

TO: MAYOR AND CITY COUNCIL
FROM: LANELL ENDRES, INTERIM CITY ADMIN/FINANCE DIRECTOR
SUBJECT: THIRD STREET BRIDGE REHABILITATION PROJECT
MEETING DATE: AUGUST 7, 2018

BACKGROUND

The City of Cannon Falls has been working closely with Goodhue County and SRF Consulting on the Legacy Grant for the rehabilitation of the historic Third Street Bridge. The project has been going through the approval process at the State and we are at a point where additional action is needed by the City Council. A proposed resolution is attached along with information about the project. Greg Isakson, Goodhue County Engineer, will be present to review the project and answer any questions you may have.

REQUESTED COUNCIL ACTION

Approve and adopt the resolution regarding the Third Street Bridge rehabilitation project.

Attachment(s):

Information Regarding the Project
Proposed Resolution

CITY OF CANNON FALLS DESIGN EXCEPTION REQUEST CHECKLIST

BRIDGE #L5391 (SP 025-599-121)

CITY of CANNON FALLS, MINNESOTA

- 1. As required by the Rules: a certified resolution from the responsible city council or county board which identifies the project by location and termini, cites the Applicable Rule and chapter, cites the standard for which the variance is requested, and describes what is proposed in lieu of the standard.**

RESOLUTION: See attached City of Cannon Falls Resolution

If applicable, cite the relevant guidance provided in the latest edition of “A Policy on Geometric Design of Highways and Streets”, from AASHTO. For projects in urban areas, if applicable, cite the relevant guidance provided in the latest edition of the “Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities” from the Institute of Transportation Engineers.

PROJECT LOCATION: City of Cannon Falls, Minnesota
PROJECT NUMBER: SP 025-599-121
ROUTE: Third Street North
DESC. LOCATION: from approximately 80-feet South of Cannon Street West to approximately 200-feet North of Water Street West
BRIDGE NUMBER: L5391

DESIGN STANDARD EXEPTION IS FROM:

- MnDOT LRFD Bridge Manual
- 8820.9922 State-Aid Geometric Design Standard: Minimum Design Standards; New Bridge, Bridge Replacement, or Bridge Rehabilitation Projects and Approach Roadways that are not on the State-Aid System
- 8820.9956 State-Aid Geometric Design Standard: Vertical Clearance from Underpasses
- AASHTO LRFD Bridge Design Specifications

- 2. Location map and typical section (in-place and proposed).**

LOCATION: **See** Project Memorandum, Appendix A – Figure 2
TYP. SECTIONS: **See** Project Memorandum, Appendix E

3. Describe adjacent land uses (agricultural, residential, commercial, etc).

ADJACENT LAND USE: The banks of the Cannon River near Bridge L5391 are wooded and largely undeveloped. There is some light industrial development north of the Cannon River and some residential development south of the Cannon River.

4. Describe the needs of motorists, pedestrians, transit users, and vehicles, bicyclists, and commercial and emergency vehicles moving along and across roads, intersections, and crossings should be consideration in a manner that is sensitive to the local context. If applicable, cite the relevant guidance provided in the Institute of Transportation Engineers' "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities".

NEED: This historic bridge provides access across the Cannon River on Third Street for local traffic and pedestrians.

5. Describe effects of designing in accordance to Rule versus proposed non-standard element on adjacent properties, pedestrians, bicycles, motoring public, and emergency vehicles.

EFFECTS OF STANDARD DESIGN:

Bridge Traffic Railing: Bridge traffic railing crash test level rating of TL-2.

Bridge Pedestrian Railing: Bridge pedestrian railing height of 54 inches (MnDOT); bridge pedestrian railing strength of 200-pound point load plus 50-pound per foot load applied at top of rail; and bridge pedestrian railing opening size of 6 inches above 27-inch height (MnDOT).

Bridge Roadway Width: Bridge roadway width of 20 feet.

Bridge Vertical Clearance: Bridge vertical clearance of 14.5 feet.

Bridge Load Rating Factor: Bridge Inventory load rating factor of 0.90.

