Parsons Brinckerhoff, Inc.

650 Elm Street
Manchester, NH 03101
603-647-2012
Fax: 603-647-20321

February 12, 2013

Town of New Haven
78 North St.
New Haven, VT 05472

Re: New Haven BRF 0183(1) – Bridge 10 – TH2 over New Haven River
Scoping Report

To Whom It May Concern:

The scoping phase for this bridge replacement project in the Town of New Haven has been completed. We have identified the resources present at this project location, met with the public for the local concerns and alternatives meetings, prepared a Purpose and Need Statement, considered several alternatives, and recommended a preferred design alternative.

Please review the attached scoping report. If you agree with the information and the preferred alternative, please respond with your approval.

Sincerely,

Adam M. Stockin, P.E.

Adam M. Stockin, PE

Parsons Brinckerhoff, Inc.

New Haven - BRF 0183(1) – Bridge 10
TH2 over New Haven River

Scoping Report

Table of Contents

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:

"At the location of Bridge #10, and the land directly adjacent, the primary concern is for the presence of pre-contact cultural resources. 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 pre-contact sensitivity. If the Area of Potential Effects (APE) for the bridge construction, which includes potential road detours and staging areas, will entail impacts to any undisturbed level terrain adjacent to the New Haven River, it is recommended that a systematic Phase IB archeological shovel test survey be undertaken.

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 New Haven. 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

Several residents voiced their concerns on various issues:

- Traffic Control/Detour
- Accident History
- Site Distance/Roadway Safety
- Condition of the Existing Bridge
- Snowmobile Traffic
- Flooding History/Debris Build up

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 New Haven BRF 0183(1) project is to improve safety, improve structural capacity and longevity, and maintain snowmobile movements.

Need:
The safety of Town Highway 2 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.

2. Structural Capacity

   The superstructure and substructure of the bridge on Town Highway 2 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 developed, the design alternatives were evaluated.

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

- Roadway Safety
- 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: 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 hydraulic impacts are greatest for this alternative. The construction period would most likely encompass an entire construction season and the cost of the project would be significantly higher because the project would be built in two halves. This alternative would require a wall pier in the river, which would only improve the hydraulic opening minimally.

While there are many drawbacks to this design option, the road would not be closed to traffic.

Alternative C: Concrete NEXT Beam Bridge

The Purpose and Need Statement is accomplished for this alternative. This alternative consists of a single drilled shaft in the river with 2 80’ spans. This shaft would be constructed while traffic is maintained on the existing structure. Once the shaft and abutment pile driving is completed the bridge will be closed. While the bridge is closed to traffic the pier cap and abutments would be constructed and the concrete NEXT beams would be placed. It is estimated that the bridge would be closed for 2 months.

This alternative has a larger hydraulic opening than Alternative B, however in high flow events debris build up may be an issue. The pier cap extends below the superstructure and the concrete beams cannot be laid out along the curve, so the pier cap is not orientated parallel to the river. This pier cap could cause a blockage in high flow events.

This alternative would allow for the shortest construction duration and it would have the lowest cost, however hydraulics are a major concern for this project so this alternative is not ideal.

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

PREFERRED ALTERNATIVE

Alternative D: Curved Steel Bridge

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 replaced in a manner that would increase safety and improve the hydraulics for the frequent high flow conditions.

One of the other concerns of the town was the snowmobile traffic that currently travels on a separate structure which is attached to the existing bridge. We are proposing a total width of 29' curb to curb on the bridge. There will be one shoulder that is widened to 6' to allow the snowmobiles to travel safely over the bridge. The widened shoulder will be placed on the same side of the bridge as the existing snowmobile structure.

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 (ABC) techniques will be utilized to speed the construction duration. It is estimated that these techniques will allow the bridge to be closed for approximately 2.5 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 their use is strongly encouraged by VTrans.

To achieve the desired construction timeframe and to eliminate the pier cap on the single shaft pier in the river a unique construction technique will be utilized. The steel for all of the curved girders will be fabricated. These beams will be shipped to a pre-cast concrete plant. The beams will be erected at the plant and the girders will be bolted together. The pier cap will then be cast. The beams will be disassembled and the beams will be shipped to the project site. The pier cap and the short segments of beams that are encapsulated in concrete will be shipped to the project site as a single piece. This piece will then be placed on the pier shaft that was previously drilled.

As in alternative C, a single drilled shaft will be constructed while the bridge is in service. This shaft and the abutment piles will be installed while 1 way alternating traffic is maintained on the existing bridge. Once these substructure elements are constructed and the beams and pier cap are ready for installation, the bridge will be closed for approximately 2.5 months.

It has been estimated that this alternative is slightly more expensive than alternative C; however the increased hydraulic opening is well worth the extra cost. There is also the added benefit of the girders being curved and following the roadway alignment. The bridge will be much "cleaner" and will be more aesthetically pleasing.

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 a pier in the river. The pier that will be in the river is a single circular shaft with a shallow pier cap. This will allow the most flow under the bridge. The abutments have been moved to new locations which better reflect the current and future alignments of the river. The proposed abutments do not impede the flow at the $Q_{2.33}$ storm.

Since the Alternatives meeting, the design team has proposed the re-alignment of Halpin Road to the South. This re-alignment will improve sight distance and allow the bridge abutment to be moved back to maximize the hydraulic opening and allow for future bank migration.

Design plans of the preferred alternative and power point presentation from the alternatives meeting are included in Appendices H & I respectively.

Appendix A – Environmental Assessment

EIV Technical Services, LLC
95 South Main Street, Suite 1
Waterbury, VT 05676
Tel: 802-244-7453
Fax: 802-244-5052

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
New Haven BRF 0183(1)
EIV Project #1382.1

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 New Haven 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 10, New Haven
This bridge is found in a rural setting and on River Road in New Haven approximately 1.1 miles east of its intersection with US Route 7. The proposed replacement structure is to be built on the current alignment and the road closed to through traffic. The remote assessment of the project area revealed no wetlands or other unique natural resources occurring in the vicinity of the structure. Wetland areas were mapped both east and west of the bridge, with the nearest approximately 1000-feet to the west. Soils in the project area are mapped as moderately well drained 'Winooski Fine Sandy-loams'.

Soils were observed to be sandy, brightly colored, and well drained in the field. No hydrophytic vegetation or unique natural communities were observed and no wetlands were delineated in the investigated area. The remnant floodplain forest around this bridge is encroached on all sides by cultivated agricultural fields.

The most relevant natural resource issue observed was the abundance of Japanese knotweed, *Fallopia japonica*, an aggressive non-native species listed by Vermont as a 'Class B noxious weed'. This species is well established along the banks of New Haven River in this area. To limit the spread of this invasive species to uncolonized areas, ensure that no soil or other material is transported out of the project area during any proposed work. Any soils excavated from this area should be wasted or re-used on-site.

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

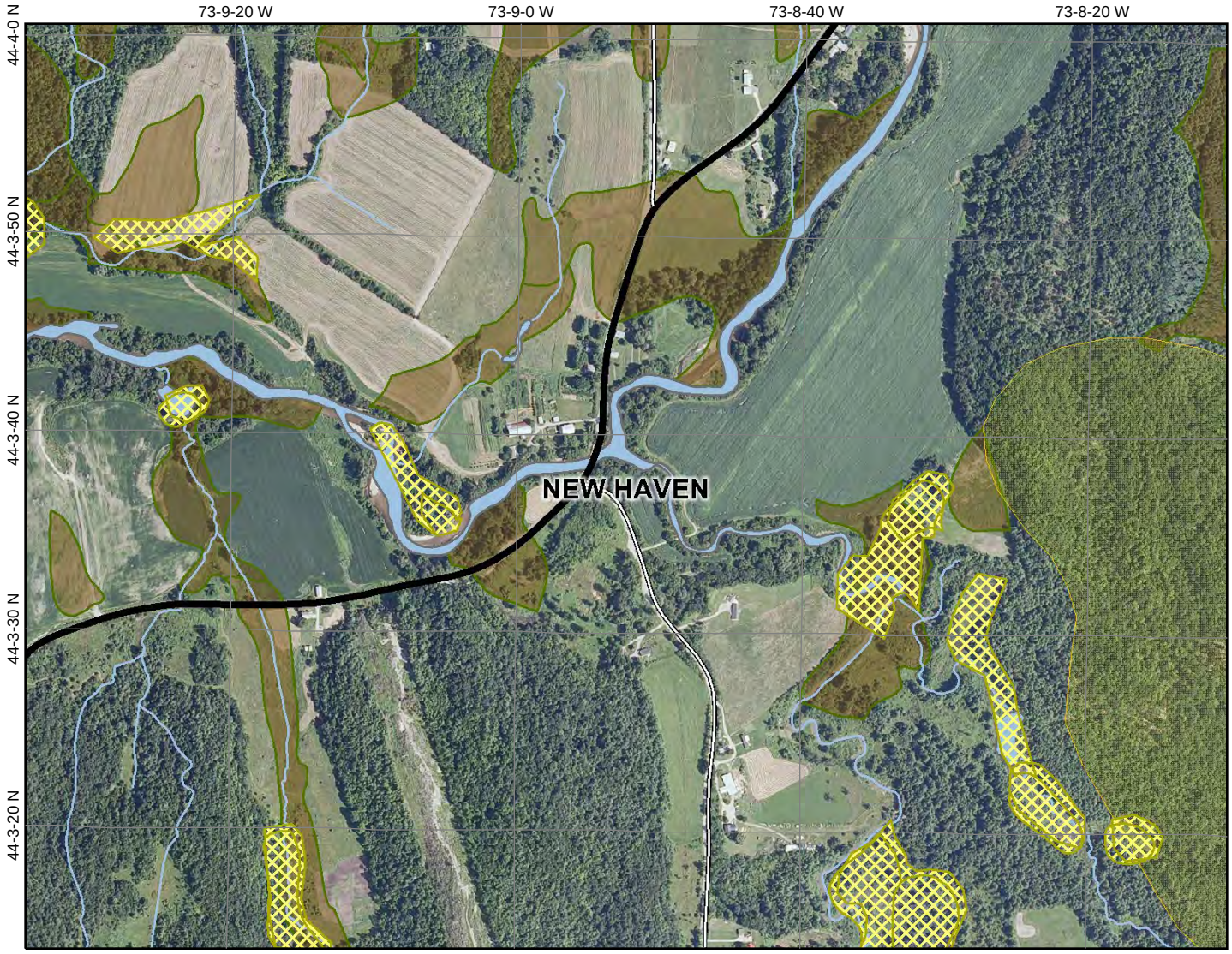
Matt Montgomery
Ecologist

Enc:
Mapped GIS Resource Data Graphics

ANR Environmental Interest Locator

Vermont Agency of Natural Resources (ANR)

New Haven



0 1000 2000 3000 ft.

Map center: 448091, 173555

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)

N

Scale: 1:10,091

Notes: RTE Species, Wetlands, hydric soils

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

10/18/10

Appendix B – Historical Assessment

Historic Structures Assessment for the New Haven Bridge # 10 Replacement
New Haven, Vermont

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

Prepared by:
Suzanne Jamele
Historic Preservation Consultant
1 High Street
Plainfield, Vermont 05667

December 10, 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 #10, over the New Haven River, located on Town Highway 2, otherwise known as River Road, in New Haven. The bridge is a steel beam and concrete deck structure built in 1934 (1934 as-built plans attached) that measures 20' curb to curb. Inspection reports from 2008, 2009 and 2010 found the substructure and deck to be severely deteriorated. The new bridge is proposed to be slightly wider than the existing, 28' curb to curb and will include a wide shoulder for snowmobiles. Replacement is proposed on the same alignment with minimal approach work. The project is in the early stages of development and assumes the bridge will be closed with a temporary detour on existing roads during construction of the new bridge. Project plans have not yet been developed.

The project area is located along a paved rural road in the southern portion of New Haven, east of Route 7. The bridge is set in flat terrain of open fields and woods. There are no structures on three quadrants surrounding the bridge. There is a 19th century farm immediately northwest 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 adjacent to the northwest end of the bridge whose setting has the potential to be affected by the project.

Description of Resources

<u>Bridge #10</u>
Also known as the Nash Farm Bridge, 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 New Haven conducted in 1975 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 #10 since before the mid-19th century. The 1871 Beers Atlas, 1857 Wallings map and 1821 Whitelaw map all show crossings in this location. The 1796 Whitelaw map has no crossing.

The existing bridge is 170 feet long, and has three simple spans of 54',74', and 54' with a 20 foot curb to curb width. The bridge is composed of five rusted steel I-beams, fabricated by Lackawanna Steel Construction Co. of Buffalo, NY, that carry a curved, scored, reinforced concrete deck. The U- shaped decks have concrete outside supports with spandrels in the corners at the end of each span, where the deck meets the pier. The deck is lined with severely deteriorated stepped Art Deco style concrete posts that originally had two-strand steel cable railings strung between them. These have been removed and the posts retrofitted to carry modern metal guard rails. The bridge rests on reinforced concrete abutments and is carried by two scored, tapered reinforced concrete piers with conical caps. The piers and abutments are set on a 45 degrees skew and rest on timber pilings. The concrete is severely spalling and has lost the smooth facing on many components in many locations. Areas of the deck, piers and posts have lost fabric completely resulting in holes, half-height or width posts, and missing spandrel corners. A modern wooden snowmobile lane, consisting of a wood deck and railings supported by small T-beams with metal railing braces, is cantilevered off the west side of the bridge.

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 #10 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. The stepped Art Deco posts on this bridge is a style commonly found by the med-1030s. . 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. 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.

Bridge #10 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 loss of its cable railings and

replacement with modern metal guard rails, along with the addition of a wooden snowmobile deck, have altered the original design of the structure. In addition, severe deterioration of the concrete abutments, piers, deck and railing posts 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.

1089 River Road - This property, known as the Old Nash Farm, is included in the Vermont Historic Sites and Structures Survey for the town of New Haven conducted in 1975 (property #0113-8) and updated in 1992 (property # 39). It is listed on the State Register of Historic Places and is eligible for the National Register under criteria A and C as an excellent example of a successful 19th century sheep farm that evolved into a dairy farm in the late 19th century. The property includes a c. 1840 Greek Revival style Georgian plan house with triangular gable fan, and centered front entry framed by a surround with entablature, pilasters, with fanlight, ¾ length multi-pane sidelights above paneled bases. It was the home of General William Nash, a successful sheep farmer in the 1840s and 1850s. A later 20th century, gambrel roofed, wood frame ground level stable barn stands to the rear of the house along with related small outbuildings.

The property stands immediately north of Bridge #10 and is not expected to be impacted by the project. It will be outside the limits of construction. Approaches to the bridge are not expected to be moved or widened. Sight limits heading south toward the bridge are somewhat limited and may require limited removal of vegetation or moving of a modern vertical plank fence on the edge of the house's front yard. This will not substantially alter the setting of the building nor will replacement of the existing bridge with a slightly larger one.

1131 River Road- This property lies to the north of the Old Nash Farm 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. 1845 sidehall plan, Greek Revival style house and two 19th century gable front barns that stand across the road. There are three mature trees in front of the house that contribute to its setting and should be avoided during construction. The house and barns are included in the Vermont Historic Sites and Structures Survey for the town of New Haven, are listed on the State Register and are 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 20 foot wide steel beam and concrete deck bridge and construct a new 28 foot wide one in its place, with limited approach work, 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 north of the bridge are outside the limits of construction. Since very little approach work is anticipated, impacts to the setting of these buildings should be minimal. The mature trees in front of #1131 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.

Attachments

1. Bibliography
2. Location and Historic Resources Map
3. Historic maps
4. Photographs
5. Vermont Historic Sites and Structures Survey Excerpts
6. 1934 As-built plans

Bibliography

Beers, F.W. *Atlas of Addison County, Vermont*. New York: F.W. Beers, 1871. Reprint. Rutland, VT: Charles E. Tuttle, 1969.

Farnsworth, Harold and Robert Rodgers. *New Haven in Vermont, 1761-1983.* New Haven, VT: Town of New Haven, 1984.

Johnson, Curtis B. and Elsa Gilbertson, eds. *The Historic Architecture of Addison County.* Montpelier, VT: Vermont Division for Historic Preservation, 1992.

