

MECHANIC STREET PEDESTRIAN SIDEWALK SCOPING STUDY NORTH BENNINGTON STP BP13(22) VILLAGE OF NORTH BENNINGTON, VT

May 29, 2015



Submitted to:
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SECTION 1: SUMMARY

The objective of this project is to create a safe and accessible route for pedestrians to travel along Mechanic Street to the Village Center and the Village School. The study area extends from Prospect Street east to the North Bennington Cemetery. The study includes an evaluation of the north and south sides of Mechanic Street. The study area was broken into three segments for evaluation, as follows:

- Segment 1: Prospect Street to North Street
- Segment 2: North Street to Frederick Street
- Segment 3: Frederick Street to the North Bennington Cemetery

Characteristics of each segment and alternative were reviewed including right-of-way widths, roadway features, traffic data, historic/archeological features, natural resources and other environmental impacts. There were no environmental impacts identified for any of the alternatives.

An Archeological Resource and Historic Preservation Assessment was completed, which indicated that the project area is archeologically sensitive due to a high potential for precontact and historic deposits and features. When the proposed route is further defined during final design, the potential for archaeological impacts should be reviewed again. This review would consist of conducting a Phase 1B archeological investigation.

The project was discussed at a Local Concerns meeting. As a result of this meeting, the following Purpose and Need Statement was developed:

Purpose: Increase pedestrian safety and accessibility for residents of the Village seeking to walk to the Village Center and for school children who walk from residential neighborhoods to the Village School.

Need: The lack of safe and accessible pedestrian facilities in this area causes pedestrians to walk within the road's traveled way at times, which is dangerous. Due to the significant public use of this area, safe and accessible pedestrian facilities are a necessity.

After the Local Concerns meeting, alternatives were developed based on design criteria and local input. This development included identification of potential grass strip and curbing locations, drainage improvements and crosswalk locations. The alternatives were compared on the basis of cost, impacts to historic and archeological features, permitting requirements and locally identified critical elements.

The alternatives were discussed at an Alternatives Presentation. The discussions focused on the specifics of each alternative, including traffic calming, curbing and on-street parking. The participants showed support for a continuous sidewalk along the south side of Mechanic Street. There was also interest in a sidewalk on the north side of Mechanic Street from Prospect Street to North Street, with a crosswalk, and possibly a three-way stop, at the

intersection with North Street. Upon completion of the presentation, the preferred alternative was identified as a continuous sidewalk along the south side of Mechanic Street and a sidewalk on the north side of Mechanic Street from Prospect Street to North Street.

The preferred alternative was further developed to include recommendations for crosswalk locations, traffic calming, access management and drainage improvements. Approximately 1,930 linear feet of 5-foot wide sidewalk is proposed on the south side of Mechanic Street, with an additional 440 linear feet of 5-foot wide sidewalk proposed on the north side of Mechanic Street. The estimated total project cost for these improvements with concrete sidewalk is \$560,000 based on a 2015 construction cost estimate of \$395,000. The estimated total project cost for the Mechanic Street sidewalk with asphalt sidewalk is \$440,000 based on a 2015 construction cost estimate of \$275,000. Based on funding under the Bicycle and Pedestrian Program, the local share of the total project cost is \$56,000 for concrete sidewalk or \$44,000 for asphalt sidewalk. However, other funding programs have different local match requirements.

Additionally, the construction and total project cost estimates were separated by segment. This information will assist the Village if they choose to construct the project in phases. The costs by segment can be found in Section 4 of this report. If the project is anticipated to be phased, it may be beneficial to consider locally funding the design and construction of Segment 3 as this would significantly reduce the total project cost by eliminating the federal funding requirements and eliminating the local project management costs. When VTrans funding is used there are several federal funding requirements that can increase the total project cost. When local funding is used, these federal funding requirements are not necessary. Additionally, the schedule is significantly shorter when local funding is used.

Upon local endorsement of this study, it is recommended that the Village apply to the VTrans Bicycle and Pedestrian Program for design and construction funds to implement the sidewalk project. It is recommended that at least Segments 1 and 2 be designed and constructed as a single project in order to reduce the total project costs.

SECTION 2: EXISTING CONDITIONS

Project Study Area

The study area for the project was defined by the Project Steering Committee, which includes representatives from the Village of North Bennington and the Bennington County Regional Commission. As shown in Figure 2-1, the study area extends along Mechanic Street from the intersection with Prospect Street to the North Bennington Cemetery.

Land Uses

As shown in Figure 2-2, the study area is classified as Village Residential, including both VR-20 and VR-40 districts. The VR-20 district is a moderate density district characterized by increased open space. The VR-40 district is a lower density district characterized by larger lot sizes. The VR-20 district includes both sides of Mechanic Street from Prospect Street to Frederick Street and the north side of Mechanic Street from Frederick Street to the North Bennington Cemetery. The VR-40 district includes the south side of Mechanic Street from Frederick Street to the North Bennington Cemetery.

Existing Transportation Facilities

The study area is centered on Mechanic Street, which is a local road with a speed limit of 30 mph. There are three additional local roads that intersect the study area: Prospect Street, North Street and Frederick Street. Mechanic Street is approximately 18 feet wide from the intersection with Prospect Street to approximately 100 feet east of the intersection. At that point, the road widens to approximately 20 feet wide for the remainder of the project area.

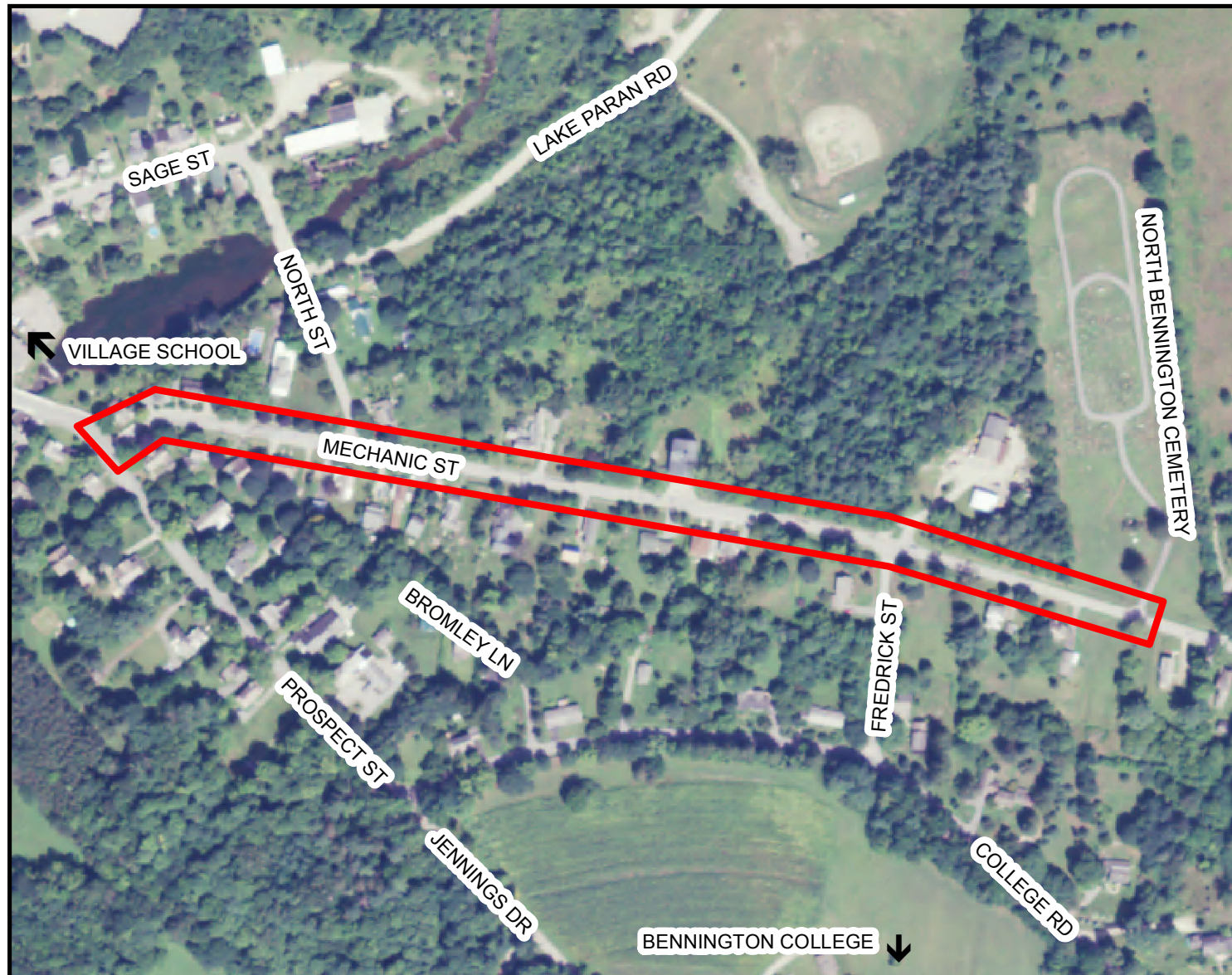
According to Vermont Agency of Transportation (VTrans) data, the 2013 Annual Average Daily Traffic was 1,200 for Mechanic Street between Prospect Street and Overlea Road. Data was obtained from VTrans for high crash locations compiled for the 2008-2012 period. There are no high crash locations within the project area.



