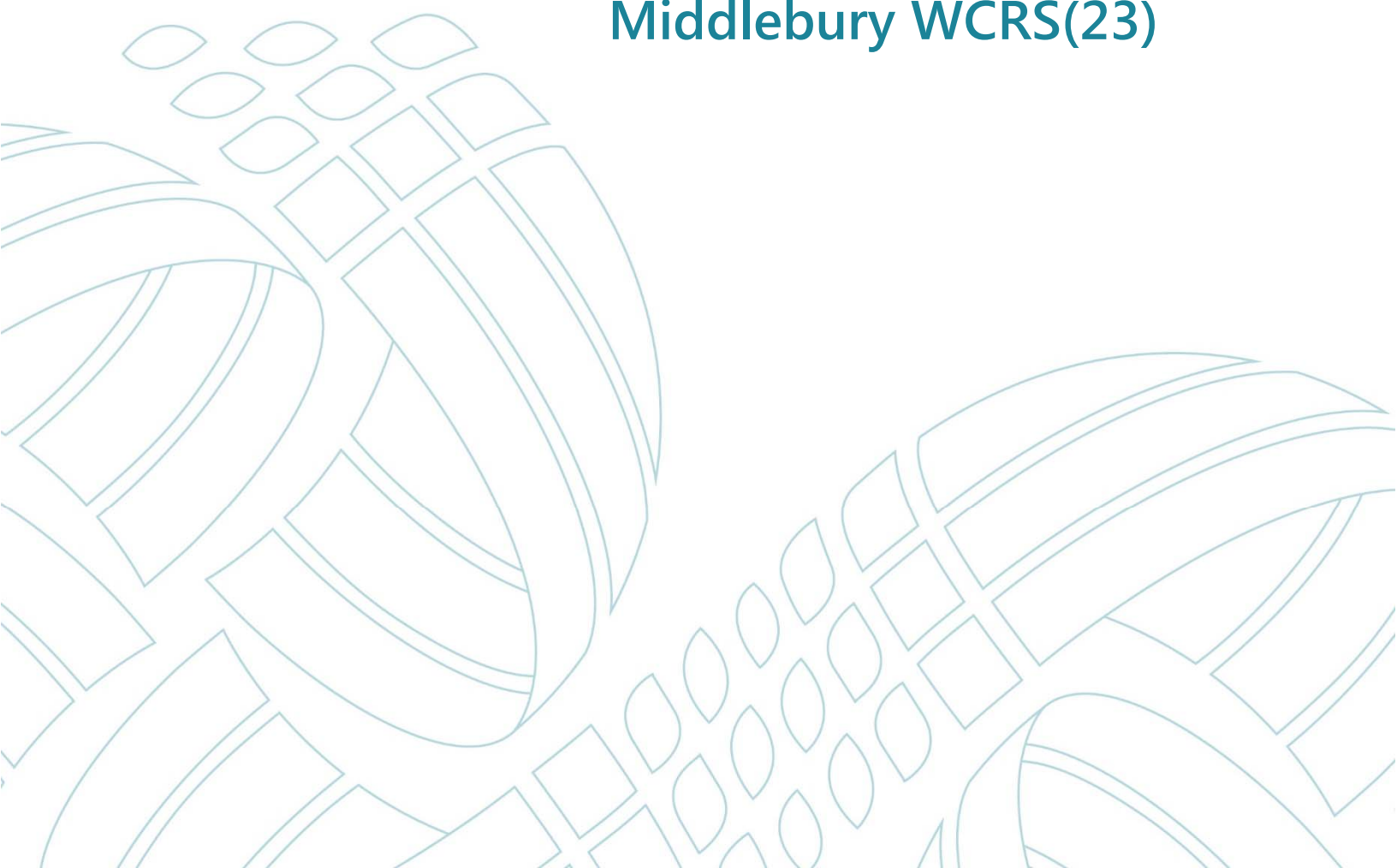


March 14, 2017



Guidelines for Preparing a Historic Structures Management Plan: Middlebury WCRS(23)





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Introduction

Vanasse Hangen Brustlin, Inc. (“VHB”) is working with the Vermont Agency of Transportation (“VTrans”) and the Town of Middlebury on the Middlebury WCRS (23) Bridge Project (“the Project”), which includes the full replacement of two roadway bridges in downtown Middlebury where Main Street and Merchants Row span the Vermont Railway, Inc. (“VTR”) track. The Project limits include the VTR Right-of-Way (“ROW”) from the Otter Creek truss bridge 239 at the south to the Elm Street Bridge at the north, and Town of Middlebury roadway ROW that includes Main Street from the Merchants Row intersection to Seymour Street and Merchants Row from the Main Street intersection to South Pleasant Street. A Project Map is included in Appendix A.

