



55 Leroy Road, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

October 11th, 2016

Zapata Courage
District Wetland Ecologist
Vermont Department of Environmental Conservation
Watershed Management Division
One National Life Drive, Main Bldg., 2nd Floor
Montpelier, VT 05620

**Re: Starksboro Bridge No. 19 on VT Route 17
Vermont General Wetland Permit Application**

Ms. Courage:

EIV Technical Services has prepared the enclosed Vermont General Wetland Permit Application in regards to the above-referenced project. We have also attached relevant plans and location maps. Please note that the footprint of the permanent access road on the south side has changed slightly in order to avoid wetland impact.

Feel free to contact me with any further questions.

Regards,

A handwritten signature in black ink, appearing to read 'Emmalee Cherington', written in a cursive style.

Emmalee Cherington, CPESC
Wetland Scientist / Environmental Engineer

Vermont Wetlands Program General Permit Qualification Form

Under Sections 9
of the Vermont Wetland Rules



VERMONT DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
WATERSHED
MANAGEMENT DIVISION
WETLANDS PROGRAM

1. General Permit Eligibility Checklist:

If you cannot verify all of the following, stop and proceed to the Individual Permit Application.

- The activity does not qualify as an Allowed Use under [Section 6](#) of the Vermont Wetland Rules.
- The activity does not need additional conditions to protect functions and values.
- All impacts have been avoided and minimized to the greatest extent possible.
- The wetland complex is not significant for Function 5.5 Exemplary Wetland Natural Community or 5.6 Rare, Threatened and Endangered Species Habitat, or applicant has received a waiver letter from VT Fish and Wildlife. (attach waiver)
- The activity is not located in or adjacent to a [vernal pool, fen, or bog](#).
- The wetland is not at or above 2,500' in elevation (headwaters wetland).
- The project is not located in a Class I wetland or associated buffer zone.
- The activity is not an as-built project that constitutes a violation of the Vermont Wetland Rules.
- The activity is not associated with an activity which received a Wetland Permit.

2. Project Type (as described in the General Permit)

Linear Project (linear facilities)

3. Wetland Type Proposed for Impact

Natural Area <Choose Secondary>

4. 50ft Wetland Buffer Proposed for Impact

Managed Area <Choose Secondary>

5. Activity Threshold based on the selections above, select the appropriate threshold. If the activity is greater than the thresholds below, stop and proceed to the Individual Permit Application. eg: Project type is non-linear, wetland and buffer type is managed and natural, and total impacts are 700 sqft → choose option (d) below.

- (a) The total activity impacts proposed are <3,000 square feet of managed wetland or buffer **and** will not exceed 999 square feet of natural wetland or buffer **and** will not exceed 149 square feet of surface water margins.
- (b) The activity is associated with a linear project **and** total activity impacts proposed are <5,000 square feet of managed wetland or buffer **and** will not exceed 2,999 square feet of natural wetland or buffer **and** will not exceed 149 square feet of surface water margins.

6. Section 8B Specific Activity Best Management Practices All permittees covered under the VT Wetland General Permit must implement best management practices (BMP) under section V. of the permit. Here, identify if the proposed activity must implement special BMPs in accordance with Section 8B

- 8B(a) Placement, relocation, removal, or upgrade of overhead utility lines
- 8B(b) Installation of underground facilities including utilities, dry hydrants, foundation drains, and wells
- 8B(c) Activities in surface water body margins
- None Apply

The Secretary may require a person applying for an authorization under a general permit to apply for an individual permit. VWR §9.8. Contact your District Ecologist to verify eligibility before submittal.

