

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## U.S. Department of Transportation Transportation Investment Generating Economic Recovery

### “TIGER 9”

#### GRANT APPLICATION PROJECT NARRATIVE REPORT

Project Name: Hinsdale, NH–Brattleboro, VT - NH Route 119 Bridge Project  
Project Type: Bridge Repair/Replacement  
Project Location: Rural, Hinsdale, New Hampshire and Brattleboro, Vermont  
Project Website: <https://www.nh.gov/dot/projects/hinsdalebrattleboro12210/index.htm>  
Funds Requested: \$20,000,000 (40%)  
Other State and Federal Funds  
    New Hampshire: \$22,580,000 (45%)  
    Vermont: \$7,420,000 (15%)  
Total Construction Costs: \$50,000,000 (100%)  
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*Anna Hunt Marsh Bridge*



*Charles Dana Bridge*

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## Table of Contents

1) Project Description.....	4
a. Project Background and Details.....	4
b. Transportation Challenges the Project Aims to Address .....	6
c. How the Project will Address these Challenges .....	7
d. Project History and Previously Completed Project Components.....	7
e. Connection to Other Infrastructure Investments .....	7
f. Benefits of the Project to Rural Communities .....	7
2) Project Location .....	8
3) Project Parties .....	11
4) Grant Funds, Sources, and Uses of all Project Funding.....	11
5) Merit Criteria .....	11
a. Primary Criteria .....	11
i. Safety .....	11
ii. State of Good Repair.....	13
iii. Economic Competitiveness.....	14
iv. Environmental Sustainability .....	14
v. Quality of Life.....	15
b. Secondary Criteria .....	16
i. Innovation .....	16
ii. Partnership .....	16
6) Project Readiness .....	17
a. Technical Feasibility.....	17
i. Bridge Estimate.....	18
ii. Total Project Estimate.....	19
b. Project Schedule.....	21
c. Required Approvals .....	21
i. Environmental Permits.....	21
ii. State and Local Approvals .....	23
iii. Federal Transportation Requirements Affecting State and Local Planning.....	23
d. Assessment of Risk and Mitigation Strategies.....	23
i. Schedule Delays.....	23
ii. Right-of-Way Procurement.....	24

**HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119  
BRIDGE PROJECT**

- iii. Cost Escalation..... 24
- iv. Public Support..... 24
- 7) Benefit Cost Analysis ..... 24
- 8) Cost Share ..... 25
- 9) Federal Wage Rate Certification..... 26

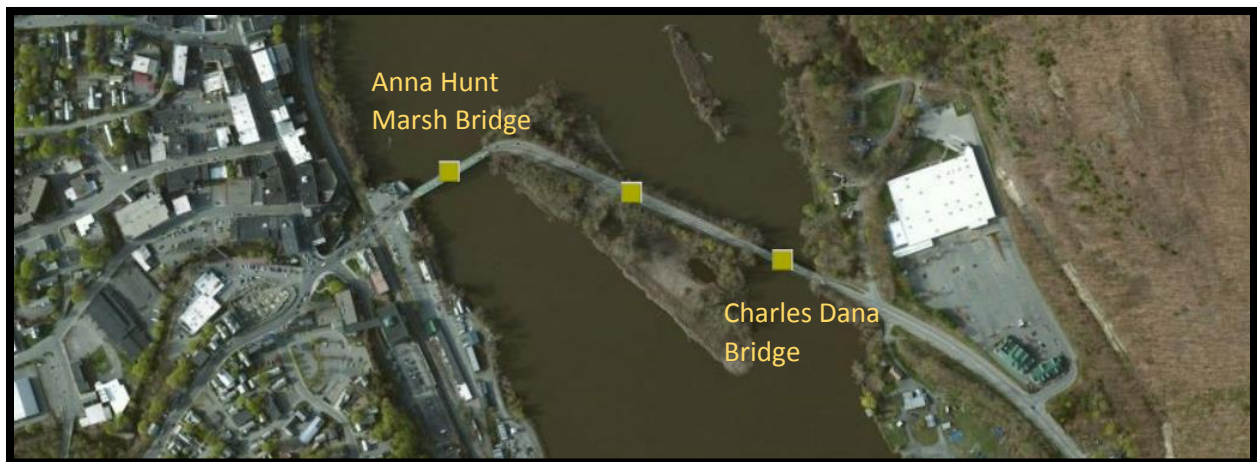
# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## 1) Project Description

### a. Project Background and Details

The New Hampshire Department of Transportation (NHDOT) proposes to bypass the Anna Hunt Marsh Bridge (NHDOT Bridge No. 041/040, CT. River Br. No.2) and the Charles Dana Bridge (NHDOT Bridge No. 042/044, CT. River Br. No. 1) which carry NH Route 119 over the Connecticut River between the rural Towns of Hinsdale, New Hampshire (Hinsdale) and Brattleboro, Vermont (Brattleboro). The Anna Marsh Bridge is jointly owned by the NHDOT (93%) and the Vermont Agency of Transportation (VTrans) (7%) and maintained by the NHDOT while the Charles Dana Bridge is entirely owned and maintained by the NHDOT. Both bridges were constructed in 1920 and rehabilitated as recently as 2003 and meet at an island in the Connecticut River. The proposed project includes bypassing of both Functionally-Obsolete and deteriorated truss structures with a new low-maintenance, aesthetically pleasing single bridge structure on a new alignment downstream of the existing structures as well as maintaining the existing historic structures for pedestrian and bicycle use.

The Anna Marsh Bridge is a fracture-critical Parker Truss with a span length of 324 feet (') and is in fair condition. The structure has a roadway width of 20'-4 inches (") (two 10'-2" travel lanes and no shoulders). A 6' cantilevered sidewalk exists outside the upstream truss. The bridge is posted for a minimum vertical clearance of 11'-4" which is below the minimum required vertical clearance of 16'-6".



*Aerial View of the Bridges Carrying NH Route 119 over the Connecticut River (Looking Upstream/North)*

The Charles Dana Bridge is also in fair condition and has a total length of 297' consisting of a 200' span fracture-critical Parker Truss and two steel girder approach spans. The roadway and sidewalk configuration match those of the Anna Marsh Bridge mentioned above. The bridge is posted for a minimum vertical clearance of 11'-10", also below the minimum required vertical clearance noted above. The narrow width and limited vertical clearance of each bridge does not allow for trucks to pass each other.

The new bridge will be a 1,782' long, 8-span, curved steel girder structure with a typical section of two 12' travel lanes, two 8' shoulders and one 6' sidewalk, for a rail-to-rail width of 46'.

## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

Annual Average Daily Traffic (AADT) over the bridge was 8,900 vehicles per day (vpd) (3,248,500 annually) and 11,100 vpd at the adjacent railroad crossing and intersection in Brattleboro in 2016, with 5.6% being trucks. NH Route 119 is an Urban Collector and is the southernmost Connecticut River crossing between New Hampshire and Vermont. According to the New Hampshire Employment Security, Economic and Labor Market Information Bureau's 2010 statistics, approximately 46% of working Hinsdale residents commute to Vermont to their jobs, or 932 out of 2,036 workers. Without this crossing, nearly half of the working population of this rural community would be required to take a 16.9-mile detour to and from work each day or seek other employment.

A new retail development (Runnings) will open in the spring of 2018 in Hinsdale which will rely on the crossing for employees and consumers. The developer has noted that the location was partially selected due to NHDOT's commitment to the construction of the new NH Route 119 bridge. Developer Deborah George said the following in September 2017 to the Brattleboro Reformer newspaper regarding the project, "This new bridge will increase the trade area of Hinsdale to include Interstate 91 and will be a big plus for the entire Hinsdale retail corridor".

The project includes bypassing the existing bridges with a new concrete deck and steel girder bridge downstream of the existing bridges on an improved roadway alignment. A new bridge with an open structure will result in unlimited vertical clearance and eliminate the substandard existing vertical clearance and the potential for vehicular impact with the bridge. Improvements will also include raising the elevation of the bridge to eliminate a dangerous at-grade railroad crossing for vehicles with the New England Central Railroad (NECR) at the westerly end of the Anna Marsh Bridge in Brattleboro. Although pedestrians and bicyclists will still use the rehabilitated truss bridges, the new bridge will provide a substantial safety improvement for operators of vehicles, pedestrians, bicyclists and train operators.