*Photo 2-1: Existing sidewalk
on Mechanic Street*

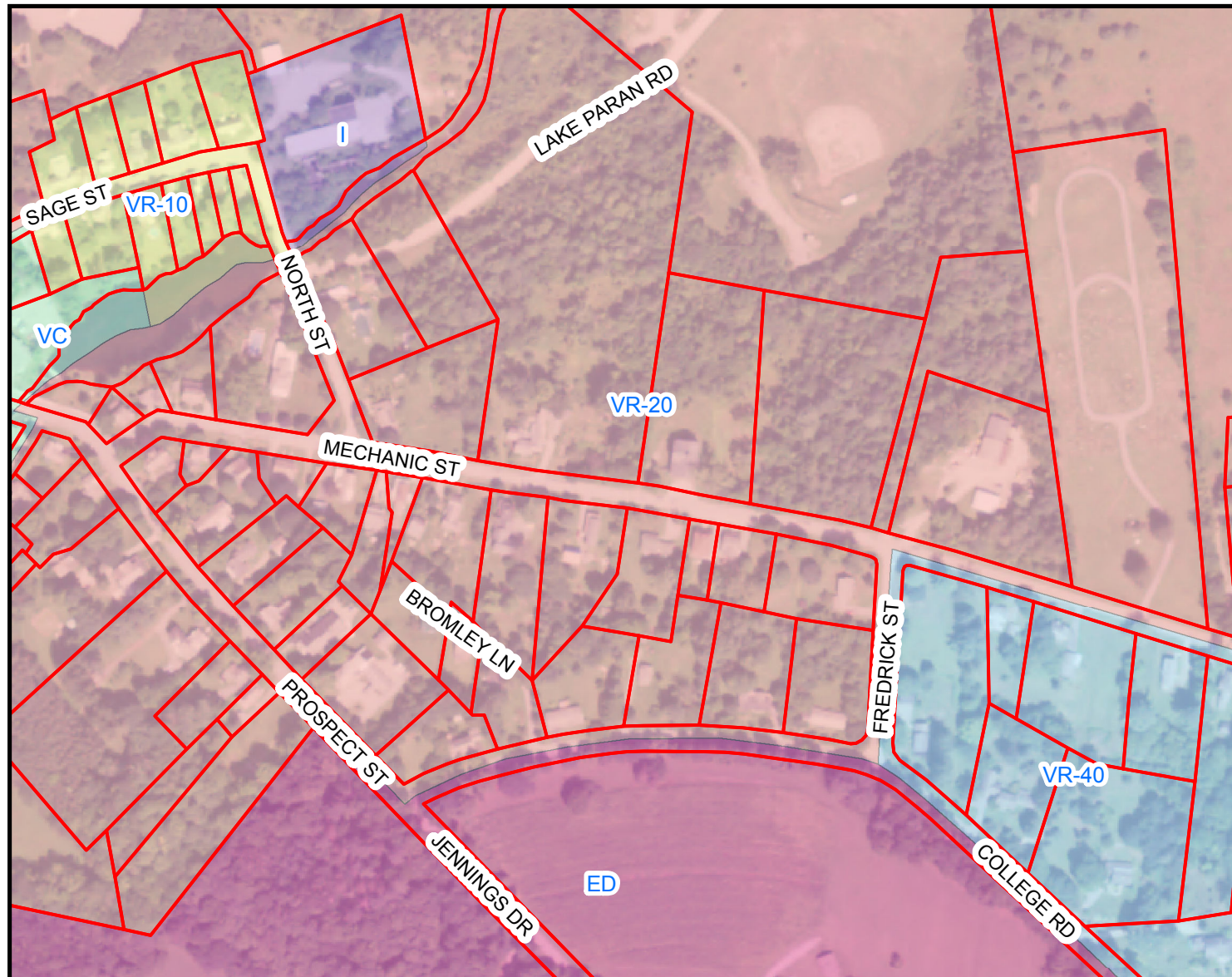
There is an existing pedestrian sidewalk that begins at Prospect Street and extends approximately 100 feet east on Mechanic Street. The existing five foot wide sidewalk is concrete with granite curb. The Mechanic Street sidewalk connects to a new concrete sidewalk on Prospect Street, which extends into the center of the Village. The existing sidewalk ramps down at the first driveway and appears to continue as a paved sidewalk level with the road. This paved sidewalk tapers to a narrow, deteriorated paved sidewalk and disappears before the intersection with North Street.

**FIGURE 2-1
PROJECT STUDY AREA**










0 150 300 600
Feet

**FIGURE 2-2
VILLAGE ZONING MAP (2012)**



Legend

-  Parcels (Tax Map)
-  ED
-  I
-  VC
-  VR-10
-  VR-20
-  VR-40

0 150 300 600
Feet

According to local knowledge, there was a pedestrian sidewalk along the south side of Mechanic Street between Prospect Street and Frederick Street many years ago; however, there is no visible evidence of marble slabs, concrete or pavement. The Village of North Bennington has maintained a plowed path in this location in the winter for several years. In the summer, the worn grass and exposed dirt path is evidence of heavy foot traffic.



*Photo 2-2: Existing foot path
on Mechanic Street*

Natural and Cultural Resources

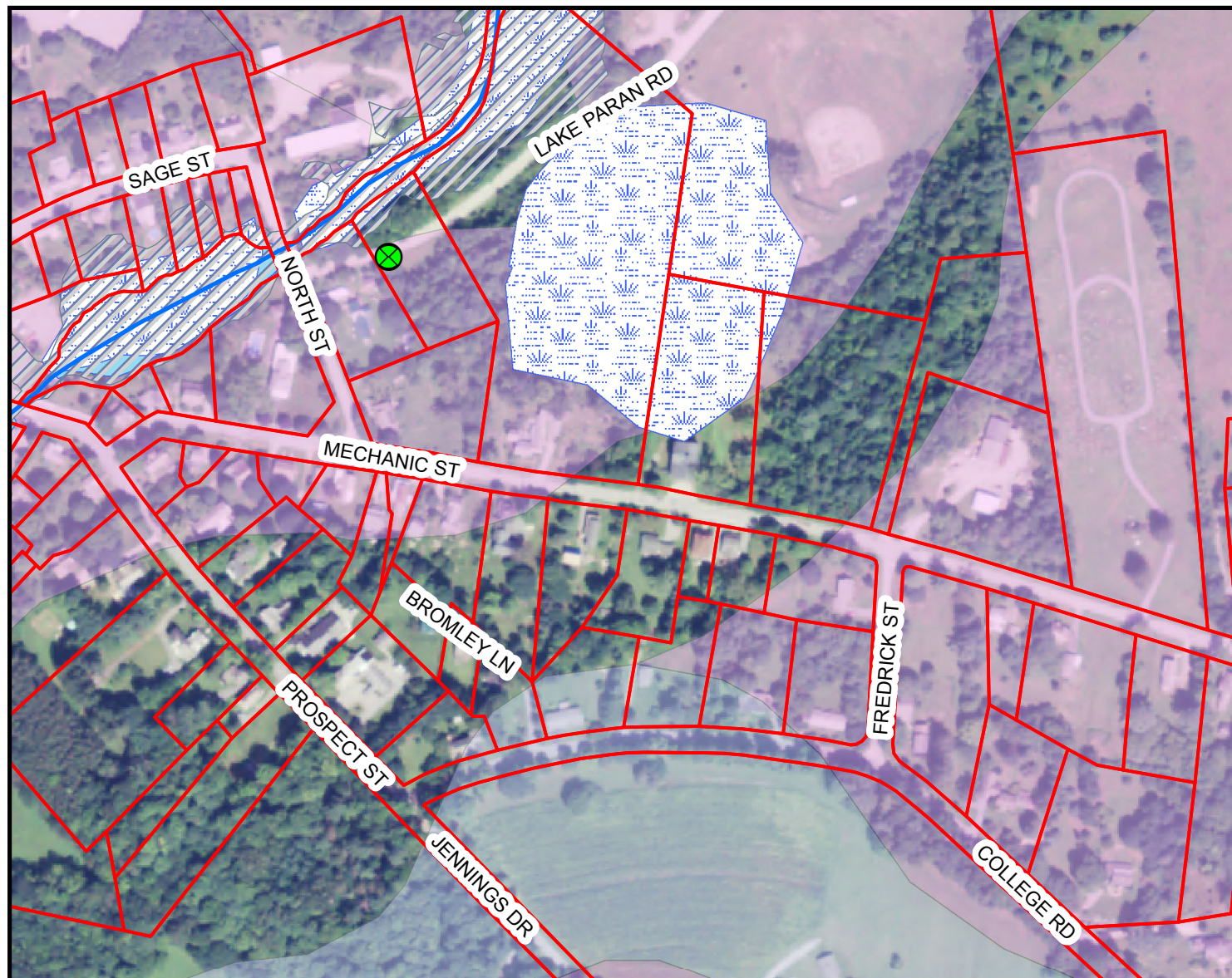
The following Geographical Information System (GIS) data was compiled from the Agency of Natural Resources and the Vermont Center for Geographic Information:

- Wetlands
- Surface Water
- Floodplains
- Endangered Species
- Flora/Fauna
- Stormwater
- Hazardous Wastes
- Forest Land
- Agricultural Land
- Public Land

The GIS mapping is shown in Figure 2-3. There are several resources near the project area; however, the only mapped resource within the study area is Statewide agricultural soil. However, as sidewalk improvements would be located within close proximity to the edge of the road and within the Village right-of-way, the soils impacted would likely be previously disturbed soils. Based on discussions with the Vermont Agency of Agriculture, the sidewalk project would have no impact to the agricultural soils. The correspondence with the Agency of Agriculture is included in Appendix A for reference.

An Archeological Resource and Historic Preservation Assessment was completed in January 2015 by Hartgen Archeological Associates, Inc. The report indicates the project area is in an archeologically sensitive location due to the potential for precontact and historic deposits and features in undisturbed areas. The project area is partially located within the historic district of North Bennington. The report describes that there are eighteen structures that are included in the National Register and an additional six structures that have previously been surveyed by the Vermont Historic Sites and Structures Survey. Additionally, there are historic features, such as a gravel path, possible carriage blocks, walkways and walls associated with these

FIGURE 2-3 NATURAL RESOURCES AND ENVIRONMENTAL FEATURES



Legend

- Parcels (Tax Map)
- Stream
- Surface Water
- ⊗ Hazardous Waste Site
- Wetland
- FEMA Flood Zone
- Prime Ag Soil
- Statewide Soil

0 150 300 600
Feet

structures that are located in or directly adjacent to the project area. The report notes that these features are part of the historic landscape and may be associated with subsurface features or deposits.

