

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: March 18th 2015

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Matt Urban
Ron Crickard
Marc Laurin
Jim Kirouac
John Butler
Chris Carucci
Andrew Benton
Mark Hemmerlein
Randy Talon
Bill Saffian
Don Lyford
Stephen Liakos
Anthony Weatherbee

EPA

Mark Kern

NHDES

Gino Infascelli
Lori Sommer

NH Fish & Game

Carol Henderson

McFarland Johnson

Jed Merrow
Mitchell Pac
Christine Perron

HEB

Joshua McAllister

Town of Bedford

Jeff Foote

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:

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NOTES ON CONFERENCE:**Finalization of February 18th 2015 Meeting Minutes**

The February 18th 2015 meeting minutes were finalized.

Roxbury-Sullivan, F-X-0121(034), 10439

John Butler provided an overview of the project. The project has three components: the replacement of the red-listed NH Route 9 bridge spanning Otter Brook in Sullivan; the removal of a stone retaining wall in Roxbury, and; the rehabilitation of approximately 2 miles of NH 9 from the vicinity of the Keene/Roxbury Town Line in Roxbury to its intersection with Centre Street in East Sullivan. The bridge will be replaced on its existing alignment with a 6 foot raise in profile to place the structure out of the 100 year flood. A detour will be established through East Sullivan along Valley Road and Centre Street. It is anticipated that the bridge replacement will be completed within one season. The retaining wall will be replaced with a 1½ to 1 benched engineered slope that will require a slight shift in the alignment of Houghton Ledge Road. NH 9 will have modest pavement reclamation with minor widening to provide a consistent 12 foot travel way with 4 foot shoulders through the project. This will require adding only 2 or 3 feet to the pavement width. The existing pavement edge along the Otter Brook side will be held requiring excavation into the hillside in some areas. Drainage culverts will be replaced.

Wetlands were delineated in the summer of 2014. The estimated impacts are ±1.4 acres. A majority of the wetland impacts (±0.8 acres) are to wet roadside drainage ditches located along NH 9, which will be replaced in-kind. Lori Sommer and Gino Infascelli agreed that these impacts will be self-mitigated.

The Otter Brook bridge will be a single span, with the opening widened from 90 feet to 150 feet. The pier of the existing 2-span bridge, which is located in the brook, will be removed. The existing ground upstream and downstream will be leveled and graded to connect to the 1½ to 1 stone slope protection along the abutments. A handful of perennial and intermittent streams are located within the project limits. An existing perennial stream that flows under Valley Road in a 30 inch culvert, day lights for a short run and then flows under NH 9 in a 24 inch pipe and outlets just downstream of the bridge. These 2 culverts will be replaced with a single 42 inch culvert that will run under Valley Road and NH 9 to outlet through the proposed wing wall of the new bridge. Mark Kern inquired if this will meet the stream crossing rules. Marc Laurin thought that this was a Tier 1 crossing, so it will likely meet them and that we will look into it further. Bill Saffian indicated if the culvert were to outlet at the stream elevation, the rock slope would have to be contoured to accommodate the water outletting at a lower elevation into Otter Brook. B. Saffian also indicated that this could make the stone somewhat unstable under higher flows and that the pipe coming across the road would be steeper. J. Butler, informed the room that not too far upstream, past Valley Road, the stream channel is very steep and that if we were to propose a structure to fully accommodate fish passage it is likely that they would only get to the other side of NH route 9 before reaching a natural impediment. The general consensus of the room was that the pipe was not going to provide fish passage anyway so there wouldn't be a need to outlet at the ordinary high water of Otter Brook.

J. Butler stated that there are ± 30 culverts under NH 9 that will be replaced. These will result in minor impacts within the top of bank of Otter Brook, but no impacts to the brook are anticipated. As a 5% increase in impervious pavement will occur, three small stormwater treatment measures locations are being further evaluated, though the topography of the area makes it challenging to site these measures. J. Butler confirmed that there will not be any curbing along the road and sheet flow will be collected into roadside ditches for a couple hundred feet and flow into catch basins that will then discharge to the brook.

