

Lincoln - BRF 0188(8) – Bridge 19
TH1 over New Haven River

Scoping Report

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Resource Documentation

Environmental Resources

EIV Technical Services, LLC (EIV) is the environmental consultant responsible for assessing the project site and identifying any natural resources that may be impacted by the project. EIV performed preliminary site visits October 21, 2010 and November 11, 2010.

No Rare, Threatened, or Endangered species were recorded, no unique natural communities were observed, and no jurisdictional wetland areas were observed or delineated in the project area. A summary of their report and resource mapping is included in Appendix A.

Historical Resources

A historical resource assessment was performed by Suzanne Jamele. She conducted a site visit November 11, 2010.

Based on initial findings and pending review of final design plans, the proposed project is found to have no adverse effect on historic structures. A preliminary draft of the historic structures assessment is included in Appendix B.

Archaeological Resources

Hartgen Archeological Associates, Inc. (HAA) performed the Archeological Resource Assessment for this project. A site visit was conducted November 11, 2010.

See the following excerpt from the preliminary archaeological report:

“Near the Lincoln Bridge location, there are several dry-laid stone features, including a cut and cobble stone column of unknown verifiable function, and the cut stone abutment from the earlier bridge which was damaged or destroyed in 1927, both of which are located on the northeast quadrant of the extant bridge. In addition, the present bridge is built on abutments of both cut stone and poured concrete. It is anticipated that the bridge improvements will result in impacts to some of the dry laid stone abutments directly beneath or adjacent to the bridge. However, it is recommended that an effort be made to minimize the destruction or removal of the stonework associated with these historic bridge features. The stone column/support is located approximately 60 feet east of the present bridge, and may be situated outside the project area of potential impact. If possible within the project parameters, it is recommended that the historic stone feature be left intact.”

It was also noted that further investigation may be needed for other potentially sensitive areas contingent upon the final design and construction plans. A preliminary report of findings is included in Appendix C.

Local Concerns Meeting

A local concerns meeting was conducted on April 26, 2011 in the Town of Lincoln. The meeting began with a short presentation of the Project Development Process, discussed the existing conditions of the bridge, and identified several concerns that the project design team had.

These were some of the concerns of the Project Design Team:

- Roadway Alignment
- Traffic control during construction
- Right-of-Way Impacts
- Utility Impacts
- Impacts to Historical resources
- Flood History at the site
- Bike and Pedestrian study

Several residents voiced their concerns on various issues:

- Traffic Speed – several residents wanted to maintain the alignment to reduce speeds, and some residents wanted the alignment straightened to increase safety
- Pedestrian/Bicycle Safety
- Condition of the Existing Bridge
- Bridge Railing sight lines
- Maintaining Emergency Services During Construction

Minutes from the Local Concerns Meeting can be found in Appendix D.

Purpose and Need Statement

Based on the Local Concerns meeting, resource delineation, and the existing site conditions, a Purpose and Need Statement was generated. This Statement defines the existing problem and aims to show conclusive evidence that the project is warranted and is the baseline of the definition of the project scope.

The Purpose and Need Statement is as follows:

Purpose:

The purpose of the Lincoln BRF 0188(8) project is to improve safety, improve structural capacity and longevity, and enhance pedestrian and bicycle movements.

Need:

The safety of Town Highway 1 is considered deficient based on the roadway width and structural capacity of the bridge over the New Haven River. The following deficiencies define the need for the facility improvement:

1. Roadway Width

The roadway lane and shoulder widths are below those required by the Vermont Standards for Collector Roads and Streets and are not adequate for the safety of pedestrians and bicycles which frequently travel this roadway.

2. Structural Capacity

The superstructure and substructure of the bridge on Town Highway 1 is deteriorating which affects the capacity of the bridge.

Alternatives Study

Once the resource impacts were identified, the town voiced their concerns, and a clear and concise Purpose and Need Statement was created the design alternatives can be evaluated.

There are several factors which were considered to evaluate each alternative:

- Cost
- Traffic Control
- Construction Duration
- Does it satisfy Purpose and Need Statement?
- ROW
- Hydraulics
- Permits
- Impacts

A matrix was constructed to assess each of these factors for each of the alternatives. The complete matrix is included in Appendix E.

Alternative A: Do Nothing

This Alternative does not meet the requirements of the Purpose and Need Statement therefore it is not a viable Alternative.

Alternative B: Bridge Rehabilitation

This alternative also does not meet the requirements of the Purpose and Need Statement therefore it is also not a viable option.

Alternative C: Phased Construction

This alternative does meet the requirements of the Purpose and Need statement, so it is a viable option. Construction duration, project costs and ROW impacts are greatest for this alternative. The construction period would most likely encompass two seasons and the cost of the project would be significantly higher because the project would be built in two halves and it would last more than one season. This alternative also has the largest permanent ROW impact.

While there are many drawbacks to this design option, the road would not be closed for a significant portion of time and emergency vehicles would be able to access the southern portion of the town.

Alternative D: Temporary Bridge

The Purpose and Need Statement is accomplished for this alternative. The largest negative for this alternative is the lost cost of the temporary bridge. The construction duration is still a

complete construction season and the ROW impact, while mostly temporary, are greater than other alternatives. Any ROW impacts will slow the design and construction durations.

The use of a temporary bridge enables the contractor to construct the bridge in one phase and therefore save the cost of phased construction. However, the cost savings from this will be offset by the cost of the temporary bridge, therefore negating most of the benefit. The bridge will be open to one lane of alternating traffic throughout the duration of the project.

Conceptual plans showing Alternatives C and D are included in Appendix F.

Preferred Alternative

Alternative E: Bridge Closure

After comparing each of the previous alternatives to the evaluation factors, it became apparent that an innovative solution may be warranted to offset the challenges of this project and to meet the concerns of the town.

The general message at the Local Concerns Meeting was that the town wanted the bridge to remain on its current alignment and that they wanted to move the project along diligently. The most efficient way to shorten the design and permitting stages of a project is to limit the impacts. Closing the bridge and building the proposed bridge on the existing alignment will have the least amount of impacts.

One of the major concerns of the town, as stated in the Purpose and Need Statement, was the safety of bicycles and pedestrians. A town wide bike/pedestrian study was conducted and our design has reflected the recommendation of widened shoulders for both sides of the bridge.

Recognizing that this bridge is extremely important to emergency services, school transportation and general travel in the town, it was understood that the bridge could not be closed for an extended period of time. Accelerated bridge construction techniques will be utilized to speed the construction duration. It is estimated that these techniques will allow the bridge to be closed for approximately two months. This timeframe would not hinder school transportation and would only conversely affect travel in the town for a short time. These techniques are becoming standard practice in the design and construction industries and they are encouraged by VTrans.

Not only does this alternative meet the Purpose and Need Statement, have the least amount of impacts, and address local concerns, but it is the least expensive alternative by a substantial margin. The savings in time is relative to the savings in cost. More times than not, the faster the project is built, the lower the construction cost.

Once we had decided that closing the bridge and using accelerated construction techniques to shorten the closure timeframe, design alternatives were evaluated in both steel and concrete. While both options would have worked in this location, pre-cast prestressed concrete box beam bridges can be constructed in a shorter time frame. There was some concern that these large pre-cast concrete beams would be too large to be shipped to the site, but we have contacted a local precast supplier and they have told us that the beams can be shipped to this project site.

A preliminary hydraulics evaluation was completed and a memo is included in Appendix G. The proposed hydraulic opening will be larger than the existing opening. This is mostly accomplished by removing the pier in the river. The proposed abutments are located in the same location as the existing abutments. Based on our preliminary findings, there is more than 1' of freeboard for the proposed structure at the Q_{50} storm. The proposed abutments do not impede the flow at the $Q_{2.33}$ storm.

Design plans of the preferred alternative are included in Appendix H and the meeting notes from the Alternatives Meeting are included in Appendix I.

Appendix A – Environmental Assessment


EIV Technical Services, LLC

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 Tel: 802-244-7453
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February 15, 2011

Mr. Adam Stockin, P.E.
 Senior Structural Engineer
 Parsons Brinckerhoff
 650 Elm St., 5th Floor
 Manchester, NH 03101

**Re: Natural Resource Evaluations
 Lincoln BRF 0188(8)
 EIV Project #1382.2**

Dear Mr. Stockin:

With this letter, EIV Technical Services, LLC is documenting both our remote and on-site natural resource evaluation at the bridge project referenced above. The structure is in Lincoln VT and was originally constructed in 1934. It spans the New Haven River and is in need of substantial rehabilitation or reconstruction. Our 2010 natural resource evaluation of the area surrounding the bridge was in support of conceptual design work for a replacement structure at the location. The evaluation coincided with topographic survey work conducted by Vermont Survey and Engineering (VSE).

Methods

Our remote evaluation of natural resources around the bridge involved queries of the VT Agency of Natural Resources' (ANR) GIS database and USDA Soil Survey records. Any occurrences of documented wetland communities in the vicinity of the bridge were recorded. Records of unique natural community types, and Rare, Threatened, or Endangered (RTE) species in the vicinity of the bridge were also queried. This information was compiled and used to guide the subsequent field investigation. Graphics depicting these resource polygons around the bridge are attached for your review.

EIV delineates and characterizes wetlands in the field using methods outlined in the US Army Corps of Engineer's (COE) Northcentral and Northeast Interim Regional Supplement dated October 2009. Field visits are also used to locate any other protected natural resources in the project area that were identified during our remote assessment. The investigated area at the bridge approximately corresponded to the topographic survey limits as defined by Parsons Brinckerhoff and conveyed to VSE. A larger area was evaluated where a protected species was documented to occur in the near vicinity or where the anticipated construction is proposed to take place off of the existing roadway alignment.

Findings

A preliminary field visit was made to the bridge site on October 21, 2010 while in the vicinity conducting other work. This site visit was intended to identify hydrophytic plant

species and better characterize any wetland habitat occurring in the project area before the seasonal dieback. A subsequent site visit was completed during the team meeting you coordinated on November 11, 2010.

A brief summary of my relevant findings follows:

Bridge 19, Lincoln

This bridge is found in a rural setting and on Lincoln Town Highway #1. The proposed replacement structure is to be wider than the existing bridge and likely built upstream, off of the current alignment. The old bridge will likely serve as a detour in some fashion during construction. The remote assessment of the project area revealed no wetlands or other unique natural resources occurring in the vicinity. Soils in the area were mapped as poorly-drained 'Limerick Silt-loam' and are often found to be hydric in the field.

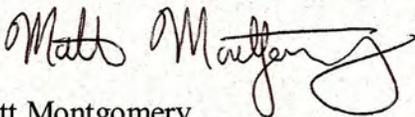
No indication of wetland plant communities or wetland hydrology was observed during either visit to the Lincoln site. The channel of the New Haven River at the bridge location is deeply incised with steep banks. Soils were largely non-existent within this lower floodplain area and bedrock outcrops were common throughout. Soils above the upper bank were bright and dry. No wetlands were delineated within or around the proposed work area and no unique natural communities were observed.

All work below the Ordinary High Water level will require approval from the US COE and coordination with the VT River Management Section of the VT Agency of Natural Resources.

In summary, no Rare, Threatened, or Endangered species are recorded to occur in or around the project area. No unique natural communities were observed and no jurisdictional wetland area was observed or delineated within the investigated area.

Thank you for the opportunity to work with you on this project. Please contact us if you have additional questions.

