OTTER CREEK ENGINEERING

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ADDISON COUNTY REGIONAL PLANNING COMMISSION

OLD TOWN ROAD SCOPING STUDY

RIPTON, VERMONT

2022

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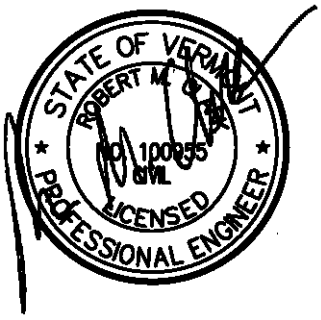

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OLD TOWN ROAD
SCOPING STUDY

RIPTON, VERMONT
Fall, 2022

Table of Contents

1.0 INTRODUCTION / PREFACE

Old Town Road is a located within the municipalities of Ripton and Middlebury in Addison County, Vermont. The road was originally constructed as a primary route between Ripton and Middlebury in the late 1700s. By 1825, the road had been reconstructed along the banks of the Middlebury River, which is the current location of the modern Route 125. While a significant portion of the original road became Route 125, the reconstruction did not utilize approximately 2.5 miles of road, and this is what became Old Town Road.

The road is an existing gravel roadway, in varying conditions and features, with some portions utilized by residents living on the road and other segments essentially abandoned and unpassable.

Old Town Road has been identified as a possible route through Ripton in the event of a catastrophic washout of Route 125, in part due to its natural resiliency to flooding and storm damage.

Currently, in the case of catastrophic washout, residents of Ripton and would need to travel 2-3 times farther than they normally would in order to access many essentials, including regional medical services located at Porter Hospital in Middlebury. Other routes through the Town of Ripton to Middlebury exist, but contain a significantly greater amount of river and tributary crossings.

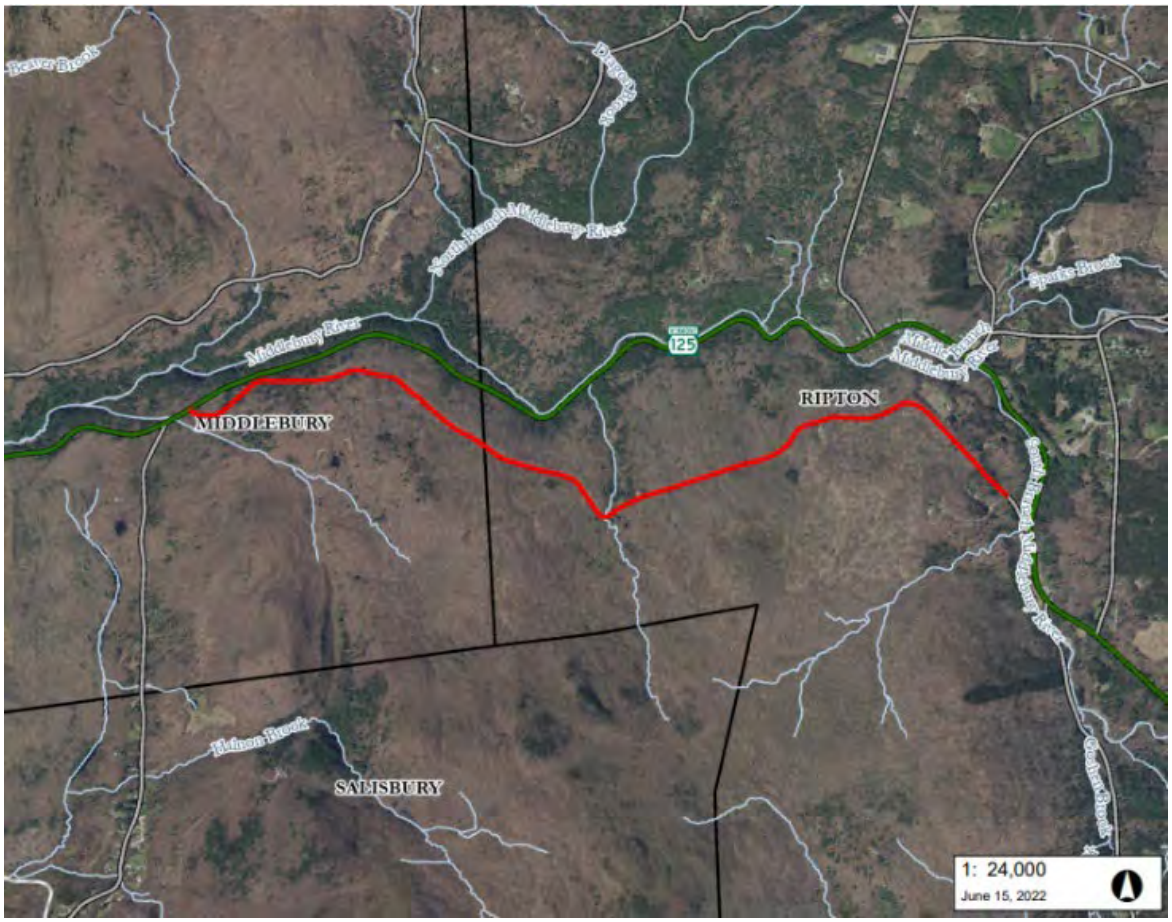
The Town of Ripton is interested in identifying options to make the Old Town Road passable for emergency use, with the overarching goal of building community resiliency.

The Town of Ripton has received support from Addison County Regional Planning Commission (ACRPC) to conduct a study of the work necessary to convert Old Town Road into an accessible emergency vehicle access.

This is not the first study which has been undertaken by the Town and ACRPC in this area. In fact, in September of 2014, a study entitled *Old Turnpike Preservation Study Report* was issued , which provided documented research on the highway right of way, a formal legal opinion as to the ownership of the road, and recommendations to the Town for permanent preservation and control of the public right of way. Refer to **Appendix A.**

2.0 EXISTING CONDITIONS

2.1 Project Study Area - Old Town Road is a class 4 and class 3 road with an associated right-of-way (ROW) for an overhead utility corridor. The ROW runs parallel to Vermont Route 125. The route initiates just above Upper Plains Road in the municipality of Middlebury and extends east through Ripton, just beyond the town center. The overall length of the roadway is 2.56 miles, with approximately 0.84 miles in Middlebury and 1.72 miles in Ripton. An aerial image representing the extents of the roadway and the project study area is depicted as **Figure 1.**



The earliest history of the road can be traced back to the Middlebury Land Records. On October 28, 1793, the ROW for the Old Centre Turnpike was recorded in the Middlebury Land Records with a 6-rod road (100 feet wide). The ROW started at the Middlebury Courthouse and extended to the eastern boundary of Middlebury and Ripton. Construction of the road began in 1803.

In 1825, a portion of the turnpike was rerouted along the Middlebury River, where modern Vermont Route 125 is currently located. The section which remained, renamed Old Town Road, is depicted as the red line in the photo above.

Since this time, Ripton never officially abandoned the road "on the hill." The road is still a public right-of-way and is considered a Class 4 road, allowing passage of suitable vehicles,

horses, bikers, and hikers. Over the years, the Town, Regional Planning Commission and other entities have invested significant time and resources into compiling a documented history of the roadway and its associated right of way. Refer to **Appendix B,** for a *History of Center Turnpike/Old Town Road in Ripton, VT from 1973 to 2008.*

2.2 Land Uses - The existing land uses along the road are forestry and rural residential. There are remnants of logging trails and hunting areas as well along the roadway. The entire project boundary is considered rural. A copy of the Middlebury and Ripton Zoning maps is included in **Appendix C**. The entire area of Old Town Road is listed as Forest District within the current Town of Middlebury Land Use Maps. This is a zoning development which is somewhat restrictive, allowing for the construction of large residential house lots and forestry / agricultural uses. It is not conducive to expansion or significant development, and aims to retain the character of the existing forested areas. In Ripton, the corridor is listed as Low Density Residential, and with permanent year-round access established along Old Town Road, could be available for residential growth.

2.3 Existing Roadway Conditions – In order to assess existing conditions, a walk of the route was conducted along the entire length of the roadway. The walk occurred on June 14, 2022 to get a better understanding of current conditions.

Based on the site walkthrough, the roadway has been parsed into four segments, as shown on **Figure 2** and as described below.

Segment 1

Location - This segment starts at VT Route 125 where it crosses the Middlebury River and extends to the end of maintained road. The road is maintained year-round by the Town of Ripton and provides access to the six (6) residential dwellings that are located within this segment.

Length – This segment of roadway is estimated to be 0.66 miles long (3,475 feet)

Classification – This segment of roadway is considered class 3, as it is maintained by the Town of Ripton.

Average Roadway Width – The roadway width along this section varies between 16 and 20-feet. For the purpose of this evaluation, we have presumed that the average roadway width along this segment of road is 18-feet.

Condition Assessment–This segment of road is crowned and has drainage swales on either side to facilitate stormwater runoff. There are several 12-inch culverts at driveways and 18-inch culverts beneath the roadway to facilitate the drainage.

Improvements needed for Emergency Vehicle Access - There are no improvements necessary to this segment in order for it to be passable by emergency vehicles.

Segment 2

Location - This segment starts at the end of segment 1 (the maintained class-3 road) and extends west towards Middlebury. The terminus of this segment is the largest stream crossing along the route, at the location of a 48-inch CMP culvert crossing of Old Town Road.

Length - This segment of roadway is estimated to be 0.66 miles long (3,475 feet)

Classification – This segment of roadway is considered class 4, as it has historically been unmaintained by the Town of Ripton.

Average Roadway Width – The roadway was completely overgrown by brush and other vegetation at the time of the site walkthrough. Field measurements were collected and the roadway width is estimated between 14 and 18 -feet. For the purpose of this report, we have assumed that the average roadway width along this segment is 16-feet.

Condition Assessment - This segment of roadway ranked the worst of the 4 roadway segments, requiring the largest amount of work to make the roadway passable for emergency vehicles. This section of road is completely overgrown with dense, ferny vegetation. The vegetation ranged from 3 to 6 feet tall. It is completely unpassable with any vehicle, and difficult to navigate by foot. There were no signs of gravel from the old road identified during the site visit. There were locations where water did not drain, indicating potential wetlands had developed within the former roadway bed.

Improvements needed for Emergency Vehicle Access - In order to be passable, the roadway must be cleared of its vegetation. Once cleared, the soil which has built up on the edges of the roadway need to be leveled so that stormwater can leave the roadway and enter the drainage swales and natural drainage courses. A +/- 6-inch layer of surface gravel will likely be needed to establish an adequate crown (cross slope) in the road to facilitate that runoff. A visual representation of this is depicted on **Figure 3.**

Segment 3

Location – This segment starts at the end of segment 2, located at the existing 48-inch CMP culvert crossing of Old Town Road and extending east to the border between Ripton and Middlebury.

Length – This segment of roadway is estimated to be 0.40 miles long (2,100 feet)

Classification – This segment of roadway is considered class 4, as it has historically been unmaintained by the Town of Ripton.

Average Roadway Width –Field measurements were collected and the roadway width is estimated between 14 and 18 -feet. For the purpose of this report, we have assumed that the average roadway width along this segment is 16-feet.

Condition Assessment– Road conditions on this section are variable. Most of the road is in a condition as reflected in the image above. In many locations, there is evidence of washouts and deposition of sediments and silts along the roadway because stormwater is unable to leave the road bed. Travel is feasible for vehicles with elevated ground clearance and 4-wheel drive.

Improvements needed for Emergency Vehicle Access – Similar to segment soil which has built up on the edges of the roadway need to be leveled so that stormwater can leave the roadway and enter the drainage swales and natural drainage courses. A +/- 6-inch layer of surface gravel will likely be needed to establish an adequate crown (cross slope) in the road to facilitate that runoff. A visual representation of this is depicted on **Figure 3.**

Segment 4

Location – This segment lies completely within the Town of Middlebury, initiating at Middlebury/ Ripton Town line and extending to Vermont Route 125, which is the western most terminus of Old Town Road. Although this segment of road is not located within the municipality of Ripton, it is critical to the overall success of a project which aims to utilize the road for emergency access purposes. As such, this segment of roadway was evaluated in the same manner as the others.

Length – This segment of roadway is estimated to be 0.84 miles long (4,450 feet).

Classification – This segment of roadway is considered class 4, as it has historically been unmaintained by the Town of Middlebury.

Average Roadway Width –Field measurements were collected, and the roadway width is estimated between 16 and 20 feet. For this report, we have assumed that the average roadway width along this segment is 18 feet.

Condition Assessment – This section of road appears unmaintained; however, there appears to be regular vehicular access by local hunters, the owner of a hunting camp, and the US Forest service. As shown in the photo, and similar to the other segments of the roadway, portions of the road are significantly lower than the drainage swales, resulting in water traveling down the roadbed rather than off of it. As a result, there are a number of washouts along this section of road. Many locations which should have cross culverts instead have been retrofitted with water bars as a means of conveying stormwater to the drainage ditches.

2.4 Improvements Needed for Emergency Vehicle Access – Similar to Segments 2 and 3, some soil, which has built up on the edges of the roadway, needs to be leveled so that stormwater can leave the roadway and enter the drainage swales and natural drainage courses. A +/- 6-inch layer of surface gravel will likely be needed to establish an adequate crown (cross slope) in the road to facilitate that runoff. A visual representation of this is depicted on **Figure 3.**

2.5 Traffic Data - The road is currently listed as a class 4 road in both municipalities and is not maintained. The road is not passable from Middlebury to Ripton in its current condition, and as such there is no measurable traffic volumes on the existing road.

Since the road is desired as an alternative route between the Ripton and Middlebury, we reviewed the existing traffic volumes on Vermont Route 125 through Ripton. These are included in **Appendix D.** The 2021 documented Average Annual Daily Traffic is listed as 7,994 vehicles per day, according the Vermont Agency of Transportation.

2.6 Natural and Cultural Resources - A desktop analysis was completed to review environmental factors that may affect construction of the road. Maps were generated using Vermont's Agency of Natural Resources Online Atlas. The maps have been attached and can be found in **Appendix E**. Known / mapped environmental resources were also labeled and identified on **Figure 1.**

On June 28, 2022, OCE Natural Resources staff conducted a site visit, specifically to review the editions project limits for the presence of many natural resources below. A copy of the detailed field notes, photographs and overall natural resources report is included as **Appendix F.**

2.6.1 **Wetlands** –Most of the soil along the road corridor is mapped within Hydrologic Soil Group B, which is well-draining soil. A section of Old Town Road is mapped as Hydrologic Soil group C/D, which is poor draining soils, which could indicate the presence of hydric soils and subsequently wetlands. During the field visit conducted by OCE Natural Resource Staff, the site was reviewed for wetlands with Zapata Courage, the DEC Wetlands District Ecologist. Several areas were examined closely for the presence of wetlands due to hydrology or observed hydric indicator plants. Soils were sampled at each location to determine whether hydric soils were present. One wetland was identified in the vicinity of an unnamed tributary of the Middlebury River. This is located at the intersection of segments 2 and 3 and is depicted on **Figure 2.** Before construction can occur in this area, a formal wetland delineation is required.

2.6.2 **Surface Waters -** There are many small surface water crossings of the roadway, where cross culverts and water bars currently convey stormwater events; however, there is only one mapped and significant unnamed tributary of the Middlebury River that crosses the road. This location is depicted on **Figures 1 and 2** and is located at the intersection of segments 2 and 3. This collects runoff within a 200-acre watershed. A stream stats analysis report was prepared and is included in **Appendix G.**

Currently, a 48-inch corrugated metal pipe (cmp) was installed as a temporary solution by the Town of Ripton the last time a culvert in this area washed out. The culvert is placed shallow, with a very steep grade on the outlet end. There is a high probability of a culvert washout with a large storm event, as this structure is substantially undersized for the drainage area and anticipated flows.

These types of stream crossings are regulated by the Vermont Department of Environmental Conservation (DEC) and are managed by a local River Management Engineer within the department. As such, understanding the regulatory requirements in permitting a replacement structure is critical in estimating the replacement / upgrade cost. On July 29th, 2022, the site was reviewed by Jaron Borg, the river management engineer assigned to this district.

Based on the size of the drainage area, field-observed widths, and geometry of the stream, Borg concluded the bankfull width for the stream crossing to be 10 feet. This suggests that this culvert will need to be replaced with a culvert which has a minimum clear width of 10-feet wide.

Additionally, culverts in this area need to be able to convey flows with a minimum of 1-foot of hydraulic free board during the 50 year storm event (Q50). For this drainage area, the Q25 is equivalent to passing 81.6 cubic feet per second.

The final replacement design criteria is that the structure must restore a more natural condition within the water body. As a result, the recommended replacement structure should be a box culvert with the following minimum dimensions:

Width of 10-feet

Clear Opening Height of 4-feet

Embedment – At a minimum, 2 feet of natural river bottom material should be placed inside the box culvert with bed retention sills to retain the earth. Cutoff walls should extend a minimum of 4-feet below the bottom of the structure on the inlet and outlet side.

It should be noted that alternative structures could be used, including open bottom arch culverts. Any final design should consider scour analysis of the stream bottom in this location, prior to proceeding with construction.

2.6.3 **Floodplains** - There is a River Corridor and associated mapped flood hazard area and flood plans along the Middlebury River. Old Town Road crosses over the Middlebury River at its terminus in the Town of Ripton. The existing bridge, referred to as Bridge No. 6 on TH 25, was evaluated in July of 2019 by Dubois and King consulting engineers and a separate set of engineering recommendations has been provided to the Town. **Refer to Appendix H.**

A hydraulic evaluation of the Bridge was conducted by the Vermont Agency of Transportation in 2018, which concluded that the structure met the current design standards and was capable of conveying flows during a 25-year storm event. The report, however, concluded that the structure was inadequately sized in geometry to accommodate a 100-year storm event, or the bankfull width associated with the Middlebury River in this location.

Additionally, there is a small amount of flood plain associated with the unnamed tributary crossing of Old Town Road at the 48-inch CMP culvert crossing referenced earlier in this report.

2.6.4 **Stormwater -** Stormwater is collected through a series of drainage swales along the road. Due to the lack of maintenance, many of the drainage swales are overgrown, filled in, and not functioning as intended. As such, stormwater from rain events runs along the road in most cases. There are some cross culverts which convey flows from the roadway ditches to the natural drainage courses within the project area. Many of these are failed or deteriorated to a point where the water does not enter them. Additionally, many of the cross culverts have been removed, and water bars have been installed within the road bed as means of managing the flows.

2.6.5 **Rare, Threatened, and Endangered Species –** A Rare, Threatened and Endangered (RTE) species desktop review was conducted prior to completing a field visit. The following resources were identified during the desktop review:

Indiana Bat – Segment 4, located in the Town of Middlebury, is within the summer range for the Indiana bat, but none of the segments within the Town of Ripton are.

Northern Long-Eared Bat - This species occurs Statewide, so restrictions may apply to this project.

Deer Wintering – A mapped deer wintering area is about 350 feet from the investigation area, to the north surrounding the Middlebury River.

RTE Species - A rare plant occurs about 500 feet north of the project area, in the ledge above the Middlebury River. A few other rare, threatened, and endangered species occurrences are shown on the map but are farther away from the investigation / project area.

During the site visit, there was no documented evidence of the presence of rare, threatened, or endangered plant or animal species within the project limits. It should be noted that a full evaluation of trees prior to clearing may be necessary to determine if there is a presence of roosting habitat for the Northern Long Eared Bat within those areas.

2.6.6 **Hazardous Material Sites -** There aren't any hazardous waste sites located within the vicinity of Old Town Road.

2.6.7 **Agricultural Land –** The site is entirely forested on either side of the existing road and its associated right of way. There is not a documented or current presence of agricultural land within the project limits.

2.6.8 **Historic, Archeological, and Architectural Resources -** An Archaeological resources assessment was conducted and completed by Dr. Charles Knight, Ph.D of Crown Consulting Archaeology. Several historic period sites are known and documented to be adjacent to the existing roadway alignment and within the project area. A site visit was conducted, and the consultant concluded that these are all located far enough away from the edges of the alignment corridor, Refer to the full report in **Appendix I**.

2.7 **Right-of-Way -** In Middlebury, Old Centre Turnpike is shown on its General Highway Map as TH114. The US forest service maintains this road, known as Forest Service Road FS#296, as both forest access and recreational usage including the trail known as Oak Ridge Trail. Additionally, in Middlebury, there is a documented legal history associated with the roadway and utility corridor right of way. In Ripton, however, the right of way has been disputed for decades. In 2014, the Town received a legal opinion from attorney Paul Gilles, Esq. that the Ripton portion of the roadway had not been abandoned by the Ripton Selectboard in the 1980s; thus, the historic right of way still existed and was available for use by the Town.

2.8 **Utilities –** The entire length of the Old Center Turnpike corridor (on the Middlebury side, in segment 4) is also a right of way for an overhead utility line, which had been established by Joseph Battell, a prominent landowner during the late 19th and early 20th centuries. This utility easement is recorded within the Middlebury Land Records.

Green Mountain Power (GMP) owns and maintains the power service in this area, which extends to Ripton and is the only source of power for many properties and residences. As part of this study, GMP Distribution Engineer Michael Christian was contacted. Mr. Christian indicated that GMP is currently planning for the replacement of overhead power in this corridor with underground service. The primary reason for this is that the power company has struggled to maintain a viable access in this area, with numerous interruptions in service as a result of fallen trees and other issues. GMP anticipates being ready to complete this project within three (3) years. The cost of relocating the power to buried service is anticipated to be the responsibility of GMP.

Consolidated Communications (Formerly Fairpoint) owns telephone services, which are also mounted to the utility poles along the corridor. During this investigation, Tucker Peterson was contacted. He stated that unlike GMP, there are currently no plans to transition from overhead to underground services in this area. Tucker was unaware of the specific arrangement in this area between the Town of Ripton and Consolidated Communications. In his experience, if the poles (and associated utilities) are located within a Town right-of-way, the cost of utility relocation is often the responsibility of the utility, or shared equally with the municipality. In

some instances, where the right-of-way is owned entirely by the utility, the cost of relocation would be entirely born by the Town.

In both cases, representatives from the utilities indicated that improved access and buried utilities would improve long-term utility services to the area.

3.0 PUBLIC INVOLVEMENT

Developing a Purpose and Need Statement requires obtaining information and input from several stakeholders, including local officials and residents. In conjunction with the existing characteristics of the project area, and the goals of both the local and regional plan, a comprehensive purpose and need relationship is developed.

3.1 **Historic Involvement** – The Town of Ripton and Addison County Regional Planning Commission (ACRPC) have undertaken several studies pertaining to this road. During the several prior investigations, public input has been available and is consistent with the Town's goal of improving the road for emergency vehicle access.

3.2 **Local Concerns Meeting -** Otter Creek Engineering (OCE) was present at the Town of Ripton's Selectboard meeting on Monday June 27th, to reach out to members of the community about the project. A presentation of the existing conditions was made, and a discussion of the viable options and alternatives presented. The consensus was that the enhancement of the road so that it could provide a key point of access in the event of catastrophic

3.3 **Purpose and Need –** The following Purpose and Need Statement was developed based on input from the Town and Public:

Purpose: *To provide a safe, accessible and reliable means of emergency vehicle access between Ripton and Middlebury, in the event of a catastrophic washout of Vermont Route 125.*

Need: *The existing class 4 road through Ripton has gone largely unmaintained for several decades and is currently unusable. Route 125 has been prone to significant damage during severe weather events and flooding, due to in part to its proximity to the Middlebury River. The existing road, in its current condition, is not suitable for providing emergency vehicles access.*

3.4 **Alternatives Presentation –** An alternatives presentation was presented at a meeting of the Addison County Transportation Advisory Committee (TAC) on September 21, 2022. The meeting occurred in person, with an option for remote participation via Zoom. The primary goal of the meeting was to review the alternatives and associated costs.

3.5 **Relationship to Local and Regional Plans** - The Ripton Town plan and the Addison County Regional Plan contain several goals, policies and recommendations which demonstrate support for this project. *The Ripton Town plan identifies the need to promote and maintain conditions ensuring the health, safety an wellbeing of all.* The regional plan more specifically addresses transportation goals and objectives of the county, and includes the following generalized statement**:**

"Exhibits Resiliency and Natural Hazards – The Exhibits Resiliency to Natural Hazards: The Region's transportation infrastructure should be designed, constructed, maintained and improved to survive increased rainfall intensity and flooding severity predicted under future climate change scenarios to preserve the infrastructure's use and promote clean water and functioning ecosystems. "

The overall objective and goal is to "develop a transportation system that is safe, efficient and protected from damage during a severe weather event". This is achieved through a policy which "Encourage the moving or abandonment of roads that often experience serious flood damage. Design culverts and bridges to provide the best possible mitigation of potential flood damage, which at a minimum should meet VTrans Hydraulics Manual and ANR Stream Alteration Standards."

The proximity of Vermont State Route 125 to the Middlebury River and the existing topography limit the ability to relocate or abandon the road as a primary highway. Although the Vermont Agency of Transportation has undertaken numerous projects to improve the road, it is still considered highly vulnerable. As such, looking at alternative means of providing access from Ripton to Middlebury, which is less prone to storm damage and therefore more resilient is appropriate.

When developing alternatives for any project, there are several items to be considered, including:

- Public input
- Current and Proposed Uses / Needs
- Local and Regional Plans / Goals

4.1 Alternatives Development

The alternatives considered under this study are generally described as follows:

4.1.1 Alternative 1 – No Build

The "No Build" alternative should be considered for any project which receives State or Federal Funding. Fundamentally, this alternative would consist of doing nothing, and continuing the historical use of the area. There would be no construction, no maintenance and would result in no improvement to the existing conditions. Overtime, given the rural nature of the project investigation area, it is expected that the roadway corridor would continue to revert to a natural condition. As the no-build condition does not satisfy the Purpose and Need Statement, it is not recommended for this project.

4.1.2 Alternative 2 – Upgrade the Road

Upgrading the road could be considered in two different manners. Currently, the existing roadway is not passable in many segments. When considering phasing, the first step in a roadway upgrade project would be to make the road passable from one end to the other. This is considered as Alternative 2A, and is described as follows:

Alternative 2A – Upgrade the Road to Passable Condition

Under this alternative, the existing road footprint, regardless of the geometry would be reconstructed such that emergency vehicles could navigate from one end to the other. This process would involve the following basic steps:

1. Clear and grub existing vegetation along the roadway
2. Replace water bars with cross culverts
3. Eliminate built up sediment on each side of the travel way
4. Re-establish drainage swales along the road
5. Add fine crushed gravel for a smooth, drivable surface.

The project would be undertaken in phases, to align with the four (4) key segments, as previously described in this report. Detailed cost estimates for each of these segments is included as **Appendix J.** These construction costs are considered preliminary and are not based on plans or detailed engineering design.

Actual cost will vary based on final design and current bid climate at the time of implementation. A summary of the estimated costs by road segment is outlined in **Table 1.**

Table 1

Construction Cost Estimates Alternative 2A - Emergency Access		
Segment No.	Location	Estimated Construction Cost
1	Ripton	$ -
2	Ripton	$ 150,000.00
3	Ripton	$ 90,000.00
4	Middlebury	$ 160,000.00
Total Estimated Cost =		**$ 400,000.00**

The limitation of this alternative is that it does not address a critical aspect of the purpose and need statement, which is to be reliable for emergency vehicle use.

Under this alternative, the existing 48-inch CMP culvert located at the interface of Segments 2 and 3 would remain in service. As stated previously, this is significantly undersized and is likely to washout in the event of a significant rainfall event. Additionally, the Potash Bridge, located at the intersection of Route 125 and Old Town Road in Ripton, which is the beginning of segment 1 is known to have a restrictive waterway opening and as a result could be subject to damage during a significant rain event. Both of these would render Old Town Road inaccessible in an emergency, without improvement. For this reason, we considered Alternative 2B as what would be required to upgrade the road to a more robust condition.

Alternative 2B – Upgrade the Road to Class 3

Upon completion of 2A, or in conjunction with the work outlined under alternative 2A, this alternative would involve upgrading the road to class 3 and making it available for year round use, like other roads in Ripton. This alternative addresses fully the purpose and need statement of the project and would result in a robust, resilient road available for all residents and emergency vehicles in the event of a washout of Vermont Route 125.

This alternative would consist of the following priority projects:

1. Upgrade and Replace the Potash Bridge
2. Relocate existing overhead utilities along the roadway corridor
3. Boxcut and widen the roadway surface to 22-feet in travel width
    a. 10 -foot travel lanes with 1-foot shoulders to allow for 2-way travel

4. Roadway geometry adjustments for a design speed of 30 miles per hour
    a. Horizontal and Vertical Curves
5. Establish permanent drainage swales and stormwater treatment practices
6. Replace the 48-inch CMP Culvert at the interface of Segments 2 and 3
7. Coordinate with and Upgrade the Town of Middlebury segment

Similar to Alternative 2A, this project would be undertaken in phases, to align with the four (4) key segments, as previously described in this report. Detailed cost estimates for each of these segments is included as **Appendix K.** These construction costs are considered preliminary and are not based on plans or detailed engineering design. Actual cost will vary based on final design and current bid climate at the time of implementation. A summary of the estimated costs by road segment is outlined in **Table 2.**

Table 2

Construction Cost Estimates Alternative 2B - Upgrade to Class III Road			
Segment No.	Location		Estimated Construction Cost
-	Ripton Potash Bridge	$	722,500
1	Ripton	$	217,500
2	Ripton	$	275,000
3	Ripton Culvert	$	225,000
3	Ripton	$	155,000
4	Middlebury	$	240,000
	Total Estimated Cost =	**$**	**1,835,000**

4.2 Evaluation Matrix

An Evaluation Matrix was prepared to compare the alternatives and is presented in **Table 3** below. The evaluation matrix includes factors such as local issues, impacts to environmentally sensitive receptors, permitting and overall project cost.

Table 3 – Evaluation Matrix

Criteria	Alternative 1 No Build	Alternative 2A Emergency Access	Alternative 2B Upgrade
Impacts			
ROW Acquisition	None	None	None
Stormwater/Drainage	None	Moderate	Substantial
Elevations/Grading	None	Minimal	Substantial
Utility Relocation	None	None	Substantial
Archeological & Historic	None	None	Potential
Prime Agricultural Soils	None	None	None
Hazardous Materials	None	None	None
Floodplains	None	Minimal	Minimal
T&E Species	None	Bat & Deer	Bat & Deer
Wetlands	None	Minimal	Minimal
Local and Regional Issues			
Access to Properties	No Change	Minimal	Moderate
Maintenance	No Change	Minimal	Moderate
Character	No Change	Minimal	Moderate
Conformance to Town/Regional Plan	No	Yes	Yes
Satisfies Purpose & Need	No	Yes	Yes
Permits/Approvals			
19 V.S.A. 111 Access Permit	No	No	Yes
Act 250	No	No	No
Floodplain	No	Yes	Yes
Stream Alteration	No	No	Yes
Stormwater Discharge	No	No	Yes
Stormwater Construction	No	No	Yes
Shoreline	No	No	No
Wetlands	No	No	Yes
Cost Estimates			
Construction Cost	0	$400,000	$1,850,000
Engineering / Technical Services	0	$60,000	$335,000
Legal / Fiscal / Administrative	0	$15,000	$40,000
Continegncy	0	$95,000	$450,000
TOTAL ESTIMATED COST	**0**	**$570,000**	**$2,675,000**

4.3 Preferred Alternative

The preferred alternative is Alternative 2 – Upgrade the road. Since this alternative meets the Purpose and Need statement, conforms to local and regional plans, and addresses public input.

What is unique about this project is that Alternative 2 can be done in both large and small phases. This would allow for smaller projects to occur which get closer to the overall project

goal, while also pursuing potential sources of funding for the larger, more complex portions of the Alternative.

As such, the recommended project is to complete Alternative 2A as Phase I of the project. Upon completion of Phase I, work would proceed to alternative 2B as Phase II. In order to asses the impacts of this larger project, a preliminary roadway alignment and design was developed for Phase II. A copy of the centerline roadway profile, with associated geometry to upgrade Old Town Road to class 3 is included as **Appendix L.**

4.4 Design Considerations

4.4.1 Natural Resource Impacts

During engineering design, or prior to construction, a formal wetland delineation is required for the project area. As identified in this study, for the priority projects to be completed under Alternative 2A (Phase I), there are no anticipated natural resource impacts.

Under Alternative 2B (Phase II), the project will be required to complete wetland permitting in and around the Potash Bridge Replacement, and the culvert replacement on the unnamed tributary of the Middlebury River. Based on the preliminary horizontal and vertical alignment of the road developed for this report, and the Natural Resource Assessment, which was conducted, no other wetland or other environmentally sensitive receptor impacts are anticipated.

4.4.2 Hazardous Site Remediation

There are no known hazardous waste sites within the project limits, and therefore no impacts or remediation is anticipated for the preferred project.

4.4.3 Utility Impacts

Under Alternative 2A (Phase I), utility relocation is considered minimal, and could be potentially avoided all together. Construction and widening of the roadway however will result in the need for substantial utility relocation as part of Phase II.

It is the desire of Green Mountain Power to relocate its infrastructure below ground, a process which is currently being undertaken by GMP distribution engineers and staff, and is expected to be completed in three to five years.

Consolidated Communications has indicated that there are no plans for utility relocation, but that they would be supportive of buried lines in conduit in this area.

The utility relocation is a critical aspect of Alternative 2B (Phase II) and as such, negotiations and communication should be initiated during the first phase.

4.4.4 Archeological Impacts

There are no anticipated archaeological or historical impacts in either phase, provided the roadway is reconstructed within the existing footprint and corridor.

The horizontal and vertical alignment of the roadway under phase II will need to be reviewed by a qualified archaeological consultant before construction can begin. It is possible that sensitive areas exist in locations where the horizontal alignment deviates from historical use. As such, those areas will require additional archaeological investigation and ultimately approval from the State of Vermont Department of Historic Preservation (SHPO) prior to commencement of construction.

4.4.5 Right-of-Way Impacts

The right-of-way is well documented, however since the roadway has remained relatively unmaintained, it is important to discuss the project and phases with all abutting property owners, and complete the necessary property deed research before construction commences within any segment of the project area. It may be appropriate at times, such as within phase II of the project, to engage the services of a Vermont licensed land surveyor to delineate the boundary and right of way.

4.4.6 Permitting

The permitting requirement for the proposed project were previously presented in **Table 3**, the evaluation matrix. In summary, there are no permits anticipated for Alternative 2A (phase I), and several anticipated for Alternative 2B (phase II). The permits anticipated for phase II include:

Vtrans 1111 ROW Permit - This is necessary for work within segment 1, and the replacement of the Potash Bridge.

Local Zoning Permit – Necessary for work within floodplains associated with the Middlebury River and the Unnamed Tributary.

State of Vermont Stream Alteration Permit – Anticipated for the replacement of the 48-inch CMP culvert and the work associated with Potash Bridge.

State of Vermont Wetlands Permit – Anticipated for replacement of the 48-inch CMP culvert, replacement of the Potash Bridge, and for some horizontal adjustments in the roadway alignment.

US Department of the Army Corps of Engineers – Anticipated for direct wetland impacts and work within the floodplain associated with the Middlebury River and the Unnamed Tributary.

State of Vermont, Operational Stormwater Permit - Municipal highways which expand the total amount of impervious surface are subject to compliance with the current stormwater regulations managed by the State of Vermont. It is anticipated that the road widening aspects of phase II will result in the need for an operational stormwater permit.

State of Vermont, Construction General Permit - Projects which disturb more than 1-acre of soil are required to obtain coverage under this permit for construction related activities and their relation to stormwater runoff. Given the size and scope of the roadway ditching and road widening project included under phase II, a construction general permit is anticipated.

4.4.7 Traffic Control

Old Town Road is currently unpassable. Upon completion of Alternative 2A, the road is envisioned to be gated on both ends, with access only permissible to existing property owners and the US Forrest Service. As such, Traffic control is not a critical aspect of the project or significant landowner concern in upgrading the road.

It is recommended that provisions be made to maintain access to existing properties and residences during road widening. A temporary access or bailey bridge will be necessary to maintain emergency vehicle access to existing residences when the Potash Bridge is replaced.

4.5 Typical Cross Sections

The preferred alternative involves improving the roadway geometry to support 10-foot traveled lanes and 1-foot gravel shoulders. Refer to **Figure 4** for additional information and visual representation of this configuration. Drainage swales will be reconstructed, and the horizontal and vertical curvature of the road adjusted to accommodate a design speed of 30 miles per hour. An option for centerline profile which meets this geometry is included as **Appendix L**, and the typical roadway section is shown below.

4.6 Total Project Cost Estimate

A preliminary construction cost estimate has been prepared and is represented below in **Table 4** which summarizes the estimated construction cost for Alternatives 2A and 2B. As shown, the anticipated construction cost is 2,250,000 in 2022.

Table 4

Projected Construction Cost Estimates Alternative 2		
Estimate Description		Estimated Construction Cost
Alternative 2A (2022)	$	400,000
Alternative 2B (2022)	$	1,850,000
Contingency (25%)	$	562,500
Total Project	$	2,812,500
Total Estimated Construction Cost (2026)	**$**	**3,420,000**

Please note that this estimate contains a 25% project contingency, which is higher than historically used. This is due in part to the impacts of the Covid-19 global pandemic on pricing and material supply chains. **Table 5** represents the total project costs for this alternative, which not only include the construction costs but also estimates for engineering design, permitting, legal and administrative. Based on our estimates of project scope and overall timeline, it is unlikely that this project will reach construction before 2026. As such, the construction cost estimate has been inflated at 5% per year to reflect the anticipated cost at that time. It is important to note that prior to the Covid 19 global pandemic, costs averaged nearly 3.6% per year over the past five (5) years. This is likely to increase significantly this year.

Table 5

Total Estimated Project Cost		
Estimate Description		Estimated Construction Cost
Construction Cost (2026)	$	3,420,000
Engineering / Technical Services	$	400,000
Legal / Fiscal / Administrative	$	55,000
Total Estimated Construction Cost (2026)	**$**	**3,875,000**

5.0 FISCAL IMPLEMENTATION

As presented in section 4.0 of this report, the proposed project consists of two phases, with the following major improvements:

Phase I

1. Clear and grub existing vegetation along the roadway
2. Replace water bars with cross culverts
3. Eliminate built up sediment on each side of the travel way
4. Re-establish drainage swales along the road
5. Add fine crushed gravel for a smooth, drivable surface.

Phase II

1. Upgrade and Replace the Potash Bridge
2. Relocate existing overhead utilities along the roadway corridor
3. Boxcut and widen the roadway surface to 22-feet in travel width
    a. 10 -foot travel lanes with 1-foot shoulders to allow for 2-way travel
4. Roadway geometry adjustments for a design speed of 30 miles per hour
    b. Horizontal and Vertical Curves
5. Establish permanent drainage swales and stormwater treatment practices
6. Replace the 48-inch CMP Culvert at the interface of Segments 2 and
7. Coordinate with and Upgrade the Town of Middlebury segment

The estimated total project cost is $3,875,000 based on a 2026 construction cost estimate of $3,420,000.

5.1 Funding Alternatives

As with any infrastructure or public improvement project, obtaining funding is critical to the overall success of the project. The Town of Ripton and the Town of Middlebury do not have designated funds or discretionary spending which would facilitate the proposed project. There are several potential options available for funding portions of this project, and include:

1. **Local Funding / Capital Budgeting –** Phase one of the project involves a scope of work which is similar to much of the annual highway maintenance currently completed by the highway staff, without the use of specialized contractors and equipment. One funding mechanism is to budget for the improvements outlined as phase I to be done with local funds on an annual basis. The total estimated cost of work in Ripton in this phase is estimated at $240,000, with another $160,000 worth of work estimated in Middlebury.

2. **VTrans Bridge Program -** This program offers 90% grant funding with a 10% local match for the replacement of municipally owned and maintained highway bridges. The replacement of the Potash Bridge would be ideal for this funding source. It should be noted that this program is competitive, with funds prioritized to bridges based on traffic volumes and overall need. The current use of Old Town Road results in this being a lower priority bridge.

3. **Vtrans Structures Grant -** This program offers funding for engineering design, permitting, bid and construction phase services, as well as construction grants for large structure replacement. It can be used for bridges, but is commonly used for culverts as the funding is limited to a maximum amount of $175,000 per grant award. Typically, grants are awarded for engineering in one fiscal year, with a subsequent grant awarded for construction once the design is complete and permits are in hand. This would be ideal for the replacement of the 48-inch CMP culvert crossing at the crossing of the unnamed tributary of the Middlebury River. The funding shares for this program would be 80% Federal / State and 20% local.

4. **VTrans Transportation Alternatives Program -** This program is administered by the Municipal Assistance Bureau. The maximum federal award under this program is limited to $300,000. The funding shares for this program would be 80% Federal / State and 20% local and awards are typically based on overall need. It should be noted that "in kind services" can account for up to 50% of the local match requirement, with at least 50% of the local match being contributed as cash. Grant applications are accepted annually and typically due in November of each year.

5. **FEMA Building Resilient Infrastructure and Communities (BRIC) Grants -** This program is administered by the Federal Emergency Management Agency (FEMA) and offers a funding mechanism specific to projects which provide states, local communities, tribes and territories funding to address high-level future risks to natural disasters such as wildfires, drought, hurricanes, earthquakes, extreme heat, and increased flooding to foster greater community resilience and reduce disaster suffering.

   A cost share is required for all projects which are funded under BRIC. The non-federal cost share funding may consist of cash; donated or third-party in-kind services and materials; or any combination thereof. FEMA will provide 100% of the federal funding for management costs. Cost share amounts are as follows:

- Generally, the cost share for this program is 75% federal cost share funding/25% non-federal cost share funding.

- Economically Disadvantaged Rural Communities (EDRCs) are eligible for an increase in funding, up to a 90% federal cost share/10% non-federal cost share. EDRCs are communities of 3,000 or fewer people, identified by the applicant, with residents having an average per capita annual income no more than 80% of the national per capita income, based on the best available data.

- FEMA provides 100% federal cost share funding for management costs.

  In Fiscal Year 2022, FEMA plans to distribute 2.295 billion through the BRIC program, of which 112 million will be made available to US States and Territories, with up to 2 million dollars per applicant.

The BRIC program offers a unique funding opportunity for projects like this and is specifically available to address the ultimate goal of this project, which provides greater resilience.

5.2 **Funding Approach & Next Steps**

In the course of developing this study, it has become apparent that a singular funding source is unlikely to be available in an amount which can address the preferred project in its entirety. As such, we offer the following approach to project funding and overall development:

1. Obtain voter approval and establish an adequate annual budget which allows for the construction of improvements described in detail as phase I on an annual basis. Ideally, this work would occur over a two year period.

2. Apply for funding for the Replacement of Potash Bridge under the VTrans Bridge Program. If awarded, utilize this funding source to replace the bridge and address the geometric changes to the roadway required to upgrade Segment 1.

3. Obtain voter approval and use local funds for the engineering design and permitting necessary to upgrade the roadway to class III. This would include the engineering design and permitting of the large culvert crossing.

4. Apply for funding through the VTrans structures grant program concurrently with a funding application for the FEMA BRIC program to redevelop the roadway for year round use. Having completed the engineering design outlined in Step 3 above, and completing the other projects which push towards the overall goal, the funding applications will be stronger and more suited, as they can demonstrate a "shovel readiness".

5.3 **Project Schedule**

The proposed project schedule is shown in **Table 6**, however, it should be noted that the overall project schedule is highly dependent on the Town's desire to move forward, the availability of State and Federal Grants, and the timeline for decisions and permits. The general approach to schedule for a complex project like this is to address key items along the projects critical path. The elements depicted on **Table 6** are intended to represent a critical path. This schedule should be adjusted to accommodate any funding award date or overall project delay.

Table 6 – Project Schedule

Project Task	Date
Receive Approval of Scoping Study	October-22
Town Approval to Rehabiliate Road (Phase I)	March-23
Upgrade Road to Driveable Condition	2023 thru 2024
Interlocal Agreement with Middlebury	2023 thru 2024
Potash Bridge Replacement	2024
Town Approval for Engineering Design and Permitting	March-24
Design, Permitting, Right of Way	2024
FEMA and Structrues Grant Applications	2025
Bidding	Fall / Winter 2025
Construction	Summer 2026

FIGURES

GENERAL NOTES

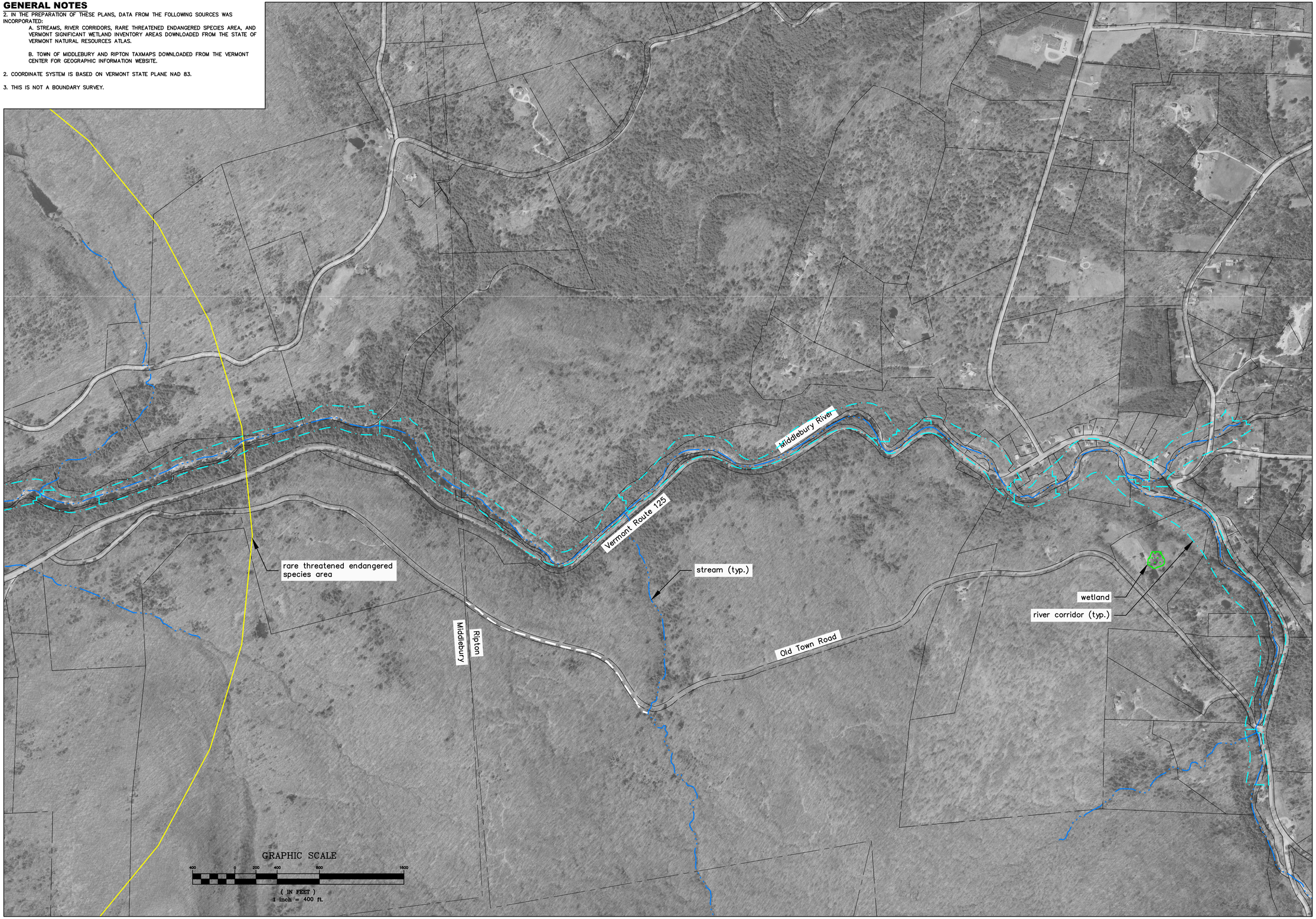
2. IN THE PREPARATION OF THESE PLANS, DATA FROM THE FOLLOWING SOURCES WAS INCORPORATED:

   A. STREAMS, RIVER CORRIDORS, RARE THREATENED ENDANGERED SPECIES AREA, AND VERMONT SIGNIFICANT WETLAND INVENTORY AREAS DOWNLOADED FROM THE STATE OF VERMONT NATURAL RESOURCES ATLAS.

   B. TOWN OF MIDDLEBURY AND RIPTON TAXMAPS DOWNLOADED FROM THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION WEBSITE.