EFFECTS OF NON STANDARD DESIGN:

Bridge Traffic Railing: A traffic railing that has not been crash tested is provided in lieu of a traffic railing that would meet TL-2 crash test level requirements.

Bridge Pedestrian Railing: A pedestrian railing height of 45 inches is provided in lieu of a bridge pedestrian railing height of 54 inches.

Sub-standard pedestrian railing strength is provided in lieu of pedestrian railing strength of 200-pound point per load plus 50 pounds of feet per load applied at the top of the railing.

A pedestrian railing opening size of 8.5 inches above 16-inch height is provided in lieu of a pedestrian railing opening size of 6 inches above 27-inch height.

Bridge Roadway Width: A roadway width of 17 feet (curb-to-curb width) is provided in lieu of a roadway width of 20 feet.

Bridge Vertical Clearance: A vertical clearance of 8 feet is provided in lieu of a vertical clearance of 14.5 feet.

Bridge Load Rating Factor: An inventory load rating factor of 0.44 is provided in lieu of an inventory load rating factor of 0.90.

- 6. Define the critical design element involved (i.e. not "Design Speed"): horizontal alignment (radius or degree of curvature), vertical alignment, grades, lane width, shoulder width, bridge width, structural capacity, stopping sight distance (horizontal and vertical), cross slope, super-elevation, clearance (horizontal and vertical).**

DESIGN ELEMENTS INVOLVED AND REQUIRED STANDARD:

Bridge Traffic Railing: Structural capacity of bridge barrier (railing) and geometry of barrier as required by MnDOT LRFD Bridge Design Manual and AASHTO LRFD Bridge Design Specifications.

Bridge Pedestrian Railing: Bridge pedestrian railing height and opening size as required by MnDOT LRFD Bridge Design Manual. Pedestrian railing strengths as required by AASHTO LRFD Bridge Design Specifications.

Bridge Roadway Width: Bridge roadway width as required by 8820.9922 State-Aid Geometric Design Standard: Minimum Design Standards; New Bridge, Bridge Replacement, or Bridge Rehabilitation Projects and Approach Roadways that are not on the State-Aid System.

Bridge Vertical Clearance: Bridge vertical clearance as required by 8820.9956 State-Aid Geometric Design Standard: Vertical Clearance from Underpasses

Bridge Load Rating Factor: Bridge load rating factor as required by 8820.9922 State-Aid Geometric Design Standard: Minimum Design Standards; New Bridge, Bridge Replacement, or Bridge Rehabilitation Projects and Approach Roadways that are not on the State-Aid System.

PROPOSED DESIGN:

Bridge Traffic Railing: Maintain current historic railing. Strength has not been determined and testing is not feasible.

Bridge Pedestrian Railing: Maintain current historic railing. Strength has not been determined.

Bridge Roadway Width: 17-feet (curb-to-curb).

Bridge Vertical Clearance: 8-feet.

Bridge Load Rating Factor: Inventory Load Rating Factor (RF) = 0.44.

- 7. Estimate the cost/impacts to construct to the standard, the cost to build to the proposed element, and information that logically explains why the proposed design was chosen. For instance, if the radius and sight distance for a horizontal curvature is proposed at 35 mph instead of 55 mph, include cost/impacts for 50 mph and 40 mph radii and sight distance.**

IMPACTS/COST:

Bridge Traffic Railing: The existing railings are considered a Character Defining Feature under the Secretary of Interior's Standards for the Treatment of Historic Properties and must be retained to maintain historical integrity.

Bridge Pedestrian Railing: The existing railings are considered a Character Defining Feature under the Secretary of Interior's Standards for the Treatment of Historic Properties and must be retained to maintain historical integrity.

Bridge Roadway Width: The single-span, riveted Pennsylvania through truss is considered a Character Defining Feature under the Secretary of the Interior's Standards for the Treatment of

Historic Properties and must be repaired or replaced in-kind to maintain historical integrity. The roadway width is constrained by the existing members of the high truss. Increasing the roadway width would require removal of the entire bridge superstructure. Removal of the entire bridge superstructure would not be compatible with the Secretary of the Interior's Standards, resulting in an adverse effect determination under Section 106.