Sincerely,
EIV Technical Services, LLC



Matt Montgomery
Ecologist

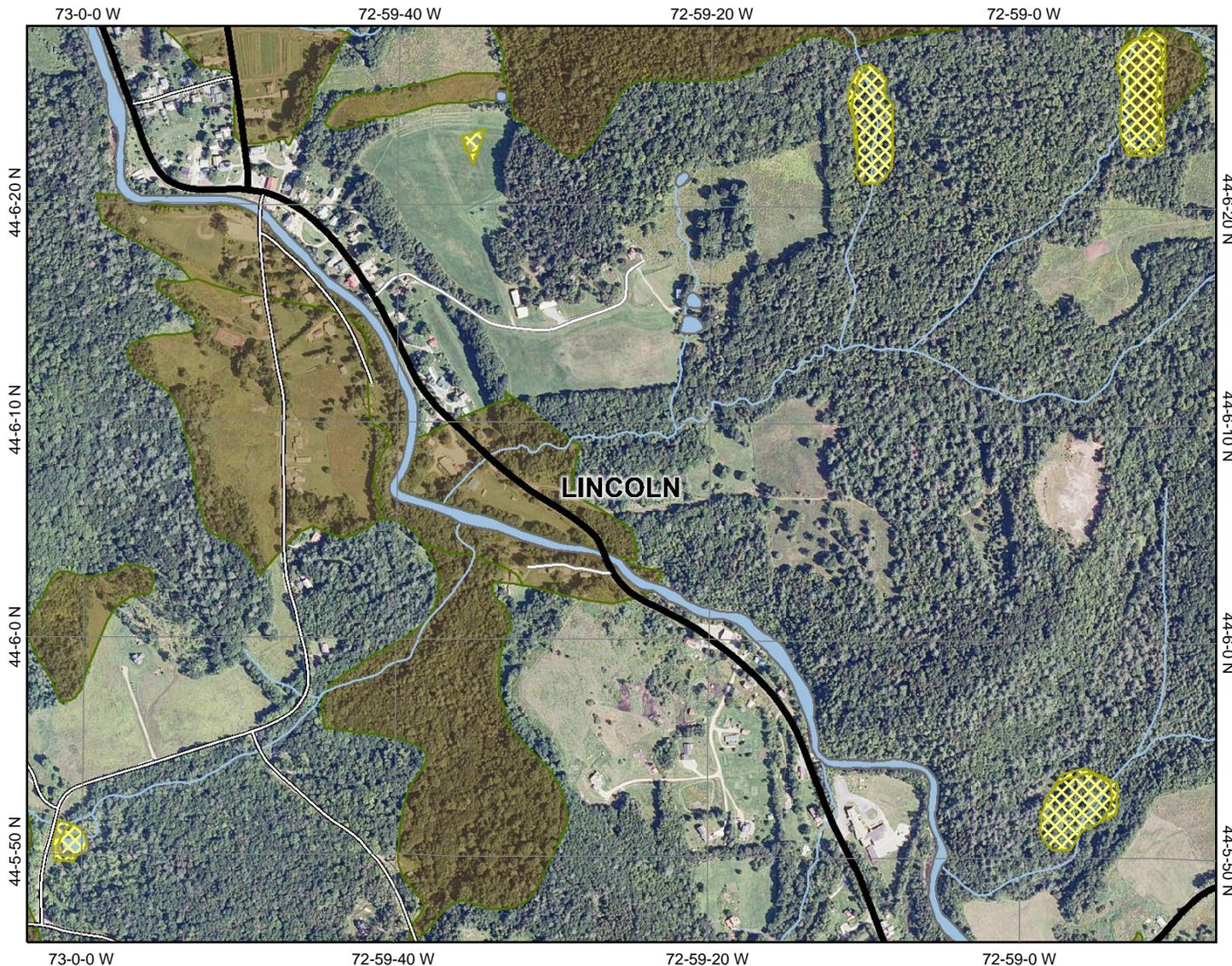
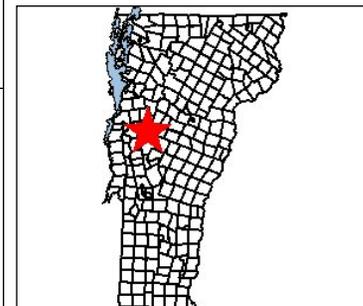
Enc:
Mapped GIS Resource Data Graphics



ANR Environmental Interest Locator

Vermont Agency of Natural Resources (ANR)

Lincoln Bridge



Legend

Roads

- US Highway
- Vermont State Highway
- Class One
- Class Two
- Legal Trail
- Emergency U-Turn Area
- Proposed Class Two
- Proposed Class Three
- Proposed Vermont State Highway
- Proposed US Highway
- Proposed Interstate
- Discontinued Interstate
- Class Three
- Class Four
- State/National Forest Highway
- Military Road (No Public Access)
- Private Road
- Wetland Advisory Layer: Class 3 Wetlands

VSWI

- Class 1 Wetland
- Class 2 Wetland
- Rare, Threatened, and Endangered Species
- Threatened or Endangered
- Rare (Not T or E)

Significant Natural Communities

- Palustrine
- Terrestrial
- Hydrography Lakes and Ponds (VHD 5k)
- Hydrography (VHD 5k)
- Deer Wintering Areas
- VT County Boundary

Hydric Soils

- Hydric Soils
- VT Town Boundaries (No Fill)
- NAIP Color Orthophotos 2009
- VT State Boundary (Fill)

VT State Plane Meters (NAD83)



Map center: 460732, 178090



DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. VCGI and the State of Vermont make no representations of any kind, including but not limited to the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

Notes: Wetlands, RTE Species, (Hydric Soils only)

URL: http://maps.vermont.gov/imf/sites/ANR_NATRESViewer/jsp/launch.jsp

Appendix B – Historical Assessment

**Historic Structures Assessment for the Lincoln Bridge # 19 Replacement
Lincoln, Vermont**

Prepared for:
The Preservation Company
5 Hobbs Road
Kensington, NH 03833

Prepared by:
Suzanne Jamele
Historic Preservation Consultant
1 High Street
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December 10, 2010

Lincoln Bridge #19 Replacement
Lincoln, Vermont
Historic Resource Identification and Preliminary Findings of Effect
December 2010

Introduction

This report will provide comments on the above-referenced project pursuant to 36 CFR 800.4, regulations established by the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act. Project review consists of evaluating the project's potential impacts to historic buildings and structures, historic districts, historic landscapes and settings, and known or potential archeological resources.

This report identifies historic resources within the proposed project's Area of Potential Effect (APE), "the geographic area within which the project may cause changes to the character or use of the historic properties" [36CFR 800.2(c)] that are listed on or appear to be eligible for listing on the National Register of Historic Places. The report also provides a preliminary assessment of effect based on conceptual ideas for project plans. A site visit was conducted by the consultant on November 11, 2010, at which time photographs were taken. File review to identify sites in the project area was undertaken at the Vermont Division for Historic Preservation in Montpelier, VT. Literature review and historic maps were consulted at the Vermont Historical Society Library in Barre.

Project Description

The proposed project involves replacement of town owned Bridge #19, over the New Haven River, located on Town Highway 1, otherwise known as East River Road, in Lincoln. The bridge is a steel beam and concrete deck structure built in 1934 and reconstructed in 1978 (see attached as-built plans), that measures 21.3' curb to curb. Inspection reports from 2008 and 2010 found the substructure, deck, and superstructure to be severely deteriorated. The new bridge is proposed to be a single span but slightly wider than the existing, 22-24 feet curb to curb and may also have a sidewalk. Replacement is proposed slightly off alignment with some approach work to straighten out curves, roughly 500 feet, at each end of the bridge. The project is in the early stages of development and assumes the bridge may have a temporary bridge built just downstream (west). Project plans have not yet been developed.

The project area is located along a paved rural road just south of Lincoln village. The bridge is set in a narrow, wooded river valley and the road has sharp curves at each end of the bridge. There are no structures in three quadrants surrounding the bridge. There is a 19th century house immediately southwest of the bridge. The proposed project's Area of Potential Effect includes the project's limits of construction- which have only been informally defined, staging area, and the property near the southwest end of the bridge whose setting has the potential to be affected by the project.

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Description of Resources

Bridge #19- The c. 1934 steel beam and concrete deck bridge is not listed on the State or National Registers of Historic Places. It was not included in the Vermont Historic Sites and Structures Survey for the town of Lincoln conducted in 1983 and updated in 1992. There has been no comprehensive inventory of this bridge type in Vermont. Consultation of 19th century maps indicates there has been a crossing in the location of Bridge #19 since before the mid-19th century. The 1871 Beers Atlas and 1857 Wallings map all show crossings in this location. The 1796 Whitelaw map has no crossing.

The existing bridge, set on a tangent, is 128 feet long, and has two spans of 64' with a 21.3 foot curb to curb width. The bridge is composed of five rusted, scaling steel I-beams that carry a scored, reinforced concrete deck with concrete curbs. A modern steel guard rail lines both sides of the concrete deck. The bridge underwent substantial reconstruction in 1978 receiving a new concrete deck, curbing, and guard rails. The bridge rests on reinforced concrete abutments. The southern abutment rests on ledge and is more substantial in size and has a broad, scored wingwall on the southeast side. There is substantial riprap at the base of the northern abutment. The bridge is carried by a scored, tapered reinforced concrete pier that originally had conical concrete caps that were removed in the 1978 reconstruction. The pier and abutments are set on a 45 degrees skew. The concrete is severely spalling and has lost the smooth facing on many components in many locations. Areas of the deck, pier and abutments have lost fabric completely.

The bridge is typical of highway bridges built in the 1930s in Vermont and represents bridge construction techniques that continue to be employed to the present day. Standardized approaches to construction of steel beam and concrete deck bridges were developed by state highway engineers in the 1930s as a result of widespread bridge rebuilding after the 1927 flood (1,285 bridges were lost), along with the growing demand for wider and safer bridges to accommodate the growing use of automobiles in the 1930s. Larger spans employed piers and rolled I-beams supporting concrete decks. Bridge #19 is representative of these techniques. Scored abutments, piers and decks gave reinforced concrete the look of masonry and added visual appeal. Decorative concrete railings and posts of various types were added to bridges to provide functional ornamentation. In the 1930s, railings composed of closely spaced ornamental concrete posts evolved into more widely spaced ornamental posts with cable railings strung between them, as employed on this bridge. This was a response to a concern that the earlier rails were visually distracting and led drivers to drift to the center of the road. It is likely that this bridge originally had concrete posts and cable railings that were removed during the 1978 reconstruction. The use of skewed piers and abutments was another 1930s improvement developed to eliminate sharply angled approaches. By the end of World War Two rolled steel I-beam bridges with concrete decks were the most common bridge type being constructed in Vermont. Construction after the War continued to employ this design and it remain the most common bridge in the state.

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Bridge #19 does not appear eligible for the National Register due to alteration and significant deterioration. Although the bridge is a typical example of the type of steel beam and concrete deck bridges being constructed in Vermont in the 1930s, the 1978 reconstruction that resulted in the loss of the original deck, curbing, and railing and the addition of the modern metal guard rail, have significantly altered the original design of the structure. In addition, severe deterioration of the concrete abutments and pier have compromised its structural integrity. The rusted I-beams show signs of metal fatigue. Since it is a common bridge type in Vermont, there are more intact examples. The bridge is neither a highly intact, rare, precedent setting or early example of its type.

Laid Up Stone Foundations-To the northeast of the existing bridge are a series of large laid up stone foundations along the river bank that may be mill ruins and/or abutments from an earlier bridge. The ruins are not eligible for the National Register as above ground structures. They may have significance as historic archeological resources and will be addressed by Hartgen Archeological Associates in their report for this project.

466 East River Road - This property, is included in the 1992 update of the Vermont Historic Sites and Structures Survey for the town of New Haven originally conducted in 1983. Identified as property # 32 in the survey update, it is listed on the State Register of Historic Places and is eligible for the National Register with local significance under criteria A and C as an example of a vernacular c. 1875 house. The house may be related to nearby 19th century mill activity but does not appear on the 1871 Beers map. The 3x2 bay, 1 1/2 story, eaves front, gable roof, wood frame house has a 3x1 bay, 1 1/2 story ell on its east end. The building's steeply pitched asphalt shingle gable roof has wide overhanging eaves and high knee walls. Walls are clapboard sided with wide corner boards and plain trim around windows and doors. A central front door is sheltered by a modern gable roof hood and is flanked by pairs of 1/1 windows. All sash on the house are 1/1 replacements. There is a door in the wing's third bay that is sheltered by a shed roof hood with straight bracket. A modern sliding glass door rests in the wing's gable end wall. A 20th century, gable roofed, garage with overhead door and board and batten siding stands to the west of the house.

The property stands in a clearing near the river, immediately southwest of Bridge #19 and is not expected to be impacted by the project. Changes to approaches, slightly new bridge alignment, and location of temporary bridge, should all aim to keep the building outside the limits of construction. These potential activities will not substantially alter the setting of the building nor will replacement of the existing bridge with a slightly larger one.

481 East River Road- This property lies to the southwest of Bridge #19 and is beyond the proposed project area but is a potential staging area. Currently the property houses the town garage and the structure that remains, a c. 1960 gable roof building sided with corrugated metal panels, is not considered historic. The 1983 Vermont Historic Sites and Structures Survey for the town of Lincoln, identified a former grist mill building (#0110-59) on this site that is no longer standing. It was not included in the 1992 survey update and was likely not extant at that time.

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C.S.H. Butterfield originally built a grist mill and saw mill on this site, both of which appear on the 1857 Wallings map and were destroyed by a flood in 1869. The grist mill was rebuilt immediately, appearing on the 1871 Beers map. Butterfield sold the mill at the turn of the 20th century to S.H. Buell who was still operating it by 1925.

574 East River Road- This property lies to the southwest of Bridge #19 and is beyond the proposed project area. However, it is worth noting its presence to ensure there will be no encroachment on the property in activities related to the project. It consists of a c. 1835 vernacular Federal style 1 ½ story, 3x3 bay, gable front house with long ell on a stone foundation. The clapboard house has cornerboards, wide frieze and cornice returns. The central entry is surrounded with pilasters and a full entablature. There are mature trees in front of the house that contribute to its setting and should be avoided during construction. The house appears on the 1857 Wallings map as the home of D. Hill and on the 1871 Beers map as the home of S.M. Colby. The house is included in the 1983 (#0110-58) and 1992 (#59) Vermont Historic Sites and Structures Survey for the town of Lincoln, is listed on the State Register and is eligible for the National Register.

