

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting

DATE OF CONFERENCES: December 8, 2022

LOCATION OF CONFERENCE: Zoom Meeting

ATTENDED BY:

NHDOT

Sheila Charles
Meli Dube
Jill Edelmann
Jon Evans
Samantha Fifield
Arin Mills
Kerry Ryan
David Scott
Nancy Spaulding

NHDHR/NHDNCR

Laura Black
David Trubey

FHWA

Jamie Sikora

VTrans

Gary Laroche
Kyle Obenauer

Tilton, Town of

Pat Consentino
Jeanie Forrester
Lee Ann Moynihan

**Tilton Conservation
Commission**

Chuck Mitchell
Ken Norton

**Tilton Historical
Society**

John Ciriello

**NH Rail Trail
Coalition**

David Topham

PROJECTS/PRESENTATIONS REVIEWED THIS MONTH:

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December 8, 2022

Tilton Retaining Wall Repair 2021-M313-1

Participants: Samantha Fifield, Arin Mills, Jon Evans, Kerry Ryan, NHDOT; Pat Consentino, Jeanie Forrester, Lee Ann Moynihan, Town of Tilton; Chuck Mitchell, Tilton Conservation Commission; John Ciriello, Ken Norton, Tilton Historical Society

Initial consultation to address the failing guardrail and slope stabilization along US Route 3 and the north bank of the Winnepesaukee River in Tilton. The existing guardrail is damaged and undermined by the failing stone slope along the riverbank. The entire length of guardrail (~530') will be replaced. To allow for proper footing of rail post, repair to the failing stone slope will be conducted through establishment of 2:1 stone slope with utility/storm water panel.

Arin discussed the objectives of the meeting and provided slides on the project location for the slope repair along US Route 3 and the Winnepesaukee River in downtown Tilton. She stated this is a state funded project, no federal funds are available for the project. Photos were shown of the project location and existing conditions within and adjacent to the project area. 1929

construction plans were shown, and said it is assumed the existing stone wall along the bank of the Winnepesaukee River was constructed either at that time or before (note 1884 image appears to show the stone wall). Parcel ownership adjacent to the project work area was also shown, to include Tilton School, Town of Tilton, and DOT railroad. Written public input was received from the Town of Tilton Town Administrator, Conservation Commission, and Tilton School.

Sam described the purpose and need for the project. Safety improvements at this location by replacing/ relocating the deteriorating guardrail and relocating the utility poles is the primary priority of the project. The stone retaining wall along the bank of the river has been deteriorating over time, causing the roadway shoulder to slough into the river, thus preventing the installation of new guardrail posts. A likely contributing factor is the fluctuating elevation of river flow on the stone wall, which causes the fines behind the rock wall to wash into the river during storm events. Sam described that to properly fix the guardrail, the river stone embankment will need to be re-built. Sam also mentioned that to improve safety of the traveling public and provide safe winter operations, guardrail should be placed 16.5-feet from the centerline of the roadway and utility poles should be placed 6-feet behind the guardrail. The proposed design will accommodate these placements and will also provide stormwater treatment of roadway water runoff.

Sam described the existing characteristics of the embankment and wall, estimated to have been originally constructed in 1929 under project #50792. The upstream dam was removed in the 1950's, causing a change in water flows and elevations on the existing dry laid stone retaining wall. The project will replace approximately 530' of existing guardrail to current standards. The current roadway shoulder is sloughing, causing the existing wooden post guardrail to be undermined. The guardrail itself is in deteriorated condition. The dry laid stone retaining wall has also been failing for several years. District 3 has provided targeted maintenance and repairs on failed sections of the wall as needed. However, with changes in environmental permitting, a more permanent solution is required.

Sam described the project's design constraints to allow it to meet current safety standards as well as the unique needs of the project area.