Project construction will consist of bridge replacement, track lowering and re-alignment, installing retaining walls, and improving stormwater infrastructure. The need for this Project originates from structural deficiencies of the existing bridges (concrete cracking, delamination, spalling, and exposed steel reinforcement), considerations of future heavy freight and passenger rail use, rail operations, drainage improvements, and public safety. Deteriorating rubble walls along the rail corridor also represent additional ongoing maintenance issues for VTR and the State of Vermont. The Project construction will be carried out in an accelerated fashion, recognizing the need to minimize the construction duration so that impacts associated with road closures and detours are mitigated to the extent feasible. In addition, the Project corridor must be opened for daily train traffic between Rutland and Burlington.

Project Phasing

The Project will be completed in two contracts and will consist of the following principal components:

Contract 1 consists of drainage improvements to include microtunneling through bedrock from the rail corridor just north of the Main Street Bridge out to the Otter Creek for the primary drainage outfall and constructing a temporary access road from Water Street, west across the VTR track and then north in parallel to the track to a location just south of the Battel Block rear parking lot.

Contract 2 consists of the replacement of both the Main Street and Merchants Row bridges using a tunnel, which requires track lowering to meet state and federal requirements for vertical clearance; the installation of retaining walls in areas where track lowering will result in a vertical cut; installation of stormwater drainage infrastructure, including tying into the existing municipal stormwater network to convey runoff through the Project area; and other incidental items.

Construction Sources of Vibration

The Project will likely require removal of bedrock along the rail corridor to achieve the necessary vertical clearance increases and to install stormwater drainage infrastructure. It is anticipated that bedrock removal will be completed through a combination of mechanical means and controlled blasting and will occur primarily within the vicinity of the existing Main

Street Bridge. The Project also will include the use of heavy construction equipment and the installation of temporary and permanent retaining walls including steel sheeting and pilings.

Recognizing that general transportation construction activities may cause ground vibrations, VTrans has included conditions within the VTrans 2011 Standard Specifications for Construction for the use of explosives, and the protection and restoration of property (General Provisions, Sections 107.11 and 107.12). In the case of the Project, its occurrence within the National Register-listed Middlebury Village Historic District and in proximity to contributing historic structures (some of which are individually eligible for the National Register) requires additional measures be taken to ensure compliance with Section 106 of the National Historic Preservation Act of 1966 ("Section 106").

Purpose of the Document

The purpose of this guidance document is threefold:

1. To recommend components of a Special Provision to guide the Construction Contractor in development of a formal Historic Structures Management Plan ("Plan"). The Special Provision will include requirements for, but not limited to, development of a Historic Structures Management Plan. The Plan will be required to include specifics related to a procedure for pre-construction survey and reporting, construction monitoring and reporting, and for a post-construction survey. These guidelines represent an initial step in what is intended to be a collaborative and iterative process, defining the scope of the Special Provision and ultimately the Plan. The Special Provision is intended to augment the General Provisions in Section 107 of VTrans 2011 Standard Specifications for Construction and will be incorporated into the Contract Documents for the Project.
2. To provide the VTrans Historic Preservation Officer ("HPO") and Project stakeholders with fundamental information regarding the proposed means of protecting historic resources during Project construction. Also, to detail the process by which the HPO, in conjunction with Project stakeholders, will identify and establish specific stipulations and/or mitigation measures that are required to be incorporated into the Project's Special Provisions to protect historic structures during Project construction.
3. To address the questions and concerns of those landowners abutting the Project corridor regarding what measures will be taken to protect their structures during Project construction.