Assessment of Effect

The proposed project is in the preliminary planning stages. Formal findings of effect for Section 106 will be based on final project plans when they become available. Based on conceptual plans, the proposed project, to remove the existing 21.3 foot wide steel beam and concrete deck bridge and construct a new 22-24 foot wide one, perhaps with a sidewalk as well, slightly off the existing alignment, along with some limited approach work to straighten out curves, and likely construction of a temporary bridge, will not directly affect any historic resource in the APE and will not significantly alter the setting of any historic structures. The existing bridge does not appear eligible for the National Register. Since it is not eligible for the Register and is not in an historic district or serve as the gateway to a district, it is not necessary to develop a special design replicating features or to be compatible with a surrounding district. The historic buildings to the south of the bridge are expected to be outside the limits of construction. Since limited approach work is anticipated, impacts to the setting of these buildings should be minimal. The mature trees in front of #574 should be avoided, if possible, as they add to the setting and character of this historic house.

In summary, it is anticipated that upon review of final project plans the proposed project will be found to have no adverse effect on any historic structures.

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Attachments

1. Bibliography
2. Location Map
3. Historic Resources map
4. Photographs
5. Historic maps
6. Vermont Historic Sites and Structures Survey Excerpts
7. 1978 As-built plans

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Project Location Map



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Historic Resources Map



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1. Looking north at east side of Bridge #19 and laid up stone ruins at right.



2. Looking north at scored pier without conical cap, steel I-beams, concrete deck curbing, and replacement guard rails on east side of bridge.

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3. Looking south at concrete deck and replacement steel guard rail on west side of bridge.



4. Looking east at steel I-beam stringers and replacement concrete deck on west side.

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5. Looking west at deterioration on west pier and rusted stringer on east side.



6. Looking south at deteriorated east pier and rusted stringer.

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7. Looking west at deteriorated concrete on east pier and rust and scaling on steel I-beams.



8. Looking southwest at east side of south abutment and bridge.

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9. Looking east at north abutment and stringers.



10. Looking north at ruins adjacent to east side of bridge.

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11. Looking east at foundations.



12. Looking north at foundations.



13. Looking north at foundation next to northeast end of bridge.



14. Looking northeast at eastern foundation.

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15. Looking southwest at #466, c. 1875 vernacular house.



16. Looking west at #466 garage, c. 1970.

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December 2010



18. Looking northwest at #481, c. 1960 town garage at location of no longer standing grist mill.



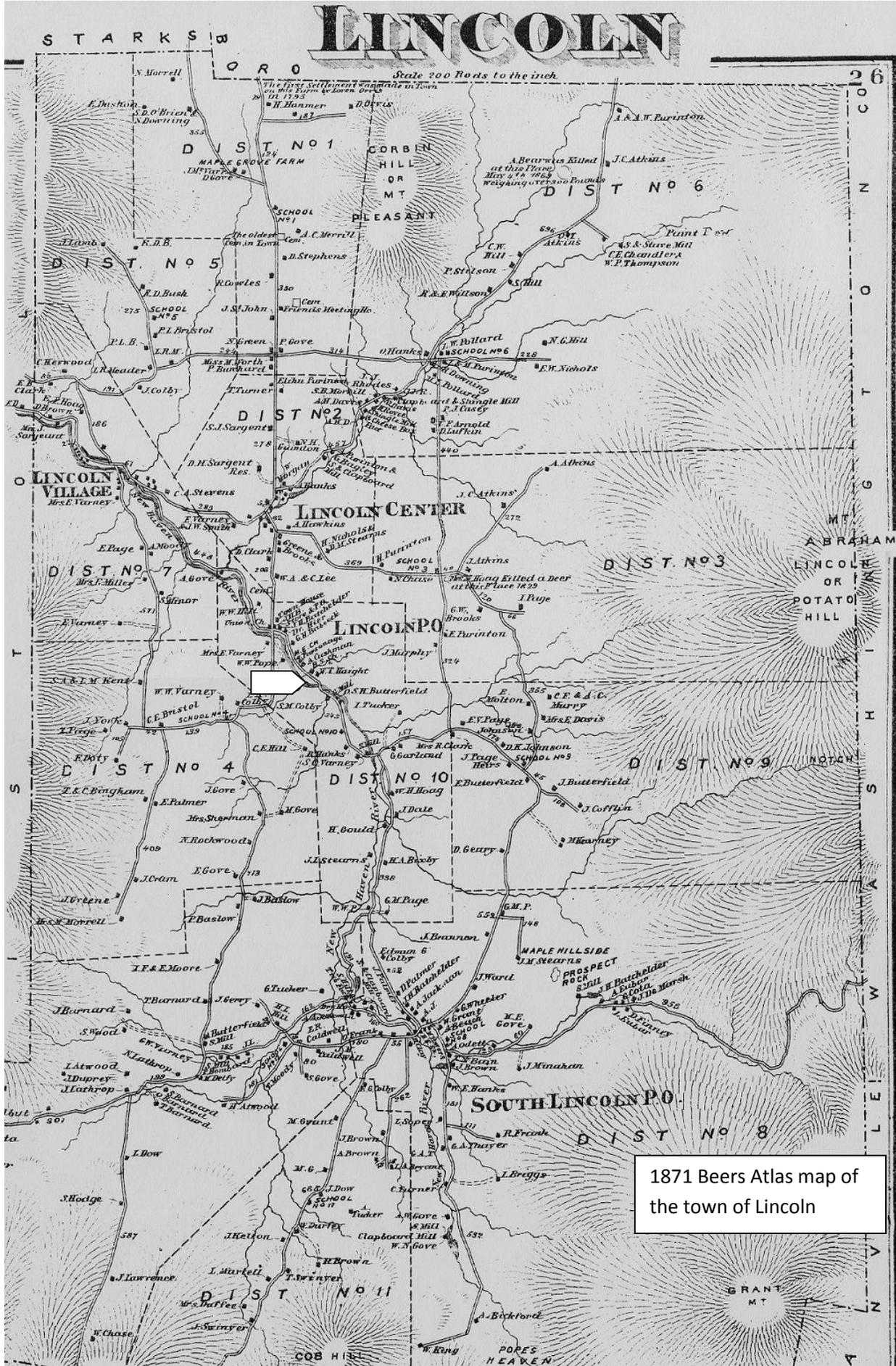
19. Looking south at #574, c. 1835 Federal style house and mature tree.

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1857 Wallings map of the town of Lincoln

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1871 Beers Atlas map of the town of Lincoln

Appendix C – Archaeological Assessment

**HARTGEN**

archeological associates inc

ARCHEOLOGICAL RESOURCE ASSESSMENT**Lincoln Bridge (Bridge #19)**

Town of Lincoln
Addison County, Vermont

HAA # V544-11

Submitted to:

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June 2011

ARCHEOLOGICAL RESOURCE ASSESSMENT

INTRODUCTION

Hartgen Archeological Associates, Inc. (HAA, Inc.) was retained by Parsons Brinckerhoff to conduct an Archeological Resource Assessment (ARA) for the proposed bridge rehabilitation project located in Lincoln, Addison County, Vermont (Map 1). The proposed work will be conducted on the Lincoln Bridge (Bridge #19), built in 1934, which is located on Town Highway 1 over the New Haven River. The rehabilitation of the Lincoln Bridge will most likely be a widened replacement off line. The bridge is on a short tangent in between two curves, and traffic control is going to require a temporary bridge and/or phased construction. Depending on the final solution, there will be some approach work, measuring approximately 500 feet, on each end of the bridge.

This review and sensitivity assessment was conducted to comply with Section 106 of the National Historic Preservation Act. The investigation was conducted according to the Vermont State Historic Preservation Office's Guidelines for Conducting Archeology in Vermont (2002). This project will be funded in part by the Vermont Agency of Transportation (VTrans), and the ARA report will be reviewed by the VTrans archeology officer for concurrence.

RESEARCH DESIGN

The project objectives are to identify areas of archeological sensitivity based on environmental factors, known site information and historical information for the project Area of Potential Effect (APE). Reference to the general project vicinity is provided as appropriate to understanding the local cultural and historical context. Background research was conducted at the Vermont Division for Historic Preservation (VDHP) where archeological site files, National Register (NR), State Register (SR) and town information were reviewed. A site visit was conducted by Elise Manning Sterling on November 11, 2010 to observe and photograph existing conditions within the project area.

ENVIRONMENTAL BACKGROUND

Present Land Use

The project area is located in the Town of Lincoln within the New Haven River valley, situated within the western limits of the Green Mountains. The extant Lincoln Bridge, constructed in 1934, measures 128 feet in length, and is aligned north-south across the New Haven River. The bridge is located on Town Highway 1 south of the Village of Lincoln.

Physiography, Hydrology and Soils

Environmental characteristics of an area are significant for determining the sensitivity for archeological resources. Precontact and historic groups often favored level, well-drained locations near wetlands and waterways. Therefore, topography, proximity to wetlands, and soils are examined to determine if there are landforms in the project area that are more likely to contain archeological resources. In addition, bedrock formations or other lithic sources may contain resources that may have been quarried by precontact groups. Other locations can also be special purpose sacred and traditional use sites. Soil conditions can provide a clue to past climatic conditions, as well as changes in local hydrology.

The project area is located on the New Haven River, at an elevation of 997 feet (309 m) above mean sea level (amsl) at the western edge of the Green Mountains. The Lincoln Bridge and New Haven River are located in a valley bound to the west by a ridge containing South Mountain, which rises to an elevation of 2,230 feet (691 m) amsl, located approximately 2.1 miles distant, and a ridge to the east dominated by Mount Abraham

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(4006 feet, 1242 m), located three miles (4.8 km) to the northeast. The project APE is located approximately 4,860 feet (1.48 km) south of Beaver meadow Brook, 800 feet (244 m) south of an unnamed tributary located on the east side of TH 1, 700 feet (213 m) south of an unnamed tributary located on the west side of TH 1, and 1,315 feet (400 m) north of the confluence of an unnamed stream.

The soils located within the project area include the Limerick series which form in loamy alluvium on flood plains. The soils have a water table at depths of 0 to 1.5 feet below the surface, and are frequently flooded for brief duration from late Fall through late Spring. These soils are characteristically very deep to bedrock and poorly drained (USDA 2005).

Current Contitions

The southeast quadrant of the bridge is characterized by the presence of bedrock and slope down to the river. A portion of the dry-laid stone bridge abutment is visible under the roadbed at this locale (Photo 1). Bedrock and steep slope are also present southwest of the bridge, as well as a 19th-century residence located on a small level elevated terrace (Photo 2). Northwest of the bridge, there is steep slope down into the river channel, where there is exposed bedrock, as well as large stones, most likely originating from an earlier stone bridge abutment (Photo 3). The landform to the northeast of the bridge is characterized by uphill slope to the north, and downhill slope to the river to the south.



Photo 1. Steep slope, exposed bedrock, and the stone bridge abutment are visible on the southeast corner of the bridge. View is to the south.

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Photo 2. Steep slope and exposed bedrock are visible on the southwest corner of the bridge. The roof of the late-19th to early 20th-twentieth century house situated on the higher terrace is visible above the bridge railing. View is to the south.



Photo 3. Slope, exposed bedrock, and stone rubble are visible on the northwest corner of the bridge. View is to the north.

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An extensive intact portion of an earlier stone bridge abutment is evident directly east of the present extant bridge (Photo 4). The base of the stone abutment is built on top of a very thin terrace situated a few feet above the water level (at the time of the site visit). The bridge which had been situated on top of this stone abutment was seriously damaged in the devastating floods of 1927 (Floyd Hall, personal communication). The stone construction of this abutment indicates masterful masonry work, with tightly laid cut stone capped with large finished stone slabs (Photo 5).



Photo 4. An overview of the area and features located northeast of the bridge.
View is to the north.



Photo 5. The stone abutment from the bridge which washed away in the 1927 flood is visible on the left. The stone column feature is located further to the right. View is to the north.

Further to the east of the abandoned stone bridge abutment is a stone column which was built on the same small terrace above the river (Photo 6). The dry-laid stone column is constructed of large rounded cobbles, as well as cut stone, as evidenced by the presence of a drill hole (Photo 7). This feature appears to be relatively intact, and mostly complete - with a finished west side (face) and south side, joined at a 90 degree angle (Photo 8). The construction of this feature differs greatly from the adjacent 19th-century bridge abutment (Photo 5). The drylaid stone column was constructed directly onto a bedrock outcrop. The builder of this feature made use of large boulders as well cut stone, suggesting a more expedient type of construction. The definite function of this feature is unclear.

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Photo 6. Photo shows a close-up view of the southwest corner of the stone column feature.
View is to the northeast.