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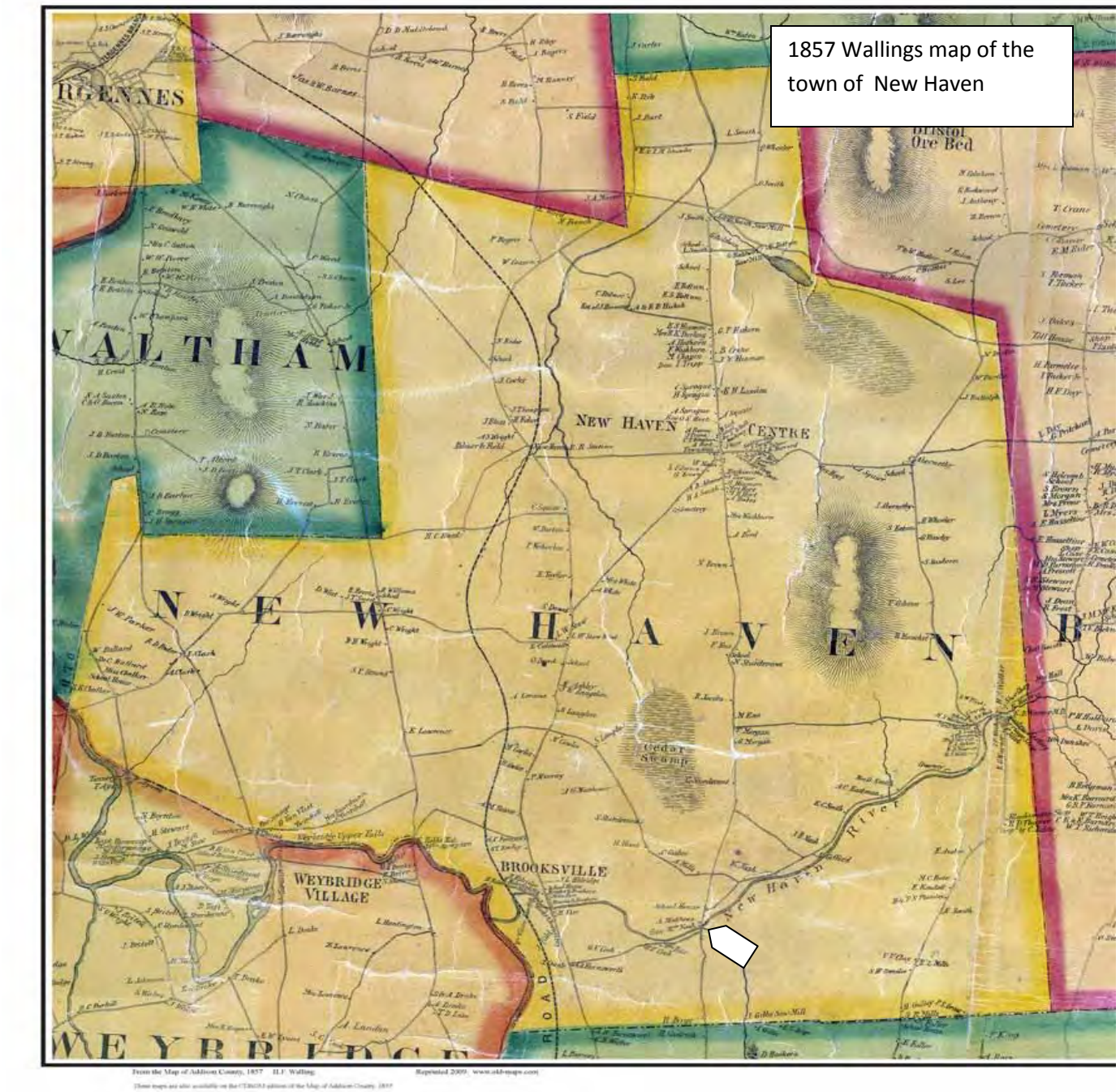
Walling, H.F. *Map of Addison County, Vermont.* New York, 1857.

Winters, Terry, Vermont Historic Sites and Structures Survey: Town of New Haven, recorded for Vermont Division for Historic Preservation, Montpelier, VT, 1975.

Historic Resources and Project Location Map


1857 Wallings map of the town of New Haven
RGENNES
VALTHAM
NEW HAVEN CENTRE
NEW HAVEN
Cedar Swamp
BROOKSVILLE
WEYBRIDGE VILLAGE
New Haven River
ROAD


BROOKSVILLE
NEW HAVEN
Scale 200 Rods to the inch.
NEW HAVEN MILLS
TOWN OF NEW HAVEN
New Haven
Business Notices
1871 Beers Atlas map of the town of New Haven

1. Looking north at east side of bridge with scored concrete piers and deck and stepped concrete posts with modern guard rail.

2. Looking north at west side of bridge with wooden snowmobile lane cantilevered off.

3. East side of bridge- southern pier with concrete failure on pier, deck and posts.

4. East side of bridge-northern pier with concrete failure on pier, spandrel, deck and posts. Rusted I-beam.

5. Looking north at east side of bridge with deteriorated scored concrete deck, piers, and stepped posts, rusting stringer.

6. Post with missing fabric and pin hole for former cable railing visible at bottom of post..

7. Art Deco stepped post with modern steel guard rail. Pin hole for former cable railing visible at bottom of post.

8. Looking west at spallling concrete spandrel with efflorescence and rusting and scaling of stringer.

9. Looking north at rusting, scaling I-beams and loss of concrete at top of piers.

10. Concrete failure in reinforced deck.

11. Spalling concrete curbs and posts encased in wood.

12.. Looking northwest at farm located at #1089.

13. Greek Revival style house at #1089.

14. Barn and sheds at #1089.

15. Shed at #1089 with slate roof, 12/12 windows, door with full entablature.

16. Greek Revival style house and mature tree at #1131.

17. Pair of barns across the road from house at #1131.

Appendix C – Archaeological Assessment

ARCHEOLOGICAL RESOURCE ASSESSMENT

Nash Farm Bridge (Bridge #10)

Town of New Haven
Addison County, Vermont

HAA # V545-11

Submitted to:
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www.acra-crm.org

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 New Haven, Addison County, Vermont (Map 1). The proposed work will be conducted on the Nash Farm Bridge (Bridge #10), built in 1934, which is located on Town Highway 2 over the New Haven River. The rehabilitation of the Nash Farm Bridge will entail widening and replacement on line with minimal approach work. At this early stage in the project scope it is assumed that the bridge will be closed with a temporary detour to route traffic around the closed 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 and Current Conditions

The project area is located in the Town of New Haven within the New Haven River valley and the Otter Creek watershed, situated directly west of the Green Mountains. The extant Nash Bridge, constructed in 1934, measures 170 feet in length, and is aligned north-south across the New Haven River. The bridge is located on River Road (TH 2), just north of its intersection with Halpin Road.

Located to the northwest of the bridge is the Old Nash Farm complex, ca 1810, which is considered to be one of the oldest farmhouses in New Haven (VDHP Historic Sites & Structures Survey 1975) (Photo 1). Situated on the level river terrace the extensive farm complex contains a large farmhouse, a barn, silos, and several sheds and outbuildings. The southwest quadrant of the bridge is a cultivated level landform (Photo 2). The landform to the northeast of the bridge is characterized by a very thin parcel of ground which contains grass and scrub brush, which quickly slopes down to the river to the east (Photo 3). The width of this landform, located between the road and the river, increases in size further to the north. The land southeast of the bridge is a level terrace which contains grass and trees adjacent to the river. The southern portion of this area contains an informal car pull-off adjacent to Halpin Road (Photo 4).

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

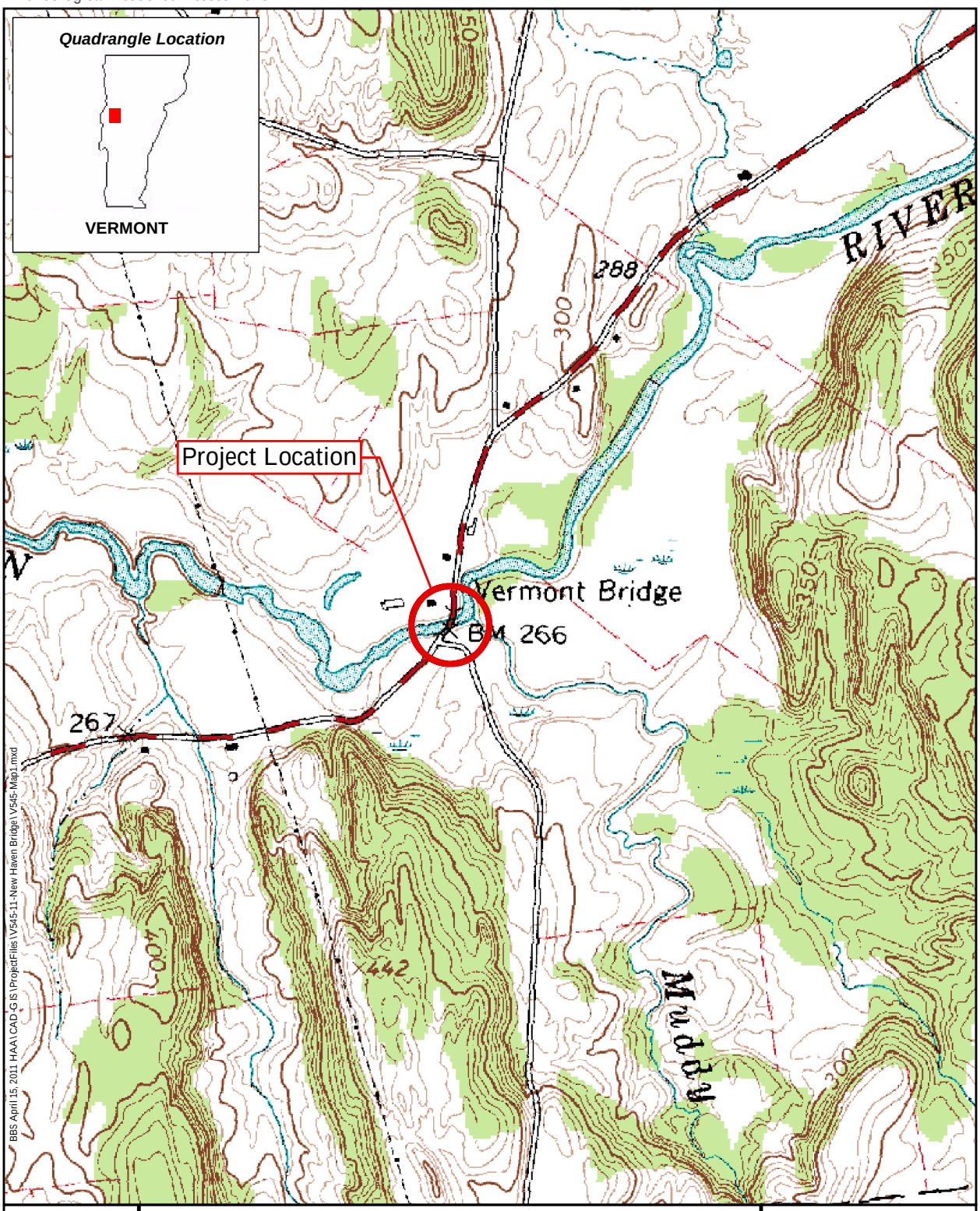

Quadrangle Location
VERMONT
Project Location
Vermont Bridge
BM 266
RIVER
288
300
350
267
442
Middlebury
BBS April 15, 2011 HAA\CAD-GIS\ProjectFiles\V545-11-New Haven Bridge\V545-Map1.mxd
N
0 1,000 2,000 Feet
0 200 400 600 Meters
Note: Contour interval is 20 feet.
Legend
Project Area
USGS 1963, Photoinspected 1983
Middlebury, Vermont
HARTGEN
archeological associates inc
Map 1

Photo 1. Photo shows the terrace northwest of the bridge, the location of the Old Nash Farm. View is to the north.

Photo 2. Photo shows the terrace northeast of the bridge. View is to the north.

Photo 3. Photo shows the terrace southwest of the bridge. View is to the south.

Photo 4. Photo shows the terrace southeast of the bridge. View is to the south.

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 at 266 feet (81 m) above mean sea level (amsl), situated on the New Haven River, and located approximately 1.5 miles (2.5 km) east of its confluence with the Otter Creek. The confluence of the New Haven River and Muddy Brook is located approximately 150 feet (45 m) east of the project area. Wetlands associated with Muddy Brook are located approximately 650 feet (198 m) south of the Nash Bridge.

The soils located within the project area include Winooski very fine sandy loam. The Winooski soil series are formed in alluvial deposits on flood plains that are occasionally flooded for brief duration from late Fall through early Spring. They are very deep to bedrock and moderately well drained. These soils have a water table at depths of 1.5 to 3.0 feet below the surface from late Fall through early Spring. This map unit is well suited to cultivated crops, hay and pasture. Fooding is ahazard, but permeability is moderately rapid, so the flooding is usually of short duration. (USDA 2005).

DOCUMENTARY RESEARCH

State and National Register

There are no National Register Historic Sites within or adjacent to the project area. In the project vicinity, there is one farm complex and one domestic residence which are listed on the State of Vermont Historic Sites & Structures Survey. Located on the west side of River Road, situated directly north of the Old Nash Farm, is a ca. 1845 Greek Revival residence.

The ca. 1810 Old Nash Farm is located directly adjacent to the project area, located northwest of the Nash Bridge. The original farmhouse has a wide gable-front, and contains a later addition ell in the back. In addition to the main farmhouse, the farm complex contains a large barn and silo, and four outbuildings.

A history of the Nash family indicates that they represent some of the earliest settlers to this country, with Thomas Nash, his wife Margery, and their five children emigrating from Leyden, Holland possibly as early as 1625. The Nash family settled in Connecticut, and stayed in that area for the next 175 years. Then, in 1799, William Nash and his wife, Susannah moved to New Haven, Vermont from Farmington, Connecticut. William and Susannah built the house now named the Old Nash Farm, and resided there with their ten children.

One of their children, General William Nash, Jr., born 1787, was an accomplished man of local and national celebrity. He held many governmental positions during the early years of Vermont's statehood, that included his election as a representative of the State Legislature, his election (twice) to the position of county senator, and his selection as a delegate to the National Whig Convention in 1852. In addition to his involvement in government, he was a General of the State Militia, and he was also active in civic and community affairs. He was active in securing the Middlebury Bank charter, and served as its president and director. William Nash was a long time member of the corporation of Middlebury College, was the Vice-President of the Vermont State Bible Society, and a member of the County and State Temperance Societies, and as such was instrumental in the Prohibition law passed through the Vermont Legislature. He and his wife, Mary, and their ten children occupied the Old Nash Farm until the general's death at the age of 84 in 1871.