Bridge Vertical Clearance: At each end of Bridge L5391 a horizontal bar with an attached sign has been suspended from the portal to limit access by vehicles more than 8 feet tall. The bar is made of 4-inch PVC plastic and suspended by lengths of chain. The horizontal bar and attached sign will be maintained with the project. The purpose of this vertical clearance restriction is to prevent the use of the bridge by heavy vehicles. continued use of the bridge by heavy vehicles would exacerbate deterioration of the bridge's Character Defining Features.

Bridge Load Rating Factor: The load rating is controlled by the strength of the existing truss members. Increasing the load rating would require replacement or strengthening of nearly every truss member. Because the truss members are Character Defining Features, these repairs would not be compatible with the Secretary of the Interior's Standards.

8. Include available accident data in detail that indicates the resulting damage (property damage/injury/death), contributing causes, and location.

ACCIDENT DATA: Crash data for Third Street North and Bridge L5391 was obtained for years 2011 through 2015 using MnDOT's Crash Management Analysis Tool (MnCMAT). There were two reported crashes on Third Street North between Cannon Street and Water Street during the analysis period.

9. Include existing and projected traffic counts.

EXISTING & PROJECTED TRAFFIC COUNTS:

Existing ADT (2018): 150 < ADT < 400

Proposed ADT (2038): 150 < ADT < 400

10. Include legal, posted, and/or safe speed of abutting roadway sections.

LEGAL SPEED: 30 MPH
POSTED SPEED: NONE (local street)
SAFE SPEED: NA (narrow roadway with low clearance barrier)

11. Indicate if future improvements are planned on the roadway or on adjacent property.

FUTURE IMPROVEMENTS: None planned

12. Describe safety mitigation considered, such as signing in accordance with MMUTCD, side-slope flattening, etc.

SAFETY MITIGATION: The City will maintain the overhead barrier and post the bridge at an artificially low 5-ton weight limit to prevent heavy vehicles from using the roadway. "ONE LANE ONLY" and "ONE CAR AT A TIME" signs will remain in place at the ends of the bridge.

SAFETY IMPROVEMENTS: The following safety features or enhancements will result from this project:

- The rehabilitated bridge will have an improved load capacity in the form of an improved bridge inventory load rating (0.3 Existing, 0.44 Proposed).
- The sidewalk ramp at the north end of the bridge will be extended to be under the 8 percent grade required by the American's with Disabilities Act.
- The existing timber deck will be replaced with a stronger concrete deck.

13. Any other pertinent factors.

PERTINENT FACTORS:

Bridge L5391 is listed in the National Register of Historic Places (NRHP) and continues to carry vehicular traffic over the Cannon River in its original location. As such, it retains integrity of setting, feeling, association, and location. The bridge is eligible under National Register Criterion C in the area of Engineering as a representative example of a Pennsylvania through truss, an unusual bridge type in Minnesota; as the design of an important engineer, Louis P. Wolff of Loweth and Wolff of St. Paul; and as the work of an important bridge builder, Alexander Y. Bayne of Minneapolis. It is one of three Pennsylvania through trusses known to be standing in Minnesota and is the earliest of the three. The bridge is significant within the statewide historic context "Historic Iron and Steel Bridges in Minnesota, 1873- 1945." The period of significance is 1910, the year of completion. The level of significance is State on a local, state, national scale.

PROPOSED IMPROVEMENT:

The proposed bridge work includes replacing the existing timber deck and walkway with lightweight concrete, repairs to the steel truss, removal of existing paint and corrosion, bridge railing repairs, and bridge repainting.

In addition, the work includes removing and replacing the backwalls of the existing concrete abutments, repairing a crack in the southeast wingwall, armoring the abutments with limestone riprap, replacing the concrete sidewalk approach panels, replacing the approach railings, and replacing the insulation covering the watermain on the east side of the bridge truss.

