Milton, VT Pedestrian and Bicycle Scoping Study

Chittenden County RPC

Town of Milton Chartered 1763

Toole Design Group

May 2015

Prepared for Chittenden County Regional Planning Commission

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This scoping study was a collaborative effort of the Project Steering Committee members, who possessed a wealth of combined knowledge and expertise regarding project background, history, local insight, and existing conditions. Their valuable insight and assistance was instrumental in developing the implementation strategy.

The preparation of this report has been financed in part through grant from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code, as well as matching funds provided by Chittenden County's municipalities and the Vermont Agency of Transportation. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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1.0 Introduction

1.1 Background

The Chittenden County Regional Planning Commission (CCRPC) and the Town of Milton (Town) initiated this scoping study to analyze and evaluate the feasibility of additional sidewalks and shared use paths at four (4) proposed study site locations:

- A gap between two existing asphalt shared use paths on Ellison Street and Haydenberry Drive;
- A segment between the existing asphalt shared use path on Ellison Street and the front entrance to Milton High School;
- A lack of sidewalks on Brandy Lane, the road connecting Milton High School to Lamoille Terrace; and
- A lack of sidewalks and safety concerns on Upper Main Street between Railroad Street and the intersection of East and North Roads.

This report analyzes and evaluates potential sidewalk and shared use path alignment alternatives, documents existing conditions, provides conceptual sidewalk and shared use path alignment alternatives, and provides opinion of probable construction costs for each study location. Preferred concept alternative alignments as identified with the Project Steering Committee (PSC), through the public participation and outreach during the scoping study process, are highlighted within this scoping study.

1.2 Project Study Area

The proposed project study site locations are shown in **Figure 1**.

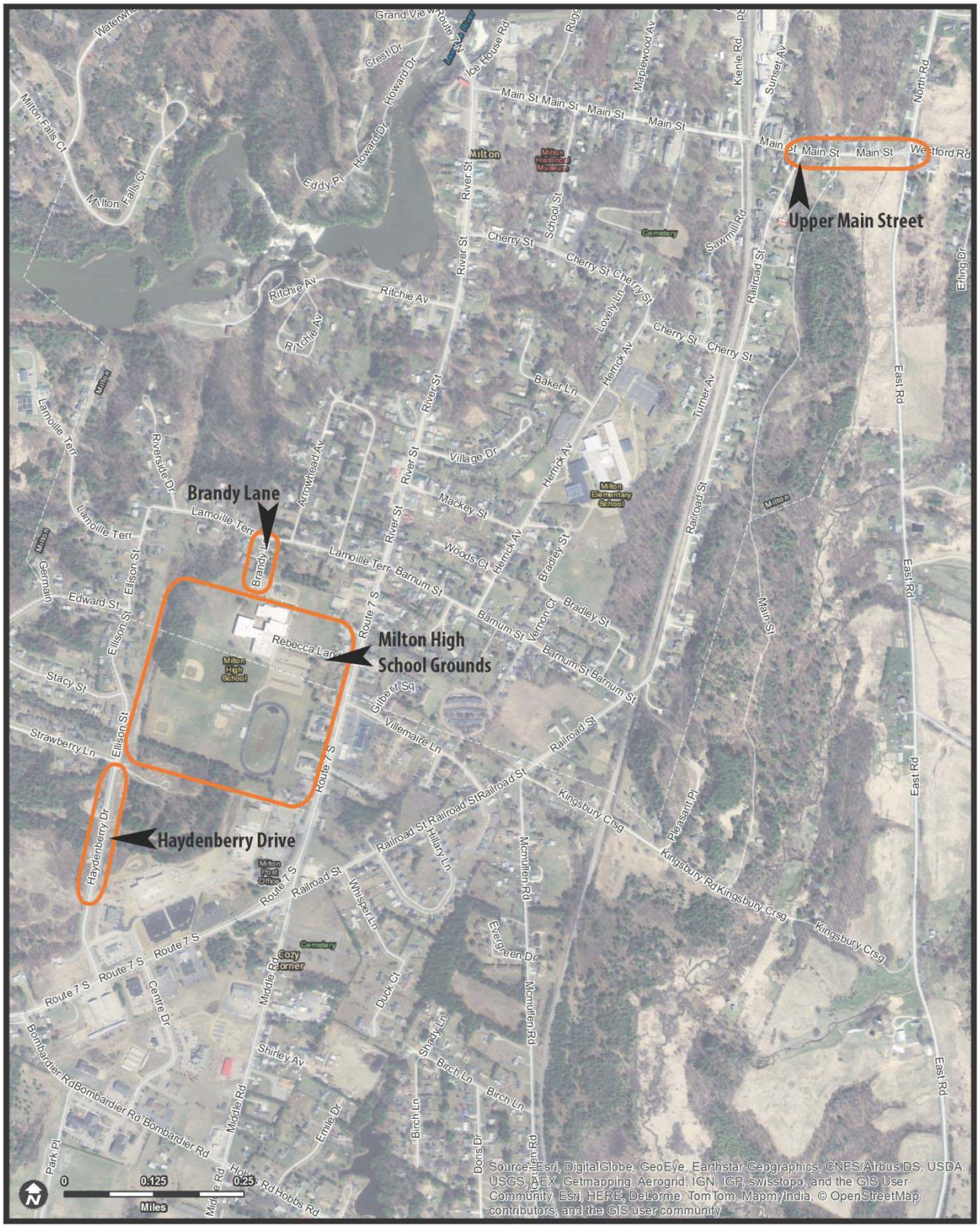

Figure 1: Project Study Area Map

1.3 Project Oversight

This scoping study project was conducted and coordinated with public involvement through workshops, presentations and meetings with the PSC which included the following entities:

- CCRPC;
- Town of Milton;
- Milton Town School District;
- Vermont Safe Routes to School Resource Center; and
- Local Motion.

Project meetings and public involvement included the following:

- **Kickoff Meeting:** June 26, 2104 – TDG staff and Steering Committee Members met to discuss project scope, study area limits, and schedule.
- **Workshop:** September 25, 2014 – TDG staff and Steering Committee Members met to discuss existing conditions findings and sketch out potential alternatives for each study area.
- **Alternatives Presentation:** November 17, 2014 – TDG staff presented project alternatives to members of the public and the Milton Selectboard.
- **Report Presentation:** April 6, 2015 – TDG staff presented the preferred alternative plans and the findings of the Scoping Study to members of the public and the Milton Selectboard.

1.4 Previous Studies

Previous reports and design plans specific to the Haydenberry Drive and Upper Main Street project sites provided valuable background and insight for this scoping study. The reports include the following:

- Haydenberry Drive
    - At the time of this scoping study, two private development projects adjacent to Haydenberry Drive were underway:
        1. An elderly housing complex located off of Haydenberry Drive is currently under construction. The project includes a 20,000 square foot, 64 unit, 3-story elderly housing complex with associated infrastructure. As part of construction, the developer will build a shared use path along the length of the parcel fronting Ellison Street and Haydenberry Drive, connecting one segment of the gap between the existing asphalt shared use paths.
        2. Blackberry Commons is a proposed development of 31 residential lots ranging in size and quantity of associated private infrastructure. At the time of the scoping study, Blackberry Commons was going through initial review. If the project is approved, the developer may likely be required to connect the proposed adjacent asphalt shared use path associated with the elderly housing development project with the existing asphalt shared use path on Ellison Street. The status and timing of this project is uncertain at this time.

- Upper Main Street
    - A phase 1 Main Street scoping study from River Street (US Route 7) to the North/East/Westford Road intersection was conducted by Trudell Consulting Engineers, Inc. in 2002. The purpose of the scoping study project was to evaluate pedestrian and bicycle facilities, calm traffic along Main Street, improve

the intersection of Railroad Street and Upper Main Street for all users and examine drainage problems. The development of three (3) concept alternatives considered the overall function of the street, roadway width, speed, vertical sight distances, the need for pedestrian crossings, the overall aesthetics of the village streetscape, drainage improvements, bicycle route width and potential environmental impacts.

2.0 Existing Conditions

2.1 Site Characteristics

All base mapping for this scoping study was compiled from Geographic Information System (GIS) and orthographic imagery data as available from the CCRPC and the State of Vermont. No field survey was performed. Site fieldwork was conducted to field verify of all topographic features within each project study area.

2.1.1 Haydenberry Drive

Haydenberry Drive is classified by the Vermont Agency of Transportation (VTrans) as a local town road with a posted speed limit of 25 MPH. It runs in a north-south direction, connecting the Lamoille Terrace residential neighborhood to the north via Ellison Street and Railroad Street/US Route 7 to the south. Within the study area, Haydenberry Drive consists of two travel lanes. The existing pavement width is 24 feet and the pavement markings are in generally good condition.

The T-intersection of Haydenberry Drive/Strawberry Lane is all-way STOP controlled. There are no crosswalk markings present. Haydenberry Drive has an existing 4 foot wide sidewalk with 6 to 8 foot grass buffer on the west side of the roadway that terminates at the first Hannaford's driveway at the southern limit of the study area. An existing 10 foot wide bituminous concrete path with a 6 to 8 foot grass buffer is provided on the east side of the roadway from the Railroad Street/US Route 7 intersection to approximately 450 feet south of Strawberry Lane. Also located on the east side of Haydenberry Drive are overhead high-tension electric transmission lines, two (2) fire hydrants, and two (2) catch basins.

Haydenberry Drive looking south

2.1.2 Milton High School Grounds

Milton High School Grounds consist of a small north parking lot for faculty and school bus dropoffs, a larger south parking lot, multiple athletic sports fields and track facilities to the south and southwest of the main school building. Access to the school is provided via Brandy Lane connecting to the north parking lot and a full access driveway connecting River Street (US Route 7) to the south parking lot. An existing chain link fence surrounds the athletic facilities to the west and south. Informal walking paths were observed at open locations along the chain link fence with access from Ellison Street, indicating pedestrian desire lines. A heavily wooded area with steep gradients exist on the northwest side of the school property. The sports facilities include the following:

- Baseball field #1 in southwest corner, oriented northeast.
- Baseball field #2 along west boundary, north of field #1, oriented northeast. Includes dugout facilities adjacent to tree line.
- Baseball field #3 near center of field, oriented southeast.
- Storage and bathroom building north of field #3, including a crushed stone service road that connects to the main parking lot.
- Running track and football field, east of field #3, including grandstands between the two facilities.
- Track & field facilities east of the running track.

Milton High School grounds looking to the north

The front entrance of Milton High School has an existing 8 foot wide sidewalk connecting to the south parking lot and a 6 foot wide sidewalk connecting to the north parking lot. There is also a 15 foot wide gated crushed stone emergency access driveway that leads from the south parking lot to an existing recreation storage building. The existing terrain is generally flat; no significant drainage problems were observed during a field visit under very wet conditions.

2.1.3 Brandy Lane

Brandy Lane is classified by the Vermont Agency of Transportation (VTrans) as a local town road with a posted speed limit of 25 MPH. It runs in a north-south direction, connecting the Lamoille Terrace residential neighborhood to the Milton High School north parking lot with a total length of approximately 275 feet. Within the study area, Brandy Lane provides two unmarked travel lanes. The existing pavement width is 20 feet.

Brandy Lane looking south

The intersection of Brandy Lane/Lamoille Terrace is STOP controlled on Brandy Lane with an existing crosswalk crossing Brandy Lane at this intersection. Brandy Lane does not have existing sidewalks; however Lamoille Terrace has existing 5 foot wide sidewalks with a 2 foot grass buffer on the south side of the roadway. Also, on the Milton High School property, an existing sidewalk segment is provided around the existing north parking lot to provide access to the school front entrance. During a field visit, standing water was observed on the west side and east side of the roadway. The team also noted the presence of heavy bus and vehicular traffic during arrival and dismissal procedures.

2.1.4 Upper Main Street

Upper Main Street is classified by the Vermont Agency of Transportation (VTrans) as a minor arterial with a posted speed limit of 30 MPH. It runs in a west-east direction, connecting US Route 7 to the west and North Road/East Road/Westford Road to the east. Within the study area, Upper Main Street provides two travel lanes. The existing pavement width varies from 24 to 30 feet and the markings are generally in good condition. The intersection of Upper Main Street at Railroad Street is STOP controlled on Railroad Street, while the intersection of Upper Main Street/North Road/East Road/Westford Road is STOP controlled on East and North Road. On the day of our site visit, we observed significant volumes of truck traffic in both directions.

Existing 5 foot wide sidewalks with 6 to 8 foot grass buffers are provided on both sides of Upper Main Street from US Route 7 to approximately Railroad Street. Existing 5 foot wide sidewalks with a 3 foot grass buffer are provided on the west side of North Road and the south side of Westford Road. There are no existing crosswalk markings.

Residential households and large mature street trees exist within the study area, with density decreasing towards the eastern end of the study area. Overhead electrical lines are present on the south side of Upper Main Street/Railroad Street and transfer to the north side of Upper Main Street approximately in the middle of the Upper Main Street study area. There is also a considerable grade change at the intersection of Upper Main Street and Railroad Street. Approximate intersection sight distance measurements were taken in the field on Upper Main Street at the Railroad Street intersection. The sight distance to the west exceeds 500 feet; however the intersection sight distance looking to the east is 250 feet, further sight distance is limited due to the adjacent vertical curve on Upper Main Street. The minimum criteria for intersection sight distance allowing a vehicle to safety turn from Railroad Street is 330 feet.

Upper Main Street looking west

An existing culvert is provided approximately 100 feet west of the intersection of North and East Roads that water empties into an open field on the south side of Upper Main Street.

2.3 Traffic Data

2.3.1 Haydenberry Drive

24-hour automatic traffic recorder counts were conducted by CCRPC on Haydenberry Drive approximately 600 feet south of Strawberry Lane in June, 2011. The counts indicate that the roadway carries a 24-hour traffic volume of approximately 1,050 vehicles per day. The 85th percentile speed for vehicles is 40 miles per hour, with a 50th percentile speed of 35 miles per hour. The posted speed limit on Haydenberry Drive is 25 miles per hour.

2.3.2 Upper Main Street

24-hour automatic traffic recorder counts were conducted by CCRPC on Upper Main Street east of Railroad Street in August, 2006. The counts indicate that the roadway carries a 24-hour traffic volume of approximately 5,200 vehicles per day. The 85th percentile speed for vehicles is 38 miles per hour, with

a 50th percentile speed of 33 miles per hour. The posted speed limit on Upper Main Street is 30 miles per hour.

2.4 Utilities

2.4.1 Haydenberry Drive

Surface and subsurface utilities noted in the right-of-way for the Haydenberry Drive project study area include two (2) sewer lines, a water line, aerial utility poles on the west side, high-tension electrical transmission lines on the east side, two (2) fire hydrants and two (2) catch basins.

2.4.2 Milton High School Grounds

Surface and subsurface utilities noted for the Milton High School grounds project study area include a sewer line, a water line and high-tension electrical transmission lines running in a north-south direction on the western boundary of the property. In addition, light poles are located adjacent to many of the athletic fields. Mapping for the layout of the associated electric conduit was not provided as part of this study.

2.4.3 Brandy Lane

Surface and subsurface utilities noted in the right-of-way for the Brandy Lane project study area include a sewer line, a water line and aerial utility poles on the west side.

2.4.4. Upper Main Street

Surface and subsurface utilities noted in the right-of-way for the Upper Main Street project study area include a sewer line, a water line, a fire hydrant and a culvert drainage structure at the east side of the project study area. Aerial utility poles exist on the south side, transitioning to the north side just west of North Road.

2.5 Natural Resources

Natural resources evaluated for this scoping study was conducted using the Vermont Agency of Natural Resources (ANR) Atlas and BioFinder mapping programs, as well as site fieldwork verification. The following is a summary considered to be potential impacts by the improvements proposed for each project study area.

2.5.1 Haydenberry Drive

The project study area may be in or adjacent to identified Prime AG soil; Adams and Windsor loamy sands (AdA), which may be suited to cultivating crops, hay and pasture.

This area may also be adjacent to identified areas contributing to biodiversity. The areas adjacent to the study area are considered to have a rating of Tier 4, containing a moderate concentration of components contributing to biological diversity. The proposed improvements would be constructed adjacent to existing roadway pavement and in part would not provide agricultural or biodiversity values. The existing land within the right-of-way would typically be considered in urban use. No additional impacts to natural resources are anticipated.

2.5.2 Milton High School Grounds

The project study area may be in or adjacent to identified Prime AG soil; Adams and Windsor loamy sands (AdA), which may be suited to cultivating crops, hay and pasture.

This area may also be adjacent to identified areas contributing to biodiversity. The areas adjacent to the study area are considered to have a rating of Tier 4, containing a moderate concentration of components contributing to biological diversity. The proposed improvements would be constructed

adjacent to existing roadway pavement and in part would not provide agricultural or biodiversity values. The existing land on the Milton School District property would typically be considered in urban use. The proposed improvements would be constructed within existing urban athletic fields and in part would not provide agricultural values as it is already in use in an urban environment. No additional impacts to natural resources are anticipated.

2.5.3 Brandy Lane

The project study area may be in or adjacent to identified Prime AG soil Adams and Windsor loamy sands (AdA), which may be suited to cultivating crops, hay and pasture. The proposed improvements would be constructed adjacent to existing roadway pavement and in part would not provide agricultural values as it is already in an urban environment. No additional impacts to natural resources are anticipated.

2.5.4 Upper Main Street

The project study area may be adjacent to identified prime farmland containing Adams and Windsor loamy sands (AdA), Limerick silt loam (Le) and Hinesburg fine sandy loam (HnA) which may be suited to cultivating crops, hay and pasture.

This area may also be adjacent to identified areas contributing to biodiversity. The areas adjacent to the study area are considered to have a rating of as low as Tier 4 and high as Tier 2, containing a moderate to very high concentration of components contributing to biological diversity. The proposed improvements would be constructed adjacent to existing roadway pavement and in part would not provide agricultural or biodiversity values.

The project study area to the east is identified and classified Class 2 wetland area containing Limerick soils (Le). These areas frequently are prone to flooding for brief duration from late Fall through Spring. The US Army Corps of Engineers (Corps) regulates wetlands and streams under the provisions of Section 404 of the Clean Water Act. The Corps has issued a Programmatic General Permit for the State of Vermont. Historically, wetland and stream impacts of less than one acre may be covered by Programmatic General Permit with impacts of less than 3,000 square feet are often eligible for approval via a one page Self-Verification Form.

The Vermont ANR regulates Vermont Class 1 and 2 wetlands. The Class 2 wetland would be regulated with 50 foot buffers and any impacts to the wetland area would likely require authorization from the Corps as well as from ANR under the Vermont Wetland Permit or Vermont General Permit. No additional impacts to natural resources are anticipated.