These Guidelines incorporate comments and recommendations from the Project Engineer, VTrans Historic Preservation Officer, the VTrans Archaeology Officer, the VTrans Construction Section, the Middlebury Project Liaison and Local Project Management Team, Town Officials and the historic building property owners. Specifically, these include the document prepared by Jim Gish, Middlebury Project Liaison, entitled "Q&A: Preservation of Downtown Historic Buildings," dated March 14, 2016, as well as the letter from Judith Ehrlich, VTrans Historic Preservation Officer, to the Town of Middlebury, dated October 5, 2015. It is important to note that since these documents were developed, the review process has changed slightly, however the original intent remains the same. For the purposes of this document, when referenced,

“**Project Stakeholders**” include those parties identified above as well as the Construction Contractor and its sub-contractors.

Anticipated Next Steps

The process for approving these Guidelines and moving forward with Section 106 compliance for the Project are as follows. It should be noted that these steps are provided to illustrate the general process of Section 106 compliance and the sequencing of events up to Project construction. Additional steps may be determined to be necessary as the process unfolds and per input from Project Stakeholders.

1. **Guidelines Reviewed:** These Guidelines will be offered for a 14-day review by VTrans, the Project Engineer, the Construction Contractor, and the Middlebury Project Liaison.
2. **Property Owner Review:** These Guidelines will be offered for review by the property owners for a 30-day period. Comments will be reviewed and addressed, which may result in revisions to this document.
3. **MILESTONE A – Amending Section 106 NEPA Documentation:** These Guidelines will be used as the basis to document the Project’s compliance with Section 106 for both Contract 1 and Contract 2. The Project’s existing Section 106 letter (dated September 9, 2013) will be amended to reflect these Guidelines. The amended Section 106 letter will facilitate the completion of the Project’s Categorical Exclusion (“CE”) documentation per the requirements of the National Environmental Policy Act (“NEPA”).
4. **Recommendation of Area of Potential Effect:** Once the Section 106 letter is amended, the Project Engineer and/or its sub-contractors will develop the recommended Area of Potential Effect (“APE”) and provide this recommendation to the VTrans HPO for review. It should be noted that the APE for Contract 1 may be different than that for Contract 2.
5. **MILESTONE B – Approval of APE:** The recommended APE will be presented to the Project Stakeholders for review and comment for a period of 14 days. Upon receipt of comments, VTrans will revise (if necessary) the APE and the HPO will review and approve the revisions.
6. **Initial Building Inventories:** Following the APE approval, the Project Engineer and/or its sub-contractors will conduct an initial building inventory. The results of this inventory will be used in part for developing the specific survey and monitoring requirements of the Special Provision.
7. **Development of Special Provision:** Following the inventory, the Project Engineer and/or its sub-contractors will develop a Special Provision for the Contract. The Special Provision will have specific requirements for the construction phase monitoring. The Special Provision will be subject to review by the VTrans HPO.
8. **MILESTONE C – Approval of Special Provision:** The draft Special Provision will be presented to the Project Stakeholders for review and comment for a period of 21 days. Upon receipt of comments, VTrans will revise (if necessary) the Special Provision and the HPO will review and approve the revisions.

9. **Development of Historic Structures Management Plan:** Following the execution of a construction Contract, the Construction Contractor will be responsible for developing a Historic Structures Management Plan in accordance with the Project Special Provisions. The Historic Structures Management Plan shall be submitted to VTrans for review, comments, and approval. The review of the Plan will be to ensure conformance with the Special Provision.
10. **Pre-Construction Survey:** The Construction Contractor will be responsible for documenting existing conditions for historic buildings within the APE through a pre-construction survey. The property owners may conduct their own independent surveys at their expense.
11. **Deployment of Monitoring Equipment:** Monitoring equipment will be deployed consistent with the approved Historic Structures Management Plan and the Special Provision.
12. **Pre-construction (Baseline) Vibration Monitoring:** Once monitoring equipment is deployed and confirmed to be operational, the pre-construction vibrational/ground movement environment shall be characterized in advance of construction.
13. **MILESTONE D – Commencement of Contract 1 Construction and Vibration Monitoring/Reporting:** Construction-phase vibration monitoring and reporting shall be carried out in conformance with the approved Plan.
14. **Post-Construction Survey and Stakeholder Input on Process:** The Construction Contractor will conduct a post-construction historic building survey. Property owners may conduct their own inventory at their expense.

Steps 9 through 14 shall be repeated for Contract 2.

