Introduction

Bridge Number: R0657

During Phases II and III of the Local Historic Bridge Study, completed in 2014 and 2017 respectively, Local Historic Bridge Reports were prepared for all known locally-owned historic bridges in the State, and included both “full reports” and “abridged reports”. The bridge reports detailed the historic background of the structures, described the character defining features, detailed planned/ recently completed work (abridged reports) or existing conditions, recommended stabilization and recommended preservation efforts (full reports), and recommended maintenance activities (full reports and most abridged reports). The Local Historic Bridge Report can be found at http://www.dot.state.mn.us/historicbridges/browse.html along with other historic reports for this bridge.

This addendum to the original Local Historic Bridge Report for Bridge R0657 describes the preservation work completed since preparation of the original report, provides a description and photographs of the current condition, and details recommended maintenance, stabilization and preservation activities along with their associated costs.

Bridge R0657, built in 1935, carries pedestrian traffic over the Minnesota River near the foot of 8th Avenue in the city of Granite Falls, Yellow Medicine County. Bridge R0657 is a 280-foot, three-span, steel suspension bridge and is significant as a rare example of that bridge type in Minnesota. The pedestrian bridge meets Criterion C as a rare example of a suspension bridge in Minnesota. Furthermore, the bridge was built by the Minneapolis Bridge Company, a significant bridge builder in Minnesota. The architect/engineer for the bridge was the John A. Roebling’s Sons Company, which was founded by the sons of John A Roebling who designed the Brooklyn Bridge. The bridge connects the downtown area with the east side of town. The City of Granite Falls owns the bridge. Downtown Granite Falls is located west of the bridge, and a residential area is located east of the bridge.

Rehabilitation of Bridge R0657 was completed in 2015. All work was planned and completed in accordance with the Secretary of the Interior’s Standards. Therefore, the bridge retains its historic integrity. Any future work on Bridge R0657 should proceed according to 2014 Local Historic Bridge Report, this Addendum, and the Secretary of the Interior’s Standards for the Treatment of Historic Properties (Standards) [36 CFR part 67] and The Secretary’s Standards with Regard to Repair, Rehabilitation, and Replacement Situations, as adapted by the Virginia Transportation Research Council (Guidelines).
Introduction

I. Work Completed
II. Rehabilitated Conditions
III. Recommendations
IV. Projected Costs

Appendices

A. SOI Standards Compliance Correspondence
B. Current MnDOT Inspection Report & Structure Inventory Report
Background

Bridge R0657, built in 1935, carries pedestrian traffic over the Minnesota River near the foot of 8th Avenue in the city of Granite Falls, Yellow Medicine County. The bridge connects the downtown area with the east side of town. The City of Granite Falls owns the bridge. Downtown Granite Falls is located west of the bridge, and a residential area is located east of the bridge.

Bridge R0657 is a 280-foot, three-span, steel suspension bridge. The center span is 130 feet long and the approach spans are 75 feet long each. Two towers are composed of steel I-beam piles and are supported with steel I-beam, angle, and plate bracing. X-bracing runs between the piles. The steel members feature rivets and some replacement bolts. Steel wire main cables and suspender cables run between the towers. Steel I-beam cable anchors connect the vertical cable members to the bridge deck. Angle sections with batten plates form a Warren-with-verticals configuration that functions as the bridge railing. A thin mesh-like metal screen runs along the interior of the truss on both sides of the concrete panel deck.

During the early 1930s the City began planning for a permanent replacement of the existing wooden foot bridge, and in 1934, a local bond fund was established to finance the bridge. The John A. Roebling’s Sons Company designed the suspension bridge and provided the steel cables and tower members. The Roebling Company was founded by the sons of the designer of the Brooklyn Bridge, John A. Roebling. By the 1930s the company was the largest manufacturer of steel cable in the world and also provided suspension bridge design services. The Minneapolis Bridge Company was selected in early 1935 as contractor for construction of the pedestrian bridge, and the bridge was completed by that summer.

A bridge plaque is located on the west tower and reads “Roebling Suspension Bridge/ 1935/ City of Granite Falls” along with a list of city officials and “Minneapolis Bridge Co. Builders.” The east concrete abutment features flared, sloping wingwalls, and the concrete slab west abutment rests against a concrete block retaining wall. The towers rest on piers consisting of a steel bent supported by an open concrete pier.

