

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

**U.S. Department of Transportation  
Better Utilizing Investments to Leverage Development**

**“BUILD 2018”**

## **TRANSPORTATION DISCRETIONARY GRANTS APPLICATION**

### **PROJECT NARRATIVE**

Project Name: Hinsdale, NH–Brattleboro, VT - NH Route 119 Bridge Project  
Project Type: Bridge Replacement & Bridge Rehabilitation  
Project Location: Rural, Hinsdale, New Hampshire and Brattleboro, Vermont  
Project Website: <https://www.nh.gov/dot/projects/hinsdalebrattleboro12210/index.htm>  
Funds Requested: \$25,000,000 (50%)  
Other State and Federal Funds  
    New Hampshire: \$21,830,000 (44%)  
    Vermont: \$3,170,000 (6%)  
Total Construction Costs: \$50,000,000 (100%)  
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*Anna Hunt Marsh Bridge*



*Charles Dana Bridge*

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

## 1) Project Description

### a. Project Background and Details

The New Hampshire Department of Transportation (NHDOT) in collaboration with the Vermont Agency of Transportation (VTTrans) proposes to construct a new bridge to bypass the functionally-obsolete and structurally-deficient 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 Town of Brattleboro (7%) and maintained by 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 Hinsdale Island in the Connecticut River. Both historic, but functionally-obsolete and deteriorated truss structures, will be preserved and maintained for pedestrian and bicycle use as part of the proposed project that will construct a new low-maintenance, aesthetically pleasing single bridge structure on a new alignment downstream from the existing bridges. This effort will also maintain the historic fabric of these two truss bridges.

The Anna Marsh Bridge is a fracture-critical Parker Truss with a span length of 324 feet (324') and is in poor condition (Note: the superstructure condition rating was reduced from a 5 (fair) to 4 (poor) as a result of a detailed hands-on fracture-critical inspection in June 2018). The structure has a roadway width of 20 feet 4 inches (20'4") (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 well below the minimum required vertical clearance of 16'6".



*Aerial View of the Existing Bridges Carrying NH Route 119 over the Connecticut River with Proposed Project Location (Looking Upstream/North)*

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The Charles Dana Bridge is also now in poor 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. The bridge is posted for a minimum vertical clearance of 11'10", also well below the minimum required vertical clearance noted above. Adding to the safety concern is the narrow width of each bridge which does not allow for trucks to pass each other while on the structures.

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

NH Route 119 is classified as an Urban Collector and is the southernmost Connecticut River crossing between New Hampshire and Vermont. Annual Average Daily Traffic (AADT) over the bridges 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.



*Rendering of the View of the New Bridge from the Southeast*

A new bridge with an open structure will result in unlimited vertical clearance and eliminate the existing substandard horizontal and vertical condition 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. The existing truss bridges will be rehabilitated and preserved for pedestrian and bike use and continued recreational opportunities. The new bridge will provide a substantial safety improvement for operators of vehicles, pedestrians, bicyclists and train operators.

According to the New Hampshire Employment Security, Economic and Labor Market Information Bureau's 2010 statistics,



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

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approximately 46% of working Hinsdale residents commute to Vermont to their jobs, or 929 out of 2,030 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.

The crossing is critical 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 included on the USDOT Multimodal Freight Network Map). Access to Interstate 91 connects the region to 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 serves the region including the Town of Hinsdale. 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 the two states and providing access to employment in Vermont for residents of the rural area of Hinsdale and the region.

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

- Improved reliability and safety of the crossing
- Improved multi-modal safety for trains, vehicles, pedestrians, and bicyclists
- Quicker emergency response times due to the elimination of vehicle delays caused by the at-grade railroad crossing and Malfunction Junction
- Improved access to economic opportunities in the rural region for businesses and residents
- Addresses regional transportation needs and improves the economic competitiveness of the two communities and region
- Facilitates the movement of goods to national and international export markets
- Creates local jobs during construction activities
- Enhances pedestrian, bicycle, and recreational opportunities
- Enhances the quality of life in the two communities and region
- Ensures continued access to nearby medical and educational facilities in the area
- Maintains two historic truss bridges and;
- Provides the ability for the Town of Brattleboro, Amtrak, the Brattleboro Museum and Art Center to move forward with several exciting safety and quality-of-life improvement projects in the area of Bridge Street, Malfunction Junction and Hinsdale Island.

This project and application meet the criteria for the rural designation of the BUILD Discretionary Grant Program and NHDOT and VTrans believe it represents the type of project envisioned under the program. Receipt of BUILD Grant funds will also allow NHDOT to reduce the need to secure GARVEE bonding and to focus, near-term, toward addressing the needs of other bridges which would not otherwise be possible without BUILD funding for this project. BUILD funding will accelerate the construction of this important project and effectively mitigate the ongoing safety and increasingly costly operational and maintenance issues.

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

Functionally-obsolete and structurally-deficient highway bridges are a national problem. New Hampshire ranks 13th in the nation with approximately 11% 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 de-icing treatment with catalytic chemicals. Without sufficient 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 efficient 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 reconstruction, but funding is insufficient to address the entirety of the need in a timely fashion, often resulting in reduced load capacities and a decreased level of service. An at-grade railroad crossing of NH Route 119 and the NECR in Brattleboro creates traffic congestion and results in the potential for accidents involving trains, vehicles, pedestrians and bicyclists.

## **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 significant rehabilitation for many decades, therefore, providing reliable 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 are provided the opportunity to prosper enabling connections to major employers, trade partners, educational, training 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. In addition, the at-grade railroad crossing of NH Route 119 and the NECR will be eliminated by elevating the new alignment of NH Route 119 over the railroad crossing.

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

To date, no construction portions of this project have been completed, although development of the proposed project has been in process since the mid-1990's. Due to limited funding the project has been continuously delayed. Detailed hands-on fracture-critical structural inspections of the Anna Hunt Marsh and Charles Dana truss bridges were completed in June 2018. As a result, the superstructure condition rating of both bridges was reduced from a 5 (fair) to 4 (poor) requiring that the bridges will now be included on the NHDOT Red-List. NHDOT is presently determining whether remedial repairs are required to keep the



*Holes through the Gusset Plate of the Charles Dana Bridge Noted in a June 2018 Detailed Inspection*

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bridges in service for vehicular traffic while the replacement bridge project development continues.