Carol Henderson inquired about providing wildlife crossing shelves at the new bridge. B. Saffian responded that the top of the $1\frac{1}{2}$ to 1 stone slope protection will only be 2 to 3 feet above the water level and will only extend out from the abutment 2 feet before it matches in with the channel bottom, as such, even at low flows it is not expected that much of the slope will be in the dry and that a shelf could not be sustainable under the bridge.

L. Sommer and C. Henderson requested minimization of tree and shrub removal on the bank directly adjacent to of the brook to retain as much shading of the brook. This will be considered to the extent practicable in the design of the project. M. Laurin pointed out that in Roxbury a large portion of the Otter Brook bank is under a Society for the Protection of NH Forest (SPNHF) conservation easement, which extends across the brook. The culvert replacements along NH 9 will impact this parcel. Don Lyford has been in communication with the SPNHF and they did not express concerns, however friendly condemnation will be required in order to deal with the easement.

It is anticipated that a wetland permit application will be submitted in 2016. As mitigation of the wetland impacts, which will not include the ditch replacement impacts as they are self-mitigating, DOT is proposing an in-lieu fee payment to the ARM fund. All agreed that this would be appropriate, but that DOT needs to coordinate with the towns to see if they have any other mitigation suggestions.

This project has been previously discussed at a Monthly Natural Resource Agency Coordination Meeting on the following dates: 10/20/1999, 8/16/2000, 9/18/2013

Berlin, X-A001(088), 16019 (Hutchins Street)

Josh McAllister (HEB Engineers, Inc.) provided an overview of the project which involves the reconstruction of Hutchins Street in Berlin, NH from the intersection with Napert Street to the intersection with Turcotte Street. Hutchins Street is the primary truck route around the City and originally bisected the mill property on the east side of the City. The City received a federal earmark in 2009 and subsequently brought HEB on as the engineering consultant. Funds remaining of the Earmark are \$779,067. The Hutchins Street roadway surface is failing due to the fact that the road was constructed on several feet of unsuitable, compressible material.

The goal of the project is to reconstruct the valuable truck route with an acceptable driving surface. In addition to roadway reconstruction, upgrades to bicycle and pedestrian access will be considered. This route sees a significant amount of pedestrian traffic as it connects several residential neighborhoods.

Hutchins Street pavement surface is in a significant level of disrepair. The pavement is failing and cracked throughout the length of the project. There is significant heaving and differential settlement causing the pavement failure and an uneven driving surface. Several geotechnical

investigations have been completed since 2002 to gain an understanding of the subsurface materials and the cause of the settling. The explorations in the road found highly compressible material (bark, wood chips, ash and sludge) below the roadway surface. The depth of the compressible material is generally 5-14 feet below the roadway surface. Testing of the material 2-4 feet below the surface found samples to be contaminated. Significant disposal costs will be incurred should the material need to be removed from the site.

To-date HEB has completed an engineering study and determined general schematic design for the project. The reconstruction section is based on recommendations in a geotechnical report completed by SW Cole. In this report, SW Cole outlined three alternatives for reconstruction:

1. Excavation and removal of all compressible material, back fill with clean material and install gravels and pavement. This option was not pursued as the cost associated with excavation and disposal of the materials below grade were significant. The engineer's estimate of cost was approximately \$4.5 million.
2. Excavate 2-feet of material, install geo-grid and installed gravel section. This option was not pursued as the cost associated with the disposal of the excavated material was significant. The engineer's estimate of cost was approximately \$1 million.
3. Reclaim existing roadway in-place, install geo-grid and install crushed gravel and pavement. This option was selected as the preferred alternative in the HEB study as it upgrades the roadway within the project budget.