2. COORDINATE SYSTEM IS BASED ON VERMONT STATE PLANE NAD 83.

3. THIS IS NOT A BOUNDARY SURVEY.



OTTER CREEK ENGINEERING

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Fax: 802 747-4820
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E-mail: info@ottercrk.com

STAMP AND SIGNATURE:

DESIGN ENGINEER

GRID NORTH

ADDISON COUNTY REGIONAL PLANNING COMMISSION
OLD TOWN ROAD RECLASSIFICATION
RIPTON, VERMONT

REVIEW

DATE ISSUED:	9/7/2022
REVISIONS:	
DRAWN BY:	HB
CHECKED BY:	RC
SCALE:	1"=400'
PROJECT NO.:	046.005
CADD FILE:	046-005 ortho

TITLE:
SITE PLAN

FIGURE NO.
1

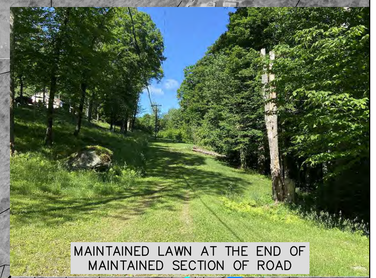
LOOKING EAST

LOOKING WEST

LEDGE SHOWING THROUGH THE GRAVEL

48" CMP

LOOKING EAST AT A LOW LYING WET AREA



MAINTAINED LAWN AT THE END OF MAINTAINED SECTION OF ROAD

SEGMENT 4

SEGMENT 3

SEGMENT 1

SEGMENT 2

STANDARD CULVERT CROSSING STREAM

GRAPHIC SCALE

400 0 200 400 800 1600

(IN FEET)

1 inch = 400 ft.

ROAD WASHOUT

LOOKING EAST AT A LOW LYING WET AREA

10' HIGH UTILITY LINE LOOKING WEST

ROAD WIDTH 16'

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OLD TOWN ROAD RECLASSIFICATION

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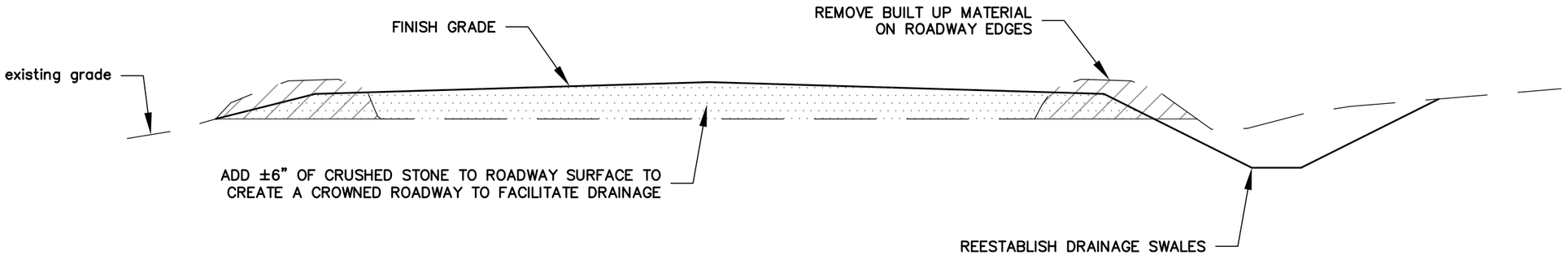
TITLE:

SITE PLAN

FIGURE NO.

2



TYPICAL ROAD SECTION

NOT TO SCALE

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ADDISON COUNTY REGIONAL PLANNING COMMISSION

OLD TOWN ROAD RECLASSIFICATION

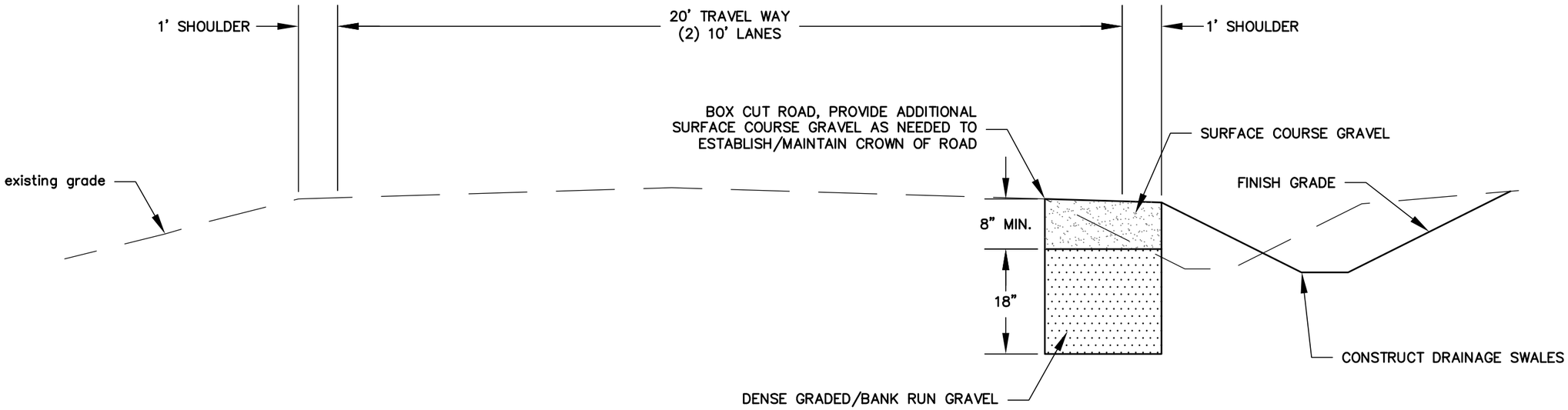
RIPTON, VERMONT

DATE ISSUED:	9/7/2022
DRAWN BY:	RR
CHECKED BY:	RC
SCALE:	AS SHOWN
PROJECT NO.:	046.005

TITLE:
ROAD
REESTABLISHMENT

FIGURE NO.
3

REF. DRAWING:



TYPICAL ROAD SECTION

NOT TO SCALE

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ADDISON COUNTY REGIONAL PLANNING COMMISSION

OLD TOWN ROAD RECLASSIFICATION RIPTON, VERMONT

DATE ISSUED:	9/7/2022
DRAWN BY:	RR
CHECKED BY:	RC
SCALE:	AS SHOWN
PROJECT NO.:	046.005

TITLE:
ROAD WIDENING

FIGURE NO.
4

REF. DRAWING:

APPENDIX A: OLD CENTRE TURNPIKE PRESERVATION STUDY REPORT

Old Centre Turnpike Preservation Study Report

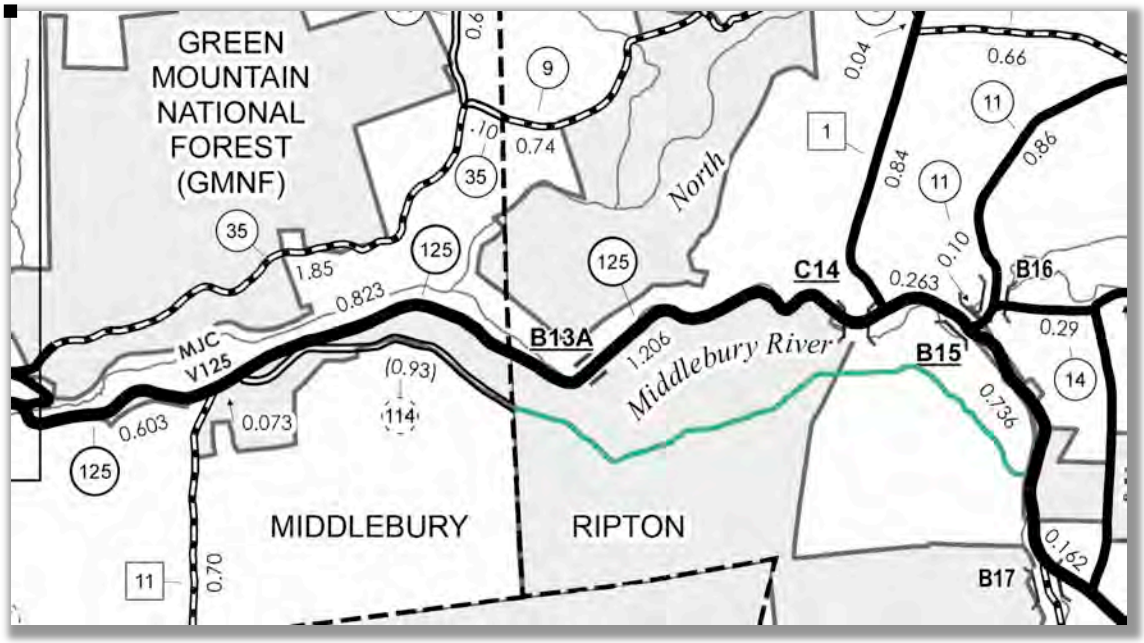
Paul S. Gillies, Esq. and Kevin Russell
Supported by LandWorks

Final Report
September 25, 2014

Addison County Regional Planning Commission • Town of Ripton
Vermont Agency of Transportation • Federal Highway Administration

Introduction

The Town of Ripton received support from the Addison County Regional Planning Commission (ACRPC) to conduct a study of an historic transportation corridor commonly known as Old Centre Turnpike and Old Town Road and to preserve the corridor for public use. The goal of the preservation study was to determine the current legal status of the corridor and make recommendations on measures necessary to preserve the permanent control of the public right-of-way of the Town of Ripton. On behalf of the Town, the ACRPC issued a request for proposals for professional consultants to conduct the study, provide a legal opinion and produce a report with recommendations to provide certainty and direction on the issue. The ACRPC and Town selected the consulting team of Paul Gillies of Tarrant, Gillies, Merriman and Richardson of Montpelier, and Kevin Russell of Community Development Services of Waitsfield to conduct the study, research the topic and prepare this report. LandWorks of Middlebury provided valuable mapping resources, accurately compiling the relevant information on a comprehensive Base Map (Appendix B). Through research of the legal record the project team has found that the Town has legal control of the corridor for current and future use by the public. A formal legal opinion that asserts that **the road was legally established and never legally discontinued** can be found on page 6.



Purpose and Need Statement

The purpose of the study is to confirm, or provide a strategy to obtain, the legal public right-of-way of the former Centre Turnpike as laid out, constructed and in use since1808 within the Town of Ripton. The *Old Centre Turnpike Preservation Study Report* will provide a legal opinion and an outline of the steps necessary for the Town to add the road to its Certificate of Highway Mileage and General Highway Map, preserving the corridor for public use.

The need for legal control of the right-of-way is for the Town to utilize the corridor for future needs that benefit the public, including emergency access in the event of a closure of State Route 125.

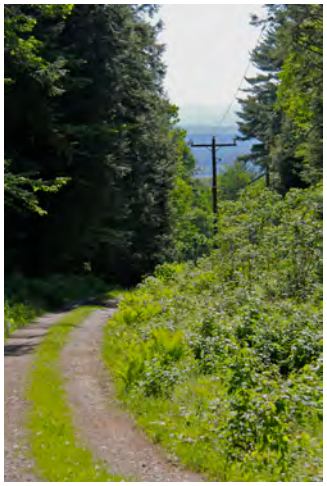
Recent and historic floods of the Middlebury River have caused road closures in the past and additional events are predicted to increase in frequency and impact in the future. A benefit-cost analysis that was conducted in 2010 concluded that it might be cost effective to employ the corridor of the Old Centre Turnpike/Old Town Road as an alternative route to the existing vulnerable roadway. Formally acknowledging the road as a legal public right-of-way will enable the Town to take action as necessary.

Furthermore, the Town has until July 1, 2015 to add the road to its Certificate of Mileage and General Highway Map or risk losing the public right-of-way as a consequence of ACT-178 of 2006, a law that requires all town roads and trails to be added to the official Town Highway Map by July 1, 2015. The study report outlines the steps necessary to comply with this Act.

Project History

A detailed chronology of the history of the corridor is found in the "History of Centre Turnpike/Old Town Road in Ripton, VT from 1793 to 2008" by Charles Billings and provided valuable background information for the preservation study (Attachment A). In 1793, John Foot surveyed a road from the Middlebury Court House easterly through what is now Ripton. In 1794, the Middlebury Selectboard recorded this layout in the land records on May 8 (Book 2, pages 221 and 222). On November 4, 1800, the Centre Turnpike Company was chartered by the Vermont Legislature to provide a toll road from Middlebury to Woodstock. Among the incorporators were Gamaliel Painter and Daniel Chipman. The road was built in 1808 along the corridor of an above-mentioned road survey recorded by the Town of Middlebury.

The original road survey and the route of the early turnpike within the Towns of Middlebury and Ripton followed a different alignment than the current Robert Frost Memorial Drive, State Route 125. As with all early Vermont turnpikes, there were changes made to its alignment due to challenging topography and developing land use patterns. Around 1825, approximately 2½ miles of the road became little used when the main turnpike was relocated downslope, adjacent to the Middlebury River to provide a connection to the commerce along the river and the growing village of Ripton. The piece of the former 1793-surveyed road that became bypassed, now known as Old Centre Turnpike in Middlebury and Old Town Road in Ripton, is the topic of this study.



Today the entire length of the Old Centre Turnpike corridor is also a right-of-way for an overhead utility line that was originally established by Joseph Battell, a notable landowner during the late 19th and early 20th century. This easement is recorded in the Middlebury Land Records. Due to this continued use, the corridor is open and passable in both towns. For the purpose of this study, we will refer to the entire corridor as the presumed Old Centre Turnpike. Much of the land surrounding the corridor is land that was donated to Middlebury College by Joseph Battell and later became the Green Mountain National Forest.

The legal status of the Ripton portion has been in question and was the primary focus of the preservation study. In 1981, the US Forest Services (USFS) investigated the status of the road and determined that it was still a public highway. At the time, the Town of Ripton took no formal action to acknowledge the road due to uncertainty of the legal status. However, the Town of Middlebury acknowledged its section of the corridor and added it to its General Highway Map. Thus, the USFS was provided access for forest management from that end of the corridor. The Middlebury road was upgraded to its current condition.

Recent events and other planning efforts including a 2010 study - *Middlebury River/Route 125 Benefit-Cost Study* - have identified the need to preserve this former road for current and future uses. The study identified the need to preserve the old corridor for emergency purposes and to reestablish the route for transportation in the event of another catastrophic flood of the Middlebury River and washout of the current Route 125. If this were to happen, the Towns would need to demonstrate the legal right-of-way of the route for public uses as a highway. In Middlebury, Old Centre Turnpike is shown on its General Highway Map as TH114. The US Forest Services maintains this road (FS#296) for forest access and recreation usage including a trail known as the Oak Ridge Trail. In Ripton however, Old Town Road is not shown on the highway mileage map.

Through a collaborative effort working with representatives from the Town of Ripton, Addison County Regional Planning Commission, National Forest Service and other stakeholders, the project team researched the current status and provided a legal opinion that asserts that Old Town Road is, and always has been, a Ripton public highway. This report recommends strategies to preserve the legal right-of-way and utility of Old Town Road including the steps necessary to satisfy Act 178 "Ancient Roads" legislation.

Existing Conditions

The Old Centre Turnpike and its attending power line deviate to the right from Route 125 just uphill of Upper Plains Road in Middlebury. There is a US Forest Service parking area and trailhead for the Oak Ridge Trail that provides recreation within the Green Mountain National Forest. The road/trail ascends at a moderate to steep incline as it wends its way above and away from the current highway. The corridor is uncharacteristically open for an old road in the woods due to the generous clearing required by the power line. It is quite visible by statewide aerial photography and satellite. This road has a locked gate just uphill from the trailhead. Large hardwood forests guard the entire length including many oak, maple, ash and yellow birch. Wild turkey can be heard and sign of deer and moose can be seen. The clearing provides an edge habitat for diverse wildlife including lots of berries for black bears. The road is well maintained in Middlebury with a crushed marble and gravel surface. The wheel tracks are bright in the green grass of June. The ditches and few culverts are well maintained making for a dry and stable road suitable for heavy vehicles required for logging and utility operations. Boulders are strewn along the way. Some not moved far from where the glacier left them, other avoided by the early road builders. The road is a recreation corridor and used by hikers, bicyclists and skiers. It is an important link to the Catamount Trail.

The Middlebury Class 4 Road ends at just less than one mile at the Ripton border. At 1.25 miles the road bends sharply to the left and summits, crossing the one main stream by way of a metal culvert. This culvert in Ripton has been maintained in recent years, presumably by the USFS. Here the Oak Ridge Trail turns off from the road easterly toward Mount Moosalamoo on a single track. Just beyond, there is a level clearing and the well-maintained road ends. Now the road takes a straight line along level ground for some distance. The gravel is replaced by soft boggy soil providing good wildlife tracks to observe. Wheel tracks from ATVs are also present. Verdant are the plants that envelope the road/trail within the wetland. The power line is noticeably lower. The public land ends at the Green Mountain National Forest boundary, within view of a residence that is at the top of Old Town Road.

The section of the Old Centre Turnpike in Ripton, now named Old Town Road, is accessed from the east over a bridge (Potash Bridge) across the Middlebury River. There are a number of private lots and residences that are served by this bridge and road. The property owners have maintained Old Town Road and its bridge in recent years, with some assistance from the Town. The USFS owns land on the east side of Route 125 where the Old Town Road meets the main road. The boundary line for this piece is the center of the Middlebury River. Otherwise, there are no public lands on either side of the road from its junction with Rt. 125 to where the road terminates at the Green Mountain National Forest boundary at the west end of Old Town Road. This is where the road transitions to the previously described section leading back toward Middlebury. The power line continues along this road. The characteristic boulders punctuate. Previous legal investigations and efforts to confirm the public right-of-way of this piece of Old Centre Turnpike have been inconclusive to date. This study rectifies that.

Natural and Cultural Resources

In addition to the observations above, the project team conducted a desktop review of the natural and cultural resources. The known resources are shown on the base map (see Attachment B). Any construction project to improve the corridor funded by Federal Highway Administration (FHWA) would trigger a National Environmental Policy Act (NEPA) assessment. This would require a comprehensive review of several natural and cultural resources to rule out any adverse impacts from the future construction and development of the corridor.

Study Approach

The approach to the study included collaborating with a project advisory committee consisting of the ACRPC staff, members of the Ripton Selectboard and staff, a representative from the Town of Middlebury and the project's consulting team. Additionally, the USFS provided valuable information from the research that was performed in the 1980's. The project team conducted important research of the public record, developed a comprehensive base map, documented important supporting exhibits (here within) and produced this written report with a legal opinion and recommendations.

Kick off Meeting – July 26

The project team and advisory committee met to initiate the project in July. At this meeting, the team reviewed a draft purpose and need statement, a draft outline of the steps necessary to comply with Act 178 and a draft base map. The team confirmed the scope of work and the direction of the study. Complete notes from the meeting are in Appendix C.

Legal Research

Following the Kick off Meeting, the team began to research the historic and legal record on the road. Paul Gillies, Esq. did a comprehensive review of:

- Centre Turnpike Corporate Records – Sheldon Museum
- Middlebury Land Records
- Ripton Land Records, and
- USFS File on research conducted in the 1980's

The Town of Ripton Land Records is not complete with missing records earlier than 1830. The record of the Town of Ripton voting in favor of spending funds to purchase and maintain the turnpike at a Town Meeting in 1853 (see Exhibits 4 and 5) was critical, along with the early laying out of the highway by the Town of Middlebury, before the boundary adjustment leaving the land covered by the 1793 road in Ripton. The USFS did similar research in 1981 and maintains an extensive file on the road in their offices in Rutland. The USFS also did a complete resurvey of the road at that time. This survey was recorded in the Middlebury Land Records on Slides 373 and 374 (shown on base map).

Second Advisory Committee Meeting - August 12

The project team and advisory committee met again in August to review a draft legal opinion provided by Paul Gillies and confirm the next steps to meet the goal of the project. The committee reviewed an outline of the necessary steps to add the road to the Town's General Highway and Certificate of Mileage. The base map was reviewed with suggestions from the committee on additional features to be added. The project team will plot and match the 1793 survey, add the historic Town boundaries and label the parcels and other features. Complete notes from the meeting are in Appendix C.

Legal Opinion

The following legal opinion of Paul Gillies, Esq. confirms that the corridor in question is a legal Ripton Town Highway.

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STEPHEN A. REYNES

September 22, 2014

Laureen Cox, Chair
Ripton Selectboard
1311 Vermont 125
Ripton, Vermont 05766

Re: Old Centre Turnpike/Town Highway

Dear Laureen:

The issue is whether the road that runs off of Route 125 easterly along the height of land in Ripton—the track of the former Centre Turnpike—is a town highway. This has been a subject of considerable research, surveying, and struggle over the years, but the evidence is clear enough for me to conclude that the track is a Class 4 town highway of Ripton. Here's how I get to that conclusion:

The highway was laid out by Middlebury Selectmen in 1793 to the town border with Ripton. Exhibit 1. This road was never discontinued, and as the land over which it travels is, since 1814 and 1829, located in Ripton, it is a town road in that town. Exhibits 2 and 3.

Discussion of the creation of the Centre Turnpike Company and its doings over its history are, for purposes of this conclusion, irrelevant. The Company had control over the route for 53 years, but in 1853 sold its interests to Ripton. Exhibits 4 and 5.

The records of the Town of Ripton prior to 1830 are lost, and no survey of that portion of the route that runs from the old town line of Middlebury to the road to Goshen has been located. But that problem is solved by evidence that Ripton spent funds to improve the road in 1853. Exhibit 6. In highway law, that is evidence of dedication and acceptance, which would be an alternative basis to conclude it is a town highway in lieu of a survey and on top of the 1853 purchase of the route from the Turnpike Company.

There is a lot of information on this issue in the U.S. Forest Service Office in Rutland, including surveys tracking the 1793 route with ground evidence. The Sheldon Museum has the corporation records of the Center Turnpike Company, and the Ripton and Middlebury town land records have even more information, but nothing in any of it suggests that the road is not a Ripton town road. Middlebury recognized it as a town road as it runs through that municipality, in 1982. It's time for Ripton to do the same.

Ripton has had opportunities in the 1980s to take this step, but its Selectboard was cautious and resistant, largely because of a concern that landowners along the route would be upset. Apparently there are successor landowners who have a similar idea, including one who has erected signs insisting that the road is not a public highway. This resistance does not change the underlying fact that the road is a highway, however. Road easements can't be extinguished the way private easements can. 19 V.S.A. § 1102.

Some have complained that they spent money improving the road, and hinted that this changes things, but that is a mistaken theory. That they went ahead and made improvements without the approval of the Selectboard has no impact on the underlying facts either.

The running of utility lines along the route, beginning in 1881, is of some value in confirming that it is a town highway, but that is not determinative either.

What matters is the 1793 survey and the 1853 purchase of the route and payment of funds to improve it by the Town of Ripton, plus a lack of any evidence of discontinuance. The lesson of the ancient roads law and the various cases that have come from fights between landowners and towns on old roads is that a highway never ceases to exist without some affirmative act of the Selectboard, discontinuing the public interest in the road. There is no evidence that that has occurred. There is neglect and a failure to acknowledge, but no discontinuance.

The Town should, however, ensure that the highway is placed on the official town highway map, by providing the evidence of its creation to the Agency of Transportation Mapping Division.

The survey that has been completed for this study plots the 1793 survey accurately, although the rendition shows the road stopping short of the Ripton line and diverges in places from the track of the road as located on the ground. The differences may be attributable to small lapses in surveying or the choices made by those who built the road following the original survey. These inconsistencies should not be of great concern to the Selectboard. When a road has moved out of its original, surveyed track, the Vermont Supreme Court has recognized that fact and not held towns to strict adhesion to the original position. *Town of Ludlow v. Watson*, 153 Vt. 437, 441-442 (1990) (applicable to the extent that original metes and bounds cannot be determined, relying on 19 V.S.A. § 32). This is partly due to the concept of dedication and acceptance, which justifies and validates changes in road location when there is maintenance and no objection by the landowner for a period of years. *Town of Springfield v. Newton*, 115 Vt. 39, 43-44 (1947). Complementing these factors is the 1853 purchase of the land over which the road runs from the Turnpike Company, as discussed above. If a challenge comes to the Town's decision to have the route included as a Class 4 highway on the official town highway map, these elements should provide a satisfactory explanation to the conclusion that this is a town road.

Thank you.

Sincerely,

Paul Gillies

See Appendix D

Exhibit 1 – 1793 Survey of John Foot – recorded on May 8, 1794 in the Middlebury Land Records - Book 2, Pages 221 and 222, and a transcript excerpt from the Middlebury Road Book.

Exhibit 2 – 1814 Laws Passed by the Vermont Legislature, page 141 - Middlebury to Ripton boundary change documentation.

Exhibit 3 – 1829 Acts Passed by the Vermont Legislature, page 20 - Middlebury to Ripton boundary change documentation.

Exhibit 4 – 1800 to 1808 Acts Passed by the Vermont Legislature– excerpts related to the Charter of the Centre Turnpike.

Exhibit 5 – March 30, 1853 Ripton Town Meeting Proceedings, page 126 – action taken regarding purchase and maintenance of the Centre Turnpike.

Exhibit 6 – April 15, 1853 Ripton Town Meeting Proceedings, page 126 and 127 – action taken regarding purchase and maintenance of the Centre Turnpike.

Corridor Preservation Recommendations

Complying with Act 178:
In 2006, the Vermont Legislature enacted a law that required all town-owned roads to be shown and listed on the General Highway Map and Certificate of Mileage. Old Town Road is not currently acknowledged as a town-owned road and is not on the Ripton map or certificate. The above legal opinion concludes that the road is a Town Highway. In order for the road to remain a legal Town right-of-way and comply with Act 178, the Town will need to take the necessary steps to add it to the Town's Certificate of Highway Mileage and General Highway Map. This is detailed in 19 V.S.A. § 305(c). The Vermont Agency of Transportation (VTrans) has published a practicum and checklist on compliance with Act 178 and describes the process on adding existing roads that are not on the General Highway Map (See appendix E). Here is a summary of these steps and important date:

- **February 10, 2015** (on or before) - The Town Selectboard files with the Clerk the annual Certificate of Highway Mileage to include the Centre Turnpike mileage and forwards a copy to the VTrans Mapping Section by February 20.
- In addition to the Certificate of Highway Mileage, the Town will need to provide documentation that includes a description of the affected highway, minutes of meetings at which the Selectboard took action to acknowledge the highway, and a copy of the General Highway Map with the road sketched on it.
- A copy of the historic and USFS surveys can provide additional evidance but are not required for roads that were established prior to February 10, 2006.
- VTrans will review the submission and request any additional information. If the documentation is timely and complete, the Agency will add the road to the General Highway Map prior to the deadline of July 1, 2015.

According to the VTrans practicum, if the Town wishes to reclassify the highway to a Town Trail, then the presumption is the Town will reclassify the highway to a trail before adding it to the Mileage Certificate and General Highway Map.

Future Considerations

Maintenance:
The Town's responsibility for maintaining Class 4 highways is described in 19 V.S.A. § 310. "Highways, bridges and trails - (b) Class 4 highways may be maintained to the extent required by the necessity of the town, the public good and the convenience of the inhabitants of the town, or may be reclassified using the same procedures as for laying out highways and meeting the standards set forth in section 302 of this title." However, codes and standards apply to the drainage structures on Class 4 Highways, in the same manner as Class 3, so culverts and bridges should be maintained. Damaged structures from flooding on Class 4 highways and bridges are eligible for FEMA providing the Town has a policy to maintain the structures on Class 4 highways. Towns are not bound to maintain town trails – "Trails shall not be considered highways and the town shall not be responsible for any maintenance including culverts and bridges." 19 V.S.A. § 302(c)(5).

The bridge over the Middlebury River to Old Town Road, known as the Potash Bridge, is a major structure along the highway and represents a significant responsibilty and potential future cost to

the Town and/or residents along the road. This study did not investigate the condition of the bridge nor does this report provide any engineering opinion or estimates of repairs or replacement. This report makes no recommendations on maintenance of the highway and the attending structures beyond suggesting that the Town work with the affected landowners on all matters related to the highway, its future uses and ongoing maintenance. The project team recommends developing a written management plan in collaboration with residents and other stakeholders to guide future actions regarding the road/trail.

Town Trail:
The advisory committee and project team discussed the possibility of reclassifying the road as a legal Town Trail in order to control the uses and work with the property owners to minimize any adverse impacts. Before the corridor is formally added to the Highway Mileage Certificate, the Town can take action to reclasssify the highway to a Town Trail. The Town may choose to reclassify only a portion of the road to a trail. If so, then adding the highway to the map may be the first step. The reclassification process is defined in 19 V.S.A. §§ 708 – 712 and 771 – 775. Here is a summary of the steps:

- The Selectboard initiates the proceedings. Or, by request of an abutting property owner, or by petition of 5% of the voters.
- The Selectboard holds a public hearing to examine the premises and hear concerns by properly posting with the Clerk, advertising in a local newspaper of record and notifying affected landowners with 30 days notices.
- The Selectboard votes to reclassify and prepares a survey of the highway to be reclassified.
- Within 60 days of the hearing, the Selectboard reports the action to the interested parties and the Clerk. The order to reclassify the highway and the survey are recorded in the Town land records.
- The Town notifies VTrans Mapping Section at the next annual cycle for updating the Certificate of Mileage and General Highway Map.

In consideration of the Town Trail, the Selectboard could work collaboratively with the landowners and others to establish a management plan for the highway/trail. The plan can include specific management and maintenance responsibilities, establish the legal uses, reroute portions of the trail to avoid impacts to property owners and other important considerations.

Conclusion

The local communities and other important stakeholders are interested in preserving the corridor of the Old Centre Turnpike and Old Town Road in the towns of Middlebury and Ripton. Emergency access to the corridor in the event of another catastrophic flood of Route 125 is a real need, particularly to the residents of Old Town Road should the Potash Bridge be lost. This study provides important clarity and certainty to the legal status of the route and reommendations on preserving control of the corridtor for the public's use. The project team throughly investigated the public record and researched the legal status of the road in question. The legal opinion concludes that Old Town Road was legally established and never legally discontinued. The status and future uses of the corridor are under the control of the governing body of the Town of Ripton. This study recommends that the Town take the steps outlined to preserve the public road by adding it to the Certificate of Mileage and General Highway Map and work closely with property owners, the USFS and others as necessary and maintain the utility of the corridor.

Appendices

A. *History of Centre Turnpike/Old Town Road in Ripton, VT from 1793 to 2008* by Billings

B. Base Map

C. Advisory Committee Meeting Notes

D. Exhibits 1-6 in support of the legal opinion

E. VTrans – *An Ancient Roads Practicum*

APPENDIX B: HISTORY OF CENTER TURNPIKE/OLD TOWN ROAD IN RIPTON, VT

History of Center Turnpike/Old Town Road in Ripton, VT from 1793 to 2008

1. **On October 28, 1793** a road was recorded in Middlebury Land Records along with a survey for a 6 rod wide road (100 ft) starting at the courthouse and extending to the old East line of Middlebury (West line of Ripton). In 1793 the East line of Middlebury crossed approximately halfway along the improved section of what is now called Private Old Town Rd. An overlay of the 1793 survey on the current Oak Ridge Trail/Private Old Town Road corresponds very well. This overlay comparison makes it is obvious that the Old Center Turnpike has not moved substantially from its original location at least to the Old Middlebury/Ripton lines (see #4.—Ripton's acquisition of Middlebury lands).
2. **In 1800 the Center Turnpike Company was chartered to build a road along the original survey**. Daniel Chipman, a Middlebury lawyer was one of the original share holders in the Center Turnpike. In 1828 he built a house (**"Chipman Inn")** and moved to Ripton.
3. **"About 1803-4 the Centre Turnpike was made, which passed through the south west corner of what was then Ripton. A part of the turnpike was then located not where it is now, but southwardly, on a hill, but afterwards, in 1825, was made down on the river."** The source is Samuel Damon, Ripton Town Clerk, 1859.
4. Ripton acquired two grants of land from Middlebury in **1814 and 1829**. The land that Ripton acquired included Middlebury's easterly portion of the Center Turnpike, as well as land in Ripton village.
5. **"We were unable to recover any survey of the Center Turnpike from the old Ripton west line easterly** (see possible explanation below, #7). That portion of the Turnpike in what was originally Middlebury is defined by the survey in the Middlebury Records. Proof that the turnpike ran through Ripton is evidenced by the 1848 order for division. Evidence of the location in old Ripton is afforded by the 1919 pole line easements and by ground evidence existing today." From a Forest Service Addendum of 25 May 1984.
6. **On May 31, 1881 Joseph Battell** stated his intent to enact a telegraph/telephone line alone the Center Turnpike from East Middlebury to the Town of Ripton. This is the **same route that the telephone line follows today**.
7. The date of the first bridge at Old Town Road across the South Branch of the Middlebury River is unknown. Malcolm Billings (b. 1913) said both his father Jason Billings and his uncle Timothy Billings (both landowners on Old Town Road) told him that the original Center Turnpike bridge was not at Potash Bridge, but instead went into Ripton village and crossed at a bridge to the north side of the river near the location of Sally Hoyler's garage, not far from the location that Joseph Battell's telegraph/telephone entered Ripton village. Timothy Billings, Jason Billings, Malcolm Billings and Willard Billings and others all used the Potash bridge to access their woodlots. The Potash Bridge is recorded in the history and deeds of the area, and references to it will probably be found dating significantly before 1900. It is known that a bridge was there prior to the washout in the late 1920's, and a concrete base is still visible on the northeast side of the river just south of the current bridge. A log version of the bridge was used in the 1950's to bring out timber from the hurricane and later when Hilton Billings built his cabin. His cabin is about 300 yards north of a local cobbler's stone foundation. This cobbler had access across the river and occupied the property prior to ca 1880.
8. The "new Potash Bridge" cement abutments (1964) and steel reinforced bridge were installed in **1960's and 1970's** by Billings, Wimett, & Mainelli. Significant gravel road improvements were also done by Mainelli, Biddle and Billings.
9. **1982-1986**. U.S. Forest Service made preparation for a timber sale that was to transport the logs across the "Potash" end of Old Town Road.
10. **In May 1983** the Middlebury Selectman agreed with the USFS that the portion of the old Center Turnpike in Middlebury was a Class 4 road.
11. **1982-1986**. Old Town Road residents/landowners, including Mainelli, Biddle & H. Billings, pointed out that their improvements and maintenance to the road made it possible for the USFS to save money by bringing the logs out to "Potash" bridge. Some of these residents asked the Town of Ripton to help them

resist USFS claim that the old Center Turnpike was a class 4 road. The USFS offered future help to maintain the bridge and the road, but because of the residents' desire to maintain private road status and Town's reluctance to be responsible for any maintenance, the Town decided to hire a lawyer(s).

12. **May 21, 1986** Ripton Town lawyer Karl Neuse provided Ripton Selectmen with an opinion that the old Centre Turnpike had been discontinued by Ripton on **December 19, 1873**. Neuse cites "...and the road, formerly the Center Turnpike passing by the dwelling house of Joseph 'Clearwell' formerly the dwelling house of 'Liza S. 'Turnwal'. And we do hereby discontinue the same and order it to be shut up and closed from travel by the public..."
13. **June 12, 1986 the Forest Service responded to the Ripton Selectmen and correctly identified that Attorney Neuse had erred in locating the road that Ripton Selectmen discontinued in 1873.** The road that Neuse described as being discontinued on December 19, 1873 actually passed by the dwelling house of Joseph **Caswell, formerly the house of Eliza S. Turnald"...** and was in fact the original extension from Maiden Lane across the Center Turnpike to the Goshen Rd (the Old County Rd). That section of discontinued highway is still visible today, and was made possible because Parsons Billings, Jr. had built a better road and bridge to service his Coal Kilns on the same route that we now travel from Rte 125 onto the Goshen road across the South Branch of the Middlebury River.
14. **About 1998** street names were assigned to all roads to comply with 911 emergency response directives. Neighborhood residents and Ripton Town officials gave the Old Center Turnpike (the section "...on the hill" as opposed to the relocated section down by the river) the name **Old Town Road**. The sign at the bridge says Pvt Old Town Road.
15. Full time former and present residents, Biddle, Mainelli, Funk, Billings, W. Leeds, E. Leeds, Coeby and Lewis have done most of the improvements and maintenance. For several years (**approximately 2002-2004** Lewis contracted for road work, sent out bills, and received payment from the full time residents on Pvt Old Town Rd. Later in 2004 (verify this time) Lewis discontinued road work and installed a gate across the original Old Town Rd ROW where his property joins the Old Center Turnpike. November 2004 Lewis served a "Notice of Trespass" on neighbor Lynn Coeby.
16. **2006.** Old Town Residents met in the Ripton Town Hall to look at ways to collectively share costs for the maintenance of Pvt Old Town Rd. Meetings were held in March 2006 and April 1st 2006. A third meeting is scheduled for April 23rd. During this same time Lewis erected signs on lands/right-of-ways of Cincotta, Coeby, and Others--"Stop! No parking on road Notice There is no turnaround beyond this At this time the maintenance of this portion of road is the sole responsibility of the Lewis'. The Lewis' property is Legally posted Keep Out! Electric, Phone and Lewis' service vehicles welcome. Thank-you."
17. **April 7, 2006.** 'Notice Against Trespass' was served by registered letter by Lewis on C. Billings, T. Billings, C. Billings-Fitzgerald, H. Billings, E. Leeds, J. Shipley, W. Leeds, and J. Beckman,. Included with the Lewis Notices was a letter which among other things states their belief that:
    a. **"...National Forest has an access they do not need to come through our land."**
    b. **"Lewis' Property is legally posted even the National Forest has to ask permission to go through our property."**
18. **April 7, 2006,** Charles called the Vermont State Police to make known his intention to walk a portion of Old Center Turnpike ROW with Ranger Tracy Pophoovan on April 19th. The Vermont State Police Officer stated that he would not get involved in making an arrest of any resident/landowner who believes he/she is on a ROW. He pointed out that a Ranger is a Federal Officer.
19. **Charles Billings Meeting with Tracy Tophooven (Ranger) and Chris Casey (Silviculturist)**

    1. On April 19, 2006 Charles Billings met with Tracy and Chris at the Ranger station in Middlebury to describe the desire of the residents and owners described in #17. above to preserve the right-of-way along Old Town Road/Old Center Turnpike. Charles described the current situation with Lewis road blockage, signs, No Trespass certified letters and other Lewis comments described above.
    2. For Tracy this was the first time that she had the chance to examine the NFS's right-of-way on the Old Center Turnpike.

3. Chris described his involvement in 1986 when Old Town Road resident Biddle fought against NFS using Old Town Road to bring logs to the bridge. Chris commented that they had legal advice and documents to show their ROW. NFS also suggested a willingness to help with ROW maintenance costs. When Biddle and some other residents still resisted, the **new** NFS district Ranger made a decision to improve the Middlebury section of the Old Center Turnpike and take the logs out that westerly route. However, NFS did not relinquish its claims to a ROW along the Ripton section of the Old Center Turnpike.
4. Tracy was impressed with the thoroughness of our research, but admitted to being overwhelmed with the number of things that she had to sort through before being able to render a decision. She asked that we defer the walk along Old Town Rd until she had a chance to consult others at the NFS. She promised to get back.
5. As of July 14, 2006 we have had no further contact with the NFS. Charles would like to re-engage the right-of-way conversation with the NFS, State Representative Willem Jewett, Ripton Selectmen, and other parties interested in continuing this right-of-way.

20. Consensus from meetings of Old Town Residents 2006-2008. The majority of the owners and residents believe that at least some public access should be preserved on Old Town Rd/Old Center Turnpike because the road supports the following:

a. Line service and improvement access for Public Service of Vermont. This is the only electrical supply route for most of Ripton's residents.
b. Line service and improvement access for Fair Point. This is the only telephone supply route for most of Ripton's residents.
c. The only access for 7year-round residential households.
d. The only access for another 1 vacation household and 4 private landowners.
e. Access for the Federal Forest Service to significant acreage of Federal Forest land.
f. An alternative route on the Old Center Turnpike "on the hill" in the event of a major washout on Rte 125 along the river. The floods of June & August 2008 is a good reminder that Ripton needs other avenues away from flood zones.
g. Recreational access to Oak Ridge Trail

Summary:

Documents and survey evidence support the fact that from about 1804 to 1825 the Old Center Turnpike was "on the hill" in very much the same location that Old Town Rd & Oak Ridge Rd now occupy in Ripton up to the Old Middlebury/Ripton Town lines. The 1857 Walling & 1871 Beers maps both show the road next to the river, which corroborates Samuel Damon's statement that the Old Centre Turnpike was moved down to the river at a fairly early time in Ripton's history. The road is very visible, has had some continuous use by both Ripton and Middlebury residents since its inception, can be found on both ancient and recently published maps, and is suitable for some vehicles, horses, cross-country skiing and walking. The Town of Ripton acknowledged the Old Center Turnpike "on the hill" history when it was officially named Old Town Road about 1998. And, despite the fact that the sign at the bridge says "Private"; there is no evidence that Ripton ever officially abandoned this section of road. In fact, in 1983 the Town of Middlebury re-established their claim to Class 4 status for the Center Turnpike "on the hill" where it makes a direct, uninterrupted connection with the Ripton section. Middlebury's acknowledgement is particularly pertinent considering that state law provides that roads which connect two towns cannot be discontinued unless the Selectmen from each town separately agree to formally discontinue. In 2006 most of the Old Town Rd residents and owners at three meetings indicated a desire to maintain a ROW along the Old Center Turnpike.

References:

1. Definitions of ancient roads and descriptions of H.701 were taken from the following issues of *Vermont Property Owners Report:* Volume 20, No. 6 (Feb-March 2006), Volume 21, No. 1 (April-May 2006), Volume 21, No. 2 (June-July 2006), Volume 21, No. 5 (Dec.2006-Jan 2007)

2. Old Centre Turnpike Records
    a. Book 2, page 27 of Middlebury 1793 Land records recorded a survey of the Old Centre Turnpike (6 rods wide) from the Court House to the *old* east line of Middlebury/*old* west line of Ripton. This survey is also recorded in the Middlebury Road Book 1, pg 38, a copy of which is attached.
    b. By act of the Vermont legislature in 1800 (Section 1, page 46) the Center Turnpike company was incorporated. It starts at the Middlebury courthouse, travels to a point about 300 ft east of the Upper Plains Road, then turns southeasterly and follows along the course of Oak Ridge Trail/Old Town Rd up to the old Ripton-Middlebury Town lines. A copy of the Survey is attached. Also see attached April 14, 1982 Forest Service Plat of Survey Tracts 500a.Bn showing the existing centerline of "Center Turnpike."
    c. 1810 Actual Survey of the State of Vermont by James Whitelaw, Surveyor General. A portion of this map was reproduced and made into place maps by the Ripton Bicentennial Committee.
    d. May 31, 1881 Middlebury Road Book 1. Letter from Joseph Battell stating his intention to enact a telegraph or telephone line by way of the Centre Turnpike from East Middlebury to Ripton.
    e. *The Vermont Historical Gazetteer*, Volume 1, Edited by Abby Maria Hemenway. Published by Miss A.M. Hemenway 1867, Addison County History; Ripton entry by Town Clerk Samuel Damon written in 1859. "About 1803-4 the Centre Turnpike was made, which passed through the S.W. corner of what was then Ripton. A part of the turnpike was then located not where it is now, but southwardly, *on a hill,* but afterward, in 1825, was made down on the river."
3. May 21, 1986 letter from Attorney Karl W. Neuse to Ripton Board of Selectmen identified a road's discontinuance by the Ripton Board's vote on December 19, 1873 (Town Proceedings, Vol. 1, pp 225a-225b). Neuse mistakes Old County Road (actually the road to Goshen) with Old Center Turnpike and landowner Joseph Casewell with Joseph Cleawell.
4. July 14, 1986 Memo by Richard T. Ackerman, Lands and Recreation Officer to Officer of General Counsel.
    a. Addendum NO. 2 Centre Turnpike. We find that "The road described in the discontinuance document on page 225a is not a section of the Centre Turnpike, but is a section of the Old County road."
    b. "May 24, 1983 Middlebury Board of Selectmen voted to declare that portion of the road (Center Turnpike) in Middlebury a Class IV Road."
    c. Maps showing section of *Old County* road that discontinued December 19, 1873. Refer to attached 1857 Walling map showing the old route from Maiden Lane across the South Branch of Middlebury River to the Goshen Rd. Also, see the attached 1871 Beers Atlas section.
5. April 12, 1982 Forest Service Surveyor's Report, attached.
6. Ripton's Charter was granted by the General Assembly of Vermont to Abel Thompson and 60 associates on April 13, 1781. Its bounds were described as follows: beginning at the south east corner of Middlebury at a marked spruce tree thence east 10 degrees south 6 miles 39 rods, 15 & 33/120 links to a marked beach tree. Thence north 10 degrees east 6 miles 39 rods 15 & 33/120 links to a marked yellow birch tree. Thence west 10 degrees north 6 miles 39 rods 15 & 33/120 links to a stake and stones. Thence south 10 degrees west 6 miles 39 rods 15 & 33/120 links to the first mentioned bounds containing 24,000 acres.
7. Attached is an aerial view map showing Old Centre Turnpike/Old Town Road in the approximate location of the old Ripton-Middlebury Town Line prior to Ripton's acquisition of land from Middlebury in 1814. Another parcel was acquired from Middlebury in 1829. The 1814 and 1829 surveys are attached.
8. Prior to H.701/Act 178, V.S.A #341 described the only clear statutory way to decide if a Town had abandoned a highway. The fact that a road had not been maintained or acknowledged as a Town road for many years was not sufficient. Highway reclassification between two towns is explained in 19 VSA #790; boards of adjoining towns need to meet and come to independent conclusions to abandon/reclassify a road connecting 2 or more towns. VSA #775 requires that a notice be sent to the Commissioner of Forests, Parks & Recreation in the case a Town wishes to discontinue a highway.

Ancient Roads Law/Act 178 and Its Relevance to the Old Centre Turnpike in Ripton

Review of Act 178

Act 178 of 2006 amends 19 V.S.A § 305(c) such that all towns are required to map all class 1, 2, 3, and 4 town highways and trails by July 1, 2015. Even highways that were created 250 years ago, and not formally discontinued, may, and many should, be added to the General Highway Map by 2015. Act 178 utilizes the sworn certificate of highway mileage and the town highway map subsequently produced to help provide clarity in the discussion over what highways and legal trails are part of a town's network. This is a new requirement for class 4 highways and trails. The town's interest in the road is preserved after it adds the road to the town highway map. However, if the town chooses to reclassify the ancient road from class 4 to any other class or a trail, it needs to go through the statutory reclassification process.

Any road that is visible is outside of the definition of "unidentified corridor" set forth in Act 178. Rather, these roads are considered Class 4 highways. Class 4 town highways are all legally established town highways that are not class 1, 2, or 3. "If a highway was legally established through a formal laying out process or "dedication and acceptance," not discontinued, and has not been included in the class 1, 2 or 3 town highway mileages on the Certificate of Highway Mileage, then the town highway, by default, is classified as class 4". A legal trail is a public right-of-way which is not a highway and meets one of the following criteria: (1). Was previously a town highway, but has since had its classification legally changed to trail or (2). Is a new public right-of-way laid out as a trail by the select board for the purpose of providing access to abutting properties or for recreational purposes. Once a highway or trail is legally established, it does not cease to be a public right of way until formally discontinued by the select board in compliance with applicable statutes.

Prior to July 1, 2010 roads that were legally created but are no longer observable were also considered class 4 roads. After this date these non-observable roads cease to have class 4 status. Instead, Act 178 created a new category of highway, the "unidentified corridor", starting on July 1, 2010. Unidentified corridors are legally authorized roads that did not appear on the town highway map prior to July 1, 2010, are not clearly observable, and are not legal trails. Invisible roads can still be revived after the 2010 deadline, but towns will have to go through a more rigorous process and may have to pay landowners if they then revive the roads. Regardless, these corridors must be reclassified by the select board prior to July 1, 2015 or they will cease to exist, and their lands will be equally divided among abutters. Reclassification of unidentified corridors will be a more rigorous process than adding observable highways to the General Highway map.

Once legally established, non-discontinued highways and trails which have not previously been included on the General Highway Map have been identified, they should be submitted to the VTrans Mapping Unit, along with the Certificate of Highway Mileage and documentation, as required in 19 V.S.A. § 305(e). The due date for clearly observable roads is July 1, 2015, but, due to the fact that select boards need to file an annual statement with the town clerk describing all town highways by February 10th, the last functional date for adding observable ancient roads to the Certificate is actually February 10, 2015.

To lay out a new road there is a significant amount of documentation, including petitions, minutes of the select board, surveys, notices to petitioners and adjoining landowners, orders of discontinuance, public hearing minutes etc. Existing highways that fall into the class 4 category do not require the same level of documentation, but still require some level of evidence of legal establishment when adding the highway to the Certificate of Highway Mileage. This documentation should include a description of the highway or trail, a copy of any surveys, minutes of the select board or other legislative meetings describing any changes, and a current town highway map containing a sketch of the addition. Class 4 highways that were legally created prior to February 10, 2010 do not require a survey. Trails are not considered highways; therefore, a highway that a town wishes to add as a trail should first be reclassified by the select board. A checklist of things that need to be done to add a Class 4 highway is provided on page 11 of VTrans' "Ancient Road Practicum". This document is attached.

Careful attention to definitions are important, especially when it comes to the term "ancient roads". This is illustrated in Huntington's statement (ref. 4) that *"an ancient road that is not included on the Town Highway Map by February 2010, or that has not been discontinued, will automatically be classified as an Unidentified Corridor. Unidentified Corridors will not be included on the Town Highway Map. The select board has until 2015 to decide whether or not to reclassify an Unidentified Corridor and include it on the Town Highway Map (as a Class 2, 3 or 4 Town Highway or Legal Trail). If no action is taken by 2015, all Unidentified Corridors will be automatically discontinued."* Here, it is important to understand that "ancient roads", now known under the statute as "unidentified corridors", are only those roads which are now totally invisible, and may have only ever existed on paper. Old, now unused or little used roads, if they are still visible and identifiable on the landscape, and were intially created by state charter, select board or other governance, and have never discontinuted, are now described as class 4 roads, according to Act 178. Therefore, it is true, as stated by Huntington, that ancient roads, which are unidentified corridors, should have been added to the Town Highway Map prior to the February 2010 deadline. However, any visible road has an inherent class 4 status and therefore has until Feb. 2015 to be put on the map. What happens to a class 4 road that isn't put on the Town Highway Map by the Feb. 2015 highway is not spelled out by Act 178, but unidentified corridors will cease to exist if they have not been reclassified and added to the map.

