Lake Champlain Bridge Replacement
P.I.N. 1805.81 BIN: 5-52118-0
NYS Route 185/VT Route 17 over Lake Champlain
Essex County, NY / Addison County, VT
Town of Crown Point, NY / Addison, VT
This project is being designed using English units and the text of this report uses English units. The following table of approximate conversion factors provides the relationship between U.S. Customary and metric units for some of the more frequently used units in highway design. The table allows one to calculate the Metric Unit by multiplying the corresponding U.S. Customary Unit by the given factor.

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Daniel D’Angelo, P.E.  
Deputy Chief Engineer, POD 2-3  
New York State Department of Transportation (NYSDOT)  
50 Wolf Road  
Albany, NY 12232

Subject: PIN 1805.81 – Lake Champlain Bridge Replacement (BIN 552118-0), Crown Point, New York and Addison, Vermont

Dear Mr. D’Angelo:

We have received your February 4, 2010 letter for the subject project requesting design approval, approval of three non-standard features and concurrence that this project meets the conditions and criteria of a categorical exclusion.

We have reviewed the supporting documentation including the Final Design Report dated February 2010 and have visited the site. We note that the Section 106 process is complete and the requirements of 36 Code of Federal Regulations Part 800 have been satisfied for this project by the execution of a January 29, 2010 programmatic agreement between NYSDOT, Vermont Agency of Transportation, New York State Historic Preservation Officer, Vermont SHPO, NYSDEC, Federal Highway Administration (FHWA) and Advisory Council on Historic Preservation.

FHWA concurs that this project will not result in the permanent incorporation of any Section 4(f) property into the proposed project. All potential occupancies of Section 4(f) properties outside existing highway rights-of-way will be temporary and minor in nature and magnitude and will not result in permanent adverse impacts. The land will be fully restored to a condition which is at least as good as that which existed prior to the project. The officials with jurisdiction agree with the above conditions. As such, no use of land or constructive use impacts are anticipated on Section 4(f) properties.

We concur with your assessment that this project to construct a new Lake Champlain Bridge on existing alignment meets the conditions and criteria of a categorical exclusion since it will not induce significant environmental impacts.

We also approve the three nonstandard features fully described in chapter 3 section 3.3.3.2.(1) of the Final Design Report and we hereby grant design approval.
If you have any questions, please contact me at (518) 431-4125 extension 252.

Sincerely,

[Signature]

John L. Burns
Area Engineer

cc:
Tod Kimball, FHWA VT Division
Jim Bridges, Design Engineer, NYSDOT, Region 1
Dan Hitt, NYSDOT, Office of Environment, POD 41
John Narowski, VAOT
PROJECT APPROVAL SHEET
(Pursuant to SAFETEA-LU Matrix)

A. IPP Approval: The project is ready to be added to the Regional Capital Program and project scoping can begin.
   The IPP was approved by:

   Joseph DiFabio
   Acting Regional Director 4/24/2007

B. Scope Approval: In order to expedite this project scoping and preliminary design were combined.

C. Public Hearing Certification (23 USC 128): A public hearing was not required.

   Geoffrey W. Wood
   Project Manager 2/4/2010

D. Recommendation for Design Approval: The project cost and schedule are consistent with the Regional Capital Program.

   Robert Hansen
   Regional Program Manager 2/4/2010

E. Recommendation for Design and Nonstandard Feature Approval: All requirements requisite to these actions and approvals have been met, the required independent quality control reviews separate from the functional group reviews have been accomplished, and the work is consistent with established standards, policies, regulations and procedures, except as otherwise noted and explained.

   James P. Bridges
   Regional Design Engineer 2/4/2010

F. Nonstandard Feature Approval: The nonstandard features have been adequately justified and it is not prudent to eliminate them as part of this project.

   John L. Burns
   Area Engineer, FHWA 2/5/2010

G. Design Approval: The required environmental determinations have been made and the preferred alternative for this project is ready for final design.

   John L. Burns
   Area Engineer, FHWA 2/5/2010
H. Recommendation for Design and Nonstandard Feature Approval:

All requirements requisite to these actions and approvals have been met, the required independent quality control reviews separate from the functional group reviews have been accomplished, and the work is consistent with established standards, policies, regulations and procedures, except as otherwise noted and explained.

Richard Tetreault                                2/3/2010
VAOT Director of Program Development
LIST OF PREPARERS

Group Director Responsible for Production of the Design Approval Document:

Thomas Potts, P.E., Vice President, HNTB Corporation

Description of Work Performed by Firm: Directed the preparation of the Design Approval Document in accordance with established standards, policies, regulations and procedures, except as otherwise explained in this document.

Note: It is a violation of law for any person, unless they are acting under the direction of a licensed professional engineer, architect, landscape architect, or land surveyor, to alter an item in any way. If an item bearing the stamp of a licensed professional is altered, the altering engineer, architect, landscape architect, or land surveyor shall stamp the document and include the notation "altered by" followed by their signature, the date of such alteration, and a specific description of the alteration.
Common Abbreviations:

AASHTO  American Association of State Highways and Transportation Officials
ACHP  Advisory Council on Historic Preservation
ADA  American Disabilities Act
ADT  Average Daily Traffic
APA  Adirondack Park Agency
APE  Area of Potential Effect
DDR  Draft Design Report
DHV  Design Hour Volume
EPA  United States Environmental Protection Agency
ESA  Endangered Species Act
ESCP  Erosion and Sedimentation Control Plan
ETC  Estimated Time of Completion
FEMA  Federal Emergency Management Agency
FHWA  Federal Highway Administration
GIS  Geographic Information System
HCM  Highway Capacity Manual
ITS  Intelligent Transportation Systems
LCTC  Lake Champlain Transportation Company
LOS  Level of Service
MLW  Mean Low Water
NDA  No Discharge Area
NEPA  National Environmental Policy Act
NHL  National Historic Landmark
NPDES  National Pollutant Discharge Elimination System
NPS  National Park Service
NY  New York
NYCRR  New York Codes Rules and Regulations
NYSDEC  New York State Department of Environmental Conservation
NYSDOT  New York State Department of Transportation
OGS  New York State Office of General Services
OHW  Ordinary High Water
OLW  Ordinary Low Water
OPRHP  New York State Office of Parks, Recreation and Historic Preservation
PAC  Public Advisory Committee
PCB  Polychlorinated Biphenyls
PDM  Project Development Manual
PIN  Project Identification Number
RPC  Regional Planning Commission
SASS  Scenic Area of Statewide Significance
SEE  Social, Economic and Environmental
SEQR  State Environmental Quality Review Act
SHPO  State Historic Preservation Office
SMSA  Standard Metropolitan Statistical Area
SPDES  State Pollutant Discharge Elimination System
STIP  Statewide Transportation Improvement Program
SWPPP  Stormwater Pollution Prevention Plan
TDML  Total Daily Maximum Load
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CHAPTER 1 - EXECUTIVE SUMMARY

1.1 Introduction

This report was prepared in accordance with the NYSDOT Project Development Manual, 17 NYCRR Part 15, and 23 CFR 771.

1.2 Purpose and Need

1.2.1 Where is the Project Located?

The project location is shown in Exhibit 1.2.1. It is the narrow portion of Lake Champlain between Crown Point, New York and Chimney Point, Addison, Vermont.

(1) Route number – The two routes that the bridge would connect are NYS Route 185 on the New York side and VT Route 17 on the Vermont side.

(2) Route name – The street name for NYS Route 185 in New York is Bridge Road. The street name for VT Route 17 in Vermont is Otter Creek Road.

(3) SH number and official highway description – SH # 1833 (NY), Rural minor arterial

(4) BIN Number and Feature crossed – BIN #5-52118-0 over Lake Champlain

(5) Town – Crown Point, NY and Addison, VT

(6) County – Essex County, NY and Addison County, VT

(7) Length – STA 99+00.00 to STA 133+50.00; bridge is approximately 2200 ft abutment to abutment, 480 ft main span

Exhibit 1.2.1 Project Location

1.2.2 Why is the Project Needed?

This project is necessary to restore an essential link between the states of New York and Vermont. The former bridge was closed on October 16, 2009 after an inspection noted rapid deterioration of the substructure and the potential for abrupt failure of the unreinforced concrete piers. Subsequently, the
bridge was demolished (under a separate NEPA Design Approval Document) on December 28, 2009.
Alternative crossings for Lake Champlain are primarily ferry crossings with limited capacity to meet the needs of all users. These include:

- **Ticonderoga, NY to Shoreham, VT Ferry** – Approximately 12 miles south from the former bridge site; capacity limited to a maximum of 18 vehicles; maximum vehicle weight of 15 tons. This ferry service is not typically capable of winter operations.
- **Essex, NY to Charlotte, VT Ferry** – Approximately 28 miles north from the former bridge site; maximum vehicle weight of 40 tons. The lake width at this location results in approximately 20 minute crossing time.
- **Plattsburgh, NY to Grand Isle, VT Ferry** – Approximately 55 miles north from the former bridge site; maximum vehicle weight of 40 tons.
- **Port Kent, NY to Burlington, VT Ferry** – Approximately 40 miles north from the former bridge site; maximum vehicle weight of 40 tons. This ferry has a one hour crossing time and does not operate in the winter.
- **Detour:** NY Route 22 South to US Route 4 East to VT Route 22A to VT Route 17 – Approximately 85 miles for the detour in each direction.
- **Crown Point, NYS to Addison, VT Ferry** – Temporary ferry service (under separate NEPA Action) adjacent to the former bridge site.

The Lake Champlain Bridge Replacement Project is needed to restore this critical link in the regional transportation system in western Vermont and northeastern New York.

The project is necessary to alleviate the hardship caused for travelers by the loss of the former bridge. That hardship has been evidenced in stakeholder comments to NYSDOT. More than 30 stakeholder agency representatives and between 850-900 members of the general public came to several meetings held in late October 2009, shortly after the old bridge was closed, to express how important the bridge had been for essential travel to jobs, medical care, and sustaining business in both New York and Vermont. The former bridge served to foster regional economic links on either side of Lake Champlain, and a large number of daily commuters have been severely inconvenienced at the loss of this facility. Also, comments from approximately 500 public individuals have been received through the project website with similar thoughts and concerns. Many of the people who contacted NYSDOT through the website initiated a two way conversation with agency staff and are responsible for at least 1,000 email exchanges. From October 16, 2009 to January 16, 2010 eleven (11) email updates on project developments have been sent from NYSDOT to an email distribution list that grew from 200 to 1730 people.

### 1.2.3 What are the Objectives/Purposes of the Project?

There are two main project objectives for the Lake Champlain Bridge Replacement:

1. Provide a replacement crossing to restore this critical link in the transportation system of western Vermont and northeastern New York with a safe and efficient crossing of Lake Champlain between Crown Point, NY and Addison, VT with a service life of at least 75 years.
2. This replacement crossing should meet the identified needs related to pedestrians, bicyclists, and agricultural equipment.

This replacement crossing should be cost effective, sensitive to the environmental, cultural, and aesthetic context of the area, and be constructible in as timely a manner as possible.

Attaining these objectives will restore connectivity within the local transportation network that will support:

- Access for workers – Estimates prepared by several regional agencies indicate that as much as 15 percent of the workforce in Addison County, Vermont comes from Essex County, New York. This workforce previously crossed the Lake Champlain Bridge. An origin and destination study conducted in August and September of 2009 found that on a Saturday, 14 percent of those interviewed were crossing the bridge to get to work. On a Wednesday, a more typical work day,
46 percent of those interviewed were crossing the bridge to get to work. Alternate routes for commuters in this broad region would add as much as 170 miles to the daily trip, or require travel to the available ferry options that would add substantial delays to travel across the lake. The 2009 Draft Origin – Destination Study is included in Appendix C.

- Access for goods and services – The Lake Champlain Bridge was used heavily for truck travel and truck freight between New York and Vermont. Alternate routes for large trucks in this broad region would add as much as 100 miles to the truck trip. Recent traffic surveys on the bridge indicate that 9 percent of the traffic is comprised of trucks, which results in over 200 trucks per day. See Appendix C for traffic analyses.

- Access for agricultural activity – Active farms make up a substantial portion of the land use in the immediate vicinity of the original Lake Champlain Bridge in both Vermont and New York. Evidence suggests that farm vehicles regularly used the Lake Champlain Bridge for transporting farm products, as well as to move field equipment and personnel to and from fields and storage barns on either side of the bridge. Closure of the bridge left farmers without recourse to carry out some aspects of their livelihoods.

- Access to medical care/emergency services – The Porter Medical Center in Middlebury, Vermont is the regional hospital serving communities in Addison County, Vermont. The Moses Ludington Hospital in Ticonderoga, NY serves communities in Essex County, New York. Both hospitals offer 24-hour emergency service and are located approximately 17 miles from the bridge. Closure of the bridge impeded access to care and access of medical workers to the hospitals. Emergency vehicles routinely used this route to transport patients from Moses Ludington Hospital in Ticonderoga, NY to Fletcher Allen Hospital in Burlington, VT. With the bridge closure, shared emergency services have been disrupted. Ambulance, fire, and police support between New York and Vermont relied on the Lake Champlain Bridge.

- Access for tourism – The tourism industry in Vermont and upstate New York remains vibrant. The Origin and Destination Study conducted in August and September 2009 found that 48 percent of those vehicles crossing the bridge in August were traveling for vacation or leisure. In September, 24 percent of the traffic across the bridge was for vacation or leisure. Without a new bridge on the existing alignment that utilizes the existing approach roadway network, tourists would seek alternative routes thereby affecting the economy and livelihood of businesses located along the bridge route.

- Access for pedestrians and bicyclists – Access to a bridge crossing at Crown Point is significant for bicyclists vacationing in the area. The Crown Point State Historic Site has a camping area and the lakefront is heavily visited. It is across the lake from Vermont’s Chimney Point State Historic Site with a historic tavern and museum. It is also less than 10 miles from several wildlife refuges and bird-watching destinations. Therefore, there is a need for access across Lake Champlain in this locale for pedestrians and bicyclists. Numerous comments received through the project website emphasized the importance of bicycle access across Lake Champlain at this specific location. In addition to the nearby offerings just listed, there are a number of designated bicycle routes passing near the crossing in either state, including New York State Bike Route 9, the New York’s Lakes to Locks Passage, and Vermont's "Land of Milk and Honey Tour" (part of the Champlain Bikeways system). The crossing thus provides opportunities both for site access and for incorporation of designated routes in either state into longer-distance tours.

In summary, transportation network connectivity across Lake Champlain in this locale is essential to the regional transportation system, to safe and efficient travel between Vermont and New York, and to the economy both locally and for the states of Vermont and New York as a whole. This region developed its interdependency largely due to the presence of the Lake Champlain Bridge for the past 80 years. This bridge crossing affects not just the economy, but the quality of life of the residents in this region.

1.3 What Alternative(s) Are Being Considered?

In November 2009 when the determination was made that it was necessary to demolish the former Lake Champlain Bridge, it was also recognized that the significant hardships created by the closing and loss of the bridge would need to be alleviated as quickly as possible. Temporary solutions were put in place to
address the emergency situation and an expedited process was begun to evaluate, design and implement a reasonable range of alternatives for restoring the crossing. This expedited process included, as first steps, extensive consultation with stakeholder agencies and outreach to the public (documented in Appendix G) along with engineering assessment of a full range of replacement options.

**Restoring the Crossing with a Permanent New Ferry Service**

Restoration of the interstate transportation link between Vermont and New York with a new ferry service was considered but dismissed based on transportation demands. As noted above, approximately 9% of the daily traffic on the original bridge was truck traffic, which averages out to over 200 trucks per day. The high number of ferry crossings required to sustain the vehicle and truck traffic and the size limitations, make a ferry an infeasible permanent solution. Additionally, both the project’s Public Advisory Committee (PAC) and the general public expressed a consensus that a permanent new ferry service would not adequately meet regional needs. This alternative will not be considered further.

**Restoring the Crossing with New Bridge on New Location (North or South of Existing)**

Bridge replacement alternatives were conceptually evaluated on a number of alignments to the north and south of the existing bridge. The consensus from the project engineers, NYSDOT, VAOT, stakeholder agencies and the public was that any new bridge be constructed in the same location and with the same orientation. Suitable sites for a bridge in a new and different location would require travelers to follow a less direct route to cross Lake Champlain, would adversely affect the local and regional economies, and would also require a lengthy environmental process for design and approval. This would not meet the project purpose and need. Bridge alternatives in new locations will not satisfy the project objective and will not be considered further.

**Restoring the Crossing with New Bridge on Existing Location**

The overwhelming consensus from this assessment, consultation, and outreach process was that a new bridge was needed, and that it be located in the same location of the former bridge. Use of the former bridge footprint minimizes potential adverse effects to the environment and facilitates compliance with permitting requirements. Thus the only feasible alternative is restoring the crossing with a new bridge at the former location. Subsequently, a full range of bridge type options for a replacement on the existing alignment were explored on an expedited schedule.

Given these considerations, various bridge types were considered for this site. After an initial assessment, a number of bridge types were eliminated from further consideration due to issues such as excessive cost, incompatibility with site conditions, and structural non-redundancy. Six alternative bridge type options for a new bridge in the same location as the former Lake Champlain Bridge were considered further for the replacement.

The six feasible bridge types considered were:

- Option 1 - Long Span Steel Girder
- Option 2 - Segmental Concrete
- Option 3 - Steel Composite Cable-Stayed
- Option 4 - Concrete Extradosed
- Option 5 - Network Tied Arch
- Option 6 - Modified Network Tied Arch

More detail on each of these designs and their estimated benefits and challenges are described in Chapter 3 of this report.
### 1.4 How will the Alternative(s) Affect the Environment?

<table>
<thead>
<tr>
<th>Resource</th>
<th>Potential Impact Synopsis</th>
<th>Mitigation Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>Potential for runoff with sedimentation to adjacent wetlands</td>
<td>Adjacent wetlands will be protected with best management practices for erosion control measures and in conformance with requirements of USACE, NYSDEC, VANR, and APA. All areas disturbed by this project will be restored to pre-existing conditions or better.</td>
</tr>
<tr>
<td>Navigable Waters</td>
<td>Temporary obstruction of marine traffic</td>
<td>The timing and duration of in-water work for construction will be coordinated with the USCG to minimize effects to marine traffic.</td>
</tr>
<tr>
<td>General Ecology/Fisheries</td>
<td>Disturbance to fish habitats due to in-water construction and turbulence</td>
<td>Best management practices will be followed to control pollution and sediment.</td>
</tr>
<tr>
<td>Stormwater Management</td>
<td>Potential for erosion and sedimentation</td>
<td>Best management practices will be followed to control pollution and sediment. All areas disturbed by this action will be restored to pre-existing conditions or better.</td>
</tr>
<tr>
<td>Historic and Cultural Resources</td>
<td>Potential for impacts to historic and archaeological resources</td>
<td>Avoidance and mitigation will be conducted as committed to in the Section 106 Programmatic Agreement dated 1-29-2010.</td>
</tr>
<tr>
<td>Parks and Recreational Resources</td>
<td>Potential for effect from use of land for construction staging</td>
<td>Avoidance and mitigation will be conducted as committed to in the Section 106 Programmatic Agreement dated 1-29-2010.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Temporary dust and construction vehicle exhaust</td>
<td>Appropriate mitigation for excessive idling of construction equipment and fugitive dust control will be employed. In addition, the contractor will be required to keep equipment maintained and operating efficiently in a clean manner to mitigate any exhaust impacts.</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Noise and vibration from construction activities – blasting, pier installation, and construction vehicle traffic</td>
<td>Advance notification of the construction schedule to the surrounding residents and businesses, will be initiated to prepare citizens when to expect unexpected loud noise and vibrations. Noise abatement measures in accordance with FHWA/NYSDOT standards will be included in construction specifications. Such measures may include appropriate mufflers on all construction vehicles and restrictions on hours of operation.</td>
</tr>
</tbody>
</table>
Exhibit 1.4-B (4.3.18): Summary of Anticipated Impacts and Mitigation Measures for Proposed Action

<table>
<thead>
<tr>
<th>Resource</th>
<th>Potential Impact Synopsis</th>
<th>Mitigation Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos/Hazardous Materials</td>
<td>Use or generation of hazardous materials during construction</td>
<td>Incidental exposure of hazardous materials during construction will be addressed prior to construction commencement, with the development of a hazardous materials management plan. All fuel storage tanks used during construction will be equipped with secondary containment systems.</td>
</tr>
<tr>
<td>Public Safety and Security</td>
<td>Travel of construction vehicles on local roads; safety issues associated with construction activity in close proximity to recreational areas</td>
<td>NYSDOT and VAOT will maintain a safety zone around the construction site. Access to the Crown Point Historic Site and campgrounds and Chimney Point Historic Site may be restricted for limited periods of time to ensure public safety.</td>
</tr>
</tbody>
</table>

Anticipated Permits/Certifications

- New York Office of General Services
  - Authorization for use of public lands (Lake Champlain bottom)
- US Army Corps of Engineers (USACE)
  - Nationwide Permit #23 for approved Categorical Exclusions (NY)
  - Individual Permit for Vermont
- New York State Department of Environmental Conservation (NYSDEC)
  - Section 401 NYSDEC Individual Water Quality Certification
  - Article 15 – Memorandum of Understanding
- U.S. Coast Guard
  - Section 9 Permit
- Adirondack Park Agency
  - APA 814 Order
- Vermont Agency of Natural Resources
  - Lakes and Ponds Permit
- Section 106 Programmatic Agreement

1.5 What Are The Costs & Schedules?

Design Approval is scheduled for February 2010 with construction beginning in May 2010 and scheduled to last through summer 2011.
### Exhibit 1.5-A
**Project Schedule**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date Occurred/(Tentative)</th>
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<tbody>
<tr>
<td>Scoping Approval</td>
<td>January 2010</td>
</tr>
<tr>
<td>Design Approval</td>
<td>(February 2010)</td>
</tr>
<tr>
<td>ROW Acquisition</td>
<td>N.A.</td>
</tr>
<tr>
<td>Construction Start</td>
<td>(May 2010)</td>
</tr>
<tr>
<td>Construction Complete</td>
<td>(Summer 2011)</td>
</tr>
</tbody>
</table>

### Exhibit 1.5-B (Exhibit 3.2.1-B) Summary of Alternative Costs - Million Dollars (2010)

<table>
<thead>
<tr>
<th>Activities</th>
<th>Alt 1 – Steel Girder</th>
<th>Alt 2 – Concrete Segmental</th>
<th>Alt 3 – Steel Cable-Stayed</th>
<th>Alt 4 – Extradosed</th>
<th>Alt 5 – Network Tied Arch</th>
<th>Alt 6 – Mod. Network Tied Arch</th>
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</thead>
<tbody>
<tr>
<td>Construction¹</td>
<td>Bridge</td>
<td>47.0</td>
<td>61.5</td>
<td>75.0</td>
<td>126.5</td>
<td>54.5</td>
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<td></td>
<td>Highway</td>
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<td>1.0</td>
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<td>1.0</td>
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<tr>
<td>Wetland Mitigation</td>
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<tr>
<td>Storm Pollution Discharge Elimination System</td>
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<tr>
<td>Subtotal (2010)</td>
<td></td>
<td>48.1</td>
<td>62.6</td>
<td>76.1</td>
<td>127.6</td>
<td>55.6</td>
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<tr>
<td>Incidentals² (2010) 10%</td>
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<td>4.8</td>
<td>6.3</td>
<td>7.6</td>
<td>12.8</td>
<td>5.6</td>
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<tr>
<td>Subtotal (2010)</td>
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<td>52.9</td>
<td>68.9</td>
<td>83.7</td>
<td>140.4</td>
<td>61.2</td>
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<td>Contingencies³ (15% @ Design Approval)</td>
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<td>7.9</td>
<td>10.3</td>
<td>12.6</td>
<td>21.1</td>
<td>9.2</td>
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<tr>
<td>Subtotal (2010)</td>
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<td>60.8</td>
<td>79.2</td>
<td>96.3</td>
<td>161.4</td>
<td>70.3</td>
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<tr>
<td>Potential Field Change Order⁴</td>
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<td>1.4</td>
<td>1.7</td>
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<td>Subtotal (2010)</td>
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<td>80.9</td>
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<td>164.4</td>
<td>71.9</td>
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<tr>
<td>Mobilization (4%)</td>
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<td>2.5</td>
<td>3.2</td>
<td>3.9</td>
<td>6.6</td>
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<tr>
<td>Subtotal (2010)</td>
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<td>64.8</td>
<td>84.2</td>
<td>102.2</td>
<td>171.0</td>
<td>74.8</td>
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<td>Expected Award Amount – Inflated⁵ @ 5%/yr to midpoint of Construction (2011)</td>
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<td>3.2</td>
<td>4.2</td>
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<td>3.7</td>
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<tr>
<td>Construction Inspection (10%)</td>
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<td>6.5</td>
<td>8.4</td>
<td>10.2</td>
<td>17.1</td>
<td>7.5</td>
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<tr>
<td>ROW Costs (2010)</td>
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<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
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<tr>
<td><strong>Total Cost</strong></td>
<td></td>
<td>75.0</td>
<td>97.3</td>
<td>118.0</td>
<td>197.2</td>
<td>86.5</td>
</tr>
</tbody>
</table>

**Notes:**
1. Engineer’s Estimate rounded up to nearest $500,000.
2. The potential cost increase due to unknown or un-tabulated items.
3. NYSDOT recommends standard contingencies: 25% Scoping stage, 15% Design Approval stage, 5% Advanced Detail Plans stage.
4. According to HDM Chapter 21 Section 21.3.9.4 and EI 07-024.
5. The escalation rate of 5% to account for potential future increases in labor, material, equipment and other costs associated with Capital Program work.