The proposed roadway reconstruction will generally follow the current alignment of Hutchins Street, while the profile will generally be raised by approximately 12-inches to account for the preferred reconstruction method. The cross-section will include 11-foot wide travel lanes with 4-foot wide shoulders to account for on-road cyclists. Additionally, curbing will be included on the east side of the road with a 6-foot wide side walk separated from the back of curb by a 3-foot wide grass strip. Additionally, the project will include a closed drainage system on the east side of the road, along the curb line, to manage roadway drainage.

There are two locations of potential wetland impacts associated with the project. At the intersection with Napert Street, two culverts pass under the roadway, managing runoff from a stormwater pond located outside of the right-of-way to the east. These culverts will likely be replaced as part of this project. The impacts associated with this replacement will occur within the right-of-way as easements are not being obtained for this work. A second location of potential wetland impacts will be at the curve in the road just before Turcotte Street. On the east side of the road there is a low wetland area that will need to be filled slightly to account for the raised profile.

HEB has reviewed the project with Craig Rennie and Sandra Mattfeldt for NHDES Alteration of Terrain and Standard Dredge & Fill Permit, respectively. C. Rennie indicated that stormwater treatment in an effort to improve water quality from this area will be a priority for the Alteration of Terrain review. Permit applications are expected to be submitted in April.

Ron Crickard asked if this will be covered by the EPA Construction General Permit. J. McAllister indicated yes.

R. Crickard asked is NEPA documentation will be submitted. J. McAllister indicated that this is still to come.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Rumney, Non-Federal, 26504 (Buffalo Road Bridge)

Josh McAllister (HEB Engineers, Inc.) provided an overview of the project which involves the replacement of a bridge on Buffalo Road in Rumney, NH. J. McAllister is presenting on behalf of Jason Ross, who is the project manager.

The existing bridge was constructed in 1940 as a 10-foot span cast-in-place concrete pipe arch with a concrete invert. Additionally, a concrete weir wall was constructed on the inlet side of the bridge. The bridge and roadway were damaged during Tropical Storm Irene in August 2011. The damage included a washout of the roadway in the overbank due to lack of capacity of the culvert during the large event. The damage from the storm was repaired by the Town utilizing funds from FEMA Public Assistance program. The replacement construction is being funded in part by the FEMA Hazard Mitigation Grant Program and NHDOT State Aid Bridge funds.

To-date, HEB has completed on-site field survey of the bridge and the river reach in the area. A hydrology-hydraulic (H-H) analysis and report have also been completed to assess the needs of the crossing. The project has been reviewed and the design intent has been approved by FEMA for funding. An engineering study has been completed with design recommendations and submitted to the Town of Rumney for review and approval prior to final submission to NHDOT for review and approval.

Per the H-H Study, the crossing requires a 12-foot span to meet the hydraulic needs. According to the NHDES Stream Crossing Rules (Env-Wt 904.05) the crossing would require a 20-foot span. The estimate for construction of a 20-foot span is approximately \$481,300 and not practicable. HEB and the Town of Rumney will be requesting an alternate design approval for the 12-foot span required by the H-H Study. The proposed structure will be a pre-cast concrete rigid frame bridge with an open bottom channel. The Bridge will have 4-foot deep footings and will be protected from scour with stone fill and natural stream bottom. Additionally, the roadway will be widened in the location of the bridge to 24-feet to meet AASHTO standards.

The project will require the submission of a wetland permit for the impacts associated with the construction. Wetlands were delineated by Ray Lobdell. Impacts are estimated at approximately 1,200 square feet and will be mostly temporary in nature.

Carol Henderson asked if Historic Resources had been contacted yet. J.McAllister indicated that they have not and that an RPR will be submitted shortly.