2.6 Archeological Sites, Historic Sites and Structures

Hartgen Archeological Associates, Inc. conducted the Archeological Resource Assessment (ARA) and Historic Preservation Assessment to identify areas of archeological sensitivity based on environmental factors, known site information, and historical information for the project Area of Potential Effect (APE). The complete report is provided in **Appendix B** and a summary of the findings are presented below.

2.6.1 Haydenberry Drive

The Haydenberry Drive project study area is characterized as a site with relatively level terrain bordered by modern residential units to the west and a utility corridor for overhead electrical power lines containing scrub brush and young sapling vegetation. Site fieldwork revealed sand and gravel soils with sparse grass cover which strongly suggests that the original soil stratigraphy was impacted during road infrastructure and residential housing construction efforts. The Haydenberry Drive project study area is not considered to have historic or precontact sensitivity and no further archeological work is recommended for this proposed project study location.

2.6.2 Milton High School Grounds

The Milton High School and Ellison Street project study area is located approximately several hundred feet north of Haydenberry Drive. The Ellison Street site is characterized as relatively level terrain bordered by modern residential units to the west and a utility corridor for overhead electrical power lines containing scrub brush and young sapling vegetation. The utility corridor and vegetation physically separate the Milton High School property. The Milton High School site is characterized as relatively flat with landscaped with lawn for athletic sports fields. Site fieldwork revealed sand and gravel soils suggesting that this area was altered during the utility line and athletic field construction activities. Both Ellison Street and Milton High School grounds project study area are not considered to have historic or precontact sensitivity and no further archeological work is recommended for this proposed project study location.

2.6.3 Brandy Lane

The Brandy Lane project study area is characterized as a site with relatively flat terrain bordered by residential units to the north and west. The proposed sidewalk alignment would be constructed adjacent to the roadway right-of-way adjacent to the front yard space of the recently constructed residential units. The Brandy Lane project study area is not considered to have historic or precontact sensitivity and no further archeological work is recommended for this proposed project study location.

2.6.4 Upper Main Street

The Upper Main Street project study area is characterized by low-lying terrain at the eastern end adjacent to Mallett's Creek and an identified wetland area to the south. To the west, the roadway and landscape rise to a highpoint where mid-18th century homes and farm complexes reside. The properties 88 and 89 Main Street, which contain elevated terraces overlooking Mallet's Creek and wetlands, are considered to have precontact archeological sensitivity along with the historic farms lands. All of the structures within the Upper Main Street project study area fall within the Milton Falls Historic District, a Vermont State Register Historic District.

89 Main Street looking east

The locations identified for historic and precontact archeological sensitivity within the Upper Main Street project study area include the raised terrace landforms located at 88 and 89 Main Street. The areas of level terrain on the south side of Upper Main Street from approximately the 89 Main Street extending east to the intersection of East Road are also anticipated to have precontact archeological sensitivity. If these sensitive areas cannot be protected during the project design, it is recommended that an archeological reconnaissance survey be conducted.

3.0 Concept Alternatives Analysis

3.1 Project Purpose and Need

Purpose: The purpose of the Milton, VT Pedestrian and Bicycle Scoping Study is to provide analysis, evaluation and recommendations for all potential sidewalk and shared use path alternative improvements at the four (4) project study areas. The proposed concept alternative improvements would address existing gaps in the Town's network of bicycle and pedestrian accommodations.

Need:

- Haydenberry Drive and Ellison Street each have an existing 10 foot wide shared use path segments on the east side. There is an approximately 450 foot gap between the existing shared use paths. To complete a network of connected facilities, the shared use path needs to be filled in between the two existing segments.
- Milton High School grounds have existing sidewalk facilities to access the school campus primarily from points north and east via Lamoille Terrace and US Route 7. The neighborhood community to the south and west via Haydenberry Drive and Ellison Street have existing sidewalk infrastructure, however no formal connections are provided to access the Milton High School grounds. To complete a network and provide transportation and recreation opportunities for the community, a walking and bicycling facility should connect to existing infrastructure on Haydenberry Drive and Ellison Street.
- Access from the north to Milton High School is provided via Lamoille Terrace, with Brandy Lane providing direct access to the Milton High School north parking lot and entrance. Lamoille Terrace has existing sidewalk infrastructure on the south side. Brandy Lane lacks any sidewalk infrastructure. To connect the existing sidewalk network, a sidewalk is needed on Brandy Lane.
- Upper Main Street from Railroad Street to intersection of North Road/East Road/Westford Road lacks sidewalks resulting in a gap in the network. Existing sidewalk segments exist on both the north and south side of Main Street, on the west side of North Road and the south side of Westford Road. To connect the existing sidewalk segments, a sidewalk facility is needed on Upper Main Street. Furthermore, the substandard crest vertical curve on Upper Main Street results in insufficient stopping sight distance for vehicles and insufficient intersection sight distance for cars and pedestrians accessing Railroad Street.

The following sections provide further comparison for each conceptual alternative including an analysis, evaluation and selection of the preferred concept alternative with an evaluation matrix and opinion of probable constructions costs.

3.2 Haydenberry Drive

3.2.1 Evaluation of Concept Alternatives

The proposed alternative for this project study area includes a 10 foot wide bituminous concrete shared use path with an 8 foot wide grass buffer on the east side of Haydenberry Drive. The proposed shared use path connects an approximate 450 foot gap between two existing asphalt shared use paths on Ellison Street and Haydenberry Drive. Additional improvements for consideration along this segment would include;

- Providing ADA-compliant ramps and crosswalk pavement markings across the two driveways for the proposed development projects;
- Providing ADA-compliant ramps and crosswalk pavement markings for all crossings at the intersection of Haydenberry Drive/Strawberry Lane/Ellison Street; and
- Relocating the STOP bar and STOP sign on the north approach for Haydenberry Drive to better align with the existing street intersections and the proposed driveway alignments.

3.2.2 Preferred Concept Alternative

Based on public involvement through workshops, presentations and meetings with Selectboard Members and the PSC; the preferred concept alternative recommendations include;

- A 10 foot wide bituminous concrete path with 8 foot grass buffer on the east side of Haydenberry Drive from the existing terminus of the path on Ellison Street south to the limit of the path presently under construction as part of the elderly housing complex.
- Constructing the driveway apron and intersection approach for the proposed Blackberry Commons roadway in an alignment directly opposite Strawberry Lane.
- Providing ADA-compliant ramps, STOP signs, STOP bars and crosswalk pavement markings at all four legs of the intersection.

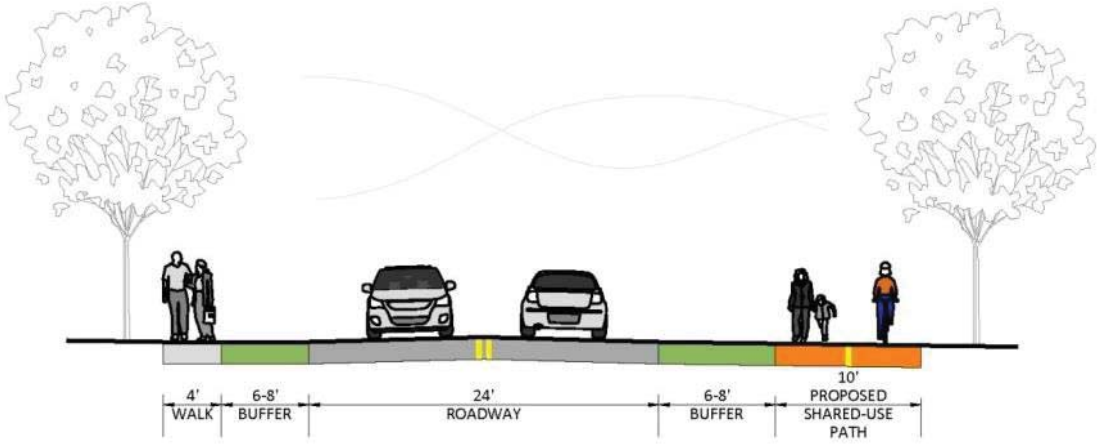

Figure 2: Haydenberry Drive Preferred Alternative Cross Section, Looking North

3.2.3 Opinion of Probable Construction Costs

The opinion of probable construction costs for the Haydenberry Drive project study area is $79,000. The cost estimate was developed from the preferred concept alternative plans and account for the anticipated construction costs which include engineering, construction, construction administration and a 25% contingency. The cost estimates do not include environmental permitting, easement, property

acquisition or potential utility relocation. The detailed itemized opinion of probable constructions costs are provided in Appendix D. The unit cost data was applied from VTrans 5 year average price list.

3.3 Milton High School Grounds

3.3.1 Evaluation of Concept Alternatives

The shared use path alternatives studied provide increased access and connectivity around the school campus. The proposed concept alternatives studied connect to the existing shared use path on Haydenberry Drive include three alternatives described below.

Shared use path Alternative 1 includes a 10 foot wide bituminous concrete shared use path with a 2 foot wide buffer zone on either side. The path alignment would begin at the existing path on Ellison Street adjacent to the southwest corner of the school property, following the general right-of-way of the existing sewer and water lines along the western property boundary. Transitioning from the existing sewer and water line, the west path alignment would require significant grading to meet ADA compliance in order to reach the elevation of the intersection with Brandy Lane and the rear entrance of the school. The path would terminate at Brandy Lane, with a new crosswalk and ADA-compliant ramps to connect to the existing sidewalks along the rear parking lot.

Shared use path Alternative 2 proposes an 8 foot wide bituminous concrete path along the north side of the internal roadway of the proposed Blackberry Commons development parcel, beginning at the shared use path on Haydenberry Drive. The path would connect through the corner of the adjacent shopping plaza parcel to a point on the school property adjacent to the south edge of the track and field facilities. The path would then continue as a 10 foot wide bituminous concrete path alignment following the general alignment of the existing fence line on the school property, looping between the existing track facility and parking lot to connect to the existing internal sidewalk at the front entrance of the school.

Shared use path Alternative 3 proposes a 10 foot wide bituminous concrete path alignment on the north side of the existing tree line along the south edge of the school property. The proposed path would pass south of the existing track and field facilities, from that point sharing the same alignment as proposed under Alternative 2.Two path alternatives are proposed to connect to US Route 7 and utilize an existing public easement.

Shared use path East Alternative 1 is a 10 foot wide bituminous concrete path using the existing green buffer between the existing surface parking lots. It is anticipated Alternative 1 alignment would require additional utility impacts to existing catch basins, but would not impact the existing parking lot layout.

Shared use path East Alternative 2 is a 10 foot wide bituminous concrete path using the edge of the existing parking lot area. It is anticipated Alternative 2 alignment would have minimal impacts to existing drainage structures, but would impact the existing parking lot layout. The proposed parking lot layout provides no net loss of parking and would meet the minimum requirements recommended for the parking space sizes and aisle widths.

3.3.2 Preferred Concept Alternative

Based on public involvement through workshops, presentations and meetings with Selectboard Members and the PSC; the preferred concept alternative recommendations include:

- A 10 foot wide bituminous concrete path with 2 foot grass buffer on the south and east side of the school property, consistent with Alternative 3; and
- An 8 foot wide bituminous concrete path with 2 foot grass buffer utilizing the public easement connecting to US Route 7, consistent with East Alternative 1.

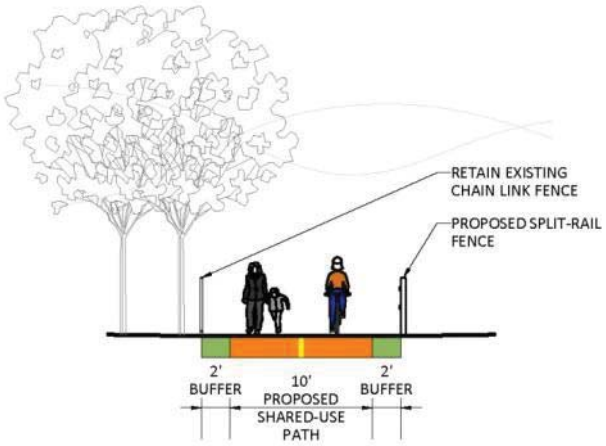

Figure 3: Milton High School Preferred Alternative Cross Section, Shared Use Path (South side of fields)

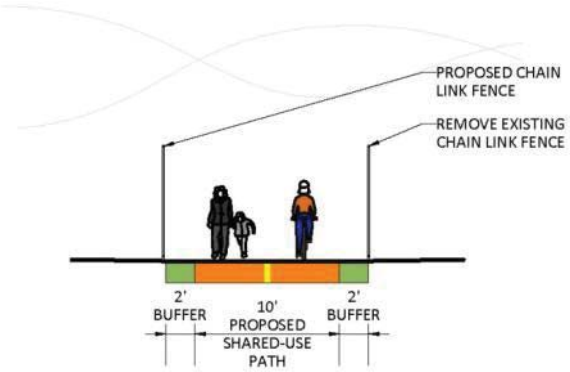

Figure 4: Milton High School Preferred Alternative Cross Section, Shared Use Path (East side of fields)

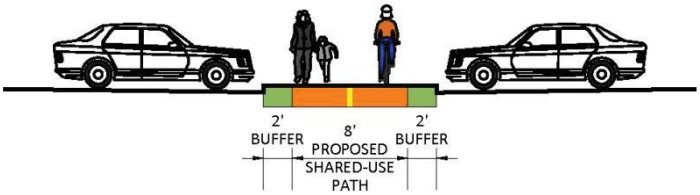

Figure 5: Milton High School Preferred Alternative Cross Section, Shared Use Path (Access to US Route 7)

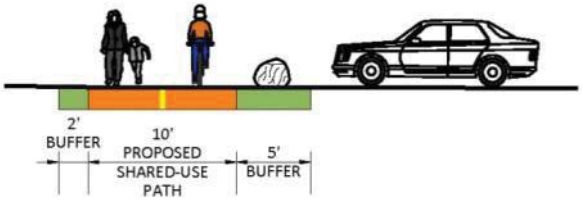

Figure 6: Milton High School Preferred Alternative Cross Section, Shared Use Path (South side of school parking)

While the west path alignment was not selected as part of the preferred alternative, members of the steering committee noted that the Town should consider constructing the path as part of a future project if demand from the public and users of the school facilities exists. The west side path alignment would complement the preferred alternative paths, providing a full network of paved, accessible shared use paths around the school property.

3.3.3 Evaluation Matrix

All of the anticipated costs, resource impacts and permit requirements for each concept alternative have been summarized in the evaluation matrices below in **Table 1** and **Table 2**.

Table 1: Evaluation Matrix Milton High School Shared Use Path Alternative 1, Alternative 2 and Alternative 3.

Item	Shared Use Path Alternative 1	Shared Use Path Alternative 2	Shared Use Path Alternative 3
Construction Characteristics			
Length	1,750 LF	2,500 LF	2,350 LF
Facility Width	10 FT	8 FT	10 FT
Buffer Width	4 FT (total)	4 FT (total)	4 FT (total)
Surface	Bituminous Concrete	Bituminous Concrete	Bituminous Concrete
Terrain	Hilly with Steep Slopes	Flat with Level Terrain	Flat with Level Terrain
Retaining Structures and/or Railing	Yes	Yes	Yes
Potential Impacts			
Property Impacts	Some	Yes	None
Utility Impacts- Aerial	Not Likely	None	None
Utility Impacts- Underground	None	None	None
Archeological Impacts	None	None	None
Historic Property Impacts	None	None	None
Trees- Removed/Replaced	Yes	Yes	None
Right-of-Way Impacts	None	Yes	None
Class II Wetland Impacts	None	None	None
Safety			
Number of Driveway Crossings	0	N/A	N/A
Number of Roadway Crossings	1	N/A	N/A
Permits			
ACT 250	No	No	No
NEPA	Categorical Exclusion	Categorical Exclusion	Categorical Exclusion
404 COE Wetlands	No	No	No
ANR Wetlands	No	No	No
Stream Alteration	No	No	No
Stormwater Discharge	No	No	No
Construction General	Yes	Yes	Yes
Archeology- Phase 1B	No	No	No
Section 106 / Historic	No	No	No
Prime Agricultural Soils	Yes	Yes	Yes
Rare, Threatened, EN Species	No	No	No
Opinion of Probable Construction Costs			
Conceptual Cost Estimate	$600,000	$500,000	$400,000

Table 2: Evaluation Matrix Milton High School Shared Use Path East Alignment

Item	Shared Use Path East Alternative 1	Shared Use Path East Alternative 2
Construction Characteristics		
Length	200 LF	200 LF
Facility Width	10 FT	8 FT
Buffer Width	4 FT (total)	4 FT (total)
Surface	Bituminous Concrete	Bituminous Concrete
Potential Impacts		
Property Impacts	None	None
Utility Impacts- Aerial	Not Likely	Not Likely
Utility Impacts- Underground	Yes	Yes
Archeological Impacts	None	None
Historic Property Impacts	None	None
Trees- Removed/Replaced	Yes	None
Right-of-Way Impacts	None	None
Class II Wetland Impacts	None	None
Safety		
Number of Driveway Crossings	N/A	N/A
Number of Roadway Crossings	N/A	N/A
Parking Impacts		
Relocated Parking Spaces	Yes (No net loss)	None
Permits		
ACT 250	No	No
NEPA	Categorical Exclusion	Categorical Exclusion
404 COE Wetlands	No	No
ANR Wetlands	No	No
Stream Alteration	No	No
Stormwater Discharge	No	No
Construction General	Yes	Yes
Archeology- Phase 1B	No	No
Section 106 / Historic	No	No
Prime Agricultural Soils	No	No
Rare, Threatened, EN Species	No	No
Opinion of Probable Construction Costs		
Preliminary Conceptual Cost Estimate	$60,000	$60,000

3.3.4 Opinion of Probable Construction Costs

The opinion of probable construction costs for the Milton High School grounds project study area improvements are $460,000. The cost estimate was developed from the preferred concept alternative plans and account for the anticipated construction costs which include engineering, construction, construction administration and a 25% contingency. The cost estimates do not include environmental permitting or potential utility relocation. The detailed itemized opinion of probable constructions costs are provided in Appendix D. The unit cost data was applied from VTrans 5 year average price list.

3.4 Brandy Lane

3.4.1 Evaluation of Concept Alternatives

The proposed alternative for this project study area is a 6 foot wide concrete sidewalk with a 4 foot wide grass buffer on the east side of Brandy Lane. The proposed sidewalk eliminates an approximate 250 foot gap between the existing sidewalk on Lamoille Terrace and the internal sidewalk on the school property. Additional improvements for consideration along this segment include;

- Providing ADA-compliant ramps connecting to the existing crosswalk across Brandy Lane;
- Providing ADA-compliant ramps and crosswalk pavement marking crossing Brandy Lane connecting to the existing internal school sidewalk and the proposed shared use path west alignment; and
- Providing drainage improvements through grade modifications during future planned repaving efforts.