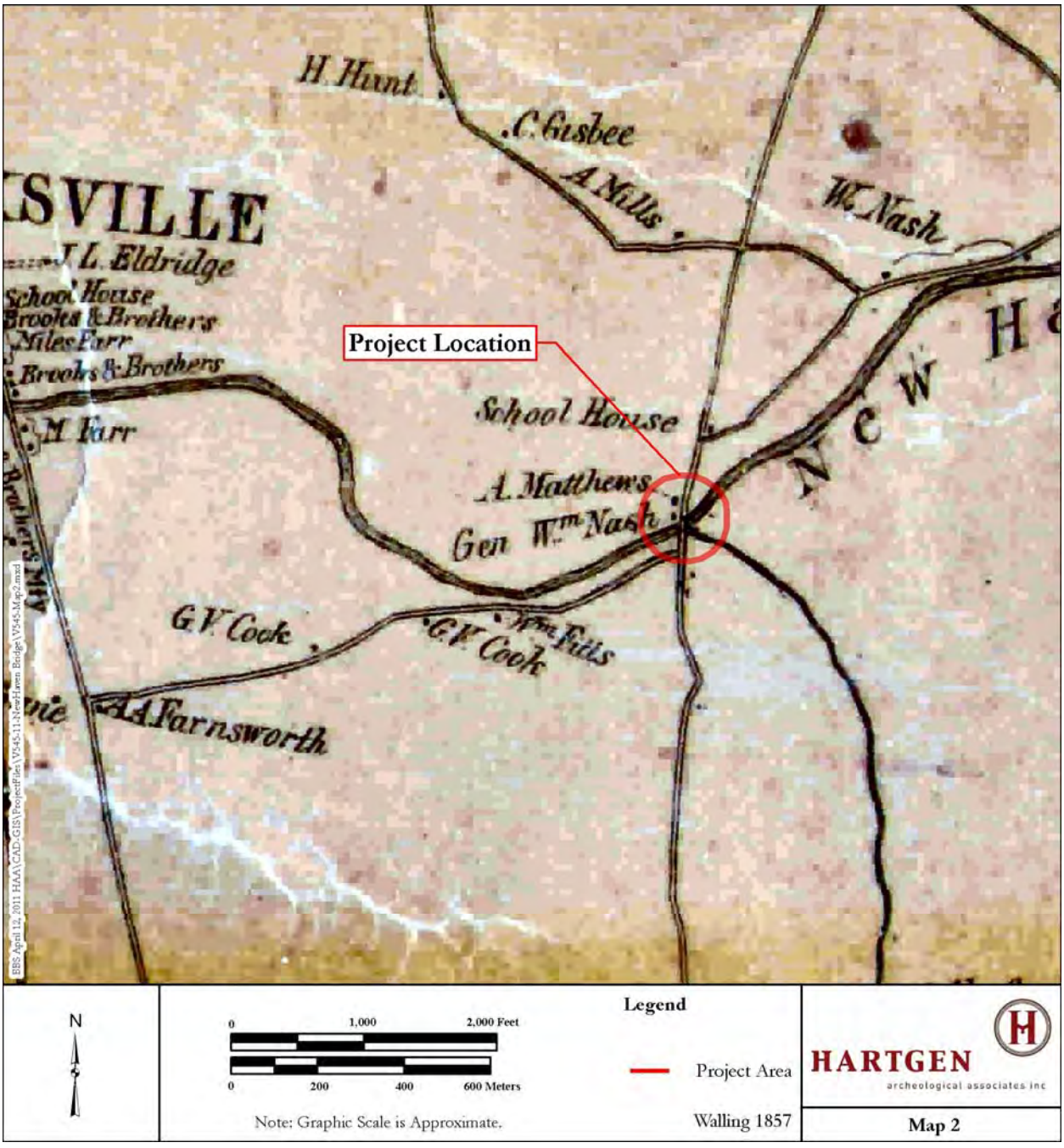
There are no known cemeteries located within the project area (Hyde and Hyde 1991).

Historic Archeological Sites

An examination of the VDHP archeological site files indicated that there are no historic archeological sites located within or adjacent to the APE.

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 1858 Walling map and the 1873 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). Both the 1857 and 1873 maps show a bridge located at project area location. The 1857 Walling map shows the home of General William Nash to the northwest, and the residence of A. Matthews further to the north. The 1869 Beers map depicts the home of Gen. W. Nash, and their neighbor to the north, Mrs. S. J. Seeley. These 19th-century maps depict no historic structures located within the project area.


H Hunt
C Gisbee
A Mills
W Nash
SVILLE
J L Eldridge
School House
Brooks & Brothers
Miles Farr
Brooks & Brothers
M Farr
Project Location
School House
A Matthews
Gen Wm Nash
G V Cook
G V Cook
Wm Fitts
A A Farnsworth
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0 1,000 2,000 Feet
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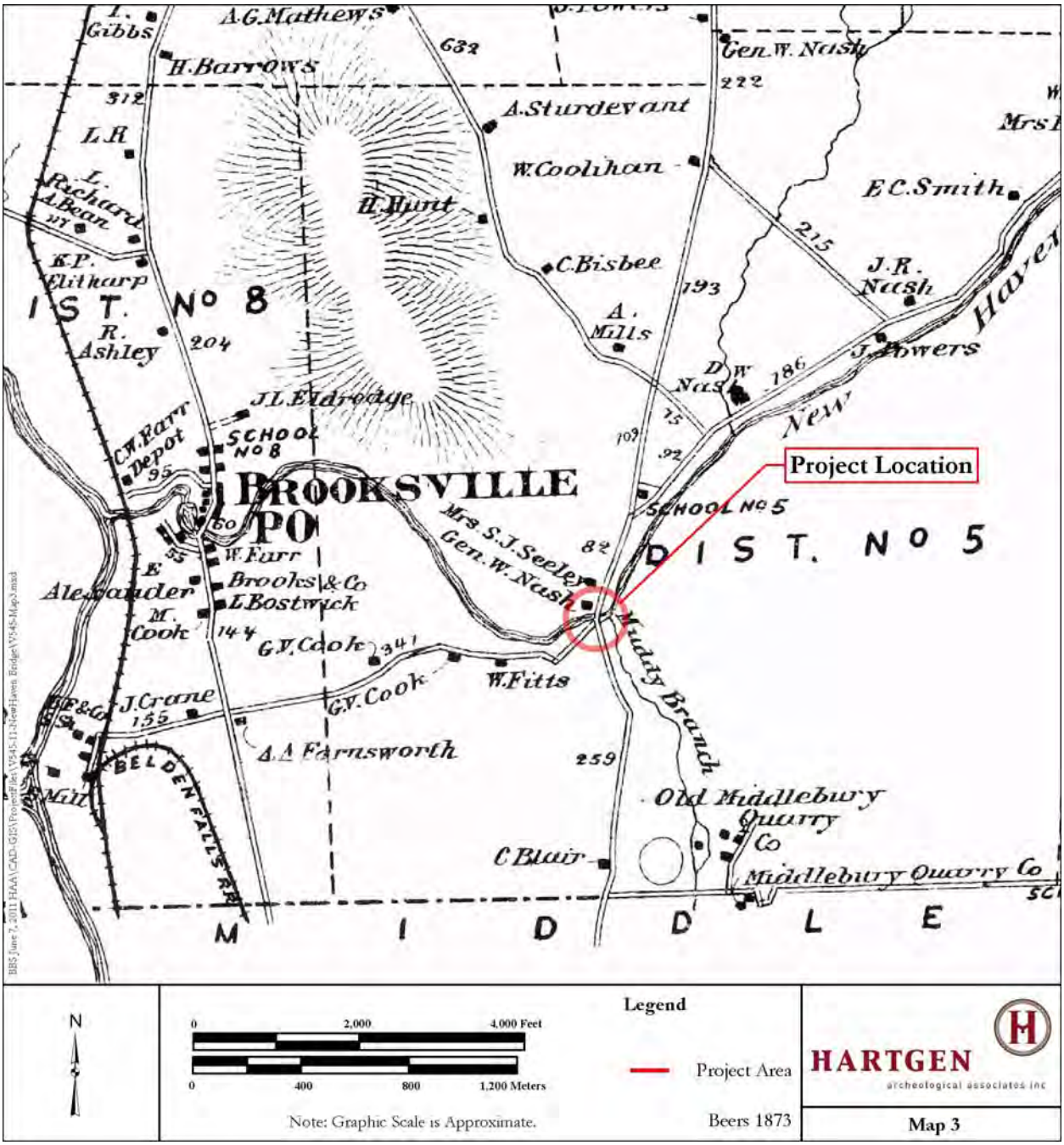
Note: Graphic Scale is Approximate.
Legend
Project Area
Walling 1857
HARTGEN
archeological associates inc
Map 2



The historic archeological sensitivity of the project APE is considered low since historic maps do not show any domiciles or industries situated at this location. In addition, the site visit did not identify any indication of historic development, including structures, features, or historic plantings.

Precontact Site File Research and Archeological Sensitivity

Examination of VDHP site files indicate that there are nine precontact sites located within a half mile of Bridge #10 (Table 1). The majority of these sites are located on the New Haven River, with a few situated adjacent to Muddy Brook. These sites include: VT-AD-461, VT-AD-695, VT-AD-709, VT-AD-820, VT-

AD-821, VT-AD-830, VT-AD-1083, VT-AD-1404 and VT-AD-1534. The majority of these sites were small precontact camps which contained a limited number of quartzite and chert lithic debitage, fire-cracked rocks, and a few stone tools. Woodland Period projectile points were recovered at three of the sites, include the largest of the sites located within one mile of the project - VT-AD-461. This site is situated on a 13.7 acre floodplain terrace of the New Haven River at its confluence with a perennial stream. The site yielded a number of quartzite and chert flakes, a biface, scrapers, cores, six points, including a quartzite Levanna projectile point, and as well as historic domestic debris.

An additional eleven precontact sites are located within a two mile radius of the project area, three of which are situated adjacent to the New Haven River. These include: VT-AD-813, VT-AD-819, VT-AD-826, VT-AD-1014, VT-AD-1084, VT-AD-1085, VT-AD-1086, VT-AD-1397, VT-AD-1398, VT-AD-1399 and VT-AD-1400 (Table 1). Several of the files for these sites could not be found at the VDHP, but of those that were reviewed, the majority represent small precontact sites of indeterminate time period which contained a small amount of quartzite and chert lithic debitage. At site VT-AD-1014, a Late Archaic Vosburg point of Hathaway chert, a biface made of Clarendon Springs chert, a ground stone tool, and three quartzite flkes were recovered. Based on the number and type of precontact sites located in the project vicinity, the project area is considered to have a high archaeological sensitivity.

The Vermont Division for Historic Preservation Internet Mapping Site was accessed and used to formulate the archeological sensitivity of the proposed project areas (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 five sensitivity factors, including the proximity to a river, other waterbody, and wetland, as well as the presence of floodplain soils and level terrain.

The VDHP Environmental Predictive Model was completed for the project area which produced an overall rating of 82 (Appendix I), indicating a high precontact sensitivity. The project area received points based on its location adjacent to a river, near a confluence with a primary waterway in the region, situated within a travel corridor, situated on a level terrace, and located in proximity to a number of precontact sites.

ARCHEOLOGICAL POTENTIAL AND RECOMMENDATIONS

A site visit was made to the #10 bridge site area on November 11, 2010 under sunny and cool conditions. The project area was free of snow cover and standing water. The terrain surrounding the bridge on its four quadrants is characterized as level floodplain terrain. All four quadrants of land adjacent to the bridge are level, and appear to be relatively undisturbed. Based on a number of factors, the landform adjacent to the bridge is considered to have a high archeological sensitivity for the presence of precontact sites.

At the location of Bridge #10, and the land directly adjacent, the primary concern is for the presence of precontact cultural resources. 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.

If the Area of Potential Effects (APE) for the bridge construction, which includes potential road detours and staging areas, will entail impacts to any undisturbed level terrain adjacent to the New Haven River, it is recommended that a systematic Phase IB archeological shovel test survey be undertaken.

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APPENDIX 1: VDHP Archaeological Resources Assessment Form

Vermont Division for Historic Preservation
Archeological Resources Assessment Form
Bridge #10, New Haven, Vermont

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

Envronmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
A. Rivers and Streams (Existing or relict)					
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	**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)	
B. Lakes and Ponds					
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			
C. Wetlands					
13) Proximity to Wetlands*	0–90 m	12	**6**	Layer 3: Proximity to Wetlands (0-180 m)	
	90-180 m	6			

Envronmental 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)	
D) Valley edge and Glacial Landforms					
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)	
E. Other Environmental Factors					
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		-	
F. Other High Sensitivity Layers					
24) High Likelihood of Burials		32		See VAI layer (Under Construction)	
25) High Recorded Archeological Site Density		32	**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)	

Envronmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
G. Negative Factors					
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:			**82**		

** 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 acquifer, 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 New Haven, Project File**

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

DATE: **May 17, 2011**

SUBJECT: **New Haven BRF 0183(1) – 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

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

- The bridge site and approaches are accident prone because of a lack of sight distance at the intersection of Halpin Road and River Road.

  The comment was noted for consideration. VTrans has provided accident data.

- There is minimal sight distance when traveling south on River Road over the bridge.

  The comment was noted for consideration.

- There is a history of flooding at the bridge site.

  The comment was noted for consideration.

- Will Halpin Road remain open during construction?

  It was discussed that it is expected that Halpin Road could remain open during the majority of construction and that short term closures may be necessary during delivery of some materials, concrete placements, etc.

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

  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 localized concrete deck failures could occur.

- Will the bridge meet State/Federal standards? (Sight distance on curved alignment.)

  Both the horizontal and vertical alignments, along with site distances, will be looked at during the alternatives study. An effort will be made to increase site distances and to increase safety along River Road and at the intersection of River Road and Halpin Road.

- Given history of flooding, sight distances, and vertical alignment constraints, can bridge be relocated upstream from its existing location?

  The comment was noted for consideration.

- The bridge elevation needs to be increased. Water has overtopped the bridge in the past.

  The comment was noted for consideration.

- Halpin Road floods due to Muddy Brook.

  The comment was noted for consideration.

- What will be the duration of construction, how many seasons?

  VTrans construction season generally occurs from April 15th to October 15th. The actual duration of construction and the number of construction seasons needed for construction are dependent on the type of bridge that is designed and the traffic control that is selected. The alternatives study will look at construction durations. We understand that it is the desire of the Town to expedite construction.

- Can the bridge remain open during construction?

  It is undetermined at this point whether the existing bridge will remain open during construction. It is dependent on the type of traffic control implemented at the site and will be investigated during the alternatives study.

- If the bridge is closed during construction, how will traffic be detoured around the site?

  A detour route has not yet been investigated; it is something that will be investigated during the alternatives study.

- Will the curved alignment of the existing bridge remain with the new bridge?

  The horizontal alignment of the new bridge has not yet been determined; it will be looked at during the alternatives study.

- What are the plans for the attached snowmobile bridge?

  The attached snowmobile bridge would be removed with the existing bridge. VTrans would generally reconstruct a new bridge to accommodate features of the existing

bridge. In the case of the Nash Bridge, the snowmobile crossing may be accommodated with a widened shoulder. The snowmobile crossing will be investigated as part of the alternatives study.

- River Road is heavily used by Bristol residents to get to Middlebury, do you have traffic counts?

  Traffic data for River Road has been produced by VTrans. There is a total of approximately 1600 ADT. The traffic volumes will be taken into consideration during the alternatives study.

- How will the existing bridge be demolished?

  The demolition of the existing bridge will be the responsibility of the construction contractor.

- Can something be done about the speed of vehicles on River Road? A resident stated that they have seen multiple crashes at the bridge site from cars traveling in both directions, many accidents occurring at the outside of the curve.

  The speed limit along River Road is controlled by the Town.

- In 1998 flooding at the Nash Farm resulted in 6-feet of water in the basement of the farmhouse at the northwest corner of the bridge.

  The comment was noted for consideration.

- Several years ago the State/Town visited the bridge site and discussed erosion control and stream bank stabilization in the area surrounding the bridge site.

  The comment was noted for consideration.

- Farm vehicles use the bridge on a daily basis.

  The comment was noted for consideration.

- A resident commented that if the bridge is closed during construction, the milk from their farm would have to be trucked through Bristol and this would create a hardship.

  The comment was noted for consideration.

- Because of mud season, Hunt Road is posted until May 1st each year.

  The comment was noted for consideration.

- Debris caught at the existing pier can be an issue during high water events.

  The comment was noted for consideration.

- A resident requested that snowmobile access be maintained by incorporating a widened shoulder or attached/separate structure.

The comment was noted for consideration. The snowmobile crossing will be investigated during the alternatives study.

- Can the elevation of Halpin Road be increased at its intersection with River Road?

  The intersection of Halpin Road and River Road would be reviewed for sight distances and safety concerns. Recommendations to improve the safety would be made as part of the alternatives study.

- What would be the cost associated with a temporary bridge?

  A temporary bridge cost has not yet been determined; however they are traditionally very expensive.

- If staged construction is used, would farm vehicles be able to pass during construction?

  Staged construction would allow for a single lane of traffic to be maintained through the project site during construction. It is undetermined what the width of the single lane would be, or what width is needed for the specific pieces of farm equipment. If staged construction is determined to be a viable method for traffic control, lane widths and specific farm equipment would be investigated during the alternatives study.

- If the bridge is closed during construction and traffic is forced to use Hunt Road as a detour, will Hunt Road receive extra maintenance efforts?