Bridge R0657 was built in 1935 and is significant as a rare example of a suspension bridge in Minnesota. Before its construction, multiple wooden foot bridges at the foot of 8th Avenue connected downtown Granite Falls with the Chicago, Milwaukee & St. Paul Railroad depot on the east side of the Minnesota River. However, ice build-up and flooding in springtime regularly damaged or destroyed the previous bridges.

The rehabilitation work included raising the bridge piers and abutments and adjusting the east suspension tower to maintain an even deck, and raising the bridge low member elevation to reduce potential for damage from a large flood event. To accommodate the new elevation, the east concrete abutment and approach were rebuilt and an Americans with Disabilities Act (ADA)-compliant pedestrian ramp was installed.

The bridge has the following character-defining features (see attached photographs):
II - Rehabilitated Conditions

1. Two towers composed of steel I-beam piles resting on concrete piers in bent configuration and supported with steel I-beam, angle, and plate bracing;
2. Riveted steel members;
3. Metal wire main cables and suspender cables and steel I-beam cable anchors; and

These features and their **historic materials were largely intact** prior to the rehabilitation work. **A notable alteration was that, in some locations, rivets were previously replaced with bolts.**

When viewed from the west side (across) the river, the ramp is clearly distinguishable as non-historic and reads like a separate structure from the bridge. The ramp does not obstruct views from the south and north, which are the critical view sheds toward the bridge and from which the suspension cables, towers, and truss are most visible. From directly east, the ramp obstructs views of the bridge. Prior to construction, however, the view from this direction was primarily of the approach and stairs, and therefore, the clearest views of the bridge’s character-defining features remain unobstructed. Furthermore, the ramp could be removed in the future without impairing the form or integrity of the bridge. Although the ramp is a visual change, it has not destroyed historic materials, features, or spatial relationships that characterize the property, and it does not interrupt critical views.

The raising of the vertical alignment of the bridge keeps the structure in its historic use a suspension bridge and the overall historic character and distinctive materials and features have been preserved. The height of the east steel tower has changed slightly, but the drape of the cables has not changed. Although the deck is now at a higher elevation, the stiffening truss was not affected. Furthermore, because raising the deck was accomplished by adding additional concrete to the east abutment and the piers, there was no loss of materials, only addition. The materials of the character-defining features identified above have not changed.

Work Completed

The rehabilitation was funded with Scenic Byways Funds. The project was completed in 2015. Plans for the rehabilitation were prepared by Widseth Smith Nolting Engineers, Architects, & Surveyors for The City of Granite Falls. All work was planned in accordance with the Secretary of the Interior’s (SOI) Standards and was closely coordinated with the MnDOT Cultural Resources Unit (CRU), the MnDOT State Aid Bridge Unit and the State Historic Preservation Office (SHPO). Correspondence with SHPO confirming that the planned work was in conformance with SOI Standards can be found in Appendix A of this report.

This project has been granted an exception from Minnesota Rule 8820.9995, MnDOT LRFD Bridge Design Manual, Guide Specification for Design of Pedestrian Bridges, MnDOT Bikeway Facility Design Manual and AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities to Rehab Bridge R0657 located on a pedestrian trail over the Minnesota River in the City of Granite Falls, Minnesota so as to allow rehabilitation of this bridge with:

- the existing 7'-7" bridge width in lieu of the 10'-0" bridge width,
- 4'-0½" railing in lieu of 4'-6" railing and
- 80 PSF LL on deck structure and 50 PSF live load on cables and towers in lieu of the standard bridge load capacity of 90 PSF.
Construction for the project occurred from November 2014 to September 2015 to address the structure’s deficiencies (MnDOT S.P. 098-060-002). General contractor was Robert R Schroeder Construction Inc. of Glenwood, Minnesota

The rehabilitation included the following:

- **Raise Vertical Alignment.** Raising the vertical alignment of the bridge included the following items:
  - **Raise the deck** - The deck was raised so that its elevation at the east and west abutments is now the same, 903.04 feet, which was the elevation of the west abutment. The elevation at the top of the east abutment was 897.0. The bridge superstructure allowed for adjustment of the vertical alignment without modification, but the substructure and steel towers required modification.
  - Raise both piers and the east abutment - The piers were raised through the addition of concrete pier caps—1’ 7 3/8” on the west pier and 4’ 5 1/8” on the east pier. An additional concrete abutment was built onto the east abutment, raising its height 6’ 0 1/2”. The MnDOT standard concrete mix No. 3Y43 was used on the abutment and piers. This concrete is not textured and is a grey color, similar to the previous concrete.
  - Adjust the east tower so the elevation of the deck is consistent between the two towers
  - Rebuild the east approach ramp - Because the east abutment was raised 6’ 0 1/2” above the prior grade, an ADA-compliant approach ramp was required to provide access. The ramp utilizes a switchback layout in order to maintain a 4.5 percent slope and is aligned primarily to the south of the bridge approach. The walls of the ramp will be concrete and have a texture matching the west approach walls.

- **Stabilize Piers** - The existing concrete piers have been stabilized through the addition of concrete footings. The new footings encase the existing columns, adding an additional 10 inches in width to the three outer faces of each column. The interior faces have not been altered, and the existing openings between the columns remain. The piers retain their essential form, and the columns remain rectangular in form, with a triangular upstream face. The new footings and encasements consist of a standard concrete mix, which is similar in color and texture to the previous concrete.

  The stabilization measures for the piers are consistent with the Standards for Rehabilitation. Although the piers are wider, the widening has corrected previous undermining of the piers and provides the additional height needed to help ensure that the bridge will continue in its historic use. In addition, the overall form and character of the piers remains. The concrete is compatible but not identical to the previous concrete, and although some historic materials have been covered, none were lost as a result of the stabilization measures.

- **Replace Elements** - A number of elements of the bridge were worn out and were replaced. In addition, the structure was repainted. Some structural elements, including the center channel under the deck and two exterior channels, were replaced in kind, though due to cost constraints, they were bolted rather than riveted. The steel wire mesh on the bridge railings was replaced with a matching steel wire mesh. Similarly, the concrete deck planks were replaced in kind with
identical concrete deck planks. Replacement of steel members, wire mesh, and the concrete deck planks is consistent with the Standards for Rehabilitation. These features are not distinctive or character-defining features, and replacement features match the old in design, color, texture, and materials.

Existing Conditions

Available information concerning Bridge R0657 including bridge rehabilitation plans and bridge inspection reports, were reviewed prior to visiting the bridge site. The current MnDOT Bridge Inspection Report and Structure Inventory Report can be found in Appendix B of this Addendum.

A site visit was conducted by LHB on October, 2017. The site visit was conducted to establish the following:

1. General condition of structure
2. Conformation to available rehabilitation plans
3. Bridge geometry, clearances and notable site issues

General Description

Bridge R0657, built in 1935, carries pedestrian traffic over the Minnesota River near the foot of 8th Avenue in the city of Granite Falls, Yellow Medicine County. Bridge R0657 is a 280-foot, three-span, steel suspension bridge. The center span is 130 feet long and the approach spans are 75 feet long each. Two towers are composed of steel I-beam piles and are supported with steel I-beam, angle, and plate bracing. X-bracing runs between the piles. The steel members feature rivets and some replacement bolts. Steel wire main cables and suspender cables run between the towers. Steel I-beam cable anchors connect the vertical cable members to the bridge deck. Angle sections with batten plates form a Warren-with-verticals configuration that functions as the bridge railing. A thin mesh-like metal screen runs along the interior of the truss on both sides of the concrete panel deck.

General Condition

Bridge R0657 is in good condition. Bridge R0657 appears to adequately serve its purpose of carrying pedestrian traffic. The bridge is currently open and is posted with a pedestrian restriction of a maximum of 360 adults / 50 PSF allowed on the bridge at any time.