### 1.6 Which Alternative is Preferred?
The feasible and practical alternative that best meets the project objectives is restoring the crossing with a new bridge at the former location using bridge option 6 (Modified Network Tied Arch). Analysis of environmental impacts and comments received through the public involvement process supports the selection of this alternative as the preferred alternative.

All six bridge type options have some advantages and disadvantages over one another. The process of selecting a bridge type for this project included both engineering analysis and extensive public outreach. The structural redundancy, the aesthetic appeal, the shallow cross section, the moderate cost, and the expedited construction schedule all support the selection of the Modified Network Tied Arch as the preferred bridge type option.

For detailed discussion and comparison, see Chapter 3 of this report.

1.7 Who Decided Which Alternative Was Selected And Who Was Involved In This Decision?

As noted in Section 1.3, this project progressed at a more rapid pace than typical in response to the closure and demolition of the original bridge in late 2009. Once the original bridge was closed to traffic on October 16, 2009 various alternatives were considered to restore the transportation link the original Lake Champlain Bridge provided for the local communities and the region. Meetings were held with both agency stakeholders and the public within two weeks of the closure and continued over the following months (see Coordination Conducted below). Attendees at the public meetings included local residents, elected officials, property owners, emergency service personnel, local business owners, members of the chamber of commerce, and local high school students.

These meetings brought attention to many issues that were important to various stakeholders. These considerations include, but are not limited to:

- Availability and Capacity – meeting the transportation needs of the local and regional community
- Location – moving the bridge site would negatively impact the established local economy
- Schedule – the community is already struggling, expediting schedule is paramount
- Cost – alternatives must be reasonable in initial and future costs
- Aesthetics – signature bridge living up to the original historic structure

Coordination Conducted

In addition to the correspondence and letters with various agencies and stakeholders, the following meetings were conducted:

- Public Meetings
  - October 27, 2009 – Addison, VT
- October 28, 2009 – Port Henry, NY
- December 12, 2009 – Ticonderoga, New York
- January 4, 2010 – Vergennes, Vermont

<table>
<thead>
<tr>
<th>Agency/Stakeholder Name</th>
<th>Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Army Corps of Engineers (USACE)</td>
<td>1/12/2010; 1/21/10</td>
</tr>
<tr>
<td>US Environmental Protection Agency (EPA)</td>
<td>1/12/2010</td>
</tr>
<tr>
<td>US Fish and Wildlife Service (USFWS)</td>
<td>1/12/2010</td>
</tr>
<tr>
<td>US Coast Guard (USCG)</td>
<td>Attendance at 12/11/09 meeting; 1/12/2010</td>
</tr>
<tr>
<td>National Park Service (NPS)</td>
<td>1/12/10</td>
</tr>
<tr>
<td>Advisory Council on Historic Preservation (ACHP)</td>
<td>1/12/10</td>
</tr>
<tr>
<td>NYS Department of Environmental Conservation (NYSDEC)</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings; 12/17/09; 12/21/09; 1/19/10</td>
</tr>
<tr>
<td>NYS Office of Parks, Recreation and Historic Preservation (OPRHP)</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings; 12/17/09; 12/21/09; 1/19/10</td>
</tr>
<tr>
<td>NY State Historic Preservation Office (NY SHPO)</td>
<td>12/17/09; 12/21/09; 1/19/10</td>
</tr>
<tr>
<td>Adirondack Park Agency (APA)</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings; 12/21/09; 1/19/10</td>
</tr>
<tr>
<td>Public Advisory Committee (PAC)</td>
<td>12/11/09; 12/15/09</td>
</tr>
<tr>
<td>VT Department of Environmental Conservation (VT DEC)</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings; 1/21/10</td>
</tr>
<tr>
<td>VT State Historic Preservation Office (VT SHPO)</td>
<td>Attendance at 12/10/09, 12/11/09 and 12/15/09 meetings; 1/21/10</td>
</tr>
<tr>
<td>Town of Crown Point</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings</td>
</tr>
<tr>
<td>Village of Port Henry</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings</td>
</tr>
<tr>
<td>Town of Moriah</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings</td>
</tr>
<tr>
<td>Essex County</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings</td>
</tr>
</tbody>
</table>
Exhibit 1.7
Meetings for Bridge Replacement Conducted to Date

<table>
<thead>
<tr>
<th>Agency/Stakeholder Name</th>
<th>Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town of Addison</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings</td>
</tr>
<tr>
<td>Addison County Regional Planning Commission</td>
<td>Attendance at 12/11/09 and 12/15/09 meetings</td>
</tr>
</tbody>
</table>

For additional information on the project, contact:

James C. Boni, P.E.
Region 1 NYSDOT
328 State Street
Schenectady, New York 12305
Email: jboni@dot.state.ny.us
Telephone: (518) 388-0200

You can also visit the project's website: https://www.nysdot.gov/lakechamplainbridge

The remainder of this report is a detailed technical evaluation of the existing/former conditions, the proposed alternatives, the impacts of the alternatives, copies of technical reports and plans and other supporting information.
CHAPTER 2 - PROJECT CONTEXT: HISTORY, TRANSPORTATION PLANS, CONDITIONS AND NEEDS

This chapter addresses the history and existing context of the project site, including the former/existing conditions, deficiencies, and needs for this part of the NYS Route 185 (Bridge Road) and VT Route 17 (Otter Creek Road) corridor.

2.1 Project History

In 1923, the Vermont General Assembly appointed a Commission to study the feasibility of bridges across Lake Champlain. The Commission concluded that New York should also be involved in the bridge planning. In 1925, the Vermont Commission was reorganized by the Vermont General Assembly and New York appointed a commission to work with Vermont. The Joint Bridge Commission of New York and Vermont recommended in their final report the creation of a Bridge Commission by compact between the states and the immediate construction of a bridge between Crown Point, NY and Chimney Point, VT. The compact creating the Lake Champlain Bridge Commission was signed on May 11, 1927. The Commission, which consisted of three members from Vermont and three members from New York, was given the powers to construct, maintain and operate a bridge.

The Lake Champlain Bridge (also known as the Crown Point Bridge) opened with elaborate ceremonies on August 26, 1929. Toll collection began on August 27, 1929. The bridge was owned and operated by the Lake Champlain Bridge Commission from 1929 until 1987. The total cost for the bridge, including materials, land, and engineering costs, was approximately $1.15 million.

An amendment to the compact in 1935 allowed the building of a second bridge over Lake Champlain. The original Rouses Point Bridge located between Rouses Point, NY and Alburgh, VT was completed in 1937. Both bridges were designed by the Boston engineering firm Fay, Spofford and Thorndike, which served as consultants to the Bridge Commission throughout the life of the Commission. The Rouses Point Bridge was replaced in September 1987.

On December 11, 1987 the Bridge Commission was abolished and all functions of the Lake Champlain Bridge Commission were transferred to the Vermont Agency of Transportation (VAOT) and the New York State Department of Transportation (NYSDOT). Upon the dissolution of the Bridge Commission, tolls were eliminated and NYSDOT assumed the maintenance responsibility for the Lake Champlain Bridge.

In 2004 and 2005, both NYSDOT and VAOT recognized the need for a sizeable investment in the bridge and a long-term solution. NYSDOT and VAOT held a public meeting on August 26, 2006 at the Knights of Columbus Hall in Port Henry, NY to announce their intention to initiate a major capital improvement project to address the Lake Champlain Bridge’s deteriorating condition. NYSDOT formally initiated a capital improvement project to address the condition of the bridge on April 24, 2007.

A Public Advisory Committee (PAC) was established in 2007 as part of the Public Involvement Plan for the project to rehabilitate or replace the Lake Champlain Bridge. The PAC is a chartered committee and serves an important role in obtaining stakeholder input very early in the project planning process when needs are assessed, objectives formulated, and alternatives evaluated for feasibility. The PAC is composed of members of both the New York and Vermont communities and representatives of community groups having an interest in the project. Lead agency representatives help organize the PAC and PAC Meetings, provide information to the PAC, listen to PAC discussions, and receive recommendations from the PAC, but are not PAC members.

The first organizational meeting of the PAC was held on June 28, 2007, and PAC meetings have continued. In October 2009, critical safety issues were identified and the need to close the bridge was recognized by both states. The PAC served as a critical communication link between the lead agencies and various community stakeholders. PAC input was sought prior to lead agency decisions regarding project objectives and needs, considered and dismissed alternatives, associated impacts, and the selection of a preferred alternative.

Throughout the design phase, the PAC will continue to provide a forum that allows interactive discussions by representatives from various groups having interest in the project. It will provide opportunities to inform
and educate stakeholders, serve as a conduit for providing information to the community, enable the lead agencies to understand stakeholder issues in greater detail, help stakeholders recognize the variety of viewpoints within the community, and allow community members to work together to formulate new ideas or to resolve differences. PAC members agree to attend PAC meetings as representatives of their interest group (such as residents or businesses), to seek input from the group they are chosen to represent, and to share those perspectives with the committee through open discussions at PAC meetings.

A PAC Charter was adopted at PAC Meeting #2, held on October 26, 2007. Subsequent PAC meetings were held as follows:

- PAC Meeting #3 on June 20, 2008
- PAC Meeting #4 on September 16, 2009
- PAC Meeting #5 on November 13, 2009
- PAC Meeting #6 on November 23, 2009
- PAC Meeting #7 on December 11, 2009
- PAC Meeting #8 on December 15, 2009

A design consultant was designated in March 2008. The project’s bi-state agreement was executed in June 2009. The project’s consultant agreement was approved in July 2009. The design consultant initiated work on the project in July 2009.

A public information meeting was held on October 8, 2009 at the Addison Central School in Addison, VT. The purpose of the meeting was to explain the intent of the project’s scoping phase of work, to provide an update on the current conditions of the Lake Champlain Bridge and to obtain input from the general public.

The former bridge was closed on October 16, 2009 after an inspection noted rapid deterioration of the substructure and the potential for abrupt failure of the unreinforced concrete piers.

Public informational meetings regarding the bridge closure were held on October 27, 2009 and October 28, 2009 in Vermont and New York, respectively. The October 27, 2009 meeting was held at the Addison Central School in Addison, VT, and the October 28, 2009 meeting was held at the Moriah Central School in Port Henry, NY. The purpose of the meetings was to explain why the bridge was closed, the steps NYSDOT and VAOT were taking to further inspect the bridge, a conceptual repair strategy, the options for getting across the lake while the bridge was closed, the ongoing investigation to install a temporary ferry service and/or a temporary bridge, and to allow those in attendance to ask questions or provide comments.

As a result of the potential for abrupt failure of the unreinforced concrete piers of the former Lake Champlain Bridge, reopening or rehabilitating the bridge was ruled out on November 9, 2009. Plans were announced to demolish the bridge. NYSDOT and VAOT implemented a project to demolish the truss spans utilizing controlled explosives. This demolition project has been advanced under a separate NEPA Action, and design approval to demolish the bridge was granted by the Federal Highway Administration (FHWA) on December 8, 2009. Demolition of the bridge occurred on December 28, 2009.

At the December 12, 2009 public meeting held at the Community Building in Ticonderoga, NY, NYSDOT and VAOT announced that input was being requested from the public regarding the design options for replacement of the Lake Champlain Bridge and its historical commemoration. Additionally, an online survey was conducted for those unable to attend the meeting.

An additional public meeting was held on January 4, 2010 at the Addison County Eagle building in Vergennes, VT to provide those who were unable to attend the December 12, 2009 meeting in Ticonderoga, NY with an opportunity to hear and discuss details about the potential bridge designs. As the replacement project has progressed, additional meetings with stakeholder agencies have been conducted. For meeting schedule, see Exhibit 1.7.

2.2 Transportation Plans and Land Use

2.2.1 Local Plans for the Project Area
2.2.1.1 Local Master Plan

The NYSDOT Regional Planning Group and VAOT’s Planning and Programming Group have reviewed the local master plans prepared for the towns of Crown Point, NY and Addison, VT. This project is consistent with the local master plans.

As a result of the sudden closure of the Lake Champlain Bridge on October 16, 2009 and the need to maintain a transportation link at this location, a temporary ferry project has been advanced under a separate NEPA Action. The temporary ferry is located immediately south of the bridge.

2.2.1.2 Local Private Development Plans

New York: There are no approved developments planned within the project area that will impact traffic operations.

Vermont: The Cottonwood on Lake Champlain LLC property, located within the project limits on the northern side of VT Route 17, has plans to develop the property to expand its banquet facilities including additional parking areas.

2.2.2 Transportation Corridor

2.2.2.1 Importance of the Project Route Segment

The Lake Champlain Bridge provides one of three roadway transportation links between New York and Vermont over or around the approximately 110 mile long Lake Champlain. The other two locations are approximately 50 miles to the south in Whitehall, NY and approximately 80 miles to the north in Rouses Point, NY. The closure of the Lake Champlain Bridge has disrupted the local community and created substantial hardships for people commuting between New York and Vermont.

2.2.2.2 Alternate Routes

There are no alternative routes that would be suitable as a permanent detour.

Permanent replacement of the bridge with a ferry system was considered but dismissed based on transportation demands and feedback from the public. The PAC formally recommended that a permanent ferry would not meet the needs of the community.

South of the Lake Champlain Bridge, the nearest access across the lake is the Ticonderoga ferry in Ticonderoga, NY, located approximately 12 miles south of the Lake Champlain Bridge. The Ticonderoga ferry can accommodate up to 18 cars and has a maximum gross vehicle weight of 15 tons. The ferry can make approximately three round trips per hour, with each crossing taking approximately seven minutes. The Ticonderoga ferry typically operates May 1 through October 31.

Motorists wishing to drive south around the lake would be subjected to an approximately 85 mile detour utilizing NY Route 22, U.S. Route 4, and VT Route 22A, and VT Route 17.

North of the bridge, the Lake Champlain Transportation Company’s (LCTC) Charlotte-Essex ferry is located approximately 28 miles north. The maximum weight per vehicle for this ferry is 40 tons. The Charlotte-Essex ferry departs every 30 minutes, with each crossing taking approximately 20 minutes. The Charlotte-Essex ferry typically operates year-round. Further north on the lake, the LCTC also provides two additional ferry crossings, the Burlington-Port Kent crossing and the Grand Isle-Plattsburgh crossing.

Motorists wishing to drive north around the lake would be subjected to an approximately 175 mile detour utilizing numerous roadways including I-87, the Rouses Point Bridge, I-89, U.S. Route 7 and VT Route 22A.

Since the closure of the Lake Champlain Bridge on October 16, 2009, the Ticonderoga ferry and the Lake Champlain Transportation Company extended the hours of operation for their ferry services to accommodate the transportation needs resulting from the bridge closure. Crossing fees were waived for most vehicles. The Ticonderoga ferry closed for the winter on January 4, 2010.
A temporary ferry service between Crown Point, NY and Addison, VT began operation on February 1, 2010 adjacent to the former bridge site. It is currently making trips every 30 minutes from each shore, with a weight limit of 15 tons. NYSDOT and VAOT advanced the temporary ferry project under a separate NEPA Action.

2.2.2.3 Corridor Deficiencies and Needs

Due to the closure of the Lake Champlain Bridge, the movement of people and goods has been limited in the region. Since the closure of the bridge, a free commuter bus service has been implemented between New York and Vermont. The approximately two hour one-way trip between the Port Henry / Ticonderoga, NY area and Middlebury / Vergennes, VT area offers commuters an alternative to the ferry services.

Additionally, bus service has been provided in New York between Ticonderoga, NY and the Essex dock for the Charlotte-Essex ferry. In Vermont, bus service is also available between Middlebury, VT and the Charlotte dock for the Charlotte-Essex ferry. The Chittenden County Transportation Authority is offering shuttle service from the Charlotte dock to Burlington, VT.

NYSDOT and VAOT just completed constructing a temporary ferry just south of the existing bridge. The ferry began operation on February 1, 2010. The temporary ferry project is being advanced under a separate NEPA Action.

2.2.2.4 Transportation Plans

The approved Statewide Transportation Improvement Program (STIP) only includes the detailed design phase for NYSDOT P.I.N. 1805.81. The most recent STIP for New York State was formally approved on December 10, 2007. This STIP covers the period between October 1, 2008 and September 30, 2011.

2.2.2.5 Abutting Highway Segments and Future Plans for Abutting Highway Segments

NYS Route 185: The NYS Route 185 highway section abutting the project limits consists of two 11 ft travel lanes. The shoulders are curbed and the shoulder width varies from two 2 ft at the immediate approach to the bridge, widening to approximately 4 ft to the west and finally transitioning to 12 ft at the project limits. The existing vertical alignment is approximately 1.0% with a slight downgradient approaching the existing bridge. The horizontal alignment at the bridge abutment is tangent, and at the approach to the bridge contains a reverse curve. The existing pavement condition consists of asphalt concrete lanes and shoulders in good condition. The existing regulatory speed limit within the western approach of the bridge is 30 mph.

VT Route 17: The VT Route 17 highway section abutting the project limits consists of two 11 ft travel lanes with two 1 ft paved shoulders. The existing vertical alignment is generally flat, with grades less than 0.5% within the eastern approaches to the existing bridge. The horizontal alignment abutting the approaches along this portion of VT Route 17 consists of two horizontal curves. The existing pavement along VT Route 17 also consists of asphalt concrete lanes and shoulders. The lanes and shoulders on the eastern approach appear to be in fair to poor condition with noticeable pavement distress. The deterioration appears to be due to a lack of adequate pavement foundation and drainage. The existing regulatory speed limit within the eastern approach of the bridge is 30 mph.

The NYSDOT Regional Planning Group and VAOT’s Planning and Programming Group have confirmed that there are no plans to reconstruct or widen this highway segment, or the adjoining segments, within the next 20 years.

2.3 Transportation Conditions, Deficiencies and Engineering Considerations

2.3.1 Operations (Traffic and Safety) & Maintenance

2.3.1.1 Functional Classification and National Highway System (NHS)
2.3.1.1 Classification Data

<table>
<thead>
<tr>
<th>Route(s)</th>
<th>NYS Route 185</th>
<th>VT Route 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Classification</td>
<td>Rural Minor Arterial</td>
<td>Rural Minor Arterial</td>
</tr>
<tr>
<td>National Highway System (NHS)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Designated Truck Access Route</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>Qualifying Highway</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>Within 1 mile of a Qualifying Highway</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>Within the 16 ft. vertical clearance network</td>
<td>No</td>
<td>N/A</td>
</tr>
</tbody>
</table>

2.3.1.2 Control of Access

NYS Route 185 and VT Route 17 are without control of access. Access along these highways will remain uncontrolled.

2.3.1.3 Traffic Control Devices

Currently signs are in place both advising the public that the bridge is closed. Signs also direct travelers to alternate routes and the temporary ferry.

2.3.1.4 Intelligent Transportation Systems (ITS)

There are currently no ITS systems in operation within the project area.

As part of the temporary ferry project, NYSDOT plans to install at least one web camera in New York.

2.3.1.5 Speeds and Delay

A radar speed study was performed by NYSDOT in January 2009 on both sides of the former Lake Champlain Bridge. The existing 85th percentile speed is shown in Exhibit 2.3.1.5.

<table>
<thead>
<tr>
<th>Route</th>
<th>NYS Route 185 Approach</th>
<th>Bridge</th>
<th>VT Route 17 Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Speed Limit</td>
<td>30 mph</td>
<td>30 mph</td>
<td>30 mph</td>
</tr>
<tr>
<td>Actual Operating Speed</td>
<td>40 mph</td>
<td>43 mph</td>
<td>37 mph</td>
</tr>
</tbody>
</table>

Travel time and delay runs are not required since this is not a major capacity project and the former Lake Champlain Bridge is not currently operational. See Operating Speed Study in Appendix C for more information.

2.3.1.6 Traffic Volumes

The traffic data was obtained in 2008.

2.3.1.6.(1) Existing Traffic Volumes

Before its closure, the Lake Champlain Bridge provided one of only three roadway transportation links between New York and Vermont over or around Lake Champlain, and was routinely used by commuters, tourists, farm machinery and trucks. Prior to its posted weight restrictions in 1994 and its subsequent closure, this route was routinely used by large trucks.

Exhibit 2.3.1.6 provides a summary of the traffic data for the former Lake Champlain Bridge.
2.3.1.6 (2) Future No-Build Design Year Traffic Volume Forecasts

Under the future no-build design year, there would be no bridge and therefore no traffic volume.

The Estimated Time of Completion (ETC)+30 design year was selected per Project Development Manual (PDM) Appendix 5, as the project consists of the bridge rehabilitation/replacement.

2.3.1.7 Level of Service and Mobility

2.3.1.7.1 Existing Level of Service and Capacity Analysis

Since the Lake Champlain Bridge is not in operation, it is currently providing no LOS.

However, using the Highway Capacity Software, HCS+ version 5.4, based on the Transportation Research Board’s (TRB) 2000 Highway Capacity Manual (HCM), an LOS analysis was performed using the 2008 ADT volumes. This analysis showed that the former Lake Champlain Bridge had been operating at LOS C prior to its closure.

There are three driveways within the project limits on the Vermont side: 1) the Cottonwood on Lake Champlain LLC property (private); 2) the Chimney Point State Historic Site Museum of Native American and French Heritage and the Vermont Department of Fish and Wildlife’s Chimney Point Boat Launch Access Area; and 3) the entrance to the temporary ferry. There are two driveways within the project limits on the New York side: 1) the entrance to the NYSDEC Crown Point Public Campground and Day Use Area and the Crown Point Visitor’s Center, which also contains the existing boat launch; and 2) the entrance to the temporary ferry.

2.3.1.7.2 Future No-Action Design Year Level of Service

Without this project, no level of service would be provided in the design year since it is not operational.

2.3.1.8 Safety Considerations, Accident History and Analysis

An accident analysis was performed in accordance with NYSDOT’s Highway Design Manual Chapter 5. The accident data was obtained by NYSDOT for the section of NYS Route 185 from mile marker 910L-1201-1033 to 910L-1201-1040 for the seven-year period from January 2001 to December 31, 2007. A total of nine accidents occurred during this period. During the three-year period from 2001 to 2003, there were a total of four accidents on this section of NYS Route 185. The accident rate for this segment of NYS Route 185 during this three-year period is 1.51 accidents per million vehicle miles. This is below the statewide accident rate for similar facilities, which is 2.81 accidents per million vehicle miles.

Accident data was obtained for the bridge section of VT Route 17 from mile marker 0.00 (New York State line) to mile marker 0.27 (VT Route 125 intersection) in Addison, VT for the seven-year period between January 2001 and December 2007. A total of five accidents occurred during this period. During the three-year period from 2001 to 2003, there was one accident on this section of VT Route 17. The accident rate for this segment of VT Route 17 during this three-year period was calculated as 0.97 accidents per million vehicle miles based upon the 2004 AADT volume of 3,500 vehicles per day (vpd), which is below the...
Vermont statewide accident rate of 1.34 accidents per million vehicles miles, the rate for rural minor arterial facilities.

The predominate accident types in New York and Vermont during the seven-year period are:

<table>
<thead>
<tr>
<th>Exhibit - 2.3.1.8</th>
<th>Collision Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NYS Route 185, From 910L-1201-1033 to 910L-1201-1040</strong></td>
<td></td>
</tr>
<tr>
<td>Type of Collision</td>
<td>Number</td>
</tr>
<tr>
<td>Sideswipe</td>
<td>2</td>
</tr>
<tr>
<td>Animal</td>
<td>1</td>
</tr>
<tr>
<td>Rear End</td>
<td>1</td>
</tr>
<tr>
<td>Fixed Object</td>
<td>5</td>
</tr>
<tr>
<td><strong>VT Route 17, From MM 0.00 to MM 0.27</strong></td>
<td></td>
</tr>
<tr>
<td>Sideswipe</td>
<td>1</td>
</tr>
<tr>
<td>Angle</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>

An accident analysis including an accident summary (TE-213) is included in Appendix C. The accident analysis showed no treatable pattern of accidents; therefore, there are no countermeasures recommended for this project.