One Vermont attorney in particular, Paul Gillies of Montpelier, has specialized in identifying ancient roads and visible class 4 roads, and has helped numerous towns to navigate Act 178 requirements.

The Town of Waitsfield is one of the towns that has done a good job of documenting their town's work on ancient roads (see reference 2.).

Information on Fourth Class Highways (Reference 6)

All highways that are not class 1, 2 or 3 are considered to be class 4 highways. Trails are not highways.

Do class 4 highways need to be maintained? "According to VSA T19 #310: "(b) class 4 highways may be maintained to the extent required by the necessity of the town, the public good and the convenience of the inhabitants of the town, or may be reclassified using the same procedures as for laying out highways and meeting the standards set forth in section 302 of this title." Furthermore, according to T19 #708 (b): "A class 4 highway need not be reclassified to class 3 merely because there exists within a town one or more class 3 highways with characteristics similar to the class 4 highway. In considering whether to reclassify a class 4 highway to class 3, consideration may be given as to whether the increased traffic and development potential likely to result from the reclassification is desirable or is in accordance with the town plan." Additionally, T19 #711 (b) states: "As part of the report of findings provided for in subsection (a) of this section, the selectmen may order that the petitioner bear the cost of upgrading a class 4 town highway to the class 3 town highway standards established in 19 VSA #302 (a) (3) (B.) Nothing in this section shall be construed to require a town to maintain a class 4 highway or to upgrade a highway from class 4 to class 3."

What is the process for altering, reclassifying or discontinuing a class 4 highway? This process is spelled out in detail in T19 #708-712 and #771-775, but here is a summary. "Landowners or voters (at least 5% of voters) petition the selectmen or the selectmen initiate on their own. Selectmen set a time and date for visiting premises and hold a hearing. Thirty days notice must be given to petitioners, abutting land owners or persons having an interest and planning commission. Notice must also be posted and published not less than 10 days before the hearing. The Vermont Department of Forests, Parks and Recreation must also be sent a notice when a petition is filed. (T19 #775) The Department will notify the state trails organizations and, if the proposed discontinuance appears to have recreational value, will urge the town to retain it in trail status. Within 60 days after the examination and hearing the selectmen must make a decision, notify the parties, and their action needs to be

recorded by the clerk."

Does the town have any legal rights if someone blocks a highway or trail? According to VSA T19 #1105: "A person who places or causes to be placed an obstruction or encroachment in a public highway or trail, so as to hinder or prevent public travel, or to injure or impede a person traveling on the highway or trail, shall be fined not more than $1,000 plus the actual costs of repairing the damage and a reasonable attorney's fee, to be recovered in a civil action in the name of the town or state. One or more items of logging or other equipment temporarily within the right-of-way of a trail shall not be actionable under this section if located in such a way as not to unreasonably impede passage. If the court finds that an action under this section was brought without substantial basis, the court may award a reasonable attorney's fee against the person bringing the action." (Added by 1991 legislature.)

Brief History of Old Center Turnpike in Ripton, VT from 1793 to 1919

1. On October 28, 1793 a road was recorded (see Middlebury Land Records, Book 2, p.27 and Book 2, p221, and in Middlebury Roads Book 1, p.38) along with a survey for a 6 rod wide road (100 ft) starting at the courthouse and extending to the old East line of Middlebury (West line of Ripton). In 1793 the East line of Middlebury crossed approximately halfway along the improved section of what is now called Private Old Town Rd. The location of the original town lines crossed Old Town Road approximately at the bend in the road where the Fair Point telecommunication boxes are now located (See the tax map on Page 6) .

2. The National Forest Service has done a comparison of the original survey of the Old Centre Turnpike with the current location of sections of Oak Ridge Trail and Old Town road and concluded that there is a very good correlation of location. They used recent surveys from their own field work, as well as that from power/phone pole surveys for compaison with the 1793survey.

3. In 1800 the Center Turnpike Company was incorporated by an act of the Legislature (Section I, p. 46) and chartered to build a road along the original survey (Daniel Chipman, a Middlebury lawyer at the time, was one of the original share holders in the Center Turnpike.)

4. "About 1803-4 the Centre Turnpike was made, which passed through the south west corner of what was then Ripton. A part of the turnpike was then located not where it is now, but southwardly, on a hill, but afterwards, in 1825, was made down on the river." This contemporary source is by Samuel Damon, Ripton Town Clerk, 1859.

5. Ripton acquired two grants of land from Middlebury in 1814 and 1829 (Vt Law 1814, p.141 and 1829, p. 20). The land that Ripton acquired included Middlebury's easterly portion of the Center Turnpike, as well as land in Ripton village, as depicted on the Tax Map below.

6. "That portion of the Turnpike in what was originally Middlebury is defined by the survey in the Middlebury Records. Proof that the turnpike ran through Ripton is evidenced by the 1848 order for division. Evidence of the location in old Ripton is afforded by the 1919 pole line easements to N.E. Tel & Tel.from Middlebury College, and by ground evidence existing today." From a Forest Service Addendum of 25 May 1984.

7. On May 31, 1881 Joseph Battell stated his intent in a letter to enact a telegraph/telephone line along the Center Turnpike from East Middlebury to the Town of Ripton. This is the same route that the telephone line follows today.

Review of Recent Case Law—Benson and Town of Royalton versus Hodgdon (Reference 5)

Reclaiming an old, clearly visible road has recently been tested in Windsor Superior Court in a 2009 case between land owners and the towns of Benson and Royalton. This case is a good comparison to the known facts for the Old Centre Turnpike and should be reassuring to the Ripton Select Board should they decide to reclaim the 4th class assets of the Old Centre Turnpike. Following is a summary of the case based on its "Conclusions of Law" (the green lettered comments compare the conclusion in law to what is known about the Old Centre Tunrpike):

1. Plaintiffs have the burden of proof of establishing the existence and location of an ancient road. McAdams v. Town of Barnard, 185 VT. 259 (2007).

   A. Because Old Town Road in the old Middlebury section of Ripton was laid out by survey, because the entire length of it has remained visible, and because it has had some continuous use throughout its existence, this burden of proof should be easily met in Ripton.

2. Precision as to location is not required, rather reasonable certainty is necessary as to width, distance and points of termination. State v. Town of Leicester, 33 VT. 653 (1861).

   A. This confirms that just because Ripton's Old Centre Turnpike is not exactly in the original location does not disqualify its legitimacy. In fact, the original survey and the more recent surveys by New England Telephone & Telegraph and the National Forest Service show very close proximity to the original 100 ft right of way.

3. While sparsely used and not maintained in living memory, proof of earlier use more extensive than within current memory is ample proof that the road, as used, was the road surveyed in 1804, at least with respect to the portion.

   A. In Ripton's case, the proof is even more certain, because the road has been kept open (cleared of brush and other maintenance), and has remained highly visible along its entire length. Also, note the similarity in dates between the time this case's road was laid out and the facts for the Old Centre Turnpike—received its state charter in 1800 and was built during 1803 and 1804.

4. The southern portion of the 1804 surveyed road has never been discontinued. That road is described in the 1804 survey. As the Town has never discontinued this road it continues to be a town highway. 19 V.S.A. §771.. Defendants assert that this road has been abandoned by the Town and is subject to claims of adverse possession. The Court disagrees in light of 19 V.S.A. § 1102 and the rule that public use of a highway is discontinued only when the required statutory procedures are followed. In re Bill, 168 VT. 439 (1998); Capital Candy Co. v. Savard, 135 VT. 14 (1976); Petition of Mattison and Bentley, 120 VT. 459 (1958). Furthermore, the presumption of discontinuance which is now contained in 19 V.S.A. § 717 does not apply because this action was begun prior to the enactment of the presumption on May 23, 2006. See 2005, No. 178 (Adj. Sess.), § 14. Based upon the Court's findings of fact, the Court concludes that the 1804 surveyed road, from the point it leaves Post Farm Road, is one and the same road as the lane, old town wagon road or old highway, ... This town highway follows the existing signs of a roadway and is three rods in width. The road has wandered slightly over the 200 plus years since it was surveyed. This is to be expected, given conditions on the ground, infrequent use, and the comparatively primitive surveying tools available in 1804. .....It is unclear to what extent the wandering in that area remains within the three rod right of way from the 1804 survey. Determination of the issues of dedication and acceptance or improper taking are not raised under the facts of this case given the public

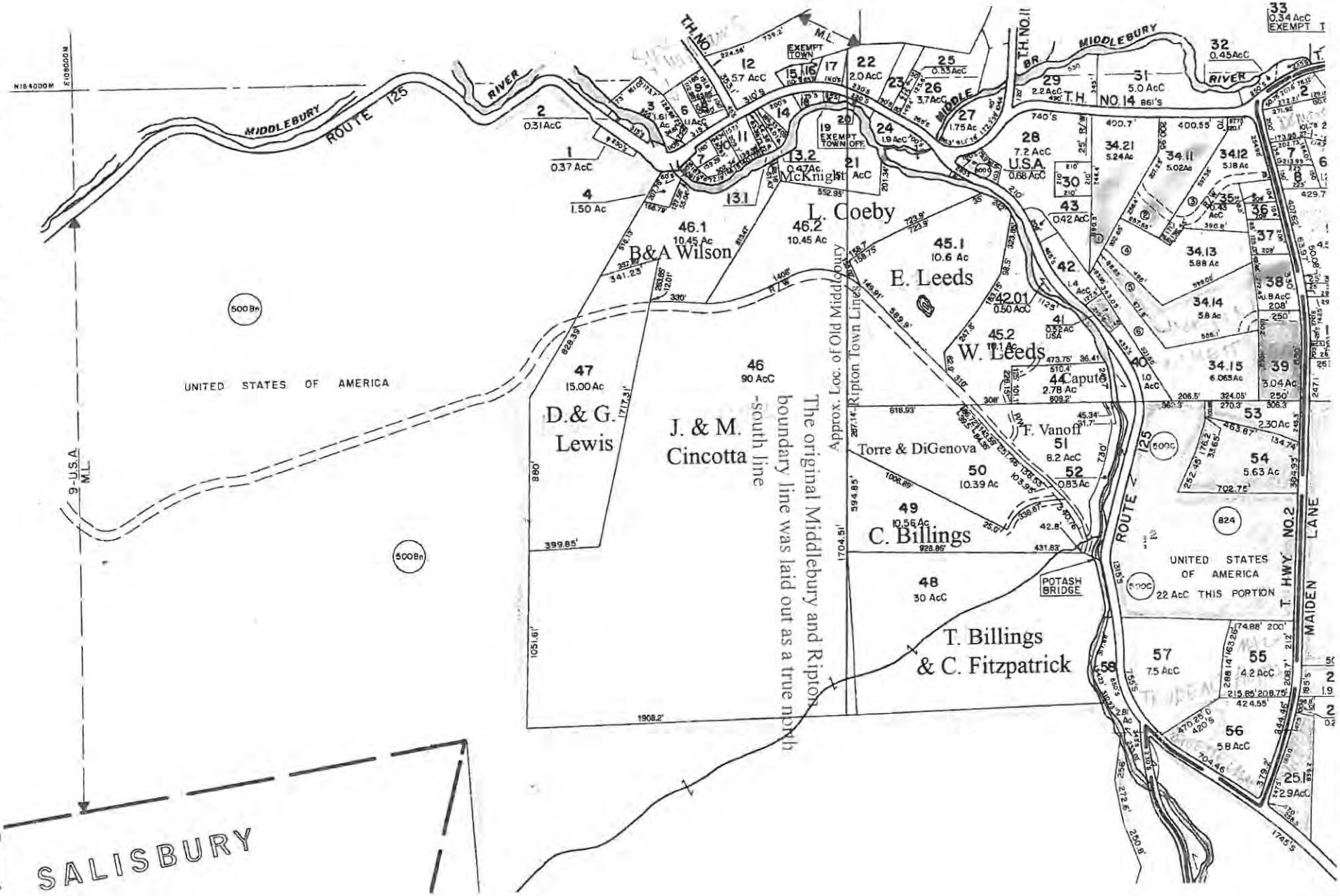
road on the Hodgdon property is within the three rods of the 1804 survey. Town of South Hero v. Wood, 179 VT. 417 (2006). This highway is open to the general use of the public, consistent with the laws of the State of Vermont and the Town of Royalton. Any use of this land inconsistent with the existence of a town highway in this location without the permission of the Town shall be discontinued forthwith.

A. This prior law would support the fact that Old Centre Turnpike in Ripton is still a town road because it has never been abandoned, and that the rules of adverse possession do not apply. The road that Attorney Neuse cited in his 1986 letter to the Ripton Select Board as being abandoned is not Old Centre Turnpike, but the old extension of Maiden Lane on to Goshen road. Reference to Old County Road. and adjacent land owners Fernald (Mrs.. Fernal) and Caswell are readily identified on the Beers map of 1871 as living along the old Goshen Road section, which is further testament to the error of Neuse's conclusion. See ref.s 13 f., g. & h.)

B. In 1848 the Centre Turnpike Company divided up the turnpike to facilitate its sale to the towns for use as free roads, as opposed to toll roads. This was done according to an act of Vermont Legislature on October 27, 1845. Ripton's section started at the "gate" at the west end of this road in East Middlebury to the east line of Ripton. In 1853 the Town voted to purchase the Centre Turnpike.

C. Nowhere in Ripton or Middlebury records has anyone found any abandonment of the Old Centre Turnpike. That fact is further proof that this old road has not been abandoned, because state law requires that to do so requires the independent action of select boards of both towns, which should be recorded as a discontinuance in the records of both town's archives. In fact, Middlebury's Select Board has taken the opposite position and in May 1983 restated its ownership and the 4th class status of the Old Turnpike, right up to the point that it crosses over into Ripton. The fact that Middlebury claimed ownership of the Old Centre Turnpike is very good evidence that Ripton has a similar claim to its section.

D. Vermont does not have a presumption of abandonment for non-use of deeded public or private easements, town roads mapped in the eighteenth century are still valid town rights-of-way, even if the town has not maintained them for a century or more (ref. 9). Nor can the roads be de facto discontinued by adverse possession, since individuals normally cannot adversely possess against the government (10).


MIDDLEBURY
ROUTE 125
RIVER
UNITED STATES OF AMERICA
SALISBURY
9-U.S.A M.L.
T.H. NO. 11
T.H. NO. 14
EXEMPT TOWN
EXEMPT TOWN OFF.
13.2 0.47Ac. McKnight
13.1
L. Coeby
46.2 10.45 Ac
46.1 10.45 Ac
B&A Wilson
45.1 10.6 Ac
E. Leeds
42.01 0.50 Ac
45.2 10.1 Ac
W. Leeds
44 Caputo 2.78 Ac
47 15.00 Ac
D.& G. Lewis
46 90 AcC
J. & M. Cincotta
Approx. Loc. of Old Middlebury Ripton Town Line
The original Middlebury and Ripton boundary line was laid out as a true north -south line
J. F. Vanoff
51 8.2 AcC
Torre & DiGenova
50 10.39 Ac
52 0.83 Ac
49 10.56 Ac
C. Billings
48 30 AcC
T. Billings & C. Fitzpatrick
POTASH BRIDGE
UNITED STATES OF AMERICA 22 AcC THIS PORTION
T. HWY. NO. 2
MAIDEN LANE
53 2.30 Ac
54 5.63 Ac
55 4.2 AcC
56 5.8 AcC
57 7.5 AcC
25.1 29 AcC
34.21 5.24 Ac
34.11 5.02 Ac
34.12 5.18 Ac
34.13 5.88 Ac
34.14 5.8 Ac
34.15 6.065 Ac
U.S.A. 0.68 AcC
28 7.2 AcC
29 2.2 AcC
31 5.0 AcC
32 0.45 AcC
33 0.34 AcC EXEMPT T
1 0.37 AcC
2 0.31 AcC
3 1.61 Ac
4 1.50 Ac
5 0.11 AcC
6 0.11 AcC
7 0.57 AcC
8 0.33 AcC
9 0.33 AcC
10 0.33 AcC
11 0.33 AcC
12 0.57 AcC
14 0.33 AcC
15 0.33 AcC
16 0.33 AcC
17 0.33 AcC
19 0.33 AcC
20 0.33 AcC
21 1 AcC
22 2.0 AcC
23 0.33 AcC
24 1.9 AcC
25 0.33 AcC
26 3.7 AcC
27 1.75 Ac
30 0.42 AcC
35 0.33 AcC
36 0.33 AcC
37 0.33 AcC
38 1.8 AcC
39 3.04 Ac
40 1.0 AcC
41 0.52 AcC USA
42 1.4 AcC
43 0.42 AcC
500Bn
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510C

References

1. **Adding Ancient Roads to the General Highway Map. Understanding How Act 178 of 2006 and Parts of V.S.A. Title 19 Work, An Ancient Road Practicum**, Vermont Agency of Transportation - Mapping Unit, pp 1-11, 8/12/2009. Entire article is attached.

2. **Waitsfield Roads • Ancient Roads**, http://www.waitsfieldvt.us/roads/ancient/index.cfm

3. **"Invisible" Ancient Roads Deadline Arrives; Some Towns Want Extension**, February – March 2010 edition, Vol. 24, No. 6 of *Vermont Property Owners Report*

4. **Huntington Ancient Road Overview, Status, Next Steps and Preliminary Map**, January 11, 2009, http://huntingtonvt.org/index2.php?option=com_docman&task=doc_view&gid=295&Itemid=26

5. **Benson and Town of Royalton versus Hodgdon** (Docket No. 291-6-04 Wrcv Winsor Superior Court, Eaton, J., Feb. 4, 2009, http://www.vermontjudiciary.org/2006Present%20TCdecisioncvl/2009-8-24-4.pdf

6. **Class 4 Highways and Trails Top 10 Questions,** *A supplement to the Vermont Trails & Greenways Spring, 2004 Newsletter,* http://www.vermonttrailsandgreenways.org/spr04in.pdf. Obtained from Hank Lambert at the Vermont Local Roads Program, 802-654-265226, http://personalweb.smcvt.edu/vermontlocalroads.

7. **Vermont League of Cities & Towns, Resource Library for Ancient Roads**, e.g. *Ancient Roads, Updated Overview*, Brief history of the ancient roads issue in Vermont. 2. Act 178 – 2006 through 2010, http://resources.vlct.org/results/?s=label:Ancient%2BRoads

8. **Ancient Roads Summary** prepared for Ripton Conservation Commission by Charles Billings (January 9, 2007).

9. **Lague v. Royea**, 152 Vt. 499, 503, 568 A.2d 357, 359 (1989) and Nelson v. Bacon, 113 Vt. 161, 165, 32 A.2d 140, 146 (1943)

10. **AM. JUR.** 2D Adverse Possession § 268 (2002)

11. **KNOWN UNKNOWNS: ANCIENT ROADS IN NORTHERN NEW ENGLAND**, 33 Vt. L. Rev. 355 (2008-2009) , http://lawreview.vermontlaw.edu/articles/16%20Goldwarg%20Book%202,%20Vol%2033.pdf

12. **19 V.S.A. 790.** "The selectmen of two adjoining towns may, by agreement, lay out, reclassify, or discontinue a highway on the line between the towns, or erect a bridge over a stream between the towns, if a majority of the selectmen of each town assent."

13. **Old Centre Turnpike Records** (Also see Ref. 8, above)

a. Book 2, page 27 of Middlebury 1793 Land records recorded a survey of the Old Centre Turnpike (6 rods wide) from the Court House to the old east line of Middlebury/old west line of Ripton. This survey is also recorded in the Middlebury Road Book 1, pg 38.

b. By act of the Vermont legislature in 1800 (Section 1, page 46) the Center Turnpike company was incorporated. It starts at the Middlebury courthouse, travels to a point about 300 ft east of the Upper Plains Road, then turns southeasterly and follows along the course of Oak Ridge Trail/Old Town Rd up to the old Ripton-Middlebury Town lines. Also refer toApril 14, 1982 Forest Service Plat of Survey Tracts 500a.Bn showing the existing centerline of "Center Turnpike."

c. 1810 Actual Survey of the State of Vermont by James Whitelaw, Surveyor General. A portion of this map was reproduced and made into place maps by the Ripton Bicentennial Committee.

d. May 31, 1881 Middlebury Road Book 1. Letter from Joseph Battell stating his intention to enact a telegraph or telephone line by way of the Centre Turnpike from East Middlebury to Ripton.

e. The Vermont Historical Gazetteer, Volume 1, Edited by Abby Maria Hemenway. Published by Miss A.M. Hemenway 1867, Addison County History; Ripton entry by Town Clerk Samuel Damon written in 1859. "About 1803-4 the Centre Turnpike was made, which passed through the S.W. Corner of what was then Ripton. A part of the turnpike was then located not where it is now, but southwardly, on a hill, but afterward, in 1825, was made down on the river."

f. May 21, 1986 letter from Attorney Karl W. Neuse to Ripton Board of Selectmen. Neuse misidentified the road's discontinuance by the Ripton Board's vote on December 19, 1873 (Town Proceedings, Vol. 1, pp 225a-225b) as Old Centre Turnpike, because he mistakes Old County Road (actually the road to Goshen) with Old Center Turnpike. He also transcribes land owner Joseph Casewell (formerly the house of Eliza S. Turnald/Mrs. Fernal) as Joseph Cleawell.

g.. July 14, 1986 Memo by Richard T. Ackerman, Lands and Recreation Officer to Officer of General Counsel—Addendum NO. 2 Centre Turnpike. We find that "The road described in the discontinuance document on page 225a is not a section of the Centre Turnpike, but is a section of the Old County road."

h. Maps showing section of Old County road that discontinued December 19, 1873. Refer to 1857 Walling map showing the old route from Maiden Lane across the South Branch of Middlebury River to the Goshen Rd. Also, see the 1871 Beers Atlas. Also, see name of adjacent landowner, Mrs. Fernal referred to in the 1873 discontinuance.

i. "May 24, 1983 Middlebury Board of Selectmen voted to declare that portion of the road (Center Turnpike) in Middlebury a Class IV Road."

j. April 12, 1982 Forest Service Surveyor's Report.

Adding Ancient Roads to the General Highway Map
Understanding How Act 178 of 2006 and Parts of V.S.A. Title 19 Work
An Ancient Road Practicum

1) Act 178 Overview and History

Act 178 of 2006 added the requirement for municipalities to account for class 4 town highways and legal trails with the following amendment to 19 V.S.A. § 305(c): "All class 1, 2, 3, and 4 town highways and trails shall appear on the town highway maps by July 1, 2015."

The Vermont Agency of Transportation (VTrans) Mapping Unit produces the General Highway Maps, also referred to as the Town Highway Maps, documenting the classification, location, and mileage of highways and legal trails.

Annually, the VTrans Mapping Unit supplies municipalities with a Certificate of Highway Mileage showing the total mileage for class 1, 2, 3, 4 town highways and legal trails on record from the previous year. The Certificate of Highway Mileage is the avenue for a legislative body to make changes to the General Highway Map by documenting any additions, alterations, reclassifications, or discontinuances that have occurred over the course of the year. Annually, on or before February 10th, the municipality files a copy of the Certificate in the clerk's office and forwards the Certificate of Highway Mileage to VTrans for processing. This process is defined in 19 V.S.A. § 305(b) as follows:

> Annually, on or before February 10, the selectboard shall file with the town clerk a sworn statement of the description and measurements of all class 1, 2, 3, and 4 town highways and trails then in existence, including any special designation such as a throughway or scenic highway. When class 1, 2, 3, or 4 town highways, trails, or unidentified corridors are accepted, discontinued, or reclassified, a copy of the proceedings shall be filed in the town clerk's office and a copy shall be forwarded to the agency.

The Mileage Certificate process has been used to account for changes to mileage and the update of the General Highway Maps for many years. However, because towns do not receive any state aid for class 4 town highways or for legal trails, the General Highway Maps for many towns did not include all the class 4 town highways and legal trails claimed by the towns. Act 178 of 2006 added the requirement to map all class 4 town highways and legal trails by July 1, 2015. These categories have been added to the Certificate of Highway Mileage to account for the mileage and changes.

Class 4 town highways are all legally established town highways that are not class 1, 2, or 3. This is essentially the default category. If a highway was legally established through a formal laying out process or "dedication and acceptance," not discontinued and has not been included in the class 1, 2 or 3 town highway mileages on the Certificate of Highway Mileage, then the town highway, by default, is classified as class 4.

The term "legal trail" is used to describe a trail that is defined by the following statute and is different from a foot trail or other trail that has not been legally established. According to 19 V.S.A. § 301(8):

> "Trail" means a public right-of-way which is not a highway and which:
>
> (A) previously was a designated town highway having the same width as the designated town highway, or a lesser width if so designated; or

(B) a new public right-of-way laid out as a trail by the selectmen for the purpose of providing access to abutting properties or for recreational use. Nothing in this section shall be deemed to independently authorize the condemnation of land for recreational purposes or to affect the authority of selectmen to reasonably regulate the uses of recreational trails. (Added 1985, No. 269 (Adj. Sess.), § 1; amended 1991, No. 47, § 1.)

As a result of Act 178 of 2006, and subsequent amendments to the statute in Act 158 of 2008, municipalities have a requirement to map all class 1, 2, 3, and 4 town highways and legal trails for which the town wishes to retain public access rights. This process includes accounting for highways that have been legally established over the 250 plus year history of Vermont's towns, cities, villages, gores, and grant, starting with the reign of King George II, to the Republic of Vermont, and finally to the State of Vermont.

2) "Unidentified Corridors"

Act 178 created a new category of highway, "unidentified corridor" which, according to statute will be created on July 1, 2010. This category is defined in 19 V.S.A. § 305(6) as follows:

Unidentified corridors.

(A) Unidentified corridors are town highways that:

(i) have been laid out as highways by proper authority through the process provided by law at the time they were created or by dedication and acceptance; and

(ii) do not, as of July 1, 2010, appear on the town highway map prepared pursuant to section 305 of this title; and

(iii) are not otherwise clearly observable by physical evidence of their use as a highway or trail; and

(iv) are not legal trails.

(B) If the conditions in subdivisions (A)(i) and (A)(ii) of this subdivision (6) are met, the legislative body of a municipality or its appointee may, after providing 14 days' advance written notice to the owners of the land upon which the unidentified corridor is located, enter private property to determine whether clearly observable physical evidence exists.

(C) Unidentified corridors shall be open to use by the public, but only in the same manner as they were used during the 10 years prior to January 1, 2006.

(D) A municipality shall not be responsible for maintenance of an unidentified corridor.

(E) Neither the municipality nor any person owning a legal interest in land through which an unidentified corridor may pass or abut shall have a duty of care to persons using the corridor.

(F) An unidentified corridor shall not be deemed to be a subdivision with respect to zoning, tax, and septic issues.

(G) After July 1, 2015, an unidentified corridor shall be discontinued, and the right-of-way shall belong to the owner of the adjoining land. If the right-of-way is located between the lands of two different owners, it shall be returned to the lots to which it originally belonged, if they can be determined; if not, it shall be equally divided between the owners of the lands on each side.

(H) An unidentified corridor shall not create a subdivision with respect to zoning, tax, and septic issues. If the unidentified corridor is reclassified as a class 1, 2, 3, or 4 highway or as a trail, the then- highway or trail shall be recognized as any other highway or trail for the purpose of creating a subdivision with respect to zoning, tax, and septic issues.

(7) Reclassification of unidentified corridors. On or by July 1, 2015 and pursuant to subchapter 2 of chapter 7 of this title, an unidentified corridor may be reclassified as a class 1, 2, 3, or 4 highway or as a trail.

The category of "unidentified corridor" does not come into existence until July 1, 2010, and the highways remain part of the class 4 town highways until that date. After July 1, 2010, highways meeting the criteria for "unidentified corridor" become this separate category. There is an additional process that is required for "unidentified corridors" or any highway that will become an "unidentified corridors".

If a highway meets the criteria for an "unidentified corridor", the municipality is required to follow an additional procedure to add this mileage to the Mileage Certificate and the highway added to the General Highway Map. The initial requirements are defined in 19 V.S.A. § 305(d).

> At least 45 days prior to first including a town highway or trail that is not clearly observable by physical evidence of its use as a highway or trail and that is legally established prior to February 10, 2006 in the sworn statement required under subsection (b) of this section, the legislative body of the municipality shall provide written notice and an opportunity to be heard at a duly warned meeting of the legislative body to persons owning lands through which a highway or trail passes or abuts.

If the municipality chooses to retain an "unidentified corridor" and does not add the highway before July 1, 2010, the municipality must follow the reclassification process defined in 19 V.S.A. § 708 and the following statutes in Chapter 7. This process also requires notice to adjoining landowners, public hearing, and the potential payment of compensation for damages. The submission of documents to the VTrans Mapping Unit would include the records and documentation generated through the process defined in 19 V.S.A. Chapter 7. This also may include the need to re-survey the highway.

If an "unidentified corridor" is not reclassified by the municipality as a highway or trail, it will be discontinued by statute on July 1, 2015, pursuant to 19 V.S.A. § 302(6)(G).

3) Mass Discontinuance

Municipalities currently have the ability for mass discontinuance of any highways that will become "unidentified corridors" on July 1, 2010. The mass discontinuance of highways only covers those highways that meet the criteria defined in 19 V.S.A. § 302(6). The provision for mass discontinuance is available until July 1, 2010 and is defined in statute as 19 V.S.A. §§ 305(h) - 305(n). 19 V.S.A. § 305(h) provides as follows:

> Notwithstanding the provisions of subchapter 7 of chapter 7 of this title, on or before July 1, 2010, a municipality's legislative body may vote to discontinue all town highways that are not otherwise clearly observable by physical evidence of their use as a highway or trail and that are not included as such on the sworn certificate of the description and measurement of town highways filed with the town clerk on February 10 of that year pursuant to subsection (b) of this section…

If a municipality does not undertake a mass discontinuance the highways and does not reclassify the "unidentified corridors", the "unidentified corridors" are discontinued by statute on July 1, 2015 as defined in 19 V.S.A. § 302(6)(G):

> After July 1, 2015, an unidentified corridor shall be discontinued, and the right-of-way shall belong to the owner of the adjoining land. If the right-of-way is located between the lands of two different owners, it shall be returned to the lots to which it originally belonged, if they can be determined; if not, it shall be equally divided between the owners of the lands on each side.

Act 178 included a provision regarding access to parcels that could potentially be landlocked due to a discontinuance of a town highway or unidentified corridor. Private rights-of-way would be retained over the previous alignment of the public right-of-way, subject to the provision included in 19 V.S.A. § 717(c):

> A person whose sole means of access to a parcel of land or portion thereof owned by that person is by way of a town highway or unidentified corridor that is subsequently discontinued shall retain a private right-of-way over the former town highway or unidentified corridor for any necessary access to the parcel of land or portion thereof and maintenance of his or her right-of-way.

4) Mileage Certificates & Town Highway Mapping Process

Updates to the General Highway Maps follow a defined process when related to town highways and legal trails. For the VTrans Mapping Unit, this process starts with the Certificate of Highway Mileage. At the municipal level, the process precedes state mapping, but the process starts earlier at the municipal level.

Modern changes to highways and trails are defined for municipalities in 19 V.S.A. Title 19 – Chapter 7. This section addresses the laying out, alteration, reclassification, or discontinuance of a public right of way. This process requires certain documents to be filed in the clerk's office and subsequently submitted to VTrans with the Mileage Certificate.

For highways from the early 20th and 19th centuries or earlier, the process is slightly different. This difference is due to what documentation was required at the time of the laying out, what documentation can be produced by the municipality based on research of the municipal record, whether the highway or trail is clearly observable, and the requirements set forth in Act 178.

According to statute a municipality is required to map all class 1, 2, 3, and 4 town highways and trails by July 1, 2015. This requirement includes the mapping of all highways and trails that have been legally established and not discontinued throughout the history of the municipality. Essentially, once a highway or trail is legally established, it does not cease to be a public right of way until formally

discontinued by the legislative body through substantial compliance with applicable statutes. Thus a highway laid out in the 1700's and not formally discontinued should be accounted for on the Certificate of Highway Mileage and added to the General Highway Map by 2015 To date municipalities may not have mapped out all their town highways because this was not a requirement for town roadway funding. Municipalities have had different approaches to addressing the requirements of Act 178. The level of effort for research and mapping of the town highways and trails to meet the requirement of Act 178 is subject to the discretion of the municipal legislative body. While some municipalities have chosen not to partake in the process and thereby accept the currently mapped highway network, while other municipalities are performing extensive research of the municipal record to find each document related to laying out, surveying, and discontinuing highways and trails. Many municipalities have chosen to take on a process somewhere in between, performing research on select highways and trails.

The Timeline

February 10, 2010 – Deadline for filing of the Certificate of Highway Mileage in the municipal office

February 20, 2010 – Deadline for submittal of the Certificate and documentation to VTrans Mapping Unit

July 1, 2010 – End of Mass Discontinuance provision

July 1, 2010 – Creation of the "unidentified corridor" category

February 10, 2015 – Deadline for filing of the Certificate of Highway Mileage in the municipal office

February 20, 2015 – Deadline for submittal of the Certificate and documentation to VTrans Mapping Unit

July 1, 2015 – Deadline for municipalities to have mapped all class 1, 2, 3, 4 town highways and legal trails

July 1, 2015 – "Unidentified Corridors" are discontinued by statute

Once a municipality identifies town highways and trails that have been legally established, not discontinued, and not included on the General Highway Map, it is time to submit the additions to the VTrans Mapping Unit.

The submission of the additions for inclusion on the General Highway Map starts with the Certificate of Highway Mileage, with all accompanying documentation required in 19 V.S.A. § 305(e). This provision is discussed in more detail in Section 5.

In early January of each year, a Certificate is sent by VTrans to each municipality showing the mileage totals on record from the previous year, with a space for notation of addition and deletion of mileage, and the total for class 1, 2, 3 and 4 and legal trails. A set of guidelines regarding the Mileage Certificate is also provided to municipalities. VTrans also includes state highway mileage on the Certificates and provides notations of alterations to this mileage category.

5) Municipal Responsibilities for Highway Additions & Documentation

A municipality can add highways and trails not newly established as class 4 town highways or legal trails by an addition to the Mileage Certificate. The municipality needs to complete this effort by July 1, 2015 to meet the requirements of 19 V.S.A. § 305(c). Due to the timing of this process, the functional date is February 10, 2015 and the filing of the Mileage Certificate.

If a highway is not clearly observable as a highway or a trail and will become an "unidentified corridor" on July 1, 2010, there are additional requirements in statute that a municipality must follow to add these highways.
If a highway is clearly observable, the municipality may add the highway to the Mileage Certificate, noting the length of the section to be added on the Certificate and supplying the appropriate documentation.

For a modern laying out, there is a significant amount of documentation generated and filed in the clerk's office, including petitions, minutes of the legislative body, surveys, notice to petitioners and adjoining landowners, orders of discontinuance, public hearing minutes, and more.

Highways that are not newly established and fall into the class 4 town highway category do not require the same level of documentation as a newly established highway, but are not exempt from filing documents or some level of evidence of legal establishment. Act 178 requires the following to be submitted with each addition as defined in 19 V.S.A. § 305(e):

> The agency shall not accept any change in mileage until the records required to be filed in the town clerk's office by this section are received by the agency. A request by a municipality to the agency for a change in mileage shall include a description of the affected highway or trail, a copy of any surveys of the affected highway or trail, minutes of meetings at which the legislative body took action with respect to the changes, and a current town highway map with the requested deletions and additions sketched on it. A survey shall not be required for class 4 town highways that are legally established prior to February 10, 2006. All records filed with the agency are subject to verification in accordance with subsection (a) of this section.

The items defined in this section of statute are interpreted and defined by the VTrans Mapping Unit as follows:

- A description of the affected highway or trail

  The description is a modern reference to the location of the highway or trail that is being added. The description should define where the road is located with beginning point, general direction, and ending point, allowing the highway or trail to be easily defined on a General Highway Map. An example of a description is as follows:

  New Road starts at a point on TH-15 (Start Rd), being a point 500 feet south of the intersection of TH-10 (Sample Hill Rd) and TH-15 (Start Rd), extending in a northeasterly direction for 1.56 miles to a point on TH-16 (End Rd), being a point 2.1 miles north of the intersection of TH-11 (Example Rd) and TH-16 (End Rd).

- A copy of any surveys of the affected highway or trail

  A copy of the documents that record the laying out of the road, if the original documents are difficult to read, it would be beneficial to include a transcription. Surveys include any metes and bound descriptions and plats of a highway or trail. Due to the multiple methods that a highway or trail can be established, a survey may not exist for a highway or trail.

It should be noted that a municipality does not need to have a new survey completed for class 4 town highways that are legally established prior to February 10, 2006.

- Minutes of meetings at which the legislative body took action with respect to the changes

  A copy of any documents that show the legislative body took action on the highway or trail. These documents may include minutes to meetings where a highway or trail may have been laid out, accepted, altered, or other public hearing addressing the highway or trail. Orders by the Selectboard, road calls, and documents related to any awards of compensation may also be submitted.

  It would also be beneficial to also receive documents that evidence the town highway or trail addition was addressed and approved by the current municipal legislative body.

  This provision is to have the municipality provide documentation that the evidences that the highway or trail was legally established.

- A current town highway map with the requested deletions and additions sketched on it

  A sketch of the changes on a copy of the current town highway map will provide the Mapping Unit the ability to locate and understand the necessary changes. Coupled with the description listed above, the Mapping Unit should be able to plot the changes on the General Highway Map for those highways and trails that are accepted.

  Current copies of the General Highway Maps can be found on-line in a PDF format at http://www.aot.state.vt.us/planning/MapGIS/Town_Maps1.htm or copies may be requested from the VTrans Mapping Unit.

Some advice that has been provided to municipalities in submission of class 4 town highway for addition to the General Highway Maps is to provide enough documentation to weather any challenges that may arise.

6) "Unidentified Corridors" and the General Highway Maps

Currently, there is no formal provision in statute requiring the mapping of "unidentified corridors" on the General Highway Maps, or the mileage accounted for on the Certificates of Highway Mileage. If a municipality chooses to depict this category of highway on the General Highway Maps, the municipality should supply the same level of documentation to VTrans as required for addition of class 4 town highway mileage. The "unidentified corridors" will be added to the General Highway Maps as a distinct and separate category, and will exist on the maps until July 1, 2015, when the category will be added to the discontinued highway category in the master road centerline data layer within the geographic information system (GIS).

7) Previously Mapped Legal Trails

The VTrans Mapping Unit currently has record of nearly 400 miles of legal trails, but only 175.05 miles have been accounted for by municipalities on the Mileage Certificates. The remaining mileage needs to be acknowledged by municipalities and mileage added to the Certificates. Once the trail is

accounted for on the Certificate, the General Highway Map will be updated to reflect a legal trail number and mileage. The mileage was not required for this category prior to Act 178 of 2006 and has only been recorded when changes were supplied to VTrans.

Since many of these legal trails were once town highways and were reclassified, VTrans has record of the changes and requests that the municipality add the mileage to the Certificate. This process does not require a significant effort on behalf of the municipality.

A series of maps showing the legal trails, mileage, and former town highway designation has been forwarded to all municipalities with previously mapped trails. This map provides a basis for the decisions to add the trails to the Certificate by the legislative body and what the history of the trails.

8) Legal Trail Additions to the Mileage Certificate & Documentation

Trails are not considered highways. If a highway was laid out as a highway and the municipality now wants to add it to the highway map as a trail, the presumption is the municipality should reclassify the highway to a trail before adding the trail to the Mileage Certificates and General Highway Map. The reclassification process is defined in 19 V.S.A. Chapter 7.

The municipality should submit the same documentation defined for highways to evidence the trail was legally established and not discontinued. Any documents showing the legislative body reclassified a highway to a trail should be provided with the documentation packet.

9) General Highway Map Update Process

The functional process followed by the VTrans Mapping Unit is to review all changes noted on the Mileage Certificates supplied by the municipalities, request additional information or clarification when needed, and update with General Highway Maps with accepted changes.

If a change is found to meet the requirements defined in statute and can be mapped by VTrans, the change is made to the General Highway Map.

If portions of the documentation are either absent, or difficult to understand, the municipality will be provided an opportunity to provide additional details, the necessary documentation, and clarification. If this is not forthcoming in the allotted timeframe, the changes may not be made during the annual Mileage Certificate and General Highway Map update cycle.

VTrans seeks to work with the municipalities to update the General Highway Maps to make them as accurate and comprehensive as possible relative to the public highway and legal trail system.

10) Summary

The requirements set forth in 19 V.S.A. § 305(c) – "All class 1, 2, 3, and 4 town highways and trails shall appear on the town highway maps by July 1, 2015" seem to be a simple task at first blush, but when given a closer look, this could potentially be a Herculean effort. There is over a 200 year history for many municipalities, with highways being laid out, altered, and discontinued, and a multitude of records generated, stored and possibly lost in this time period.

A municipality that has taken on the effort to research and map the town highways and trails can attest to the complexities that may arise.

This document attempts to provide some clarity to current statutes regarding adding town highways and trails that have been legally established and not discontinued, and some insight to the necessary documentation to be supplied with the Mileage Certificates.

For more information contact

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Planning, Outreach, and Community Affairs Division - Mapping Unit
1 National Life Drive
Montpelier, VT 05633-5001

Via telephone at (802) 828-2600

Via email at johnathan.croft@state.vt.us

Act 178 and "Ancient Roads" Resources

Learn more about Ancient Roads, Act 178, and Town Highways:

- The text of Act 178 of 2006 can be found on-line at the Vermont State Legislatures web page at http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2006/acts/ACT178.HTM
- The text of Act 158 of 2008 can be found on-line at the Vermont State Legislatures web page at http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2008/acts/ACT158.htm
- Ancient Roads Listserv – a resource to discuss issues, pose questions, and seek solutions from the community researching and mapping ancient roads. More information is available at http://www.dhca.state.vt.us/Planning/ListservAncientRoads.htm or http://list.uvm.edu/cgi-bin/wa?A0=ANCIENTROADS
- Mapping Unit Publication Links available on-line can be found at http://www.aot.state.vt.us/planning/Documents/Mapping/Publications/mapping_pubs.htm, http://www.aot.state.vt.us/planning/MapGIS/mapping_otherlinks.htm and at http://www.aot.state.vt.us/planning/MapGIS/mapping_ancientroads.htm
- Vermont Institute for Government pamphlet compiled by Paul Gillies – "How to Find Ancient Roads" available at http://crs.uvm.edu/citizens/ancientroads.pdf
- Ancient Roads Research and Mapping Grant site at the Agency of Commerce & Community Development - http://www.dhca.state.vt.us/Planning/AncientRoadsGrantProgram.htm
- The Vermont League of Cities and Towns has a Resource Library containing a lot of documentation regarding ancient roads. The link is http://resources.vlct.org/ and the documents can be found by using "ancient roads" in the search tool.
- The current series of Town Highway Maps available on-line at - http://www.aot.state.vt.us/planning/MapGIS/Town_Maps1.htm
- The Map Archive of older Town Highway Maps - http://www.mtbytes.com/vtrans/
- The Handbook for Local Officials ("The Orange Book") is available on-line at http://www.aot.state.vt.us/maint/Documents/book.pdf
- The Vermont Local Roads Program host information about local roads and has some informative fact sheets at http://personalweb.smcvt.edu/vermontlocalroads/default.htm
- Regional Planning Commission Web Sites - http://www.aot.state.vt.us/Planning/Links.htm
- Vermont State Archives – Lotting Plans - http://vermont-archives.org/lottingplans.asp

Town Highway/Legal Trails Addition Checklist

The following includes a checklist of the documentation to be supplied to VTrans when adding highways and trails that have not been previously mapped and are required to be mapped under the provisions of Act 178 of 2006. The documentation is subject to verification by VTrans.

Check the box ☒ if the information is included as part of the documentation submitted.

☐ A description of the affected highway or trail

☐ A copy of any surveys of the affected highway or trail*

☐ Minutes of meetings at which the legislative body took action with respect to the changes

☐ A current town highway map with the requested deletions and additions sketched on it

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☐ If the highway or trail to be added is "not clearly observable by physical evidence of its use as a highway or trail", then supply the additional documentation pursuant to the following statute:

> 19 V.S.A. § 305(d) - At least 45 days prior to first including a town highway or trail that is not clearly observable by physical evidence of its use as a highway or trail and that is legally established prior to February 10, 2006 in the sworn statement required under subsection (b) of this section, the legislative body of the municipality shall provide written notice and an opportunity to be heard at a duly warned meeting of the legislative body to persons owning lands through which a highway or trail passes or abuts.

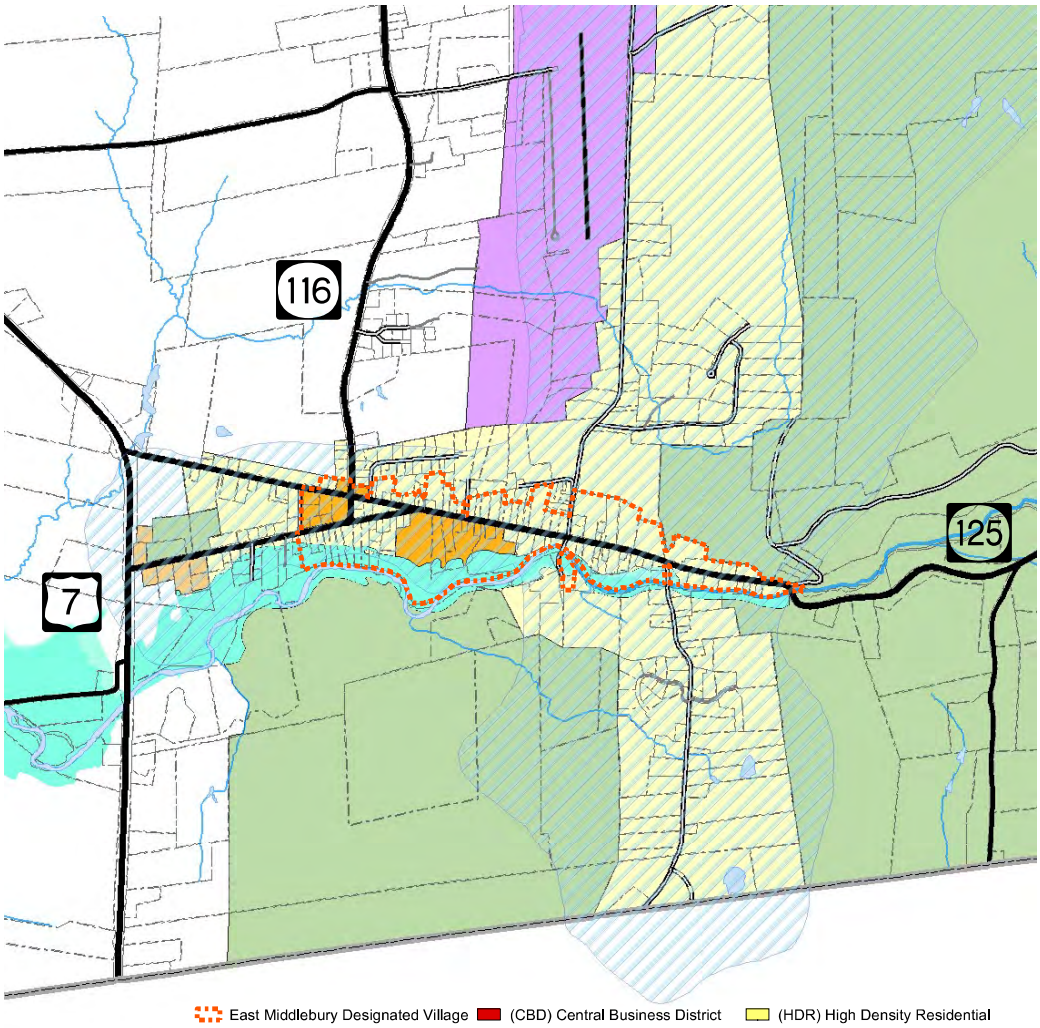
☐ Evidence of written notice to adjoining landowners

☐ Minutes of the public hearing at which the legislative body took action with respect to the addition of the town highway or trail

*Note: A survey shall not be required for class 4 town highways that are legally established prior to February 10, 2006.

All records filed with the agency are subject to verification in accordance with 19 V.S.A. § 305 (a) and 19 V.S.A. § 305 (e).

