

STATE OF VERMONT  
AGENCY OF TRANSPORTATION

Scoping Report

FOR  
**FERRISBURGH BF 019-4(35)**

**US ROUTE 7, BRIDGE 139 OVER LEWIS CREEK**

May 8, 2024

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## I. Site Information

Bridge 139 is a State-owned bridge located on US Route 7 in the Town of Ferrisburgh approximately 4.9 miles north of the junction with VT Route 22A. The existing conditions were gathered from a combination of a Site Visit, the Inspection Report, the Route Log and the existing Survey. See correspondence in the Appendix for more detailed information.

Roadway Classification	Principal Arterial (National Highway System)
Bridge Type	Three Span Continuous Rolled Beam Bridge
Bridge Length	286 feet
Year Built	1957
Ownership	State of Vermont

### Need

Bridge 139 carries US Route 7 across Lewis Creek. The following is a list of deficiencies of Bridge 139 and US Route 7 in this location:

1. The reinforced concrete deck is in fair condition with a few areas of spalling that extend the full width of the bays and penetrate up to and beyond the first layer of reinforcing steel. There is also moderate to heavy saturation throughout the deck with efflorescence, varying sized delaminations, and map cracking throughout the fascia.
2. The steel girder superstructure is in satisfactory condition with areas of rust scale at the beam ends and scattered small locations along the flanges with minor pitting and section loss.
3. The reinforced concrete substructure is in good condition with scattered shrinkage cracks throughout the abutment end walls with light staining and minor saturation.
4. The shoulder widths on the bridge are substandard.

### Traffic

A traffic study of this site was performed by the Vermont Agency of Transportation. The traffic volumes are projected for the years 2028 and 2048.

TRAFFIC DATA	2028	2048
AADT	11,833	12,981
DHV	1,316	1,444
%T	9.6	12.6
%D	50	50
ADTT	1,527	2,189
Flexible ESALS:	<b>2028~2048</b>	<b>2028~2068</b>
	11,290,000	23,872,000

## Design Criteria

The design standards for this bridge project are the Vermont State Standards, dated October 22, 1997. Minimum standards are based on an ADT of 12,981, a DHV of 1,444, and a design speed of 50 mph for a Principal Arterial.

Design Criteria	Source	Existing Condition	Minimum Standard	Comment
Approach Lane and Shoulder Widths	VSS Table 3.3	8'/12'/12'/8' (40')	8'/12'/12'/8' (40')	
Bridge Lane and Shoulder Widths	VSS Table 3.3	3'/12'/12'/3' (30')	10'/12'/12'/10' (44')	Substandard shoulder widths
Clear Zone Distance	VSS Table 3.4	No Issues Noted	24' fill / 12' cut	
Banking	VSS Section 3.13	0.8% - 4%	8% (max)	
Speed	VSS Section 3.3	50 mph (Posted)	50 mph (design)	
Horizontal Alignment	AASHTO Green book Table 3-10b	R = 5,730'	R <sub>min</sub> = 2,720' @ 4%	
Vertical Grade	VSS Table 3.5	2.31%	4% for level terrain	
K Values for Vertical Curves	AASHTO Table 3-37	K <sub>crest</sub> = 164	84 crest / 96 sag	
Vertical Clearance	VSS Section 3.8	No Issues Noted	16'-3" (min)	
Stopping Sight Distance	AASHTO Table 3-37	267'	425'	
Bicycle/Pedestrian Criteria	VSS Table 3.7	3' shoulder on bridge	5' paved shoulders	Substandard
Hydraulics	VTrans Hydraulics Unit	Existing available freeboard: 21.8ft @ 2% AEP 20.8ft @ 1% AEP	Meets minimum BFW and at least 1ft freeboard at 1% AEP	
Bridge Railing	Structures Design Manual Section 13	Curb mounted three rail aluminum railing	TL-4	Not Crash Tested
Structural Capacity	Structures Design Manual, Ch. 3.4.1	Not Deficient	Design Live Load: HL-93	

## Inspection Report Summary

Deck Rating	5 Fair
Superstructure Rating	6 Satisfactory
Substructure Rating	7 Good
Channel Rating	8 Very Good

From the Bridge Inspection Reports:

05/10/2023 – Deck: Moderate to heavy saturation throughout with efflorescence, varying sized delaminations, and small areas of rust staining. There are a few areas of spalling that extend the full width of the bays and penetrate up to and beyond the first layer of reinforcing. Bays 3 and 4 have large areas of timber form work in place along spans 1 and 2. Deck curb in poor condition, voided spall and failed patched areas, and exposed reinforcing. Deck Fascia has map cracking throughout with varying amounts of efflorescence staining and scattered small delaminations. Superstructure: Rust scale at the beam ends and scattered small locations along the flanges with minor pitting/section loss. Substructure: Scattered shrinkage cracks with light staining and minor saturation. Continued saturation and deterioration throughout the deck, a deck replacement project should be considered see maintenance report. ~JW

05/06/2021 – Deck: Moderate to heavy saturation throughout w/ efflorescence-stained cracking, varying sized delaminations, small areas of rust staining, and a few spalls that penetrate to the first

layer of reinforcing. Bays 3 and 4 have large areas of timber form work in place along spans 1 and 2. Curbing - Deep voided spalls and failed patched areas w/ exposed reinforcing along the granite facing throughout. The abutment 1 curb ends are spalled out w/ exposed reinforcing leaving the old sliding steel plates undermined and unsupported. Stringers have rust scale at the beam ends and scattered small locations along the flanges w/ minor pitting/section loss. Bearings have rust scale throughout the abutment 1 bearings w/ minor pitting/section loss. End walls and abutment seat/stems have scattered shrinkage cracks w/ light staining and minor saturation. Due to the widespread saturation and deterioration throughout the deck it should be considered for replacement. The soffit has visible moderate to heavy saturation throughout w/ scattered spalls and delaminations. The curbs also continue to spall out with deep voids and exposed reinforcing along the granite facing. ~JW/SP

05/29/2019 – Bridge is in satisfactory shape. The substandard and damaged aluminum and concrete bridge rail system needs full upgrading. This particular rail type has all but been eliminated elsewhere, as it is not adequate. Rail replacement may even add some additional horizontal clearance depending on the type used. The deck, which has had some localized distress in span #2 and subsequent shoring, should be considered for rehabilitation or perhaps the option of full replacement in 20 years or so. Note: The formwork in span #2, was thought to have been a response to areas of full depth failure but turned out to have been installed to address only delamination's and some spalling. Prior deck replacement recommendations were based on assumed holes; though distress was not as severe as once thought. The expansion joint at the south abutment leaks and there is curb distress allowing for heavy leakage, along with damage to the curb plating, which is a target for plow wing impact. The curb plating needs removal and the curb repaired. ~ MJ/SP

## **Hydraulics**

Lewis Creek flows beneath Bridge 139. The existing bridge span appears to meet state stream equilibrium standards for bankfull width based on the 200 ft clear span of the existing bridge. For reference, the Phase II Stream Geomorphic Assessment completed by the Agency of Natural Resources reported a bankfull width of approximately 84 ft through this section of Lewis Creek. There is approximately 21.8 ft and 20.8 ft of freeboard at the 2% AEP and 1% AEP, respectively. The existing structure does meet current standards of the VTrans Hydraulic Manual and appears to meet state stream equilibrium standards for bankfull width.

During the preliminary hydraulic assessment, it was discovered from bridge inspection photos that there may be bank erosion occurring at the abutments. A stone fill size was provided in the hydraulics memo (see Appendix C) for any necessary bank and abutment armoring.

## **Utilities**

The existing utilities are shown on the Existing Conditions Layout Sheet, and are as follows:

### Aerial:

- Comcast
- Consolidated Communications
- Firstlight Fiber
- Green Mountain Power
- Waitsfield Champlain Valley Telecom

### Underground:

- Consolidated Communications

### Municipal:

- There are no Municipal utilities within the project limits.

The aerial utilities in the project area are located over 230 feet west of the bridge and will not be in conflict with project work. Consolidated has a buried Fiber line in a 4" PVC conduit which hangs off the west side of the bridge which will likely need to be relocated.

### **Right Of Way**

The existing Right-of-Way (ROW) is plotted on the Existing Conditions Layout Sheet. There is ample State-Owned Right-of-Way on either side of US Route 7. It is assumed that additional rights will not be needed for construction.

### **Environmental and Cultural Resources**

The environmental resources present at this project are shown on the Existing Conditions Layout Sheet, and are as follows:

#### ***Biological:***

VTrans Environmental hired the consultant, VHB, to perform a natural resource evaluation at this site. For additional information on all natural resources, see the Existing Conditions Layout Sheet and the Natural Resources Memo in Appendix F.

#### Wetlands/Watercourse

There were four Class II wetland complexes delineated within the project study area when the field survey was completed by the consultant. Two of the larger wetland complexes are located along the banks of Lewis Creek directly underneath the bridge around the abutments.

Lewis Creek passes under US Route 7 through Bridge 139. Additionally, the consultant identified a perennial unnamed tributary to the south of Lewis Creek which passes under US Route 7 via a culvert.

#### Rare, Threatened, and Endangered Species

There were no state listed Rare, Threatened, and Endangered Species present at Bridge 139.

The project was submitted to the US Fish and Wildlife Service (USFWS) via the online Information for Planning and Consultation (IpaC) webtool, and an Official Species List was generated on October 13, 2023, to identify federally listed species within the project area. Federally listed species that have the potential to occur in the project area include the monarch butterfly (*Danaus 7lexippus*) and northern long-eared bat (*Myotis septentrionalis*).

#### Wildlife Habitat

Through field visits done as part of the resource identification process, it was determined that Bridge 139 does not impede the passage of aquatic organisms, and also provides a terrestrial travel opportunity for wildlife movement under the bridge within the riparian zone along the edge of Lewis Creek. The US Route 7 corridor was found to be a fragmenting feature effecting habitat

connectivity in the area. Further fragmentation would not be anticipated from this project unless a temporary bridge was required to be installed off alignment.

***Archeological:***

The VTrans Archeologist conducted a site visit on August 29<sup>th</sup>, 2023 to assess the archaeological sensitivity of the project area. The field visit determined that areas outside the US Route 7 roadway prism and footprint of disturbance from the construction of Bridge 139 should be considered sensitive for precontact archaeological resources. Unless these archaeologically sensitive areas can be avoided by project developments, further field investigations will be required.

***Historic:***

Bridge 139 is likely not historic as it is a common steel girder interstate bridge constructed around the 1950s.

***Hazardous Materials:***

No hazardous waste sites were identified within the proposed project area.

***Stormwater:***

A stormwater resource ID was performed for this project and based on a review of available mapping and project photos. It appears that there are no drainage structures within the project area. Depending on the extent of the project limits and roadway approach work, improvements to the drainage from the roadway leading to either side of the bridge should be considered. And, to the extent that drainage work is conducted as part of this project, it is encouraged that it be aligned with the VTrans Phosphorus Control Highway Drainage Management Standards, as this may allow future credit toward achieving phosphorus reduction goals required by the Agency's TS4 permit.

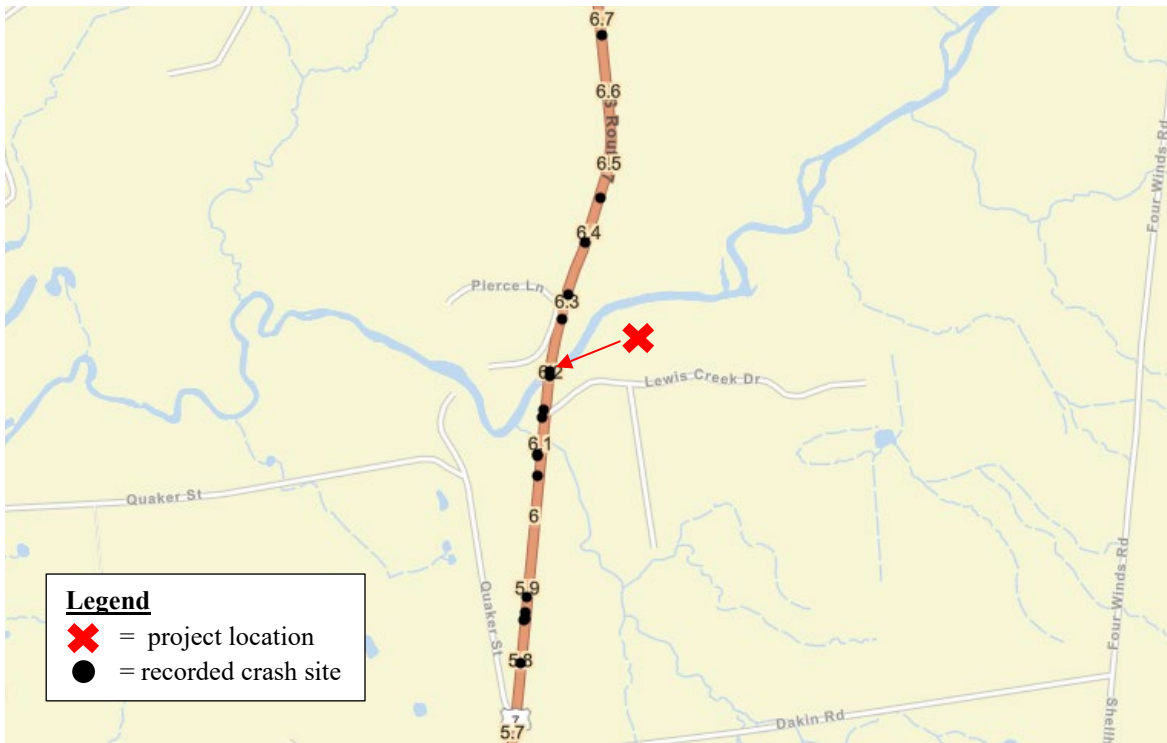
***Landscape Clearance***

A landscape resource ID was performed for this project and recommendations included 1) minimizing riparian buffer disturbance and tree clearing, 2) maintaining and improving wide shoulders for bike access as this project is located within a high use/priority bicycle route, and 3) if found in the project area, develop a plan for managing invasive species. A riparian planting plan should be developed for any disturbed riparian areas on this project.



## II. Safety

There have been 91 crashes along US Route 7 in Ferrisburgh in the last six-year period. 17 of those crashes were within 1 mile of the project area. The structure is not located within a designated high crash location section based on the High Crash Location Report 2012-2016.



## III. Local Concerns

A local concerns questionnaire was sent to the Town of Ferrisburgh. The town responded to the questionnaire and provided input on bike and pedestrian usage of the current bridge and corridor as well as RTE species occurrences in the project area. A copy of the questionnaire can be found in Appendix N.

## IV. Operations Concerns

An Operations questionnaire was sent to the VTrans maintenance District 5. The district did not respond to the questionnaire. There is a copy of the blank questionnaire in Appendix O.

## V. Maintenance of Traffic

The Vermont Agency of Transportation has created an Accelerated Bridge Program, which focuses on faster delivery of construction plans, permitting, and Right of Way, as well as faster construction of projects in the field. One practice that helps in this endeavor is closing bridges for portions of the construction period, rather than providing temporary bridges. In addition to saving money, the intention is to minimize the closure period with faster construction techniques and incentives to contractors to complete projects early. The Agency will consider the closure option on most projects

where rapid reconstruction or rehabilitation is feasible. The use of prefabricated elements in new bridges will also expedite construction schedules. This can apply to decks, superstructures, and substructures. Accelerated Construction should provide enhanced safety for the workers and the travelling public while maintaining project quality. The following options have been considered:

### **Option 1: Off-Site Detour**

This option would close the bridge and reroute traffic onto an official, signed State detour. There is one regional detour that could be used if the bridge is closed during construction. The potential State-signed detour is as follows:

1. US Route 7, to VT Route 17 to VT Route 116, to VT Route 2A, to Interstate I-89, to Route 189, back to US Route 7 (60.1 miles end-to-end).

This likely would be signed and used as a truck detour for through truck traffic.

A separate detour utilizing Federal Aid Secondary (FAS) roads could be signed as a passenger car detour route. Local traffic would likely utilize either the below FAS detour route via Monkton Road, or local bypass routes available in the area. The passenger car detour route located along FAS routes is as follows:

1. US Route 7, to Monkton Road, to Hollow Road, to Old Hollow Road, back to US Route 7 (18.5 miles end-to-end).

There are many local bypass routes available in the area that will likely see an increase in traffic from local passenger cars if US Route 7 is closed during construction. Local bypass routes are not signed detours but may experience higher traffic volumes during a road closure. The two most likely local bypass routes are as follows:

1. US Route 7, to Dakin Road, to Four Winds Road, to Old Hollow Road, back to US Route 7 (4.2 miles end-to-end).
2. US Route 7, to Greenbush Road, to Stage Road, back to US Route 7 (5.5 miles end-to-end).

A map of the detour routes can be found in Appendix Q.

*Advantages:* This option would have minimal impacts to natural and cultural resources located up and downstream of the structure. This option reduces the time and cost of the project both at the development stage and construction. This is the safest traffic control option since the traveling public is removed from the construction site. There are many detour routes available for both vehicular traffic including a regional detour, a FAS detour route, and multiple paved local bypass routes.

*Disadvantages:* Traffic flow would not be maintained through the project corridor during construction.

### **Option 2: Phased Construction**

Phased construction is the maintenance of one lane of traffic on the existing bridge while working on the other lane. The project begins with traffic being constricted to one lane, while work is done on the other. After completion of improvements to the first lane, traffic is switched to the completed lane and work proceeds on the second lane. Traffic flow is constant, although delayed due to slower speeds in the work zone. This allows keeping the road open during construction, while having minimal impacts to adjacent property owners and environmental resources.

While the time required to develop a phased construction project would remain the same, the time required to complete a phased construction project increases because some of the construction tasks have to be performed multiple times. In addition to the increased design and construction costs mentioned above, the costs also increase for phased construction because of the inconvenience of working around traffic and the effort involved in coordinating the joints between the phases. Another negative aspect of phased construction is the decreased safety of the workers and vehicular traffic, which is caused by increasing the proximity and extending the duration that workers and moving vehicles are operating in the same confined space. Phased construction is usually considered when the benefits include reduced impacts to natural and cultural resources and decreased costs and development time by not requiring the purchase of additional ROW.

With phased construction, one side of each bridge deck would be constructed while traffic on US Route 7 is reduced from 2-lanes to 1-lane. Based on traffic volumes through this section of US Route 7, two lanes of traffic would be required to be maintained with this maintenance of traffic option. Unfortunately, maintaining two lanes of traffic would not be feasible based on the existing bridge geometry and beam configuration. One lane of traffic could be maintained by using a traffic signal, but would cause major traffic delays and backups on US Route 7 during peak hours.

*Advantages:* Traffic flow would be maintained through the project corridor during construction. Also, this option would have minimal impacts to adjacent properties and environmental and cultural resources. Right-of-Way would not be required for this maintenance of traffic option. Phasing the work allows the work to proceed one lane at a time without the expense of a temporary bridge and without the inconvenience of a closure and detour.

*Disadvantages:* Compared to a closure and detour or a temporary bridge scenario, it takes longer and costs more to construct, rehabilitate, or repair a bridge project in phases because some of the construction tasks have to be performed multiple times and cannot be performed concurrently. Additional permit requirements may come into play. The safety risks for both workers and travelers are also increased due to the close proximity to each other. Some structural qualities, such as joints, demand more coordination time and may suffer in quality as well. Two lanes of traffic flow would not be able to be maintained with this option based on existing bridge geometry.

### **Option 3: Temporary Bridge**

Based on the length between stop bars for placement of a temporary bridge and the traffic volumes along US Route 7 at this location, a temporary bridge would need to have two lanes to accommodate two-way traffic.

From a constructability standpoint, a temporary bridge could be placed either east or west of the existing structure and roadway corridor. A temporary bridge on either side of the road would require major tree clearing efforts, buried utility relocation, and would impact natural and cultural resources on either side of the bridge.

Additional costs would be incurred to construct a temporary bridge, including the cost of fill for the approaches and the bridge itself, installation and removal of the temporary bridge and approaches, and restoration of the disturbed area.

If a temporary bridge is chosen as the preferred method of traffic control, based on the traffic volumes, it should be a two-lane bridge. See the Temporary Bridge Layout Sheets in Appendix R.

*Advantages:* Traffic flow can be maintained along the US Route 7 corridor.

*Disadvantages:* This option would require a potential utility relocation and would have adverse impacts to natural and cultural resources. There would be decreased safety for the workers and to vehicular traffic, because of cars driving near the construction site, and construction vehicles entering and exiting the construction site. This traffic control option would be more costly and time consuming than an offsite detour.

## **VI. Alternatives Discussion**

This project was identified by Asset Management as a good candidate for bridge deck replacement. The objective of this scoping process is to apply a cost-effective treatment at the proper time to preserve and extend the useful life of the bridge. Preventative maintenance provides the biggest benefit for the smallest level of investment. By either repairing or replacing the bridge deck or superstructure, the service life of the superstructure and substructure can be maximized by protecting them from exposure to the elements that have caused the deck to deteriorate to its current condition. Therefore, the alternatives analysis was limited to the bridge deck and superstructure exclusively.

### **No Action**

This alternative is not recommended. The bridge is declining in structural condition and will continue to deteriorate if no action is taken. The bridge deck has large areas of heavy saturation, efflorescence staining, and areas of delamination and spalling that extend the full width of the bays and penetrate beyond the first layer of reinforcing. The superstructure has rust scale at the beam ends and scattered section loss along the beam flanges. In the interest of safety to the traveling public, the No Action alternative is not recommended. No cost estimate has been provided for this alternative since there are no immediate costs.

### **Deck Rehabilitation**

The existing deck of Bridge 139 is rated as a 5, or “fair” condition. The superstructure, referring to the steel beams, is rated a 6 (“satisfactory”), and the existing substructure is rated a 7 (“good”). Deck patching would include removal of loose and deteriorating concrete, cleaning and possibly supplementing reinforcing steel, application of patching materials to cracks and areas of section loss, and paving on the bridge and for a short distance on each approach to the bridge. Some characteristics of deck patching are as follows:

- Patching tends to accelerate the deterioration of the existing concrete that is in contact with the patching material, and thus offers a widely variable service life often 15 years or less.

- Much of the work would take place underneath the bridge with efforts required to avoid contamination of Lewis Creek.
- In approximately 15 years, the condition of the bridge would be similar to its current condition and major work would be required again.
- The bridge does not meet the minimum standard width with a 12<sup>2</sup>/<sub>3</sub>' typical section. The existing 3-foot-wide shoulders do not meet the minimum standard for shared-use by bicycles and pedestrians.

The disadvantages seem to outweigh the benefits to this short-term fix. Deck rehabilitation alone will not be considered further.

## **Deck Replacement**

This alternative would involve removing the existing deck in its entirety and placing a new wider deck on the existing steel beams. In addition to replacing the bridge deck and bridge railing, some repair work on the curtain walls between the wingwall and concrete repair made to the pier caps would be required. Work to be included for a deck replacement project includes:

- There is rust scale at the beam ends and scattered small locations along the beam flanges with minor section loss. The beams should be inspected and cleaned as needed, and the failing joints replaced.
- There is rust scale throughout the abutment 1 bearings with minor section loss. Bearings should be inspected and replaced as needed.
- There are scattered shrinkage cracks with minor saturation in the abutment end walls. Silane should be applied to all exposed substructure concrete as part of the project.
- A new composite deck with the typical section of 5'-12'-12'-5' would be constructed.

The existing substructure is in good condition, and it is reasonable to assume that it can safely carry anticipated traffic loads for an additional 40 years.

The existing deck geometry does not meet the minimum standard for bridge roadway width of 40-feet as set forth in the Vermont State Standards. A new deck on the existing beams should ideally be wide enough to meet minimum standards but would not be possible based on the existing geometry of the outer girders and available overhang. A more feasible bridge deck width would improve the existing bridge width to 34-feet with a 5'-12'-12'-5' typical section, which meets the minimum shared-use standard. The bridge deck width will be decided and finalized in the design phase of this project.

*Advantages:* This alternative would address the structural concerns of the bridge and extend the life of the existing structure an additional 40 years. This alternative will protect the superstructure for years to come from exposure to the elements. This option would also have minimal impacts to adjacent properties and resources.

*Disadvantages:* The new deck would have a design life greater than that of the remaining substructures and the bridge typical, while improved, would still not be up to design standards.

*Maintenance of Traffic:* Traffic could be maintained on an offsite detour, a temporary bridge, or with phased construction.

## **Superstructure Replacement**

A superstructure replacement would include a new deck, beams, and bridge railing. The new superstructure would be a new steel beam bridge, similar to the existing superstructure. Substructure repairs and modifications to accommodate the new superstructure would be as follows:

- There are scattered shrinkage cracks with minor saturation in the abutment end walls. Silane should be applied to all exposed substructure concrete as part of the project.
- The existing bridge seats would be cut down and new bridge seats and wingwalls would be poured to accommodate the new, wider superstructure.
- A new deck with a typical section of 5'-12'-12'-5' would be constructed.

The existing substructure is in satisfactory condition, and it is reasonable to assume that with the repairs listed above, the existing substructure can safely carry anticipated traffic loads for an additional 40 years.

The existing 3-foot-wide shoulders do not meet the minimum standard. A new superstructure should be constructed to a minimum rail-to-rail width of 34-feet; 12-foot lanes, with 5-foot shoulders. It should be evaluated in design if the existing substructures could accommodate a wider width to match the existing roadway corridor width more closely. This could be achieved by increasing the number of beams from six to seven.

*Advantages:* This alternative would address the structural concerns of the bridge and extend the life of the existing structure an additional 40 years. This alternative will protect the superstructure for years to come from exposure to the elements which have deteriorated the deck. This option would also have minimal impacts to adjacent properties and resources. This option would eliminate future maintenance concerns for the beams.

*Disadvantages:* The new superstructure would have a design life greater than that of the remaining substructures and the bridge typical, while improved, may still not be up to design standards.

*Maintenance of Traffic:* Traffic could be maintained on an offsite detour, a temporary bridge, or with phased construction.

## **VII. Alternatives Summary**

Based on the existing site conditions and bridge condition there are several viable alternatives:

- Alternative 1: Deck Rehabilitation with Traffic Maintained via Temporary Lane Closures
- Alternative 2a: Deck Replacement with Traffic Maintained on an Offsite Detour
- Alternative 2b: Deck Replacement with Traffic Maintained via Phased Construction
- Alternative 2c: Deck Replacement with Traffic Maintained on a Temporary Bridge
- Alternative 3a: Superstructure Replacement with Traffic Maintained on an Offsite Detour
- Alternative 3b: Superstructure Replacement with Traffic Maintained via Phased Construction
- Alternative 3c: Superstructure Replacement with Traffic Maintained on a Temporary Bridge

A cost evaluation for each of the alternatives is shown below.

**VIII. Cost Matrix<sup>1</sup>**

Ferrisburgh BF 019-4(35)		Do Nothing	Alternative 1	Alternative 2			Alternative 3		
			Deck Rehabilitation	Deck Replacement			Superstructure Replacement		
			a. Temporary Lane Closures	a. Offsite Detour	b. Phased Construction	c. Temporary Bridge	a. Offsite Detour	b. Phased Construction	c. Temporary Bridge
COST	Bridge Cost	\$0	\$787,700	\$913,300	\$1,050,300	\$913,300	\$4,254,700	\$4,892,900	\$4,254,700
	Removal of Structure	\$0	\$0	\$834,000	\$959,100	\$834,000	\$834,000	\$959,100	\$834,000
	Roadway	\$0	\$110,000	\$450,000	\$647,000	\$450,000	\$513,000	\$737,000	\$513,000
	Maintenance of Traffic	\$0	\$85,490	\$348,300	\$734,100	\$1,154,040	\$348,300	\$734,100	\$1,154,040
	Construction Costs	\$0	\$983,190	\$2,545,600	\$3,390,500	\$3,351,340	\$5,950,000	\$7,323,100	\$6,755,740
	Construction Engineering & Contingencies	\$0	\$294,957	\$636,400	\$847,625	\$837,835	\$892,500	\$1,098,465	\$1,013,361
	Accelerated Premium	\$0	\$0	\$178,192	\$0	\$0	\$416,500	\$0	\$0
	Total Construction Costs w CEC	\$0	\$1,278,147	\$3,360,192	\$4,238,125	\$4,189,175	\$7,259,000	\$8,421,565	\$7,769,101
	Preliminary Engineering	\$0	\$294,957	\$254,560	\$271,240	\$268,107	\$892,500	\$1,098,465	\$1,013,361
	Right of Way	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total Project Costs	\$0	\$1,573,104	\$3,614,752	\$4,509,365	\$4,457,282	\$8,151,500	\$9,520,030	\$8,782,462
Annualized Costs	\$0	\$104,874	\$90,369	\$112,734	\$111,432	\$203,788	\$238,001	\$219,562	
TOWN SHARE	No Town Share								
TOWN %	No Town Share								
SCHEDULEING	Project Development Duration	NA	2 years	2 years	2 years	2 years	2 years	2 years	2 years
	Construction Duration	NA	3 months	4 months	8 months	8 months	4 months	8 months	8 months
	Closure Duration (If Applicable)	NA	NA	30 days	NA	NA	45 days	NA	NA
ENGINEERING	Typical Section - Roadway (feet)	40	40	40	40	40	40	40	40
	Typical Section - Bridge (feet)	3'/12'/12'/3' (30)	3'/12'/12'/3' (30)	5'/12'/12'/5' (34')			5'/12'/12'/5' (34')		
	Geometric Design Criteria	Substandard Width	Substandard Width	Substandard Width			Substandard Width		
	Traffic Safety	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	Alignment Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
	Bicycle Access	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	Pedestrian Access	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
	Hydraulics	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
Utilities	No Change	No Change	Likely requires underground utility relocation			Likely requires underground utility relocation			
OTHER	ROW Acquisition	No	No	No	No	No	No	No	No
	Road Closure	No	No	Yes	No	No	Yes	No	No
	Design Life	10	15	40	40	40	40	40	40

<sup>1</sup> Costs are estimates only, used for comparison purposes.



## IX. Conclusion

Our recommendation is **Alternative 2a**; to replace the existing deck using a maximum 30-day closure and offsite detour.

### Structure:

This alternative includes replacing the deck with a new precast or cast-in-place concrete deck using a maximum 30-day bridge closure and offsite detour. A deck replacement will also include new bridge railing, membrane, and pavement. Additionally, shear studs will be welded to the existing beams for a composite deck. Providing a continuous deck should be evaluated in design to eliminate the joints over the piers. During design, accelerated bridge construction will be investigated to reduce the 30-day closure duration.

Bank armoring should also be included as part of this project in order to mitigate the observed erosion at the abutment banks.

The new deck will match the existing geometry in regard to vertical and horizontal alignment. By increasing the deck overhang, the existing 3-foot-wide shoulders can be increased to 5-feet. While this does not meet the minimum standard of 8-feet, a 5-foot shoulder meets the minimum shared use standards.

### Traffic Control:

The recommended method of traffic control is to close the bridge for 30 days and maintain traffic on an offsite detour. There are many available local bypass and FAS detour routes for vehicular traffic to use during the bridge closure. It is recommended that the State-signed truck detour utilize VT Route 17 to VT Route 116, VT Route 2A, Interstate I-89, and Route 189, back to US Route 7. There are numerous local bypass routes located around the bridge site that are expected to be used by passenger cars. During design, VTrans will evaluate those routes for signal timing modifications and the addition of signals at key intersections.

There are 9.6% trucks, and the separate truck route on VT Route 116 is recommended for through truck traffic. This will require a robust public outreach effort to the trucking community.

US Route 7 through the project area is classified as a heavily used bicycle route and accommodations for bicycle traffic should be considered in design.

Due to the narrow geometry of the bridge, maintaining two-way traffic via phased construction is not a feasible option. A two-lane temporary bridge constructed on either side of the existing bridge would have major impacts to natural and cultural resources and is the most expensive option.