*Limited Vertical Clearance and Roadway Width Limit Truck Traffic to One at a Time Crossing the Bridge*

The bridge is a critical facility for the movement of people and goods, locally, regionally, nationally, and internationally as NH Route 119 is the southernmost (and most direct) connection from the rural southwest region of New Hampshire to Interstate 91 (which is on the USDOT Multimodal Freight Network Map). Access to Interstate 91 connects the region to



## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

Canada to the north, and New England's larger ports and intermodal facilities to the south. The bridge is also important from an emergency services and medical standpoint as the Brattleboro Memorial Hospital in Brattleboro is the closest hospital serving the region. Load posting or closure of the bridges would require the use of a 16.9-mile detour to the north crossing between Chesterfield, New Hampshire and Brattleboro, Vermont.

The safe and dependable operation of this crossing is critical to providing connectivity for the regional transportation between these two states and providing access to employment in Vermont for residents of the rural area of Hinsdale and the region. TIGER funding will accelerate the construction of this important project.

Beneficial outcomes of the project will include but not be limited to:

- Improved reliability and safety of the crossing
- Improved multi-modal safety for vehicles, pedestrians, bicyclists, and trains
- Quicker emergency response times due to the elimination of vehicle delays caused by the at-grade railroad crossing
- Provide access to economic opportunities in the rural region for businesses and residents
- Address regional transportation needs, and ensure the continued economic vitality of these two communities and the region
- Facilitate the movement of goods to national and international export markets
- Provide / create jobs in the region for the entire duration of the construction activities
- Enhance the quality of life in these two communities and the wider region
- Ensure continued efficient access to nearby medical facilities in the area

NHDOT believes this application meets the criteria for the rural aspect of the TIGER Grant Program and further, that it represents the type of project envisioned. Receipt of TIGER Grant funds will also allow NHDOT to reduce future GARVEE debt payments and to focus, near-term, toward addressing the needs of other bridges which would not otherwise be possible without TIGER funding for this project.

### **b. Transportation Challenges the Project Aims to Address**

Functionally-Obsolete and Structurally-Deficient highway bridges are a national problem, and New Hampshire, from a statistical standpoint, ranks 11th in the nation with approximately 13% of the state bridge inventory classified as Structurally-Deficient. Compounding the problem in northern New England are the harsh environmental conditions that accelerate bridge deterioration, particularly winter conditions which require roadway treatment with catalytic de-icing chemicals. With insufficient funding and forces to maintain the bridge inventory in a state of good repair, NHDOT has had to prioritize bridge rehabilitation and replacement projects. Many of these bridges are critical in that they are relied upon for regional, national and international movement of people and goods, making them important not only to the local communities they serve but also by providing convenient connections to the National Freight Network by having corridors free of weight and vertical clearance restrictions. For these reasons, New Hampshire has prioritized Structurally-Deficient bridges for rehabilitation and

## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

replacement, but funding is insufficient to address the entirety of the need in a timely fashion, often resulting in load capacity down-posting and/or a decreased level of service.

### **c. How the Project will Address these Challenges**

This project will bring the NH Route 119 bridges (the existing truss bridges and the new vehicular bridge) to a state of good repair, and address operational, safety, and economic development concerns. The new bridge will not require additional major rehabilitation for many decades, therefore, providing local, national, and international connectivity for this corridor to the National Freight Network and the NHS system. The operational and safety improvements will ensure that communities in New Hampshire and Vermont continue to prosper enabling connections to major employers, trade partners, educational and training opportunities and medical facilities. It will also ensure that the connection of the southern region of New Hampshire to the vital Boston to Montreal trade corridor operates unimpeded.

### **d. Project History and Previously Completed Project Components**

To date, no portions of this project have been completed although development of the proposed project has been in process since the mid-1990's, but due to limited funding has been continuously delayed.

### **e. Connection to Other Infrastructure Investments**

VTrans has recently, with the assistance of federal funds, invested over \$100M in the replacement of several bridges carrying Interstate 91 in Brattleboro, including the \$60M replacement of two bridges over the West River being completed in October 2017. The recent investment in the I-91 corridor is important to keeping the interstate system in a state of good repair, improving safety, and enhancing economic opportunities in the region. Bypassing of the NH Route 119 bridges between Hinsdale-Brattleboro will enable those in the southwestern region of New Hampshire to access the Interstate 91 corridor which provides economic opportunities. The investment in the region will be incomplete without the additional investment in the NH Route 119 crossing.

### **f. Benefits of the Project to Rural Communities**

Hinsdale, as well as the adjacent towns of Winchester and Chesterfield, New Hampshire are very rural towns with a total population of just over 11,000 residents. Nearly half of the working residents of Hinsdale commute to Vermont for employment using the NH Route 119 river crossing. The benefits of this project to the rural Monadnock region of southwestern New Hampshire are safe and reliable access to employment, timely response from emergency services and access to the Interstate 91 corridor to access the regional, national and international trade network. Furthermore, a new retail development in Hinsdale will be opening in the spring of 2018 into space made available due to the departure of a large "box store" nearly four years ago. The new retailer will require over 70 new employees, some of which are likely to commute from Vermont utilizing NH Route 119. The continued safe and reliable connection of NH Route 119 over the Connecticut River will be instrumental to maintaining employment and economic opportunities for the region.

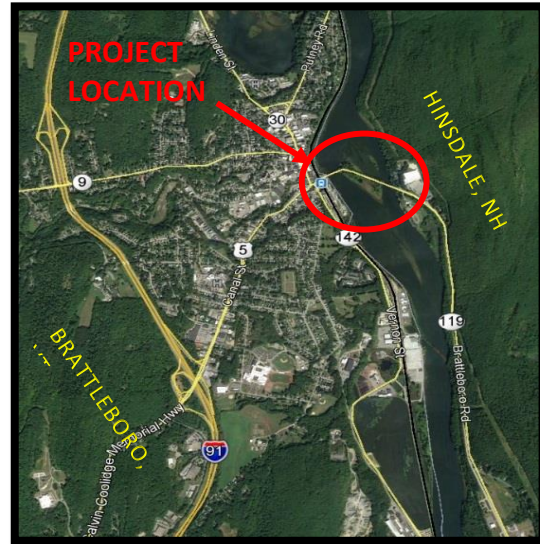
# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## 2) Project Location

The project location extends from Hinsdale to Brattleboro over the Connecticut River via NH Route 119, by way of two bridges spanning either side of an island situated mid-way between the two shorelines. It is worth noting that historically the island has been “shrinking” due to natural erosion and severe environmental events.

The western bridge, the Anna Hunt Marsh Bridge, is located on the Brattleboro side and intersects at a grade crossing of the NECR and Vermont Routes 5 and 142, known to locals as “Malfunction Junction”. The eastern side of the channel is home to the Charles Dana Bridge where NH Route 119 follows the river shoreline through the town of Hinsdale.

The planned project would functionally bypass both existing bridges with a single bridge approximately 1,000’ downstream/south of the existing NH Route 119 crossing and form a T-intersection with VT Route 142. This will separate the new bridge from “Malfunction Junction” and introduce a grade-separation of NH Route 119 over the railroad tracks. The eastern intersection would shift closer to the two local businesses situated on a private access road. The current historic bridges would be rehabilitated to serve pedestrians and bicyclists.