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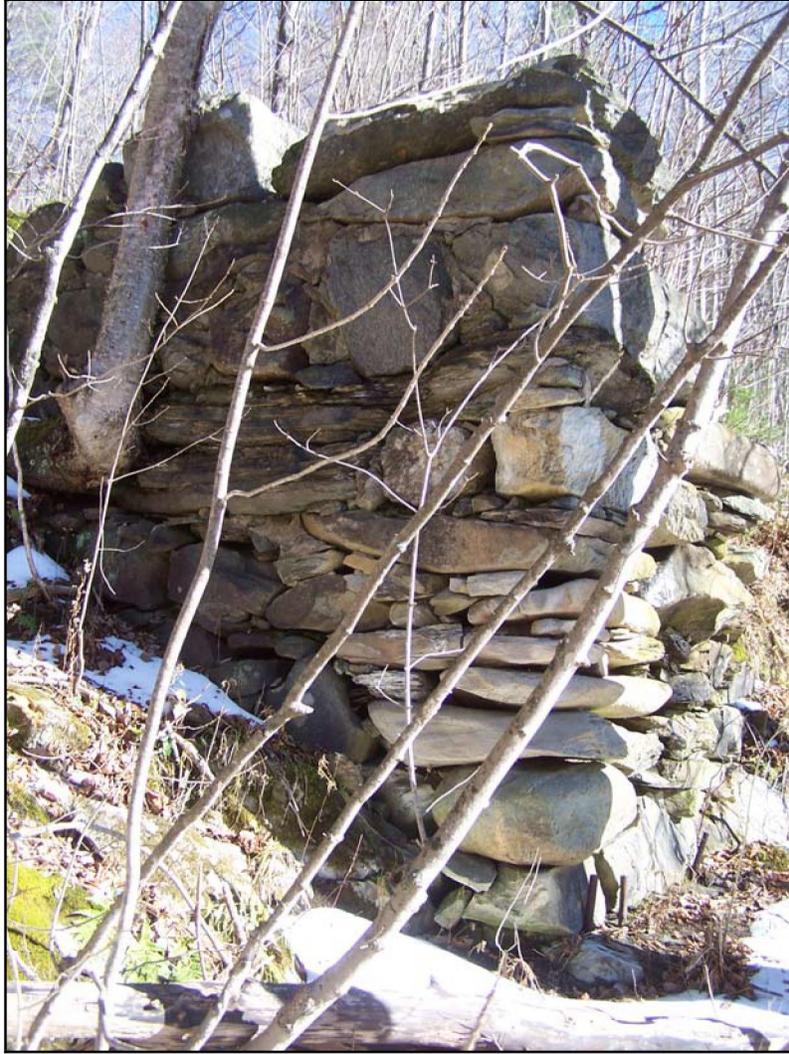


Photo 7. Photo shows a close-up view of a cut stone block with drill hole located in the stone column feature. View is to the northwest.



Photo 8. Photo shows a close-up view of the stone materials and masonry technique associated with the earlier stone bridge abutment. View is to the north.

DOCUMENTARY RESEARCH

Precontact Site File Research and Archeological Sensitivity

Examination of VDHP site files indicate that there are no precontact sites located within a two mile radius of Bridge # 19. The VDHP Environmental Predictive Model was completed for the project area which produced an overall rating of 32 (Appendix I), indicating precontact sensitivity. The project area received points based on its location adjacent to a river, situated within a travel corridor, and the presence of floodplain soils.

The Vermont Division for Historic Preservation Internet Mapping Site was accessed and used to formulate the archeological sensitivity of the proposed project area (VDHP 2009). The mapping site evaluates the precontact potential of all areas of Vermont, based on 11 environmental factors, such as the presence of specific terrain, soils, or proximity to streams or wetlands. If an area possesses just one of these environmental characteristics, it is considered by the Vermont Division for Historic Preservation (VDHP) / State Historic Preservation Officer (SHPO) to be archeologically sensitive. Based on the Vermont ArcheoMap Information System, the project area possessed three sensitivity factors, including the proximity to a river, proximity to a waterbody, as well as the presence of floodplain soils.

The paucity of recorded precontact sites would seem to suggest the area's limited use in precontact times. While the mountain environment may have discouraged intensive precontact habitation of this area, the terrain would be conducive for small hunting camps. Lacy has documented high elevation precontact sites in the Green Mountains (Lacy 1994; 1997). The dearth of reported sites along the New Haven River in the

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project vicinity may be more likely a result of lack of archeological testing than the actual absence of sites, as well as a tendency towards low density and/or seasonal or intermittent camp sites. While there may be potential for precontact sites located adjacent to the New Haven River on areas of level terrain, the terrain located directly adjacent to the APE is relatively sloped, and not conducive to precontact occupation.

National and State Registers

There are no National Register Historic Sites within or adjacent to the project area. In the project vicinity, there are three individual 19th-century structures which are listed on the Vermont Historic Sites & Structures Survey (VHSSS). The two domestic residences listed on the VHSSS situated closest to the APE include the c. 1840 Vernacular Style Cushman House, located approximately 870 feet (265 m) north of the bridge on the east side of the TH1, and the c. 1835 Vernacular Federal Style Pierce House, located approximately 560 feet (170 m) south of the bridge on the west side of TH 1.

A 19th-century grist mill building, which comprises a portion of the Lincoln Town Shed, located approximately 780 feet (237 m) south of the project area, on the east side of TH1, is also listed on the VHSSS. The Lincoln Town Shed is comprised of three separate architectural components, including a c. 1870 wood-frame grist mill with fieldstone foundation, a c. 1940 shed-roofed frame addition, and a c.1960 low-pitched gabled ell. The form summarizes the significance of this building in Lincoln's history:

The grist mill is the best preserved in Lincoln, the other mills having suffered from floods, fires and economic change. It sits on a high foundation on a site that slopes steeply down to the New Haven River.The original section of the building is unused, and contains sections of old shutes, a hopper and other scattered remnants of mill machinery. Although this was not Lincoln's first grist mill, by 1886 it was its only one. C.S.H. Butterfield owned it then (Smith), selling it at the turn of the century to S.H. Buell, who operated it until 1925. Butterfield's original grist mill and sawmill on this site were swept away in the 1869 flood (Smith, p. 500). Beer's map of 1871 apparently shows that Butterfield rebuilt the grist mill immediately (afterward). (VHSS 1983)

Lincoln Vermont History, provides several photographs of the mill, one taken in 1900 when the structure was still known as S.H. Buell's grist mill, and the other taken in 1925 when it had become the town garage. These photos reveal that a small shed-roofed and open carriage shed built onto the site of the current shed-roofed addition which was present in 1900, had been removed by 1925 (Photos 9-10) (Lincoln Historical Society 2007). Another photograph shows the dam associated with the grist mill, with the mill evident in the foreground (Photo 11). A close-up view of the dam reveals a stonework abutment which bears a striking resemblance to the standing stone column located on the northeast quadrant of the project area (Photo12).

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Photo 9. S.H. Buell's Grist Mill c. 1900 (Lincoln Historical Society 2007).



Photo 10. "Old Grist Mill, now Town garage....c. 1925. (Lincoln Historical Society 2007).

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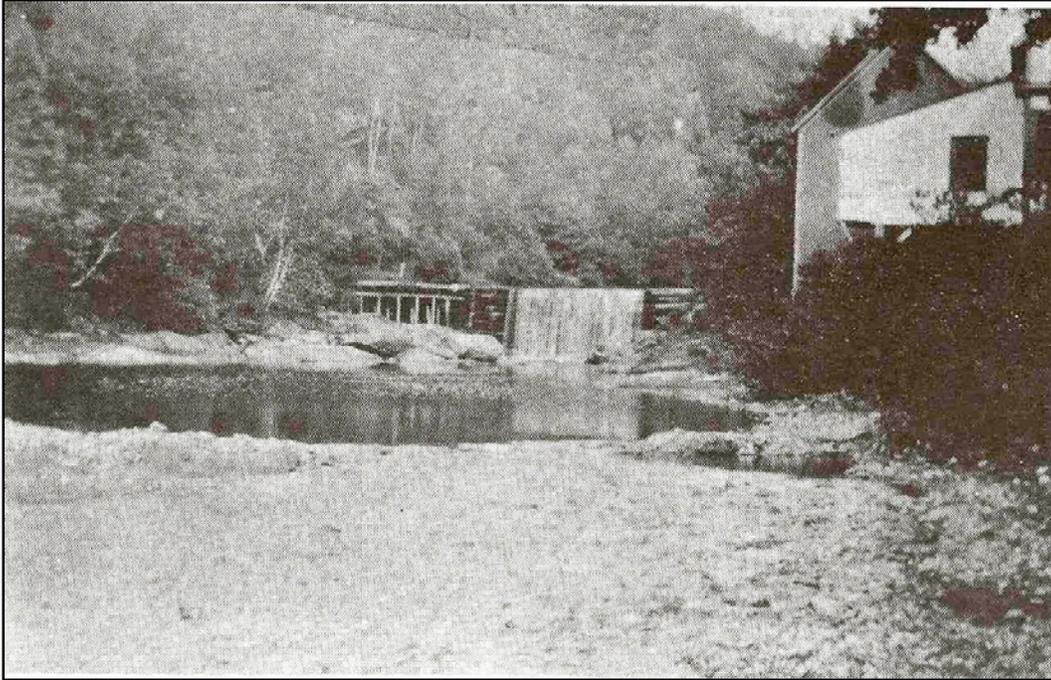


Photo 11. “The grist mill dam, source of power for the old grist mill” which is now used as a shed for town road equipment. (Lincoln Historical Society 2007).



Photo 12. Close-up of “The Grist Mill Dam. Note the stonework on the left hand side of the dam. (Lincoln Historical Society 2007).

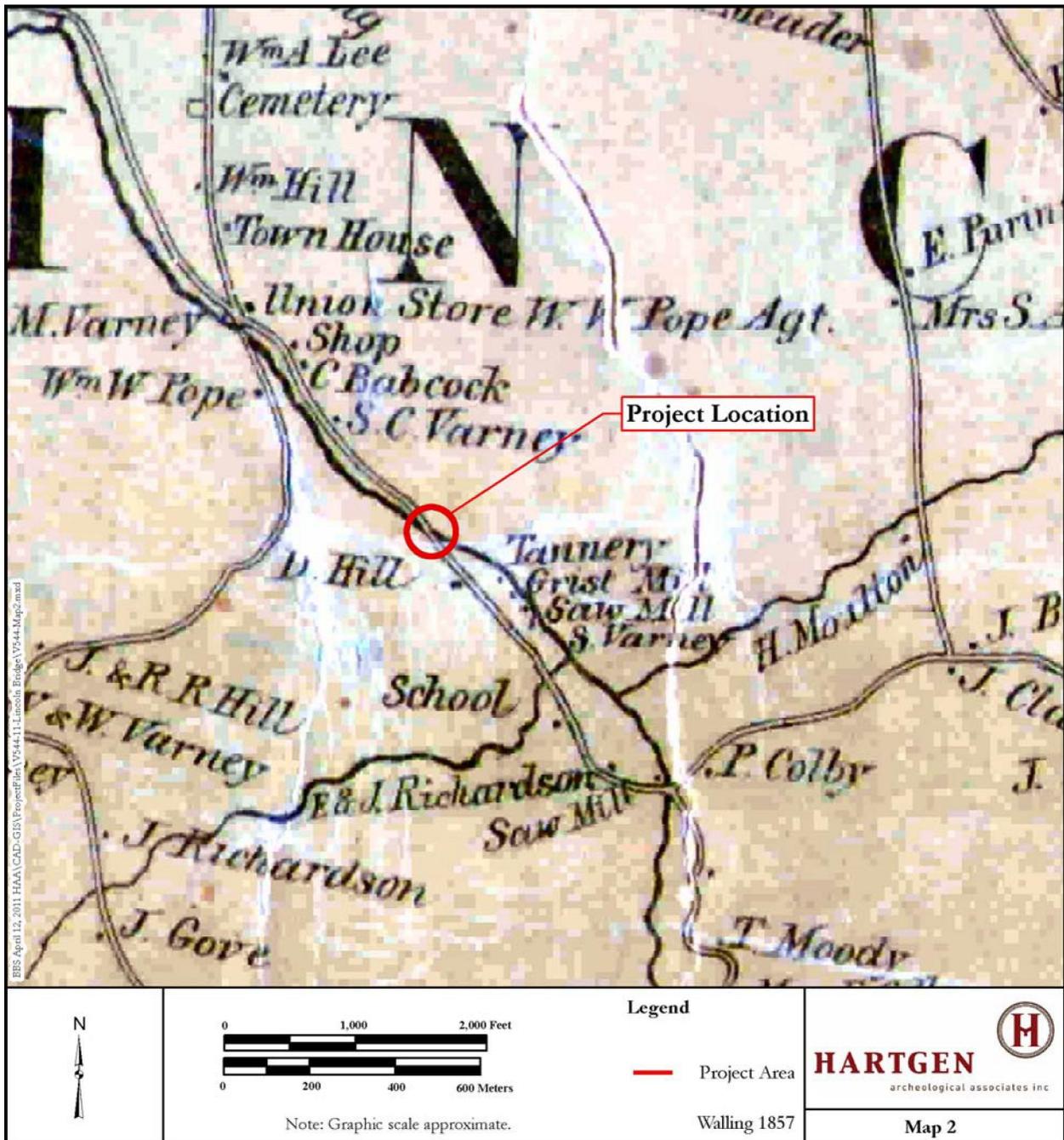
Historic Sites and Cemeteries

An examination of the VDHP archeological site files indicated that there are no historic archeological sites located within the bridge project APE. There are no known cemeteries located within the project area (Hyde and Hyde 1991).