  This question will be discussed with VTrans to determine if extra funds can be appropriated for maintenance of a detour route.

- How will the bridge construction be funded?

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

- Is there money set aside for construction?

  It was discussed that 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.

- If the existing bridge deteriorates before a new one is constructed, would it be posted?

  It was discussed that the existing bridge is inspected every two years by VTrans bridge inspectors and that an inspection report is sent to the town. Based upon the findings of the bridge inspection report VTrans may make recommendations to the town to post the bridge or reduce the speed across the bridge. A member of the town government identified that River Road is posted for 24,000 lbs, but that the town would give overweight permits for as much as 80,000 lbs.

- Can the truck traffic on the existing bridge be limited until after construction of the new bridge?

Limitation on traffic across the bridge is something that could be considered and enacted by the Town.

- Will construction costs be considered with the alternatives?

  Estimated construction costs are considered during the alternatives study.

- Has the existing bridge been rated?

  It is undetermined if the existing bridge has a current load rating. We will check with the state to determine if a current load rating is on file.

- Does the traffic volume affect the rating?

  Traffic volume does not generally affect a load rating. The load rating determines the weight of vehicles that can safely pass over the bridge.

- There is survey flagging that was placed on Nash Farm property. What is it for?

  The survey flagging is likely left over from topographic survey collection.

- Person wrote letter in support of temporary bridge to limit detour traffic on Hunt Rd.

  The letter is attached to these comments and is noted for consideration.

- A resident stated that they would not recommend using Hunt Road as a detour and would recommend using South Street if a detour is needed.

  The comment was noted for consideration.

- If Halpin Road is closed, traffic would be forced to detour through Middlebury.

  The comment was noted for consideration.

- At Alternatives Presentation Meeting will there be more design information?

  Additional design information is expected to be available at the alternatives presentation meeting.

- Will the Alternatives Presentation Meeting be a onetime meeting, or will there be a series of ongoing update meetings?

  The alternatives presentation will be a onetime public informational meeting.

- Can information and updates be posted to the Town Website?

  Updates can be sent to the town so that the town can post them to their website.

- A resident indicated that Munger Street was not a good alternative for a detour. There have been a number of bad accidents on Munger Street.

  The comment was noted for consideration.

- Can the sheriff have a greater presence on River Road both now and during construction?

  The town will discuss an increased presence of the sheriff along River Road.

- Can the roadway be posted to 35 MPH?

  The speed limit along River Road is controlled by the Town and is not something that would be revised as part of this project. A member of the town government indicated that the Selectboard is talking about lowering speed limit along River Road.

- Will the roadway at each end of the bridge be repaired as part of this project?

  As part of the bridge reconstruction, the approaches to the bridge will be reconstructed to match back into the existing River Road. Changes to the overall roadway will be minimal.

- Are the original plans available from the 1934 construction?

  The design consultant has the original 1934 construction plans for the bridge.

- What is the elevation to existing bedrock?

  The elevation to bedrock is undetermined at this time, but is expected to be determined during the geotechnical investigations.

- Will the fishing access off of Halpin Road, southeast of the existing bridge, be maintained for use after the new bridge is constructed?

  It is anticipated that the fishing access off of Halpin Road will be maintained for use after the new bridge construction is completed.

- Are there any plans to condemn the existing bridge prior to construction?

  At this time there are no plans to condemn the existing bridge.

- What will be the impact on construction time if the existing bridge remains open during construction and traffic is not detoured around?

  The timeframe for construction will be investigated during the alternatives study, however it is expected that if the project is constructed by closing the existing bridge and detouring traffic around, the closure would be part of a single construction season. If the traffic was maintained through the construction site with a temporary bridge or with staged construction, construction would likely extend beyond a single season.

- Is a temporary bridge different than staged construction?

  A temporary bridge would involve construction of a temporary structure adjacent to the existing bridge and would allow or maintaining traffic during construction of the new bridge. Staged construction would allow for the maintenance of a single lane of traffic on the existing bridge while half of it is demolished and half of the new structure is being constructed. The single lane of traffic would then be switched to the new bridge while

the other half of the old bridge is demolished and the remaining portion of the new bridge is constructed.

- What is the overall length of the existing bridge?

  The existing bridge is 170-ft long.

- If you increase the height, would it increase the weight of bridge?

  It is undetermined if a taller bridge would also be a heavier bridge. It is dependent on the construction materials used for the new bridge.

- If the elevation of the existing bridge is raised, how high would it be?

  The configuration of the existing bridge is undetermined at this time. The vertical alignment of the new bridge will be investigated was part of the alternatives study.

- There was flooding at the Nash Farm in 1998 which resulted in about 3'-4' of water in the yard of the farmhouse at the northwest side of the bridge.

  The comment was noted for consideration.

The Local Concerns Meeting ended 8:05 pm.

Please read aloud on our behalf during questions and comments time. Thank you.

April 8, 2011

Dear Town of New Haven / State of Vermont:

In that we cannot attend the informational meeting taking place next Tuesday evening regarding the replacement of the Old Nash Farm / River Road Bridge, we are writing to express some concerns.

First, let us say that we are overjoyed to hear that this bridge replacement project is slated to begin this year. We live at the corner of South Street and Hunt Road, and drive over that bridge every day. We have had many close calls on the bridge due to other drivers not staying on their side of the very narrow space available. We have felt that it is not a matter of IF, but WHEN a terrible tragedy is going to occur on that bridge.

However, we want to very strongly voice our opinion that a temporary bridge does indeed need to be erected for use during the replacement project. If not, the increased traffic on Hunt Road, in itself, will pose potential imminent danger. As you're all well aware, distracted drivers and drivers who refuse to drive the speed limit are now everywhere in Vermont. The accident in which a bicyclist (and neighbor of ours) was struck on River Road last fall is testament to this (as are the deaths of both of our cats on this road in the last year). As residents of Hunt Road, we walk and ride our bikes with our children, and meet many neighbors doing the same. Young kids ride horses on this road. There is a daycare center on this road. During the summer months, when the Four Hills Farm trucks are rolling up and down our road from dawn til dark, the increased dust really takes a toll on residents with asthma, and the noise is deafening. Due to that experience (which at least happens only in short spurts of a few days at a time), we are very worried about what closing the Nash Farm Bridge for a prolonged period would mean in terms of increased traffic on Hunt Road.

We hope you will seriously consider doing whatever is necessary to create a temporary bridge or bridges, keeping both the River Road and Halpin Road open for use.

In closing, we want to know *how many vehicles travel River Road from Bristol to Rt. 7 each day*? Has this volume been measured? If not, will it be? We would also like to know from where and how much funding is available to this project and whether any of those funds are specifically earmarked for a temporary bridge. And we would like to know what other kind of information and data will be used when deciding whether or not to install a temporary bridge.

Respectfully yours,

Josie Masterson-Glen and William Glen

1925 Hunt Road
New Haven, VT 05472
802-388-7197

SIGN-IN SHEET
LOCAL CONCERNS MEETING

New Haven BRF 0183(1)

Meeting Date/Time: Tuesday, April 12, 2011 7:00 PM
Meeting Location: New Haven Town Hall, New Haven, VT

Name	Affiliation	Phone Number	E-Mail Address
Mike Bowdish	ACSA	352-9966	
Marilyn Ewell	River Rd Resident	388-7370	mewell@middlebury.edu
Martin Ewell	" "	" "	
Jim Collier	Hunt Rd. Resident	453-7324	
Jaden Collier	" "	" "	
Kathleen Ready	New Haven Select Board	453-5494	KREADY (A) GMAVT.NET
Pam Kingman	Town Clerk	453-3516	newhavenclerk@gmavt.net
Katie Reilley	Town New Haven	453 3516	newhavenhighway@gmavt.net
Rick Kehne	ACRPC	388-3141	rkehne@acrpc.org
Mary Manley	town/River Road resident	388-0773	manleyVt@gmail.com
Jerry Smiley	River Rd. resident		

SIGN-IN SHEET
LOCAL CONCERNS MEETING

New Haven BRF 0183(1)

Meeting Date/Time: Tuesday, April 12, 2011 7:00 PM
Meeting Location: New Haven Town Hall, New Haven, VT

Name	Affiliation	Phone Number	E-Mail Address
Glenn Ash	resident	453-3817	
Phil Livingston Jr	resident	349-9377	
Roger Bouse	Resident	453-2682	
FABIAN BOURGEOIS	RESIDENT	453-5255	FABIAN.BOURGEOIS@VSMAIL-COM
GEORGE CRANE	RESIDENT	388-8044	
Lori Stone	Resident	382-8668	
Pam marsh	Resident/SelectBoard	349-9788	
Kathleen LBarrett	resident/SelectBd	453 4232	
André Cloutier	Resident	388-2227	
Mary McGuire	resident	388-6740	
Robert Birchard	VTrans ACSA	989-3669	

SIGN-IN SHEET
LOCAL CONCERNS MEETING

New Haven BRF 0183(1)

Meeting Date/Time: Tuesday, April 12, 2011 7:00 PM
Meeting Location: New Haven Town Hall, New Haven, VT

Name	Affiliation	Phone Number	E-Mail Address
Diane Livingsta	Snow mobile bridge	545-2120	
Michael Hedy	Snowmobile bridge Dairy farm on River Rd	985-0163	
Phil Livingston	Snowmoble bridge	802 349 6501	
Lewis Barnes	snowmobile bridge	453-3816	
Becky Hutchins	snowmobile bridge Live on River Road	382-9191	
Bruce Mann	Snowmobile Bridge Live on River Road.	382-9191	
DAVID HOLBROOK	SNOWMOBILE MAIN Corridor Bridge	771-7012	
Margaret Carothers	NASH FARM	388-2204	nashfarm@wildblue.net
IVA Menard	Business just north of Bridge	388-6414	imenard69@gmail.com
Jane Caulk	Resident	388-8029	jaube@middlebury.edu
matt Ford	Resident	388 6414	

SIGN-IN SHEET
LOCAL CONCERNS MEETING
New Haven BRF 0183(1)

Meeting Date/Time: Tuesday, April 12, 2011 7:00 PM
Meeting Location: New Haven Town Hall, New Haven, VT

Name	Affiliation	Phone Number	E-Mail Address
Gail + Bob Regan	resident - River Rd.	388-1050	gail.regan@castleton.edu