## **X. Appendices**

- Appendix A: Town Map
- Appendix B: Bridge Inspection Report
- Appendix C: Preliminary Hydraulics Memo
- Appendix D: Preliminary Geotechnical Information
- Appendix E: Resource Identification Completion Memo
- Appendix F: Natural Resources Memo
- Appendix G: Archeology Memo
- Appendix H: Historic Memo
- Appendix I: Environmental Specialist Resource ID
- Appendix J: Hazardous Sites Map
- Appendix K: Stormwater Resource ID
- Appendix L: Landscape Clearance Resource ID
- Appendix M: Utilities Resource ID
- Appendix N: Local Input
- Appendix O: Operations Input
- Appendix P: Crash Data
- Appendix Q: Detour Map
- Appendix R: Plans

## Appendix A: Town Map

Scale: 1:57,160

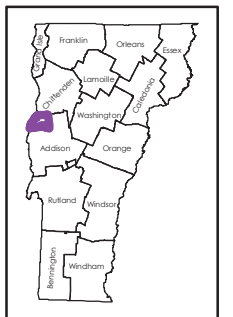


**FERRISBURGH  
US 7 BR 139**

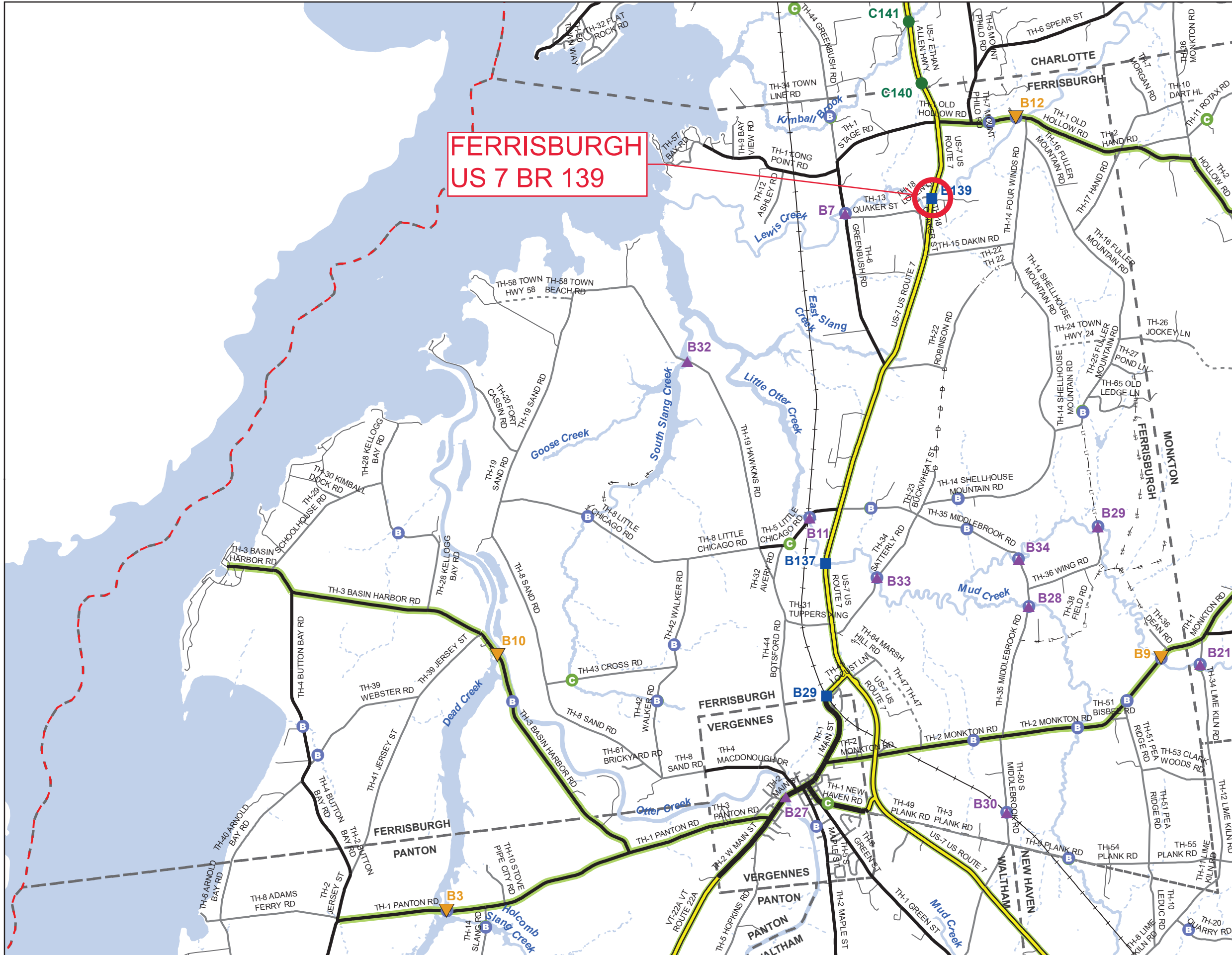
- ★ INTERSTATE
- STATE LONG
- STATE SHORT
- ▲ TOWN LONG
- ▼ FEDERAL AID
- ◆ BIKE PATH
- INTERSTATE
- STATE HIGHWAY
- CLASS 1
- CLASS 2
- CLASS 3
- CLASS 4
- - - LEGAL TRAIL
- PRIVATE
- - - DISCONTINUED
- FEDERAL AID HIGHWAY
- MAINTENANCE DISTRICT
- POLITICAL BOUNDARY
- VTRANS REGION BOUNDARY
- NAMED RIVER-STREAM
- - - UNNAMED RIVER-STREAM
- B Point from Local Bridge Data \*
- C Point from Local Culvert Data \*

\* Points are from local town bridge and culvert inventories. Some points may overlap where VTrans has also conducted an inventory on the Town highway.  
Data source: VOB/CIT aka VTCulverts

Produced by:  
Mapping Section  
Division of Policy, Planning and  
Intermodal Development  
Vermont Agency of Transportation  
April 2022



**FERRISBURGH**  
COUNTY-TOWN CODE: 0105-0  
ADDISON COUNTY  
DISTRICT #5  
District Long Name: Colchester District  
VTrans Four Region: Northwest



This map was funded in part through grants from the Federal Highway Administration, U.S. Department of Transportation. The representation of the authors expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

## **Appendix B: Bridge Inspection Report**

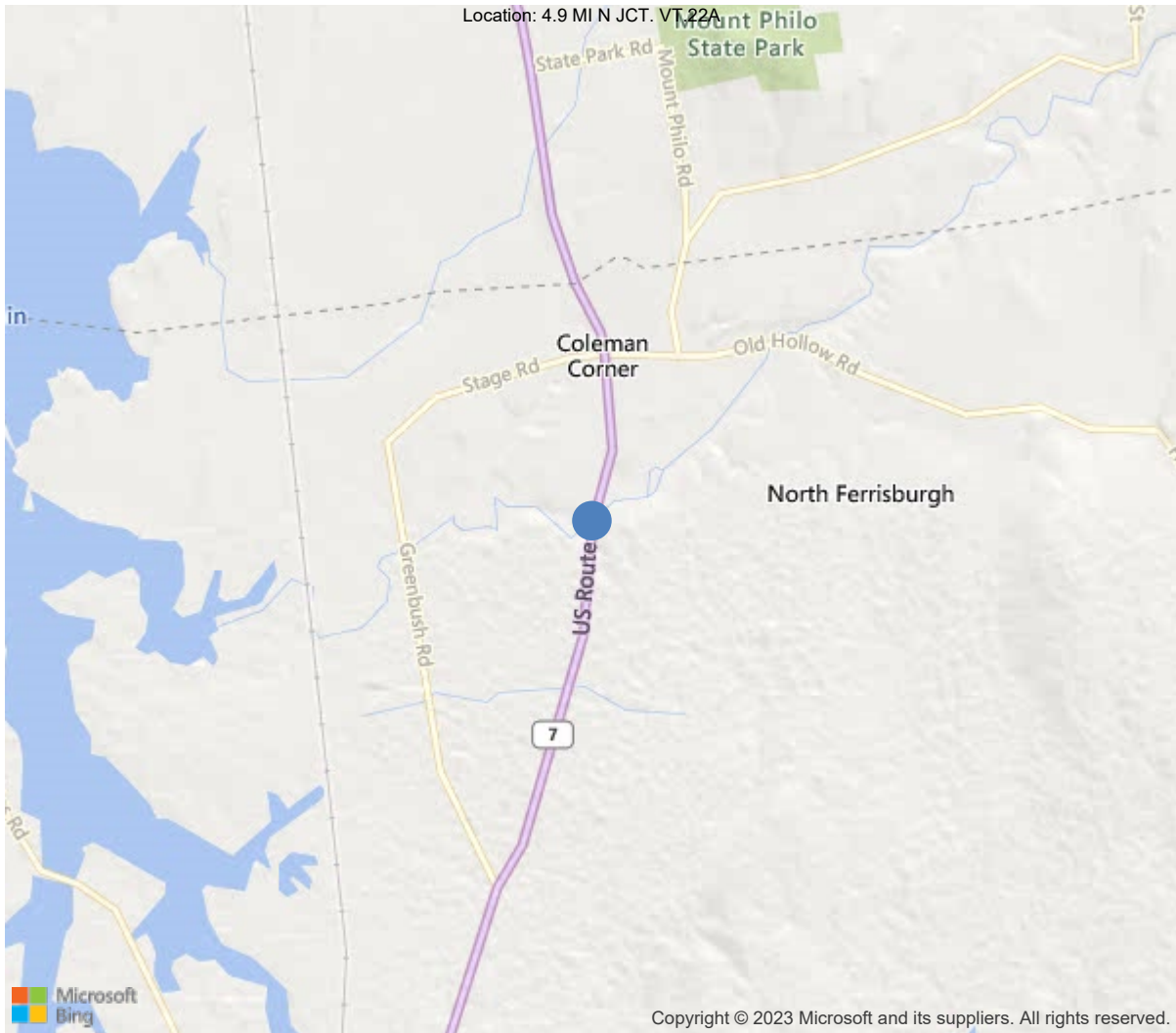


Town: 78 - FERRISBURGH

District 5, 1 - ADDISON County

Owner: 1 - State Highway Agency

Maintenance Responsibility: 1 - State Highway Agency



44.24823, -73.22920

IDENTIFICATION	
(1) State Names	50 - Vermont
(8) Structure Number	200019013901052
(5) Inventory Route	1
(2) Highway Agency District	5 - District 5
(3) County Code	1 - ADDISON
(4) Place Code	26275
(6) Features Intersected	LEWIS CREEK
(7) Facility Carried	US 00007 ML
(9) Location	4.9 MI N JCT. VT.22A
(11) Mile Point	116.715 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrte	0010000007
(16) Latitude	44.2482305555556
(17) Longitude	-73.2291972222222
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	42
Material	4 - Steel continuous
Type	2 - Stringer/Multi-beam or girder
(44) Approach Structure Type	00
Material	0 - Other
Type	0 - Other
(45) No. of Spans in Main Unit	3
(46) No. of Approach Spans	0
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	6 - Bituminous
Type of Membrane	2 - Preformed Fabric
Type of Deck Protection	0 - None
AGE AND SERVICE	
(27) Year Built	1957
(106) Year Reconstructed	0
(42) Type of Service	15
On	1 - Highway
Under	5 - Waterway
(28) Lane	
On	2
Under	0
(29) Average Daily Traffic	11900
(30) Year of ADT	2018
(109) Truck ADT	10 %
(19) Bypass, Detour Length	20 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	100 ft
(49) Structure Length	286 ft
(50) Curb or Sidewalk Width	
Left	1.5 ft
Right	1.5 ft
(51) Bridge Roadway Width Curb to Curb	30 ft
(52) Deck Width Out to Out	35.4 ft
(32) Approach Roadway Width (W/Shoulders)	36 ft
(33) Bridge Median	0 - No median
(34) Skew	45 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	30 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	0 ft
Ref:	
(55) Min Lat Underclear RT	0 ft
Ref:	
(56) Min Lat Underclear LT	0 ft
NAVIGATION DATA	
(38) Navigation Control	0 - No navigation control on w
(111) Pier Protection	
(39) Navigation Vertical Clearance	0 ft
(116) Vert-Lift Bridge Nav Min Vert Clear	0 ft
(40) Navigation Horizontal Clearance	0 ft

CLASSIFICATION	
(112) NBIS Bridge Length	Y
(104) Highway System	1
(26) Functional Class	2 - Rural Principal Arterial -
(100) Defense Highway	1 - The inventory route is on
(101) Parallel Structure	N - No parallel structure exists
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0 - N/A
(110) Designated National Network	0 - The inventory route is not
(20) Toll	3 - On free road. The structure
(21) Maintain	1 - State Highway Agency
(22) Owner	1 - State Highway Agency
(37) Historical Significance	5 - Bridge is not eligible for
CONDITION	
(58) Deck	5
(59) Superstructure	6
(60) Substructure	7
(61) Channel & Channel Protection	8
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	4 - M 18 / H 20
(63) Operating Rating Method	1
(64) Operating Rating	
Type	1 - Load Factor(LF)
Rating	55
(65) Inventory Rating Method	1 - Load Factor(LF)
(66) Inventory Rating	
Type	
Rating	33
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	A - Open, no restriction
APPRAISAL	
(67) Structural Evaluation	6
(68) Deck Geometry	4
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	8
(72) Approach Roadway Alignment	8
(36A) Bridge Railings	0 - Inspected feature does not meet
(36B) Transitions	0 - Inspected feature does not meet
(36C) Approach Guardrail	1 - Inspected feature meets current
(36D) Approach Guardrail Ends	1 - Inspected feature meets current
(113) Scour Critical Bridges	8 - Bridge foundations determined to
PROPOSED IMPROVEMENTS	
(75) Type of Work	35 - Bridge rehabilitation bec
(76) Length of Structure Improvement	286 ft
(94) Bridge Improvement Cost (Multiply value by 1000)	\$ 3544
(95) Roadway Improvement Cost (Multiply value by 1000)	\$ 50
(96) Total Project Cost (Multiply value by 1000)	\$ 3594
(97) Year of Improvement Cost Estimate	2020
(114) Future ADT	12495
(115) Year of Future ADT	2028

INSPECTIONS *			
(90) Inspection Date			05/10/2023
(91) Frequency			24
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	No		
C: Other Special Inspection			
* The inspection date and frequency information in this box contains the current NBI date and frequency information. Please refer to the report header for the date this inspection was conducted.			



**Deck**

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
<b>12</b>	Reinforced Concrete Deck	SF	10124	0	7974	2100	50
<b>1080</b>	Delamination/Spall/Patched Area	SF	2150	0	2000	100	50
<b>1120</b>	Efflorescence/Rust Staining	SF	7974	0	5974	2000	0
<b>510</b>	Wearing Surfaces	SF	8580	8580	0	0	0
<b>301</b>	Pourable Joint Seal	LF	42	42	0	0	0
<b>303</b>	Assembly Joint with Seal	LF	35	18	17	0	0
<b>2360</b>	Adjacent Deck or Header	LF	17	0	17	0	0
<b>330</b>	Metal Bridge Railing	LF	572	286	114	172	0
<b>7000</b>	Damage	LF	286	0	114	172	0
<b>804</b>	Concrete Fascia	LF	572	0	372	200	0
<b>1080</b>	Delamination/Spall/Patched Area	LF	72	0	72	0	0
<b>1120</b>	Efflorescence/Rust Staining	LF	500	0	300	200	0

**58 - Deck** (5 - FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.)

Moderate to heavy saturation throughout with efflorescence, varying sized delams, and small areas of rust staining. There are a few areas of spalling that extend the full width of the bays and penetrate up to and beyond the first layer of reinforcing. Bays 3 and 4 have large areas of timber form work in place along spans 1 and 2.

**200 - Existing Wearing Surface Depth** (3")

**A21 - Deck Wearing Surface Condition** (1 - Very Good)

**A24 - Deck Curb Condition** (5 - Poor)

Deep voided spalls and failed patched areas with exposed reinforcing along the granite facing throughout. The abutment 1 curb ends have spalled out with exposed reinforcing leaving the old sliding steel plates undermined and unsupported.

**A36 - Deck Joint Trough Condition** (1 - Very Good)

**A38 - Deck Drain Condition** (5 - Poor)

The deck drains have completely rotted out. the Vermont joints galvanized down spout drain is in good condition.

**A39 - Deck Fascia Condition** (3 - Satisfactory)

Map cracking throughout with varying amounts of efflorescence staining and scattered small delams. The fascia soffits have moderate to heavy saturation with efflorescence and scattered rust staining. The upstream soffit has scattered lineal spalls with exposed reinforcing as well.

**B.C.05 Bridge Railing Condition Rating** (FAIR - Some moderate defects; strength and performance of the component are not affected.)

Aluminum tube steel rail is in good condition. The concrete pedestals have large delamed areas with rust staining and spalls with exposed reinforcing throughout. Sections of the upstream rail has had repairs with new pedestals installed at the abutment ends and near mid span with W beam rail added

**B.C.08 Bridge Joints Condition Rating** (VERY GOOD - Some inherent defects.)

**APPROACH**

**72 - Approach Roadway Alignment (8 - Equal to present desirable criteria)**

**A13 - Approach Rail Condition (1 - Very Good)**

**A16 - Approach Post Condition (1 - Very Good)**

### Superstructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
<b>107</b>	Steel Open Girder/Beam	LF	1716	1458	172	86	0
<b>1000</b>	Corrosion	LF	258	0	172	86	0
<b>515</b>	Steel Protective Coating	SF	14872	11010	2970	744	148
<b>3420</b>	Peeling/Bubbling/Cracking	LF	3862	0	2970	744	148
<b>311</b>	Movable Bearing	EA	12	0	6	6	0
<b>1000</b>	Corrosion	EA	12	0	6	6	0
<b>313</b>	Fixed Bearing	EA	12	6	4	2	0
<b>1000</b>	Corrosion	EA	6	0	4	2	0

**59 - Superstructure** (6 - SATISFACTORY CONDITION - structural elements show some minor deterioration.)

Rust scale at the beam ends and scattered small locations along the flanges with minor pitting/section loss.

**A55 - Lateral Bracing Condition** (1 - Very Good)

**B.C.07 Bridge Bearings Condition Rating** (GOOD - Some minor defects.)

Rust scale throughout the abutment 1 bearings with minor pitting/section loss.

**B.C.14 NSTM Inspection Condition** (NOT APPLICABLE - Component does not exist.)

### Substructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
<b>205</b>	Reinforced Concrete Column	EA	6	6	0	0	0
<b>215</b>	Reinforced Concrete Abutment	LF	100	80	20	0	0
<b>1120</b>	Efflorescence/Rust Staining	LF	20	0	20	0	0
<b>234</b>	Reinforced Concrete Pier Cap	LF	100	100	0	0	0

**60 - Substructure** (7 - GOOD CONDITION - some minor problems.)

Scattered shrinkage cracks with light staining and minor saturation.

**A71 - Abutment End Walls Condition** (3 - Good)

Scattered shrinkage cracks with light staining and minor saturation.

**A81 - Pier Seat/Cap Condition** (2 - Very Good)

**A83 - Pier Shaft Condition** (2 - Very Good)

**A85 - Pier Columns Condition** (2 - Very Good)

**A86 - Pier Footings Condition** (2 - Very Good)

### CHANNEL

**61 - Channel Condition** (8 - Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.)

### GENERAL OBSERVATION

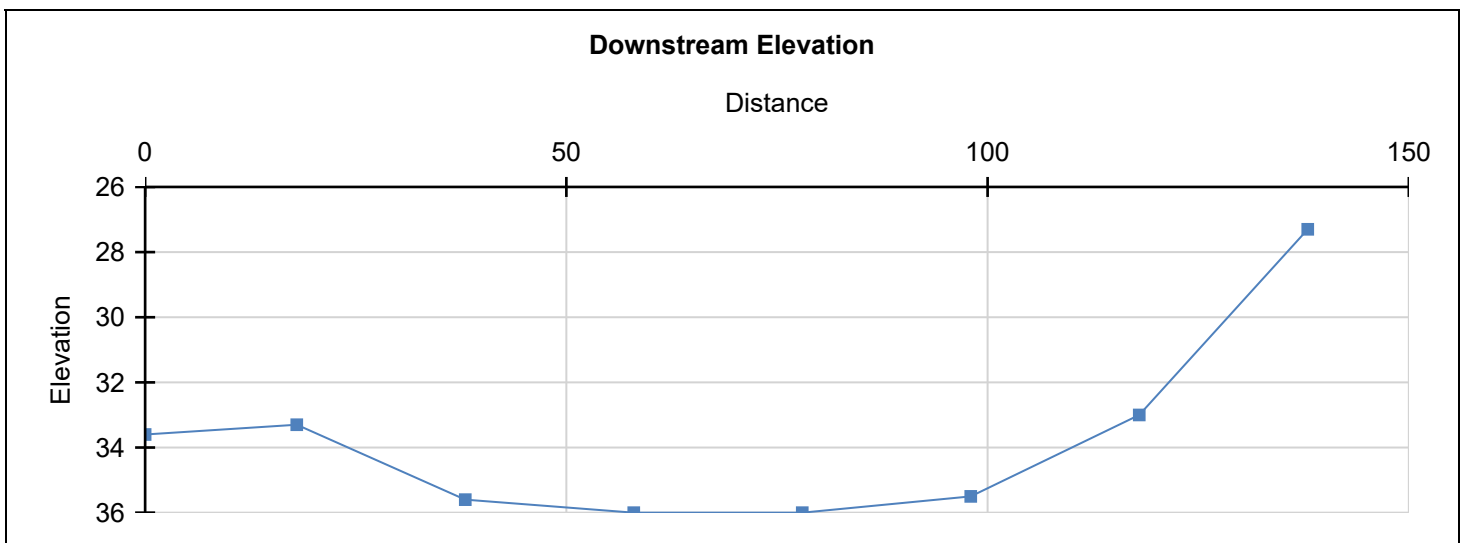
Continued saturation and deterioration throughout the deck, a deck replacement project should be considered see maintenance report.

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	10124	0	7974	2100	50
1080	Delamination/Spall/Patched Area	SF	2150	0	2000	100	50
1120	Efflorescence/Rust Staining	SF	7974	0	5974	2000	0
510	Wearing Surfaces	SF	8580	8580	0	0	0
107	Steel Open Girder/Beam	LF	1716	1458	172	86	0
1000	Corrosion	LF	258	0	172	86	0
515	Steel Protective Coating	SF	14872	11010	2970	744	148
3420	Peeling/Bubbling/Cracking	LF	3862	0	2970	744	148
205	Reinforced Concrete Column	EA	6	6	0	0	0
215	Reinforced Concrete Abutment	LF	100	80	20	0	0
1120	Efflorescence/Rust Staining	LF	20	0	20	0	0
234	Reinforced Concrete Pier Cap	LF	100	100	0	0	0
301	Pourable Joint Seal	LF	42	42	0	0	0
303	Assembly Joint with Seal	LF	35	18	17	0	0
2360	Adjacent Deck or Header	LF	17	0	17	0	0
311	Movable Bearing	EA	12	0	6	6	0
1000	Corrosion	EA	12	0	6	6	0
313	Fixed Bearing	EA	12	6	4	2	0
1000	Corrosion	EA	6	0	4	2	0
330	Metal Bridge Railing	LF	572	286	114	172	0
7000	Damage	LF	286	0	114	172	0
804	Concrete Fascia	LF	572	0	372	200	0
1080	Delamination/Spall/Patched Area	LF	72	0	72	0	0
1120	Efflorescence/Rust Staining	LF	500	0	300	200	0

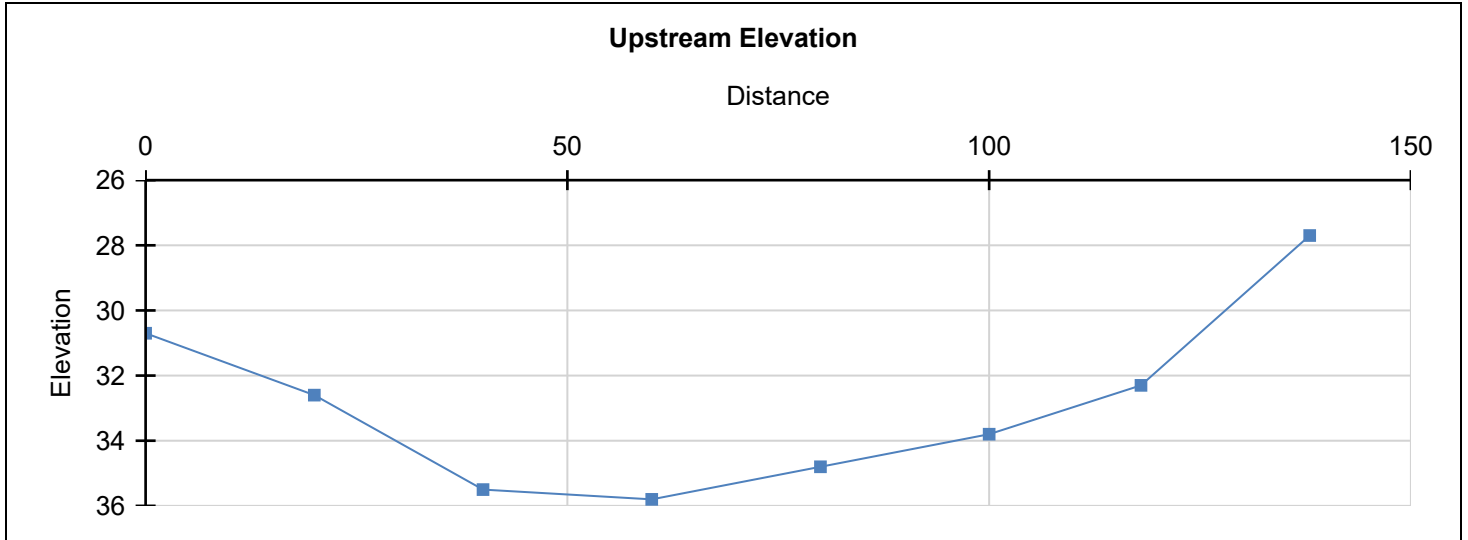
### Channel Profile

Waterway Flow: West to East	Top of Water: 32ft at upstream station 7
Origin: Fascia beams	Bottom of Beam:

Station	Distance	Downstream	Upstream
Abutment 2 + 70ft	0	33.6	30.7
2	18	33.3	
2	20		32.6
3	38	35.6	
3	40		35.5
4	58	36	
4	60		35.8
5	78	36	
5	80		34.8
6	98	35.5	
6	100		33.8
7	118		32.3
7	118	33	
8	138		27.7
8	138	27.3	



Team Lead: Justin White, Inspection Date: 05/10/2023





South approach



North approach



Downstream curb



Downstream curb





Guardrail pedestals



Guardrail pedestals



Upstream repaired rail



Abutment 1 joint



Abutment 1 downstream curb/joint end



Abutment 1 upstream curb/joint end



Abutment 2 joint



Downstream fascia



Upstream fascia



Span 1



Spalls Span 1 bays 1 and 3



Span 2



Spall span 2 bay 3



Span 3



Abutment 1 bearings



Pier 2



Abutment 1

**Maintenance Needs**

**Date Reported:** 05/10/2023

**Priority:**

**Status:** Open

**Type of Work:** 8 - Deck - Deck replacement

**Component:** Deck

---

**Deficiency Description**

Moderate to heavy saturation throughout with efflorescence, varying sized delams, and small areas of rust staining. There are a few areas of spalling that extend the full width of the bays and penetrate up to and beyond the first layer of reinforcing. Bays 3 and 4 have large areas of timber form work in place along spans 1 and 2.

**Remarks**

A deck replacement project should be considered.

---



Spalls Span 1 bays 1 and 3



Spall span 2 bay 3

## **Appendix C: Preliminary Hydraulics Memo**

**TO:** Laura Stone, Structures Scoping Project Manager

**CC:** Patrick Ross, Hydraulics Engineer

**FROM:** Madeline Glow, Hydraulics Project Engineer

**DATE:** April 16, 2024

**SUBJECT:** Ferrisburgh BF 019-4(35), pin#22B390: Preliminary Hydraulics Memo  
Site Location: Ferrisburgh, US-7 (300 feet north of Lewis Creek Dr), BR 139 over Lewis Creek  
Coordinates: [44.24823, -73.22920](#)

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

#### **ANR Coordination/ Bankfull Width**

A site visit to measure bankfull width was not completed because the existing bridge is most likely going to be rehabilitated. For reference, the Phase II Stream Geomorphic Assessment completed by the Agency of Natural Resources reported a bankfull width of approximately 84 ft through this section of Lewis Creek. If the scope of this project changes and a new structure is proposed, further coordination with ANR will be necessary to confirm a minimum clear span that meets equilibrium standards.

#### **Design Flows**

US Route 7 is a Principal Arterial corresponding to a hydraulic design flow and scour/countermeasure design flow of 2% AEP (Q50) and 1% AEP (Q100), respectively.

#### **Existing Conditions**

- Steel Girder Bridge
- 200 feet +/- hydraulic clear span with a minimum low chord elevation of 148.87 feet.
- There is approximately 21.8 ft and 20.8 ft of freeboard at the 2% AEP and 1% AEP, respectively.
- The existing structure does meet current standards of the VTrans Hydraulic Manual and appears to meet state stream equilibrium standards for bankfull width.

#### **FEMA & FHARC**

This project is within the FEMA Special Flood Hazard Area without Base Flood Elevations (Zone A). Any replacement or temporary structure option that encroaches the existing floodplain will trigger the Flood Hazard Area & River Corridor Rule (FHA&RC) General Permit at a minimum and further coordination with the hydraulics unit may be needed. This analysis did not include any temporary impacts associated with construction fill and/or a temporary bridge.



**Stone Fill**

Stone Fill, Type II should be used for any necessary bank and abutment armoring and to protect any disturbed channel banks or roadway slopes. Please coordinate with the hydraulics unit regarding stone fill limits and extents during preliminary design.

**Additional Comments**

If the scope of this project changes in ways that would affect the low chord elevation or abutment locations, please notify the Hydraulics section so we can adjust our analysis. Please contact us with any questions.

## **Appendix D: Preliminary Geotechnical Memo**



## Geotechnical Scoping Report Data Form

### **General Project Information**

Project Name:	Ferrisburgh BF 019-4(35)				
Project Pin #	22B390				
Requestor Name:	Laura Stone, P.E., Scoping Engineer				
Prepared By:	E. Thomas, AOT Geologist				
Date:	11/14/2023				
Location Information of Structure:	Town	Route	Mile Marker		
	Ferrisburgh	US-7	6.2		
Structure Type:	Bridge	Structure ID #:	Bridge #139	Conceptual Treatment Type:	Deck
General Project Description:	The structure consists of a continuous steel multi-beam/girder that extends over Lewis Creek in the Town of Ferrisburgh on US-7. The conceptual treatment stated by Structures is a deck replacement.				

### **Geological Information**

Surficial Map Description:	Alluvium
Bedrock Map Description:	Iberville Fm. Shale/Siltstone. Dark-gray shale with thin discontinuous beds of cross-bedded and graded dolomitic siltstone.

**Record Plan Information**

Are there Record Plans?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Record Plans ID #	<a href="#">57s652</a>
Historical Plan Notes:	The length of the bridge is indicated to be 283.54 ft. The bridge foundation consists of two abutments and two piers. Abutment 1 and Pier 1 are located at the north end of the bridge while Pier 2 and Abutment 2 are located at the south end of the bridge. 13 borings total were collected in the record plans. 3 borings were conducted for Abutment 1, 3 borings for Pier 1, 4 borings for Pier 2, and 3 borings for Abutment 2. The plans indicate that the abutment foundations consist of piles, while the piers suggest spread footings.

**Bedrock Depth Information**

Are there Historical Borings?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>				
Historical Boring Information:	Project Name	Distance from Project (ft)	# of Borings	Top of Bedrock Elevation (ft)	Rock Type
	Ferrisburgh F72 (7)	0 – this is the original construction.	13	107.9 to 101.8	Not stated in logs.
Link to Historical Boring Information:	<a href="M:\Projects\22b390\Structures\Record Plans">M:\Projects\22b390\Structures\Record Plans</a>				
Is there any bedrock depth information from well data near the project area?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>				
Well Data Information:	Well Report #	Bedrock Depth (ft)	Distance from Project (ft)		
	399	104	350		
	23021	73	381		
	56468	75	530		

Are Bedrock Outcrops Present at the Site?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bedrock Depth General Comments:	Depth of bedrock encountered as stated in boring logs found ranges between 6 ft to 15 ft.

**General Site Conditions**

Site Visit Conducted?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Date of Site Visit:	N/A
Are there Overhead Utilities at the Site?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Are there environmental Hazards Present at the Site?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Information regarding found Environmental Hazards:	N/A
Site Condition Notes:	Due to the quality of the photos available of the project site, existing information, and the conceptual treatment type stated as deck removal, a site visit was not conducted.

Note that representative site photos are provided in Appendix A.

**Recommendations**

Are Borings Needed in the Scoping Phase?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Subsurface Investigation Recommendations:	Based on the information reviewed during this investigation, this structure appears to be a good candidate for a deck replacement assuming the loads from the replacement deck are similar in magnitude to the existing loads. If a replacement deck will increase the loading on the existing foundation, a detailed geotechnical assessment of the subsurface conditions beneath the abutments and piers may be required to assess their capacity to support the increased loads. It is assumed a minimum of two borings would be taken and if shallow bedrock is encountered then rock cores would be taken to assess the quality

	and classification of the bedrock. Additional methods would also be recommended to profile the bedrock surface.
Foundation & Structure Type Recommendations:	The Geotechnical Engineering Section can assist in performing an assessment of the existing abutments if the proposed replacement of the deck increases the loading. A detailed geotechnical assessment may be required to assess the capacity of the abutments to support the increased loading and check for any potential stability issues.

The information provided is utilized from the databases and references noted in the Reference Section below. This form has been completed to the best of staff and reviewer knowledge.

Please reach out to us if you have any questions or concerns.

Staff Name & Title: *EJT*

Ethan Thomas, AOT Geologist	Ethan.Thomas@vermont.gov (802) 595-6752
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Reviewer Name & Title: *END*

Eric Denardo, P.E.	Geotechnical Engineer
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**References:**

Doll, C. G., 1970, Surficial Geologic Map of Vermont, Vermont Geological Survey, Montpelier, VT.

Ratcliffe, N. M., Stanley, R. S., Gale, M. H., Thompson, P. J., Walsh, G. J., 2011, Bedrock Geologic Map of Vermont, Vermont Geological Survey, Montpelier, VT.

Vermont Agency of Natural Resources Department of Environmental Conservation, Natural Resources Atlas, [www.anr.vermont.gov/maps/nr-atlas%20](http://www.anr.vermont.gov/maps/nr-atlas%20), accessed 11/08/2023.

## APPENDIX A



Appendix A 1: Approach of Bridge #138. The view is to the north.





Appendix A 2: Abutment 1. Note some undermining of the left side of the abutment.



Appendix A 3: View of Pier 2.



Appendix A 4: View of Pier 1.



Appendix A 5: View of Abutment 2.

## **Appendix E: Resource ID Completion Memo**



OFFICE MEMORANDUM
AOT - PDB - ENVIRONMENTAL SECTION

RESOURCE IDENTIFICATION COMPLETION MEMO

TO: Laura Stone, Project Manager
FROM: Julie Ann Held, Environmental Specialist
DATE: March 27, 2024
Project: Ferrisburgh BF 019-4(35)

ENVIRONMENTAL RESOURCES:

- Archaeological Resources: [X] Yes [ ] No See Archaeological Resource ID Memo
Historic Resources: [ ] Yes [X] No See Historic Resource ID Memo
Wetlands: [X] Yes [ ] No See Natural Resource ID Memo
Aquatic Organism Passage: [ ] Yes [X] No See Natural Resource ID Memo
Agricultural Soils: [ ] Yes [X] No See Natural Resource ID Memo
Wildlife Habitat: [X] Yes [ ] No See Natural Resource ID Memo
Endangered Species: [X] Yes [ ] No See Natural Resource ID Memo
Stormwater Considerations: [X] Yes [ ] No See Stormwater Resource ID Memo
Landscape Considerations: [X] Yes [ ] No See Landscape Resource ID Memo
6(f) Properties: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Hazardous Waste: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Contaminated Soils: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Wild Scenic Rivers: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Act 250 Permits: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
FEMA Floodplains: [X] Yes [ ] No See Environmental Specialist Resource ID Memo
Flood Hazard Area: [X] Yes [ ] No See Environmental Specialist Resource ID Memo
River Corridor: [X] Yes [ ] No See Environmental Specialist Resource ID Memo
Protected Lands: [X] Yes [ ] No See Environmental Specialist Resource ID Memo
US Coast Guard: [ ] Yes [ ] No See Environmental Specialist Resource ID Memo
Lakes and Ponds: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Scenic Highway/ Byway: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Environmental Justice: [ ] Yes [X] No See Environmental Specialist Resource ID Memo
Other: [ ] Yes [X] No See Environmental Specialist Resource ID Memo

cc:
Project File

## **Appendix F: Natural Resources Memo**



To: Ferrisburgh BF 019-4(35)  
Project File

Date: December 7, 2023

Memorandum

Project #: 58916.06

From: Mitch Jackman;  
Carla Fenner, PWS

Re: Natural Resources Assessment

---

On behalf of the Vermont Agency of Transportation ("VTrans"), VHB prepared this memorandum to summarize the results of a natural resources desktop assessment, wetlands and waters field delineation, protected bat potential roost tree ("PRT") survey and rare, threatened and endangered ("RTE") plants survey (together, "natural resources assessments") conducted for the proposed Ferrisburgh BF 019-4(35) project ("Project") located in Ferrisburgh, Vermont at the crossing of Lewis Creek. The Project would occur within the VTrans right-of-way ("ROW") along US Route 7 ("US-7").