Vermont Wetlands Program Permit Application Database Form

Under Sections 8 and 9
of the Vermont Wetland Rules



Application Submittal Instructions	
<ul style="list-style-type: none"> ■ If submitting via US post, include a check in the correct fee amount made payable to the "State of Vermont," and a CD for applications that contain large files (1 MB or greater). <div style="margin-left: 40px;"> Mail to: Vermont Wetlands Program Watershed Management Division One National Life Drive, Main 2 Montpelier, VT 05620-3522 </div> ■ Applications can also be submitted via email to the following address: anr.wsmdwetlands@vermont.gov <ul style="list-style-type: none"> ■ If submitting via email, please mail a check in the correct fee amount, made payable to the "State of Vermont," and a copy of the Vermont Wetlands Program Application Database Form (this page) to the address provided above. It is not necessary to mail in a copy of the complete application. 	

Applicant Name: VT Agency of Transportation	Application Preparer Name: Emmalee Cherington
Town where project is located: Starksboro	County: Addison
Span#:	Vermont Wetlands Project (VWP)# if Known:
Project Location Description: Traveling approximately three miles easterly on VT Route 17 from the VT Route 116 911 street address or direction from nearest intersection intersection in Starkshoro 1350 ft east of the western intersection of Jerusalem Rd	
Brief Project Summary: The purpose of the project is to address deficiencies on Bridge No. 19 to ensure safety. The current bridge is in a deteriorated condition including voids, scour and corrosion. The work to be completed includes installation of a baffled culvert liner and pressure grouting the voids. Weirs will be added to the outlet to assist in aquatic organism passage. Additionally two permanent access roads will be constructed.	
Application Type: <input type="checkbox"/> Individual Permit (multiple wetlands) <input type="checkbox"/> After the Fact Permit <input type="checkbox"/> Wetland Determination <input type="checkbox"/> Individual Permit (single wetland) <input checked="" type="checkbox"/> General Permit Coverage Authorization <input type="checkbox"/> Permit Amendment: VWP Project # _____	
Existing Land Use Type(s): (Check all that apply) <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Agriculture <input checked="" type="checkbox"/> Transportation <input type="checkbox"/> Forestry <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial/Commercial	
Proposed Land Use Type(s): (Check all that apply) <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Agriculture <input checked="" type="checkbox"/> Transportation <input type="checkbox"/> Forestry <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial/Commercial	
Proposed Impact Type(s): (Check all that apply) <input type="checkbox"/> Buildings <input type="checkbox"/> Utilities <input type="checkbox"/> Parking <input type="checkbox"/> Septic/Well <input type="checkbox"/> Stormwater <input type="checkbox"/> Driveway <input type="checkbox"/> Park/Path <input type="checkbox"/> Agriculture <input type="checkbox"/> Pond <input type="checkbox"/> Lawn <input type="checkbox"/> Dry Hydrant <input type="checkbox"/> Beaver Dam Alteration <input type="checkbox"/> Silviculture <input checked="" type="checkbox"/> Road <input type="checkbox"/> Aesthetics <input type="checkbox"/> No Impact <input type="checkbox"/> Other: Culvert liner and maintenance	
Wetland and Buffer Impact Type: (Check all that apply) <input type="checkbox"/> Dredge <input type="checkbox"/> Drain <input checked="" type="checkbox"/> Cut Vegetation <input checked="" type="checkbox"/> Stormwater <input checked="" type="checkbox"/> Trench/Fill <input type="checkbox"/> Other: Access road	
Wetland Delineation Date(s): September 4, 2016	

Wetland Improvements	Buffer Zone Improvements	Reason for Improvements
Restoration: s.f.	Restoration: s.f.	<input type="checkbox"/> Correction of Violation
Creation: s.f.	Creation: s.f.	<input type="checkbox"/> To offset permit impacts
Enhancement: s.f.	Enhancement: s.f.	<input type="checkbox"/> Voluntary
Conservation: s.f.	Conservation: s.f.	