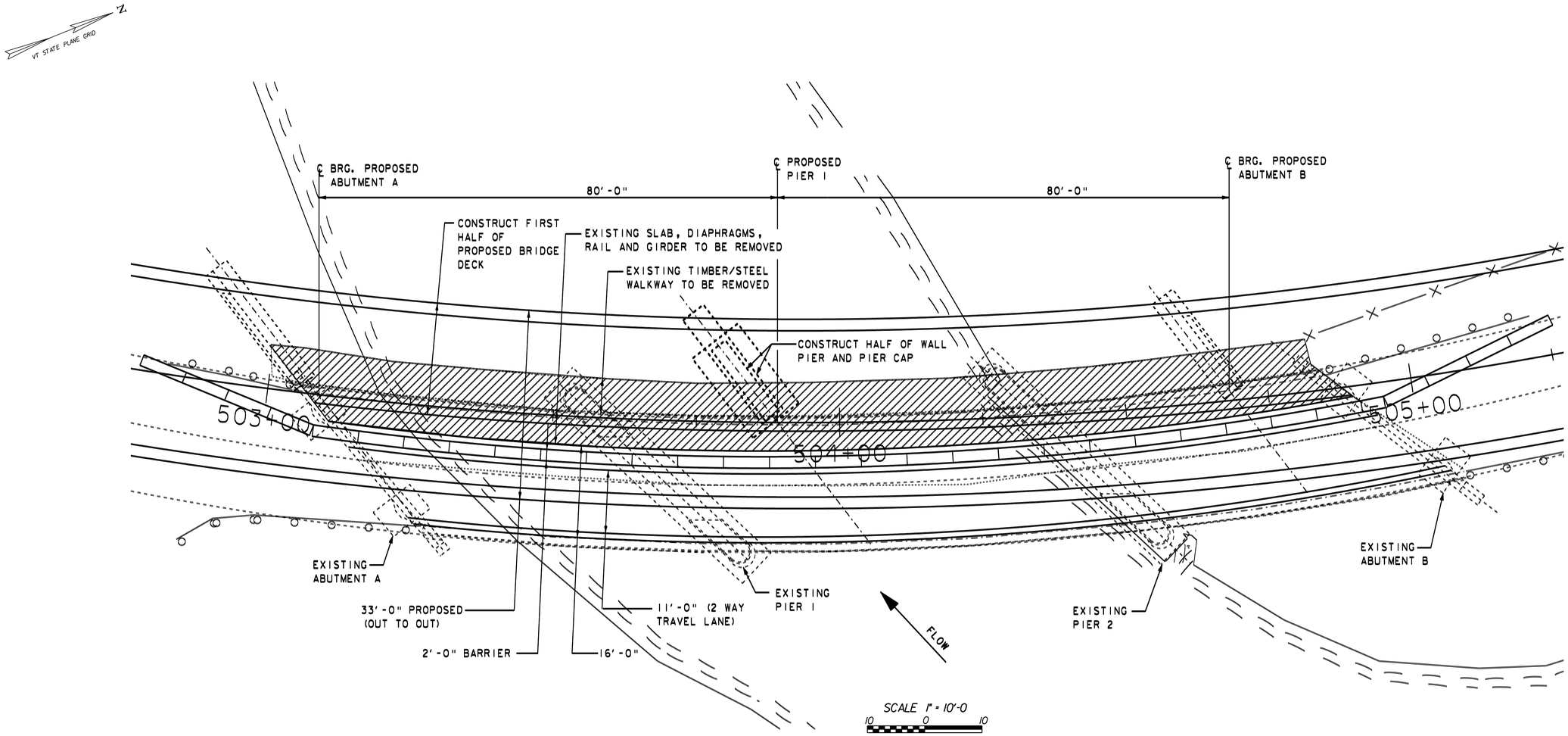
Page _____

Appendix E – Alternative Matrix

Evaluation Matrix - VT TH 2 Over the New Haven River, New Haven, VT

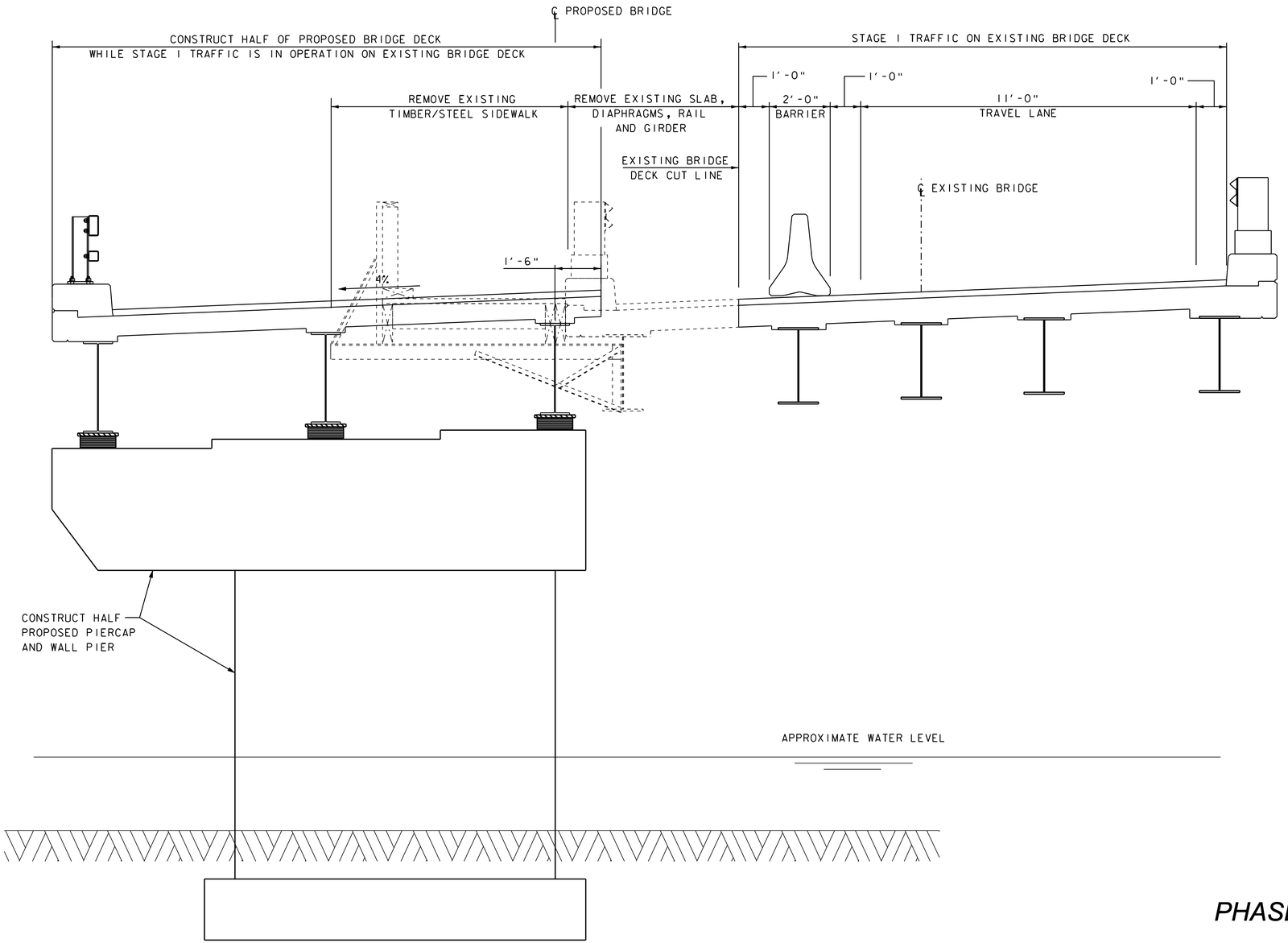
		ALTERNATIVES:	A	B	C	D
			Do Nothing Existing Alignment	New Construction Phased Construction Steel	New Construction Bridge Closure Concrete	New Construction Bridge Closure Steel
COST	Roadway		$0.00	$456,400.00	$394,400.00	$394,400.00
	Structure		$0.00	$3,840,000.00	$2,304,000.00	$2,688,000.00
	Structure Removal		$0.00	$240,000.00	$192,000.00	$192,000.00
	Traffic Control		$0.00	$114,800.00	$91,900.00	$91,900.00
	Right of Way Acquisition		$0.00	$12,800.00	$12,800.00	$12,800.00
	Total Cost		$0.00	$4,664,000.00	$2,995,100.00	$3,379,100.00
DURATION	Projected Construction Duration			8 Months	3 Months	3.5 Months
ENGINEERING	Typical Section		20' (Curb to Curb)	29' (Curb to Curb)	29' (Curb to Curb)	29' (Curb to Curb)
	Traffic Safety		No Change	Improved	Improved	Improved
	Alignment Change		No	Minor	Minor	Minor
	Snowmobile Access		Yes	Yes	Yes	Yes
	Hydraulic Improvements		No Change	Minor	Yes	Yes
	ROW		No Change	Yes	Yes	Yes
	Utility		No Change	No Change	No Change	No Change
IMPACTS	Agricultural Lands		No	No	No	No
	Archaeological		No	Potential	Potential	Potential
	Historic Structures, Sites, & Districts		No	Potential	Potential	Potential
	Haz. Materials		No	No	No	No
	Floodplain		No	Minor	Minor	Minor
	Fish & Wildlife		No	Temporary	Temporary	Temporary
	Rare, Threatened & Endangered Species		No	No	No	No
	Public Lands - Sec 4(f)		No	No	No	No
	LWCF - Section 6(f)		No	No	No	No
	Noise		No	No	No	No
	Wetlands		No	Minor	Minor	Minor
LOCAL AND REGIONAL ISSUES	Concerns		Yes	Yes	Yes	Yes
	Economic Impacts		No	No	Temporary	Temporary
	Conformance to Regional Transportation Plan		No	Yes	Yes	Yes
	Satisfies Purpose & Need Statement		No	Yes	Yes	Yes
PERMITS	ACT 250		No	No	No	No
	401 Water Quality		No	Yes	Yes	Yes
	404 COE Permit		No	Yes	Yes	Yes
	Stream Alteration		No	Yes	Yes	Yes
	Conditional Use Determination		No	Possible	Possible	Possible
	Stormwater Discharge		No	Yes	Yes	Yes
	Lakes and Ponds		No	No	No	No
	T & E Species		No	No	No	No
	SHPO		No	Yes	Yes	Yes
OTHER	Land Acquisition		No	Minor	Minor	Minor

Appendix F – Alternative Plans



PHASED CONSTRUCTION - STAGE I
(CURVED GIRDER ALT.)
TEMPORARY ONE WAY ALTERNATING TRAFFIC

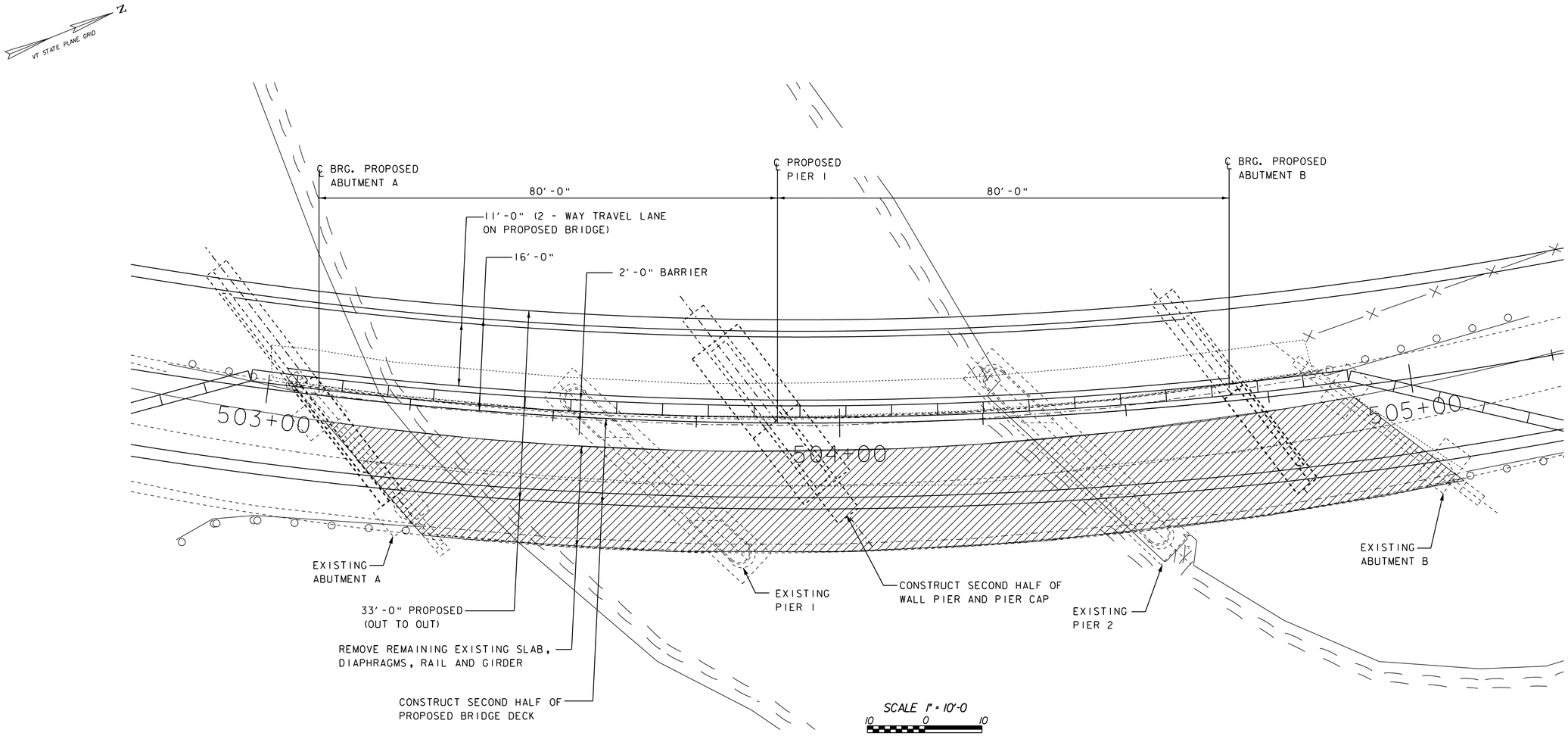
PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(1)	
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF



PHASED CONSTRUCTION - STAGE I
PIER ELEVATION
AND DECK SECTION

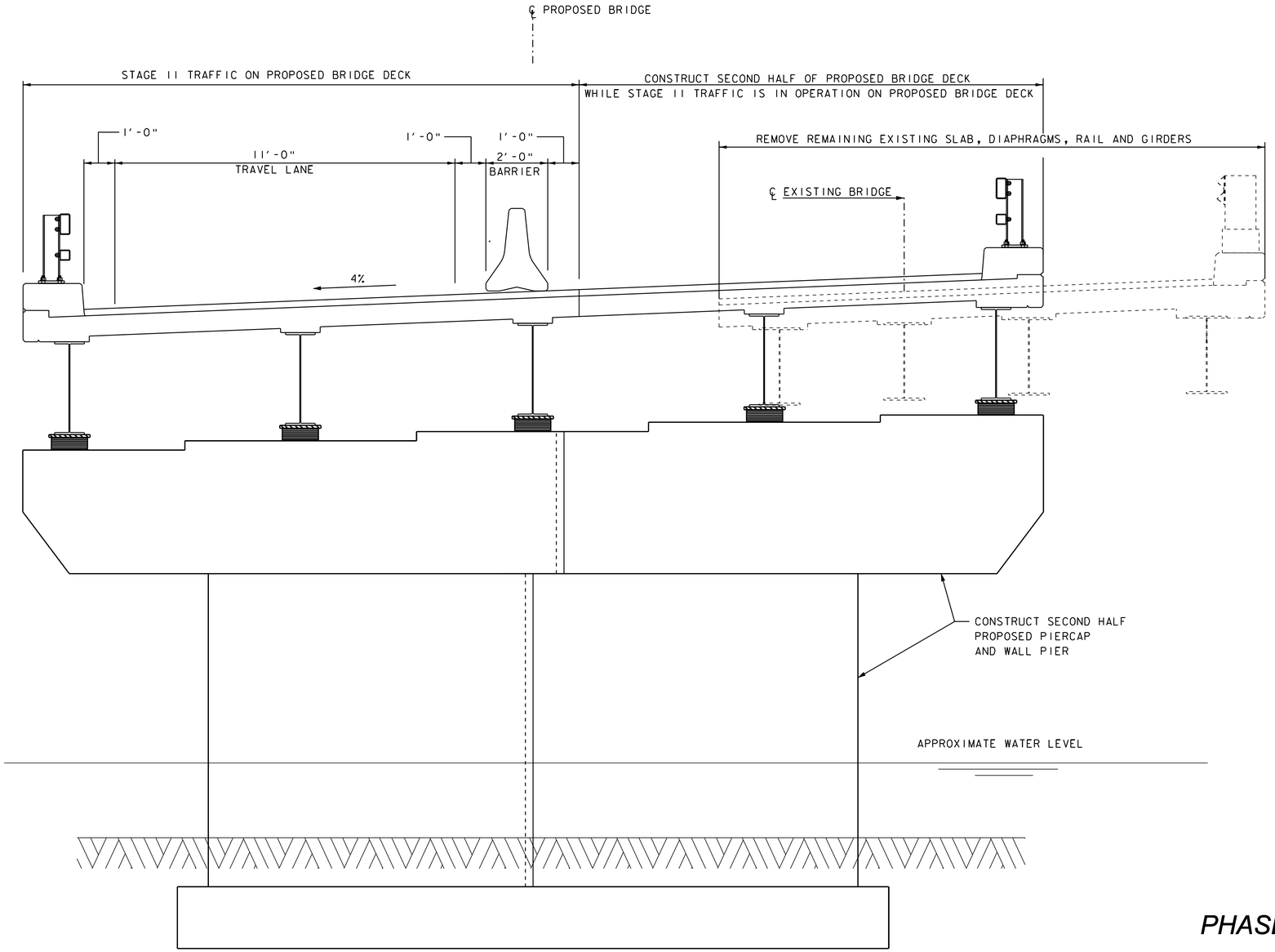
SCALE 1/2" = 1'-0
1 0 1 2

PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(11)	
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF



PHASED CONSTRUCTION - STAGE II
(CURVED GIRDER ALT.)
TEMPORARY ONE WAY ALTERNATING TRAFFIC

PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(1)	
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF



PHASED CONSTRUCTION - STAGE II
PIER ELEVATION
AND DECK SECTION

SCALE ½" = 1'-0
1 0 1 2

PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(1)	
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF

PARCEL # 704.2
PETER F. CAROTHERS

PARCEL # 704.2
PETER F. CAROTHERS

VT STATE PLANE GRID N

NEW HAVEN RIVER

PROPOSED BRIDGE LIMITS

RIVER ROAD

501+00

502+00

503+00

504+00

505+00

506+00

R.O.W.