As the proposed alignment is further defined during final design, the potential archeological impacts should be reviewed again, which may include documenting existing historic features and performing a Phase 1B archeological investigation for any historic features to be disturbed. The complete report is included as Appendix B.

Right-of-Way

The public road right-of-way (ROW) is not documented in the land records. As such, the land surveyor reviewing this project recommended using a ROW width of 49.5 feet, or 3 rods, for the purpose of this study and verifying the ROW width during the final design phase by attempting to locate field monuments. The property boundaries for the parcels adjacent to the study area are shown in Figure 2-4.

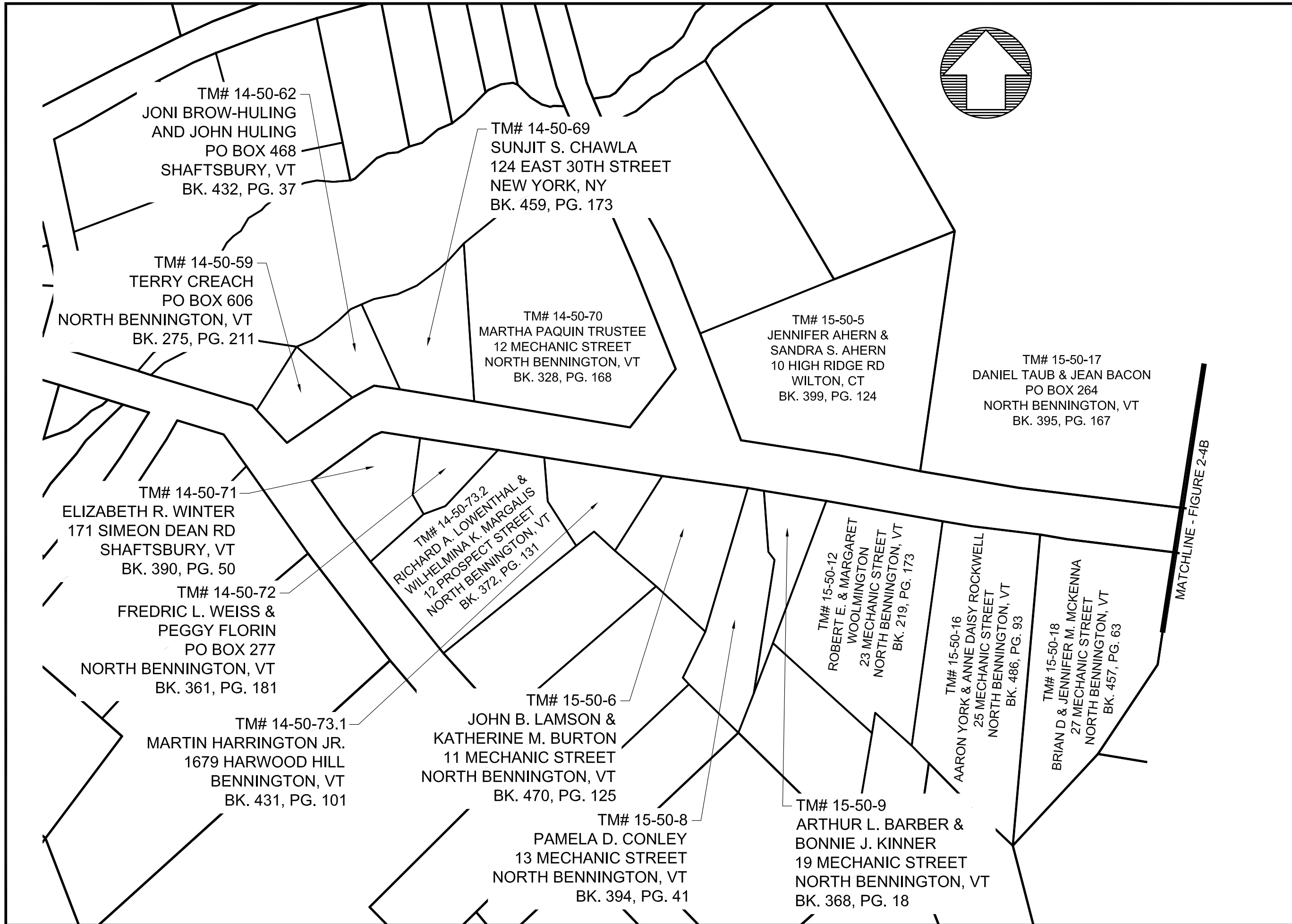
Utilities

There are multiple utilities within the study area including the following:

- Municipal water system along the north side of Mechanic Street.
- Municipal sewer system along the center of Mechanic Street.
- Municipal storm drain system along the south side of Mechanic Street as shown in Figure 2-5.
- Utility poles with electric, telephone and cable wires (owned by Fairpoint) throughout the project area as shown in Figure 2-5.

The municipal water and sewer systems and the utility poles should not be impacted by the proposed sidewalk alignments. There will likely be minor impacts to the municipal storm drain system due to curb installation. These impacts would improve stormwater runoff collection.

FILE: M:\CADD Files\North Bennington VT\Mechanic Street\Basemap.dwg Mar 18, 2015 - 6:03pm



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Date	MARCH 2015
Scale	1"=200'
Approved by	C.M.HASKINS

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MECHANIC STREET SCOPING STUDY
NORTH BENNINGTON STP BPT3(22)

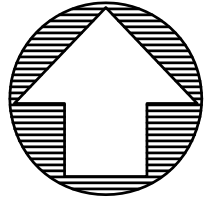
RIGHT-OF-WAY
AND PARCEL MAPPING

NORTH BENNINGTON, VERMONT

2-4A

DWG. NO. Basemap.dwg

SHEET 1 OF 2



MATCHLINE - FIGURE 2-4A

TM# 15-50-23
CHRISTOPHER C. &
JENNIFER L. WREN
204 PROSPECT STREET
NORTH BENNINGTON, VT
BK. 497, PG. 39

TM# 15-50-23
CHRISTOPHER C. &
JENNIFER L. WREN
204 PROSPECT STREET
NORTH BENNINGTON, VT
BK. 497, PG. 39

TM# 15-50-23
CHRISTOPHER C. &
JENNIFER L. WREN
204 PROSPECT STREET
NORTH BENNINGTON, VT
BK. 497, PG. 39

TM# 15-50-31
VILLAGE OF NORTH BENNINGTON
PO BOX 427
NORTH BENNINGTON, VT
BK. 200, PG. 136 & BK. 174, PG. 99

TM# 15-50-40
SALVATORE R. MATANO
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THE BAPTIST PARISH
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PO BOX 219
NORTH BENNINGTON, VT
BK. 432, PG. 18

TM# 15-50-20
JOYCE HALL
31 MECHANIC STREET
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BK. 405, PG. 151

TM# 15-50-27
JULIET JAMIE GREGORIO
166-25 POWELLS COVE BLVD
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TM# 15-50-22
LELAND H. RUSSELL JR.
& BERTHA M. RUSSELL
33 MECHANIC STREET
NORTH BENNINGTON, VT
BK. 228, PG. 231

TM# 15-50-33
JOHN F. & LORRAINE F. BREEN
63 MECHANIC STREET
NORTH BENNINGTON, VT
BK. 220, PG. 234

TM# 15-50-32
PRISCILLA N. KENNEDY
LIVING TRUST
PO BOX 216
NORTH BENNINGTON, VT
BK. 173, PG. 98

TM# 15-50-35
RONALD E. &
NANCY T. NADEAU
PO BOX 817
NORTH BENNINGTON, VT
BK. 383, PG. 33

TM# 15-50-37
SARAH BUTTERFIELD
75 MECHANIC STREET
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BK. 458, PG. 100



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Drawn	C.M.HASKINS
Checked by	N.R.JOHNSON
Date	MARCH 2015
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MECHANIC STREET SCOPING STUDY
NORTH BENNINGTON STP BPT3(22)

RIGHT-OF-WAY
AND PARCEL MAPPING

NORTH BENNINGTON, VERMONT

2-4B



DWG. NO. Basemap.dwg

SHEET 2 OF 2

FIGURE 2-5
STORM DRAIN STRUCTURES AND UTILITY POLES



Legend

-  Utility Pole
-  Drainage Structure

0 150 300 600
Feet

SECTION 3: PUBLIC INVOLVEMENT

Developing a Purpose and Need Statement requires obtaining input from multiple sources, reviewing the existing characteristics of the area and reviewing local and regional plans to identify the relationship of the planned improvements to these plans.

A Project Kick-off Meeting was held with the Village of North Bennington Board of Trustees and the Highway Department to discuss the project and identify possible alternatives. The information obtained at this meeting was used to prepare for the public meetings. One concept alternative discussed at this meeting included a sidewalk along the south side of Mechanic Street. The group encouraged the use of curbing and a green strip.

Local Concerns Meeting

A Local Concerns Meeting was conducted on December 9, 2014 to discuss the project and obtain input from the public regarding the purpose and need for the project. A copy of the meeting minutes is included as Appendix C.

The meeting was well attended and the public expressed strong support for the project. The participants discussed the increased pedestrian traffic along Mechanic Street by both children and college students. Safety of pedestrian traffic was discussed with specific mention of high vehicular speeds. Some of the participants noted a desire to maintain the ability to park on the street. Occasionally vehicles park partially in the street and partially on the grass; however there is no delineated on-street parking. There is one location at 33 and 35 Mechanic Street where there is a gravel parking area that provides sufficient space for parallel parking along the street.

The project area was reviewed and the concept identified at the kick-off meeting was discussed briefly. The participants expressed concern regarding the potential sidewalk location on the south side of Mechanic Street due to drainage issues on many properties along the south side of the street. The drainage issues appear to be caused by water draining to the north from the College Road area. They voiced concern that the drainage issues would not be addressed and potentially be worsened.