Wetland Impact Fee Calculations: Round to the nearest square foot. Fees will auto-calculate.		
Total Wetland Impact (minus linear clear, including ATF)	square feet (s.f.)	Wetland Impact Fee: (\$0.75/sf) \$ 0.00
Total Wetland Clearing (qualified linear projects only)	square feet (s.f.)	Wetland Clearing Fee: (\$0.25/sf) \$ 0.00
After The Fact Wetland Impact (to correct a violation)	square feet (s.f.)	After the Fact Wetland Fee: (0.75/sf) (Required for after the fact permit applications) \$ 0.00
Total Buffer Zone Impacts and Calculations: Round to the nearest square foot		
Total Buffer Zone Impact	2000 square feet (s.f.)	Buffer Impact Fee: (\$0.25/sf) \$ 500.00

Additional Fees	
Agricultural Crop Conversion Check here: <input type="checkbox"/>	\$ 0.00 <small>(Flat fee of \$200.00)</small>
Minimum Application Fee: (\$50.00) <small>Required when total impact fee is less than \$50.00</small>	\$ 0.00
Administrative Fee:	\$ 240.00

Make Checks Payable to: State of Vermont	Total Check Amount:	\$ 740.00
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Application for Authorization Under the Vermont General Wetland Permit and Determination Petition

Under Sections 8 and 9
of the Vermont Wetland Rules



**VERMONT DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**
**WATERSHED
MANAGEMENT DIVISION**
WETLANDS PROGRAM

Applicant Information: <i>If the applicant is someone other than the landowner, the landowner information must be included below</i>			
Applicant Name: John Lepore representing Vermont Agency of Transportation			
Address: One National Life	City/Town: Montpelier	State: VT	Zip: 05633-5001
Phone Number: 802-828-2672	Email Address: John.Lepore@vermont.gov		
Applicant Certification: By signing this application you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.			
Applicant Signature:			Date: 10/12/2016

Landowner Information: <i>Landowner must sign the application. If landowner is different from the applicant this section must be filled out</i>			
<input checked="" type="checkbox"/> Check this box if landowner is the same as the applicant			
Landowner Name:			
Address:	City/Town	State:	Zip:
Phone Number:	Email Address:		
Landowner Easement: <i>Attach copies of any easements, agreements, or other documents conveying permission, and agreement with the landowner stating who will be responsible for meeting the terms and conditions of the permit. List the attachment for this information in this section. Describe the nature of the agreement or easement in the space provided below:</i>			
Landowner Certification: By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.			
Landowner Signature:			Date: 10/12/2016

Application Preparer Information: <i>Consultant, engineer, or other representative that is responsible for filling out the application, if other than the applicant or landowner.</i>			
Application Preparer Name: Emmalee Cherington			
Address: 55 Leroy Rd, Suite 15	City/Town: Williston	State: VT	Zip: 05495
Phone Number: 802-497-3653	Email Address: echerington@eivtech.com		
Application Preparer Certification: By signing this application you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.			
Application Preparer Signature:			Date: 10/11/2016

Handwritten signatures are also accepted.

1. Location of wetland and project: (Individual Permit Application [IPA] Section 1)
 Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing features.

Traveling approximately three miles easterly on VT Route 17 from the VT Route 116 intersection, the wetland is located in Starksboro, 1350 ft east of the western intersection of Jerusalem Rd. with VT Rte 17. The subject wetland is located on the outlet (southern side) of the existing structure.

2. Program Contact: (IPA Section 2)
 Indicate here if you have been in contact with the Wetlands Program before the application submittal.

2.1 Date of Interaction with State Wetland Ecologist	2.2. State Wetland Ecologist Name
September 15, 2016	Zapata Courage

3. Wetland Classification: (IPA Section 3)

3.1. The wetland is a class II wetland because: (IPA Section 3.1)

The wetland meets the presumption of significance

3.2. Section 4.6 Presumption (IPA Section 3.2)
 If the wetland meets the Section 4.6 Presumption, it does so because:

- a. Wetland is of the same type and threshold size as those mapped on VSWI maps; or greater than 0.5 acres.
- b. The wetland contains woody vegetation and is adjacent to a stream, river, or open body of water.