Assessments focused on an approximately 6.7-acre area generally centered on the ("Study Area"). The Study Area was established to include the footprint of Project activities plus accessible lands within a 50-foot setback from the Project's limits of disturbance ("LOD") in order to identify state-regulated Class II wetland buffers that may extend into the Study Area associated with wetlands located beyond the LOD and potential (as yet undesigned) erosion prevention and sediment contract ("EPSC") measures (see Natural Resources Map, **Attachment 1**).

The natural resources assessment for the Project included reviews of public and privileged databases and field surveys and was designed to include an evaluation for the presence/absence, and potential impacts to streams, wetlands, and RTE plant species, including bats, and assess the presence of non-native invasive plant species ("NNIS"). This memorandum was written to inform the planning, design, and permitting (if needed) of the Project.

## EXISTING CONDITIONS

The Study Area is located within the Champlain Valley Biophysical Region of Vermont, which is characterized by relatively warm temperatures and lower precipitation than other regions of Vermont, and also relatively fertile clay and silt derived soils. Lewis Creek runs generally east to west through the Study Area and under a Bridge 139, a three-span continuous steel girder bridge with a reinforced concrete deck and reinforced concrete abutments and columns (2), constructed in 1957. In addition to the Lewis Creek (watershed HUC:04300108502), the Vermont Hydrography Dataset ("VHD") mapped an unnamed perennial stream to the south and flowing generally northwest towards Lewis Creek in the Study Area that passes under US-7 via a culvert. The Study Area also contains one wetland feature in the southwest portion that is included in the Vermont Significant Wetland Inventory ("VSWI") as mapped by the Vermont Department of Environmental Conservation ("DEC").

The Natural Resources Conservation Service ("NRCS") has mapped the dominant soils within the Study Area as Winooski very fine sandy loam (Wo) and Hadley very fine sandy loam (Hh, NRCS, 2022). On-site elevations range from approximately 160 to 200 feet above mean sea level.

Within the Study Area, existing conditions are influenced by the presence of the US-7 corridor and also includes naturalized forest edge and forested conditions beyond the limits of the mowed and maintained road shoulders. Numerous non-native invasive plant species ("NNIS") are present within the Study Area as described below. The





## Memorandum

surrounding landscape is a mix of forest blocks, agricultural lands, and rural residential development as well as the US-7 travel corridor and intersecting town roads.

Representative photographs of the on-site conditions and identified natural resources are included in **Attachment 2**.

### **METHODOLOGY AND ASSESSMENT RESULTS**

#### **Waters**

VHB Environmental Scientists conducted stream delineation and assessment work within the Study Area on October 9, 2023 to map stream channels and jurisdictional ditches. Stream determinations and Ordinary High Water ("OHW") width assessments follow guidance provided in the United States Army Corps of Engineers ("USACE") *Regulatory Guidance Letter: Subject-Ordinary High Water Identification*. When applicable, stream delineations are conducted pursuant to the 2005 Vermont Agency of Natural Resources ("ANR") *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* ("ANR Riparian Buffer Guidance"), including flagging Stream Top of Bank ("TOB") and Top of Slope ("TOS"). Stream OHW, TOB, and TOS are flagged on larger channels (generally streams greater than six feet wide) and stream centerline ("SC") is flagged for smaller channels (less than six feet wide). Streams are identified in the field with blue flagging, and features are mapped in the field using GPS-enabled and sub-meter capable mobile mapping technology. Flagging is hung where there is woody vegetation and it would not detract from land-use, such as agriculture. Stream identifiers include the year, stream delineation type (OHW, TOS, TOB, JD or SC), and stream ID number. Stream flow regimes are classified as ephemeral, intermittent, or perennial and are determined based on qualitative observations of instream hydrologic indicators at the time of observation, as well as geomorphic characteristics, and are subject to professional judgment. Riparian buffers are applied to streams and rivers in the natural resource mapping when the project is subject to Act 250, and are consistent with the ANR Riparian Buffer Guidance, which are designated for any natural perennial and intermittent stream channels. Jurisdictional ditches are not considered streams but are mapped and identified when such features are present that serve to connect wetlands or waters or were likely excavated within a wetland.

As shown on **Attachment 1**, ANR maps a River Corridor and the 100-year floodplain associated with the Lewis Creek. During VHB's October 9, 2023 field assessments, the OHW for the Lewis Creek was delineated as 2023-TOB-LC. In addition, VHB delineated 2023-TOB-1 for a perennial unnamed tributary to the south of Lewis Creek which passes under US-7 via a culvert, and applied a 50-foot River Corridor to this waterway in lieu of an ANR-determined one. There was also one intermittent stream channel delineated by VHB and identified as 2023-SC-1, and a non-jurisdictional ditch which is mapped as 2023 NJD-2. Additional details are included in the Wetlands and Waters Summary Table included as **Attachment 3**.

#### **Wetlands**

The Vermont Wetland Rules ("VWR") regulate activities within significant wetlands (Class I and Class II wetlands, as defined by the VWR) and their associated 50-foot buffers for Class II wetlands and 100-ft buffer for Class I wetlands (ANR 2023). Additionally, the USACE regulates the discharge of fill or dredging in wetlands under Section 404 of the Clean Water Act.



## Memorandum

Wetland delineations are made pursuant to applicable methodologies described in *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method* ("Regional Supplement"; USACE 2012). Field notes are recorded to document conditions in the wetland including vegetation, soils, and evidence of hydrology, potential wetland functions, wetland classifications, general characteristics of the wetland, any unique qualities observed during the site assessment, along with other considerations relevant to support site findings. Wetland functions are evaluated using the field notes and observations and are based on the functional criteria described in Section 5 of the VWR. Wetlands are identified in the field with pink flagging and are mapped in the field using mobile data collection technology capable of sub-meter accuracy.

VHB Environmental Scientists conducted wetland delineation fieldwork concurrent with stream delineations. In total, VHB delineated four wetlands within the Study Area. On-site wetlands include a mix of Palustrine Forested ("PFO") and Palustrine Emergent ("PEM") wetlands (Cowardin *et al.*, 1979). Of the four delineated wetlands, all features were assessed by VHB to qualify as a Class II wetland, based in part on the landscape position and observed function of each wetland individually and also that the wetlands in the Study Area and as mapped by the VSWI are contributing to a cumulative overall function of riparian wetland habitats to the Lewis Creek. Additional details on these wetlands can be found in the Wetlands and Waters Summary Table (**Attachment 3**) as well as in the USACE Wetland Determination Data Forms (**Attachment 4**).

### **Rare, Threatened and Endangered Species**

Vermont statute 10 V.S.A. Chapter 123: Protection of Endangered Species applies to both endangered and threatened species. Protected endangered and/or threatened species include those listed under the chapter as well as those protected under the federal Endangered Species Act. The list of Vermont's rare and uncommon species is produced by the Vermont Natural Heritage Inventory ("NHI"), a program within the Vermont Fish & Wildlife Department ("FWD"). Such species are considered by VTrans when reviewing projects for compliance with the National Environmental Policy Act ("NEPA"), by the Natural Resources Board for projects subject to Act 250 jurisdiction, and by the Vermont Agency of Natural Resources ("ANR") when reviewing projects subject to various state regulatory review processes.

To identify the potential occurrence of RTE species and to assess available on-site habitat conditions relative to each, VHB queried the NHI database for the presence of known element occurrences ("EO") of RTE species within and adjacent to the Study Area (see **Attachment 5**). VHB used a 1-mile search radius and found a total of 16 EO records for RTE species. Of the total 16, 11 species are aquatic and five are associated with terrestrial habitats (two bat species and two bird species and one turtle species).

In addition to the NHI database, on October 28, 2023, VHB reviewed the U.S. Fish and Wildlife Service ("USFWS") Information for Planning and Consultation System ("IPaC") database for a list of federally listed Endangered and Threatened species within the Study Area (see **Attachment 7**). From this, the Study Area is within the known range of the monarch butterfly (*Danaus plexippus*), which is a candidate for Federal listing as well as the state and federally endangered northern long-eared bat (*Myotis septentrionalis* or "MYSE"), a forest-dwelling bat. From the NHI database review, there is a known MYSE occurrence within a one-mile radius of the Study Area, where MYSE was captured in a mist-netting survey conducted by the FWD in 2006. In order to assess potential impacts to the species from tree



## Memorandum

clearing associated with a Project, a Potential Roost Tree ("PRT") survey was conducted in the Study Area as described below.

### RTE Plants

On October 9, 2023, VHB Ecologists conducted a general plant survey to document the presence/absence of identifiable RTE plants. A Partial Floristic Inventory of identifiable plants, including those that are rare or NNIS, at the time of survey is included in **Attachment 6**. In general, vegetative cover along the US-7 roadway corridor is regularly mowed/maintained through mowing and includes mixed herbaceous vegetation that is responsive to disturbance (*i.e.*, mowing) and generally weedy. The roadway fill slopes and areas adjacent to the north and south approach to the US-7 bridge were found to be naturalized in vegetation cover and comprised of a shrub-sapling and forested edge. The species composition of woody vegetation onsite is mixed hardwood and softwood species that are common to Vermont and the surrounding landscape of the Champlain Valley and foothills of the Green Mountains. No onsite vegetative communities were identified to meet the definition of a recognized Natural Community per the reference publication *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*<sup>1</sup>. VHB's field survey found no RTE plant species present in terrestrial portions of the Study Area.

### RTE Animals

On October 27, 2023, FWD-approved PRT surveyors assessed the Study Area for PRTs that may be used by MYSE. PRTs were defined as the following, per the FWD's (2017 guidance):

- a cavity tree exhibiting any form of decay or excavation by primary cavity producers that provides access to the interior of the bole;
- a tree with cracks or crevices into which bats may roost, including bark furrows;
- a tree with peeling or exfoliating bark;
- live shagbark hickory or black locust; and/or
- a tree with roost features whose total tree height exceeds 10 feet and is at least four inches in Diameter at Breast Height ("DBH").

Representative photographs of PRTs are included in **Attachment 2** and are depicted in the Natural Resource Map in **Attachment 1**. It should be noted that VHB assessment of potential bat habitat is limited to mapping of PRTs, and does not include review of any structures (*e.g.*, bridges) that could provide suitable roost habitat for other protected bats. Further bat surveys could be required if a project in the Study Area would result in tree cutting of PRTs during the summer roosting season. VHB's assessment here does not include detailed presence/absence surveys and is limited to the identification of PRTs for VTrans' consideration during project planning.

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<sup>1</sup> Thompson, E.H., Sorenson, E.R., and R.J. Zaino. 2019. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont. Second Edition*. Published by Vermont Fish and Wildlife Department, The Nature Conservancy, and Vermont Land Trust. Distributed by Chelsea Green Publishing.



## Memorandum

### **Wildlife Habitat Connectivity and Non-Native Invasive Plants**

#### Wildlife Habitat Connectivity

During its October 2023 field delineation and assessments, VHB made observations and assessments of onsite wildlife habitats relevant to habitat connectivity value and function within the Study Area. In general, the Study Area contains two types of habitats: aquatic habitat in perennial streams (Lewis Creek and the unnamed tributary identified by VHB as 2023-TOB-1) and terrestrial habitat. VHB's fieldwork did not include surveys of aquatic habitat, however based on a visual assessment of the existing conditions of Lewis Creek in the Study Area and information from VTrans, the existing bridge crossing of US-7 over Lewis Creek is not impeding the passage of aquatic organisms ("AOP"), and additionally provides a terrestrial travel opportunity for wildlife movement under the bridge within the riparian zone along the edge of Lewis Creek. Terrestrial habitats onsite consist of upland forest, emergent and forested wetland areas, and the open, mowed, maintained roadway corridor of US-7. The road is not enclosed by a fence, walls, or other blockades that would prohibit the movement of wildlife across the road, and so travel across US-7 is possible.

As US-7 is a relatively heavily traveled State highway, wildlife crossing of US-7 between adjacent habitats presents safety considerations for the traveling public and for wildlife. There are forest blocks to both the east and west of the Study Area which are interspersed with rural residential and rural sub-division type development along Loven Lane (west) and Lewis Creek Road (east). The Ferrisburgh town center is located approximately 3.1 miles to the south, with North Ferrisburgh approximately 0.7 mile to the north at the intersection of Old Hollow Road and Stage Road. The existing transportation and residential development in close proximity to the Study Area as well as the presence of NNIS are impacting the value of habitats in the Study Area for wildlife habitat connectivity. In the ANR BioFinder, the areas bounding the bridge immediately north and south are considered highest priority for Surface Water and Riparian Areas and Physical Landscape Diversity.

Because the Study Area was limited to the VTrans ROW centered on US-7, the forest blocks that extend to the east and west from the Study Area were not assessed in the field but a remote sensing analysis using aerial photography and database information was used in assessing potential onsite habitats and the role that the Study Area has in habitat connections to and between surrounding areas. VHB finds that the Study Area contains current and ongoing habitat fragmentation resulting from the US-7 road corridor. Further habitat fragmentation from a road project within the Study Area would not be anticipated unless a temporary bridge was required to be installed off alignment. The bridge over Lewis Creek provides AOP habitat for aquatic wildlife and there is terrestrial habitat connectivity under the bridge for passage of mammals, reptiles, and other terrestrial wildlife. The culvert that passes the unnamed tributary 2023-TOB-1 was not examined in detailed by VHB in this assessment. Based on visual observation in the field and a general assessment of streamflow regime and stream channel geomorphology, the culvert may be undersized for meeting AOP habitat connectivity. Representative photographs of observed habitat conditions are presented in **Attachment 2**.

#### NNIS

Several species of NNIS were noted to occupy onsite naturalized habitats. Per VTrans request, the target NNIS species for VHB's survey were common reed (*Phragmites australis*) and purpose loosestrife (*Lythrum salicaria*). Both common reed and purpose loosestrife were found to be present in the Study Area and their locations are included on the Natural Resources Map in **Attachment 1**. Other NNIS species present onsite include common buckthorn (*Rhamnus cathartica*), garlic mustard (*Alliaria petiolata*), wild parsnip (*Pastinaca sativa*), and Morrow's honeysuckle (*Lonicera*



## Memorandum

*morrowii*). Although multiple NNIS species are present, the Study Area is not dominated by their presence. VHB recommends that VTrans to consider measures to avoid spreading NNIS and introducing new NNIS to the Study Area during Project planning and design.

### CONCLUSIONS

Based on VHB's database reviews and field assessments described above, there are natural resources present within the Study Area that will need to be considered during detailed future planning and design of Project activities. These resources reported herein include wetlands, Class II Wetland buffers, surface waters (streams), River Corridors, and RTE species (potential roost habitat for MYSE). Depending on VTrans' proposed Project activities within the Study Area, one or more permit authorizations and/or consultation with regulatory agencies could be required: Clean Water Act Section 404 permit, Vermont Wetland Permit, Flood Hazard and River Corridor Protection ("FHARC") permit, Title 19 consultation, and Vermont Endangered and Threatened Species Takings Permit.

### ATTACHMENTS

1. Natural Resources Map
2. Representative Site Photographs
3. Summary of Delineated Wetlands and Streams
4. USACE Wetland Determination Data Forms
5. Elemental Occurrence Table
6. Ferrisburgh BF 019-4(35) Partial Floristic Inventory
7. USFWS IPaC Official Species List

### REFERENCES AND RESOURCES

Cowardin, L.M., Carter, V., Golet, F.C., and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitat of the United States*. U.S. Fish and Wildlife Service. FWS/OBD-79/31.

Natural Resources Conservation Service (NRCS), United States Department of Agriculture. 2022. Web Soil Survey. Available online at: <https://websoilsurvey.nrcs.usda.gov/app/> Last accessed February 2022.

U.S. Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeastern Region (Version 2.0), Final Report*.

U.S. Fish and Wildlife Service (USFWS). 2023. Interim Consultation Framework for the Northern Long-eared Bat. Effective March 31, 2023. Available online at: [https://www.fws.gov/sites/default/files/documents/Interim%20Consultation%20Framework\\_21Mar23.pdf](https://www.fws.gov/sites/default/files/documents/Interim%20Consultation%20Framework_21Mar23.pdf)

Vermont Agency of Natural Resources (ANR). 2005. *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers*. Effective December 9, 2005.

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Ref: 58916.06  
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November 1, 2023



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Vermont Fish and Wildlife Department. 2017. Regulatory Review Guidance to Protecting Northern Long-Eared Bats and Their Habitats. Available on-line at:

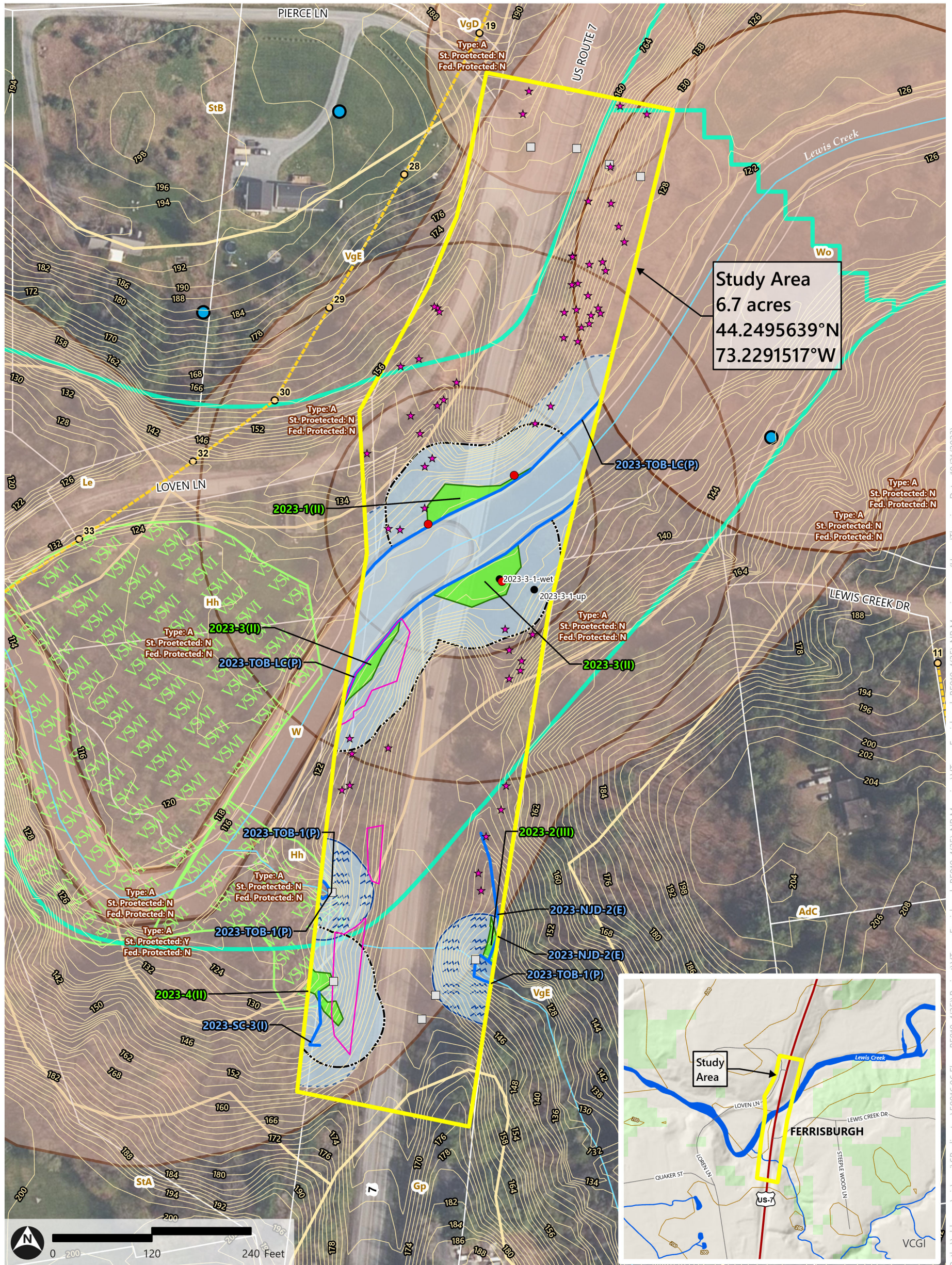
[https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Conserve/RegulatoryReview/Guidelines/Regulatory Review Guidelines for Protecting Northern %20Long-eared Bats and Their Habitats \(2-2017\).pdf](https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Conserve/RegulatoryReview/Guidelines/Regulatory%20Review%20Guidelines%20for%20Protecting%20Northern%20Long-eared%20Bats%20and%20Their%20Habitats%20(2-2017).pdf)

# Natural Resources Map

Ferrisburgh BF 019-4(35) | Ferrisburgh, Vermont



DRAFT | October 31, 2023



**Study Area**  
6.7 acres  
44.2495639°N  
73.2291517°W

Study Area (VHB)	Potential Roost Tree (PRT) (VHB)	Private Wells (ANR)
Delineated Wetland (Potential Class) (VHB)	Potential Roost Tree Cluster (VHB)	VNHI Element Occurrence (FWD)
Proposed Class II Wetland Buffer - 50 ft. (VHB)	Found Culvert (VHB)	VT Uncommon Species (FWD)
Wetland Determination Data Point (VHB)	Poles (GMP)	Town Boundary (VCGI)
Delineated Stream (Flow Regime) (VHB)	Overhead Electric Lines (GMP)	Parcel Boundary (VCGI)
Riparian Buffer - 50 Ft (VHB)	Stream (ANR)	NRCS Soil Boundary (VCGI)
River Corridor (VHB)	River Corridor (ANR)	2 ft. Contour (VCGI)
Non-Native Invasive Species (NNIS) (VHB)	VSWI Wetland (ANR)	

Natural resources field surveys completed by VHB (M. Jackman and K. Maines) on October 9, Oct. 24 and Oct. 27, 2023.

Source: Color Imagery from VCGI (2022); VCGI (Various dates), ANR (Agency of Natural Resources - Various dates); FWD (VT Fish and Wildlife Department - Various dates); VTrans (Vermont Agency of Transportation - 2021); VHB (Vanasse Hangen Brustlin - 2023).

Path: \\vhb.com\gis\proj\SBurlington\58916.06\Fbrg BF019-4(35)\Project\VTrans Ferrisburgh BF019-4(35)\_NR Mapping.aprx (User: JTherrien, Date: 10/31/2023)



© VHB

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## Ferrisburgh BF019-4(35) Project: Representative Photograph Log

### PROJECT NUMBER

58916.06

### CLIENT

Vermont Agency of Transportation

### LOCATION

US Route 7

Ferrisburgh, Vermont





NO. 1 / 10.09.2023

DESCRIPTION

Representative photo of wetland  
2023-1



NO. 2 / 10.08.2023

DESCRIPTION

Representative photo of wetland  
2023-2



NO. 3 / 10.08.2023

DESCRIPTION

Representative photo of wetland  
2023-1



NO. 4 / 10.08.2023

DESCRIPTION

Representative photo of wetland  
2023-4



NO. 5 / 10.08.2023

**DESCRIPTION**

Representative photo of the Lewis Creek, delineated by VHB as 2023-TOB-LC. Photo also shows the non-native invasive species common reed growing adjacent to Lewis Creek



NO. 6 / 10.08.2023

**DESCRIPTION**

Another view of Lewis Creek taken from under the US Route 7 bridge



NO. 7 / 10.08.2023

**DESCRIPTION**

Representative photo of the unnamed tributary to Lewis Creek, delineated by VHB as 2023-TOB-1



NO. 8 / 10.08.2023

**DESCRIPTION**

Representative photo of the non-native invasive species purple loosestrife growing as a clump near Lewis Creek



NO. 9 / 10.08.2023

**DESCRIPTION**

Representative photo of the culvert which passes stream 20230TOB-1 under US Route 7



NO. 10 / 10.08.2023

**DESCRIPTION**

A representative view of a potential roosting tree for bats within the Study Area



**Summary of Delineated Wetlands**

**Client:** Vermont Agency of Transportation

**Project:** Ferrisburgh BF 019-4(35)

**Location:** Ferrisburgh, Vermont

**Prepared By:** VHB; October 23, 2023

**Delineation Date(s):** VHB (M. Jackman) on October 9, 2023

VHB Delineated Wetlands												
Wetland ID <sup>1</sup>	Delineated Area (Square Feet) <sup>1</sup>	Cowardin Classification <sup>2</sup>	Hydrology Indicator	Hydric Soil Indicator	Vermont Wetland Rules Classification					Typical Vegetation	Comments	
					Contiguous to a VSWI-mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) <sup>3</sup>	VWR Section 4.6 Categorical Class II Wetlands <sup>4</sup>	VWR Section 5 Functional Criteria Presence / Significance				VHB-Proposed VWR Classification <sup>6</sup>
								Type <sup>5</sup>	VHB-Proposed Significant?			
<b>2023-1</b>	2,280	PEM	Surface Water (A1), Drift Deposits (B3), Geomorphic Position (D2), Saturation (A3)	Redox Dark Surface (F6)	No	Yes	No	5.1(L), 5.2(L), 5.10 (L)	Yes	II	<i>Salix nigra</i> , <i>Solidago spp.</i>	Fringe wetland to Lewis Creek, low function as assessed but feature is assumed to contribute to function of collection of fringe wetlands to the surface water
2023-2	496	PEM, PFO	Geomorphic Position (D2), Saturation (A3)	Redox Dark Surface (F6)	No	No	No	5.1(L), 5.2(L)	No	III	<i>Solidago spp.</i> , <i>Tussilago farfara</i> , <i>Ranunculus spp.</i>	Very small area of emergent wetland conditions at the downgradient end of a non-jurisdictional ditch
2023-3	4,870	PEM	Surface Water (A1), Drift Deposits (B3), Geomorphic Position (D2), Saturation (A3)	Redox Dark Surface (F6)	No	No	No	5.1(L), 5.2(L), 5.10 (L)	Yes	II	<i>Solidago spp.</i> , <i>Tussilago farfara</i>	Two fringe wetland areas, both on the south side of Lewis Creek under/partially under the span of the US Route 7 bridge; low function as assessed but feature is assumed to contribute to function of collection of fringe wetlands to the surface water; cumulative function of two 2023-3 assumed to also contribute to larger cumulative function of additional fringe wetlands beyond the Study Area
<b>2023-4</b>	1,130	PEM	Water-Stained Leaves (B9), Saturation (A3), Geomorphic Position (D2)	Redox Dark Surface (F6)	No	No	Yes - contiguous to VSWI	5.1(L), 5.2(L), 5.10 (L)	Yes	II	<i>Lysimachia nummularia</i> , <i>Thuja occidentalis</i> , <i>Ribes lacustre</i> , <i>Ranunculus spp.</i>	Probably continues to larger natural feature outside of Study Area where VSWI is mapped to the west

<sup>1</sup>All wetlands field delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2011; Delineated Wetlands that extend outside the Study Area are denoted with **bold** text.

<sup>2</sup>Classification follows Cowardin, L.M., Carter, V., Golet, F.C. and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitat of the United States. U.S. Fish and Wildlife Service. FWS/OBD-79/31. 103pp.

<sup>3</sup>Wetland contiguity to streams as defined in the Vermont ANR (2005) *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* and confirmed if a delineated perennial or intermittent stream channel inflows, through flows, and outflows from a delineated wetland (ephemeral channels not typically being subject to ANR Riparian Buffer Guidance). The vegetative assemblage or natural community type is used when determining riparian vegetation function. Flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment (P=perennial, I=intermittent, E=ephemeral).

<sup>4</sup>Alpha-numeric codes correspond with Section 4.6 Presumptions of the 2023 Vermont Wetland Rules.

<sup>5</sup>VWR Section 5: Functional Criteria for Evaluating a Wetland's Significance: 5.1=Water Storage for Flood Water and Storm Runoff, 5.2=Surface and Groundwater Protection, 5.3=Fish Habitat, 5.4=Wildlife Habitat, 5.5=Exemplary Wetland Natural Community, 5.6=Rare, Threatened or Endangered Species Habitat, 5.7=Education and Research in Natural Sciences, 5.8=Recreational Value and Economic Benefits, 5.9=Open Space and Aesthetics, 5.10=Erosion Control Through Binding and Stabilizing the Soil. (P)= Present, (H)=High, (L)=Low; Correspond to observed level of functionality.

<sup>6</sup>VHB-Proposed VWR Classification is based on review and application of the VWR, particularly VHB's interpretation of Section 4.6 Presumptions and is subject to final determinations by the ANR-DEC.

**Summary of Delineated Streams**

**Project:** Ferrisburgh BF 019-4(35)

**Client:** Vermont Agency of Transportation

**Location:** Ferrisburgh, Vermont

**Prepared By:** VHB; October 23, 2023

**Delineation Date(s):** VHB (M. Jackman) on October 9, 2023

VHB Delineated Streams												
Stream ID	Stream Name	Associated Wetlands	Average Ordinary High Water (OHW) Width (Feet) <sup>1</sup>	Dominant Substrate	Water Depth (Inches)	Bank Height (Feet)	Flow Regime (Ephemeral, Intermittent, or Perennial) <sup>2</sup>	ANR-Mapped River Corridor? (Yes/No)	VHB-Proposed River Corridor (Yes/No)	Watershed Size (Square Miles) <sup>3</sup>	VWQS Classification (2022) <sup>4</sup>	Comments
2023-TOB-LC	Lewis Creek	2023-1 and 2023-3	55	cobble, sand	20	4	Perennial	Yes	No	77	B	Lewis Creek crossing under US Route 7; fringe wetlands present; delineation done during high water conditions
2023-TOB-1	None (unnamed tributary to Lewis Creek)	2023-2	18	cobble, sand	6	2	Perennial	No	Yes	0.80	B	Perennial tributary to Lewis Creek, unnamed; flows through culvert under US Route 7
2023-SC-3	None	2023-4	3.0	silt, clay	3	1.0	Intermittent	No	No	<0.25	-	Headcut channel in fine substrate soil downgradient to TOB-1

<sup>1</sup> U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification. No. 05-05.*

<sup>2</sup> Stream flow regime determined based on qualitative observations of in stream hydrology indicators and geomorphic characteristic and are subject to professional judgment.

<sup>3</sup> Watershed size determined from Vermont Agency of Natural Resources ("ANR") Stream Alteration Regulatory Program mapping and/or watershed delineation tool on ANR Atlas.

<sup>4</sup> From ANR. 2022. *Vermont Water Quality Standards (Vt. Code R 12 004 052).*

<sup>5</sup> List of streams from the ANR. 2016. *303(d) Assessment of the Condition of Vermont Waters. Priority Listing of Vermont Waters.* Vermont Department of Environmental Conservation.

<sup>6</sup> If no ANR mapped river corridor is present, VHB proposed river corridor is applied pursuant to the DEC Flood Hazard Area and River Corridor Protection Procedure (2017), as applicable.





WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2023-3-1up

Project Site: Ferrisburgh BF019-4(35) City/County: Addison State: Vermont Sampling Point: 2023-3-1up
Applicant/Owner: Vtrans
Investigator(s): VHB (MCJ) Section, Township, Range: Ferrisburgh
Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): 0 to 3%
Subregion (LRR or MLRA): LRR R Lat: 44.248002 Long: -73.22904 Datum: NAD83
Soil Map Unit: Winooski very fine sandy loam NWI Class: UPL
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? YES
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B13) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Depth (inches): Water Table Present? Depth (inches): Saturation Present? Depth (inches): Wetland Hydrology Present? NO
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-10 10YR 4/1 100% 10YR 5/6 10% CLAY LOAM
10-16 2.5Y 4/2 90% CLAY LOAM
Hydric Soil Indicators: Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S9) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? NO
Remarks:

	Absolute % Cover	Dom. Sp?	Indicator Status	
<b>Tree Stratum (Plot size: <u>30' RAD</u> )</b>				
1. <u><i>Tsuga canadensis</i></u>	<u>15</u>	<u>X</u>	<u>FACU</u>	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>7</u> (A)  # Dominants across all strata: <u>13</u> (B)  % Dominants OBL, FACW, FAC: <u>54%</u> (A/B)
2. <u><i>Fraxinus pennsylvanica</i></u>	<u>15</u>	<u>X</u>	<u>FACW</u>	
3. <u><i>Carpinus caroliniana</i></u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
4. <u><i>Pinus strobus</i></u>	<u>3</u>		<u>FACU</u>	
5. <u><i>Carya cordiformis</i></u>	<u>3</u>		<u>FAC</u>	
6. <u><i>Thuja occidentalis</i></u>	<u>1</u>		<u>FACW</u>	
7. _____				
<u>52</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>34</u> x 2 = <u>68</u> FAC <u>69</u> x 3 = <u>207</u> FACU <u>54</u> x 4 = <u>216</u> UPL <u>47</u> x 5 = <u>235</u> Sum: <u>204</u> (A) <u>726</u> (B)  Prevalence Index = B/A = <u>3.56</u>
<b>Sapling Stratum (Plot size: <u>15' RAD</u> )</b>				
1. <u><i>Carpinus caroliniana</i></u>	<u>30</u>	<u>X</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Thuja occidentalis</i></u>	<u>15</u>	<u>X</u>	<u>FACW</u>	
3. <u><i>Acer saccharum</i></u>	<u>15</u>	<u>X</u>	<u>FACU</u>	
4. <u><i>Carya cordiformis</i></u>	<u>3</u>		<u>FAC</u>	
5. <u><i>Quercus rubra</i></u>	<u>3</u>		<u>FACU</u>	
6. _____				
7. _____				
<u>66</u> = Total Cover				Definitions of Vegetation Strata:  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
<b>Shrub Stratum (Plot size: <u>15' RAD</u> )</b>				
1. <u><i>Fraxinus pennsylvanica</i></u>	<u>3</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Present? <u>YES</u>
2. <u><i>Carpinus caroliniana</i></u>	<u>3</u>	<u>X</u>	<u>FAC</u>	
3. <u><i>Prunus virginiana</i></u>	<u>3</u>	<u>X</u>	<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
<u>9</u> = Total Cover				
<b>Herb Stratum (Plot size: <u>5' RAD</u> )</b>				
1. <u><i>Waldsteinia fragarioides</i></u>	<u>32</u>	<u>X</u>	<u>UPL</u>	Hydrophytic Vegetation Present? <u>YES</u>
2. <u><i>Acer platanoides</i></u>	<u>15</u>	<u>X</u>	<u>UPL</u>	
3. <u><i>Parthenocissus quinquefolia</i></u>	<u>15</u>	<u>X</u>	<u>FACU</u>	
4. <u><i>Toxicodendron radicans</i></u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>77</u> = Total Cover				
<b>Woody Vines (Plot size: <u>15' RAD</u> )</b>				
1. _____				Hydrophytic Vegetation Present? <u>YES</u>
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).    				