Historic Resources and Compliance with Federal Regulations

Under Section 106 of the National Historic Preservation Act of 1966 ("Section 106"), any project receiving federal funding or permits must be reviewed for its potential effects to historic and archaeological resources. The Middlebury Downtown Bridge Replacement Project is funded in part by the Federal Highway Administration ("FHWA"). By agreement with the FHWA, the Advisory Council on Historic Preservation ("ACHP"), and the Vermont State Historic Preservation Officer ("VT SHPO"), the Vermont Agency of Transportation ("VTrans") is responsible for conducting the Section 106 review for the Project.

Section 106 review includes evaluating a project's potential impacts to historic buildings and structures, historic districts, historic landscapes and settings, and known or potential archeological resources. Historic and archaeological resources include those listed in or eligible for listing in the National Register of Historic Places.

The Middlebury Village Historic District (“MVHD”) includes over 300 properties spread over approximately 2,000 downtown acres and includes such well-known Middlebury landmarks as the Battell Block, St. Stephen’s Episcopal Church, the National Bank of Middlebury, the United States Post Office, and Town Hall Theater. The MVHD is listed in the National Register of Historic Places (“NR”).¹

The guidelines in this document have been developed for recommending measures to be included in the Project Special Provisions. The measures to be included in the Special Provision, which is to be developed by the Project Engineer and/or its sub-contractors and reviewed by the VTrans HPO as well as abutting landowners or their designees, seeks to avoid, minimize, and, if necessary, mitigate adverse effects to the historic structures.

Elements of the following guidelines are based on the National Cooperative Highway Research Program’s 25-25/Task 72 report (“NCHRP 25-25”), “Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects” (September 2012) prepared by Wilson, Ihrig & Associates, Inc., ICF International, and Simpson, Gumpertz & Heger, Inc.² The Project Engineer and/or its sub-contractors shall consult this and other resources in the development of the Special Provisions.

Project Overview

The Project’s Purpose and Need is to address the structural deficiencies of two roadway bridges in downtown Middlebury where Main Street (VT 30/TH 2 Bridge 102) and Merchants Row (TH 8 Bridge 2) span the Vermont Railways, Inc. (“VTR”) track. The Alternatives Analysis Report³ compared the No Build, Rehabilitation, Build on New Alignment, and Replacement options, and determined that the most prudent and feasible alternative is to Replace on Alignment. The full length of the Project, including rail work, is approximately 3,350 ft. As described in the Alternatives Analysis Report, the Preferred Alternative for the replacement of the Main Street Bridge (Bridge 102) and the Merchants Row Bridge (Bridge 2) involves construction of a precast concrete box shaped tunnel. The base of the precast box structure will be installed at an elevation allowing for 21’0” of vertical clearance for trains. Drainage and utilities will be constructed and/or rerouted to allow for this track lowering. The tunnel will be approximately 340 ft. in total length.

Once the tunnel is installed, the section above the tunnel (existing open trench between the former bridges) will be covered with fill and topsoil to establish a grassy park that links Triangle Park with the remainder of the Village Green. While the tunnel construction is a small segment of the Project length, it is the most complex part of the Project and necessitates a calculated, thoughtful approach to historic resource protection.

¹ Middlebury Village Historic District nominations and amendments (1976, 1980, 2001) are available here: http://orc.vermont.gov/Documents/Middlebury_NationalRegister_NominationForm_00000131.pdf (1976) http://orc.vermont.gov/Documents/Middlebury_NationalRegister_NominationForm_00000132.pdf (1980) http://orc.vermont.gov/Documents/Middlebury_NationalRegister_NominationForm_00000133.pdf (2001)

² http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25%2872%29_FR.pdf

³ Alternatives Analysis Report: Middlebury WCRS(23) Bridge Project, prepared by VHB for Town of Middlebury, July 23, 2013.

Construction Activities and Timeline

Blasting and excavation of rock and other heavy construction activities will take place near the location of the Main Street Bridge as part of Contract 1. Activities include the construction of launch pits required to construct a drainage outfall to the Otter Creek using a micro-tunneling approach. There will not be any removal of rock under the railroad tracks during Contract 1.

During Contract 2, the vertical clearance increase required for the Project will be obtained by lowering the elevation of the railroad tracks under the bridges. To achieve the appropriate vertical clearance, blasting or other methods of removal of bedrock ledge will be required in a localized area under a section of the existing railroad tracks in the vicinity of the Main Street Bridge. Construction activities may also require the use of heavy equipment and the installation of steel sheeting and piling for retaining walls over the entire distance of the proposed tunnel, which would also generate vibrations in close proximity to historic structures. Contract 2 activities are anticipated to take place over the course of 18-24 months.