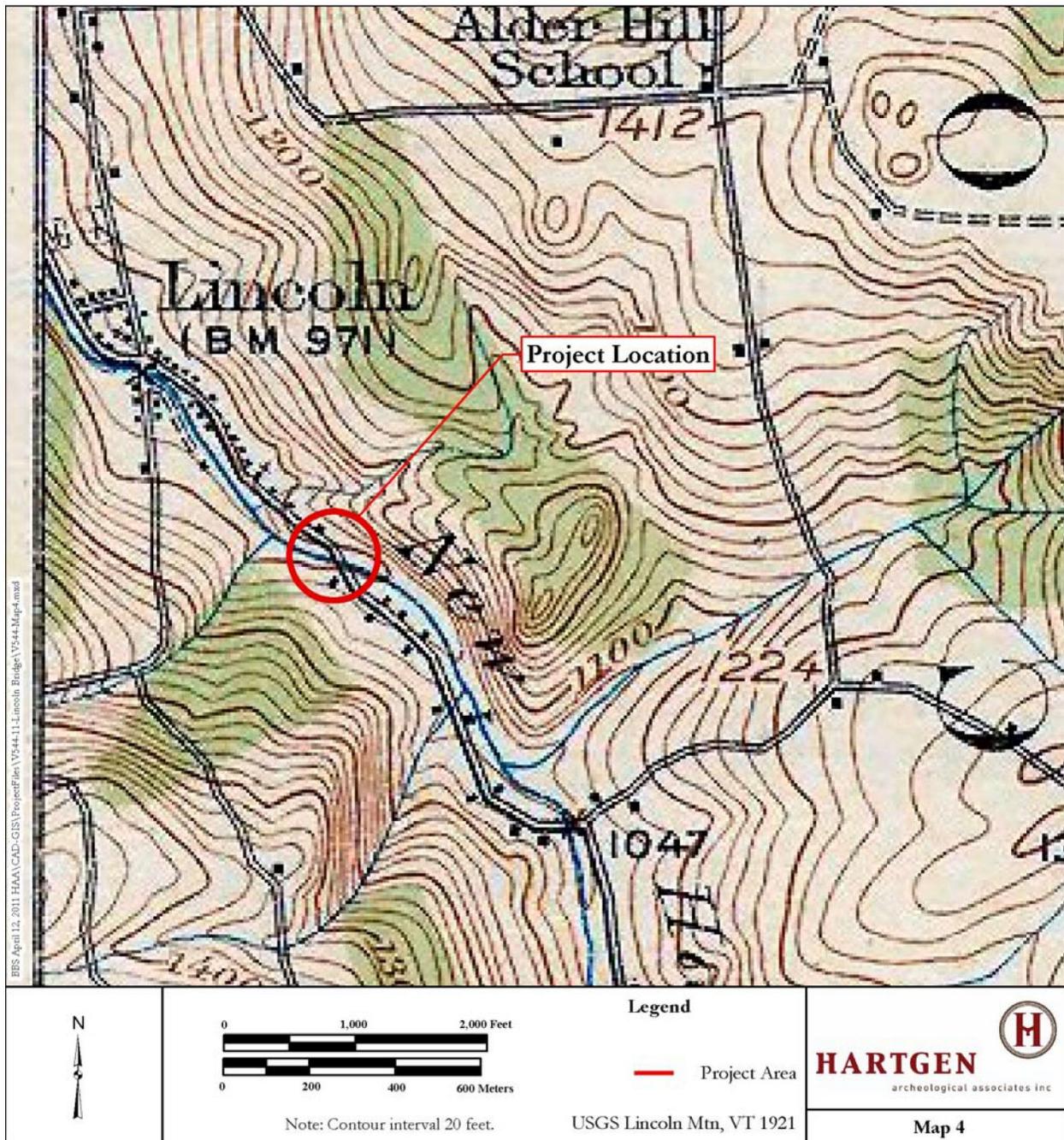
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Historic Maps and Archeological Sensitivity

A review of historic maps of the project area was conducted to attain an overview of the changing historical and environmental landscape within the project area. This includes the study of historic structures that may be or may no longer be extant, alterations to road and rail systems, and changes in stream and river courses. The two 19th-century maps, the 1857 Walling map and the 1871 Beers map depicts the roadways and river and stream courses in the project area, as well as the names of the residents who lived there in those years (Maps 2 & 3). The 1857 Walling indicates that the c. 1840 Cushman House located to the north was then owned by S.C. Varney, and the c. 1835 Pierce house, located south of the bridge, was occupied by D. Hill. On the landform on which the present Town Shed (and Grist mill) is situated, four buildings are depicted, including a tannery, a grist mill, a saw mill, and the home of S. Varney.



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South Lincoln was swept away, and the supports of other town bridges were badly eroded (Lincoln Historical Society 2007). It is likely that the Lincoln (#19) bridge is one the ones that was heavily damaged during the flood, and had to be rebuilt. The present bridge was constructed in 1934 on a different alignment, located slightly to the west of the original abutment. While a new bridge was eventually built, there was a period of seven years where either the damaged bridge was used, or a temporary bridge had to be erected.

Since it was known that the original bridge in this locale had been destroyed, it was considered a possibility that the enigmatic stone column was constructed after 1927 as a support for a small temporary bridge. The stone column was solidly built with a clearly defined (southwest) cornerstone. The variety of stone materials

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and style of construction possibly suggested that the feature may have been expediently built, possibly as part of a temporary bridge. However, the historic photograph of the grist mill dam (abutment) stonework demonstrates a strong similarity with the stone column near the project area (Photo 12). This suggests that there may have been another feature associated with the dam constructed downstream, the wooden superstructure of which had washed away during one of the many historic floods. While the true function of this feature may never be known, whether related to a bridge or mill, it is clearly associated with the historic use and management of local water power, and stands as a monument to local enterprise and masonry construction techniques.

ARCHEOLOGICAL POTENTIAL AND RECOMMENDATIONS

A site visit was made to the Lincoln Bridge #19 site area on November 11, 2010 under sunny and cool conditions. The project area was free of snow cover and standing water.

Near the Lincoln Bridge location, there are several dry-laid stone features, including a cut and cobble stone column of unknown verifiable function, and the cut stone abutment from the earlier bridge which was damaged or destroyed in 1927, both of which are located on the northeast quadrant of the extant bridge. In addition, the present bridge is built on abutments of both cut stone and poured concrete. It is anticipated that the bridge improvements will result in impacts to some of the drylaid stone abutments directly beneath or adjacent to the bridge. However, it is recommended that an effort be made to minimize the destruction or removal of the stonework associated with these historic bridge features. The stone column/support is located approximately 60 feet east of the present bridge, and may be situated outside the project area of potential impact. If possible within the project parameters, it is recommended that the historic stone feature be left intact.

The landform on which the Lincoln Town Shed (and c. 1870 Grist Mill) is located, which was also the previous location of the no longer extant tannery, (original) grist mill, saw mill, and residence of S. Varney, is situated at least 600 feet (186 m) distant from the south end of the bridge. It is therefore located outside the proposed project APE. However, if project plans entail the use of this landform as a construction staging area, then further review may be necessary in order to draft recommendations to protect any potential buried historic features or deposits.

The terrain surrounding the bridge on its four quadrants can be primarily characterized as relatively steeply sloped. Areas of level terrain located adjacent to the New Haven River which do not exhibit signs of obvious disturbance would be considered to have a high precontact sensitivity. However, the precontact sensitivity of the land located directly adjacent to the four corners of the bridge is considered to be low, based primarily on the presence of slope, exposed bedrock and/or previous disturbance. Only on the northeast quadrant of the bridge is there a very thin lowlying terrace landform. This landform is not considered highly sensitive because of its small size, its lowlying situation just above water level, as well as the high likelihood that this area had been scoured out during the numerous historic floods.

If the Area of Potential Effects (APE) for the bridge construction, which includes potential staging areas, will entail impacts to any potentially sensitive areas of undisturbed level terrain, located further from the bridge, then further investigation may be necessary. It is recommended that the project maps should be reviewed by an archaeologist after initial project plans have been designed.

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APPENDIX 1: VDHP Archaeological Resources Assessment Form

Vermont Division for Historic Preservation
Archeological Resources Assessment Form
Bridge #19, Lincoln Vermont

DHP# _____

Organization & Recorder: **HAA. INC./ E. Manning**Date: 2/18/2011

Environmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
<i>A. Rivers and Streams (Existing or relict)</i>					
1) Proximity to Rivers and Permanent Streams	0-90 m	12	12	Layer 1: Proximity to Rivers and Permanent Streams (0-180 m)	
	90-180 m	6			
2) Proximity to Intermittent Streams	0-90 m	12		-	
	90-180 m	6			
3) Proximity to Permanent River/Stream Confluences	0-90 m	8		Layer 6: Proximity to River/Stream Confluences (0-180 m)	
	90-180 m	4			
4) Proximity to Intermittent Stream Confluences	0-90 m	12		-	
	90-180 m	6			
5) Proximity to Waterfalls	0-90 m	8		Layer 7: Proximity to Waterfalls (0-180 m)	
	90-180 m	4			
6) Proximity to Heads of Drainages	0-90 m	8		Layer 5: Proximity to Heads of Permanent Drainages (0-300 m)	
	90-180 m	4			
7) Major Floodplain - Alluvial Terrace	0-90 m	8	8	Layer 10: Floodplain Soils Presence	
	90-180 m	4			
8) Knoll or Swamp Island		32		Layer 1: Proximity to Rivers and Permanent Streams (0-180 m)	
9) Stable Riverine Island		32		Layer 2: Proximity to Waterbodies (0-180 m)	
<i>B. Lakes and Ponds</i>					
10) Proximity to Pond or Lake	0-90 m	12		Layer 2: Proximity to Waterbodies (0-180 m)	
	90-180 m	6			
11) Proximity to Stream-Waterbody Confluences	0-90 m	12		Layer 4: Proximity to Stream-Waterbody Confluences (0-180 m)	
	90-180 m	6			
12) Lake Coves, Peninsulas, and Bayheads	0-90 m	12		Layer 2: Proximity to Waterbodies (0-180 m)	
	90-180 m	6			
<i>C. Wetlands</i>					
13) Proximity to Wetlands*	0-90 m	12		Layer 3: Proximity to Wetlands (0-180 m)	
	90-180 m	6			

Environmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
14) Knoll or Swamp Island		32		Layer 3: Proximity to Wetlands (0-180 m)	
<i>D) Valley edge and Glacial Landforms</i>					
15) High Elevated Landform (e.g. Knoll Top, Ridge Crest, Promontory)		12		See Landmarks (Info Layers) and Catchment layers (Water-related Layers)	
16) Valley Edge Features (e.g. Kame Outwash Terrace)		12		Layer 9 Glacial Outwash and Kame Terrace Soils	
17) Marine/Lake Delta Complexes		12		Layer 9 Glacial Outwash and Kame Terrace Soils Presence	
18) Champlain Sea or Glacial Lake Shore Line**		12		Layer 8: Paleo Lake Soils Proximity (0-180 m)	
<i>E. Other Environmental Factors</i>					
19) Caves and Rockshelters		32		-	
20) Natural Travel Corridors (e.g. Drainage Divides)		12	12	See Landmarks (Info Layers) and catchment layers (Water-related Layers)	
21) Existing or Relict Springs	0-90 m	8		-	
	90-180 m	4			
22) Potential or Apparent Prehistoric Quarry for Lithic Material Procurement	0-90 m	8		See Soils with "M" parent material (Under Construction)	
	90-180 m	4			
23) Special Environmental or Natural Area~	0-180 m	32		-	
<i>F. Other High Sensitivity Layers</i>					
24) High Likelihood of Burials		32		See VAI layer (Under Construction)	
25) High Recorded Archeological Site Density		32		See VAI layer (Under Construction)	
26) High likelihood of containing significant site based on recorded or archival data or oral tradition		32		See VAI layer (Under Construction)	

Environmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
<i>G. Negative Factors</i>					
27) Excessive (>15%) or Steep Erosional (>20%) Slopes		-32		See Slope Layer (Info Layers folder)	
28) Previously Disturbed Land***		-32		See Land Use ND Building Footprint Layers (Info Layers folder)	
Total Score:			32		

** remains incompletely mapped; digital layer includes paleo lakes and wetlands based on soils data

*** as evaluated by a qualified archeological professional or engineer based on coring, earlier as-built plans, or obvious surface evidence (such as a gravel pit)

~such as Milton aquifer, mountain top, etc. (historic or prehistoric sacred or traditional site locations, other prehistoric site types)

*Environmental predictive model limits wetlands to those > one acre in size; ArchSensMap

Appendix D – Local Concerns Meeting Minutes

TO: Adam Stockin, P.E., Parsons Brinckerhoff

CC: Town of Lincoln, Project File

FROM: Aaron Guyette, P.E., Structures Project Manager

DATE: May 17, 2011

SUBJECT: Lincoln BRF 0188(8) – Local Concerns Meeting Notes

The meeting began with a short presentation of the Project Development Process, discussed the existing conditions of the bridge, and identified several concerns that the project design team has.