**2.3.1.9 Existing Police, Fire Protection and Ambulance Access**

While emergency services are not located within the project limits, emergency vehicles routinely use this route to transport patients from Moses Ludington Hospital in Ticonderoga, NY to Fletcher Allen Hospital in Burlington, VT. Subsequent to the closure of the bridge, New York residents needing access to the Level 1 Trauma Center at Fletcher Allen Hospital in Burlington, VT must utilize one of the alternative routes described in Section 2.2.2.

The following emergency services are located in the vicinity of the project area:

- The Town of Crown Point Fire Department is located approximately six miles from the project area at 2764 Main Street, Crown Point, NY.
- The Town of Addison Fire Department is located approximately nine miles from the project area at 4811 VT Route 22A, Vergennes, VT.
- The Moses Ludington Hospital is located approximately 16 miles from the project area at 1019 Wicker Street, Ticonderoga, NY.
- The Porter Hospital is located approximately 17 miles from the project area at 115 Porter Drive, Middlebury, VT.

Emergency services will continue to coordinate appropriate responses to emergency situations in the project area.

**2.3.1.10 Parking Regulations and Parking Related Conditions**

- **NYS Route 185**: The northern shoulder along NYS Route 185 is posted “No Parking Anytime”.
- **VT Route 17**: At the eastern end of the bridge there is an existing wide shoulder along the northern side of the horizontal curve on VT Route 17. This area is occasionally occupied by parked vehicles. Adequate space exists for at least ten vehicles to park.

As part of the temporary ferry construction, VAOT has constructed a temporary parking lot at the intersection of VT Route 17 and VT Route 125. The temporary parking lot contains approximately 20 parking spaces. The temporary ferry and temporary parking lot are being advanced under separate NEPA Action.
General: Parking for the historical and recreational features located adjacent to the project area is contained within their respective sites.

2.3.1.11 Lighting

Before its demolition, roadway lighting was present on the existing bridge and approaches.

2.3.1.12 Ownership and Maintenance Jurisdiction

On December 11, 1987, the Lake Champlain Bridge Commission was abolished at which time the Lake Champlain Bridge and all functions of the Lake Champlain Bridge Commission were transferred to VAOT and NYSDOT. Upon the dissolution of the Bridge Commission, the tolls on the bridge were eliminated and NYSDOT assumed maintenance responsibility for the Lake Champlain Bridge.

New York was the lead agency with respect to operation, inventory, inspection and maintenance for the former bridge. The roadway approaches to the bridge were maintained by the State in which they were located, with the exception of snow and ice control. NYSDOT performed snow and ice control on both roadway approaches.

2.3.2 Multimodal

2.3.2.1 Pedestrians

There were no separate provisions for pedestrians on the previous bridge. Pedestrian traffic between New York and Vermont will be accommodated by the temporary ferry service.

Along the New York approach to the bridge, the Crown Point State Historic Site, Lake Champlain Visitors Center, and the Crown Point Public Campground and Day Use Area generate pedestrian traffic. These features are located on opposite sides of NYS Route 185.

Along the Vermont approach to the bridge, the Chimney Point State Historic Site and a restaurant may generate pedestrians.

A pedestrian generator checklist is included in Appendix C.

2.3.2.2 Bicyclists

There were no separate provisions for bicyclists on the previous bridge. Bicycle traffic between New York and Vermont will be accommodated by the temporary ferry service. There are no plans for a bicycle route within the project limits.

In New York, State Bicycle Route 9 follows NY Route 22 generally north-south in the general project area.

In Vermont, the Champlain Bikeway is located adjacent to the project limits. The Champlain Bikeway follows VT Route 17 and VT Route 125 in the vicinity of the project.

2.3.2.3 Transit

There are no transit providers operating within the project limits.

NYSDOT and VAOT have advanced the construction of a temporary ferry just south of the existing bridge under a separate NEPA Action. The temporary ferry became operational on February 1, 2010.

Since the closure of the Lake Champlain Bridge on October 16, 2009, the Ticonderoga ferry and the Lake Champlain Transportation Company extended the hours of operation for their ferry services to help accommodate the transportation needs resulting from the bridge closure. The Ticonderoga ferry closed for the winter on January 4, 2010.

Additionally, a free commuter bus service has been implemented between New York and Vermont. The approximately two-hour one-way trip between the Port Henry / Ticonderoga, NY area and Middlebury / Vergennes, VT area offers commuters an alternative to the ferry services.

A second bus service has been provided in New York between Ticonderoga, NY and the Essex dock for the Charlotte-Essex ferry. In Vermont, bus service is also available between Middlebury, VT and the Charlotte dock for the Charlotte-Essex ferry. The Chittenden County Transportation Authority is also offering shuttle service from the Charlotte dock to Burlington, VT.
2.3.2.4 Airports, Railroad Stations, and Ports

There are no airports, railroad stations, or port entrances within the project limits.

A list of airports in the general vicinity of the project is as follows:

- Ticonderoga Municipal Airport – Ticonderoga, NY
- Brisson Airport – Shoreham, VT
- Torrey Airport – Shoreham, VT
- Manning Personal Airstrip – Bridport, VT
- Ass-Pirin Acres – Panton, VT
- Staton Airport – Panton, VT
- Vermont Skydiving Adventures – Panton, VT
- Yankee Kingdom Airport – Panton, VT
- Basin Harbor Airport – Vergennes, VT
- Spencer Airport – Panton, VT

2.3.2.5 Access to Recreation Areas (Parks, Trails, Waterways, State Lands)

There are several entrances to recreation areas within the project limits.

Along NYS Route 185 there is one entrance to recreation areas, the New York State Department of Environmental Conservation’s Crown Point Public Campground and Day Use Area. This area also contains a boat launch for boating on Lake Champlain.

Along VT Route 17, there is one entrance that is shared by two recreation areas: the Chimney Point State Historic Site Museum of Native American and French Heritage and the Vermont Department of Fish and Wildlife’s Chimney Point Boat Launch Access Area.

Lake Champlain provides recreation for boating and fishing. The boating community in the project area consists of a wide variety of boats ranging from personal watercraft (jet-skis), small sailboats and powerboats, to large sailboats and cabin cruisers. In an effort to better evaluate the sizes of the existing sailboats on Lake Champlain within the project area, an informal survey of the sailboats was conducted by contacting numerous marinas located on Lake Champlain in December 2009. The results of the survey indicated that the maximum typical mast height above the waterline of sailboats sailing on the lake in the vicinity of the bridge was approximately 70 ft. Sailboats that exceed 70 ft in mast height typically sail in the northern parts of Lake Champlain where the lake is wider. Larger sailboats typically have the ability to lower their masts prior to approaching the project area. It is anticipated that these larger sailboats would have to lower their masts if they continue heading south for the canal system and points south where vertical clearance is significantly less than 70 ft. It is also anticipated that larger sailboats leaving the canal system would not raise their masts until after they have passed the Lake Champlain Bridge.

North of the bridge, the controlling vertical clearance on Lake Champlain is 56.5 feet from ordinary high water elevation of 98.0 at the Rouses Point Bridge. South of the bridge, the controlling vertical clearance would be the structures over the Champlain Canal. Per the NYSDOT Bridge Manual, Section 2.4.4 Navigable Waterways, the Champlain Canal has a minimum vertical clearance of 15.5 ft above maximum navigable pool elevation.

Ice fisherman and snowmobilers also utilize Lake Champlain in the winter, once the lake has frozen.

2.3.3 Infrastructure

2.3.3.1 Existing Highway Section

See Typical Sections, Plan and Profile sheets in Appendix A.
2.3.3.2 Geometric Design Elements Not Meeting Standards

2.3.3.2.(1) Critical Design Elements

Bridge: The structural capacity of the Lake Champlain Bridge was nonstandard based on the posted weight restrictions since 1994. In 2009, the bridge was reduced to one lane (40 ton posting).

The shoulder width on the former bridge was non-standard at 2 ft, in relation to the 4 ft width required.

The vertical clearance for the former thru-truss portion of the bridge was posted at 14 ft. The vertical clearance for a thru-truss should be a minimum of 16 ft, preferably 16.5 ft, in accordance with the NYSDOT Bridge Manual.

The crest vertical curve stopping sight distance across the former bridge’s main span was 258 ft. Based on a design speed of 45 mph the standard value should be 360 ft.

The bridge was closed on October 16, 2009 due to safety concerns and subsequently demolished on December 28, 2009.

NYS Route 185: The design speed for the project in New York is 45 mph. Within the project limits, the existing shoulders along the eastern bridge approach vary from 2 ft to 12 ft in width. In accordance with the NYS Bridge Manual, the shoulders along this classification of roadway should be at least four feet wide, with a maximum shoulder width of eight feet.

The existing superelevation at Curve 1 (Sta. 99+00 to Sta. 102+12) is a non-standard feature. The existing superelevation is 7%. With a 45 mph design speed and 8% maximum superelevation, the radius of 716 ft requires a superelevation of 7.75%.

The existing sag vertical curve headlight sight distance on the New York roadway approach (Sta. 103+80 to Sta. 107+40) is 78 ft. Based on a design speed of 45 mph, the standard value should be 360 ft.

VT Route 17: The design speed for the project in Vermont is 30 mph. Within the project limits, the existing shoulders along the eastern bridge approach are approximately 1 ft wide. In accordance with the Vermont State Design Standards, the shoulders along this classification of roadway with a design hour volume (DHV) between 200 and 400 vehicles should be at least 4 ft wide.

2.3.3.2.(2) Other Design Parameters

There are no additional existing nonconforming features.

2.3.3.3 Pavement and Shoulder

The pavement along the NYS Route 185 approach consists of asphalt concrete lanes and shoulders in good condition. The pavement along VT Route 17 approach consists of asphalt concrete lanes and shoulders in fair to poor condition with noticeable pavement distress. The deterioration appears to be due to a lack of adequate pavement foundation and drainage.

2.3.3.4 Drainage Systems

Pavement drainage systems within the project area consist primarily of an open drainage system of ditches and culverts. The curbed approaches to the bridge drain through curb openings which allow stormwater to flow down the embankments into ditches and ultimately Lake Champlain. There are signs of erosion along the bridge approach embankments due to stormwater flowing from the curb openings.

2.3.3.5 Geotechnical

In general, subsurface conditions consist of four distinct strata. At the approaches a layer of granular fill, with varying amounts of fines, is present. This stratum is underlain by the Marine and Lacustrine Silt and Clay and gives way to Chazy Group Limestone. Beneath the lake and at the shorelines no fill is present; however, fine sand and silt deposits are found above the Limestone. For more information see Lake Champlain Bridge Replacement Project Preliminary Geotechnical Engineering Report.

Excavations and disturbances should be minimized due to existing archaeological resources. Also, the debris from the recent demolition of the original bridge has the potential to be problematic if encountered at the bottom of the lake.
2.3.3.6 Structure

The former bridge was closed on October 16, 2009 after an inspection noted rapid deterioration of the substructure and the potential for abrupt failure of the unreinforced concrete piers. Subsequently, the bridge was demolished on December 28, 2009. However, for this section the original structure will be evaluated.

2.3.3.6.(1) Description:

a) BIN – 5-52118-0
b) Feature carried and crossed – NYS Route 185 and VT Route 17 crossing over Lake Champlain
c) Type of bridge number and length of spans, etc. – Combination of through-truss, deck truss, and deck plate girders spans; 14 spans, approximately 2200 ft total length; at-grade approach slabs
d) Width of travel lanes, parking lanes, and shoulders – Bridge had two 11 ft travel lanes and two 2 ft shoulders; NY approaches have two 11 ft travel lanes with two 3 ft shoulders, and VT approaches have two 11 ft travel lanes with two 1 ft shoulders
e) Sidewalks – None
f) Utilities carried – No utilities on the bridge; however, there was electricity on the bridge for street lighting and navigation lights.

2.3.3.6.(2) Clearances (Horizontal/Vertical)

The vertical clearance over the roadway on the original bridge was 14 feet.

The navigational horizontal clearance was approximately 400 ft from face of pier to face of pier, and the maximum navigational vertical clearance was 90 ft over a 186 ft channel width from a Mean Low Water (MLW) elevation of 92.5 ft above sea level.

2.3.3.6.(3) History & Deficiencies

The Lake Champlain Bridge’s iconic form was conceived by Charles M. Spofford, an early pioneer in design methods for continuous trusses. The bridge’s form was a particularly elegant application of Spofford’s ideas that demonstrated the advantages in efficiency of continuous structural systems. This bridge had an important place in the evolution of continuous trusses and the practice of bridge engineering in the United States.

An unusual aspect of the Lake Champlain Bridge design was the use of plain, rather than reinforced concrete, for the piers, particularly given the pier slenderness. In addition, there were no obvious considerations in the pier design for the potential for ice abrasion. For a more detailed discussion of the original Lake Champlain Bridge’s historic structural significance and unusual aspects of design, see the Lake Champlain Bridge Safety Assessment Report.

The Lake Champlain Bridge was a vehicular bridge that traversed Lake Champlain between Crown Point, NY and Addison, VT. It was one of only two bridges across Lake Champlain; all other transport across the lake is by ferry. The bridge connected NYS Route 185 in New York and VT Route 17 in Vermont. The 0.5 mile, two-lane bridge was owned by NYSDOT and VAOT and maintained by NYSDOT.

The bridge was opened to traffic in 1929 as a toll bridge. The tolls were removed in 1987. The bridge was closed due to safety concerns on October 16, 2009 and subsequently demolished on December 28, 2009.

2.3.3.6.(4) Inspection

There was a significant amount of rehabilitation and retrofit work on the Lake Champlain Bridge over its 80 year life, with the most extensive work completed in the early 1990’s. This rehabilitation included replacement of the existing concrete deck with a concrete filled steel grid deck, new traffic barriers, drainage improvements, bearing rehabilitation, post tensioning containment of piers, gusset plate repairs, and other miscellaneous steel repairs. For a chronological listing of major rehabilitation projects, see the Lake Champlain Bridge Safety Assessment Report.
The following is a summary of the most recent biennial inspections for the Lake Champlain Bridge.


b) State Condition Rating – 3.375 (in 2009)

Summary of Condition and Inspection Reports:

Complete structural inspections are required every two years. Diving inspections are required every five years. The most recent biennial inspection of the Lake Champlain Bridge occurred in the spring of 2009. During this inspection the number of reported red, yellow, and safety flags increased dramatically over the number of flags received in the previous inspection in 2007. Red flags report the failure or potentially imminent failure of a critical primary structural component. Yellow flags report a potentially hazardous condition that left unattended would likely become a clear and present danger. They may also report actual or imminent failure on a non-critical structural component. Safety flags report a condition presenting a clear and present danger to vehicle or pedestrian traffic, but no danger to structural failure or collapse. The following table provides a summary of the flags issued as a result of the past biennial inspections of the bridge.

<table>
<thead>
<tr>
<th>Year of Inspection</th>
<th>Yellow Flags</th>
<th>Red Flags</th>
<th>Safety Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>20</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

The yellow flag identified in 2007 for concrete deterioration of Pier 3 was repaired prior to the 2009 inspection. All 2009 flags were conditions not flagged during previous inspections, illustrating an increased rate of deterioration of the bridge. Two of the yellow flags were directly related to the conditions of the piers, including the deterioration of the post-tensioning bands on Pier 6 and Pier 7 which were added in a previous repair contract to arrest cracking of the existing piers.

As a whole, the bridge structure was given a general rating of 4 and a computed condition rating of 3.722 during the 2007 biennial inspection. Upon completion of the 2009 biennial inspection, the general rating of the bridge was decreased to 3, with a computed condition rating of 3.375. Structures that have condition ratings between 3 and 4 in New York State are characterized by severe deterioration, considered to be structurally deficient, and are not functioning as originally designed.

In addition to the recent biennial inspections, a diving inspection was performed in the summer 2005 and an in-depth inspection was performed in the fall 2007. The diving inspection investigated the conditions of Piers 4, 5, 6, 7, and 8 at and below the waterline. Widespread deterioration was noted, including map cracking, scaling, cracking of the concrete, and concrete spalling. Deterioration at the water level was noted up to approximately four inches deep. The report recommended repairs to the cracks identified at Pier 6 and Pier 7 and repairs to abrasion damage to all piers at the waterline. These repairs were anticipated to be included in on-going maintenance and repair of the existing bridge. The next diving inspection was scheduled for the summer 2010. Field investigations to determine the scope of the on-going bridge project included inspection of the structure to evaluate the work required for rehabilitation of the existing bridge.

During emergency steel repairs, concrete section loss was observed at the waterline on pier 5 by a NYSDOT engineer. This observation led to the extraction of 6 inch diameter concrete cores, which showed weak concrete to a depth of 18 inches. Analysis of pier 5 showed that the pier could fail catastrophically, which would lead to collapse of the bridge. After closure, a dive inspection of piers 5-8 was performed. The discovery of cracks in piers 5 and 7 led to the decision to permanently close the bridge.

2.3.3.6.(5) Restrictions

In 1994, posted weight restrictions were imposed on the former bridge. Additionally, the two lane bridge was reduced to one lane in July 2009 as an interim resolution of the red flags reported in the 2009 inspection.
The former bridge was closed on October 16, 2009 and subsequently demolished on December 28, 2009.

2.3.3.6.(6) Future Conditions

The former bridge was demolished on December 28, 2009. This report proposes a replacement structure be constructed at the location of the original bridge.

2.3.3.6.(7) Waterway

The bridge carries NYS Route 185 and VT Route 17 over Lake Champlain.

A survey was conducted in December 2009 of numerous marinas on Lake Champlain to determine an appropriate vertical clearance for the Lake Champlain Bridge. As noted in Section 2.3.2.5, most vessel traffic on Lake Champlain near the project limits is recreational. The results of the survey indicate that the typical maximum mast height above the waterline of sailboats sailing on the lake in the vicinity of the bridge is approximately 70 ft.

2.3.3.7 Hydraulics of Bridges and Culverts

The Lake Champlain Bridge carries NYS Route 185 and VT Route 17 over Lake Champlain. A USGS lake gauge at the ECHO Center in Burlington, VT continuously measures the level of the water in the lake. The level of Lake Champlain varies within about five feet each year. Water levels are generally the lowest during late summer and early fall when runoff from tributary streams is lowest because of the movement of moisture back to the atmosphere (through evapotranspiration) over the summer. The water levels are usually highest from April to May because of high runoff in tributary streams due to snowmelt and low evapotranspiration.

The highest recorded level at the gauge in Burlington was 101.86 ft above mean sea level on April 27, 1993. An historical maximum lake level of 102.1 ft above mean sea level was measured on May 4, 1869 at Rouses Point, NY. The minimum lake level observed in Burlington was 92.6 ft above mean sea level on December 4, 1908.

Ordinary high water (OHW) is 98.0 ft above sea level and ordinary low water (OLW) is 93.0 ft above sea level, and have been confirmed by USACE.

2.3.3.8 Guide Railing, Median Barriers and Impact Attenuators

Box beam guide railing exists on both sides of each bridge approach. The existing box beam approach guide railing transitioned to the two-rail steel bridge railing, which ran along both sides of the bridge, in each quadrant at the bridge approaches.

<table>
<thead>
<tr>
<th>Type</th>
<th>Location/Side</th>
<th>Length</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Beam Guide Railing</td>
<td>NYS Route 185 Approach RT</td>
<td>195 ft</td>
<td>Good</td>
</tr>
<tr>
<td>Box Beam Guide Railing</td>
<td>NYS Route 185 Approach LT</td>
<td>270 ft</td>
<td>Good</td>
</tr>
<tr>
<td>Box Beam Guide Railing</td>
<td>VT Route 17 Approach RT</td>
<td>340 ft</td>
<td>Good</td>
</tr>
<tr>
<td>Box Beam Guide Railing</td>
<td>VT Route 17 Approach LT</td>
<td>370 ft</td>
<td>Good</td>
</tr>
</tbody>
</table>

2.3.3.9 Utilities

There were no utilities across the original bridge except for electricity to power the roadway and navigational lighting. The utilities in the vicinity of the roadway approaches to the bridge are shown in Exhibit 2.3.3.9.
### Exhibit - 2.3.3.9
Existing Utilities in the Vicinity

<table>
<thead>
<tr>
<th>Owner</th>
<th>Type</th>
<th>Location/Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Grid</td>
<td>OH Power Line</td>
<td>Crosses NYS Route 185 approach roadway</td>
</tr>
<tr>
<td>National Grid</td>
<td>UG Power Line</td>
<td>NYS Route 185 approach roadway (right side)</td>
</tr>
<tr>
<td>Crown Point Telephone</td>
<td>OH Fiber Optic</td>
<td>Crosses NYS Route 185 approach roadway</td>
</tr>
<tr>
<td>Crown Point Telephone</td>
<td>UG Telephone</td>
<td>NYS Route 185 approach roadway (100 ft right of centerline)</td>
</tr>
<tr>
<td>New York State Department of Environmental Conservation</td>
<td>Sewer 4&quot; Force Main</td>
<td>Crosses under NYS Route 185 approach roadway</td>
</tr>
<tr>
<td>New York State Department of Environmental Conservation</td>
<td>2&quot; Water Main</td>
<td>Crosses under NYS Route 185 approach roadway</td>
</tr>
<tr>
<td>Green Mountain Power Corporation</td>
<td>OH Power Line</td>
<td>Northern side of VT Route 17</td>
</tr>
<tr>
<td>Green Mountain Power Corporation</td>
<td>UG Power Line</td>
<td>Northern side of VT Route 17</td>
</tr>
<tr>
<td>Green Mountain Power Corporation</td>
<td>UG Power Line</td>
<td>Crosses under VT Route 17 approach roadway at Chimney Point State Historic Site driveway</td>
</tr>
<tr>
<td>Waitsfield Telecom</td>
<td>OH Fiber Optic</td>
<td>Northern side of VT Route 17</td>
</tr>
<tr>
<td>Waitsfield Telecom</td>
<td>UG Telephone</td>
<td>Crosses under VT Route 17 approach roadway at Chimney Point State Historic Site driveway</td>
</tr>
<tr>
<td>Vermont Agency of Administration Department of Building and General Services</td>
<td>Sewer</td>
<td>Chimney Point State Historic Site (along the west side of VT Route 17 &amp; under VT Route 125)</td>
</tr>
<tr>
<td>Vermont Agency of Administration Department of Building and General Services</td>
<td>Water</td>
<td>Chimney Point State Historic Site (along side driveway)</td>
</tr>
</tbody>
</table>

### 2.3.3.10 Railroad Facilities

There are no railroads within the project limits and no at-grade crossings within 0.6 mile that could impact traffic conditions.

### 2.3.4 Landscape and Environmental Enhancement Opportunities

This section focuses on the critical existing areas to identify potential enhancement opportunities related to the project and to help avoid and minimize impacts. Chapter 4 focuses on the impacts, enhancements, and mitigation.

#### 2.3.4.1 Landscape

Several state parks, recreational areas, and wildlife/bird refuges are adjacent to the original Lake Champlain Bridge site and within the study area. On the New York side, the Crown Point Campground and Crown Point State Historic Site (for passive recreation) flank the bridge approach. The study area is part of a NYSDEC bird conservation area. The Crown Point Campground is located within the Adirondack Forest Preserve. The New York approach also falls within the boundaries of the Adirondack Park.
On the Vermont side, the Chimney Point State Historic Site and recreation area is located to the east of the bridge approach. The study area in Vermont is adjacent to two wildlife management areas; Dead Creek Wildlife Management Area and Hospital Creek/Whitney Creek Wildlife Management Area.

For additional information see Chapter 4.

2.3.4.1. Terrain

The terrain within the project area is considered to be rolling, which indicates that the natural slopes consistently rise or fall below the roadway level and occasionally contain steep slopes that restrict the roadway alignment.

2.3.4.1.2. Unusual Weather Conditions

There are no unusual weather conditions within the project area. The project will be designed in accordance with NYSDOT and VAOT standards, which take into account the possibility of inclement weather conditions such as drifting snow and icing.

2.3.4.1.3. Visual Resource Inventory

The original Lake Champlain Bridge was located in a particularly scenic area of both New York and Vermont. Visual resources include:

- Adirondack Park
- Fort St. Frederic
- Fort Crown Point
- Chimney Point
- Views of Green Mountains and Adirondack Mountains
- Views of Lake Champlain

The APA has identified the Vermont shore line as a Visually Significant Resource (VSR).

The former Lake Champlain Bridge complemented its natural setting by virtue of its architecture and scale; it had recently been added to the National Register of Historic Places. For a detailed discussion see Chapter 4.

2.3.4.2 Opportunities for Environmental Improvements

NYSDOT and VAOT recognize the opportunities for integrating the bridge project to enhance the community and natural setting. The following enhancements are being considered:

- The connection of a sidewalk from the Crown Point State Historic Site’s existing sidewalk to the proposed sidewalks on the bridge.
- A sidewalk connection from the proposed sidewalks along NYS Route 185 with the NYS DEC’s Crown Point Public Campground and Day Use Area

2.3.5 Miscellaneous

There is no additional pertinent information on the existing conditions.
CHAPTER 3 - ALTERNATIVES

This chapter discusses the alternatives considered and examines the engineering aspects for all feasible alternatives to address project objectives in Chapter 1 of this report.