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

VTrans has recently, with the assistance of significant 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 completed in October 2017 with the new “Bridge to Nature”. 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 and Brattleboro will enable those in the rural southwestern region of New



***VTrans and FWHA recently invested approximately \$60 million to replace the I-91 Bridges over the West River in Brattleboro with the "Bridge to Nature"***

Hampshire to access the Interstate 91 corridor which provides tremendous economic opportunities. Investment in this project will significantly leverage connectivity to prior federally-funded infrastructure investments by ensuring effective connection to the already-upgraded Interstate 91 corridor.

Another significant and recent federally-funded investment in the region included \$50 million of American Recovery and Reinvestment Act (ARRA) funding to improve 193 miles of the NECR in Vermont (known as the Vermonter) to improve safety, increase train speeds, and reduce travel time. This project included track upgrades to and from the Brattleboro Amtrak station (Union Station) and will allow for increased passenger capacity in the future. Elimination of vehicular traffic from NH Route 119 will provide the opportunity for the Town and Amtrak to make further investments in amenities and station upgrades setting the stage for increased passenger service and a better user experience.

Other federal investments in the project area have included approximately \$450k of Environmental Protection Agency (EPA) funding to assess and develop remediation plans for the redevelopment of several Brownfield sites along the Connecticut River waterfront and other areas within and adjacent to the project site. Over \$425k of Federal Transit Administration (FTA) was utilized to add a bus turnaround and short-term parking at Union Station to provide alternate transportation opportunities.

A BUILD grant for the Hinsdale-Brattleboro bridge project would represent a significant step in connecting prior federal investments in the project area and region to generate safety



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improvements, enhancements to quality of life and the ability to continue moving forward with other important projects in the area that are contingent upon the completion of this project.

### **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 for all three towns. Nearly half of the working residents of Hinsdale commute to Vermont for employment using the NH Route 119 river crossing. According to the United States Census Bureau American Community Survey (ACS), the 2016 United States Median Household Income (MHI) was \$55,322 and the New Hampshire MHI was \$68,485. While New Hampshire had the highest MHI in the country, the MHI for Cheshire County was \$58,359 and specifically for Hinsdale was significantly lower at \$47,292, or nearly 17% below the United States MHI average and 45% below the New Hampshire MHI average. The importance of the continuance of a safe and reliable crossing of the Connecticut River from Hinsdale to Brattleboro is paramount to allowing access to higher paying jobs in the Brattleboro area for western New Hampshire residents. 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. A new retail development (Runnings) opened in April of 2018 in Hinsdale which will rely on the crossing for delivery of goods, employees, and consumers. The developer 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 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.

In 2015, New Hampshire's Southwest Regional Planning Commission (SWRPC) adopted the Southwest New Hampshire Broadband Plan which outlines priorities for encouraging further distribution and enhancement of broadband services throughout the rural southwestern region of New Hampshire. Specifically, two of the high priorities that were identified were:

- 2.a.ii – Encourage policies that promote the installation of broadband conduit when construction occurs in roadway rights of way and;
- 2.a.iii – Promote the inclusion of broadband infrastructure development & maintenance in public works projects.

To aid in achieving these goals, NHDOT is committed to installing broadband conduit on the new downstream bypass bridge as part of this project to provide for future broadband distribution and enhancement.

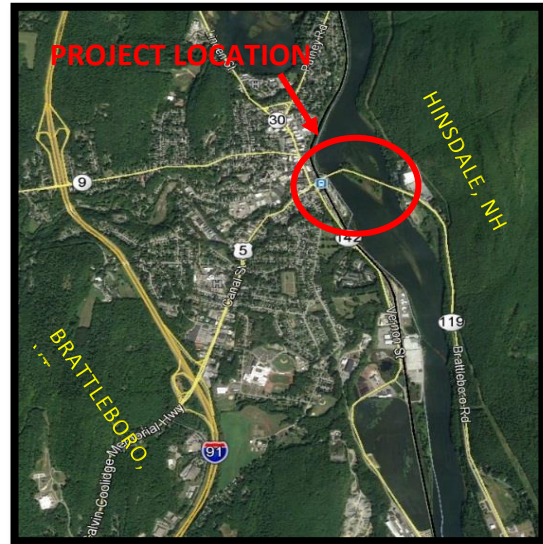
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## 2) Project Location

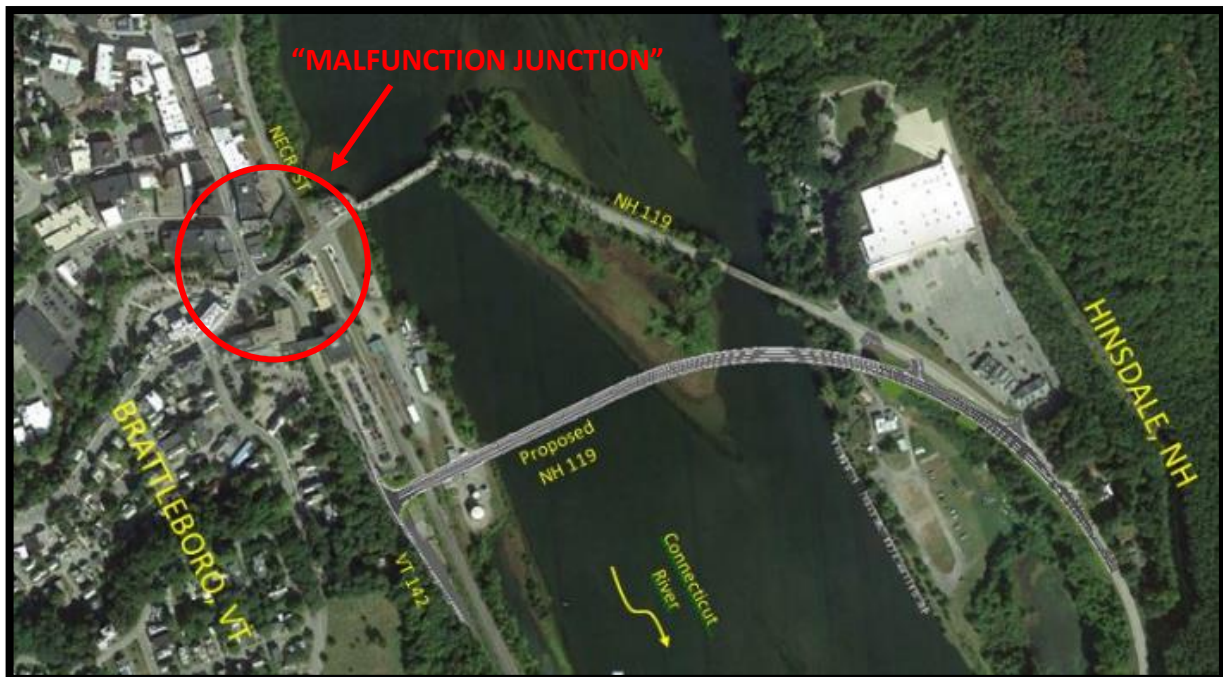
The project location extends from Hinsdale to Brattleboro over the Connecticut River via NH Route 119, by way of two bridges spanning either side of Hinsdale Island situated mid-way between the two shorelines.