Land Use Districts
East Middlebury

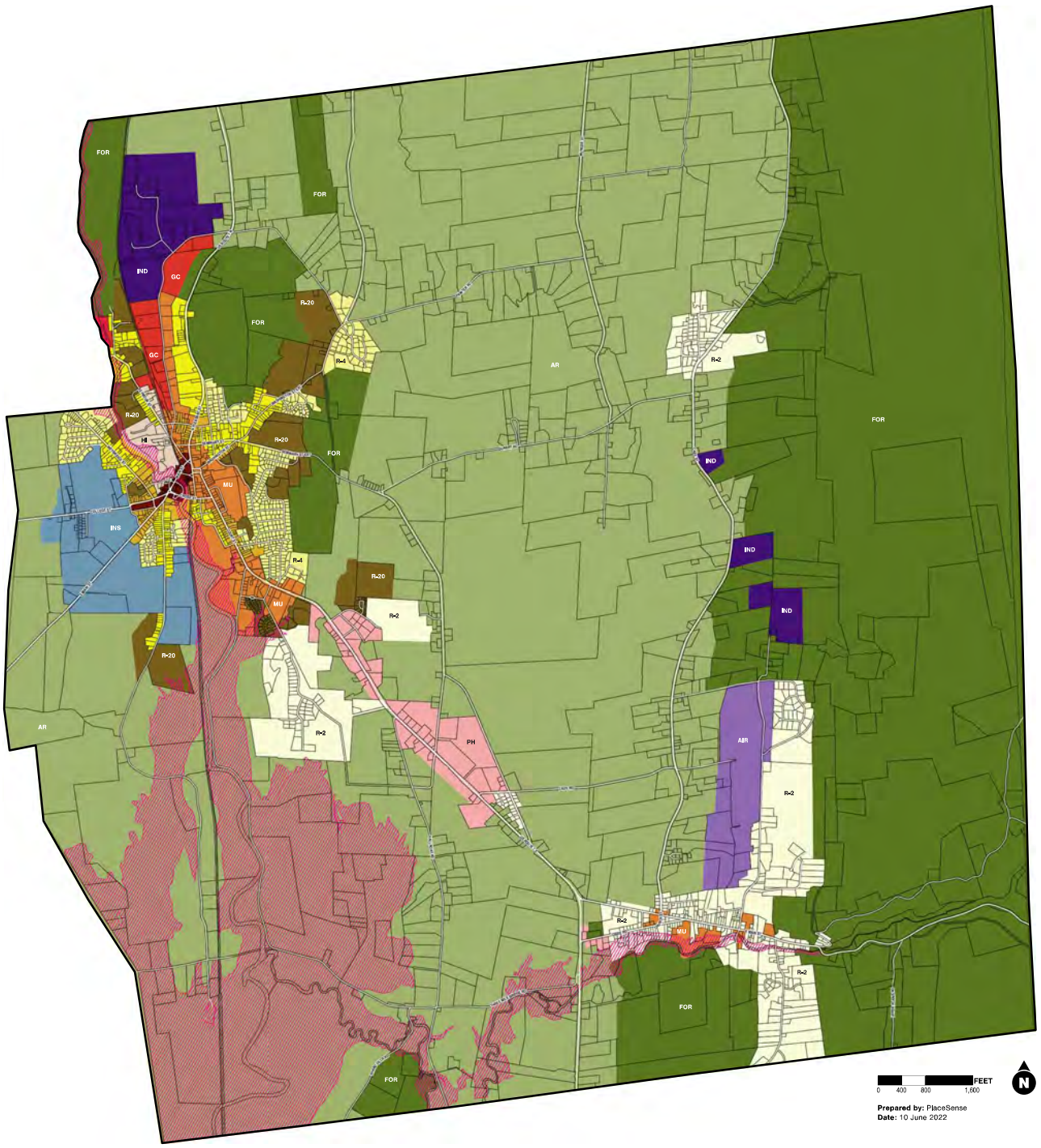


DRAFT ZONING DISTRICT MAP

TOWN OF MIDDLEBURY, VERMONT

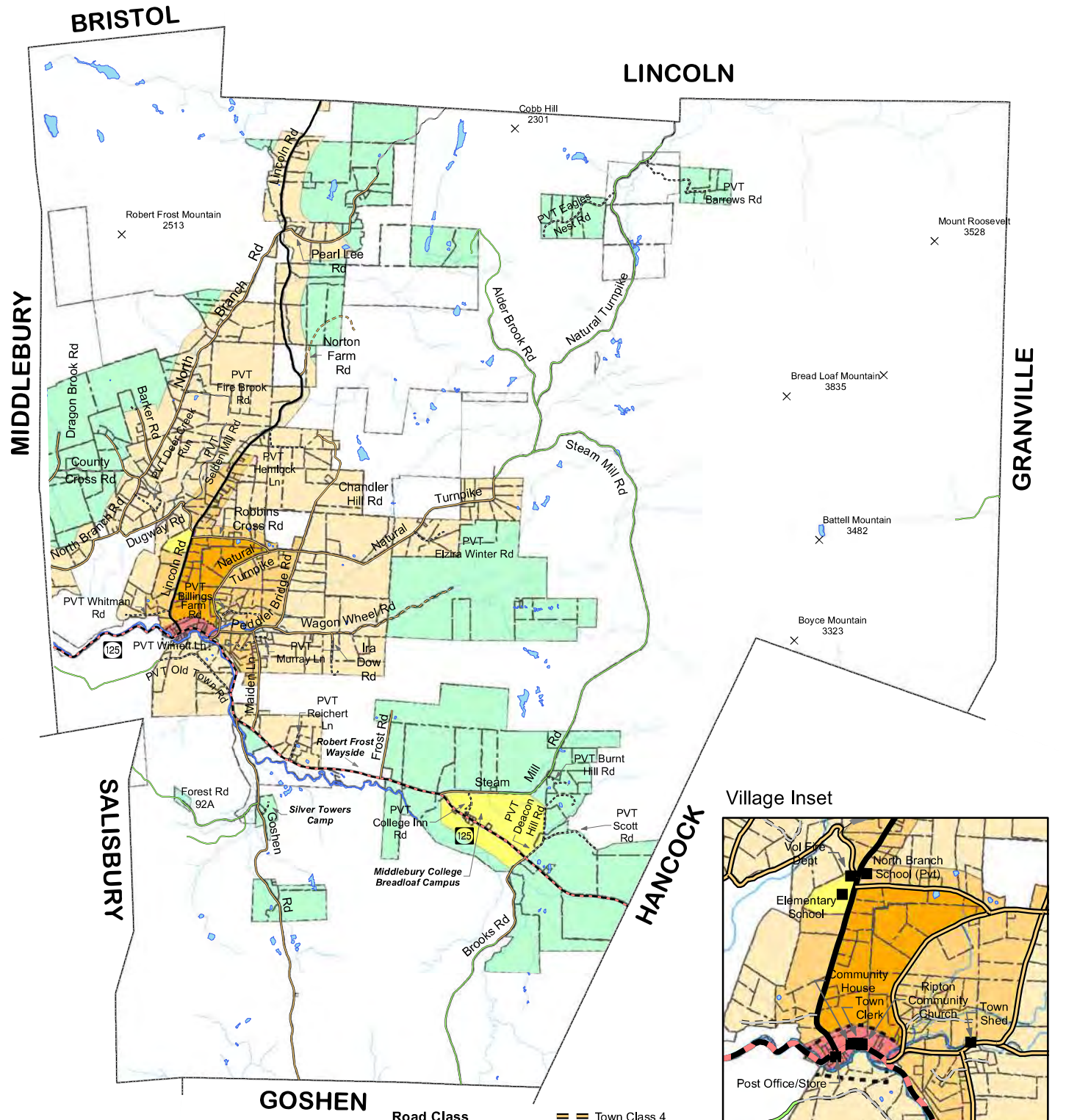
Districts

- Central Business (CB)
- Heritage Industrial (HI)
- Mixed Use (MU)
- Residential 20 (R-20)
- Residential 12 (R-12)
- Residential 8 (R-8)
- Residential 4 (R-4)
- Residential 2 (R-2)
- Institutional (INS)
- Airport (AIR)
- Industrial (IND)
- General Commercial (GC)
- Protected Highway (PH)
- Agricultural / Rural Residential (AR)
- Forest (FOR)
- Flood Hazard Overlay (FHO)



Prepared by: PlaceSense
Date: 10 June 2022

Town of Ripton
Land Use and Zoning Districts



Land Use Districts and Zoning Districts

- (NC-1) Neighborhood Commercial
- (HDR-2) High Density Residential
- (MDR-5) Medium Density Residential
- (LDR-10) Low Density Residential
- (RR-25) Rural Residential
- (CON-25) Conservation District
- (INS) Institutional District
- Ripton Historic District Boundary

Road Class

- US Highway
- State Route or Class 1
- Town Class 2
- Town Class 3
- Town Class 4
- Legal Trail
- Forest Rd
- Private Rd

Note:
Land Use (adopted 7/2010) and Zoning Districts adopted by the Select Board on Oct 8, 2012.

Flood Hazard Area and Fluvial Erosion Hazard (FEH) Overlay Districts are shown on a separate map series, and are by reference a part of the Ripton Town Plan and Zoning Bylaws.

This map intended for planning purposes

Addison County Regional Planning Commission GIS

ACRPC 10/2012

APPENDIX D: EXISTING TRAFFIC VOLUME DATA

VERMONT AGENCY OF TRANSPORTATION
OSB DATA UNIT

Route	FC	RU	TOWN	RouteName	Begin MM	Begin Name	Begin Number	End MM	End Name	End Number	ATR	PERM	2019 AADT	2019 Status	2020 AADT	2020 Status	2021 AADT	2021 Status
U007	3	R	MOUNT TABOR		0.000	DORSET TL	TL	4.183	DANBY TL	TL	R085		4242	E	3593	E	4018	E
U007	3	R	DANBY		0.000	MT TABOR TL	TL	2.473	WALLINGFORD TL	TL	R108		4299	E	3641	E	4018	E
U007	3	R	WALLINGFORD		0.000	DANBY TL	TL	3.662	HARTSBORO RD	TH34	R107		4356	E	3690	E	4181	E
U007	3	R	WALLINGFORD		3.662	HARTSBORO RD	TH34	5.262	CHURCH ST	TH17	R503		4972	E	4211	E	4773	E
U007	3	R	WALLINGFORD		5.262	CHURCH ST	TH17	5.431	MILL RD/DEPOT RD	VT140	31125705-S		5588	E	4733	E	5308	A
U007	3	R	WALLINGFORD		5.431	MILL RD/DEPOT RD	VT140	5.693	FRANKLIN ST	TH64	31125705-N		7083	E	5999	E	6692	A
U007	3	R	WALLINGFORD		5.693	FRANKLIN ST	TH64	6.320	VT 7B	VT7B	R558		7200	E	6098	E	6911	E
U007	3	R	WALLINGFORD		6.320	VT 7B	VT7B	6.771	HPMS BREAK	HPMS BREAK			7317	E	6197	E	7021	E
U007	3	R	WALLINGFORD		6.771	HPMS BREAK	HPMS BREAK	7.094	CLARENDON TL	TL			7317	E	6197	E	7021	E
U007	3	R	CLARENDON		0.000	WALLINGFORD TL	TL	0.753	VT 7B S	VT7B	R106		7317	E	6197	E	7021	E
U007	3	R	CLARENDON		0.753	VT 7B S	VT7B	1.469	VT 7B N	VT7B	R549		6525	E	5527	E	6262	E
U007	3	R	CLARENDON		1.469	VT 7B N	VT7B	3.339	VT 103	VT103	31105715-S		7104	E	6017	E	6535	A
U007	3	R	CLARENDON		3.339	VT 103	VT103	3.969	HPMS BREAK/RURAL/URBAN LIMIT	R/U	31105715-N		12536	E	10618	E	11540	A
U007	3	U	CLARENDON		3.969	HPMS BREAK/RURAL/URBAN LIMIT	R/U	4.763	VT 7B	VT7B	R104		12536	E	10317	E	12030	E
U007	3	U	CLARENDON		4.763	VT 7B	VT7B	5.193	N SHREWSBURY RD	minor0582	31105725-S		12850	E	10576	E	11567	A
U007	3	U	CLARENDON		5.193	N SHREWSBURY RD	minor0582	5.565	VT 7B	VT7B	31105725-N		13376	E	11008	E	12233	A
U007	3	U	CLARENDON		5.565	VT 7B	VT7B	5.656	RUTLAND TL	TL			13566	E	11165	E	12516	E
U007	3	U	RUTLAND TOWN		0.000	CLARENDON TL	TL	0.110	MIDDLE RD/WINDCREST	FAU0127/TH35	31120757-S		13566	A	11165	E	12516	E
U007	3	U	RUTLAND TOWN		0.110	MIDDLE RD/WINDCREST RD	FAU0127/TH35	0.360	US 4 W	US4	31120705-S		17565	A	14456	E	15675	A
U007	3	U	RUTLAND TOWN	S MAIN ST	0.360	US 4 W	US4	0.677	END DIVIDED HWY	DIVIDED HWY	R022	CTC	20942	A	17235	E	19551	A
U007	3	U	RUTLAND TOWN	S MAIN ST	0.677	END DIVIDED HWY	DIVIDED HWY	0.842	SEWARD DR	TH36	31120759-N		22151	A	18230	E	19537	A
U007	3	U	RUTLAND TOWN	S MAIN ST	0.842	SEWARD DR	TH36	1.135	COLD RIVER RD	FAU3202	31120764-S		25521	A	21004	E	24707	E
U007	3	U	RUTLAND TOWN	S MAIN ST	1.135	COLD RIVER RD	FAU3202	1.177	RUTLAND CL	CL	31120764-N		25921	A	21333	E	23914	E
U007	3	U	RUTLAND CITY	S MAIN ST	0.000	RUTLAND TL	TL	0.468	PARK ST	FAU3046	R078		22205	E	18275	E	20486	E
U007	3	U	RUTLAND CITY	S MAIN ST	0.468	PARK ST	FAU3046	0.589	STRONGS AVE	FAU3056	31119770-S		20362	E	16758	E	23332	A
U007	3	U	RUTLAND CITY	S MAIN ST	0.589	STRONGS AVE	FAU3056	1.283	WEST ST	BUS4	31119770-N		20506	E	16876	E	17065	A
U007	3	U	RUTLAND CITY	MAIN ST	1.283	WEST ST	BUS4	1.420	WOODSTOCK AVE	US4	31119710-S		25499	E	20986	E	22075	A
U007	3	U	RUTLAND CITY	N MAIN ST	1.420	WOODSTOCK AVE	US4	2.809	RUTLAND TL	TL	31119710-N		17961	E	14782	E	14956	A
U007	3	U	RUTLAND TOWN		1.177	RUTLAND CL	CL	1.465	POST RD	FAU3214	31120795-S		17961	E	14782	E	11213	A
U007	3	U	RUTLAND TOWN		1.465	POST RD	FAU3214	1.708	E PITTSFORD RD	FAU3201	31120795-N		14074	E	11583	E	11127	A
U007	3	R	RUTLAND TOWN		1.708	E PITTSFORD RD	FAU3201	3.961	PITTSFORD TL	TL	R548		9849	E	8342	E	9087	E
U007	3	R	PITTSFORD		0.000	RUTLAND TL	TL	2.804	VT 3	VT3	R102		7411	E	6277	E	7112	E
U007	3	R	PITTSFORD		2.804	VT 3	VT3	5.016	KENDALL HILL RD	MC0155	R175		9348	E	7918	E	8971	E
U007	3	R	PITTSFORD		5.016	KENDALL HILL RD	MC0155	7.591	BRANDON TL	TL	R101		8174	E	6923	E	7844	E
U007	3	R	BRANDON		0.000	PITTSFORD TL	TL	1.313	MCCONNELL RD	MC0227			8174	E	6923	E	7844	E
U007	3	R	BRANDON		1.313	MCCONNELL RD	MC0227	3.780	VT 73 EAST	VT73	R427		6893	E	5838	E	6614	E
U007	3	R	BRANDON		3.780	VT 73 E	VT73	3.833	CARVER ST	TH5			8525	E	7221	E	8180	E
U007	3	R	BRANDON		3.833	CARVER ST	TH5	4.222	CHAMPLAIN ST	VT73	31102740-S		10156	E	8602	E	8580	A
U007	3	R	BRANDON		4.222	CHAMPLAIN ST	VT73	7.413	LEICESTER TL	TL	31102740-N		5813	E	4924	E	7630	A
U007	3	R	LEICESTER		0.000	BRANDON TL	TL	3.425	SALISBURY TL	TL	A018	CTC	6250	A	5357	A	6069	A
U007	3	R	SALISBURY		0.000	LEICESTER TL	TL	2.618	LAKE DUNMORE RD	VT53	A108		6943	E	5881	E	6663	E
U007	3	R	SALISBURY		2.618	LAKE DUNMORE RD	VT53	4.503	MIDDLEBURY TL	TL	A107		8550	E	7242	E	7636	A
U007	3	R	MIDDLEBURY		0.000	SALISBURY TL	TL	0.958	VT 116	VT116	30111710-S		8550	E	7242	E	8525	A
U007	3	R	MIDDLEBURY		0.958	VT 116	VT116	1.231	VT 125 E	VT125	30111710-N		7029	E	5954	E	7490	A
U007	3	R	MIDDLEBURY		1.231	VT 125 E	VT125	1.642	RURAL/URBAN LIMIT	R/U	A010		6376	E	5400	E	7994	A

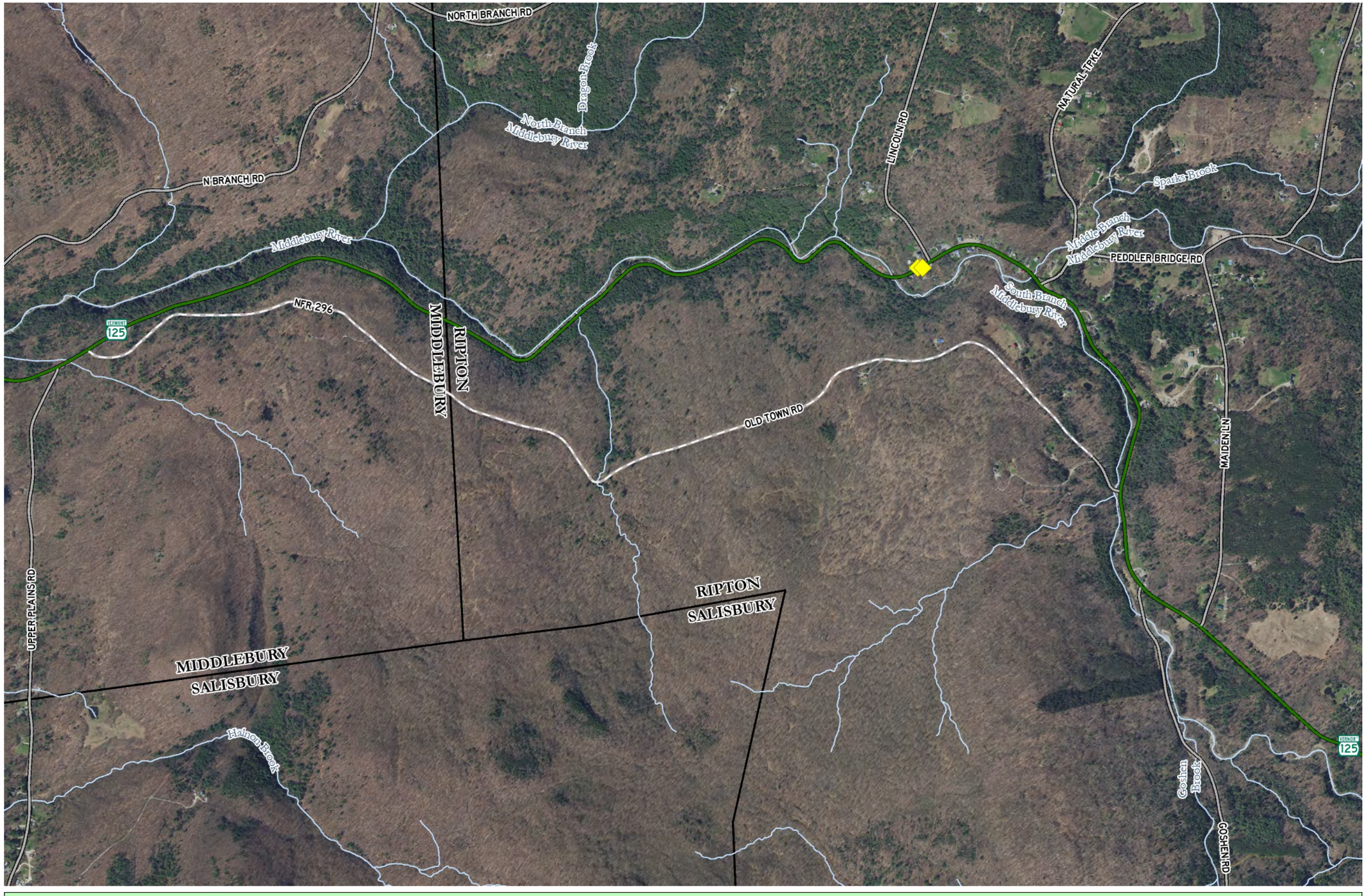
APPENDIX E: NATURAL RESOURCE MAPS

VERMONT

Hazardous Waste Sites

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Hazardous Site
- Hazardous Waste Generators
- Brownfields

Roads

- Interstate
- US Highway; 1
- State Highway
- Town Highway (Class 1)
- Town Highway (Class 2,3)
- Town Highway (Class 4)
- State Forest Trail
- National Forest Trail
- Legal Trail
- Private Road/Driveway
- Proposed Roads

Stream/River

- Stream
- Intermittent Stream

- Town Boundary

1: 13,677

1in = 1140 ft.
1cm = 137 meters

695.0 0 348.00 695.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

NOTES

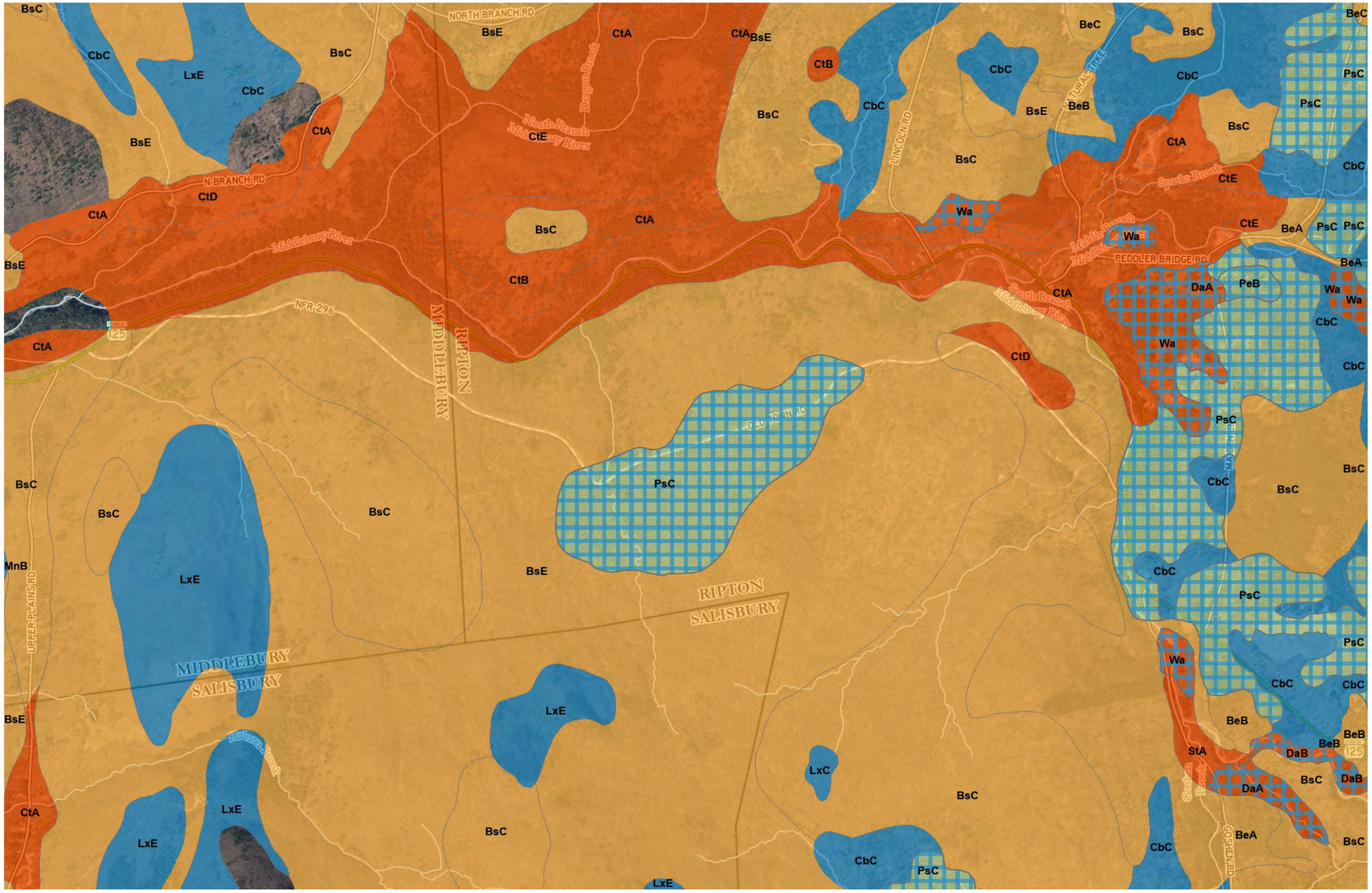
Map created using ANR's Natural Resources Atlas

VERMONT

Hydrologic Soil Group

Vermont Agency of Natural Resources

vermont.gov



LEGEND

Soils - Hydrologic Groups

- A
- A/D
- B
- B/D
- C
- C/D
- D

Roads

- Interstate
- US Highway; 1
- State Highway
- Town Highway (Class 1)
- Town Highway (Class 2,3)
- Town Highway (Class 4)
- State Forest Trail
- National Forest Trail
- Legal Trail
- Private Road/Driveway
- Proposed Roads

Stream/River

- Stream
- Intermittent Stream

Town Boundary

1: 13,677

1in = 1140 ft.
1cm = 137 meters

695.0 0 348.00 695.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

NOTES

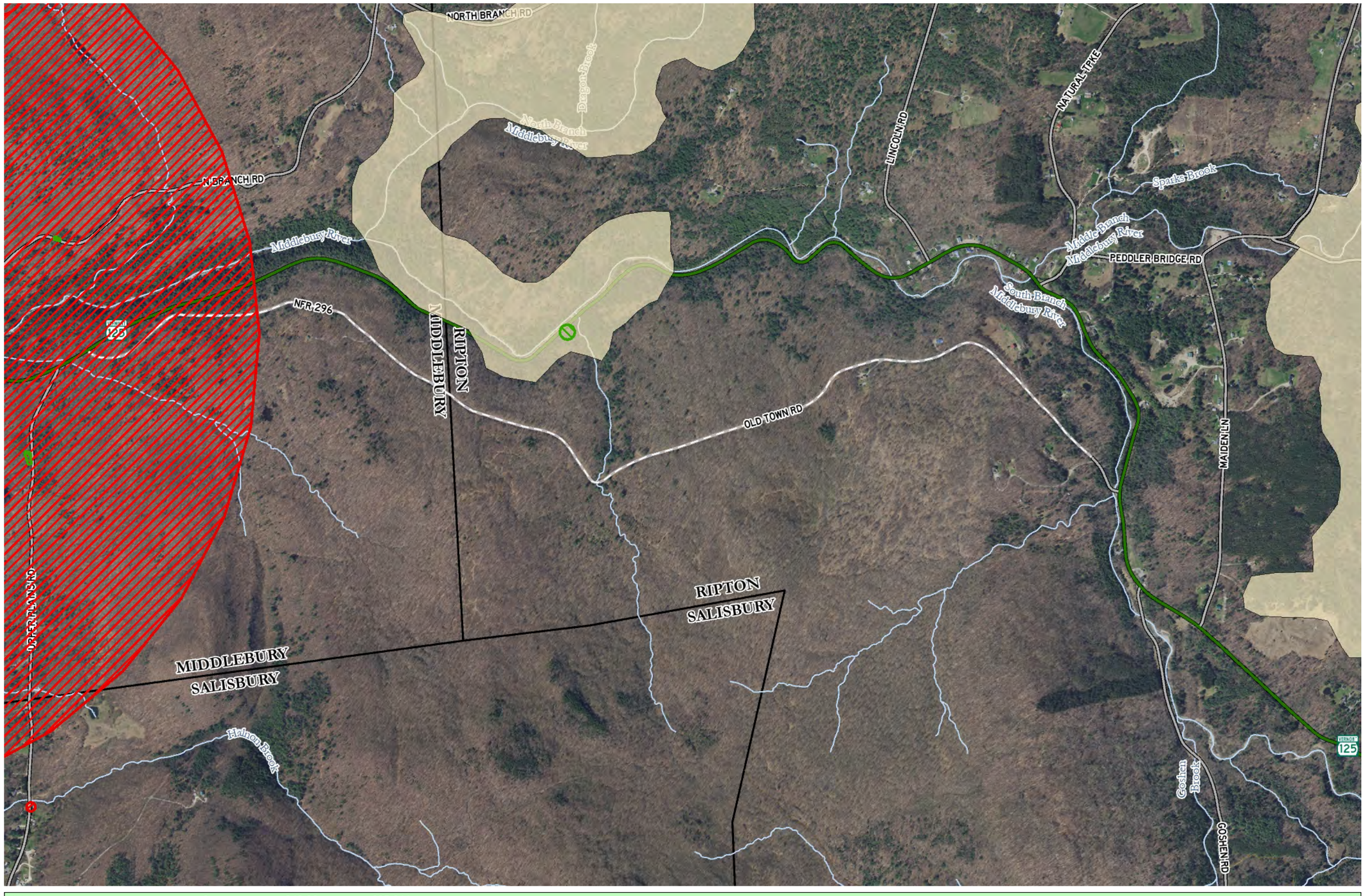
Map created using ANR's Natural Resources Atlas

VERMONT

Rare Threatened Endangered

Vermont Agency of Natural Resources

vermont.gov



LEGEND

Rare Threatened Endangered Species

- Threatened or Endangered
- Rare

Deer Wintering Areas

Roads

- Interstate
- US Highway; 1
- State Highway
- Town Highway (Class 1)
- Town Highway (Class 2,3)
- Town Highway (Class 4)
- State Forest Trail
- National Forest Trail
- Legal Trail
- Private Road/Driveway
- Proposed Roads

Stream/River

- Stream
- Intermittent Stream

Town Boundary

1: 13,677

1in = 1140 ft.
1cm = 137 meters

695.0 0 348.00 695.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

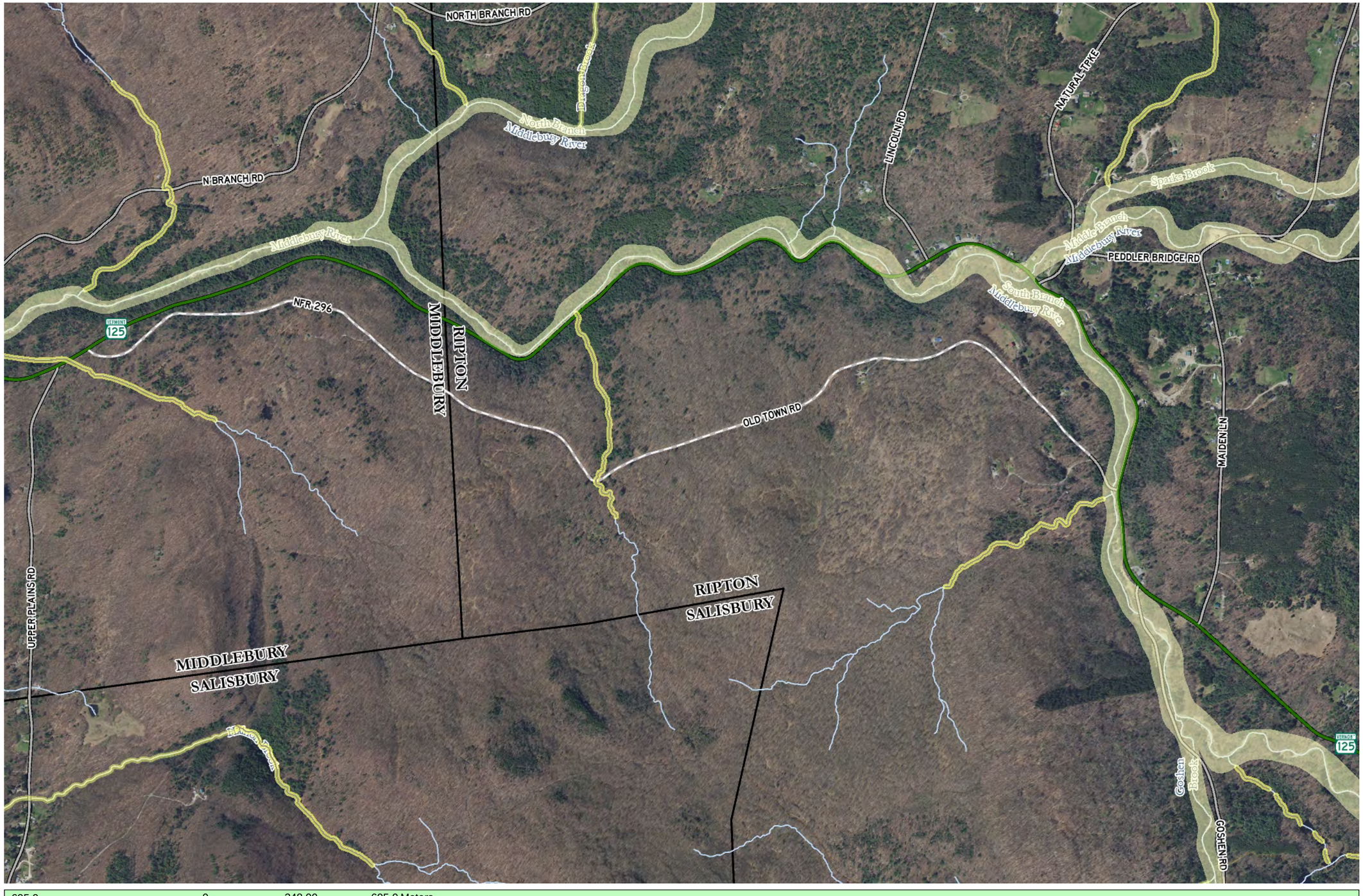
NOTES

Map created using ANR's Natural Resources Atlas

River Corridor

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- River Corridors (Aug 27, 2019)
  - .5 - 2 sqmi.
  - .25-.5 sqmi.
- Roads
  - Interstate
  - US Highway; 1
  - State Highway
  - Town Highway (Class 1)
  - Town Highway (Class 2,3)
  - Town Highway (Class 4)
  - State Forest Trail
  - National Forest Trail
  - Legal Trail
  - Private Road/Driveway
  - Proposed Roads
- Stream/River
  - Stream
  - Intermittent Stream
- Town Boundary

1: 13,677

1in = 1140 ft.
1cm = 137 meters

695.0 0 348.00 695.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

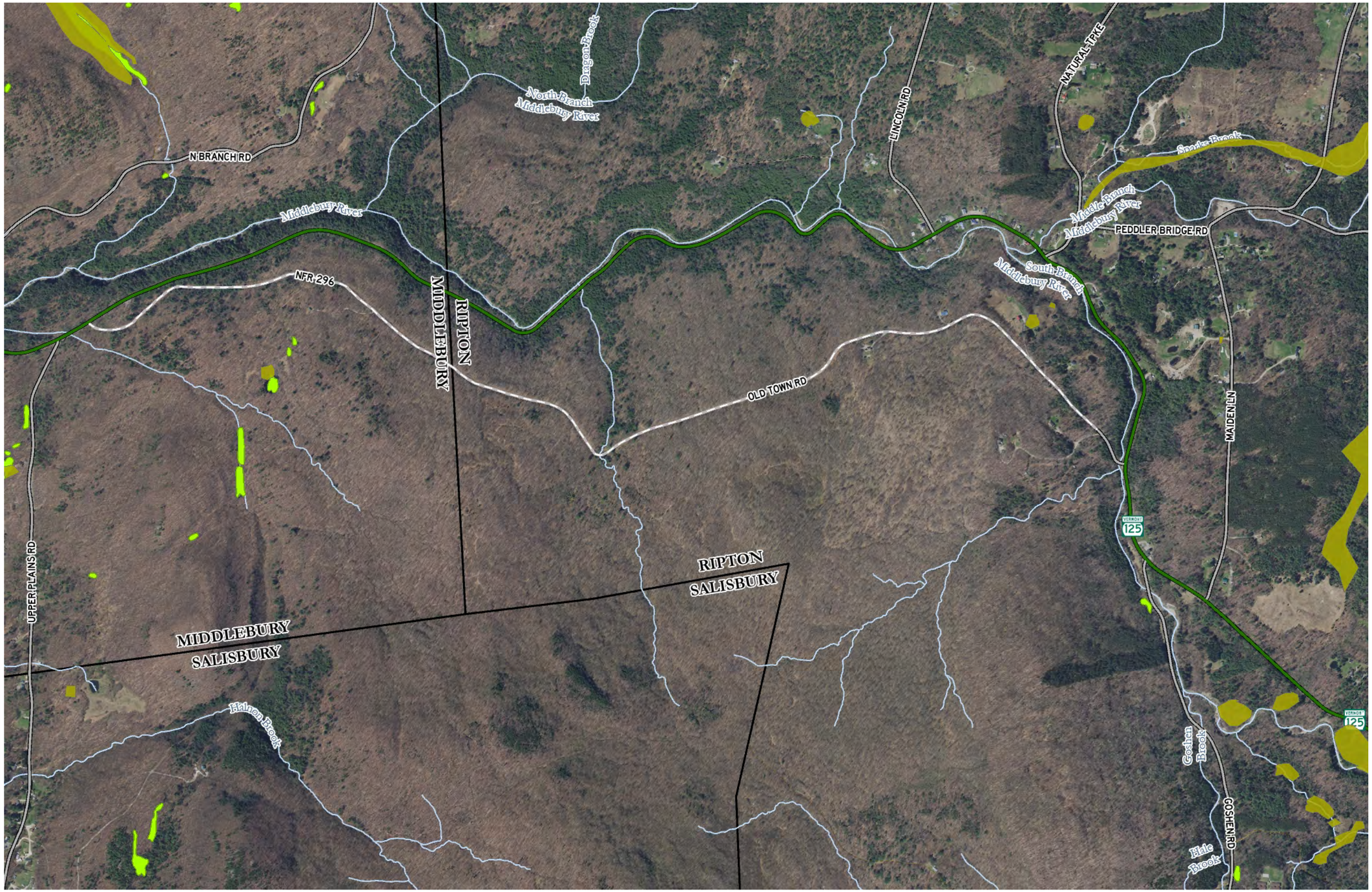
NOTES

Map created using ANR's Natural Resources Atlas

Watershed Management

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Watersheds for 303(d) List
- Wetland - VSWI
  - Class 1 Wetland
  - Class 2 Wetland
  - Buffer
- Wetlands Advisory Layer
- Roads
  - Interstate
  - US Highway; 1
  - State Highway
  - Town Highway (Class 1)
  - Town Highway (Class 2,3)
  - Town Highway (Class 4)
  - State Forest Trail
  - National Forest Trail
  - Legal Trail
  - Private Road/Driveway
  - Proposed Roads
- Stream/River
  - Stream
  - Intermittent Stream
- Town Boundary

1: 13,677

1in = 1140 ft.

1cm = 137 meters

695.0 0 348.00 695.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

NOTES

Map created using ANR's Natural Resources Atlas

NATURAL RESOURCES ASSESSMENT REPORT

Project:	Addison County Regional Planning Commission – Old Town Road Reclassification
OCE Project #:	046-005
Location:	Old Town Road, Ripton, VT
Date of Assessment:	June 28, 2022
Weather:	75 degrees and sunny
Assessment by:	Mary Beth Poli, PWS (OCE Natural Resources Ecologist)
Date of DEC Visit:	September 1, 2022
Weather:	75 degrees and cloudy
Attended by:	Mary Beth Poli, PWS and Zapata Courage (VT Wetland Program)

Assessment Summary

On June 28, 2022, OCE conducted a Natural Resources Assessment for the proposed Old Town Road Reclassification project.

The natural resources investigation area included the area 50 feet from each side of the edge of the existing road bed for the length of the existing road, including naturalized areas. The following natural resources were evaluated during the field assessment:

Wetlands:

During the field visit, several areas were examined closely for the presence of wetlands due to hydrology or observed hydric indicator plants. Soils were sampled at each location to determine whether hydric soils were present. Army Corps of Engineers wetland delineation protocols were used to determine the presence or absence of wetlands based on the hydrology, plants, and soils in the investigation area.

One wetland was found to be connected to an unnamed tributary of the Middlebury River. This area will likely need to be delineated prior to construction, and proposed activities in the wetland or its 50-foot buffer may require a wetland permit. This area is described as Point 4 in Table 1 and in the Photographs section below. Several other areas were evaluated as potential wetlands but since they only occur within the existing road bed they are likely the result of the compaction from the road and were not natural wetlands prior to its construction. Photos and GPS points of each of these additional areas are shown in Table 1 and the Photographs section below. In addition, more information about these areas is included in the DEC Wetland Ecologist Site Visit section below.

Rare, Threatened and Endangered (RTE) Species:

An RTE species desktop review was conducted in the Agency of Natural Resources Atlas prior to the field visit to identify any observed species or habitat of particular interest near the project area. The following resources were identified during the desktop review:

- Indiana Bat Summer Range: the portion of the investigation area in the Town of Middlebury is within the summer range, but not the portion in the Town of Ripton.
- Northern Long-eared Bat: this species occurs Statewide, so restrictions may apply to this project.
- Deer Wintering Areas: the closest deer wintering area is about 350 feet from the investigation area, to the north surrounding the Middlebury River.
- RTE Species: A rare plant occurs about 500 feet north of the project area, in the ledge above the Middlebury River. A few other rare, threatened, and endangered species occurrences are shown on the map but are farther away from the investigation area.

- Wetlands: No wetlands or vernal pools are mapped near the investigation area.
- Significant Natural Communities: No significant natural communities are in the project area, but the Hemlock Forest significant natural community is found along the Middlebury River about 400 feet north of the investigation area.

Wildlife observed during the field visit included the following bird species:
- Vireo olivaceus (Red-eyed Vireo)
- Setophaga caerulescens (Black-throated Blue Warbler)
- Piranga olivacea (Scarlet Tanager)
- Turdus migratorius (American Robin)
- Catharus fuscescens (Veery)

Plants observed during the field visit included the following species:
- Scirpus atrovirens (Green bulrush)
- Onoclea sensibilis (Sensitive Fern)
- Osmunda regalis (Royal Fern)
- Dennstaedtia punctilobula (Hayscented fern)
- Spirea alba (Meadowsweet)
- Solidago canadensis (Canada goldenrod)

No rare, threatened, or endangered plant or animal species were observed during the natural resources assessment.

A full evaluation of trees for Northern Long-eared Bat roosting habitat may be necessary if Act 250 or federal funding is used for the project and trees are proposed to be cut within the roosting window (April 1 to October 31). A full evaluation for bat roost characteristics would need to follow the Potential Roost Tree Survey Methods for Endangered Bats from the Vermont Department of Fish and Wildlife (VFWD). This work was beyond the scope of this Natural Resources Assessment, and is most efficiently done following final design to ensure the appropriate trees are evaluated.

Table 1: Photograph Descriptions

Point #	Description	GPS Location (approx., not survey grade	Naturalized?
1	Potential Class II Wetland south of road; if culvert replacement or other work outside of road bed is proposed, may need delineation and permitting	43.972664 N, 73.067613 W	No
2	Road/trail begins to show signs of decreased use; not yet naturalized	43.970253 N, 73.058433 W	No
3	Potential wetland; if culvert replacement or other work outside of road bed is proposed, may need delineation and permitting	43.973023 N, 73.064392 W	No
4	Class II wetland at stream crossing with culvert; delineation and wetland permitting may be needed	43.967782 N, 73.052313 W	No
5	Naturalized area of road begins	43.967943 N, 73.051953 W	Yes

6	Non-jurisdictional wetland: assessed due to hydric plant indicators; indicators caused by road compaction with no wetland indicators outside of old road bed	43.969106 N, 73.047597 W	Yes
7	Non-jurisdictional wetland: assessed due to hydric plant indicators; indicators caused by road compaction with no wetland indicators outside of old road bed	43.969509 N, 73.046093 W	Yes
8	Non-jurisdictional wetland: asessed due to hydric plant indicators; indicators caused by road compaction with no wetland indicators outside of old road bed	43.970018 N, 73.043543 W	Yes
9	Edge of private land with gate; visually assessed to north from gate and no wetland indicators observed	43.970944 N, 73.042328	Yes

Photographs

Point 1:

Point 2:

Point 4:

Point 5:

Point 6:

Point 7:

Point 8:

Point 9:

DEC Wetland Ecologist Site Visit

On September 1, 2022, OCE conducted a site visit with the State of Vermont Department of Environmental Conservation (DEC) Wetland Ecologist for this region, Zapata Courage. The majority of the road alignment was walked, and Zapata confirmed OCE's findings, including:

- The wetland at the stream crossing (Point 4) is Class II, a wetland delineation will be needed, and a wetland permit will likely be needed if activities are proposed within 50 feet of the wetland boundary.
- The string of small wetlands within the road bed as shown in points 6, 7 and 8 are not State jurisdictional as they occur only within the road bed.
- The wetlands at Points 1 and 3 will need to be delineated if work is proposed outside of the road bed or if a culvert replacement is planned near this wetland. A wetland permit may also be needed.

Next Steps and Permitting Considerations

1) Investigation Area: If work is proposed outside of the investigation area described above, field assessment of these additional areas for wetlands and other natural resources will likely be necessary.
2) Comprehensive Bat Roost Tree Survey: This natural resources assessment does not include a comprehensive survey of potential RTE Bat Species Assessment. Once the design has been completed and specific trees have been identified for removal for this project, a qualified consultant may need to conduct a comprehensive survey of all trees proposed to be cut within the Northern Long-eared Bat roosting season (April 1 to October 31), depending on the permits and/or funding necessary for the project.
3) Wetland Classification: Wetlands are classified based on a variety of factors, including size and connection to surface water. There are a few Class I wetlands in the State but there are none near the project area. Wetlands which are connected to surface water, larger than 0.5 acres in size, or have significant wildlife habitat or other significant ecological value are considered Class II and are protected under the Vermont Wetland Rules (jurisdictional). In addition, the 50-foot buffer surrounding each Class

II wetland is protected. Wetlands that are smaller and isolated, and do not provide significant functions and values are considered Class III and are not protected under the Vermont Wetland Rules (non-jurisdictional). Class II wetlands require delineations to show work is outside of the wetland buffer, and may require wetland permitting if impacts are proposed within the wetland or buffer. While consultants can recommend classification, only a DEC Wetland Ecologist can determine the class of wetlands.

4) Wetland Delineations & Permitting: The wetlands at points 1 and 3 are potentially Class II and would need to be delineated if work is proposed near the wetlands. After delineation, DEC will need to classify the wetlands as Class II or III based on their size. If work is proposed within 50 feet of the wetland boundary, a wetland permit may be needed. The wetland at point 4 is a DEC-confirmed Class II wetland due to its connection to surface water, and will likely need delineation and permitting.