During both Contract 1 and Contract 2, there is potential for vibration to occur throughout and adjacent to the Project area. There are three aspects of construction to note:

- As part of the drainage outfall construction for Contract 1, blasting, drilling, rock removal, and micro-tunneling will take approximately 6 months to complete.
- As part of the track lowering and tunnel installation for Contract 2, the greatest potential for vibration will occur during the controlled blasting and mechanical removal of rock under the tracks in the Main Street area. It is estimated that the rock removal will take approximately 6-8 months to complete.
- Areas of temporary and permanent sheeting and piling will need to be installed under both Contract 1 and Contract 2 for various walls and excavation support.

Vibration Monitoring Criteria

While the specifics of the Construction Contractor's vibration monitoring criteria will be detailed during the collaborative development of the Special Provisions, the following section provides general information and an overview of how this process will likely work.

Vibration Monitoring - Area of Potential Effect

To comply with Section 106 requirements, the Area of Potential Effect ("APE") for Project-related vibration will be based on established guidelines, precedent, and a technical analysis of construction-related vibration based upon the specifics of the blasting, geotechnical information, and building conditions. The APE for all construction activities will be proposed by the Project Engineer and/or its sub-contractors, reviewed by Project Stakeholders, and approved by the VTrans Historic Preservation Officer.

Recommendations for and examples of APE determinations found in NCHRP 25-25 state that Departments of Transportation across the country select a range of 200 – 1000 feet, depending on project activities and conditions. The specific limits of the APE for this project will be determined based on structure type and condition, soil conditions, and construction activities.

Vibration Monitoring Criteria

Certain heavy construction activities have the potential to generate ground-borne vibration and cause structural damage. There are various levels of structural damage as follows:

- Cosmetic: The formation of hairline cracks on drywall surfaces or the growth of existing cracks in plaster or drywall surfaces; formation of hairline cracks in mortar joints of brick/concrete blocks.
- Minor: The formation of large cracks or loosening and falling of plaster or drywall surfaces, or cracks through bricks/concrete blocks.
- Major: Damage to structural elements of the building, cracks in support columns, loosening of joints, splaying of masonry cracks, etc.

VTrans Standard Specifications for Construction includes subsection 107.12 (f) on Ground Vibration Limits. The maximum Peak Particle Velocity (PPV) of ground vibration in any of the three mutually perpendicular components of particle velocity for the following structure types shall be limited as follows:

<u>Type of Structure</u>	<u>PPV in mm/s (in/sec)</u>	
	<u>Frequencies < 40 Hertz</u>	<u>Frequencies > or = 40 Hertz</u>
<i>Modern Homes (Drywall interior)</i>	19 (0.75)	50 (2.0)
<i>Older Homes (plaster on wood or lath)</i>	13 (0.50)	50 (2.0)
<i>Non-Residential Structures Underground Utilities</i>		

The ground vibration monitoring criteria will be developed and refined as part of the Special Provision. The Agency reserves the right to lower the PPV limit in areas where there may be structures or elements with a higher sensitivity to ground vibration. VTrans and the HPO will review all vibration monitoring criteria as part of the Special Provision development. Adherence to this specification does not waive the Contractor's responsibility for damage as specified in this Subsection of the VTrans Standard Specifications for Construction and in Subsection 107.16.

For various reasons, including but not limited to structure materials, structure condition, founding soil condition, the potential to repair if damaged, the importance of buildings such as historic properties, and the type of construction equipment anticipated, lower ground-borne vibration PPV monitoring limits may be determined by the Project Engineer for each structure identified in the Area of Potential Effect. Key goals for establishing construction vibration monitoring limits are to minimize the risk of damage and to be able to react to construction vibration events in a reasonable manner while also minimizing unnecessary limitations to construction activities due to concerns of vibration.

The NCHRP 25-25/Task 72 report “Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects” is a valuable resource that can provide insight into different studies, government regulations, guidelines, standards and project reports which establish ground-borne vibration limits for minimizing risk of structural damage.