The western bridge, the Anna Hunt Marsh Bridge, is located on the Brattleboro side and intersects an at-grade crossing of the NECR and Vermont Routes 5 and 142, known locally as “Malfunction Junction” (see figure below). The eastern side of the channel is home to the Charles Dana Bridge where NH Route 119 follows the river shoreline into the town of Hinsdale.

The proposed project would create a bypass of both existing bridges with a new 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 significant reduction of vehicular traffic in the vicinity of the Amtrak train station will create a safer and more pleasurable user experience for those taking advantage of the Vermonter train service. The eastern



**Current Project Location**



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

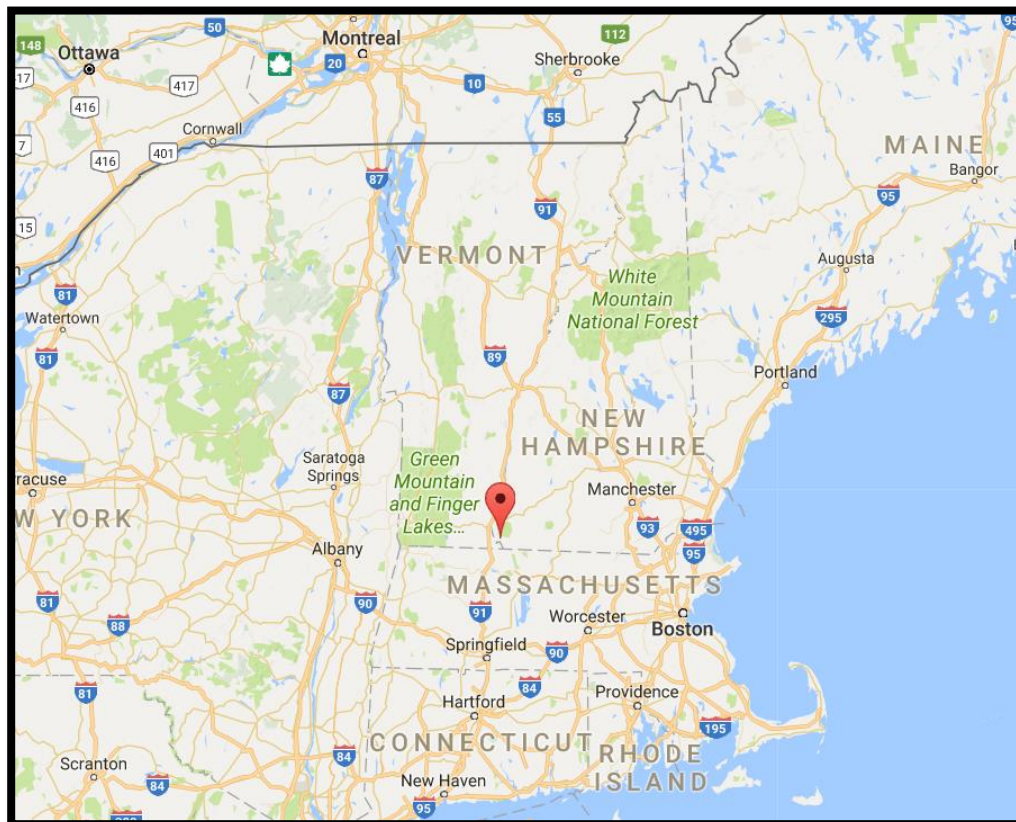
intersection would shift closer to the two local businesses situated on a private access road. The current historic bridges would be rehabilitated to serve pedestrians and bicyclists.

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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, in Brattleboro, 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.

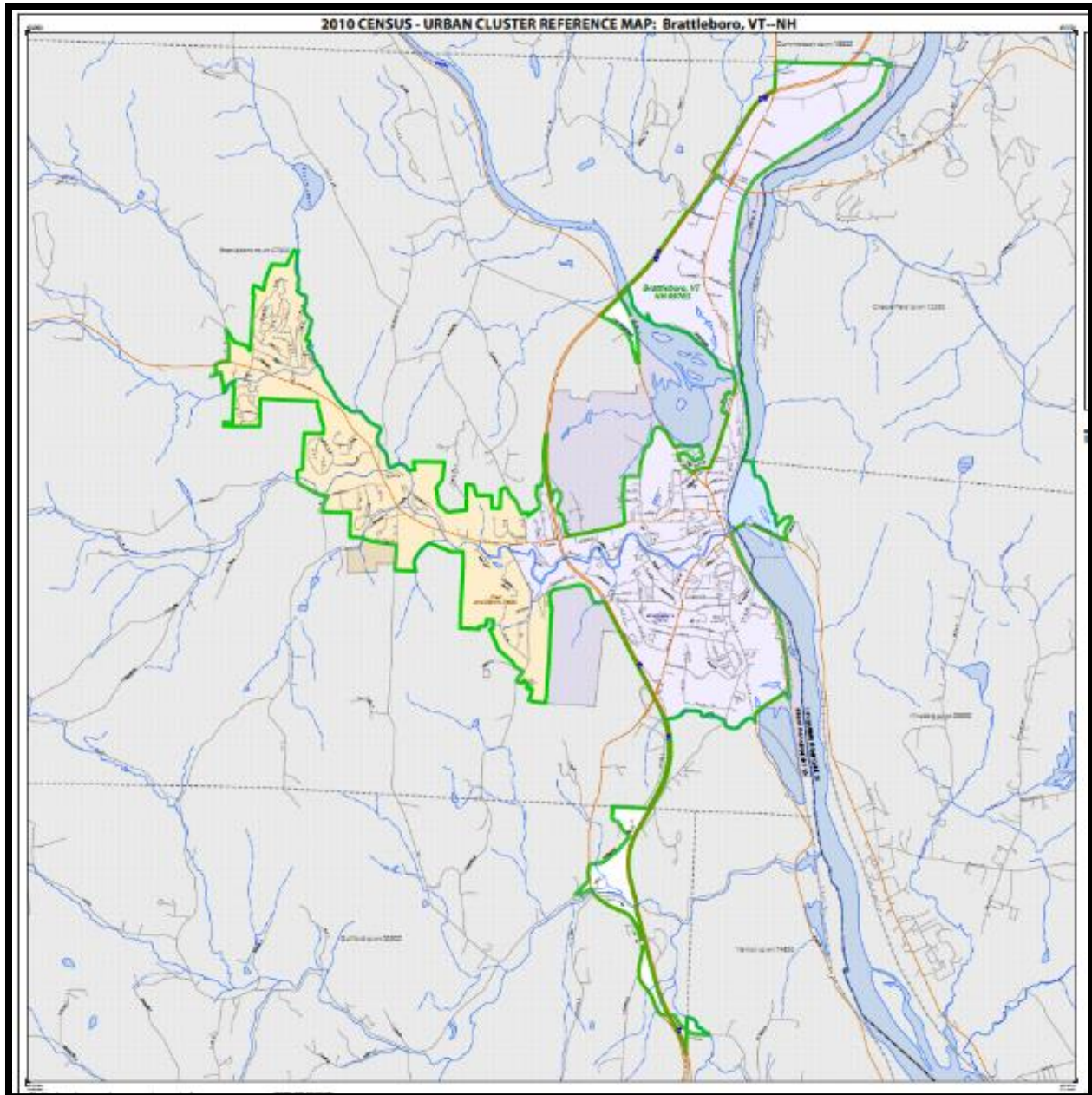
NH 119 connects Cheshire County and the rural Monadnock Region to the international trade corridor of Interstate 91, further connecting the region to the Canadian trade market to the north and larger New England ports to the south. The nearest alternate routes include NH Route 9, 16.9 miles north in Chesterfield, or NH Route 10, 18.7 miles south through Massachusetts.