Purpose and Need Statement

After the Local Concerns Meeting, the following Purpose and Need Statement was developed based on input from the Trustees and the public:

Purpose: Increase pedestrian safety and accessibility for residents of the Village seeking to walk to the Village Center and for school children who walk from residential neighborhoods to the Village School.

Need: The lack of safe and accessible pedestrian facilities in this area causes pedestrians to walk within the road's traveled way at times, which is dangerous. Due to the significant public use of this area, safe and accessible pedestrian facilities are a necessity.

Alternatives Presentation

An Alternatives Presentation was conducted on February 10, 2015 to present the alternatives, obtain input from the public regarding the proposed alternatives and select an alternative. A copy of the meeting minutes is included as Appendix D. A summary of the comments received at the Alternatives Presentation is included in Section 4.

Public Informational Meeting

A Public Informational Meeting was held on May 12, 2015 to present the draft report and solicit input from the public. A copy of the meeting minutes is included as Appendix E.

Relationship to Local and Regional Plans

The North Bennington Village Plan and the Bennington County Regional Commission Plan both contain goals, policies and recommendations in support of the proposed improvements. The North Bennington Village Plan contains language in Chapter 8, Transportation, as follows:

- The Village should prepare and maintain a five-year roadway and sidewalk improvement plan that includes priorities, costs and proposed funding sources.
- Roadways are important public spaces and should include attractive landscaping and pedestrian amenities.
- Continue to apply for and use Transportation Enhancement grants to improve the Village's transportation infrastructure and related facilities and resources.

The Village Plan also identifies preferred sidewalk components in Section 8.4 as follows:

- Sidewalks within the Village's Historic Districts must be carefully integrated with the architecture and site features of the area.
- A green strip between the curb and sidewalk should be included when feasible and crosswalks should be carefully sited at locations which are visible and where vehicle speeds are not excessive.

The Bennington County Regional Commission Plan contains the following policies and actions in Sections 9.3 and 9.7:

- Encourage the development and maintenance of safe pedestrian pathways in villages, hamlets, neighborhoods and all areas of concentrated residential or commercial development.
- Transportation planning should encourage healthful and environmentally sound activities.
- In village and urban areas, sidewalks should be sited and planned so as to offer convenient and pleasant travel routes between adjacent commercial areas while connecting to nearby residential neighborhoods.
- In rural residential areas, sidewalks or footpaths should be located alongside busy roads to provide a safe travel route for pedestrians.

Both the Village Plan and the Regional Plan support the sidewalk project.

SECTION 4: EVALUATION OF ALTERNATIVES

There are several factors that influence the development of alternatives, including public input, existing pedestrian facilities and existing conditions. The critical elements defined by the review of existing conditions and local input are as follows:

1. Maximize the use of existing pedestrian facilities.
2. Avoid adverse effects on existing drainage issues for properties south of Mechanic Street and preferably improve conditions.
3. Improve roadway drainage.
4. Utilize green strips where possible.

The development of alternatives was also guided by regulatory standards including the following:

- Vermont Pedestrian and Bicycle Facility Planning and Design Manual
- Americans with Disabilities Act (ADA) Standards for Accessible Design

In order to develop alternatives for the project, the study area was divided into three segments as follows:

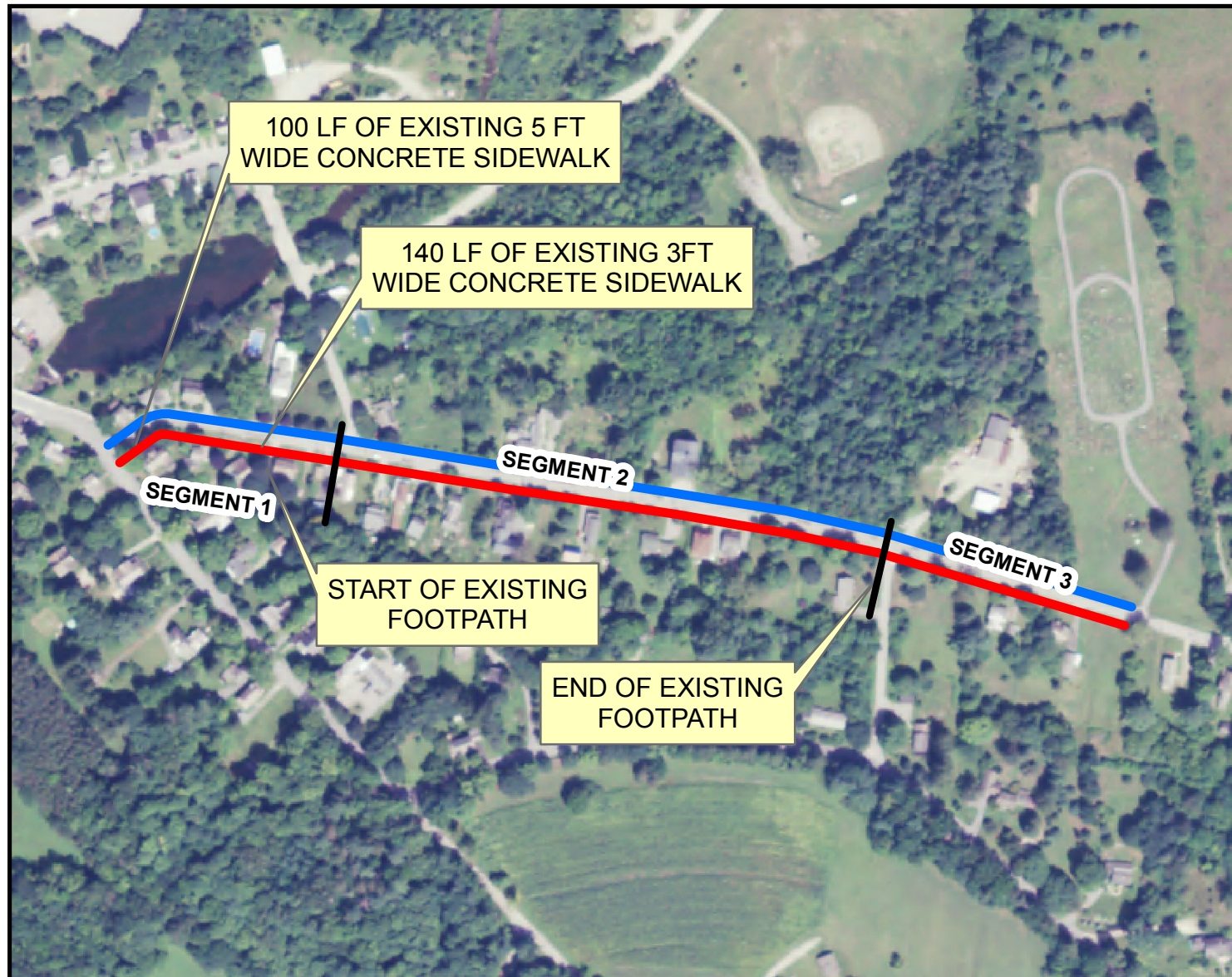
- Segment 1: Prospect Street to North Street
- Segment 2: North Street to Frederick Street
- Segment 3: Frederick Street to the North Bennington Cemetery.

In each of these segments, two alignment alternatives were considered. The two alignment alternatives are the north side and south side of Mechanic Street, as shown in Figure 4-1. All alternatives include a five foot wide sidewalk. Some alternatives include a green strip and/or curbing, depending on the specific segment characteristics. The proposed alternative typical cross sections A, B and C are shown in Figure 4-2. In addition, a mandatory “no build” alternative was considered.

The options for sidewalk material include Portland cement concrete and bituminous concrete (asphalt). Concrete sidewalks tend to be more durable than asphalt sidewalks; however the concrete should be treated with a sealant to protect it from salt. Asphalt sidewalks will likely need to be replaced more frequently than concrete. Concrete also provides a strong visual delineation of pedestrian areas at driveway crossings, whereas asphalt sidewalks do not. In regard to cost, concrete is typically more expensive than asphalt.

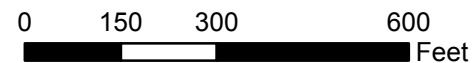
The options for curb materials include granite and concrete (cast-in-place, precast or bituminous). Granite is more durable and requires little to no maintenance. Concrete curbs can be easily damaged by vehicles and plows and will require more frequent replacement than granite. In regard to cost, granite is more expensive than concrete. Based on local input, the preferred curb material is granite and the decision on sidewalk material will likely depend on cost. As such, construction cost estimates for both concrete and asphalt sidewalk will be provided for the preferred alternative.