3.4.2 Preferred Concept Alternative

Based on public involvement through workshops, presentations and meetings with Selectboard Members and the PSC; the preferred concept alternative recommendations include;

- A 6 foot wide concrete sidewalk with 4 foot grass buffer on the east side of Brandy Lane and
- Providing ADA-compliant ramps connecting the existing crosswalk across Brandy Lane.

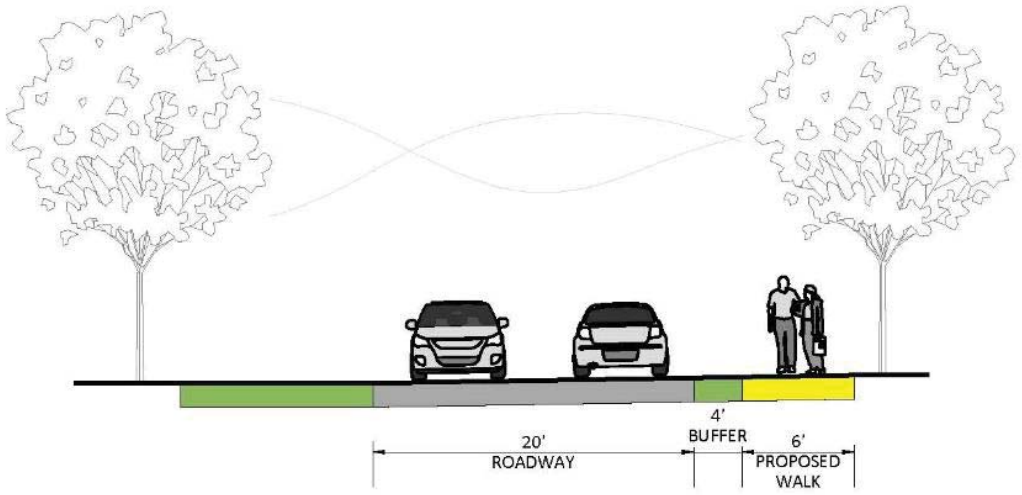

Figure 7: Brandy Lane Preferred Concept Alternative, Looking North

3.4.3 Opinion of Probable Construction Costs

The opinion of probable construction costs for the Brandy Lane project study area improvements are $56,000. The cost estimate was developed from the preferred concept alternative plans and account for the anticipated construction costs which include engineering, construction, construction administration and a 25% contingency. The cost estimates do not include environmental permitting, easement, property acquisition or potential utility relocation. The detailed itemized opinion of probable constructions costs are provided in Appendix D. The unit cost data was applied from VTrans 5 year average price list.

3.5 Upper Main Street

3.5.1 Evaluation of Concept Alternatives

Two sidewalk alignments are proposed for Upper Main Street. Sidewalk Alignment 1 is a proposed 8 foot wide concrete sidewalk with a 3 foot wide grass buffer on the north side of the roadway. The proposed alignment would connect the existing sidewalk segment on Upper Main Street and the existing sidewalk segment on North Road. Sidewalk Alignment 2 is a proposed 8 foot wide concrete sidewalk with a 3 foot wide grass buffer on the south side of the roadway. The proposed alignment would connect the existing sidewalk on Upper Main Street and existing sidewalk on Westford Road.

It is also recommended that the roadway be reconstructed to reduce the elevation at the top of the existing vertical curve east of Railroad Street. This requires a substantial cut to provide appropriate vertical curvature for safe stopping sight distance to reduce conflicts between westbound vehicles on Upper Main Street and northbound left turning vehicles on Railroad Street. Under this scenario, the maximum cut at the crest of Upper Main Street would be seven feet below existing grade. This will require retaining walls in order to minimize the impact to the adjacent historic properties.

The roadway reconstruction of Upper Main Street is likely to require relocation of some or all of the existing utilities below grade which include water, sewer, storm drain and gas lines. The roadway reconstruction will also impact existing overhead utilities with utility pole relocation required in order to accommodate the sidewalk alignment. It is recommended that the Town consider burying overhead utility lines as part of any future reconstruction efforts in order to enhance the existing historic district.

As an alternative to the extensive roadway reconstruction, the Town may consider restricting left turn movements from Railroad Street. Existing traffic volumes suggests that over 90 percent of drivers on Railroad Street turn right onto Upper Main Street, indicating that a restriction would likely not be a major impact to traffic. While this modification will not improve the deficient stopping sight distance on Upper Main Street, it will eliminate intersection sight distance concerns at Railroad Street.

Additional improvements for consideration along this segment include;

- Providing ADA-compliant ramps and crosswalk pavement markings crossing Upper Main Street west of the North/East Road intersection;
- Providing ADA-compliant ramps and crosswalk pavement markings crossing East Road;
- Providing ADA-compliant ramps and crosswalk pavement markings crossing Upper Main Street west of the Railroad Street intersection;
- Providing ADA-compliant ramps and crosswalk pavement markings crossing Railroad Street at the intersection of Upper Main Street; and
- Balancing the road profile cut and fill at the intersection of Upper Main Street/Railroad Street.

It is recommended that the Town consider implementing all-way STOP control at the intersection of Upper Main Street with North Road, East Road and Westford Road. A preliminary review of traffic

volumes supplied by CCRPC indicates that the intersection may meet the volume warrants described in the *Manual on Uniform Traffic Control Devices* (MUTCD) for all-way STOP control. Prior to implementing this recommendation, new automatic traffic recorder counts should be taken on the approaches to the intersection to verify that the traffic volumes and speeds meet the warrants set forth in the MUTCD for all-way STOP control.

3.5.2 Preferred Concept Alternative

Based on public involvement through workshops, presentations and meetings with Selectboard Members and the PSC; the preferred concept alternative Phase 1 and Phase 2 recommendations include;

- **Phase 1:** All-way STOP control at the intersection of Upper Main Street/North Road/Westford Road/East Road. Restrict left turning movements from Railroad Street.
- **Phase 2:** An 8 foot wide concrete sidewalk and retaining wall with 3 foot grass buffer on the north side of Upper Main Street. Reconstructing Upper Main Street east of Railroad Street to provide adequate vertical curvature for safe intersection and stopping sight distance.

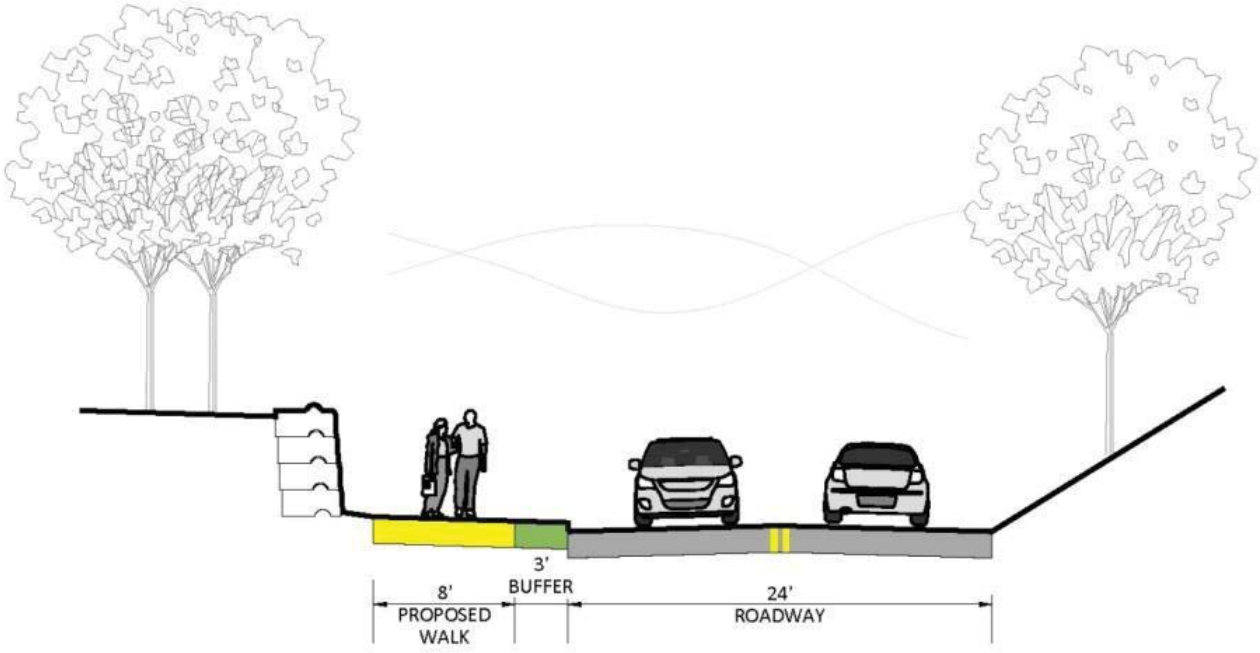

Figure 8: Phase 2, Upper Main Street at Railroad Street Preferred Alternative Cross Section, Looking East

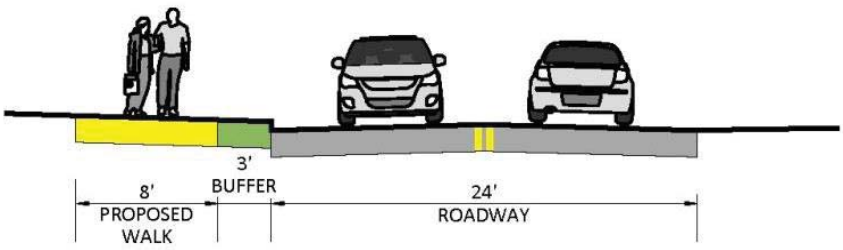

Figure 9: Upper Main Street at Westford Road Preferred Alternative Cross Section, Looking East

3.5.3 Evaluation Matrix

All of the anticipated costs, resource impacts and permit requirements for each concept alternative have been summarized in the evaluation matrix below in **Table 3.**

Table 2: Evaluation Matrix Upper Main Street

Item	Sidewalk on South side	Sidewalk on North side
Construction Characteristics		
Length	820 LF	820 LF
Facility Width	8 FT	8 FT
Buffer Width	3 FT	3 FT
Surface	Concrete	Concrete
Potential Impacts		
Property Impacts	Some	None
Utility Impacts- Aerial	Not Likely	Not Likely
Utility Impacts- Underground	Yes	Yes
Archeological Impacts	Yes	Yes
Historic Property Impacts	Yes	Yes
Trees- Removed/Replaced	Yes	Yes
Right-of-Way Impacts	Some	Some
Class II Wetland Impacts	Yes	Yes
Safety		
Number of Driveway Crossings	2	5
Number of Roadway Crossings	2	2
Permits		
ACT 250	No	No
NEPA	Categorical Exclusion	Categorical Exclusion
404 COE Wetlands	Yes	Yes
ANR Wetlands	Yes	Yes
Stream Alteration	No	No
Stormwater Discharge	No	No
Construction General	Yes	Yes
Archeology- Phase 1B	Yes	Yes
Section 106 / Historic	Yes	Yes
Prime Agricultural Soils	Yes	Yes
Rare, Threatened, Endangered Species	No	No
Opinion of Probable Construction Costs		
Preliminary Conceptual Cost Estimate	$1,729,000	$1,729,000

3.5.4 Opinion of Probable Construction Costs

The opinion of probable construction costs for the Upper Main Street project study area Phase 1 improvements are $2,500. Phase 2 improvements are expected to cost $1,729,000. The cost estimate was developed from the preferred concept alternative plans and account for the anticipated construction costs which include engineering, construction, construction administration and a 25% contingency. The cost estimates do not include environmental permitting, easement, property acquisition or potential utility relocation. The detailed itemized opinion of probable constructions costs are provided in Appendix D. The unit cost data was applied from VTrans 5 year average price list.

4.0 Summary

The Milton, VT Pedestrian and Bicycle Scoping Study was prepared at the request of the CCRPC and the Town of Milton to analyze and evaluate all concept alternatives for sidewalk and shared use path connections. This report presents the existing conditions data, conceptual design alternatives, selection of the preferred conceptual design alternative and opinion of probable construction costs for each project study area. At the conclusion of a public participation and outreach process in which the findings of this report were presented and reviewed, the Milton Selectboard identified a preferred design alternative for each project study area. The proposed recommendations and preferred design alternatives align with the transportation goals in the Milton Comprehensive Plan, 2013 and will continue to develop walking and bicycling infrastructure within the community.

Appendix A

Meeting Memorandum: Project Steering Committee Work Session

TooleDesignGroup

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Boston, MA 02109
617.619.9910
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www.tooledesign.com

Meeting Memorandum

Subject:	Team Work Session Meeting Minutes
Project:	Milton, VT Scoping Study
Date:	September 25, 2014
Time:	12:00-4:00 PM
Location:	Milton Town Office Building Milton, VT
Participants:	Bryan Davis, CCRPC Roger Hunt, Public Works Director Katherine Sonnick, Planning Director Katelin Brewer-Cole, Local Motion Katie Miller, Milton Community Youth Coalition Chris Giard, Director of Facilities MTSD Scott Thompson, MHS Assistant Principal Karen Carlin, MHS Nurse Patrick Baxter, Toole Design Group John Dempsey, Toole Design Group

Toole Design Group (TDG) provided a meeting agenda and working base maps including the proposed study site locations. TDG lead the discussion with the Project Steering Committee (PSC) to discuss and review alternative concepts for bicycle and pedestrian facilities within each study area. Meeting comments are listed below based on project site location.

Haydenberry Drive- A 450-ft gap between two existing asphalt pathways on Ellison Street and Haydenberry Drive;

- The Town presented two (2) development projects occurring on Haydenberry Drive south of Strawberry Lane intersection and adjacent to the project site location.
    - A proposed elderly housing complex located off of Haydenberry Drive is currently under construction. The proposed project includes approximately 20,000 square foot, 3-story elderly housing complex with associated infrastructure for a total of 64 units. It's understood the proposed development parcel will also include a side path for the length of the parcel connecting one segment of the gap between the existing asphalt pathways on Ellison Street and Haydenberry Drive.

    - A second development project, Blackberry Commons is proposing 31 residential lots ranging in size and associated private infrastructure. Blackberry Commons is going through the initial development review phases and is understood if the project is to be constructed, the parcel would need to connect the proposed adjacent asphalt path from the elderly housing development project with the existing asphalt path on Ellison Street.
- Each proposed development includes one driveway curb cut from Haydenberry Drive to access the proposed development parcels. It was suggested to maintain the minimum turning radii for both driveways as approved by the Town.
- It was suggested pedestrian upgrades to the intersection of Haydenberry Drive, Ellison Street and Strawberry Lane intersection should include all curb ramps and crosswalks meet ADA-compliance. It was also suggested to relocate the existing stop sign on the north approach of Haydenberry Drive further to the north to better align with the proposed development parcel driveway curb cut and exploring additional traffic calming measures.
- It was suggested once the 450-ft asphalt path missing gap is completed, the Town should stripe a dashed yellow center line the entire length of the path to further emphasize patrons use the correct side of the path and reduce dangerous conflicts.
- It was suggested future restriping on Haydenberry Drive should include solid white edge lines or fog lines to reduce the travel lane widths.

Milton High School Grounds- The segment between the existing asphalt pathway on Ellison Street and Milton HS front entrance;

- Faculty and staff representatives from Milton HS shared preliminary ideas for future long term improvements and upgrades to the athletic field complex. The future upgrades include demolishing the existing grandstand structure. The future structure would be able accommodate a larger grandstand seating area, concession operations and restroom facilities.
- School representatives discussed potential path alignments on school property may impact overall operations of the existing athletic fields.
- School representatives expressed concerns regarding safety and security issues with potential path alignments on school property.
- The Town discussed a future long-term goal of establishing a connected path system from Milton HS to the Milton Municipal Building.
- The Town expressed interest in utilizing existing utility easements for potential path alignments.
- The project team identified potential public right-of-way access (Subway restaurant and/or Pomerleau parcel) and connections from US Route 7 to Milton HS property that the consultant team will look to explore.
- It was suggested that if portions of the path alignment are proposed on Milton HS property, some vertical delineation or separation should be considered to address safety and security issues.
- It was suggested that constructed pathway segments be illuminated to address safety and security issues.

Brandy Lane – A 5-ft wide sidewalk on Brandy Lane, the road connecting Milton HS to Lamoille Terrace;

- The team discussed Brandy Lane existing radii and if a radius reduction can be performed.
- The team preferred a 5-ft wide concrete sidewalk with a 3-ft wide grass buffer on the eastside of Brandy Lane.
- The Town suggested addressing the drainage issues through pavement modifications and preferred not introduce a closed drain system.

Upper Main Street- The segment between Railroad Street and the intersection of East and North Roads;

- The Town informed the Project Stakeholder Committee, an approved planned development on the northside of Railroad Street is currently at least 5 years old. The approved development is now presumed expired.
- The Town expressed an interest to explore providing a wider sidewalk to take little right-of-way as possible.
- Previous studies included a proposed shared use path on the southside of Upper Main Street and a sidewalk on the northside of Upper Main Street. Both preliminary studies proposed cutting the road grade significantly to address sight lines in attempt to reduce safety concerns at the Upper Main Street/Railroad Street intersection. It's noted the previous study cost estimates were approximately $3.5 million utilizing 2008 unit prices.
- The Town informed the team the existing sewer utility lines on Upper Main Street are buried approximately 6-ft to 8-ft and existing water utility lines are buried approximately 3.5-ft to 5.5-ft.
- The team expressed an interest to potentially explore traffic data or perform counts for this corridor. The Town indicated prior to 9:00 AM and after 2:30 PM are estimated peak travel times.
- It was suggested to analyze and collect readily available crash data from the Milton Police Chief or State data.
- The intersection of Upper Main Street and Railroad Street design treatments were discussed which included a mini traffic circle, traffic signal control or all way stop control.
- The intersection of Upper Main Street, East Road, North Road and Westford Road design treatments were discussed which included all way stop control or traffic signal control.
- The Town suggested if a wall element is proposed in a design solution, the aesthetic of the materials should be consistent with and mimic an old main street character.

<u>Next Steps</u>

TDG will take action to address comments discussed at this meeting and key action items are referenced below;

- Follow up with respective contact regarding crash data and traffic count data.
- Schedule alternatives presentation for the Monday, November 3, 2014 as an agenda item for standing Select Board meeting.

- Develop conceptual alignment alternatives for alternatives presentation.
- Develop comparison matrix for conceptual alignment impacts.
- Written summary of concept alternatives.

