

# BUREAU OF ENVIRONMENT

## CONFERENCE REPORT

**DATE OF CONFERENCES:** April 6 and 13, 2006

**LOCATION OF CONFERENCES:** J.O. Morton Building

**ATTENDED BY:** Marc Laurin, Cathy Goodmen, Christine Perron, Jon Evans, Kevin Nyhan, Charles Hood, Chris Waszczuk, Phil Miles, Kit Morgan, Nancy Mayville, NHDOT; Jim Garvin, Linda Wilson, Emily Paulus, Beth Muzzey, and Edna Feighner, NHDHR; Harry Kinter and Ed Woolford, FHWA; Phil McDonald, Underwood Engineering; Dorothy Duffy, Lakeport Community Association; Lynne Monroe and Carol Hooper, Preservation Co.; Ron Joy, McFarland Johnson; Deb Loiselle, DES; Bill Barry, VHB; Michael Croteau, SEA; Tom Levins, Holden Engineering; Amy Dixon and Jason Gallant, Louis Berger; Bob Sporel, DRED; Phil Faulkner, City of Keene; Mike Johnson, Maine Historical Commission (via phone); Addie Kim and John Watters, HNTB; Richard Candee, Portsmouth Historical Society;

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

*Thursday, April 6, 2006*

**Dover, X-A000(280), 14287. Participants: Marc Laurin and Chris Waszczuk.**

It was noted that the 7X 25-meter dense dump, 1890-1920 was located at the proposed entrance to the park and ride. The archaeological deposit was found eligible for the National Register. Although the preferred approach would be to preserve it in place, NHDHR agreed that the current effort to recover a 5% representative sample from the site through the excavation of 25 5 X 5 meter units, the washing and initial processing of the artifacts, and their eventual cataloguing by SCRAP volunteers under the direction of IAC would be adequate mitigation. IAC will make several presentations about what the site represents and identifying the different artifact forms. The project would thus have an educational value as well as preserve data for future study.

NHDHR agreed that this approach would have a no adverse effect on the resource.

**Newmarket, STP-TE-X-000S(416), 13499. Participant: Phil McDonald ([mac@underwoodeng.com](mailto:mac@underwoodeng.com)) and Frank Underwood, Underwood Engineering, Inc. and Julie Glover, Project Coordinator, Town of Newmarket.**

Frank Underwood identified project limits. The following items were noted:

- Project Identification – The project is identified as Main Street Reconstruction - Phase 2, Newmarket, NH (State Project #13499, STP-TE-X-000S(416))
- Phase 1 of the Main Street Re-Construction program was completed August 2005
- Phase 2 construction is scheduled for 2007

- Project Area extends along NH Route 108 (Exeter Street & Main Street) from New Road to Lamprey River/Bay Road

Project Scope – Transportation Enhancement is part of \$6 million downtown restoration project. TE elements are intended to improve pedestrian circulation, formalize parking and access to parking and to provide amenities such as landscape and lighting that promotes pedestrian circulation. The Phase 2 project also includes the following elements:

Sanitary Sewer:	700+/- ft. (Exeter Street)
Storm Sewers:	2500+/- ft. (Exeter Street, Main Street and Water Street)
Water:	3400+/- ft. (Exeter Street and Main Street)
Utilities:	Electric, Telephone, Cable & Fire installed underground & pole removal
Road Re-Construction	New Road to Lamprey River

*The above four items are funded by other sources and are not considered eligible for TE reimbursement. The following items below are identified as eligible for TE reimbursement:*

Sidewalks	Exeter Street (east side only)
Main Street (both sides of roadway)	
Lighting	Exeter Street (east side only)
Main Street (both sides of roadway)	
Landscaping	Street trees/amenities

Environmental Review Documentation

A “Draft” copy of the Environmental Review Documentation was submitted for review by NHDOT. The document was prepared to fulfill requirements for separate federal funding application relative to water improvements. The report can be revised, if necessary, for separate discussion relating to sidewalk, landscape and lighting. A Categorical exclusion is requested for this project. Comments relative to environmental report will be forwarded to UEI.

Discussion

*Archaeological* – It was noted that initial investigations were begun in early 1980’s by Victoria Bunker. In addition, there was a follow up investigations conducted during construction of sewers in Main Street and Water Street. Although the prior investigations did not uncover significant artifacts, it was noted that a Phase I archaeological investigation is requested. Water line, drainage, and other trenches to be excavated are at separate locations and prior investigations may be outdated and inconclusive. The investigation would include a literature search, which should precede monitoring of proposed trenches by a qualified historical archaeologist. The archaeologist may identify buried soil horizons.

*Historic District* – It was noted that Newmarket has a downtown, National Register-listed commercial historic district, generally extending from Gerry Avenue to Bay Road. Newmarket does not have a local historic district, but ALL of the properties in the downtown are listed on the National Register.

*Property impacts* – Two or three sidewalk easements are anticipated. It was noted that a Programmatic Section 4(f) evaluation is needed if permanent easements are required for the project. Temporary easements do not require a Section 4(f).

*Environmental* – It was noted that a new water main is to be constructed over the Lamprey River to the Bay Road side of the bridge. The bridge itself is not eligible for the National Register. The new pipe is to be supported by the bridge, similar to the existing water main. Also, two new drainage outfalls to the Lamprey River are proposed. One will replace the existing drainage outfall across from Elm Street; the other is to replace the pipe on Water Street. The existing pipes are old and inadequate and are in a state of disrepair.

*Signs* – It was noted that signs encroach into the R-O-W and that aerial easements should be considered. This would permit property owners to maintain their signs as long as their buildings remain. The agreement would be between each individual owner and the town and the town would make an agreement with FHWA. The existing signs are considered “grand-fathered” only as long as the building remains. Sample Aerial Easement docs can be obtained from Bill Janelle in Right-of-Way (NHDOT, 271-3227).

*Short Term Impacts can be expected and are typically addressed in the following manner*

*Traffic Control – Traffic Control Plan to be prepared*

*Dust – Water, dust retardant employed during construction*

*Noise – Normal work hours are anticipated*

*Siltation – Filtration devices employed at storm water inlets (CB's)*

*Business – Business profiles will be developed to help identify operational constraints for businesses.*

*Sidewalks* – The sidewalk elevations should be designed, where possible, to improve ADA accessibility. It was noted that there might be tax credit incentives to businesses that improve handicap access.