3.1 Alternatives Considered and Eliminated from Further Study

The No Action/Maintenance or Null alternative will result in no restoration of the transportation system connecting western Vermont and northeastern New York provided by the original Lake Champlain Bridge. This alternative will not satisfy the project objective or the programming goal and therefore will not be considered further.

Restoration of the interstate transportation link between Vermont and New York with a new ferry service was considered but dismissed based on transportation demands. As noted above, approximately 9% of the daily traffic on the original bridge was truck traffic, which averages out to over 200 trucks per day. The high number of ferry crossings required to accommodate the vehicle and truck traffic, and the size limitations, make a ferry an unfeasible permanent solution. Additionally, both the project’s Public Advisory Committee and the general public expressed a consensus that a permanent new ferry service would not adequately meet the regional needs. This alternative will not be considered further.

Bridge replacement alternatives were conceptually evaluated on a number of alignments to the north and south of the existing bridge. The consensus from the project engineers, NYSDOT, VAOT, stakeholder agencies and the public was that any new bridge be constructed in the same location. Use of the former bridge footprint minimizes potential adverse effects to the environment and facilitates compliance with permitting requirements. Suitable sites for a bridge in a new and different location would require travelers to follow a less direct route to cross Lake Champlain, would adversely affect the local and state economies, and would also require a lengthy environmental process for design and approval. This would not meet the project purpose and need. Bridge alternatives in new locations will not satisfy the project objective and will not be considered further.

Once it was determined that only a bridge at the former location would meet objectives, a number of bridge types were considered before being eliminated from further study:

1. Conventional Truss – This type was considered but eliminated based on the many fracture critical members, vulnerability to progressive collapse, and high life cycle costs.

2. Lattice Truss – This type was considered but eliminated based on the many fracture critical members, vulnerability to progressive collapse, high life cycle costs, incompatible soil conditions, and construction complexity.

3. Concrete Arch – This type was considered but eliminated based on incompatible soil conditions, construction complexity, and long construction schedule.

4. Fin Back – This type was considered but eliminated based on inappropriate geometrical requirements (i.e. wider deck to accommodate center tower), steeper grades to accommodate structure depth, and very high initial cost.

5. Suspension Bridge – This type was considered but eliminated based on inefficiency for span length, incompatible soil conditions, long construction schedule, and very high initial cost.

3.2 Feasible Build Alternatives

3.2.1 Description of Feasible Alternatives

All feasible alternatives will provide a replacement structure using a similar horizontal alignment as the original Lake Champlain Bridge. The bridge types listed below also meet some basic requirements such as:

- Structural redundancy
- Constructability within an expedited time frame
Only distinct comparative advantages and disadvantages between bridge types are included in the bullet points below.

**Alternative 1 – Long Span Steel Girder** - Combination of haunched main span and uniform depth approaches, steel plate or twin trapezoidal box girders made composite with a precast or cast-in-place conventionally reinforced concrete deck. All steel will be metalized for enhanced corrosion protection. The substructures are founded on drilled shafts/caissons socketed into rock.

- **Advantages**
  - Lowest initial cost
  - High degree of redundancy
  - Replaceable deck
  - Lighter weight superstructure results in reduced foundation costs
  - Short construction time
  - Contractor familiarity
  - Construction minimally impacted by cold weather

- **Disadvantages**
  - Difficult to maintain navigational clearance with deep tapered section over main channel span
Alternative 2 - Segmental Concrete - Precast, post-tensioned single cell segmental box girder built in balanced cantilever; variable depth for the main channel spans and constant depth for the approach spans. Pier segments and variable depth segments may be cast-in-place. The substructures are founded on drilled shafts/caissons socketed into rock.

- Advantages
  - Precast segmental construction results in high initial quality

- Disadvantages
  - Heaviest superstructure resulting in large foundations
  - Non-replaceable deck
  - Maintenance costs (overlay replacement)
  - Segmental construction impacted by cold weather
  - Heavy lifting equipment required
  - Difficult to maintain navigational clearance with deep tapered section over main channel span

Rendering of Alternative 2 – Segmental Concrete Bridge
Alternative 3 - Steel Composite Cable Stayed - Conventional two tower cable-stayed bridge with a steel composite superstructure comprised of steel edge girder with floorbeams framing supporting precast decks. Since deck for the main span is not readily replaceable, a 2” wearing surface must be replaced periodically. All steel will be metalized for enhanced corrosion protection. Substructures and pylons are supported on drilled shafts/caissons socketed into rock.

- **Advantages**
  - Efficient use of steel
  - Moderate degree of redundancy
  - Lighter weight superstructure results in reduced foundation costs
  - Balanced cantilever construction

- **Disadvantages**
  - High initial cost
  - Less efficient for spans less than 600 ft
  - Non-replaceable deck
  - Maintenance costs (overlay replacement)
  - Longer construction time

Rendering of Alternative 3 – Steel Composite Cable Stayed Bridge
Alternative 4 - Concrete Extradosed - Similar to a cable-stayed bridge but using a stiff, deep concrete superstructure and lower towers. Superstructure framing consists of edge girders with floorbeams supporting a precast concrete deck. Since deck for the main span is not readily replaceable, a 2" wearing surface must be replaced periodically. Substructures and pylons are supported on drilled shafts/caissons socketed into rock.

- Advantages
  - Moderate degree of redundancy
  - Moderate weight superstructure
  - Balanced cantilever construction

- Disadvantages
  - High initial cost
  - Less efficient for spans less than 600 ft
  - Non-replaceable deck
  - Maintenance costs (overlay replacement)
  - Longer construction time

Rendering of Alternative 4 – Concrete Extradosed Bridge
Alternative 5 - Network Tied Arch - The main channel span is a basket handle arch with a network cable arrangement and internally redundant box tie girders supporting a composite precast deck system. Hangers are stay cables for corrosion protection and replaceability. The approach spans are steel plate girders. All steel will be metalized for enhanced corrosion resistance. Substructures are founded on drilled shafts/caissons socketed into rock.

- **Advantages**
  - Enhanced degree of redundancy
  - Efficient use of steel
  - Replaceable deck
  - Lighter weight superstructure results in reduced construction costs
  - Float in construction for arch erection

- **Disadvantages**
  - Complex fabrication for arch span

Rendering of Alternative 5 – Network Tied Arch Bridge
Alternative 6 - Modified Network Tied Arch - Similar to the Network Tied Arch, the main channel span is a basket handle arch with a network cable arrangement and internally redundant box tie girders supporting a composite precast deck system. Hangers are stay cables for corrosion protection and replaceability. The steel girder approach spans adjacent to the main span cantilever to meet the arch and provide a smoother transition. All steel will be metalized for enhanced corrosion resistance. Substructures are founded on drilled shafts/caissons socketed into rock.

- **Advantages**
  - Enhanced degree of redundancy
  - Efficient use of steel
  - Replaceable deck
  - Lighter weight superstructure results in reduced construction costs
  - Float in construction for arch erection

- **Disadvantages**
  - Complex fabrication for arch span
<table>
<thead>
<tr>
<th>Exhibit 3.2.1-A Common Elements of Each Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geometry</strong></td>
</tr>
<tr>
<td>• All alternatives include reducing the grade of the bridge to 5% to meet ADA compliance for the sidewalks</td>
</tr>
<tr>
<td>• All alternatives maintain two 11 ft lanes, two 5 ft shoulders and two 5 ft sidewalks</td>
</tr>
<tr>
<td>• Horizontal alignment will be moved slightly to the north to minimize impacts to cultural resources at the Vermont approach</td>
</tr>
<tr>
<td><strong>Materials</strong></td>
</tr>
<tr>
<td>• High performance steel (HPS) will be used where appropriate</td>
</tr>
<tr>
<td>• High performance concrete (HPC) will be used where appropriate</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
</tr>
<tr>
<td>• All alternatives will have replaceable structural elements</td>
</tr>
<tr>
<td><strong>Control of Access</strong></td>
</tr>
<tr>
<td>• No control of access will be provided, similar to the original bridge</td>
</tr>
<tr>
<td><strong>Right of Way</strong></td>
</tr>
<tr>
<td>• No change in ROW will be required</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
</tr>
<tr>
<td>• There may be a small wetland regulated by APA that is impacted</td>
</tr>
<tr>
<td>• There will be minor noise impacts due to construction for all alternatives</td>
</tr>
<tr>
<td>• All alternatives will change the visual profile from the original bridge</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
</tr>
<tr>
<td>• See Exhibit 3.2.1 Summary of Alternative Costs</td>
</tr>
<tr>
<td><strong>Project Goals</strong></td>
</tr>
<tr>
<td>• All alternatives meet the project goals.</td>
</tr>
</tbody>
</table>
## Exhibit 3.2.1-B (Exhibit 1.5-B) Summary of Alternative Costs - Million Dollars (2010)

<table>
<thead>
<tr>
<th>Activities</th>
<th>Alt 1</th>
<th>Alt 2</th>
<th>Alt 3</th>
<th>Alt 4</th>
<th>Alt 5</th>
<th>Alt 6</th>
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</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Bridge</td>
<td>47.0</td>
<td>61.5</td>
<td>75.0</td>
<td>126.5</td>
<td>54.5</td>
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<tr>
<td></td>
<td>Highway</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
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<td>1.0</td>
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<tr>
<td>Wetland Mitigation</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Storm Pollution Discharge Elimination System</td>
<td>Included in Highway Construction Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal (2010)</td>
<td>48.1</td>
<td>62.6</td>
<td>76.1</td>
<td>127.6</td>
<td>55.6</td>
<td>58.6</td>
</tr>
<tr>
<td>Incidentals(^2) (2010) 10%</td>
<td>4.8</td>
<td>6.3</td>
<td>7.6</td>
<td>12.8</td>
<td>5.6</td>
<td>5.9</td>
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<td>Subtotal (2010)</td>
<td>52.9</td>
<td>68.9</td>
<td>83.7</td>
<td>140.4</td>
<td>61.2</td>
<td>64.5</td>
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<tr>
<td>Contingencies(^3) (15% @ Design Approval)</td>
<td>7.9</td>
<td>10.3</td>
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<td>21.1</td>
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<td>Subtotal (2010)</td>
<td>60.8</td>
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<tr>
<td>Potential Field Change Order(^4)</td>
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<td>1.7</td>
<td>2.0</td>
<td>3.0</td>
<td>1.6</td>
<td>1.5</td>
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<td>Subtotal (2010)</td>
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<td>80.9</td>
<td>98.3</td>
<td>164.4</td>
<td>71.9</td>
<td>75.7</td>
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<tr>
<td>Mobilization (4%)</td>
<td>2.5</td>
<td>3.2</td>
<td>3.9</td>
<td>6.6</td>
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<td>3.0</td>
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<td>Subtotal (2010)</td>
<td>64.8</td>
<td>84.2</td>
<td>102.2</td>
<td>171.0</td>
<td>74.8</td>
<td>78.7</td>
</tr>
<tr>
<td>Expected Award Amount – Inflated(^5) @ 5%/yr to midpoint of Construction (2011)</td>
<td>3.2</td>
<td>4.2</td>
<td>5.1</td>
<td>8.6</td>
<td>3.7</td>
<td>3.9</td>
</tr>
<tr>
<td>Construction Inspection (10%)</td>
<td>6.5</td>
<td>8.4</td>
<td>10.2</td>
<td>17.1</td>
<td>7.5</td>
<td>7.9</td>
</tr>
<tr>
<td>ROW Costs (2010)</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>75.0</td>
<td>97.3</td>
<td>118.0</td>
<td>197.2</td>
<td>86.5</td>
<td>91.0</td>
</tr>
</tbody>
</table>

**Notes:**

1. Engineer’s Estimate rounded up to nearest $500,000.
2. The potential cost increase due to unknown or un-tabulated items.
3. NYSDOT recommends standard contingencies: 25% Scoping stage, 15% Design Approval stage, 5% Advanced Detail Plans stage.
4. According to HDM Chapter 21 Section 21.3.9.4 and EI 07-024.
5. The escalation rate of 5% to account for potential future increases in labor, material, equipment and other costs associated with Capital Program work.

### 3.2.2 Preferred Alternative

The Modified Network Tied-Arch Bridge was selected as the preferred bridge replacement design type. All six alternatives have some advantages and disadvantages over each other. Critical factors in choosing a preferred alternative by the design team were manageable cost, public preference, site restrictions, and constructability.

The landing areas at both shores are rife with cultural resources which limit any impact associated with the replacement structure. It is also important to maintain a reasonable navigational clearance for the vessel traffic on the lake. For this reason, Alternatives 1 and 2 are undesirable. However, Alternative 1 is the least expensive of the six, while Alternative 2 is moderately high in cost.

The expedited replacement of the original Lake Champlain Bridge is also a primary concern of the project, so the longer construction times of Alternatives 3 and 4 make them undesirable. Additionally, the costs of both alternatives are significantly higher than other four alternatives.
Alternatives 5 and 6 are quantitatively the same. However, in addition to the more flowing aesthetic appeal of Alternative 6, the projection of the rigid frame over the channel piers does offer an advantage for the heavy lifting of the proposed float-in arch erection. The rigid frame cantilever provides the lifting mechanism to lift vertically as opposed to lifting at an angle.

The PAC met twice (December 11 and 15, 2009) to discuss and consider the concepts. The PAC was joined for a planning charrette on December 11, 2009 by other key stakeholders including local, state, and federal agencies and jurisdictions, community organizations, high school students, and advocacy groups such as those representing bicyclist interests and historic preservation interests, totaling 50 participants. At this charrette, the first five alternatives were presented. However, there were numerous comments expressing the perception that Alternative 5 was incomplete or disjointed, as if the approach spans and main span were separate entities. Alternative 6 was a direct result of these comments. Public meetings, attracting approximately 600 attendees, were conducted on December 12, 2009 in Ticonderoga, NY and on January 4, 2010 in Vergennes, VT where all six alternatives were presented to solicit the general public's input to identify the locally preferred alternative. To provide added opportunity for public input, information on the bridge type alternatives and a related survey were posted on the NYSDOT project website. Over 3,500 survey responses were received. The Modified Network Tied Arch Bridge was the preferred design option by an overwhelming majority of all the stakeholders involved.

The PAC passed a formal recommendation at its December 15, 2009 meeting in support of the Modified Network Tied Arch as the preferred alternative.

The Modified Network Tied Arch Bridge Alternative meets the purpose and need and project objectives; and it represents a consensus of stakeholder agencies and the public. Therefore the Modified Network Tied Arch Bridge Alternative will be progressed to final design.

3.2.3 Design Criteria for Feasible Alternative(s)

3.2.3.1 Design Standards

- AASHTO LRFD
- NYSDOT Bridge Manual and NYSDOT Highway Design Manual (HDM)
- VAOT Vermont State Design Standards
### 3.2.3.2 Critical Design Elements

#### Exhibit 3.2.3.2-A
Critical Design Elements for Replacement Lake Champlain Bridge

<table>
<thead>
<tr>
<th>PIN:</th>
<th>Critical Design Elements for Replacement Lake Champlain Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route No. &amp; Name:</td>
<td>NYS Route 185 / VT Route 17</td>
</tr>
<tr>
<td>Project Type:</td>
<td>Bridge Replacement</td>
</tr>
<tr>
<td>ADT:</td>
<td>2,979</td>
</tr>
<tr>
<td>% Trucks:</td>
<td>9%</td>
</tr>
<tr>
<td>NHS (Y/N):</td>
<td>No</td>
</tr>
<tr>
<td>Functional Class:</td>
<td>Rural Minor Arterial</td>
</tr>
<tr>
<td>Design Class:</td>
<td>Rural Arterial</td>
</tr>
<tr>
<td>% Trucks:</td>
<td>9%</td>
</tr>
<tr>
<td>ADT:</td>
<td>2,979</td>
</tr>
<tr>
<td>Truck Access / Qualifying HW:</td>
<td>Truck Access in NYS</td>
</tr>
<tr>
<td>Terrain:</td>
<td>Rolling</td>
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<tr>
<td>ADT:</td>
<td>2,979</td>
</tr>
<tr>
<td>Truck Access / Qualifying HW:</td>
<td>Truck Access in NYS</td>
</tr>
<tr>
<td>Terrain:</td>
<td>Rolling</td>
</tr>
<tr>
<td>Element</td>
<td>Standard</td>
</tr>
<tr>
<td>Design Speed</td>
<td>New York²</td>
</tr>
<tr>
<td>Lane Width</td>
<td>Vermont³</td>
</tr>
<tr>
<td>Shoulder Width</td>
<td>New York²</td>
</tr>
<tr>
<td>Bridge Roadway Width</td>
<td>Vermont³</td>
</tr>
<tr>
<td>Maximum Grade</td>
<td>New York²</td>
</tr>
<tr>
<td>Vertical Clearance Over Roadway</td>
<td>16 ft min., 16.5 ft desirable</td>
</tr>
<tr>
<td>Pavement Cross Slope</td>
<td>Vermont³</td>
</tr>
<tr>
<td>Structural Capacity</td>
<td>New York²</td>
</tr>
<tr>
<td>Pedestrian Accommodation</td>
<td>Per Requirements of NYS HDM Chapter 18</td>
</tr>
</tbody>
</table>

(1) Based on as-built drawings, omitted if data unavailable.
(2) NYSDOT Bridge Manual
(3) VAOT Vermont State Design Standards
(4) Previous condition in row 1 is posted speed. Proposed posted speed remains 30 mph.
(5) The Regional Traffic and Safety Group has determined that the use of a Design Speed of 45mph (72.4km/h) is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume.
<table>
<thead>
<tr>
<th>PIN:</th>
<th>1805.81</th>
<th>Route No. &amp; Name:</th>
<th>NYS Route 185 / VT Route 17</th>
<th>Functional Class:</th>
<th>Rural Minor Arterial</th>
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</thead>
<tbody>
<tr>
<td>Project Type:</td>
<td>Bridge Replacement</td>
<td>Design Class:</td>
<td>Rural Arterial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Trucks:</td>
<td>9%</td>
<td>Terrain:</td>
<td>Rolling</td>
<td></td>
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</tr>
<tr>
<td>ADT:</td>
<td>2,979</td>
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<td></td>
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</tbody>
</table>

### Critical Design Elements for NYS Route 185 / VT Route 17 Highway Approaches

<table>
<thead>
<tr>
<th>Element</th>
<th>Standard</th>
<th>Previous Condition</th>
<th>Proposed Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Design Speed</td>
<td>New York 45 mph (72.4km/h)</td>
<td>Vermont 30 mph (48km/h)</td>
<td>New York 30 mph (48km/h)</td>
</tr>
<tr>
<td>2 Lane Width</td>
<td>New York 11 ft min. (3.4m)</td>
<td>Vermont 11 ft min. (3.4m)</td>
<td>New York 11 ft (3.4m)</td>
</tr>
<tr>
<td>3 Shoulder Width</td>
<td>New York 4 ft min. (1.2m)</td>
<td>Vermont 4 ft min. (1.2m)</td>
<td>New York 2 ft (0.6m)</td>
</tr>
<tr>
<td>4 Maximum Grade</td>
<td>New York 6%</td>
<td>Vermont 7%</td>
<td>New York 5.5%</td>
</tr>
<tr>
<td>5 Horizontal Curvature</td>
<td>New York 587 ft min. (178.9m) @ e = 8%</td>
<td>Vermont 214 ft min. (65.2m) @ e = 8%</td>
<td>New York 716.2 ft</td>
</tr>
<tr>
<td>6 Superelevation Rate</td>
<td>New York 8% max.</td>
<td>Vermont 8% max.</td>
<td>New York 7%</td>
</tr>
<tr>
<td>7 Stopping Sight Distance</td>
<td>New York 360 ft min. (109.7m)</td>
<td>Vermont 200 ft min. (61.0m)</td>
<td>New York -</td>
</tr>
<tr>
<td>8 Horizontal Clearance</td>
<td>New York Fill slopes: 14 ft min. for 1:4 or flatter; Cut slopes: 12 ft min. for 1:3, 12 ft min for 1:4 or flatter: may use 10 ft min. to avoid/minimize impacts to resources</td>
<td>Vermont -</td>
<td>New York Fill slopes: 14 ft min. for 1:4 or flatter; Cut slopes: 12 ft min. for 1:3, 12 ft min for 1:4 or flatter: may use 10 ft min. to avoid/minimize impacts to resources</td>
</tr>
<tr>
<td>9 Pavement Cross Slope</td>
<td>New York 1.5% min, 2% max</td>
<td>Vermont 2%</td>
<td>New York -</td>
</tr>
<tr>
<td>10 Rollover</td>
<td>New York 4% max. between lanes; 8% max at edge of shoulder</td>
<td>Vermont 7% max.</td>
<td>New York -</td>
</tr>
<tr>
<td>11 Pedestrian Accommodation</td>
<td>New York Per Requirements of NYS HDM Chapter 18</td>
<td>Vermont None</td>
<td>New York None</td>
</tr>
</tbody>
</table>

(1) Based on available data, omitted if data unavailable.
(2) NYSDOT Highway Design Manual, Chapter 2
(3) VAOT Vermont State Design Standards
(4) Previous condition in row 1 is posted speed. Proposed posted speed remains 30 mph.
(5) The Regional Traffic and Safety Group has determined that the use of a Design Speed of 45mph (48km/h) is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume.
(6) Non-Standard Feature – see Section 3.3.3.2.(1)
3.2.3.3 Other Design Parameters

Exhibit 3.2.3.3-A

<table>
<thead>
<tr>
<th>Highway or Feature</th>
<th>Element</th>
<th>Standard Criteria</th>
<th>Proposed Condition</th>
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</thead>
<tbody>
<tr>
<td>2 Level of Service</td>
<td>LOS C</td>
<td>LOS C</td>
<td></td>
</tr>
<tr>
<td>3 Drainage Design Storm</td>
<td>10 year storm</td>
<td>10 year storm</td>
<td></td>
</tr>
<tr>
<td>4 Navigational Clearance</td>
<td>Consultation with USCG and the maritime community on Lake Champlain</td>
<td>75 ft vertical over 300 ft horizontal clearance</td>
<td></td>
</tr>
</tbody>
</table>

Exhibit 3.2.3.3-B

<table>
<thead>
<tr>
<th>Location</th>
<th>Design Vehicle</th>
<th>Vehicle Accommodated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Deck</td>
<td>Farm Equipment</td>
<td>16.5 ft high x 16 ft wide (one lane + shoulder)</td>
</tr>
</tbody>
</table>

3.3 Engineering Considerations

3.3.1 Operations (Traffic and Safety) & Maintenance

3.3.1.1 Functional Classification and National Highway System

This project will not change the functional classification of the highway.

3.3.1.2 Control of Access

No control of access will be provided.

3.3.1.3 Traffic Control Devices

3.3.1.3.(1) Traffic Signals

No new traffic signals are proposed.

3.3.1.3.(2) Signs

Existing signs will be replaced. Proposed signs will be placed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and the NYSDOT Supplement.

3.3.1.4 Intelligent Transportation Systems (ITS)

No ITS measures are proposed.

As part of the temporary ferry project, NYSDOT plans to install at least one web camera in New York. The temporary ferry project is being advanced under a separate NEPA Action.

3.3.1.5 Speeds and Delay

3.3.1.5.(1) Proposed Speed Limit

The posted speed limit within the project limits will be the same as the previous 30 mph speed limit.

3.3.1.5.(2) Travel Time Estimates

Travel time estimates are not applicable for a bridge replacement project.

3.3.1.6 Traffic Volumes

The future design year traffic volumes are the same as those shown in Section 2.3.1.6.

3.3.1.7 Level of Service and Mobility
3.3.1.7 Level of Service and Mobility

3.3.1.7.(1) At Project Completion & Design Year

Using the Highway Capacity Software, HCS+ version 5.4, based on the Transportation Research Board’s (TRB) 2000 Highway Capacity Manual (HCM), a LOS analysis was performed for the proposed Lake Champlain Bridge. The analysis showed that the two-lane bridge would operate at LOS C for the ETC and ETC+30 conditions.

There are three driveways within the project limits on the Vermont side: 1) the Cottonwood on Lake Champlain LLC property (private); 2) the Chimney Point State Historic Site Museum of Native American and French Heritage and the Vermont Department of Fish and Wildlife’s Chimney Point Boat Launch Access Area; and 3) the entrance to the temporary ferry. There are two driveways within the project limits on the New York side: 1) the entrance to the New York State Park and Crown Point Visitor’s Center, which also contains the existing boat launch; and 2) the entrance to the temporary ferry.

3.3.1.7.(2) Work Zone Safety & Mobility

A. Work Zone Traffic Control Plan – Currently, signs are in place advising the public that the bridge is closed, and directing travelers to either follow alternate routes or the temporary ferry. Routes for emergency vehicles have been established since the closure of the Lake Champlain Bridge on October 16, 2009. These routes for emergency vehicles will not be impacted by the bridge construction.