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2023-3-1wet

Project Site: Ferrisburgh BF019-4(35) City/County: Addison State: Vermont Sampling Point: 2023-3-1wet

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? YES
Hydric Soil Present? YES
Wetland Hydrology Present? YES
Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? X Depth (inches): <1"
Water Table Present? X Depth (inches): surface
Saturation Present? X Depth (inches): surface
Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks. Rows include 0-5 and 5-12 depth intervals.

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1), Histic Epipedon (A2), Black Histic (A3), Hydrogen Sulfide (A4), Stratified Layers (A5), Depleted Below Dark Surface (A11), Thick Dark Surface (A12), Sandy Mucky Mineral (S1), Sandy Gleyed Matrix (S4), Sandy Redox (S5), Stripped Matrix (S6), Dark Surface (S7) (LRR R, MLRA 149B)

Restrictive Layer (if observed): Type: ROCK Depth (inches): 12
Hydric Soil Present? YES

Remarks:

Tree Stratum	(Plot size: <u>30' RAD</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<u>Fraxinus pennsylvanica</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	Dominance Test Worksheet:
2.	<u>Ulmus americana</u>	<u>3</u>		<u>FACW</u>	# Dominants OBL, FACW, FAC: <u>10</u> (A)
3.	<u>Populus deltoides</u>	<u>3</u>		<u>FAC</u>	# Dominants across all strata: <u>11</u> (B)
4.					% Dominants OBL, FACW, FAC: <u>91%</u> (A/B)
5.					
6.					
7.					
				<u>21</u>	= Total Cover
Sapling Stratum	(Plot size: <u>15' RAD</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<u>Fraxinus pennsylvanica</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	Prevalence Index Worksheet:
2.	<u>Ulmus americana</u>	<u>3</u>		<u>FACW</u>	Total % Cover of: <u>          </u> Multiply By: <u>          </u>
3.					OBL <u>          </u> x 1 = <u>          </u>
4.					FACW <u>87</u> x 2 = <u>174</u>
5.					FAC <u>84</u> x 3 = <u>252</u>
6.					FACU <u>15</u> x 4 = <u>60</u>
7.					UPL <u>          </u> x 5 = <u>          </u>
					Sum: <u>186</u> (A) <u>486</u> (B)
				<u>18</u>	= Total Cover
Shrub Stratum	(Plot size: <u>15' RAD</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<u>Alnus incana</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators:
2.	<u>Lonicera morrowii</u>	<u>15</u>	<u>X</u>	<u>FACU</u>	<input checked="" type="checkbox"/> Dominance Test is > 50%
3.	<u>Rhamnus cathartica</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
4.	<u>Carpinus caroliniana</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	<u>          </u> Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
5.	<u>Acer negundo</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	<u>          </u> Rapid Test for Hydrophytic Vegetation
6.					<u>          </u> Morphological Adaptations
7.					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				<u>75</u>	= Total Cover
Herb Stratum	(Plot size: <u>5' RAD</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<u>Amphicarpaea bracteata</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	Definitions of Vegetation Strata:
2.	<u>Solidago gigantea</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
3.	<u>Phragmites australis</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
4.	<u>Equisetum arvense</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5.	<u>Rubus pubescens</u>	<u>3</u>		<u>FACW</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
6.	<u>Lysimachia nummularia</u>	<u>3</u>		<u>FACW</u>	Woody vine - All woody vines, regardless of height.
7.	<u>Symphotrichum lateriflorum</u>	<u>3</u>		<u>FAC</u>	
8.	<u>Eutrochium purpureum</u>	<u>3</u>		<u>FAC</u>	
9.					
10.					
11.					
12.					
				<u>72</u>	= Total Cover
Woody Vines	(Plot size: <u>15' RAD</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Hydrophytic Vegetation Present? <u>YES</u>
2.					
3.					
4.					
5.					
					= Total Cover

Remarks: (If observed, list morphological adaptations below).

**Ranunculus sp.** was observed at 3%

**Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary**

**Client:** Vtrans

**Project:** Ferrisburgh BF019-4(35)

**Prepared by:** VHB (C. Peterson, C. Fenner) October 28, 2023

**Field Habitat Assessment Date:** October, 2023

Species	Common Name	Type	State Rank	Global Rank	VT Status	Federal Status	Last Observed Date	Habitat Description <sup>1</sup>	Occurrence Description <sup>2</sup>	Optimal Survey	EO Mapped within Study Area (Yes/ No)	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
<i>Lasmigona compressa</i>	Creek Heelsplitter	Animal	S2	G5	-	-	2003	Creeks, small rivers; prefers sand, fine gravel and mud substrates.	Lewis Creek, midway between Greenbush Road and Route 7	Summer - Fall	Yes	Yes	No	Although polygon mapped in Study Area, Project avoids aquatic habitats, so no survey recommended
<i>Potamilus alatus</i>	Pink Heelsplitter	Animal	S2	G5	E	-	1997	Creeks, small rivers; prefers sand, fine gravel and mud substrates.	Lewis Creek mouth, near F&W Department. Lewis Creek at Greenbush Road.	Summer - Fall	Yes	Yes	No	Although polygon mapped in Study Area and state-listed, Project avoids aquatic habitats, so no survey recommended
<i>Bartramia longicauda</i>	Upland Sandpiper	Animal	S2B	G5	E	-	1988	Prairies, open meadows and fields. Native grassland; mixed with tall grass and broad-leaved weeds.	Junction of Fuller Mountain Road and Four Winds Road, southeast 0.25 miles on Fuller Mountain, at Royer Farm.	Spring - Summer	No	Yes	No	No suitable habitat in Study Area
<i>Sturnella magna</i>	Eastern Meadowlark	Animal	S2B	G5	T	-	2022	Wetter grasslands and prairies, pastures, hayfields, roughly 6 acres territory.	Quaker Street, between Jewell Lane and Greenbush Road, fields on south side of Quaker Street just east of Harvest Lane.	Spring	No	Yes	No	No suitable habitat in Study Area
<i>Myotis lucifugus</i>	Little Brown Bat	Animal	S1	G3G4	E	UR	2006	Mixed woodlands with snags; caves, mines, anthropogenic structures	Ferrisburgh, north of Lewis Creek, south of Stage Road, west of Route 7, east of Greenbush Road. Mist-netting site "Pigeons Roost Pierce Woods" south end of Pidgeons Roost Road.	Summer	No	Yes	Yes*	Species is extremely rare in Vermont, listed state endangered, and site has potential suitable habitat. Survey recommended if Project requires tree cutting and cannot adhere to time-of-year restrictions
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Animal	S1	G2G3	E	E	2006	Mixed woodlands with snags; caves, mines, anthropogenic structures	Ferrisburgh, north of Lewis Creek, south of Stage Road, west of Route 7, east of Greenbush Road. Mist-netting site "Pigeons Roost Pierce Woods" south end of Pidgeons Roost Road.	Summer	No	Yes	Yes*	Species is extremely rare in Vermont, listed state endangered, and site has potential suitable habitat. Survey recommended if Project requires tree cutting and cannot adhere to time-of-year restrictions
<i>Pyganodon grandis</i>	Giant Floater	Animal	S2S3	G5	T	-	1997	Shallow streams, lakes and pools with fine sediment such as sand or gravel substrates; preference to little to no flow.	Lewis Creek Delta, unspecified location; above and below Greenbush Road.	Summer	No	No	No	Although state-listed and potential habitat on site in Lewis Creek, Project avoids aquatic habitats, so no survey recommended
<i>Lasmigona costata</i>	Flutedshell	Animal	S2	G5	E	-	2006	Small to medium rivers and lakes, often in gravel substrates with swift currents.	Lewis Creek, midway between Greenbush Road and Route 7	Late Summer - Fall	Yes	Yes	No	Although state-listed and potential habitat on site in Lewis Creek, Project avoids aquatic habitats, so no survey recommended
<i>Notropis heterolepis</i>	Blacknose Shiner	Animal	S1	G5	-	-	2010	Creeks, small rivers, shallower areas of lakes with aquatic vegetation. Usually in cool, clear waters over sand.	Ferrisburgh, Lewis Creek, coordinates provided in DEC fish database, approx. 3 miles above mouth.	Late Summer - Fall	No	No	No	Although species is critically rare, it is not state/federally listed and the site does not provide potential habitat suitability.
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	Animal	S2	G5	-	-	2016	Large streams and lakes, often those with gravel riffles, shallow streams with loose sediment for ammocoete spawning.	Lewis Creek, Ferrisburgh. Just below Greenbush Road crossing.	Spring - Summer	No	No	No	Species not listed and polygon not mapped in Study Area
<i>Hetaerina americana</i>	American Rubyspot	Animal	S2S3	G5	-	-	2006	Creeks to large rivers with moderate current and aquatic vegetation, frequent around riffles.	Lewis Creek, Charlotte, at Quinlan Bridge, about 200 meters above Route 7	Summer - Late Summer	Yes	Yes	No	Although polygon mapped in Study Area, Project avoids aquatic habitats, so no survey recommended
<i>Potamogeton strictifolius</i>	Straight-leaf Pondweed	Plant	S2S3	G5	-	-	1972	Shallow, still or slow-moving streams, lakes, ponds, rivers, tolerant to basic waters.	Lewis Creek elevation 96 feet	Spring	No	Yes	No	Species not listed and polygon not mapped in Study Area
<i>Glyptemys insculpta</i>	Wood Turtle	Animal	S3	G3	-	UR	2006	Forested streams, open grasslands, barrens, sandy shores (spring, nesting).	Ferrisburgh, Lewis Creek, southbound shoulder of Rte 7. 1/10 mile north of Lewis Creek.	Spring - Late Summer	Yes	No	No	Although polygon is mapped in Study Area, Lewis Creek bed and bank conditions not suitable habitat for this species
<i>Leptodea fragilis</i>	Fragile Papershell	Animal	S2	G5	E	-	1997	Freshwater, streams and rivers of all sizes and turbidity, preference for mud, gravel, and sand substrates.	Lewis Creek, unspecified location; above and below Greenbush Road.	Summer	Yes	Yes	No	Although state-listed and potential habitat on site in Lewis Creek, Project avoids aquatic habitats, so no survey recommended
<i>Lampsilis ovata</i>	Pocketbook	Animal	S2	G5	E	-	2022	Rivers of varying sizes, with moderate to slow flows. Substrate a mix of silt, mud and/or sand	Lewis Creek, at Greenbush Road, Greenbush Road to Route 7, downstream of Loven Road, Lewis Creek Delta.	Late Summer	Yes	Yes	No	Although state-listed and potential habitat on site in Lewis Creek, Project avoids aquatic habitats, so no survey recommended
<i>Anguilla rostrata</i>	American Eel	Animal	S2	G4	-	-	2021	Primarily riverine, but occasionally in lakes and ponds. Variety of freshwater habitats, fond of dark corners of water bodies.	Ferrisburgh, captured.	Summer	Yes	Yes	No	Although lacking state/federal listing, species is rare, and recorded within the study area which provides potential suitable habitat

1-Mile Element Occurrence Radius from Study Area Centerpoint

**<sup>1</sup>Potential sources for habitat description listed below:**

Brown, Paul Martin. 2007. *Wild Orchids of the Northeast: New England, New York, Pennsylvania, and New Jersey*. University Press of Florida.

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**Partial Floristic Inventory - Species Checklist**

**Project:** Ferrisburgh BF 019-4(35)

**Client:** Vermont Agency of Transportation

**Location:** Ferrisburgh, Vermont

**Prepared By:** VHB; October 23, 2023

**Survey Date(s):** VHB (M. Jackman) on October 9, 2023

Scientific Name <sup>1</sup>	Common Name	Family	VT Rarity Rank <sup>2,3</sup>	Non-Native Invasive Species <sup>4</sup>
<i>Acer negundo</i> L.	boxelder	Aceraceae	-	-
<i>Acer rubrum</i> L.	red maple	Aceraceae	-	-
<i>Acer saccharinum</i> L.	silver maple	Aceraceae	-	-
<i>Acer saccharum</i> Marshall	sugar maple	Aceraceae	-	-
<i>Aegopodium podagraria</i> L.	bishop's goutweed	Apiaceae	-	-
<i>Ageratina altissima</i> (L.) R.M. King & H. Rob.	white snakeroot	Asteraceae	-	-
<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande	garlic mustard	Brassicaceae	-	B
<i>Amphicarpaea bracteata</i> (L.) Fernald	American hogpeanut	Fabaceae	-	-
<i>Artemisia vulgaris</i> L.	common wormwood	Asteraceae	-	-
<i>Asarum canadense</i> L.	Canadian wildginger	Aristolochiaceae	-	-
<i>Betula lenta</i> L.	sweet birch	Betulaceae	-	-
<i>Berberis vulgaris</i> L.	common barberry	Berberidaceae	-	-
<i>Bromus inermis</i> Leyss.	smooth brome	Poaceae	-	-
<i>Carpinus caroliniana</i> Walter	American hornbeam	Betulaceae	-	-
<i>Carya cordiformis</i> (Wangenh.) K. Koch	bitternut hickory	Juglandaceae	-	-
<i>Carex crinita</i> Lam.	fringed sedge	Cyperaceae	-	-
<i>Carya ovata</i> (Mill.) K. Koch	shagbark hickory	Juglandaceae	-	-
<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae	-	-
<i>Deparia acrostichoides</i> (Sw.) M. Kato	silver false spleenwort	Dryopteridaceae	-	-
<i>Doellingeria umbellata</i> (Mill.) Nees	parasol whitetop	Asteraceae	-	-
<i>Dryopteris marginalis</i> (L.) A. Gray	marginal woodfern	Dryopteridaceae	-	-
<i>Elaeagnus angustifolia</i> L.	Russian olive	Elaeagnaceae	-	-
<i>Eurybia divaricata</i> (L.) G.L. Nesom	white wood aster	Asteraceae	-	-
<i>Euthamia graminifolia</i> (L.) Nutt.	flat-top goldentop	Asteraceae	-	-
<i>Fagus grandifolia</i> Ehrh.	American beech	Fagaceae	-	-
<i>Frangula alnus</i> Mill.	glossy buckthorn	Rhamnaceae	-	-
<i>Fraxinus americana</i> L.	white ash	Oleaceae	-	-
<i>Fraxinus pennsylvanica</i> Marshall	green ash	Oleaceae	-	-
<i>Galium mollugo</i> L.	false baby's breath	Rubiaceae	-	-
<i>Galium palustre</i> L.	common marsh bedstraw	Rubiaceae	-	-
<i>Geum rivale</i> L.	purple avens	Rosaceae	-	-
<i>Hackelia virginiana</i> (L.) I.M. Johnst.	beggarslice	Boraginaceae	-	-
<i>Hamamelis virginiana</i> L.	American witchhazel	Hamamelidaceae	-	-
<i>Hesperis matronalis</i> L.	dames rocket	Brassicaceae	-	WL
<i>Impatiens capensis</i> Meerb.	jewelweed	Balsaminaceae	-	-
<i>Juniperus virginiana</i> L.	eastern redcedar	Cupressaceae	-	-
<i>Lonicera morrowii</i> A. Gray	Morrow's honeysuckle	Caprifoliaceae	-	B
<i>Lythrum salicaria</i> L.	purple loosestrife	Lythraceae	-	B
<i>Lysimachia nummularia</i> L.	creeping jenny	Primulaceae	-	-
<i>Maianthemum canadense</i> Desf.	Canada mayflower	Liliaceae	-	-
<i>Mitchella repens</i> L.	partridgeberry	Rubiaceae	-	-
<i>Onoclea sensibilis</i> L.	sensitive fern	Dryopteridaceae	-	-
<i>Osmorhiza berteroi</i> DC.	sweetcicely	Apiaceae	-	-
<i>Osmunda cinnamomea</i> L.	cinnamon fern	Osmundaceae	-	-
<i>Ostrya virginiana</i> (Mill.) K. Koch	hophornbeam	Betulaceae	-	-
<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia creeper	Vitaceae	-	-
<i>Pastinaca sativa</i> L.	wild parsnip	Apiaceae	-	WL
<i>Phalaris arundinacea</i> L.	reed canarygrass	Poaceae	-	WL
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	common reed	Poaceae	-	B
<i>Phleum pratense</i> L.	timothy	Poaceae	-	-
<i>Pilea pumila</i> (L.) A. Gray	Canadian clearweed	Urticaceae	-	-
<i>Pinus strobus</i> L.	eastern white pine	Pinaceae	-	-
<i>Polystichum acrostichoides</i> (Michx.) Schott	Christmas fern	Dryopteridaceae	-	-

**Project:** Ferrisburgh BF 019-4(35)

**Client:** Vermont Agency of Transportation

**Location:** Ferrisburgh, Vermont

**Prepared By:** VHB; October 23, 2023

**Survey Date(s):** VHB (M. Jackman) on October 9, 2023

Scientific Name <sup>1</sup>	Common Name	Family	VT Rarity Rank <sup>2,3</sup>	Non-Native Invasive Species <sup>4</sup>
<i>Populus balsamifera</i> L.	balsam poplar	Salicaceae	-	-
<i>Populus deltoides</i> W. Bartram ex Marshall	eastern cottonwood	Salicaceae	-	-
<i>Populus tremuloides</i> Michx.	quaking aspen	Salicaceae	-	-
<i>Prunus serotina</i> Ehrh.	black cherry	Rosaceae	-	-
<i>Prunus virginiana</i> L.	chokecherry	Rosaceae	-	-
<i>Quercus bicolor</i> Willd.	swamp white oak	Fagaceae	-	-
<i>Quercus rubra</i> L.	northern red oak	Fagaceae	-	-
<i>Rhamnus cathartica</i> L.	common buckthorn	Rhamnaceae	-	B
<i>Rhus hirta</i>	Staghor sumac	Anacardiaceae	-	-
<i>Rubus idaeus</i> L.	American red raspberry	Rosaceae	-	-
<i>Rubus pubescens</i> Raf.	dwarf red blackberry	Rosaceae	-	-
<i>Salix nigra</i> Marshall	black willow	Salicaceae	-	-
<i>Solidago caesia</i> L.	wreath goldenrod	Asteraceae	-	-
<i>Solidago canadensis</i> L.	Canada goldenrod	Asteraceae	-	-
<i>Solanum dulcamara</i> L.	climbing nightshade	Solanaceae	-	-
<i>Solidago flexicaulis</i> L.	zigzag goldenrod	Asteraceae	-	-
<i>Solidago gigantea</i> Aiton	giant goldenrod	Asteraceae	-	-
<i>Solidago rugosa</i> Mill.	wrinkleleaf goldenrod	Asteraceae	-	-
<i>Cornus racemosa</i> Lam.	gray dogwood	Cornaceae	-	-
<i>Cornus sericea</i> L.	redosier dogwood	Cornaceae	-	-
<i>Symphotrichum lateriflorum</i> (L.) Á. Löve & D. Löve	calico aster	Asteraceae	-	-
<i>Symphotrichum novae-angliae</i> (L.) G.L. Nesom	New England aster	Asteraceae	-	-
<i>Taraxacum officinale</i> F.H. Wigg.	common dandelion	Asteraceae	-	-
<i>Thuja occidentalis</i> L.	arborvitae	Cupressaceae	-	-
<i>Tilia americana</i> L.	American basswood	Tiliaceae	-	-
<i>Toxicodendron radicans</i> (L.) Kuntze	eastern poison ivy	Anacardiaceae	-	-
<i>Trifolium pratense</i> L.	red clover	Fabaceae	-	-
<i>Trifolium repens</i> L.	white clover	Fabaceae	-	-
<i>Tsuga canadensis</i> (L.) Carrière	eastern hemlock	Pinaceae	-	-
<i>Tussilago farfara</i> L.	coltsfoot	Asteraceae	-	-
<i>Ulmus americana</i> L.	American elm	Ulmaceae	-	-

<sup>1</sup> Nomenclature follows USDA-NRCS PLANTS database (plants.usda.gov/) (2023).

<sup>2</sup> The Vermont Rarity Rank from the "Rare and Uncommon Native Vascular Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated May 4, 2022.

<sup>3</sup> The Vermont Rarity Rank from the "Endangered and Threatened Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated February 10, 2022.

<sup>4</sup> **Class B Noxious Weeds Species (B)** from: Quarantine #3- Noxious Weeds (2012).

**Watch List Species (WL)** from: Vermont Invasive Exotic Plant Committee. 2017. Quarantine and Watch List Update.





# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5094  
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:  
Project Code: 2024-0013304  
Project Name: Ferrisburgh BF 019-4(35)

November 07, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

*Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.*

## **About Official Species Lists**

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

## **Endangered Species Act Project Review**

Please visit the “**New England Field Office Endangered Species Project Review and Consultation**” website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

<https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review>

**\*NOTE\*** Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

**Northern Long-eared Bat - (Updated 4/12/2023)** The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at [newengland@fws.gov](mailto:newengland@fws.gov) to see if reinitiation is necessary.

#### *Additional Info About Section 7 of the Act*

Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/service/section-7-consultations>

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

**Candidate species** that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

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consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

### **Migratory Birds**

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

<https://www.fws.gov/program/migratory-bird-permit>

<https://www.fws.gov/library/collections/bald-and-golden-eagle-management>

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

## **OFFICIAL SPECIES LIST**

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

### **New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

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## PROJECT SUMMARY

Project Code: 2024-0013304

Project Name: Ferrisburgh BF 019-4(35)

Project Type: Road/Hwy - Maintenance/Modification

Project Description: Transportation project in vicinity of US-7 bridge over Lewis Creek

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.24850765,-73.22904586803597,14z>



Counties: Addison County, Vermont

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## ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a>	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Endangered

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

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## **IPAC USER CONTACT INFORMATION**

Agency: VHB  
Name: carla fenner  
Address: 40 IDX Drive  
Address Line 2: Building 100, Suite 200  
City: South Burlington  
State: VT  
Zip: 05403  
Email: cfenner@vhb.com  
Phone: 8027344355

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## **Appendix G: Archeology Memo**

Alexander Honsinger MA, RPA | Cultural Resources Specialist  
Vermont Agency of Transportation  
219 North Main Street | Barre, VT 05641  
802-793-7456 phone | [Al.Honsinger@vermont.gov](mailto:Al.Honsinger@vermont.gov)  
<http://vtrans.vermont.gov>



To: Julie Ann Held, Environmental Specialist

Subject: Ferrisburgh BF 019-4(35) – Archaeological Resource ID

This archaeological resource identification memo pertains to potential work at Bridge #139, constructed in 1957, which carries VT-7 over Lewis Creek in the town of Ferrisburgh.

### *Physical Environment*

VTrans staff analyzed an approximately 2.6-ac area encompassing the bridge and four adjacent landform quadrants for this archaeological resource identification effort (Figures 1 and 2). The project area is situated along Lewis Creek in the Champlain Valley biophysical region (Vermont Geodata Portal 2022). Champlain Valley terrain adjoining the lake is characterized by level landforms containing diverse oak-hickory forests interspersed with agricultural land. Expansive swamps, marshes, and floodplains proximate to Lewis Creek provide waterfowl and marsh bird habitats that were significant resources to past peoples (Vermont Fish and Wildlife 2023). Bedrock within the preliminary project APE is mapped as the Upper Ordovician Iberville formation (Oib) and characterized by dark-gray shale with thin, discontinuous beds of siltstone (Ratcliffe et al. 2011). Shale and siltstone are most often too fissile and brittle to produce chipped stone tools; these materials may have been used in the past to manufacture expedient edge tools during instances when more suitable material was unavailable. According to the Natural Resource Conservation Service (NRCS) Websoil Survey, soils within the APE are classified as Hadley very fine sandy loam alluvium (34.9%), glaciolacustrine Vergennes Clay (16.5%), and Winooski very fine sandy loam alluvium (31.6%) (USDA 2023).

### *Pre-contact Archaeological Sensitivity*

The source of Lewis Creek lies in the Southern Green Mountain physiographic province in the present-day town of Starksboro. The river's course subsequently meanders through Monkton, Hinesburg, Charlotte, and Ferrisburgh before emptying into Lake Champlain (Figure 3). Historic documentation suggests that Lewis Creek was an important node in traditional Abenaki territory. According to an 1896 letter written by naturalist Rowland E. Robinson to United States Bureau of Fisheries biologist William Converse Kendall, the outlet of Lewis Creek at Lake Champlain was a preferred fish netting location for migratory, lake-locked species and known to the Abenaki as "Sungahneetook," supposedly translating to "Fishing Weir River" (Kendall 1927:327) (Figure 4). During the nineteenth century, travels of citizens from Odanak to visit their ancestral homelands in the Champlain Valley and sell crafts were common (Smith 1886:664-678). Rowland also had a relationship with John Watso of Odanak, who acted as an informant regarding Abenaki lifeways and may have provided the author with the traditional placename for Lewis Creek (Leary 2021).



There are no previously recorded archaeological sites in the preliminary APE and no previous archaeological projects have been conducted within potential impact areas. While there are no previously recorded precontact archaeological sites within the preliminary APE, eight precontact sites lie within an 1 mile (1.6 km) radius of Bridge 139 (VDHP 2023). Previously recorded Pre-contact archaeological sites line the course of greater Lewis Creek and adjacent wetlands throughout the town of Ferrisburgh; site density along the watershed provides additional evidence for the significance of the river corridor within historic Abenaki and Pre-contact community settlement patterns.

Using the Vermont Division of Historic Preservation's (VDHP 2015) Environmental Predictive Model for Locating Pre-contact Archaeological Sites, undisturbed areas within vicinity of the preliminary APE score above the 32-point threshold to be considered archaeologically sensitive. Contributing factors to archaeological sensitivity include the proximity of Lewis Creek (0-90m), wetlands (0-90m), high recorded site density, and a natural travel corridor.

#### *Historic Period Background and Archaeological Sensitivity*

Records concerning European settlement in Ferrisburgh are limited until the close of the American Revolution. Following this, settlement again commenced, and families arrived to establish farms within the fertile Champlain Valley. Agriculture represented the predominate vocation of Ferrisburgh settlers following the town's founding and throughout the succeeding century (Smith 1886:439). Despite this, ancillary cottage industries of the period were developed in town including, but not limited to, the construction of sawmills, gristmills, and potasheries. Falls along Little Otter Creek, Cronkhite Brook, and Lewis Creek were among the watersheds selected for small-scale industry in Ferrisburgh, such as the sawmill formerly located downstream from the project area visible on historic maps (Walling 1857; Figure 4). Despite these efforts, the town's production sector was invariably overshadowed by the immense hydropower that could be drawn from the falls in Vergennes along the Otter Creek (Smith 1886:445-448).

Vermont residents began raising Merino sheep upon the introduction of Spanish flocks during the early nineteenth century. The breed figured prominently in the state's agricultural sector until regions possessing more amenable climate obtained flocks, such as the western United States and Australia. Following the reduction of the wool industry in the Champlain Valley, dairy production regained prominence and has remained significant in Ferrisburgh's agricultural economy (Robinson 1892:355-366; Town of Ferrisburgh 2011).

Historic maps demonstrate that the present route of VT-7 and Bridge #139 was not established until the mid-twentieth century and built to carry the roadway over Lewis Creek (Figures 5-8). This trapezoidal, artificial landform is clearly visible in LIDAR imagery (Figure 2; Vermont Geodata Portal 2017). Despite the presence of mapped domestic structures within available historic maps, the extensive construction impact of the bridge and roadway would have destroyed any remains within its footprint (Figures 5 and 6). In addition, analysis of LIDAR imagery did not reveal any anomalies or previously undiscovered foundations in the preliminary APE (Figure 2).

*Summary*

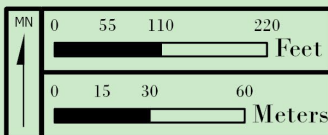
Following background research and desktop analysis, VTrans staff conducted a site visit on August 29, 2023, to assess the archaeological sensitivity of the project area (Figures 9-12). The areas denoted on the maps below (Figure 13 and 14) outside the VT-7 roadway prism and footprint of disturbance from the construction of Bridge 139 should be considered sensitive for precontact archaeological resources. Landforms proximate to the course of Lewis Creek depicted in the archaeological sensitivity maps below also have potential to contain deeply buried archaeological deposits. Unless these archaeologically sensitive areas can be avoided by project developments, further field investigations will be required. Once project plans and scope become available, a formal review will be issued.

Please let me know if you have any questions.

Thank you,

Alexander Honsinger

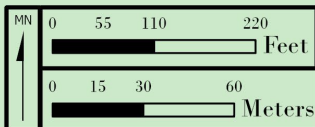
VTrans Cultural Resources Specialist



Ferrisburgh BF 019-4(35)  
 US 7, MM 6.20, Town of Ferrisburgh, Addison County  
 Archaeological Resource Review  
 Resource ID  
 VTrans Project Delivery Bureau | Environmental Section  
 219 North Main Street | Barre, VT 05641  
 Alexander Honsinger  
 Cultural Resources Specialist

Ferrisburgh  
 APE

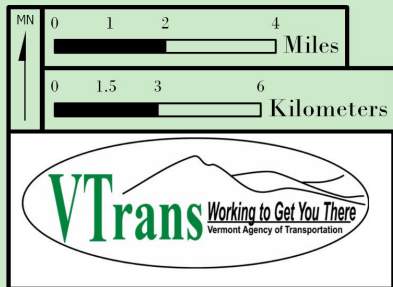
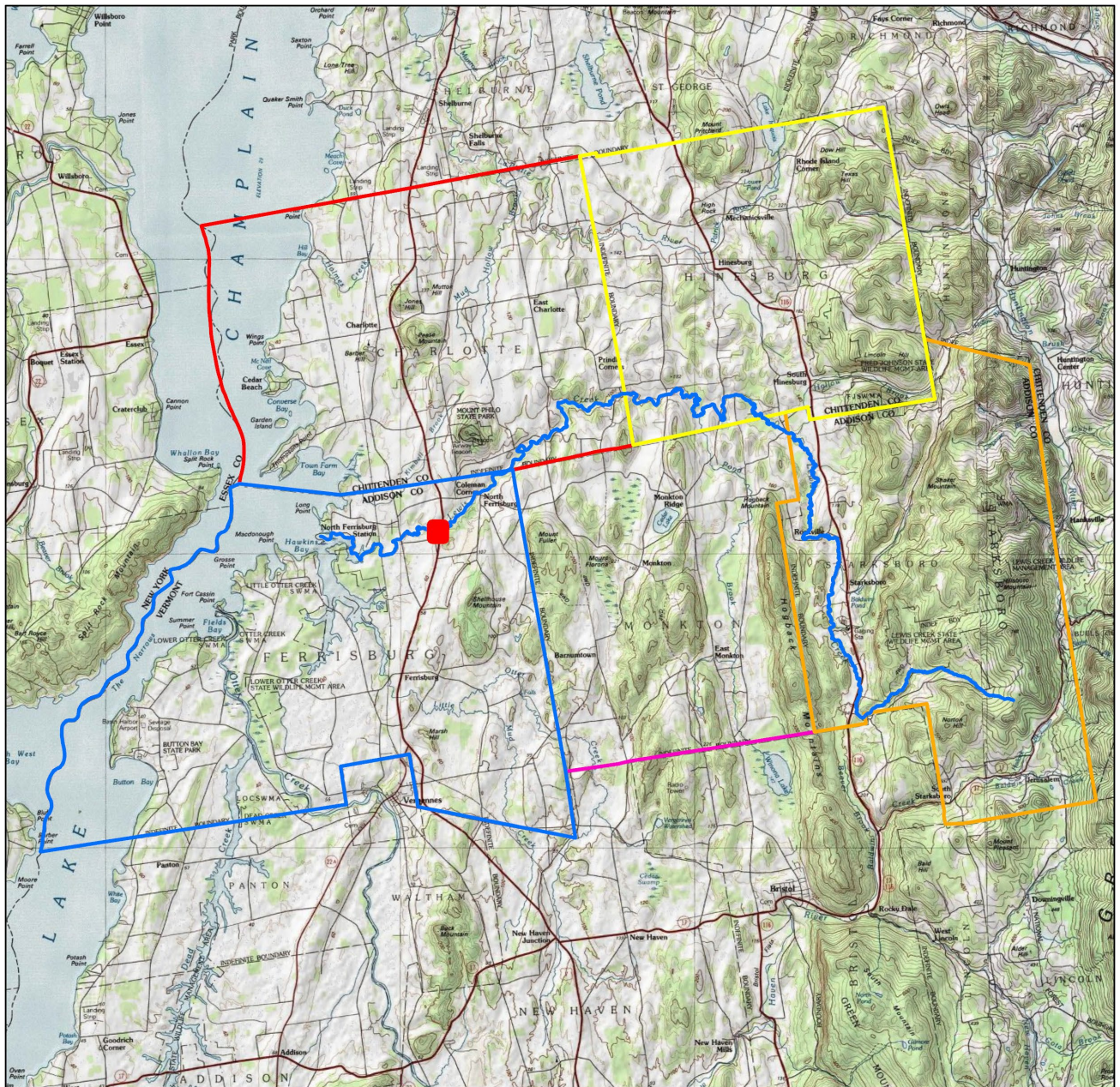
**Figure 1. Preliminary Project APE.**



Ferrisburgh BF 019-4(35)  
 US 7, MM 6.20, Town of Ferrisburgh, Addison County  
 Archaeological Resource Review  
 Resource ID  
 VTrans Project Delivery Bureau | Environmental Section  
 219 North Main Street | Barre, VT 05641  
 Alexander Honsinger  
 Cultural Resources Specialist

 Ferrisburgh  
 APE

**Figure 2. Preliminary APE on LIDAR imagery digital elevation model (Vermont Geodata Portal 2017).**



Ferrisburg BF 019-4(35)  
 US 7, MM 6.20, Town of Ferrisburg, Addison County  
 Archaeological Resource Review  
 Resource ID  
 VTtrans Project Delivery Bureau | Environmental Section  
 219 North Main Street | Barre, VT 05641  
 Alexander Honsinger  
 Cultural Resources Specialist

- APE
- Charlotte
- Ferrisburgh
- Hinesburg
- Monkton
- Starksboro
- Lewis Creek

Figure 3. Map depicting the Lewis Creek Watershed on USGS Topographic Maps.