**Laconia Freight Depot. Participant: Dorothy Duffy, Lakeport Community Association ([dorothyduffy@metrocast.net](mailto:dorothyduffy@metrocast.net)).**

D. Duffy reviewed the Lakeport Community Association projects at the Freight Depot that it would like to pursue in the near future:

1. Handicap Access Ramp Railing: Dorothy Duffy stated that the city wanted the handicap access railing to surround the entire ramp or loading dock that extends 15’ beyond the end of the freight depot rather than end at the handicap access door or the office door. The railing was to have vertical uprights with no more than 4” between them. She noted that the Association would like to do the work this spring because the high school would provide the labor. D. Duffy also noted that she thought the city was concerned about liability because of the liability clause in the lease agreement with the Bureau of Rail and Transit. [Jim Garvin and Joyce McKay subsequently discussed this question with Kit Morgan. He indicated that he would look at the lease and talk to the AG’s office concerning the lease agreement to provide the appropriate direction on this issue. He subsequently determined that the lease agreement could not be changed but observed that the work needed to be conducted according to the Secretary of the Interior’s Standards. Jim Garvin wrote a letter to the code official to this effect.]
2. Insulation of the underside of the floor was discussed. If batt or rolled fiber glass insulation were used, then a vapor barrier would need to be placed on the warm side of the insulation adjacent to the floor. However, the Association plans to use rigid foam insulation with aluminum vapor barrier on both sides of the foam board. This insulation has its own vapor barrier and needs no added barrier. In addition, Linda Wilson suggested placing a 6 mil. sheet of black polyethylene down on the ground to keep moisture from rising up into the building, a phenomenon known as rising damp. This

procedure would be particularly beneficial since the Association is enclosing the crawl space with pressure treated boards.

3. and 4. Skirting around the building beneath the sills and around the pit for the scales: The Lakeport Association wanted to replace the existing with pressure treated wood that is painted black. J. Garvin agreed to this addition, and it was also agreed that latticework or wire fencing could be placed under the loading dock. This is a reversible addition. These additions are intended to keep animals from borrowing beneath the building and dock.

4. Installing the showcases inside the building is not a problem.

5. Replacing the damaged ceiling tiles is fine.

9. Pull down stairs providing access to the upstairs: This project sounds like a good idea. D. Duffey indicated that the installation of the door would not affect original materials. If the Association finds during its design or installation that it does, then NHDOT and NHDHR should see the design.

10. Repair of the wood pedestrian office door at the rear of the office: The Lakeport Associate understands that it is probably an original door but request the ability to place a beaded board storm door on the outside. This addition is also reversible and can be pursued.

13. Insulation of the Freight Door: The insulation needs to be placed on the outside because of the way the door operates. The Association suggested placing removable wood shutters composed of beaded board along the opening. J. Garvin suggested attaching the double doors with butt hinges with a loose pin so that the doors can be taken down easily during the summer months. Attach them to the outside casing and paint the hinges red so they are not visible.

### **Homestead Woolen Mills Dam (Dam #232.01), Swanzey. Participants: Deb Loiselle, NHDES.**

D. Loiselle opened the meeting by providing a brief update of the proposed river restoration project in Swanzey, NH, which has been ongoing for several years. In March 2006, the citizens of Swanzey voted on two warrant articles specific to the proposed project. The purpose of Article 10 was to see if the Town would vote to raise and appropriate the sum of \$50,000.00 to reduce the risk of scour of the Thompson Covered Bridge; the Town voted "yes". The purpose of Article 11 was to see if the Town would vote to authorize the Selectmen to accept a deed to acquire ownership and responsibility of maintenance of the Homestead Woolen Mills Dam; the Town voted "no". D. Loiselle explained that the dam owner is currently under an Administrative Order by Consent and is moving forward with the dam removal option, however, the purpose of meeting today was to discuss potential grant opportunities for addressing the stability of the Thompson Covered Bridge. Future meetings with NHDHR representatives will address the dam more specifically. D. Loiselle also noted that there are several meetings planned over the next few months, with a variety of individuals and agencies, to discuss the logistics and funding of this project for the dam and the bridge.

Project partners are cognizant of the importance of collaborating the dam removal with the bridge stabilization. D. Loiselle will be meeting with several of the Project Partners at the end of the month to discuss timing and funding, and other logistics of the proposed project. Although the bridge is owned by the Town of Swanzey, the Project Partners believe it is good stewardship to assist with exploring funding options for addressing the stability of the bridge. The goal is to provide a list of potential funding sources to the Town for consideration.

The Thompson Covered Bridge lies upstream of the dam and is in jeopardy regardless of whether the dam is removed or not. The Feasibility Study notes the removal of the dam would accelerate the scouring at the bridge piers and the cost estimate to stabilize the bridge is \$500,000.00. As noted

earlier, the Town has secured \$50,000.00 but there still remains an additional \$450,000.00 to address this issue. D. Loiselle explained that she has had previous discussions with NHDOT personnel relative to Bridge Aid funding and TE funding. J. Garvin inquired about the responsibility that NHDOT has, if any, to the bridge. D. Loiselle explained that the NHDOT does not have any ownership or maintenance responsibility. She noted that it was explained to her that the only responsibility they have is to conduct bi-annual inspections and reporting for all bridges in New Hampshire. This information is submitted by NHDOT to the appropriate municipalities. She also noted that monies for the Bridge Aid program are earmarked for several years out and would most likely not be an option. However, she did note that she would follow-up with NHDOT representatives to discuss this further in the near future.

J. Garvin noted that the Thompson Covered Bridge is one of the oldest bridges in New Hampshire, and perhaps in the United States. He suggested that it would be appropriate to talk with Judd Gregg's office about a congressional earmark but would first need to discuss this with Jim McConaha. "Save America's Treasures" may be appropriate as well but the bridge would need to be on the National Register of Historic Places as a "national" resource. J. Garvin and L. Wilson noted they would look into this. This funding would need to be done on a competitive level and application deadlines are April 18, 2006. Individuals agreed that this would not be enough time to apply for this particular grant. J. Garvin also noted that one can apply for "Save America's Treasures" through a congressional earmark and would pursue this option. L. Wilson explained that there are national environmental funds available where there is high community participation. She suggested that the national program "Grant Station Insider" be further investigated. She also noted that NHDHR has a listing of potential funding resources for New Hampshire historic preservation projects. D. Loiselle asked that she forward this information for reference. She also noted a few additional resources as follows: 15 Mile Mitigation Enhancement Funds, Silvia Conte Refuge, USDA Rural Development Grant. The following individuals were recommended by L. Wilson as additional contacts: Adair Mulligan (Connecticut River Joint Commissions) and Jeff Porter (Southwest Regional Planning Office). NHDHR representatives wanted to know if the Town representatives, specifically Beth Fox, were being kept informed of the project status. D. Loiselle noted that in the near future she and the owner (and perhaps others) will be meeting with the Town. She explained that several other meetings have been, and will be, scheduled prior to meeting with the Town.

### **Portsmouth, BRF-X-2(66), 10665: Participants: Chris Baker and Ritz Walsh, VHB.**

Chris Baker, Project Manager and Rita Walsh, Senior Preservation Planner, of Vanasse Hangen Brustlin, Inc. (VHB) presented the proposed improvements to a roughly 1-mile section of Rt. 33 (Greenland Road) between Griffin Road and Islington Street. The improvements consist of the replacement of a 1930 concrete tee-beam highway bridge over the Boston & Maine Railroad (Hampton Branch) and associated roadway improvements for the approaches to the new bridge. These roadway improvements will necessitate taking a narrow front section of land from some properties. The intersection at Greenland Road and Islington Street, at the east end of the project area, will also be modified to a conventional T-intersection.