Appendix B

Archeological Resource and Historic Preservation Assessment

HARTGEN
archeological associates inc

ARCHEOLOGICAL RESOURCE AND HISTORIC PRESERVATION ASSESSMENT

Milton Bike/Pedestrian Scoping Study

Village of Milton
Chittenden County, Vermont

HAA # 4766.11

Submitted to:

Patrick Baxter
Toole Design Group
33 Broad Street, Fourth Floor
Boston, Massachusetts 02109
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Prepared by:

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www.hartgen.com

An ACRA Member Firm
www.acra-crm.org

August 2014

ARCHEOLOGICAL RESOURCE ASSESSMENT

INTRODUCTION

Hartgen Archeological Associates, Inc. (HAA, Inc.) was retained by Toole Design Group to conduct an Archeological Resource Assessment (ARA) and Historic Preservation Assessment for the proposed Milton Bike/Pedestrian Path Scoping Study located in the Village of Milton, Chittenden County, Vermont (Map 1). The project is funded by the Chittenden County Regional Planning Commission. This review and sensitivity assessment was conducted to comply with Section 106 of the National Historic Preservation Act. The investigation was conducted according to the Vermont State Historic Preservation Office's Guidelines for Conducting Archeology in Vermont (2002) and is under review by the Vermont Agency of Transportation (VTrans).

The objective of the ARA is to identify areas of archeological sensitivity based on environmental factors, known site information and historical information for the project Area of Potential Effect (APE). Background research was conducted at the Vermont Division for Historic Preservation (VDHP) where archeological site files, National Register (NR), State Register (SR) and town information were reviewed. A site visit was conducted by Elise Manning Sterling on August 8, 2014 to observe and photograph existing conditions within the project area and photograph structures 50 years and older.

Project Description

The project includes construction of new pathways in four areas within the Town of Milton. For reference in this report, these areas are designated as Areas 1-4, as depicted on Maps 1 and 2. The four areas include:

- Area 1 - A 450 foot (137 m) "gap" in existing sidewalk on the east side of Haydenberry Drive, located north of the McDonald's.
- Area 2 - The area between the existing asphalt pathway on Ellison Street and the front entrance of Milton High School, approximately 2,218 feet (676 m).
- Area 3 - A 5 foot (1.5 m) wide sidewalk on Brandy Lane, the road connecting the High School to Lamoille Terrace, approximately 262 feet (80 m). This scoping study includes the potential for the proposed sidewalk to be located on either the east or west side of Brandy Lane.
- Area 4 - Upper Main Street between Railroad Street and the intersection of East & North Roads, including safety analysis for pedestrian and vehicular traffic along the Upper Main Street portion of the project, approximately 706 feet (215 m). This scoping study includes the potential for the proposed sidewalk to be located on either the north or south side of Main Street.

Present Land Use and Area of Potential Effects (APE)

The proposed Bike and Pedestrian Path improvements are located along four separate and non-contiguous sections of existing road or paths within the Town of Milton. Three of the areas, including Haydenberry Drive (Area 1), Ellison Drive to the Milton High School (Area 2), and Brandy Lane (Area 3), are located adjacent to roads and buildings constructed in the last 40 years. A large portion of these areas contains paved parking areas, business lots, sidewalks and driveways directly adjacent to the roadways. The Milton High School path will primarily traverse landscaped playing fields and a stretch of land within a power line right-of-way. The fourth project area (Area 4) is located at the eastern end of Main Street, a section of the town in which the roads were well established by the mid-19th century, and which contains a number of well preserved 19th-century residences.

The VTrans requires that all projects under archeological review have a clearly defined area of potential effects (APE) that includes all areas where ground disturbance is proposed and areas that may be impacted temporarily or unintentionally such as staging areas and rights-of-way. Based on the proposed impacts listed in the previous section and a width of 50 feet (15 m), the APE includes approximately 4.2 acres (1.7 ha).

N

0 1,000 2,000 Feet

0 200 400 600 Meters

Note: Contour interval is 20 feet.

Legend

Project Areas

USGS 1948, Photorevised 1987
Milton, Essex Center, Colchester
& Georgia Plains, Vermont

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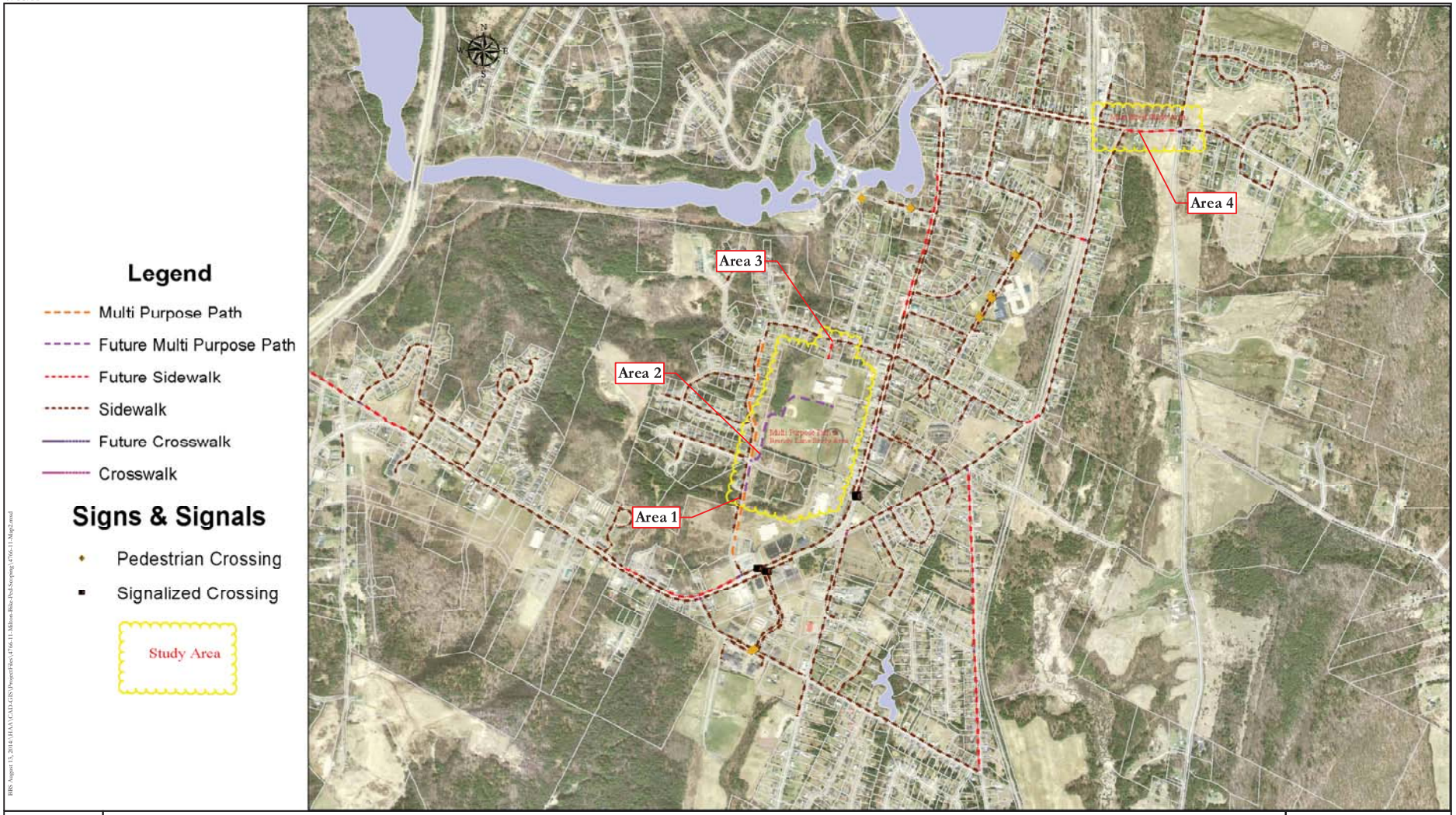
Map 1



Note: Map Scale Is Approximate.

Project Map
Sidewalk, Bike & Ped Network
UPWP Study Areas
(Town Of Milton Dept. of Public Works, 2014)

HARTGEN archeological associates inc

Map 2

ENVIRONMENTAL BACKGROUND

Physiography, Hydrology and Soils

Environmental characteristics of an area are significant for determining the sensitivity for archeological resources. Precontact and historic groups often favored level, well-drained locations near wetlands and waterways. Therefore, topography, proximity to wetlands, and soils are examined to determine if there are landforms in the project area that are more likely to contain archeological resources. In addition, bedrock formations or other lithic sources may contain resources that may have been quarried by precontact groups. Other locations can also be special purpose sacred and traditional use sites. Soil conditions can provide a clue to past climatic conditions, as well as changes in local hydrology.

The Town of Milton is located in the Champlain lowlands physiographic region, within the Lamoille River valley at an approximate elevation of 340 feet above mean sea level (amsl). The Main Street portion of the project (Area 4) is located at approximately 382 feet (116 m) amsl approximately 2,000 feet southeast of dammed Arrowhead Mountain Lake. The Lamoille River, directly south of the dam on Arrowhead Mountain Lake, is located approximately 2,000 feet from both the northern and southern portions of the project area. Mallett's Creek flows through the eastern end of Main Street in Area 4, draining into a large wetland to the southwest of the intersection of Main and East Streets. In general, the southern project area (Areas 1-3) is relatively flat, situated at a distance from streams and rivers, along roads constructed in the late 20th century.

The soils located within the majority of the project area include Adams and Windsor loamy sands, 0-5 per cent slopes, as well as Hinesburg fine sand loam and Belgrade Eldridge complex of silt and sand (USDA 2014). These soils are derived from glaciofluvial or glaciolacustrine deposits that formed in glacial till. The bedrock of the project vicinity is Dunham dolomite, with the Main street portion formed of Cheshire quartzite. The Cheshire quartzite was frequently used for making stone tools during precontact periods. Other local materials, such as slate, may also have been used to make stone tools. The vegetation in the Milton area is characterized as the Northern Hardwoods which were dominated by maple, birch, beech, spruce and hemlock (Kuchler 1964).

DOCUMENTARY RESEARCH

Historic Archeological Sites

One historic site listed on the Vermont Archaeological Inventory is located within one mile of the project area, and includes;

VT-CH-370 The site consists of three structures representing the pulp mill facility of the International Paper Company. The pulp mill was established in 1899, and operated until 1926. The mill complex consists of two foundations of poured concrete and a third standing brick structure. This site is located west of the Milton Dam on the south side of the river, situated approximately 2100 feet (640 m) northwest of the northwest corner of the project area 2260 (680 m).

Cemeteries

There are no known cemeteries located within or adjacent to any of the four proposed sidewalk segments (Hyde and Hyde 1991).

National and State Register Listed Sites

There are no sites or districts located within or adjacent to the four project areas that are listed on the National Register of Historic Places.

The northern Main Street portion of the project area (Area 4) is located within the Milton Falls Historic District, which is listed on the Vermont State Register (Map 3). The structures within the Historic District located within project Area 4 will be discussed in further detail in the historic preservation/architectural history section of this report.

Historic Maps and Archeological Sensitivity

A review of historic maps of the project area was conducted to attain an overview of the changing historical and environmental landscape within the project area. This includes the study of historic structures that may be or may no longer be extant, alterations to road and rail systems, and changes in stream and river courses. The 1857 Walling map and the 1869 Beers map depict the roadways and river and stream courses in the project area vicinity, as well as the names of the residents who lived there in those years (Maps 4 & 5). These maps show only a few structures located on the eastern end of Main Street. The rest of the houses within the Main Street project area were constructed during the period 1890-1900. Historic United States Geologic Series (USGS) maps, dating to as late as 1987, show that some of the roads in the southern part of the project area (Areas 1-3), including Haydenberry Drive and Brandy Lane, had not yet been built. The high school is shown as an addition to the 1987 USGS, which had been photorevised from the original 1948 map (Map 1).

This historic archeological sensitivity of Areas 1-3 is low. Study of historic maps, as well as modern USGS maps indicate that there was limited early settlement in this part of Milton, with these roads being established later in the 20th century, along with the subsequent construction of modern houses, the Milton High School, and shopping plazas. The Main Street portion of the project (Area 4) has a moderate historic archeological sensitivity since this portion of town was established much earlier, with a number of houses erected by the mid-18th century (Map 6).

Precontact Research and Archeological Sensitivity

An examination of the VDHP archeological site files reveals a relatively high precontact site density in the project vicinity, primarily concentrated along the Lamoille River, Arrowhead Mountain Lake, and Lake Champlain, with a fair of number of sites located adjacent to smaller waterways and wetlands. There are fifteen precontact sites listed in the Vermont site files in the project vicinity. These include:

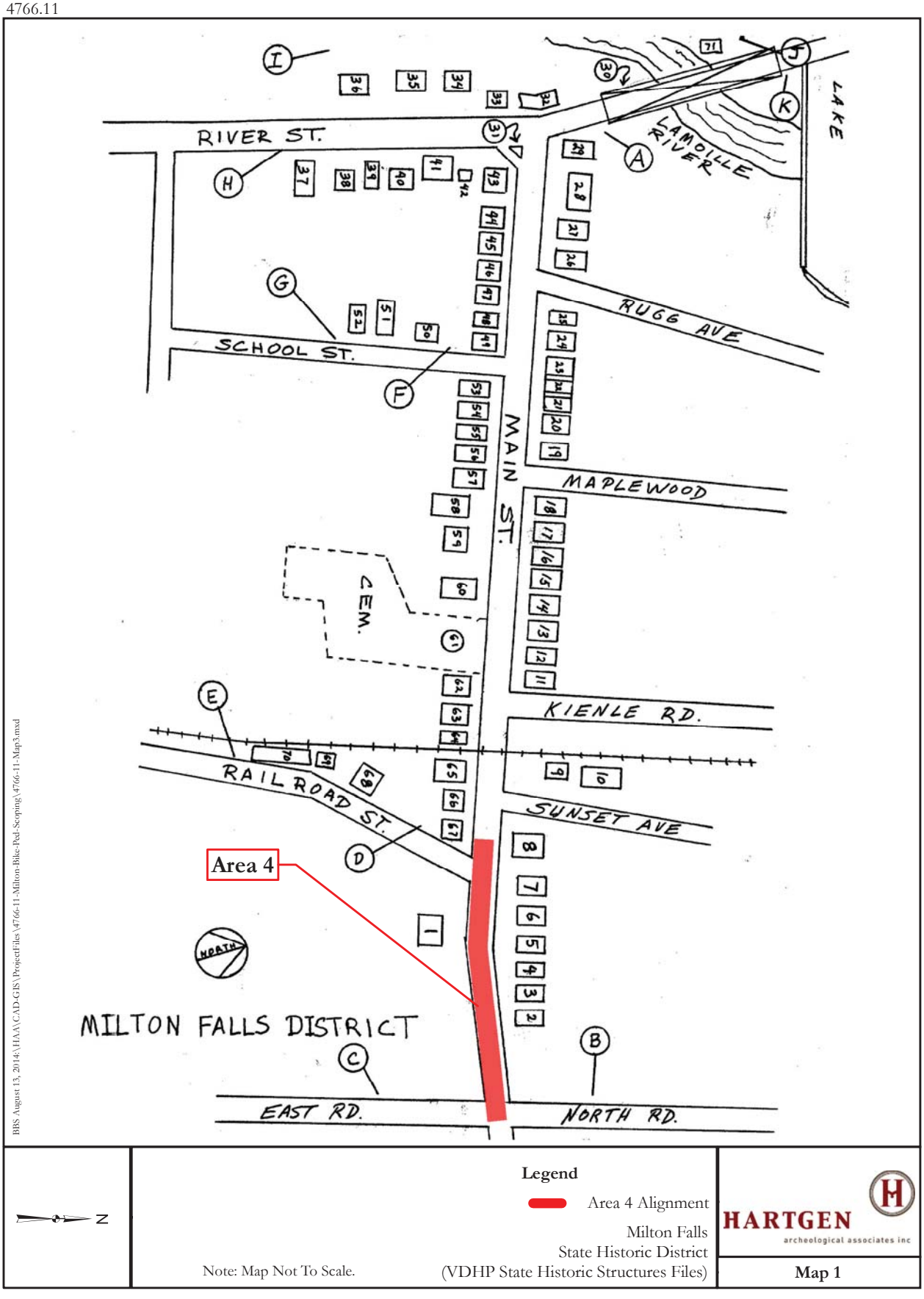
VT-CH-315 This precontact site consists of a dispersed distribution of fire-cracked rock, a few chert flakes, and a chert core within a sample area of approximately 200 by 75 feet. The researcher noted that the distribution suggested several epidoses of activity, though the site age was indeterminate. This site is located near the headwaters of an unnamed stream which feeds into the Lamoille River.

VT-CH-316 This precontact site of indeterminate age consists of a dispersed distribution of fire-cracked rock, three bifaces and calcined bone. This site is located near the headwaters of an unnamed stream which feeds into the Lamoille River.

VT-CH-321 This Middle to Late Woodland period precontact site was identified during testing for the proposed Checkerberry Commercial Park. Artifacts recovered during Phase I and II testing of the site included two triangular projectile points, unifaces, utilized flakes and chert, quartzite and quartz flakes. The site is located on the bank of an erosional gully which leads into the Lamoille River. Site VT-CH-326 is located on the other side of the gully.

VT-CH-326 This is a precontact site of undetermined time period which contained lithic debitage and a projectile point tip. The site is located on the bank of an erosional gully leading to the Lamoille River. Site VT-CH-321 is located on the other side of the gully.

VT-CH-353 This site was originally identified based on the recovery of one chert flake and a charcoal feature. Additional excavation revealed that the charcoal feature was a tree burn. This site was thus considered an isolated find.



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Note: Map Not To Scale.