**Current Project Location**



**Proposed Project Location (Looking Upstream/North)**

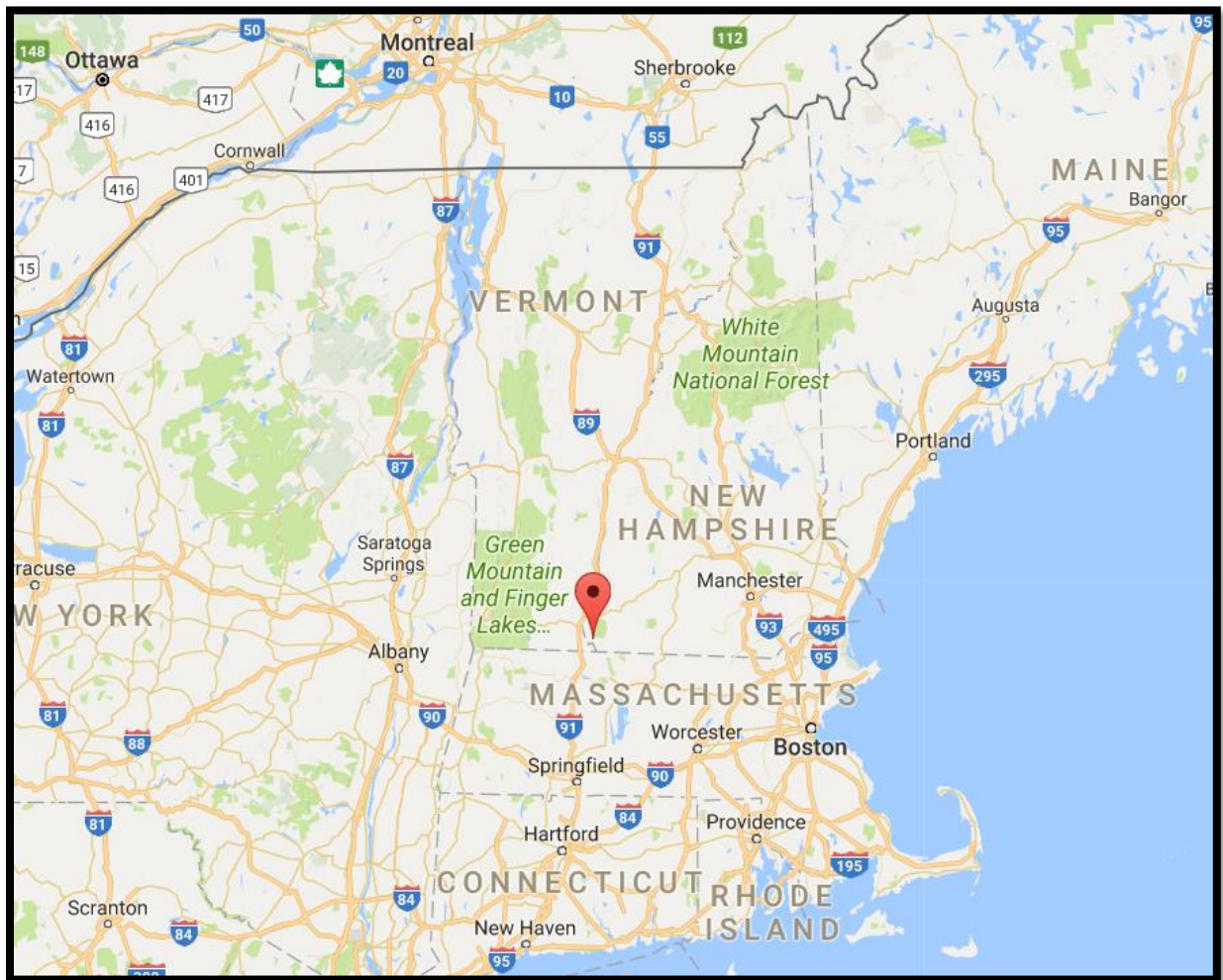


## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

The project is located at the intersection of several existing transportation corridors and railways. As previously mentioned, NH Route 119 intersects with the NECR in Brattleboro which transports imported and domestic goods between the U.S./Canadian border and Willimantic, Connecticut, and provides on-dock transatlantic ship access at the Port of New London, Connecticut. Pan Am Southern operates trains on this route as a leading freight transportation company in the region.

Amtrak also operates a station within the project limits, on the Brattleboro side, and is a popular mode of transportation for the people in the region. The Amtrak station connects the region to Washington, D.C., New York City, Connecticut, Massachusetts, New Hampshire, and Pennsylvania with their daily service routes.

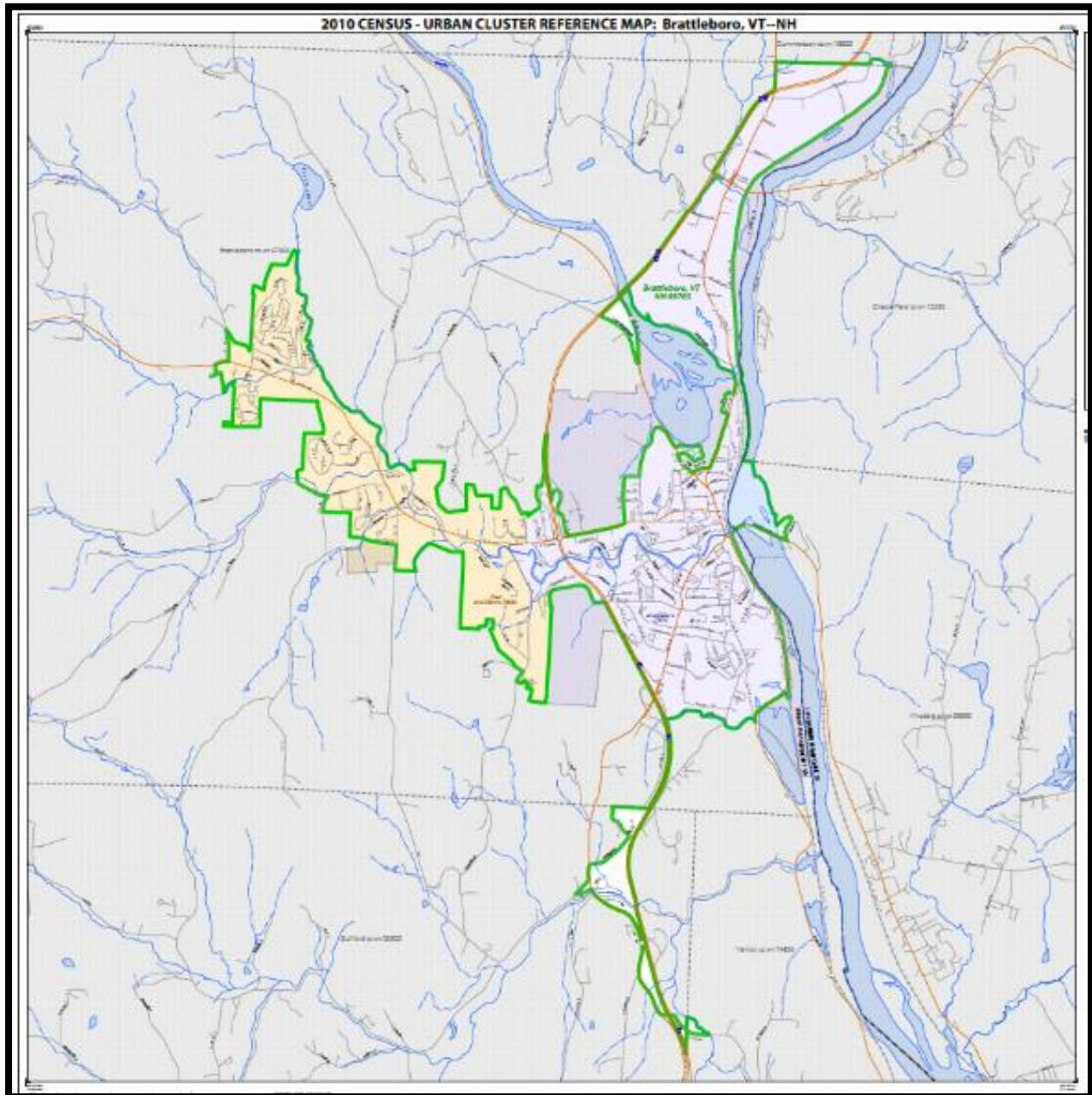
For those traveling in vehicles via major highways and roadways, the NH 119 bridges connect Cheshire County and the Monadnock Region to the international trade corridor of Interstate 91, further connecting the region to the Canadian trade market to the north and larger New England ports to the south. The nearest alternate routes include NH Route 9, 16.9 miles north in Chesterfield, or NH Route 10, 18.7 miles south through Massachusetts.



*Connections to Existing Transportation Infrastructure*

## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

According to the 2010 Census Urban Area (UA) designations listed at the Census Bureau website at [http://www2.census.gov/geo/maps/dc10map/UAUC\\_RefMap/ua/](http://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/), Hinsdale is not identified as an Urban Area and Brattleboro is identified as an “Urban Cluster”. For the purposes of the TIGER Discretionary Grants program, the project location is considered “Rural”.



*Brattleboro, Vermont is an “Urban Cluster” According to the 2010 Census*

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

### 3) Project Parties

NHDOT and VTrans are the principal executive transportation agencies for their states. Under state statutes in their respective states, both NHDOT and VTrans are authorized to seek federal aid for modernization of highway and bridges. For the purpose of this TIGER Grant Application, NHDOT is the sole applicant for the Hinsdale, NH – Brattleboro, VT NH Route 119 Bridge Project.