*Connections to Existing Transportation Infrastructure*

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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 BUILD Discretionary Grants program, the project location is considered “Rural”.



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

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### 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 highways and bridges. For the purpose of this BUILD Grant Application, NHDOT is leading the contract and the BUILD application process for the Hinsdale, NH – Brattleboro, VT NH Route 119 Bridge Project.

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

This project has an estimated total cost of \$59.44 million, of which, \$25 million is being requested in BUILD funding and \$34.44 million will come from other New Hampshire and Vermont state and federal funding sources. BUILD investments represent approximately 42% of the total project’s funding. There are no other planned or 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 %
BUILD Grant Funds	\$20,750,000	\$4,250,000	\$25,000,000	50.0%
Federal Formula	-----	\$1,686,000	\$1,686,000	3.4%
VT State Funds	-----	\$1,484,000	\$1,484,000	3.0%
NH State Funds (SB 367)	\$8,516,000	-----	\$8,516,000	17.0%
State Funds (Toll Credits)	\$13,314,000	-----	\$13,314,000	26.6%
Total \$\$	\$42,580,000	\$7,420,000	\$50,000,000	100.0%
Total %	85.2%	14.8%	100.0%	

### 5) Merit Criteria

#### a. 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. As noted, the superstructure condition rating of the both the Anna Hunt Marsh and Charles Dana bridges were recently reduced from a 5 (fair) to 4 (poor) which will result in the addition of the bridges to the NHDOT Red-List. Load-posting of the bridges 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

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south, emergency 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. An increase in response time of approximately 35 minutes or more in each direction is a significant decrease in safety for residents and visitors of these towns. Additionally, the existing truss bridges are damaged often due to truck impact, particularly at the portals, where large trucks must cross the centerline to avoid impacting the bridge.

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 Amtrak station. The project will eliminate vehicle crossings of NH Route 119 and the railroad, 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. 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 rehabilitated and maintained for pedestrians and bicyclists only, thereby, enabling use of the entire roadway width without conflict with vehicles.

One of the stated goals 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 this goal by eliminating two functionally-obsolete bridges from vehicular service and providing a new structure that can carry modern loads, eliminate the substandard vertical clearance, and provide multi-use roadway shoulders and a year-round 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

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potential for interaction between bicyclists, and pedestrians. The new bridge will also greatly improve emergency response times to the residents of Hinsdale and the region.

### **b. State of Good Repair**

Some of the stated goals of the project are to restore the structural integrity of the bridge crossing, eliminate geometric limitations associated with the bridges (width and vertical clearance restrictions), and eliminate vehicular interaction at 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 structurally-deficient, over 98 years of age and require increasingly time-consuming and expensive maintenance to maintain vehicular travel.
- Remedial repairs are now likely required due to the findings of the June 2018 detailed inspection.
- 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 narrowing the useable bridge width even further, the safety of pedestrians is significantly compromised.



*The superstructure condition rating of the bridges was recently reduced to a 4 (Poor) and Remedial Repairs may be required. (Photo – Hole in Lower Chord June 2018 in Charles Dana Bridge)*

The bridges are each over 98 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.

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A detailed hands-on fracture-critical inspection of both bridges in June 2018 revealed advancing deterioration including larger holes in the lower chords and gusset plates of the bridges which prompted the reduction of the condition rating of the superstructures from a 5 (fair) to 4 (poor), reclassifying them as structurally-deficient. NHDOT is currently contemplating whether remedial repair measures or load-posting may be required. Without remedial actions, continued corrosion-related deterioration of the truss components may soon necessitate a reduced weight limit posting which would cause significant inconvenience to freight and emergency vehicle use of the bridges.

There are over 2,400 federal-definition bridges in the NHDOT bridge inventory and approximately 650 (27%) of them are over 75 years of age with 11% of the state's inventory of bridges being categorized as structurally-deficient. Bypassing these truss bridges with a new, single, low-maintenance structure utilizing BUILD Grant funding will allow NHDOT to address these two bridges expeditiously and advance addressing other important statewide bridge needs.

### **c. Economic Competitiveness**

The new 8-span bridge spanning the Connecticut River will provide improved levels of service compared to 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 are essentially 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.

As detailed above in *1)f. Benefits of the Project to Rural Communities*, in 2015, New Hampshire's Southwest Regional Planning Commission (SWRPC) adopted the Southwest New Hampshire Broadband Plan which outlines priorities for encouraging further distribution and enhancement of broadband services throughout the rural southwestern region of New Hampshire. NHDOT is committed to installing broadband conduit on the new downstream bypass bridge as part of this project to provide for future broadband distribution and enhancement.