AER E&T

EXISTING BRIDGE LIMITS

PARCEL # 766
GARY DUPOISE &
THEO LOWELL

NEW HAVEN RIVER

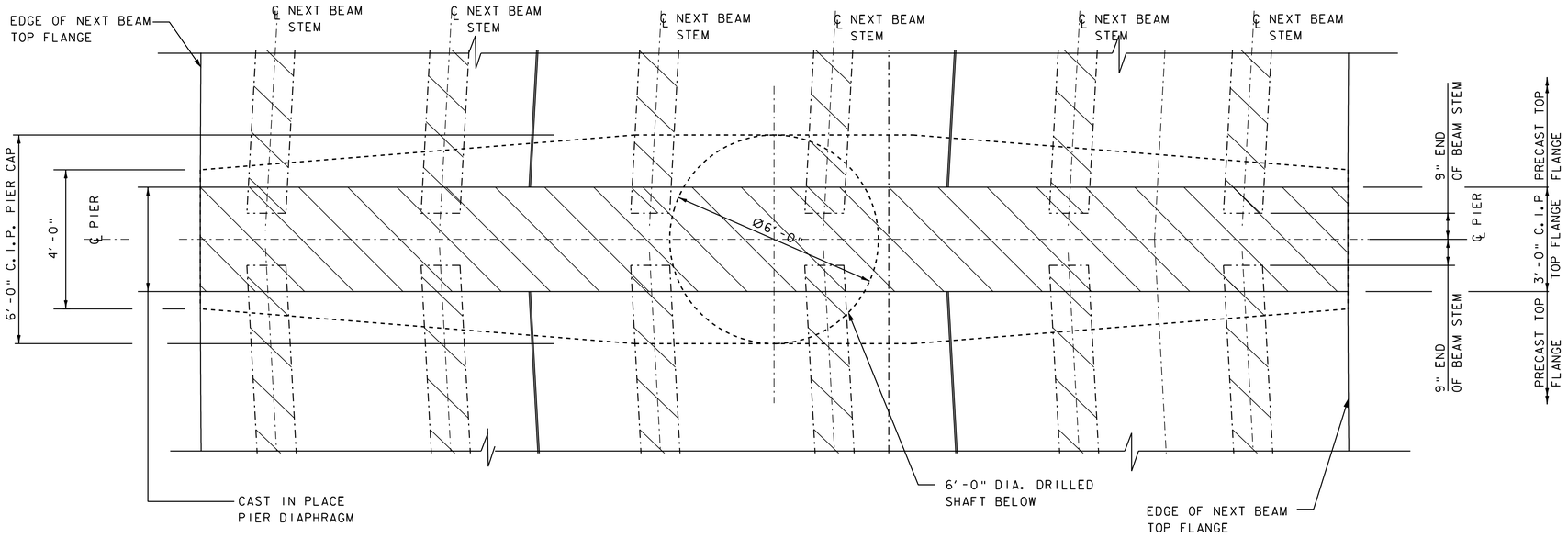
PARCEL # 761.3
FOSTER BROS. FARM

SCALE 1" = 20'-0
10 0 10

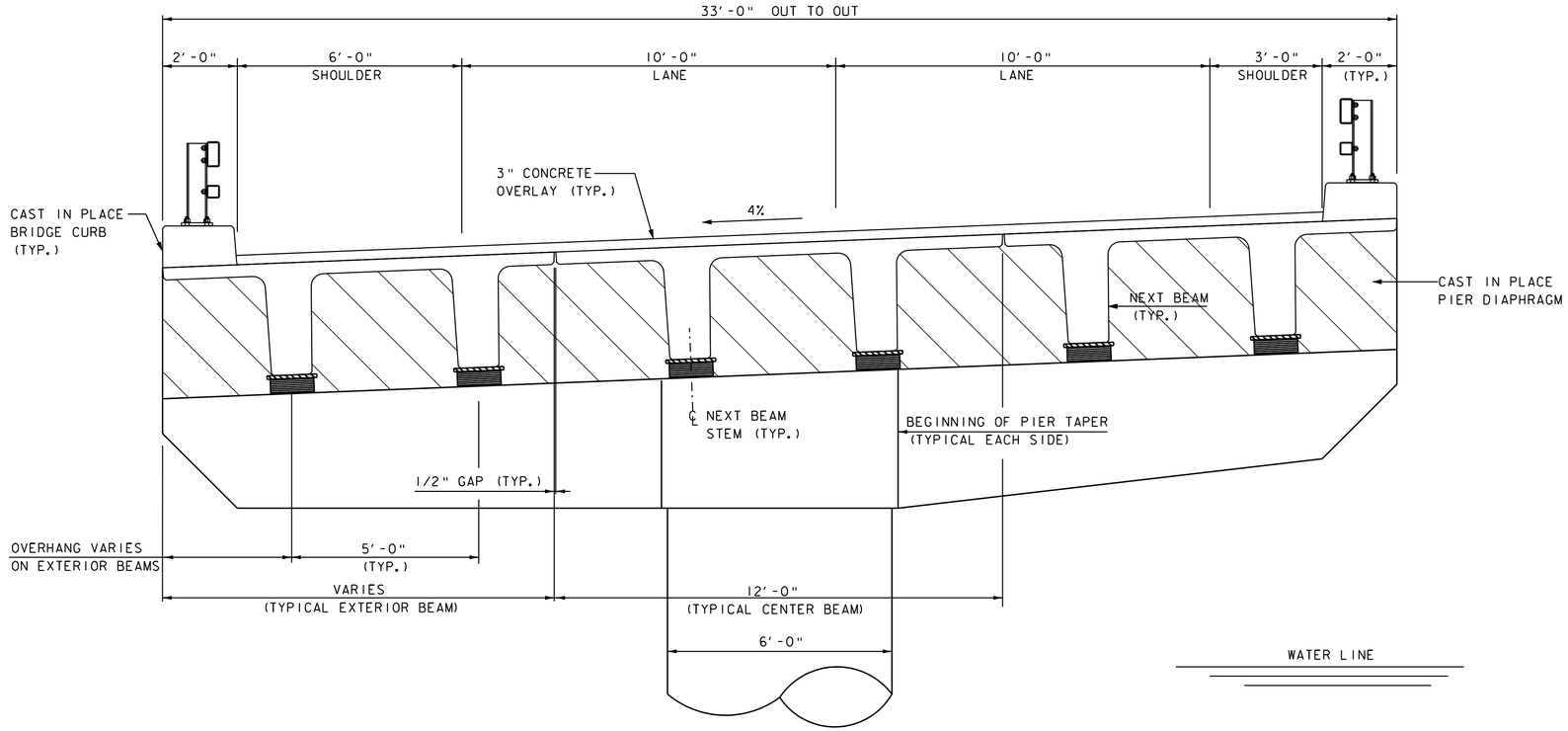
GENERAL PLAN NEXT BEAM ALTERNATE

PROJECT NAME:	NEW HAVEN
PROJECT NUMBER:	BRF 0183(1)

FILE NAME:	PLOT DATE: $$$$DATE$$$
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF



PIER PLAN

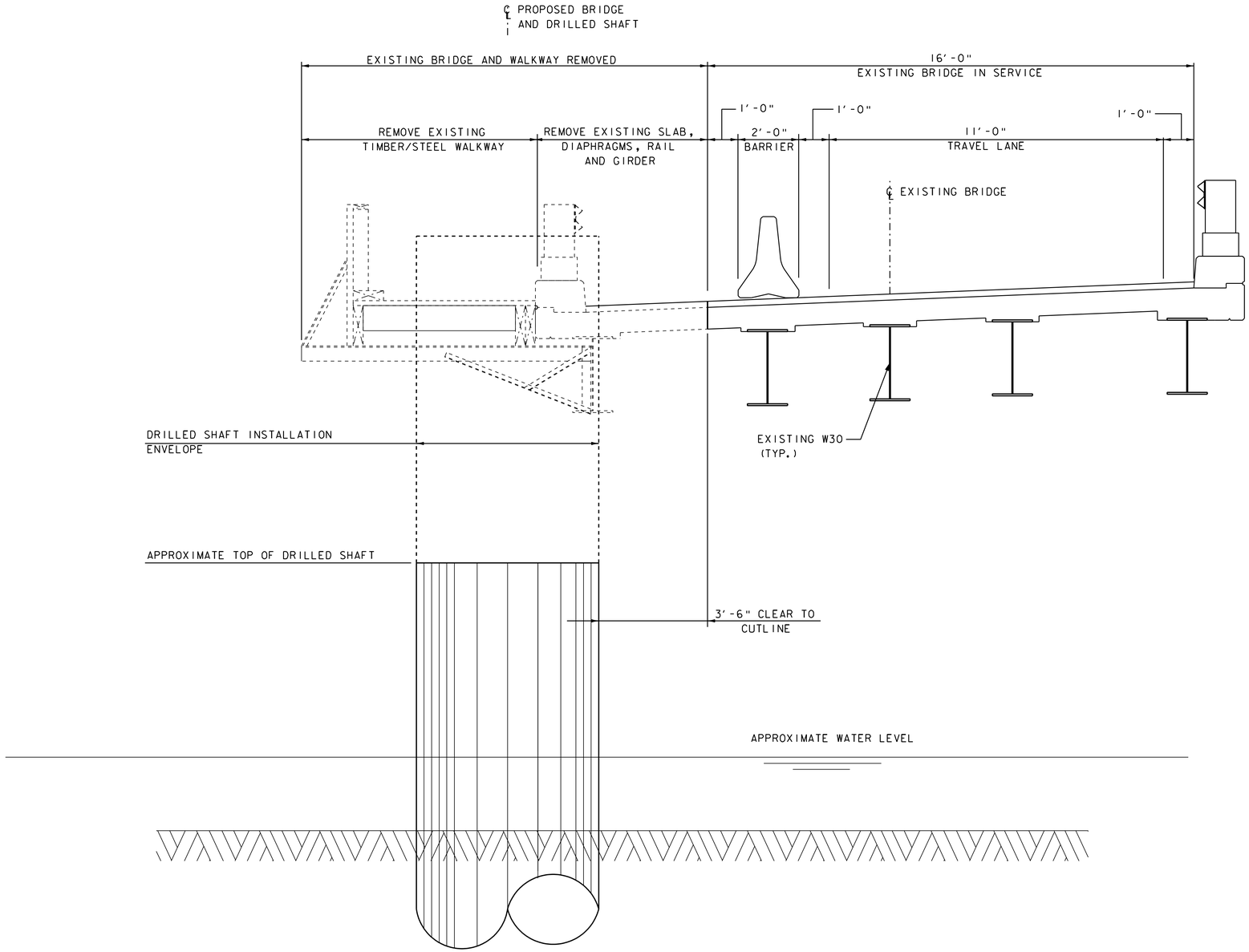


PIER ELEVATION

SCALE ½" = 1'-0
1 0 1 2

TYPICAL PIER ELEVATION AND DECK SECTION (NEXT BEAM ALTERNATE)

PROJECT NAME:	NEW HAVEN
PROJECT NUMBER:	BRF 0183(1)
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF



SCALE 1/2" = 1'-0

0 1 2

DRILLED SHAFT INSTALLATION PHASING SECTION (NEXT BEAM & CURVED GIRDER ALTERNATE)

PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(11)	
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF

Appendix G – Preliminary Hydraulics Report

Parsons Brinckerhoff
650 Elm Street
Manchester, NH 03101
Phone: 603 647 2012
Fax: 603 647 2032

INTERNAL MEMO

TO: Adam Stockin, PE

FROM: Joseph L. Mulledy, PE

DATE: July 11, 2012

SUBJECT: **New Haven, BRF 0183(1)** TH 1 BR 10 over the New Haven River
Preliminary Hydraulic Evaluation

Based on our preliminary hydraulic analysis using flows generated by graphical analysis of three methods for estimating stormwater runoff (StreamStats, TR55/TR20 and AWM), the following data was developed for the above subject bridge structure:

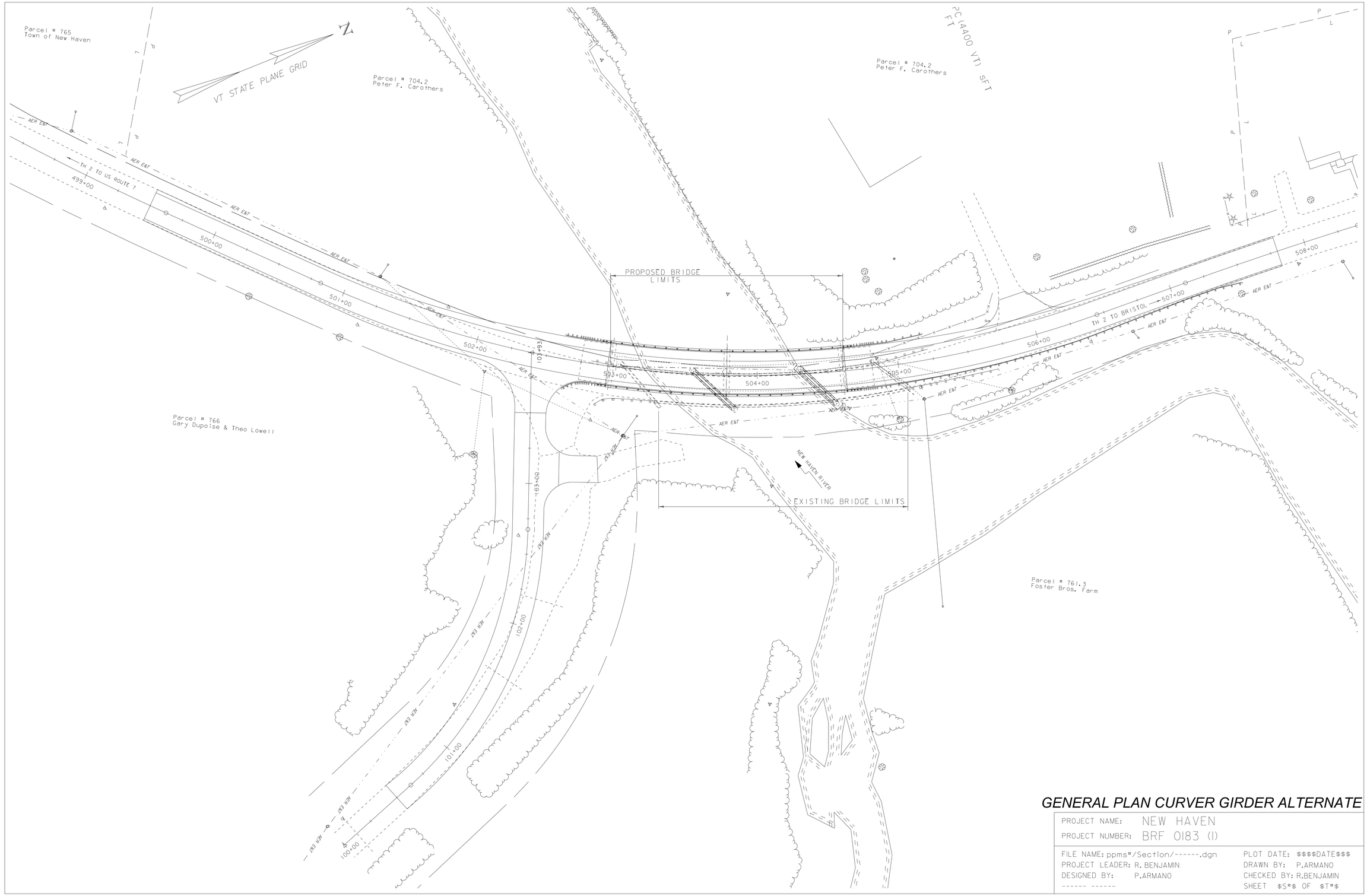
Existing
Span Length: 170' – 3 Spans (54, 74, 54)
Low Beam Elevation: 259.43'
Open Area: 989.34 s.f.

Proposed
Span Length: 2 – 82' Spans
Low Beam Elevation: 259.9
Open Area: 1015.77 s.f.

Flow
Q_{50}: 13,243 cfs
Water Surface: 260.45
Proposed Clearance: 0
$Q_{2.33}$: 672 cfs
Water Surface: 255.14
Surface Width: 78.9'
Abutment Impact: None

The proposed hydraulic condition will be improved from the existing condition due to the increased opening, the shifting of the southerly abutment to the outside of the curve of the river, and a singular circular column in the river to reduce debris buildup.

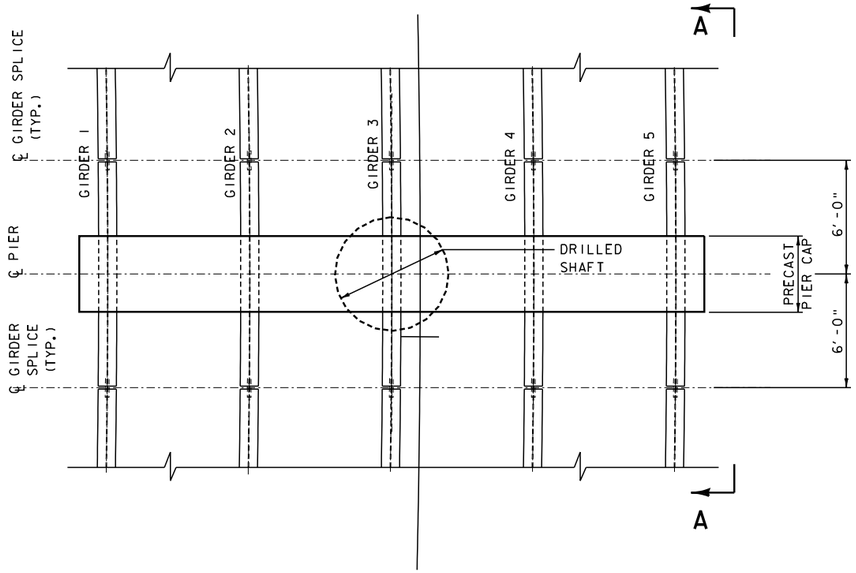
Appendix H – Preferred Alternative Plans



GENERAL PLAN CURVER GIRDER ALTERNATE

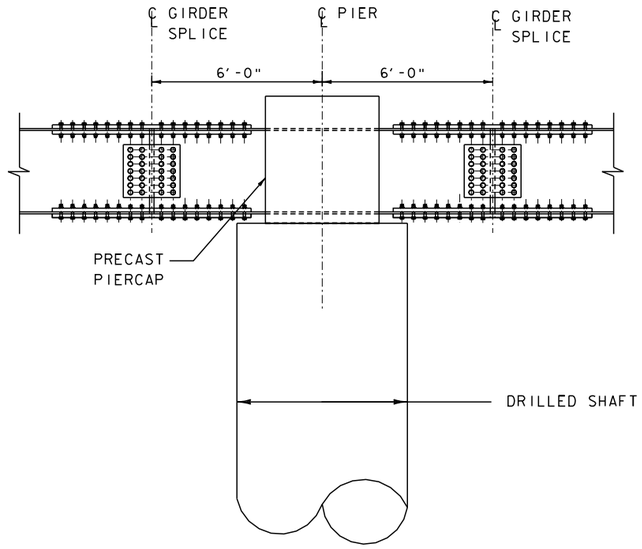
PROJECT NAME:	NEW HAVEN
PROJECT NUMBER:	BRF 0183 (1)