With the temporary ferry operational during construction of the replacement bridge, work zone traffic control for vehicles along NYS Route 185 and VT Route 17 will be minimal. It is anticipated that a plan will be developed by the contractor in accordance with any USCG permit requirements to protect mariners on Lake Champlain during construction of the bridge. The details for any work zone traffic control will be prepared and evaluated during final design.

B. Special Provisions -The use of time related provisions will be evaluated during final design. The work zone traffic control will need to be coordinated with local officials and residents.

C. Significant Projects (per 23 CFR 630.1010) - A Transportation Management Plan (TMP) will be prepared for the project consistent with 23 CFR 630.1012. The TMP will consist of a Temporary Traffic Control (TTC) plan. Transportation Operations (TO) and Public Information (PI) components of a TMP will be considered during final design.

3.3.1.8 Safety Considerations, Accident History and Analysis

As discussed in Section 2.3.1.8, the accident analysis showed no treatable pattern of accidents; therefore, there are no countermeasures recommended for this project.

The provision of a raised sidewalk and wider shoulder on the bridge will increase the safety of pedestrians and bicyclists utilizing the roadway.

Guide railing: Bridge Railing is proposed to be installed on the bridge between the roadway and the sidewalk, separating pedestrians from the roadway. Approach guide railing and guide rail termini will be installed to meet current standards and warrants. In addition, a minimum 3.5 ft high pedestrian railing will be provided on the outside edge of the sidewalk.

Signs: Proposed signs will be placed in accordance with the MUTCD and the NYSDOT Supplement.

3.3.1.9 Impacts on Police, Fire Protection and Ambulance Access

Refer to Section 3.3.1.7(2) for a discussion of the anticipated impacts during construction. Upon completion of the bridge construction, emergency vehicles will be able to resume utilizing this lake crossing. Since the closure of the Lake Champlain Bridge on October 16, 2009, emergency vehicles needing to cross the lake have utilized one of the alternate routes discussed in Section 2.2.2.2.

3.3.1.10 Parking Regulations and Parking Related Issues

VAOT has proposed to eliminate the existing wide shoulder along the northern side of the horizontal curve on VT Route 17 where vehicles occasionally park.
No other changes are proposed to existing parking conditions within the project area. For existing parking conditions see Section 2.3.1.10.

3.3.1.11 Lighting

Navigation lights will be provided.

NYSDOT and VAOT are currently evaluating aviation, roadway, and feature lighting for the proposed structure. A determination is anticipated during final design. Light standards on the roadway approaches affected by the proposed reconstruction will be relocated as necessary.

3.3.1.12 Ownership and Maintenance Jurisdiction

Per the 2009 bi-state agreement and upon completion and final acceptance of the project, NYSDOT shall provide routine maintenance for the replacement bridge and bridge approaches in both New York and Vermont. Routine maintenance includes control of snow and ice, traffic control, including pavement markings and striping, signs and other delineators, and minor pavement and bridge repairs. NYSDOT shall continue to provide all inspections for the National Bridge Inventory System (NBIS). The bridge will be jointly owned by both states. Ownership and maintenance for the highway approaches, including any retaining walls, sidewalks, steps, etc. will be assigned per the bi-state agreement.

A turnaround for NYSDOT maintenance vehicles in Vermont will be resolved during final design.

Non-routine maintenance of the temporary ferry structures will be the responsibility of the replacement bridge contractor. Inspections of the temporary ferry structures will occur throughout the operation of the temporary ferry by NYSDOT and VAOT on their respective shores.

3.3.1.13 Constructability Review

A review of the proposed replacement bridge with the Regional Construction Group occurred on January 13, 2010. Topics of the meeting included:

- Heavy lifting techniques
- Foundation construction
- Material availability
- Transportability
- Construction sequence

Follow-up meetings will be scheduled as necessary. A contractor constructability review meeting was conducted on February 1, 2010.

3.3.2 Multimodal

3.3.2.1 Pedestrians

In accordance with Federal, NYSDOT and VAOT policies, safe accommodations for pedestrians have been considered and incorporated into the project.

One 5 ft wide raised sidewalk will be included on each side of the proposed structure and roadway approaches. The grades on the proposed structure were developed to ensure that the sidewalk grades will not exceed five percent in accordance with the Americans with Disabilities Act (ADA). Also, the proposed cross slope on the sidewalks will not exceed two percent. Other pedestrian accommodations, crosswalks, and appropriate signage will be included, as necessary.

Sidewalk locations and termination points have been developed to provide pedestrian accommodations between the historic and recreational resources in the project area. The pedestrian accommodations have also been coordinated with the environmental initiatives being considered as part of the project by NYSDOT and VAOT.

A Pedestrian Generator Checklist is included in Appendix C.

3.3.2.2 Bicyclists
Given the close proximity of the Champlain Bikeway in Vermont and New York State Bicycle Route 9 in New York, bicycle accommodations have been considered for this project. This has been done in accordance with Federal, NYSDOT and VAOT policies, to provide safe and adequate accommodations for bicyclists. The shoulder on the proposed structure and roadway approaches will be 5 ft wide, a significant increase compared to the former bridge. The proposed 5 ft shoulder will accommodate bicyclists along this uncontrolled access highway. The proposed shoulder width has been developed in accordance with AASHTO, NYSDOT and VAOT standards.

The proposed bicycle accommodations will complement the pedestrian accommodations being included in this project.

3.3.2.3 Transit

No changes are proposed to transit conditions existing prior to the closure of the Lake Champlain Bridge on October 16, 2009.

It is anticipated that the temporary transit services established as a result of the bridge closure will be terminated upon completion and full operation of the temporary ferry.

3.3.2.4 Airports, Railroad Stations, and Ports

There are no airports, railroad stations, or port entrances within the project limits.

3.3.2.5 Access to Recreation Areas (Parks, Trails, Waterways, and State Lands)

No changes are proposed for vehicular access to the adjacent recreation areas.

Access for pedestrians will be enhanced by the inclusion of one 5 ft wide sidewalk on each side of the proposed bridge as described in Sections 2.3.4.2 and 3.3.2.1. Additional sidewalks are also under consideration by OPRHP within the Crown Point State Historic Site (under a separate contract).

3.3.3 Infrastructure

3.3.3.1 Proposed Highway Section

Refer to Appendix A for typical sections.

3.3.3.1.(1) Right of Way

There are no proposed permanent ROW acquisitions.

Temporary easements are anticipated for the potential staging area at Van Slooten Harbour Marina in Port Henry, NY and at a potential staging area on private property along NY Route 185 (Refer to Section 3.3.5).

There are 2 possible temporary easements in Vermont (see Appendix A for drawings):

1. Area on Dwg. GP-7, at Sta. 131, on the right side where there is existing pavement. This is still within the existing highway easement.

2. Area of Dwg. GP-8, Sta. 132-133+50 on the left (opposite the Chimney Point driveway) - the proposed fill slope is against the highway boundary, and a temporary easement is anticipated to allow for the construction of the slope.

3.3.3.1.(2) Curb

NYS Route 185 and VT Route 17 will both have vertical faced curb on both sides of the highway within the project limits.

3.3.3.1.(3) Grades

The proposed maximum grade will be five percent.

3.3.3.1.(4) Intersection Geometry and Conditions
The VT Route 17 and VT Route 125 intersection is located within the resurfacing limits. This intersection was recently reconfigured as part of the temporary ferry project. The temporary ferry project is being advanced under a separate NEPA Action. The existing intersection geometry will be retained.

3.3.3.1.(5) Roadside Elements

(a) Snow Storage, Sidewalks, Utility Strips, Bikeways, Bus Stops - No snow storage, utility strips, bikeways or bus stops are proposed within the project limits. One 5 ft sidewalk will be provided on each side of the bridge and roadway approaches.

(b) Driveways – NYS Route 185: Driveway modifications to the NYSDEC Public Campground and Day Use Area / Crown Point Visitor’s Center or the temporary ferry access are not proposed.

VT Route 17: Driveway modifications to the Chimney Point State Historic Site have been requested. Driveway modifications to the Cottonwood on Lake Champlain LLC property or the temporary ferry access are not proposed.

(c) Clear Zone - The design clear zone width for this project is 15 ft in New York and 14 ft in Vermont. Note that bridge rail and/or guide rail will be continuous for most of the length of the project. Where rail is not required, the project specific clear zone widths will be provided.

3.3.3.2 Special Geometric Design Elements

3.3.3.2.(1) Non-Standard Features

The preferred alternative will include three non-standard features.

First is the superelevation at Curve 1 (Sta. 99+00 to Sta. 102+12). Refer to Appendix A for Plans and Profiles. With the project's 45 mph design speed and 8% max superelevation, the radius of 716 ft requires a superelevation of 7.75%. The existing superelevation is 7%. Increasing superelevation will raise the elevation of the high side pavement, resulting in increased grading impacts to adjacent historically-sensitive areas. Therefore, it is proposed to match the existing superelevation of 7.0% which corresponds to a design speed of 40 mph. This speed is just 3 mph less than the observed 85th percentile speed of 43 mph, as recorded by Region 1 Traffic. A curve warning sign may be installed, if determined to be required during final design.

The second non-standard feature is the sag vertical curve headlight sight distance on the New York roadway approach (Sta. 103+80 to Sta. 107+40). Constructing a vertical curve that fully satisfies the design criteria would result in significant impacts to the adjacent historically-sensitive Fort St. Frederic and Champlain Bridge Toll Keeper's House/Visitor Center. The proposed design provides a significant incremental improvement to the existing sag vertical curve; the headlight sight distance can be improved from 78 ft to 320 ft, while avoiding negative impacts to sensitive properties on the New York approach. The proposed headlight distance corresponds to a design speed of 41 mph. This speed is just 2 mph less than the observed 85th percentile speed of 43 mph, as recorded by Region 1 Traffic.

The third non-standard feature is the crest vertical curve stopping sight distance across the bridge's main span (Sta. 114+90 to Sta. 119+70). The proposed bridge profile allows a 300 ft wide by 75 ft high navigation channel between Sta. 114+90 and 119+70. The navigational channel dimensions and locations have been agreed upon by the US Coast Guard, and the ensuing bridge profile and structure allows for this channel. Modifying the profile to allow a 360 ft stopping sight distance would require raising the bridge profile to accommodate the navigation channel, which would subsequently increase impacts to both bridge approaches, resulting in significant adverse impacts to adjacent historically-sensitive areas and features. The proposed stopping sight distance corresponds to a design speed of 41 mph. This speed is just 2 mph less than the observed 85th percentile speed of 43 mph, as recorded by Region 1 Traffic.

The proposed bridge profile was designed to ensure pedestrians provisions were incorporated into the design in accordance with ADA guidelines. Raising the profile would result in a grade in excess of 5% which would exceed the ADA guideline requirements.
Additionally, the proposed vertical curve is encompassed within the bridge between Pier 4 and Pier 5. The resulting pier spacing is the most economical spacing for the given span and structure type. The resulting structure’s configuration will also create a symmetrical arch centered on the New York/Vermont state line, which is an important visual element of the proposed project.

Refer to Appendix F for the Non-Standard Feature Justification forms.

3.3.3.2.(2) Non-Conforming Features

There will be no non-conforming features within the project limits.

3.3.3 Pavement and Shoulder

Due to the limited roadway approach work, a Pavement Evaluation is not required for this project.

Pavement thickness design for the roadway approach in New York will be developed in accordance with the NYSDOT Comprehensive Pavement Design Manual during final design.

Pavement thickness design for the roadway approach in Vermont will be developed in accordance with the VAOT Pavement Design Guide during final design.

3.3.3.4 Drainage Systems

An open drainage system of scuppers is proposed for the replacement bridge.

A combination of a closed drainage systems and open ditches is proposed for the roadway approaches.

Edge drain / underdrain will be installed the entire length of the roadway reconstruction for subsurface drainage and will either daylight or discharge into drainage structures.

NYS Route 185: The improvements associated with the roadway approaches in New York total less than one half of an acre of impervious area. Drainage structures connected by drainage pipes will be included in the curbed roadway approach. The system will tie into and outlet at the existing culvert under NYS Route 185 located at approximately Sta. 101+05. The stormwater will then flow to Lake Champlain via existing ditches and overland flow.

VT Route 17: The improvements associated with the roadway approaches in Vermont total less than one acre of impervious area. Drainage structures connected by drainage pipes will be included in the curbed roadway approach. Portions of the closed drainage system will flow against the proposed grade of VT Route 17 from the drainage structure at the low point near the entrance to the Chimney Point State Historic Site. The new drainage system will outlet on the embankment on the northern side of VT Route 17 to Lake Champlain. Slope protection will be provided at the proposed discharge point.

3.3.3.5 Geotechnical

It is anticipated that foundations at the abutments will be supported by micro-piles in an effort to minimize excavations and potential disturbance of archaeological resources. All but one bridge pier will be founded on drilled shafts socketed into bedrock. The pier closest to the Vermont shore will be a spread footing because rock is so shallow at that location. The recent demolition of the original bridge has the potential to be problematic for the drilled shaft construction if debris remains within the footprint of the proposed shafts. To minimize this risk, use of an underwater investigation to verify that all significant debris has been removed will be done during final design or as part of the contract work. The underwater investigation may require a diver, a wire drag, sidescan sonar, or other investigative methods to ensure a clear area for installation of the drilled shafts.

The project does not involve any rock slopes or cuts and therefore does not require a rock slope rating assessment.

3.3.3.6 Structures

3.3.3.6.(1) Description of Work

A Modified Network Tied Arch replacement bridge on approximately the same horizontal alignment as the original Lake Champlain Bridge is proposed.
(a) Type of bridge, number of spans, etc. – Modified network tied arch main span, steel girder approach spans, 8 spans total; at grade approach roadway

(b) Width of travel lanes, shoulders, and sidewalks – Two 11 ft lanes, two 5 ft shoulders and two 5 ft sidewalks. Refer to the typical section included in Appendix A.

(c) Utilities carried – Electricity will be provided for navigation lights. The bridge will provide accommodations for the addition of future utilities. Utility conduits may be provided on the bridge to accommodate future use by utility companies.

3.3.3.6.(2) Clearances (Horizontal/Vertical)

A minimum vertical clearance over the roadway of 16.5 ft and a horizontal clearance of 32 ft are proposed for the approach spans and bridge.

3.3.3.6.(3) Live Load

The replacement bridge will be designed to AASHTO HL-93 requirements and the NYSDOT Design Permit Vehicle.

3.3.3.6.(4) Associated Work

Demolition and removal of the original bridge is being advanced under a separate NEPA Action.

3.3.3.6.(5) Waterway

A Coast Guard permit is required and the permit process is in progress. A modification of the vertical clearance in the channel has been proposed to comply with ADA maximum slope requirements of 5 percent on the proposed sidewalks, and to minimize geotechnical impacts. The proposed channel is 300 ft wide and 75 ft high. The proposed channel was determined based on outreach to the local maritime community and vessel traffic on the lake.

Restrictions to boaters during construction will be minimized. It is anticipated the channel may be closed temporarily for float-in and erection of the main arch span.

3.3.3.7 Hydraulics of Bridges and Culverts

The minimum navigable waterway vertical clearance set for the proposed structure is based on the ordinary high water (OHW) elevation of 98.0 feet above mean sea level as confirmed by USACE.

A detailed hydraulic analysis is not required for the proposed structure.

3.3.3.8 Guide Railing, Median Barriers and Impact Attenuators

All guide rail within the project limits including bridge railing will be evaluated during final design for conformance to design standards.

3.3.3.9 Utilities

There are currently no proposed utilities on the bridge. However, if lighting is included a conduit owned by NYSDOT will be added. The bridge will provide accommodations for future utilities.

There are minor utility impacts anticipated in Vermont associated with the drainage system at historic properties, and some utility pole impacts. These utility pole impacts will be handled within the existing ROW.

3.3.3.10 Railroad Facilities

There are no railroads within the project limits and no at-grade crossings within 0.6 mile that could impact traffic conditions.

3.3.4 Landscape and Environmental Enhancements

Refer to Chapter 4 for complete discussion.

3.3.4.1 Landscape Development and Other Aesthetics Improvements
Potential visual impacts from the replacement bridge design were considered during project planning since the bridge will be a highly visible component of the landscape from varied vantage points. As a result of a series of public meetings and stakeholder involvement, NYSDOT and VAOT have committed to a replacement bridge design that minimizes adverse effects to the visual setting of significant historic resources. This was part of the reason why the Modified Network Tied Arch Bridge was selected as the preferred alternative.

Any surrounding lands used during the construction period will be restored to their original condition, as stipulated in the Section 106 Programmatic Agreement. In consideration of all these facts, no adverse visual effects are anticipated from the project.

3.3.4.2 Environmental Enhancements

Additional safe access and connectivity will be provided between the recreational and historic sites by the accommodations proposed for pedestrians and bicyclists. The proposed sidewalks offer pedestrians a new vantage point for scenic overlooks of the lake and surrounding areas.

3.3.5 Miscellaneous

Staging areas are necessary for the construction of this project. Areas which are found to be prudent locations will be screened for environmental considerations. Each site will comply with its respective State procedures, Federal laws, and regulations. Landowners will be consulted and all proper reviews and permits will be acquired prior to the use of the land.

Four proposed staging areas in New York are proposed in addition to the pavement approach for the construction of the replacement bridge:

1. Van Slooten Harbour Marina in Port Henry, NY. It is anticipated that a temporary easement will be needed for this site.
2. Area adjacent to the Crown Point Visitors center
3. New York State Department of Environmental Conservation’s Crown Point Maintenance Center
4. Private property along NYS Route 185. It is anticipated that a temporary easement will be needed for this site.

Two proposed staging areas in Vermont are proposed in addition to the pavement approach for the construction of the replacement bridge:

5. The Cottonwood on Lake Champlain LLC property, reputedly owned by Dana and Lorraine Franklin, which will be pre-screened for contractor use. Portions of this property have been utilized for the temporary ferry project. Those portions have been previously reviewed for archaeological resources and cleared with conditions.
6. State of Vermont property south of the former bridge along VT Route 125
Exhibit 3.3.5 Potential Staging Areas

- Staging Area 1
- Staging Area 5
- Project Location
- Staging Area 2
- Staging Area 3
- Staging Area 6
- Staging Area 4
CHAPTER 4 - SOCIAL, ECONOMIC & ENVIRONMENTAL CONSIDERATIONS

4.1 Introduction

The purpose of this chapter is to (1) identify the social, economic and environmental consequences of the preferred replacement bridge alternative; (2) identify feasible avoidance or mitigation measures; (3) satisfy the applicable social, economic and environmental (SEE) laws; and (4) identify all permits and approvals needed for the preferred alternative. This chapter evaluates only the preferred alternative, as all feasible alternatives for this project have similar social, economic and environmental impacts. The text which follows provides:

- An overview description of the affected resources
- A discussion of the regulatory requirements and how they apply
- Potential impacts and related mitigation

For the purposes of this environmental evaluation, the study area, or immediate vicinity of the proposed project site is considered to be within one-quarter (1/4) mile of the footprint of the former Lake Champlain Bridge crossing on each shoreline in New York and Vermont. It also includes the proposed construction staging areas. Four staging areas are under consideration in New York in addition to the pavement approach for the construction of the replacement bridge. These include:

1. Van Slooten Harbour Marina in Port Henry, NY
2. Area adjacent to the Crown Point Visitors center
3. New York State Department of Environmental Conservation’s Crown Point Maintenance Center
4. Private property along NYS Route 185

In addition, two staging areas in Vermont are proposed in addition to the pavement approach for the construction of the replacement bridge:

5. The Cottonwood on Lake Champlain LLC property, reputedly owned by Dana and Lorraine Franklin, which will be pre-screened for contractor use. Portions of this property have been utilized for the temporary ferry project. Those portions have been previously reviewed for archaeological resources and cleared with conditions.
6. State of Vermont property south of the former bridge along VT Route 125

The general locations of these staging areas are shown in Exhibit 3.3.5.

4.1.1 Environmental Classification

4.1.1.1 National Environmental Policy Act (NEPA)

Under NEPA the Federal Lead Agency is the Federal Highway Administration (FHWA; NY Region).

In accordance with 23 CFR 771.117d and the NEPA checklist, NYSDOT has determined that this project will be progressed as a NEPA Class II action (Categorical Exclusion with Documentation). This type of Action requires individual approval by FHWA. In accordance with the Federal Highway Administration’s regulations 23 CFR 771.117(d), this project meets the project description of the Categorical Exclusion "D list" as a replacement of an existing highway and bridge in essentially the same corridor with no additional capacity (no added thru lanes) and does not significantly impact the environment. This project will be progressed (pending FHWA approval) as a Class II Action because it will not individually or cumulatively have a significant environmental impact. Documentation is required because there is the potential to have some effect on cultural resources. The required supplemental documentation is detailed below. The NEPA assessment checklist can be found in Appendix B.
4.1.1.2 State Environmental Quality Review Act (SEQR)

This project will be processed under the State Environmental Quality Review Act (SEQR) in New York. NYSDOT anticipates this project will have no adverse effect on 106 resources or 4(f) properties. As a result, the project will be progressed as a SEQR Non-type II Action in accordance with 17 NYCRR Part 15, “Procedures for Implementation of the State Environmental Quality Review Act.” As a Non-Type II project, a determination of effect (negative declaration) must be made prior to design approval. It is anticipated that the Project will receive a Determination of No Significant Effect complying with 17 NYCRR 15.11.

4.1.1.3 Vermont Environmental Review Requirements

Because this project is located in both New York and Vermont, with potential for resource impacts in each state, an additional environmental screening for Vermont social, economic and environmental resources is required. A Categorical Exclusion/Environmental Analysis/Administrative Checklist for this project has been prepared by the VAOT Environmental Section. Information relative to potential project effects in Vermont is also discussed in the following sections of this chapter.

Act 250 – Title 10 VSA, Chapter 151 (Vermont Land Use/Development Law) will not apply to the proposed project, as the land area anticipated to be affected in Vermont will be less than 10 acres.

4.2 Social, Economic and Environmental Consequences

4.2.1 Social Consequences

New York

The land on the New York side of the proposed bridge crossing is a state campground and historic site with a visitor center and amenities on the west. Other land use in the vicinity is primarily agricultural. No land outside of NYSDOT rights-of-way will be permanently acquired for the project. In addition, no businesses or homes will be displaced. The proposed project is consistent with local and regional land use plans.

The Proposed Action will be located in the Town of Crown Point in New York. This town is a cohesive community with a long shared history among residents. The community has a distinct town center with other development mostly dispersed across a large geographic area. The proposed project will not have any direct impacts on any neighborhood or village center. It will also not have any adverse effect on factors affecting community health and cohesion including ease of social interaction, connectivity within the community, and changes in traffic patterns, air quality, ambient noise levels, or access to community resources.

In general, census data indicates that Crown Point, New York has limited minority populations which occur in concentrations comparable to other nearby communities, or their respective counties, as a whole. The percentage of low-income individuals is, however, somewhat higher in Crown Point than in Essex County as a whole. It is notable that there are no residential concentrations or key employment centers within the study area for the proposed project in Crown Point, New York. As such, no direct adverse impacts to any environmental justice populations are anticipated.

Vermont

The Vermont Categorical Exclusion/Environmental Analysis/Administrative Checklist for this proposed project identified that it is consistent with local and regional land use plans. The proposed project will not alter land uses, neighborhood cohesion, or land use patterns.

Since the proposed project will re-establish an important local transportation system link, it will have a beneficial effect on community sustainability in both New York and Vermont by reconnecting essential access to jobs and resources such as local health care facilities. Consequently, all social consequences are expected to be positive.

4.2.2 Economic Consequences
4.2.2.1 Local Economies

New York

The primary sources of non-farm employment in the Standard Metropolitan Statistical Area (SMSA) that includes the study area in New York include services/retail trade, local government, and education/health care/social services (NY State Department of Labor, 2009). Major employers in the immediate region of the proposed project include schools in Crown Point, Moriah, and Port Henry as well as the Walmart/Lowes retail complex and the paper mill in Ticonderoga. Development and thereby, indirectly, potential for change in the economies in the Towns of Crown Point, Moriah, and Port Henry in New York is guided by the land use plan for the Adirondack Park which encompasses them. Non-residential development within the Park is zoned to be limited primarily to existing community centers.

Vermont

The Addison County Regional Planning Commission (RPC) Regional Plan (May, 2008) notes that the manufacturing, retail trade and healthcare sectors are important employers in Addison County. However, the education, agriculture and forestry sectors are also significant and form a larger part of the Addison region’s economy than they do in other adjacent areas of Vermont. Estimates prepared by several regional agencies indicate that as much as 15 percent of the workforce in Addison County, Vermont comes from Essex County, New York, previously crossing the former Lake Champlain Bridge. An origin and destination study conducted in September of 2009 at the former bridge found that on a Wednesday, a typical work day, 46 percent of those interviewed were crossing the bridge to get to or from work.