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. According to the United States Census Bureau American Community Survey (ACS), the 2016 United States Median Household Income (MHI) was \$55,322 and the New Hampshire MHI was \$68,485. While New Hampshire had the highest MHI in the country, the MHI for Cheshire County was \$58,359 and specifically for Hinsdale was significantly lower at \$47,292, or nearly 17% below the United States MHI average and 45% below the New Hampshire MHI average. The importance of the continuance of a safe and reliable crossing of the Connecticut River is paramount to allowing access to higher paying jobs in the Brattleboro area for western New Hampshire residents.



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The economic effects from the closing of the Vermont Yankee Nuclear Power Plant in 2014 were felt throughout the 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 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 has a deep-rooted heritage in farming and would benefit from the growth of agritourism along with the economic ripple effect it would bring to this rural region.

The project also includes the rehabilitation and preservation of the two existing truss bridges for adaptive re-use. The historic structures will be rehabilitated for pedestrians, bicyclists and alternative modes of transportation use and to 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.

### **d. Environmental Protection**

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

Eighty-one percent (81%) 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, mitigating airborne 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. Improved stormwater measures to adequately collect runoff will be incorporated into the project design and wetland impacts will be minimized.

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

### e. Quality of Life

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

- 1.) Provide more transportation choices;
- 2.) Enhance Economic Competitiveness;
- 3.) Support Existing Communities;
- 4.) Coordinate Policies and Leverage Development;
- 5.) Value Communities & Neighborhoods



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



*Street View of Malfunction Junction*

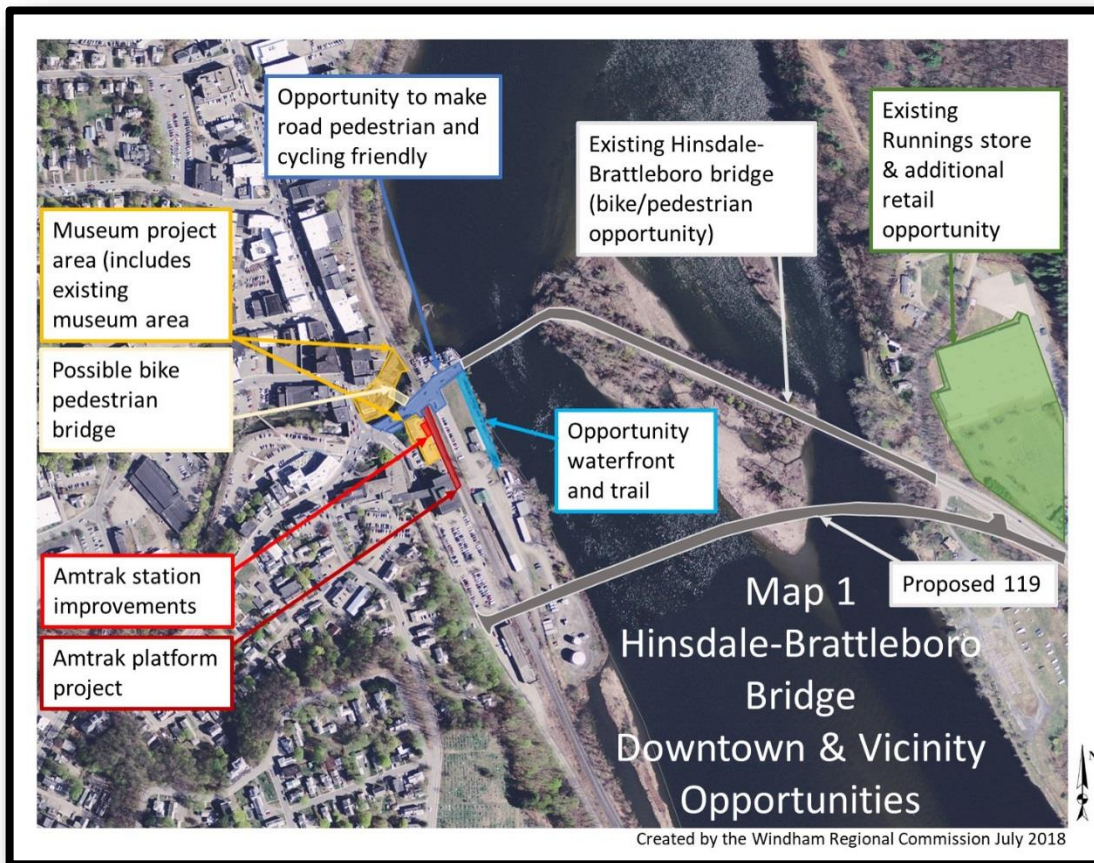
This project, as well as other important projects planned for the future, achieve each of these principles. The relocation of the bridge will eliminate VT Route 119/Bridge Street as a main traffic artery contributing to “Malfunction Junction” where Vermont Routes 5, 119 and 142 meet in a disjointed tangle 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 create the opportunity for future further mitigation of the intersection challenges.

The Town of Brattleboro, the Windham Regional Planning Commission and the Brattleboro Museum & Art Center are contemplating major projects which are contingent upon the existing truss bridges being closed to vehicular traffic. The Town of Brattleboro is coordinating with Amtrak to make substantial improvements to the train station and surrounding area to create a “welcome center” as the train station is the first stop in Vermont. This project would include improvements to handicap access to the station, retail shops, information booths and other amenities which are not currently possible due to the volume of vehicular traffic crossing the at-

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

grade railroad intersection. The Brattleboro Museum & Art Center is planning for a \$22 million expansion project which would create a “campus” across both sides of Bridge Street and transform the area. The adjacent maps illustrate the location of these and many other projects being envisioned for the area only made possible by construction of the bypass bridge.