### 4) Grant Funds, Sources, and Uses of all Project Funding

This project has a total cost of \$59.44 million, of which, \$20 million will come from TIGER funding and \$39.44 million will come from other New Hampshire and Vermont state and federal funding sources. TIGER investments represent approximately 34% of the total project’s funding. There are no other pending discretionary federal funding requests associated with this project. The project cost breakouts are as follows:

Project Costs by State and Project Component

	PE	ROW	Construction	Total
New Hampshire	\$900,550	\$270,000	\$42,580,000	\$43,750,550
Vermont	\$184,450	\$8,080,000	\$7,420,000	\$15,684,450
Total \$\$	\$1,085,000	\$8,350,000	\$50,000,000	\$59,435,000
Total %	1.8%	14.1%	84.1%	100.0%

Construction Project Costs by State and Funding Source

	New Hampshire	Vermont	Total \$\$	Total %
TIGER Grant Funds	\$20,000,000	-----	\$20,000,000	40.0%
Federal Formula	-----	\$5,936,000	\$5,936,000	11.9%
State Funds (SB 367)	\$8,516,000	\$1,484,000	\$10,000,000	20.0%
State Funds (Toll Credits)	\$8,516,000	-----	\$8,516,000	17.0%
GARVEE Bonds	\$5,548,000	-----	\$5,548,000	11.1%
Total \$\$	\$42,580,000	\$7,420,000	\$50,000,000	100.0%
Total %	85.2%	14.8%	100.0%	

### 5) Merit Criteria

#### a. Primary Criteria

##### i. Safety

The continued deterioration of these bridges will result in the high probability of implementing weight limit restrictions and potential closure which would have significant economic, quality of life and safety impacts for both communities and the region. Load-posting of the bridge will increase response times by emergency service vehicles such as ambulances due to a detour length of approximately 16.9 miles to the north. To reach areas to the south, emergency



## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

responders may use an 18.7-mile detour route utilizing Route 10 through Massachusetts or the 16.9-mile detour to the north. With either route, the significance of the added response time for emergency services personnel increases the public's safety and health risk drastically. Rescue, Inc. deploys ambulances across the Anna Marsh and Charles Dana bridges to the Towns of Hinsdale and Chesterfield New Hampshire. The Hinsdale Fire and Rescue Department regularly use the bridges for transport to Brattleboro Memorial Hospital (BMH). An increase in response time of approximately 35 minutes or more in each direction is a significant decrease in safety for residents of these towns.

The existing at-grade railroad crossing in Brattleboro presents an inherent risk due to the mixed use involving trains, vehicles, bicyclists and pedestrians. Approximately eight trains utilize the rail corridor at this location per day which provides ample opportunities for collisions, loss of life and property damage. That number also includes two Amtrak trains stopping on the highway crossing daily for passenger boarding and disembarking at the Brattleboro station. The project will eliminate vehicle crossings of NH Route 119 and the railroad and reduce the number of pedestrians and bicyclists crossing the tracks, therefore, significantly reducing the probability of injury or loss of life and reducing congestion.



*View from the Anna Marsh Bridge, West Towards  
Downtown Brattleboro, during Train Crossing*

The existing cantilevered timber sidewalk is not maintained during the winter, thus, it is not available for use by pedestrians if snow has accumulated. The unavailability of the sidewalk forces pedestrians to walk within the narrow 20'-4" travel way on the bridge, which may also be reduced in width due to snow curb accumulation, further reducing the safety of pedestrians. The new bridge will have a dedicated 6' wide pedestrian sidewalk and 8' wide shoulders to safely accommodate pedestrians and bicyclists. Additionally, the existing truss bridges will be maintained for pedestrians and bicyclists only, therefore, enabling use of the entire roadway width without conflict with vehicles.

The purpose of this project is to provide safe, sustainable, and efficient multimodal movement of people and goods across the Connecticut River while supporting transportation, commerce, economic development and regional response needs. The proposed new bridge and rehabilitation of the existing bridges for pedestrian and bicyclist use will satisfy the stated purpose of the project by eliminating two Functionally-Obsolete bridges from vehicular service and offering a new structure that can carry modern highway and bridge design loads, eliminate the substandard vertical clearance, and provide multi-use roadway shoulders and a year-round



## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

accessible sidewalk to safely accommodate pedestrians. Furthermore, elevating the new bridge to eliminate the at-grade crossing with the railroad eliminates the potential for vehicular collisions with trains, and significantly reduces the potential for interaction between bicyclists, and pedestrians. The new bridge will allow maintenance of expected emergency response times to the residents of Hinsdale and the region.

### **ii. State of Good Repair**

The purpose of the proposed project is to restore the structural integrity of the bridge crossing, eliminate geometrical limitations associated with the bridges (width and vertical clearance restrictions), and eliminate the at-grade railroad crossing. The project will facilitate the continued use of the crossing to provide economic opportunities in this rural region of New Hampshire and Vermont while maintaining a vital connection to the Interstate 91 corridor for the regional, national and international movement of people and goods.

The need for the project is as follows:

- The bridges had been previously down posted in 1977 with temporary repairs performed in 1993 and 2003
- The existing bridges are both over 90 years of age and require increasingly time-consuming and expensive maintenance
- Both bridges are Functionally-Obsolete with narrow curb-to-curb widths of approximately 20'-4" and limited minimum vertical clearances of 11'-4" and 11'-10"
- The cantilevered timber sidewalk is not maintained in winter; therefore, pedestrians must walk in the travel way to cross the bridge during this time of the year. With snow curbs creating narrowing the useable bridge width even further, the safety of pedestrians is further reduced.

The bridges are each over 90 years old and, due to their truss-type construction and the harsh environmental elements encountered in northern New England, they require increased amounts of maintenance funding each year to maintain them in a useable condition. Each year, however, the condition continues to deteriorate as the bridges age and the effort required to maintain them exceeds the funding and personnel available. The last significant rehabilitation to the bridges was in 2003. If the bridges are not replaced, or bypassed, an extensive rehabilitation including removal of lead-based paint and re-painting, deck replacement and structural repairs would be required. These efforts, however, would not alleviate the safety issues with the bridge width and vertical clearance nor would they eliminate the at-grade railroad crossing.

There are over 2,400 federal-definition bridges in the NHDOT bridge inventory and 650 (27%) of them are over 75 years of age. With 10.9% of the state's inventory of bridges being categorized as Structurally-Deficient, bypassing these bridges with a new, single, low-maintenance structure utilizing TIGER Grant funding will allow NHDOT to advance addressing other important statewide bridge needs.

## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

### **iii. Economic Competitiveness**

The new 8-span bridge spanning the Connecticut River will provide improved levels of service over the Functionally-Obsolete Anna Hunt Marsh and Charles Dana bridges. Positive project outcomes will include more efficient, safer and reliable travel, resulting in better traffic flow, reduced transportation costs, and enhancement of the unique rural characteristics of this region while maintaining economic stability and growth.

It is essential to maintain a transportation corridor between Hinsdale and downtown Brattleboro as residents utilize this link for social activities, commerce, education, employment and to access emergency services. The two towns form a community, separated by the Connecticut River, and this project is designed to safely and efficiently move all users across the river supporting the area's socio-economic relationships.

Brattleboro is the principal commercial and employment center in the Tri-State region (southern New Hampshire, southern Vermont and northern Massachusetts) and the NH Route 119 corridor provides the shortest route to Interstate 91 in Vermont. Reliable access to a large range of employment opportunities for the Hinsdale labor force is critical as evidenced by the 46% of working Hinsdale residents commuting to Vermont.

The economic effects from the closing of the Vermont Yankee Nuclear Power Plant in 2014 were felt throughout this entire region and the town of Hinsdale was one of the communities most directly affected. The new bridge would better facilitate existing area commerce and changing land uses. Economic benefit will be gained by accommodating increased weights and larger vehicles which will support regional initiatives to bring in and create jobs in the Green Economy Industries sectors and enable expansion of the regional co-operative economy by facilitating collaboration between local farming communities and the food co-operative system.

These bridges also serve as a connection between New Hampshire's and Vermont's vital recreational and tourism sectors. The up-and-coming agritourism industry contributes \$1.2 billion to New Hampshire's economy and 11% of visitors to the state come for agritourism activities. This area is deep rooted in farming heritage and would benefit from the growth of agritourism along with the economic ripple it would bring to this rural region.