**Figure 4. A man fishes along the Lewis Creek ca. 1877 at the location of the former Stage Road Covered Bridge, now Bridge No. 139. Photograph from the personal collection of Rowland E. Robinson (La Narna 1887).**

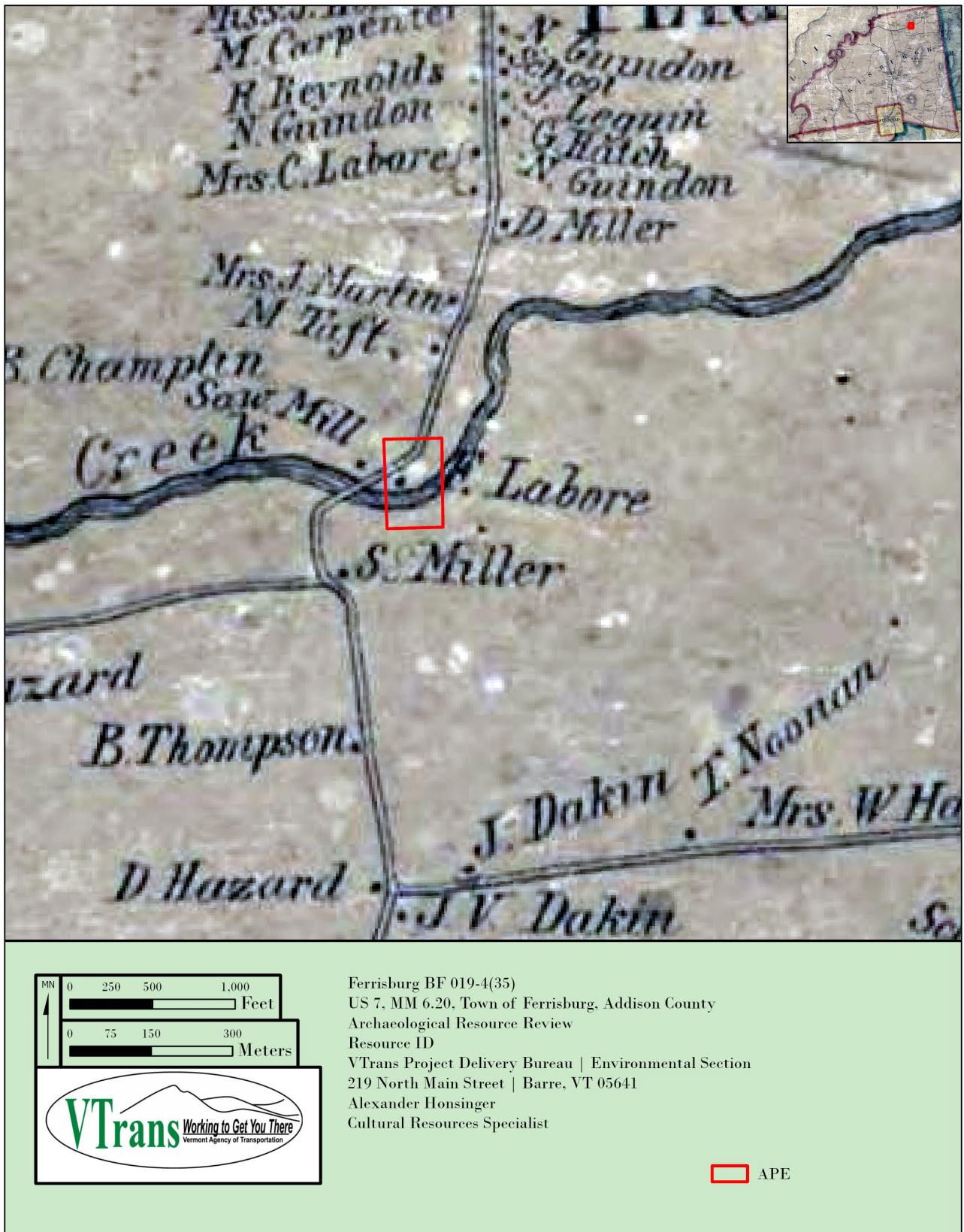


Figure 5. Approximate APE on Walling (1857) map.

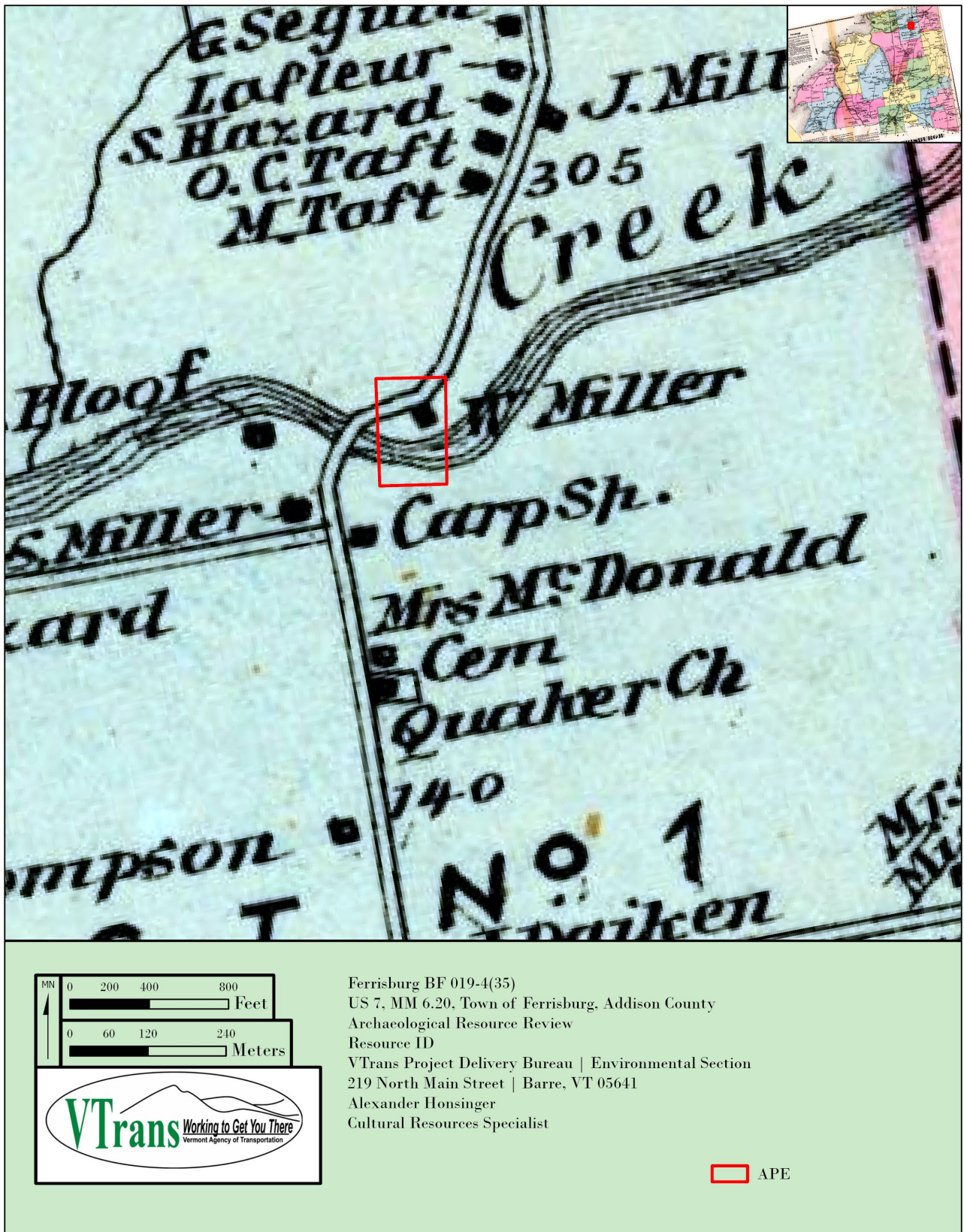
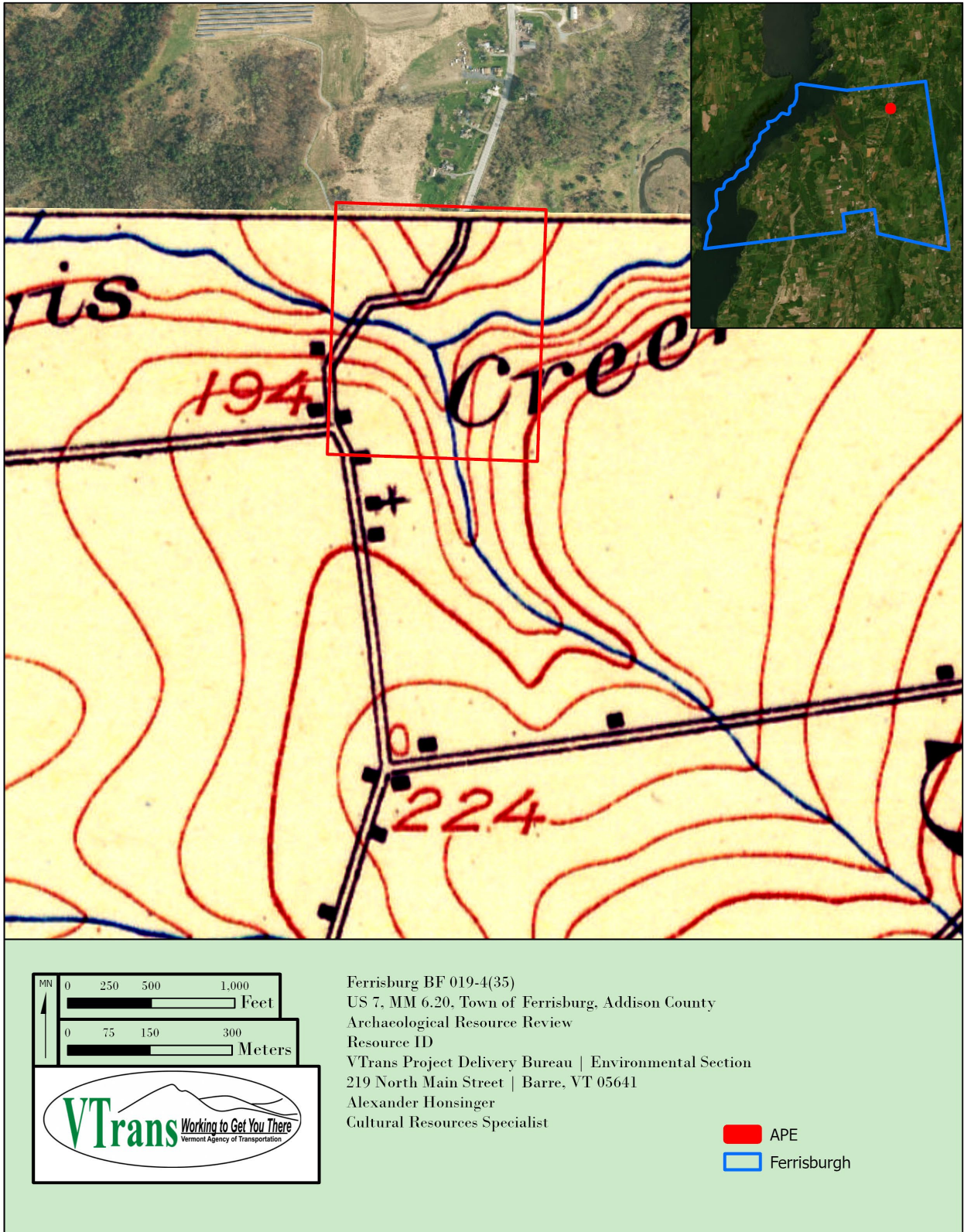
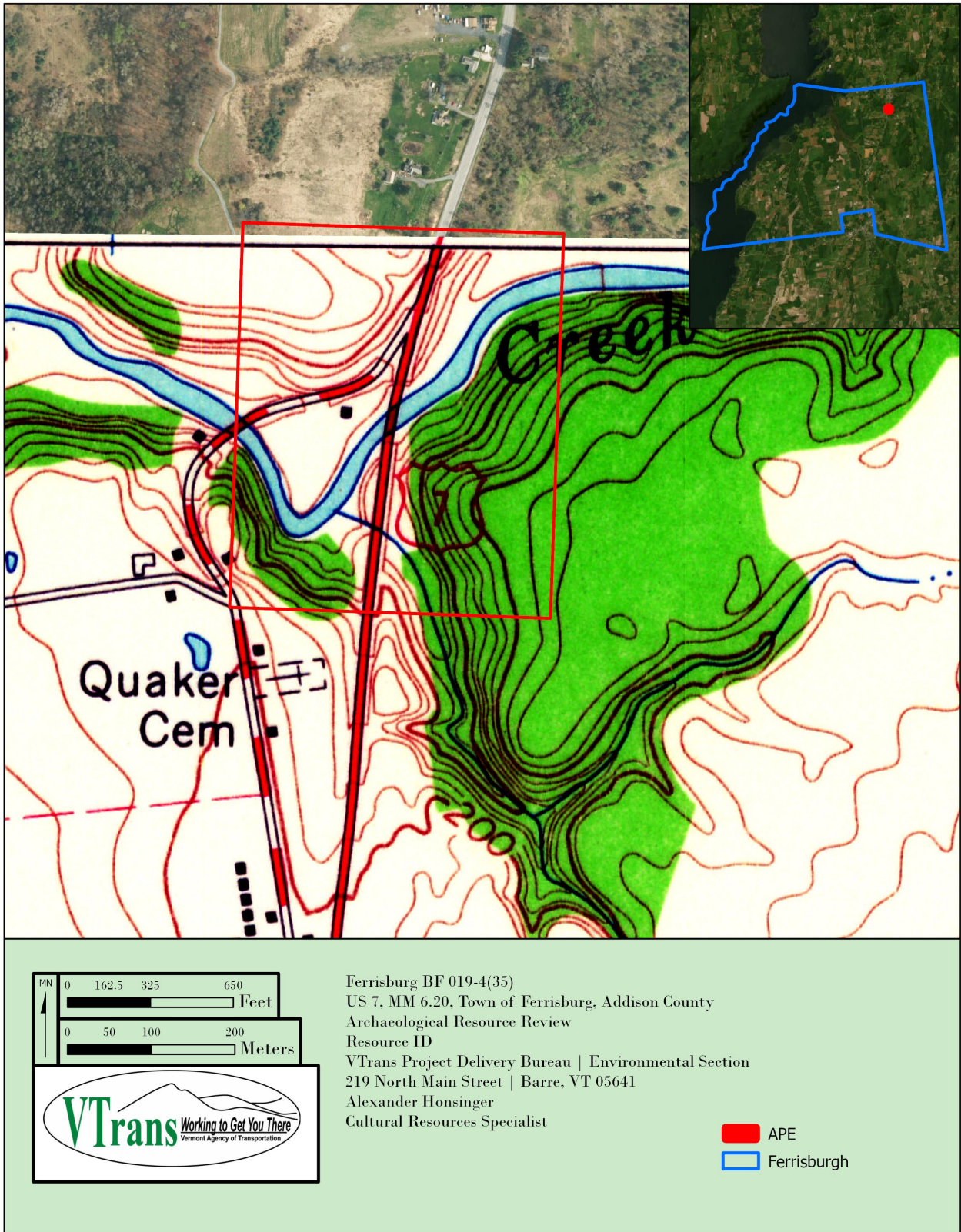


Figure 6. Approximate APE on Beers (1871) map.





**Figure 7. APE on USGS (1903) map.**



**Figure 8. APE on USGS (1963) map.**



**Figure 9. Northeastern bridge quadrant.**



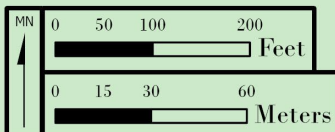
**Figure 10. Northwestern bridge quadrant.**






**Figure 11. Southwestern bridge quadrant.**



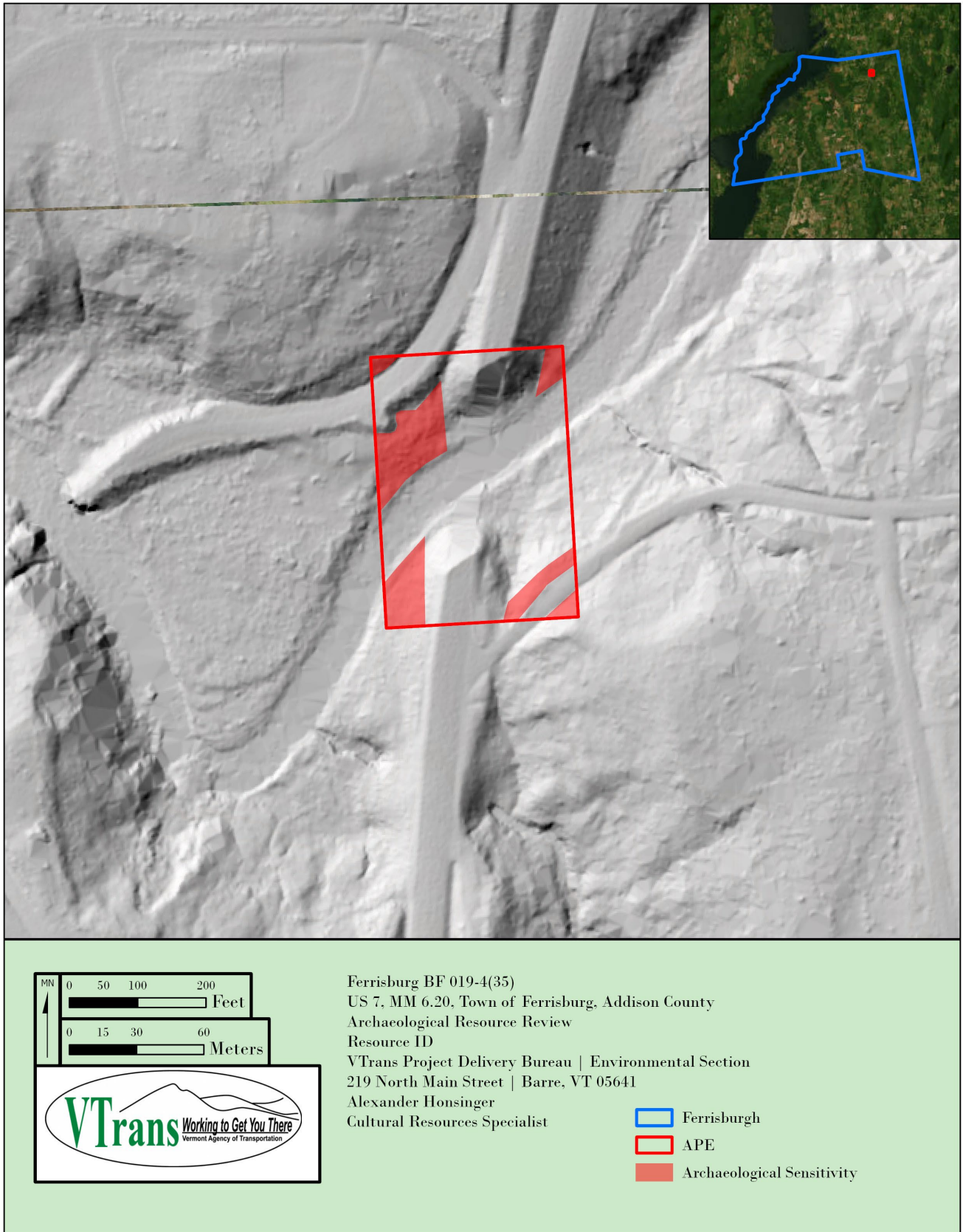
**Figure 12. Southeastern bridge quadrant.**



Ferrisburgh BF 019-4(35)  
 US 7, MM 6.20, Town of Ferrisburgh, Addison County  
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 Alexander Honsinger  
 Cultural Resources Specialist

-  Ferrisburgh
-  APE
-  Archaeological Sensitivity

**Figure 13. Archaeologically sensitive within the preliminary APE.**



**Figure 13. Archaeologically sensitive area within the preliminary APE and LIDAR imagery (Vermont Geodata Portal 2017).**



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## Appendix H: Historic Memo



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**Vermont Agency of Transportation**  
**Project Delivery Bureau - Environmental Section**  
**Barre City Place**  
Tel: 802.595-3744

**To:** JulieAnn Held  
**From:** Judith Williams Ehrlich, VTrans Historic Preservation Officer  
**Date:** March 27, 2024  
**Subject:** Historic Resource Identification for Ferrisburgh BF 019-4(35)

---

I have completed a resource identification (ID) for Ferrisburgh BF 019-4(35). At this time, the project is anticipated to include repairs to or replacement of Bridge No. 139.

This Resource Identification effort is being undertaken to provide information to the VTrans designers working on a proposed improvement project. Toward that end, VTrans Cultural Resources staff have identified potential resources within a broad preliminary Area of Potential Effect to ensure the designers are aware of all cultural resources that could possibly be affected by a project. Once the project is defined at the Conceptual Design phase, Cultural Resources staff will be able to determine a formal Area of Potential Effect for purposes of Section 106 and 22 VSA § 14.

VTrans hired WSP USA, Inc. to survey and evaluate Bridge No. 139 on U.S. Route 7 in Ferrisburgh. In their report titled, "Historic Resources Identification Survey, Bridge No. 139 over Lewis Creek, U.S. Route 7, Ferrisburgh BF 019-4(35)" WSP recommended that Bridge No. 139 is not historic nor is it eligible for listing in the National Register of Historic Places. I concur with their recommendation.

There are no other buildings or structures in the project area.

There are no Section 4(f) property types in the project area.

Please do not hesitate to contact me should you require additional information.

## **Appendix I: Environmental Specialist Resource ID**

Date: March 27, 2024  
Environmental Specialist: Julie Ann Held  
Project: Ferrisburgh BF 019-4(35)

**6(f) Properties:**

There aren't any 6(f) Properties within the project area.

**Hazardous Waste:**

There aren't any Hazardous Wastes Sites identified within the project area.

**Contaminated Soils:**

There aren't any Contaminated Soils within the project area.

**Wild Scenic Rivers:**

There aren't any designated Wild Scenic Rivers within the project area.

**Act 250 Permits:**

There aren't any Act 250 Permits within the project area.

**FEMA Floodplains:**

There are FEMA Floodplains mapped within the project area and a Flood Hazard Area/ River Corridor Permit may be required if there are impacts.

**River Corridor:**

There are River Corridors mapped within the project area and a Flood Hazard Area/ River Corridor Permit may be required if there are impacts.

**Protected Lands:**

There are Protected Lands mapped within the project area. These lands are listed as the Vermont River Conservancy Easement. The PM should design to avoid impacting these parcels due to requiring additional NEPA and permitting requirements.

**US Coast Guard:**

There aren't any US Coast Guard navigable waterways within the project area.

**Lakes and Ponds:**

There aren't any lakes or ponds within the project area.

**Scenic Highway/ Byway:**

There aren't any Scenic Highway/ Byways within the project area.

**Environmental Justice:**

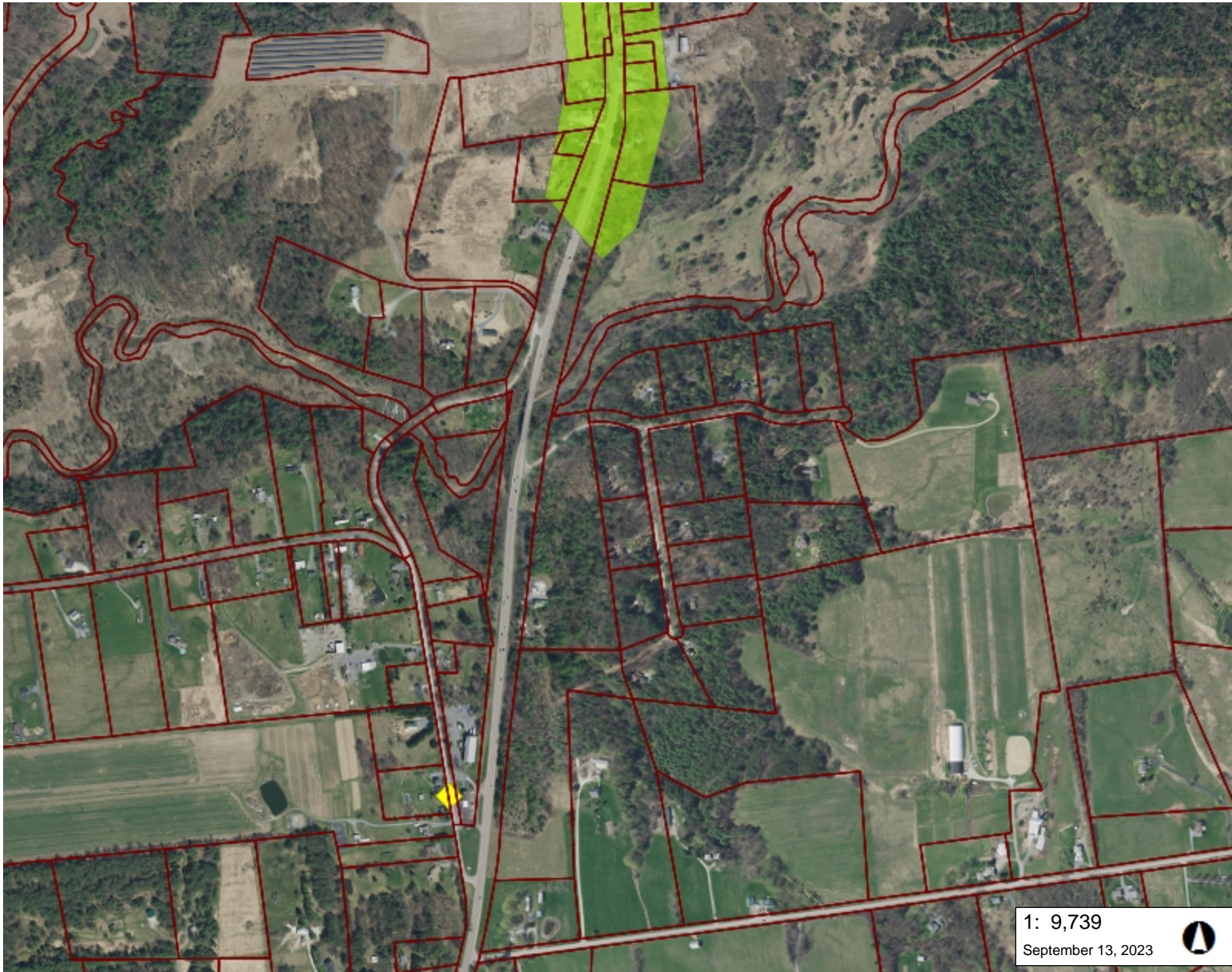
There aren't any EJ populations present within the study area, therefore there isn't any potential to have a disproportionately high and adverse effect.

**Other:**

There aren't any other resources within the project area.

---

## **Appendix J: Hazardous Sites Map**



## LEGEND

- Landfills**
  - OPERATING
  - CLOSED
- Land Use Restrictions**
  - Class IV GW Reclass
  - Class VI GW Reclass
  - Deed Restriction
  - Easement
  - Land Record Notice
  - Other
- Hazardous Site
- Hazardous Waste Generators
- Brownfields
- Salvage Yard
- Aboveground Storage Tank
- Underground Storage Tank (w/)
- Dry Cleaner
- Architectural Waste Recycling
- Urban Soil Background Areas
- Parcels (standardized)
- Town Boundary

1: 9,739  
September 13, 2023

## NOTES

Map created using ANR's Natural Resources Atlas

495.0 0 248.00 495.0 Meters  
  
 WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere 1" = 812 Ft. 1cm = 97 Meters  
 © Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

**DISCLAIMER:** This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.



## **Appendix K: Stormwater Resource ID**

State of Vermont  
Environmental Section  
219 North Main Street  
Barre, Vermont 05641  
[Vtrans.vermont.gov](http://Vtrans.vermont.gov)

Agency of Transportation

[phone] 802-498-5787

To: Project file  
From: Heather Voisin, VTrans Green Infrastructure Engineer  
Date: January 19, 2024  
Subject: Ferrisburgh BF 019-4(35) - Stormwater Resource ID Review

**Project Description:** I have reviewed the project area for Ferrisburgh BF 019-4(35) for stormwater related regulatory and water quality concerns. At this time, the project scope has not yet been defined, so this review is based on the surrounding area and potential stormwater impacts. The project involves Bridge 139 on US Route 7, which crosses the Lewis Creek. My evaluation has included the review of existing imagery and mapping (ANR Natural Resource Atlas, VTrans Operational Stormwater Permits) to capture existing stormwater features and existing drainage.

### Regulatory Considerations

Once the scope of the project has been determined, an assessment of how much impervious area is involved will determine if an Operational Stormwater permit is required for the project. There do not appear to be any existing stormwater permits in the immediate vicinity of the site area.

### Existing Drainage

Based on a review of available mapping and project photos, it appears that there are no drainage structures within the project area. Drainage from the roadway approaches mostly flow overland, while the bridge itself is curbed. The northbound lane of US Route 7 north of the bridge appears to have timber curbing that extends a nominal amount, vertically at the shoulder and guardrail. This likely results in some concentration of stormwater flows along the side of the road, however larger storms would likely spill over the small lip of the curb. South of the bridge, there appears to be a recently (re)established drainage ditch leading to a culvert under Lewis Creek Drive.

### Design Considerations

Depending on the extent of the project limits and roadway approach work, it may be worthwhile to consider improvements to the drainage from the roadway leading to either side of the bridge. And, to the extent that drainage work is conducted as part of this project, it is encouraged that it be aligned with the VTrans Phosphorus Control Highway Drainage Management Standards, as this may allow future credit toward achieving phosphorus reduction goals required by the Agency's TS4 permit.

## **Appendix L: Landscape Clearance Resource ID**



**State of Vermont** | Agency of Transportation  
Environmental Section  
219 North Main  
Barre, VT 05641  
[Vtrans.vermont.gov](http://Vtrans.vermont.gov)

To: Project File  
From: Bonnie Kirn Donahue, *VTrans Landscape Architect*  
Date: January 31, 2024  
Project: **Ferrisburgh BF 019-4(35) 22B390**  
Subject: Landscape (LA) Clearance for Resource ID

I have reviewed the proposed area for **Ferrisburgh BF 019-4(35) 22B390**, and found the following:

#### **SITE DESCRIPTION**

The project area is located in a rural stretch of Route 7.

#### **EXISTING CONDITIONS**

The following items/conditions were found on site that could influence design decisions:

1. Context/setting:
  - a. This project is located in a rural area
2. Presence of utilities:
  - a. Desktop review. No utilities were identified.
3. Riparian buffer:
  - a. This project includes work within a riparian area and may benefit from a planting plan.
4. Trees to protect:
  - a. No trees to protect were identified in the project area.
5. Presence of hazard trees
  - a. Desktop review. No hazard trees were identified.
6. Special site features:
  - a. No special sites were identified in the project area.
7. Plants observed: (this is not a complete list of species on site)
  - a. Desktop review. No species were identified. See natural resources clearance.

8. Invasive species observed: (this is not a complete list of species on site)
  - a. Desktop review. No species were identified. See natural resources clearance.
9. Accessibility & Active Transportation:
  - a. This project includes bicycle facilities that should be protected.
    - i. Wide shoulders exist on both sides of the road.

#### **RECOMMENDATIONS**

1. Minimize tree clearing in this area.
2. Minimize disturbance in the riparian buffer.
3. Develop a riparian planting plan for any disturbed riparian areas on this project.
4. Protect, maintain, and improve the accessibility, function, and safety of active transportation infrastructure, such as:
  - a. This project is located in the High Use/Priority category in the VTTrans Bicycle Corridor Priority map. Maintain wide shoulders and bicycle infrastructure.
5. Develop a plan for managing invasive species in the project area.

#### **NOTES**

1. I am available to assist with landscape architectural design, including planting plans, plant lists, hardscape/pedestrian access plans, etc. ([bonnie.donahue@vermont.gov](mailto:bonnie.donahue@vermont.gov)).

## **Appendix M: Utilities Resource ID**

**Ferrisburgh, BF 019-4(35) 22b390**  
*Existing Utilities within Project Limits Report*

*US-7 Ferrisburgh BR#139 M.M. 6.200*

**AERIAL**

Comcast

Consolidated Communications

Firstlight Fiber

Green Mountain Power

Waitsfield Champlain Valley Telecom

**UNDERGROUND**

Consolidated Communications

Ferrisburgh, BF 019-4(35) Pin: 22b390

The aerial utilities in the project area are 230' or more West of the bridge and will not be in conflict. Consolidated has buried Fiber in a 4" PVC conduit which hangs off the West side of the bridge. This will need to be relocated.

**By: Jeff Brunet**

**Date: 9/21/2023**

## **Appendix N: Local Input Questionnaire**



## Local & Regional Input Questionnaire

---

### Project Summary

This project, BF 019-4(35), focuses on bridge 139 on US Route 7 in Ferrisburgh, Vermont. The bridge is deteriorating and needs either a major maintenance action or replacement. Potential options being considered for this project include targeted repairs, deck replacement, and a new bridge. It is possible that VTrans will recommend a road closure and detour traffic away from the project site for the duration of the work. Efforts will be made to limit the detour to State roads.

### Community Considerations

1. Are there regularly scheduled public events in the community that will generate increased traffic (e.g. vehicular, bicycles and/or pedestrians), or may be difficult to stage if the bridge is closed during construction? Examples include annual bike races, festivals, parades, cultural events, weekly farmers market, concerts, etc. that could be impacted? If yes, please provide approximate date, location and event organizers' contact info.