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

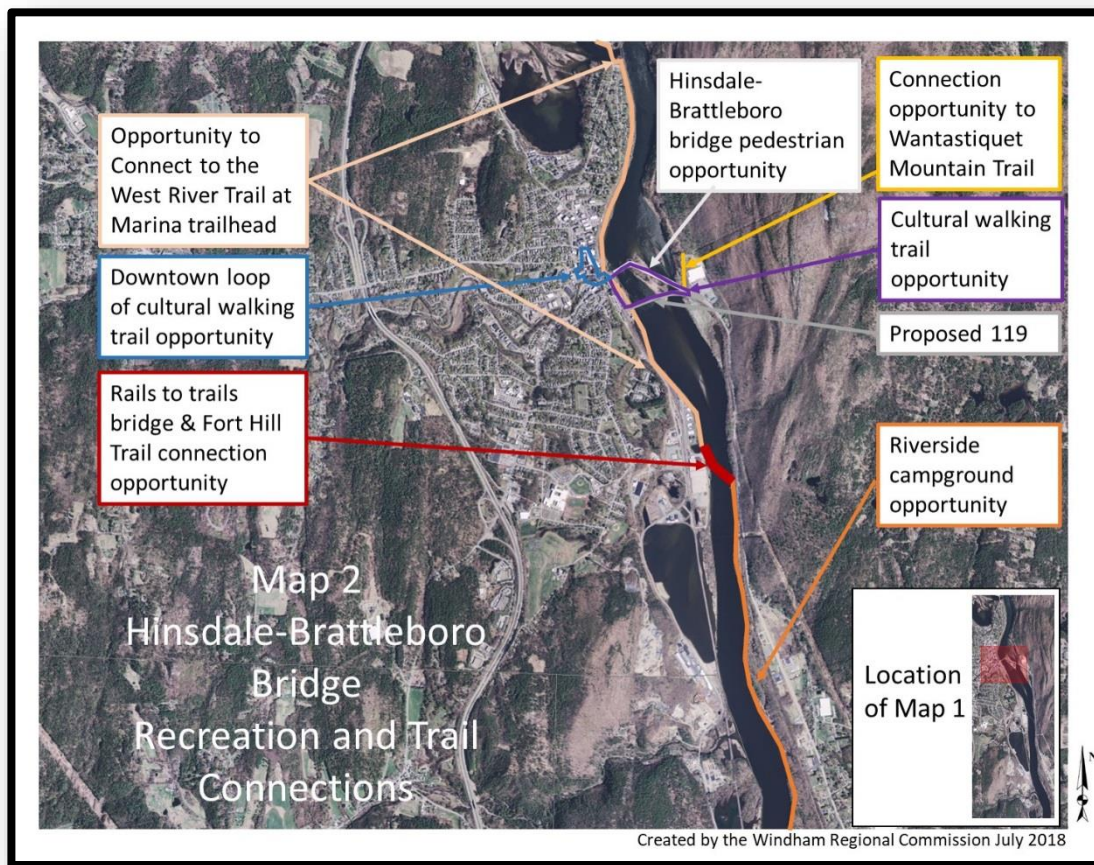


**Map 1 - Downtown & Vicinity Opportunities**

the risk of being stopped at the railroad tracks which handles regular freight traffic and multiple passenger 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 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 recognizes 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 Southwestern



**Map 2 - Recreation & Trail Connections**

Regional Planning Commission is currently working with the Town of Hinsdale to develop concepts for improved recreational opportunities on Hinsdale Island including connections to existing trail networks such as the Wantastiquet Trail and Fort Branch Trails in Hinsdale, and the West River Trail in Brattleboro

Rehabbing the existing bridges for pedestrian and bicyclists is consistent with the State of Vermont Complete Streets Policy, vision, enhanced recreational opportunities, improved multimodal transportation network that enhances safety, choice and protects the Town's rural character. The Town of Hinsdale adopted a Complete Streets Policy in 2016. In implementing that policy, the Town will work with partners, such as 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. Bicycle and pedestrian

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

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 bike-friendly, and offers many opportunities for connections to existing trail networks that would enhance the livability of the area.

As detailed in *c. Economic Competitiveness* above, the SWRPC adopted the 2015 Southwest New Hampshire Broadband Plan which outlines priorities for encouraging further distribution and enhancement of broadband services throughout the rural southwestern region of New Hampshire.

NHDOT is committed to installing broadband conduit on the new downstream bypass bridge as part of this project to provide for future broadband distribution and enhancement.

### **f. Innovation**

The new high-value bridge structure will be designed for a 120-year service life adding a significant element of sustainability to the project. NHDOT and VTTrans are committed to utilizing innovative technologies, proactive maintenance and reliable preservation techniques and best practices recommended by the Strategic Highway Research Program (SHRP 2) to construct and maintain their bridges. One example of innovation included in the project will be the use of a bare concrete deck and stainless-steel reinforcing. In addition, NHDOT is in the final stages of preparing 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 taxpayers and the users of the transportation system.

As detailed in *c. Economic Competitiveness* above, the SWRPC adopted the 2015 Southwest New Hampshire Broadband Plan which outlines priorities for encouraging further distribution and enhancement of broadband services throughout the rural southwestern region of New Hampshire. NHDOT is committed to installing broadband conduit on the new downstream bypass bridge as part of this project to provide for future broadband distribution and enhancement.

### **g. Partnership**

New Hampshire and Vermont have established a strong partnership relative to reconstruction or maintenance of shared interstate infrastructure by addressing all bridges that cross the Connecticut River (36 bridges) between the two states. Along with Maine, the three states constitute 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 limited to utilizing a combination of state funds, toll credits and federal formula funds for the construction of this project. As such, the BUILD funding would provide significant assistance in completing this project sooner, and reducing the level of future GARVEE-related debt service.

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

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 local, state and federal stakeholders as well as elected officials at many 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.

### **h. Non-Federal Revenue for Transportation Investment**

The State of New Hampshire has been proactive in raising non-federal revenue for infrastructure investment as evidenced by several significant and purposeful state-level infrastructure appropriations over the past few years. In July 2014, the state raised the state portion of the gas tax by 4.2 cents per gallon through state Senate Bill 367 (SB367). Although this investment was enacted prior to the January 1, 2015 date stipulated by the BUILD Notice of Funding Opportunity (NOFO), this ongoing revenue generation contributes an additional \$34m per year of state revenue to the reliability of the state's infrastructure. The state also has elected to make significant "one-time" investments toward bridge rehabilitation and replacement in 2017 and again in 2018. In 2017, the state directed \$36.8m in one-time funding to the rehabilitation and replacement of state and municipally-owned structurally-deficient bridges and roadways through the passing of state SB38. Effective June 6, 2018, New Hampshire House Bill 1817 (HB 1817) directed \$30.4m of general fund revenue surplus to address structurally-deficient bridges across the state. These immediate and significant injections of state revenue funding provide opportunities to advance many important bridge projects. Each of these one-time funding allocations equates to the approximate equivalent of a 1 cent raise in the gas tax over four years (New Hampshire raises approximately \$8m in revenue per 1 cent of gas tax in a typical year). In total through these three actions alone, the State of New Hampshire will have directed nearly \$240m in additional new non-federal revenue to infrastructure investments over a 5-year period from 2016 through 2020. These significant state funding amounts directed towards addressing deficient bridge and roadway infrastructure is a clear statement that the state acknowledges the importance of local infrastructure investment and is proactively identifying alternative revenue sources to address bridge and roadway infrastructure deficiencies.