The work that was completed has minimized changes to the bridge while accomplishing the purpose and need of the project. The structure remains a suspension bridge and the overall appearance of the steel towers and cables has not changed. Although the deck is at a higher elevation, the stiffening truss has not been affected. As described above, alterations to character defining features have been kept to a minimum, and there has been no loss of historic materials to character-defining features. The ADA ramp has resulted in a visual change, but this change has not obstructed key views of the bridge’s character-defining features. It is recommended that the project has conformed to the Standards for Rehabilitation and, therefore, has had No Adverse Effect on the bridge.
Minnesota Department of Transportation (MnDOT)  
Local Historic Bridge Report - Addendum after Rehabilitation

II - Rehabilitated Conditions

Bridge Number: R0657

Overall View – Raised Bridge Pier

Photo 1: Pre-rehab view (Note lower bridge column infill, absence of ADA ramps)

Photo 2: During rehab
II - Rehabilitated Conditions

Bridge Number: R0657

Photo 3: After rehab view (note: raised pier infill, ADA ramp @ E. Abutment)

Photo 4: Pier 1 infill formwork
II - Rehabilitated Conditions  Bridge Number: R0657

Photo 5: Pier 1 Infill

Photo 6: Pier 2 infill formwork
II - Rehabilitated Conditions

Bridge Number: R0657

Photo 7: Pier2 Infill

Photo 8: West Abutment
Minnesota Department of Transportation (MnDOT)
Local Historic Bridge Report - Addendum after Rehabilitation

II - Rehabilitated Conditions

Bridge Number: R0657

Photo 9: West Abutment

Photo 10: West Abutment
II - Rehabilitated Conditions

Bridge Number: R0657

Photo 11: East Abutment

Photo 12: East Abutment
II - Rehabilitated Conditions

Bridge Number: R0657

Photo 13: East Abutment – Pedestrian Ramp

Photo 14: East Abutment – Pedestrian Ramp
Photo 15: Bridge deck removal

Photo 16: After rehab view – Bridge deck
II - Rehabilitated Conditions

Bridge Number: R0657

Photo 17: After rehab view – Bridge deck

Photo 18: After rehab view – Bridge deck
II - Rehabilitated Conditions  

Bridge Number: R0657

Photo 19: Weight Limit
Overall Recommendations

This bridge report addendum assesses the maintenance, stabilization and preservation needs of this structure. The maintenance activities, along with regular structural inspections and anticipated bridge component replacements, are routine practices directed toward continued structure serviceability and asset preservation. Stabilization activities address immediate needs identified as necessary to maintain a bridge’s structural and historic integrity and serviceability and should be performed as soon as possible. Preservation activities are near-term or long-term steps that need to be taken to preserve, and in some cases, restore a bridge’s structural and historic integrity and serviceability. In assessing preservation activities, a design life of 20 years or longer is typically considered.

Bridge R0657 is currently open to Pedestrian traffic. The recommendations that follow assume the structure’s use will remain the same.

Recommended Inspections

The rehabilitation of Bridge R0657 was completed in the fall of 2015. In addition to standard inspection protocol and procedures which should be undertaken for a bridge of this type, the following inspections should be performed to more acutely monitor the condition of the bridge’s historic elements. Inspections should be performed in accordance with recommendations found in this Local Historic Bridge Report Addendum and current MnDOT requirements in the most recent version of MnDOT’s Bridge Inspection Field Manual.

Prior to conducting the inspection, the Bridge Inspection Team Leader (BITL) should review the Local Historic Bridge Report and this Addendum to become familiar with the significance of the bridge, its character-defining features, and details of the recent rehabilitation. Specific elements of the historic bridge to pay close attention to are described below.

After completing the inspection, the inspector should note any condition issues that pertain to the bridge’s historic features within the inspection report. If repairs are recommended to the bridge’s character-defining features or historic fabric, the BITL should consult with the MnDOT Cultural Resources Unit (CRU) for advice on repair methods that meet the Secretary of the Interior’s (SOI) Standards by emailing CulturalResources.dot@state.mn.us.

Recommended Annual Maintenance Activities

There were no major stability issues observed in bridge preservation document. The major concern was flood related issues and the rehab addressed that by raising the bridge deck. Therefore, there were no annual maintenance activities recommended for this bridge.