I am unaware of any regularly scheduled events that would impact this bridge beyond normal traffic.

2. Is there a "slow season" or period of time from May through October where traffic is less or no events are scheduled?

U.S. 7 is the major north south route in the western part of the state. There is no slow season.

3. Please describe the location of the Town garage, emergency responders (fire, police, ambulance) and emergency response routes that might be affected by the closure of the bridge, one-way traffic, or lane closures and provide contact information (names, address, email addresses, and phone numbers).

Town garage - TH33 off of Little Chicago Rd.

Ferrisburgh VFD - 3909 US-7, Ferrisburgh, VT 05456

Police - Ferrisburgh does not have a police department. They would be served by the VSP New Haven barracks or the Vergennes Police Dept. at 8 Main St. in Vergennes

None of these are in close proximity to the project area.

4. Are there businesses (including agricultural operations and industrial parks) or delivery services (fuel or goods) that would be adversely impacted either by a detour or due to work zone proximity?

North of the project there are a number of businesses along Rt. 7 including Vermont Cookie Love, The Village Cafe and Tavern, 9th State Cannabis, some used car dealerships, and some boat sales and service businesses

## Local & Regional Input Questionnaire

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South of the project area is the Dakin Farms retail store.

5. Are there important public buildings (town hall, community center, senior center, library) or community facilities (recreational fields, town green, etc.) close to the project?

Public buildings are all well south of the project area.

6. What other municipal operations could be adversely affected by a road/bridge closure or detour?

Closure would have significant impacts on traffic flow in the region. Without knowing a proposed detour, it's difficult to consider potential impacts.

7. Are there any town highways that might be adversely impacted by traffic bypassing the construction on other local roads? Please indicate which roads may be affected and their condition (paved/unpaved, narrow, weight-limited bridges, etc), including those that may be or go into other towns.

Traffic would likely follow one of two local routes (both listed north to south starting at intersection w/U.S. 7):

1. Stage Rd. (paved), Greenbush Rd. (paved), to U.S. 7 at a dangerous intersection
2. Hollow Rd. (paved), Four Winds Rd. (paved), Dakin Rd. (paved), to U.S. 7

Travelers on the second local route might continue south on Shellhouse Mtn. Rd. (gravel south to Fuller Mtn. Rd., then paved) to Middlebrook Rd. (paved), though this would be less direct.

8. Is there a local business association, chamber of commerce, regional development corporation, or another downtown group that we should be working with? If known, please provide name, organization, email, and phone number.

none that I can think of

9. Are there any public transit services or stops that use the bridge or transit routes in the vicinity that may be affected if they become the detour route?

The TVT Burlington Link uses this road. [Schedule available at the TVT website.](#)

### **Schools**

1. Where are the schools in your community and what are their yearly schedules (example: first week in September to third week in June)?

## Local & Regional Input Questionnaire

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Ferrisburgh Elementary School - Little Chicago Rd.

Vergennes High School and Middle School - Monkton Rd., Vergennes

Both within Addison Northwest School District. The school year starts the week before Labor Day in August and runs through the second week of June

2. Is this project on specific routes that school buses or students use to walk to and from school?

Students are not likely to be walking or biking to school along this route. Buses do use the route.

3. Are there recreational facilities associated with the schools nearby (other than at the school)?

Not that I am aware of

### **Pedestrians and Bicyclists**

1. What is the current level of bicycle and pedestrian use on the bridge?

I anticipate that bicycle and pedestrian use of the bridge is quite low. The routes listed above as local road by-passes offer much more attractive walking and biking opportunities.

2. Are the current lane and shoulder widths adequate for pedestrian and bicycle use?

Yes

3. Does the community feel there is a need for a sidewalk or bike lane on the bridge?

Not that I am aware of

4. Is pedestrian and bicycle traffic heavy enough that it should be accommodated during construction?

No

5. Does the Town have plans to construct either pedestrian or bicycle facilities leading up to the bridge? Please provide any planning documents demonstrating this (scoping study, master plan, corridor study, town or regional plan).

## Local & Regional Input Questionnaire

---

No

6. In the vicinity of the bridge, is there a land use pattern, existing generators of pedestrian and/or bicycle traffic, or zoning that will support development that is likely to lead to significant levels of walking and bicycling?

No

### Design Considerations

1. Are there any concerns with the alignment of the existing bridge? For example, if the bridge is located on a curve, has this created any problems that we should be aware of?

No

2. Are there any concerns with the width of the existing bridge?

None

3. Are there any special aesthetic considerations we should be aware of?

No

4. Does the location have a history of flooding? If yes, please explain.

Not at the height of the existing bridge

5. Are there any known Hazardous Material Sites near the project site?

No

6. Are there any known historic, archeological and/or other environmental resource issues near the project site?

The bridge crosses Lewis Creek which is a popular fishing destination.

There are RTE element (2-3) occurrences downstream of the bridge and one additional occurrence upstream.

7. Are there any utilities (water, sewer, communications, power) attached to the existing bridge? Please provide any available documentation.

I do not know.

8. Are there any existing, pending, or planned municipal utility projects (communications, lighting, drainage, water, wastewater, etc.) near the project that should be considered?

Not that I am aware of

## Local & Regional Input Questionnaire

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9. Are there any other issues that are important for us to understand and consider?  
U.S. 7 is the major north south route in the western part of the state.

### **Land Use & Zoning**

1. Please provide a copy of your existing and future land use map or zoning map, if applicable.  
[The town plan is available on line.](#)  
[Zoning by-laws](#), including a zoning map, are also available online.
2. Are there any existing, pending or planned development proposal that would impact future transportation patterns near the bridge? If so, please explain.  
Not that I am aware of.
3. Is there any planned expansion of public transit or intercity transit service in the project area?  
Please provide the name and contact information for the relevant public transit provider.  
Not that I am aware of. TVT did recently expand their Link service to add a mid-day run. No further expansion is planned at this time.

### **Communications**

1. Please identify any local communication outlets that are available for us to use in communicating with the local population. Include weekly or daily newspapers, blogs, radio, public access TV, Facebook, Front Page Forum, etc. Also include any unconventional means such as local low-power FM.  
The Addison Independent is the local newspaper.
2. Other than people/organizations already referenced in this questionnaire, are there any others who should be kept in the loop as the project moves forward?  
Not that I am aware of

**Appendix O: Operations Input Questionnaire (blank)**

Pending Response from District.

## **Bridge Scoping Project BF 019-4(35) Operations Input Questionnaire**

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The Structures Section has begun the scoping process for BF 019-4(35), Ferrisburgh, US Route 7, Bridge 139, over Lewis Creek. This is a rolled beam / concrete deck bridge constructed in 19. The Structure Inspection, Inventory, and Appraisal Sheet (attached) rates the deck as 5 (fair), the superstructure as 6 (satisfactory), and the substructures as 7 (good). We are interested in hearing your thoughts regarding the items listed below. Leave it blank if you don't wish to comment on a particular item.

1. What are your thoughts on the general condition of this bridge and the general maintenance effort required to keep it in service?
  
2. What are your comments on the current geometry and alignment of the bridge (curve, sag, banking, sight distance)?
  
3. Do you feel that the posted speed limit is appropriate?
  
4. Is the current bridge and approach roadway width adequate for winter maintenance including snow plowing?
  
5. Are the joints salvageable or would you recommend replacement?
  
6. Are the railings constantly in need of repair or replacement? What type of railing works best for your district?
  
7. Are you aware of any unpermitted driveways within close proximity to the bridge? We frequently encounter driveways that prevent us from meeting railing and safety standards.
  
8. Are you aware of abutting property owners that are likely to need special attention during the planning and construction phases? These could be people with disabilities, elderly, or simply folks who feel they have been unfairly treated in the past.

**Bridge Scoping Project BF 019-4(35)**  
**Operations Input Questionnaire**

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9. Do you find that extra effort is required to keep the slopes and riverbanks around the bridge in a stable condition? Is there frequent flood damage that requires repair?
  
10. Does this bridge seem to catch an unusual amount of debris from the waterway?
  
11. Are you familiar with traffic volumes in the area of this project?
  
12. Do you think a closure with off-site detour and accelerated construction would be appropriate? Do you have any opinion about a possible detour route, assuming that we use State route for State projects and any route for Town projects? Are there locations on a potential detour that are already congested that we should consider avoiding?
  
13. Please describe any larger projects that you have completed that may not be reflected on the attached Appraisal sheet, such as deck patches, paving patches, railing replacement with new type, steel coating, etc.
  
14. If there is a sidewalk on this bridge, how effective are the Town's efforts to keep it free of snow and ice?
  
15. Are there any drainage issues that we should address on this project?
  
16. Are you aware of any complaints that the public has about issues that we can address on this project?
  
17. Is there anything else we should be aware of?

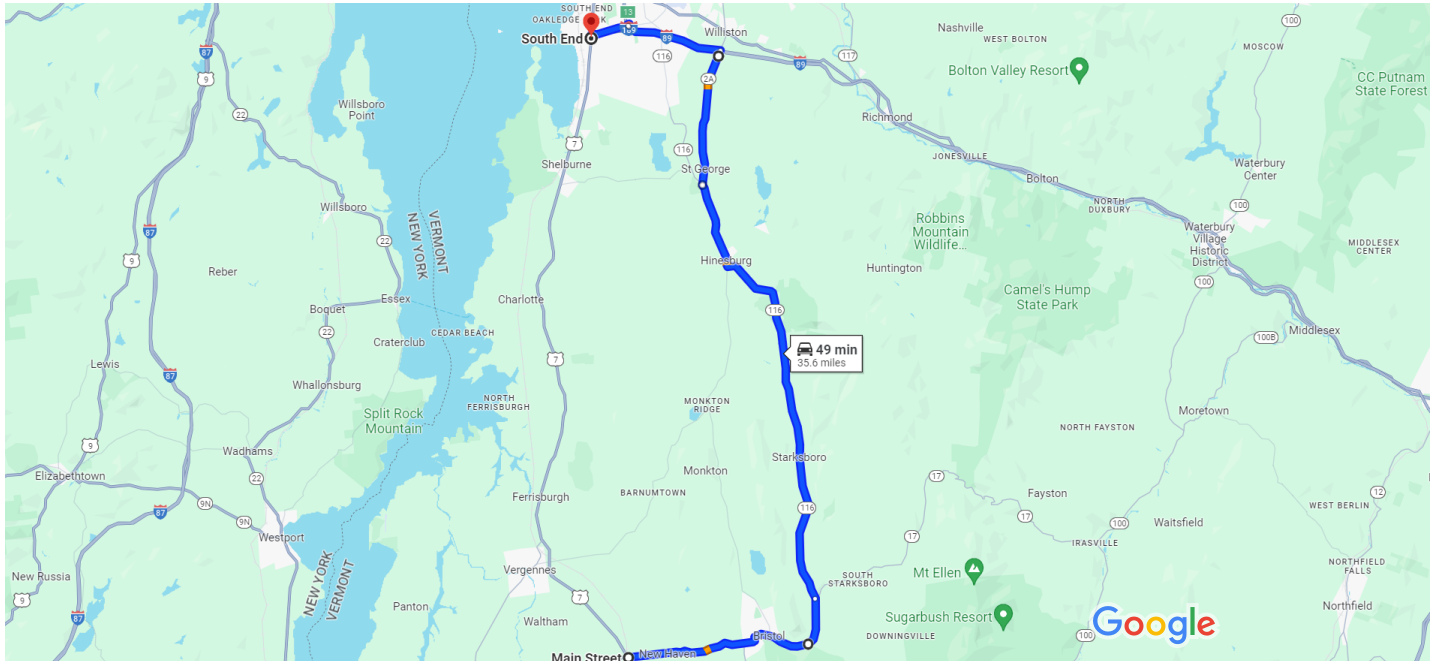


## **Appendix P: Crash Data**



4347657	September 8, 2019 at 12:45 PM	Ferrisburgh	US-7				198502507	6.19	Day								
5930045	January 16, 2022 at 3:03 AM	Ferrisburgh	US-7	Property Damage Only	Single Vehicle Crash	Clear	2285000112	6.2	None/Other	Night	None	Heavy Truck	Not at a Junction	None			Dry
4099489	June 9, 2019 at 8:48 PM	Ferrisburgh	US-7	Property Damage Only	Single Vehicle Crash	Clear	198501470	6.28	None/Other	Night	None	None	Not at a Junction	None			Dry
3848852	December 17, 2018 at 6:10 PM	Ferrisburgh	US-7	Property Damage Only	Single Vehicle Crash	Clear	188503886	6.39	None/Other	Night	None	None	Not at a Junction	None			Dry
5931923	August 7, 2021 at 2:47 AM	Ferrisburgh	US-7				218501858	6.53		Night							
5927358	February 4, 2021 at 1:22 PM	Ferrisburgh	US-7	Injury	Rear End	Clear	218500219	6.74	None/Other	Day	None	None	Not at a Junction	None			Dry
809264	August 19, 2017 at 2:18 PM	Ferrisburgh	US-7	Property Damage Only	Other - Explain in Narrative	Cloudy	178502851	6.76	None/Other	Day	None	None	Not at a Junction	None			Dry
803907	April 18, 2017 at 4:32 PM	Ferrisburgh	US-7	Property Damage Only	Right Turn and Thru, Same Direction Sideswipe/Angle Crash ^^--	Clear	178501221	6.81	None/Other	Day	None	Heavy Truck	T - Intersection	None			Dry
5922176	January 12, 2021 at 9:31 AM	Ferrisburgh	US-7	Injury	Right Turn and Thru, Broadside ^c--	Cloudy	218500072	6.82	None/Other	Day	None	Heavy Truck	Not at a Junction	None			Dry
3852442	August 24, 2018 at 4:13 PM	Ferrisburgh	US-7	Property Damage Only	Right Turn and Thru, Same Direction Sideswipe/Angle Crash ^^--	Clear	188502684	6.91	None/Other	Day	None	None	Not at a Junction	None			Dry
4254391	August 24, 2019 at 4:52 PM	Ferrisburgh	US-7				198502343	6.93		Day							
734452	January 7, 2017 at 2:49 PM	Ferrisburgh	US-7	Property Damage Only	No Turns, Thru moves only, Broadside ^c	Cloudy	178500059	6.94	None/Other	Day	None	None	Four-way Intersection	None			Dry
809312	August 5, 2017 at 8:16 PM	Ferrisburgh	US-7	Property Damage Only	No Turns, Thru moves only, Broadside ^c	Clear	178502666	6.94	None/Other	Night	None	None	Other - Explain in Narrative	None			Dry
3844687	August 14, 2018 at 5:40 PM	Ferrisburgh	US-7	Property Damage Only			188502573	6.94	None/Other	Day	None	None					
5007572	January 29, 2020 at 2:20 PM	Ferrisburgh	US-7	Property Damage Only	No Turns, Thru moves only, Broadside ^c	Clear	208500286	6.94	None/Other	Day	None	None	Four-way Intersection	None			Dry
5919209	November 21, 2020 at 1:55 PM	Ferrisburgh	US-7	Injury			208503013	6.94	None/Other	Day	None	None		None			
5920690	October 9, 2021 at 3:54 PM	Ferrisburgh	US-7	Injury	Single Vehicle Crash	Clear	218502493	6.94	None/Other	Night	None	None	Four-way Intersection	None			Dry
5927830	April 15, 2021 at 6:34 PM	Ferrisburgh	US-7				218500730	6.94		Day							
3849808	October 26, 2018 at 6:05 PM	Ferrisburgh	US-7	Injury	No Turns, Thru moves only, Broadside ^c	Clear	188503356	6.95	None/Other	Night	None	None	Four-way Intersection	None			Dry
3842114	March 16, 2018 at 9:01 AM	Ferrisburgh	US-7	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Clear	188500817	6.98	None/Other	Day	None	None	Not at a Junction	None			Dry
4422387	September 27, 2019 at 7:44 AM	Ferrisburgh	US-7	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Clear	198502711	6.98	None/Other	Day	None	None	T - Intersection	None			Dry
5921584	January 17, 2022 at 5:48 AM	Ferrisburgh	US-7	Property Damage Only	Head On	Freezing Precipitation	2285000118	6.98	None/Other	Night	None	None	Not at a Junction	Road Surface Condition(wet, icy, snow, slush, etc)			Snow
5930604	March 6, 2022 at 3:10 PM	Ferrisburgh	US-7	Injury	Rear End	Clear	2285000610	6.98	None/Other	Day	None	None	Not at a Junction	None			Dry
3847035	June 25, 2018 at 11:07 AM	Ferrisburgh	US-7	Injury	No Turns, Thru moves only, Broadside ^c	Clear	188501938	6.99	None/Other	Day	None	None	Four-way Intersection	None			Dry
3843736	June 29, 2018 at 4:12 PM	Ferrisburgh	US-7	Property Damage Only	Rear End	Clear	188501992	7.13	None/Other	Day	None	None	Not at a Junction	None			Dry
5927795	December 9, 2020 at 4:16 PM	Ferrisburgh	US-7				208503165	7.27		Day							
5928046	October 12, 2020 at 9:56 AM	Ferrisburgh	US-7				208502659	7.28		Day							
4254398	August 19, 2019 at 3:56 PM	Ferrisburgh	US-7				198502270	999.99		Day							
4386239	September 18, 2019 at 4:11 PM	Ferrisburgh	US ROUTE 7	Injury	No Turns, Thru moves only, Broadside ^c	Clear	198502622		None/Other	Day	None	None	T - Intersection	None			Dry
5934567	February 4, 2022 at 1:39 AM	Ferrisburgh	US ROUTE 7				2285000309			Night							

## Appendix Q: Detour Maps



Map data ©2024 Google 2 mi

Main St  
New Haven, VT 05472

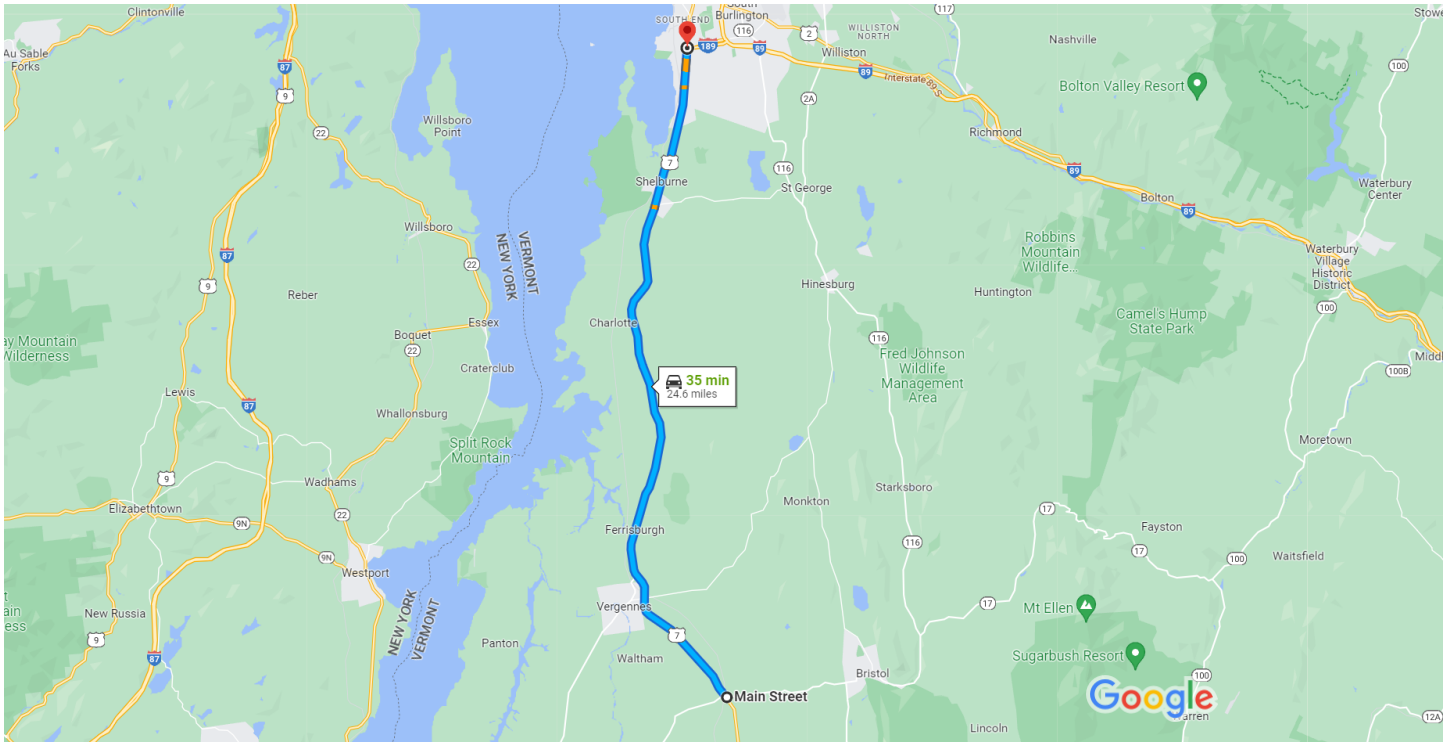
- ↑ 1. Head east on VT-17 E  
8.7 mi
- ↑ 2. Continue onto Rte 116 N  
16.6 mi
- ↘ 3. Turn right onto VT-2A N  
5.0 mi
- ↖ 4. Turn left to merge onto I-89 N toward Burlington  
3.5 mi
- ↘ 5. Take exit 13 for I-189 toward US-7/Shelburne/Burlington  
0.2 mi
- ↑ 6. Continue onto I-189 W/Interstate 189 W  
1.4 mi
- ↙ 7. Use any lane to turn left onto Shelburne St  
0.1 mi

South End  
Burlington, VT



# Ferrisburgh BF 019-4(35) Regional Detour Through Distance

Through Distance = 24.6 miles,  
Travel Time = 35 min



Map data ©2023 Google 2 mi

Main St  
New Haven, VT 05472

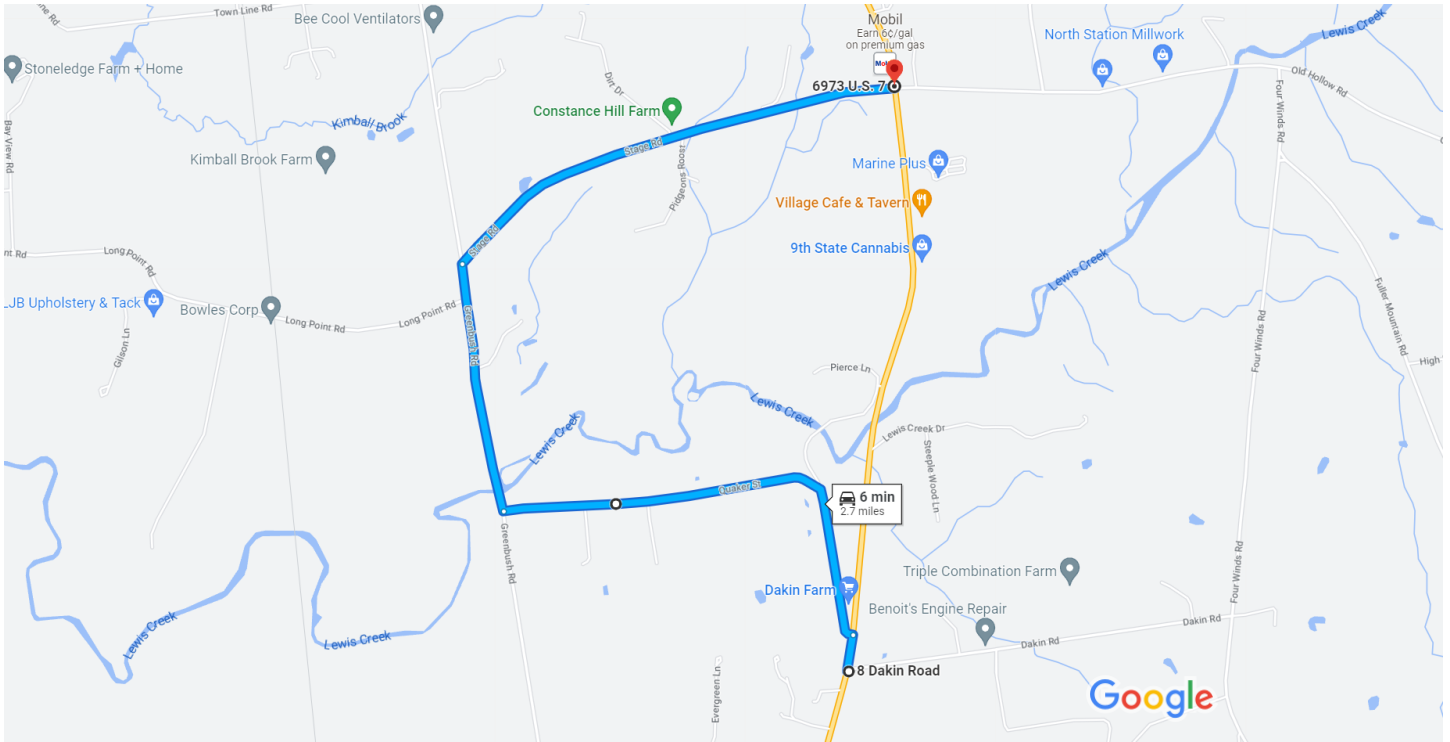
- ↑ 1. Head northwest on US-7 N
  - 📍 Pass by Buffalo Wild Wings (on the left in 24.6 mi)
- 
- 24.6 mi

South End  
Burlington, VT 05401



# Ferrisburgh BF 019-4(35) Western Local Bypass Detour Distance

Detour Distance = 2.7 miles,  
Travel Time = 6 min



Map data ©2023 1000 ft

8 Dakin Rd  
Ferrisburgh, VT 05456

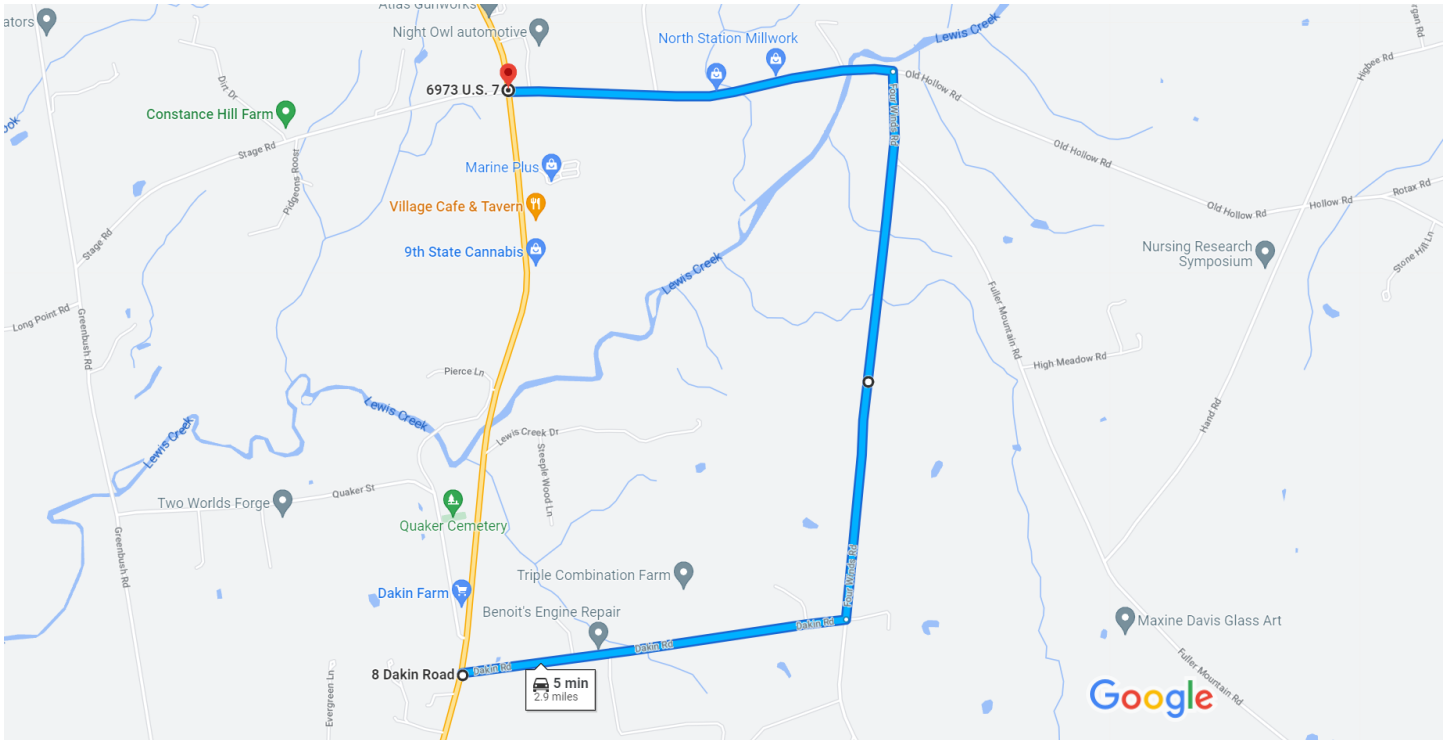
- ↑ 1. Head north on US-7 N toward Dakin Rd  
\_\_\_\_\_ 423 ft
- ↶ 2. Turn left onto Quaker St  
\_\_\_\_\_ 1.0 mi
- ↷ 3. Turn right onto Greenbush Rd  
\_\_\_\_\_ 0.5 mi
- ↷ 4. Turn right onto Stage Rd  
\_\_\_\_\_ 1.0 mi
- ↶ 5. Turn left onto US-7 N  
  - i** Destination will be on the left
  - \_\_\_\_\_ 20 ft

6973 US-7  
North Ferrisburgh, VT 05473



# Ferrisburgh BF 019-4(35) Eastern Local Bypass Detour Distance

Detour Distance = 2.9 miles,  
Travel Time = 5 min



Map data ©2023 1000 ft

8 Dakin Rd  
Ferrisburgh, VT 05456

- ↑ 1. Head east on Dakin Rd  
\_\_\_\_\_ 0.8 mi
- ↶ 2. Turn left onto Four Winds Rd  
\_\_\_\_\_ 1.2 mi
- ↶ 3. Turn left onto Old Hollow Rd  
\_\_\_\_\_ 0.8 mi
- ↷ 4. Turn right onto US-7 N  
  - i** Destination will be on the left
  - \_\_\_\_\_ 20 ft

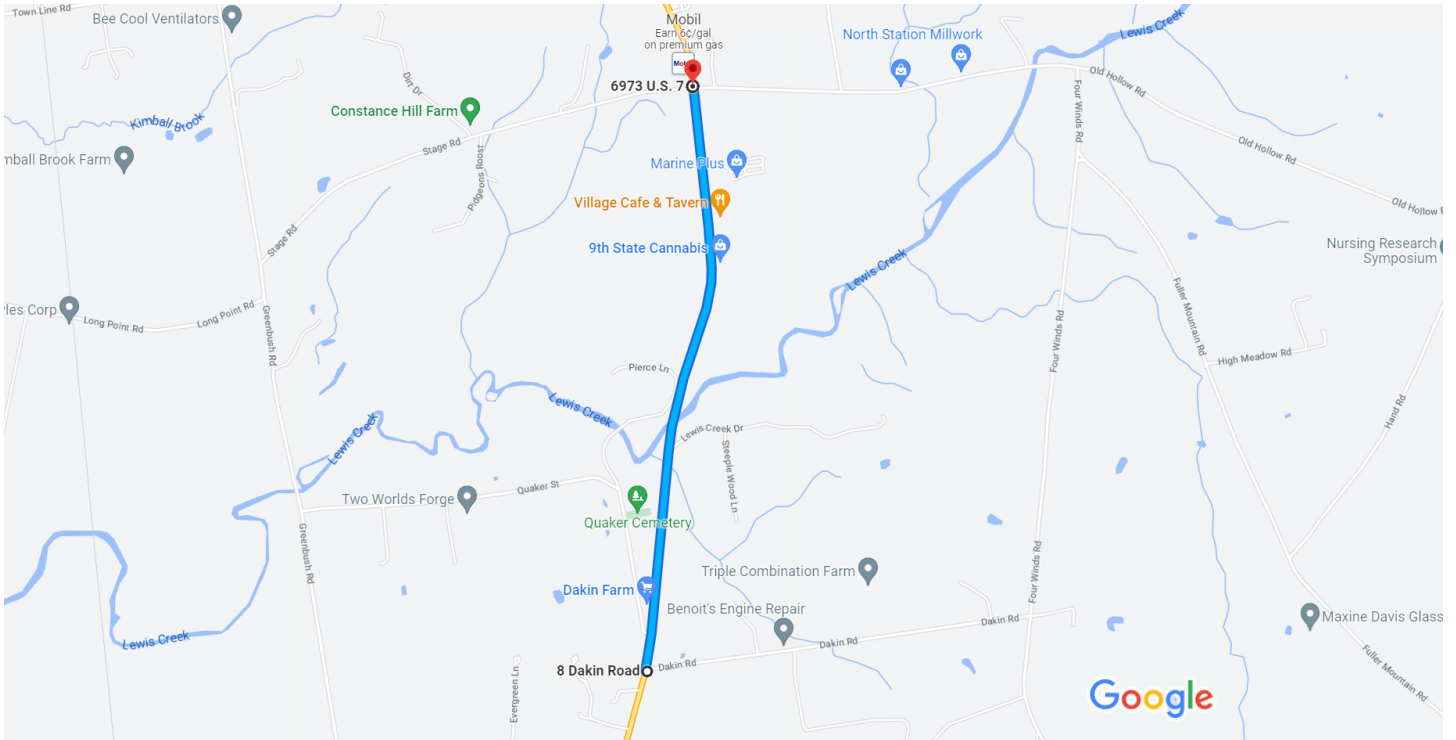
6973 US-7  
North Ferrisburgh, VT 05473





# Ferrisburgh BF 019-4(35) Local Bypass Through Distance

Through Distance = 1.3 miles,  
Travel Time = 2 min



Map data ©2023 1000 ft

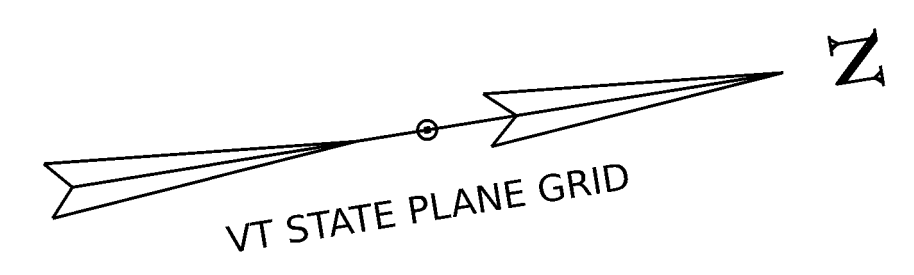
8 Dakin Rd  
Ferrisburgh, VT 05456

- ↑ 1. Head north on US-7 N toward Dakin Rd
- i** Destination will be on the left

1.3 mi

6973 US-7  
North Ferrisburgh, VT 05473

**Appendix R: Plans**



**N/F  
GREEN  
MOUNTAIN  
DIRECT  
LLC**

**N/F  
STATE  
OF  
VERMONT**

**N/F  
MALANEY,  
KRISTA L.**

**N/F  
CURTIS, SCOTT T.  
& ALYSHA JO**

**LEWIS CREEK  
FLOW**

APPROX. EXISTING R.O.W.