Concerns of the Project Design Team:

- Roadway Alignment
- Traffic control during construction
- Right-of-Way Impacts
- Utility Impacts
- Impacts to Historical resources
- Flood History at the site
- Bike and Pedestrian study – How will the ongoing study effect the design and construction of the bridge

Following the brief presentation, Local Concerns, Comments, and Questions were solicited. The following were recorded at the April 26, 2011 Local Concerns Meeting:

- Several residents commented that they are against straightening the alignment of the roadway.

The comments were noted for consideration with alignment alternatives.

- Can the substructure be salvaged?

PB discussed the observations that they have made in the field, and due to current conditions their initial assessment is that the substructures will have to be replaced.

- How long will the construction duration be?

PB discussed that construction duration will be from 1 to 2 construction seasons and is dependent on the design. For example, if the bridge can be closed during construction then it is very likely the new bridge can be completed in a single season, however if a temporary bridge is needed or the new bridge is constructed using staged construction then the duration may be longer. Construction duration will be investigated during the alternatives study.

- The Garland Bridge, upstream from the Truchon Bridge, was replaced in one construction season between end of school and start of school.

The comment was noted for consideration.

- Speeding along the stretch of road surrounding the bridge is a concern. The bridge is located on a blind corner which creates conflicts with pedestrians and speeding cars.

The comment was noted for consideration with alignment alternatives.

- The curves of the roadway help to slow down the traffic. There have generally been no serious vehicular accidents at the bridge site. A resident who lives at the end of the bridge indicated that she had only called 911 once in the many years that she has lived there (Lisa Truchon).

The comment was noted for consideration with alignment alternatives.

- A resident who lives near the bridge commented that she had followed vehicles traveling near 55 mph in the vicinity of the bridge.

The comment was noted for consideration with alignment alternatives.

- There is a concern over maintaining emergency services during construction. All emergency services currently rely on the existing bridge to access the south side of the river.

The comment was noted for consideration of traffic control during construction.

- There is generally no safety issue associated with the roadway alignment. The curves force people to slow down.

The comment was noted for consideration with alignment alternatives.

- What is the timeline for the project development? The town would like to know dates and durations for design periods and construction.

It was discussed that the project is split into two different parts; design and construction. The project definition and project design process are in motion and are being advanced at an accelerated rate. The project is not yet funded for construction. Construction funding is not obligated until a project is further along in the Project Design Phase. VTrans has indicated that Construction funding is likely to be available when the design is complete. An estimate of the year 2014 to begin construction would be reasonable.

- The town has contacted the state to stress the need for action on the project and to request accelerated design and construction.

The comment was noted for consideration.

- What is funding source for the project?

The funding source was identified as 80% federal funds, 10% state funds, and 10% municipal funds.

- What will the total cost of the project be?

It was discussed that an estimate for the total project cost had not yet been developed. Project cost estimates will be developed during the alternative study.

- What would be the level of magnitude cost that is added to the project for a temporary bridge or for staged construction?

Exact dollar amounts have not been determined, however it was discussed that staged construction would likely add between 30%-40% beyond traditional construction costs and that a temporary bridge would likely add cost in the magnitude of hundreds of thousands of dollars to the total construction cost.

- Please don't include lights on the new bridge.

The comment was noted for consideration.

- Will the pier be removed?

It is likely that a new bridge would be a single span structure, and in that case the pier would be removed from the river.

- There have been no flooding issues at this bridge, those typically occur further downstream.

The comment was noted for consideration.

- Please take sight lines into consideration when selecting the project railing. There are bridges that have used the black anodized aluminum railing and it is difficult to see through them around a curve. It is important at the Truchon Bridge to see beyond the curves in the roadway to be able to see pedestrians, bicycles, or oncoming traffic.

The project railing will be selected with input from the town. Several appropriate railing types are likely to be presented at the alternatives presentation meeting.

- Will the existing bridge last until the new bridge can be constructed?

We are aware that there was a failure in the deck last week (4/19/2011) and that a three foot diameter hole developed in the northbound lane. While the steel beams supporting the concrete deck appear to have the appropriate capacity and are expected to last until a new bridge can be constructed, it is a possibility that additional localized concrete deck failures could occur.

- A member of the Selectboard noted there could be additional failures in the concrete bridge deck.

The comment was noted.

- What are the standards for roadway alignments? Why is the existing curvature of the roadway a potential concern?

From a driving standpoint a roadway alignment typically is designed to reduce the amount of curvature and to also reduce the amount of reverse curvature. Driving on a

tangent is usually safer than negotiating curves. In the case of the Truchon Bridge, it would be very difficult to accommodate the proper amount of superelevation (banking) around the curves.

The current alignment at the Truchon Bridge appears to work well and is generally favored by the public. Replacement of the bridge on the same alignment as the existing bridge will help to simplify the design, permitting, and construction efforts.

- The new bridge needs to be widened. The existing bridge is very dangerous for pedestrians and bicycles.

We are aware of the ongoing bicycle and pedestrian study that is being performed through the town. We are currently planning to have the new bridge accommodate a six foot widened shoulder at the request of the town.

- The town indicated that they would prefer to have bike/ped. area that can be easily maintained through the winter. The town does not own a sidewalk plow.

The comment was noted for consideration.

- A resident commented that they like the existing roadway alignment. They would also like to see the bridge closed during reconstruction.

The comment was noted for consideration.

- A resident asked about the use of cable guardrail across the bridge as it is something that can easily be seen through.

The comment was noted for consideration.

- Can the new bridge be built off alignment adjacent to the existing bridge? The town owns most of the land upstream and the existing bridge could remain in use during construction of the new bridge.

The comment was noted and an off alignment construction will be investigated during the alternatives study.

- A resident was in agreement with maintaining traffic during construction. If the bridge was closed it would create separation between the town and the school and emergency services.

The comment was noted for consideration.

- A resident commented that they felt visibility at the bridge is not the real safety issue, but that motorists are not aware of, or looking out for, pedestrians on the bridge is the issue.

The comment was noted for consideration.

- A resident commented that the sidewalk on the Firehouse Bridge is not utilized. The sidewalk is on the wrong side of the bridge and the town has no way to maintain it during the winter months.

The comment was noted for consideration.

- Will the new Truchon Bridge have a raised sidewalk?

It is unclear at the point in time and the Bicycle and Pedestrian Study is ongoing. The town has written a letter to VTrans supporting a widened shoulder at the same elevation as the roadway.

- A resident commented that the Truchon Bridge sidewalk / widened shoulder should be on the same side as the school. (North Side).

The comment was noted for consideration.

- A resident asked about the use of chain link fence for pedestrian guardrail. They have seen it used in NH and it is something that can easily be seen through. They also commented that they don't want a temporary bridge.

The comments were noted for consideration.

- A resident commented that the town supports this project and would like to help move it along any way possible.

The comment was noted for consideration.

- A resident commented that Lincoln was built on the river and there are remnants of mills / foundations along the river's banks.

The comment was noted for consideration.

- A resident asked about the pedestrian study and how it was related to the bridge project.

It was discussed that the bicycle and pedestrian study is ongoing and that the bridge project would likely accommodate the pedestrian facility that is preferred by the study.

- Is the bridge so bad that a load limit is required?

The bridge has not currently been rated, however it is an option for the town to consider.

- A resident commented that they have a copy of the original bridge plans and offered to share a copy of them.

It was discussed that the design team would be interested in seeing the plans and any other information that anyone would like to share.

- The town indicated that they would like to meet onsite with a VTrans bridge inspector to discuss the recent hole in the concrete deck and to ask questions about other areas of the bridge that could be problematic in the coming months.

It was discussed that this request would be passed along to the bridge inspection team at VTrans.

- The Town indicated that they would like to see a wider bridge, on the order of a six foot increase in width.

It was discussed that the width of the new bridge would be designed in accordance with the VT State Standards and that the new bridge would likely accommodate bicycle and pedestrian traffic.

- A resident commented that they would like to see some form of separation between the roadway and the bike/ped. pathway.

The comment was noted for consideration.

The bridge Local Concerns Meeting adjourned at 7:40 pm

The Bike/Ped. Study Local Concerns Meeting followed.

Lincoln Town Clerk

From: "Veronica Sargent" <vsargent@anesu.org>
To: <clerk@lincolnvermont.org>
Sent: Monday, April 25, 2011 2:12 PM

To whom it may concern:

I would like to address the following concern about the up-coming sidewalk/pedestrian paths for the Town of Lincoln. I am very concerned about the maintenance and up-keep. Who's going to plow it? Who's going to make sure that the lines will be painted? Who's going to be in charge of making sure the required maintenance is being completed? So, far the town of Lincoln has not been able to keep up with the one cross walk in the town. With the lack of maintenance and the lack of legal authority in the town I feel this could have a negative impact on the community with continuous complaints about safety needs not being met.

Thanks, Veronica Sargent

4/25/2011

Lincoln Town Clerk

From: "Larry Michaels" <larry@getoutofthecar.com>
To: "Lincoln Town Clerk" <clerk@lincolnvermont.org>
Sent: Tuesday, April 26, 2011 12:48 PM
Subject: Re: Public Meeting TONIGHT re: bridge and pedestrian study

Dear Sally,

I am very pleased to read about the pending Pedestrian Study to improve safety for bicycle and pedestrian traffic in and around the center of town and specifically from the village center to the Elementary School. I have walked, jogged, and bicycled across Truchon Bridge and although traffic is usually not an issue during the times I travel across, the opportunity to provide safe pedestrian access outside the road boundary of the bridge roadway must be strongly considered. Not unlike many other communities pedestrians are put in an unsafe situation when they are "caught" with traffic traveling on the bridge in both directions at or near the same time. With little or no shoulder it can sometimes feel like a game of "chicken" when two vehicles and the pedestrian (walker, bicyclist, stroller, etc.) are at the same location on the bridge at the same time.

I wish I could be at the meeting tonight, however I am in Massachusetts dealing with the pending sale of our house.

Thank you for this opportunity to be heard.

Larry Michaels

On Apr 26, 2011, at 12:15 PM, Lincoln Town Clerk wrote:

Hello Lincoln Residents,

This is a reminder that TONIGHT is the public meeting about the "Truchon" Bridge #19, and the pedestrian study to improve walking/biking access through the center of Lincoln to the Town Garage. Since the pedestrian study is closely tied to the Truchon Bridge replacement, we are combining them into one Public Meeting for your convenience. Please join us **tonight, upstairs at Burnham Hall, at 6:30pm**. If you are unable to attend, but have concerns or ideas to share, please contact Town Clerk, Sally Ober, either by replying to this e-mail or calling 453-2980.

Thanks,
--Sally

Message sent by: Sally Ober, Town Clerk
 Town of Lincoln
 62 Quaker St.
 Lincoln, VT 05443

phone: (802)453-2980
 fax: (802)453-2975
clerk@lincolnvermont.org
www.lincolnvermont.org

OFFICE HOURS:

Mon. through Thurs. 8:00 am to 2:00 pm
 also Wed. evenings from 4:00 to 7:00 pm
 or by appointment

Lincoln Town Clerk

From: "Anne Parfitt" <anne@gmavt.net>
To: "Lincoln Town Clerk" <clerk@lincolnvermont.org>
Sent: Tuesday, April 26, 2011 1:14 PM
Subject: RE: Public Meeting TONIGHT re: bridge and pedestrian study

Sent on 6/22 in response to email

Sent to: 'rainvb@wcvt.com'

Over the years I had envisioned a safe sidewalk from the school to the library. Crossing the river was always the problem to be solved. Perhaps the new bridge could incorporate a safe area for foot and bike traffic.

