Sandown Road Bridge Overflow 086/055

Sandown Road over the Exeter River

On January 10, 2019 the Town received a letter from NH DOT directing that we shut down, or restrict to one lane, the Sandown Road Bridge Overflow (which is the last bridge prior to the Sandown Town Line) and immediately begin repairs/replacement. This came one day after our Public Budget Hearing. The State's letter referred to an inspection completed in October 2018.

These before photos below depict each side of the bridge, which was slated for guardrail repair in the Highway Department 2019 operating budget. We were now faced with a much larger repair project, and successfully asked voters to amend the Bridge Capital Reserve Warrant Article at the 2019 Deliberative Session to be able to address the repairs. The beams (you can see at the edges in both photos, taken on January 10, 2019) were deteriorating and needed replacement. After engaging engineers that had been previously authorized by the NH Bridge Aid Program, further inspection and investigation into records showed that the outside edge beams were the beams of concern.

The Engineer's Recommended Repair Approach with Town Funding included the following rationale:

The substructure (abutments) are in good condition (NHDOT rated as a 7 on a 0 to 9 scale), and it is recommended to keep the existing abutments and replace the superstructure (beams and deck); have the new bridge deck pre-engineered and prefabricated by US Bridge or equal; prepare existing abutments to receive the prefabricated bridge deck (with the knowledge that there may be additional necessary repairs to abutments that we would not be able to see until the pavement is pulled up); replace guardrail and complete minor approach roadwork in both directions to provide a smooth transition.

Engineers outlined a galvanized steel beam option with galvanized steel decking. This is described as a corrugated steel (like a metal roof) with deeper grooves that are filled with asphalt paving. Galvanized steel is more cost effective, no painting is necessary, and therefore is good in applications close to the water.

These systems are generally available pre-engineered and are prefabricated from the manufacturer, arriving on a flatbed truck, assembled in place, and laid into their final location. This method involves removal of the existing beams and deck, with the road closed during that time. The road did not need to be completely closed until the deck had to be removed. Lighting and traffic controls were installed and the bridge closed down for the day on April 2nd to install barriers for the one lane restriction, and from April 3rd until July 25th, was open for one lane of travel in the center span.

The Highway and Police Departments daily turned the lights on and off, and the Highway Department kept the lighting units fueled. This was a lot of extra work for all of them, and we appreciate their assistance to keeping the area safe as work progressed. The bridge was closed completely, with additional signage and the detours in place, on July 25th.

Thankfully the abutments did not need any work, and they were shimmed to receive the new beams and then the pre-fabricated deck was placed. Following that, the road was paved and the new guardrails installed. Actual construction work took just less than a month and we were successfully able to reopen the bridge on the morning of August 23, 2019 in time for busses on the first day of school on Monday August 26th.

Engineers advised the Town that the life expectancy of a bridge depends on the environment, for this bridge, design life might be 75 years. Deterioration due to such environmental considerations as dewatering and road salt make it less years. The US Bridge (manufacturer) warranty on their galvanizing is 35 years. In order to maintain this warranty, we must appropriate funds for the annual inspection (in the operating budget under Bridges). The paving on the bridge would not be expected to last 35 years, but the new structure itself might have a life expectancy of 35-50 years. At that point, we would likely have to look at it anyway, as the abutments are in good shape now, but are estimated to be 90 years old presently.

The Town is appreciative of all the public safety mutual aid assistance we had from our partners in the Towns of Sandown and Danville during the period of closure (with automatic mutual aid to our residents on the opposite side of the closure), and to residents and the motoring public for your patience and consideration throughout the project.

We are pleased to report that the bridge was done on time and slightly under the originally estimated budget. This is in large part thanks to the assistance of our Highway Department and their man hours.

The engineer's original estimate for the project, including contingencies, was $349,000. The Town's costs charged to the Bridge Capital Reserve Fund total $243,228.28 and broken down into the following category expenses:

Engineering	$ 60,515.69	Signs	$ 3,315.62
Lighting	$ 10,084.21	Barricades	$ 12,696.88
Labor	$ 770.10	Misc Supplies	$ 16.28
Bridge Deck	$115,086.25	Guardrail	$ 17,118.75*
Paving	$ 23,148.00	Wetlands Permit	$ 476.60

*Guardrail funding for the bridge had been included in the Highway Department operating budget in the amount of $8,740.00, making the total cost of the guardrail installation $25,858.75. There are also some day to day labor costs that are included in the Highway Department budget as those staff members time is allocated to Highway but some of their time was spent on this project.

We have also provided the follow-up reports and documentation to the State of NH DOT Bridge Program.

A full report of the initial presentation information and pertinent meeting minutes, the construction files, and engineering documentation are available at the Selectmen's Office.

Data compiled by Heidi Carlson

Photos courtesy of Heidi Carlson