The proposed project will have no direct adverse impacts on the local economies. The loss of the former Lake Champlain Bridge had an adverse effect on local economic conditions in both New York and Vermont. The proposed project is vital to the local economies and commerce between communities in the region surrounding the replacement bridge site in New York and Vermont. The proposed replacement bridge will restore a vital link in the transportation system, thus restoring essential access to local businesses and jobs. As such, it will have a beneficial effect.

4.2.2.2 Regional Economy

Estimates in the RPC plan state that trucks are responsible for 90 percent of the freight and goods moving into, out of, and through Vermont. The former Lake Champlain Bridge provided an important link for truck travel and truck freight between New York and Vermont. In addition, farm vehicles regularly used the Lake Champlain Bridge for transporting farm products as well as to move field equipment and farm personnel to and from fields and storage barns on either side of the bridge. The tourism industry in Vermont and New York remains vibrant and is important to the economies of both states. The origin and destination study found that 48 percent of the vehicles crossing the bridge in August were traveling for vacation or leisure. In September, 24 percent of the traffic across the bridge was for vacation or leisure.

The closing of the former Lake Champlain Bridge had an adverse effect on regional economic conditions in both New York and Vermont. The proposed project is vital to the regional economy and commerce between the states of New York and Vermont, specifically to the freight, agricultural and tourism industries. The proposed replacement bridge will restore and re-establish a vital link in the regional transportation system. As such it will have a beneficial effect on sustainability of the regional economy.

4.3 Environmental Consequences

4.3.1 Surface Waters

Surface waterbodies and watercourses directly crossed or within 1/4 mile of the proposed project include:

- Lake Champlain
- Hospital Creek – flows into Lake Champlain from Vermont
- Whitney Creek – flows into Lake Champlain from Vermont

The Lake Champlain watershed covers a total of 8,234 square miles (approximately 3,050 square miles in New York and 5,184 in Vermont). The shoreline is approximately 587 miles in length and the lake has a surface area of approximately 435 square miles. The lake drains an area located between the
Adirondack Mountains in northeastern New York and the Green Mountains in northwestern Vermont. The lake flows south to north. The lake is long, narrow and deep, and outlets into the Richelieu River to the north in Quebec. The centerline of the lake forms the New York/Vermont state boundary.

Presently, waters along the shoreline located north of the former Lake Champlain Bridge that extend out one-quarter mile or to a depth of 30 feet are designated by NYSDEC as Class A. Deeper, open water areas located north of the former bridge are designated as Class AA. South of the former Lake Champlain Bridge, where the lake is narrower and comparatively shallower, the water quality of the lake is designated as Class B by the NYSDEC. According to the NYSDEC Water Quality Standards and Classifications (2008) (6 NYCRR Part 701), the best use of Class AA and Class A waters are: *source of water supply for drinking; culinary or food processing purposes; primary and secondary contact recreation and fishing*. The waters are suitable for fish, shellfish, and wildlife propagation and survival. The best uses for Class B waters include primary and secondary contact, recreation, and fishing. Like Class AA and A waters, Class B waters are suitable for fish, shellfish, and wildlife propagation and survival.

Both NYSDEC and the Vermont Department of Environmental Conservation (VTDEC) are actively involved in the Lake Champlain Basin Program, a federal, state, and local initiative to restore and protect Lake Champlain and its surrounding watershed. As part of that initiative, a Long-Term Water Quality and Biological Monitoring Project for Lake Champlain has been underway since 1992. Data collected as part of the monitoring program has contributed to a better overall understanding of the lake water quality and has led to the imposition of health advisories and other restrictions. New York, for instance, has included the lake on its Section 303(d) List of Impaired Waters since 1998 due to elevated PCB, mercury, and phosphorus levels. The EPA also issued a fish consumption health advisory in 1998/1999 for the lake due to elevated levels of PCBs and mercury. The PCB source is thought to be the lake bottom sediments, which have become contaminated over a long history of industrial use within the lake’s watershed. Atmospheric deposition is thought to be the primary source of the elevated mercury levels. Increased phosphorus inputs to the lake are attributed to non-point source runoff and from intensive agricultural uses within the watershed. To address the issue of phosphorus loading to the lake, NYSDEC and VTDEC established a joint TDML (Total Daily Maximum Load) for phosphorus in 2002. To maintain the TDML goal, various point and non-point source controls have been and continue to be instituted/implemented by both states for those communities within the watershed. Refer to the Stormwater Section (4.3.7.3) for more information on some of the measures and guidelines of both states that will apply to construction of the proposed project to help minimize potential water quality impacts to the lake.

Also, to help further protect the water quality of the lake, the EPA has designated Lake Champlain in the vicinity of the proposed project site as a No Discharge Area (NDA), meaning vessels are not allowed to discharge sewage into the lake.

As proposed, the replacement bridge will be constructed on the same alignment and with virtually the same orientation as the former bridge. It will include a total of six piers in the water that will be slightly offset from those of the former bridge. The potential for impacts to Lake Champlain and surface water quality is limited to the period of active construction. Once the new bridge is open and operational, it is expected to carry roughly the same volume and mix of traffic that used the former bridge. Thus, no new sources of potential water quality pollution will be introduced to the project area with the new bridge.

To minimize potential water quality and other environmental impacts to Lake Champlain from in-water construction activity, the proposed methodology employed to construct the piers will limit the footprint of disturbance to lake-bottom sediments and confine the construction activity to the greatest extent practicable. Additionally, spoils from any drilling for pier foundation construction will be properly contained, managed, and disposed of so as to reduce the potential for environmental and water quality impacts. A suite of construction best management practices will also be specifically developed for this project that will contribute to the protection of water quality.

Work above the waterline, such as the construction of bridge abutments, foundations, approaches, and earthwork associated with the creation and fortification of fill embankments also has the potential to affect water quality. A Stormwater Pollution Prevention Plan (SWPPP) and Erosion and Sediment Control Plan (ESCP) will be developed specifically for the project (Refer to Section 4.3.7.3 for more detail) which, together with the planned construction methodology, will help minimize the potential for water quality
impacts to Lake Champlain and other nearby receiving waters from pollutant inputs attributed to stormwater runoff.

Overall, construction of the proposed project is not anticipated to result in any adverse impacts to Lake Champlain or any other surface water resources in the project vicinity.

Water resources are included on Exhibit 4.3.2.3.

4.3.1.1 Corps of Engineers Permit (Section 404)

New York

NYSDOT, in concurrence with the FHWA, has determined that this project will be progressed under USACE Nationwide Permit #23 (Approved Categorical Exclusion).

Vermont

VAOT, in concurrence with the FHWA, has determined that the Vermont USACE permit will be an Individual Permit. The USACE will have jurisdiction over any temporary fills to wetlands or below Ordinary High Water (OHW) associated with construction access. The bridge structure itself (piers) will fall under the jurisdiction of the USCG.

For clarification, it was determined at a regulatory agency meeting held on January 21, 2010 that a USACE Individual permit would be required for new bridge construction if additional (temporary) impact puts the overall project impacts above 5,000 square feet of waterway and wetland impact (on the Vermont side). The demolition pad (causeway) that is being used for demolition of the former bridge approach on the Vermont side involves roughly 4,710 square feet of impact to USACE regulated areas. This impact is being permitted under a USACE General Permit specific to the demolition activity. Because the causeway is also required for new bridge construction, its use for this new construction activity must also be permitted by the USACE. Because the causeway has a temporary impact of 4,710 square feet to USACE regulated areas and since there is the potential for additional temporary fills to USACE regulated areas resulting from other construction access required during new bridge construction which could eclipse the General Permit/Individual Permit threshold of 5,000 square feet, an Individual Permit is being proactively pursued by the applicant.

4.3.1.2 Water Quality Certification (WQC)-Section 401

New York

It has been determined that the proposed project will require an Individual 401 WQC (Water Quality Certification) pursuant to Article 15, NYCRR 608, Protection of Waters and because use of a USACE NWP 23 requires Individual Water Quality Certification. NYSDOT will obtain the permit prior to commencement of project activities and will adhere to any conditions or requirements. Further coordination will be required with NYSDEC during final design to determine the nature and extent of potential surface water quality impacts posed by the proposed project during and after construction. Appropriate erosion and sediment control plans will be developed during the final design phase for the project. These will include temporary and/or permanent erosion and sedimentation control measures. Refer to Section 4.3.7.3 for additional information.

Vermont

A Section 401 Water Quality Certification will be required for proposed project work in Vermont and is anticipated to be obtained and issued concurrently with the Vermont Lakes and Ponds Permit identified in Section 4.3.1.3

4.3.1.3 Protection of Bed and Banks of Streams

New York

Lake Champlain, in the direct project area, is assigned a water quality classification of Class B, Standard B. Coordination with NYSDEC will continue pursuant to 1997 “DEC/DOT MOU Regarding ECL Articles 15 and 24. Review of the project plans are required by NYSDEC for impacts to beds, banks and fisheries, as final design plans become available.
Vermont

A Lakes and Ponds Permit from the VTDEC Water Quality Division Shoreland Enforcement Office is required for the proposed project (29 V.S.A. Chapter 11). A Section 401 WQC will be issued concurrent with this permit.

4.3.2 Wetlands

Wetlands and other water resources in the vicinity of the proposed bridge are shown in Exhibit 4.3.2.3. Details regarding wetlands by category are provided below.

4.3.2.1 State Regulated Wetlands

NYSDEC Freshwater Wetlands

The proposed project in New York falls entirely within the Adirondack Park. The New York State Freshwater Wetlands Act requires NYSDEC to map all protected wetlands in the State of New York, with the exception of wetlands located within the Adirondack Park Region. Those wetlands are mapped by the Adirondack Park Agency (APA) and by default are also considered as NYSDEC wetlands. However, the APA has regulatory jurisdiction over all wetlands located within the Adirondack Park boundary. Thus, NYSDEC does not regulate the APA wetlands located in the Lake Champlain Bridge project area.

Adirondack Park Agency (APA) Wetlands

APA-regulated wetlands are noted within the project area as indicated on the Adirondack Park Geographic Information System (GIS) data layers (dated 2001). APA wetlands are also noted within the project area as indicated on the Adirondack Park Freshwater Wetland Maps, Essex County, Port Henry Quadrangle dated 1980. In addition, APA staff conducted a field investigation on November 25, 2009 to identify jurisdictional wetlands. The investigation resulted in the identification and delineation of a small (emergent) APA wetland, approximately 127 square feet, along the western shoreline of Lake Champlain in the vicinity of an old ferry pier just to the south of the former bridge. The wetland is located in the area filled by a crane platform used for bridge demolition and was also impacted by the temporary causeway that was required for demolition of the approach on the NY side. The causeway will continue to be used throughout the duration of construction of the replacement bridge but is not anticipated to result in any additional impacts to this wetland. These wetland impacts are temporary and the wetland will be restored to pre-existing conditions following construction of the bridge. All known APA regulated wetlands within the project area are shown on Exhibit 4.3.2.3.

Vermont Regulated Wetlands

Vermont regulated wetlands were investigated for this project. The Vermont Wetland Rules establish three classes of wetlands. Class One and Class Two wetlands are “significant wetlands” and therefore are protected under the rules. Class One wetlands are wetlands which the Vermont Wetlands Board determines are exceptional or irreplaceable in their contribution to Vermont’s natural heritage, and merit the highest level of protection under the rules. Class Three wetlands are not protected under the rules, however, they may be protected by other federal, state, or local regulations. A review of Vermont Significant Wetlands Maps as well as the Vermont Center for Geographic Information GIS data (2009) revealed that there are no Class One or Class Two wetlands in the immediate vicinity of the proposed project.

A site visit conducted by a VAOT Environmental Biologist on December 12, 2009 resulted in the identification and delineation of a Class Three wetland located along the shoreline just to the southeast of the former Lake Champlain Bridge. A second wetland investigation conducted by the Vermont Agency of Transportation Environmental Division on January 21, 2010 focused on an area to the northwest of the former bridge. No wetlands were found in this area. The Class Three wetland located southeast of the former bridge is not regulated by the state of Vermont and therefore a Vermont Wetland Conditional Use Determination is not required for this project. This Class Three wetland is, however, a federally regulated wetland (Refer to Section 4.3.2.2 below for more information).

Although no additional wetland impacts are anticipated from the use of the causeway for construction, coordination with the USACE at a regulatory agency meeting held in Vermont on January 21, 2010 determined that an Individual Section 404 Permit would be required for construction activities on the
Vermont side. Specifically, the permit is needed to cover any additional temporary fills to the Class Three wetland or any temporary fills below the OHW associated with causeway use or as a result of any additional construction access required for new bridge construction (Refer to Section 4.3.1.1 under the “Vermont” sub-heading for further clarification relative to USACE permit requirements on the Vermont side of the bridge).

4.3.2.2 Federal Jurisdictional Wetlands

New York

The APA site visit on November 25, 2009 resulted in the identification and delineation of a federal jurisdictional emergent wetland near the base of the former Lake Champlain Bridge. This is the same small wetland (approximately 127 square feet) that is described above in Section 4.3.2.1 under the sub-heading “Adirondack Park Agency (APA) Wetlands” and regulated by the APA. This wetland was impacted by the construction of a crane platform and temporary causeway required for the demolition of the former bridge. That temporary wetland impact was authorized under a Nationwide Permit #23 issued on December 23, 2009 for the bridge demolition project. The causeway will continue to be used throughout the duration of construction of the replacement bridge but is not anticipated to result in any additional impacts to this federal wetland. However, a USACE Nationwide Permit #23 for an Approved Categorical Exclusion is anticipated to be required for the proposed project to allow for the continued use of the causeway through this wetland area during the construction of the replacement bridge, and therefore will be applied for by NYSDOT. It is anticipated that all other land-based work for the replacement bridge is expected to occur in upland areas, above OHW, and will not require a permit from USACE.

The USACE NWP #23 will be obtained by NYSDOT once final design details are ascertained. Restoration of the federal wetland will be required for any unavoidable impacts that may occur. The need for such restoration will be fully coordinated with the USACE.

Vermont

The State of Vermont does not have a USACE Nationwide Permit Program comparable to the State of New York. Any impacts to federal jurisdictional wetlands in Vermont are, however, subject to USACE review.

A temporary causeway constructed on the Vermont side of Lake Champlain to facilitate demolition of the former bridge’s approach spans requires filling approximately 786 square feet of the Class Three wetland noted above under the Vermont Regulated Wetlands sub-heading of Section 4.3.2.1. A USACE Section 404 General Permit was secured for that fill activity as well as for associated temporary fills below the OHW. The causeway will remain in place and will be used for the duration of construction of the replacement bridge. Although no additional wetland impacts are anticipated from the use of the causeway for construction, coordination with the VT USACE office during a resources agency meeting held on January 21, 2010 determined the a USACE Individual Section 404 Permit would be required for construction activities on the Vermont side of Lake Champlain associated with the replacement bridge. Specifically, the permit is needed to cover any additional temporary fills to the Class Three wetland or below the OHW associated with causeway use or as a result of any additional construction access required for the project (Refer to Section 4.3.1.1 under the “Vermont” sub-heading for further clarification relative to USACE permit requirements on the Vermont side of the bridge).

Any temporary impacts to the Class Three wetland will be fully restored to pre-existing conditions upon completion of project construction in accordance with both the requirements of the permit and through coordination with the USACE.

4.3.2.3 Executive Order 11990

A programmatic Executive Order 11990 applies to this project based on its classification as a Categorical Exclusion under 23 CFR 771.117. The project satisfies the requirements of EO 11990. No further approval from FHWA is required.
4.3.3 Coastal Zones

4.3.3.1 Coastal Zone Management

The proposed project is not located within a New York Coastal Zone Management Area according to the Coastal Zone Area Map dated January 1981. Therefore, a consistency determination is not required.

4.3.3.2 Waterfront Revitalization and Coastal Resources Act

The proposed project is not located within a Local Waterfront Revitalization area. No further action is required.

4.3.3.3 Coastal Erosion Hazard

The proposed project is not located in or near a Coastal Erosion Hazard Area. There are no Coastal Erosion Hazard Areas in NY Region 1. No further action is required.

4.3.3.4 Coastal Barrier Resources Act

There are no coastal barriers in NY Region 1. Compliance with the Coastal Barrier Resources Act is not required.

4.3.3.5 Scenic Area of Statewide Significance (SASS)

The proposed project is not located in a SASS as defined by the NYSDOT Division of Coastal Resources and Waterfront Revitalization pursuant to section 913 of the Executive Law and Parts 600 and 602 of 19 New York Codes Rules and Regulations (NYCRR).

4.3.3.6 Significant Coastal Fish and Wildlife Habitats

The proposed project is not located in a Significant Coastal Fish and Wildlife Habitat. No further action is required.

4.3.3.7 Vermont Coastal Zone Consistency

As Vermont does not have any locations of ocean front, it does not have a coastal area management program. A consistency review does not apply.

4.3.4 Navigable Waters

Lake Champlain is the only navigable waterway in the study area. The lake is currently used for recreational as well as commercial marine traffic. In particular, the lake is regularly used for sailing. The former bridge provided clearances from Standard Low Water Elevation of 92.5. Adjusting these clearances for OHW 98.0 (Ordinary High Watermark):

- 84.5 feet vertical clearance for width of 185 ft
- 72.5 feet vertical clearance for width of 300 ft
- 44.5 feet vertical clearance for width of 400 ft

The lake bottom in New York is owned by the NY State Office of General Services (OGS). Construction in the water for the replacement bridge requires authorization from this agency. Correspondence from OGS dated November 25, 2009 states that all projects related to the Lake Champlain Bridge replacement (demolition, temporary ferry, and new construction) are authorized.

Ongoing coordination has been conducted with the U.S. Coast Guard (USCG) and U.S. Army Corps of Engineers (USACE) regarding work in the navigation channel and potential effects to navigation on the lake. The USCG has agreed with the USACE that the latter will be the lead agency with regard to addressing mitigation for any navigational issues. The USCG checklist dated January 25, 2010 is included in Appendix B.

Direct impacts to navigable waters are expected to be limited and may include a somewhat different configuration of piers in the navigation channel and a change to the maximum navigational clearance as
compared to the former bridge. As currently designed, the replacement bridge proposed vertical clearances from OHW 98.0 are:

- 77 feet vertical clearance for width of 100 ft
- 75 feet vertical clearance for width of 300 ft (lit navigation channel)
- 73 feet vertical clearance for width of 400 ft

Those changes from the clearances with the former bridge are expected to be insignificant in terms of effects on marine traffic. As such, NYSDOT and VAOT have selected a final bridge design that will minimize interference with marine traffic.

In summary, no significant or permanent impacts to navigable waters are anticipated. As there will be no significant adverse effects to navigable waters, no mitigation is required or proposed.

4.3.4.1 Army Corps of Engineers’ (USACE) Permit (Section 10)

A USACE Section 10 is required because the project will involve construction activities in or over USACE defined navigable waters. The project will be progressed pursuant to Section 10 of the Rivers and Harbors Act, Section 404 wetlands, Vermont's USACE either General or Individual permit and NY's USACE NWP #23, and all will be addressed in the pre-construction notifications (permit applications) for either side in final design.

4.3.4.2 Coast Guard Permit (Section 9)

New York

The proposed project will require a USCG Section 9 Permit since Lake Champlain is considered navigable at this location. Work in the water will involve the construction of piers as discussed in Section 4.3.1 above. Work above the navigational channel will include the erection of the bridge deck and superstructure. It is anticipated that the main span will be floated by barge and lifted into place in a manner that will minimize impacts to navigation.

The USCG was consulted for the demolition of the former Lake Champlain Bridge. Correspondence dated December 18, 2009 outlines specific requirements of marking the waterway, clearance of the channel deadlines, signage, and navigational lights. A USCG Checklist (dated January 25, 2010) is included in Appendix B of this report. The permit for the replacement bridge will be acquired as soon as the final project design is ascertained.

Vermont

Work in or over the navigable portion of Lake Champlain in the State of Vermont will be addressed under the NYSDOT U.S. Coast Guard Section 9 Permit for this project.

4.3.5 Wild, Scenic, and Recreational Rivers

4.3.5.1 National Wild, Scenic and Recreational Rivers (Federal)

Per the Nationwide Rivers Inventory List of National Wild and Scenic Rivers, National Wild, Scenic, or Recreational Rivers are not located within the New York or Vermont study areas for this project. Therefore, no further review is required.

4.3.5.2 Wild, Scenic and Recreational Rivers (State)

There are no NYSDEC or VTDEC Designated Study or Inventory State Wild, Scenic or Recreational Rivers within or adjacent to the proposed project site. No further review is required.

4.3.6 Floodplains

A review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for Essex County, New York (July 16, 1987) and Addison County, Vermont (September 18, 1986) reveal that there is a 100-year floodplain associated with the Lake Champlain along the shoreline in the vicinity of the Proposed Project. As such, a portion of the proposed abutment foundations and fill embankments for the replacement bridge may be located within the 100-year floodplain Zone A.
The limits of the 100-year floodplain on the New York side of Lake Champlain are shown on Exhibit 4.3.2.3. Floodplain resources on the Vermont side were assessed directly from available Flood Insurance Rate Maps FIRM maps; the FIRM shows that the replacement bridge will also be located within the 100-year floodplain on the Vermont side of Lake Champlain.

The footprint of the abutment foundations and fill embankments for the replacement bridge and approach spans will be similar to the former bridge. Although hydraulic analyses will be performed as part of the bridge design to obtain more accurate information as to the extent of potential impacts to the 100-year base flood elevations, it is anticipated that the loss of flood storage capacity caused by the construction of the replacement bridge will be minimal. This determination is based on the fact that the floodplain in the vicinity of the proposed project is connected to the much more expansive floodplain associated with the 435 square mile Lake Champlain. Thus, any localized loss of flood storage capacity is anticipated to be negligible and would not cause a measurable change in the 100-year base flood elevation or to flooding patterns or severity elsewhere.

In summary, no significant impacts to floodplains or increased flooding are anticipated within the proposed project area. As there will be no significant adverse effects to floodplains, no mitigation is required or proposed.

4.3.6.1 Executive Order 11988

The project conforms with Executive Order 11988 Floodplain Management as implemented in 23 CFR 650 Subpart A (Location and Hydraulic Design of Encroachments on Floodplains) and as amended by 6 NYCRR 502 (Floodplain Management Criteria for State Projects). Refer to Section 4.3.6.2 for additional information.

The design process for this project has considered and evaluated the practicability of alternatives to floodplain encroachments and it has been determined that, in accordance with 23 CFR 650, Subpart A, the preferred alternative is the practicable and preferred alternative based on social, economic and environmental factors.

4.3.6.2 New York State Flood Insurance

Actions funded from state sources must be evaluated and constructed in compliance with the requirements of 6 NYCRR Part 502 Floodplain Management. NYSDEC regulates only those floodplains that have been designated “Zone A” by FEMA. Pursuant to the NYS Environmental Conservation Law Article 36-0111 (ECL), NYSDEC is required to take affirmative action to minimize flood hazards and losses in connection with state-owned and state-financed facilities.

NYSDEC permitting under 6 NYCRR Part 502 would be required if the proposed bridge replacement alters the 100-year base flood elevation by more than 0.3m (1.0 foot). Because the project involves replacement of the former Lake Champlain Bridge on virtually the same footprint and alignment, and because the amount of fill to be placed in the 100-year floodplain Zone A on the New York side of the lake is anticipated to be minimal, the need for this permit is considered unlikely. However, a definitive determination will be made at the time detailed hydraulic analysis is completed as part of the final design.

4.3.6.3 Vermont Flood Hazard Management

The VTDEC River Management Program (RMP) provides technical support and coordination of flood hazard management programs throughout the State of Vermont.

The Vermont Agency of Natural Resources (VANR) Floodplain Coordinator confirmed at a January 21, 2010 environmental resource coordination meeting that no floodplain permits will be required for this project in Vermont. However, any changes to the floodplain will need to be calculated and filed with the VANR Floodplain Management Office and the Town of Addison upon completion of the project.

4.3.7 Water Source Quality

4.3.7.1 Ground Water

New York
NYSDEC/U.S. Geological Survey (USGS) aquifer maps have been reviewed and it has been determined that the proposed project is not located in an identified Primary Water Supply or Principal Aquifer Area. There is no sole source aquifer, wells, reservoirs, or associated stream flow source areas within the study area. As there will be no impacts to any aquifers, wells or reservoirs, no mitigation is required or proposed. No further investigation for NYSDEC designated aquifers is required.

Vermont

VTDEC/USGS aquifer maps have been reviewed and it has been determined that the proposed project is not located in an identified Primary Water Supply or Principal Aquifer Area. There is no sole source aquifer, wells, reservoirs, or associated stream flow source areas within the study area. As there will be no impacts to any aquifers, wells or reservoirs, no mitigation is required or proposed.