#### **Summary of Previous Inventory/National Register Evaluation**

Most of the project area was reviewed for the presence of historic properties in 1995, when the original road/bridge improvements project was proposed and was being progressed by NHDOT. Consultant Lisa Mausolf prepared a NHDHR Project Area Form and 15 individual inventory forms for this review. Of the 15 individual properties reviewed, only the Helen Diamond House at 653 Greenland Road was determined eligible for the National Register of Historic Places by NHDHR staff. The National Register eligibility of St. Mary's Cemetery was reviewed more intensively, but

was determined not eligible. The corridor was determined not eligible after historic district potential was examined, because many of the properties were not yet 50 years old. Although not within the project area, three properties close to the eastern end of the project area on Islington Street and Plains Road were given a preliminary examination in 1995. These properties are 1821 Islington Street, 1722 Islington Street, and 1 Plains Road. The 1995 recommendations concluded that all three properties might be individually eligible for the National Register, pending further investigation, but that no district potential existed in their vicinity.

A preliminary review of the archaeological inventory revealed that sites have not been recorded in or adjacent to the project area.

There was a question at the meeting about the previous inventory/National Register evaluation of the 1930 highway bridge proposed for replacement and the National Register status of the Boston & Maine Railroad over which it travels. It is believed that the original stone abutments of an earlier bridge over the railroad line may still exist. Information on the bridge is available at both NHDOT and NHDHR. It is also believed that the railroad line is the earliest in the state and has already been determined eligible for the National Register as the Eastern Railroad. J. Garvin also requested that the 1980s evaluation of T-Beams be checked to see if the bridge had been scored.

### **Preliminary Survey Work for Current Project**

The current project area extends further west than the 1995 project area along Greenland Road. Recent due diligence efforts identified 7 additional properties at the west end that are more than 50 years old. These properties, however, do not appear to be historically or architecturally significant, based on a visual analysis and their relative age.

A National Register nomination was prepared for the property at 1821 Islington Street in 1992, but was not accepted due to incomplete data.

### **Phase IA Archaeological Assessment**

Independent Archaeological Consulting, LLC will conduct a Phase IA archaeological assessment of the 4,500-foot corridor. Joyce McKay has reviewed and okayed the scope and fee for this work.

### **Next Steps - Consultant's Assignment**

The following tasks were agreed upon by the agencies to proceed with efforts to identify and evaluate aboveground historic properties and identify effects upon them as part of the Section 106 process. VHB will perform this work.

- Prepare updated summary on method/status of NH 33 Greenland Road Project Area Form (10665) using continuation sheets. New streetscape photographs will also be taken.
- Update individual forms by preparing continuation sheets with new photographs, update description and condition/integrity.
- Research files on bridges at NH DOT and NHDHR. Obtain NHDHR survey form documentation and other pertinent information on Boston & Maine RR Eastern line. Update information on continuation form for the bridge, if previously inventoried.
- Prepare new individual and reconnaissance forms for properties over 50 years old not previously inventoried in the 1995 and those that are now within the Project Area that appear to be older than fifty years old and retain some integrity.

The Sherburne Homestead at 1821 Islington Street was specifically discussed, and its form will need to be updated along with the others. For this form, review available historic information, and field survey to identify other buildings in Portsmouth area of the same vintage to determine the

architectural/historical significance of this house. Such a comparative analysis may need to be done for other new forms. Also complete a form for the muster field and its objects. Presentations at Cultural Resources Meetings and the Environmental Document will record such information as how much land is being taken and project effects for both Section 106 and 4(f) purposes for all eligible properties.

**Bradford 14540V. Participant: Michael Croteau, SEA ([Michael.Croteau@seacon.com](mailto:Michael.Croteau@seacon.com)).**

SEA proposes to replace the West Meadow Road Bridge over Hoyt Brook (099/120) as an on-line replacement project. The bridge has an 18' span and is a one-lane structure whose superstructure rests on seven I-beams. It has a steel pan deck filled with bituminous asphalt. The abutments are dry laid stone. Following the October 2005 flood, the bridge was closed. Plans are to replace the bridge on its current alignment. However, the width will be expanded to two lanes so that it will extend 8-10 feet outside the current footprint. J. Garvin observed that the abutments composed of the large boulders extant at the site were historic, however, neither they nor the bridge is eligible for the National Register. M. Croteau explained that they intend to keep the current abutments. E. Feighner indicated that the project area did not appear to be sensitive for archaeological sites. A No Historic Properties Affected Memo should be completed.

**Surplus Lands: Springfield (SP-P7690D). Participant: Mark Hemmerlein**

M. Hemmerlein presented a surplus land in the Town of Springfield located adjacent to Baptist Pond. Currently, NHDOT has been leasing the land and the lessees wish to purchase it. The purchase would not affect historic buildings and it is no sensitive for archaeological sites. No historic properties are present.

**Lyndeborough 14251. Participant: Tom Levins ([hes@holdenengineering.com](mailto:hes@holdenengineering.com)/472-2078).**

Tom Levins presented the proposed plan to replace the Gulf Road Bridge over Stony Brook (059/106). It is a 1920, I-beam and concrete deck bridge on stone abutments rehabbed in 1960. The plan includes constructing a new timber bridge superstructure and reconstructing the existing stone abutments and retaining walls. The existing road width varies between 16 and 18 feet. The new bridge width will be 24 feet and the existing stone retaining walls will be removed and reconstructed to accommodate the new width. The bridge and roadway will be constructed on the current alignment and the road will be closed during construction.

It was determined that the proposed project would have no adverse effects on cultural resources. However, E. Feighner requested that the existing walls be photo-documented as part of a Phase IB report. Documentation should include recording the structure as it is being dismantled. Photographs should be black and white. Holden will contact Kathleen Wheeler, Archaeologist, for an estimate and an approximate schedule for doing the work.

**Lebanon 14194. Participants: Bob Barry and Amy Dixon ([adixon@louisberger.com](mailto:adixon@louisberger.com)) and Jason Gallant, Louis Berger Group, Inc.**

Representatives from The Louis Berger Group, Inc. (LBG) met with representatives from the New Hampshire Department of Transportation (NH DOT) and the New Hampshire Division of Historical Resources (NH DHR) on the afternoon of Thursday, 6 April to discuss the Section 106 requirements for proposed improvements to the US Route 4 / NH Route 10 bridge over the Mascoma River / BMRR in Lebanon (Bridge No. 077/107).

Jason Gallant began the discussion with an overview of the bridge's history. The existing bridge was built in 1945, designed by Harold Langley, and consists of a three-span, riveted plate girder superstructure with a non-composite deck. Pertinent information regarding previous deck rehabilitation improvements made to the bridge in 1971 and 1984 were discussed and a description of the surrounding area was provided. Mr. Gallant explained that several design options are being explored, but that the present preferred alternative is rehabilitation of the existing structure that will be limited to deck and floor beam replacement and the addition of a sidewalk by cantilevering the additional width. It was noted that the adjacent dam and powerhouse would not be impacted.

Amy Dixon discussed the results of a file search conducted at NHDHR's offices. The subject bridge was discussed in the Historic Bridge Inventory completed in the early 1990s; however, at that time the bridge did not meet the minimum age requirement for National Register evaluation. Ms. Dixon requested some directions for the review of cultural resources within the project limits.