- The project is state funded, no federal funds, as the project is maintenance of existing infrastructure.
- Permanent impacts should remain in the existing ROW, which is 3 rods or +/- 24.75' from centerline.
- Guardrail should be placed a minimum of 16.5' from centerline to safely accommodate plow operations, allowing plow trucks to stay within travel lanes.
- Utility poles need to be a minimum of 6' behind guardrail for safety.
- Accommodate fluctuating river elevations and velocities without impacting the roadway.
- Construction of a retaining wall and or slope along the Winnepesaukee River which can be safely maintained.
- Improvements to stormwater treatment and management.
- Design must allow long-term maintenance of all roadway infrastructure.

Alternatives considered include:

- No build – This option is not feasible as the slope will continue to destabilize, which will eventually lead to US Route 3 closure.
- Shifting of US Route 3 north and away from the river - This option is not feasible due to the following requirements: Impacts to the National Register listed Charles E. Tilton Mansion property, impacts to commercial properties, a new license for US Route 3 crossing of the railroad, underground utility impacts, full rebuilding of the roadway, full rebuilding of the Town of Tilton’s sidewalk, construction of a retaining wall to support the hillside on the north side of the roadway, high cost (\$4 to \$5 million).
- Repair/rebuild in-kind of existing dry laid stone riverbank retaining wall – This option is not feasible as repair will not allow relocation of guardrail to allow for safe winter maintenance or the relocation of utility poles to a safe distance behind guardrail. Also, the dry laid wall construction does not address fine loss from fluctuating river water elevations; the wall and roadway shoulder would continue to destabilization due to fine loss. This option is not cost-effective in the long-term as continued maintenance and environmental permitting will be required. Sam F noted the retaining wall is functionally obsolete.
- Cast-in-Place Concrete Retaining wall – This option is not feasible primarily due to its cost (\$2.5 to \$3.0 million); only State funds are available to this project.
- 2:1 slope with utility moved to hillside. This is the one of the preferred alternatives as it will have the least impacts on the river. This option requires a permanent utility easement from the Tilton School to relocate poles on the hillside located on the north side of the roadway.
- 2:1 slope with utilities remaining on riverside. This option is the preferred cost-effective alternative that will meet the design constrains of the project. The project will not require additional permanent ROW easements and will construct a slope that can be maintained by District forces.

Sam described that the proposed design would relocate the top of bank to 25’ from centerline to accommodate the relocation of guardrail and utilities, which will improve safety of the traveling public. A 2:1 stone slope will be constructed along the river, which will be vegetated above the ordinary high-water line. Approximately 550’ of guardrail will be placed 16.5’ from centerline, and utilities will be placed 6’ from the back of guardrail. The existing drainage (drop inlets, catch basins and pipes) on US Route 3 will be upgraded and a stormwater infiltration trench will be constructed behind the guardrail. The roadway superelevation will also be corrected. A sketch of the typical slope design and a photograph from the Walpole-Charlestown 14747 project, where this type of slope was constructed, was shown.

Arin summarized the comments received to date, to include the Town of Tilton Historical Society, Conservation Commission, Town Administrator, and the Tilton School. The Area of Potential Effect (APE) and results of EMMIT review were also shown. Sam described the anticipated timeline for the project, resulting in a 2-year construction beginning in 2024. Nancy Spaulding (NHDOT) stated the project timeline is pending funding for construction.

Laura B appreciated the follow-up from the town and suggested the APE also include property downstream which will be impacted from the change in river flow velocities, once hydraulic calculations are complete. She stated a historic inventory should be completed for all historic elements within the APE and it will need to be determined if the existing wall contributes to this historic resource or landscape. Arin M stated the project will also need to meet the Env-900 rules for wetland permitting, which also requires any changes to hydraulics to be determined. Sam F commented FEMA is currently updating the flood model for the Winnepesaukee River, and the project may be pushed out another year to allow for design and funding. Laura B recommended the APE be broad to start and the need for inventories can be determined as designs are developed and impacts are evaluated. She also recommended public outreach include the Town of Northfield.