## **6) Project Readiness**

### **a. Technical Feasibility**

In 2010, NHDOT and VTrans commissioned the detailed inspection and load capacity rating of the existing truss bridge structures to precisely determine the existing condition, level of deterioration, safety concerns, load capacity 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

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


F” was selected based on the design to maximize safety and minimize impact to the area while 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 the evaluation of alternatives by way of numerous public informational meetings, public hearings and meetings with local, state and federal natural and cultural resource agencies. When considering initial and long-term costs of construction and future maintenance, the project is feasible, viable and cost-effective. The preferred alternative, to bypass the existing truss bridges with a single downstream structure, 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	Project: 12210C			
		SUBJECT: NH 119 OVER CONNECTICUT RIVER	Designer & User: WPS			
		TITLE: BUILD ESTIMATE	date: 7/2/2018			
			Checker: CKN			
Ttl. Items:	52	Item Description	Quantity	Unit	Unit Cost	Total Cost
						<b>\$ 44,600,000.00</b>
Item No.						
1	207.1	Common Channel Excavation	438	CY	\$ 25.00	\$ 10,950.00
2	209.201	Granular Backfill Bridge (F)	2100	CY	\$ 45.00	\$ 94,500.00
3	403.11	Hot Bituminous Pavement, Machine Method	675	Ton	\$ 75.00	\$ 50,625.00
4	403.61	Pavement Joint Adhesive (Bridge Base)	9012	LF	\$ 1.50	\$ 13,518.00
5	403.911	Hot Bituminous Bridge Pavement, 1" Base Course (F)	456	Ton	\$ 160.00	\$ 72,960.00
6	500.02	Access for Bridge Construction	1	U	\$6,000,000.00	\$ 6,000,000.00
7	503.201	Cofferdams	1	U	\$ 600,000.00	\$ 600,000.00
8	504.1	Common Bridge Excavation (F)	3385	CY	\$ 35.00	\$ 118,475.00
9	508.	Structural Fill	195	CY	\$ 75.00	\$ 14,625.00
10	510.1	Pile Driving Equipment	1	U	\$ 50,000.00	\$ 50,000.00
11	510.61	Furnishing & Driving Steel Bearing Piles	2076228	LB	\$ 0.50	\$ 1,038,114.00
12	510.65	Driving-Points for Steel Bearing Piles	231	EA	\$ 180.00	\$ 41,580.00
13	510.9	Pile Splices	462	EA	\$ 50.00	\$ 23,100.00
14	520.0302	Concrete Class AA, Approach Slabs (QC/QA) (F)	77	CY	\$ 570.00	\$ 43,890.00
15	520.12	Concrete Class A, Above Footing (F)	2703	CY	\$ 1,000.00	\$ 2,703,000.00
16	520.213	Concrete Class B, Footings (On Soil) (F)	986	CY	\$ 600.00	\$ 591,600.00
17	520.351	Form Liner for Concrete (F)	473	SY	\$ 10.00	\$ 4,730.00
18	520.6	Concrete Class T, Foundation Seal	3861	CY	\$ 350.00	\$ 1,351,350.00
19	520.70026	Concrete Bridge Deck (QC/QA) (Panel Option) (F)	3512	CY	\$ 850.00	\$ 2,985,200.00
20	534.3	Water Repellent (Silane-Siloxane)	433	GAL	\$ 150.00	\$ 64,950.00
21	538.2	Barrier Membrane, Peel and Stick, Vertical Surfaces (	45	SY	\$ 150.00	\$ 6,750.00
22	538.6	Barrier Membrane, Heat Welded, Machine Method (F)	8121	SY	\$ 25.00	\$ 203,025.00
23	541.1	PVC Waterstops, NH Type 1 (F)	81	LF	\$ 10.00	\$ 810.00
24	541.2	PVC Waterstops, NH Type 2 (F)	82	LF	\$ 10.00	\$ 820.00
25	541.4	PVC Waterstops, NH Type 4 (F)	93	LF	\$ 10.00	\$ 930.00
26	544.	Reinforcing Steel (F)	482000	LB	\$ 1.25	\$ 602,500.00
27	544.51	Reinforcing Steel - Stainless Steel (F)	1053000	LB	\$ 2.75	\$ 2,895,060.48
28	544.7	Synthetic Fiber Reinforcement	539	LB	\$ 8.25	\$ 4,446.75
29	547.	Shear Connector (F)	25250	EA	\$ 5.25	\$ 132,562.50
30	548.21	Elastomeric Bearing Assemblies (F)	25	EA	\$ 1,200.00	\$ 30,000.00
31	550.1	Structural Steel (F)	6336900	LB	\$ 1.75	\$ 11,089,575.00
32	550.2101	Bridge Shoes - HLMR	20	EA	\$ 2,500.00	\$ 50,000.00
33	561.20	Prefabricated Modular Bridge Joint System (F)	102	LF	\$ 1,750.00	\$ 178,500.00
34	562.1	Silocon Joint Sealant (F)	120	LF	\$ 15.00	\$ 1,800.00
35	563.23	Bridge Rail T3 (F)	1532	LF	\$ 135.00	\$ 206,820.00
36	563.231	Bridge Rail T3 With Protective Screening (F)	48	LF	\$ 180.00	\$ 8,640.00
37	563.233	Bridge Rail T3 With Snow Screening (F)	192	LF	\$ 180.00	\$ 34,560.00
38	563.24	Bridge Rail T4 (F)	1566	LF	\$ 141.00	\$ 220,806.00
39	563.241	Bridge Rail T4 With Protective Screening (F)	48	LF	\$ 205.00	\$ 9,840.00
40	563.243	Bridge Rail T4 With Snow Screening (F)	192	LF	\$ 205.00	\$ 39,360.00
41	564.1	Bridge Lighting System	1	U	\$ 50,000.00	\$ 50,000.00
42	565.232	Bridge Approach Rail T3 (Steel Posts) (F)	2	U	\$ 5,500.00	\$ 11,000.00
43	565.242	Bridge Approach Rail T4 (Steel Posts) (F)	2	U	\$ 6,000.00	\$ 12,000.00
44	585.2	Stone Fill, Class B	67	CY	\$ 27.00	\$ 1,809.00
45	609.01	Straight Granite Curb	65	LF	\$ 22.00	\$ 1,430.00
46	609.02	Curved Granite Curb	65	LF	\$ 32.00	\$ 2,080.00
47	692.	Mobilization	1	U	\$1,218,321.25	\$ 1,218,321.25
48	1010.41	Quality Control / Quality Assurance (QC/QA) for Concr	1	\$	\$ 537,583.90	\$ 537,583.90
49	1020.02	Inspection - Paint	1	\$	\$ 10,000.00	\$ 10,000.00
50	1020.03	Inspection - Steel	1	\$	\$ 120,000.00	\$ 120,000.00
51	1030.	Construction Engineering	1	\$	\$3,045,803.13	\$ 3,045,803.13
52						\$ -
53		Rehabilitation of Existing Truss Bridges				\$ 8,000,000.00
54						\$ -
55						\$ -
56						\$ -