James Garvin said that the bridge is likely eligible for inclusion in the National Register of Historic Places because of its engineering significance. J. McKay inquired whether the best approach to determining the bridge's eligibility was to score the bridge using criteria established by NHDOT and NHDHR for the Historic Bridge Inventory, or whether an individual survey form would be required. J. Garvin and J. McKay agreed that the bridge scoring method would be sufficient for determining the bridge's eligibility. J. Garvin pointed out that changes to the bridge, including the rehabilitation approach, would be considered an adverse effect because it would result in changes to the physical appearance of the bridge. He said that Historic American Engineering Record (HAER) documentation of the bridge would be required as mitigation.

J. McKay outlined the information that LBG would be accountable for gathering and providing to NH DOT/NH DHR in order for them to score the bridge:

- Any previous scoring documentation
- Research in NH DOT's Bureau of Bridge Design files
- Research in NH DOT's Bridge Maintenance Department
- Inclusion of any historical plans, including plans for previous rehabilitation projects (NB: LBG has retained these plans as part of their engineering study)
- Compilation of comparable bridges in the state, which may be obtained from Bridge Design. Comparison would be among the riveted deck plate continuous girders with variable sections.

Other alternatives and the potential construction of a temporary bridge that might be necessary if a detour is needed during construction were discussed. Edna Feighner said that if a temporary bridge or other ground disturbing activities were to take place that at least a Phase IA archaeological study would be necessary. Additional phases may be necessary if the area is found sensitive. The archaeologist can combine the two phases if initial investigation finds the area sensitive.

Linda Wilson inquired whether the completion of a Project Area form would be necessary. J. McKay suggested that because this is a municipally managed bridge project and in the effort to lessen the burden on the City of Lebanon, that a Project Area form might only be necessary if there would be disturbance to the area outside of the bridge's footprint. NHDHR concurred.

Action Items:

- Mr. Gallant, as part of the engineering study, will meet with the City of Lebanon and present the alternative bridge designs. If the City agrees that the rehabilitation of the bridge without the use of a temporary bridge to detour traffic is the most prudent design, LBG will carry forth with compiling background information for the bridge scoring evaluation.
- Should the City determine that the use of a temporary bridge is a preferred alternative, LBG will inform the City and follow through with the completion of a Project Area form and a Phase IA archaeological investigation.
- If the bridge is found eligible, the project will require completion of a HAER document.

Thursday, April 13, 2006

**Alstead 14540M/W. Participants: Kevin Nyhan, Jon Evans, and Joyce McKay.**

The Department needs to move forward the replacement of a culvert and a bridge, which is now spanned by a bailey bridge on NH Route 123 between Mill Hollow and Cobb Hill Road. Both were damaged by the October 2005 floods. The Department needs to do the project during the summer months so that the operation of the school buses will not be disrupted. It was agreed that the replacement of the culvert would not impact any archaeologically sensitive areas. The miscellaneous brick in the area appears to have been washed down the stream from sites above this location. The replacement of the bailey bridge will not impact any dwellings eligible for the National Register. A No Historic Properties Affected memo can be signed.

A separate part of the project along NH Route 123A just below Vilas Pool will rebuild a stone wall damaged by the October 2005 flood. Concrete barriers are now separating the road from Cold River. A portion of the foundation for the 1942 edged tool factory founded by Hamlet Rice was found projecting from the bank. During the replacement of the wall, E. Feighner requested that the work be monitored by a qualified historical archaeologist. Any remains will need to be recorded.

**Gorham, X-A000(347), 14407. Participants: Cathy Goodmen.**

The municipally managed project involves the rehabilitation of a 1949 diesel railroad engine originally used in Berlin to a museum. This project was submitted in 2003 for TE funding, and it was originally rejected. The project was resubmitted in 2004 with more information and accepted. This engine has been in Gorham for several years, and they wish to place a small railroad museum in it. The car has no engines remaining and the town wishes to make that area a small museum with benches and a video of the work this rail engine performed when it was in use. The cab will remain close to original so that visitors can see what the engineer would have seen when driving the train. There were only four of this model made. One is no longer in existence, one is on display in Conway, and one is in use in Conway. L. Wilson was concerned that this rehabilitation was adverse impacts to an historic engine, resulting in a "preemptive gutting" of the object. She is interested in finding out when the inside materials (engine) were removed. J. Garvin requested background and plans for the

project. If the engine is not eligible for the National Register, then no further review would be needed. In discussion with the architect of the Town of Gorham has retained, it was noted that some outside work has already been performed by town volunteers.

**Pembroke, X-A000(414), 14477A. Participant: Cathy Goodmen.**

The project addresses safety concerns at the intersection of US Route 3 and Pembroke Hill Road in Pembroke. Currently, three options are being considered; 1- Roundabout, 2- signalized intersection, and 3- a center turn lane. There are several potentially National Register eligible buildings in the project area. This project will not advertise until 2009 but was presented to receive input from NHDHR regarding the area. It was noted that some research was performed several years ago for the area to the south of this for the pipe line construction, and they will look at that to see if some information is available for the current project area. L. Wilson requested that individual forms be completed for the buildings within the area of potential effect.

**Wakefield Surplus Land, SP-2006-3. Participant: Christine Perron.**

This 1.35-acre parcel is currently leased from NHDOT by the Town of Wakefield as a town park known as Turntable Park. The park contains an intact turntable that was part of the Wolfeboro Railroad, and the park is in a eligible district. The town now wishes to purchase the parcel in order to make permanent improvements, including the construction of a railroad museum. Before the NHDHR and FHWA can make a decision regarding the sale of the parcel, they asked that C. Perron to determine if Land and Water Conservation Funds or Transportation Enhancement funds were used for this parcel, and if there is an existing agreement with the DRED Trails Bureau for the recreational rail trail on the parcel. It is believed that the property once included a roundhouse, passenger depot, and freight depot. Thus, the area is sensitive for archaeological remains of the former rail yard.

**Wakefield Surplus Land, SP-P2424. Participant: Christine Perron.**

An abutter wishes to purchase this 3.7-acre parcel located in Wakefield along NH Route 16. Because of the potential for this parcel to contain historic and archeological resources, E. Feighner asked that J. McKay conduct a field review of the parcel. The parcel will then need to be reviewed again by the NHDHR at the next meeting. [Subsequent survey of the parcel located a filled area with a cellar hole, probably associated with a former school. The associated foundation stones suggested that demolition of the school had considerably disrupted the site. There may be associated deposits in the adjacent filled area. The only other cultural features observed were stone walls. In general, the area is low and wet, and not likely sensitive for Native American site. Although a map notes the existence of a cemetery across the road, grave markers were not found.]