Chuck M stated the 2:1 slope will require a lot of fill which will alter the river flow as well as traffic flow in the area. Sam F stated a 1.5:1 slope was still being considered, although the steeper slope would be harder for DOT staff to maintain. Chuck also voiced concern over the need for 1 way traffic and flaggers during construction. Ken N noted the Winnepesaukee River trail runs adjacent to the project along the sidewalk. Ken also mentioned this portion of the river is used by whitewater paddlers and the Northfield side is used by residents for swimming. He also has concerns for potential impacts to the island from changes to the river flow and how climate change may impact this flow. Sam F stated the updated rain values are used in the hydraulic calculations. Ken also noted the Silver Lake dam proposal, and how that may be impacted by the changes to river flow.

John C said the Tilton Island is one of Tilton's most important resources and was a gift to the town from Charles Tilton around 1847 when soil was added to the island. The cast iron truss footbridge was erected about 1881, as was a gathering centerpiece of the town. John also has concerns for potential impacts to the island from changes to river hydraulics and wondered about a potential need to shore up the island

David T said in his initial review he did not have archaeological concerns, but after listening to the conversation he also would like a closer look at the hydraulics, to determine if any impacts to the island and other potentially sensitive and undisturbed areas may require an archeology survey. Sheila C concurred. Sam F said she will review the hydraulic calculations, once complete, and look at the impacts downstream to assess potential impacts and minimize downstream impacts from changes to velocities.

Hinsdale, NH – Brattleboro, VT 12210D, X-A004(821)

Participants: David Scott, Meli Dube, Jon Evans, NHDOT; Gary Laroche, Kyle Obenauer, VTrans; David Topham, NH Trail Coalition

Continued consultation of bridge rehabilitation of bridges carrying NH RT 119 over the Connecticut River, including discussion on the treatment of the bridge rail on the Anna Hunt Marsh Bridge (041/040), that was previously discussed December 10, 2020.

David Scott, NHDOT Bureau of Bridge Design, began the presentation by providing a summary of the project location, status, existing bridge information and condition. The 12210D project addresses the need to rehabilitate the Anna Hunt Marsh Bridge (#041/040) and the Charles Dana

Bridge (#042/044) carrying NH Route 119 over the Connecticut River between Hinsdale, NH and Brattleboro, VT as a result of environmental commitments made for the 12210C project. As part of the 12210C project, a new vehicular crossing is being constructed downstream, and the 12210D project will rehabilitate the two existing bridges for pedestrian and cyclist use. The Anna Hunt Marsh Bridge was constructed in 1920 and rehabilitated in 1988 and 1998. The Charles Dana Bridge was constructed in 1927 and rehabilitated in 1988 and 1998 with a sidewalk added in 1993. Floor systems were replaced in 1988 and bridge decks were replaced in 2004. Both bridges are camelback through steel trusses through the main spans with the Charles Dana Bridge having rolled beam stringers on the approach spans. The Anna Hunt Marsh Bridge has a granite masonry abutment on the VT side and a reinforced concrete abutment on the NH side. The Charles Dana Bridge has reinforced concrete abutments and piers. The roadway width in the area is 20' +/- . The bridges have exterior sidewalks with timber decks. The project was previously discussed at the December 10, 2020 Cultural Resource Agency Meeting where discussion took place regarding the date of installation of the sidewalk on the Anna Hunt March bridge. Laura Black, NHDHR, stated that this is still unclear and requested follow-up with confirmation about the sidewalk and whether it was original or a later add-on. (See post meeting follow-up below.)