<Choose One>

4. Description of Entire Wetland: (IPA Section 4)
 Answer the following questions regarding the entire wetland, which includes all wetland areas connected to the wetland area proposed for impact. Answers may be estimates based on desktop review when wetland extends past the investigation area (parcel boundary). Specific questions about the wetland in the project area will follow.

4.1. Size of Complex in Acres: (IPA Section 4.1)
 The size of the complex can be obtained from the Wetland Inventory Map for mapped wetlands, or best estimation based on review of aerial photography or site visit. This is not the size of the of the delineated wetland on the subject property unless the entirety of the wetland is represented in the delineation.

2.3 acres (estimated from soils map)

4.2. Vegetation Cover Types Present: (IPA Section 4.2)
 List all wetland types in the entire wetland and their percent cover.
 For example: 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland

100% shrub swamp (dominated by alder swamp)

4.3. Pre-project Cumulative Impacts to the Wetland: (IPA Section 4.7)
 Identify any cumulative ongoing impacts outside of the proposed project that may influence the wetland. Examples include but are not limited to: Wetland encroachments on and off the subject property, land use management in or surrounding the wetland, or development that influences hydrology or water quality. List any past Vermont Wetland Permits or CUD's related to this property.

The Class 2 wetland is located along Hallock Brook at the toe of VT Route 17. VT Route 17 limits the expansion of the wetland. The road shoulder is composed of stone fill above the culvert and vegetated slopes elsewhere. A residence is located 315 feet to the west of the subject wetland. A town bridge is located approximately 520 feet downstream from the subject wetland.

5. Context of Subject Wetland: (IPA Section 5.1)
 Describe where the subject wetland is in the context of the larger wetland or wetland complex described above.
 For example: Upslope/downslope, narrow eastern "finger", 400 ft. from open water portion.

The subject wetland is upslope from the larger wetland.

6. Subject Wetland Vegetation: (IPA Section 5.3)
 List dominant wetland vegetation cover type and associated dominant plant species. For example: emergent marsh with cattails; forested swamp dominated by red maple and yellow birch; shrub swamp dominated by speckled alder and peat moss; wet meadow dominated by reed canary grass.

The subject wetland is a shrub swamp dominated by red maple, gray birch and spirea alba.

7. Buffer Zone: (IPA Section 5.6)
 Describe the buffer zone of the subject wetland

7.1 Buffer Land Use: (IP Section 5.6.1)
For example: Mowed shoulder, forested, old field, paved road, and residential lawns, etc.
 Describe any previous and ongoing disturbance in the buffer zone.

The buffer zone is composed of a Northern hardwood forest, maintained shoulder. There are maintained walking trails through the buffer zone.

8. Wetland Function Summary: (IPA Section 6)
 Check which functions are present in the wetland complex

<input checked="" type="checkbox"/> Flood/Storm Storage	<input type="checkbox"/> RTE Species
<input checked="" type="checkbox"/> Surface & Groundwater Protection	<input type="checkbox"/> Education & Research
<input checked="" type="checkbox"/> Fish Habitat	<input type="checkbox"/> Recreation/Economic
<input checked="" type="checkbox"/> Wildlife Habitat	<input type="checkbox"/> Open Space/Aesthetics
<input type="checkbox"/> Exemplary Natural Community	<input checked="" type="checkbox"/> Erosion Control

9. Overall Project Description: (IPA Section 17)

9.1. Overall Project Purpose: (IPA Section 17.1)
 Description of the basic project.
For example: six-lot residential subdivision; expansion of an existing commercial building, building a single family residence.

The scope of work involved in this project includes lining the existing culvert with an 124 foot long elliptical (6'-7" x 7'-4") 10 gauge poly-coated steel liner with the addition of fish baffles. A new headwall and outlet cradle will be installed and the respective area of scour behind each will be filled with flowable fill. In addition, a series of downstream weirs will be constructed to facilitate aquatic organism passage. A 100' by 16' permanent access road will be installed at both the inlet and outlet of the culvert.