**Salem-Manchester, IM-IR-0931(174), 10418C: Participant: Marc Laurin and Joyce McKay.**

J. McKay discussed the effects of the project on the dwelling at 2 Brady Street. Because this property was missed during the original survey of the Armenian District for the Salem-Manchester project, Lynne Monroe completed an individual form. However, the form had not been reviewed at the previous DOE meeting. For the purposes of discussion, J. McKay treated the property as eligible as

recommended by the consultant. She explained that the property contained a significant amount of asbestos and that the broken pipes permitted water to flood the bathroom, kitchen, and basement during the winter. Given the condition of the property, NHDHR agreed that it could be documented through a state-level HABS study, but it did not need to be advertised for sale and removal to another location. L. Wilson additionally requested completion of the district area form that had been begun for the Armenian District during the original survey and the installation of a historic marker recognizing the significance of the community. The sign might be placed in the vicinity of the Armenian Congregational Church.

**Keene Stone Arch Railroad Bridge. Participants: Phil Faulkner ([phf@alum.exeter.edu/357-2728](mailto:phf@alum.exeter.edu/357-2728)); Bob Spoerl, DRED ([wspoerl@dred.state.nh.us/34546](mailto:wspoerl@dred.state.nh.us/34546)); and Kit Morgan.**

The ad hoc committee on the Stone Arched Bridge, which is supported by eight organizations, made a presentation giving the background of the bridge and its historical and architectural significance. The presentation stated the bridge was in a state of deterioration because little or no maintenance has taken place since 1972 when the Boston & Maine RR abandoned the Cheshire Line. The committee listed 6 maintenance items that are considered urgent. They are as follows:

1. Remove small trees, brush, and other vegetation on the bridge's surface.
2. Remove several dozen medium-sized trees on the wings of the bridge. The concern in both instances is that the roots will penetrate the masonry and dislodge it.
3. Stop erosion on the roadbed of the bridge and on the steep approaches. This erosion has been caused by ATV's and other motorized vehicles.
4. Control surface water that accumulates on the roadbed. Water flows to the center of the road and increase erosion. Road should be built up in the center and drainages built to carry the water away safely.
5. Point masonry as needed.
6. Develop a yearly maintenance plan.

The presentation concluded by suggesting the following plan:

- DOT/DRED would issue an RFP to get a needs-assessment for repairing the bridge.
- Based on the response to the RFP, draft a grant request for funds to cover the cost of the needs assessment.
- When funds are obtained, the selected firm would undertake and complete the needs-assessment.
- From the needs-assessment report, prioritize the various maintenance projects that are suggested.
- Raise additional funds from grants, corporations and individuals to undertake the tasks noted in the report
- Issue RFP's and award contracts
- Develop a plan for annual maintenance

In a discussion following the presentation, the group was generally favorable to the suggestions made by the committee. It was agreed that this maintenance plan should be presented to other members of DOT who were not able to attend the meeting to determine what action will be taken. Tom Jamison will consider issuing the RFP since DOT owns the bridge. DRED would also need to be involved since they operate the recreational trail. Conservation license plate monies appear to be the best source of revenue for the initial assessment. A historic structures report would be the most appropriate document to in which to evaluate the condition of the bridge, recommend rehabilitation

measures, and complete a maintenance schedule. H. Kinter agreed that it would be very appropriate to apply for TE funding for the rehabilitation.

**Portsmouth, BHF-X-T-0101(015), 13678: Participants: Kevin Nyhan; Addie Kim and John Watters, HNTB; Mike Johnson, Maine Historic Commission, and Nancy Mayville.**

The purpose of this meeting was to present the preferred alternative for the Memorial Bridge project and to review the cultural resource effects of the alternatives on the National Register-eligible Memorial Bridge Historic District.

Nancy Mayville provided an overview of the project and indicated that coordination with NHDOT and MEDOT March 29<sup>th</sup> was undertaken to determine the preferred alternative. NHDOT and MEDOT have determined that the preferred alternative will involve replacement of the lift span of the Memorial Bridge, rather than lift span rehabilitation. The partial closure, involving a 5-month closure of the bridge, has been chosen as the preferred construction phasing option. Nancy Mayville indicated that, as a result of input obtained from the April 6, 2006 public meeting, consideration is also being given to the widening of the sidewalks.

John Watters described the proposed project, which will include rehabilitation of the flanking trusses, the lift span replacement, and replacement of the Scott Avenue Bridge. He indicated that the new lift span would be constructed of rolled, or I-beam, steel shapes that would not be built up and riveted. Upper and lower chords sections will be smooth, bolted rolled sections, with steel cover plates, and the connections would be gusseted, with bolts and nuts. The general configuration of the bridge would remain the same, a warren truss, and vertical members would be 30 feet on center. The visual appearance of the steel would be smoother than the existing structure, but from a distance of 500 to 1,000 feet (from the water or from the Kittery/Portsmouth shorelines), this difference may not readily be discernible. The physical housing for the machinery for the span drive will be the same, although the new machine house will have an improved appearance.

The operator's house would be used to allow remote control operation from the south tower. The housing would preferably be transparent to allow increased visibility, with a railing 360 degrees around. Architectural details have not been decided, but the SHPOs will be consulted on development of these. A 25-foot stair access to the operator's house is shown on the renderings, similar to the existing operator's house and would meet building code. Secure gates would be installed at the stairs.

John Watters indicated that the existing steel framing on the lift span has pack rust corrosion on multiple members. The bottom part of the lift span under the deck has built up lacing, and many areas of this have been replaced. A lower cost of maintenance would be associated with the new lift span constructed with rolled members with cut steel plates. Fewer of the members would be subject to corrosion, as the members would not be "built up" and there would be less opportunity for water to infiltrate between plates of steel. The marine environment and road salt has contributed to significant corrosion on the bridge that has resulted in several hundred thousand dollars worth of emergency repairs to the steel framing. The new lift span would have gusset plates with bolted connection. The new railings on the lift span would mimic the appearance of the existing railings. The existing towers flanking the lift span would be strengthened, and the appearance would remain the same. The strengthening of the towers would involve adding steel plates, but they would be hard to see and would be concealed with paint. The counterweight of the bridge would be larger to offset the

increased load of the lift span, but John Watters indicated that this would involve adding about 1 foot of concrete and steel to the sides and would not involve a large visual difference. John Watters indicated that the entire bridge would be painted.

Tom Jamieson inquired about signage on the bridge. Nancy Mayville indicated that a dialogue regarding signage will be undertaken with pedestrian/bicycle groups in Portsmouth and Kittery. She indicated that the issue with the steel grid deck is that cyclists cannot comfortably ride, and one reason for the solid deck is that this is the only place for cyclists to cross the Piscataqua River in this area. The timber sidewalks would also be changed to concrete, and the steel deck will be filled.

Jim Garvin inquired whether a solid deck would permit better control of water through the deck. Nancy Mayville concurred with this and indicated that the new issue that arose in the public meeting is widening of the sidewalks to 8 feet. The costs and ramifications of this need to be examined; this would require a higher railing if bicycles are on the sidewalk.

Jim Garvin indicated that the State Historic Preservation Office was obtaining information on the preferred alternative for the first time. The other issue is costs, and comparative costs for the lift span replacement vs. lift span rehabilitation.