RESOLUTION NUMBER xxxxxx
CITY OF CANNON FALLS, MINNESOTA

A resolution approving bridge traffic railing, pedestrian railing, roadway width, vertical clearance, and load rating factor design exception requests for the proposed Rehabilitation of Bridge L5391 Project.

WHEREAS, the City of Cannon Falls is preparing plans for the rehabilitation of historic Bridge #L5391; and

WHEREAS, it has been determined during the design of this rehabilitation project that 1) the existing railings are to be retained, 2) the roadway width on the bridge will be set at 17-foot curb-to-curb, 3) the city wishes to use a bar to restrict the vertical clearance to 8-feet, and 4) the inventory load rating of the bridge will be 0.44; and

WHEREAS, 1) the existing railings are considered a Character Defining Feature under the and must be retained to maintain historical integrity, 2) the roadway width is constrained by the existing members of the truss, 3) the city wishes to restrict the use of the bridge by heavy vehicles using a vertical clearance restriction bar, and 4) Increasing the load rating would require replacement or strengthening of nearly every truss member.

NOW, THEREFORE BE IT RESOLVED, that the Cannon Falls City Council does hereby request the State of Minnesota to approve design exceptions that will allow the existing bridge railing to remain, maintain a 17-foot roadway width on the bridge, have a vertical clearance of 8-feet, and have an inventory load rating of 0.44, and;

BE IT FURTHER RESOLVED, that the Cannon Falls City Council hereby indemnifies, saves and hold harmless the State of Minnesota, SRF Consulting Group Inc., and their agents and employees of and from claims, demands, actions, or causes of action arising out of or by reason of 1) the existing railings, 2) the bridge roadway width, 3) the vertical clearance restriction bar, and 4) the load rating; and further agrees to defend at their sole cost and expense any action or proceeding commenced for the purpose of asserting any claim arising as a result of the granting these design exceptions.

CITY OF CANNON FALLS

Mayor Robby Robinson

ATTEST: _____
City Administrator

**CITY OF CANNON FALLS
GOODHUE COUNTY, MINNESOTA**

RESOLUTION NUMBER 2374

**A Resolution Approving Bridge Traffic Railing, Pedestrian Railing, Roadway Width,
Vertical Clearance and Load Rating Factor Design Exception Requests
for the Proposed Rehabilitation of Bridge L5391 Project**

WHEREAS, the City of Cannon Falls is preparing plans for the rehabilitation of historic Bridge #L5391; and

WHEREAS, it has been determined during the design of this rehabilitation project that 1) the existing railings are to be retained, 2) the roadway width on the bridge will be set at 17-foot curb-to-curb, 3) the city wishes to use a bar to restrict the vertical clearance to 8-feet, and 4) the inventory load rating of the bridge will be 0.44; and

WHEREAS, 1) the existing railings are considered a Character Defining Feature under the and must be retained to maintain historical integrity, 2) the roadway width is constrained by the existing members of the truss, 3) the city wishes to restrict the use of the bridge by heavy vehicles using a vertical clearance restriction bar, and 4) Increasing the load rating would require replacement or strengthening of nearly every truss member.

NOW, THEREFORE BE IT RESOLVED, that the Cannon Falls City Council does hereby request the State of Minnesota to approve design exceptions that will allow the existing bridge railing to remain, maintain a 17-foot roadway width on the bridge, have a vertical clearance of 8-feet, and have an inventory load rating of 0.44, and;

BE IT FURTHER RESOLVED, that the Cannon Falls City Council hereby indemnifies, saves and hold harmless the State of Minnesota, SRF Consulting Group Inc., and their agents and employees of and from claims, demands, actions, or causes of action arising out of or by reason of 1) the existing railings, 2) the bridge roadway width, 3) the vertical clearance restriction bar, and 4) the load rating; and further agrees to defend at their sole cost and expense any action or proceeding commenced for the purpose of asserting any claim arising as a result of the granting these design exceptions.

ADOPTED by the City Council of Cannon Falls this 7th day of August 2018.

CITY OF CANNON FALLS

Lyman M. Robinson, Mayor

ATTEST: _____
Lanell Endres, Interim City Administrator