The project also includes the preservation of the two existing truss bridges for adaptive re-use. The historic structures will be minimally rehabilitated for pedestrians, bicycle and alternative modes of transportation use and may reinstate recreational use on Hinsdale Island. Bicycle and pedestrian friendly communities are magnets for tourism and economic development and reap the rewards of increased retail sales, recreational opportunities and seasonal tourism.

### **iv. Environmental Sustainability**

The Brattleboro/Hinsdale transportation corridor has numerous natural resources that contribute to the social, economic, environmental, and aesthetic qualities of the area. In 2012, the Connecticut River was designated as America's first *National Blueway*, in recognition of the restoration and preservation efforts on the river. Changing this transportation network and eliminating the need for vehicles to idle while trains cross the roadway will reduce vehicle

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

exhaust, limit greenhouse gas emissions and preserve the integrity and use of two historic bridge structures.

Eighty-three percent (83%) of the Hinsdale workforce travels alone in their vehicles, so this new bridge will reduce traffic queuing and congestion on Vermont Route 119 (aka Bridge Street) while waiting for trains, helping to mitigate environmental pollutants in this area.

Air, noise, wildlife and water quality impacts from project construction activities will be limited and anticipated to be temporary. Best Management Practices (BMP's) will be utilized throughout the duration of construction. Adequate stormwater measures will be incorporated into the design of the project and wetland impacts will be minimized.

## v. Quality of Life

This project improves the quality of life of area residents and employees by supporting four of the six “Livability Principles” developed by USDOT, along with the Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA) as part of the Partnership for Sustainable communities;

1.) Provide more transportation choices ; 2.) Enhance Economic Competitiveness; 3.) Support Existing Communities; and 4.) Value Communities and Neighborhoods

The relocation of the bridge will eliminate VT Route 119/Bridge Street as a main traffic artery contributing to “Malfunction



*"Malfunction Junction" will be improved by the relocation of Bridge Street to the new alignment of NH Route 119.*

Junction” where Vermont Routes 5, 119 and 142 meet in a disjointed tangle of blind spots, changes in road grade, and an at-grade railroad crossing. The reconfiguration of the corridor will increase safety and mobility for pedestrians and bicyclists. It will also open the door for future further mitigation of the intersection.

This project reinforces the importance of regional socio-economic partnerships to support existing communities. A major benefit of the project will be access to essential services for residents of Hinsdale. Currently, ambulances going to the Brattleboro Memorial Hospital, 15 miles closer than any other hospital, and other emergency services must cross the existing bridges and run the risk of being stopped at the railroad tracks which handles regular freight traffic and Amtrak trains daily. The majority of health service providers are also located in Brattleboro. Hinsdale high school students attend the Windham Regional Career Center located in Brattleboro for vocational career and college preparation programs. Brattleboro residents in turn, benefit from the retail opportunities located in Hinsdale.

## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

Hinsdale is one of the designated historic Waypoint Communities along the *Connecticut River Byway*. The Connecticut River was also designated as one of only fourteen *American Heritage Rivers*, which recognized its "distinctive natural, economic, agricultural, scenic, historic, cultural and recreational qualities". This region is home to heritage trails, historic encampments, and popular bike routes that crisscross over the river between New Hampshire and Vermont. The proposed project achieves a balance between preservation, enjoyment and stewardship of the Connecticut River while improving a multimodal connection between rural Hinsdale and the historic downtown of Brattleboro for residents, businesses, and visitors.

The Town of Hinsdale adopted a Complete Streets Policy in 2016. In implementing that policy, the Town will encourage partners, such as the NHDOT, to develop and implement Complete Streets elements and considerations that encourage safe travel for all road users and offers tools that provide citizens with choices as to how they travel. The renovated bridges will comply with the vision and purpose by maintaining a multimodal transportation network that enhances safety, choice and protects the Town's rural character as well as conform to the State of Vermont Complete Streets legislation, adopted in 2011. Bicycle and pedestrian connections improve quality of life and contribute positively to the health, social cohesiveness, safety, economic vitality and quality of entire communities and regions. This project will make Brattleboro and Hinsdale more walkable and bikeable, hence, more livable.

### **b. Secondary Criteria**

#### **i. Innovation**

The new high-value bridge structure will be designed for a 120-year service life. NHDOT and VTrans are committed to utilizing innovative technologies, proactive maintenance and preservation techniques and best practices recommended by the Strategic Highway Research Program (SHRP 2) to construct and maintain their bridges. In addition, NHDOT is proactively compiling a Bridge Maintenance Manual to document proper bridge maintenance activities, schedules, and procedures to ensure that the service life of all their bridges are extended to provide value to the users of the transportation system.

#### **ii. Partnership**

New Hampshire and Vermont have established a strong partnership relative to reconstruction or maintenance of shared interstate infrastructure. Along with Maine, the three states are involved in a unique partnership referred to as the "Tri-State Partnership". This partnership heightens the focus on asset management, and infrastructure preservation and allows for a continuous and comprehensive assessment of infrastructure system performance, knowledge base transfers, training, coordinated materials procurement to leverage volume pricing, and implementation and support of the Managing Assets for Transportation System (MATS) – a long term asset performance system. These three northern New England states share a unique bond as their economic vitalities are critically linked by shared high-investment infrastructure.

New Hampshire and Vermont are currently utilizing a combination of state funds, GARVEE bonds, toll credits and federal formula funds only for the construction of this project. As such,



# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

the TIGER funding would provide significant assistance in completing this project, and reducing the level of GARVEE bonding and associated future debt service.

In addition to over 20 years of internal coordination between NHDOT and VTrans, dozens of meetings with the Brattleboro/Hinsdale Bridge Committee have been held starting in 1996 and several Public Informational Meetings and Public Hearings were held to provide opportunities for public input into the project design.

This application enjoys widespread support from many local, state and federal stakeholders as well as elected officials at all levels of local and state government. In addition, New Hampshire and Vermont elected federal officials fully support the project. Letters of support for the project from elected officials and others are posted on the NHDOT project website.

## **6) Project Readiness**

### **a. Technical Feasibility**

In 2010, NHDOT and VTrans commissioned the inspection and load capacity rating of the existing truss bridge structures crossing the Connecticut River to precisely determine the existing condition, level of deterioration, safety concerns, and potential upcoming maintenance needs to keep the structure in a state of good repair. As a result of this analysis, it was determined that a comprehensive evaluation of rehabilitation and replacement alternatives for the structure was warranted. In December 2013, a Revised Environmental Assessment (EA) for the project was completed. The study evaluated and documented the potential resource impacts associated with ten project alternatives (See Appendix of the Benefit Cost Analysis). The preferred “Alternative F” was selected based on the design to maximize safety and minimize impact to the area and taking into consideration the purpose and need criteria.

The report documented the project viability, design criteria, basis of design, and cost estimates (which have been further refined in subsequent design phases). Contingencies and updated unit costs have been applied to mitigate cost variability as a risk to the project. Project stakeholders and the public were involved in evaluation of alternatives by way of numerous public informational meetings, public hearings and meetings with local, state and federal resource agencies. The project is feasible, viable and cost-effective when considering initial and long-term costs of construction and future maintenance. The preferred alternative, to bypass the existing truss bridges with a single concrete deck and steel girder structure downstream of the existing structures, meets the goals of the project and fulfills the purpose and need.

NHDOT and VTrans have cost risk-mitigation measures in place including the ability to shift funding between projects to accommodate unforeseen cost overruns, as well as the ability to shift funding between programs if necessary (both state and federal). Both agencies actively use a budget monitoring process whereby agency technical and finance staff meet regularly with program management staff to monitor costs at the project and program levels. This careful monitoring allows both agencies to identify in advance when and where potential budgetary adjustments may become necessary, and plan accordingly for changes in advance to avoid sudden and more disruptive funding shifts.