John Watters stated that current estimates indicate that the complete roadway closure would represent cost savings. The rehabilitation would involve construction costs of \$33.6 million, for a total project cost of \$38.8 million (when considering design and administrative costs). The new lift span would involve construction cost of \$34.4 million, for a total project cost of \$39.6 million. This represents a differential of \$800,000 for initial costs alone, and does not account for increased maintenance costs. The new lift span would involve lower future maintenance costs. The existing bridge was built in 1921-22, and the steel framing absorbs chlorides that, with blast cleaning, cannot totally be removed, so the painting does not last as long. The built-up members of the existing bridge have more edges for moisture and pack rust to collect in and are difficult to seal. The life cycle cost analysis is being performed to calculate the differential painting costs. With the lift span rehabilitation, touch up painting would be required within 10 years. With the lift span replacement, painting should last for more than 20 years, so in 20 years touch up painting may be required and complete painting would be required in no less than 30 years, even in the harsh marine environment.

Jim Garvin inquired about the proportion of the surface area of the lift span to the older metal trusses that would remain in place for both the lift span and the adjacent trusses. John Watters indicated that it would cost approximately \$6.7 million to paint the entire structure and approximately \$2.5 million to paint the lift span, so these numbers should give some idea of the proportion of the lift span to the flanking steel trusses. Jim Garvin asked why the lift span would have greater deterioration above the deck than the two flanking spans.

Jim McConaha pointed out that, if the lift span is replaced, the rest of the bridge would have the same maintenance issues. He inquired whether the lift span is more deteriorated. John Watters indicated that the open grid deck allows deicing salts to eat away at the underlying steel, and entire portions of the roadway framing system need to be replaced. The members in the middle of the road for adjacent truss spans are in poorer shape, and the edges are in better shape.

Harry Kinter inquired whether, if the lift span were rehabilitated, the bridge deck and everything below the deck would need to be replaced. Would the replacement include the lower chords? He asked whether the rehabilitated lift span would be floated in. John Watters indicated that rehabilitation would be completed in place, but a new lift span would be constructed off site and floated in.

Harry Kinter pointed out that prudency issues would need to be clearly addressed in the Section 4(f) Evaluation. This discussion would include the benefit in time savings as well as other benefits of the replacement option.

John Watters indicated that, assuming a full road closure, the lift span rehabilitation could be performed in 5 months, while the lift span replacement could be accomplished in four months. The float-in, float-out of the lift span could conceivably be performed in as little as two days, although two weeks is carried in the schedule, and testing could take less than one week. He indicated that the critical construction activity becomes the Scott Avenue Bridge replacement.

Harry Kinter indicated that the long-term costs should be developed for the lift span rehabilitation vs. replacement. John Watters indicated that 5-year, 10-year, and 20-year life cycle costs are being developed.

Richard Candee inquired whether the cost of lift span rehabilitation off-site had been established. John Watters indicated that this would involve taking the bridge out of service for a longer period of time, and this would also be cost-prohibitive, since float out has to be done twice. He indicated that the construction duration would also be more than 5 months, and the other issue is where the work could be done off site.

Jim Garvin indicated that the original bridge was built at the State Pier. He indicated that the other issue is Section 4(f). Under Section 106, the adverse effects should be avoided if possible. Replacing the original fabric of the bridge would be considered an adverse effect, and the National Historic Preservation Act does not favor the preferred alternative on this basis. He inquired about incorporation of Section 106 in the Environmental Study Report.

Harry Kinter indicated that the Environmental Study Report will address both Section 4(f) and Section 106. He stated that, for the option, which doesn't take the bridge (lift span rehabilitation), there is no question of feasibility. He stated that NHDOT will need to make a case for why the rehabilitation is not prudent, a difficult argument.

Mark Richardson stated that the designers are well aware of the historical issues and historical fabric of the bridge, and that it is not the intent to destroy, but to replicate the appearance of the bridge as much as can reasonably be achieved. He stated that one concern is the connection points on the truss panels. New plates were installed on these that sandwich the corrosion in between, and he is concerned with long-term encapsulation of this corrosion, since it is difficult to inspect the actual condition at these points. It will continue to corrode at these points. The plates were installed in 2004 as the only practical method to strengthen the truss until the currently proposed larger project could be developed. He stated that the contingency and costs could escalate for rehabilitation and the timeframe for construction within 5 months could be extended, if more section loss is found during construction on the bridge. Fabrication off-site of materials that had not been planned would create delays. Significant stabilizing of the truss would be required to disassemble new pieces. Due to the nature of a truss bridge and how the steel members frame together, it is difficult (if not impossible) to replace some members without compromising the structural stability of the bridge. With the partial, alternating one-way traffic phasing, there was a concern that this option could increase the likelihood of delay into the winter. He sees the same potential for delay during rehabilitation of the lift span. Replacement of the lift span would also provide a real benefit for reduced future bridge maintenance.

Harry Kinter indicated that this should all be part of the prudency discussion. Mark Richardson indicated that, collectively, the concept for rehabilitation was deemed acceptable, but because of the

corrosion uncertainty, the NHDOT didn't want to leave the bridge in this deteriorated condition. In response, Jim Garvin stated that it seemed as if the lift span rehabilitation option had been foreclosed, and he had assumed that the rehabilitation below the deck would bring the bridge to a like new condition. He had assumed that the rehabilitated bridge would not have pack rust and that the joints would be reconstituted on the Memorial Bridge. He stated that, if this is not true, then a thorough rehabilitation is not proposed. The lift span rehabilitation costs should be reevaluated for comparison with the costs of the lift span replacement option. No retention of deteriorated members or patch plates with rust behind them was previously assumed by NH DHR to be part of the proposed rehabilitation. He noted that the cost of thorough rehabilitation should be worked into the final equation and the cost increase needed to completely rehabilitate the bridge determined.

John Watters estimated that 50% to 75% of the panel points have been corroded by pack rust, as described by Mark Richardson. He indicated that there is no way to restore the bridge to like new conditions, due to the infiltration of chlorides into the steel.

Jim McConaha inquired whether, when work begins on the bridge, and the lift span is removed, the lift span is kept in operating condition to allow vessels to pass underneath the operating lift span as they do today. John Watters indicated that the bridge would be lifted and locked in the up position for 2 months, when the trunnions, sheaves, and mechanical components would be replaced. After the 2 months, the bridge would have a greater ability to lift to accommodate navigational traffic, since the mechanical and electrical components will be new and in better operating condition than the existing bridge. The rehabilitation would be performed when the bridge is subject to lifts. Scaffolding would be built under the bridge to allow the bridge to be worked on between lifts, and the contractor would need to work around navigational closures. When a bridge lift would occur, the contractor would need to get off of the span and do a "lock out/tag out" when all materials are removed from the lift span, so they don't fall off. This is more of a concern than with the float out/float in of the lift span.

Jim Garvin indicated that staging for preferred alternative and staging for the rehabilitation procedure of the lift span should be spelled out. He indicated that the effects cannot be understood, with the current explanation. He inquired whether engineering approaches to the two scenarios could be better explained.

Nancy Mayville indicated that the questions should be put on the table, and the team would work on a document to address questions. The project team would be back one or two more times to discuss the preferred alternative and effects on cultural resources.