Information on municipal drinking water wells is not readily available due to national security concerns. Given the rural nature of the area and distance to the nearest municipal water system, and the character of the area adjacent to the proposed bridge site, it can be reasonably concluded there are no municipal drinking water wells in the proposed project area in either New York or Vermont.

4.3.7.2 Point Sources

The proposed project does not involve a discharge of pollutants (including dredged material, solid waste, chemicals and sand) via a point source. No further consideration is necessary.

4.3.7.3 Storm Water Discharge

New York

Land-based components of the replacement bridge, namely the approach roads, fill embankments, some piers, and abutment foundations, will be constructed in upland areas. Construction staging areas associated with the proposed project will also be located within upland areas. The proposed project disturbance area from these activities is expected to be less than 1 acre on the New York side of Lake Champlain. Consequently, a State Pollutant Discharge Elimination System (SPDES) General Permit, GP-0-08-001, for Storm Water Discharges from Construction Activity will not be required. However, because the selected contractor's staging areas may ultimately increase the project's temporary earth disturbance quantity to greater than 1 acre, the need for an SPDES will be re-evaluated during final design and development of construction contract documents. In addition, a Storm Water Pollution Prevention Plan (SWPPP) will be developed that will incorporate erosion and sediment controls as well as water quality, quantity controls, and other best management practices as deemed appropriate for this project.

The SWPPP will include 1) structural and non-structural measures to reduce and/or eliminate stormwater discharges, 2) regular inspections of erosion and sedimentation controls and other construction best management practices, 3) proof of certification of the project contractor and 4) compliance with New York state water quality standards. Construction activities will also comply with the New York State Stormwater Management Design Manual (April, 2008) as well as with the New York Standards and Specifications for Erosion and Sedimentation Controls (August, 2005).

Vermont

Based on VANR Stormwater Analyst's Threshold Determination made during the January 21, 2010 environmental resource agency coordination meeting, no Operational Stormwater Permit (GP#3-9015) will be required for the bridge replacement project. The project will not trigger or exceed the GP#3-9015 threshold of 1-acre, or greater, of permanent new impervious surface in Vermont. It was also determined, at the January environmental resource agency coordination meeting that the jurisdictional threshold for Construction General Permit (CGP-3-9020) would not be reached, as the total disturbance from construction in Vermont is anticipated to be less than 1-acre.

However, because the selected contractor's adjacent staging areas may increase the project's temporary earth disturbance quantity to greater than 1-acre, it was agreed that Erosion Prevention and Sediment Control (EPSC) Plans would be developed following the VAOT Protocol for EPSC. This project, by its nature and type, is considered to be a Low Risk project in terms of construction stormwater impact under the CGP-3-9020 guidelines. EPSC Plans will be developed following the VANR Low Risk guidelines in
order to maintain water quality standards, and to prevent any delays if the permitting threshold is reached, during construction.

Overall, the proposed project will be subject to various New York and Vermont stormwater management and erosion prevention and sedimentation control guidelines which collectively will serve to minimize the project’s potential for adverse water quality impacts to Lake Champlain and other nearby water resources.

4.3.7.4 Reservoirs Supplying Water to NYC

The proposed project area does not lie within a reservoir supplying water to New York City. No further consideration is necessary.

4.3.7.5 Sole Source Aquifers

A review of the U.S. Environmental Protection Agency (EPA) designated Sole Source Aquifer Areas Federal Register Notices, Maps, and Fact Sheets illustrates the project is not located in a sole source aquifer Project Review Area. No federal review and/or approvals are required pursuant to Section 1424(e) of the Safe Drinking Water Act.

4.3.8 General Ecology and Wildlife Resources

The study area is within a region of New York and Vermont that is rich with a diversity of wildlife. In New York, the study area is part of the Adirondack Park and a NYSDEC bird conservation area and State Forest Preserve.

In Vermont, the study area is adjacent to two state wildlife management areas (Dead Creek and Hospital Creek/Whitney Creek).

The waters of Lake Champlain in the vicinity of the proposed project area are known to support significant populations of a variety of fish and shellfish species. Lake Champlain is popular for fishing in all seasons even with the existence of a long standing (since 1998) Environmental Protection Agency (US EPA) Fish Consumption Advisory for the lake. These aquatic populations add to the biodiversity of the region and help to support terrestrial animals as well as fishing birds that prey upon them. Additionally, there are several federal and state threatened and endangered species (refer to Section 4.3.9.1) in the general vicinity of the proposed project.

There will be no direct impacts to the general ecology or wildlife resources in the study area. The replacement bridge will occupy generally the same footprint and orientation as the former bridge and will not significantly alter the surrounding habitats. Consultation with NYSDEC and VANR has determined there will be no effect on fisheries. VANR Fisheries Biologist concluded at the January 21, 2010 environmental resource coordination meeting that there would be no fisheries concerns for the proposed project in Vermont.

4.3.8.1 Critical Environmental Areas

There is no designated critical habitat in the project study area in New York or Vermont in accordance with the definitions/provisions of the Endangered Species Act of 1973 (ESA).

4.3.8.2 Fish and Wildlife

The proposed project area in both New York and Vermont is dominated by open agricultural fields and croplands fringed by mixed hardwood forest blocks and tree rows. The hardwood trees are prevalent down to the water’s edge of Lake Champlain.

The combination of open fields, open water, and deciduous hardwoods are ideal habitat for large birds of prey, small deer populations, and wildlife commonly found in agricultural areas such as raccoons, opossums, field mice, voles, and rats. Additionally, there are several federal or state threatened or endangered species listed as potentially being in this area (refer to Section 4.3.9.1).

The waters of Lake Champlain in the vicinity of the project area are known to support significant populations of a variety of fish and shellfish species. NYSDOT is coordinating with NYSDEC Region 5 fisheries on the projects impacts to the toxicity to fish and other aquatic organisms.
Coordination with the U.S. Fish and Wildlife Service (USFWS) has occurred.

4.3.8.3 Forest Preserve Lands

New York

The proposed project lies within a NYSDEC jurisdictional Forest Preserve Land, but does not affect the “Forever Wild” state of the land. Correspondence between NYSDEC and NYSDOT (November 13, 2009) acknowledged and concurred with the necessity of using a limited area of Forest Preserve Land for transportation purposes in association with the temporary ferry approach roads. This finding remains applicable for the replacement bridge project. No further action is required under this section.

Vermont

There are no Forest Preserve Lands in the proposed project area in Vermont.

4.3.9 Endangered or Threatened Species

4.3.9.1 Endangered or Threatened Species (Federal)

The U.S. Fish and Wildlife Service (USFWS) and Vermont ANR-Fish and Wildlife was contacted for information regarding any rare, threatened, or endangered species that may exist in the study areas in both New York and Vermont.

New York

Information provided by USFWS noted the following federally designated threatened and endangered species in the vicinity of the Proposed Project in New York:

- Indiana Bat (*Myotis sodalis*)

A project notification letter was sent to the USFWS. In their response (December 3, 2009 and December 4, 2009) the USFWS concluded that the replacement bridge, “may affect, but is not likely to adversely affect” the Federal species of concern noted above. The USFWS and VANR-FWD confirmed that radio tagged Indiana bats utilized the former Crown Point Bridge as a migratory route across Lake Champlain. Both agencies expressed the need to maintain the tree line at the edge of Lake Champlain on the alignment of the new bridge. According to NYSDEC specifications/requirements, any tree removal activities associated with construction of the replacement bridge must be confined to the time period between October 1 and March 31 in order to protect the Indiana Bat. NYSDEC and USFWS have recommended that NYSDOT recheck information on the status and listing of threatened and endangered species every 90 days to ensure it has current information on potential effects to those species and potential need for mitigation.

Vermont

The Vermont Threatened and Endangered Species List (dated August 2007) lists the following federally designated threatened and/or endangered species which are potentially present in the proposed project vicinity in Addison, Vermont:

- Indiana Bat (*Myotis sodalis*) - known and potential maternity colony habitat
- Dwarf Wedgemussel (*Alasmidonta heterodon*) – Although identified as being potentially located in the vicinity of the project area, this species is not found in Lake Champlain. It is only found in freshwater streams and rivers and none of these water features will be directly or indirectly impacted by the proposed project.

As noted above, the replacement bridge will be within a migratory route across Lake Champlain used by Indiana Bats. VAOT has coordinated with the Northeast Region USFWS Biologist and finds this project to have “no effect” on the Indiana Bat. Tree cutting (vegetation) will be limited to October 15 through April 1 in Vermont and planting plans should explore using Shagbark Hickory for its roosting qualities.

4.3.9.2 Endangered or Threatened Species (State)

New York
NYSDEC was contacted and determined that there is a likelihood of occurrence of State Endangered or Threatened Species in the project vicinity. The NY Natural Heritage database of threatened and endangered species was screened for the proposed project. There are two known species records and three communities found within one half mile of the project site. The species found include:

- Northern Harrier (*Circus cyaneus*) breeding pair
- Northern Tansy-mustard (*Descurainia pinnata ssp. brachycarpa*).

These are both located on the west side of Route 185 in the Fort St. Frederic Ruins and the Fort Crown Point Ruins. The three communities are Calcareous Shoreline Outcrop, Calcareous Pavement Barrens and Successional Red Cedar Woodlands. None of the known occurrences are within the area of potential effect (APE) for the proposed project. There is an historic record for Elusive Clubtail (*Stylurus notatus*) with a general location of Crown Point. There are no known recent locations for this species in this area.

The replacement bridge will be in the same location and of the same general configuration as the former bridge. The options for the construction staging area adjacent to the replacement bridge site will not infringe on these habitats. Consequently, no new infringement on any habitats or any state threatened and/or endangered species is anticipated.

Vermont

The Vermont Threatened and Endangered Species List (dated August 2007) lists the following state designated threatened and/or endangered species as potentially present in the proposed project vicinity in Addison, Vermont:

- Bald Eagle (*Haliaeetus leucocephalus*) - Lake Champlain wetlands –nesting/ wintering
- Indiana Bat (*Myotis sodalis*) - known and potential maternity colony habitat
- Dwarf Wedgemussel (*Alasmidonta heterodon*) - Although identified as being potentially located in the vicinity of the project area, this species is not found in Lake Champlain. It is only found in freshwater streams and rivers and none of these water features will be directly or indirectly impacted by the proposed project.

Coordination with the VANR Department of Fish and Wildlife (DFW) determined that there would be no adverse effect to any known rare, threatened, or endangered species as a result of demolition of the former bridge. At the time of the assessment of potential environmental consequences of establishing the temporary ferry service, a survey was conducted to determine the current presence of state threatened or endangered plants and animals in the project vicinity. In particular, the area was checked for the presence of the Dwarf Wedgemussel, a state threatened species. None were found. Instead the site was found to be over-run by the invasive zebra mussel and no native freshwater mussel species were found. These findings are also applicable to the replacement bridge project.

4.3.9.3 Wildlife and Waterfowl Refuges

The proposed project will not involve work in any wildlife or waterfowl refuge in New York or Vermont. No further action with regard to wildlife or waterfowl refuges is needed. Section 4(f) relative to wildlife and waterfowl refuges therefore does not apply.

4.3.10 Historic and Cultural Resources

4.3.10.1 National Historic Preservation Act (Section 106 Process)

The location of the former and proposed replacement bridge spanning Lake Champlain is rich with cultural resources of national significance, on both the New York and Vermont sides of the lake. Potential impacts to these resources were considered during the Section 106 process.

The area of potential effect (APE) was determined, as accurately as it can be prior to construction, based on the anticipated project footprint on land and in water, the proposed locations of construction access and staging areas, and in consideration of potential indirect effects of the new bridge. The footprint of the proposed bridge and approach roads assumes the same alignment as that of the former bridge to the
extent possible. The alignment was slightly modified to account for the proposed positioning of the new bridge abutments. In New York, the new (larger) bridge abutment is centered on the location of the former bridge abutment, whereas in Vermont, the new abutment is skewed northerly to avoid (to the extent possible) the known archaeological site on the south side of the former bridge abutment. The APE is depicted on a figure in Appendix A.

The known significant architectural and archaeological resources, their locations relative to the APE, potential changes (effects) from the project, and the project’s impact avoidance, minimization and mitigation measures are summarized in this section. Based on consultation with the Lake Champlain Maritime Museum and their inventory of underwater archaeological sites compiled during previous surveys, no underwater archaeological sites are located within the APE for the proposed project.

The studies from which these cultural resources were identified are the following:

- 1978, P. Huey, Office of Parks Recreation and Historic Preservation (OPRHP), Site of Grenadiers Redoubt at Crown Point.
- 1982, P. Huey, OPRHP, Testing prior to bank stabilization.
- 1993, C. Fisher, OPRHP, Obliged to live…on the outside of the Fort: A report on the soldiers huts found during archeological survey on the proposed maintenance building site.
- 2009, NYSM, Archaeological Survey for Temporary Ferry, End of Field Letter.

New York

The New York side of the project area is located within three overlapping National Historic Landmarks (NHL) including the Adironack Forest Preserve, the Fort Crown Point, and Fort St. Frederic. Contributing elements to these NHLs are listed in the following table, Summary of Proposed Changes to Identified Historic Properties (Summary table). Within the boundaries of the NHLs are four historic resources individually listed or eligible for listing on the National Register of Historic Places (NRHP), as follow:

- Crown Point Steamboat Pier
- Champlain Bridge Toll Keeper’s House
- 19th Century Limekiln
- Champlain Memorial Light House

NYSDOT commissioned a cultural resource survey in November-December 2009 to investigate potential for archaeological sites on the New York side of the project area for a temporary ferry facility, in the area southwest of the bridge in the Crown Point Public Campground. One site was found which was avoided by the temporary ferry facility project and which is outside the APE of the new bridge. Six known archaeological sites are close to and/or within the limits of the project, identified by prior studies. Since the boundaries of these sites have not been fully determined and the project’s construction access and staging locations may be slightly modified, these sites are considered potentially located within the APE. These sites are detailed on the Summary table. The area surrounding the bridge in New York contains other eligible archaeological sites both known and yet to be discovered, as well as historic structures and standing ruins.

Vermont

There are two significant historic architectural properties and one archaeological site of potential national significance on the Vermont side of the project, as listed in the below table, Summary of Proposed Changes to Identified Historic Properties. One of the architectural properties is the NRHP-listed Chimney Point Tavern, located within the Chimney Point State Historic Site. The other is the Watson House, an NRHP-eligible structure along the approach road to the bridge.
VAOT commissioned a limited cultural resource survey in November-December 2009 to investigate potential for archaeological sites on the Vermont side of the project area, around the former bridge abutment and piers. Several NRHP-eligible sites were found under and around the bridge to the south of the former bridge abutment. This aggregate site has potential to contain prehistoric and historic archaeological deposits. Data recovery may be required for this site if construction of the new bridge will impact it. The area surrounding the bridge in Vermont contains other eligible archaeological sites both known and yet to be discovered, as well as historic structures and standing ruins, such as the three known archaeological sites (VT-AD-327, 328 and 329) on the Chimney Point Historic Site property, identified during prior studies. The Chimney Point Historic site also contains remains from an 18th Century pottery operation and part of a stone wall that may be from the French Fort.

Exhibit 4.3.10.1-A SUMMARY OF PROPOSED CHANGES TO IDENTIFIED NY HISTORIC PROPERTIES

<table>
<thead>
<tr>
<th>Historic Property</th>
<th>NRHP Qualifying Characteristics</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adirondack Forest Preserve NHL</td>
<td>NR Criterion A: Significant in the history of conservation of American natural resources, as the first state forest preserve in the nation, late 1800s</td>
<td>• Small changes to ground surface elevation near new bridge abutments • Color, texture, placement of abutment walls and retaining walls slightly change surrounding visual characteristics near bridge • Changes not anticipated to alter the characteristics that qualify the property for the National Register</td>
</tr>
<tr>
<td>Fort Crown Point NHL</td>
<td>NR Criterion A: significant in the history of English exploration and settlement of North America, mid 1700s</td>
<td>• Small changes to ground surface elevation near new bridge abutments • Color, texture, placement of abutment walls and retaining walls slightly change surrounding visual characteristics near bridge • Protective measures prescribed during construction of new bridge • Changes not anticipated to alter the characteristics that qualify the property for the National Register</td>
</tr>
<tr>
<td>His Majesty's Fort at Crown Point (includes barracks)</td>
<td>Major structure</td>
<td>No changes – falls outside APE</td>
</tr>
<tr>
<td>Light Infantry Redoubt</td>
<td>Contributing element</td>
<td>No changes – falls outside APE</td>
</tr>
<tr>
<td>Grenadier Redoubt</td>
<td>Contributing element</td>
<td>No changes – falls outside APE</td>
</tr>
<tr>
<td>Gage's Redoubt</td>
<td>Contributing element</td>
<td>No changes – falls outside APE</td>
</tr>
<tr>
<td>Historic Property</td>
<td>NRHP Qualifying Characteristics</td>
<td>Changes</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lake Champlain Bridge</td>
<td>• Contributing element to National Register Listed 1929 Lake Champlain Bridge</td>
<td>• Color, texture, placement of abutment walls and retaining walls slightly change surrounding visual characteristics near new bridge</td>
</tr>
<tr>
<td>Toll Keeper's House</td>
<td>• Within boundaries of all three NHLs listed above</td>
<td>• Protective measures prescribed during construction of new bridge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Changes not anticipated to alter the characteristics that qualify the property for the National Register</td>
</tr>
<tr>
<td>Champlain Memorial Lighthouse</td>
<td>• Eligible under NR Criteria A and C: significant in the history of transportation on Lake Champlain, and significant for the style of construction of the memorial</td>
<td>No changes – falls outside APE</td>
</tr>
<tr>
<td></td>
<td>• Within boundaries of all three NHLs listed above</td>
<td></td>
</tr>
<tr>
<td>Crown Point Steamboat Pier</td>
<td>• Eligible under NR Criteria A: significant in the history of transportation on Lake Champlain</td>
<td>No changes – falls outside APE</td>
</tr>
<tr>
<td></td>
<td>• Within boundaries of all three NHLs listed above</td>
<td></td>
</tr>
<tr>
<td>19th Century Limekiln</td>
<td>• Within boundaries of all three NHLs listed above</td>
<td>No changes – falls outside APE</td>
</tr>
</tbody>
</table>

**Known Archaeological Sites**

<table>
<thead>
<tr>
<th>Historic Property</th>
<th>Characteristics</th>
<th>Changes</th>
</tr>
</thead>
</table>
| 18th century Roadway Site (NYSM site # TBD) | • NR eligibility not yet determined  
  • Site located Nov. 2009 during cultural resource survey for temporary ferry  
  • Current site boundaries outside of APE | Possibility to locate more portions of roadway within APE for new bridge |
<table>
<thead>
<tr>
<th>Property</th>
<th>NR Criteria</th>
<th>Site Information</th>
<th>Potential for New Bridge</th>
</tr>
</thead>
</table>
| Crown Point (SHPO USN A031.02.000016) | o NR Criterion D: historic information potential  
  o Site boundaries are not exact |  | Possibility to locate portions of site within APE for new bridge |
| British Fort (SHPO USN A031.02.000166) (NYSM Site 2754) | o NR Criterion D: historic information potential  
  o Site boundaries are not exact |  | Possibility to locate portions of site within APE for new bridge |
| Fort St. Frederic (SHPO USN A031.02.000036) (NYSM Site 2753) | o NR Criterion D: historic information potential  
  o Site boundaries are not exact |  | Possibility to locate portions of site within APE for new bridge |
| NYSM Site 9266 (Unnamed Prehistoric Site) | o NR Criterion D: prehistoric information potential  
  o Site boundaries are not exact |  | Possibility to locate portions of site within APE for new bridge |
| British Storehouses Site | o Site mentioned in DEC Unit Management Plan for Crown Point  
  o Supposedly located "along the shore between the Grenadier Redoubt and the Champlain Bridge"  
  o Evidence of site has not been found |  | Possibility to locate portions of site within APE for new bridge |

**Exhibit 4.3.10.1-B SUMMARY OF PROPOSED CHANGES TO IDENTIFIED VT HISTORIC PROPERTIES**

**VERMONT**

**National Register of Historic Places – Individually Listed or Eligible Properties (Above-Ground)**

<table>
<thead>
<tr>
<th>Property</th>
<th>NR Criteria</th>
<th>Potential Changes</th>
<th>Potential for National Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chimney Point Tavern</td>
<td>NR Criterion A: significant in the military, transportation, and architectural history of development of the state of Vermont</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  • Small changes to ground surface elevation near new bridge abutments  
  • Color, texture, placement of abutment walls and retaining walls slightly change surrounding visual characteristics near new bridge  
  • Protective measures prescribed during construction of new bridge  
  • Changes not anticipated to alter the characteristics that qualify the property for the National Register |  |
| Watson House | Eligible under NR Criterion C: Significant for the style of construction; Italianate style residence |  
  • Small changes to ground surface elevation near new bridge abutments  
  • Changes not anticipated to alter the characteristics that qualify the property for the National Register |  |

**Known Archaeological Sites**
Historic Property |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;South of Existing Abutment&quot; Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristics</td>
<td>Changes</td>
<td></td>
</tr>
<tr>
<td>o NR Criterion D: prehistoric and historic information potential</td>
<td>o Located Nov/Dec 2009 during cultural resource survey for new bridge</td>
<td></td>
</tr>
<tr>
<td>o Located Nov/Dec 2009 during cultural resource survey for new bridge</td>
<td>o Avoidance recommended</td>
<td></td>
</tr>
<tr>
<td>o Avoidance recommended</td>
<td>o If avoidance is impossible, Data Recovery recommended</td>
<td></td>
</tr>
<tr>
<td>o If avoidance is impossible, Data Recovery recommended</td>
<td>• Possible impacts by approach and/or abutment alignment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Data Recovery may be required</td>
<td></td>
</tr>
</tbody>
</table>

Section 106 Process

Due to the cultural sensitivity of the project area, the design of the replacement bridge includes several measures to avoid impacts. One is that the bridge and approach roads have been set on nearly the same alignment as those of the former bridge, so that use of (disturbance of) previously undisturbed lands will be minimized. Another is that the proposed lane widths of the replacement bridge and approaches will be to the minimum design standards allowed by each state: 11 ft wide travel lanes and 5 foot shoulders. These avoidance measures helped to reduce the overall size of the Area of Potential Effect (APE).

FHWA, in coordination with NYSDOT, NYSDEC, VAOT, NY SHPO, VT SHPO, the Advisory Council on Historic Preservation (ACHP), and the Section 106 Consulting Parties have recognized that the full effects of the replacement bridge construction on cultural resources, such as from construction access, staging, and vibration, cannot be fully determined prior to the approval of the undertaking. As such, FHWA, NYSDOT, NYSDEC, VAOT, NY SHPO, VT SHPO, and ACHP have developed a Programmatic Agreement (executed January 29, 2010) to ensure consideration and protection of cultural resources, and to satisfy FHWA’s Section 106 responsibilities (see Programmatic Agreement in Appendix B).

Based on the results of cultural and archaeological investigations undertaken in the APE in New York and Vermont, and the input received from cooperating agencies, Consulting Parties, the public, NY SHPO, and VT SHPO, and the application of the Criteria of Adverse Effect (36 CFR 800.5), the parties concluded that no above-ground historic resources will be adversely affected by construction of the replacement bridge on the New York or Vermont sides. The parties also agreed that the likelihood for potential adverse effects to historic properties resulting from the proposed project is related to the potential and yet unknown archaeological properties located under and directly adjacent to the Vermont and New York bridge approaches and as such, the stipulations in the Programmatic Agreement are appropriate and sufficient to mitigate any adverse effects to these resources.

The Programmatic Agreement (PA) includes a range of protection measures and mitigation commitments, including public outreach in the event of adverse effects and allowance for changes in the PA in the event of unanticipated circumstances. Key stipulations relative to each state are described below. To see the full PA, refer to Appendix B.

Key stipulations relative to the New York side include:

- Developing and implementing a pre-construction protection plan to avoid and/or minimize vibration impacts on Fort St. Frederic and Fort Crown Point based on a structural assessment of visible ruins
- Repairing any damages to these resources in the event that damages occur as a result of the project. Repair will be done in accordance with the Secretary of the Interior's Standards for Restoration, in consultation with the SHPO
- Ensuring that a Historic Preservation Monitor is present on-site during all construction work to ensure that the stipulations of the PA regarding monitoring and protection of historic properties are carried out during the construction work and to fulfill the other duties outlined in the PA
- Maintaining signage for traffic and public access to the Crown Point State Historic Site and the Crown Point Public Campground
- Refining the APE for potential impacts to archaeological resources associated with construction activities in New York, followed by conducting additional cultural resource surveys as needed in archaeologically sensitive areas to identify resources. Resources will be avoided to the extent possible; if resources cannot be avoided, NYSDOT will minimize or mitigate impacts, which may include the recovery of significant data, appropriate analysis, report preparation and curation of artifacts at the NYS OPRHP facility at the Peebles Island Resource Center.