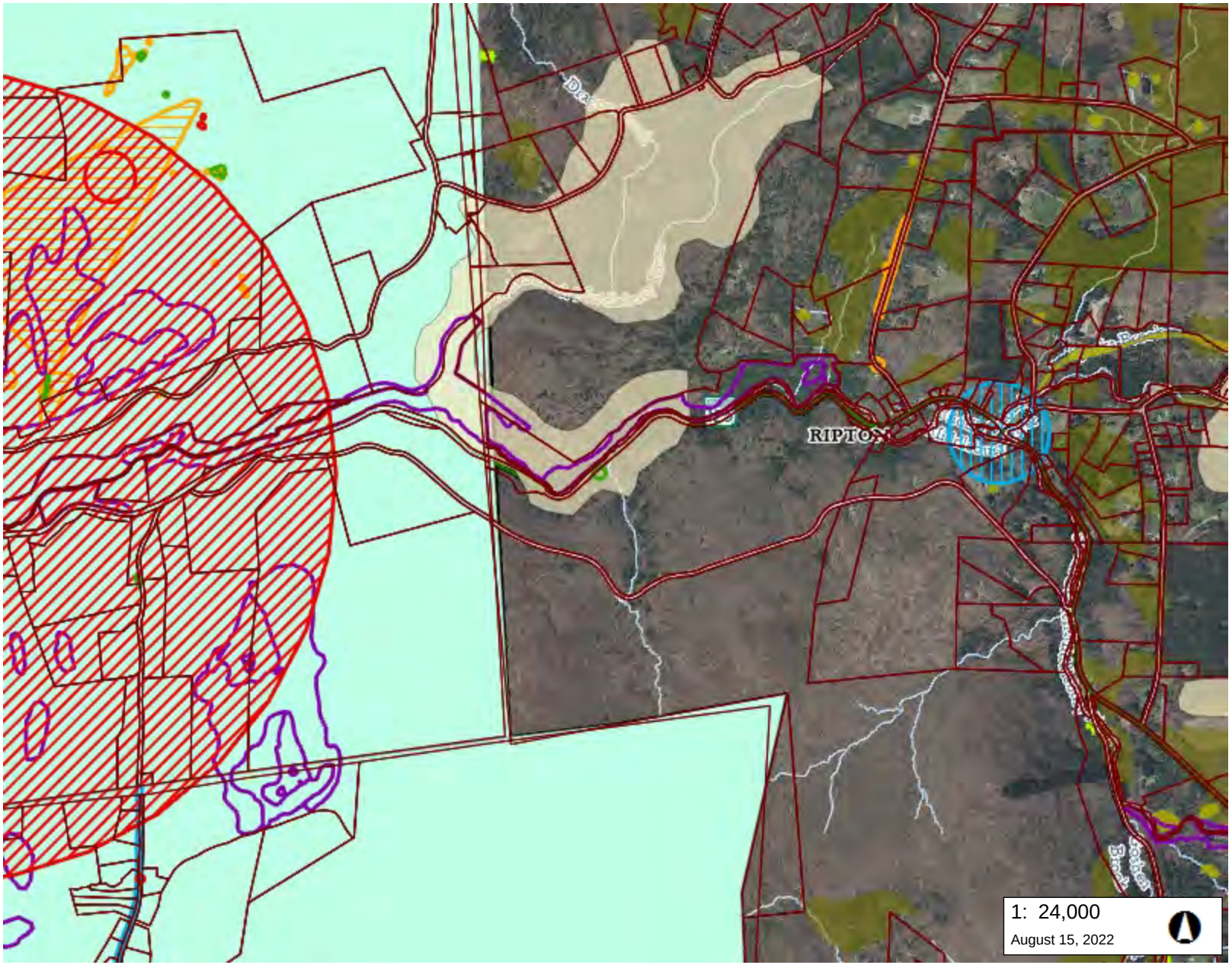
Attachments

1. ANR Atlas Natural Resources Map (for reference only, not valid for permitting)
2. State of Vermont Bat Evaluation Protocols

Old Town Rd. Natural Resources Map

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Rare Threatened Endangered
  - Threatened or Endangered
  - Rare
- Significant Natural Community
- Uncommon Species and Other
  - Animal
  - Plant
  - Natural Community
- Deer Wintering Areas
- Indiana Bat Hibernacula
- Indiana Bat Summer Range
  - Observed
  - Potential
- Vernal Pools Confirmed – AE/V
- Vernal Pools Unconfirmed – AI
- Wetland - VSWI
  - Class 1 Wetland
  - Class 2 Wetland
  - Buffer
- Wetlands Advisory Layer
- Soils - Hydric
- Parcels (standardized)
- Roads
  - Interstate
  - US Highway; 1
  - State Highway
  - Town Highway (Class 1)

NOTES

Map created using ANR's Natural Resources Atlas

1,219.0 0 610.00 1,219.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 2000 Ft. 1cm = 240 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Potential Roost Tree Survey Methods for Endangered Bats

Vermont Fish and Wildlife Department
January 2018

Surveys for potential roost trees of Vermont state endangered bats should be conducted by personnel **trained by the Vermont Fish and Wildlife Department** (VFWD) and experienced in the identification of potential roost trees used by Indiana bats (*Myotis sodalis*) and northern long-eared bats (*Myotis septentrionalis*).

Roost Tree Identification Survey Methods

1. Determine if the project area is within the range of the Indiana bat and/or northern long-eared bat. ***Please note that based on historic and current data, northern long-eared bat range in Vermont is state-wide, but this distribution information may change in the future with continued data collection.***

2. Determine if the project contains suitable roosting habitat for Indiana and/or northern long-eared bats.[1]

3. Complete (100%) survey of the forested portion of the project area to be significantly altered or converted to non-forested habitat.
    - Each tree ≥ 4 inches in diameter at breast height (DBH) shall be individually assessed using potential roost tree criteria. If the project does not pose a concern for impacts to northern long-eared bats based on distance from known summer or winter colonies and/or amount of tree clearing[1] but is within Indiana bat range, only trees 12 inches DBH or greater must be assessed.

4. Potential roost tree criteria:
    - Cavity tree exhibiting any form of decay or excavation by primary cavity producers (e.g., woodpeckers) that provides access to the interior of the trunk
    - Cracks or crevices into which bats may roost, including bark furrows
    - Peeling or exfoliating bark on the trunk or branches
    - Live shagbark hickory or black locust
    - Total tree height exceeds 10 feet

5. Record data on all potential roost trees:
    - Tree species
    - DBH
    - Roost features: cavity, crack, crevice, or exfoliating bark
    - Percentage of bark remaining on tree
    - GPS Location (latitude and longitude in decimal degrees, NAD83)
    - Include photographs of roost features

[1] *Refer to U.S. Fish and Wildlife Service Range-Wide Indiana Bat Summer Survey Guidelines* and *VFWD Regulatory Review Guidance for Protecting Northern Long-Eared Bats and Their Habitats*

Reporting on the Identification of Potential Roost Trees

Submit a written report which confirms the surveyor's name and training/experience conducting such surveys, date survey completed, methods used, results, and a map of the location of each potential roost tree to Alyssa.bennett@vermont.gov for review and approval.

Time of Year Restrictions on Cutting Potential Roost Trees

Trees identified as potential roosts should not be cut when bats are active and concentrated on the forested landscape. For Indiana bats, the active period is April 1-October 31. For northern long-eared bats the restricted range is dependent on the location of tree cutting.[1] Furthermore, a 100-foot buffer shall be retained around potential roost trees during the active period.

If time of year restrictions on cutting potential roost trees cannot be adhered to, the trees in question shall be surveyed prior to cutting and in accordance with the following methodology:

1. Emergence surveys shall follow the methods described in the *U.S. Fish and Wildlife Service Guidelines[1], Appendix E,* but with the following Vermont-specific criteria:

    - Emergence surveys shall be conducted between April 1 and October 31 with one exception: Trees over 18 inches DBH with potential roost features within Indiana bat summer range are limited on the landscape and highly correlated with larger colony sizes when used by Indiana bats. Potential removal of these trees shall be brought to the attention of the VFWD during the project planning process and may require additional mitigation or a more limited survey window to evaluate maternity colony use.

    - Emergence surveys shall be conducted on **three** consecutive nights of suitable weather and temperature conditions as described in the *USFWS Guidelines*. (i.e., if a night with unsuitable weather conditions occurs in-between nights with suitable weather, then the survey from suitable nights are still considered consecutive).

2. All survey work shall be conducted by individuals trained in bat monitoring, who shall be pre-approved by the VFWD. A list of individuals who have attended a training is available on request from the VFWD. Training is valid for five years.

3. Survey methods will be confirmed with the VFWD at least two-weeks prior to the planned survey dates.

4. Completed USFWS Bat Emergence Survey Datasheets shall be provided to the VFWD within 10 days of the completion of the surveys.

5. Any potential roost tree for which the emergence surveys indicate no bat use may be cut or trimmed within the 10-day period after completion of the surveys or outside the time of year restrictions.

6. The VFWD shall be notified within 48-hours if any bats are observed during the emergence surveys.

APPENDIX G: STREAM STATS ANALYSIS REPORT

StreamStats Report

Region ID: VT
Workspace ID: VT20220616204215670000
Clicked Point (Latitude, Longitude): 43.96745, -73.05226
Time: 2022-06-16 16:42:34 -0400

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.31	square miles
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	0	percent
PRECPRIS10	Basin average mean annual precipitation for 1981 to 2010 from PRISM	47.5	inches

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Statewide Peak Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.18	689
LC06STOR	Percent Storage from NLCD2006	0	percent	0	18.5
PRECPRIS10	Mean Annual Precip PRISM 1981 2010	47.5	inches	33.5	70.4

Peak-Flow Statistics Flow Report [Statewide Peak Flow]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp
50-percent AEP flood	21.6	ft^3/s	12.2	38.3	34.8
20-percent AEP flood	36	ft^3/s	19.9	65.2	36.1
10-percent AEP flood	47.8	ft^3/s	25.3	90.4	38.6
4-percent AEP flood	65.7	ft^3/s	32.8	132	42.5
2-percent AEP flood	81.6	ft^3/s	39.2	170	44.9
1-percent AEP flood	99.6	ft^3/s	46.1	215	47.3

Statistic	Value	Unit	PII	PIu	ASEp
0.5-percent AEP flood	120	ft^3/s	52.8	273	50.8
0.2-percent AEP flood	150	ft^3/s	61.9	364	55.2

Peak-Flow Statistics Citations

Olson, S.A.,2014, Estimation of flood discharges at selected annual exceedance probabilities for unregulated, rural streams in Vermont, with a section on Vermont regional skew regression, by Veilleux, A.G.: U.S. Geological Survey Scientific Investigations Report 2014–5078, 27 p. plus appendixes. (http://pubs.usgs.gov/sir/2014/5078/)

Application Version: 4.9.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.0

Town of Ripton, Vermont
Engineering Investigations and Recommendations Study
Old Town Road (Potash) Bridge over South Branch of the Middlebury River
(Bridge No. 6 on TH 25)

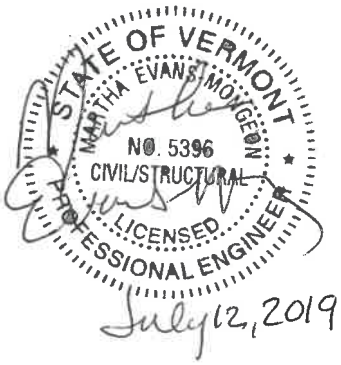
By

DuBois and King

6 Green Tree Drive

South Burlington, VT 05403

DuBois-king.com



July 2019

D&K project #625162

Town of Ripton, Vermont
Engineering Investigations and Recommendations Study
Old Town Road (Potash) Bridge over South Branch of the Middlebury River
(Bridge No. 6 on TH 25)

Executive Summary

When reviewing this report, please refer to the glossary of terms in Appendix A.

Old Town Road connects VT 125 in Ripton at about milemarker 2.0 to VT 125 in Middlebury at about milemarker 3.5. The portion of the road that is in Middlebury is a class 4 Town highway, and is also known as National Forest Road (NFR) 296. The portion that is in Ripton has been assumed to be a private road for a number of years. In 2014 a study of the history of the road was undertaken and a legal opinion concerning ownership was obtained (Appendix B). The legal opinion was that the portion of Old Town Road that is in Ripton is also a class 4 Town highway. The 2017 and 2018 Vtrans bridge inspection reports and the VTrans Town highway maps for Ripton, indicate that Old Town Road (Town Highway 25), in the area of Bridge 6, is a Class 3 Town Highway.

The Addison County Regional Planning Commission, hired DuBois and King on the Town's behalf, to do a bridge study of the bridge that connects VT 125 to Old Town Road in the Town of Ripton. The goal of the study is to determine the feasibility of repairing or replacing the bridge, in order to allow Old Town Road to function as an emergency route, should VT 125 become impassable during a flood event.

DuBois & King, Inc. (D&K) has evaluated alternatives for replacing the Old Town Road Bridge. D&K does not recommend retaining the substructure, due to it configuration and condition. Our recommendation is to completely replace the bridge. Our evaluation considered key components of bridge design and construction and the specific impacts that would affect the municipality and the public.

In preparation of a recommendation, thought and consideration were given toward: natural and cultural resources, substructure conditions, hydraulic requirements, structure durability, impacts to Right-of-Way and utilities, construction schedule, maintenance of traffic, and the opinion of probable construction costs. Following is a summary of the evaluation.

D&K recommends that new a precast concrete slab superstructure be built on a cast-in-place concrete foundation, in a new location, while maintaining traffic on Old Town Road on the existing structure.

Existing Conditions

The latest VTrans inspection report dated August 13, 2018 (Appendix C) indicates that the deck is in good condition, the superstructure (beams) are in very good condition, and the substructure is in fair condition, which is less than satisfactory.

The existing Old Town Road Bridge has a clear span of approximately 27'-8", over the North Branch of the Middlebury River. It is comprised of a timber deck, made up of 2 x 6 lumber, with timber runner planks, supported on painted steel beams which are supported on cast-in-place concrete abutments, founded on bedrock. No record plans of the existing bridge were found. The rail to rail width is 13.0 feet, and total superstructure width is 16.0 feet.

The traffic volume estimate from the inspection report was 20 vehicles per day in 2017.

The scour rating is "stable for scour". Although the substructure is founded on bedrock, which would normally make scour unlikely, on this bridge there is a layer of boulders and other material between the concrete and the bedrock, which could scour out and cause a significant problem. Of note, one of the wingwalls has scoured out and is leaning outward. The eastern abutment is leaning forward, out of plumb, by about 2 ¼" in 4 feet, according to the inspection report.

According to the most recent bridge inspection report, the bridge was built in 1970 and reconstructed, with a new deck and new steel beams, in 2015. It is unlikely that the bridge itself would be considered historically significant.

On July 24, 2018, VTrans completed a hydraulic study of this structure. The study is included in this report (Appendix D). This study resulted in a determination that the existing bridge meets VTrans current hydraulic standards. It is adequate to pass the 25-year (4%Annual Exceedance Period (AEP)) flow with at least 1 foot of freeboard. However, the existing bridge does not meet the state stream equilibrium standards for bankfull width (span). The existing structure constricts the channel.

Since no Right-of-Way plans are available for this bridge, D&K has contacted the Town of Ripton for information concerning the existing Right-of-Way. Based on information provided by the Town of Ripton an assumed 3-Rod (49.5-foot) Right-of-Way along Old Town Road, in the area of the bridge, has been used in developing this bridge study. It is anticipated that additional Right-of-Way would be required in order to replace the bridge. D&K previously worked on VT 125 in the project vicinity. The state Right-of-Way in this area is also a 3-rod Right-of-Way.

Field Evaluation

A field visit was conducted on May 16, 2019. The field visit was used to evaluate the condition of both the substructure and the superstructure, and to obtain dimensional information, since no record plans were available. The existing substructure is in fair to poor condition. It is our recommendation that both abutments and all four wingwalls be replaced.

The existing timber deck and steel stringer (beam) superstructure is in good condition. The stringers are painted and the paint is in good condition. The bridge rail and approach rail do not meet current standards. There are no connections between the bridge rail and the approach rail on any of the four corners.

Old Town Road serves as access for a few year round residences. The other end of Old Town Road is not adequate for year round vehicular travel. The Town of Ripton is interested in upgrading Old Town Road as an emergency route, should VT 125 be impacted by flooding, as it has been in recent years. Because there are year round residents that use this bridge on a daily basis, D&K recommends that the Town of Ripton chose an alignment for the replacement structure which would allow the existing structure to continue to function while the new bridge is built. We have also considered the option of replacing the structure in its current location and installing a temporary bridge to provide access to the residents during construction.

:

View of the Old Town Road Bridge looking south

Introduction:

The Old Town Road Bridge (Bridge #6) is located just off of VT 125 approximately 5 miles east of the intersection of VT 125 and US 7. The bridge has experienced flood damage on several occasions, the latest being in July of 2017.

The Town of Ripton undertook research to determine whether Old Town Road was in fact town owned infrastructure. The legal opinion that they received at the conclusion of the study was that the road is a Class 4 Town Highway. The portion of Old Town Road that is within the Town of Middlebury is also a Class 4 Town Highway.

Once town ownership was verified, VTrans began inspecting the bridge. VTrans has now completed two bridge inspections, one in 2017 and one in 2018. Prior to 2015, any maintenance that we conducted on the bridge was done by the residents who own property on the Ripton end of Old Town Road.

The existing bridge superstructure consists of seven (7) steel stringers (beams) with a nail laminated timber deck spanning over the North Branch of the Middlebury River. The superstructure has a width of 13'-0" rail to rail. The bridge has a clear span length of 27'-9". The bridge rail consists of steel beam rail mounted on steel posts, with steel base plates bolted to the deck and steel offset blocks. The existing substructure consists of cast-in-place concrete abutments and wingwalls. Bedrock can be seen in the stream and beneath the existing substructure units.

The structure is not skewed, the angle between superstructure and substructure is 90 degrees. The bridge substructure does not currently align with the stream. The existing bridge provides a vertical clearance of 12'-6" +/-. It is estimated that the total waterway opening is approximately 350 ft^2. The deck, steel stringers and bridge rail were replaced in 2015. The date of construction of the substructure (abutments and wingwalls) is unknown. Ripton has contracted for further repair work to be done including scour protection in front of the eastern abutment. A load rating was performed on the bridge after the superstructure (deck, and stringers) was replaced. The bridge is posted for maximum four axle load of 29 tons. Old Town Road past the bridge is posted for a maximum load of 24,000 pounds.

The existing bridge railings are substandard, as they are not an acceptable, crash tested system. The bridge approach rail is also substandard. There is no connection between the bridge rail and the approach rail.

The bridge is currently open to traffic. There are six (6) year round residences which use the bridge to access their homes. Emergency services, such as fire and ambulance for these residents use this bridge. The Addison Regional Planning Commission has given the town of Ripton a grant, which is to be used to prepare a study concerning the replacement of Bridge 6. DuBois & King, Inc. was hired by the Regional Planning Commission to perform an engineering study and determine the best option for replacement of the bridge.

I. Project Development:

Following documentation of existing conditions, DuBois & King, Inc. identified and evaluated several feasible alternatives to replace the existing structure. Factors in determining appropriate structure selection included:

- Proper Waterway Opening
- Overall Geometry Conforming to the Site
- Durability
- Initial and Long Term Costs
- Length of Service Life
- Maintenance of Traffic during Construction

A conceptual opinion of probable construction and engineering cost was developed for the alternatives investigated.

The following are the results of our evaluation:

II. Existing Conditions:

A. Site Observation

A site observation was conducted in May 2019. The observation consisted of two DuBois & King engineers visiting the site and making visual observations of the existing bridge, roadway approaches, streambed conditions, site constrictions and documentation of any utilities that were present. Several key measurements of the existing bridge were recorded. The observation concluded with a photo documentation of the bridge site and surroundings.

B. Field Survey

Survey information was available from previous work done by D&K for VTrans on the VT 125 corridor. Complete survey information is available for the VT 125 end of the bridge. Limited information is available for the opposite end of the bridge. A basemap was developed from the available field survey of the project area. An Existing Conditions Site Plan is included in Appendix G.

C. Identification of Natural and Cultural Resources

It is unlikely that the existing bridge would be considered to be historic. There are no other additional structures in the vicinity of the bridge, which might be considered to be historic. When the design of a replacement structure proceeds, possible archeological resources will need to be investigated.

There is a small stream that joins the North Branch of the Middlebury River, on the southwestern corner of the bridge site. If a new bridge location is chosen, this area should be avoided.

There are no mapped wetlands in the area of the project. The possibility of un-mapped, Class 3, wetlands exists and will need to be investigated further as the design of the project continues.

There are no mapped threatened or endangered species within the project area. There are trees within the project area that would need to be cut to proceed with construction. This would likely trigger time of year restrictions, which would require that the trees not be cut during the summer months, when the bats are out of hibernation.

D. Subsurface Investigation

No subsurface investigation has been performed. The existing substructure is founded on bedrock. Bedrock is also present in the stream at numerous locations. Prior to final design, a geotechnical evaluation should be performed at the chosen bridge location to determine what elevation and ultimate bearing capacity of the bedrock.

E. Existing Condition Assessment

The condition of the existing abutments is such that it is not recommended that they be reused. There is material below the abutment stems, between the bedrock and the cast-in-place concrete, which interferes with the contact and bearing between the rock and the concrete. Also, there appear to be no footings below the abutment stems. Because of this, the resistance to sliding and overturning of the existing abutments is likely inadequate for the applied loads. There are no weepholes in the abutments. This can lead to a buildup of hydrostatic pressure behind the abutments, which is detrimental to the abutment stability. We observed that the eastern abutment has been backfilled with boulders. This material does not compact, and therefore exerts a non-uniform pressure on the back of the abutments.

The western abutment is in much better condition than the eastern abutment. If it becomes necessary to retain one abutment, we would recommend keeping the western abutment and replacing the eastern abutment.

- The southeast wingwall has failed, tilted, and is in danger of collapse.

- On the western abutment, there is a “mud slab” consisting of mortar and stone between the concrete and the bedrock which interferes with contact and bond.

- The steel stringers and timber deck are in good condition

- The approach rails are not continuous with the bridge rails. The backfill at the eastern abutment consists of boulders.

F. Hydrologic and Hydraulic Analysis

An important step in planning for a proposed bridge replacement over a waterway is determination of the required area of the bridge opening to pass specified storm flow events. VTrans hydraulic standards for bridges on Town highways require that they be designed to accommodate a 25-year storm, which is equal to a 4 % annual exceedance probability (AEP), with 1-foot minimum of freeboard. Due to the inconvenience that would result in having this bridge washed out in the future, the 100-year storm, or 1 % AEP should also be evaluated. Maintaining the 100-year storm elevation below the proposed bridge low chord elevation would be beneficial, especially since one of the purposes that the Town has in mind for this bridge is as an emergency access, should VT 125 be washed out in a flood event.

In addition to the hydraulic requirements, the bank full width of the stream should also be evaluated, and, if possible, accommodated with a new bridge design.

VTrans did an initial hydraulic evaluation of this bridge (Appendix D). Their report, dated July 24, 2018, was part of the information provided at the beginning of this study. Their hydraulic study concluded that the current structure meets VTrans' hydraulic standards, but does not provide a width of opening consistent with the bank full width of the stream.

VTrans recommends, if a new structure is built, that it have a minimum open span of 44 feet, perpendicular to the flow of the river, and a minimum clear height of 9 feet, providing a waterway opening of 400 square feet.

III. Permitting and Clearances:

In order to maintain passage of traffic during construction, it is advantageous to choose a location other than the existing location for the new bridge. The disadvantage to this approach is that by going off the existing alignment more Right-of-Way must be acquired and there is the potential for more environmental impacts.

Wetlands may be present in the area of the stream located near the southwest corner of the bridge. If a downstream bridge location is chosen, impacts to this area can be avoided.

A complete replacement of this bridge will be subject to several regulatory permits and clearances that must be obtained prior to construction of the preferred alternative. Based on our review of the site, the following permits may be required:

- Historical and archeological clearances from the State Historic Preservation Office.
- Preparation of project-specific Erosion and Sediment Pollution Control Plan.
- VT ANR stream alteration permit
- US Corp of Engineer's Permit

Permitting is typically performed during the preliminary design phase and is based on the preferred alternative that has been selected.

IV. Right-of-Way and Utilities:

A. Right-of-Way

The Town of Ripton has assumed for this study that the existing Right-of-Way is 3-Rods or 49.5-feet wide. There is also a 3-Rod Right-of-Way for VT 125 in this area. For a complete replacement of the bridge it is unlikely that the work can be kept completely within the existing Right-of-Way. Temporary construction easements would likely be needed to provide the contractor room to work and access the site. If the existing bridge

can be used to maintain traffic during construction, no temporary easements for maintaining traffic will be necessary.

B. Utilities

Two overhead utility lines were the only documented utilities found during the site observation. One line is located directly above the existing bridge, and continues along the alignment of Old Town Road. The other crosses the intersection of Old Town Road and VT 125 and continues along the alignment of VT 125. The electrical utility in this area is Green Mountain Power. The line that follows VT 125 will not need to be relocated to construct a new bridge. However, the line that follows Old Town Road will likely need to be either temporarily or permanently relocated in order to construct a new bridge. Since the existing line is located within the Town's Right-of-Way, the expense for relocating the utility will be borne by the utility companies. The relocation route for a temporary or permanent relocation route should be identified early in the project development process, since it often takes some time to get the utility companies to relocate their lines.

C. Abutting Properties

The Town has identified tax map parcel and property owners that abut the project. Abutter information can be found on the Existing Conditions Site Plan, included in Appendix G.

V. Alternatives Investigation:

Two (2) bridge superstructure types have been evaluated as part of this study. The superstructure types are a precast, pre-stressed concrete slab superstructure, and cast-in-place concrete slab bridge. The recommended bridge superstructure alternative is precast pre-stressed concrete slab as it is economical, quick to construct, practical, durable, and low-maintenance.

The recommended substructure is a cast-in-place substructure, on bedrock. Based on the observed bedrock elevations at the site, the height of the substructure units will be approximately 12 feet, from finished grade to bedrock.

A. Design Criteria

The functional classification of Old Town Road is "local road". The following summarizes the design criteria we believe are appropriate for this bridge site:

Bridge Design Codes and Specifications:

- AASHTO LRFD Bridge Design Specification, 8th Edition
- AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition
- Vtrans Vermont State Design Standards, 1997
- VTrans Structures Bridge Design Manual, 2011 revision
- Structural Capacity: AASHTO HL-93
- Traffic Volume: 20 vehicles per day

Bridge Width: Vermont State Design Standards, Table 6.3, specify a minimum lane width of 7 feet and a minimum shoulder width of 0 feet, for a local road with an average daily traffic (ADT) count of between 0 and 25 vehicles per day, when the design speed is less than 40 miles per hour. If the ADT is between 25 and 50 vehicles per day, the recommended minimum lane width is 8 feet. A bridge with a rail to rail width of 16 feet, would meet this requirement. This would be the case for the current conditions on Old Town Road.

The Town of Ripton believes that they should consider the future possibility of this road being the only road out of Ripton, in the event of a flood event that washes out sections of VT 125. This type of flood event has happened in the past. The Town requested that D&K also investigate what width would be appropriate if the traffic on Old Town Road increased considerable, and investigate the cost associated with the construction of a wider bridge.

Vermont State Design Standards Table 6.3 specifies a minimum lane width of 9 feet and a minimum shoulder width of 2 feet for a traffic volume between 100 and 1500 vehicles per day.

D&K recommends that Old Town Road be designed for a rail to rail width of 22 feet, or two 9 foot lanes and two 2 foot shoulders. This width would be adequate for traffic now and in the future. A new bridge can be expected to last 75 years, and it would be short-sighted, if additional traffic is expected in the future, to build a bridge that will not be adequate to meet the future needs.

The existing width of Old Town Road, is about 16 feet. If a replacement bridge is built, with a width of 22 feet, Old Town Road will need to be upgraded in the future to match the width of the bridge.

Appendix G contains plans and profiles for several alternatives which were considered.

Design Speed: The AASHTO Policy on Geometric Design of Highways and Streets, Table 5.1 gives minimum design speeds for local roads. If the traffic volume is less than 50 vehicles per day and the terrain is either rolling or mountainous, the recommended design speed is 20 miles per hour. In mountainous terrain, this table gives a recommended design

speed of 20 mph, for up to 400 vehicles per day. Vermont State Design Standards for Local roads do not require a minimum design speed.

D&K recommends that Old Town Road be design for a speed of 20 miles per hour.

Complete Streets: During the 2011 legislative session, the Complete Streets Bill (Act 34) was passed to "ensure that the needs of all users of Vermont's transportation system - including motorists, bicyclists, public transportation users, and pedestrians of all ages and abilities - are considered in all state and municipally managed transportation projects and project phases." The language in the bill specifically excludes unpaved highways. Since Old Town Road is at this point an unpaved road, the Complete Streets Bill does not apply to Old Town Road. Should Old Town Road be paved in the future, the Town of Ripton may have to consider the elements of complete streets at that time.

B. Alignment Alternatives

Appendix G of this report contains four (4) possible bridge layouts. Each of the layouts meets the 44 foot minimum clear span normal to the stream.

Alternative 1 leaves VT 125 at a 90 degree angle. It is located slightly downstream of the existing river crossing. Using this new bridge location would eliminate the need for a utility relocation and would not require the use of a temporary bridge. At the far end of the bridge there is an 80 foot radius to connect to existing Old Town Road. This radius is acceptable for a 20 mph design speed. The vertical alignment would be a 5 % grade coming off VT 125. This grade would need to be connected to the existing grade of Old Town Road, which is approximately 12%, using a sag vertical curve. This alignment would utilize the existing Right-of-Way on upstream (south) side of the bridge. New Right-of-Way would need to be acquired on the north side of the bridge. The land which would need to be acquired is owned by the US Forest Service and by one private property owner. The bridge length for this alternative would be 51’-0”.

Alternative 2 also departs from VT 125 at a 90 degree angle. This alternative would require either a temporary or a permanent utility relocation. It includes a 65 foot radius curve at the end of the bridge followed by a tangent section that is about 20 feet long and then a switchback 90 foot radius curve. These radii are acceptable for a 15 mph design speed. This alignment comes closer to the nearby stream and might require a wetland permit. This alignment is almost completely outside the existing Right-of-Way, and would require Right-of-Way acquisition from at least two private property owners, as well as from the federal government. The bridge length of this alternative is 50’-0”.

Alternative 3 departs from VT 125 at an angle of about 60 degrees. This is similar to the angle that Old Town Road currently makes with VT 125. This alternative would

require either a temporary or a permanent utility relocation. There is a curve with a radius of 80 feet near the end of the bridge, a tangent section of about 60 feet, and a curve with a radius of 90 feet to get it back on the alignment of Old Town Road. These radii are acceptable for a 20 mph design speed. This alternative utilizes less of the existing Right-of-Way than alternate 1, but more of the existing Right-of-Way than alternate 2. The bridge length for this alternative is 57'-0", and the substructure would be skewed to the superstructure by an angle of 60 degrees.

Alternative 4 keeps the alignment of the bridge in roughly the same location as the existing bridge. It departs from VT 125 at an angle of about 70 degrees. This alternative would require either a temporary or a permanent utility relocation. There is a curve with a radius of 60 feet near the end of the bridge. This radius is acceptable for a 15 mph design speed. This alternative eliminates the need for obtaining additional permanent Right-of-Way. Temporary construction easements would likely be needed. The bridge length for this alternative is 50'-0", and the substructure would be skewed to the superstructure by an angle of 10 degrees. This alternative would require that either a temporary bridge be installed, or the road be closed to traffic during construction of the new bridge.

Alternative 1A and 3A The preferred alternative is also shown with a bridge width of 16 feet, rail to rail. This is illustrated in Alternative 1A. The other alternative which the Town of Ripton was most interested in at our public information meeting was alternative 3. Therefore, Alternative 3 is also shown for illustration with a bridge width of 16 feet, rail to rail. This is alternative 3A.

C. Bridge Type Alternatives

Two superstructure types were considered in this study. Both superstructure types would be paired with a substructure replacement which would consist of a cast-in-place substructure, founded on the bedrock that is evident in the area.

1) Precast non-voided slab

This option uses 6 adjacent precast slabs. Four of the slabs would be 4 feet wide, and the outer two slabs would be 3 feet wide. This would provide the required width of 22 feet. The slabs would be pre-stressed with steel pre-stressing strands. There would be post tensioning that would hold the slabs together from fascia to fascia. The depth of the slabs would be 18 inches, for alternatives 1 and 2, and would be 21 inches for alternative 3. The slabs would be solid concrete with no voids in them. They would be made in a pre-casting plant under controlled conditions using a high strength concrete mix. The bridge rail would be fascia

mounted to the bridge deck. The advantages and disadvantages of this superstructure are:

Advantages: High quality, durable superstructure.

Expected service life of 75 years for the new structures.

Controlled casting and curing conditions, and high strength concrete increase the durability of the superstructure.

Quicker construction duration

Disadvantages: Additional lead time needed to order precast sections longitudinal joints between units.

2) Cast in Place Slab

This option uses a single, full-width, cast in place concrete slab. The total width would be 22 feet. The slab would be constructed of high performance concrete. It would be cast and cured in place. The depth of the slab would be 18 inches for alternatives 1 and 3 and 21 inches for alternative 3.

Advantages: Durable superstructure.

Expected service life of 75 years for the new structure.

Less lead time needed to order construction materials

No longitudinal joint

Disadvantages: Longer construction duration than precast superstructure

Less control of curing conditions for cast in place concrete

Because of the difficulties of shoring and constructing a cast-in-place slab of this size, D&K does not recommend this superstructure alternative. The precast alternative is our recommendation.

D. Maintenance of Traffic During Construction

The existing bridge would be used to maintain traffic while building a new structure.

If the existing alignment is chosen instead, the road would need to be closed to traffic during construction of the new structure or a temporary bridge would need to be installed on a different alignment, prior to constructing the permanent bridge.

E. Opinion of Probable Construction Cost

We have developed a conceptual opinion of probable construction cost for each alternative in this report. The costs were prepared by estimating quantities and applying unit prices obtained from previously bid VTrans projects for bridge and roadway construction. The conceptual costs are subject to change due to fluctuations in the cost of labor and materials, and with the refinement of the overall design during subsequent phases of the project. See Appendix F. The costs outlined below are based on D&K's recommended alternative.

Project Cost Estimates:

Final Engineering Design	$ 80,000
Bridge Construction	$ 578,000
Construction Administration	$ 42,000
Preliminary Opinion of Budget for project	**$ 700,000**

F. Schedule and Budget

Regardless of the alternative selected, construction would be anticipated to last approximately 3-months. Estimated project durations and opinion of probable construction costs have been included in this report and summarized below, for the purposes of establishing an appropriate schedule and budget.

A schedule should be selected that will allow the Town to advertise (bid) the project during the winter months, and construct the project during the summer and fall.

Project Durations:	
Engineering design, and permitting	9 months
Advertising and bidding	1 month
Construction	3 months
Total Duration for project	**13 months**

VI. Funding Alternatives:

The Town of Ripton will need to obtain funding to complete design plans, obtain permits and Right-of-Way, advertise for construction bids and complete the construction of the new bridge.

Some of the options that Ripton might consider are:

1. The Town Highway Bridge program. This program is through VTrans. Typically the funding is 80% federal, 10 % state and 10% local. This funding would cover all required design, permitting, Right-of-Way identification and acquisition, advertisement and construction. The funds are administered thought VTrans and design would be carried out either by VTrans employees, or consultants chosen by VTrans. This program has limited funding. Priorities are defined by the Regional Planning Commission, which forward their priorities to the VTrans. VTrans then develops their own list of statewide priorities, and allocates the available funding accordingly.

2. VTrans Town Highway Bridge grants. These funds are available through the VTrans Transportation District. The maximum for a single grant award is $175,000. These grants can be used for design or construction or both. It is possible, depending on availability of funding, to get a grant for design and a separate grant for construction. They are awarded on a competitive basis, as long as there is funding available. The local share for this funding source is 10%, if certain conditions are met, or 20% if those conditions are not met. More information concerning these grants is available in the VTrans “Orange Book”, also known as A Handbook For Local Officials.

3. FEMA, Hazard Mitigation grants, these grants can be accessed after a major disaster declaration, and are intended to eliminate a future flood hazard. A 25% local match of funds is required. In order to be considered for these grants the Town of Ripton must meet the following requirements.

    i. Have a FEMA approved and adopted local hazard mitigation plan.
    ii. Be in good standing with the National Flood Insurance Program (NFIP)
    iii. Have an adopted Local Emergency Operations Plan (LEOP)

4. FEMA, Public Assistance Program. These grants can be accessed after major disaster declaration, and are intended to aid in the repair or replacement of flood damaged public infrastructure. A 25% local match (a portion of which may be paid by the state based on the following criteria), of funds is required. The state of Vermont contributes a minimum of 7.5% of eligible costs or 12.5% where communities take the following 4 specific actions.

    i. Participate in the national flood insurance program or have applied.

ii. Have adopted road and bridge standards that meet or exceed those found in the VTrans Handbook for Local Officials (The orange book).

iii. Have adopted a local emergency operations plan.

iv. Have adopted a local hazard mitigation plan.

If, in addition to these actions, the Town also protects their river corridors from new encroachment, or protect their flood hazard areas from new encroachment and participate in the FEMA community Rating System, the state of Vermont will contribute 17.5% of the total eligible costs.

VII. Recommendations:

D&K recommends Alternative 1. This alternative has several advantages. It does not require an overhead utility relocation. It does not impact the stream which is located to the south of the existing bridge. It only requires Right-of-Way acquisition from one private property owner and from the US government. It does not require temporary bridge. It leaves VT 125 at a 90 degree angle, which is considered to be the safest manner of intersecting the mainline road. At a 90 degree angle, the operator leaving the sideline can easily see in both directions. The vehicle exiting the sideline also is aware of the need to come to a stop for the mainline traffic.

D&K recommends that the superstructure type be precast concrete slabs, with a bare deck, and fascia mounted bridge railing. Installation the precast elements takes less time and labor than cast-in-place concrete. Precast concrete reduces construction duration, as the curing time for the concrete takes place prior to installation. Precast concrete is placed and cured under controlled conditions resulting in a more durable product. There is a local pre-caster in the Ripton area.

D&K recommends that the substructure be cast-in-place concrete. The presence of bedrock near or at the ground surface, makes precast concrete for the substructure a less desirable choice. Cast-in-place concrete can be placed directly on the bedrock, conforming to the uneven profile. The stem of the substructure units, once the footing is cast, could be made of pre-cast concrete. This would further reduce the construction duration, but would also have cost implications, as pre-cast concrete is oftn more expensive than cast-in-place concrete.

It is recommended that the entire bridge be removed and replaced with a new structure. The existing structure is undersized, horizontally and restricts the channel. In addition, the existing substructure is not structurally stable.

APPENDIX A
GLOSSARY OF TERMS

GLOSSARY OF BRIDGE TERMS

AASHTO – American Association of State Highway and Transportation Officials.

ADT – Average Daily Traffic.

ABUTMENT – A substructure element supporting each end of a single span bridge of superstructure and, in general, retaining or supporting the approach embankment.

BEAM – A linear structural member designed to span from one support to another.

CAST-IN-PLACE – Concrete poured within formwork on site to create a structural element in its final position.

CAMBER – A slight convexity on the road surface.

CHORD – A horizontal member of a truss.

COLUMN – A verticle structural member that transfers dead and live load from the bridge deck and girders to the footings or shafts.

COMPRESSION – The pushing force, which tends to shorten a member; opposite of tension.

CONCRETE – A mixture of water, sand, stone, and a binding element, which hardens to a rock-like consistency.

CROSS BRACE – Transverse brace between two main longitudinal members.

DEAD LOAD – A static load due to the weight of the structure itself.

DECK – The roadway portion of a bridge that directly supports vehicular and pedestrian traffic.

DIAGONAL – A sloping structural member of a truss or bracing system.

EXPANSION JOINT – A joint designed to provide means for expansion and contraction movements produced by temperature changes, load, or other forces.

FATIGUE – Cause of structural deficiencies, usually due to repetitive loading over time.

FLANGE – The flat top and bottom plates of a beam, stringer, or girder.

FLOORBEAM - A transverse beam supporting other beams (stringers) and the bridge deck.

FOOTING – The enlarged, lower portion of a substructure that distributes the structure load either to the earth or to supporting piles; the most common footing is the concrete slab.

GIRDER – A main support member for the structure that usually receives loads from floor beams and stringers; also, any large beam, especially if built up.

GVW – Gross Vehicle Weight.

HINGE – A point in a structure at which a member is free to rotate.

INVENTORY RATING - A live load, which can safely utilize an existing structure for an indefinite period of time.

LIVE LOAD – Vehicular traffic, wind, water, etc.

LOAD RATING – The determination of the live load carrying capacity of an existing bridge.

LOWER CHORD – The bottom horizontal member of a truss.

MEMBER – An individual angle, beam, plate, or built piece intended to become an integral part of an assembled frame or structure.

OPERATING RATING – The maximum permissible live load to which the structure may be subjected.

OVERLAY – A layer of concrete or pavement placed on top of a structure or pavement.

PIER – A vertical support or substructure unit that supports the spans of a multi-span superstructure at an intermediate location between its abutments.

PILE – A verticle shaft driven into the ground that carries loads through weak layers of soil to those capable of supporting such loads.

PLATE GIRDER – A large, solid web plate with flange plates attached to the web plate by flange angles or fillet welds; fabricated from steel.

POSTING LOAD – A live load a bridge may safely utilize on a routine basis for a limited period of time.

PRE-CAST GIRDER, SLAB, OR BOX BEAM – Fabricated off site of Portland Cement Concrete, reinforcing steel, and post -tensioning cables. These girders, slabs, or box beams are shipped to the construction site by truck and hoisted into place by cranes.

REINFORCED CONCRETE – Concrete with steel reinforcing bars bonded within it to supply increased tensile strength and durability.

RIVETED CONNECTION – A rigid connection of metal bridge members that is assembled with rivets. Riveted connections increase the strength of the structure.

SPALLS – Pop outs, shallow holes and deteriorated areas in concrete.

SPAN – The distance between piers or abutments.

SECTION LOSS – Loss of material (thickness or width) in steel members, usually from corrosion.

STAGED CONSTRUCTION – A construction method in which one-half of the bridge is constructed first and the second half constructed later. The purpose of this method is to maintain traffic through the bridge site during construction.

STAY – Diagonal brace installed to minimize structural movement.

STRINGER – A longitudinal beam supporting the bridge deck.

SUBSTRUCTURE – The parts of a bridge that are below the bottom of the girders. Pilings, shafts, spread footings, piers and abutments are part of the substructure.

SUPERSTRUCTURE – The parts of a bridge that are above the piers and abutments. Girders, trusses, bridge deck, and bridge railing are parts of the superstructure.

TENSION – A force that pulls or stretches.

TRUSS – A rigid, jointed structure made up of individual straight pieces arranged and connected, usually in a triangular pattern, so as to support longer spans.

TRUSS BRIDGE – A bridge having a pair of trusses for the superstructure.

UPPER CHORD – The top longitudinal member of a truss.

WEB – The portion of a beam located between and connected to the flanges.

APPENDIX B

LEGAL OPINION

July 30, 2014

To: Ripton Selectboard

From: Paul Gillies

RE: Draft opinion letter

The issue is whether the road that runs off of Route 125 easterly along the height of land in Ripton—the track of the former Centre Turnpike—is a town highway. This has been a subject of considerable research, surveying, and struggle over the years, but the evidence is clear enough for me to conclude that the track is a Class 4 town highway of Ripton. Here's how I get to that conclusion:

The highway was laid out by Middlebury Selectmen in 1793. Exhibit 1. This road was never discontinued, and as the land over which it travels is, since 1814 and 1829, located in Ripton, it is a town road in that town. Exhibits 2 and 3.

Discussion of the creation of the Centre Turnpike Company and its doings over its history are, for purposes of this conclusion, irrelevant. The Company had control over the route for 53 years, but in 1853 sold its interests to Ripton. Exhibits 4 and 5.

The records of the Town of Ripton prior to 1830 are lost, and no survey of that portion of the route that runs from the old town line of Middlebury to the road to Goshen has been located. But that problem is solved by evidence that Ripton spent funds to improve the road in 1853. Exhibit 6. In highway law, that is evidence of dedication and acceptance, which would be an alternative basis to conclude it is a town highway in lieu of a survey and on top of the 1853 purchase of the route from the Turnpike Company.

There is a lot of information on this issue in the U.S. Forest Service Office in Rutland, including surveys tracking the 1793 route with ground evidence. Exhibit 7. The Sheldon Museum has the corporation records of the Center Turnpike Company, and the Ripton and Middlebury town land records have even more information, but nothing in any of it suggests that the road is not a Ripton town road. Middlebury recognized it as a town road as it runs through that municipality, in 1982. It's time for Ripton to do the same.

Ripton has had opportunities in the 1980s to take this step, but its Selectboard was cautious and resistant, largely because of a concern that landowners along the route would be upset. Apparently there are successor landowners who have a similar idea, including one who has erected signs insisting that the road is not a public highway. This resistance does not change the underlying fact that the road is a highway, however. Road easements can't be extinguished the way private easements can. 19 V.S.A. § 1102.

Some have complained that they spent money improving the road, and hinted that this changes things, but that is a mistaken theory. That they went ahead and made improvements without the approval of the Selectboard has no impact on the underlying facts either.

The running of utility lines along the route, beginning in 1881, is of some value in confirming that it is a town highway, but that is not determinative either.

What matters is the 1793 survey and the 1853 purchase of the route and payment of funds to improve it by the Town of Ripton, plus a lack of any evidence of discontinuance. The lesson of the ancient roads law and the various cases that have come from fights between landowners and towns on old roads is that a highway never ceases to exist without some affirmative act of the Selectboard, discontinuing the public interest in the road. There is no evidence that that has occurred. There is neglect and a failure to acknowledge, but no discontinuance.

The Town should, however, ensure that the highway is placed on the official town highway map, by providing the evidence of its creation to the Agency of Transportation Mapping Division.

Paul Gillies, Esq.

APPENDIX C
2018 INSPECTION REPORT

STRUCTURE INSPECTION, INVENTORY and APPRAISAL SHEET

Vermont Agency of Transportation ~ Structures Section ~ Bridge Management and Inspection Unit

Inspection Report for : RIPTON **Bridge No.:** 00006 **District:** 5
Located on: C3025 **over** S. BR. MIDDLEBURY RIV. **approximately** 0.01 MI TO JCT VT125 **Owner:** TOWN-OWNED

CONDITION

Deck Rating: 7 GOOD
Superstructure Rating: 8 VERY GOOD
Substructure Rating: 5 FAIR
Channel Rating: 6 SATISFACTORY
Culvert Rating: N NOT APPLICABLE
Federal Str. Number: 100116000601161
Federal Sufficiency Rating: 61.8
Deficiency Status of Structure: ND

AGE and SERVICE

Year Built: 1970 **Year Reconstructed:** 2014
Service On: 1 HIGHWAY
Service Under: 5 WATERWAY
Lanes On the Structure: 01
Lanes Under the Structure: 00
Bypass, Detour Length (miles): 99
ADT: 000020 **% Truck ADT:** 01
Year of ADT: 2017

GEOMETRIC DATA

Length of Maximum Span (ft): 0029
Structure Length (ft): 000033
Lt Curb/Sidewalk Width (ft): 0
Rt Curb/Sidewalk Width (ft): 0
Bridge Rdwy Width Curb-to-Curb (ft): 12.8
Deck Width Out-to-Out (ft): 16
Appr. Roadway Width (ft): 020
Skew: 20
Bridge Median: 0 NO MEDIAN
Min Vertical Clr Over (ft): 99 FT 99 IN
Feature Under: FEATURE NOT A HIGHWAY OR RAILROAD
Min Vertical Underclr (ft): 00 FT 00 IN

STRUCTURE TYPE and MATERIALS

Bridge Type: ROLLED BM TIMB DECK
Number of Approach Spans: 0000 **Number of Main Spans:** 001
Kind of Material and/or Design: 3 STEEL
Deck Structure Type: 8 TIMBER
Type of Wearing Surface: 7 WOOD OR TIMBER
Type of Membrane: 0 NONE
Deck Protection: 7 CCA.CREOSOTED WOOD

APPRAISAL *AS COMPARED TO FEDERAL STANDARDS

Bridge Railings: 0 DOES NOT MEET CURRENT STANDARD
Transitions: 0 DOES NOT MEET CURRENT STANDARD
Approach Guardrail: 0 DOES NOT MEET CURRENT STANDARD
Approach Guardrail Ends: 0 DOES NOT MEET CURRENT STANDARD
Structural Evaluation: 5 BETTER THAN MINIMUM TOLERABLE
Deck Geometry: 4 MEETS MINIMUM TOLERABLE CRITERIA
Underclearances Vertical and Horizontal: N NOT APPLICABLE
Waterway Adequacy: 5 OCCASIONAL OVERTOPPING OF BRIDGE & ROADWAY WITH SIGNIFICANT TRAFFIC DELAYS
Approach Roadway Alignment: 5 BETTER THAN MINIMUM TOLERABLE CRITERIA
Scour Critical Bridges: 8 STABLE FOR SCOUR

DESIGN VEHICLE, RATING and POSTING

Load Rating Method (Inv): 2 ALLOWABLE STRESS(AS)
Posting Status: P POSTED FOR LOAD
Bridge Posting: 5 NO POSTING REQUIRED
Load Posting: 10 NO LOAD POSTING SIGNS ARE NEEDED
Posted Vehicle: POSTING NOT REQUIRED
Posted Weight (tons):
Design Load: 0 OTHER OR UNKNOWN

INSPECTION

Insp. Date: 082018 **Insp. Freq. (months):** 24 **X-Ref. Route:** **X-Ref. BrNum:**

INSPECTION SUMMARY and NEEDS

8/13/2018 Bridge post welds are cracked along their lower bases and need repairs. Post are bent. Standard approach rail should be installed. Abutment 1 has rotated approx. 2-1/4" in4' and should be monitored till repairs are made. End wing section upstream has rotated approx. 13". Town should consider adding knee wall along abutments if hydraulically adequate to do so. MJK AC

*07/14/2017 - Special inspection of 28' span H-pile with timber deck bridge. Bridge is considered a "Long structure" and will be added to the NBI inventory. Recent high water caused severe erosion behind each abutment which has been filled in with boulders and gravel. The north abutment has tipped forward approximately 6" rotating along a horizontal pour line just above the ledge streambed. The abutment needs to be monitored fo any further movement and should be considered for augmentation with a gravity type knee wall off the ledge streambed to help stabilize. A concrete wing extension should also be added that extends several feet upstream on a more obtuse angle along the upstream end of the northern abutment, where the wing is damaged. If the north abutment does continue to rotate, then it will need full replacement. The bridge does appear to be hydraulically inadequate (undersized). It may be necessary to lower the substructure condition rating if the northern abutment continues to list. Note: * The 5 axle semi-truck schematic on the posting sign is incorrect, as it is showing only 4 axles. ~ MJ*

APPENDIX D
HYDRAULIC STUDY

VERMONT

State of Vermont
Structures and Hydraulics Section
One National Life Drive
Montpelier, Vermont 05633-5001
vtrans.vermont.gov

[phone] 802-371-7326
[fax] 802-828-3566
[ttd] 800-253-0191

Agency of Transportation

TO: Richard Hosking, District 5 Project Manager
Ashley Bishop, District 5 Technician

CC: Jaron Borg, ANR River Management Engineer
Alison Dickinson, Ripton Town Clerk

FROM: Keith Friedland, Hydraulics

DATE: July 24, 2018

SUBJECT: Ripton TH-25, Old Town Road, over the South Branch Middlebury River
Site location: intersection with VT-125, mm 2.0
GPS coordinates: 43.967380, -73.030533

We have completed our hydraulic study for the above referenced site, and offer the following for your use:

Hydrology

The following physical characteristics are descriptive of this drainage basin:

Drainage Area	16 square miles
Land Cover	Forest
Avg. Drainage Basin Slope	4.8 %
Water Bodies and Wetlands (NLCD 2006)	1.5 %

Using the USGS hydrologic method, the following design flow rates were selected:

Annual Exceedance Probability (AEP)	Flow Rate in Cubic Feet per Second (cfs)	
43 %	720	
10 %	1,300	
4 %	1,700	Design Flow – Local Road
2 %	2,100	
1 %	2,500	Check Flow

Channel Morphology

The channel for this perennial stream is sinuous with an estimated local channel slope of 2%. Field measurements of bankfull width varied from 40 to 48 feet at a bankfull depth of 2.0 to 2.5 feet upstream and downstream of the structure. The Vermont Hydraulic Geometry Relationships anticipate a bankfull width of 44.4 feet for stream channels in equilibrium at this watershed size. There is exposed ledge upstream and downstream of the structure.