# 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>7/10/2018</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 (8%) <sup>1</sup>				\$255,077
	MOBILIZATION (8%) <sup>2</sup>				\$255,077
	CONTINGENCY (5%) <sup>2</sup>				\$159,423
				<b>ROADWAY SUB-TOTAL</b>	<b>\$3,858,041</b>
	CONSTRUCTION ENGINEERING (10%) <sup>2</sup>				\$385,804
698.12	FIELD OFFICE TYPE C <sup>1</sup>	MON	30	\$1,750.00	\$52,500
698.2	PHYSICAL TESTING LABORATORY <sup>1</sup>	MON	30	\$800.00	\$24,000
				<b>ROADWAY TOTAL</b>	<b>\$4,320,345</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>\$48,920,345</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 represents the current project schedule:

- *June 2018* – Preliminary Plans, Specification and Estimate (PPS&E) submittal
- *September 2018* – Permit application submittal (ACOE 404, NHDES Wetlands, NHDES Shoreland, VT Wetlands, VT River Flood Hazard & River Corridor, VT Operational Stormwater, VT Construction Stormwater)
- *August 2019* – PS&E submittal and NH Right-of-Way procurement complete
- *September 2019* – VT Right-of-Way procurement complete
- *September 2019* – Contract advertisement based upon current funding with BUILD 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, or a temporary bridge were evaluated but found to not be necessary, 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 and expected to easily be completed by the dates noted in the schedule above.

It is important to note that the above schedule is achievable with BUILD grant funding included in the project. In the absence of BUILD funding, alternative funding sources, such as 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 began an anticipated 8 to 12-month coordination process to apply for and obtain seven state and federal environmental permits required to construct the project. NHDOT and VTTrans have proactively coordinated 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 the required approvals.

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## **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 wetland 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 three Natural Resource Agency meetings to discuss environmental permitting requirements, as well as to 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 US Coast Guard has confirmed that the project will not require a Bridge Permit. The Army Corps of Engineers and EPA have agreed that the project will not require an Individual 404 Permit and can be authorized under the VT and NH General Permits. The anticipated permits are as follows: Army Corps of Engineers VT General Permit and NH General Permit, NH Department of Environmental Services (NHDES) Wetlands Permit, NHDES Shoreland Permit, VT Agency of Natural Resources (VTANR) Flood Hazard & River Corridor Permit, VTANR Wetlands Permit, VTANR Operational State Stormwater Permit, and VTANR Stormwater Construction Discharge Permit. Permit applications are scheduled to be submitted in early fall 2018 with permit approvals anticipated in early 2019, well prior to the scheduled advertising date.

## **3. Environmental Studies**

A detailed and comprehensive 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 10 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 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 in February 1996. Between then and July 1998, the committee met a total of 16 times to discuss project alternatives and provide feedback to NHDOT and VTrans throughout the NEPA

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process. The committee included members from 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 plus 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. In addition, a Public Hearing was held January 18, 2018 which resulted in a June 5, 2018 finding of necessity for the project which allows property acquisitions to continue with eminent domain if necessary. The Project Advisory Committee suggested a sub-committee be formed to help determine options for the continued non-motorized use of the two existing truss bridges and Hinsdale Island. This sub-committee met in May and June of 2018 and is expected to continue to hold meetings to develop concepts for the disposition of the bypassed truss bridges and roadway.

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

Approvals by elected state and local officials have been obtained for this project. The project is included in the NHDOT 2019-2028 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 states Legislature and Governor.

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

Approvals by elected officials have been obtained for this project. The project is included in the NHDOT 2019-2028 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.

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## **i. Schedule Delays**

The project is being developed through the NHDOT project development 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 permitting. An appropriate amount of time has been allocated for the necessary aspects of the project including public 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 (PPS&E) stage, representing approximately 80% completeness. 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 identified potential funding sources for the design and construction of the project.

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

Right-of-Way acquisitions are required to realign a portion of NH Route 119 and construct the new bridge downstream of the existing bridges. Most of the acquisitions and more complex acquisitions are in Vermont. VTrans has met with all affected property owners in Vermont and NHDOT is preparing for meetings with affected property owners in New Hampshire. Right-of-Way plans are also currently being developed. VTrans has begun the valuation process and is currently preparing to make offers and negotiate with owners. The condemning authority in Vermont is the Town of Brattleboro and the condemnation process can be completed in roughly three months, if needed. The condemning authority in New Hampshire is NHDOT although condemnation is not anticipated to be required due to the minimal property impacts. Neither NHDOT nor VTrans views the remainder of the Right-of-Way acquisition process to be a high risk to the schedule or cost for this project.

## **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 significantly 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, resulting in an upward effect on the potential cost of this project and others. NHDOT and VTrans are aware of this market characteristic and classify it as a minimal risk for this project as it will be advertised within the next two years.

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## **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 Opportunity and the Benefit-Cost Analysis Guidance for Discretionary Grant Programs (June 2018). It is anticipated that if no major capital improvements are made, this bridge will need to be 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 30-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 1.97 at a 7% discount rate, and a BCR of 2.52 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 20 years. Award of the BUILD 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 Vermont side 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 and in accordance with State laws, 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.

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The Town of Brattleboro 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, federal formula funds, and toll credits only for the construction of this project. As such, the BUILD 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 BUILD funding for this project.

Approximately 11% of New Hampshire's state bridge inventory is classified as structurally-deficient. Bypassing of these two bridges with a new, single, low-maintenance structure utilizing BUILD 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 BUILD funding will ensure that the schedule provided in section 6b is met. Without it, other funding such as GARVEE bonds would 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.