Recommended Stabilization Activities

There was a pier undermining observed and the rehab addressed that by stabilizing the column through the addition of concrete footings. Since this the only observed issue of stabilization, there were no additional stabilization activities recommended for this bridge.
Recommended Preservation Activities

There were no major stability issues observed in bridge preservation document. The major concern was flood related issues and the rehab addressed that by raising the bridge deck. Therefore, there were no recommended preservation activities for this bridge.
Appendix A.  SOI Standards Compliance Correspondence

February 20, 2014

Raeen Hutter Barnes, Historian
MnDOT Cultural Resources Unit
Transportation Building, Mail Stop 620
395 John Ireland Boulevard
St. Paul MN 55155-1899

RE: SP 098-060-001
Rehabilitation of the Granite Falls Pedestrian Bridge - 50% design review
Granite Falls, Yellow Medicine County
SHPO Number: 2011-1740

Dear Ms. Hutter Barnes:

Thank you for continuing consultation on the above project which has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, and per the terms of the Programmatic Agreements between the Federal Highway Administration, the Minnesota Department of Transportation and the Minnesota State Historic Preservation Office.

We have reviewed the 50% plans that were submitted for this project and we find that the work as proposed meets the Secretary of the Interior’s Standards for Rehabilitation. Therefore, we concur with your determination that this project will have no adverse effect on the Granite Falls Pedestrian Bridge, which has been determined eligible for listing in the National Register of Historic Places.

If you have any questions regarding our review please contact Kelly Gragg Johnson, Review and Compliance Specialist, at (651) 259-3455.

Sincerely,

Sarah J. Biermers, Manager
Government Programs and Compliance

cc: Andrew Schmidt, Summit Envirosolutions
January 23, 2014

Sarah J. Biemers, Manager
Government Programs & Compliance
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. West
St. Paul, MN 55102

Re: SP 098-060-001 [SHPO Number 2013-1740] [Granite Falls Pedestrian Bridge, over the Minnesota River, 90% plans, Granite Falls, Yellow Medicine County]

 Dear Ms. Biemers,

We have reviewed the above-referenced undertaking pursuant to our FHWA-delegated responsibilities for compliance with Section 106 of the National Historic Preservation Act, as amended (36 CFR 800), and as per the terms of the applicable Programmatic Agreements between the FHWA and the Minnesota State Historic Preservation Office (SHPO). The Section 106 review fulfills MnDOT’s responsibilities under the Minnesota Historic Sites Act (MS 138.655-666), the Field Archaeology Act of Minnesota (MS 138.40), and the Private Cemeteries Act (MS 307.68, Subd. 9 and 10).

Please find enclosed the 90% plans for the Granite Falls Pedestrian Bridge and Summit Envirosolutions letter report “Historical Review of 90 Percent Draft Plan Pedestrian Bridge over Minnesota River, Granite Falls.” These plans address comments expressed during the 60% plans from your office in a letter dated September 30, 2013. The comments were addressed as follows:

- the railings proposed on the new ADA ramp will be a picket-type railing with square posts and balusters.
- the ADA ramp has been realigned so that the ramp is south of the bridge approach, allowing for clear views of the bridge from the east and north.
- the piers will be enlarged on three faces and not the interior face so that the existing openings between columns will remain.
- and piers will retain their essential form; the steel wire mesh on the bridge railings will be replaced with a matching steel wire mesh.

The above was discussed with Natasha Wiener during a phone conference on October 16, 2013 and concurred via email on November 18, 2013.

Currently, there will be no Corps of Engineer Permit because the project will be covered under a General Permit RGP-003-MN as a non-reporting impact. Additionally, the ground in the construction area has been previously disturbed and it is proposed that there will be no new ground disturbance at either end of the bridge for any construction activities. If during the course of planning either of these situations change, the MnDOT CRU will inform SHPO immediately.
It is the continued determination of this office that the proposed work minimizes the changes to the bridge while accomplishing the purpose and need, and will lead to a No Adverse Effect. If you have any questions about the enclosed or this letter, please do not hesitate to call me at (651) 366-4291.

Sincerely,

Renée Hutter Barnes
Historian
MnDOT Cultural Resources Unit (CRU)

Attachments

cc: Bill Lavin, City of Granite Falls
    Andrew Schmidt, Summit Envirosolutions
    Kent Rohr, WSN
    Mn/DOT CRU Project File
Appendix B. Current MnDOT Inspection Report & Structure Inventory Report

Due to the use of the bridge, locally owned pedestrian bridge over a stream, there is no MnDOT inventory report available for this bridge.