Jim McConaha commented that the appearance of concrete sidewalks is bland and plain and advocated the use of modern planking material to retain the appearance of the sidewalk. He stated that the pedestrian experience is part of the advantage of the timber sidewalk. Lynne Monroe commented that this is a matter of taste. John Watters indicated that composite resin was considered, but the framing system doesn't lend itself to use on the bridge. The boards are thinner and since the strips are 5 feet on center, they would sag and deform. He indicated that joints should be avoided, and this material would involve joints every 6 inches. John Watters indicated that there are ways of adding color and texture to improve the look of the sidewalk without a substantial increase in cost. The concrete can be designed to appear similar to a brick sidewalk. He indicated that this was a concern raised at the public meeting, to replicate the nautical feel of the bridge. John Watters indicated that the SHPOs and Portsmouth Historical Society would be consulted to come up with a better sidewalk appearance.

Harry Kinter inquired whether there would be pavement markings for bicycles. Nancy Mayville indicated that this would be added to the list of questions, but this would be a 14-foot shared lane and

may be too narrow to safely stripe for bicycle use. This might mean an 11-foot travel lane and 3-foot shoulder for cyclists, but would put the bicyclists against the bridge truss in a confined space. Tom Jamieson indicated that segregating vehicles from a designated bike lane would provide a safer riding experience for cyclists. Richard Candee indicated that signage would help this situation.

Mike Johnson inquired whether support below the deck was the main problem. He inquired whether replacing the system below the deck would have the same result as replacing the entire lift span. John Watters indicated that most of the repairs would be performed under the deck. The conditions on upper portions of the bridge are not as severe as below the deck, but corrosion is there as well.

Joyce McKay indicated that, unless there are specific questions, the attendees would reconvene next month, and in the interim, formulate questions about the preferred alternative. She requested that they be submitted two weeks before the meeting on May 11.

Harry Kinter inquired about the status of the Environmental Study Report. Kevin Nyhan indicated that internal comments are due next Tuesday. Charlie Hood indicated that review is proceeding on sections that don't address Section 106 issues. Joyce McKay indicated that sections addressing Section 106 will need to be substantially reworked, pending the outcome of the ongoing Section 106 consultation process.

Harry Kinter stated that, FHWA is interested in hearing views of consulting parties on the lift span replacement. Richard Candee indicated that the Portsmouth Historical Society strongly favored the lift span rehabilitation and is interested in the levels of deterioration above and below the deck and would like information on, and further explanation of, alternative nearby sites for float-in/float-out rehabilitation and the associated costs. He indicated that the all rolled steel system may look different from the existing bridge, and they have interest in the appearance of the design and engineering that might mitigate the effects of the lift span replacement. He indicated that they need to review the prudence issues. Carol Hooper noted that the timber sidewalks on the bridge are not the original sidewalks. Richard Candee inquired why replacing only the section below the deck was not feasible.

Jim Garvin requested information about a prudent way to remove and rehabilitate the lift span on dry land and the cost ramifications. He requested information on the loss of fabric on the bridge including the lift span and adjacent trusses and noted that there is a big adverse effect for replacing the lift span. He noted the need to quantify the different levels of adverse effect for the lift span rehabilitation and lift span replacement resulting from the replacement of the steel members. Additional information on what rehabilitation would include examination from two perspectives: rehabilitation by replication of all deteriorated components and rehabilitation as planned indicating which members would be replaced in both instances would aid an understanding of effect. An on-site and off-site rehabilitation should be addressed. Nancy Mayville indicated that this information would be provided in a month or two.

Lynne Monroe inquired whether the renderings accurately reflect the appearance of the new lift span, given the design variables involved. John Watters confirmed that the renderings are an accurate depiction of the proposed lift span replacement.

Jim Garvin inquired about a size increase in the steel members. John Watters indicated that the proposed members would be similar in size to the existing. He indicated that the picture accurately depicts the final product.

Linda Wilson inquired whether the lattice sections would be retained. John Watters indicated that lattice sections in Trusses 1 and 3 (flanking spans) will remain, but the lattice in the center lift span

would be replaced by rolled members. Richard Candee requested documentation on how much of the lattice would be replaced for all of the spans and wanted to understand where the greatest deterioration existed.

Tom Jamieson noted that floating the deck section away for rehabilitation would incur a longer duration of impact on pedestrian and bicycle traffic. It was noted that traffic in communities would be affected for a longer period of time. Nancy Mayville indicated that a realistic approach is needed for time-efficient construction.

Harry Kinter inquired whether the contract is going to specify a construction staging area. Nancy Mayville indicated that NHDOT would allow the contractor to choose a staging area, since he needs to make sure that he can construct the project. Harry Kinter pointed out the need to have control over where and how the contractor works to prevent cultural resource impacts. Nancy Mayville indicated that, for the emergency repairs, the contractor leased the land under the bridge from the City of Portsmouth. She indicated that the NHDOT would make documents available to the contractor, referencing historical documents, and would allow them to make their arrangements for staging. The selected staging area would be reviewed for impacts to historic properties.

Joyce McKay concluded the meeting and noted that the next cultural resource meeting to discuss the Memorial Bridge Rehabilitation would be held on May 11, 2006.

**Rochester 14019. Participant: Ron Joy, McFarland-Johnson ([rjoy@mjinc.com](mailto:rjoy@mjinc.com)).**

A. Purpose of Meeting : topics

The NHDHR had requested that McFarland Johnson (MJ) investigate the following issues prior to issuing a *No Adverse Effect Memo* for the rehabilitation of the city-owned historic arch. MJ presented the following:

1. *Bridge Railing Style* ~ Confirmed that the City of Rochester prefers the 3-bar aluminum bridge railing style to the masonry post railing style.
2. *Aesthetic Bridge Railing Enhancements* ~ Discussed what modifications (if any) should be made to NHDOT standard 3-bar aluminum bridge railing to enhance aesthetics.
3. *Brick Arch Strengthening* ~ Confirmed that the strengthening alternative of installing a structural slab on top of the masonry arch was not being advanced.
4. *Mortar Type* ~ Recommended mortar type for pointing of brick and stone.
5. *Brick Hardness* ~ Provided update regarding brick hardness.
6. *Brick Cleaning* ~ Recommended general cleaning strategy for brick barrels.

B. Bridge Railing Style

At a previous Resource Meeting, MJ notified the NHDHR that the city selected the 3-bar aluminum (black anodized) bridge railing with balusters from 5 styles of bridge railings. The City requested that MJ promote this bridge railing scheme to the NHDHR. At this previous Resource Meeting, MJ presented an additional (sixth) bridge railing style (*masonry post system*) that the City had not seen at that time.

The NHDHR supported the City's choice of the 3-bar aluminum alternative at the previous Resource Meeting, but requested that MJ show the added *masonry post system* style to the City to confirm their preference of the 3-bar aluminum. MJ did this.

Though the NHDHR will accept the 3-bar aluminum for this project, we discussed the appearance of a standard T4 steel bridge rail (which has 4 horizontal rails without the pedestrian balusters) vs. the 3-bar aluminum, which would require balusters.