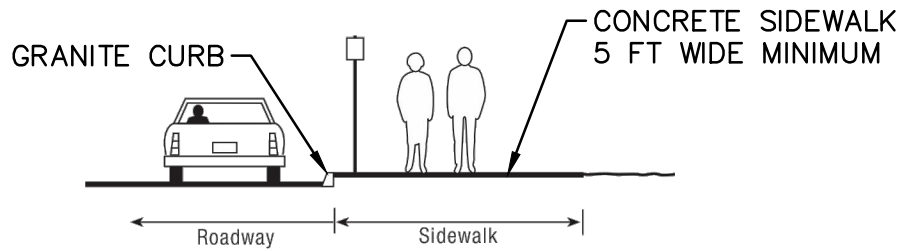
**FIGURE 4-1
ALTERNATIVE ALIGNMENTS**



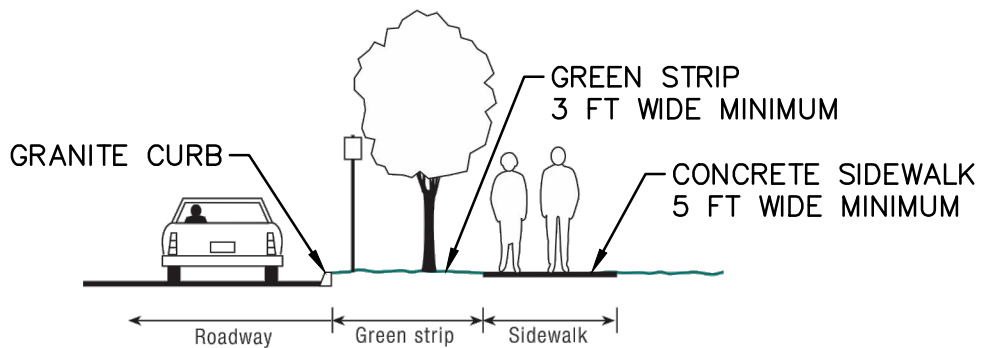
Legend

- North Alignment
- South Alignment

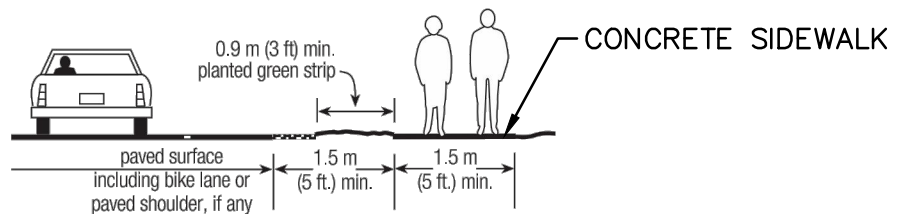




TYPICAL SECTION A: SIDEWALK ADJACENT TO ROAD



TYPICAL SECTION B: SIDEWALK AND GREEN STRIP WITH CURB



TYPICAL SECTION C: SIDEWALK AND GREEN STRIP

NOTE:

THESE SCHEMATICS ARE ADAPTED FROM FIGURES 3-5 AND 3-16 IN THE VTRANS PEDESTRIAN AND BICYCLE FACILITY PLANNING AND DESIGN MANUAL.



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MECHANIC STREET SCOPING STUDY

FIGURE 4-2
ALTERNATIVE CROSS SECTIONS

NORTH BENNINGTON, VERMONT

PROJECT NO. 7140027
PROJECT MJR. CMH
SCALE NOT TO SCALE
DATE MARCH 2015
DRAWING NO. STP BP13(22)

Segment 1: Prospect Street to North Street

The southern alternative alignment for Segment 1 would begin at the existing paved sidewalk on Prospect Street and extend east approximately 420 feet to 11 Mechanic Street. The corner at the intersection with Prospect Street would be improved to include an ADA accessible ramp. The sidewalk would be located directly adjacent to the road with curbing, as shown in typical section A, until approximately the first utility pole. Due to the road alignment and existing mature trees, it is likely not feasible to include a green strip in this area. At the first utility pole, the sidewalk would jog to the south, away from the road. It is possible that this pole may require relocation due to preferred alignment or aesthetics; however, assuming the right-of-way is centered on the road, it appears there would be sufficient width to shift the sidewalk south of the utility pole without the need for relocation. The sidewalk would continue east following the existing footpath alignment, which would allow for a green strip, as shown in typical section C. This would locate the sidewalk behind the utility poles, eliminating the need to relocate the poles. There is a small garden area in the right-of-way just east of the utility pole that would be impacted by the sidewalk and would need to be removed or relocated. Curbing is not recommended in areas where the sidewalk is not directly adjacent to the road in order to avoid altering drainage patterns as there is no existing storm drain system in this area.



The northern alternative alignment for Segment 1 would begin at the newly improved concrete sidewalk at the intersection with Prospect Street and extend east approximately 440 feet to North Street. The corner at the intersection with Prospect Street has already been improved to include an ADA accessible ramp, therefore no further work is required here. The sidewalk would follow the alignment of the existing sidewalk. Due to the existing sidewalk alignment and several existing landscaping features, the new sidewalk would be directly adjacent to the road with curbing, as shown in typical section A. The eastern end of Segment 1 currently has a narrow sidewalk with a narrow green strip. This green strip would need to be eliminated in order to install a five foot wide sidewalk.



Impacts of these alternative alignments on drainage patterns and stormwater collection were reviewed. It appears that stormwater runoff from this segment mostly flows to Prospect Street where it is collected in a catch basin on the west side of the bridge. Based on the topography, stormwater runoff flows west along the north and south edges of the road. On the north side,

the stormwater runoff appears to flow to Prospect Street with little or no infiltration along Mechanic Street. On the south side, the stormwater runoff appears to flow west to 5 Mechanic Street where there may be some infiltration. There does not appear to be stormwater infiltration at 10 Prospect Street, which indicates that the remainder of the stormwater runoff flows to Prospect Street. In the northern alternative alignment, there does not appear to be any need for additional drainage structures. In the southern alternative alignment, additional drainage structures would likely not be required as long as curb is installed only where the sidewalk is directly adjacent to the road.

Table 4-1 provides a comparison of the two alignment alternatives for Segment 1.

TABLE 4-1
SEGMENT 1 – COMPARISON OF ALTERNATIVE ALIGNMENTS

Characteristic	Southern Alignment	Northern Alignment
Use of Existing Alignments	Partial	Full
Drainage	No Change	No Change
Curbing	Partial	Full Length
Green Strips	Partial	None
Right-of-way ¹	Temporary Easements Only	Temporary Easements Only
Utility Relocation	None Required ²	None Required
Landscaping Conflicts	Minimal ³	None
Length of Concrete Sidewalk	440 Feet	440 Feet

Notes:

1. Right-of-way determinations assume the right-of-way is centered on the road.
2. Relocation of the western-most pole on the south side of Mechanic Street may be necessary due to a preferred alignment or aesthetics; however, it is not anticipated to be required.
3. Minimal landscaping conflicts are anticipated west of the driveway to 5 Mechanic Street as there is a small garden in this area.

Segment 2: North Street to Frederick Street

The southern alignment alternative for Segment 2 would begin at the end of Segment 1, just west of the intersection with North Street and extend east approximately 1,050 feet to Frederick Street. The sidewalk would approximately follow the existing footpath, which would allow for a green strip between the road and the sidewalk for the entire length of Segment 2, as shown in typical section C. In addition, by utilizing the existing footpath alignment, there would be no conflicts with existing landscaping or utility poles. Due to the presence of a stormwater collection system and signs of erosion along the edge of the pavement, curbing should be utilized as shown in typical section B from Frederick Street to the catch basin at 19 Mechanic Street. The use of curb in this area will improve drainage collection and minimize erosion. In the remainder of Segment 2, curbing is not recommended in order to avoid altering drainage patterns as there is no existing storm drain system in the area down-gradient of 19 Mechanic Street.

The northern alignment alternative for Segment 2 would begin just east of the intersection with North Street and extend approximately 980 feet east to the driveway for 56 Mechanic Street. There are utility poles located along the north side of Mechanic Street for the entire length of Segment 2, as well as a hydrant near 34 Mechanic Street. As the poles are approximately 2 to 4 feet from the edge of the road, the sidewalk would be located behind the poles with a green strip, as shown in typical section C. Curbing is not recommended in this alternative for Segment 2 as it would hinder drainage along the north side of the road. At 26 Mechanic Street, there is a fence and landscaping that would require either removal or the sidewalk to be located directly adjacent to the road. In addition, there appears to be a marble carriage block at this location that is considered historic and should not be disturbed. East of 26 Mechanic Street, the grade slopes away from the road to the north. The construction of a sidewalk in this location would likely require fill to be added to provide a level surface sufficiently wide enough for the sidewalk. In addition, significant clearing would be required east of 26 Mechanic Street to provide sufficient clear space behind the utility poles for the sidewalk.



Based on the topography of Segment 2, stormwater flows from Frederick Street west towards North Street. Along the south side of Mechanic Street, there is evidence of erosion along the edge of the road. Along the north side of Mechanic Street, it appears that the stormwater drains off the road to the north where the grade slopes away from the road. There is no evidence of erosion along the northern side of the road. There are three existing catch basins located on the south side of Mechanic Street along the steeper portion of Segment 2 from Frederick Street to 31 Mechanic Street. This stormwater collection system daylights on the north side of Mechanic Street east of 31 Mechanic Street. The addition of curbing along the south side of Mechanic Street will improve stormwater collection and minimize erosion by directing stormwater runoff into the existing catch basins. Between 31 Mechanic Street and 25 Mechanic Street, the grade along the road lessens slightly. If curbing is installed to 25 Mechanic Street, a catch basin should be installed east of the driveway. West of 25 Mechanic Street, the grade lessens again and there is one catch basin in front of 19 Mechanic Street. Curb should be installed from 25 Mechanic Street to 19 Mechanic Street to improve stormwater collection and minimize erosion.

This segment includes the areas where “on-street” parking was noted as a priority by the public. It is important to note that the current road layout does not actually include a parking lane. According to local input, vehicles occasionally park partially on the road and partially in the grass. If a dedicated parking lane were included on the south side of the road and the proposed sidewalk incorporates a green strip, it would require permanent easements from each property along the length of the parking lane because the sidewalk would encroach on private property. If the green strip was eliminated from the sidewalk project, a parking lane could be installed without the need for permanent easements. In either case, a parking lane

would require the sidewalk alignment be moved south, which would impact physical features such as landscaping, walkways and fences. Since it does not appear that vehicles regularly park on the street, the increased impacts of moving the sidewalk further south may not be justifiable. In addition, local input has indicated a need for traffic calming. A seldom used parking lane will make the travel lanes appear wider to drivers, which can lead to increased speeds. As such, a parking lane is not included in the southern alignment alternative.

Table 4-2 provides a comparison of the two alignment alternatives for Segment 2.

TABLE 4-2
SEGMENT 2 – COMPARISON OF ALTERNATIVE ALIGNMENTS

Characteristic	Southern Alignment	Northern Alignment
Use of Existing Alignments	Full	None
Drainage	Improved	No Change
Curbing	Partial	None
Green Strips	Full Length	Partial
Right-of-way ¹	Temporary Easements Only	Temporary Easements Only
Utility Relocation	None Required	None Required
Landscaping Conflicts	None	Moderate ²
Length of Concrete Sidewalk	1,050 Feet	980 Feet

Notes:

1. Right-of-way determinations assume the right-of-way is centered on the road.
2. Moderate landscaping conflicts may arise at 26 Mechanic Street. Tree removal would be required for most of the length east of 26 Mechanic Street.