Lori Sommer indicated that the proposal seems reasonable.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Berlin, RT 16, Fully Funded by City, N/A

Josh McAllister (HEB Engineers, Inc.) provided an overview of the project which involves the reconstruction of Rte. 16 from St. Anne Church to the White Mountains Community College (WMCC) in the City of Berlin, NH. The total project length is 2.5 miles. The project is being completely funded by the City with available funding expected to be between \$3 million and \$4 million. Approximately one-third of the project is located along the banks of the Androscoggin River. The roadway was originally constructed in the early 1900's with concrete pavement. The concrete pavement has heaved over the years and caused significant pavement failure throughout the project length.

The goal of the project is to reconstruct the most critical needs within the roadway corridor with the funds that are available. Critical concerns include the removal of concrete pavement, pedestrian access, drainage improvements and parking.

Currently the pavement along Rte. 16 is failing. Rte. 16 is a heavily travelled route in the North Country of New Hampshire and runs through the center of the City of Berlin. The heaving concrete has caused an uneven pavement surface and significant failure. The existing roadway width is between 32-50 feet wide from St. Anne Church to the 12th Street Bridge. From 12th Street to WMCC, the roadway width is between 26-28 feet. Sidewalks exist along this corridor but vary in level of failure. Generally the sidewalks from the 12th Street Bridge to WMCC are in good shape. On-street parking exists in various locations, though some areas do not have enough (adjacent to the Brown School).

Drainage infrastructure is in need up upgrades. Due to the proximity of the road to the Androscoggin River, major outlets are completely submerged. Some of the closed drainage infrastructure near 8th Street is submerged as well. Most catch basins are old sewer structures or on ledge and do not have a sump. HEB reviewed the project with Craig Rennie with the NHDES Alteration of Terrain program. C. Rennie indicated that due to the proximity to the Androscoggin River that improvement water quality will be important. HEB and NHDES discussed surface treatment measures in areas where there is more space within the Right-of-Way. Water infrastructure has generally been upgraded for most of the project area, though Berlin Water Works (BWW) has some minor upgrades to complete in the area. The water upgrades by BWW will be completed concurrently with this project. The sewer system is in good shape and does not need any significant work.

To-date, HEB has completed a significant inventory analysis of the project area. Field survey of the full project length has been completed with wetland areas delineated. Ground penetrating radar and subsurface explorations have been completed to gain an understanding of the extend of the concrete pavement and subsurface conditions. Video inspection of portions of the drainage system has been completed to assess condition. Project design development has not begun at this point. HEB's next step will be to conduct stakeholder meetings to identify project priorities.

It is anticipated that this project will require an NHDES Alteration of Terrain Permit, Standard Dredge & Fill permit and Shoreland Permit by Notification (PBN). Minor wetland impacts are anticipated, primarily at culvert crossings on the northern part of the project near the WMCC. These potential impacts were reviewed with Sandra Mattfeldt of the Wetland Bureau. HEB also

met with Darlene Forst to review shoreland permitting. She indicated that as a roadway reconstruction and stormwater project with no significant tree impacts or floodplain impacts that a PBN is appropriate. Additionally, an NHB check found no records. Permit submissions are anticipated in the Fall 2015.

Lori Sommer asked if the culverts would be replaced. J. McAllister indicated that they would be replaced within the right-of-way and connect to existing outlets. No impacts to the banks of the Androscoggin River are anticipated.

J. McAllister indicated that HEB would be back to present the project once design progressed further.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Bedford, Non-Federal, 24217

Christine Perron (McFarland Johnson) provided an overview of the project, which proposes to replace the bridge that carries Beals Road over Baboosic Brook in the towns of Bedford and Merrimack. The Town of Bedford is the lead sponsor of the project. The project is funded by the State Aid Bridge Program and will receive no federal funding. The bridge is located at the Bedford/Merrimack town line between NH Route 101 and the Everett Turnpike. The drainage area at the bridge is 23.3 square miles, making this a Tier 3 Stream Crossing.