10. Project Details: (IPA Section 18)
 Provide details regarding specific impacts to the wetland and buffer zone.

10.1. Specific Impacts to Wetland and Buffer Zone Dimensions: (IPA Section 18.1)
 List portions of the project that will specifically impact the wetland or buffer zone and their dimensions.
For example: driveway crossing with 16' wide fill, installation of buried sewer force main with 5' trench including fill footprint.

The permanent access road located at the outlet will be entirely within the buffer zone. The roadway will measure 100 feet by 16 feet (to the toe). The access road was shifted slightly after the preliminary design so that it would not be within the actual wetland area.

10.2. Bridges and Culverts: (IPA Section 18.2)
 Culvert circumference, length, placement and shapes, or bridge details. List any stream alteration permits that are required or obtained where perennial streams or rivers are involved.

The existing culvert is a 118' long, 7'-7" x 8'-7" CGMPP Vertical Ellipse
 Proposed Culvert liner: 124' long, elliptical (6'-7" x 7'-4"), 10-gauge, poly-coated steel liner
 The proposed headwall is 10' long with a 8.5' footing.
 The wingwalls attached to the headwall are each 7' long.
 A Title 19 Stream Alteration permit has been issued (September 19, 2016).

11. Wetland and Buffer Zone Impacts: (IPA Section 19)

11.1. Wetland Impacts: (IPA Section 19.1)
 Summarize the square footage of impact in the appropriate category. Round to nearest square foot

Permanent Wetland Fill		s.f.
Temporary Wetland Impact		s.f.
Other Permanent Wetland Impact <i>(this number includes clearing of woody vegetation, dredging, and does not include fill)</i>		s.f.
Total Wetland Impact:	0	s.f.

Describe in detail the proposed impact to wetlands
For example: Fill for road crossing, temporary impacts for trench and fill related to utility installation.

11.2. Buffer Zone Impacts: (IPA Section 19.2)
 Summarize the square footage of impact in the appropriate category.

Temporary Buffer Impact		s.f.
Permanent Buffer Impact	2000	s.f.
Total Buffer Impact:	2000	s.f.

Describe in detail the proposed impact to buffer zones
For example: Addition of fill along roadway embankment extending into buffer zone.

All impact is within the buffer zone.

A permanent maintenance access will be constructed, connecting the outlet to Route 17. The access road is completely within the buffer limits (100' x 16'). At the toe of slope where the wetland was delineated, the access has been moved slightly uphill to keep it within the buffer zone. The total wetland buffer zone impact is 2000 SF.

11.3. Cumulative Impacts: (IPA Section 19.3)
 List any potential cumulative or ongoing, direct and indirect impacts on the functions of the wetland.
For example: Increased noise from parking lot, vegetation management, inputs from stormwater pond outlet, reduction in flood storage volume from the addition of fill from the project.

The proposed project should not have any cumulative impacts on the function of the wetland. Currently, the culvert suffers from sever deterioration, potentially allowing erosion and scour and road failure. After consultation with the regional fisheries biologist and the regional river management engineer, it was determined that the proposed liner will contain sloped fish baffles, benefiting aquatic transport through Hallock Brook.

