Description
The Terrace Mill Stone Arch Bridge, also known as Bridge R0437 by the Minnesota Department of Transportation (MnDOT), is located in Terrace, Pope County, Minnesota and is a part of the Terrace Mill Historic District (PO-CFL-009). Bridge R0437 is a single-span masonry arch bridge that was originally constructed in 1903, and rehabilitated in 1998. An inscription on the keystone reads “JMD 1903.”

The bridge is located approximately 200 feet north of the Terrace Mill and spans the east branch of the Chippewa River. A spillway from the nearby mill dam runs under the bridge and into the Chippewa River. The stone arch bridge is located directly adjacent to the west side of Bridge 1816, which was constructed in 1915, and carries present-day County State Aid Highway (CSAH) 21 over the river. The east side of Bridge R0437 abuts Bridge 1816, only the west side of Bridge R0437 is visible.

The Bridge R0437 is a single-span masonry arch bridge that has a structure length of 30 feet, a span length of 25 feet, and a deck width of 18 feet. Abutments on the north and south sides anchor the bridge into the steep slopes of the Chippewa River bank. The abutments are comprised of the original stone that is now a “veneer” over a new reinforced concrete block structure. The non-load bearing closed spandrels on the bridge are constructed of concrete block and faced with the original stone. The riverstones are applied in a random coursing with raked joints. The voussoir stones are slightly larger and have been shaped into squares and rectangles as compared to the smaller, rounder stones covering the abutments and spandrels. The bridge retains its original arch and barrel, which are constructed of stone and carry the load of the span. There is not a defined capstone or parapet.

The deck is 17.5 feet wide and is comprised of a four-inch thick concrete sidewalk. On the west side of the bridge, four-foot wide sidewalks approach the bridge from both the north and south, converging at the deck. The east side approaches are covered in turf. The west side of the bridge, along with the portion of the east side that is directly over the arch, features a cedar wood railing. The railings have four-by-four square posts and two-by-six-and two-by-eight rails.

Integrity -
Bridge R0437 retains its integrity of location and setting, and is still carries a load. According to the “Minnesota Masonry-Arch Highway Bridges Multiple Property Documentation Form (MPDF),” “most historic highway bridges have experienced some modification as the result of routine maintenance or the attempt to increase roadway width and load-bearing capacity” (Hess 1989:F-3). Since the character defining feature of a masonry-arch is the arch, it will lose its integrity “when alterations produce a noticeable change in the original design of the masonry arch, or obscure the original masonry arch from public view” (Hess 1989:F-3). Bridge R0437 was rehabilitated in 1998 in accordance with the Secretary of Interior Standards for the Treatment of
Historic Properties (SOI’s Standards). Deteriorated features were repaired or replaced in-kind on a limited basis. While concrete block walls were added behind the spandrel walls and abutments as part of the rehabilitation, they are not visible, thus they do not affect the integrity of design. Moreover, the railing is a reconstruction of a missing historic feature and improves the integrity of design. Therefore, the bridge retains its integrity of design and materials. The bridge is able to convey its historic feeling and association with the mill. Therefore, Bridge R0437 retains sufficient integrity to convey its significance and contributions to the Terrace Mill Historic District.

EVALUATION AND ANALYSIS

Historical Context

Historical Narrative

Over time, three mills have stood on the site of the present-day mill in Terrace. The first mill was built circa 1870 and was destroyed by fire in 1888. A second mill was built in 1888, but was disassembled and moved to the nearby village of Brooten in the mid-1890s when the railroad through Brooten was constructed (NPS 1979). The third and present mill, and the associated stone arch bridge over the east branch of the Chippewa River, was built in 1903 by Jonas Magnus Danelz (The Starbuck Times 1975). Little is known about Danelz; he immigrated to the United States from Sweden in 1869 at the age of 30 and died in Swift Falls, Minnesota in 1923 at the age of 84. In addition to the Terrace Mill, he is known to have run a flour mill in Swift Falls in the early 1870s, and operated two additional flour mills in Canada before those were destroyed by fire. Dates for Danelz’s involvement in the Canadian mills are unknown (Swift County History). While it appears that Danelz was capable in the milling industry, it is unknown whether he had any formal engineering training that would have aided him in designing either the mill or the stone arch bridge.