Mitch Pac (McFarland Johnson) provided details on existing conditions and design alternatives. The existing bridge is a 20' span concrete deck slab with mortar rubble masonry abutments and wingwalls. The bridge was constructed in 1928 and the superstructure was replaced in 1984. Both the roadway and the bridge have poor geometry, and the bridge is hydraulically undersized. Following Tropical Storm Irene the condition of the substructure was rated as poor when evidence of settlement was observed, and the abutments continue to be monitored for further settlement. The bridge is currently on the NHDOT Municipal Bridge Red List as structurally deficient. Within the project area, Baboosic Brook has a bankfull width of approximately 56'. Based on this bankfull width, the NH Stream Crossing Guidelines recommend a span of 69' (1.2x bankfull +2').

Due to the condition of the existing substructure, bridge replacement is proposed. The preferred alternative is a precast concrete rigid frame with a 36'-0" clear span and 8'-0" vertical opening. This alternative would allow for accelerated construction and lower construction costs, as well as long-term durability with low maintenance costs. This design would decrease the upstream 100-year flood elevation by 3.76'. Natural streambed material would be placed over proposed riprap to facilitate wildlife passage. This alternative does meet the General Design Criteria of the Stream Crossing Rules, although it would be considered an Alternative Design since it does not meet all of the Tier 3 design criteria. The cost of this alternative was estimated at \$640,000; however, this cost has increased to approximately \$740,000 as design refinements have been made.

A 69' span, as a much longer structure, would consist of precast NEXT beams on spread footings. The larger structure would require more time to construct, which is not desirable due to the necessity to close the road during construction. Estimated construction costs are \$960,000, approximately \$220,000 more than the preferred alternative. If design of this alternative was further refined, it is expected that this cost would increase. In addition, the 69' span would have

higher long-term maintenance costs. For these reasons, it was determined that this alternative was not practicable.

C. Perron summarized proposed wetland impacts and reviewed other resources in the project area. Total permanent impacts to the banks and channel would be 5,394 sq ft, consisting of 166 linear feet of impact to the channel and 193 linear feet of impact to banks. Impacts are necessary for regrading the banks to tie into the larger structure and placing riprap along the new wingwalls and abutments for scour protection. The Natural Heritage Bureau reported occurrences of Blanding's turtle and wood turtle in the vicinity of the project, as well as an exemplary floodplain forest along Baboosic Brook upstream from the bridge. The project will not impact the floodplain forest. NH Fish & Game provided comments in 2013 regarding turtles. These comments have been addressed as follows:

- 1) Riprap will not extend across the entire channel, and natural streambed material will be placed over the riprap that is installed.
- 2) Temporary, biodegradable rolled erosion control matting will be used.
- 3) There are 3 existing catch basins with sumps in the project area, and Fish & Game asked that sumps be eliminated due to their potential impact on turtles. Replacing the basins in kind is currently proposed. Eliminating the sumps was not considered desirable due to the water quality benefit that they provide and because the sumps are already present at the site.
- 4) No curbing is proposed by this project.

The US Fish & Wildlife Service online mapping tool (IPAC) did not report any potential species of concern in the vicinity of the project. Baboosic Brook is a 4th order stream and the project will require a Shoreland Permit by Notification for earth disturbance within the Protected Shoreland. Baboosic Brook also has a regulatory floodway with adjacent floodplain. The project would not result in an increase in base flood elevation or a change in flood storage capacity. There would be a slight increase in impervious surface due to the wider bridge and approaches; however, there are no surface water impairments in the vicinity of the project and existing drainage will be perpetuated. Finally, the NH Division of Historical Resources provided feedback on the project and indicated that there are no concerns with the bridge.

C. Perron completed the presentation by stating the preferred alternative would be an overall improvement due to improved wildlife passage, improved hydraulic capacity, and reduced velocities through the bridge. The proposed impacts to banks and channel would be within the same general area of the existing bridge. For these reasons, the proposed bridge could be considered self-mitigating. The project team is seeking DES concurrence that compensatory mitigation would not be required.