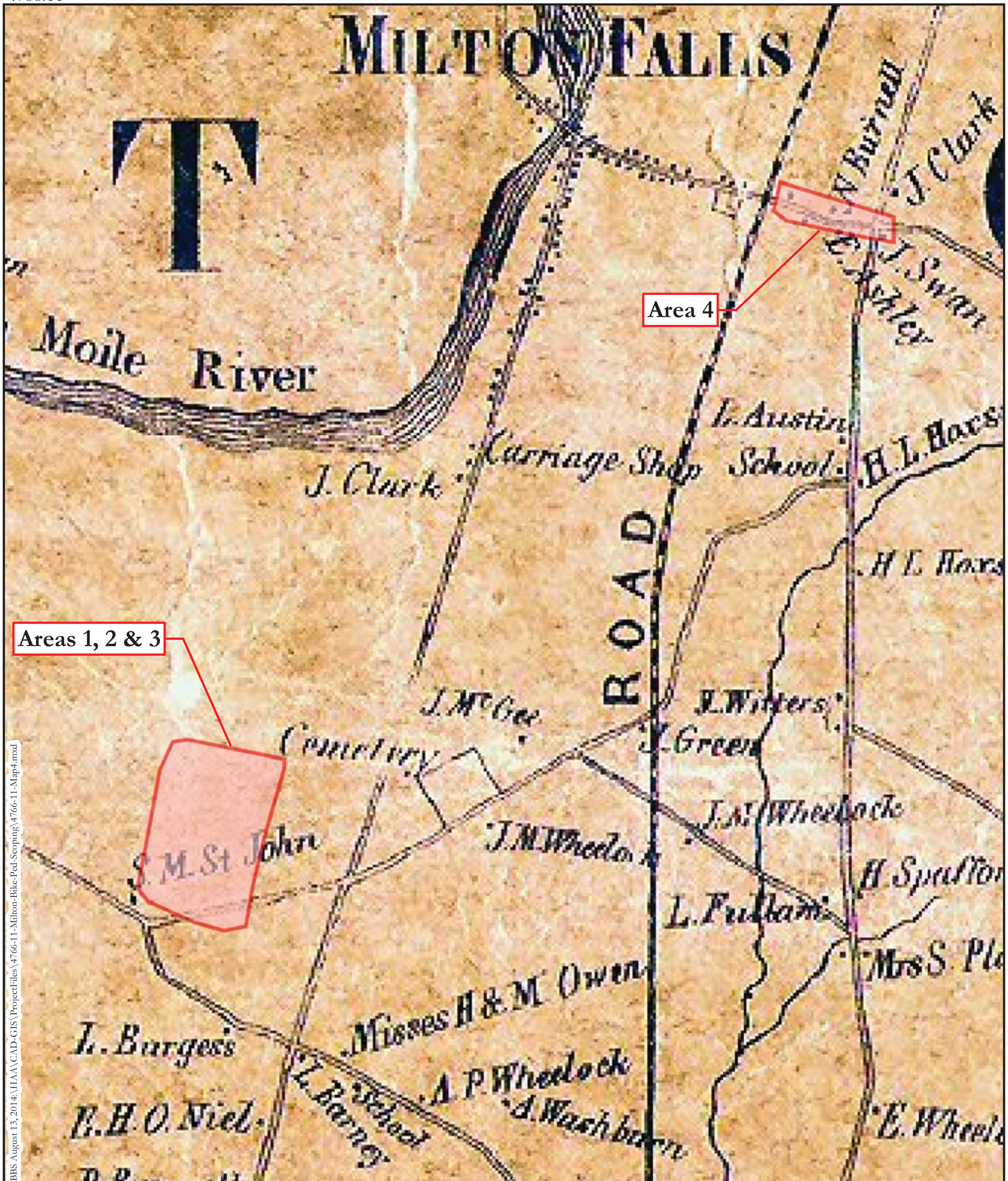
Legend

Area 4 Alignment

Milton Falls
State Historic District
(VDHP State Historic Structures Files)

HARTGEN archeological associates inc

Map 1



N

0 1,000 2,000 Feet

0 200 400 600 Meters

Note: Graphic scale approximate.

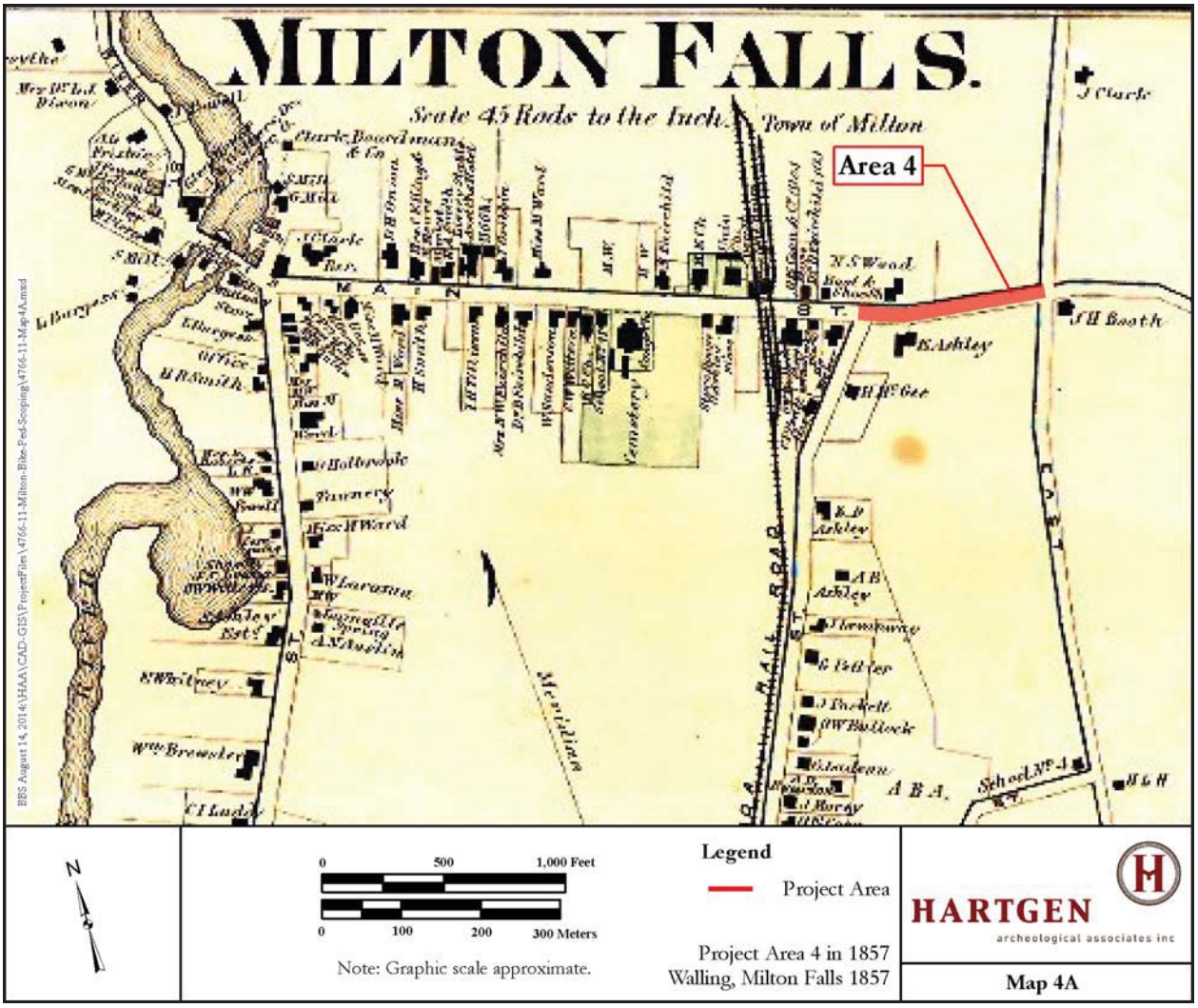
Legend

Project Area

Project Area in 1857
Walling 1857

HARTGEN archeological associates inc

Map 4



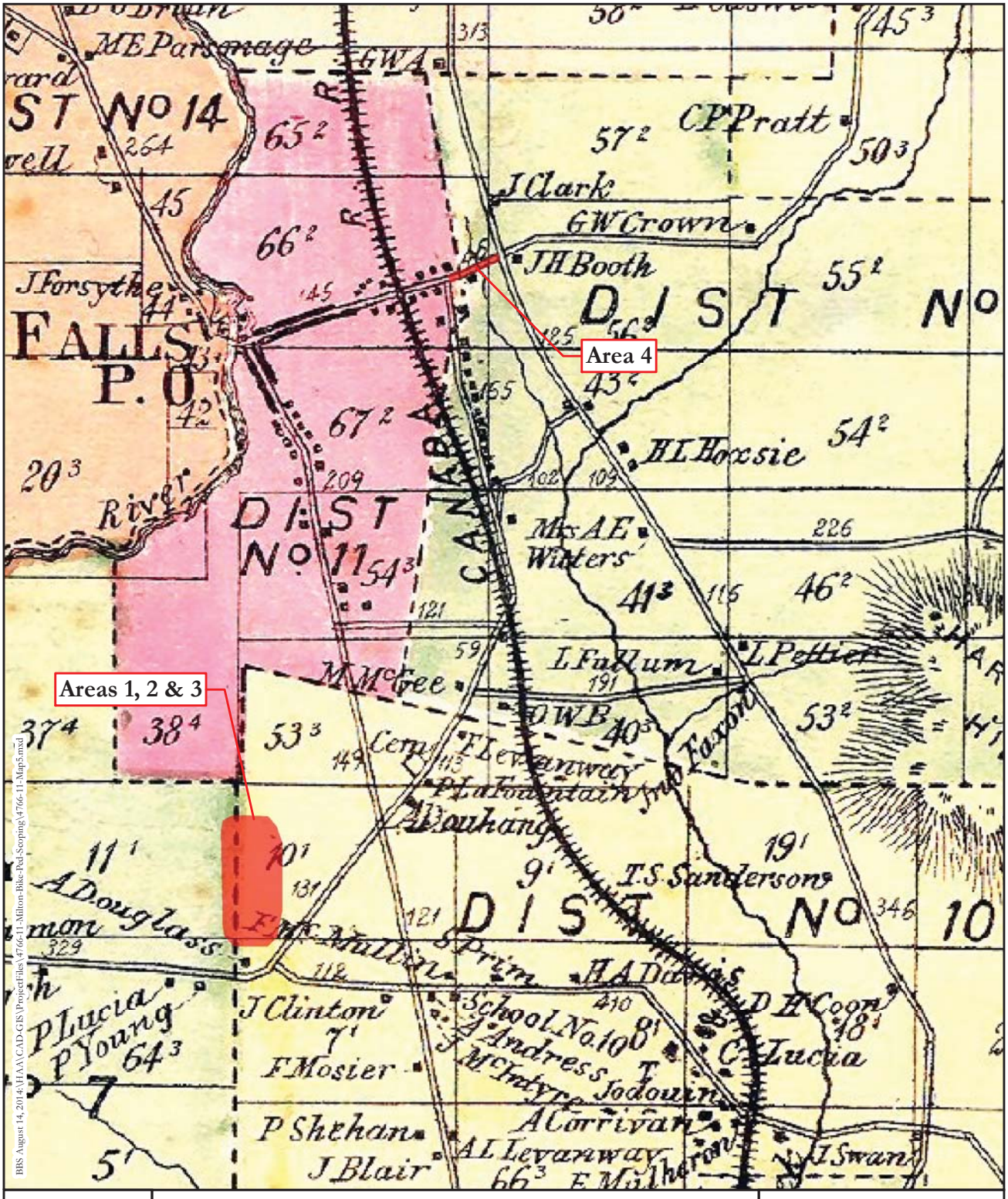
VT-CH-354 A Middle to Late Woodland site identified by the presence of Native American pottery.
VT-CH-360 A precontact site of identified by the presence of one Rama chert flake, located approximately 1700 feet (517 m) northwest of the southwest corner of the project area.

VT-CH-362 A small precontact site of indeterminate time period which was identified based on the recovery of a small number of chert and quartz flakes, chert tools, and bone.

VT-CH-363 The Blue Heron Site – An Early Archaic food process site which contained projectile points, knives, scrapers, and lithic debitage.

VT-CH-369 A precontact site of indeterminate time period consisting of fire-cracked rock and charcoal staining which was eroding out of the Lamoille River bank. The site is located just west of a lower dam on the Lamoille River.

VT-CH-457 Tree Swallow Site. A precontact site of unknown time period located near Mallett's Creek, several hundred feet north of the intersection of Main and West Streets.



N

0 1,000 2,000 Feet
0 200 400 600 Meters

Note: Graphic scale approximate.

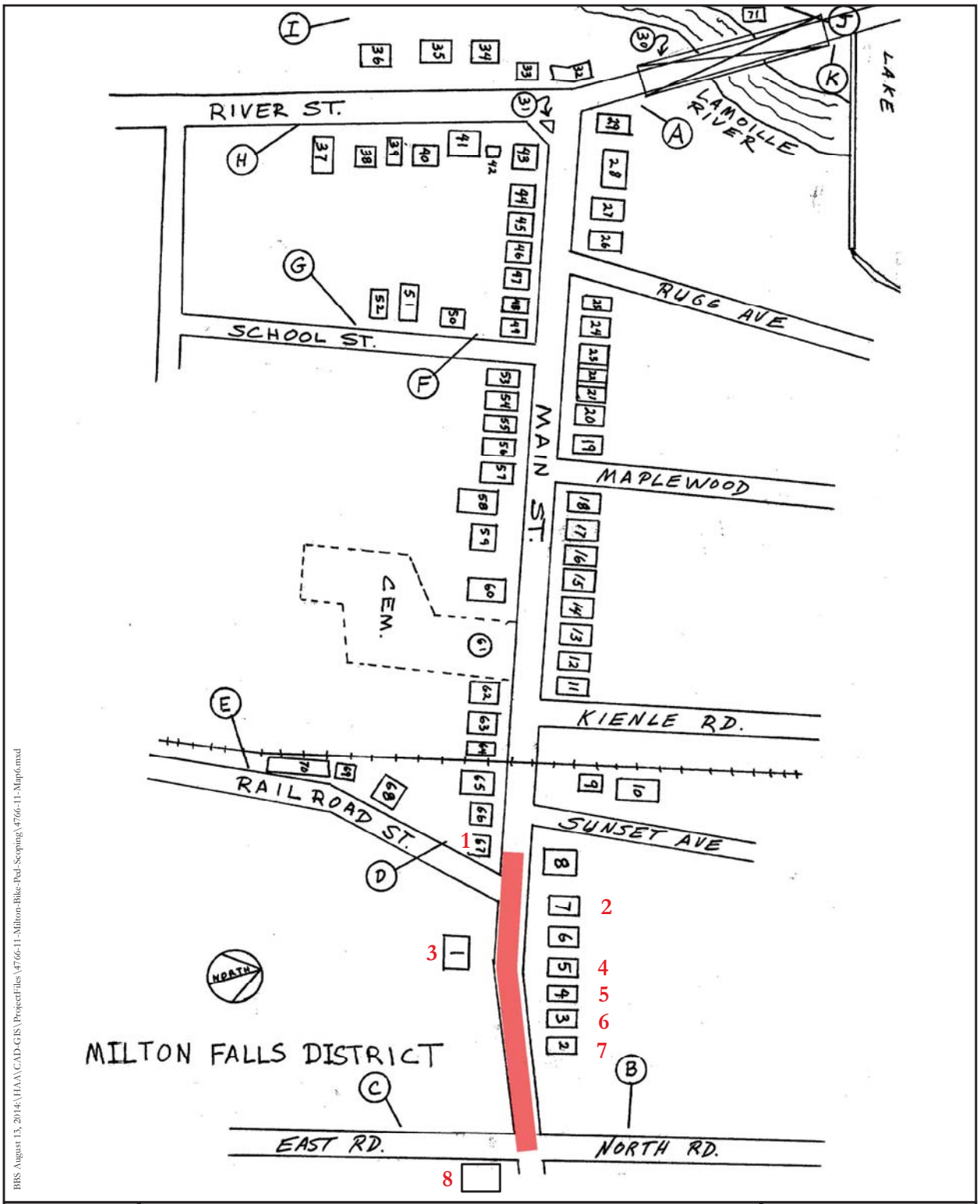
Legend

Project Area

Project Area in 1869
Beers 1869

HARTGEN archeological associates inc

Map 5



BBS August 13, 2014\\HAA\CAD-GIS\ProjectFiles\4766-11-Milton-Bike-Ped-Scoping\4766-11-Map6.mxd

Legend

3 Structure Numbers
Referenced in Table 1

Note: Map Not To Scale.

Milton Falls
State Historic District with HAA
Historic Structure Designations
(VDHP State Historic Structures Files)

HARTGEN archeological associates inc

Map 6

VT-CH-623 A precontact site of indeterminate time period located in the Mallett's Creek drainage which contained a quartzite Levanna-like projectile point, chert and quartzite scrapers and flakes.

VT-CH-624 A precontact site of indeterminate time period located in the Mallett's Creek drainage which contained quartzite flakes and fire-cracked rock.

VT-CH-848 A Paleo Period precontact site located one mile (1.6 km) southwest of the southern portion of the project area.

VT-CH 918 A precontact site of indeterminate time period which contained 14 lithics and one piece of fire-cracked rock. This site was considered to be potentially significant because of its proximity to Paleo-Period Site VT-CH-848.

The VDHP Environmental Predictive Model was completed for the project area which produced an overall rating of 24 (Appendix I), with a score of 32 indicating archeological sensitivity. The project area received points based on its level terrain and location near waterways, and located in an area of high archeological site density. The Main Street section (Area 4) maintains the highest precontact sensitivity because of its proximity to Mallett's Creek. The level area directly adjacent to Mallett's Creek at the east end of Main Street was identified as archeologically sensitive in a 2001 assessment by UVM (Kelly and Crock 2001). The areas of higher terrain overlooking the wetlands, located at 88 Main Street (north side) and 89 Main Street (south side) to the west of this previously identified sensitivity area, are also considered to be archeologically sensitive.

Area 1 is located east of the head of drainage at Cozy Corner which flows northward into the Lamoille River. There are a number of small precontact sites located directly adjacent to this small unnamed drainage. Area 1 is not located adjacent to or in view of this drainage, as the landform is presently configured from road and housing development construction. Because of the previous road disturbance evident along this small section of proposed pathway, this area is not considered to have precontact sensitivity.

Areas 2 and 3 are situated further distant from major water sources and are not located near small streams or head of drainages. Areas 2 and 3, like Area 1, are not considered to have a high precontact archeological sensitivity since it is likely that the soils have been heavily disturbed from historic development of roads, driveways, utilities and intensive landscaping.

Archeological Site Reconnaissance and Recommendations

Area 1- Haydenberry Drive

Area 1 is characterized as an area of level terrain bordered by a modern road way to the west and a power line to the east which has scrub brush and small trees (Photo 1). Study of the sand and gravel soils that are evident through the sparse grass cover strongly suggests that the original soil stratigraphy was impacted during the recent development of this area through the construction of roads for modern housing developments. This area is not considered to have historic or precontact sensitivity. No further archeological work is recommended for this section of the project area.

Area 2 – Ellison Street to Milton High School

The western end of Area 2 is located several hundred feet north of Area 1, on the east side of Ellison Road and beneath a power line (Photo 2). The area beneath the power line has grass and scrub cover which extends approximately 200 feet in width to a tree-line that separates this area from the high school to the east.

Photo 1. Photo shows a view of Area 1 - Haydenberry Drive north of McDonalds. View is to the north.