Existing Conditions

The existing structure is a timber deck bridge on steel girders with a clear span of 27.8 feet and a clear height of

12.5 feet, providing an approximate waterway opening of 350 square feet. The concrete bridge abutments are founded on ledge and in poor condition.

Our calculations, field observations and measurements indicate the existing structure does meet current standards of the VTrans Hydraulic Manual. However, it does not meet the state stream equilibrium standards for bankfull width (span length). The existing structure constricts the channel width, resulting in an increased potential for debris blockage. This complication is known to cause ponding at the inlet, increase stream velocity and scour at the outlet, and may also lead to erosion and failure of channel banks. This structure results in a headwater depth of approximately 7.4 feet at 4% AEP and 9.8 feet at 1% AEP.

Replacement Recommendations

In sizing a new structure, we attempt to select structures that meet both the current VTrans hydraulic standards, state environmental standards with regard to span length and opening height, and allow for roadway grade and other site constraints.

Based on the above considerations and the information available, we recommend any of the following structures as a replacement at this site:

- A bridge with a 44-foot opening span between face of abutments perpendicular to the flow and minimum clear height of 9.0 feet would provide a waterway area of approximately 400 square feet. If sloping stone fill is placed in front of each abutment and the waterway area is reduced, this structure will need to be larger. Stone Fill Type E4 will need to be used to build the channel through this structure. This structure will result in a headwater depth of 5.8 feet at 4% AEP and 7.6 feet at 1% AEP. This provides 1.0 foot of freeboard at the design AEP.

Note: *Any similar structure that fits the site conditions could be considered. Please contact the VTrans Hydraulics Section with alternatives that have significantly different inlet geometry, so headwater depths may be calculated.*

Stone Fill, Type IV should be used to protect any disturbed channel banks or roadway slopes at the structure's inlet and outlet, up to a height of at least one-foot above the top of the opening. The stone fill should not constrict the channel or structure opening.

Prior to any action toward the implementation of any recommendations received from VTrans, stream type and structure size must be confirmed, and may be modified, by the VT ANR River Management Engineer to ensure compliance with state environmental standards for stream crossing structures. Regulatory authorities including the US Army Corps of Engineers may have additional concerns or requirements regarding this structure.

General Comments

Please note that while a site visit was made, these recommendations were made without the benefit of a survey and are based on limited information. The drainage area is large enough that if a survey of the site does become available, a more detailed model should be built for this structure.

It is always desirable for a new structure to have flared wingwalls, matched into the channel banks at the inlet and outlet, to smoothly transition flow and protect the structure and roadway approaches from erosion. The bottom of abutment footings should be at least six feet below the channel bottom, or to ledge, to prevent undermining. Abutments on piles should be designed to be free standing for a scour depth at least 6 feet below channel bottom. Any new structure should be properly aligned with the channel, span the natural channel width, and be constructed on a grade that matches the channel.

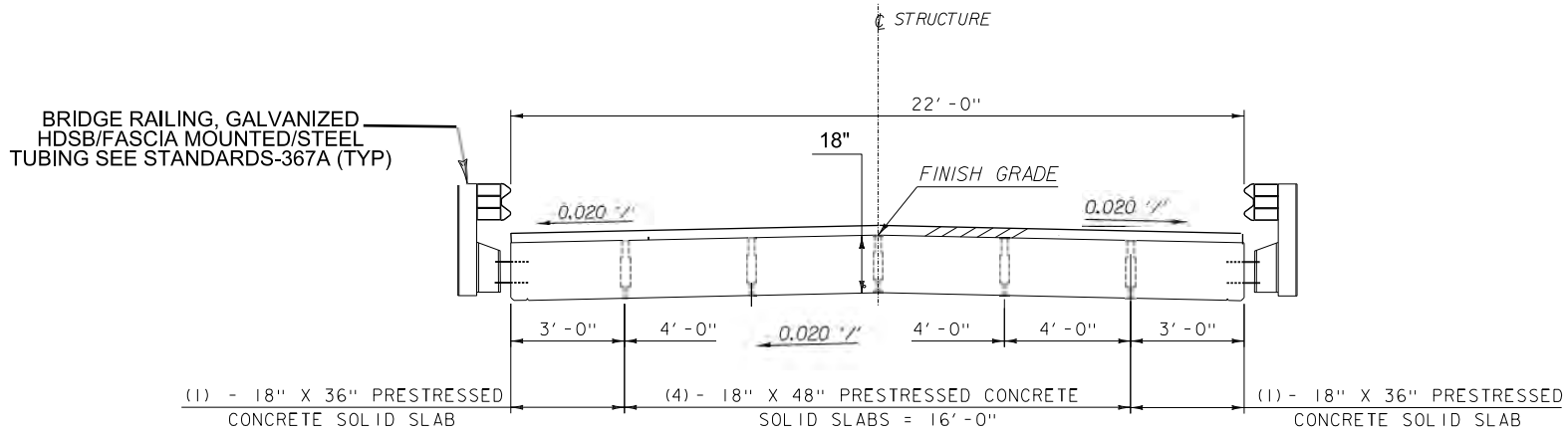
The structures recommended above have been sized with respect to hydraulic and environmental standards and

do not consider debris blockage complications. To minimize maintenance and ensure constructability, it is recommended that the structure height be adequate for the passage of debris.

The final decision regarding replacement of this structure must comply with state regulatory standards, and should take into consideration matching natural channel conditions, roadway grade, environmental concerns, safety, and other requirements.

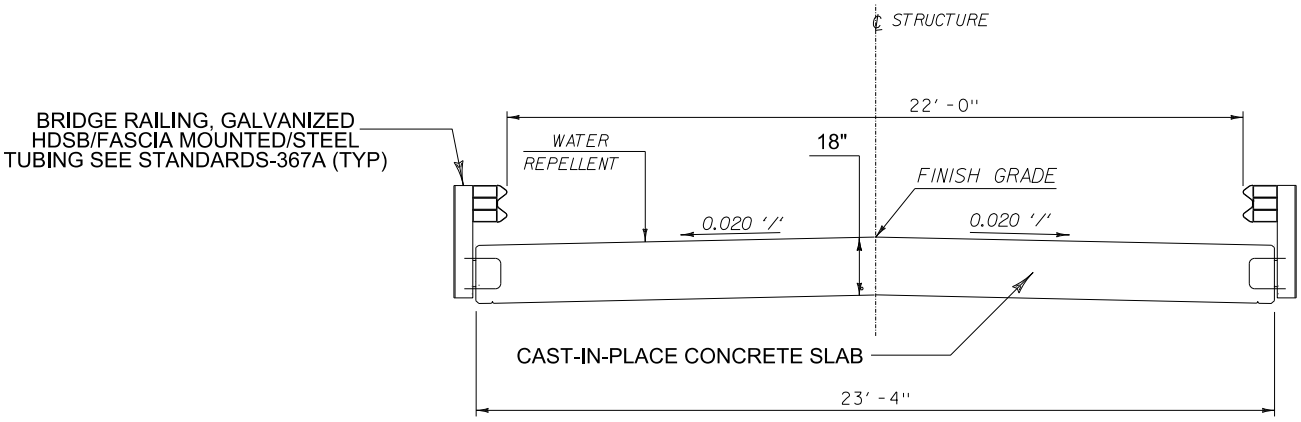
Please contact us if you have any questions or if we may be of further assistance.

APPENDIX E
TYPICAL SECTIONS



TYPICAL SECTION

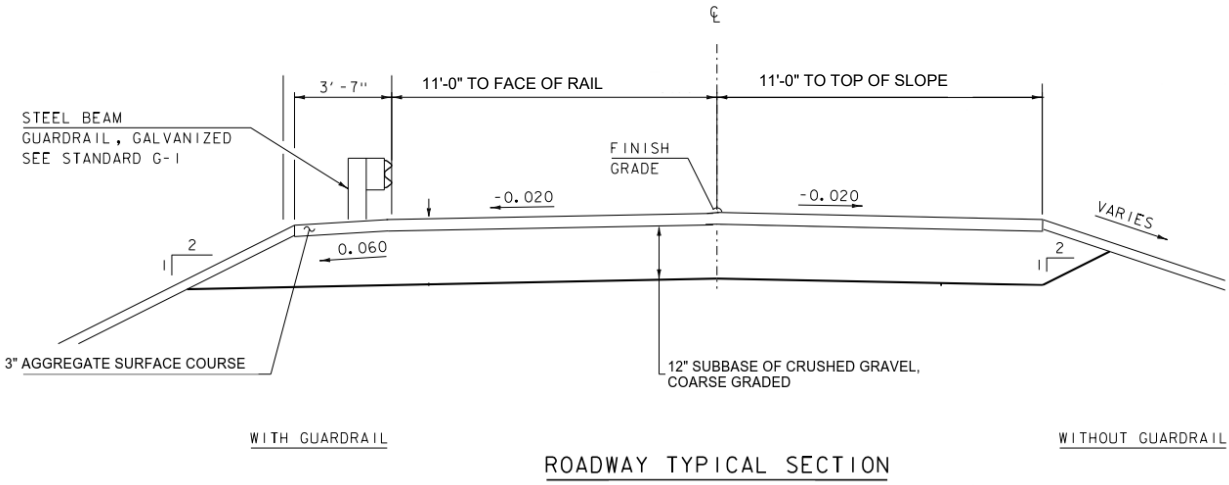
PRECAST CONCRETE UNITS
NOT TO SCALE



TYPICAL SECTION

CAST-IN-PLACE SLAB

NOT TO SCALE



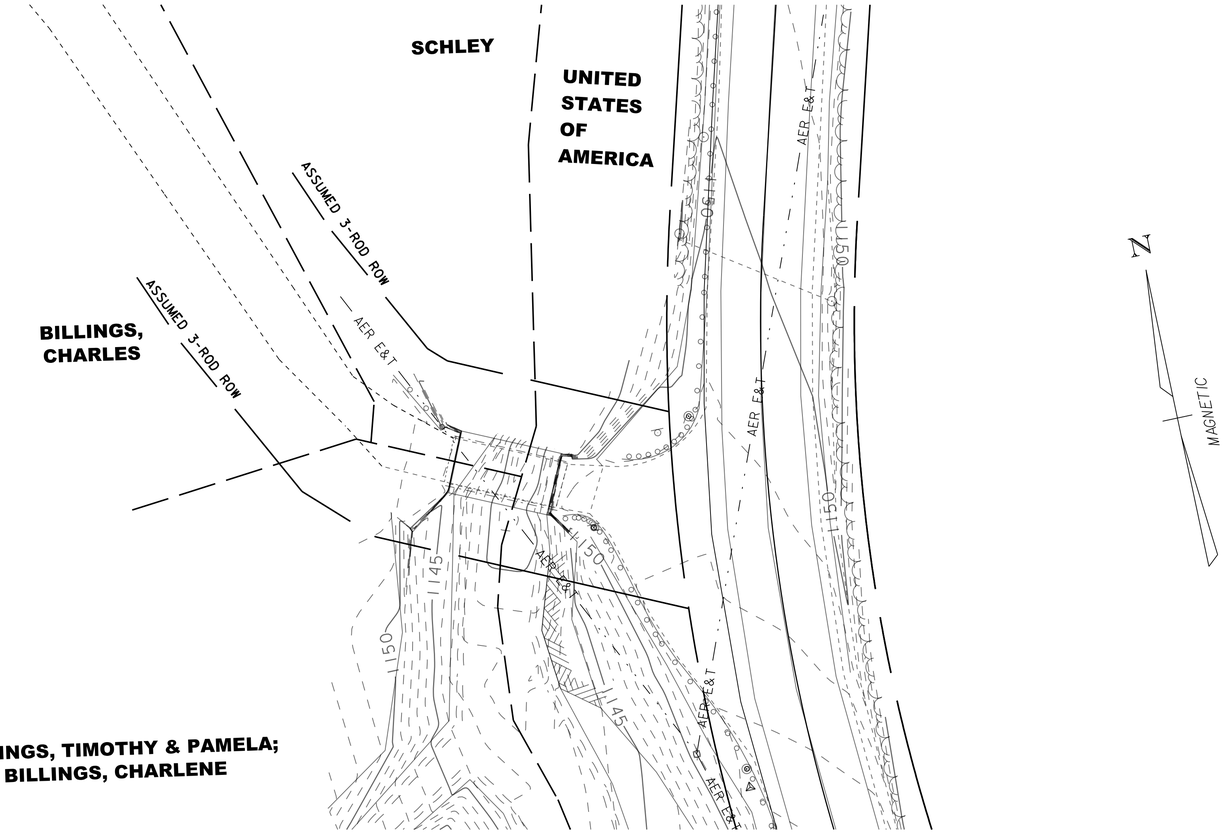
ROADWAY TYPICAL SECTION

APPENDIX F
DECISION MATRIX

Decision Matrix for Ripton, Old Town Road, Potash Bridge

	Maintain Traffic on Existing Bridge	Relocated Overhead Utilities	Design Speed	Impact to Stream and Wetland	Affected Property Owners	Bridge Length	Bridge Skew	Angle to VT 125	Rail to Rail Bridge Width	Total estimated cost - Precast Superstructure
Alternative 1	yes	no	20	no	Schley, USA	51 ft	0 degrees	90 degrees	22 feet	$ 578,000
Alternative 2	yes	yes	15	yes	Billings, Billings, USA	50 ft	0 degrees	90 degrees	22 feet	$ 610,000
Alternative 3	yes	yes	20	yes	Billings, Billings, USA	57 ft	60 degrees	60 degrees	22 feet	$ 656,000
Alternative 4	no	yes	15	no	None	50 ft	10 degrees	70 degrees	22 feet	$ 610,000
Alternative 1A	yes	no	20	no	Schley, USA	51 ft	0 degrees	90 degrees	16 feet	$ 498,000
Alternative 3A	yes	yes	20	yes	Billings, Billings, USA	57 ft	60 degrees	60 degrees	16 feet	$ 584,000

APPENDIX G
ALTERNATIVES
PLAN AND ELEVATION



EXISTING CONDITION

OLD TOWN ROAD

SCALE 1" = 20'-0"

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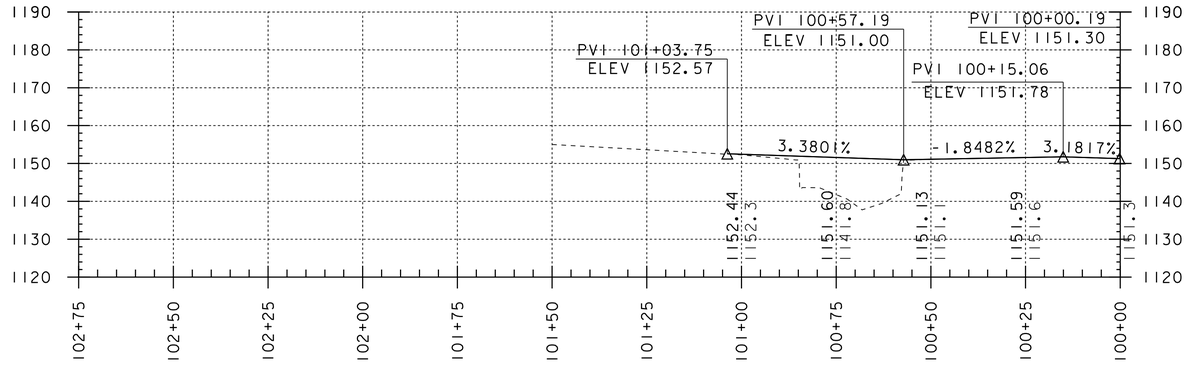

EXISTING PROFILE - OLD TOWN ROAD

SCALE 1" = 20'-0"

20 0 20

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TOWN OF RIPTON, VERMONT

OLD TOWN ROAD BRIDGE STUDY

SHEET TITLE

EXISTING CONDITIONS

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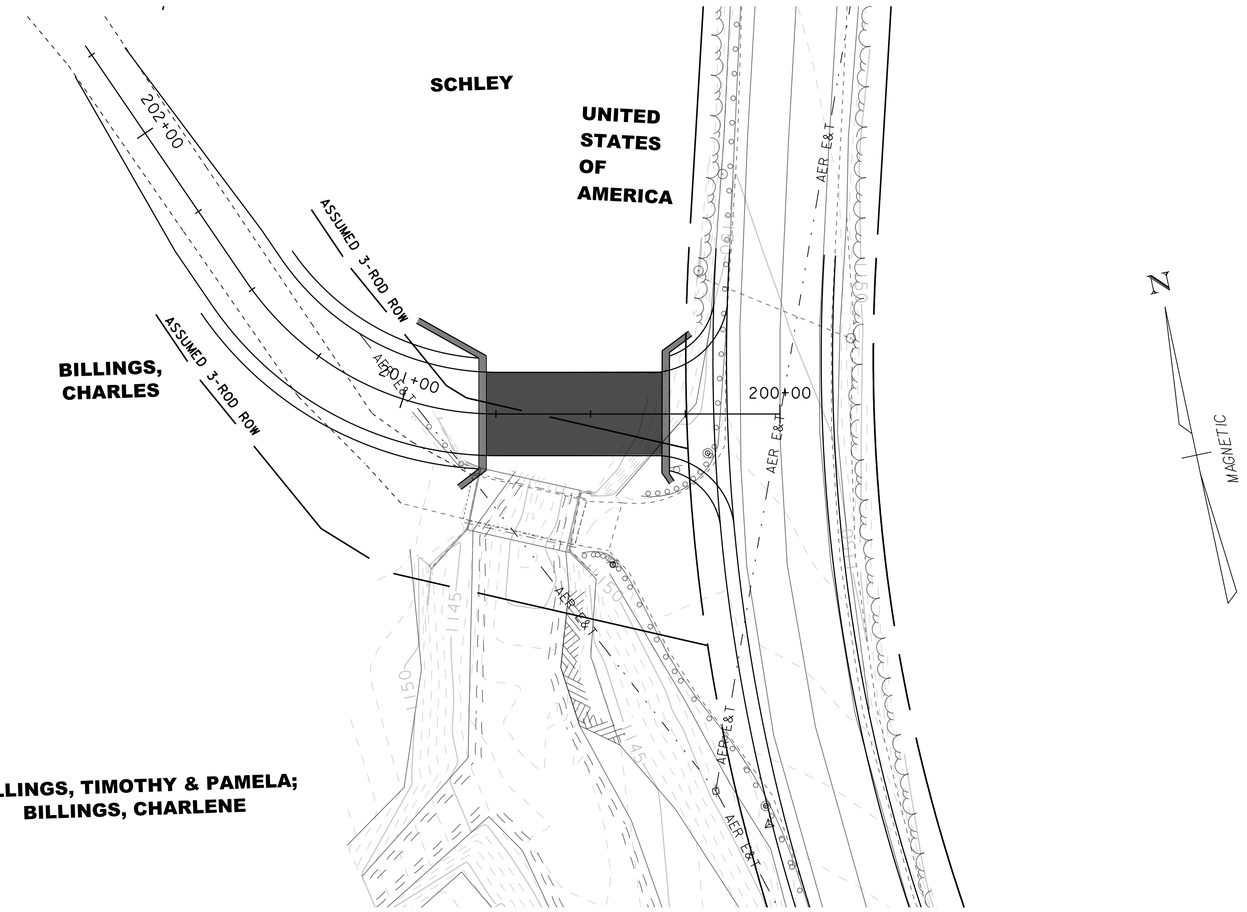

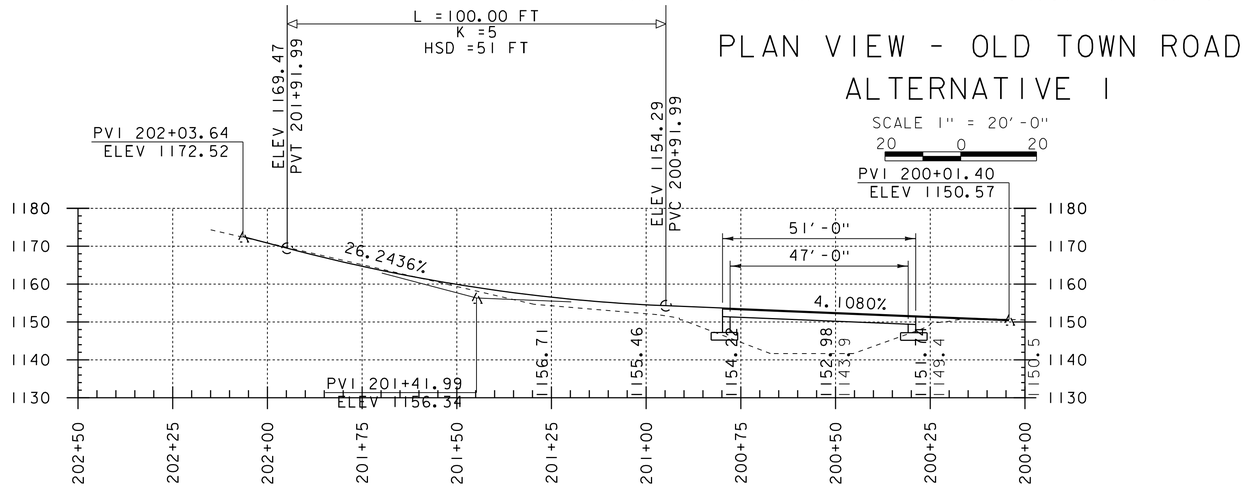

PLAN VIEW - OLD TOWN ROAD
ALTERNATIVE I

SCALE 1" = 20'-0"
20 0 20

PROFILE- OLD TOWN ROAD
ALTERNATIVE I AND IA

SCALE 1" = 20'-0"
20 0 20

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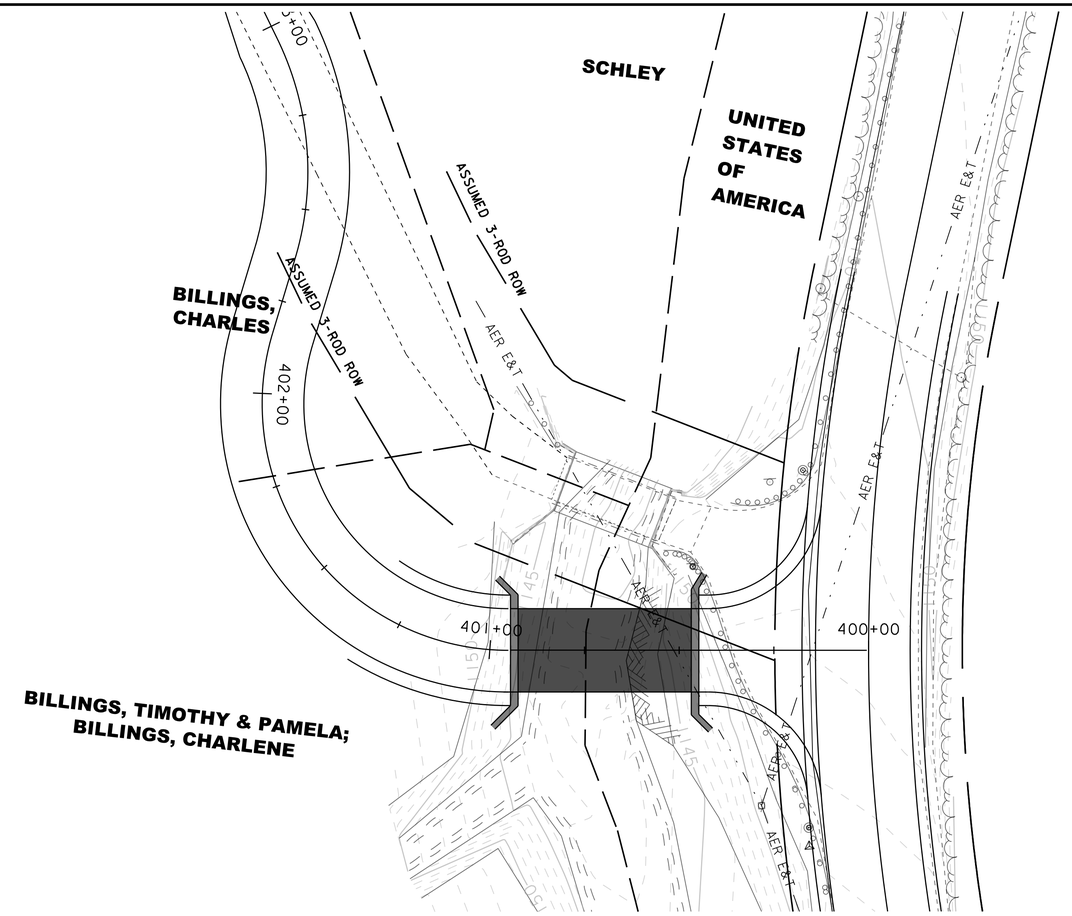

PLAN VIEW - OLD TOWN ROAD
ALTERNATIVE 2

SCALE 1" = 20'-0"
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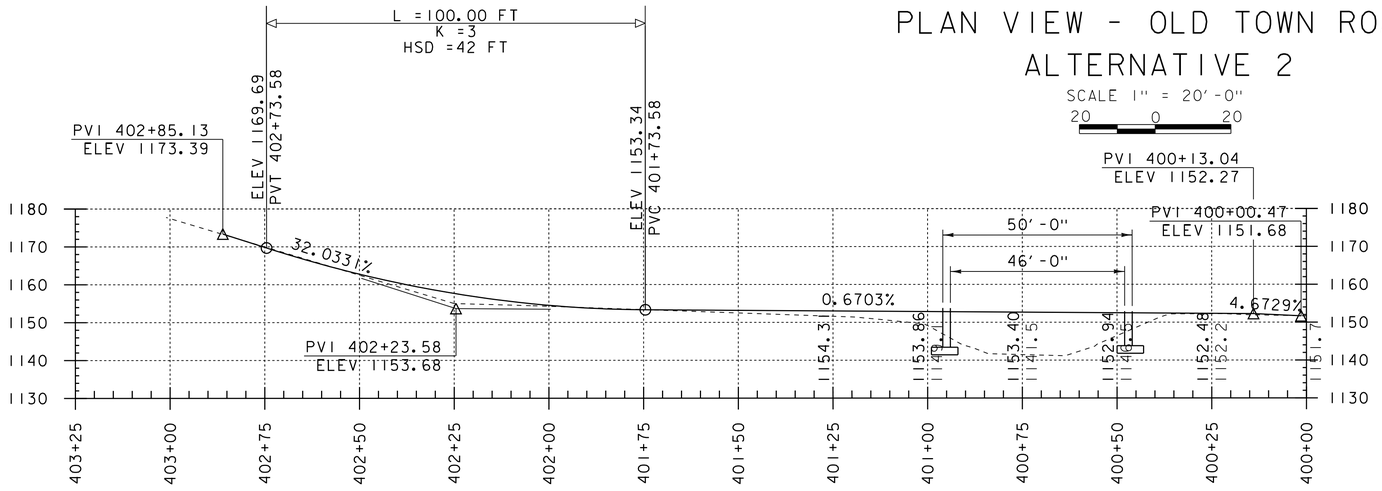

PROFILE - OLD TOWN ROAD
ALTERNATIVE 2

SCALE 1" = 20'-0"
20 0 20

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SHEET 3 OF 7

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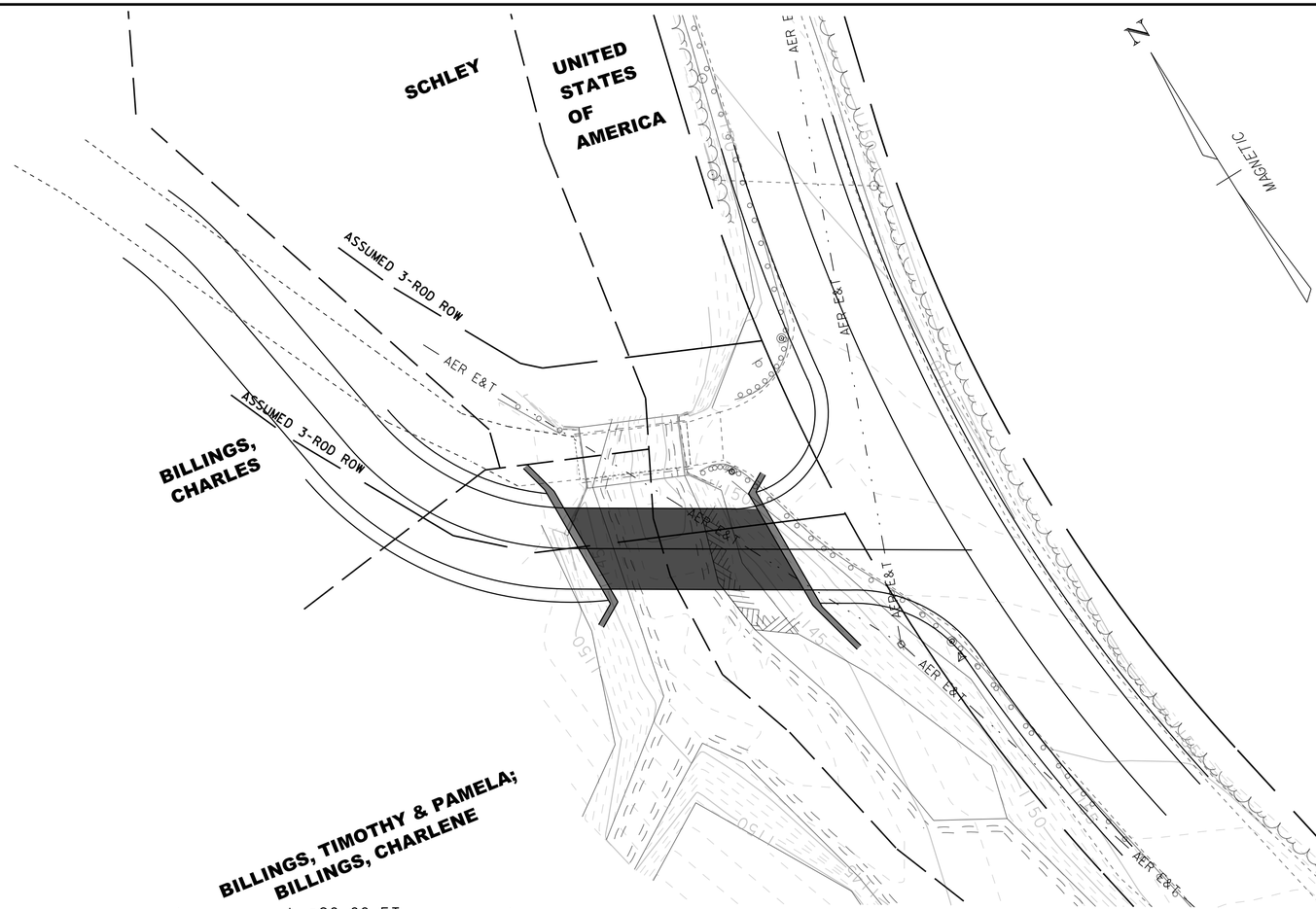

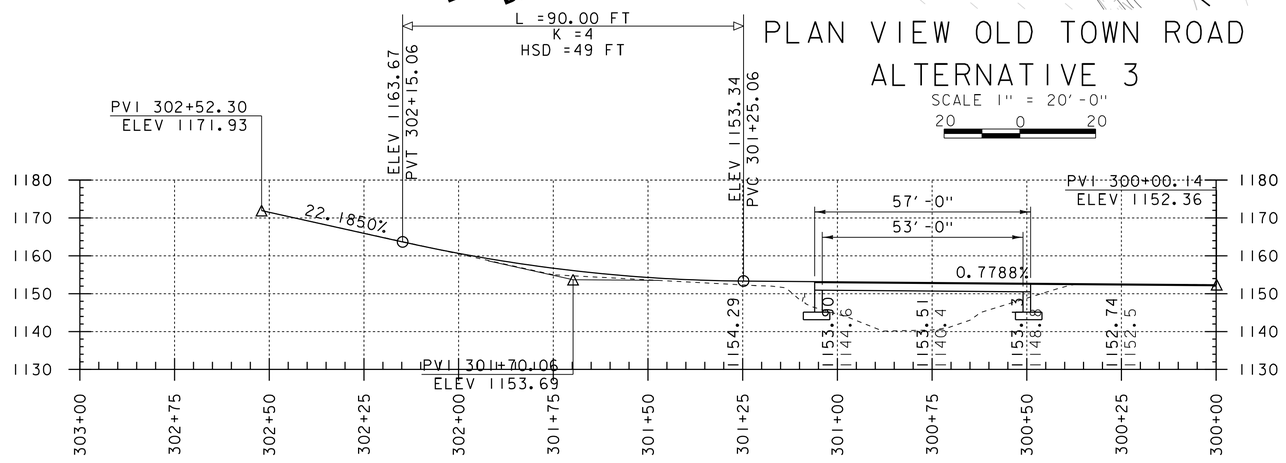

PLAN VIEW OLD TOWN ROAD ALTERNATIVE 3

SCALE 1" = 20'-0"

20 0 20

PROFILE - OLD TOWN ROAD ALTERNATIVE 3 AND 3A

SCALE 1" = 20'-0"

20 0 20

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SHEET 4 OF 7

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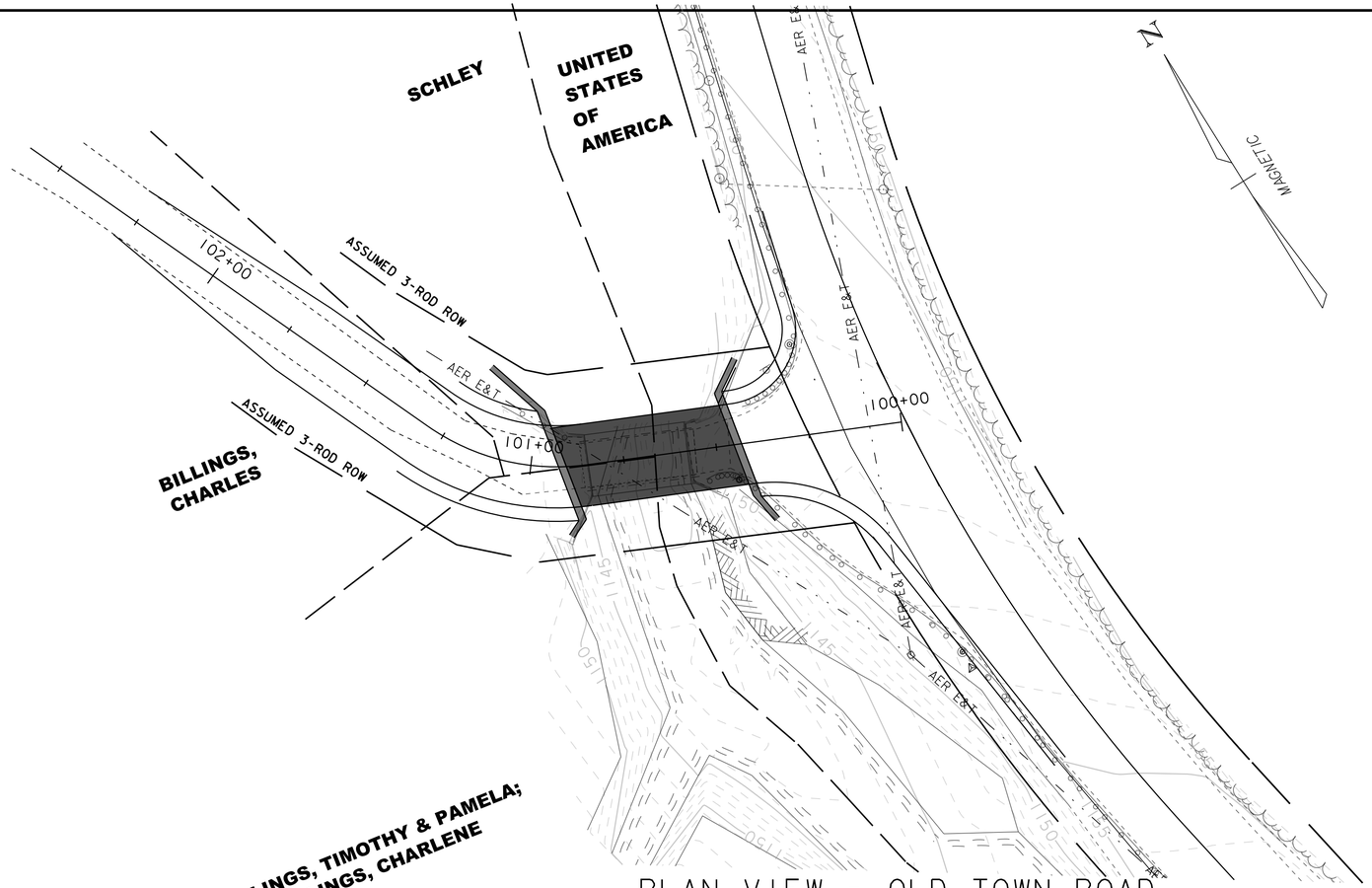

PLAN VIEW - OLD TOWN ROAD
ALTERNATIVE 4

SCALE 1" = 20'-0"
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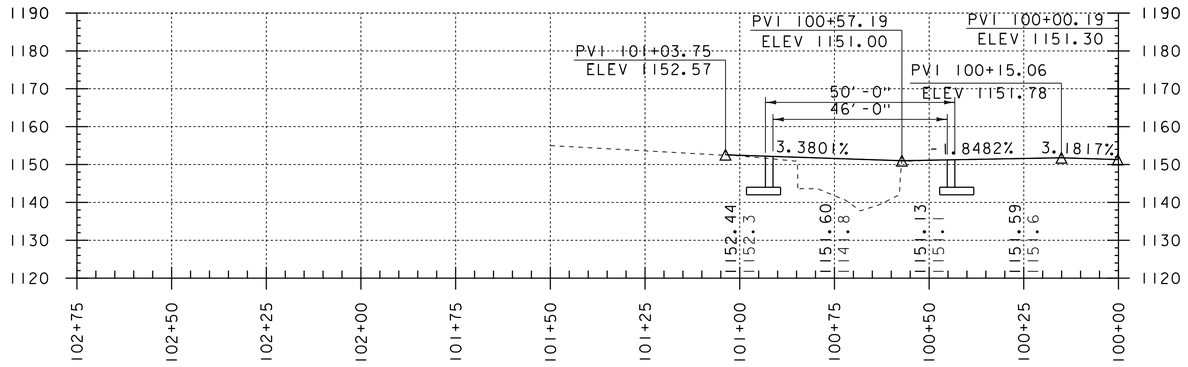

PROFILE - OLD TOWN ROAD
ALTERNATIVE 4

SCALE 1" = 20'-0"
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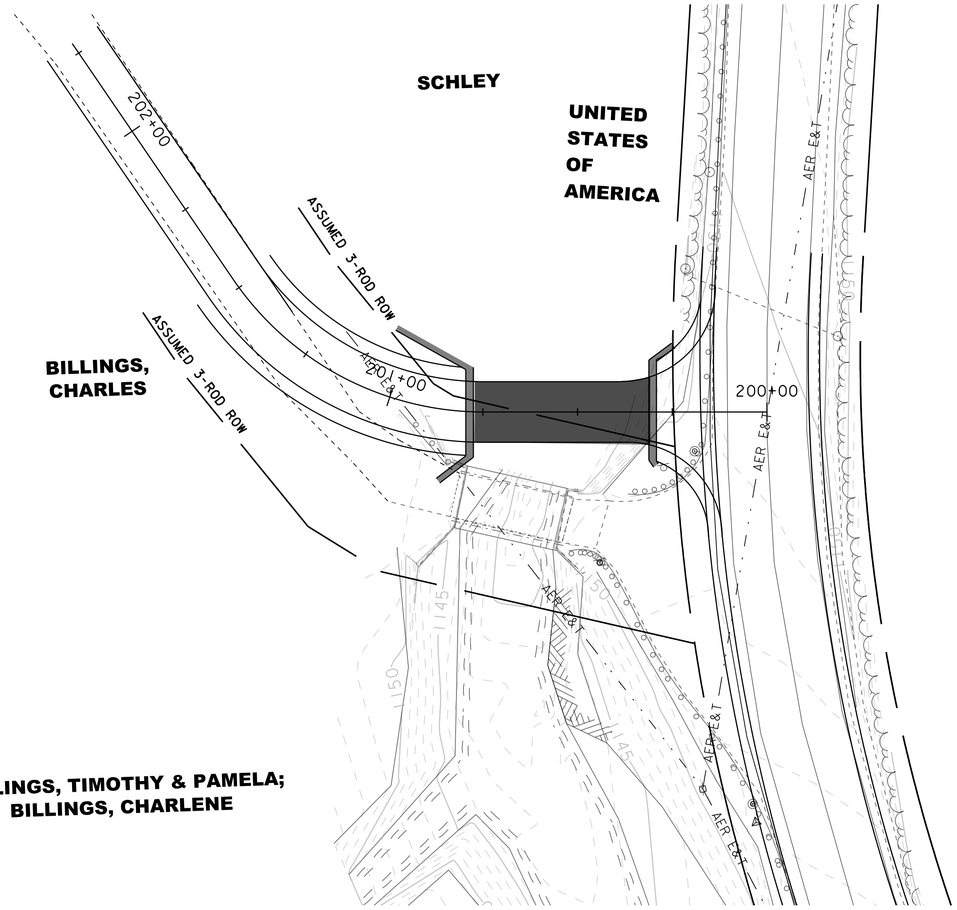

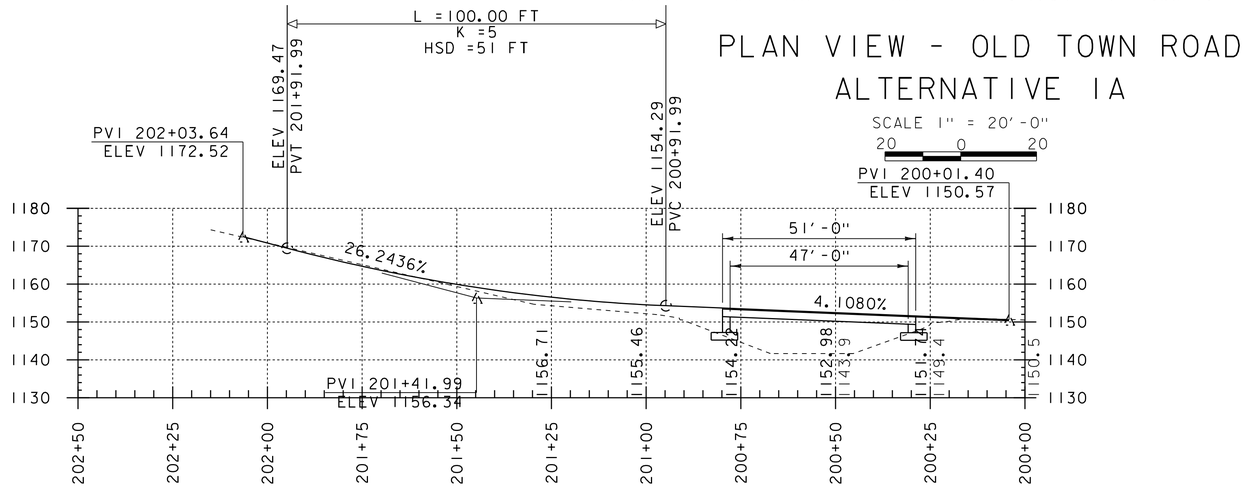

PLAN VIEW - OLD TOWN ROAD ALTERNATIVE IA

SCALE 1" = 20'-0"

20 0 20

PROFILE- OLD TOWN ROAD ALTERNATIVE I AND IA

SCALE 1" = 20'-0"

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SHEET 6 OF 7

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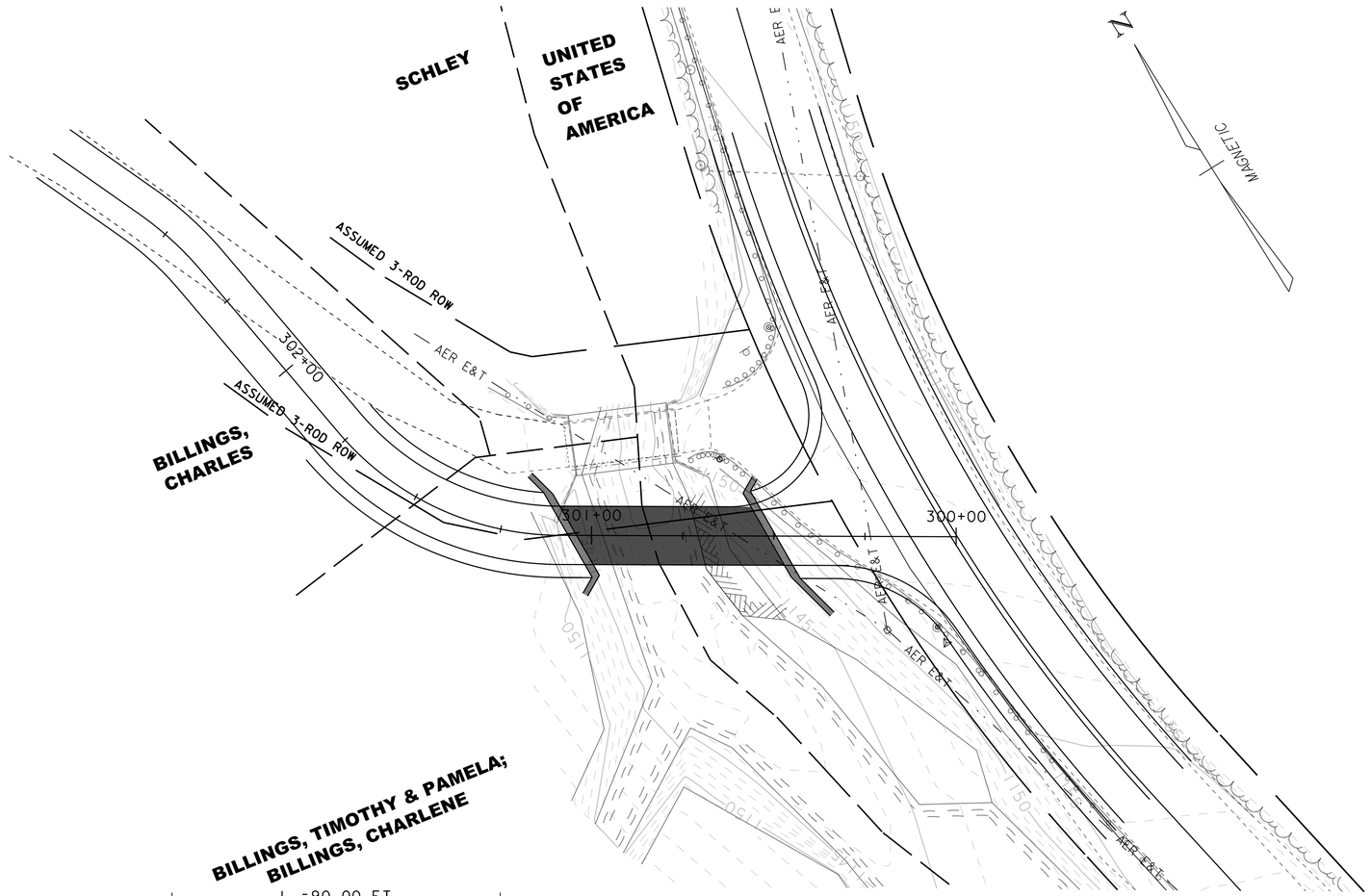
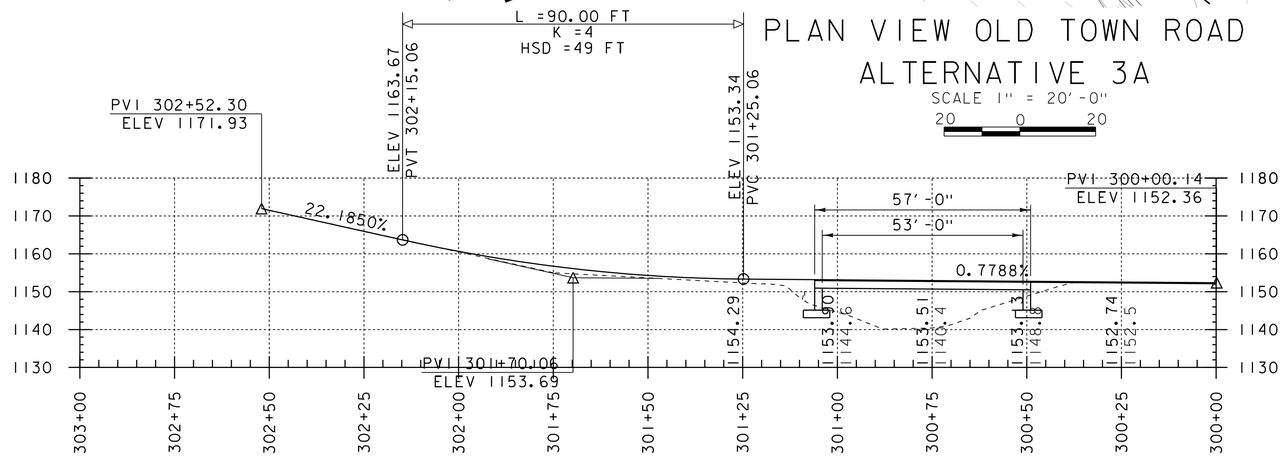


PLAN VIEW OLD TOWN ROAD
ALTERNATIVE 3A

SCALE 1" = 20'-0"



PROFILE - OLD TOWN ROAD
ALTERNATIVE 3 AND 3A

SCALE 1" = 20'-0"

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TEL: (802) 878-7661
www.dubois-king.com
BEDFORD, NH
RANDOLPH, VT
LACONIA, NH
SPRINGFIELD, VT

PROFESSIONAL SEAL

NOT FOR CONSTRUCTION CONCEPTUAL PLANS

NO.	DATE	REVISION

TOWN OF RIPTON, VERMONT

OLD TOWN ROAD BRIDGE STUDY

SHEET TITLE

ALTERNATIVE 3

DRAWN BY	DATE
MEM	$$DATE$$
CHECKED BY	D&K PROJECT #
JCH	625162
PROJ. ENG.	D&K ARCHIVE #
MEM	

DRAWING NUMBER

7

SHEET 7 OF 7

$FILE$

APPENDIX H

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

DuBois & King inc.