Lori Sommer asked how the proposed vertical clearance compared to the existing bridge. M. Pac replied that the existing vertical opening is approximately the same as proposed; however, the proposed bridge would be arched.

Both L. Sommer and Gino Infascelli commented that it appeared that impacts from the proposed bridge would extend beyond what is currently impacted by the existing bridge. C. Perron agreed that there would be new impacts just outside the footprint of previously impacted areas. Jeff Foote (Town of Bedford) explained that this was due to the need for a wider bridge that accommodates paved shoulders for pedestrians and bicyclists. Jed Merrow commented that additional streambed

habitat would actually be created by the proposed design since the bridge would be longer. It was agreed that more information was necessary to clarify the extent of new permanent impact. L. Sommer noted that new impacts for a Tier 3 stream crossing require mitigation unless the crossing fully complies with the Stream Crossing Rules. The need for mitigation in the form of an in-lieu fee will be determined once additional information on proposed impacts is reviewed with Lori and Gino.

G. Infascelli suggested that changes to the proposed drainage be considered, including replacing the catch basins with drop inlets and reducing the length of riprap at the drainage outlets. He felt that these changes would provide some treatment of runoff, be easier to maintain, and address Fish & Game's concern regarding turtles getting trapped in catch basins. He further commented that catch basin sumps require maintenance and he wasn't sure that they provided much of a water quality benefit because they are rarely cleaned out. J. Foote noted that the catch basins are currently located in ditch lines, which do provide some treatment before runoff enters the basins. He agreed with G. Infascelli's suggestions and noted that it may be possible to create more of a plunge pool design.

L. Sommer asked about the project's schedule. C. Perron replied that the permit application would be submitted to the towns that day. However, J. Foote noted that obtaining the permit was not urgent, and coordination with DES would continue on the issues raised at this meeting.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Franconia, Non-Federal, 40272

Tony Weatherbee provided an overview of the project. The scope of the project is to rehab the bridge that carries NH Rte. 116 over Coppermine Brook (069/049). The existing structure is a concrete slab bridge that has a 19'-0" span and 32'-0" deck width. Proposed work consists of replacing the concrete deck, placing concrete toewalls, and placing riprap.

Carol Henderson asked if using fabric would help. T. Weatherbee said that riprap is preferred and Gino Infascelli verified that sometimes fabric can be problematic.

G. Infascelli asked what time of the year this project would be done. T. Weatherbee said the project would be done in the late fall and early winter.

Lori Sommer said that no mitigation would be required.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Franconia, Non-Federal, 40270

Tony Weatherbee provided an overview of the project. T. Weatherbee indicated the proposed work would rehab the existing bridge that carries NH Rte. 18 over Black Brook (085/104). The existing structure is a concrete slab bridge that has a 10'-0" span and 29'-0" deck width. The

proposed work consists of repairing the concrete deck, repairing the concrete toewalls, and placing riprap.

Lori Sommer said that no mitigation would be required.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Alexandria, Non-Federal, 40244

Tony Weatherbee provided an overview of the project. T. Weatherbee indicated the proposed work would rehab the existing bridge that carries Fowler River Road over Bog Brook (174/146). The existing structure is a two span concrete slab bridge that has a two 13'-0" clear spans and 28'-0" deck width. Proposed work consists of replacing the concrete deck, removing the pier, widening the substructure, and placing riprap. The deck will be removed in two phases and the pier will be removed while the deck is off.

Carol Henderson asked if the pier will fully be removed and T. Weatherbee said yes the pier will be fully removed, including the footing. Using natural material removed from where the structure will be widened to fill in the location where the pier was located was discussed.

Lori Sommer said that mitigation for the substructure widening is required and that some credit will be given for the pier removal. Matt Urban and L. Sommer will coordinate the amount.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.