Photo 2. Photo shows the western end of Area 2 beneath the power line. The tree-line separating this portion of the path alignment from the school property is visible in the background. View is to the northeast.

Sand and gravel soils are evident through the sparse grass, suggesting that this area was altered during power line construction and maintenance. Previous landscaping disturbance is also indicated by the very level terrain, as well as the presence of pipes indicating the alignment of a pipeline.

On the east side of the tree-line, in the proposed pathway alignment, are the high school playing fields (Photo 3). The level and heavily landscaped playing fields extend from the front of the high school several thousand feet to the south, where it meets the proposed path under the power line. The proposed alignment of the path from Ellison Street to the front of the high school is not considered sensitive for historic or precontact resources. No further archeological work is recommended for this section of the project area.

Photo 3. Photo shows the proposed Area 2 path alignment on the high school property playing fields. View is to the southwest.

Area 3 – Brandy Lane

A sidewalk path is proposed along a several hundred section of Brandy Lane, leading from Lamoille Terrace to the entrance behind the high school (Photo 4). The proposed sidewalk will be constructed adjacent to a newly constructed road in the front yard of recently constructed homes. This area does not have a high historic or precontact sensitivity. No further archeological work is recommended for this section of the project area.

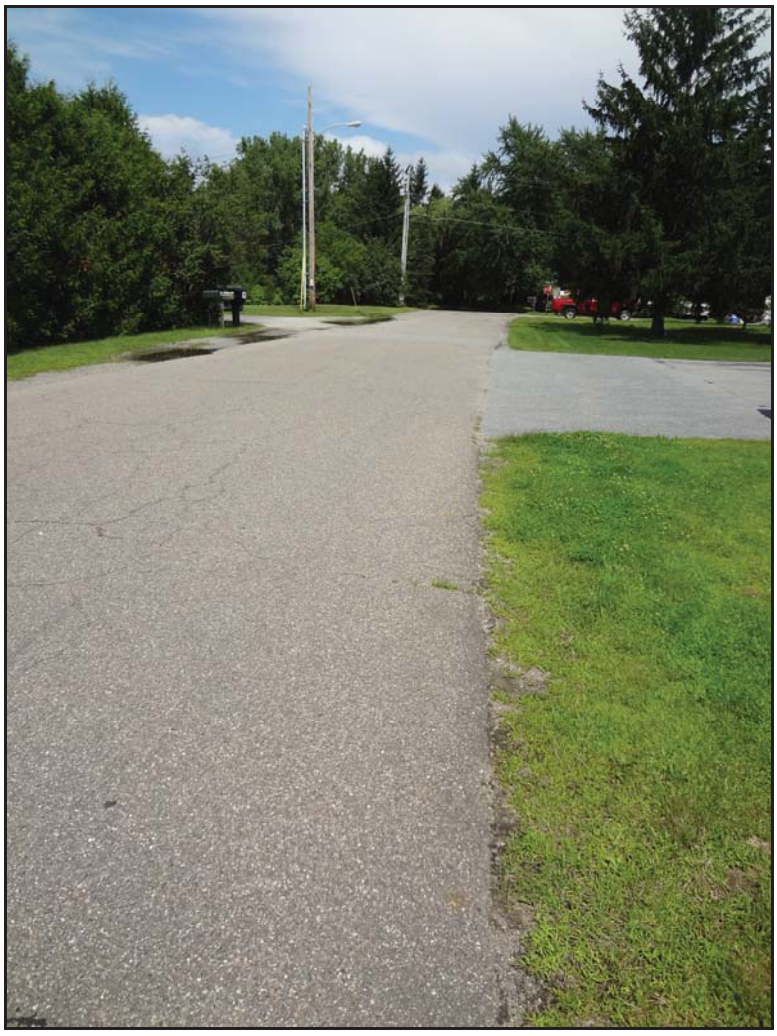


Photo 4. Photo shows the proposed alignment of a sidewalk along Brandy Lane in Area 3. View is to the north.

Area 4 – Main Street

The proposed sidewalk/path alignment on Main Street is characterized by lowlying terrain at its eastern end overlooking Mallett's Creek and the wetlands to the south (Photo 5). Further to the west, the road and land rise to a rounded knoll top on which sit mid-18th century houses and farm complexes (Photo 6-8). These properties (88 and 89 Main St.), which contain elevated terraces which overlook Mallett's Creek and the wetlands, are considered to have precontact archeological sensitivity. The grounds of these historic farm complexes are also considered to have historic sensitivity. Further to the west of these historic farmsteads, the land within the project area slopes steeply downward toward Railroad Street and the railroad tracks.

The areas identified for historic and precontact archeological sensitivity within the Main Street (Area 4) section of the project include the raised or rounded terrace landforms located at 88 and 89 Main Street. The areas of level terrain on the south side of Main Street, situated between the driveway at 89 Main Street, and extending eastward to the intersection with East Road are also considered to have precontact archeological sensitivity. If these sensitivity areas can not be avoided during project design, it is recommended that archeological reconnaissance survey be conducted. The results of this report and its recommendations should be reviewed by VTrans for concurrence.

Photo 5. Area 4 photo shows the view from the top of the hill on Main Street toward the intersection of East and North Road. The area on the right, overlooking Mallett's Creek and wetlands is considered archeologically sensitive. View is to the east.

Photo 6. Photo shows the intersection of Main Street and East and North Roads (foreground), and the raised terraces on which sit historic farmsteads. Note the house at 89 Main Street on the left. View is to the west.

Photo 7. Photo shows the front yard and terrace of 89 Main Street, considered to be archeologically sensitive. View is to the southwest.

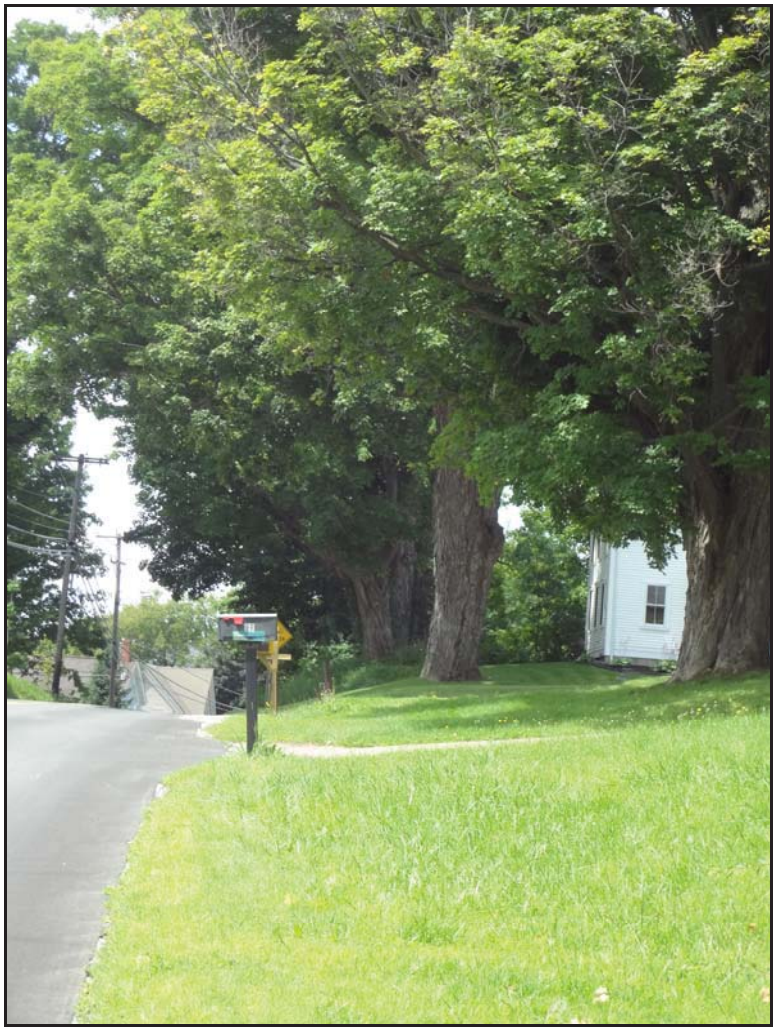


Photo 8. Photo shows the front yard and terrace of 88 Main Street, considered to be archeologically sensitive. View is to the west.

Architectural Assessment

All of the structures within the project area have previously been surveyed (Table 1). The project area falls largely within the Milton Falls Historic District, a Vermont State Register Historic District. The Milton Falls Historic District is chiefly comprised of wood-framed one and two story residential and commercial structures dating from c.1820 to the first quarter of the 20th century (Schoettle 1977). Buildings within the project area along Main Street are principally wood-framed houses of one, two or two-and-half stories, constructed during the second half of the nineteenth century or in the early twentieth century (Photos 9 thru 16; Map 6). These dwellings are principally vernacular in style (Photos 12, 14-16), but examples of Greek Revival (Photo 11), Italianate (Photo 9) and Queen Anne styles (Photos 10 and 13) are represented. One structure, 4 East Road, was previously surveyed individually, and is listed on the Vermont State Register. No direct project impacts on any of the structures is anticipated. However, it is possible that there will be impacts to landscape features associated with one or more of these properties.

Table 1. Previously surveyed structures adjacent to or within the project APE.

Structure Number	Photo Number	Property Name or Address	VHSSS Number (all are on VSSS)	Description of Building
1	9	79 Main Street	0410-17-67	A wood-framed T-plan house of 1 1/2 stories with Italianate details.
2	10	82 Main Street	0410-17-7	A wood-framed Queen Anne style house of 2 1/2 stories and with intersecting gable roof.
3	11	89 Main Street	0410-17-1	A 1 1/2 story wood-framed Greek revival upright-and-wing house with associated outbuildings.
4	12	88 Main Street	0410-17-5	A 2 story wood-framed vernacular house with gable roof and 2-story garage addition.
5	13	94 Main Street	0410-17-4	A 2-story wood-framed Queen Anne style house with intersecting gable roof.
6	14	96 Main Street	0410-17-3	A 2-story wood-framed gable-entry vernacular house with 1 1/2 story addition forming a T plan.
7	15	98 Main Street	0410-17-2	A 2-story wood-framed gable-entry vernacular house with Italianate porch extending across its south elevation.
8	16	4 East Road	0410-13	A 2-story 5-bay wide center-passage vernacular wood-framed house with gable roof.

Sidewalks and curbs

Sidewalks and curbing in the project area largely date to the mid-to-late 20th century and are comprised of concrete. They are not considered to have historic value. Replacement with new concrete sidewalks of similar scale and size and concrete or granite curbing is appropriate.

Street lighting, historic exterior stairs and historic fencing

There are no street lights, historic exterior stairs, or historic fencing located within the project area. There is a modern fence associated with 98 Main Street (Structure 7, Photo 15). It contributes significantly to the landscape associated with that structure; impacts to it should be avoided. If it is necessary to remove it, it should be relocated at the street-edge of the property after end of project work.

Retaining walls

A low retaining wall is located in front of, and is associated with, 82 Main Street. It is comprised of dry-laid fieldstone (Photo 10). It is likely that this wall is either immediately adjacent to or within the proposed work areas. If the stone wall is to be affected by the contemplated work, it is recommended that it be repaired or replaced in kind, salvaging as much of the original material as possible.

Wherever the expansion of a road or sidewalk affects the topography significantly enough to create a slope greater than 45□ or creates a change in topography requiring a retaining wall to secure the slope, the materials selected for such a retaining wall should reflect the scale, texture, color, size and materials used in extant retaining walls within the District.

Trees and other mature plantings

Impacts to any large trees or to mature plantings that contribute significantly to the scale of the street or neighborhood should be avoided. Mature trees are located close to the current road edge or to the outside edge of the current sidewalk in several locations within the project area along Main Street. Examples of this include the maple trees in front of 88, 89, and 94-98 Main Street and 4 East Road (see Photos 10-12 and 15). Impacts to any large trees or to mature plantings that contribute significantly to the scale of the street should be avoided. If this is not possible, replacement plantings of the same or similar species should be provided.

Photo 9. Structure 1, 79 Main Street, facing south. A wood-framed T-plan house of 1 1/2 stories with Italianate details.

Photo 10. Structure 2, 82 Main Street, facing northwest. A wood-framed Queen Anne style house of 2 1/2 stories and with intersecting gable roof.

Photo 11. Structure 3, 89 Main Street, facing southwest. A 1 1/2 story wood-framed Greek revival upright-and-wing house with associated outbuildings.

Photo 12. Structure 4, 88 Main Street, facing northwest. A 2 story wood-framed vernacular house with gable roof and 2-story garage addition.

Photo 13. Structure 5, 94 Main Street, facing northwest. A 2-story wood-framed Queen Anne style house with intersecting gable roof.

Photo 14. Structure 6, 96 Main Street, facing northwest. A 2-story wood-framed gable-entry vernacular house with 1 1/2 story addition forming a T plan.

Photo 15. Structure 7, 98 Main Street, facing northwest. A 2-story wood-framed gable-entry vernacular house with Italianate porch extending across its south elevation.

Photo 16. Structure 8, 4 East Road, facing northwest. A 2-story 5-bay wide center-passage vernacular wood-framed house with gable roof.

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APPENDIX 1: VDHP Archeological Resource Assessment Form

Vermont Division for Historic Preservation
Archeological Resources Assessment Form
Milton Bike/Ped Path Scoping Study

DHP# _____
Organization & Recorder: **HAA. Inc./ E. Manning**
Date: 8/132014

Envronmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
A. Rivers and Streams (Existing or relict)					
1) Proximity to Rivers and Permanent Streams	0–90 m	12	**12**	Layer 1: Proximity to Rivers and Permanent Streams (0-180 m)	
	90-180 m	6			
2) Proximity to Intermittent Streams	0–90 m	12		-	
	90-180 m	6			
3) Proximity to Permanent River/Stream Confluences	0–90 m	8		Layer 6: Proximity to River/Stream Confluences (0-180 m)	
	90-180 m	4			
4) Proximity to Intermittent Stream Confluences	0–90 m	12		-	
	90-180 m	6			
5) Proximity to Waterfalls	0–90 m	8		Layer 7: Proximity to Waterfalls (0-180 m)	
	90-180 m	4			
6) Proximity to Heads of Drainages	0–90 m	8		Layer 5: Proximity to Heads of Permanent Drainages (0-300 m)	
	90-180 m	4			
7) Major Floodplain - Alluvial Terrace	0–90 m	8		Layer 10: Floodplain Soils Presence	
	90-180 m	4			
8) Knoll or Swamp Island		32		Layer 1: Proximity to Rivers and Permanent Streams (0-180 m)	
9) Stable Riverine Island		32		Layer 2: Proximity to Waterbodies (0-180 m)	
B. Lakes and Ponds					
10) Proximity to Pond or Lake	0–90 m	12		Layer 2: Proximity to Waterbodies (0-180 m)	
	90-180 m	6			
11) Proximity to Stream-Waterbody Confluences	0–90 m	12		Layer 4: Proximity to Stream-Waterbody Confluences (0-180 m)	
	90-180 m	6			
12) Lake Coves, Peninsulas, and Bayheads	0–90 m	12		Layer 2: Proximity to Waterbodies (0-180 m)	
	90-180 m	6			
C. Wetlands					
13) Proximity to Wetlands*	0–90 m	12	**12**	Layer 3: Proximity to Wetlands (0-180 m)	
	90-180 m	6			

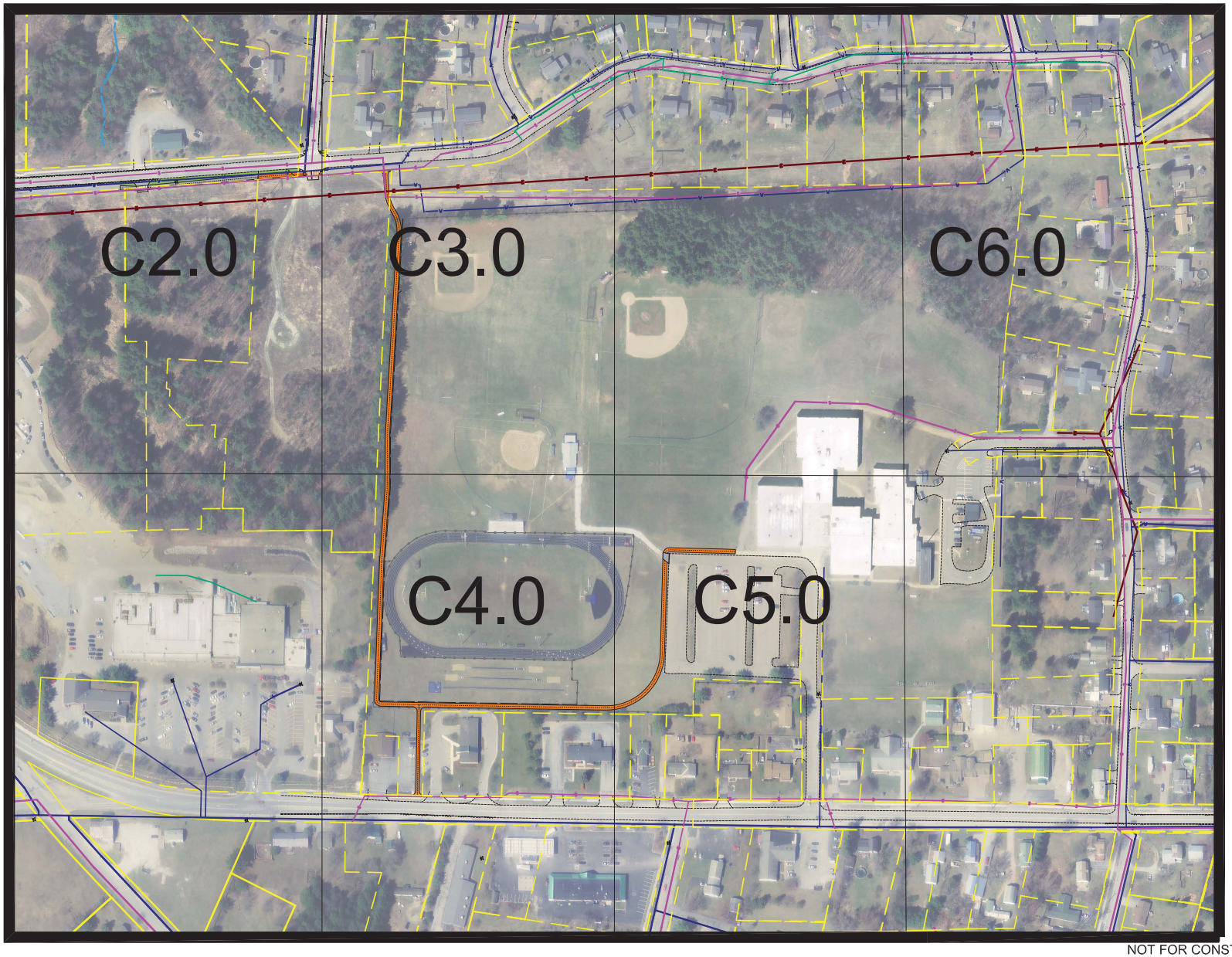
Envronmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
14) Knoll or Swamp Island		32		Layer 3: Proximity to Wetlands (0-180 m)	
D) Valley edge and Glacial Landforms					
15) High Elevated Landform (e.g. Knoll Top, Ridge Crest, Promontory)		12		See Landmarks (Info Layers) and Catchment layers (Water-related Layers)	
16) Valley Edge Features (e.g. Kame Outwash Terrace)		12		Layer 9 Glacial Outwash and Kame Terrace Soils	
17) Marine/Lake Delta Complexes		12		Layer 9 Glacial Outwash and Kame Terrace Soils Presence	
18) Champlain Sea or Glacial Lake Shore Line**		12		Layer 8: Paleo Lake Soils Proximity (0-180 m)	
E. Other Environmental Factors					
19) Caves and Rockshelters		32		-	
20) Natural Travel Corridors (e.g. Drainage Divides)		12		See Landmarks (Info Layers) and catchment layers (Water-related Layers)	
21) Existing or Relict Springs	0–90 m	8		-	
	90–180 m	4			
22) Potential or Apparent Prehistoric Quarry for Lithic Material Procurement	0–90 m	8		See Soils with "M" parent material (Under Construction)	
	90–180 m	4			
23) Special Environmental or Natural Area~	0–180 m	32		-	
F. Other High Sensitivity Layers					
24) High Likelihood of Burials		32		See VAI layer (Under Construction)	
25) High Recorded Archeological Site Density		32	**32**	See VAI layer (Under Construction)	
26) High likelihood of containing significant site based on recorded or archival data or oral tradition		32		See VAI layer (Under Construction)	