Anne

4/26/2011

**SIGN-IN SHEET
LOCAL CONCERNS MEETING**

Lincoln BRF 0188(8)

Meeting Date/Time: Tuesday, April 26, 2011 6:30 PM
Meeting Location: Burnham Hall, Lincoln, VT

Name	Affiliation	Phone Number	E-Mail Address
ERWIN ISHAM	SELECT BOARD MEMBER.	453-2579.	ERWINI@YAHOO.COM
Diane Cushman	community	453-3331	wombats@gmavt.net
Sally Ober	Town Clerk	453-2980	clerk@lincolnvermont.org
Ann Kensek	Asst. Clerk	"	
Brian Goodro	Selectboard	"	xlr8@gmavt.net
Doris J Boblett	community	453-6866	geneboba@aol.com
Mary Beth Stilwell	local landowner/ community	453-2628	mbstilwell@madriver.com
Sue Rice	local land owner community	453-2259	Surice@gmavt.net
RAMY RICE	"	"	"
Dave Narvison	Fire Dept - Emergency Mgr	453-3419	dharris@wvt.com
Mary Narvison	community	"	mhnarvison@wvt.com

**SIGN-IN SHEET
LOCAL CONCERNS MEETING**

Lincoln BRF 0188(8)

Meeting Date/Time: Tuesday, April 26, 2011 6:30 PM
Meeting Location: Burnham Hall, Lincoln, VT

Name	Affiliation	Phone Number	E-Mail Address
DAVID JEROME		453-4690	
Judi Jerome		" "	
Bruce Cobb		453-2979	bruce.cobb88@Yelco.com
Jayne Cousino		453-4384	
Robert Bernstein		453-4225	
Paul Goleis		453-2120	
Steven Patterson		453-2182	
David S. Patterson		453-2182	

**SIGN-IN SHEET
LOCAL CONCERNS MEETING**

Lincoln BRF 0188(8)

Meeting Date/Time: Tuesday, April 26, 2011 6:30 PM
Meeting Location: Burnham Hall, Lincoln, VT

Name	Affiliation	Phone Number	E-Mail Address
Donald Wood	Old Hotel	453-7071	
Matt Wood	Old Hotel	453-2567	theddhotel@gmail.com
Budd Wood	None tax payer		
Nancy Wood	Tax payer		
Ray Hutchins	Emp. owner	453/3511	None
Sandra Rhodes	Tax Payer	453-3066	
Elizabeth Steadman	property owner	453-2598	NA
Mary Purise	Tax payer	453-2972	
Nancy Goodrich	tax payer	863-0545	n.good20myfairpoint.net
Will Sipsey	Lincoln TAC rep	453 3665	ws wsipsey@wcvt.com
Rob Barber	Resident	453 5975	AREMBER@CCV-ORL

**SIGN-IN SHEET
LOCAL CONCERNS MEETING**

Lincoln BRF 0188(8)

Meeting Date/Time: Tuesday, April 26, 2011 6:30 PM
Meeting Location: Burnham Hall, Lincoln, VT

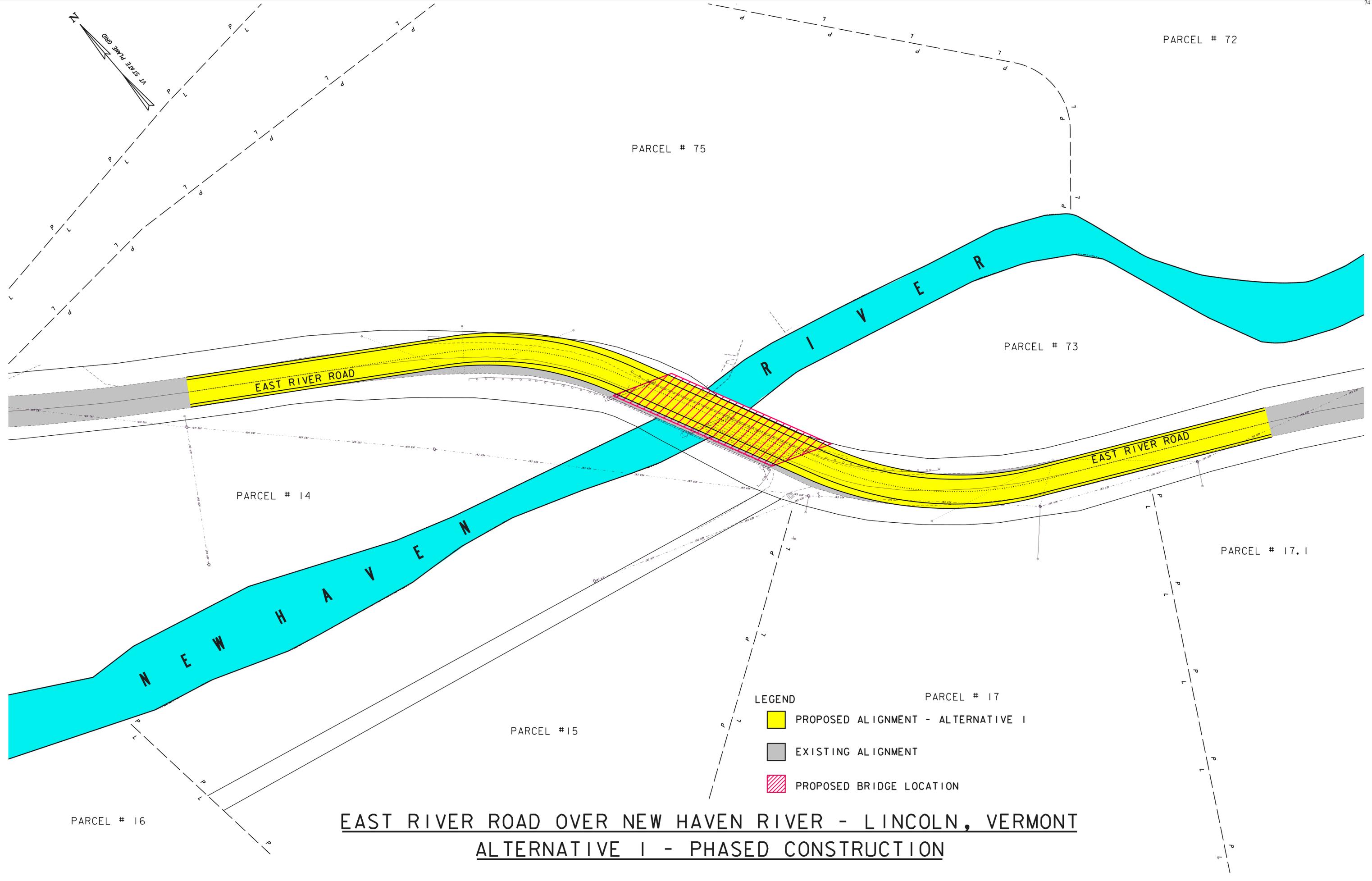
Name	Affiliation	Phone Number	E-Mail Address
George Truchon		453-3885	
Wendy Jones		453-3885	
Steve Revelle		453-3122	
Jeremy Farrell		453-4466	
JIM DONOVAN	BOARD	425-5001	
LISA TRUCHON		453-2080	
EVAN TRUCHON		453-2080	
W.M. Smith		453-3331	
Aron Parker		4961	
Kenny Malloy	Lincoln Preschool	453-5595	
Patty Schenckler		453-6688	

Appendix E – Alternative Matrix

Evaluation Matrix - VT TH 1 Over the New Haven River, Lincoln, VT

ALTERNATIVES:		A	B	C1	C2	D1	D2	E1	E2
		Do Nothing	Rehabilitation	New Construction Phased Construction Concrete	New Construction Phased Construction Steel	New Construction Temporary Bridge Concrete	New Construction Temporary Bridge Steel	New Construction Bridge Closure Concrete	New Construction Bridge Closure Steel
COST	Roadway	\$0.00	\$64,000.00	\$300,800.00	\$300,800.00	\$294,400.00	\$294,400.00	\$307,200.00	\$307,200.00
	Structure	\$0.00	\$384,000.00	\$2,000,000.00	\$2,080,000.00	\$1,600,000.00	\$1,664,000.00	\$1,600,000.00	\$1,664,000.00
	Structure Removal	\$0.00	\$0.00	\$192,000.00	\$192,000.00	\$128,000.00	\$128,000.00	\$128,000.00	\$128,000.00
	Temporary Structure	\$0.00	\$0.00	\$0.00	\$0.00	\$256,000.00	\$256,000.00	\$0.00	\$0.00
	Traffic Control	\$0.00	\$64,000.00	\$96,000.00	\$96,000.00	\$104,960.00	\$104,960.00	\$19,200.00	\$19,200.00
	Right of Way Acquisition	\$0.00	\$0.00	\$12,800.00	\$12,800.00	\$25,600.00	\$25,600.00	\$6,400.00	\$6,400.00
	Total Cost	\$0.00	\$512,000.00	\$2,601,600.00	\$2,681,600.00	\$2,408,960.00	\$2,472,960.00	\$2,060,800.00	\$2,124,800.00
DURATION	Projected Construction Duration		4 months	8 months	8 months	6 months	6 months	4 months	4 months
ENGINEERING	Typical Section	21.3' (Curb to Curb)	21.3' (Curb to Curb)	28' (Curb to Curb)	28' (Curb to Curb)	28' (Curb to Curb)	28' (Curb to Curb)	28' (Curb to Curb)	28' (Curb to Curb)
	Traffic Safety	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	Alignment Change	No Change	No Change	Minor	Minor	Minor	Minor	Minor	Minor
	Bicycle/Pedestrian Access	No	No	Yes (wide shoulders)	Yes (wide shoulders)	Yes (wide shoulders)	Yes (wide shoulders)	Yes (wide shoulders)	Yes (wide shoulders)
	Hydraulic	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	ROW	No Change	No Change	Yes	Yes	Yes	Yes	Minor	Minor
Utility	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	
IMPACTS	Agricultural Lands	No	No	No	No	No	No	No	No
	Archaeological	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	Historic Structures, Sites, & Districts	No	No	No	No	No	No	No	No
	Haz. Materials	No	No	No	No	No	No	No	No
	Floodplain	No	No	No	No	No	No	No	No
	Fish & Wildlife	No	No	Temporary	Temporary	Temporary	Temporary	Temporary	Temporary
	Rare, Threatened & Endangered Species	No	No	No	No	No	No	No	No
	Public Lands - Sec 4(f)	No	No	No	No	No	No	No	No
	LWCF - Section 6(f)	No	No	No	No	No	No	No	No
Noise	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	
Wetlands	No	No	No	No	No	No	No	No	
LOCAL AND REGIONAL ISSUES	Concerns	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Economic Impacts	No	No	No	No	No	No	No	No
	Conformance to Regional Transportation Plan	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	Satisfies Purpose & Need Statement	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PERMITS	ACT 250	No	No	No	No	No	No	No	No
	401 Water Quality	No	Possible	Yes	Yes	Yes	Yes	Yes	Yes
	404 COE Permit	No	Possible	Yes	Yes	Yes	Yes	Yes	Yes
	Stream Alteration	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	Conditional Use Determination	No	Possible	Possible	Possible	Possible	Possible	Possible	Possible
	Stormwater Discharge	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	Lakes and Ponds	No	No	No	No	No	No	No	No
	T & E Species	No	No	No	No	No	No	No	No
SHPO	No	No	Yes	Yes	Yes	Yes	Yes	Yes	
OTHER	Land Acquisition	No	No	Minor	Minor	Yes	Yes	Minor	Minor