Key stipulations of the Programmatic Agreement relative to the Vermont side include:

- Developing and implementing a vibration monitoring plan for the Chimney Point buildings and the National Register listed Tavern
- Repairing any damages to these resources in the event that damages occur as a result of the project. Repair will be done in accordance with the Secretary of the Interior’s Standards for Restoration, in consultation with the SHPO
- Ensuring that a Historic Preservation Monitor is present on-site during all construction work to ensure that the stipulations of the PA regarding monitoring and protection of historic properties are carried out during the construction work and to fulfill the other duties outlined in the PA
- Maintaining signage for traffic, parking and pedestrian access for museum staff and tenants, and emergency responder access to the Chimney Point State Historic Site
- Reviewing and clearing all construction-related sites for archaeological resources, in coordination with an archaeological resource protection plan
- Refining the APE for potential impacts to archaeological resources associated with construction activities in Vermont, followed by conducting additional cultural resource surveys as needed in archaeologically sensitive areas to identify resources. Resources will be avoided to the extent possible; if resources cannot be avoided, VAOT will minimize or mitigate impacts, which may include the recovery of significant data, appropriate analysis, report preparation and curation of artifacts, all of which will be conducted in conformance with the Secretary of Interior’s Standards and the State Historic Preservation Office’s Guidelines for Conducting Archeology in Vermont.

4.3.10.2 Section 4(f) – Historic and Archaeological Resources

The potentially affected significant historic properties in the new bridge project area were discussed in 4.3.10.1. The NRHP listed and eligible resources quality as potential Section 4(f) resources, including archaeological sites. Based on the results of cultural and archaeological investigations undertaken in the APE in New York and Vermont, and the input received from cooperating agencies, Consulting Parties, the public, NY SHPO, and VT SHPO, and the application of the Criteria of Adverse Effect (36 CFR 800.5), the parties concluded that no above-ground historic resources will be adversely affected by construction of the replacement bridge on the New York or Vermont sides. The parties also agreed that the likelihood for the project to cause potential adverse effects to historic properties, which are simultaneously potential Section 4(f) properties, is related to the potential and yet unknown archaeological properties located under and directly adjacent to the Vermont and New York bridge approaches and as such, the stipulations in the Programmatic Agreement (PA) are appropriate and sufficient to mitigate any adverse effects to these resources.

Minor changes in access for temporary construction activities for the replacement bridge undertaking will not substantially impair or diminish the features of the historic resources that qualify them under Section 106 and Section 4(f). It should be noted that Section 4(f) could apply to as-yet undiscovered archaeological resources if and when they are determined to be National Register eligible and warrant preservation in place. NYSDOT and VAOT have committed to further refining the APE for archaeological resources, undertaking additional archaeological investigations if warranted, recovering data if warranted, and monitoring for archaeological resources during construction. These commitments are outlined in the PA covering the construction of the replacement bridge (see Appendix B). As such, the proposed project is not anticipated to result in use of or adverse effects on historic Section 4(f) properties.

Potential Section 4(f) parklands and wildlife and waterfowl refuges are addressed in Section 4.3.13.1 below. Based on the combined evaluations relative to significant historic resources, public recreational
properties and parklands, and wildlife/waterfowl refuges, the proposed project will not have any direct or constructive use impacts on Section 4(f) resources. Therefore, Section 4(f) documentation is not required.

4.3.10.3 Section 110 of the National Historic Preservation Act

Due to the presence of the three overlapping National Historic Landmarks, the Adirondack Forest Preserve, Fort Crown Point, and Fort St. Frederic, Section 110(f) of the National Historic Preservation Act applies to this project. NYSDOT and VAOT, to the maximum extent possible, have undertaken planning and actions as necessary to minimize harm to the National Historic Landmarks. Through consultation, and as agreed in the Programmatic Agreement, the parties have concluded that no above-ground historic resources will be adversely affected by construction of the replacement bridge on the New York or Vermont sides. The project avoids any adverse effects on the National Historic Landmarks.

The Advisory Council on Historic Preservation (ACHP) has commented on this undertaking through the consultation process and has signed the Programmatic Agreement. The requirements of Section 110(f) have been satisfied. As the project does not involve other federally owned, jurisdictional, or controlled property that is eligible for inclusion in the National Register of Historic Places, the remainder of Section 110 does not apply.

4.3.10.4 American Antiquities Act of 1906

The proposed project does not lie within Federal or Native American-owned property. The American Antiquities Act of 1906 does not apply. No further investigation is required.

4.3.10.5 Archaeological Resources Protection Act of 1979

The proposed project does not lie within Federal, Tribal, or Indian-owned property. The Archaeological Resources Protection Act of 1979 does not apply. Furthermore, conformance with this Act is covered in the Section 106 Process of the National Historic Preservation Act (36 CFR 800).

4.3.10.6 American Indian Religious Freedom Act

NYSDOT will be following the Section 106 Process of the National Historic Preservation Act (36 CFR 800) by complying with the terms of the PA described above. This ensures compliance with this Act.

4.3.10.7 NYS Historic Preservation Act of 1980 (Section 14.09)

Because the project is a federally funded action, NYSDOT will be following the Section 106 Process of the National Historic Preservation Act and by complying with the terms of the PA described above. This ensures compliance with the NYSHPA Section 14.09 process.

4.3.10.8 NYS Historic Bridges

There are no bridges over 50 years old or listed on the Historic Bridge Inventory located within the project’s area of potential effect. For reference, the former Lake Champlain Bridge, recently demolished was individually listed in the National Register of Historic Places. It is no longer present.

4.3.10.9 NYS Historic Canal Bridges

The Historic Bridge Inventory has no listing of any historic canal bridges within the project’s area of potential effect. Consideration of Historic Canal Bridges does not apply since no component of the National Register eligible New York State Canal System is present.

4.3.10.10 Vermont State Historic Preservation Act (22 VSA 14)

Because the project is a federally funded action and involves a federal permit, VAOT will be following the Section 106 Process of the National Historic Preservation Act and by complying with the terms of the PA described above. This ensures compliance with the Vermont State Historic Preservation Act (22 VSA 14).

4.3.11 Visual Resources

The location of the former Lake Champlain Bridge and the proposed new bridge is a particularly scenic area spanning New York and Vermont. Visual resources include views of the Green Mountains,
Adirondack Mountains, and Lake Champlain with its pastoral shoreline. Historic sites and architectural features, such as the ruins of Fort Crown Point and the Chimney Pont Tavern, are important visual elements within the landscape setting, contributing to its distinctive visual character.

The former Lake Champlain Bridge was renowned for complementing its natural setting by virtue of its architecture and scale. The visual setting and viewer groups of the proposed replacement bridge are similar to that of the former bridge. Views of the former and proposed bridge and the lake’s shorelines are visible to the following viewer groups: 1) passengers in vehicles traveling between New York and Vermont; 2) tourists/visitors to the Adirondack Park and recreation users at the base of the former bridge on the New York side; 3) visitors to Chimney Point State Park and recreation users at the base of the former bridge on the Vermont side; 4) boaters, fishermen, and other water-based users of Lake Champlain, and 5) residents who live along the shoreline of the lake.

Views for interstate passengers and tourists/visitors are very similar. Views to and from the former bridge and shoreline on the New York side generally feature(d) large areas of undeveloped parklands and farm fields located in Vermont, the nearby historic Fort St. Frederic in New York, the broad waters of Lake Champlain, and the surrounding mountains in both New York and Vermont. Deciduous and evergreen trees interspersed with open fields could also be seen from the bridge and the shoreline throughout the project vicinity. The APA has identified the Vermont shore line as a Visually Significant Resource (VSR). In general, the existing visual setting is rural and includes preserved forests, agricultural lands, and pristine natural areas.

Similarly from the Vermont side, views feature large areas of undeveloped parklands and stands of deciduous trees in New York, historic landmarks such as the Crown Point Lighthouse and Fort Crown Point, Lake Champlain, and the Adirondack mountains. Views from the Vermont side are also mostly rural and include preserved parklands, historic ruins, and pristine natural areas.

From Lake Champlain, boaters and fishermen enjoy views of the scenic and pastoral shorelines of New York and Vermont. Rocky cliffs are present on both sides of the lake.

The replacement bridge is not expected to adversely affect views and/or the overall visual quality of the study area. Since the replacement bridge will be constructed within virtually the same footprint as the former bridge and will consist of a “basket handle” arch with an aesthetic form reminiscent of the former bridge, views are expected to be comparable to those to and from the former bridge. The replacement bridge deck will be at a similar height as the former bridge deck, while the arch rib will rise approximately 29 feet higher than the former bridge’s arch. Views from the bridge will be virtually the same as the previous views for all travelers, with exception of the bridge superstructure from the bridge deck. Since the bridge will lie on almost the exact same alignment, views from one shore toward the other will be nearly identical to what they were. While the proposed pier locations will be slightly offset from the former bridge, the spacing is similar and reminiscent of the former bridge. The tied arch will be higher but still reflective of the rounded Adirondack and Green Mountains which form the backdrop. Overall, the proposed bridge is anticipated to complement its setting in a very similar fashion as the former bridge.

Potential adverse visual impacts from the replacement bridge design were considered during project planning, since the bridge will be a highly visible component of the landscape from varied vantage points. As a result of a series of public meetings and stakeholder involvement (as detailed in Chapter 1 of this Design Report), NYSDOT has committed to a replacement bridge design that minimizes adverse effects on the visual quality of the project area and that is most acceptable to the public. In a process of public outreach and Section 106 consultation, the Modified Network Tied Arch Bridge was selected as the preferred alternative, in part because of its aesthetic similarities to the former bridge. The Section 106 signatory agencies and consulting parties determined that the bridge design concept is a suitable and appropriate complement to the scenic qualities and historic/cultural resources in New York and Vermont.

Any lands used temporarily during the construction period will be fully restored to a condition at least as good as that which existed prior to the project. In consideration of all these facts, no adverse visual effects are anticipated from the project.

4.3.12 Natural Landmarks

There are no identified natural landmarks within the project area that are currently included on the National Registry of Natural Landmarks.
4.3.13 Parks and Recreational Resources

4.3.13.1 Section 4(f) – Parklands and Wildlife and Waterfowl Refuges

Several state parks and public recreational areas are adjacent to the proposed project site and within the study area. These properties are potential Section 4(f) resources.

In New York, the Crown Point Campground, Crown Point State Historic Site (for passive recreation), and the Crown Point Bird Conservation Area flank the bridge approach. The New York approach also falls within the boundaries of the Adirondack Park.

On the Vermont side, the Chimney Point State Historic Site (for passive recreation) and recreation area is located to the east of the bridge approach. The study area in Vermont is adjacent to two wildlife management areas: Dead Creek Wildlife Management Area and Hospital Creek/Whitney Creek Wildlife Management Area. Vermont also has a fishing and boat access beneath the bridge at Chimney Point. Public access to this site was removed following closure of the former Lake Champlain Bridge. It will be restored at the end of construction.

Construction of the replacement bridge on approaches that transect the boundaries of these resources are unavoidable project activities consistent with the history of the area as a transportation corridor. The project will not result in the permanent incorporation of any Section 4(f) property into the proposed project. All occupancies of Section 4(f) properties outside existing highway rights-of-way will be temporary and minor in nature and magnitude and will not result in permanent adverse impacts. The land will be fully restored to a condition which is at least as good as that which existed prior to the project. The officials with jurisdiction agree with the above conditions. As such, no use of land or constructive use impacts are anticipated on Section 4(f) parklands, or wildlife or waterfowl refuges.

4.3.13.2 Section 6(f)

The project does not impact parkland that has been partially or fully federally funded through the Land and Water Conservation Act. The parks or properties that have received funding (for recreational or conservation purposes) from the Land and Water Conservation Fund (LWCF) Act and are thus Section 6(f) properties in the study area include:

- Champlain Memorial Lighthouse & Pier (Restoration Project), New York
- Crown Point Campground (Improvement Projects), New York
- Chimney Point State Park, Vermont

Impacts to these properties as a result of the emergency projects subsequent to the closure of the former bridge -- installation of the temporary ferry service and the bridge demolition -- were mitigated. The new bridge project will not require or result in any 6(f) conversions.

4.3.13.3 State Parks and Preserves

Adirondack Park

The proposed project lies within the Adirondack Park and adjacent to the Crown Point Campgrounds. In a letter dated November 4, 2009, the Adirondack Park Agency (APA) informed NYSDOT that they will defer to NYSDEC for parkland effects on the New York side of the proposed project, as the land is governed by a Unit Management Plan (UMP). The APA previously issued a "letter of advice" as a permit for the demolition and temporary ferry service. An APA Order 814 permit is anticipated to be required for the proposed project and will be obtained. NYSDOT has committed to continued coordination with the APA. In addition, it was agreed that NYSDOT would restore any disturbed parklands to a condition that is as good as or better than the pre-existing condition. Photos and notes have been taken of the pre-existing conditions for restoration purposes.

Chimney Point State Park – Vermont

The proposed project lies to the west of Chimney Point State Park and adjacent to the Chimney Point Historic Site. The design for the replacement bridge includes shifting the centerline of the alignment.
approximately 7 feet further north and further away from the state park and historic site. As such, no impacts to any state park in Vermont are anticipated.

4.3.13.4 Section 1010

The project does not involve the use of land from a park in which Urban Park and Recovery Program funds have been applied. No further processing under Section 1010 is required.

4.3.13.5 Heritage Areas

The proposed project will not impact areas identified as Heritage Areas through the NYS OPRHP Heritage Program.

4.3.14 Farmlands

4.3.14.1 Farmland Protection

New York

GIS data information from the APA shows that the shoreline in New York is comprised of farmlands of statewide importance. These areas, however, have been set aside for permanent use as state parks, historic sites, and recreation lands. They have not been available for active agriculture nor are they expected to be in the future. One of the potential construction staging areas may be located within an active agricultural field. An assessment of the potential impacts and mitigation of that as yet undefined construction staging area will be addressed during final design. Any construction staging area in an agricultural field will be returned to its former conditions and use following construction completion.

The bridge foundations for the proposed replacement bridge on the shoreline of New York are anticipated to be in approximately the same location of the foundations for the former Lake Champlain Bridge. The approach roads to the replacement bridge are anticipated to also be in approximately the same footprint as the existing roadways. Consequently, no new significant loss of farmland soils from the bridge elements is anticipated.

Vermont

GIS data information from the Natural Resources Conservation Service (2009) shows that the shoreline in the study area in Vermont is comprised of prime farmland soils (Melrose Fine Sandy Loam). The area north and east of the former bridge site is in active agricultural use.

The centerline of the bridge foundations for the proposed replacement bridge on the shoreline of Vermont is approximately 7 feet north of the former Lake Champlain Bridge foundations. The approach roads to the replacement bridge are anticipated to also be slightly north of the existing roadways. Consequently, some minor loss of farmland soils from the bridge elements is anticipated. However, this will be taken from existing VAOT right-of-way and no active farm fields will be impacted. Consequently, it is anticipated that the loss of farmland acreage caused by the construction of the replacement bridge will be insignificant.

One of the potential construction staging areas in Vermont may be located within an active agricultural field. An assessment of the potential impacts and mitigation of that as yet undefined construction staging area will be addressed during final design. Any construction staging area in an agricultural field will be returned to its original conditions and use following construction completion.

4.3.14.2 Farmland (Federal)

New York

The proposed project activities in New York will not permanently convert any prime or unique farmland, or farmland of state or local importance, as defined by the US Department of Agriculture (USDA) Natural Resources Conservation Service, to a nonagricultural use.

Vermont

The proposed project activities in Vermont may permanently convert a minor amount of prime or unique farmland soils, or farmland soils of state or local importance, as defined by the USDA Natural Resources
Conservation Service (NRCS), to a nonagricultural use. This amount will be determined during final
design. It is anticipated that the amount of farmland loss will be insignificant. This determination is based
on the fact that such soils will be taken from existing VAOT right-of-way and no active farm fields will be
impacted.

4.3.14.3 Farmland (State)

New York

The proposed project will not permanently acquire more than one acre from an actively operated farm
within an Agricultural District, or more than ten acres within any Agricultural District in New York. One of
the potential construction staging areas may be located within an active agricultural field. An assessment
of the potential impacts and mitigation of that as yet undefined construction staging area will be
addressed during final design. Any construction staging area in an agricultural field will be returned to its
original condition and use following construction completion.

Vermont

There are no farmland soils of statewide significance in or adjacent to the proposed project site in
Vermont. Potential impacts to active agricultural fields are described in the section above (4.3.14.2)

4.3.15 Air, Noise, and Energy

4.3.15.1 Clean Air Act (CAA)

The proposed project is not expected to substantially alter the volume or flow of traffic over Lake
Champlain at this location from that when the former Lake Champlain Bridge was in place. Therefore, the
Proposed Project will not alter ambient air quality standards.

The proposed project was originally listed on the New York 2008-2011 Statewide Transportation
Improvement Program (STIP) as a programmed Rural Highway Bridge Replacement and Rehabilitation
project. The project was determined to be Air Quality (AQ) Exempt meaning that if the County is in a non-
attainment area, the project is exempt from transportation conformity. The project is located in Essex
County which is in an attainment area.

The proposed project is included in the 2010-2013 Vermont Statewide Transportation Improvement
Program. Vermont is designated as an attainment of all federal air quality standards.

4.3.15.2 Air Quality Analysis

Carbon Monoxide (CO) Analysis

An air quality analysis for CO is not required since this project will not increase traffic volumes, reduce
source-receptor distances by 10 percent or more, or change other existing conditions to such a degree as
to jeopardize attainment of the National Ambient Air Quality Standards. The project does not require a
project-level conformity determination.

Particulate Matter (PM) Analysis

This project is determined to be a SEQR Non-Type II Action (and is classified as a NEPA Class II
Categorical Exclusion). As such, the proposed project will not have a significant effect on PM emissions.
It can therefore be concluded that the project will have no significant adverse impact on ambient PM
levels.

Lead Standards

FHWA has advised that micro scale lead analyses for highway projects is not needed or warranted. Lead
emissions have substantially been reduced from previous levels due to the reduction of lead in gasoline.
Future lead emissions will be reduced and eventually eliminated as a result of regulation and legislation,
including the prohibition of the manufacture, sale, or introduction into commerce of any engine requiring
leaded gasoline after model year 1992 and the requirement for reformulated gasoline to contain no heavy
metals (such as lead).
4.3.15.3 Noise

The proposed replacement bridge will not significantly change either the horizontal or vertical alignment of the bridge deck or increase the number of through traffic lanes as compared to the former bridge. Once opened, the replacement bridge will carry traffic volumes similar to those previously carried by the former bridge up to its closure in October 2009. This project is being developed in conformance with 23 CFR 772 and does not require a traffic noise analysis. A slight increase in noise levels may exist during the construction of the project. The contract specifications will require that the Contractor’s equipment strictly adhere to federal noise regulations.

4.3.16 Energy Assessment

The proposed project is classified as a Categorical Exclusion and will not require an energy analysis since, by definition it will not significantly impact energy utilization.

4.3.17 Contaminated and Hazardous Materials

4.3.17.1 Asbestos Assessment

There are no known sources of asbestos within the proposed project area. The proposed replacement bridge will not introduce any new sources of asbestos into the study area environment. Therefore, no adverse effects are anticipated.

As there will be no significant adverse effects from asbestos or hazardous materials, no mitigation is required or proposed.

4.3.17.2 Hazardous Waste

There are no known sources of hazardous materials within the proposed project area. The proposed replacement bridge will not introduce any new sources of hazardous materials into the study area environment. Therefore, no adverse effects are anticipated.

The proposed project is not anticipated to require permanent acquisition of new right-of-way, permanent easement, relocating utilities, and/or demolishing or substantially modifying building or structures. Therefore, a hazardous waste or contaminated materials screening is not required.

4.3.17.3 Hazardous Spills

New York

The NYSDEC Lists of Hazardous Spills indicates there are no active spills that may be encountered during proposed project activities.

Vermont

The VTDEC spill site list shows no spill of hazardous materials in the proposed project vicinity in the past ten years. There are no active spills that may be encountered during proposed project activities.

4.3.17.4 Storage Tanks

According to the NYSDEC’s list of storage tanks, there are no underground storage tanks within the footprint of the proposed replacement bridge.

According to the VTDEC list of underground storage tanks, the following registered tanks are in the vicinity of proposed project:

- Addison Four Corners Store
- Champlain Bridge Marina

Neither of these underground storage tanks will be affected by construction of the proposed replacement bridge.
### 4.3.18 Construction Effects

Temporary construction period impacts for the proposed replacement bridge which could arise are itemized in the following table along with the nature of the potential effect and proposed associated mitigation.

**Exhibit 4.3.18 (Exhibit 1.4-B): Summary of Potential Temporary Environmental Impacts and Mitigation – Construction Period**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Potential Impact Synopsis</th>
<th>Mitigation Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>Potential for runoff with sedimentation to adjacent wetlands</td>
<td>Adjacent wetlands will be protected with best management practices for erosion control measures and in conformance with requirements of USACE, NYSDEC, and APA. All areas disturbed by this project will be restored to pre-existing conditions or better.</td>
</tr>
<tr>
<td>Navigable Waters</td>
<td>Temporary obstruction of marine traffic</td>
<td>The timing and duration of in-water work for construction will be coordinated with the USCG to minimize effects to marine traffic.</td>
</tr>
<tr>
<td>General Ecology/Fisheries</td>
<td>Disturbance to fish habitats due to in-water construction and turbulence</td>
<td>Best management practices will be followed to control pollution and sediment.</td>
</tr>
<tr>
<td>Stormwater Management</td>
<td>Potential for erosion and sedimentation</td>
<td>Best management practices will be followed to control pollution and sediment. All areas disturbed by this action will be restored to pre-existing conditions or better.</td>
</tr>
<tr>
<td>Historic and Cultural Resources</td>
<td>Potential for impacts to historic and archaeological resources</td>
<td>Avoidance and Mitigation will be conducted as committed to in the Programmatic Agreement dated 1-29-2010.</td>
</tr>
<tr>
<td>Parks and Recreational Resources</td>
<td>Potential for effect from use of land for construction staging</td>
<td>Avoidance and mitigation will be conducted as committed to in the Programmatic Agreement dated 1-29-2010.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Temporary dust and construction vehicle exhaust</td>
<td>Appropriate mitigation for excessive idling of construction equipment and fugitive dust control will be employed. In addition, the contractor will be required to keep equipment maintained and operating efficiently in a clean manner to mitigate any exhaust impacts.</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Noise and vibration from construction activities – blasting, pier installation, and construction vehicle traffic</td>
<td>Advance notification of the construction schedule to the surrounding residents and businesses, will be initiated to prepare citizens when to expect unexpected loud noise and vibrations. Noise abatement measures in accordance with FHWA standards will be included in construction specifications. Such measures may include appropriate mufflers on all construction vehicles and restrictions on hours of operation.</td>
</tr>
<tr>
<td>Resource</td>
<td>Potential Impact Synopsis</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Asbestos/Hazardous Materials</td>
<td>Use or generation of hazardous materials during construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incidental exposure of hazardous materials during construction will be addressed prior to construction commencement, with the development of a hazardous materials management plan. All fuel storage tanks used during construction will be equipped with secondary containment systems.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Safety and Security</th>
<th>Travel of construction vehicles on local roads; safety issues associated with construction activity in close proximity to recreational areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NYSDOT will maintain a safety zone around the construction site. Access to the Crown Point Historic site and campgrounds and Chimney Point Historic site may be restricted for limited periods of time to ensure public safety.</td>
</tr>
</tbody>
</table>

4.3.18.1 Borrow Areas

It is anticipated that there will be no impacts due to borrow areas or borrow pits as construction will require a very limited amount of fill. Any borrow areas will be from areas requiring cuts to establish final grades.

4.3.18.2 Spoil Areas

It is anticipated that spoil areas will be primarily areas requiring fill material (i.e. embankments) during construction with the exception of those areas requiring structural fill. The areas of spoils will be limited in extent as possible.

4.3.19 Anticipated Permits, Approvals, and Coordination

- New York Office of General Services
  - Authorization for use of public lands (Lake Champlain bottom)
- US Army Corps of Engineers (USACE)
  - Nationwide Permit #23 for approved Categorical Exclusions (NY)
  - Individual Permit for Vermont
- New York State Department of Environmental Conservation (NYSDEC)
  - Section 401 NYSDEC Individual Water Quality Certification
  - Article 15 – Memorandum of Understanding
- U.S. Coast Guard
  - Section 9 Permit
- Adirondack Park Agency
  - APA 814 Order
- Vermont Agency of Natural Resources
  - Lakes and Ponds Permit
- Section 106 Programmatic Agreement (Executed 1-29-2010)
- Coordination and public outreach as described in Section 1.7