Envronmental Predictive Model				ArcheoMapTool GIS Model	Field Inspection Comments
Variable	Proximity	Value	Assigned Score	Variable	
G. Negative Factors					
27) Excessive (>15%) or Steep Erosional (>20%) Slopes		-32		See Slope Layer (Info Layers folder)	
28) Previously Disturbed Land***		-32	**-32**	See Land Use ND Building Footprint Layers (Info Layers folder)	
Total Score:			**24**		

** remains incompletely mapped; digital layer includes paleo lakes and wetlands based on soils data
*** as evaluated by a qualified archeological professional or engineer based on coring, earlier as-built plans, or obvious surface evidence (such as a gravel pit)
~such as Milton acquifer, mountain top, etc. (historic or prehistoric sacred or traditional site locations, other prehistoric site types)
*Environmental predictive model limits wetlands to those > one acre in size; ArchSensMap

Appendix C

Preferred Concept Alignment Alternatives and Typical Cross Sections



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TooleDesignGroup
33 BROAD STREET, 4th FLOOR, BOSTON MA 02109
PHONE: (617) 619-1910 FAX: (301) 927-2800
www.tooledesign.com

MILTON VT SCOPING STUDY

KEY PLAN
MILTON, VT

PREPARED: JD/PR
CHECKED: PB

DATE
APRIL 2015

REV 1 -
REV. 2 -
REV. 3 -

SHEET NAME
PREFERRED CONCEPTUAL DESIGN

DRAWING NUMBER
C1.0

SHEET NUMBER
1 OF 8

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MILTON VT SCOPING STUDY

HAYDENBERRY DRIVE AT ELLISON STREET
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB

DATE
APRIL 2015

REV 1 -
REV. 2 -
REV. 3 -

SHEET NAME
PREFERRED CONCEPTUAL DESIGN

DRAWING NUMBER
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SHEET NUMBER
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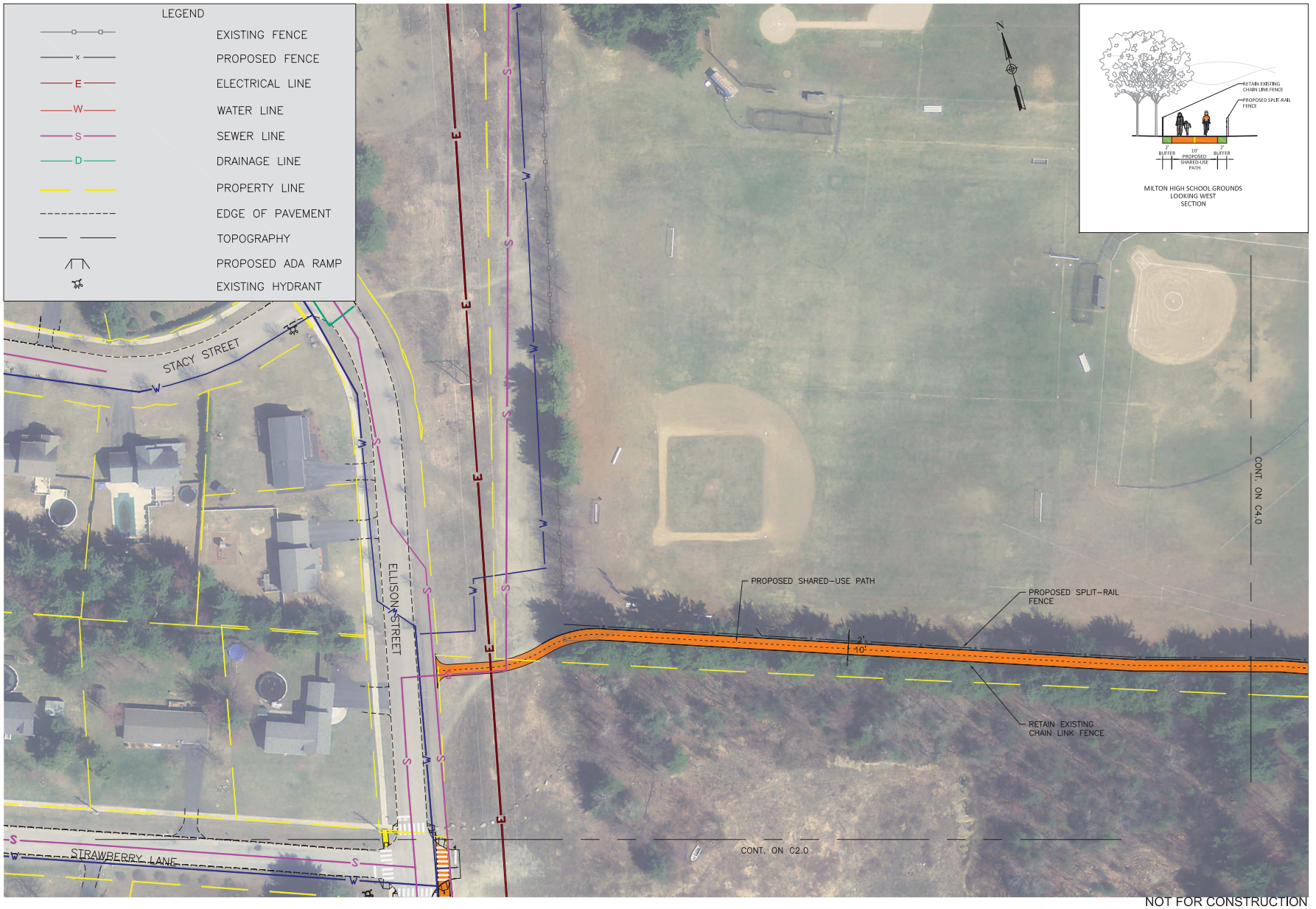

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MILTON VT SCOPING STUDY

HAYDENBERRY DRIVE AT ELLISON STREET
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB
DATE
APRIL 2015
REV 1 -
REV. 2 -
REV. 3 -
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DRAWING NUMBER
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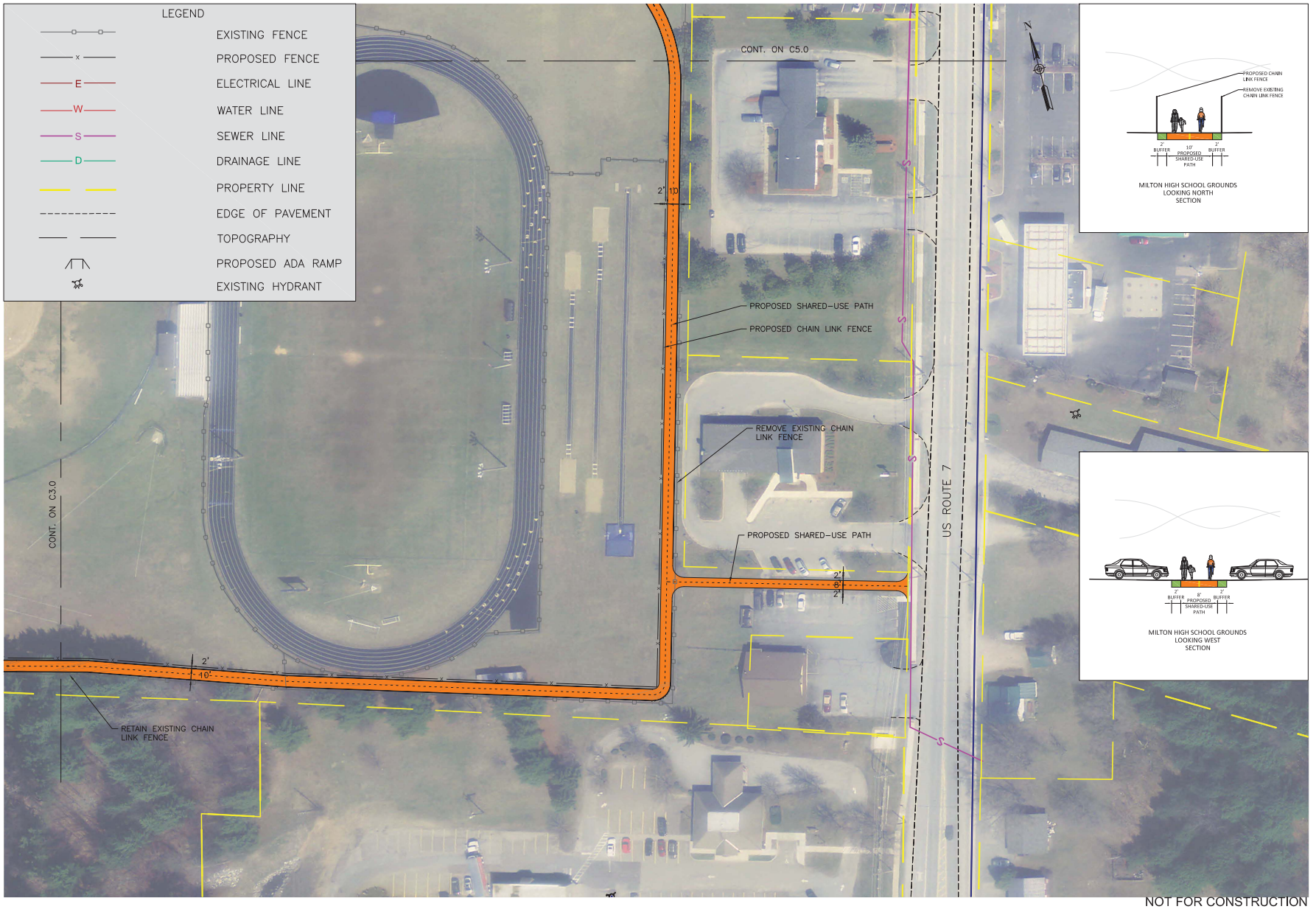

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MILTON VT SCOPING STUDY

MILTON HIGH SCHOOL GROUNDS
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB

DATE
APRIL 2015

REV 1 -
REV. 2 -
REV. 3 -

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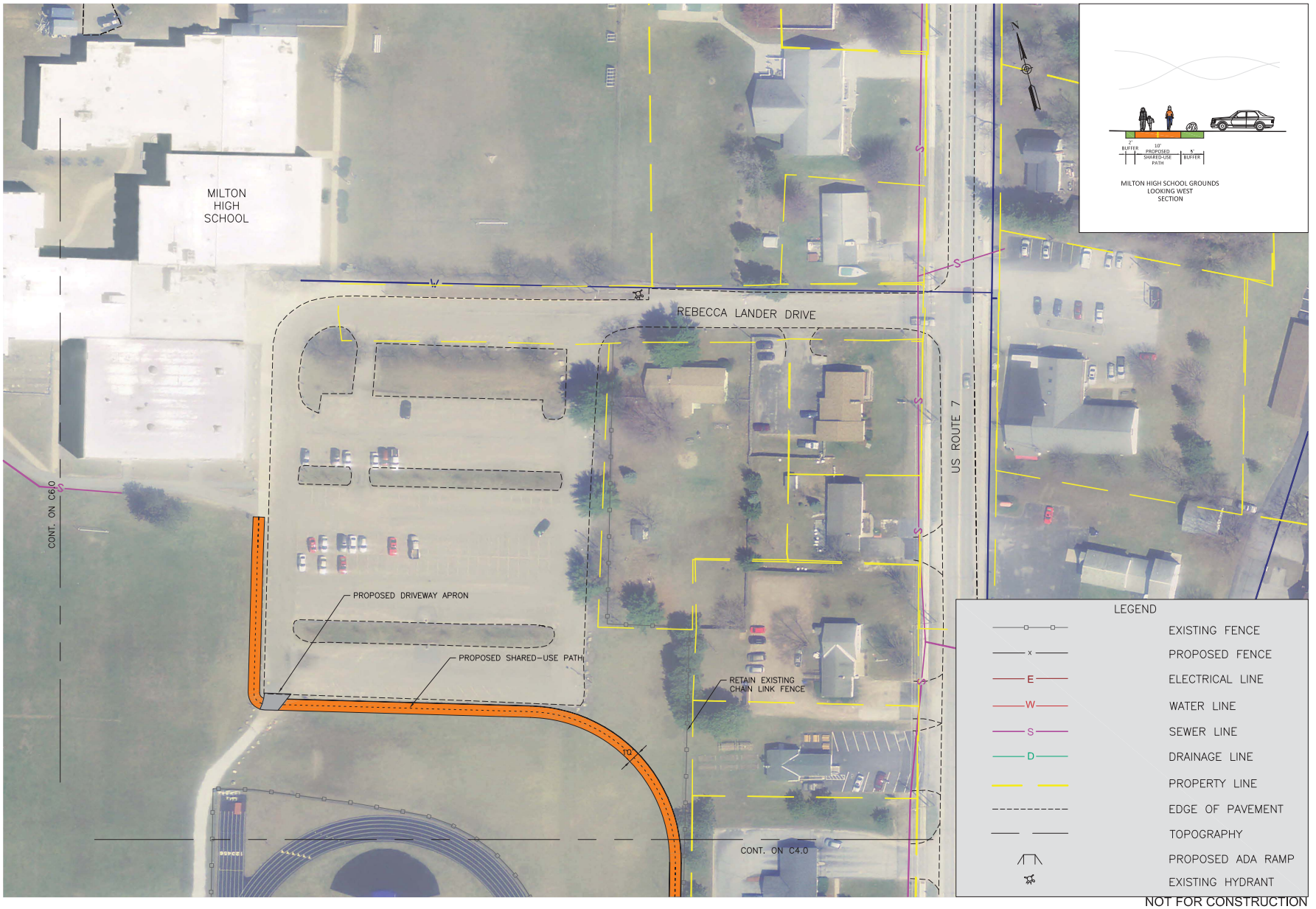

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MILTON VT SCOPING STUDY

MILTON HIGH SCHOOL GROUNDS
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB

DATE
APRIL 2015

REV 1 -
REV. 2 -
REV. 3 -

SHEET NAME
PREFERRED CONCEPTUAL DESIGN

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SHEET NUMBER
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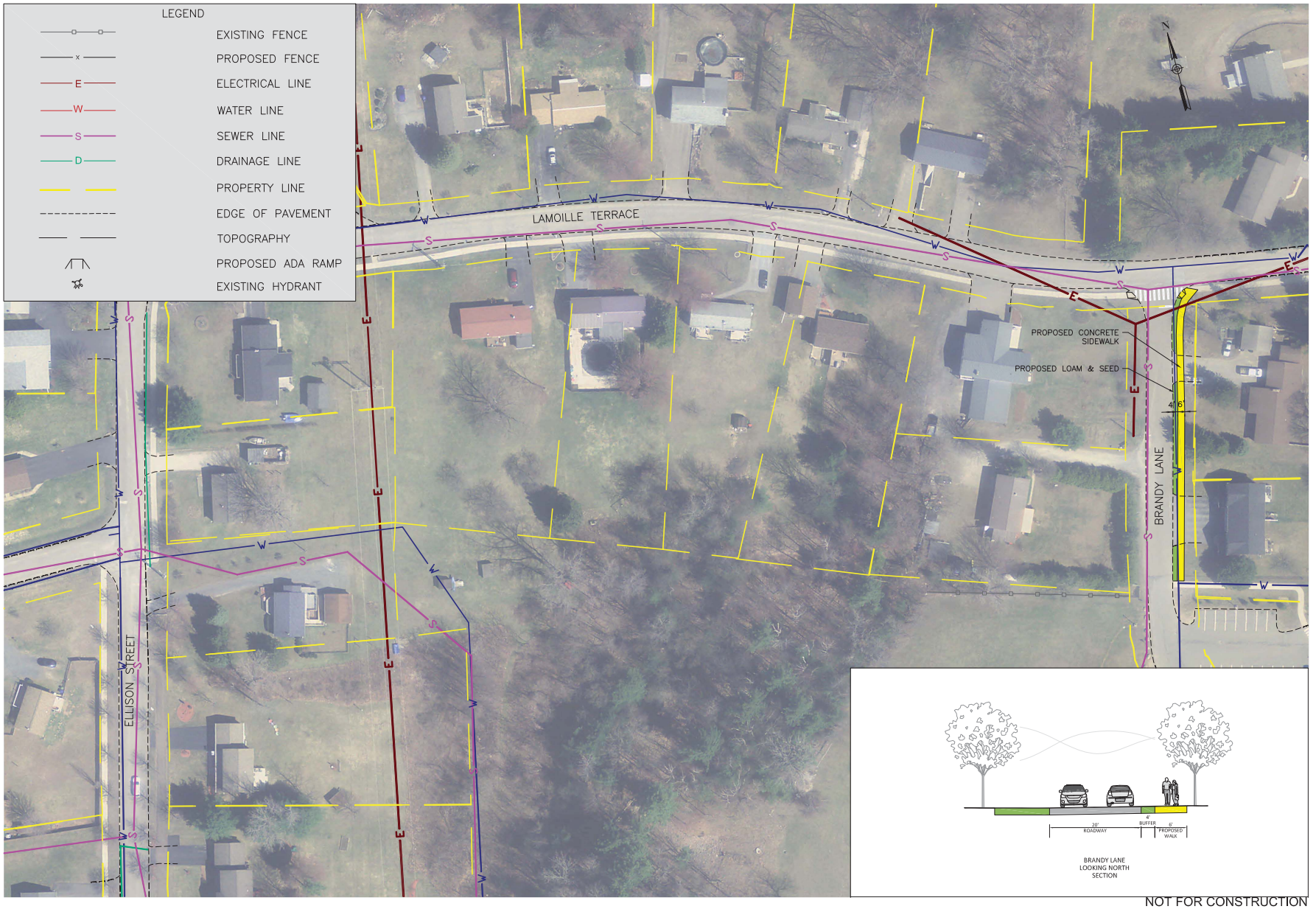