#### C. Aesthetic Bridge Railing Enhancements

Potential aesthetic adjustments to the bridge railing were discussed. MJ recommended that no modifications be made to the NHDOT (safety-tested) railing system, given the high traffic and pedestrian activity on the bridge. The NHDHR agreed, and also noted associated additional costs. Given that the existing bridge has modern concrete sidewalks and paved surface, it is not critical that the bridge railing match the original railing. Though it may be beneficial to match the feel of the original bridge railing's horizontal lines, the NHDHR noted that there are currently no viewing vantage points, such as a nearby parallel bridge crossing, where the general commuting public can view the bridge elevation.

#### D. Brick Arch Strengthening

MJ confirmed that placing a structural concrete slab over the existing arch barrel in order to achieve a higher load carrying capacity was not required for this project. This worked out well, as the NHDHR would not have endorsed this type of improvement. Removing the upper courses of the existing pavement and fill, and incorporating sheet membrane drainage has been recommended and is endorsed by the NHDHR.

#### E. Mortar Type

The MJ team collected 2 mortar samples: (1) original mortar bedding at a granite wing wall (beneath 2 layers of Portland cement pointing), and (2) mortar pointing and original bedding samples from the brick cavity located at the west abutment. David Bitterman conducted a microscopic review, performed initial laboratory testing, and offered the following:

1. Brick and granite bedding material obtained from the samples appear to be a natural cement mortar. This is consistent with known historical preference for using natural cement mortars in engineering structures adjacent to water so that they require binders with hydraulic properties.
2. Natural cement mortars are compatible with the mechanical properties of both brick and granite, and apparently have performed satisfactorily as bedding material for this structure.
3. Current brick and granite pointing appears to be a Portland cement mix representing a later pointing campaign(s).
4. Mortar may be classified as a "high end" Type N vs. a Type M or Type S.

David Bitterman evaluated 3 mortar pointing mixes, including: (1) Option 1 ~ Natural Cement / Hydrated Lime / Sand (2) Option 2 ~ Naturally Hydraulic Lime / Sand, and (3) Option 3 ~ Portland Cement / Hydraulic Lime / Sand. The MJ team recommended that the Option 1 mix with goal to match the sample in binder, and sand grading be incorporated into the project. The Option 1 mix would be the most compatible to the physical properties of the existing mortars and masonry units, and sufficient to withstand the environmental conditions to which it is subjected. The NHDHR concurred with this recommendation, noting that hydraulic cements had been used elsewhere in New Hampshire, specifically at Harrisville.

Although natural cements were totally eclipsed by Portland cement in the early twentieth century, production of natural cements has recently resumed. There is one producer that is capable of providing compatible natural cement. Rosendale Natural Cement (manufactured by Edison Coatings Inc.) mines natural cement in the Rosendale region of Ulster County, New York. Though sole source material procurement is not generally preferable, the NHDHR agreed that it was justifiable in this

case, given the historic character of the structure. MJ will work with David Bitterman and Rosendale Natural Cement to develop a masonry pointing specification.

#### F. Brick Hardness

MJ sounded the brick with a hammer along the arch underside and at the crown in exposed test pits. Hammer rebounds were generally solid. Mortar joints were scraped and found to be generally hard.

MJ forwarded brick specimens to a laboratory for compressive strength testing per ASTM guidelines. Compressive strengths were found to be 8900 psi and 6200 psi. From a structural analysis perspective, AASHTO load rating guidelines present service load allowable stresses for a range of compressive strengths and mortar types. The highest allowable compressive stress is allotted to grouted masonry with compressive strengths greater than 4500 psi, which was found to exist in the brick specimens.

MJ noted that it would be necessary to find replacement brick of parallel hardness. J. Garvin stated that he would recommend the name of a mason who might assist with that effort. There are needed spot repairs, especially where the water main broke. The project may require shoring to remove damaged brick and replace.

#### G. Brick Cleaning

The calcitic material on the brick surface may be lime that has been dissolved and transported by water moving through the structure, possibly by surface water that was not effectively intercepted. Though visually disfiguring, its presence on the brick is not necessarily harmful in itself, even though it can be. Addressing the drainage issues and pointing the masonry should arrest its development.

Removal of deposits is possible with (sometime acidic) cleaners marketed by companies such as ProSoCo. However, the expense and risk of cleaning the brick (including preventing runoff from cleaners reaching the river) could overshadow the benefits.

MJ initiated dialogue with NHDHR regarding whether it would be important to enhance the aesthetic character by cleaning off years of accumulated white residue staining. Consensus was that there were no significant identifiable benefits to cleaning the entire brick arch underside in areas where the existing pointing was sound, despite the variable colors of the existing pointing material, given that the brick arch barrels cannot readily be viewed by the public. There would also be a risk that improper cleaning could cause damage to the existing brick. NHDHR clearly preferred that the brick not be cleaned.

If cleaning were implemented, a performance specification that specifies using proprietary cleaners formulated specifically for use on historic brickwork, and performed by experienced personnel using the gentlest means possible, would need to be developed. It would also be recommended that cleaning procedures first be tried at different concentrations in a test area to judge their effectiveness and assess the potential of harming the actual brickwork. If this were advanced, MJ should communicate the technique and area for cleaning to NHDHR.

#### H. Conclusions

Based on the information presented, the NHDHR indicated that the “No Adverse Effect” box within the *Cultural Resource Memorandum of Effect (Municipally Managed Projects)* may be checked and the memorandum may be signed by resource team members.

#### **Stone Wall Policy:**

The discussion of the request to send material related to the stone wall policy to regional planning offices and districts as requested by Linda Wilson was discussed briefly. J. Garvin noted that a paper on the topic had been completed some time ago. He will find it, and see if it requires editing for sending as a mailing.

**Epsom Baptist Church. Participants: Jim Garvin, Phil Miles, and Kit Morgan.**

The Town of Epsom created an ad hoc committee to examine the possibility of buying and moving the Baptist Church. The current owner donated the church to the town, but set a firm deadline to move the church. The town is now looking for a temporary place to set it while it raises funds to complete the task. NHDOT had purchased the surplus parcel across from the church in 1994 and would like to sell it. Although the town had previously expressed interest in the parcel, it did not have the funds to buy it. It had petitioned for a different price, but the petition was not granted. The town is now requesting a temporary lease of the property for the church. K. Morgan asked about the potential length of the lease and expressed concern about NHDOT liability if the church were vandalized. NHDOT would need a request from the town selectmen, so that it was clear the project had the full support of the town. It was noted that there was a high-tension wire between the current property and the surplus land. The surplus parcel may not be a buildable lot. The NHDHR and NHDOT will continue to look into this request.

**\*\*Memos:** Dover, X-A000(280), 14287; Hampton, X-A000(229), 14188

Submitted by Joyce McKay, Cultural Resources Manager

c.c.	J. Brillhart	K. Cota	N. Mayville	Bill Cass
	C. Barleon, OSP	C. Waszczuk	D. Lyford	
	V. Chase	R. Roach, ACOE	H. Kinter, FHWA	

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