The following background information on vibration is from the Association for Preservation Technology (APT) Journal:

In simplified terms, vibrations originate at a source, transmit through a media, normally soil, and then reach a receiver, such as a building or other structure. Different buildings will respond quite differently to vibration due to their variations in mass, stiffness, and materials. Moreover, different sources generate ground-borne vibrations that transmit through the soil in different ways. Transient vibrations result from ground impacts, such as from dropping heavy debris, which generate a large initial response that quickly attenuates with distance from the vibration source. Steady-state vibrations result from continuous, high-energy activities, such as vibratory pile driving or vibratory roller compaction of soil. Pseudo-steady-state vibrations are a mixture of transient and steady-state responses.

For buildings, the magnitude of vibrations is typically measured in terms of peak particle velocity (PPV) using units of inches per second (in/sec). The number of vibration cycles in a specified period of time is called the vibration frequency, typically measured in Hertz (Hz) or cycles per second.⁴

As one can infer from the above, there is a wide range of opinion on appropriate vibration limits for historic buildings and structures. There is not one set of guidelines, only recommendations from various agencies and sources. However, determining factors for susceptibility to vibration are construction type and condition, not necessarily that the building is historic.

In addition to concerns of ground-borne vibration, soil settlement caused by nearby excavation is a similar phenomenon and equally as important.⁵ Activities which cause settlement should try to be avoided near all existing structures and special consideration should be made to address potential soil settlement.

The type of construction activities and whether vibrations are continuous or transient are important factors in establishing monitoring limits. Pile driving as well as dynamic compaction are activities that would typically generate the highest vibration level.⁶ Blasting is at the high end of the spectrum for potential vibration and traffic is at the low end.

⁴ Johnson, Arne P. and W. Robert Hannen. “Vibration Limits for Historic Buildings and Art Collections.” APT Bulletin: Journal of Preservation Technology, no. 46 (2015): 2-3.

⁵ Ibid, page 26.

⁶ Ibid, page 28.

Pre-Construction Building Survey and Construction Monitoring

Management of structures will be initiated through pre-construction monitoring surveys performed by the Construction Contractor. The purpose of this survey is to provide the Contractor with baseline records prior to construction monitoring, as the Contractor is liable for monitoring and damages. Property owners will have the option of hiring a third party to conduct a survey if they would like independent verification of pre-construction building conditions. In the event of a claim, the property owner's survey can be reviewed against that of the Construction Contractor. While the specifics of the Construction Contractor's pre-construction building survey will be detailed during the collaborative development of the Special Provisions, the following section provides general information and an overview of how this process will likely work.

Historic Structures Monitoring Plan

As noted previously, as part of the requirements of the Construction Contract, the Construction Contractor will prepare a Historic Structures Monitoring Plan ("Plan"). The Plan will meet the minimum requirements defined by the Special Provisions of the Contract and will define the actions that the Contractor will take to inventory, monitor, and protect buildings within the defined APE.

Timing / Implementation

In order to facilitate the development of the technical specifications regarding the number and positioning of vibration monitoring equipment, the Initial Building Inventories should be executed as soon as possible.

Pre-Construction Survey

Pre-construction documentation provides a baseline from which construction-related changes to the structures within the APE can be identified, monitored and assessed. Structures in the pre-construction survey may include, but are not limited to:

- Buildings
- Monuments, fountains and statues
- Bridges, dams and retaining walls
- Any other structures or features determined by the Project team and/or VTrans HPO to be particularly susceptible to distress

Documentation should include, but is not limited to:

- Address of structure
- Architectural Description
 - Foundation Materials
 - Wall Structure & Cladding (interior and exterior)
 - Windows

- Roof Type & Covering
- Number of Stories
- Entrance Location
- Approximate Dimensions
- Noted architectural features, particularly those susceptible to damage
- Condition of Building
 - Location/Width/Inventory of visible defects/cracks/loose materials/previous repairs
 - Drainage features
 - Indications of settlement

Vibration Monitoring

Based on these guidelines and the 2011 VTrans Standard Specifications for Construction, at minimum, the development of a formal Plan – including specific technical details and procedures for vibration monitoring – will be required to be prepared, stamped, and administered by a qualified engineer through the Construction Contractor’s construction contract.