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## i. Bridge Estimate



PROJECT: HINSDALE / BRATTLEBORO  
SUBJECT: NH 119 OVER CONNECTICUT RIVER  
TITLE: PRELIM PLANS ESTIMATE

Project: 12210C  
Designer & User: WPS  
date: 10/11/2017  
Checker:

SUMMARY OF BRIDGE QUANTITIES						
Item No.	Item Description	Quantity	Unit	Unit Price:	Cost:	
1	207.1	Common Channel Excavation	351	CY	\$ 25.00	\$ 8,775
2	209.201	Granular Backfill Bridge (F)	1407	CY	\$ 45.00	\$ 63,315
3	403.11	Hot Bituminous Pavement, Machine Method	722	Ton	\$ 75.00	\$ 54,150
4	403.61	Pavement Joint Adhesive (Bridge Base)	8920	LF	\$ 1.50	\$ 13,380
5	403.911	Hot Bituminous Bridge Pavement, 1" Base Course (F)	447	Ton	\$ 160.00	\$ 71,520
6	500.02	Access for Bridge Construction	1	U	\$ 6,000,000.00	\$ 6,000,000
7	503.201	Cofferdams	6	U	\$ 100,000.00	\$ 600,000
8	504.1	Common Bridge Excavation (F)	3306	CY	\$ 35.00	\$ 115,710
9	508.	Structural Fill	145	CY	\$ 75.00	\$ 10,875
10	510.1	Pile Driving Equipment	1	U	\$ 50,000.00	\$ 50,000
11	510.61	Furnishing & Driving Steel Bearing Piles	2544696	LB	\$ 0.50	\$ 1,272,348
12	510.65	Driving-Points for Steel Bearing Piles	297	EA	\$ 180.00	\$ 53,460
13	510.9	Pile Splices	594	EA	\$ 50.00	\$ 29,700
14	520.0302	Concrete Class AA, Approach Slabs (QC/QA) (F)	77	CY	\$ 570.00	\$ 43,890
15	520.12	Concrete Class A, Above Footing (F)	2497	CY	\$ 1,000.00	\$ 2,497,000
16	520.213	Concrete Class B, Footings (On Soil) (F)	965	CY	\$ 600.00	\$ 579,000
17	520.351	Form Liner for Concrete (F)	518	SY	\$ 10.00	\$ 5,180
18	520.6	Concrete Class T, Foundation Seal	1988	CY	\$ 350.00	\$ 695,800
19	520.70026	Concrete Bridge Deck (QC/QA) (Panel Option) (F)	3697	CY	\$ 850.00	\$ 3,142,450
20	534.3	Water Repellent (Silane-Siloxane)	552	GAL	\$ 150.00	\$ 82,800
21	538.2	Barrier Membrane, Peel and Stick, Vertical Surfaces (F)	48	SY	\$ 150.00	\$ 7,200
22	538.6	Barrier Membrane, Heat Welded, Machine Method (F)	7933	SY	\$ 25.00	\$ 198,325
23	541.1	PVC Waterstops, NH Type 1 (F)	82	LF	\$ 10.00	\$ 820
24	541.3	PVC Waterstops, NH Type 3 (F)	54	LF	\$ 10.00	\$ 540
25	541.4	PVC Waterstops, NH Type 4 (F)	108	LF	\$ 10.00	\$ 1,080
26	544.	Reinforcing Steel (F)	254383	LB	\$ 1.25	\$ 317,979
27	544.2	Reinforcing Steel, Epoxy Coated	1004134	LB	\$ 1.60	\$ 1,606,614
28	544.7	Synthetic Fiber Reinforcement	539	LB	\$ 8.25	\$ 4,447
29	547.	Shear Connector (F)	25255	EA	\$ 5.25	\$ 132,589
30	548.21	Elastomeric Bearing Assemblies (F)	25	EA	\$ 1,200.00	\$ 30,000
31	550.1	Structural Steel (F)	6336900	LB	\$ 1.75	\$ 11,089,575
32	550.2101	Bridge Shoes - HLMR	20	EA	\$ 2,500.00	\$ 50,000
33	561.20	Prefabricated Modular Bridge Joint System (F)	102	LF	\$ 1,750.00	\$ 178,500
34	562.1	Silicon Joint Sealant (F)	178	LF	\$ 15.00	\$ 2,670
35	563.23	Bridge Rail T3 (F)	1383	LF	\$ 135.00	\$ 186,705
36	563.231	Bridge Rail T3 With Protective Screening (F)	162	LF	\$ 180.00	\$ 29,160
37	563.233	Bridge Rail T3 With Snow Screening (F)	226	LF	\$ 180.00	\$ 40,680
38	563.24	Bridge Rail T4 (F)	1412	LF	\$ 141.00	\$ 199,092
39	563.241	Bridge Rail T4 With Protective Screening (F)	166	LF	\$ 205.00	\$ 34,030
40	563.243	Bridge Rail T4 With Snow Screening (F)	226	LF	\$ 205.00	\$ 46,330
41	564.1	Bridge Lighting System	1	U	\$ 50,000.00	\$ 50,000
42	565.232	Bridge Approach Rail T3 (Steel Posts) (F)	2	U	\$ 5,500.00	\$ 11,000
43	565.242	Bridge Approach Rail T4 (Steel Posts) (F)	2	U	\$ 6,000.00	\$ 12,000
44	585.2	Stone Fill, Class B	36	CY	\$ 27.00	\$ 972
45	609.01	Straight Granite Curb	64	LF	\$ 22.00	\$ 1,408
46	609.02	Curved Granite Curb	64	LF	\$ 32.00	\$ 2,048
47	692.	Mobilization	1	U	\$ 1,184,924.67	\$ 1,184,925
48	1002.1	Repairs or Replacements as Required - Bridge Structures	1	\$	\$ 2,829,647.02	\$ 2,829,647
49	1030.	Construction Engineering	1	\$	\$ 2,962,311.67	\$ 2,962,312
50						
51		Rehabilitation of Existing Truss Bridges				\$ 8,000,000.00
52						
					Total:	\$ 44,600,000

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## ii. Total Project Estimate

PRELIMINARY DESIGN SECTION	<b>STATE OF NEW HAMPSHIRE</b>			PROJECT NO.	A004(152)
	<b>DEPARTMENT OF TRANSPORTATION</b>			STATE NO.	12210C
<b><u>PRELIMINARY ESTIMATE (TOTAL)</u></b>					
CITY/TOWN:	<b>HINSDALE-BRATTLEBORO</b>			DATE:	<b>10/10/2017</b>
COUNTY:	<b>CHESHIRE</b>			LENGTH:	<b>0.81</b> MI
ROAD:	<b>NH 119/VT 142</b>			PAVEMENT:	<b>24-36</b> FT WIDE
TYPE:	<b>BRIDGE REPLACEMENT</b>			SHOULDERS:	<b>3-8</b> FT WIDE
				COST SHARE	VT      NH
				BRIDGE	17%      83%
				CONSTRUCTION	40%      60%
<b>ITEM NO.</b>	<b>ITEM</b>	<b>UNIT</b>	<b>QUANTITY</b>	<b>PRICE</b>	<b>AMOUNT</b>
203.1	COMMON EXCAVATION	CY	9,700	\$8.00	\$77,600
203.2	ROCK EXCAVATION	CY	131	\$35.00	\$4,585
203.6	EMBANKMENT-IN-PLACE	CY	20,300	\$6.00	\$121,800
209.1	GRANULAR BACKFILL	CY	240	\$45.00	\$10,800
214	FINE GRADING	U	1	\$14,800.00	\$14,800
304.1	SAND	CY	5,175	\$20.00	\$103,500
304.2	GRAVEL	CY	6,150	\$24.00	\$147,600
304.3	CRUSHED GRAVEL	CY	5,775	\$29.00	\$167,475
304.35	CRUSHED GRAVEL FOR DRIVES	CY	65	\$30.00	\$1,950
403.11	HOT BITUMINOUS PAVEMENT, MACHINE METHOD	TON	5,800	\$90.00	\$522,000
403.12	HOT BITUMINOUS PAVEMENT, HAND METHOD	TON	70	\$119.00	\$8,330
563.23	BRIDGE RAIL T3	LF	70	\$160.00	\$11,200
563.24	BRIDGE RAIL T4	LF	115	\$158.00	\$18,170
565.232	BRIDGE APPROACH RAIL T3 (STEEL POSTS)	U	2	\$5,300.00	\$10,600
565.242	BRIDGE APPROACH RAIL T4 (STEEL POSTS)	U	2	\$10,000.00	\$20,000
585.3	STONE FILL, CLASS C	CY	100	\$41.00	\$4,100
606.18001	31" W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (STEEL POST)	LF	1,450	\$16.50	\$23,925
606.1254	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 3)	U	1	\$1,950.00	\$1,950
606.1255	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 2)	U	2	\$1,925.00	\$3,850
608.12	2" BITUMINOUS SIDEWALK	SY	1,620	\$16.00	\$25,920
609.01	STRAIGHT GRANITE CURB	LF	2,190	\$21.75	\$47,633
609.811	BITUMINOUS CURB, TYPE B (4" REVEAL)	LF	2,065	\$6.50	\$13,423
618.610	UNIFORMED OFFICERS WITH VEHICLE <sup>1</sup>	\$	1	\$30,000.00	\$30,000
618.700	FLAGGERS <sup>1</sup>	HR	4,000	\$25.00	\$100,000
619.1	MAINTENANCE OF TRAFFIC <sup>1</sup>	U	1	\$80,000.00	\$80,000
619.2	CONSTRUCTION SIGNS AND WARNING DEVICES <sup>1</sup>	U	1	\$35,000.00	\$35,000
619.25	PORTABLE CHANGEABLE MESSAGE SIGNS	U	4	\$3,400.00	\$13,600
	RETAINING WALL	U	1	\$125,000.00	\$125,000
	SIGNALS	U	1	\$175,000.00	\$175,000
					<b>\$1,919,810</b>