☐ Randolph, VT 05060 (802) 728-3376
☐ Bedford, NH 03110 (603) 637-1043
☒ S. Burlington, VT 05403 (802) 878-7661
☐ Laconia, NH 03246 (603) 524-1166

Engineering ● Planning ● Development ● Management

PROJECT: Ripton Old Town Road BR 6

SHEET NO. 1 OF 1

CALCULATED BY: MEM DATE: 12-Jul-19

SCALE:

ALTERNATIVE 1, WIDTH OF 22 FEET, DOWNSTREAM LOCATION

ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT
201.10	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	LS	1	$10,000.00	$10,000.00
203.15	COMMON EXCAVATION	CY	95	$18.00	$1,710.00
203.30	EARTH BORROW	CY	1070	$18.00	$19,260.00
203.16	SOLID ROCK EXCAVATION	CY	10	$100.00	$1,000.00
204.25	STRUCTURE EXCAVATION	CY	155	$30.00	$4,650.00
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	155	$40.00	$6,200.00
301.15	SUBBASE OF GRAVEL	CY	210	$40.00	$8,400.00
401.10	AGGREGATE SURFACE COURSE	CY	55	$55.00	$3,025.00
501.38	HIGH PERFORMANCE CONCRETE, CLASS PCS (FPQ)	CY	130	$700.00	$165,000.00
507.11	REINFORCING STEEL, LEVEL I (EPOXY COATED)	LB	23400	$1.30	$30,420.00
510.24	GROUTING SHEAR KEYS	LF	255	$25.00	$6,375.00
514.10	WATER REPELLENT, SILANE	GAL	12	$75.00	$900.00
525.44	BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING	LF	90	$300.00	$27,000.00
529.15	REMOVAL OF STRUCTURE	LS	1	$15,000.00	$15,000.00
531.16	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	EA	24	$300.00	$7,200.00
613.06	STONE FILL, STREAM BED MATERIAL (E-STONE, TYPE IV)	CY	45	$65.00	$2,925.00
621.06	ANCHOR FOR STEEL BEAM RAIL	EA	2	$900.00	$1,800.00
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	100	$25.00	$2,500.00
630.15	FLAGGERS	HR	150	$30.00	$4,500.00
631.16	TESTING EQUIPMENT CONCRETE	LS	1	$1,000.00	$1,000.00
635.11	MOBILIZATION/DEMOBILIZATION	LS	1	$43,000.00	$43,000.00
641.10	TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
	EROSION CONTROL	LS	1	$20,000.00	$20,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X36")	LF	102	$520.00	$53,040.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	204	$650.00	$132,600.00

Construction:

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST TOTAL: $578,000.00

Note:

In providing opinions of probable construction cost, the Client understands that D&K has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing, and that our Opinion of Probable Construction Costs are made on the basis of our professional judgment and experience. D&K makes no warranty, expressed or implied, that the bids or the negotiated cost of the Work will not vary from the Opinion of Probable Construction Cost provided herein.

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Engineering ● Planning ● Development ● Management

PROJECT: Ripton Old Town Road BR 6

SHEET NO. 1 OF 1

CALCULATED BY: MEM DATE: 12-Jul-19

SCALE:

ALTERNATIVE 2, WIDTH OF 22 FEET, UPSTREAM LOCATION NO SKEW

ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT
201.10	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	LS	1	$10,000.00	$10,000.00
203.15	COMMON EXCAVATION	CY	95	$18.00	$1,710.00
203.30	EARTH BORROW	CY	1990	$18.00	$35,820.00
203.16	SOLID ROCK EXCAVATION	CY	10	$100.00	$1,000.00
204.25	STRUCTURE EXCAVATION	CY	250	$30.00	$7,500.00
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	250	$40.00	$10,000.00
301.15	SUBBASE OF GRAVEL	CY	350	$40.00	$14,000.00
401.10	AGGREGATE SURFACE COURSE	CY	90	$55.00	$4,950.00
501.38	HIGH PERFORMANCE CONCRETE, CLASS PCS (FPQ)	CY	110	$700.00	$165,000.00
507.11	REINFORCING STEEL, LEVEL I (EPOXY COATED)	LB	19800	$1.30	$25,740.00
510.24	GROUTING SHEAR KEYS	LF	250	$25.00	$6,250.00
514.10	WATER REPELLENT, SILANE	GAL	12	$75.00	$900.00
525.44	BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING	LF	88	$300.00	$26,400.00
529.15	REMOVAL OF STRUCTURE	LS	1	$15,000.00	$15,000.00
531.16	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	EA	24	$300.00	$7,200.00
613.06	STONE FILL, STREAM BED MATERIAL (E-STONE, TYPE IV)	CY	45	$65.00	$2,925.00
621.06	ANCHOR FOR STEEL BEAM RAIL	EA	2	$900.00	$1,800.00
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	375	$25.00	$9,375.00
630.15	FLAGGERS	HR	150	$30.00	$4,500.00
631.16	TESTING EQUIPMENT CONCRETE	LS	1	$1,000.00	$1,000.00
635.11	MOBILIZATION/DEMOBILIZATION	LS	1	$46,000.00	$46,000.00
641.10	TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
	EROSION CONTROL	LS	1	$20,000.00	$20,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X36")	LF	100	$520.00	$52,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	200	$650.00	$130,000.00

Construction:

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST TOTAL: $610,000.00

Note:

In providing opinions of probable construction cost, the Client understands that D&K has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing, and that our Opinion of Probable Construction Costs are made on the basis of our professional judgment and experience. D&K makes no warranty, expressed or implied, that the bids or the negotiated cost of the Work will not vary from the Opinion of Probable Construction Cost provided herein.

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Engineering • Planning • Development • Management

PROJECT: Ripton Old Town Road BR 6

SHEET NO. 1 OF 1

CALCULATED BY: MEM DATE: 12-Jul-19

SCALE:

ALTERNATIVE 3, WIDTH OF 22 FEET, UPSTREAM LOCATION SKEWED

ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT
201.10	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	LS	1	$10,000.00	$10,000.00
203.15	COMMON EXCAVATION	CY	95	$18.00	$1,710.00
203.30	EARTH BORROW	CY	1680	$18.00	$30,240.00
203.16	SOLID ROCK EXCAVATION	CY	10	$100.00	$1,000.00
204.25	STRUCTURE EXCAVATION	CY	215	$30.00	$6,450.00
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	215	$40.00	$8,600.00
301.15	SUBBASE OF GRAVEL	CY	310	$40.00	$12,400.00
401.10	AGGREGATE SURFACE COURSE	CY	75	$55.00	$4,125.00
501.38	HIGH PERFORMANCE CONCRETE, CLASS PCS (FPQ)	CY	115	$700.00	$165,000.00
507.11	REINFORCING STEEL, LEVEL I (EPOXY COATED)	LB	20700	$1.30	$26,910.00
510.24	GROUTING SHEAR KEYS	LF	285	$25.00	$7,125.00
514.10	WATER REPELLENT, SILANE	GAL	12	$75.00	$900.00
525.44	BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING	LF	102	$300.00	$30,600.00
529.15	REMOVAL OF STRUCTURE	LS	1	$15,000.00	$15,000.00
531.16	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	EA	24	$300.00	$7,200.00
613.06	STONE FILL, STREAM BED MATERIAL (E-STONE, TYPE IV)	CY	45	$65.00	$2,925.00
621.06	ANCHOR FOR STEEL BEAM RAIL	EA	2	$900.00	$1,800.00
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	325	$25.00	$8,125.00
630.15	FLAGGERS	HR	150	$30.00	$4,500.00
631.16	TESTING EQUIPMENT CONCRETE	LS	1	$1,000.00	$1,000.00
635.11	MOBILIZATION/DEMOBILIZATION	LS	1	$47,000.00	$47,000.00
641.10	TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
	EROSION CONTROL	LS	1	$20,000.00	$20,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X36")	LF	114	$600.00	$68,400.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	228	$720.00	$164,160.00

Construction:

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST TOTAL: $656,000.00

Note:

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Engineering ● Planning ● Development ● Management

PROJECT: Ripton Old Town Road BR 6

SHEET NO. 1 OF 1

CALCULATED BY: MEM DATE: 12-Jul-19

SCALE:

ALTERNATIVE 4, WIDTH OF 22 FEET, EXISTING LOCATION

ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT
201.10	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	LS	1	$10,000.00	$10,000.00
203.15	COMMON EXCAVATION	CY	95	$18.00	$1,710.00
203.30	EARTH BORROW	CY	310	$18.00	$5,580.00
203.16	SOLID ROCK EXCAVATION	CY	10	$100.00	$1,000.00
204.25	STRUCTURE EXCAVATION	CY	150	$30.00	$4,500.00
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	150	$40.00	$6,000.00
301.15	SUBBASE OF GRAVEL	CY	90	$40.00	$3,600.00
401.10	AGGREGATE SURFACE COURSE	CY	25	$55.00	$1,375.00
501.38	HIGH PERFORMANCE CONCRETE, CLASS PCS (FPQ)	CY	130	$700.00	$165,000.00
507.11	REINFORCING STEEL, LEVEL I (EPOXY COATED)	LB	23400	$1.30	$30,420.00
510.24	GROUTING SHEAR KEYS	LF	255	$25.00	$6,375.00
514.10	WATER REPELLENT, SILANE	GAL	12	$75.00	$900.00
525.44	BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING	LF	90	$300.00	$27,000.00
528.10	ONE-WAY TEMPORARY BRIDGE	LS	1	$50,000.00	$50,000.00
529.15	REMOVAL OF STRUCTURE	LS	1	$15,000.00	$15,000.00
531.16	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	EA	24	$300.00	$7,200.00
613.06	STONE FILL, STREAM BED MATERIAL (E-STONE, TYPE IV)	CY	45	$65.00	$2,925.00
621.06	ANCHOR FOR STEEL BEAM RAIL	EA	2	$900.00	$1,800.00
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	100	$25.00	$2,500.00
630.15	FLAGGERS	HR	150	$30.00	$4,500.00
631.16	TESTING EQUIPMENT CONCRETE	LS	1	$1,000.00	$1,000.00
635.11	MOBILIZATION/DEMOBILIZATION	LS	1	$45,000.00	$45,000.00
641.10	TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
	EROSION CONTROL	LS	1	$20,000.00	$20,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	102	$520.00	$53,040.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	204	$650.00	$132,600.00

Construction:

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST TOTAL: $610,000.00

Note:

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Engineering • Planning • Development • Management

PROJECT: Ripton Old Town Road BR 6

SHEET NO. 1 OF 1

CALCULATED BY: MEM DATE: 12-Jul-19

SCALE:

ALTERNATIVE 1A, WIDTH OF 16 FEET - DOWNSTREAM LOCATION

ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT
201.10	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	LS	1	$8,000.00	$8,000.00
203.15	COMMON EXCAVATION	CY	61	$18.00	$1,098.00
203.30	EARTH BORROW	CY	810	$18.00	$14,580.00
203.16	SOLID ROCK EXCAVATION	CY	10	$100.00	$1,000.00
204.25	STRUCTURE EXCAVATION	CY	140	$30.00	$4,200.00
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	140	$40.00	$5,600.00
301.15	SUBBASE OF GRAVEL	CY	145	$40.00	$5,800.00
401.10	AGGREGATE SURFACE COURSE	CY	35	$55.00	$1,925.00
501.38	HIGH PERFORMANCE CONCRETE, CLASS PCS (FPQ)	CY	115	$700.00	$165,000.00
507.11	REINFORCING STEEL, LEVEL I (EPOXY COATED)	LB	20700	$1.30	$26,910.00
510.24	GROUTING SHEAR KEYS	LF	153	$25.00	$3,825.00
514.10	WATER REPELLENT, SILANE	GAL	10	$75.00	$750.00
525.44	BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING	LF	90	$300.00	$27,000.00
529.15	REMOVAL OF STRUCTURE	LS	1	$15,000.00	$15,000.00
531.16	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	EA	16	$300.00	$4,800.00
613.06	STONE FILL, STREAM BED MATERIAL (E-STONE, TYPE IV)	CY	40	$65.00	$2,600.00
621.06	ANCHOR FOR STEEL BEAM RAIL	EA	2	$900.00	$1,800.00
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	100	$25.00	$2,500.00
630.15	FLAGGERS	HR	150	$30.00	$4,500.00
631.16	TESTING EQUIPMENT CONCRETE	LS	1	$1,000.00	$1,000.00
635.11	MOBILIZATION/DEMOBILIZATION	LS	1	$37,000.00	$37,000.00
641.10	TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
	EROSION CONTROL	LS	1	$20,000.00	$20,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	204	$650.00	$132,600.00

Construction:

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST TOTAL: $498,000.00

Note:

In providing opinions of probable construction cost, the Client understands that D&K has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing, and that our Opinion of Probable Construction Costs are made on the basis of our professional judgment and experience. D&K makes no warranty, expressed or implied, that the bids or the negotiated cost of the Work will not vary from the Opinion of Probable Construction Cost provided herein.

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Engineering • Planning • Development • Management

PROJECT: Ripton Old Town Road BR 6

SHEET NO. 1 OF 1

CALCULATED BY: MEM DATE: 12-Jul-19

CHECKED BY: DATE:

SCALE:

ALTERNATIVE 3A, WIDTH OF 16 FEET, UPSTREAM LOCATION SKEWED

ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT
201.10	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	LS	1	$8,000.00	$8,000.00
203.15	COMMON EXCAVATION	CY	61	$18.00	$1,098.00
203.30	EARTH BORROW	CY	1273	$18.00	$22,914.00
203.16	SOLID ROCK EXCAVATION	CY	10	$100.00	$1,000.00
204.25	STRUCTURE EXCAVATION	CY	190	$30.00	$5,700.00
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	190	$40.00	$7,600.00
301.15	SUBBASE OF GRAVEL	CY	210	$40.00	$8,400.00
401.10	AGGREGATE SURFACE COURSE	CY	50	$55.00	$2,750.00
501.38	HIGH PERFORMANCE CONCRETE, CLASS PCS (FPQ)	CY	100	$700.00	$165,000.00
507.11	REINFORCING STEEL, LEVEL I (EPOXY COATED)	LB	18000	$1.30	$23,400.00
510.24	GROUTING SHEAR KEYS	LF	171	$25.00	$4,275.00
514.10	WATER REPELLENT, SILANE	GAL	10	$75.00	$750.00
525.44	BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING	LF	102	$300.00	$30,600.00
529.15	REMOVAL OF STRUCTURE	LS	1	$15,000.00	$15,000.00
531.16	BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD	EA	16	$300.00	$4,800.00
613.06	STONE FILL, STREAM BED MATERIAL (E-STONE, TYPE IV)	CY	40	$65.00	$2,600.00
621.06	ANCHOR FOR STEEL BEAM RAIL	EA	2	$900.00	$1,800.00
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	325	$25.00	$8,125.00
630.15	FLAGGERS	HR	150	$30.00	$4,500.00
631.16	TESTING EQUIPMENT CONCRETE	LS	1	$1,000.00	$1,000.00
635.11	MOBILIZATION/DEMOBILIZATION	LS	1	$43,000.00	$43,000.00
641.10	TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
	EROSION CONTROL	LS	1	$20,000.00	$20,000.00
900.640	SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS EXTERIOR)(18"X48")	LF	265	$720.00	$190,800.00

Construction:

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST TOTAL: $584,000.00

Note:

In providing opinions of probable construction cost, the Client understands that D&K has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing, and that our Opinion of Probable Construction Costs are made on the basis of our professional judgment and experience. D&K makes no warranty, expressed or implied, that the bids or the negotiated cost of the Work will not vary from the Opinion of Probable Construction Cost provided herein.

APPENDIX I: CROWN CONSULTING ARCHAEOLOGY REPORT

Archaeological Resources Assessment Report for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont

Submitted to:

Robert M. Clark, P.E.
Project Engineer
Otter Creek Engineering, Inc.
404 East Main Street
P.O. Box 712
East Middlebury, VT 05740

Submitted by:

Charles Knight, Ph.D.
Crown Consulting Archaeology, LLC
PO Box 358
50 Main Street
Winooski, VT 05404-0358

June 16, 2022

CCA Report
No. 2022-021

Archaeological Resources Assessment Report for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont

Project Description

The Addison County Regional Planning Commission, with assistance from Otter Creek Engineering, Inc. proposes the Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont (Figure 1). The proposed project is a planning study for upgrades to the Ripton Old Town Road so that it could be used as an emergency vehicle access in the event of a catastrophic washout of Vermont Route 125 (Figure 2). Old Town Road had been identified in a prior ACRPC study as a possible route through Ripton in case of catastrophic washout of Route 125. For several decades, Old Town Road was considered a private dead-end road and was not included on the town highway map. The Old Centre Turnpike study concluded that Old Town Road is part of the original location of an historic turnpike route between Woodstock and Middlebury, and is a public right-of-way. An Archaeological Resources Assessment (ARA) of the proposed project 's study area was carried out by Crown Consulting Archaeology, LLC as part of the Section 106 permitting process.

The Archaeological Resources Assessment (ARA)

The goal of an ARA (or "review") is to identify portions of a specific project's APE that have the potential for containing pre-Contact and/or historic sites. An ARA is to be accomplished through a "background search" and a "field inspection" of the project area. For this study, reference materials were reviewed following established guidelines. Resources examined included the National Register of Historic Places (NRHP) files; the Historic Sites and Structures Survey; and the USGS master archaeological maps that accompany the Vermont Archaeological Inventory (VAI). Relevant town histories and nineteenth-century maps also were consulted. Based on the background research, general contexts were derived for pre-Contact and historic resources in the study area.

Archaeological Site Potential

The proposed project's study area is the extents of the Ripton Old Town Road, a linear Class 4 road that connects two sections of the modern VT Rte.125 in Ripton, Vermont. It is an upland route, taking the traveler away from the edge of the Middlebury River, unlike VT Rte. 125 which follows the river bank below the Ripton Old Town Road alignment. There are no known pre-Contact Native American archaeological sites within or adjacent to the proposed project study area, and due to the steep slope throughout the project area, the area is not sensitive for pre-Contact Native American sites. However, several historic period sites are known to exist adjacent to the Ripton Old Town Road, in two locations (see Figure 1).

The first location is at the intersection of the Ripton Old Town Road and VT Rte. 125 (Figure 3). There, three historic period sites have been identified: VT-AD-598, VT-AD-1305, and VT-AD-1306. Of these, site VT-AD-1306 is located 40 m northwest of the

western end of the Ripton Old Town Road, on the north side of VT Rte. 125. Site VT-AD-598 is located 20 m south of Ripton Old Town Road, while site VT-AD-1305 is located adjacent to the northern edge of the Ripton Old Town Road near its intersection with VT Rte. 125. Site VT-AD-1305 consists of a building foundation and a large number of debris, which was thought to potentially reflect more recent garbage dumping and thus, not related to the foundation. The site has not been evaluated by any state institution; therefore, its significance is not known. No portions of these sites were observed from the edge of the Ripton Old Town Road during the field visit. Site VT-AD-1305, being the closest, was looked for from the road, but no portions of it were observed. It exists well beyond the edge limits of the existing Old Town Road.

The second cluster of known historic archaeological sites is in the middle of the Ripton Old Town Road, at a point where it crosses a small tributary of the Middlebury River, just north of where this tributary is created by the confluence of two smaller mountain streams. In total, four historic period sites are known from this general area (Figure 4). Site VT-AD-1310 and 1334 are located 10 m to the southwest of the stream crossing, on the upslope side of the road. However, there is no information given as to the nature of these two historic period sites in the Vermont Archaeological Inventory (VAI). East of the stream crossing, site VT-AD-1326 is located 20 m south of the Ripton Old Town Road, and upslope of it. This site consists of a stone-lined cellar hole and/or foundation, and is located adjacent to the Oak Ridge Trail, which veers south, off from the road. Finally, site VT-AD-602 is located 10 m north of the road, along the edge of a level fern terrace and consists of stone cairns. Therefore none of these sites are located within or on the edge limits of the existing Old Town Road.

Although several of these historic period sites are located within 10-20 m of the proposed project alignment, they are all located sufficiently away from it so as to not be disturbed by the proposed project which will be limited to the existing road corridor.

These historic period sites do not appear on any of the historic period maps, such as the 1857 Wallings map (Figure 5) or the historic 1871 Beers Atlas (Figure 6). Nor are they identified on the more recent 1902 or 1944 USGS maps (Figure 7). Since most of them have not yet been evaluated, or even described, it may be that they do not represent structures, which would have bene placed on the historic period maps. There are no structures along or adjacent to the proposed project alignment that are listed on either National Register or State Register of Historic Places.

Desk Review

As part of the desk review, the Vermont Division of Historic Preservation's (VDHP) 2015 predictive model matrix for identifying pre-Contact Native American archaeological sites is employed for the project area. As stated in the VDHP Guidelines: "The predictive model is intended to identify areas with a high potential for containing significant precontact Native American sites." A completed matrix for the proposed project is presented in Figure 8. As can be seen, the Old Town Road Reclassification (046-005) Project scores 24 on the Predictive Model, due to it being located within 90 m

several permanent streams (12), and within 90 m of the confluence of two of these mountain streams (12).

Site Visit

A field inspection of the project area was carried out on June 10, 2022 by Charles Knight, Principal Investigator of Crown Consulting Archaeology, LLC. Knight walked the entirety of the project alignment, since a locked gate near the western entrance did not permit the use of a vehicle. The Ripton Old Town Road is marked by both the corridor for the road itself, and the adjacent powerline, thus creating a wide corridor with relatively good visibility (Figure 9). The entire alignment is marked by steep slope throughout (Figures 10 & 11). The existing Ripton Old Town Road consists of 4 types of road surface. In the western third, the road consists of crushed stone up to a point where a log landing sits and some wood splitting machinery was located (Figure 12). From that point east until the stream crossing, the roadway consists of a dirt track (Figure 13). Beyond the stream crossing the dirt track disappears altogether replaced by an overgrown corridor and is, for the most part, impassable. This extends east until the road becomes a graded and gravel dirt road that is kept up, due to private residences along it. This section comprises the eastern third of the road.

The series of historic archaeological near the western intersection of Old Town Road and VT Rte. 125 were not identified during the field visit. Most of them are well away from the road edges, while VT-AD-1305 was not observed from the road edge, as discussed above.

The stream crossing is a location where 4 historic period sites have been identified (see Figure 4). None of these sites were observed during the field visit. The stream crossing itself is deeply incised and drops sharply on its northern side (Figure 14). The southwest corner, where sites VT-AD-1310 and VT-AD-1334 are located, sits at least 5 m above the roadway, since the curve of the road cuts into the slope. As a result, neither of these sites will be disturbed by the proposed project. The fern terrace was observed just east of the stream crossing on the northern side of the road (Figure 15). No portion of site VT-AD-602 were observed along the edges of the fern terrace, nor along the edge of the roadway. As mentioned above, site VT-AD-1326 sits well away from the road, next to the hiking trail. The entire stream crossing location is steeply sloped.

The eastern third of the Ripton Old Town Road accesses a series of private residences. While there are some relatively level sections, they are not archaeologically sensitive, since they are not near any sensitivity factors, such as water (Figure 16). Like the western portion, the eastern third is marked by hilly terrain (Figure 17) and steep slopes (Figure 18). A lidar map of the entire alignment demonstrated the steepness throughout the project area (Figure 19). No areas of archaeological sensitivity or historic period sites were observed anywhere along the project's APE.

Conclusions

The Addison County Regional Planning Commission proposes the Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont. Crown Consulting Archaeology, LLC conducted an Archaeological Resources Assessment of the proposed project alignment and no areas were identified as sensitive for pre-Contact Native American sites. Several historic period sites are known adjacent to the project alignment, but these are all located far enough away from the edges of the alignment corridor as to not be disturbed by the project. Provided the proposed upgrade project of the road stays within the limits of the existing road and powerline corridor, then no archaeological resources will be disturbed, and no additional archaeological study will be recommended as part of the Section 106 permitting process. However, if the road will be widened, especially at its western intersection with VT Rte. 125, or at the stream crossing, then additional archaeological study may be required. In general, however, there was nothing identified along the margins of the existing road and powerline corridor cut into steep slope, which represent the northern-most slopes of Mt. Moosalamoo.

Thank you for working with us on this project. Please let me know if you have any questions or comments.

Charles Knight, Ph.D.
Principal Investigator

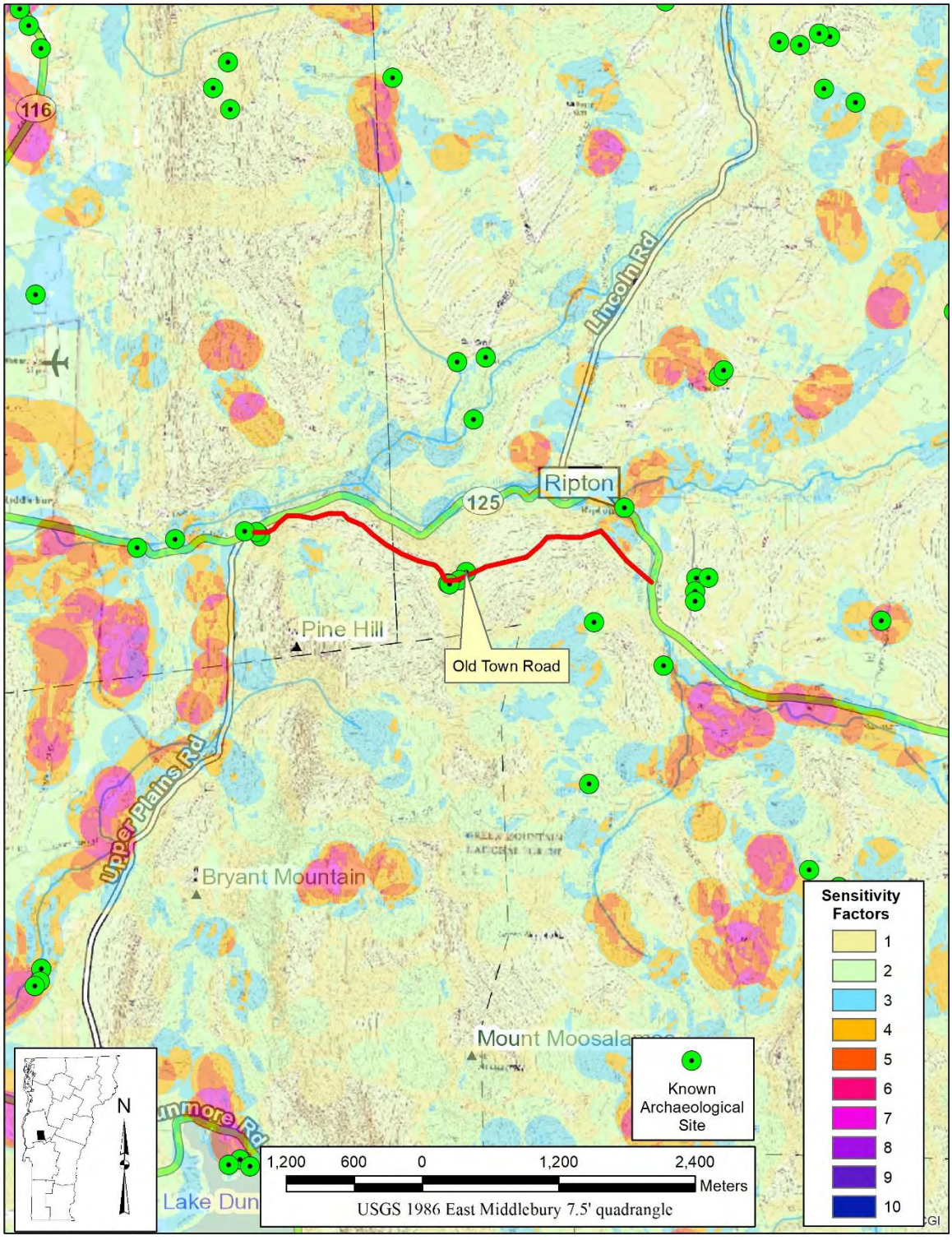


Figure 1. Map showing the location of the proposed Old Town Road Reclassification (046-005) Project, in relation to known archaeological sites and archaeological sensitivity factors, Ripton, Addison County, Vermont.

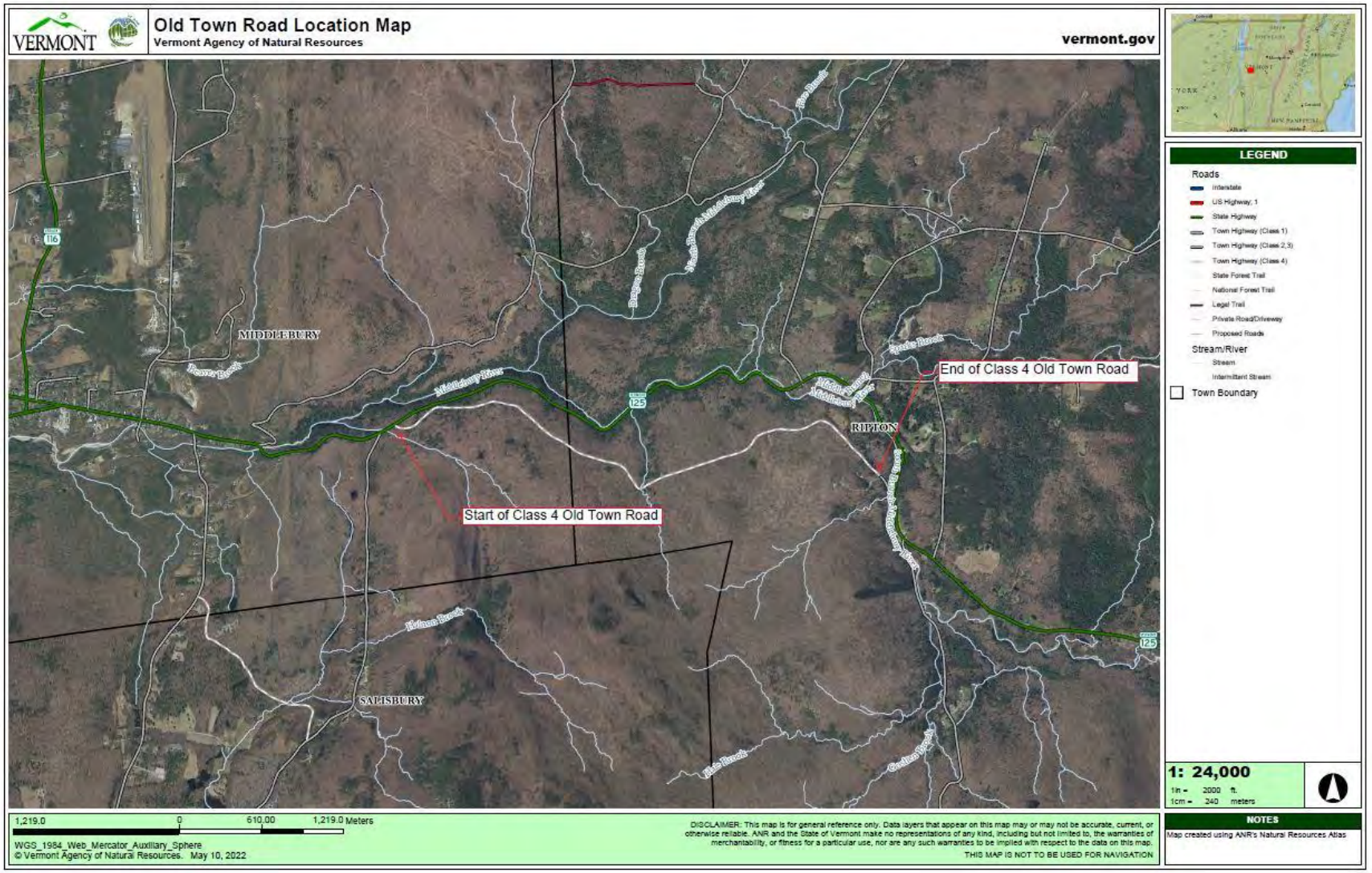


Figure 2. Aerial photograph showing the limits of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

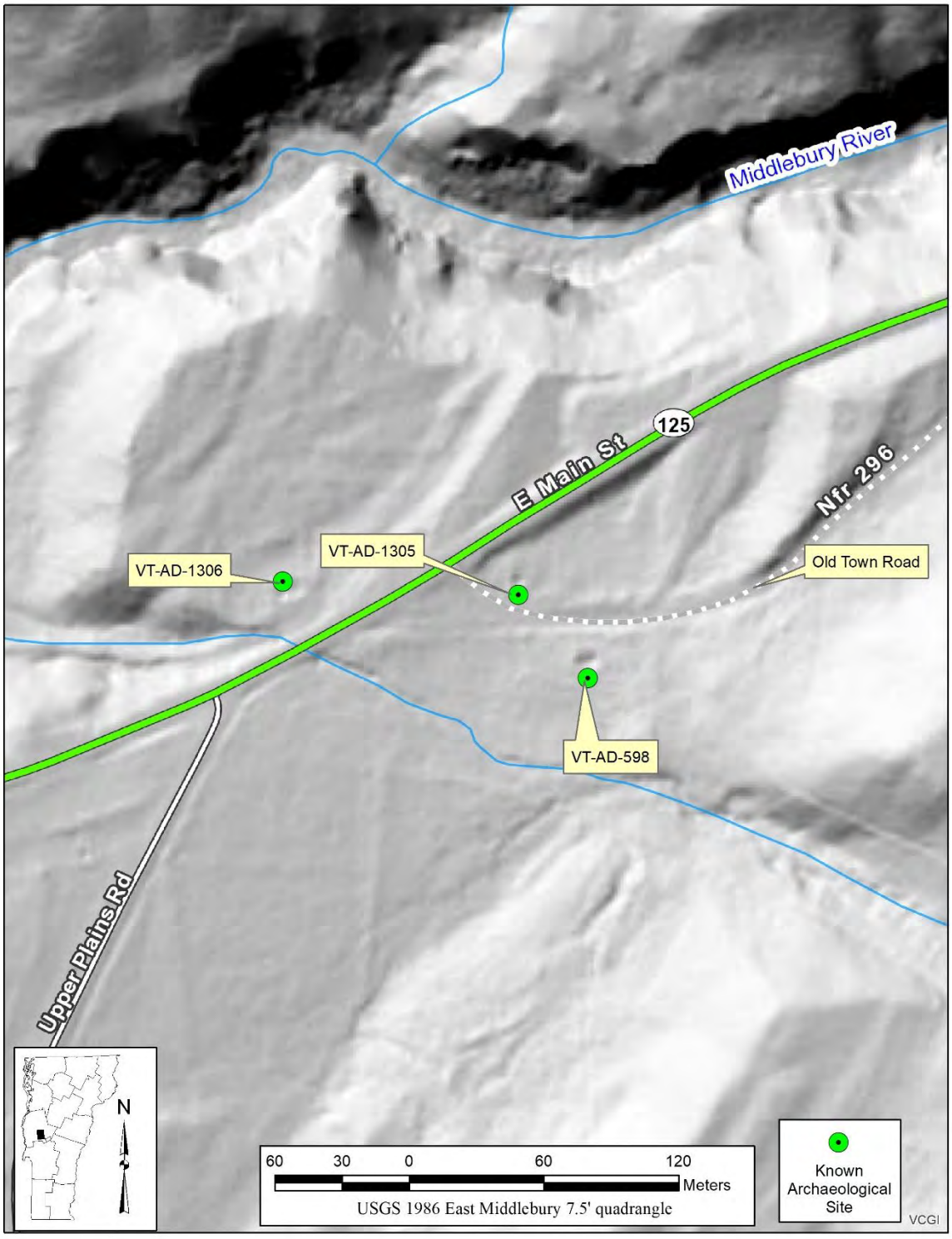


Figure 3. Lidar map showing the location of a group of historic period sites near the intersection of Old Town Road and VT Rte. 125 for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

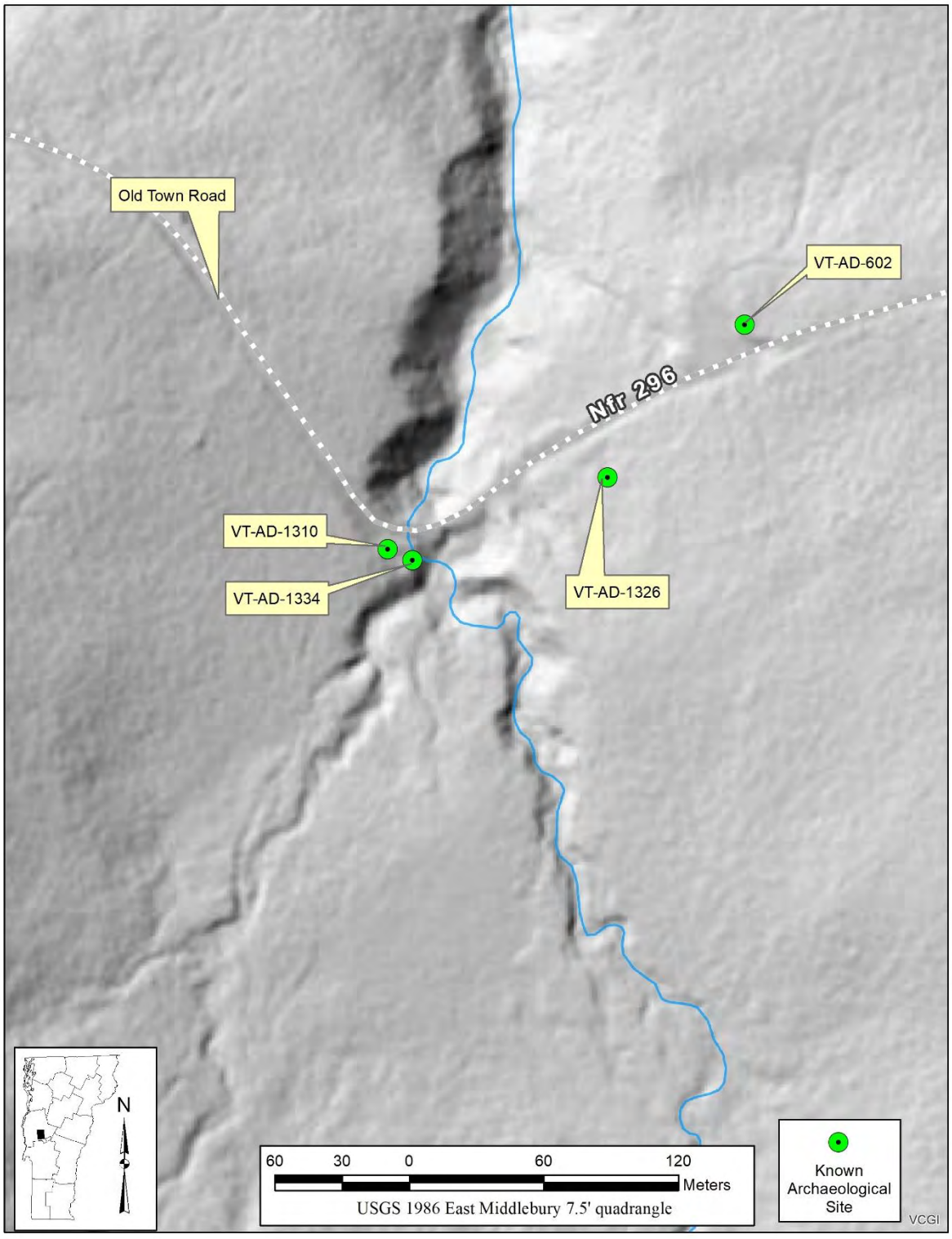


Figure 4. Lidar map showing the location of a group of historic period sites near a stream crossing in the center of the existing Old Town Road alignment for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

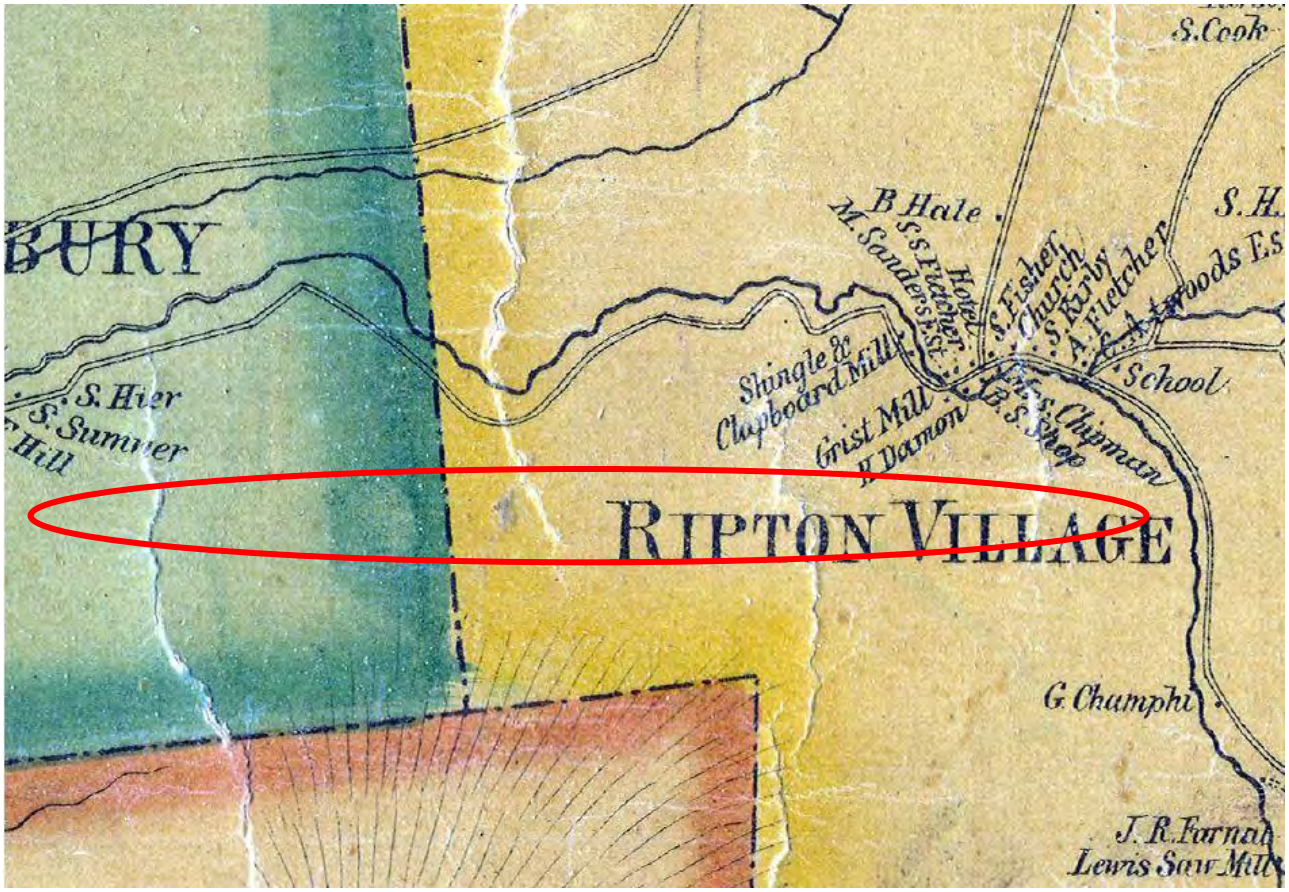


Figure 5. Historic 1857 Wallings map showing the limits of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

