

New Casselman River Bridge, Grantsville, Maryland

Location and Description of Setting:

The New Casselman River Bridge carries US 40 Alternate over the Casselman River in Grantsville, Garrett County, Maryland. To the north of the bridge is the old Casselman River stone arch bridge. This stone arch bridge was constructed in 1813 as part of the National Road, and resides in Casselman River State Park. To the south of the New Casselman River Bridge are the 1970s dual steel beam bridges carrying Interstate 68 over the Casselman River. Together the three bridges represent three generations of bridge and roadway construction. As such, the US 40 Alternate bridge represents a key element to the overall history of this area and the history of roadway/bridge construction.

Description of Bridge:

The New Casselman River Bridge was constructed in 1932 when the National Road was relocated from its original nineteenth-century location. It is a Pratt truss bridge with riveted connections. The bridge's largest span is about 133 feet, and its total length is about 137 feet. The deck width is 40 feet and the vertical clearance above the deck is just less than 15 feet.

Figure 12. New Casselman River Bridge



Figure 13. New Casselman River Bridge



Rehabilitation Project Information

Date/Cost for Rehabilitation:

Detailed design work for this project started in 2006. The Maryland State Highway Administration (SHA) advertised the project in January 2008, and construction began in June 2008. The bridge was reopened to traffic in September 2008, and the project was completed in October 2008. The project was funded by Transportation Enhance Program Funds, Federal Bridge Rehabilitation Funds, and state funds. The total project cost was \$2.5 million.

Project Designer:

Maryland State Roads Commission, Bridge Office. The Rehabilitation Design team for the New Casselman River Bridge included Maurice Agostino (Design Project Engineer, State Highway Administration Office of Structures), Steve Wiley (Construction Project Engineer, State Highway Administration District 6 Construction), Fred Braerman (Consultant Design Engineer, Johnson, Mirmiran and Thompson). The contractor was Concrete General, Inc.

Bridge Owner/Client:

Maryland State Highway Administration, Office of Structures

Source for Additional Information:

Mauricio Agostino,
Maryland State Highway Administration
Office of Structures
magostino@sha.state.md.us

Anne Bruder
Maryland State Highway Administration
abruder@sha.state.md.us

Project Information

1. Project description, including purpose and need.

By 2006, when detailed design work for rehabilitation of the New Casselman River Bridge began, the bridge was classified as structurally deficient. The classification was due to the poor condition of the concrete deck and deterioration in some of the steel members that comprise the truss superstructure. A thorough inspection of every element was performed to determine the condition of the bridge and ascertain the feasibility of rehabilitating the bridge. The inspection revealed several areas where the steel portions of the bridge had corroded and were deteriorated to the point where entire steel members needed to be replaced or strengthened. While this was significant, the overall condition of the steel portions of the bridge was good. The primary area of concern was the concrete deck, which had full depth punctures and required constant attention.

The design of the 80 year old bridge was reviewed using current bridge design code. Its design met today's load carrying requirements. The bridge also provided sufficient lane and shoulder width for accommodating both vehicle and bicycle traffic. Therefore, despite the age of the New Casselman River Bridge, rehabilitating and repairing the bridge was determined to be the best course of action.

The scope of the project included:

- replacing in-kind the concrete deck slab,
- repairing and strengthening a number of the truss vertical members,
- replacing a number of the truss diagonals,
- replacing the exterior stringers supporting the concrete deck slab,
- cleaning and painting the entire steel superstructure,
- minor repairs and modifications to the concrete abutments supporting the truss, and
- placing rip rap around the base of the abutment supports to protect against scour.

In order to perform the repairs to the steel truss superstructure, portions of the bridge needed to be disassembled. The bridge could not support vehicle traffic while this work took place, so during construction, the bridge was closed and traffic detoured. A comprehensive public involvement effort was undertaken to make sure all stakeholders affected by the detour were notified of the project and allowed to comment. The public involvement effort for this project included sending written notification of the project to businesses adjacent to the bridge, the Garret County School Board, local emergency services, and the elected officials in the area. A public informational meeting was also held. Particular attention was made to assure stakeholders that the bridge would be reopened to traffic prior to the Grantsville Fall Festival. Special considerations were made to accommodate pedestrians, bicyclists, and horse drawn vehicles from the local Amish community, which were not allowed to use I-68. A second detour via the older Casselman River stone arch bridge in Casselman River State Park was developed in conjunction with the Department of Natural Resources specifically to accommodate these users.

The New Casselman River Bridge was closed to traffic and the rehabilitation work commenced in June 2008. The concrete deck was removed and the rest of the bridge's superstructure exposed. A second inspection of the bridge was performed at this time to identify any additional areas of deterioration not seen during the original inspection. This second inspection revealed only a few

additional areas that needed repairs, and confirmed that the steel superstructure was in good condition despite its age and exposure to the weather.

Construction progressed throughout the summer of 2008. After the concrete deck was removed, all old paint was removed from the steel superstructure and the deteriorated members of the truss were repaired or replaced in-kind. Once the steel repairs were completed, the new concrete deck was formed and placed, and all the steel portions of the bridge were painted. A new two strand metal railing was installed to serve as a traffic barrier. This barrier meets current safety standards and maintains an “open feel” as motorists travel across the bridge. A special shield/splash guard behind the railing protects the steel truss members from exposure to road salts and will help preserve the bridge.

The bridge was reopened to traffic on September 15, 2008, meeting the SHA’s commitment to the community to reopen the bridge to traffic prior to the fall festival season. The service life of this bridge has been extended indefinitely as a result of the work performed.

The bridge continues to be used as a highway facility, while its historic character has been retained and preserved. The bridge’s distinctive materials and features were preserved through the careful repair on in-kind replacement of deteriorated elements. The shield/splash guard is a reversible addition that does not alter the historic character of the bridge.

2. Traffic levels, loading needs, and other related issues.

Inspection (as of November 11, 2008)

- Deck condition rating: Very Good (8 out of 9)
- Superstructure condition rating: Satisfactory (6 out of 9)
- Substructure condition rating: Satisfactory (6 out of 9)
- Sufficiency rating: 83.3 (out of 100)

Average daily traffic (as of 2006): 3,750

3. Section 106 effects finding (no adverse, adverse). Major issues discussed with State Historic Preservation Officer, and how issues were resolved.

In 2007, SHA consulted with the Maryland SHPO. The agencies concurred that the project as designed would have No Adverse Effect on historic properties, including the New Casselman River Bridge and surrounding historic properties in Grantsville and the old Casselman River Bridge, which is a National Historic Landmark.

4. Lessons Learned.

The rehabilitation of the New Casselman River Bridge is one example of the work that SHA has done over the years to maintain its historic properties. In May 2009, the Maryland State Highway Administration received the Maryland Historical Trust’s Maryland Preservation Award for Stewardship of Historic Properties by a Government Agency. This was the first award given in this category.