12. Mitigation Sequence: (IPA Section 20) <i>Please refer to Section 9.5b of the rules on Mitigation Sequencing for this section.</i>	
12.1. Avoidance of Wetland Impacts: (IPA Section 20.1)	
12.1.1. Can the activity be located on another site owned or controlled by the applicant, or reasonably available to satisfy the basic project purpose? If not, indicate why. Cite any alternative sites and explain why they were not chosen.	<input type="checkbox"/>
<p>The access roads were specifically located in to minimize the impacts on the greater wetland complex. This is the least obstructive method repair possible in terms of potential impact.</p>	
12.1.2. Can the proposed activity be practicably located outside the wetland/buffer zone? If not, indicate why. Explain the alternatives you have explored for avoiding the wetland and buffer onsite, And why they are not feasible.	<input type="checkbox"/>
<p>The current culvert requires replacement before there is significant failure at the road level. It will create less impact to install a liner into the current location than to install a new culvert and redirect Hallock Brook.</p>	
12.2. Avoidance to the Impact to Functions and Values: (IPA Section 20.2)	
12.2.1. If the proposed activity cannot be practicably located outside the wetland/buffer zone, have all practicable measures been taken to avoid adverse impacts on protected functions?	<input type="checkbox"/>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12.2.2. What design alternatives were examined to avoid impacts to wetland function? <i>For example: Use of matting, relocation of footprint, etc.</i>	<input type="checkbox"/>
<p>The area related to the permanent access road and the slope behind the headwall will be heavily grubbed, seeded and mulched upon reaching finished grade. Additionally, the required bypass pumping will consist of a sump/sand bag dam that diverts water through the proposed liner in an effort to minimize additional scour.</p>	
12.2.3. What steps have been taken to minimize the size and scope of the project to avoid impacts to wetland functions and values? Include information on project size reduction and relocation.	<input type="checkbox"/>
<p>The access road was slightly reduced in size to avoid impacting the wetland. The project has been designed to install liner as opposed to an entirely new culvert which would require a greater footprint and impact area.</p>	
12.2.4. Explain how the proposed project represents the least impact alternative design. Explain why other alternatives, which you described above, were not chosen.	<input type="checkbox"/>
<p>The owner did not want to impact the wetland during the project. Therefore, the access road was relocated to a position that would allow for the work to be effectively completed without encroachment.</p>	

13. Wetland Determination: (IP Section 21)
 If the application involves a wetland determination please answer the following.

Wetland is mapped or contiguous to the Vermont Significant Wetland Inventory Map
 Wetland is not mapped on or contiguous to the Vermont Significant Wetland Inventory Map

13.1. Reason for Petition: (IP Section 21.1)
 Please choose one from the dropdown menu.
 Make a determination of Class II

13.3. Determination Narrative: (IP Section 21.2)
 Please provide any narrative to support the petition for a wetland determination here, including previous decisions by the Secretary or Water Board. Determinations are made based on an evaluation of the functions and values present. Here add narrative description on the functions listed in section 8 of this application and described in section 5 of the Vermont Wetland Rules. **For example:** Wetland provides water storage and surface water protection because it is large in size, concave, and naturally vegetated.

The wetland is currently not mapped on the Vermont Significant Wetland Inventory Map. It was determined to provide surface and ground water storage, the complex also provides flood and erosion protection. Additionally, the wetland provides fish and wildlife habitat and is naturally vegetated.

14. Supporting Materials: (IP Section 22)

****ADDITIONAL MATERIALS REQUIRED TO CALL APPLICATION COMPLETE**

14.1. **Location Map: (IP Section 22.1)
 Provide a location map that is 8 1/2" x 11" and separate from any site plans.
 The Vermont Natural Resources Atlas is appropriate using USGS topography map base layer, roads, and VSWI wetlands.

Date	Title
September 28, 2016	Starksboro VT Rte 17 Bridge No. 19- Natural Res

14.2. **Site Plan(s): (IP Section 22.2)
 Please list by date, date of last revision, author, and title. Plans must include wetland delineation and buffer zones, limits of disturbance, erosion controls, building envelopes, and any permanent memorialization.

Title	Author	Date	Last Revision Date
Bridge Repair Plans. Bridge No. 19	Jason Cloutier	07/13/2016	

14.3. Other Supporting Documents: (IP Section 22.5)
 Provide any other documentation that supports the application.
Examples include but are not limited to: Photographs, easements, agreements, restoration/plan, GIS shapefiles, additional ACOE forms.