FILE NAME: ppms#/Section/------.dgn	PLOT DATE: $$$$DATE$$$
PROJECT LEADER: R. BENJAMIN	DRAWN BY: P.ARMANO
DESIGNED BY: P.ARMANO	CHECKED BY: R.BENJAMIN
------ ------	SHEET $S#$ OF $T#$



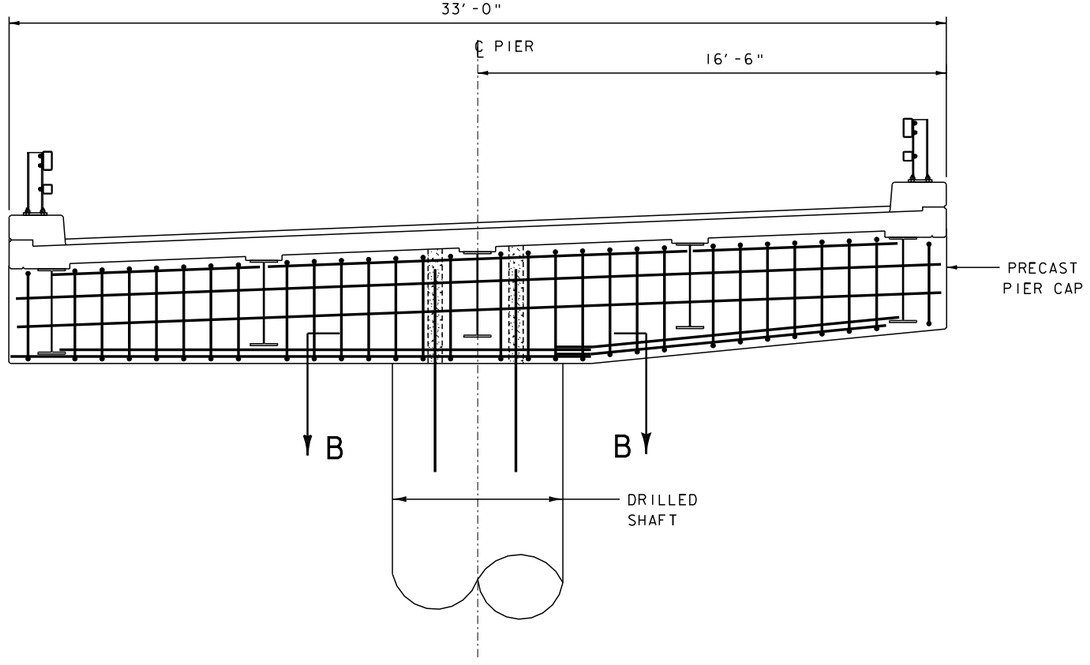
PLAN

SCALE 1/4" = 1'-0



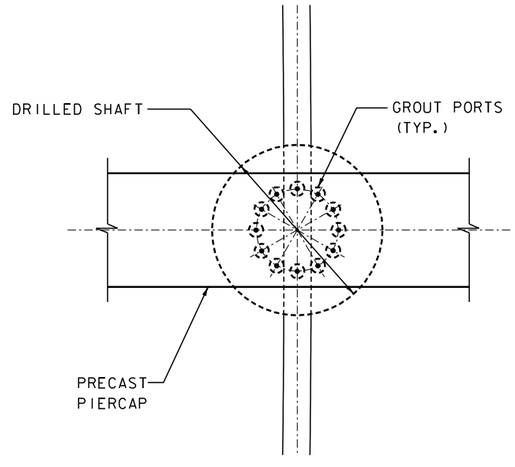
SECTION A-A

SCALE 3/8" = 1'-0



ELEVATION

SCALE 3/8" = 1'-0

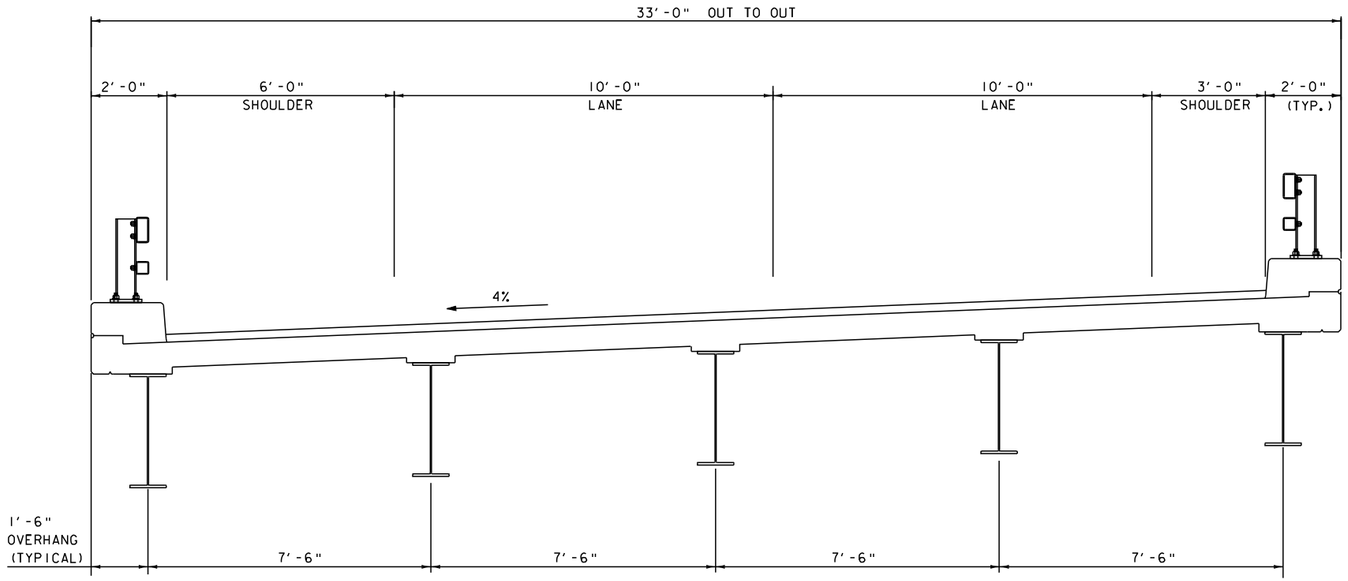


SECTION B-B

SCALE 3/8" = 1'-0

CLOSED BRIDGE CONSTRUCTION
PIER PLAN, ELEVATION AND DETAILS
(CURVED GIRDER ALTERNATE)

PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(1)	
FILE NAME:	PLOT DATE: $$$$DATE$$$
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF

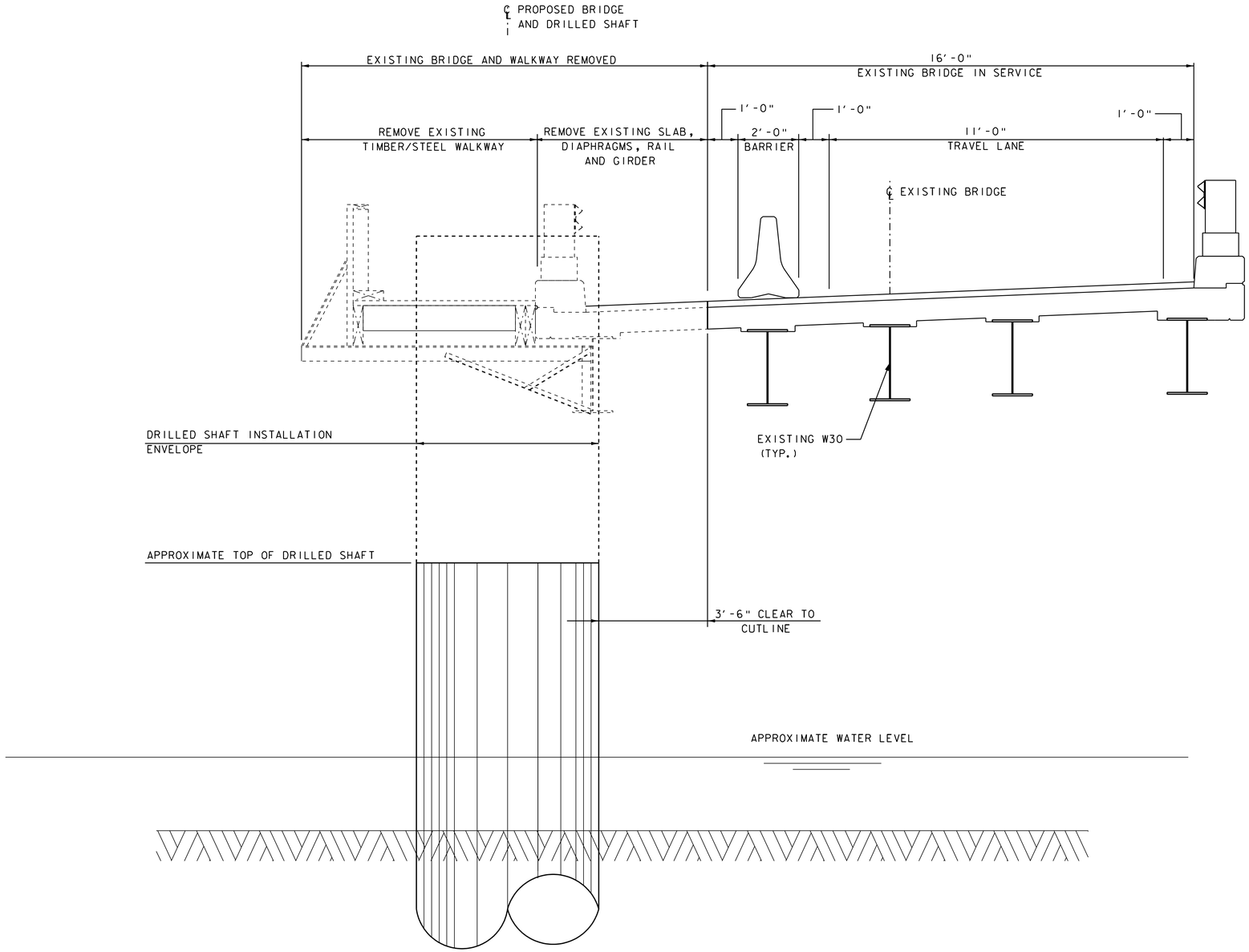


SCALE 1/2" = 1'-0

0 1 2

BRIDGE TYPICAL SECTION

PROJECT NAME:	
PROJECT NUMBER:	
FILE NAME:	PLOT DATE: $$$$DATE$$$
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF



SCALE 1/2" = 1'-0

0 1 2

DRILLED SHAFT INSTALLATION PHASING SECTION (NEXT BEAM & CURVED GIRDER ALTERNATE)

PROJECT NAME: NEW HAVEN	
PROJECT NUMBER: BRF 0183(11)	
FILE NAME:	PLOT DATE: 4/24/2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET OF

Appendix I – Alternative Meeting Power Point Presentation

NASH FARM BRIDGE

New Haven, VT

Alternatives Meeting

PARSONS BRINCKERHOFF

VTrans Vermont Agency of Transportation

PROJECT LOCATION

- River Road over the New Haven River
- Just North of intersection of River Rd. and Halpin Rd.
- South of the Nash Farm

PROJECT LOCATION

PROJECT DESCRIPTION

- Built in 1934
- 3 span - 170’ long steel girder bridge
- Currently 20’ curb to curb
- Additional structure for snowmobiles

PURPOSE AND NEED

PARSONS BRINCKERHOFF

VTrans Vermont Agency of Transportation

LOCAL CONCERNS

- Condition of Existing Bridge
- Accident History
- Flooding
- Snowmobile Traffic
- Traffic Control/Detour

PURPOSE AND NEED

- The purpose of the New Haven BRF 0183(1) project is to improve safety, improve structural capacity, and to maintain snowmobile movements.

PURPOSE AND NEED

- The safety of Town Highway 2 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:

PURPOSE AND NEED

- The roadway lane and shoulder widths are below those required by the Vermont Standards for Collector Roads and Streets.

PURPOSE AND NEED

- The superstructure and substructure of the bridge on Town Highway 2 is deteriorating which affects the capacity of the bridge.

ALTERNATIVES

PARSONS BRINCKERHOFF

VTrans Vermont Agency of Transportation

EVALUATION FACTORS

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

ALTERNATIVE MATRIX

Evaluation Matrix - VT TH 2 Over the New Haven River, New Haven, VT

		ALTERNATIVES	A Do Nothing Existing Alignment	B New Construction Phased Construction Steel	C New Construction Bridge Closure Concrete	D New Construction Bridge Closure Steel
COST		Roadway	$0.00	$235,000.00	$236,000.00	$236,000.00
		Structure	$0.00	$1,760,000.00	$1,214,000.00	$1,280,000.00
		Structure Removal	$0.00	$256,000.00	$430,000.00	$430,000.00
		Traffic Control	$0.00	$91,000.00	$90,000.00	$90,000.00
		Right of Way Acquisition	$0.00	$12,800.00	$12,800.00	$12,800.00
		Total Cost	$0.00	$2,354,800.00	$1,742,800.00	$1,811,800.00
DURATION		Projected Construction Duration		Months	Months	3 Months
ENGINEERING		Typical Section	20' (Curb to Curb)	24' (Curb to Curb)	20' (Curb to Curb)	24' (Curb to Curb)
		Traffic Safety	No Change	Improved	Improved	Improved
		Alignment Change	No	Minor	Minor	Minor
		Crossmeable Autera	Yes	No	Yes	No
		Hydraulic Improvements	No Change	Minor	Yes	No
		ROW	No Change	No	Yes	No
		Safety	No Change	No Change	No Change	No Change
IMPACTS		Agricultural Lands	No	No	No	No
		Archeological	No	Potential	Potential	Potential
		Historic Structures, Sites, & Districts	No	Potential	Potential	Potential
		Haz. Materials	No	No	No	No
		Floodplain	No	Minor	Minor	Minor
		Fish & Wildlife	No	Temporary	Temporary	Temporary
		Rare, Threatened & Endangered Species	No	No	No	No
		Public Lands - Sec 4(f)	No	No	No	No
		DHP - Section 4(f)	No	No	No	No
		Noise	No	No	No	No
		Wetlands	No	Minor	Minor	Minor
LOCAL AND REGIONAL ISSUES		Concerns	Yes	No	Yes	No
		Economic Impacts	No	No	Temporary	Temporary
		Conformance to Regional Transportation Plan	No	No	Yes	No
		Satisfies Purpose & Need Statement	No	No	No	No
PERMITS		ACT 250	No	No	No	No
		401 Water Quality	No	No	No	No
		404 COE Permit	No	No	Yes	No
		Stream Alteration	No	No	Yes	No
		Conditional Use Determination	No	Possible	Possible	Possible
		Stormwater Discharge	No	No	Yes	No
		Locks and Ponds	No	No	No	No
		E & I Species	No	No	No	No
		Survey	No	No	Yes	No
OTHER		Land Acquisition	No	Minor	Minor	Minor

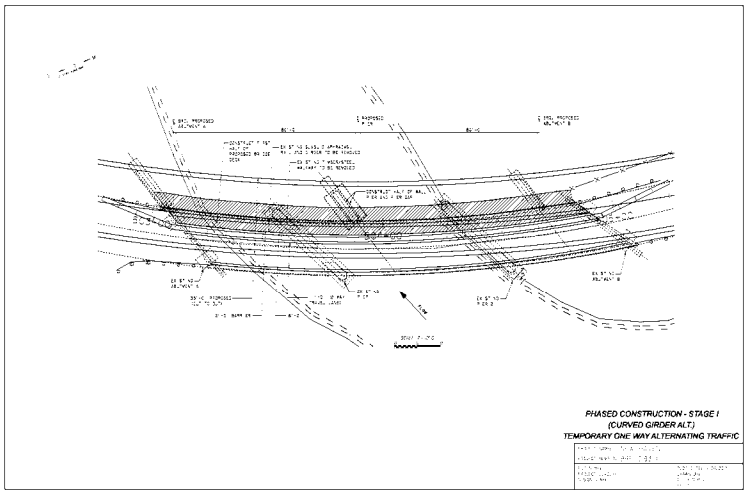
ALTERNATIVE A: DO NOTHING

- Required to show this alternative for comparison
- Does not meet Purpose and Need Statement