Segment 3: Frederick Street to the North Bennington Cemetery

The southern alignment alternative for Segment 3 would begin at the end of Segment 2, just east of the intersection with Frederick Street. The sidewalk would continue east along the south side of Mechanic Street approximately 460 feet to a point across from the entrance to the North Bennington Cemetery. There is an existing hydrant located east of the intersection with Frederick Street. The sidewalk would need to be located in front of or behind the hydrant to avoid relocating the hydrant. East of the hydrant, the sidewalk should be set back from the road to provide a green strip, as shown in typical section C. Curbing is not recommended in this alternative in order to match the more rural character of the segment. As such, drainage patterns would not change and no additional drainage structures would be required.



The northern alignment alternative for Segment 3 would begin at the end of Segment 2, just west of the driveway to 56 Mechanic Street. The sidewalk would continue east across the driveway and along the north side of Mechanic Street approximately 500 feet to the entrance

to the North Bennington Cemetery. In this alternative, it is recommended that the driveway for 56 Mechanic Street be reconstructed to a typical “T” intersection to provide a safer pedestrian crossing. If this is not possible, the crosswalk should be located slightly further to the west of Frederick Street to provide a safe landing area for pedestrians. It appears that the utility poles east of Frederick Street are not a consistent distance from the edge of the road. The poles are located progressively further away from the road from west to east. Due to this inconsistency, the sidewalk may need to vary in distance from the road. The sidewalk would likely need to be located behind the poles in the western half of the segment, as shown in typical section C, and then shift in front of the poles for the eastern half of the segment, as shown in typical section A or C. Ideally, the sidewalk would be located such that a green strip is maintained throughout the entire segment. Curbing is not recommended in this alternative in order to match the more rural character of the segment. As such, drainage patterns would not change and no additional drainage structures would be required.

Table 4-3 provides a comparison of the two alignment alternatives for Segment 3.

TABLE 4-3
SEGMENT 3 – COMPARISON OF ALTERNATIVE ALIGNMENTS

Characteristic	Southern Alignment	Northern Alignment
Use of Existing Alignments	N/A	N/A
Drainage	No Change	No Change
Curbing	None	None
Green Strips	Full Length	Full Length
Right-of-way ¹	Temporary Easements Only	Temporary Easements Only
Utility Relocation	None Required	None Required
Landscaping Conflicts	None	None
Length of Concrete Sidewalk	460 Feet	500 Feet

Notes:

1. Right-of-way determinations assume the right-of-way is centered on the road.

“No Build” Alternative

The “no build” alternative must be considered for all projects funded by the Federal Highway Administrative Act to comply with the National Environmental Policy Act (NEPA). For the proposed sidewalk project, the no-build alternative consists of signage to bring attention to pedestrian activities.

The “no build” alternative would not provide a safe and accessible pedestrian facility as there would be no physical improvement to the existing deteriorated sidewalks and footpath. In addition, under the “no build” alternative, a pedestrian facility beyond Frederick Street would not be a component of the project.

As the “no build” alternative does not satisfy the Purpose and Need Statement, this alternative is not recommended.

Additional Evaluation Criteria

Each segment described above includes an alternatives matrix for the two alternative alignments presented. In addition to the criteria evaluated in these matrices, the following criteria should be reviewed:

1. Ability to Meet Purpose and Need Statement
2. Maintenance Requirements
3. Estimated Project Cost
4. Permitting Requirements

Ability to Meet Purpose and Need Statement:

All alternatives presented for each segment meet the Purpose and Need statement with the exception of the “no build” alternative. Each of the build alternatives will provide a safe and accessible pedestrian facility from the North Bennington Cemetery to Prospect Street and can be constructed to meet applicable ADA standards.

Maintenance Requirements:

The build alternatives presented for each segment would require similar maintenance. In areas where landscaping or forested areas are directly adjacent to the sidewalk, there may be slightly more maintenance to trim branches and shrubs that encroach into the sidewalk area; however, this would likely be an annual maintenance event, or possibly even once every few years.

The Village currently maintains a plowed path along the gravel walkway in the winter. Therefore winter maintenance should not significantly increase after the installation of the new sidewalk. The only location where maintenance would be required where it is not currently performed would be segment 3, east of Frederick Street. This is a fairly short distance and therefore should not create an unnecessary burden on the Highway Department. It should also be noted that if the “no build” alternative is chosen, the Village will not maintain a plowed path along the gravel walkway beyond the 2014/2015 winter season.

Estimated Project Cost:

The alternatives presented for each segment of the project vary minimally in regard to cost. Table 4-4 summarizes the length of sidewalk and curb for each alternative, plus possible additional cost factors.

Table 4-4:
Comparison of Cost Factors

	Estimated Sidewalk Length	Estimated Curb Length	Additional Cost Factors
Segment 1:			
Northern Alignment	440	390	Sidewalk demolition
Southern Alignment	440	90	
Segment 2:			
Northern Alignment	980	0	Fill for leveling
Southern Alignment	1,050	880	Adjustment of catch basin rims, additional catch basin
Segment 3:			
Northern Alignment	500	0	
Southern Alignment	460	0	
No Build:			
No Build	0	0	No future maintenance cost

Based on the similar sidewalk lengths for each segment, the main difference in cost will likely be the use of curbing and any additional cost factors. In Segment 1, the northern alignment will likely cost more than the southern due to the additional curb length. In Segment 2, the southern alignment will likely cost more than the northern due to the use of curb and drainage considerations. In Segment 3, the alignments will likely be very similar in cost. In the “no build” alternative, there would actually be a maintenance cost decrease for the Village as there would no longer be a cost associated with plowing the walkway.

However, without a full project defined, the individual segment costs would be unreliable as there are other factors that will add to the cost of the total project. For example, depending on the preferred alternative for each segment, there will be at least one, and possibly up to four, crosswalks required. As such, specific cost estimates are not provided for each alternative. A detailed cost estimate is provided for the preferred alternative later in this section.

Permitting Requirements:

Sidewalk projects do not typically require significant permitting. Since all alternatives are fairly similar in scope and typically have similar impacts in regard to permitting, Table 4-5 applies to all alternatives. As shown in Table 4-5, there are no State permits or approvals anticipated for this project. If Federal funding is utilized, an environmental analysis will be required in accordance with the National Environmental Policy Act (NEPA). It is likely that the project would qualify for a Categorical Exclusion as it is not anticipated to have a significant effect upon natural and cultural resources, nor a significant environmental impact.

TABLE 4-5
PERMITTING REQUIREMENTS

Permit or Approval	Required?	Notes
Act 250	No	Less than 10 acres, no previous permit
Agency of Agriculture	No	No undisturbed agricultural soils impacted
Construction General Permit	No	Less than 1 acre disturbed area
Fish and Wildlife Division	No	No Threatened/Endangered species impacted
Stream Alteration	No	No streams impacted
Stormwater Discharge Permit	No	Less than 1 acre of new impervious
19 VSA 1111 Access Permit	No	No State roads impacted
Waste Management Division	No	No hazardous waste sites impacted
Wetland Permit	No	No wetlands impacted

Alternatives Presentation

The alternatives described in this section were discussed at the Alternatives Presentation Meeting. The critical design elements were reviewed and each alternative was briefly described. The participants discussed concerns regarding high vehicular traffic speeds on Mechanic Street and questioned if crosswalks would slow traffic. There was a suggestion to consider the use of stop signs at the crosswalk locations. Another key topic included the location of curbing and parking. It was noted that the current “on-street” parking makes it difficult to maintain grass in the green strip and curbing would prevent parking in the green strip. However, full length curbing throughout all segments would change the drainage pattern and likely require the installation of new drainage structures. Therefore, curbing is proposed in Segment 2 on the south side of Mechanic Street from Frederick Street to 19 Mechanic Street and at locations in Segment 1 where the sidewalk is directly adjacent to the road.

The participants showed support for a continuous sidewalk along the south side of Mechanic Street. However, there was also support for a crosswalk at the intersection with North Street due to high pedestrian activity, which spurred discussion regarding replacement of the existing sidewalk along the north side of Mechanic Street from Prospect Street to North Street. There participants supported the concept of replacing the existing sidewalk on the north side in addition to installing sidewalk on the south side.

Preferred Alternative

Based on input from the Alternatives Presentation, the following segment alternatives were identified as the preferred alternatives and will be combined to form the preferred alternative for the project.

- Segment 1: Combination of Northern and Southern alignments
- Segment 2: Southern Alignment
- Segment 3: Southern Alignment

The preferred alternative was chosen for multiple reasons, which are summarized as follows:

1. The area surrounding the Mechanic Street and North Street intersection is a high pedestrian traffic area.
2. The majority of pedestrians to be served by the proposed sidewalk facility either live on the south side of Mechanic Street or travel from Frederick Street, which is located off the south side of Mechanic Street.
3. The public participants and board members felt that if the sidewalk crossed Mechanic Street too many times, pedestrians would not use it and instead would make their own path or walk on the road.
4. There is minimal impact to physical features on the south side of Mechanic Street due to the existing pathway.
5. There is the opportunity for improved drainage on the south side of Mechanic Street due to the installation of curbing.