Structures determined to be susceptible to construction vibrations as defined by the Special Provision, will be subjected to both a pre-construction (baseline) vibration monitoring survey and construction-phase vibration monitoring. Vibration monitoring will include but is not limited to the following:

- Vibration Instrumentation
 - Suitable vibration monitors shall be deployed capable of measuring vibration (peak particle vibration velocity or “PPV”) in each of three mutually perpendicular orientations.
 - Equipment shall be maintained as per manufacturer’s recommendations.
 - All vibration instruments shall be able to withstand Vermont’s varying climatic conditions and have redundant sources of power in order to ensure continuous data collection. The Construction Contractor is responsible for ensuring the monitoring equipment is working on a daily basis. No work with the potential to cause vibrations will occur if the monitoring and reporting equipment is not working properly.
- Crack Displacement Monitoring
 - Crack displacement monitoring gauges shall be installed as appropriate across existing structural cracks identified in buildings or structures and deemed necessary during the pre-construction building inspections and agreed to by the property owner. Readings shall be taken from the crack monitoring device at the time of installation and again just prior to construction start-up and at intervals during construction.
 - Additional crack monitoring devices will be installed as deemed necessary during construction to monitor new cracks that are identified as having developed during construction.

- Location of Vibration Monitors and Pre-Construction Baseline Surveying
 - A scaled plan will be prepared indicating monitoring locations, including measurements to be taken at construction site boundaries and at historic structures within the established APE.
 - Each structure will have an individual site plan as needed showing location and type of sensor to be installed.
 - Pre-construction, baseline vibration monitoring should be carried out for a period of time sufficient to adequately characterize the existing vibrational environment associated with typical activities in downtown Middlebury (e.g., train passage, roadway traffic, etc.). The date and time of train trips through the corridor for the full duration of the baseline monitoring should be obtained from Vermont Rail System in order to cross-reference vibrational data with instances of train passage. Any construction or other atypical source of vibration unrelated to the Project but occurring within the APE at the time of the baseline survey should be noted similarly. To the extent feasible, baseline monitoring should be scheduled to avoid such atypical sources of vibration.

- Data Acquisition
 - The information to be provided in the data reports should include, at a minimum, daily histogram plots and the maximum peak vector sum PPV vs. frequency. The reports should also identify construction equipment operating during the monitoring period and their locations and distances to all vibration-sensitive locations.
 - Monitoring reports will be made available to property owners.

- Exceedance Notification and Reporting Procedures
 - Notification of exceedance events [i.e., measurements that are recorded that exceed the established vibration threshold(s)] will be transmitted to the Resident Engineer (RE) in real-time during construction. This will allow the RE, or designee, to react during construction activities.
 - Follow-up procedures to reduce construction vibration levels to below the recommended threshold shall be evaluated by the Construction Contractor and submitted promptly to the RE. Vibration thresholds will be adjusted and/or structure inspections increased.
 - If threshold limits are exceeded and/or impacts to buildings are identified, construction activities causing the vibration will be stopped until alternative equipment or construction procedures can be implemented to generate vibration levels that do not exceed allowable limits.

Post Construction Survey and Report

Upon completion of blasting and/or all vibration-producing construction activities, the Construction Contractor shall again inspect the interior and exterior of all structures and buildings included in the Pre-Construction Survey.

The Construction Contractor shall provide a copy of the complete Post-Construction Survey Report to the RE. The RE will forward the Post-Construction Survey Report, including photo and video documentation, to VTrans for safe-keeping. Each property owner shall have access to the survey for his/her property. Due to the personal nature of information, surveys shall not be available to the public.