From its construction in 1903 until 1915, Bridge R0437 functioned as a vehicular roadway over the Chippewa River from the north. The bridge served an important function by providing farmers who lived on the north side of the river, and their supply of grain, access to and from the mill. In 1915, a steel beam bridge (Bridge 1816) was constructed to replace the stone arch bridge. The new structure was built adjacent to the northeast side of the stone arch bridge and carries what is now CSAH 21 over the river. Upon the completion of Bridge 1816, the stone arch bridge was abandoned. The Terrace Mill continued to operate until 1967, when it was closed (NPS 1979).

In 1979, the non-profit Terrace Mill Foundation (TMF) incorporated, purchased the mill from Chippewa Falls Township, and began a 30-year commitment to restoring and maintaining the mill and property (MHS 2013). That same year, the Terrace Mill Historic District, which includes the mill, the mill dam, the raceway system, both Bridge R0437 and Bridge 1816, and the Miller’s House, was listed in the National Register of Historic Places (NRHP) (NPS 1979).

On July 10, 1980, Pope County deeded Bridge R0437 to the TMF through right-of-way proceedings (Pope County Recorder’s Office 1980). According to an account in a local newspaper, the County did not want to assume liability for any injuries that may occur while on the stone arch bridge and thus transferred ownership to TMF (Gaffney 1987).

As Bridge R0437 had been abandoned in 1915, by the mid-1990s, it was in desperate need of repairs. Photographs taken by the TMF in 1998 show that the northern abutment bridge was eroding away and most of the southern abutment had collapsed. Large cracks were found throughout the structure and numerous stones from the bridge had fallen into the river below. Heavy vegetation was also growing on the deck and the west wall, making it difficult to see the structure hidden beneath the overgrowth (Schluter 1998).

When the TMF incorporated and purchased the Terrace Mill site, one of its main priorities was to restore the mill and its associated properties to their original conditions. According to the TMF, the organization believed a rehabilitated bridge would “enhance the historic significance of the Terrace Mill area and provide a safe walkway across the east branch of the Chippewa River for pedestrian traffic” (TMF 1998). Though it would be years before the TMF would be able to rehabilitate the bridge, as early as 1989, the TMF board began deliberations about what could be done to restore Bridge R0437. Finally, in 1994 the
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The project was kick-started when the TMF was awarded a Minnesota Historical Society (MHS) State-Grants-in-Aid grant for $7,500 to prepare a historic structure report (HSR) for the bridge (Terrace Mill Foundation 1995). The firm of Widseth Smith Nolting of Alexandria, Minnesota conducted the study. Completed in 1994, the purpose of the HSR was to assist the TMF “in their efforts to restore the bridge by assessing the value of the bridge as a historic structure.” The “report was designed to serve as a reference throughout the project, and [as] an invaluable tool for preserving the rural heritage of the Village of Terrace” (Widseth Smith Nolting 1994). The report identified the character defining features of the bridge, assessed its current condition, and spelled out methods that should be used in future construction projects to preserve the structure.

After the HSR was completed, the TMF partnered with Pope County to apply for an Intermodal Surface Transportation Efficiency Act (ISTEA) grant to fund the rehabilitation of Bridge R0437. Also included in the ISTEA grant application was a request for funds to replace the superstructure of Bridge 1816 and to construct a sheet pile weir at the spillway of the Terrace Mill Dam, to increase the capacity of the spillway and prevent further damage to the existing structures. The total project cost in the ISTEA application was estimated to be $312,500, with $250,000 in Federal funding through the ISTEA grant, an additional $62,500 provided in state bonding funds in the form of a matching grant from an ISTEA Preservation Matching Grant from MHS, and $7,500 contributed by the TMF (Pope County Highway Department 1995; letter from Britta Bloomberg, SHPO, to Belvin Doebbert, Nelson, Obenland & Boebbert, personal communication, 1998; TMF 1998). Though the project was awarded the ISTEA funds, construction was delayed until 1998 due to an issue related to the requirements of the ISTEA Preservation Matching Grant from MHS. Since this funding source was state bond funds, and State requirements only allow bond funds to be awarded to public entities, ownership of Bridge R0437 had to be transferred back to Pope County from the TMF. This transaction occurred on March 16, 1998 (Pope County Recorder’s Office 1998).

