Project Status Update

East Thetford Road over Connecticut River Bridge Rehabilitation

Lyme, New Hampshire – Thetford, Vermont

February 2022

2021 and the impact of COVID-19 have posed many challenges for the supply chain and workforce development across all industries. While this has temporarily slowed progress on the project, we are excited for the final product!

Proposed Work

The proposed rehabilitation work consists of replacement of the deck, select floor system members (exterior stringers, end floor beams), repairs to select truss members, rehabilitation of the pier, and painting of all structural steel. Upon completion of the work, it is anticipated that no load posting will be required. The roadway width will be maintained at 21'-0". Due to the nature of the work, where parts of the floor system and deck must be removed to make the repairs, the bridge cannot be open to traffic while repairs are being made. NHDOT and VTrans understand that this closure will be a hardship for the communities and are working to ensure it is as short as possible.

This rehabilitation project, with an estimated cost of approximately $8 million, was Advertised on September 14, 2021, and did not receive any bids. In speaking with contractors, they cited concerns regarding procuring materials, and with the total contract time, given the uncertainties in the workforce and difficulty finding people to work on their projects. NHDOT and VTrans are coordinating regarding any potential modifications to the contract and plan to re-Advertise this spring for active construction in 2023 and 2024. Given the additional time to prepare for and complete the work, the project team anticipates having multiple bidders interested in completing the project.

Project Background

This project has been in the works for close to two decades, it was initially identified as a need and programmed sometime prior to the New Hampshire 2005-2014 Ten Year Transportation Improvement Plan. The intent of the project is to rehabilitate the structure to maintain the structural integrity, reliability and continuity of this river crossing for the next 50-yrs. To achieve this, the project will rehabilitate the existing two-span 471'-0" long Parker truss bridge constructed in 1937 over the Connecticut River between Lyme, NH and Thetford, VT.

The existing bridge has a 21'-0" roadway with no shoulders and approximately 1'-5" raised curbs and carries an Average Daily Traffic (ADT) of 1,900 vehicles per day (2020) on East Thetford Road, a local collector road. In comparison, the downstream bridge between Hanover, NH and Norwich, VT carries 13,460 ADT (2020) on NH 10A, a Statewide Corridor, and the upstream bridge between Orford, NH and Fairlee, VT carries 3,550 ADT (2020) on NH 25A, a Regional Corridor.

The project considered four alternatives through the National Environmental Policy Act (NEPA) process during the preliminary design phase. Each alternative is evaluated through the environmental process described below. The alternatives considered and evaluated for this project included:

- "Do Nothing" – Required as part of the environmental process
- Bridge Rehabilitation without affecting historic integrity – would not meet necessary safety standards or provided a long-term solution
- Bridge Rehabilitation – selected as the proposed action
- Bridge Replacement – not practicable and does not meet the requirements of Section 4(f)

During the Preliminary Design phase of the project, two public meetings were held to provide the public with an opportunity to provide input on the project These meetings were conducted in Lyme in 2014 and in Thetford in 2015. As part of this public outreach, NHDOT received comments regarding the possibility of adding a sidewalk to the outside of the structure. This concept was evaluated by the team and it was determined that the truss does not have enough extra structural capacity to support the addition of a sidewalk and the associated pedestrian loading.

Environmental Requirements

The use of federal funds or the need for federal permits requires compliance with NEPA, which is umbrella legislation requiring compliance and consultation on a wide range of environmental factors. For most factors that must be considered during this process there are additional laws that guide how project impacts are measured and evaluated, such as Section 106 of the National Historic Preservation Act. For more information regarding the NEPA process as it relates to transportation projects, please visit FHWA's website at: https://www.environment.fhwa.dot.gov/nepa/nepa_projDev.aspx

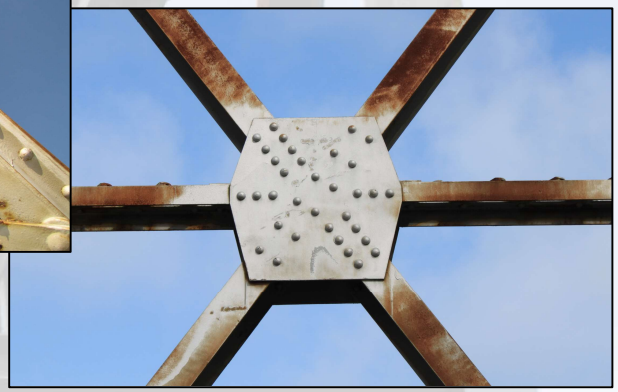
Due to its age, being one of the few remaining examples of a Parker truss bridge, and it's being constructed using federal relief funds, the bridge was determined to be eligible for the National Register of Historic Places by an architectural historian meeting the qualifications of 36 CFR 61. The bridge was listed on the register by the Lyme Heritage Commission in March 2020.

The use of USDOT funding affords resources that are eligible for listing on the National Register with additional protections under Section 4(f) of the US DOT Act of 1966 and 23 CFR 774. The bridge's eligibility for listing provides the same protection as actually being listed on the Register. In addition to the bridge, there are two other eligible properties and two sites of archeological interest within the project area.

Site photo Jan 2018

The 4(f) regulation requires a project first seek to avoid impacts to a 4(f) resource, and if they cannot be avoided, that the feasible and prudent alternative that causes the least harm to the resource be selected for implementation. In this case a bridge rehabilitation was determined to be feasible and prudent and therefore, must be selected over the replacement option.

Truss member, 2013



Gusset plate, 2014

Bridge Safety

The bridge has been on the NHDOT's State Red List of deficient bridges since 2013 due to the superstructure and substructure receiving a condition rating of 4 or "Poor" on a scale of 0 to 9. Please note that this is an evaluation of the bridge's condition, not its structural capacity. A "Poor" condition rating does not mean that the structure is unsafe. It is also does not mean that a bridge must be replaced, many bridges with condition ratings of 3 "Serious" or 4 "Poor" have been successfully rehabilitated by NHDOT and VTrans during past projects. Some of the more recent examples of these past projects include the bridges between Orford, NH-Fairlee, VT, Haverhill, NH-Newbury, VT, and Stewartstown, NH-Canaan, VT, among others.

To ensure the safety for the traveling public, Red List bridges receive a routine bridge inspection twice per year. Due to the way this bridge was constructed, it also receives a fracture critical member inspection on a 24-month interval, and an underwater inspection at a 60-month interval in conformance with the National Bridge Inspection Standards.

In 2014, advancing deterioration in some of the steel floor system members was noted during a routine bridge inspection, which warranted the bridge being down-posted to "Weight Limit 15 Tons" to ensure safe continued service. Also, in 2014, focused structural steel repairs were performed by NHDOT Bureau of Bridge Maintenance to address this deterioration and keep the bridge open to traffic until this project is completed. The ongoing inspection and maintenance efforts are in place to ensure the continued safe service of the bridge.