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

	MISCELLANEOUS ITEMS (20%)				\$383,962
	LIMITED RE-USE SOILS (NH ONLY)				\$200,000
	ITS - RWIS WEATHER STATION (NH ONLY)				\$80,000
	WATER TREATMENT (VT ONLY)				\$300,000
					<b>\$2,883,772</b>
	DRAINAGE (11%)				\$304,691
					<b>\$3,188,463</b>
	WATER POLLUTION CONTROL (20%) <sup>1</sup>				\$637,693
	MOBILIZATION (10%) <sup>2</sup>				\$318,846
	CONTINGENCY (20%) <sup>2</sup>				\$637,693
				<b>ROADWAY SUB-TOTAL</b>	<b>\$4,782,695</b>
	CONSTRUCTION ENGINEERING (10%) <sup>2</sup>				\$478,269
698.12	FIELD OFFICE TYPE C <sup>1</sup>	MON	30	\$1,800.00	\$54,000
698.2	PHYSICAL TESTING LABORATORY <sup>1</sup>	MON	30	\$1,000.00	\$30,000
				<b>ROADWAY TOTAL</b>	<b>\$5,344,964</b>
	BRIDGE <sup>2,3</sup>	U	1	\$44,600,000	\$44,600,000
				<b>BRIDGE TOTAL</b>	<b>\$44,600,000</b>
				<b>CONSTRUCTION TOTAL</b>	<b>\$49,944,964</b>
				<b>ROUNDED TOTAL</b>	<b>\$50,000,000</b>
<sup>1</sup> ITEMS SHARED BY EACH STATE (ROADWAY SPLIT)					
<sup>2</sup> ITEMS SHARED BY EACH STATE (BRIDGE SPLIT)			COMP. BY:		T. Zanes
<sup>3</sup> INCLUDES MOBILIZATION AND CONSTRUCTION ENGINEERING			CHECKED BY:		J. Hebert



# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## **b. Project Schedule**

The following project schedule has been developed based upon information contained based upon NHDOT and VTrans staff analysis:

- *October 2017* – Preliminary Plans complete
- *June 2018* – Permits (ACOE 404, NHDES, VT ANR, USCG, Vermont Storm water and Flood Hazard) applications submittal, Preliminary Plans, Specification and Estimate (PPS&E) submittal
- *August 2019* – PS&E submittal and Right of Way procurement complete
- *September 2019* – Contract advertisement based upon current funding with TIGER grant
- *December 2019* – Contract Award
- *April 2020* – Construction of new bridge begins
  - Build construction trestle
  - River pier construction
  - Abutment construction
  - Superstructure construction
  - Roadway approach construction
- *January 2023* - Shift traffic to new structure and begin rehabilitation of existing truss bridges for pedestrian / bicycle use
- *January 2024* – Project construction completion

Traffic will be maintained on the existing truss bridges during the construction of the new bridge as the facility is too critically important to the region to be closed for any extended duration. During the evaluation of alternatives, other traffic control configurations such as a full detour, and a temporary bridge were evaluated but found to not be viable or cost-effective.

Funding for this project will be obligated well before the deadline of September 30, 2020. Pre-construction activities for the project are well underway and are not anticipated to take an extended amount of time as the NEPA process is already complete. Right-of-Way procurement is in process in New Hampshire and Vermont.

It is important to note that the above schedule is achievable with TIGER grant funding included in the project. In the absence of TIGER funding, additional GARVEE bonding will need to be secured, which may result in delays to the project construction.

## **c. Required Approvals**

### **i. Environmental Permits**

No significant impacts to the natural, social or economic environment are anticipated, and the NEPA process is complete. Beginning in the fall of 2017, NHDOT will begin the preparation of several applications for permits which will be required to construct the project, including ACOE 404, ACOE 401, NHDES, USCG, Vermont stormwater and Flood Hazard. The process to apply for and obtain these permits is anticipated to take approximately 8 to 12 months. NHDOT and VTrans have proactively been coordinating with local, state and federal resource and permitting agencies for this project, and as such, no other permits or approvals are anticipated and no issues are anticipated in receiving these required approvals.

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

## **1. Status of NEPA Approvals**

The Vermont Division of the Federal Highway Administration (FHWA) issued a Finding of No Significant Impact (FONSI) on January 17, 2014, including a wetlands finding, and NHDOT formally adopted the findings on June 28, 2017, concluding the NEPA process. NEPA approval has allowed commencement of the final design phase of the project.

## **2. Reviews, Permits and Approvals by Other Agencies**

Permits required for the project are not anticipated to require extensive additional resource agency coordination. NHDOT has presented the project at two Natural Resource Agency meetings to discuss environmental aspects of the project, as well as receive feedback and guidance for the project. State and federal resource agencies have raised no unanticipated objections to the environmental permitting aspects of the project and permitting is not anticipated to be a significant risk to the completion of the project. The anticipated permits are as follows: Army Corps of Engineers Section 404 Permit, Army Corps of Engineers Section 401 Water Quality Certificate, NH Department of Environmental Services (NHDES) Wetlands Permit, NHDES Shoreland Permit, VT Agency of Natural Resources (VTANR) Flood Hazard Permit, VTANR Wetlands Permit, VTANR Operational State Stormwater, and VTANR Stormwater Construction Discharge Permit. Permit applications are scheduled to be submitted in mid-2018 with permit approvals anticipated in early 2019, well prior to the scheduled advertising date.

## **3. Environmental Studies**

A detailed and comprehensive Environmental Assessment (EA) was completed in 2013 under the administrative leadership of the Federal Highway Administration (FHWA) and VTrans. The EA documented the investigation and evaluation of the project purpose and need, feasible project alternatives, and the affected environment and impacts. An extensive public input process was an important component of the EA. The conclusion documented in the EA was that “Alternative F” of ten alternatives was the least environmentally impactful alternative that met the project purpose and need. The NEPA process was deemed complete by VTrans in 2013 and NHDOT in 2017.

## **4. Compliance with NEPA and Other Approvals**

There are ten environmental commitments associated with the project documented in a letter from the NHDOT Bureau of Environment dated June 28, 2017 which address project components including continued public input into the design, rehabilitation of the existing truss bridges for pedestrian and bicycle use, Right-of-Way, and coordination regarding specific plant and animal species. NHDOT and VTrans, through provisions in the construction contractors contract and other project controls intends to fully-comply with the stipulated environmental commitments which have been identified, discussed and agreed upon.

## **5. Public Engagement**

Public engagement has been extensive since the formation of the Brattleboro / Hinsdale Bridge Committee was formed in February 1996. Between February 1996 and July 1998, the committee met a total of sixteen times to discuss project alternatives and provide feedback to NHDOT and VTrans throughout the NEPA process. The committee included members from

# HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

regional planning commissions, both state transportation agencies, and interested citizens. This group has continued to provide input into the direction of the project up to the present day.

Public informational meetings were facilitated by VTrans in both Hinsdale and Brattleboro in 2005. Project Advisory Committee Meetings were held by NHDOT in February, March, April and June of 2017. The purpose of these meetings was to collect project design feedback from residents and other stakeholders as well as to explain the Right-of-Way process and rights of property owners. Feedback collected from these meetings was positive due to the 20-year history of public outreach on the project.