Since Bridge R0437 is listed in the NRHP and the project was receiving federal funding, the project had to undergo a Section 106 review as mandated by the National Historic Preservation Act of 1966. In a letter dated March 19, 1997, the Minnesota State Historic Preservation Office (SHPO) stated they had reviewed the project and found that it would have no adverse effect on the historic district, provided certain stipulations were met. To ensure that no adverse effect would occur, the SHPO stipulated that it be allowed to review the final design and specifications for the project (Letter from Dennis A. Gimmestad, SHPO to Steven Windish, Widseth Smith Nolting, personal communication 1997). The SHPO approved the final plans on August 8, 1998 (Dennis A. Gimmestad, SHPO to Dale Wegner, Pope County Highway Department, personal communication, 1998).

Though final approval by SHPO had not yet been received, construction on the bridge began on May 11, 1998. Lakeview Construction of Glenwood, Minnesota was the contractor. As part of the rehabilitation, the arch and barrel were pointed, and any severely deteriorated stones were repaired or replaced in-kind. The spandrel walls and abutments were disassembled and reconstructed using salvaged and matching new stone. To strengthen the spandrels and abutments, new concrete block walls were added behind them, so they are not visible. A wooden railing was added to the bridge to replicate a railing that existed on the structure during the historic district’s period of significance. The design was based on photos of the bridge after its construction. At the same time, Bridge 1816 was also rehabilitated and a sheet pile weir was constructed on the east side of Bridge 1816 to ensure constant water levels and to control the flow of water on the spillway (Letter from Steven Windish, Widseth Smith Nolting, to Dennis Gimmestad, SHPO, personal communication, 1996). Reopened in the fall of 1998, Bridge R0437 is now a pedestrian-only bridge that enables visitors to understand and experience how the bridge contributed to the functioning of the Terrace Mill.

Significance

Bridge R0437 was listed in the NRHP in 1979 as a contributing resource to the Terrace Mill Historic District. The Terrace Mill Historic District is significant under NRHP Criterion A in the areas of Commerce, Engineering, Industry, and Transportation:

“as a unified cluster of flour mill buildings and structures typical of the modest rural milling operations which once existed at literally hundreds of Minnesota locations in the late nineteenth and early twentieth centuries. It particularly exemplifies the rural water power type of complex and included in the district are all of the essential elements: [including] two bridges which carried incoming grain and outgoing flour shipments across the dammed river…” (NPS 1979).
Locally, the historic district has significance as “the mill was an important contributor to the local and regional economy from its construction in 1903 to the end of all commercial operations in the building in 1967” (NPS 1979). Bridge R0437 contributes to the Terrace Mill Historic District as it played an important role in the function and commercial success of the mill by providing access to the mill from farms on the north side of the Chippewa River. The bridge benefitted both the local farmers who travelled to the mill to have their grain processed and the mill itself, as it facilitated the opening of the mill to a much larger market area by providing customer access to the site from lands across the river.

**Recommendation**

Bridge R0437 was listed in the NRHP in 1979 as part of the Terrace Mill Historic District. The district is significant under NRHP Criterion A in the areas of Commerce, Engineering, Industry, and Transportation. The Terrace Mill Historic District has local significance as an important contributor to the local and regional economy. Built as part of the mill complex by the builder of the present-day mill, Bridge R0437 was built during the historic district’s period of significance and was integral to the functioning and commercial success of the mill. The bridge allowed farmers access to the mill from the north by allowing safe passage over the mill pond dam and the Chippewa River. The bridge retains sufficient historic integrity to convey its contributions to the understanding and the functioning of the Terrace Mill Historic District. Therefore, Bridge R0437 is recommended to be still eligible for the NRHP as a contributing resource to the NRHP-listed Terrace Mill Historic District.

**Sources**

Gaffney, Andrea

Hess, Jeffrey

Minnesota Historical Society [MHS]

National Park Service [NPS]

Pope County Highway Department

Pope County Recorder’s Office


Schluter, Dean

Swift County History

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The Starbuck Times
1975 “Will the Terrace Mill Survive?” 29 October. Starbuck, Minnesota.

Terrace Mill Foundation
1995 Project Activity Report Form MHS Grant Number 121-94-1722. Terrace Mill Restoration Folder, on file at the Pope County Historical Society, Glenwood, Minnesota.


Widseth Smith Nolting

National Register Status
Contributing to Listed District

Consultant’s Recommendation of Eligibility
Eligible - Contributing

Prepared By
Kelli Andre Kellerhals
The 106 Group Ltd.

Date Surveyed
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Property Photograph

Facing NE

Property Photograph

Facing SE
Chippewa Falls, Pope County, Minnesota

Property Photograph

Facing S

Property Photograph

Facing SE