The preferred alternative is summarized as follows:

- Prospect Street to North Street:
 - 5-foot wide sidewalk on both sides of Mechanic Street
 - Sidewalk directly adjacent to the road on the north side with granite curbing (typical section A)
 - Sidewalk directly adjacent to the road on the south side with granite curbing until the first utility pole east of Prospect Street (typical section A)
 - Sidewalk set back from road with a green strip from first utility pole east of Prospect Street for remainder (typical section C)
 - Crosswalk to be considered on the western side of the intersection with North Street
- North Street to Frederick Street:
 - 5-foot wide sidewalk on south side of Mechanic Street
 - Sidewalk set back from road with a green strip (typical section C)
 - Granite curbing from 19 Mechanic Street to Frederick Street (typical section B)
 - New catch basin at 25 Mechanic Street
 - Crosswalk required across Frederick Street
- Frederick Street to North Bennington Cemetery:
 - 5-foot wide sidewalk on south side of Mechanic Street
 - Sidewalk set back from road with a green strip (typical section C)
 - Crosswalk required across Mechanic Street at cemetery entrance

The new sidewalk should be located in the same alignment as the existing pathway. As the new sidewalk will be wider than the existing pathway, the new sidewalk should be located using a “best fit” method to minimize impact to physical features and utility poles.

Design Considerations for the Preferred Alternative

The preferred alternative is summarized above; however, there are some additional design considerations that will need to be evaluated during final design. These design considerations include traffic calming, access management and drainage improvements.

Traffic Calming:

Local input during the public meetings has indicated that there is a desire for traffic calming on Mechanic Street. This study did not include a survey of speeding violations on Mechanic Street; however there was a consensus amongst the meeting attendees that Mechanic Street is used as a short cut from New York to Route 7 and that vehicles frequently exceed the speed limit. Traffic calming can be approached using physical features, pavement markings and signage. Physical features include concepts such as bulb-outs and speed bumps/tables that encourage or require drivers to slow down. These features typically have an impact on snow removal and street sweeping efforts and may require the installation or relocation of drainage structures. The cost of physical features can vary depending on the type and scale; however, they are typically more expensive than pavement markings and signage.

Pavement markings can aid in traffic calming by visually restricting the travel area, changing the perception of speed or reminding the driver to slow down. Some pavement markings can deter from aesthetics in the summer and be covered up in the winter. Drivers can also become used to pavement markings and ignore them after some time has passed. A good, low cost option for traffic calming on Mechanic Street may be the use of lane striping. When a center line and “fog” (white) lines are added, they can be spaced to make the travel lane appear narrower, without actually narrowing the pavement. Lane narrowing or its perception tends to decrease vehicle speed. In the case of Mechanic Street where the pavement allows for approximately 10 foot wide travel lanes, the fog lines could be placed approximately 9-9.5 feet from the center line to create the appearance of a narrower travel lane.

Signage for traffic calming can extend beyond speed limit signs. Pedestrian activity signs can provide traffic calming by indicating to the driver a need to be cautious due to possible pedestrian and/or bicycle activity. The preferred alternative will require three crosswalks. These crosswalks would be located in the following areas:

1. Across Mechanic Street on the west side of the intersection with North Street
2. Across Frederick Street at the intersection with Mechanic Street
3. Across Mechanic Street at the entrance to the cemetery

The crosswalks across Mechanic Street will require crosswalk signage at the crosswalk and in advance of the crosswalk. However, there is a local concern that crosswalks and related signage will not slow down the traffic on Mechanic Street. This concern was raised at a public meeting, along with a request to consider the use of stop signs at crosswalks. The crosswalk across Frederick Street would be located at an existing stop sign; however, the crosswalks across Mechanic Street would not be located at existing stop signs. According to the Board of Trustees, a new stop sign may be installed after conducting an engineering study to determine if a particular location meets the safety and traffic requirements needed for a stop sign.

State law requires that the State and municipalities follow the Manual on Uniform Traffic Control Devices (MUTCD) when installing signs. Based on a review of MUTCD Section 2B.04, it does not appear that stop signs would be warranted at the crosswalk locations on Mechanic Street. The factors considered in determining intersection control include traffic volumes, number of approaches, approach speeds, sight distance and crash history. The location of the

proposed crosswalk at the cemetery entrance does not meet any of the requirements for the placement of a stop sign. The location of the proposed crosswalk at the intersection of Mechanic Street and North Street meets the requirements for a stop sign on North Street, which currently exists. Detailed traffic counts for this intersection would need to be collected to determine if stop signs on Mechanic Street are warranted; however, it is unlikely that this location will meet the requirements for a multi-way stop. If a full determination for this intersection is desired, an engineering study with detailed traffic counts may be performed during final design. It is important to note that MUTCD specifically states that stop signs are not to be used for traffic calming purposes.

It is recommended that a combination of pavement markings and signage be utilized for traffic calming. The pavement markings should include a center line and fog lines from Prospect Street to Frederick Street. As the existing road is approximately 20-feet wide, the fog lines should be painted to allow for 9-foot travel lanes with a 1-foot shoulder on each side. The signage should include pedestrian crossing signage at each crosswalk location, as per MUTCD.

Access Management:

Access management is the process of reviewing existing driveway locations and widths in order to improve safety and traffic flow. VTrans Standard B-71 provides typical widths for residential and commercial driveways. For the preferred alternative, there is a single area of concern, which is located at 33 and 35 Mechanic Street. Each property appears to have a dedicated driveway; however, there is also a paved parking lane in front of the two properties. This 100 foot long parking lane creates a safety hazard for pedestrians as the vehicles are basically parking in the sidewalk alignment causing pedestrians to walk in the road. There are two main alternatives in this case:



1. Eliminate the parking lane and install the sidewalk with a green strip matching the typical cross section to the east and west.
2. Keep the parking lane and install a raised sidewalk south of and directly adjacent to the parking lane.

If the driveways do not provide sufficient parking space for these properties, the Village may choose to install a parking lane as described in alternative 2 above. The parking lane should be between 8 and 10 feet wide, depending on the available space. This alternative may require the sidewalk width to be reduced to 4 feet due to the location of concrete stairs for 33 Mechanic Street and a stone wall for 35 Mechanic Street. In addition, the bottom step to 35 Mechanic Street may be lower in elevation than the proposed sidewalk. In order to avoid the potentially costly effort of resetting the steps to the proposed sidewalk elevation, the sidewalk

could ramp down to a landing at this location. This would serve two purposes as it would provide ADA access from the parking lane, as well as eliminate the need to disturb the steps.

If the Village determines the parking lane is not required, it would be eliminated as described in alternative 1 above. In this case, the steps at 35 Mechanic Street would likely still be an issue. There should be sufficient space to move the sidewalk a 2 to 3 feet west, however this may not resolve the elevation issue as the grading behind the sidewalk could still create a low spot in this area. It may be necessary to ramp the sidewalk down to a landing to match the step as described above.

Drainage Improvements:

The three existing catch basins located in segment 2 will require minor rehabilitation to ensure proper stormwater collection. Curbing is recommended to be installed adjacent to these three catch basins. The frames and grates will need to be adjusted to be located directly adjacent and parallel to the curb. This will allow for optimum stormwater collection. The drainage structures should not require relocation as the frame and grate can be moved to the ideal location as long as it is still somewhat located over the catch basin opening. If catch basins require replacement due to deterioration, it would be ideal to replace them during the construction of the sidewalk project. However, catch basin replacement is not included in the preferred alternative as it appears that the drainage system was installed in the past few years and therefore should not require replacement at this time.

Due to the installation of new curbing down the hill to 25 Mechanic Street, a new catch basin will be required to collect stormwater runoff traveling along the curb line. The catch basin should be located east of the driveway to 25 Mechanic Street. This location is the transition area from the hill to the flatter portion of Mechanic Street. This catch basin should be connected to the catch basin near 19 Mechanic Street with an 18-inch diameter high-density polyethylene (HDPE) pipe.

Total Project Cost Estimate

The preliminary cost estimates presented in Tables 4-6 and 4-7 have been prepared for the preferred alternative. These estimates include 5 foot wide sidewalk for the full project length, granite curbing as described previously, full length center line and fog line striping, crosswalk markings and signage, and catch basin rehabilitation. Table 4-6 shows the cost for concrete sidewalk and Table 4-7 shows the cost for asphalt sidewalk. As shown in Table 4-6, the preliminary construction cost estimate for concrete sidewalk is \$395,000 in 2015 dollars. As shown in Table 4-7, the preliminary construction cost estimate for asphalt sidewalk is \$275,000 in 2015 dollars.

Table 4-8 presents the total project costs for the preferred alternative. The total project cost for concrete sidewalk is estimated at \$560,000 based on a construction cost of \$395,000 in 2015. The total project cost for asphalt sidewalk is estimated at \$440,000 based on a construction cost of \$275,000 in 2015.

Table 4-6:
Preliminary Construction Cost Estimate – Concrete Sidewalk

DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL COST
Removal of Existing Concrete Sidewalk	100	SY	\$30	\$3,000
Excavation of Surfaces	280	SY	\$10	\$2,800
Bituminous Concrete Pavement	110	TON	\$115	\$12,650
Detectable Warning Surface	60	SF	\$45	\$2,700
Portland Cement Concrete Sidewalk	1,330	SY	\$100	\$133,000
Vertical Granite Curb	1,360	LF	\$35	\$47,600
Catch Basin	1	EA	\$3,500	\$3,500
18" HDPE Storm Drain	240	LF	\$60	\$14,400
Catch Basin Rehabilitation	4	EA	\$1,500	\$6,000
Painted Pavement Markings	1	LS	\$10,000	\$10,000
Crosswalk Signs	4	EA	\$110	\$440
Sign Post (12 ft high)	4	EA	\$100	\$400
Remove and Reset Sign	4	EA	\$35	\$140
Relocate Mailbox (single support)	5	EA	\$125	\$625
Flaggers	200	MHRS	\$30	\$6,000
Tree Protection	1	LS	\$9,000	\$9,000
Traffic Control	1	LS	\$10,000	\$10,000
Mobilization/Demobilization	1	LS	\$55,000	\$55,000
Subtotal Construction Cost				\$317,000
Contingency (25%)				\$78,000
Total Construction Cost 2015				\$395,000

Notes:

1. Construction costs are preliminary and are not based on detailed plans and specifications. Actual cost may vary substantially from these estimates. Contingencies are based on approximately 25% of the construction cost at the preliminary planning stage.
2. The Engineering News Record Construction Cost Index was 9962 when the cost estimate was completed in March 2015.
3. Painted pavement markings include full length 4-inch white line on both sides of road, 4-inch yellow center line, two stop bars for Mechanic Street/North Street intersection and three crosswalks.
4. Restoration of growth and protection of historic features are included in the Mobilization/Demobilization item.