Public engagement will continue through the entire design process. An environmental commitment of the EA is that a new Bridge Committee with leaders from Hinsdale and Brattleboro will continue to provide input into the design of the new bridge structure. Pursuant to this commitment, Public Information Meetings were held in Hinsdale and Brattleboro in September 2017.

## **ii. State and Local Approvals**

Approvals by elected officials for this project have been obtained. The project is included in the NHDOT 2017-2026 Ten Year Transportation Improvement Plan, the NHDOT Statewide Transportation Improvement Program, and the VTrans Statewide Transportation Improvement Program. These plans contain project priorities, and are based upon input from Regional Planning Commissions, numerous public meetings in both states, and approval by each states Legislature and Governor.

## **iii. Federal Transportation Requirements Affecting State and Local Planning**

Approvals by elected officials for this project have been obtained. The project is included in the NHDOT 2017-2026 Ten Year Transportation Improvement Plan, the NHDOT Statewide Transportation Improvement Program, and the VTrans Statewide Transportation Improvement Program. These plans identify project priorities, and are based upon input from Regional Planning Commissions, numerous public meetings in both states, and approval by each state's Legislature and Governor.

## **d. Assessment of Risk and Mitigation Strategies**

NHDOT and VTrans have evaluated potential risks to the completion of this project and implemented mitigation strategies to manage them through deliberate actions undertaken throughout the project development process. For this project, risks include schedule delays, permitting approval, Right-of-Way procurement, cost escalation and public support. Each of these risks and the associated mitigation strategy are discussed in detail below.

### **i. Schedule Delays**

The project is being developed through the NHDOT project development process, a process which has been successfully utilized for many similar projects with state and federal funding. NHDOT and VTrans have coordinated the project design through their respective agencies and have assigned personnel with the proper experience to manage internal technical groups as well as the consultant partner assisting with the project design and permitting. An appropriate amount of time has been allotted for the necessary aspects of the project including public

## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

outreach, Right-of-Way procurement, permitting, and design. Advertisement is currently programmed for September 2019. The design of the project is nearing the completion of the Preliminary Plans, Specifications and Estimate stage, representing approximately 80% complete. The project is on track to advertise by the desired date, however, to avoid the potential for schedule delays, NHDOT and VTrans have accelerated the Right-of-Way procurement process, advanced the design, performed extensive resource agency coordination and have identified potential funding sources for the design and construction of the project.

### **ii. Right-of-Way Procurement**

Right-of-Way layout adjustments are required to realign a portion of NH Route 119 to construct the new bridge downstream of the existing bridges. VTrans has met with all affected owners on the Vermont portion of the project and New Hampshire is preparing for meetings with affected owners on the New Hampshire portion of the project. Right-of-Way plans have been developed and both the NHDOT Bureau of Bridge Design and the Right-of-Way Section of the VTrans Project Delivery Bureau have begun coordination with affected property owners. While acquisition of Right-of-Way is a risk with any infrastructure improvement project, particularly with regard to cost and schedule, the risk for this project is assumed to be minimal due to the public support for the project, nature of required acquisitions, and the potential to use eminent domain should agreement not be reached.

### **iii. Cost Escalation**

Cost estimates for construction as well as other project costs such as engineering consultation, Right-of-Way acquisitions, and permitting costs have been prepared and updated at each step in the project development process. Both NHDOT and VTrans maintain an extensive database of weighted average bid prices and have project development procedures in place to produce accurate and reliable construction cost estimates for projects of this type. Inflation of construction costs have been stable and predictable for several years, and is not anticipated to change dramatically over the next few years. Contractor competition is high in New Hampshire and Vermont, keeping escalation of construction bids low. One aspect of the local construction industry is that contractors are increasingly having trouble finding and retaining qualified labor staff. If the shortage of qualified labor continues to decline, salary rates may increase, therefore, having an upward effect on the potential cost of this project and others. NHDOT and VTrans are aware of this risk and classify it as a minimal risk for this project due to the fact that it will be advertised within the next two years.

### **iv. Public Support**

Public support for the project is evidenced by the positive engagement that NHDOT and VTrans have noted since 1996. Ongoing public engagement will ensure public support for the project and consideration of the public's input into the design of the new structure. The public supports this project and lack of public support is not considered a risk.

## 7) Benefit Cost Analysis

A Benefit-Cost Analysis (BCA) was performed using the guidelines of the Notice of Funding Availability. It is anticipated that if no major capital improvements are made, this bridge will



## HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT

need to be further down-posted to a level where some emergency vehicles and freight traffic must be completely detoured based upon the current level of deterioration and the assumed progression of future deterioration. Since this crossing is the southernmost crossing of the Connecticut River in New Hampshire and Vermont, the long-term closure and permanent re-routing of traffic onto other local or state routes was not considered a viable option. The BCA compares the construction of a new bypass bridge (the proposed project) to the base case or “no build” scenario where maintenance will continue to keep the bridge open to an “E-2” posting until 2037, and then an expected down-posting to a “20 Tons” limit starting in 2037 which will require some emergency vehicles and freight to utilize alternate routes.

The evaluation period of benefits and costs of a project are typically for a period that includes the construction of the project and the operational period which is 20 to 50 years on average. For this analysis the period includes the project development stage with the construction of the proposed bridge anticipated to begin in 2020 and be open to traffic at the end of 2022 with a 40-year operation life for the purposes of the BCA. The rehabilitation of the existing bridges for pedestrian and bicycle traffic would be complete by the end of 2023.

The replacement and bypassing of the NH Route 119 bridges over the Connecticut River results in a Benefit-Cost Ratio (BCR) of a BCR of 1.8 at a 7% discount rate, and a BCR of 2.0 at a 3% discount rate. Refer to the attached BCA for additional details.

### 8) Cost Share

The Hinsdale, NH – Brattleboro, VT NH Route 119 Bridge Project has been in planning by NHDOT and VTrans for over 40 years. Award of the TIGER Discretionary Grant would accelerate the construction of this important project allowing for this route to become free of weight and vertical clearance restrictions. New Hampshire has prioritized Structurally-Deficient bridges for reconstruction and replacement, but with over 2,400 federal-definition bridges in the NHDOT bridge inventory and 650 (27%) of them being over 75 years of age, funding is insufficient to address all of the deficient bridges in a timely fashion resulting in down-posting or a decreased level of service to these bridges.

The low-water mark of the Connecticut River is used as the state line between New Hampshire and Vermont at the project location. Due to the location of the state line, NHDOT and VTrans have agreed to fund the project utilizing an 83%/17% split for all Preliminary Engineering (PE) and construction costs of the new bridge. VTrans will pay for 7% of the construction costs to rehabilitate the Anna Marsh Truss Bridge. NHDOT will pay for 93% of the costs of the rehabilitation of the Anna Marsh Truss Bridge and 100% of the rehabilitation costs of the Charles Dana Hunt Truss Bridge. NHDOT has agreed to administer the design and permitting portion of the project. New Hampshire and Vermont are currently utilizing state funds, GARVEE bonds, federal formula funds, and toll credits only for the construction of this project. As such, the TIGER funding would provide significant assistance in completing this project and allow NHDOT to focus, near-term, toward addressing the needs of other bridges which would not otherwise be possible without TIGER funding for this project.

## **HINSDALE, NH – BRATTLEBORO, VT - NH ROUTE 119 BRIDGE PROJECT**

New Hampshire has over 10% of the state bridge inventory classified as Structurally-Deficient. Bypassing of these two bridges with a new, single, low-maintenance structure utilizing TIGER Grant funding will allow NHDOT to accelerate addressing other important statewide bridge needs. VTrans has recently, with the assistance of federal funds, invested over \$100M in the replacement of several bridges carrying Interstate 91 in Brattleboro, including the \$60M replacement of two bridges over the West River. The investment in the region will be incomplete without the additional investment in the NH Route 119 crossing.

The project is feasible, viable and cost-effective when considering initial and long-term costs of construction and future maintenance. The assistance of TIGER funding will ensure that the schedule provided in section 6b is met. Without it, additional GARVEE bonds need to be secured, resulting in higher future debt service payments and potential delays to the project construction.

### **9) Federal Wage Rate Certification**

NHDOT adheres to all federal wage rate requirements and has included a federal wage rate certification letter with this application.