CURVE (X)  
DELTA = 70°30'57"  
D = 01°08'00"  
R = 5729.70'  
L = 527.28'  
E = 1051.59'  
P = 24.21'

APPROX. EXISTING R.O.W.

**US ROUTE 7  
TO WALTHAM**

**US ROUTE 7  
TO CHARLOTTE**

BENCHMARK  
NCS DISK  
# 65  
ELEV = 156.51

STA 327+36.10 =  
CHAN 51+50.00  
A = 134°35'29" LT

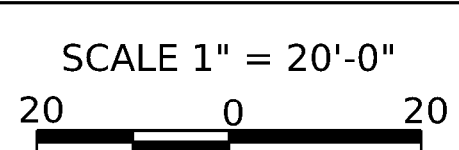
**N/F  
HINSDALE,  
COREY MICHAEL;  
HINSDALE, CLARK W. III**

**N/F  
HINSDALE,  
COREY MICHAEL;  
HINSDALE, CLARK W. III**

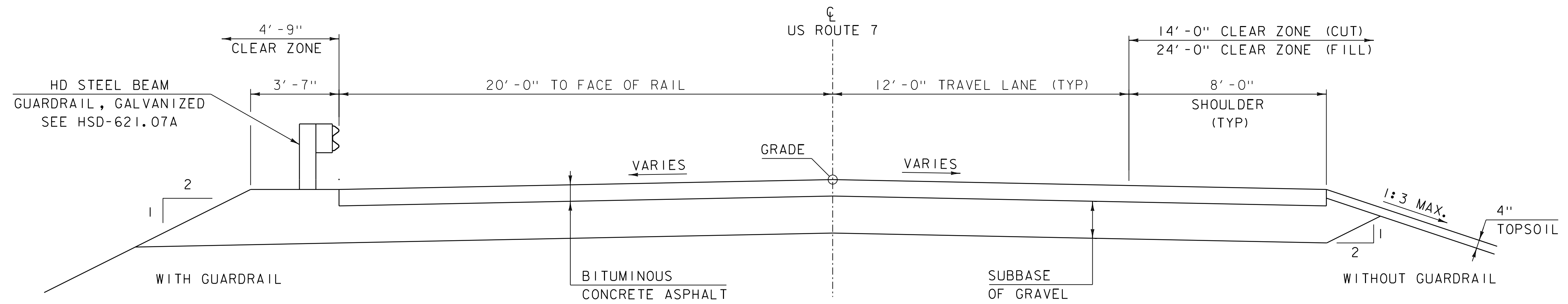
**N/F  
STATE  
OF  
VERMONT**

**N/F  
ALMEIDA, STEVEN M.**

EXISTING CONDITIONS

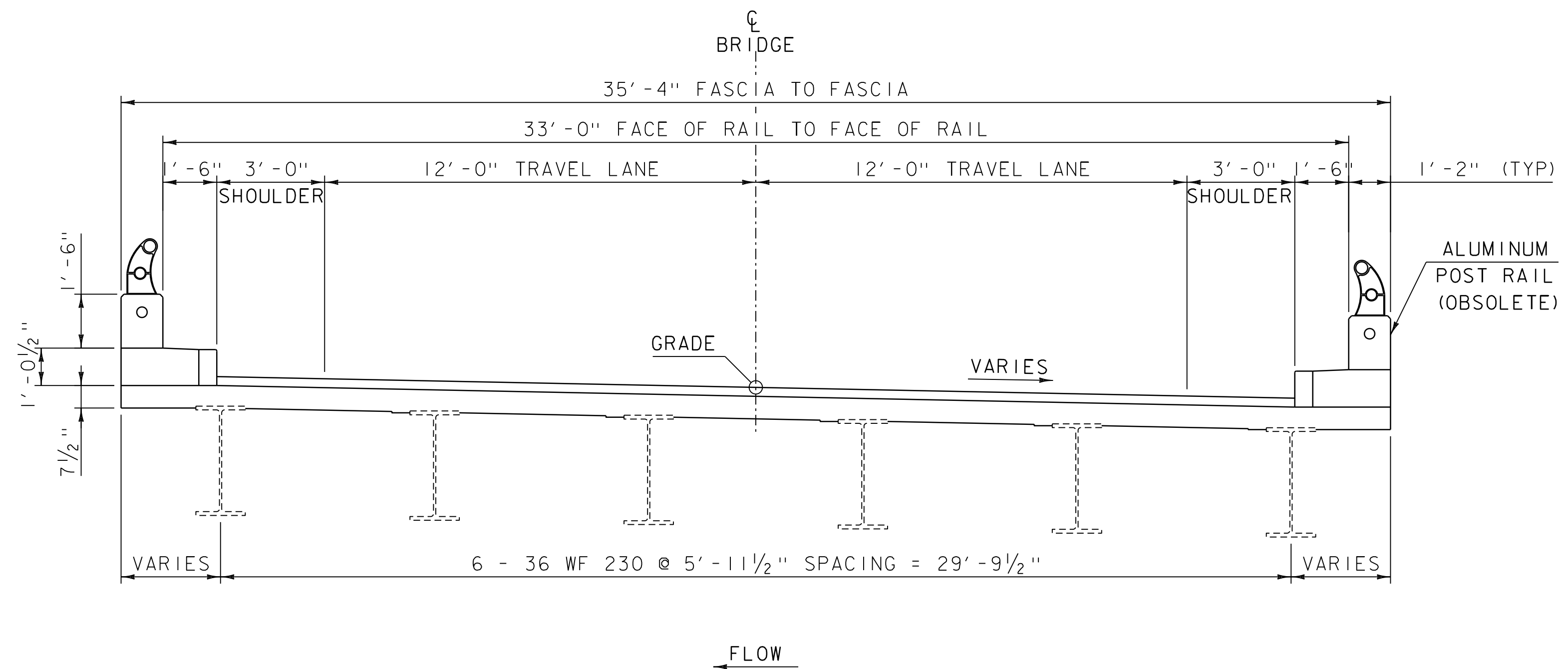


PROJECT NAME:	FERRISBURGH	PLOT DATE:	11-APR-2024
PROJECT NUMBER:	BF 019-4(35)	DRAWN BY:	D.D.BEARD
FILE NAME:	22b390/s22b390BDR_Existing.dgn	CHECKED BY:	.....
PROJECT LEADER:	L.J.STONE	SHEET	1 OF 14
DESIGNED BY:	.....		
EXISTING CONDITIONS LAYOUT			



**EXISTING US ROUTE 7 TYPICAL SECTION**

SCALE 3/8" = 1'-0"



**EXISTING BRIDGE TYPICAL SECTION**

SCALE 3/8" = 1'-0"

**MATERIAL TOLERANCES**  
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

PROJECT NAME: FERRISBURGH

PROJECT NUMBER: BF 019-4(35)

FILE NAME: 22j390\s22j390\typical.dgn

PROJECT LEADER: L.J.STONE

DESIGNED BY: -----

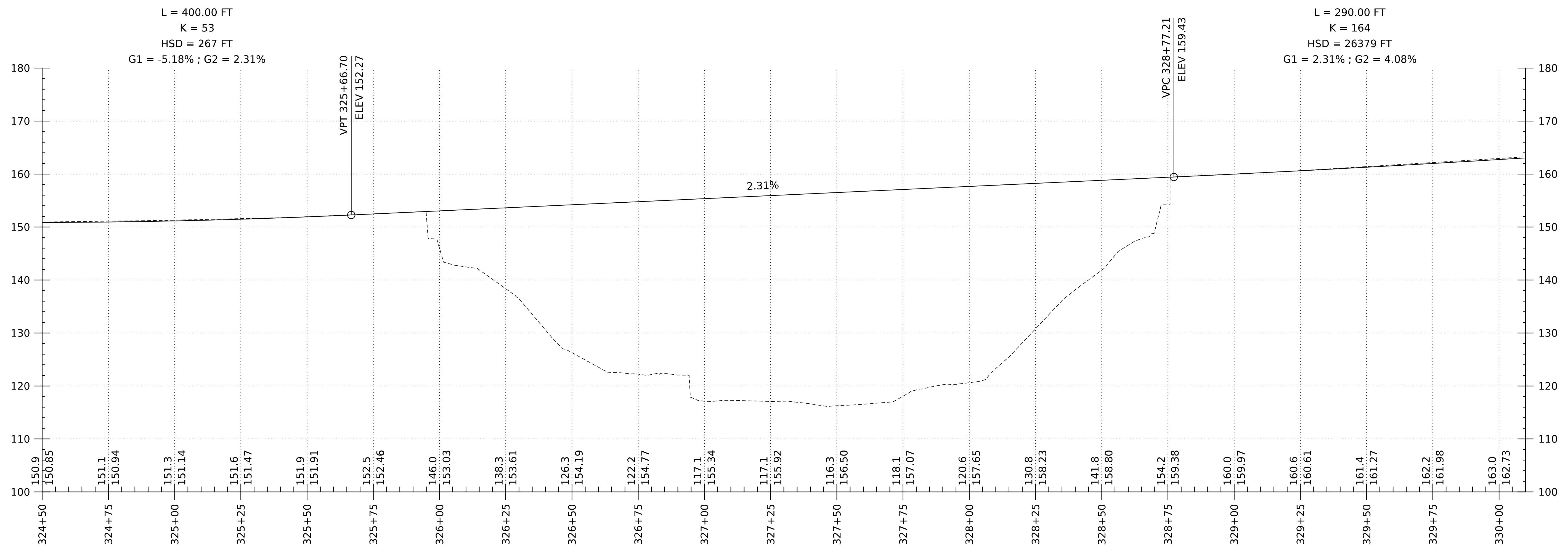
EXISTING TYPICAL SECTIONS

PLOT DATE: 11-APR-2024

DRAWN BY: D.D.BEARD

CHECKED BY: -----

SHEET 2 OF 14

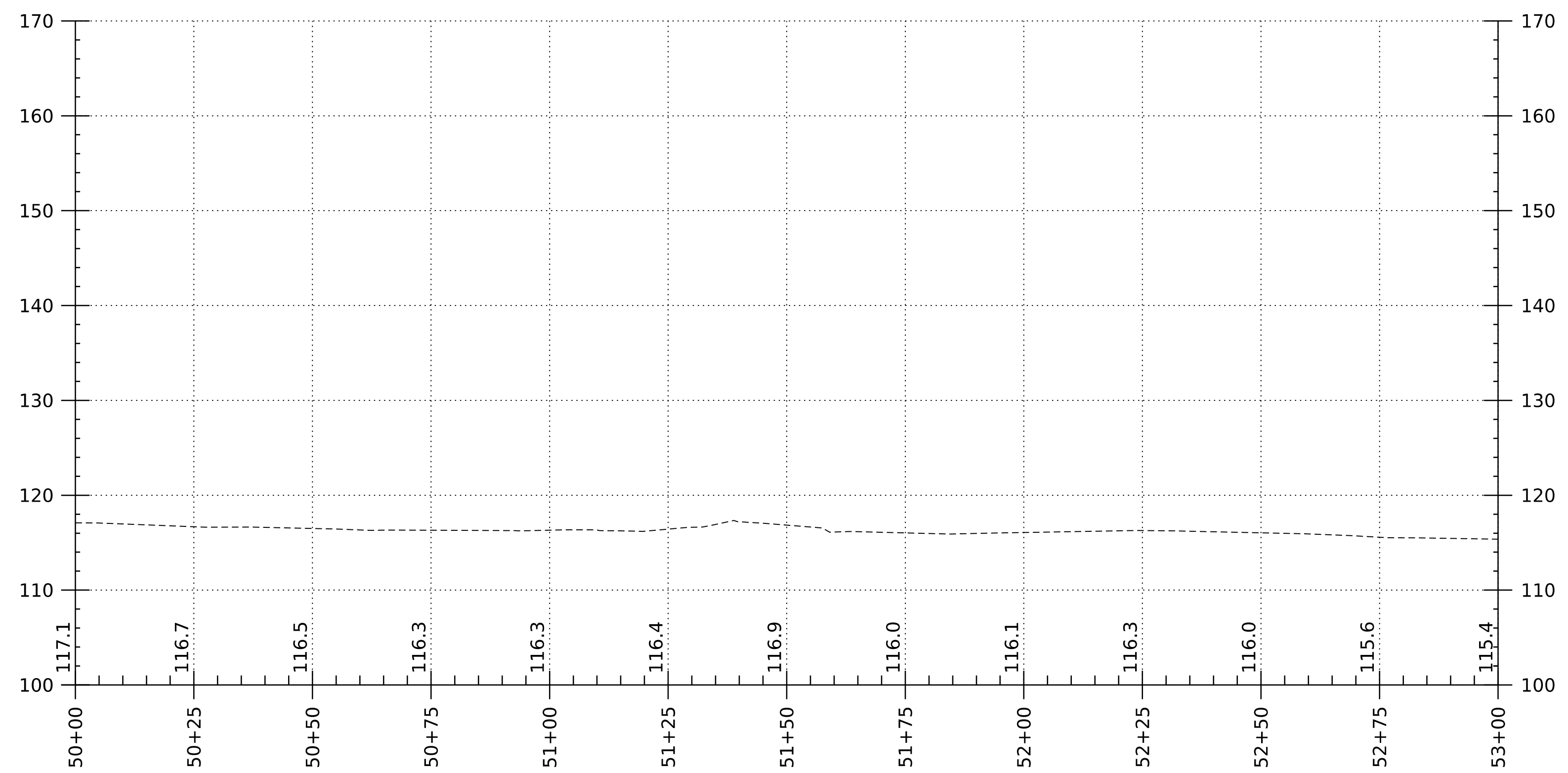


US ROUTE 7 PROFILE

SCALE: HORIZONTAL 1"=20'-0"  
 VERTICAL 1"=10'-0"

NOTE:  
 GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG  $\phi$   
 GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG  $\phi$

PROJECT NAME:	FERRISBURGH
PROJECT NUMBER:	BF 019-4(35)
FILE NAME:	s22b390profile.dgn
PROJECT LEADER:	L.J.STONE
DESIGNED BY:	-----
US ROUTE 7 PROFILE SHEET	
PLOT DATE:	11-APR-2024
DRAWN BY:	D.D.BEARD
CHECKED BY:	-----
SHEET	3 OF 14

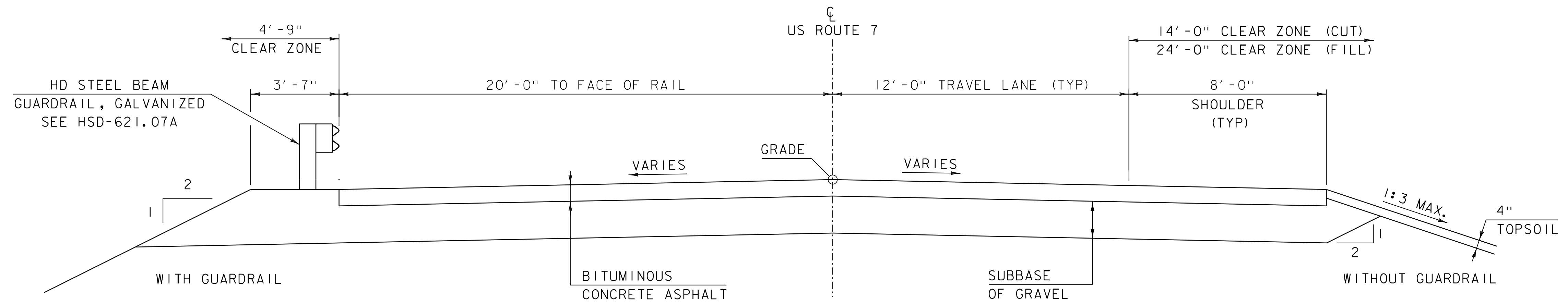


CHANNEL PROFILE

SCALE: HORIZONTAL 1"=20'-0"  
 VERTICAL 1"=10'-0"

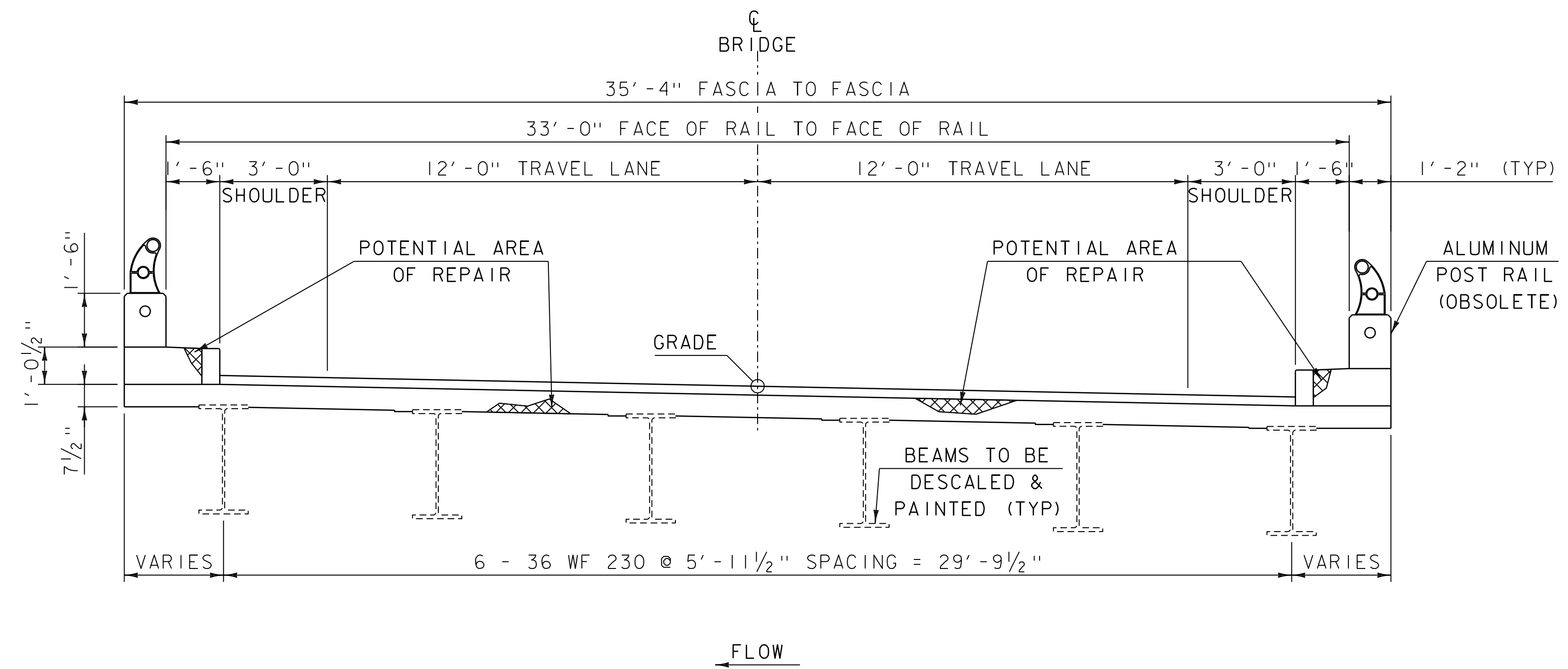
NOTE:  
 GRADES SHOWN TO THE NEAREST  
 TENTH ARE EXISTING GROUND ALONG  $\phi$   
 GRADES SHOWN TO THE NEAREST  
 HUNDREDTH ARE FINISH GRADE ALONG  $\phi$

PROJECT NAME: FERRISBURGH	PLOT DATE: 11-APR-2024
PROJECT NUMBER: BF 019-4(35)	DRAWN BY: D.D.BEARD
FILE NAME: s22b390profile.dgn	CHECKED BY: -----
PROJECT LEADER: L.J.STONE	SHEET 4 OF 14
DESIGNED BY: -----	
CHANNEL PROFILE SHEET	



**EXISTING US ROUTE 7 TYPICAL SECTION**

SCALE 3/8" = 1'-0"



**REHABILITATION BRIDGE TYPICAL SECTION**

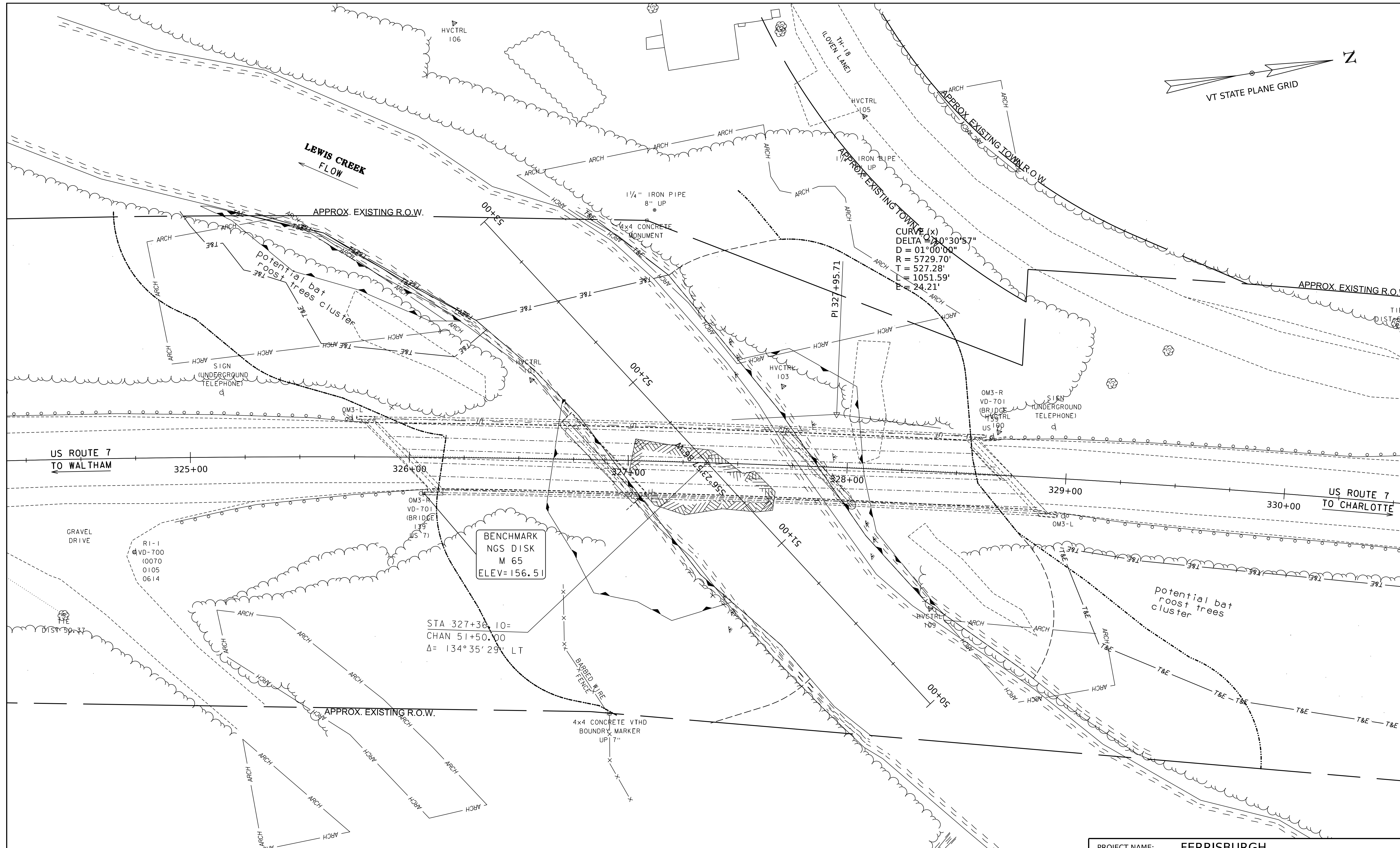
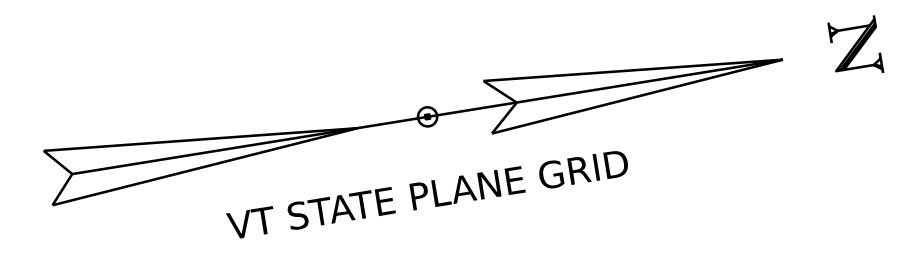
SCALE 3/8" = 1'-0"

**MATERIAL TOLERANCES**  
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

PROJECT NAME: FERRISBURGH  
PROJECT NUMBER: BF 019-4(35)

FILE NAME: 22j390\s22j390typical.dgn PLOT DATE: 11-APR-2024  
PROJECT LEADER: L.J.STONE DRAWN BY: D.D.BEARD  
DESIGNED BY: ----- CHECKED BY: -----  
REHABILITATION TYPICAL SECTIONS SHEET 5 OF 14



CURVE (X)  
 DELTA = 70°30'57"  
 D = 01°00'00"  
 R = 5729.70'  
 T = 527.28'  
 L = 1051.59'  
 E = 24.21'

BENCHMARK  
 NGS DISK  
 M 65  
 ELEV=156.51

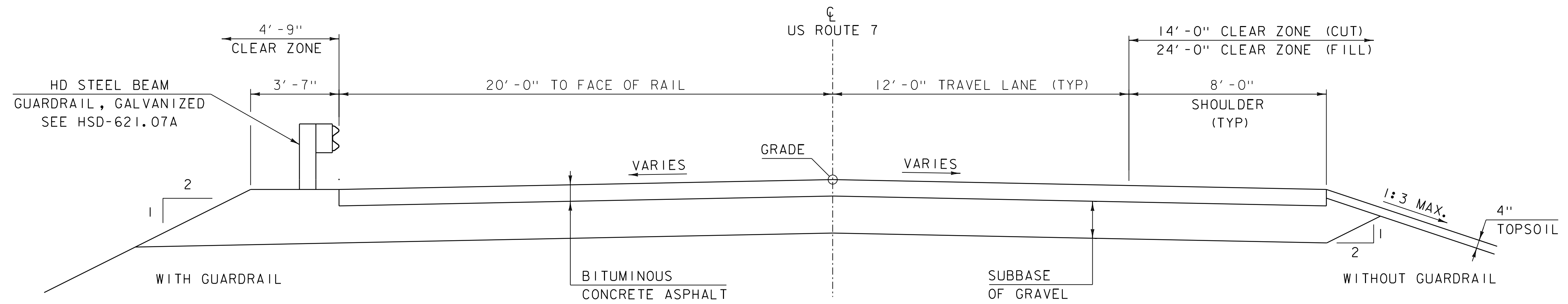
STA 327+36.10=  
 CHAN 51+50.00  
 Δ = 134°35'29" LT

DECK REHABILITATION

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

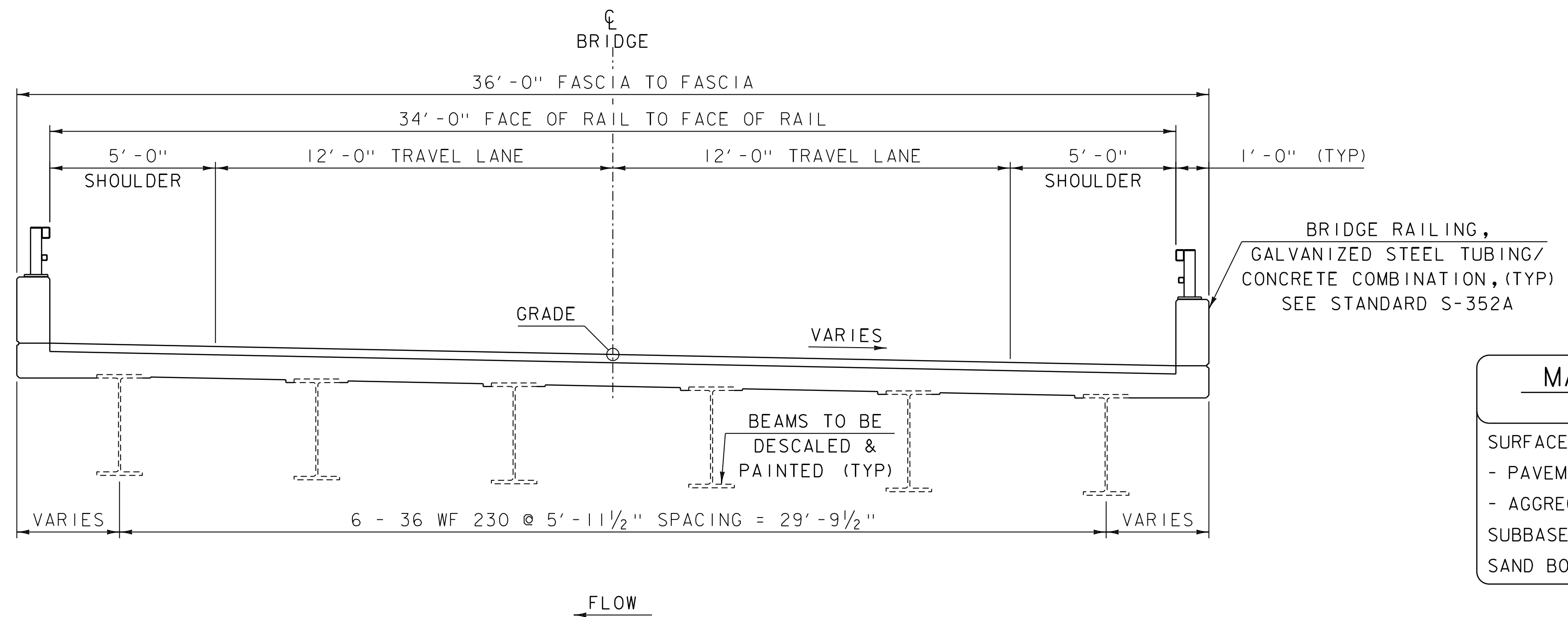
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PROJECT NUMBER:	BF 019-4(35)	DRAWN BY:	D.D.BEARD
FILE NAME:	22b390/s22b390BDR_Rehab.dgn	CHECKED BY:	-----
PROJECT LEADER:	L.J.STONE	DESIGNED BY:	-----
DECK REHABILITATION LAYOUT		SHEET	6 OF 14





**EXISTING US ROUTE 7 TYPICAL SECTION**

SCALE 3/8" = 1'-0"



**DECK REPLACEMENT TYPICAL SECTION**

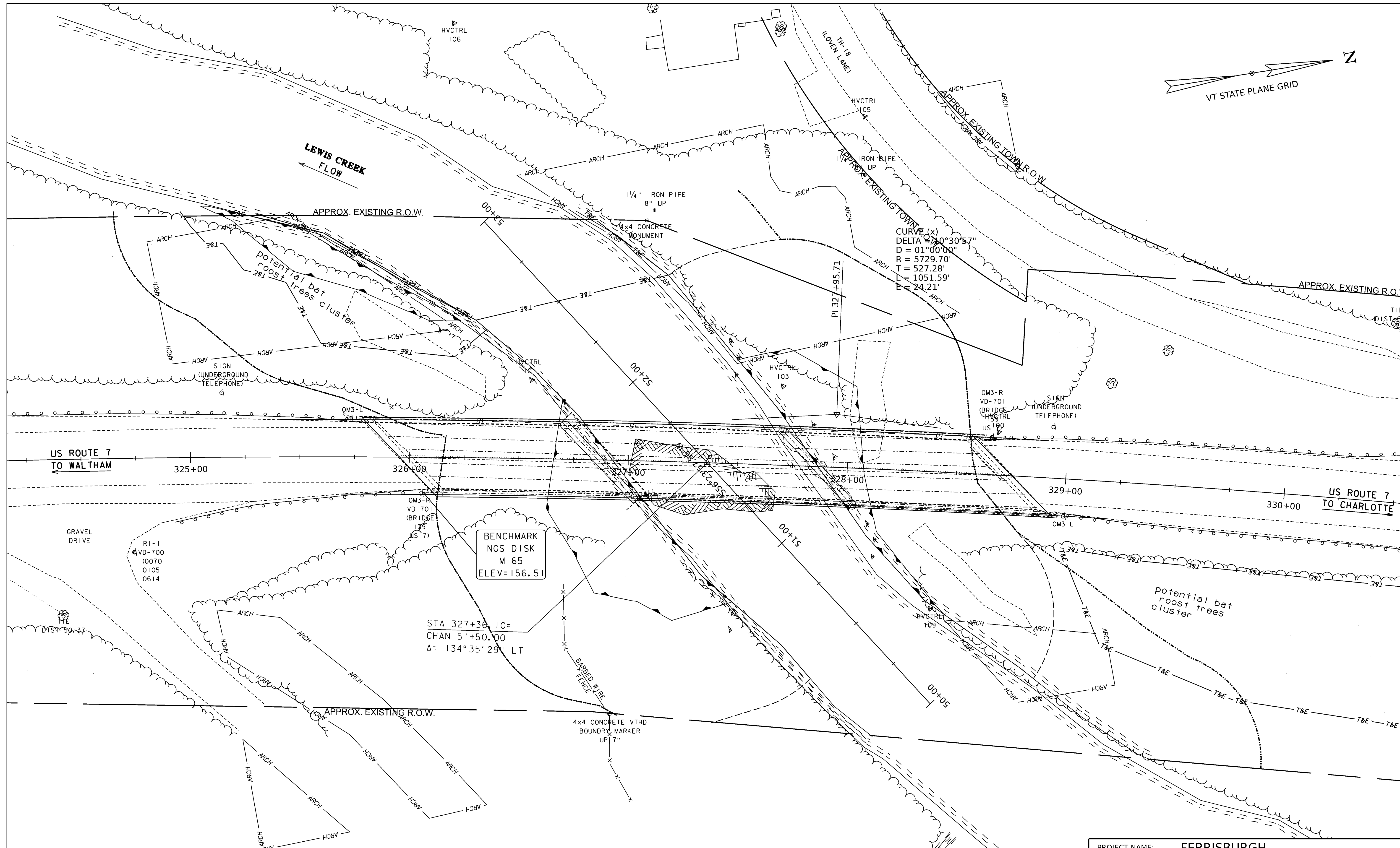
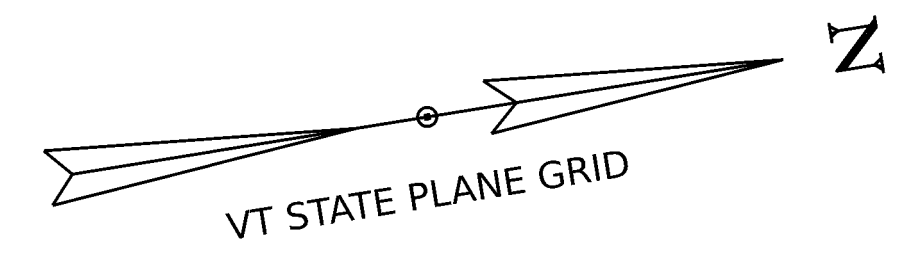
SCALE 3/8" = 1'-0"