D. Scott explained that an existing bridge condition assessment and structural analysis has been completed on the bridges, and rehabilitation measures have been identified. The purpose of this meeting is to discuss specific rehabilitation measures with the goal of moving the project forward to target construction after the replacement bridge has been opened to traffic which is expected to be in late 2024/early 2025. Rehabilitation measures include:

1. Maintain roadway width of 20' +/- to accommodate emergency and maintenance vehicles
access even after the bridge has been converted to pedestrian and cyclist use.
2. Remove exterior sidewalk from Charles Dana Bridge
3. Repair truss members with advanced deterioration and section loss.
4. Repair exterior stringers with advanced section loss
5. Rehabilitate bearings
6. Remove existing paint and repaint, possible a different color
7. Rehabilitate deck expansion joints
8. Replace lower bracing
9. Partial depth bridge deck repairs
10. Install new wearing surface
11. Possibly add benches and planters for seating/decoration
12. Bridge rail replacement – must meet pedestrian and bicycle height requirements
13. Abutment, wingwall and pier repairs
14. Install removable bollards or gates at the NH and VT ends.

D. Scott specifically requested agency feedback on the proposed replacement rail, which is currently designed as a 4-rail system to meet pedestrian and bicycle safety requirements. Gary Laroche, VTRANS, expanded on the question by stating that 4 bar rail is good for vehicular traffic flow, and asked if there is a better recommendation for pedestrian and bike use. L. Black state that the 4-bar rail is not aesthetically appropriate for the setting and is not historic, so she questioned whether it was needed for pedestrian use. D. Scott will look into historically accurate

rail and what would be considered appropriate for the safety needs. Jill Edelmann, NHDOT Bureau of Environment, showed bridge card photos from the 1940s which showed a 3 bar rail with 6" spacing. L. Black indicated that keeping the rail as simple and open as possible with less mass will be more in line with historical designs, but agrees that for safety purposes the open space between rails should be minimized to 6". Jamie Sikora, FHWA, noted that since the bridge is being kept open for emergency and maintenance vehicles, crash worthy rail may be required. D. Scott will check on the robustness of the rail required but noted that historically accurate rail is not as robust as modern rails. He suggested that possibly 2" diameter tubes mounted in a similar fashion to the original rail might suffice. L. Black requested that the Department follow up on this question by sending mockups for agency review. Jon Evans, NHDOT Bureau of Environment, stated that 4 tubes may be necessary for safety purposes, rather than 3.

G. Laroche stated that NHDOT will take over NEPA coordination for this project and that the intent is to turn the future maintenance of these bridges over to the town as there is no longer vehicular traffic. J. Sikora asked if there are other funding sources available for this project such as TAP.

Dave Topham, NH Rail Trail Coalition, revisited the rail spacing issue by stating that 3 rail would be more historically accurate but safety requirements dictate 6" spacing and that 3 rail is not allowed on RR trails. L. Black stated that Section 106 allows flexibility as the intent is not to replicate the historic condition exactly but to design for compatibility as much as possible for the setting. J. Sikora mentioned that the towns may not understand the importance of this issue when undertaking maintenance activities in the future, and L. Black stated that providing maintenance guidance in the MOA would be beneficial. G. Laroche asked if tube rail won't work, are there other possible rail designs? L. Black suggested to keep it simple, don't choose another new random design element from a different historic bridge to introduce to this area, keep it consistent with the character of this bridge.

Post meeting follow up regarding bridge sidewalks: This information was gathered in response to a request from Laura Black for clarification and history of the sidewalks.

Looking at plans that the Department has:

Anna Hunt Marsh (041/040):

- Shop drawing for truss clearly shows a sidewalk. The plan has a "1920" notation which is when our bridge inspection report indicates the bridge was built.
- 1987 rehabilitation plans clearly label a proposed (replacement) sidewalk on the General Plan and the cross section shows a sidewalk.

Charles Dana (042/044):

- Shop drawing has a date of 1927 on it and the cross-section of the bridge drawn does not show a sidewalk on the exterior side of the bridge and the plan view of the framing plan doesn't show anything on the exterior side of the trusses.
- Plans from a 1987 rehabilitation of this bridge do not show a sidewalk to the exterior side of the truss or approach spans on either the existing or proposed sections.
- 1994 rehabilitation show a sidewalk.