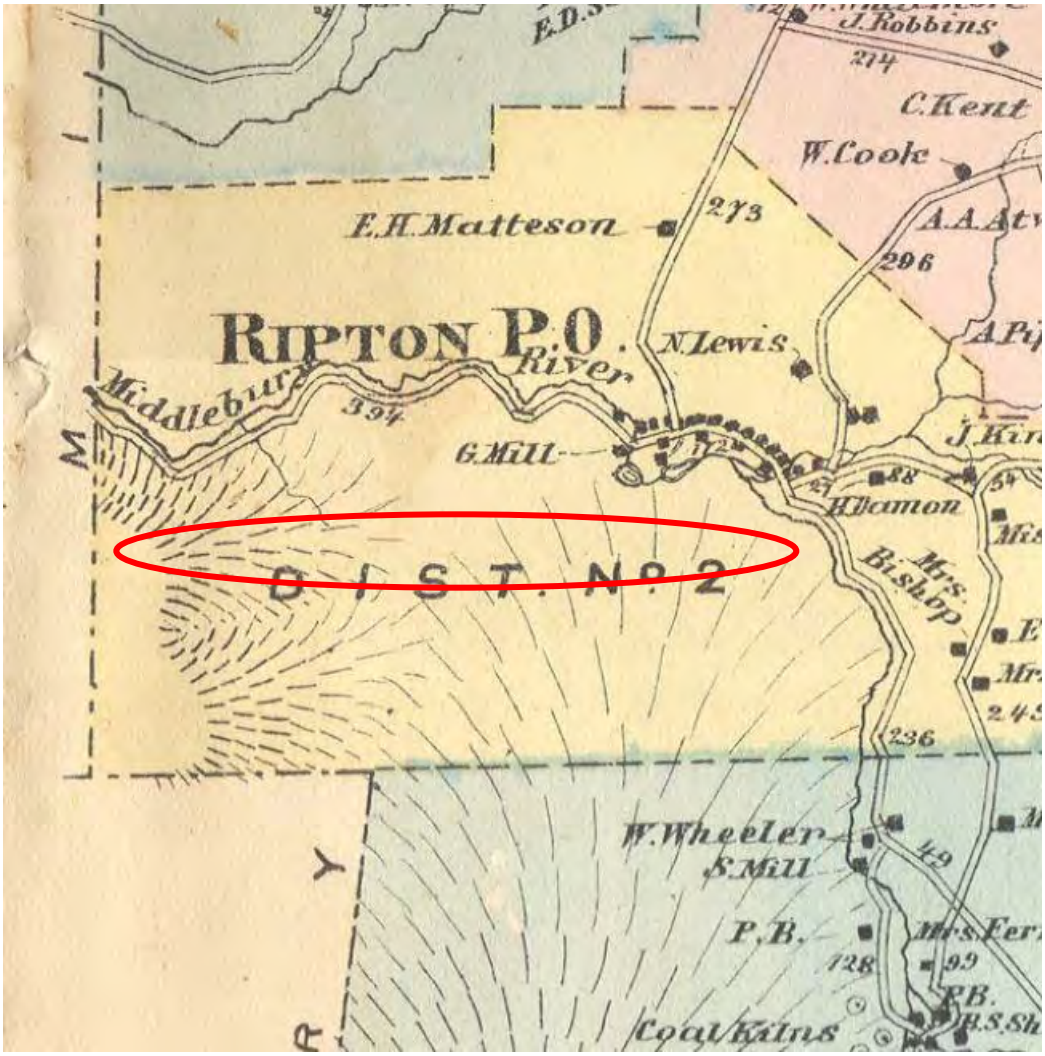
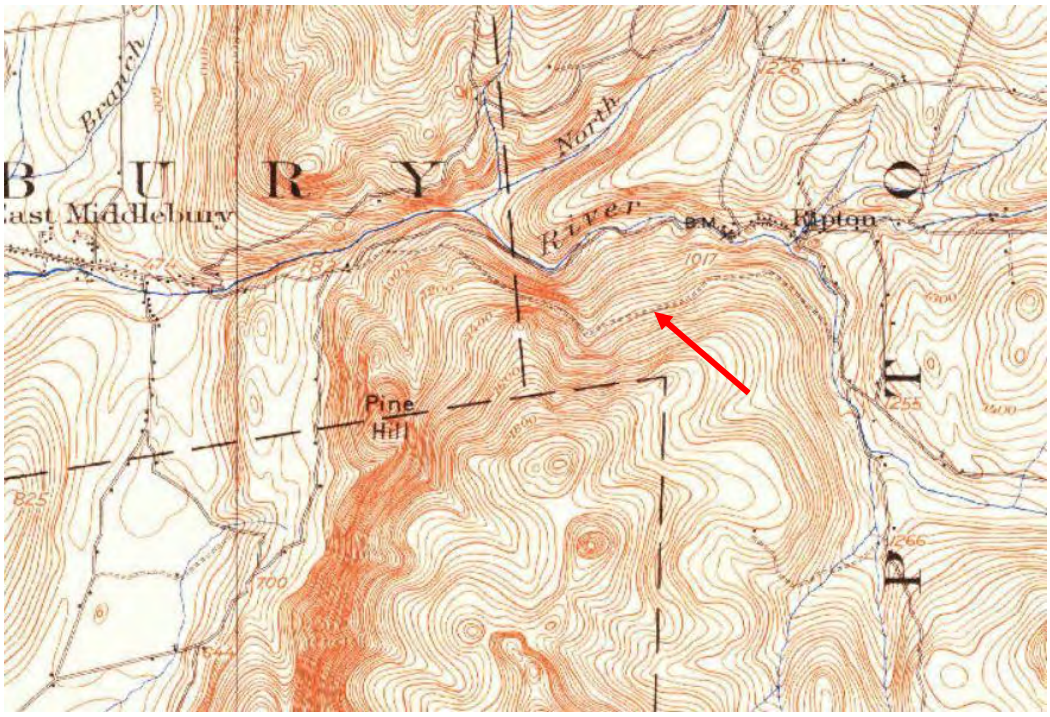
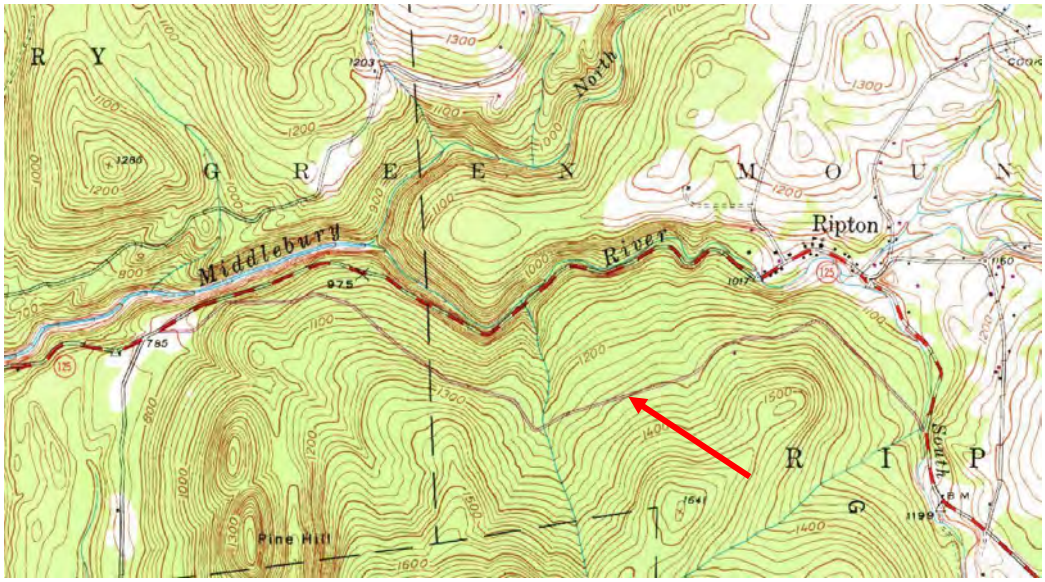


Figure 6. Historic 1871 Beer's atlas showing the limits of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.



a



b

Figure 7. Historic 1902 USGS map (a) and 1944 USGS map (b) showing the alignment of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

VERMONT DIVISION FOR HISTORIC PRESERVATION

Environmental Predictive Model for Locating Pre-contact Archaeological Sites

Project Name Ripton Old Town Rd County Addison Town Ripton
DHP No. Map No. Staff Init. Date 6/14/22

Additional Information

Environmental Variable	Proximity	Value	Assigned Score
A. RIVERS and STREAMS (EXISTING or RELICT):			
1) Distance to River or Permanent Stream (measured from top of bank)	0- 90 m 90- 180 m	12 6	12
2) Distance to Intermittent Stream	0- 90 m 90-180 m	8 4	
3) Confluence of River/River or River/Stream	0-90 m 90 –180 m	12 6	12
4) Confluence of Intermittent Streams	0 – 90 m 90 – 180 m	8 4	
5) Falls or Rapids	0 – 90 m 90 – 180 m	8 4	
6) Head of Draw	0 – 90 m 90 – 180 m	8 4	
7) Major Floodplain/Alluvial Terrace		32	
8) Knoll or swamp island		32	
9) Stable Riverine Island		32	
B. LAKES and PONDS (EXISTING or RELICT):			
10) Distance to Pond or Lake	0- 90 m 90 -180 m	12 6	
11) Confluence of River or Stream	0-90 m 90 –180 m	12 6	
12) Lake Cove/Peninsula/Head of Bay		12	
C. WETLANDS:			
13) Distance to Wetland (wetland > one acre in size)	0- 90 m 90 -180 m	12 6	
14) Knoll or swamp island		32	
D. VALLEY EDGE and GLACIAL LAND FORMS:			
15) High elevated landform such as Knoll Top/Ridge Crest/ Promontory		12	
16) Valley edge features such as Kame/Outwash Terrace**		12	

17) Marine/Lake Delta Complex**		12	
18) Champlain Sea or Glacial Lake Shore Line**		32	
E. OTHER ENVIRONMENTAL FACTORS:			
19) Caves /Rockshelters		32	
20) ☐ Natural Travel Corridor ☐ Sole or important access to another drainage ☐ Drainage divide		12	
21) Existing or Relict Spring	0 – 90 m 90 – 180 m	8 4	
22) Potential or Apparent Prehistoric Quarry for stone procurement	0 – 180 m	32	
23)) Special Environmental or Natural Area, such as Milton acquifer, mountain top, etc. (these may be historic or prehistoric sacred or traditional site locations and prehistoric site types as well)		32	
F. OTHER HIGH SENSITIVITY FACTORS:			
24) High Likelihood of Burials		32	
25) High Recorded Site Density		32	
26) High likelihood of containing significant site based on recorded or archival data or oral tradition		32	
G. NEGATIVE FACTORS:			
27) Excessive Slope (>15%) or Steep Erosional Slope (>20)		- 32	
28) Previously disturbed land 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)		- 32	
** refer to 1970 Surficial Geological Map of Vermont			
		Total Score: 24	
Other Comments :			
0- 31 = Archeologically Non- Sensitive **32+ = Archeologically Sensitive**			

April 8, 2015

Figure 8. Completed VDHP predictive model matrix of the APE for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 9. Photos looking east, and upslope, along the Old Town Road in the western end of its existing alignment (a & b) for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 10. Photos looking east,, and upslope along the Old Town Road in the western end of its existing alignment (a & b) for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 11. Photos looking northeast at the northern edge of the road (a), and west along the road demonstrating the width of the road and powerline corridor (b) for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 12. Photos looking west, and downslope (a), and east at the landing area where the crushed gravel road ends (b) of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 13. Photos looking east, and upslope (a), and west (b) along the dirt track portion of the existing road, for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 14. Photos looking northeast (a) and northwest (b) at the northern edge of the stream crossing along the existing alignment of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 15. Photos looking northeast, and upslope (a) and northwest across the fern terrace (b) for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 16. Photos looking west, and upslope (a), and northwest into a section of level terrain north of the road (b), for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 17. Photos looking west, and upslope (a & b), at the western end of the eastern portion of Old Town Road, for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

a

b

Figure 18. Photos looking east, and upslope (a), and north at the drop of the north side of the road (b) along the eastern portion of Old Town Road, for the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

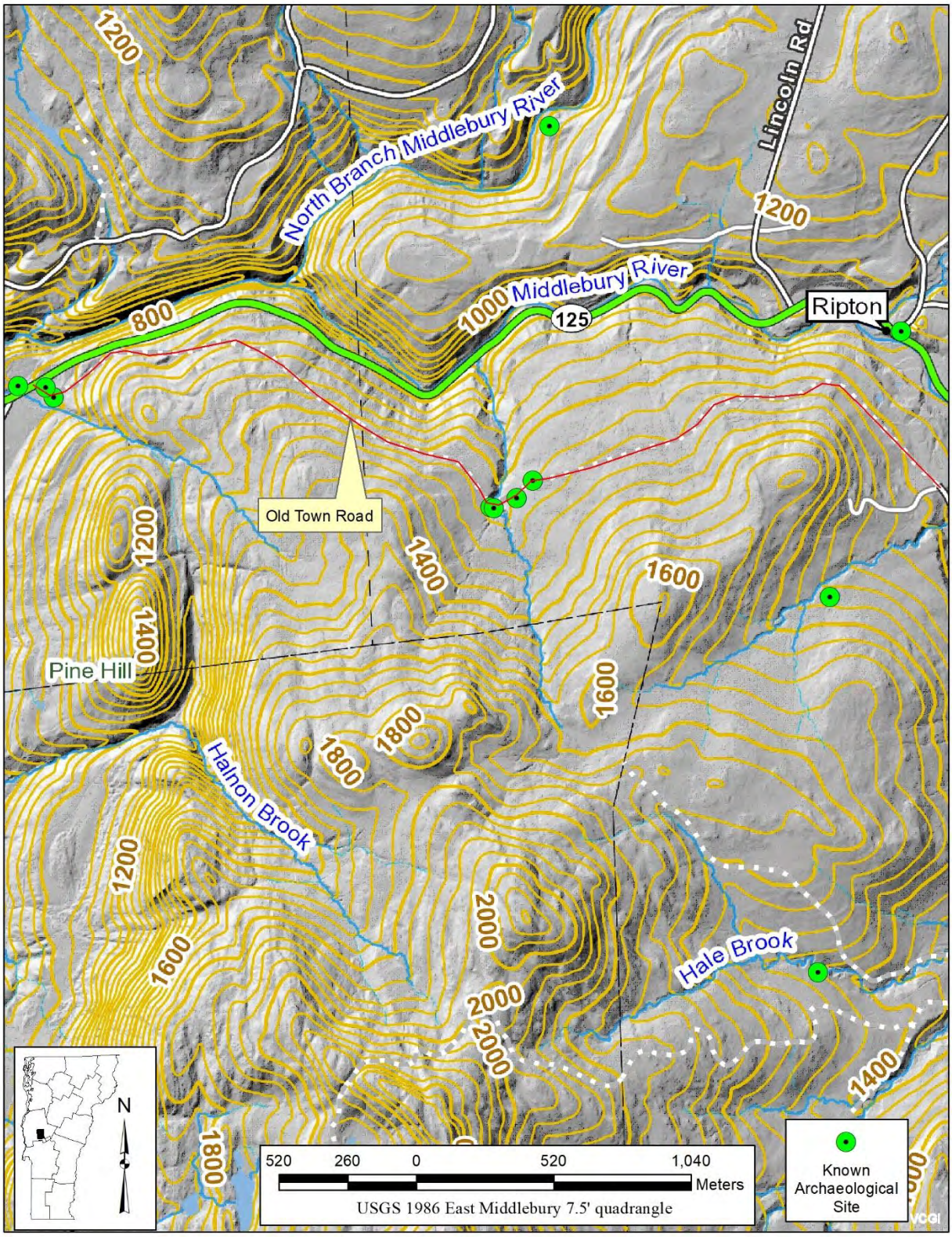


Figure 19. Lidar map with contours of the entire alignment of the proposed Old Town Road Reclassification (046-005) Project, Ripton, Addison County, Vermont.

Construction Cost Estimate
Alternative 2A - Segment 1

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	0	LS		$ -
Clearing/Grubbing	0	S.Y		$ -
Ditching	0	C.Y.		$ -
Road Surface Restoration	0	C.Y.		$ -
18-Inch Culvert Crossing	0	E.A.		$ -
Utility Relocation	0	E.A.		$ -
General/Misc. Work	0	C.Y.		$ -
			TOTAL OPINION OF PROBABLE COST =	**$ -**

Construction Cost Estimate
Alternative 2A - Segment 2

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1.0	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	2.0	Acres	$15,000.00	$ 30,000.00
Highway Ditching (Traditional)	2,400	LF	$6.00	$ 14,400.00
Highway Ditching (Type II Riprap)	1,000	LF	$12.00	$ 12,000.00
Surface Gravel (Roadway Crown)	800	CY	$45.00	$ 36,000.00
18-Inch Culvert Crossing	12	E.A.	$1,500.00	$ 18,000.00
Utility Relocation	1	LS	$0.00	$ -
General/Misc. Work	1	LS	$19,560.00	$ 19,560.00
TOTAL OPINION OF PROBABLE COST =				**$ 149,960.00**

Construction Cost Estimate
Alternative 2A - Segment 3

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1.00	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	0.50	ACRES	$15,000.00	$ 7,500.00
Highway Ditching (Traditional)	1,500	LF	$6.00	$ 9,000.00
Highway Ditching (Type II Riprap)	600	LF	$12.00	$ 7,200.00
Surface Gravel (Roadway Crown)	500	CY	$45.00	$ 22,490.00
18-Inch Culvert Crossing	7	EA	$1,500.00	$ 10,500.00
Utility Relocation	1	LS	$0.00	$ -
General/Misc. Work	1	LS	$11,503.50	$ 11,503.50
TOTAL OPINION OF PROBABLE COST =				**$ 88,193.50**

Construction Cost Estimate
Alternative 2A - Segment 4

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1.00	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	1.00	Acres	$15,000.00	$ 15,000.00
Highway Ditching (Traditional)	3,400	LF	$6.00	$ 20,400.00
Highway Ditching (Type II Riprap)	1,000	LF	$12.00	$ 12,000.00
Surface Gravel (Roadway Crown)	1,000	C.Y.	$45.00	$ 45,000.00
18-Inch Culvert Crossing	15	E.A.	$1,500.00	$ 22,500.00
Utility Relocation	1	LS	$0.00	$ -
General/Misc. Work	1	LS	$20,235.00	$ 20,235.00
TOTAL OPINION OF PROBABLE COST =				**$ 155,135.00**

Construction Cost Estimate
Alternative 2B - Segment 1

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	1.00	Acres	$15,000.00	$ 15,000.00
Highway Ditching (Traditional)	3,000	LF	$6.00	$ 18,000.00
Highway Ditching (Type II Riprap)	500	LF	$12.00	$ 6,000.00
Roadway Widening (4-ft)	1,000	CY	$50.00	$ 50,000.00
Regrade / Resurface / Crown	3,500	LF	$5.00	$ 17,500.00
18-Inch Culvert Crossing	12	EA	$1,500.00	$ 18,000.00
Utility Relocation	8	EA	$5,000.00	$ 40,000.00
General/Misc. Work	1	LS	$27,675.00	$ 27,675.00
			TOTAL OPINION OF PROBABLE COST =	**$ 212,000.00**

Construction Cost Estimate
Alternative 2B - Segment 2

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1.00	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	1.25	Acres	$15,000.00	$ 18,750.00
Highway Ditching (Traditional)	2,400	LF	$6.00	$ 14,400.00
Highway Ditching (Type II Riprap)	1,000	LF	$12.00	$ 12,000.00
Roadway Widening (6-ft)	2,000	CY	$50.00	$ 100,000.00
Regrade / Resurface / Crown	3,400	LF	$5.00	$ 17,000.00
18-Inch Culvert Crossing	7	EA	$1,500.00	$ 10,440.00
Utility Relocation	12	EA	$4,000.00	$ 46,400.00
General/Misc. Work	1	LS	$35,848.50	$ 35,848.50
			TOTAL OPINION OF PROBABLE COST =	**$ 275,000.00**

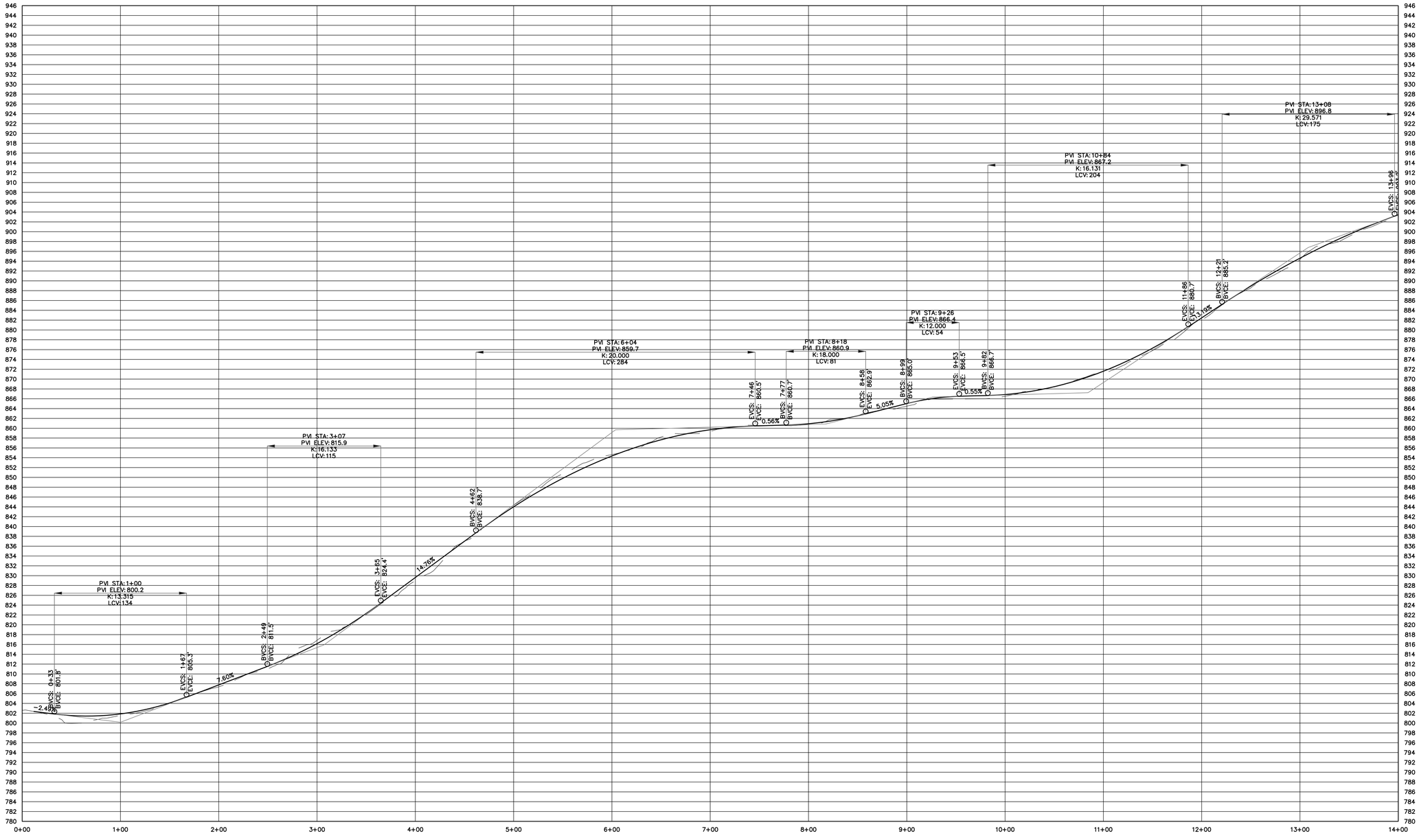
Construction Cost Estimate
Alternative 2B - Segment 3

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1.00	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	1.00	Acres	$15,000.00	$ 15,000.00
Highway Ditching (Traditional)	1,500	LF	$6.00	$ 9,000.00
Highway Ditching (Type II Riprap)	600	LF	$12.00	$ 7,200.00
Roadway Widening (6-ft)	900	CY	$50.00	$ 45,000.00
Regrade / Resurface / Crown	2,100	LF	$5.00	$ 10,500.00
18-Inch Culvert Crossing	7	EA	$1,500.00	$ 10,500.00
Utility Relocation	4	EA	$4,000.00	$ 16,840.00
General Conditions / Miscellaneous Work	1	LS	$20,106.00	$ 20,106.00
TOTAL OPINION OF PROBABLE COST =				**$ 154,000.00**

Construction Cost Estimate
Alternative 2B - Segment 4

Item	Unit Quantity		Unit Cost	Total Cost
Mobilization	1.00	LS	$20,000.00	$ 20,000.00
Clearing/Grubbing	0.75	Acres	$15,000.00	$ 11,250.00
Highway Ditching (Traditional)	3,400	LF	$6.00	$ 20,400.00
Highway Ditching (Type II Riprap)	1,000	LF	$12.00	$ 12,000.00
Roadway Widening (4-ft)	1,300	CY	$50.00	$ 65,000.00
Regrade / Resurface / Crown	4,400	LF	$5.00	$ 22,000.00
18-Inch Culvert Crossing	15	EA	$1,500.00	$ 22,500.00
Utility Relocation	9	EA	$4,000.00	$ 35,600.00
General Conditions / Miscellaneous Work	1	LS	$31,312.50	$ 31,312.50
TOTAL OPINION OF PROBABLE COST =				**$ 240,000.00**

APPENDIX L: CENTERLINE ROADWAY PROFILE



OLD TOWN ROAD CENTERLINE

SCALE: 1"=50' HORIZONTAL
1"=10' VERTICAL

OTTER CREEK ENGINEERING

404 East Main Street
P.O. Box 712
East Middlebury, VT 05740
Telephone: 802 382-8522
Fax: 802 382-8640
~
110 Merchants Row
4th Floor, Suite 15
Rutland, VT 05701
Telephone: 802 747-3080
Fax: 802 747-4820
~
E-mail: info@ottercrk.com

STAMP AND SIGNATURE:

DESIGN ENGINEER

ADDISON COUNTY REGIONAL PLANNING COMMISSION

OLD TOWN ROAD RECLASSIFICATION

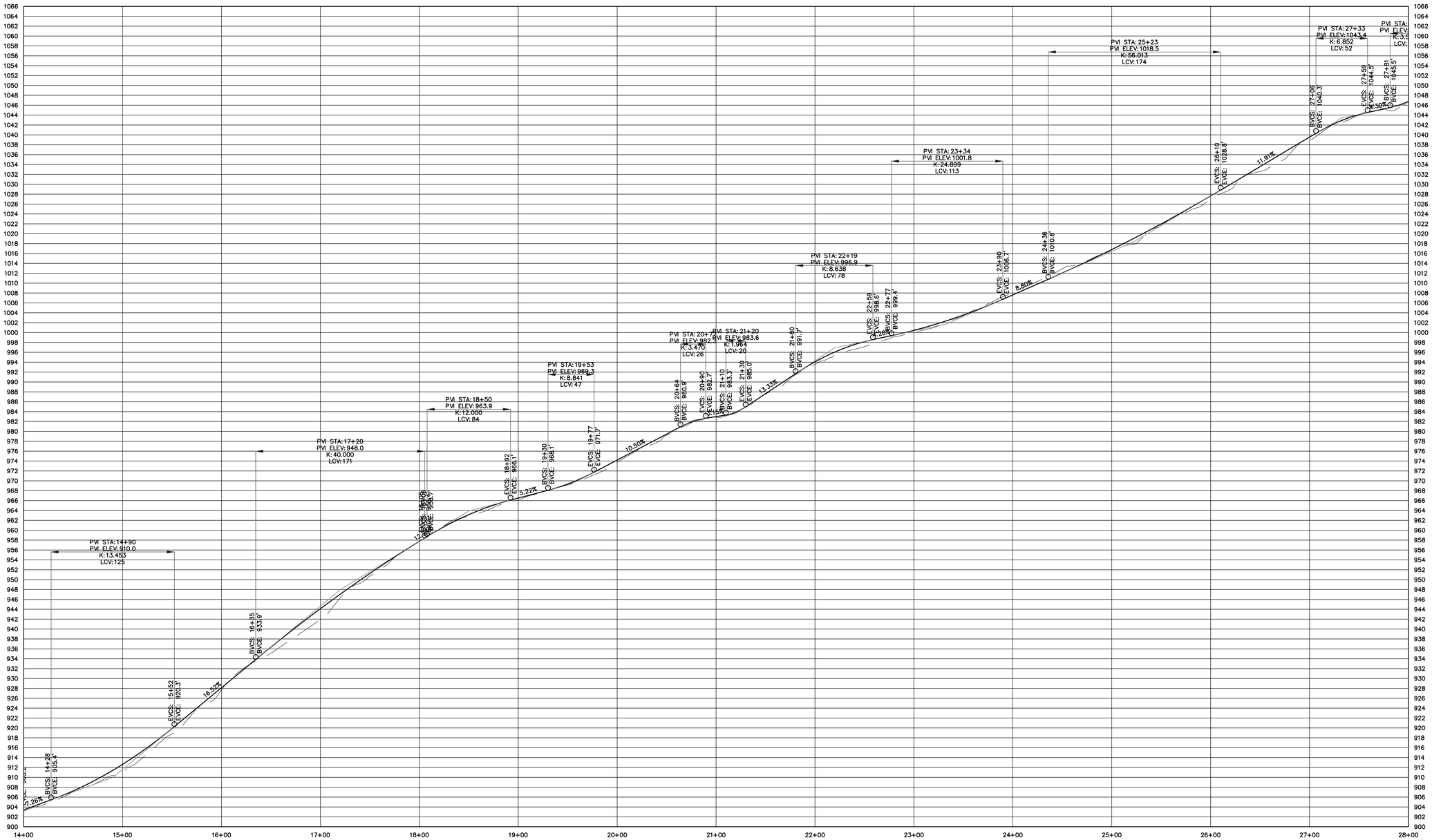
RIPTON, VERMONT

REVIEW

DATE ISSUED:	9/21/2022
REVISIONS:	
DRAWN BY:	HB
CHECKED BY:	RC
SCALE:	AS SHOWN
PROJECT NO.:	046.005
CADD FILE:	QTY-Corridor

TITLE:
CENTERLINE PROFILE

FIGURE NO.
1



OLD TOWN ROAD CENTERLINE

SCALE: 1"=50' HORIZONTAL
1"=10' VERTICAL

OTTER CREEK ENGINEERING

404 East Main Street
P.O. Box 712
East Middlebury, VT 05740
Telephone: 802 382-8522
Fax: 802 382-8640
~
110 Merchants Row
4th Floor, Suite 15
Rutland, VT 05701
Telephone: 802 747-3080
Fax: 802 747-4820
~
E-mail: info@ottercrk.com

STAMP AND SIGNATURE:

DESIGN ENGINEER

ADDISON COUNTY REGIONAL PLANNING COMMISSION

OLD TOWN ROAD RECLASSIFICATION

RIPTON, VERMONT

REVIEW

DATE ISSUED:	9/21/2022
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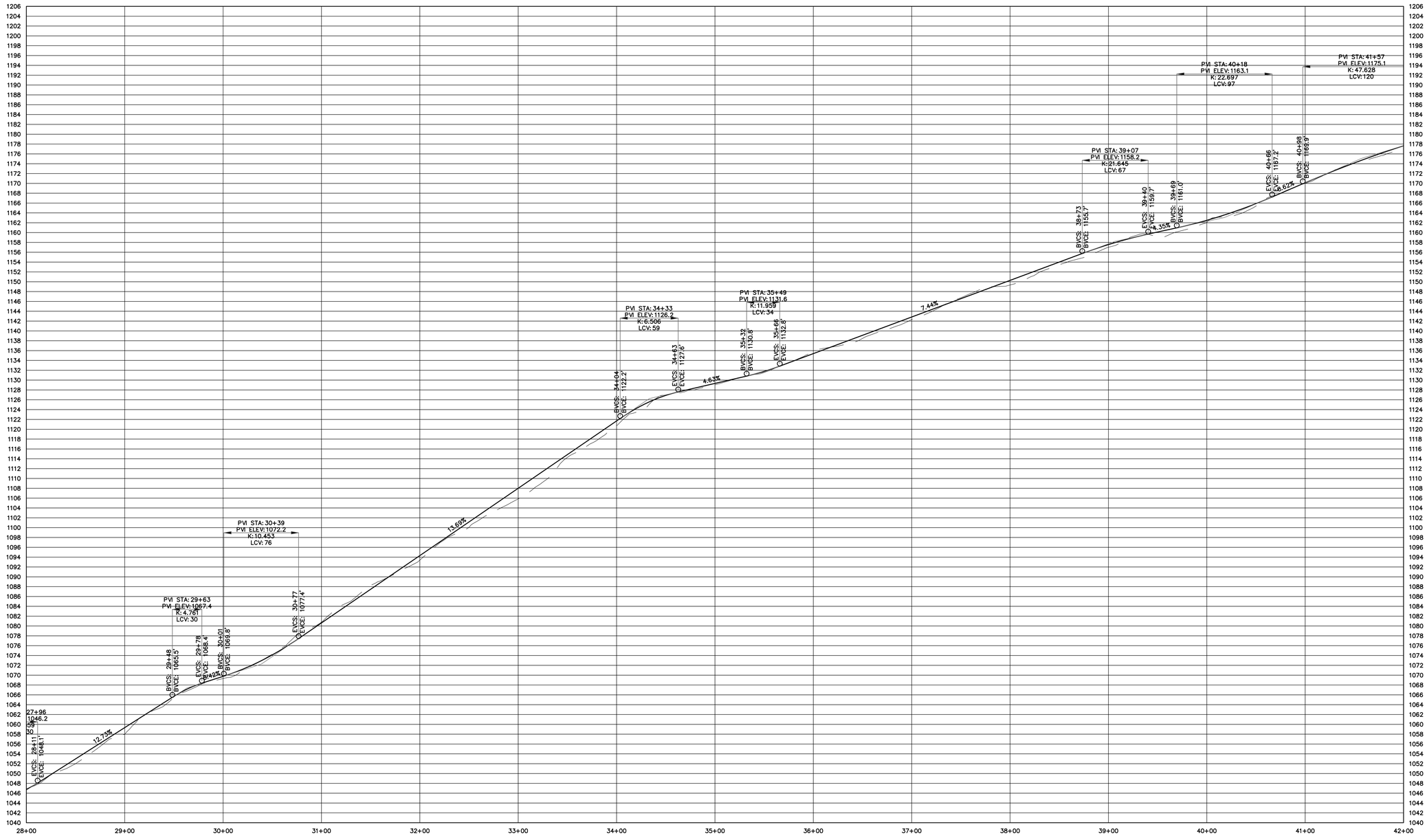
PROJECT NO.:	046.005
CADD FILE:	QTY-Corridor

TITLE:
CENTERLINE PROFILE

FIGURE NO.
2



OLD TOWN ROAD CENTERLINE

SCALE: 1"=50' HORIZONTAL
1"=10' VERTICAL

OTTER CREEK ENGINEERING

404 East Main Street
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East Middlebury, VT 05740
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Telephone: 802 747-3080
Fax: 802 747-4820
~
E-mail: info@ottercrk.com

STAMP AND SIGNATURE:

DESIGN ENGINEER

ADDISON COUNTY REGIONAL PLANNING COMMISSION

OLD TOWN ROAD RECLASSIFICATION

RIPTON, VERMONT

REVIEW

DATE ISSUED:	9/21/2022
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CHECKED BY:	RC
SCALE:	AS SHOWN
PROJECT NO.:	046.005
CADD FILE:	QITY-Corridor

TITLE:
CENTERLINE PROFILE

FIGURE NO.
3

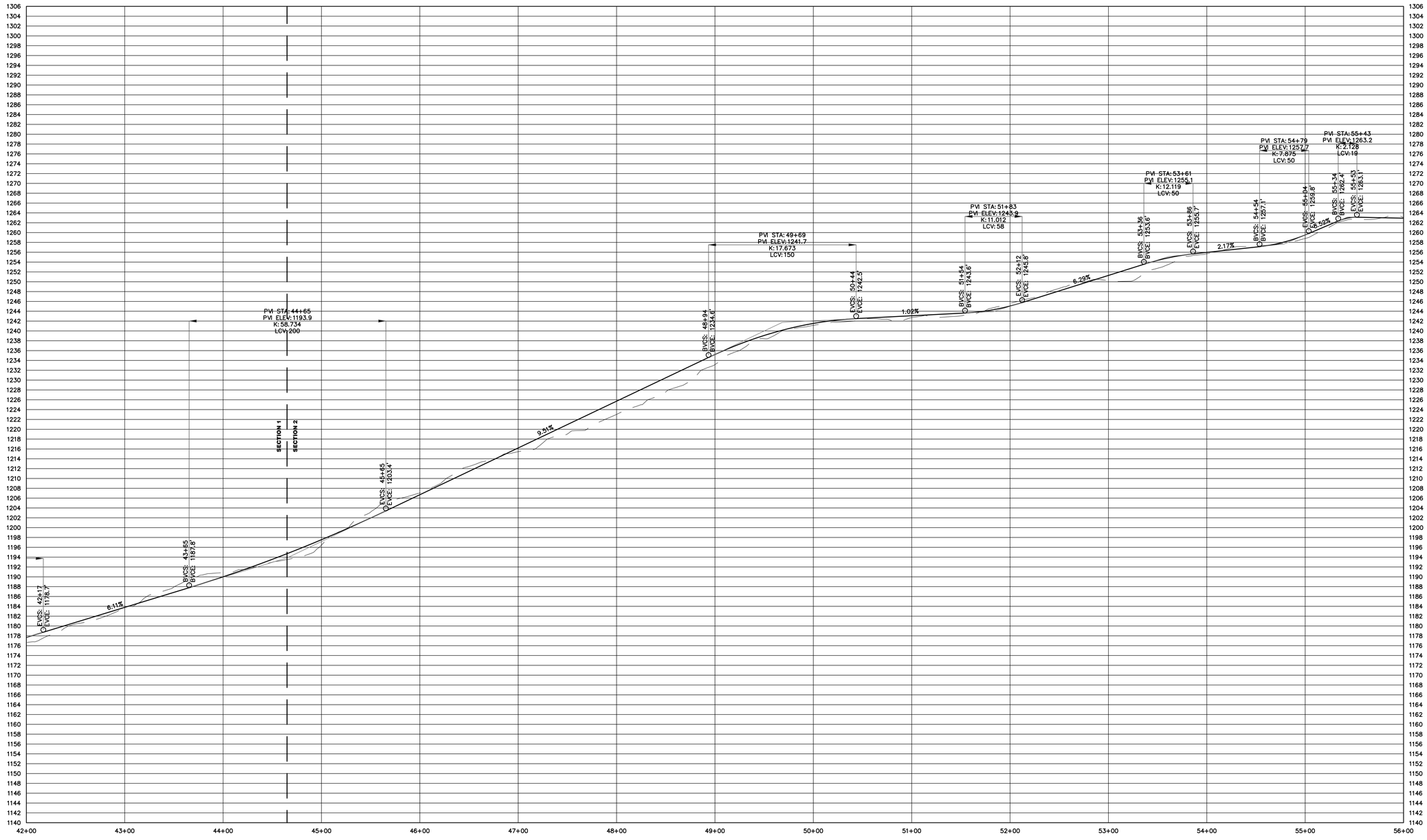

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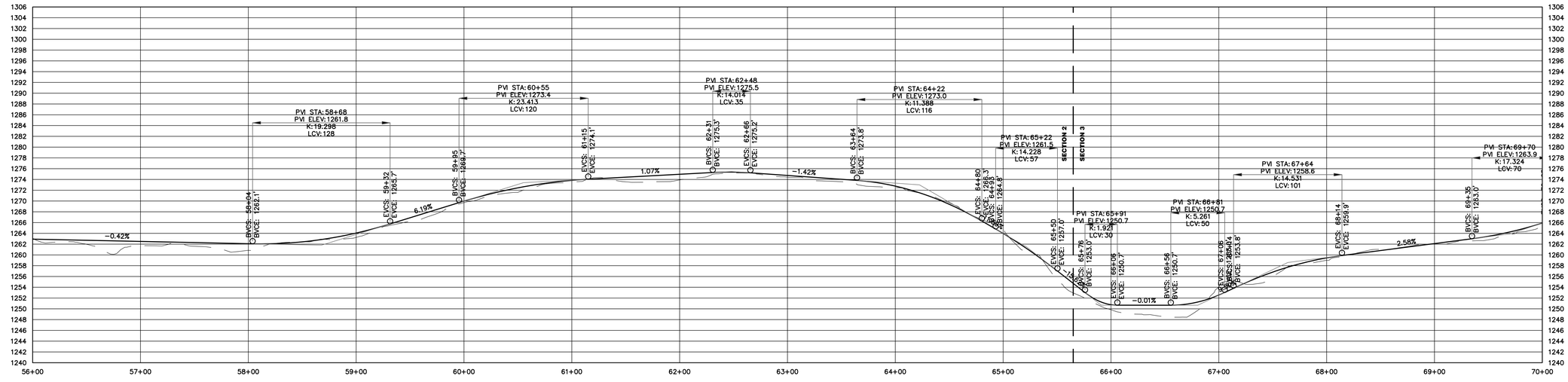
FIGURE NO.
4



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SCALE: 1"=50' HORIZONTAL
1"=10' VERTICAL

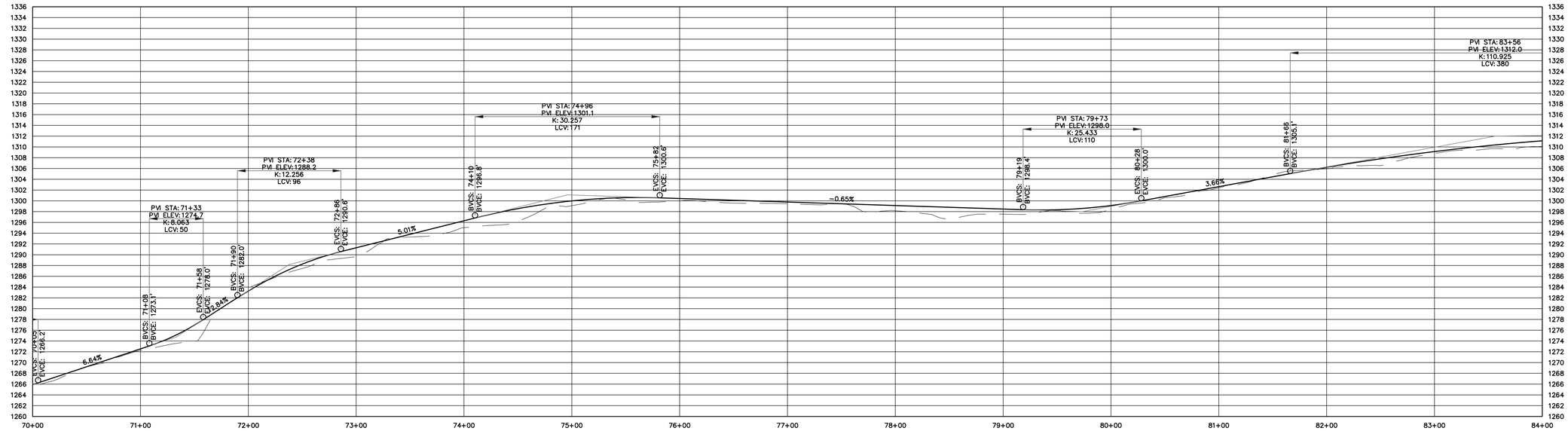

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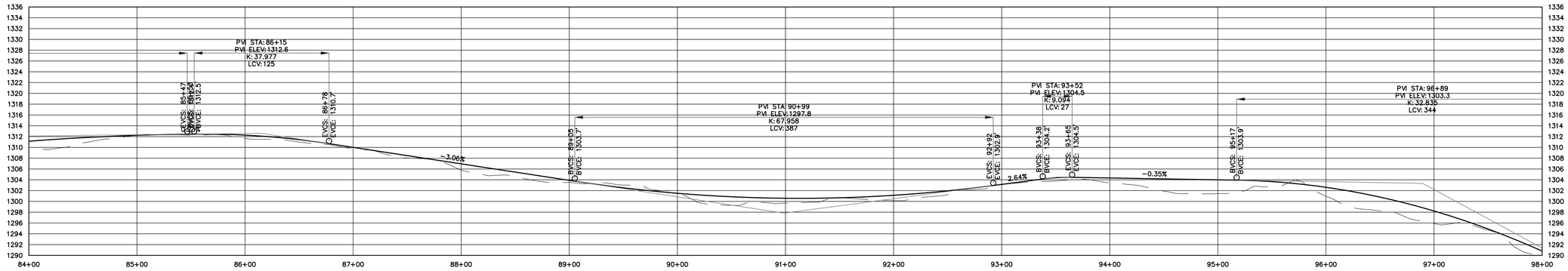
FIGURE NO.
5



OLD TOWN ROAD CENTERLINE

SCALE: 1"=50' HORIZONTAL
1"=10' VERTICAL

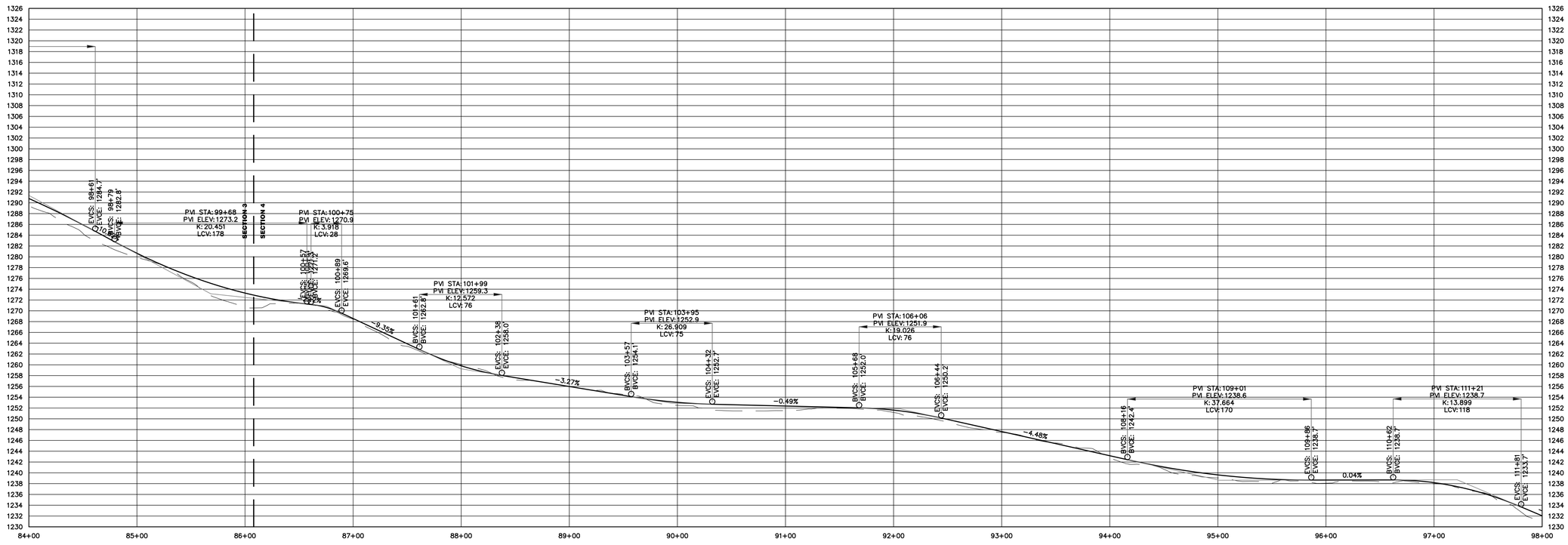


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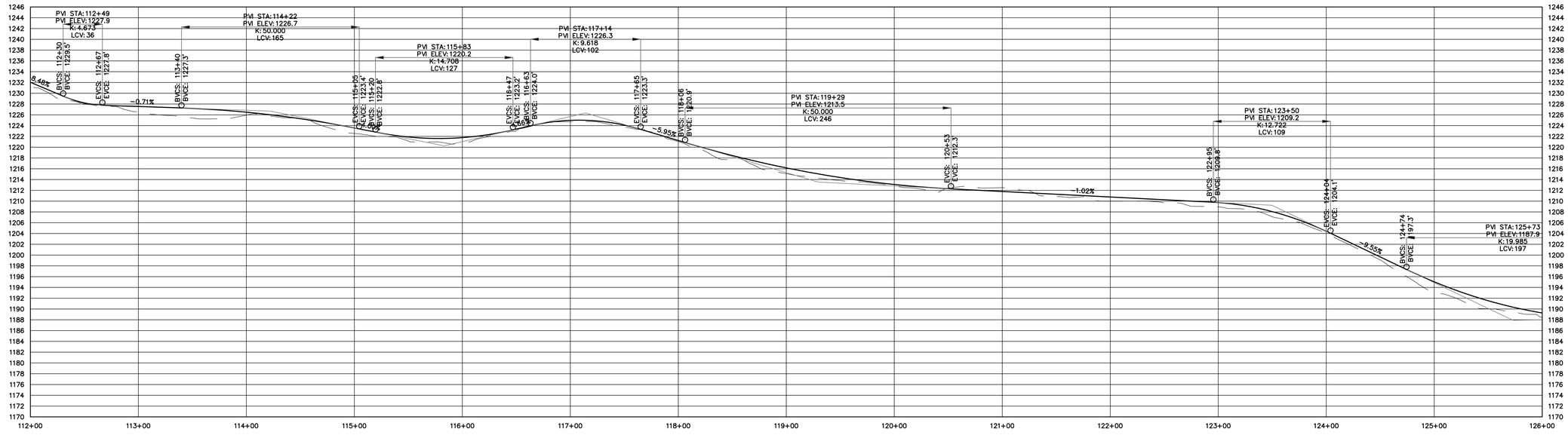
FIGURE NO.
6



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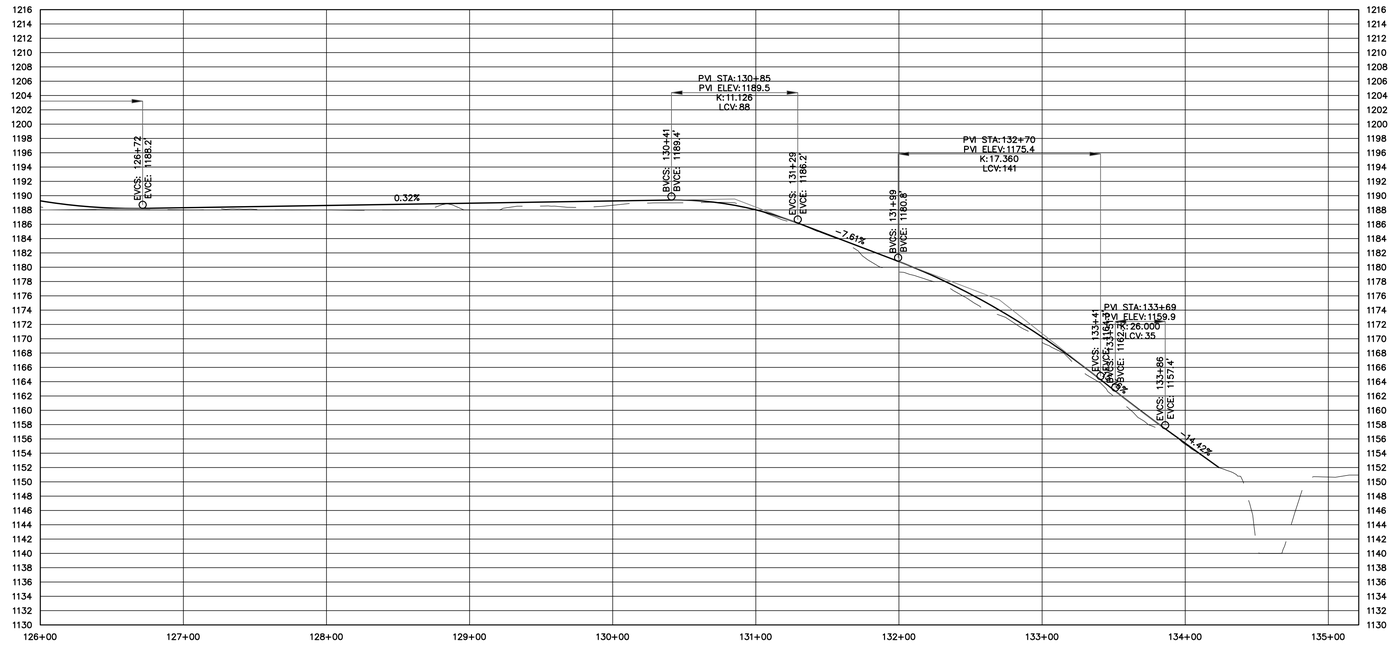

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FIGURE NO.
7