Table 4-7:
Preliminary Construction Cost Estimate – Asphalt Sidewalk

DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL COST
Removal of Existing Concrete Sidewalk	100	SY	\$30	\$3,000
Excavation of Surfaces	280	SY	\$10	\$2,800
Bituminous Concrete Pavement	110	TON	\$115	\$12,650
Detectable Warning Surface	60	SF	\$45	\$2,700
Bituminous Concrete Sidewalk	150	TON	\$230	\$34,500
Vertical Granite Curb	1,360	LF	\$35	\$47,600
Catch Basin	1	EA	\$3,500	\$3,500
18" HDPE Storm Drain	240	LF	\$60	\$14,400
Catch Basin Rehabilitation	4	EA	\$1,500	\$6,000
Painted Pavement Markings	1	LS	\$10,000	\$10,000
Crosswalk Signs	4	EA	\$110	\$440
Sign Post (12 ft high)	4	EA	\$100	\$400
Remove and Reset Sign	4	EA	\$35	\$140
Relocate Mailbox (single support)	5	EA	\$125	\$625
Flaggers	200	MHRS	\$30	\$6,000
Tree Protection	1	LS	\$9,000	\$9,000
Traffic Control	1	LS	\$10,000	\$10,000
Mobilization/Demobilization	1	LS	\$55,000	\$55,000
Subtotal Construction Cost				\$219,000
Contingency (25%)				\$56,000
Total Construction Cost 2015				\$275,000

Notes:

1. Construction costs are preliminary and are not based on detailed plans and specifications. Actual cost may vary substantially from these estimates. Contingencies are based on approximately 25% of the construction cost at the preliminary planning stage.
2. The Engineering News Record Construction Cost Index was 9962 when the cost estimate was completed in March 2015.
3. Painted pavement markings include full length 4-inch white line on both sides of road, 4-inch yellow center line, two stop bars for Mechanic Street/North Street intersection and three crosswalks.
4. Restoration of growth and protection of historic features are included in the Mobilization/Demobilization item.

Table 4-8:
Total Project Cost

DESCRIPTION	TOTAL COST CONCRETE SIDEWALK	TOTAL COST ASPHALT SIDEWALK
Construction Cost (2015) with 25% Contingency	\$395,000	\$275,000
Engineering:		
Design Phase Engineering	\$58,000	\$58,000
Construction Phase Engineering	\$58,000	\$58,000
Local Project Management	\$38,000	\$38,000
Legal, Administrative and Fiscal	\$11,000	\$11,000
Total Project Cost	\$560,000	\$440,000

Notes:

1. Construction costs are shown in Table 4-6. The construction cost includes 25% contingency.
2. Engineering costs are estimated at 15-21% of the construction cost.
3. Local Project Management costs are estimated at 10-14% of the construction cost.
4. Legal, administrative and fiscal costs are estimated at about 3-4% of the construction cost.

Phasing Alternatives

At the Public Informational Meeting, there were discussions with the Village Trustees regarding phasing the pedestrian improvements. The construction of the project can easily be separated following the same segments developed for the alternatives evaluation. The segments are summarized as follows:

- Segment 1: Northern and Southern sides of Mechanic Street from Prospect Street to North Street, including the crosswalk at the intersection with Prospect Street.
- Segment 2: Southern side of Mechanic Street from North Street to Frederick Street.
- Segment 3: Southern side of Mechanic Street from Frederick Street to the cemetery, including the crosswalks at Frederick Street and at the cemetery.

The construction cost estimates and total project costs are presented for each segment of the project in Tables 4-9 and 4-10. If the project is separated into phases, the engineering, local project management and legal, administrative and fiscal costs will tend to be a higher percentage of the construction cost as many tasks will need to be repeated for each phase. For example, the environmental documentation would need to be prepared and submitted for each phase separately. Additionally, lower cost construction projects, such as Segment 3, will have even higher percentages as there are tasks in the VTrans design and construction process that are not based on the size of the project. Larger projects can absorb the cost of these tasks better than smaller projects can, therefore the percentage of engineering and local project management is increased on smaller projects.

Table 4-9:
Total Project Cost by Segment – Concrete Sidewalk

DESCRIPTION	SEGMENT 1 COST ESTIMATE	SEGMENT 2 COST ESTIMATE	SEGMENT 3 COST ESTIMATE
Construction Cost (2015) with 25% Contingency	\$125,000	\$225,000	\$45,000
Engineering:			
Design Phase Engineering	\$22,500	\$40,000	\$10,000
Construction Phase Engineering	\$22,500	\$40,000	\$10,000
Local Project Management	\$15,000	\$27,000	\$7,000
Legal, Administrative and Fiscal	\$5,000	\$8,000	\$3,000
Total Project Cost	\$190,000	\$340,000	\$75,000

Notes:

1. Construction costs are shown in Table 4-6. The construction cost includes 25% contingency.
2. Engineering costs are estimated at 18-22% of the construction cost. Segments with lower construction costs will have engineering costs at a higher percentage of the construction cost.
3. Local Project Management costs are estimated at 12-16% of the construction cost. Segments with lower construction costs will have local project management costs at a higher percentage of the construction cost.
4. Legal, administrative and fiscal costs are estimated at about 4-6% of the construction cost. Segments with lower construction costs will have legal, administrative and fiscal costs at a higher percentage of the construction cost.

Table 4-10:
Total Project Cost by Segment – Asphalt Sidewalk

DESCRIPTION	SEGMENT 1 COST ESTIMATE	SEGMENT 2 COST ESTIMATE	SEGMENT 3 COST ESTIMATE
Construction Cost (2015) with 25% Contingency	\$85,000	\$170,000	\$20,000
Engineering:			
Design Phase Engineering	\$22,500	\$40,000	\$10,000
Construction Phase Engineering	\$22,500	\$40,000	\$10,000
Local Project Management	\$15,000	\$27,000	\$7,000
Legal, Administrative and Fiscal	\$5,000	\$8,000	\$3,000
Total Project Cost	\$150,000	\$285,000	\$50,000

Notes:

1. Construction costs are shown in Table 4-6. The construction cost includes 25% contingency.
2. Engineering costs were developed in Table 4-8.
3. Local Project Management costs were developed in Table 4-8.
4. Legal, administrative and fiscal costs were developed in Table 4-8.

SECTION 5: FISCAL IMPLEMENTATION

As presented in Section 4, the proposed project is a sidewalk to provide a safe pedestrian facility along Mechanic Street and to connect Mechanic Street to the downtown Village area. Approximately 1,930 linear feet of 5-foot wide sidewalk is proposed on the south side of Mechanic Street, with an additional 440 linear feet of 5-foot wide sidewalk proposed on the north side of Mechanic Street. The estimated total project cost for these improvements with concrete sidewalk is \$560,000 based on a 2015 construction cost estimate of \$395,000. The estimated total project cost for these improvements with asphalt sidewalk is \$440,000 based on a 2015 construction cost estimate of \$275,000. The construction costs should be inflated by 3-4% per year to estimate construction costs in the future, with non-construction costs increased accordingly.

Funding Alternatives

The Village of North Bennington does not have the funds to finance the entire sidewalk project locally and therefore must receive grants or take on long-term debt to finance the proposed project. The VTrans Bicycle and Pedestrian Program, administered by VTrans Local Projects section, provided funding for this report and is the most likely funding source for design and construction.

The proposed sidewalk is an eligible project under the Bicycle and Pedestrian Program. The funding shares are 90% Federal/State and 10% local. However, if a project funded under this program does not proceed to construction, any funds provided for the preliminary and design phases are subject to being paid back by the municipality. Grant applications are accepted annually and are generally due by the last week of July.

The Transportation Alternatives Program, also administered by the Local Projects section, is an option for funding design. As the maximum Federal award under the Transportation Alternatives Program is limited to \$300,000, this is not an option for funding the construction phase for the entire route. The Transportation Alternatives Program has an award range of \$20,000 to \$300,000 and the local match is 20%. A minimum of 50% of the local match must be a cash expenditure, with the remainder of the local match as “in-kind” services; however an in-kind match is not required and the entire local match may be a cash expenditure.

Based on funding under the Bicycle and Pedestrian Program, the local share of the total project cost is \$56,000 for concrete sidewalk and \$44,000 for asphalt sidewalk.

If the project is anticipated to be phased, it may be beneficial to consider locally funding the design and construction of Segment 3 as this would significantly reduce the total project cost by eliminating the federal funding requirements and eliminating the local project management costs. When VTrans funding is used there are several requirements that can increase the total project cost, such as environmental documentation, right-of-way, Davis Bacon and Buy America. When local funding is used, these requirements are not necessary. The cost of obtaining easements can also be reduced. Additionally, the schedule is significantly shorter when local funding is used.

Project Schedule

The proposed project schedule is based on several criteria including the following factors:

- The need for the improvements as defined by local officials.
- The cost of the project to property owners and local approval of the project.
- Funding requirements
- Permitting requirements

Based on these factors, the project schedule shown in Table 5-1 is achievable.

Table 5-1:
Project Schedule

Project Task	Date
Receive Approval of Scoping Study	June 2015
Submit Funding Application for Final Design Funds	July 2015
Receive Approval of Funding Application	August 2015
Grant Agreement Executed	October 2015
Procurement for Design Services	January 2016
Complete Topographic Survey of Project Areas	May 2016
Final Design Plans and Specifications Advertised for Bid	April 2018

Notes:

1. The project schedule is based on several items beyond the control of the Village of North Bennington, including the availability of funding, time necessary to obtain permits, time regulatory and funding agencies need to review plans and specifications and the success or failure of local bond votes. The schedule may change based on the actual time needed to complete these tasks. Final design duration is based on typical Local Projects section project schedules.