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MILTON VT SCOPING STUDY

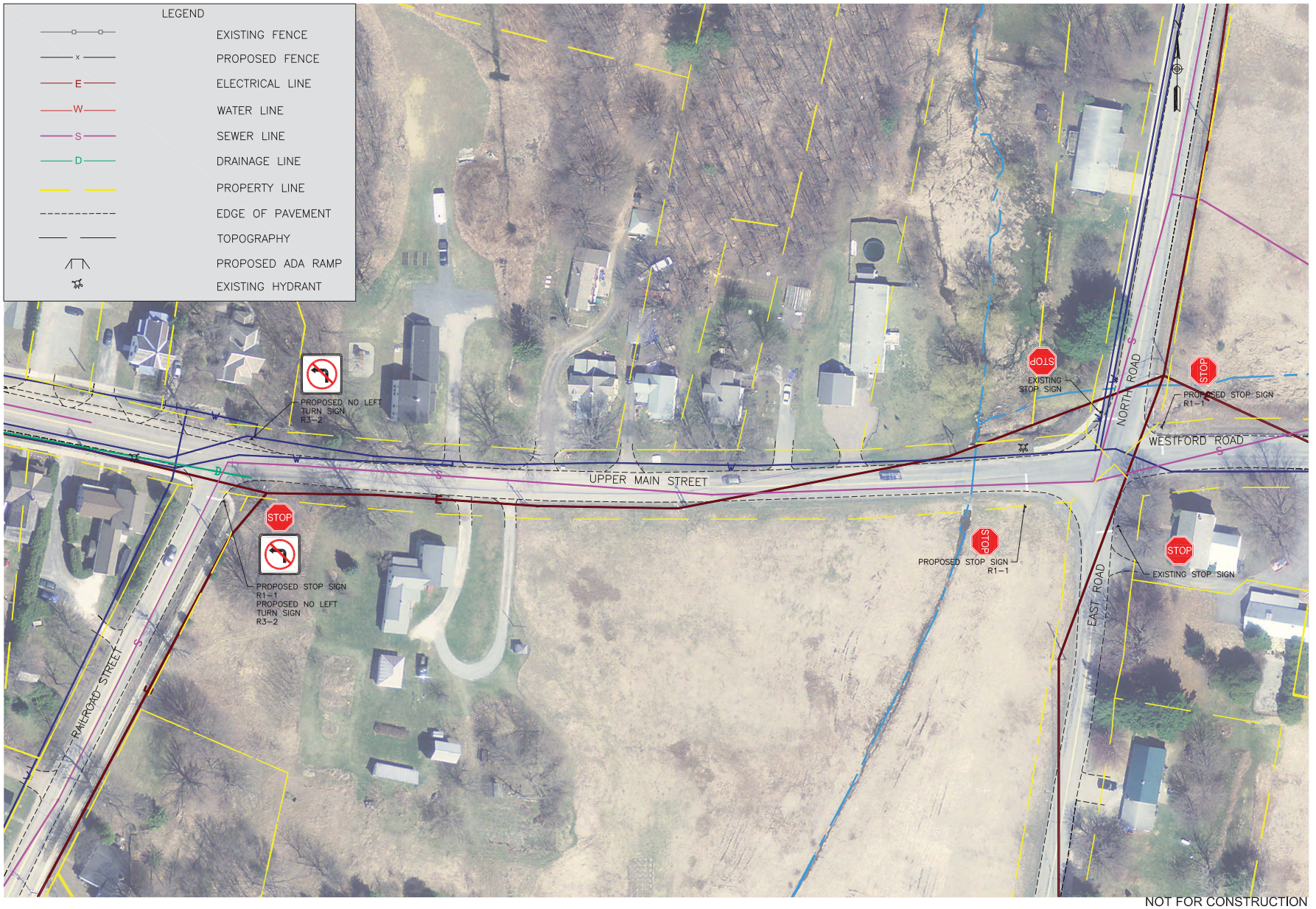
MILTON HIGH SCHOOL GROUNDS
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB
DATE
APRIL 2015
REV 1 -
REV. 2 -
REV. 3 -

SHEET NAME
PREFERRED CONCEPTUAL DESIGN
DRAWING NUMBER
C6.0

SHEET NUMBER
6 OF 8



NOT FOR CONSTRUCTION

Toole Design Group
33 BROAD STREET, 4th FLOOR, BOSTON MA 02109
PHONE: (617) 619-9910 FAX: (301) 927-2800
www.tooledesign.com

MILTON VT SCOPING STUDY

PHASE 1 | UPPER MAIN STREET FROM RAILROAD STREET TO WESTFORD ROAD
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB

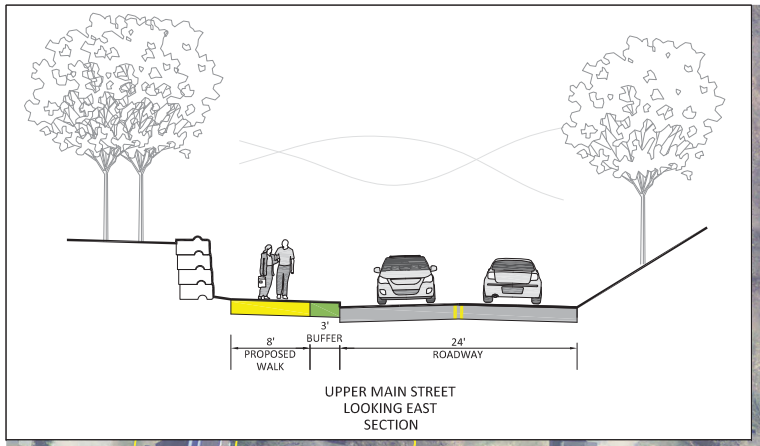
DATE
APRIL 2015

REV 1 -
REV. 2 -
REV. 3 -

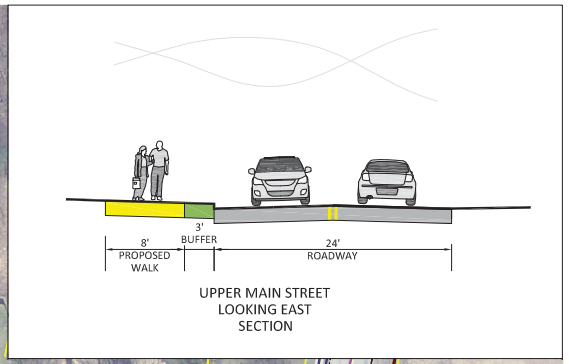
SHEET NAME
PREFERRED CONCEPTUAL DESIGN

DRAWING NUMBER
C7.0

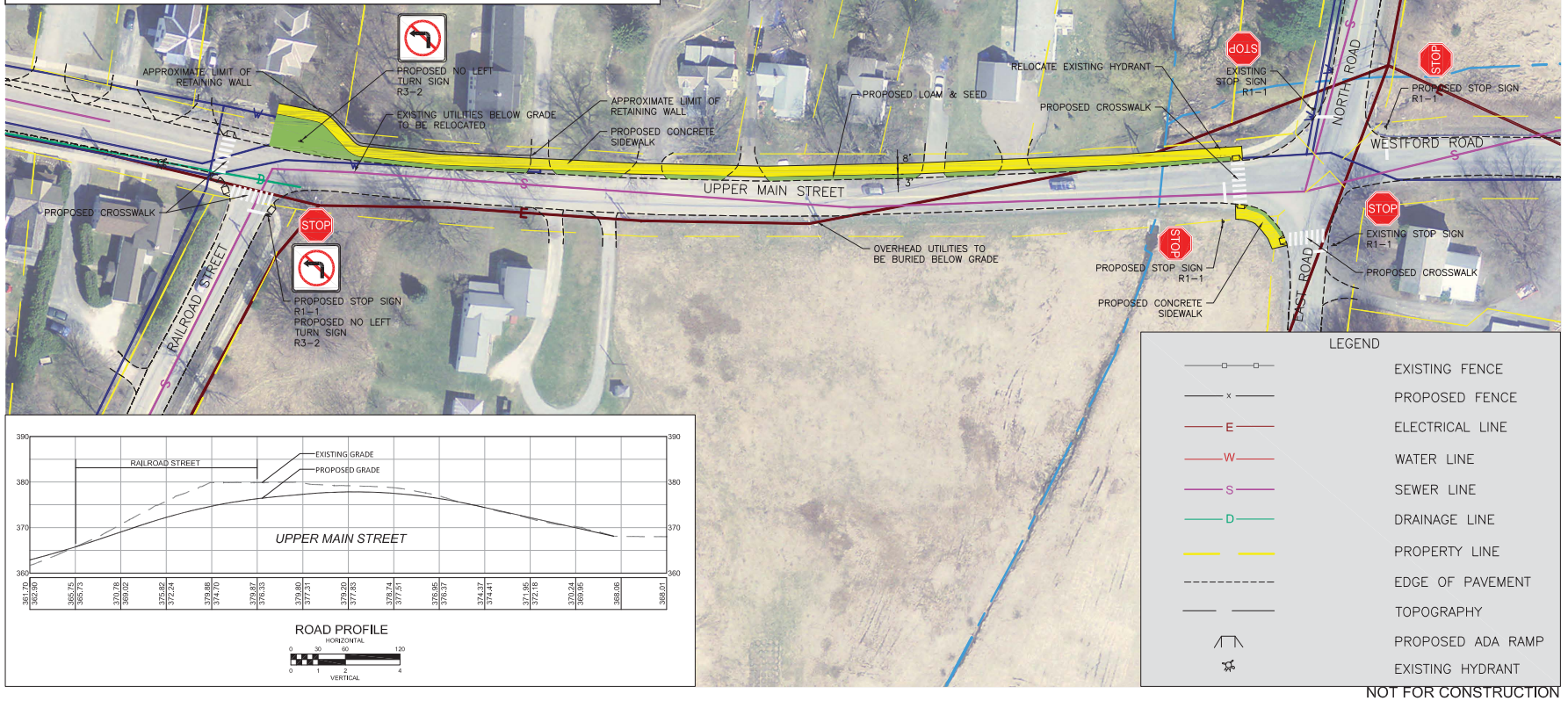
SHEET NUMBER
7 OF 8



UPPER MAIN STREET
LOOKING EAST
SECTION



UPPER MAIN STREET
LOOKING EAST
SECTION



ROAD PROFILE
HORIZONTAL
0 30 60 120
VERTICAL
0 1 2 4

LEGEND

- EXISTING FENCE
- PROPOSED FENCE
- ELECTRICAL LINE
- WATER LINE
- SEWER LINE
- DRAINAGE LINE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TOPOGRAPHY
- PROPOSED ADA RAMP
- EXISTING HYDRANT

NOT FOR CONSTRUCTION

Toole Design Group
33 BROAD STREET, 4th FLOOR, BOSTON MA 02109
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www.tooledesign.com

MILTON VT SCOPING STUDY

PHASE 2 | UPPER MAIN STREET FROM RAILROAD STREET TO WESTFORD ROAD
MILTON, VT

0 20 40 80

PREPARED: JD/PR
CHECKED: PB
DATE
APRIL 2015
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
PREFERRED CONCEPTUAL DESIGN
DRAWING NUMBER
C7.1
SHEET NUMBER
8 OF 8

Appendix D
Opinion of Probable Construction Costs

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Haydenberry Drive Improvements	Cost	$79,000
	ESTIMATED PROJECT TOTAL	**$79,000**

Notes:
Background information is provided on individual tabs.
Cost does not include environmental permitting, easement or property acquisition.
VTrans 5 Year Price List February 2009- December 2013

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Haydenberry Drive Improvements

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Unclassified Excavation	75	CY	$25.00	$1,900
Removing Curb	65	LF	$6.00	$400
Vertical Granite Curb	85	LF	$31.00	$2,700
Subbase Gravel	85	CY	$27.00	$2,300
Subbase Sand Borrow	45	CY	$18.00	$900
Portland Cement Concrete Sidewalk, 5 inch	15	SY	$61.00	$1,000
Bituminous Concrete Path	35	TON	$147.00	$5,200
ADA Ramps	6	EA	$3,200.00	$19,200
Detectable Warning Surface	6	EA	$45.00	$270
Durable 4" Yellow Line, Type 1 Tape	100	LF	$2.00	$200
Durable 12" White Line, Type I Tape	560	LF	$6.00	$3,360
Traffic Signs & Posts	1	EA	$120.00	$120
Loam & Seed	100	SY	$15.00	$1,500
Erosion Control	1	LS	$4,300.00	$4,300
Traffic Controls	1	LS	$4,000.00	$4,000
Mobilization	1	LS	$3,000.00	$3,000

SUBTOTAL =	$51,000
25% CONTINGENCY =	$13,000
DESIGN & CONSTRUCTION ENGINEERING =	$15,000
TOTAL =	$79,000.00

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Milton High School Improvements	Cost	$450,000
	ESTIMATED PROJECT TOTAL	**$450,000**

Notes:
Background information is provided on individual tabs.
Cost does not include environmental permitting, easement or property acquisition.
VTrans 5 Year Price List February 2009- December 2013

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Milton High School Improvements

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Unclassified Excavation	1955	CY	$25.00	$48,900
Subbase Gravel	1305	CY	$27.00	$35,300
Subbase Sand Borrow	655	CY	$18.00	$11,800
Portland Cement Concrete Sidewalk, 5 inch	45	SY	$61.00	$2,800
Bituminous Concrete Path	445	TON	$147.00	$65,500
Chain-link Fence, 4 feet	1605	LF	$36.00	$57,780
Remove Existing Fence	15	LF	$2.00	$30
Durable 4" Yellow Line, Type 1 Tape	1400	LF	$2.00	$2,800
Durable 12" White Line, Type 1 Tape	30	LF	$6.00	$180
Loam & Seed	1205	SY	$15.00	$18,075
Erosion Control	1	LS	$4,300.00	$4,300
Traffic Controls	1	LS	$25,000.00	$25,000
Mobilization	1	LS	$17,000.00	$17,000

SUBTOTAL =	$290,000
25% CONTINGENCY =	$73,000
DESIGN & CONSTRUCTION ENGINEERING =	$87,000
TOTAL =	$450,000.00

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Brandy Lane Improvements	Cost	$56,000
	ESTIMATED PROJECT TOTAL	**$56,000**

Notes:
Background information is provided on individual tabs.
Cost does not include environmental permitting, easement or property acquisition.
VTrans 5 Year Price List February 2009- December 2013

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Brandy Lane Improvements

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Unclassified Excavation	125	CY	$25.00	$3,200
Subbase Gravel	55	CY	$27.00	$1,500
Portland Cement Concrete Sidewalk, 5 inch	235	SY	$61.00	$14,400
ADA Ramps	2	EA	$3,200.00	$6,400
Detectable Warning Surface	2	EA	$45.00	$90
Remove Existing Fence	15	LF	$2.00	$30
Loam & Seed	70	SY	$15.00	$1,050
Erosion Control	1	LS	$4,300.00	$4,300
Traffic Controls	1	LS	$3,000.00	$3,000
Mobilization	1	LS	$2,000.00	$2,000

SUBTOTAL =	$36,000
25% CONTINGENCY =	$9,000
DESIGN & CONSTRUCTION ENGINEERING =	$11,000
TOTAL =	$56,000.00

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Upper Main Street Improvements: Phase 1	Cost	$2,500
	ESTIMATED PROJECT TOTAL	**$2,500**

Notes:
Background information is provided on individual tabs.
Cost does not include environmental permitting, easement or property acquisition.
VTrans 5 Year Price List February 2009- December 2013

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Upper Main Stree Improvements: Phase 1

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Durable 12" White Line, Type I Tape	60	LF	$6.00	$360
Traffic Signs & Posts	4	EA	$120.00	$480
Erosion Control	1	LS	$500.00	$500
Traffic Controls	1	LS	$100.00	$100
Mobilization	1	LS	$100.00	$100

SUBTOTAL =	$1,600
25% CONTINGENCY =	$400
DESIGN & CONSTRUCTION ENGINEERING =	$500
TOTAL =	$2,500.00

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Upper Main Street Improvements: Phase 2	Cost	$1,729,000
	ESTIMATED PROJECT TOTAL	**$1,729,000**

Notes:
Background information is provided on individual tabs.
Cost does not include environmental permitting, easement or property acquisition.
VTrans 5 Year Price List February 2009- December 2013

Milton, VT Scoping Study
Opinion of Probable Construction

Prepared By: Toole Design Group
Date: April 2015

Upper Main Street Improvements: Phase 2

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Clearing and Grubbing	0.1	ACRE	$14,000.00	$1,400
Unclassified Excavation	545	CY	$25.00	$13,700
Excavation of Surfaces and Pavements	13350	CY	$20.00	$267,000
Removing Curb	25	LF	$6.00	$200
Vertical Granite Curb	945	LF	$31.00	$29,300
Subbase Gravel	11100	CY	$27.00	$299,700
Retaining Wall	90	CY	$800.00	$72,000
Superpave Bituminous Concrete Pavement	1350	CY	$72.00	$97,200
Portland Cement Concrete Sidewalk, 5 inch	695	SY	$61.00	$42,400
ADA Ramps	7	EA	$3,200.00	$22,400
Detectable Warning Surface	7	EA	$45.00	$315
Durable 12" White Line, Type I Tape	1065	LF	$6.00	$6,390
Loam & Seed	1340	SY	$15.00	$20,100
Erosion Control	1	LS	$4,300.00	$4,300
Utility Adjustments	1	LS	$70,000.00	$70,000
Traffic Controls	1	LS	$95,000.00	$95,000
Mobilization	1	LS	$73,000.00	$73,000

SUBTOTAL =	$1,115,000
25% CONTINGENCY =	$279,000
DESIGN & CONSTRUCTION ENGINEERING =	$335,000
TOTAL =	$1,729,000