Appendix F – Alternative Plans



PARCEL # 72

PARCEL # 75

PARCEL # 73

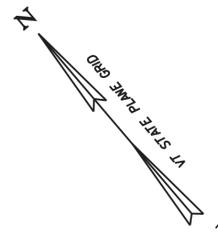
PARCEL # 14

PARCEL # 17.1

PARCEL # 17

PARCEL # 15

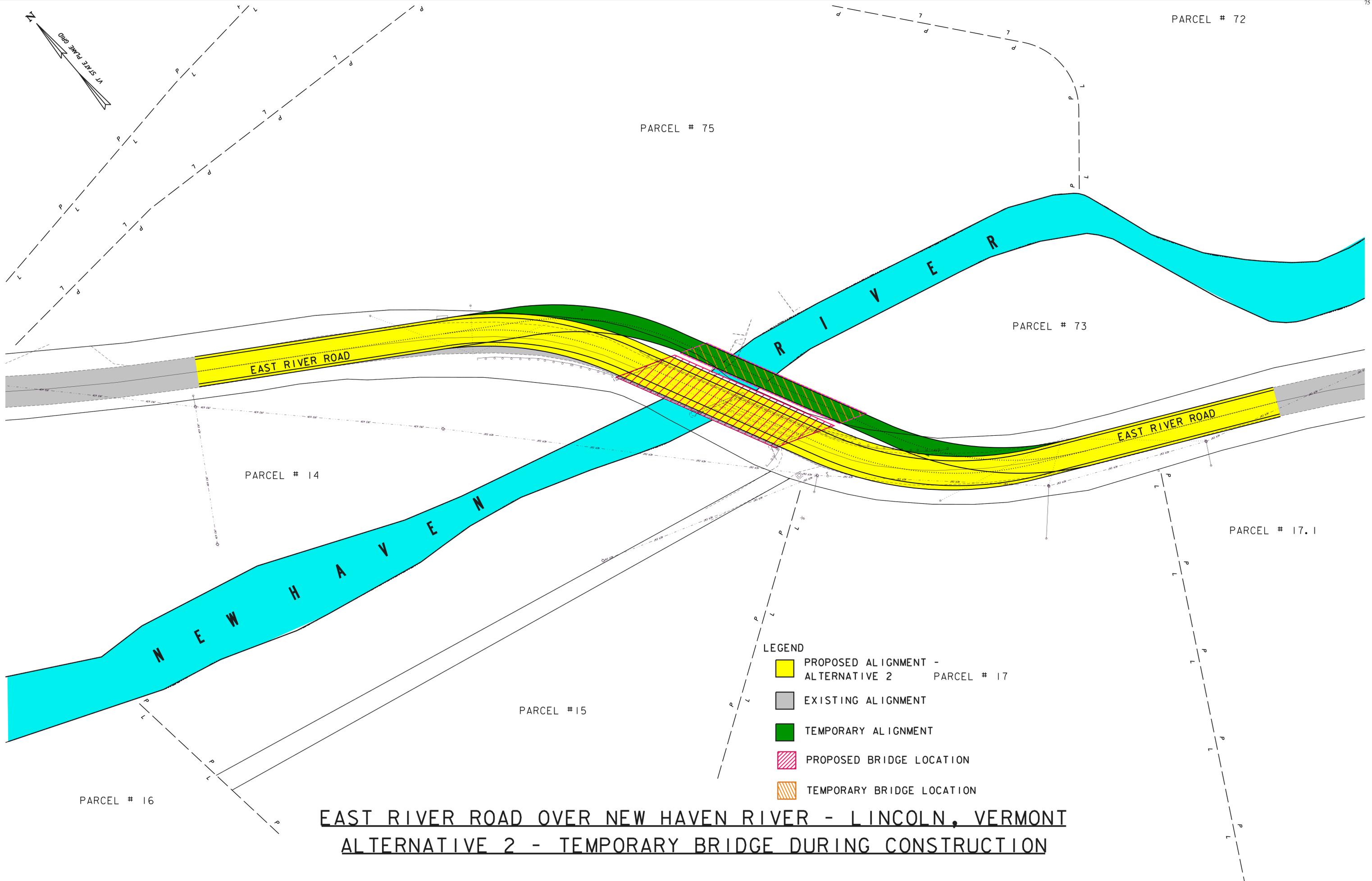
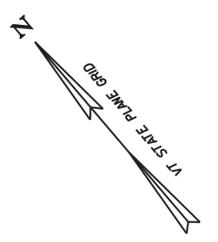
PARCEL # 16



LEGEND

- PROPOSED ALIGNMENT - ALTERNATIVE I
- EXISTING ALIGNMENT
- PROPOSED BRIDGE LOCATION

EAST RIVER ROAD OVER NEW HAVEN RIVER - LINCOLN, VERMONT
ALTERNATIVE I - PHASED CONSTRUCTION



- LEGEND
- PROPOSED ALIGNMENT - ALTERNATIVE 2
 - EXISTING ALIGNMENT
 - TEMPORARY ALIGNMENT
 - PROPOSED BRIDGE LOCATION
 - TEMPORARY BRIDGE LOCATION

EAST RIVER ROAD OVER NEW HAVEN RIVER - LINCOLN, VERMONT
ALTERNATIVE 2 - TEMPORARY BRIDGE DURING CONSTRUCTION

Appendix G – Preliminary Hydraulics Report



INTERNAL MEMO

TO: Adam Stockin, PE
FROM: Royd Benjamin, PE
DATE: December 1, 2011
SUBJECT: Lincoln, BRF 0188(8) Bridge 19 -TH1 over the New Haven River
Preliminary Hydraulic Evaluation

Based on our preliminary hydraulic analysis using flows generated by StreamStats, a Web-based GIS application developed by the USGS for various States, the following data was developed for the above subject bridge structure:

Existing

Span Length: 128'
Low Beam Elevation: 994.8

Proposed

Span Length: 128'
Low Beam Elevation: 995.0

Flow

Q₅₀: 2,630 cfs
Water Surface: 989.2
Proposed Clearance: 5.8'

Q_{2.33}: 990 cfs
Water Surface: 983.7
Surface Width: 53'
Abutment Impact: None

Appendix H – Preferred Alternative Plans

PARCEL # 75

PARCEL # 73

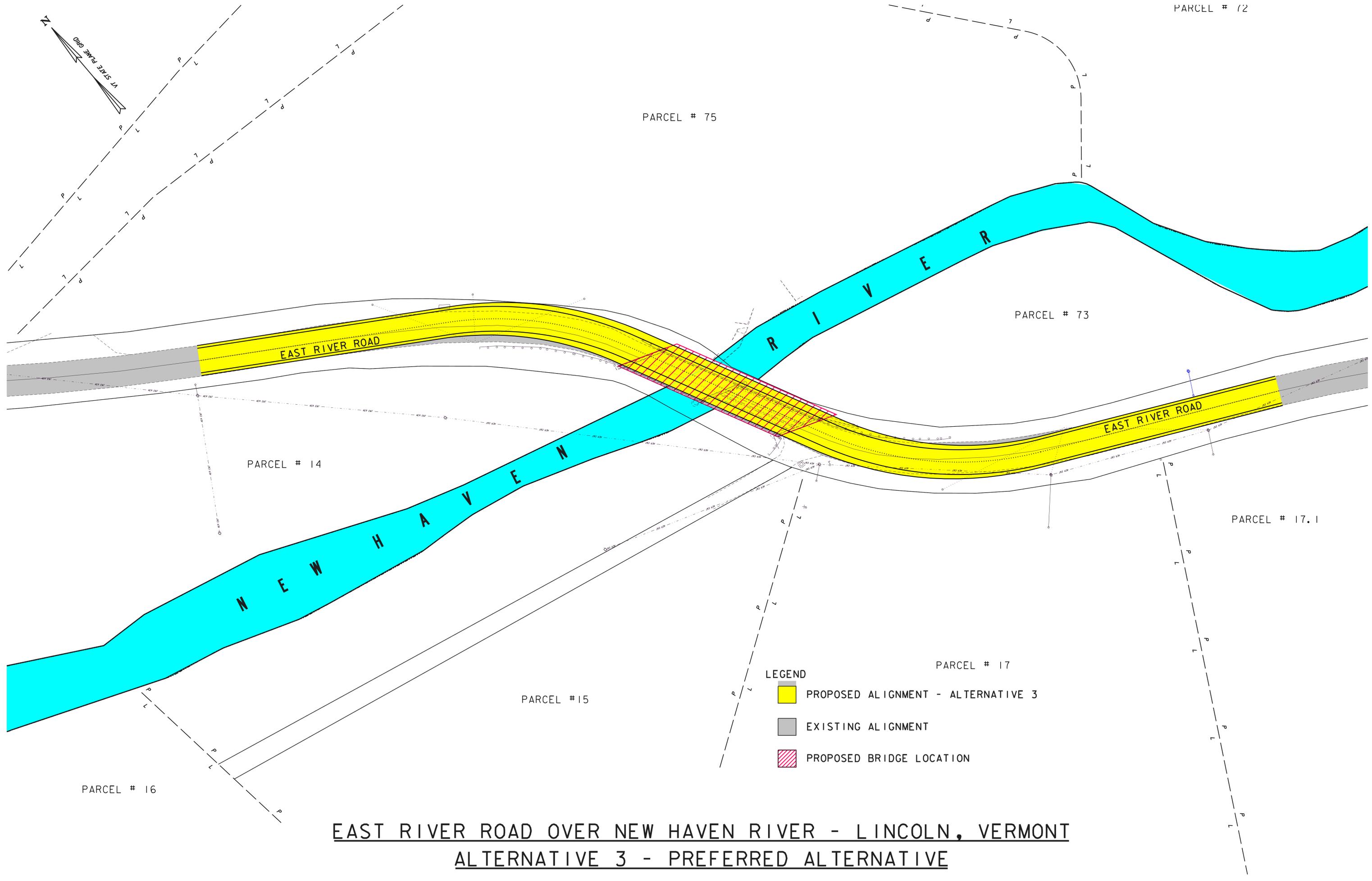
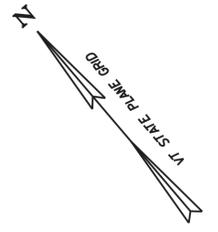
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PARCEL # 17.1

PARCEL # 17

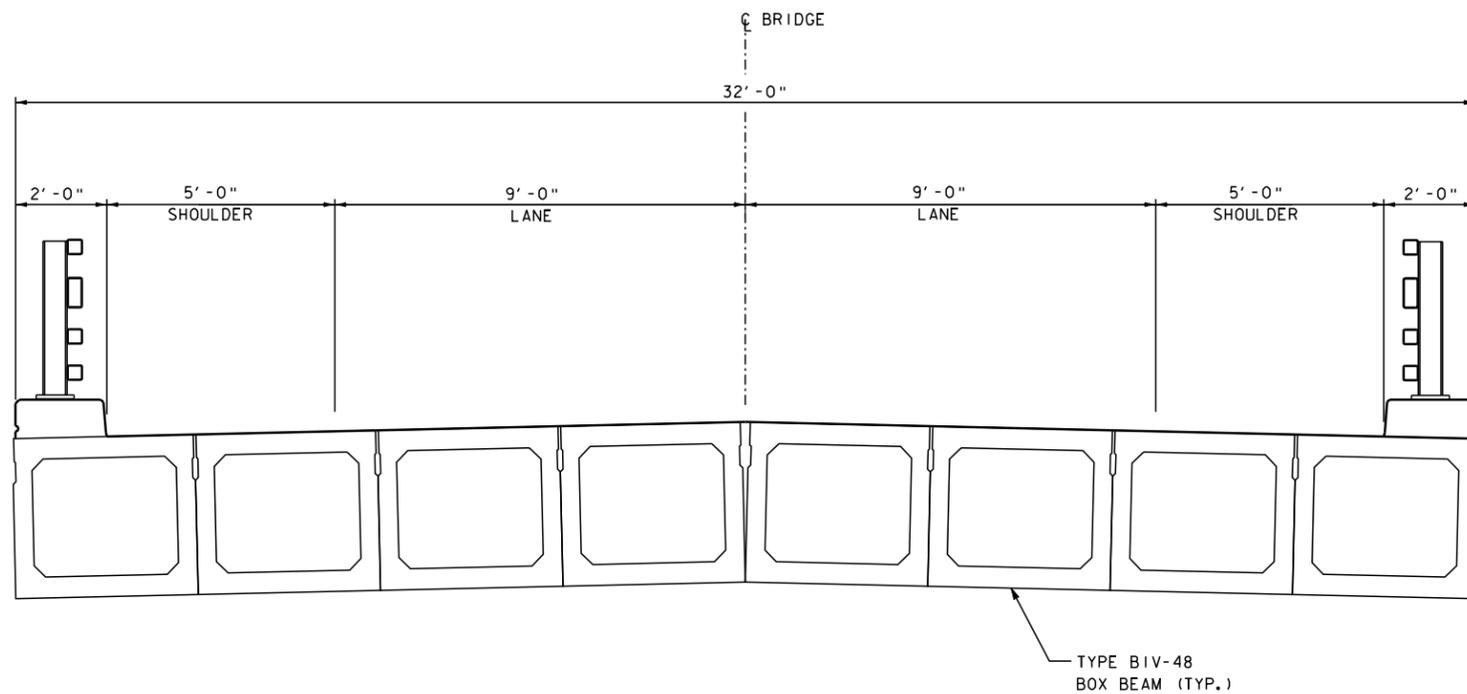
PARCEL # 15

PARCEL # 16



- LEGEND**
- PROPOSED ALIGNMENT - ALTERNATIVE 3
 - EXISTING ALIGNMENT
 - PROPOSED BRIDGE LOCATION

EAST RIVER ROAD OVER NEW HAVEN RIVER - LINCOLN, VERMONT
ALTERNATIVE 3 - PREFERRED ALTERNATIVE



PROPOSED DECK SECTION (PRECAST CONCRETE BOX BEAM OPTION)

SCALE: 1/2" = 1'-0"



STATE OF VERMONT

Town Of LINCOLN	Bridge No. 19
Highway No. TH #1, CL 2	Log Sta. Surv. Sta.
TH #1 OVER NEW HAVEN RIVER	
PROPOSED DECK SECTION (PRECAST CONCRETE BOX BEAM OPTION)	
Designed By	Drawn By
Checked By	Bridge Design Supervisor
Date	Date
PROJECT LINCOLN	PROJECT NO. STP HTFD (1)
I.G.C. Info.	Sheet of

Appendix I – Alternatives Meeting Minutes