**MATERIAL TOLERANCES**  
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	
	+/- 1"
SAND BORROW	
	+/- 1"

PROJECT NAME: FERRISBURGH  
PROJECT NUMBER: BF 019-4(35)

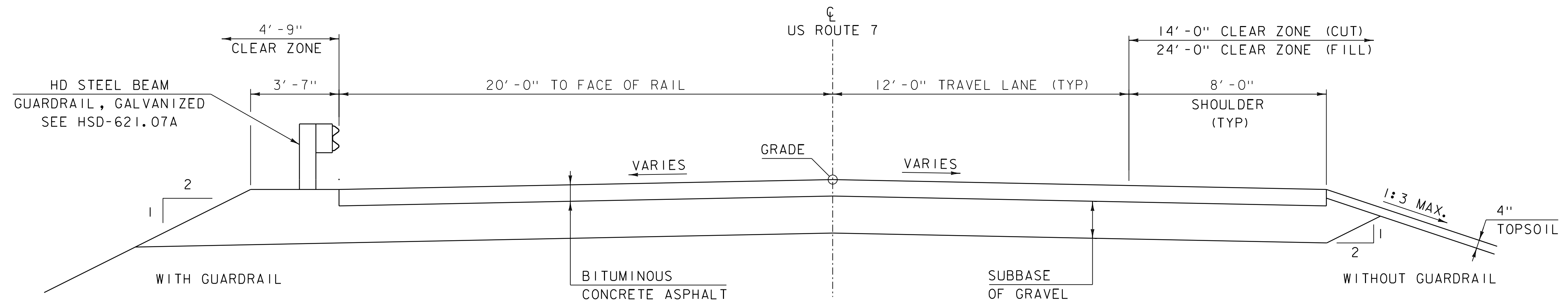
FILE NAME: 22j390\s22j390typical.dgn PLOT DATE: 11-APR-2024  
PROJECT LEADER: L.J.STONE DRAWN BY: D.D.BEARD  
DESIGNED BY: ----- CHECKED BY: -----  
DECK REPLACEMENT TYPICAL SECTIONS SHEET 7 OF 14



DECK REPLACEMENT

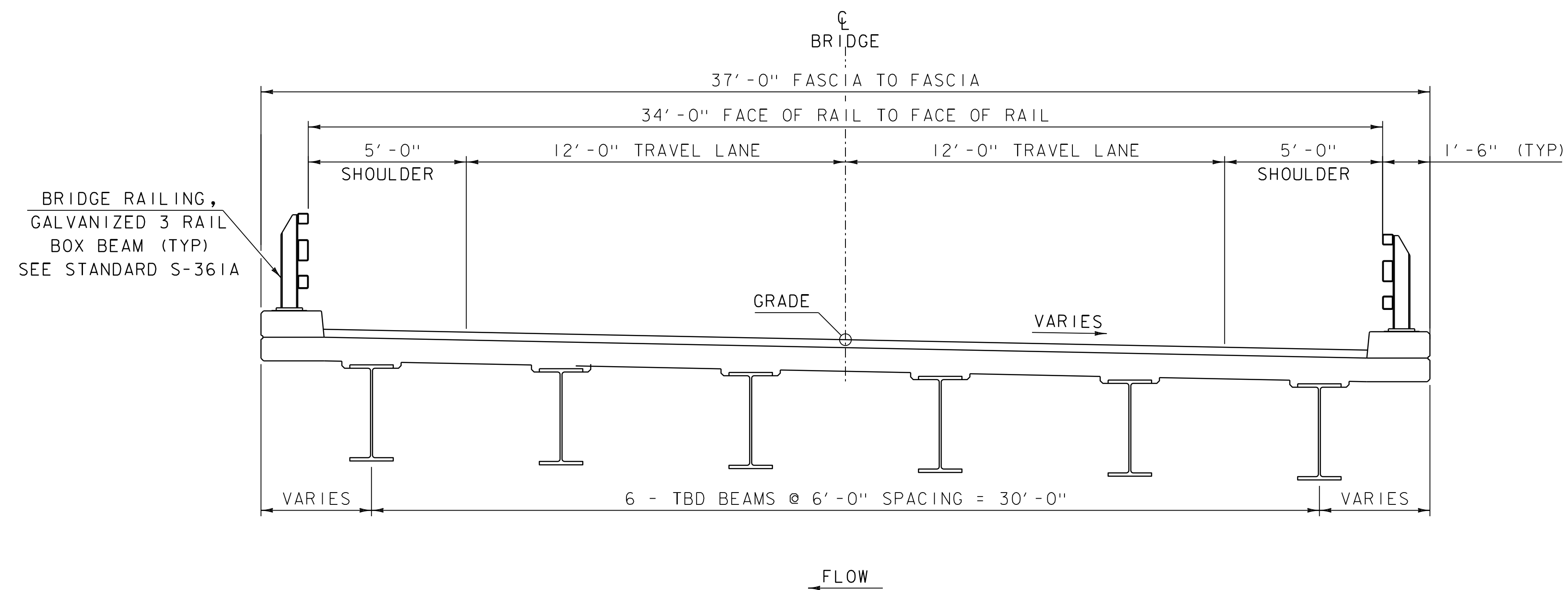
SCALE 1" = 20'-0"  
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PROJECT NAME:	FERRISBURGH
PROJECT NUMBER:	BF 019-4(35)
FILE NAME:	22b390/s22b390BDR_Deck Replacement.dwg
DATE:	11-APR-2024
PROJECT LEADER:	L.J. STONE
DRAWN BY:	D.D. BEARD
DESIGNED BY:	-----
CHECKED BY:	-----
DECK REPLACEMENT LAYOUT	SHEET 8 OF 14



**EXISTING US ROUTE 7 TYPICAL SECTION**

SCALE  $\frac{3}{8}$ " = 1'-0"



**SUPERSTRUCTURE REPLACEMENT TYPICAL SECTION**

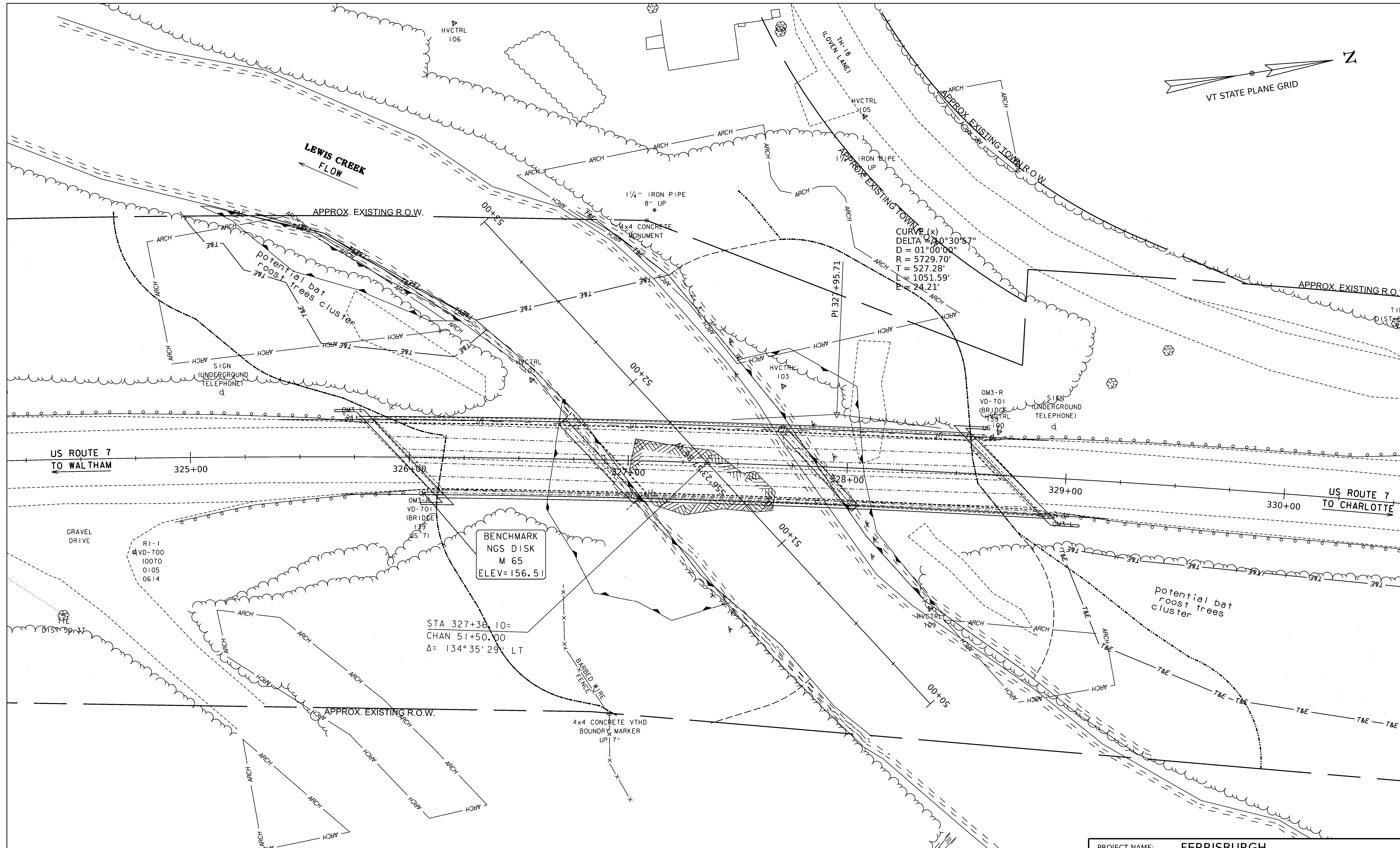
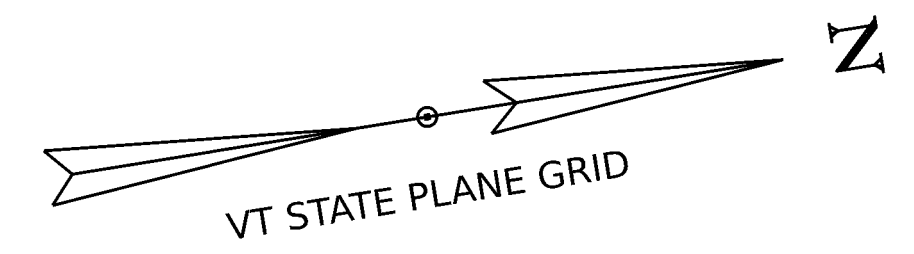
SCALE  $\frac{3}{8}$ " = 1'-0"

**MATERIAL TOLERANCES**  
(IF USED ON PROJECT)

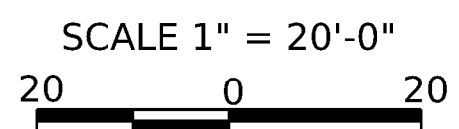
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

PROJECT NAME: FERRISBURGH  
PROJECT NUMBER: BF 019-4(35)

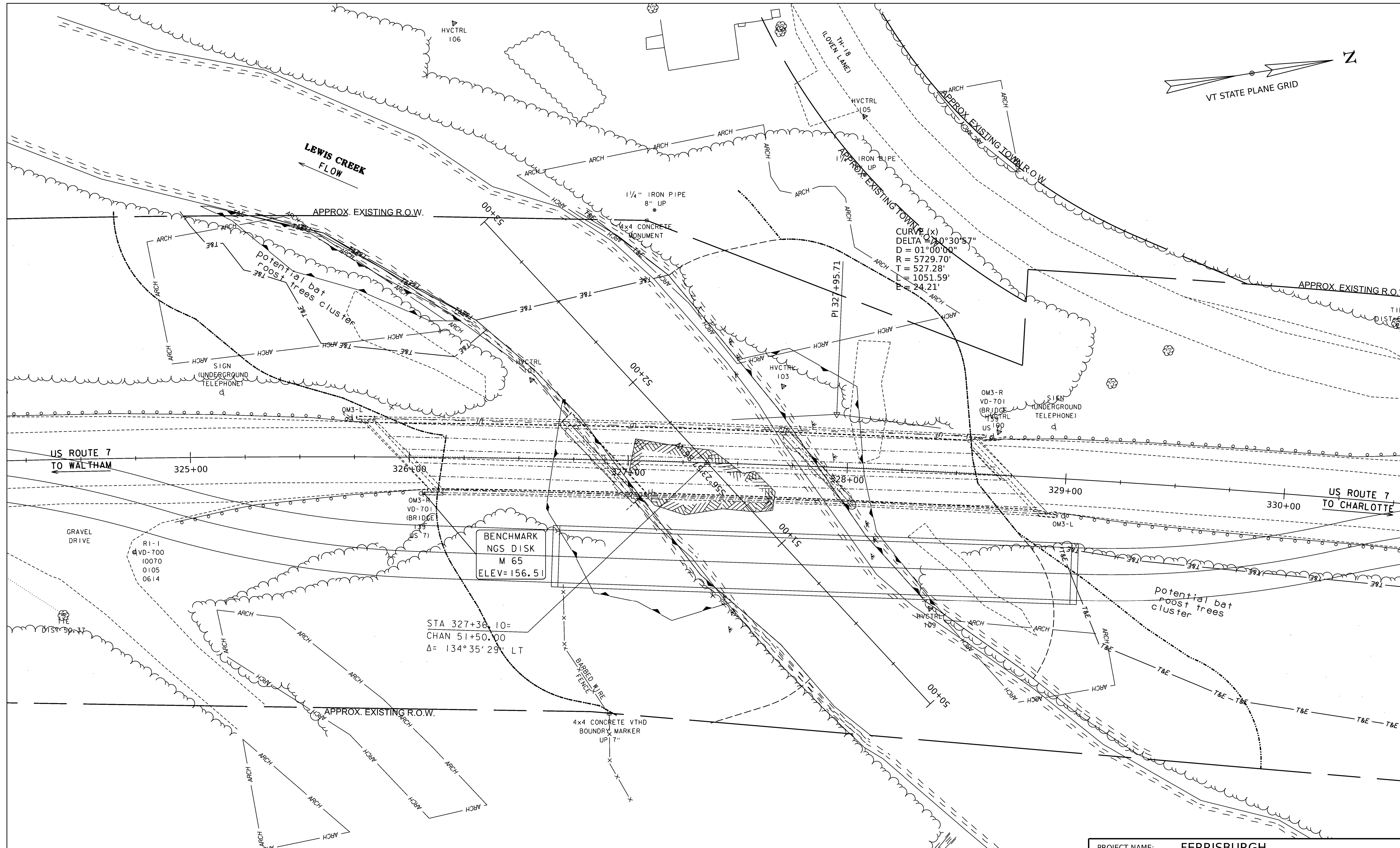
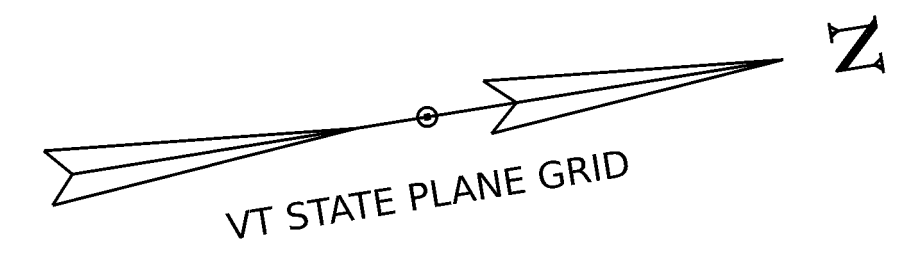
FILE NAME: 22j390\s22j390\typical.dgn PLOT DATE: 11-APR-2024  
PROJECT LEADER: L.J.STONE DRAWN BY: D.D.BEARD  
DESIGNED BY: ----- CHECKED BY: -----  
SUPER REPLACEMENT TYPICAL SECTIONS SHEET 9 OF 14



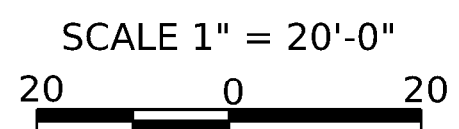
**SUPERSTRUCTURE REPLACEMENT**



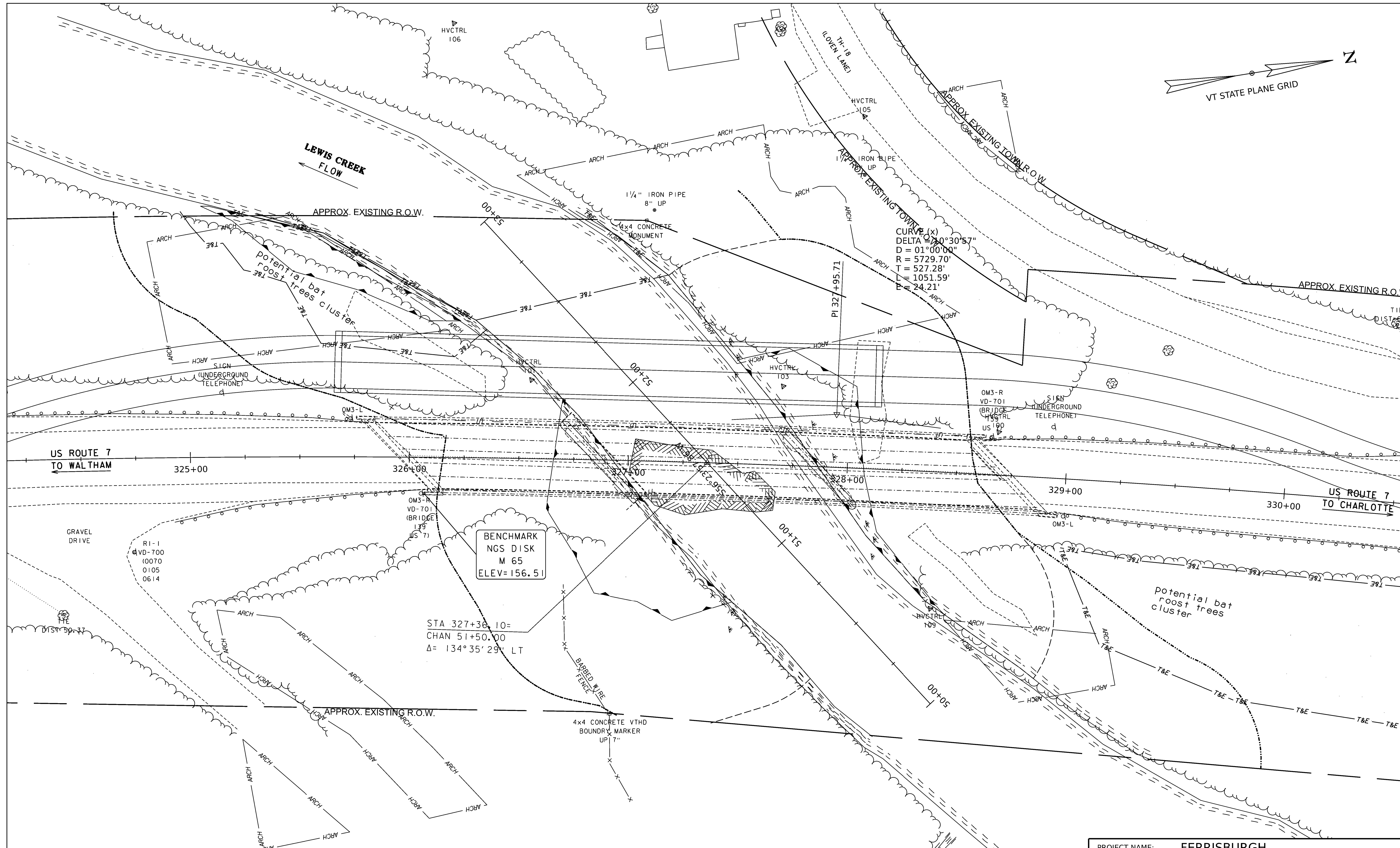
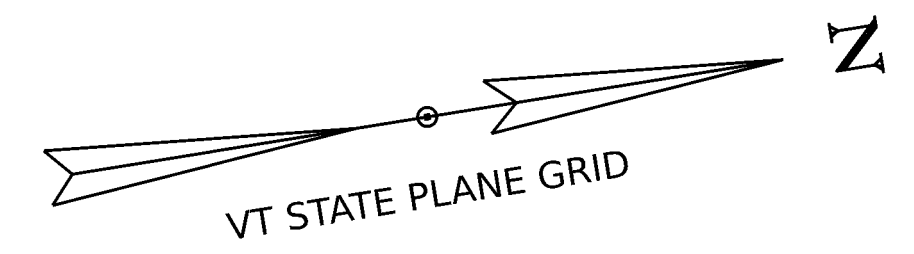
PROJECT NAME:	FERRISBURGH	DATE:	11-APR-2024
PROJECT NUMBER:	BF 019-4(35)	DRAWN BY:	D.D.BEARD
FILE NAME:	22b390/s22b390BDR_Super Replacement	CHECKED BY:	-----
PROJECT LEADER:	L.J.STONE	SHEET	10 OF 14
DESIGNED BY:	-----		
SUPERSTRUCTURE REPLACEMENT LAYOUT			



UPSTREAM TEMPORARY BRIDGE



PROJECT NAME:	FERRISBURGH	DATE:	11-APR-2024
PROJECT NUMBER:	BF 019-4(35)	DRAWN BY:	D.D.BEARD
FILE NAME:	22b390/s22b390BDR_Upstream Temp	CHECKED BY:	
PROJECT LEADER:	L.J.STONE		
DESIGNED BY:			
UPSTREAM TEMPORARY BRIDGE LAYOUT		SHEET	11 OF 14



CURVE (x)  
 DELTA = 70°30'57"  
 D = 01°00'00"  
 R = 5729.70'  
 T = 527.28'  
 L = 1051.59'  
 E = 24.21'

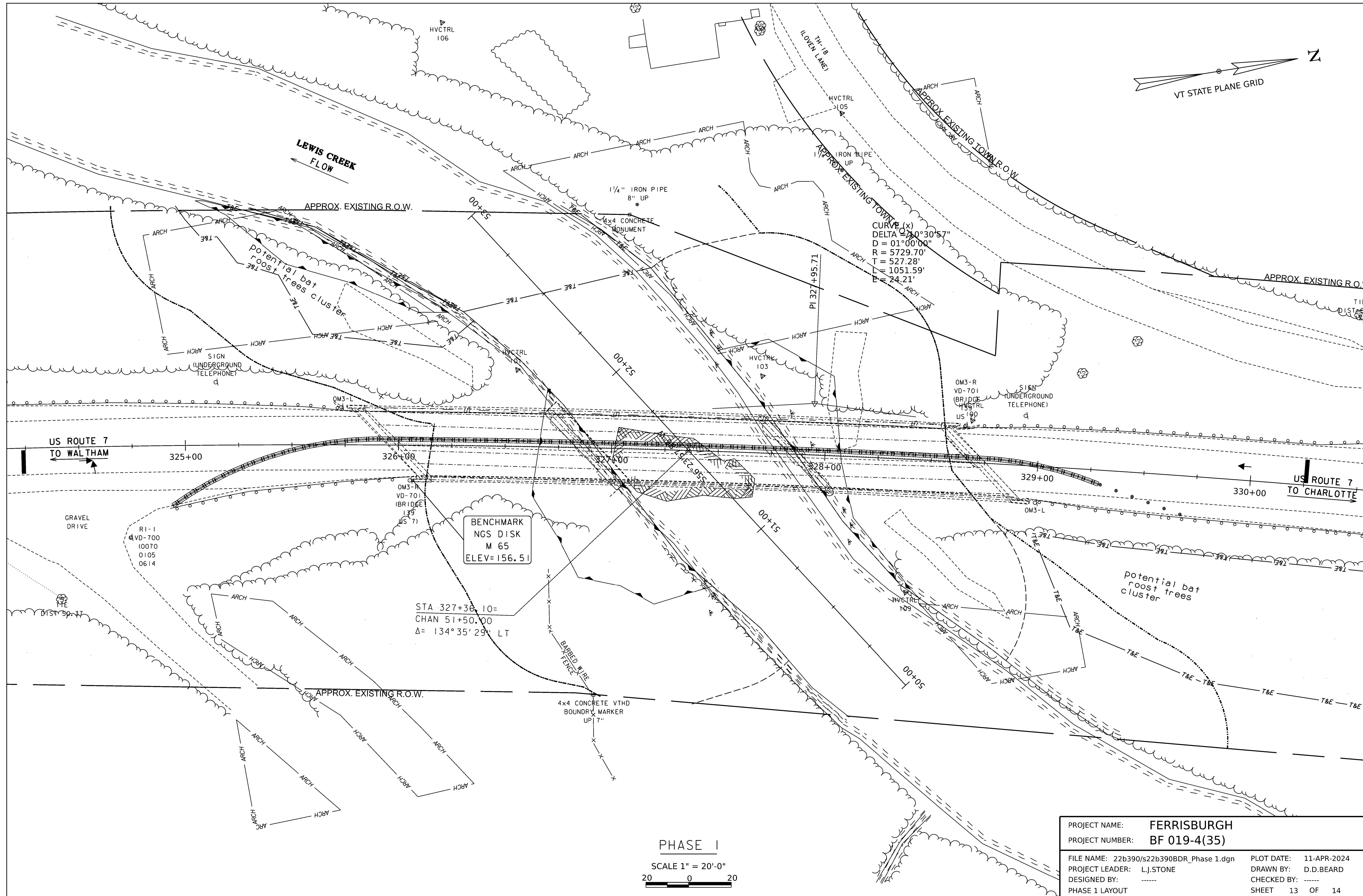
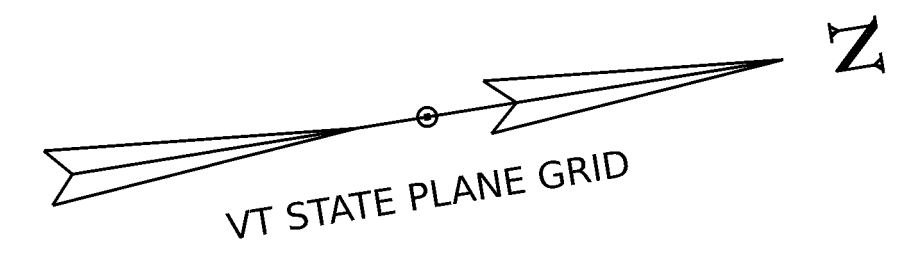
BENCHMARK  
 NGS DISK  
 M 65  
 ELEV = 156.51

STA 327+36.10 =  
 CHAN 51+50.00  
 Δ = 134°35'29" LT

DOWNSTREAM TEMPORARY BRIDGE

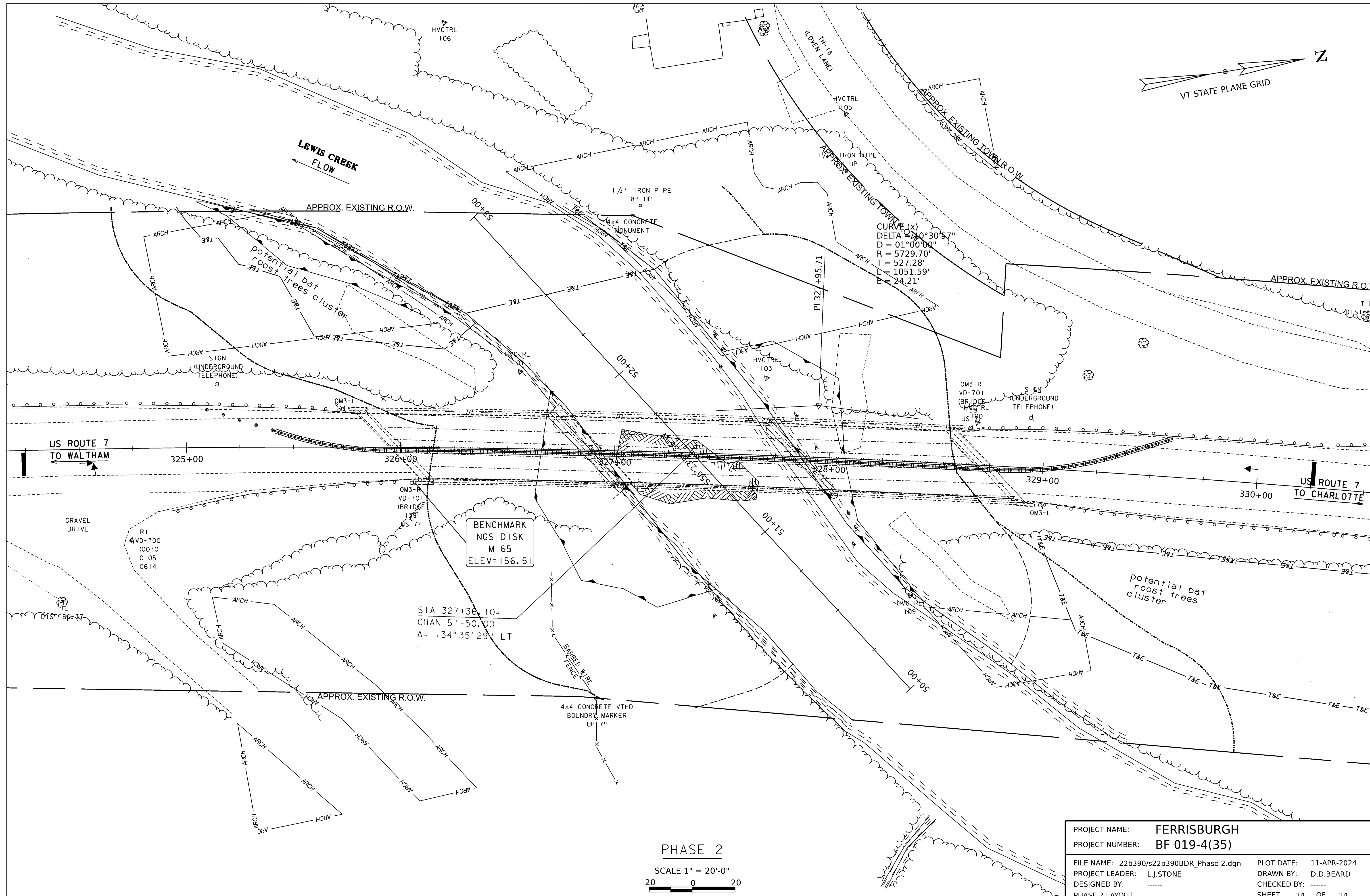
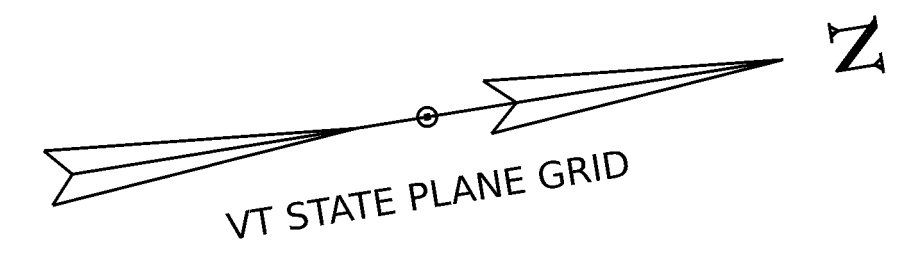
SCALE 1" = 20'-0"  
 20 0 20

PROJECT NAME:	FERRISBURGH
PROJECT NUMBER:	BF 019-4(35)
FILE NAME:	22b390/s22b390BDR_Downstream Temp Bridge.dwg 11-APR-2024
PROJECT LEADER:	L.J.STONE
DESIGNED BY:	-----
DRAWN BY:	D.D.BEARD
CHECKED BY:	-----
DOWNSTREAM TEMPORARY BRIDGE LAYOUT	SHEET 12 OF 14



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

PROJECT NAME:	FERRISBURGH	PLOT DATE:	11-APR-2024
PROJECT NUMBER:	BF 019-4(35)	DRAWN BY:	D.D.BEARD
FILE NAME:	22b390/s22b390BDR_Phase 1.dgn	CHECKED BY:	-----
PROJECT LEADER:	L.J.STONE	PHASE 1 LAYOUT	SHEET 13 OF 14



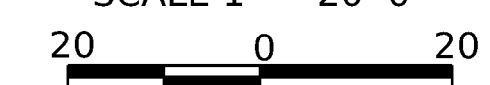
CURVE (x)  
 DELTA = 70°30'57"  
 D = 01°00'00"  
 R = 5729.70'  
 T = 527.28'  
 L = 1051.59'  
 E = 24.21'

BENCHMARK  
 NGS DISK  
 M 65  
 ELEV=156.51

STA 327+36.10=  
 CHAN 51+50.00  
 Δ = 134°35'29" LT

PHASE 2

SCALE 1" = 20'-0"



PROJECT NAME:	FERRISBURGH	PLOT DATE:	11-APR-2024
PROJECT NUMBER:	BF 019-4(35)	DRAWN BY:	D.D.BEARD
FILE NAME:	22b390/s22b390BDR_Phase 2.dgn	CHECKED BY:	-----
PROJECT LEADER:	L.J.STONE	PHASE 2 LAYOUT	SHEET 14 OF 14