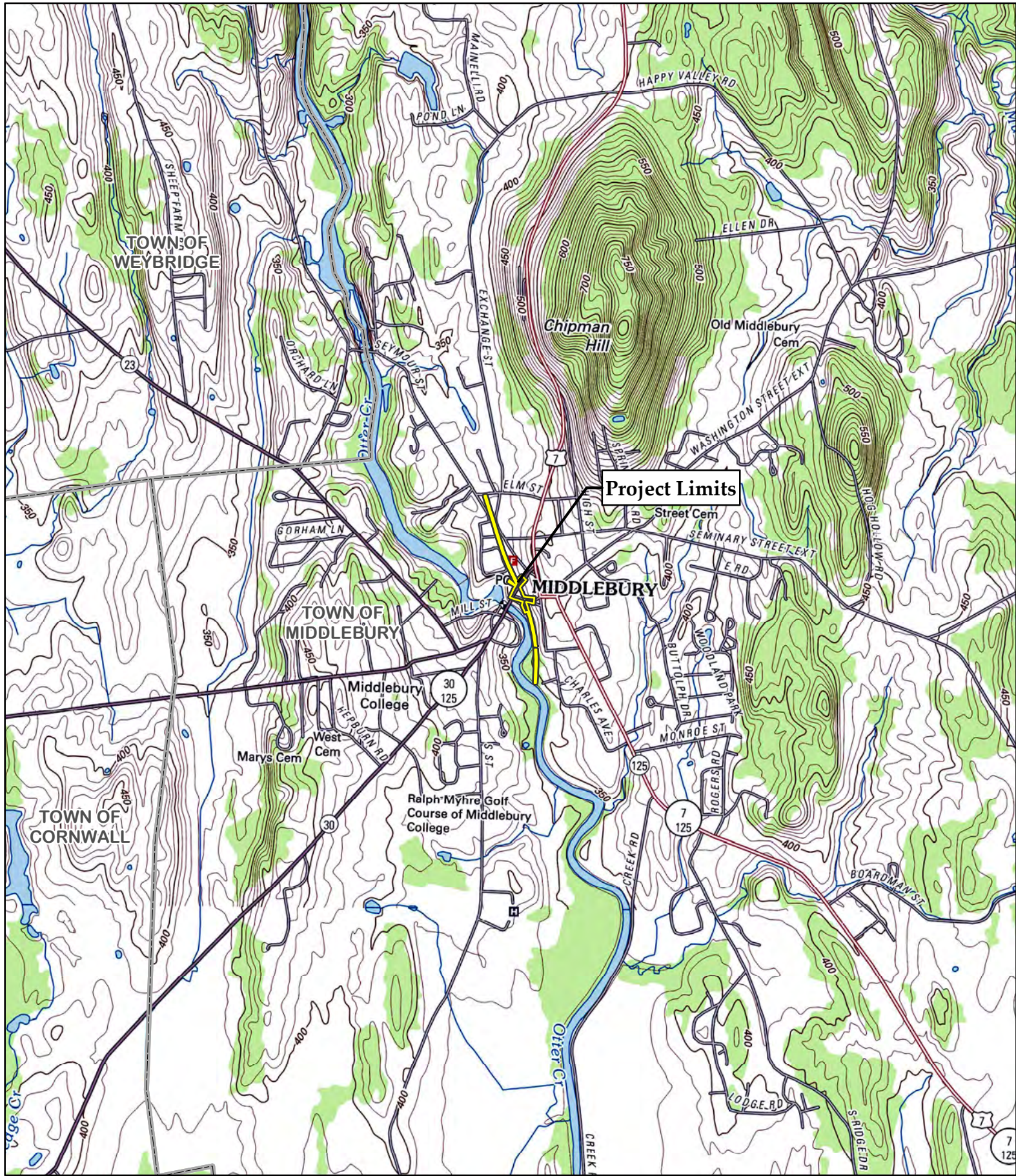
If damages are identified, an engineering damage assessment shall be conducted by a professional structural engineer at the contractor's expense in conjunction with the VTrans HPO to assess impacts to historic structures and identify appropriate repair remedies.

Damages



Damage to historic structures within the APE caused by Project construction shall be repaired to pre-construction condition at the Construction Contractor's expense in a timely manner, appropriate to structural needs and life safety issues. The VTrans HPO shall review and approve proposed repairs before they are carried out, in order to ensure compliance with the Secretary of Interior's Standards for Rehabilitation. Damage remediation shall be detailed in the Special Provisions of the contract documents. Independent pre-construction surveys performed at the request of or on behalf of the property owners can be reviewed at such time a claim of damages is made.

Conclusion

Incorporation of these monitoring guidelines, at minimum, into the Special Provisions of the contract documents and the cooperation of all parties will ensure the protection of historic buildings in compliance with Section 106 of the National Historic Preservation Act. It is the goal of all parties involved to ensure the safety of all involved, to protect historic structures, to comply with all federal regulations.



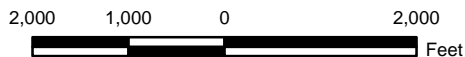
Legend

-  Project Limits = 3.38 Acres
-  Town Boundary



**Town of Middlebury
Middlebury WCRS (23) - Bridge Project
Middlebury, Vermont
Site Location Map**

July 25, 2016



Sources: Background - USGS Topographic Quads (Cornwall and Middlebury, 2012); Town Boundaries from VCGI (2009).



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