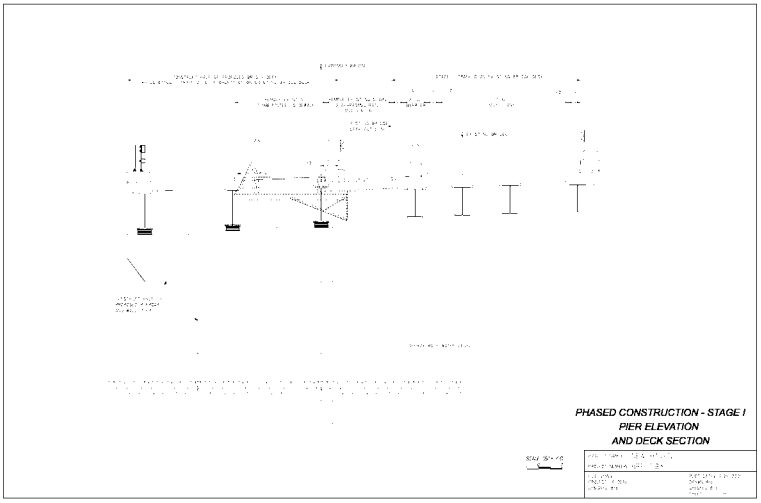
ALTERNATIVE B: PHASED CONSTRUCTION

- Meets Purpose and Need Statement
- Longest construction duration
- Largest cost
- Least amount of Hydraulic Improvement
- 1-way alternating traffic for approx. 8 months
- Built in 2 halves, therefore not as durable

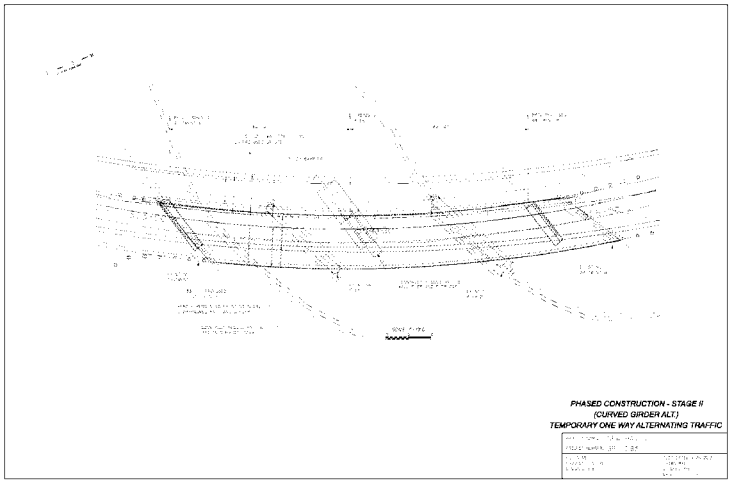
ALTERNATIVE B: PHASED CONSTRUCTION



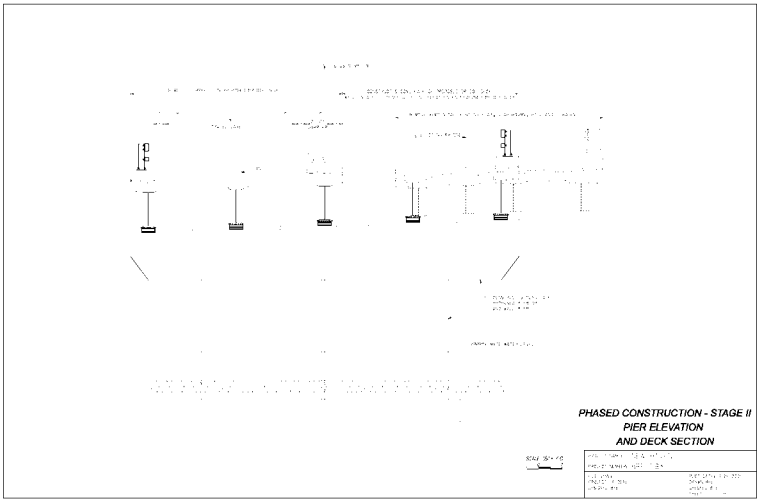
ALTERNATIVE B: PHASED CONSTRUCTION



ALTERNATIVE B: PHASED CONSTRUCTION



ALTERNATIVE B: PHASED CONSTRUCTION



ACCELERATED BRIDGE CONSTRUCTION (ABC)

PB PARSONS BRINCKERHOFF

VTrans Vermont Agency of Transportation

ACCELERATED BRIDGE CONSTRUCTION

- Owners are realizing that time is money
- Many design guidelines developed to aid designers in the most up to date methods
- Precast pieces
- "Lego" construction
- Incentive/Disincentive
- The way of the future and encouraged/required by VTrans

ACCELERATED BRIDGE CONSTRUCTION

- Owners, Designers, Fabricators and Pre-casters working together

ACCELERATED BRIDGE CONSTRUCTION

- Innovation, Open Minds and Hard Work

ACCELERATED BRIDGE CONSTRUCTION

- Sibley Pond Bridge Project – Pittsfield, ME
- First "NEXT D" Beam in Nation

ACCELERATED BRIDGE CONSTRUCTION- SIBLEY POND BRIDGE - PITTSFIELD, ME

ACCELERATED BRIDGE CONSTRUCTION- SIBLEY POND BRIDGE - PITTSFIELD, ME

ALTERNATIVES CONTINUED

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ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE

- 160' total length (2 - 80' spans)
- 29' curb to curb (widened 9')with a 6' shoulder on one side for snowmobile access.
- Minor change to roadway alignment to the West account for widened roadway.
- Use of Accelerated Bridge Construction Techniques to speed construction durations

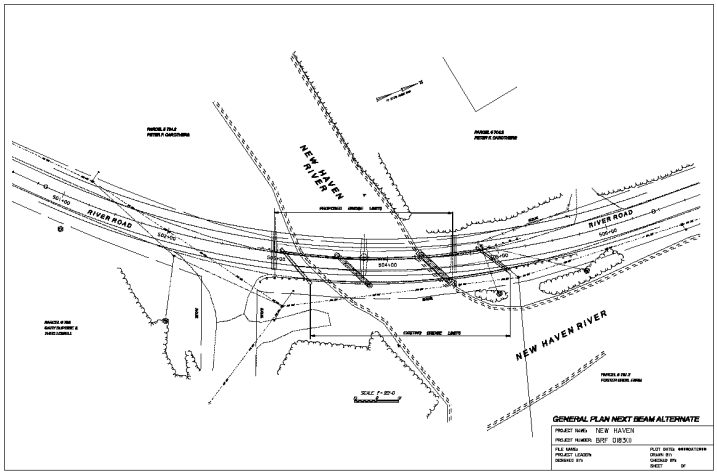
ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE

- Meets Purpose and Need Statement
- Least expensive
- Improves hydraulic opening
- No impact to school transportation
- Limited permitting required
- Long Term Design Life
- Beams chorded to accommodate curvature

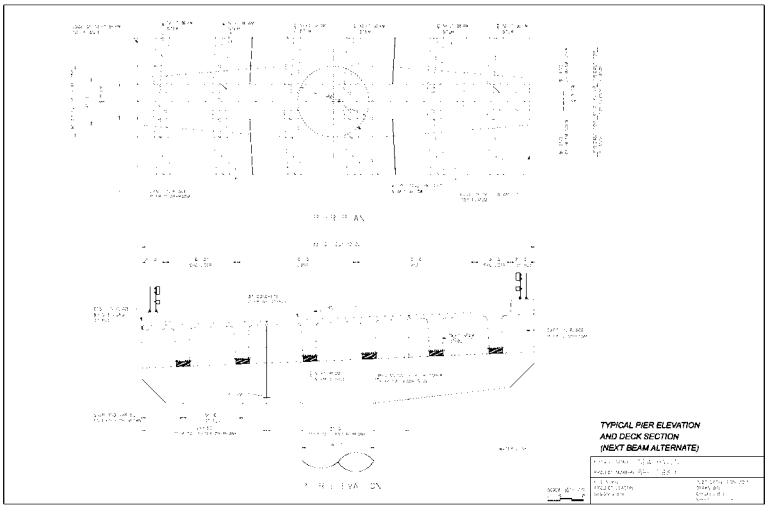
ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE

- Traffic Control
  - 1 way signalized alternating traffic - approximately 1 month
  - Bridge closure - approx. 2 months
  - Detour traffic to South St.

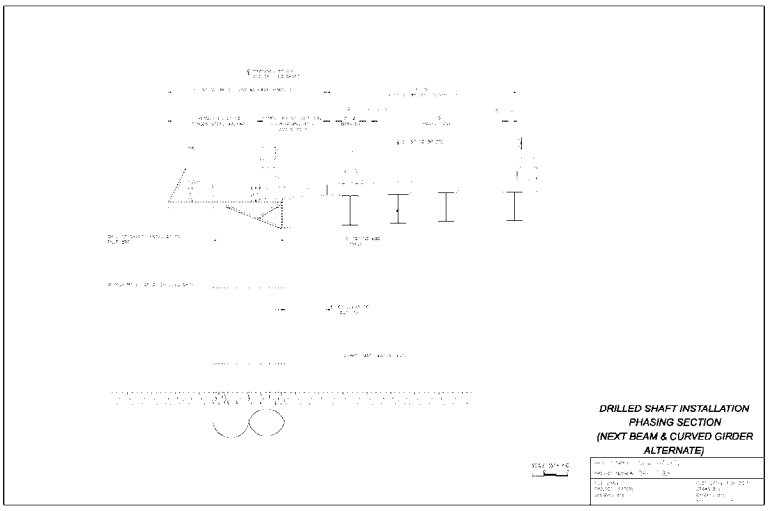
ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE



ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE



ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE



ALTERNATIVE C: CONCRETE "NEXT" BEAM BRIDGE

PREFERRED ALTERNATIVE

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PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE

- 164’ total length (2-82’ spans)
- 29’ curb to curb (widened 9’)with a 6’ shoulder on one side for snowmobile access.
- Minor change to roadway alignment to the West account for widened roadway.
- Use of Accelerated Bridge Construction Techniques to speed construction durations

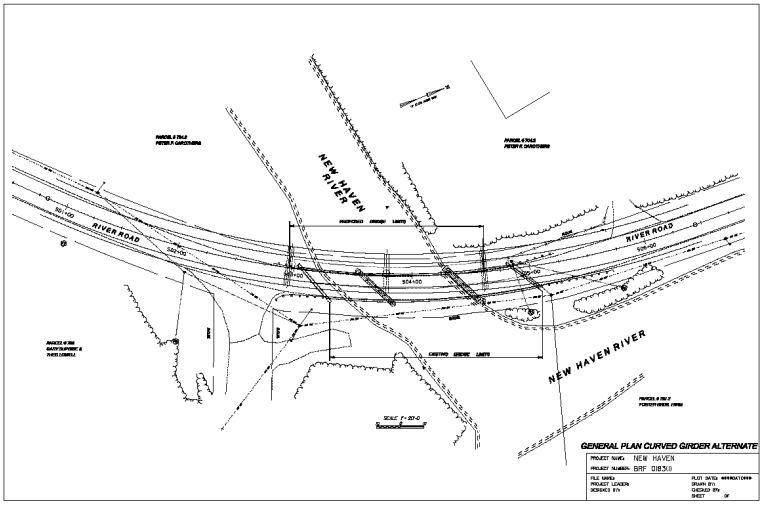
PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE

- Traffic Control
  - 1 way signalized alternating traffic - approximately 1 month
  - Bridge closure - approx. 2.5 months
  - Detour traffic to South St.

PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE

- Meets Purpose and Need Statement
- No impact to school transportation
- Limited permitting required
- Long Term Design Life
- Least Hydraulic Impact
- Curved girders accommodate roadway alignment
- Slightly more expensive than concrete option

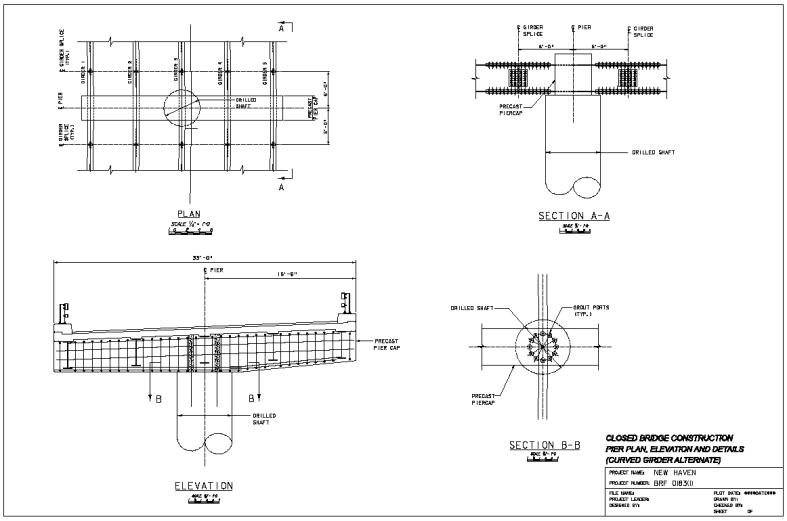
PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE



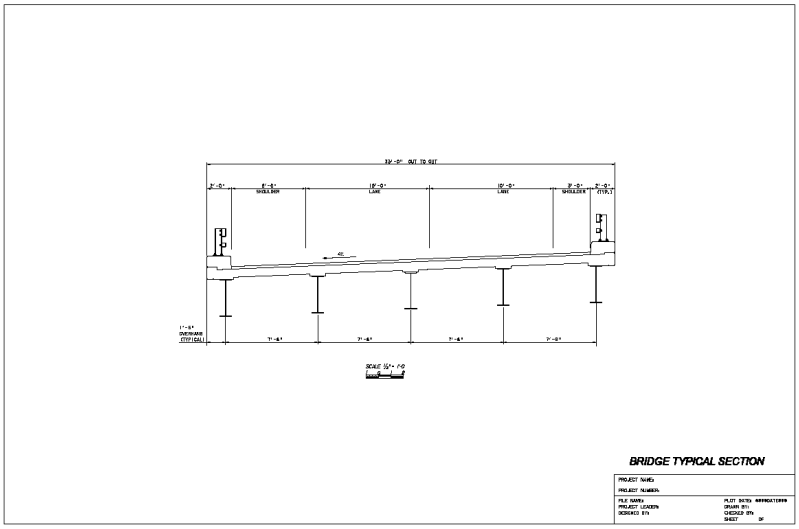
ACCELERATED BRIDGE CONSTRUCTION DETAIL

- Fabricate Steel
- Ship to Precast Concrete Plant
- Frame and bolt girders
- Cast integral pier cap beam
- Disassemble Steel and Ship to site

PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE



PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE



PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE

PREFERRED ALTERNATIVE D: CURVED STEEL BRIDGE

- Steel Advantages
  - Hydraulics
    - Maximize Hydraulic Opening
    - Minimize Debris Buildup
  - Clean, Efficient Design
- Potential Limitations
  - Final Design Details

CONCLUSION

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ADDRESSING LOCAL CONCERNS

- Roadway Safety
  - Widened bridge width to 29' curb to curb.
  - Radius of Curve will be reduced therefore increasing sight distance
  - The Halpin Rd profile grade will be increased to allow for increased sight distance.

ADDRESSING LOCAL CONCERNS

- Flooding History
  - The bridge hydraulics will be improved and will limit debris build up.
- Condition of Existing Bridge
  - The structure will be replaced
- Snowmobile traffic
  - A widened shoulder (6') will be provided to allow for this traffic.
- Traffic Control During Construction
  - Road closure period is expected to be approximately 2.5 months and ABC methods will be utilized. South St. will be the posted detour to limit additional traffic on Hunt Rd. and Munger St.

WHAT'S NEXT?

- Based on all of the data collected and our engineering judgment it is recommended that the Town pursue Design Alternative D.
- The town will receive a letter requesting approval of this preferred alternative. Once the town approves this alternative the design team will commence the final design phase of this project.


YOUR QUESTIONS
AND CONCERNS
PB PARSONS BRINCKERHOFF
VTrans Vermont Agency of Transportation

Appendix J – Alternatives Meeting Minutes