Date	Last Revision	Author	Title
9/4/2016	10/10/2016	Emmalee Cherington	Wetland Delineation- Wetland
9/4/2016	10/10/2016	Emmalee Cherington	Wetland Delineation- Upland
10/10/2016		Emmalee Cherington	Soils Map



LEGEND

- Wetlands - VSWI
 - Class 1 Wetland
 - Class 2 Wetland
- Amphibian and Reptile Crossir
 - Confirmed
 - Potential
- Rare Threatened Endangered
 - Threatened or Endangered
 - Rare
- Significant Natural Community
- Deer Wintering Areas
- VTRANS State and Town Long
- VTRANS State Short Structure
- Town Bridge
- Town Culvert
- Stream
- Town Boundary

1: 3,735
September 28, 2016

190.0 0 95.00 190.0 Meters
 WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 311 Ft. 1cm = 37 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.

NOTES

Map created using ANR's Natural Resources Atlas

PROPOSED BRIDGE REPAIR

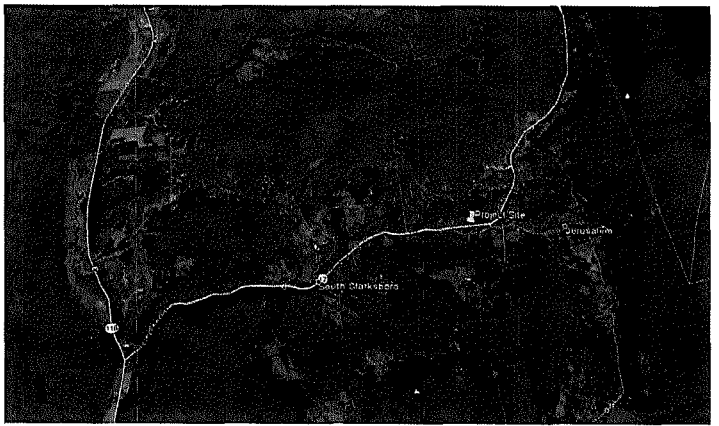
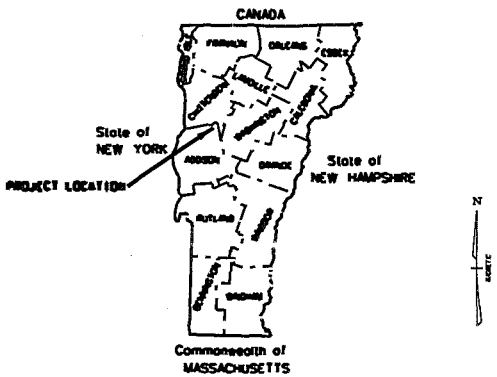
GENERAL NOTES:

- (1) THE INTENT OF THIS PLAN-SET IS TO CONVEY A REPAIR CONCEPT. THERE MAY BE DISCREPANCIES BETWEEN WHAT EXISTS IN THE FIELD AND WHAT IS SHOWN IN THIS PLAN-SET. WORK WILL CONSIST, BUT IS NOT LIMITED TO, INSTALLING A LINER, CONSTRUCTING A HEADWALL, AND CONSTRUCTING AOP COMPONENTS, AND RELATED WORK.
- (2) THE WORK AND MATERIALS FOR THIS PROJECT SHALL CONFORM TO THE 2011 VERMONT STANDARD SPECIFICATIONS BOOK.
- (3) REINFORCING STEEL SHALL BE BLACK BAR GRADE 60.
- (4) REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE: SPACING $\pm 1"$ CLEARANCES $\pm 1/4"$
- (5) MINIMUM COVER FOR REINFORCING STEEL SHALL BE TWO INCHES.
- (6) COAT CONCRETE CONTACT SURFACES WITH A EPOXY BONDING COMPOUND MEETING REQUIREMENTS OF SUBSECTION 719.02.
- (7) TREAT ALL NEW CONCRETE SURFACES WITH SILANE ONCE COMPLETED.
- (8) IF REINFORCING STEEL OR CONCRETE IS DAMAGED, DELAMINATED, OR OTHERWISE DAMAGED BEYOND THE DEFINED LIMITS OF REMOVAL, THEN THE CONTRACTOR SHALL REPAIR THE DAMAGED AREAS AT HIS/HER OWN EXPENSE.
- (9) ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36 GALVANIZED OR METALIZED AS PER SUBSECTION 506.15 (A) OR (B) UNLESS OTHERWISE SPECIFIED.
- (10) THE GROUT SHALL CONFORM TO THE 2011 VERMONT STANDARD SPECIFICATIONS BOOK.
- (11) THE LINER SHALL BE A 6'-7" X 7'-4" VERTICAL ELLIPSE. 10 GAUGE POLY-COATED STEEL.
- (12) ALL CONCRETE SHALL BE HPC CLASS A. AN APPROVED MIX DESIGN SHALL BE IN PLACE BEFORE ANY CONCRETE IS POURED.
- (13) ACCESSES WILL BE LEFT INTACTED AND WILL BE HEAVILY GRUBBED, SEEDED AND MULCHED AFTER COMPLETION OF THE PROJECT.
- (14) IF DIFFERENT CONDITIONS ARE FOUND OR FOR QUESTIONS, PLEASE CONTACT SVEN SCRIBNER AT (802)-522-8090.

FISH SWIM VELOCITIES:	
SPECIES/LIFESTAGE	MAX VELOCITY (FPS)
BROOK TROUT - JUVENILE/ADULT	0.7/2.2
BROWN TROUT - JUVENILE/ADULT	1.7/4.1
RAINBOW TROUT - JUVENILE/ADULT	1.7/3.4

OUTLET DROP:	
SPECIES/LIFESTAGE	MAX OUTLET DROP (IN)
BROOK, BROWN, RAINBOW TROUT ADULT	8.0
BROOK, BROWN, RAINBOW TROUT JUVENILES	4.0

DEPTHS:	
SPECIES/LIFESTAGE	TARGET LOW FLOW DEPTH (IN)
BROOK TROUT - JUVENILE	2.1
BROOK TROUT - ADULT	4.2
BROWN TROUT - JUVENILE	1.8
BROWN TROUT - ADULT	7.5
RAINBOW TROUT - JUVENILE	1.7
RAINBOW TROUT - ADULT	6.0




STREAM STATS:
DRAINAGE AREA = 1.67 SQ. MILES
MEAN ANNUAL PRECIPITATION = 52.5 INCHES
BASIN STORAGE AREA = 2.86%
NORTHING (VT STATE PLANE) = 185665
FLOW DATA:
LOW FLOW FISH PASSAGE = 0.20 CFS
HIGH FLOW FISH PASSAGE (SPRING)
RAINBOW/BROWN = 60.20 CFS
HIGH FLOW FISH PASSAGE (FALL)
BROOK = 17.2 CFS

HECRAS OUTPUT INTERNAL CULVERT LOCATION:				
	FLOW (CFS)	DEPTH (FT)	VELOCITY (FPS)	TURBULANCE
LFF	0.2	0.47	0.10	0.21
	1.0	0.61	0.35	0.73
	2.5	0.72	0.69	1.42
	5.0	0.85	1.10	2.27
	10.0	1.05	1.65	3.39
	15	1.24	2.03	4.19
HFF	17.2	1.29	2.18	4.49

NOTES: NATURAL CHANNEL TURBULANCE AND VELOCITY VALUES WILL LIKELY EXCEED INTERNAL CULVERT CONDITIONS D/S DUE TO SLOPE AND NATURAL DROPS.

PROJECT LOCATION:
3.4 MILES EAST OF
JUCT. VT.RTE. 116.

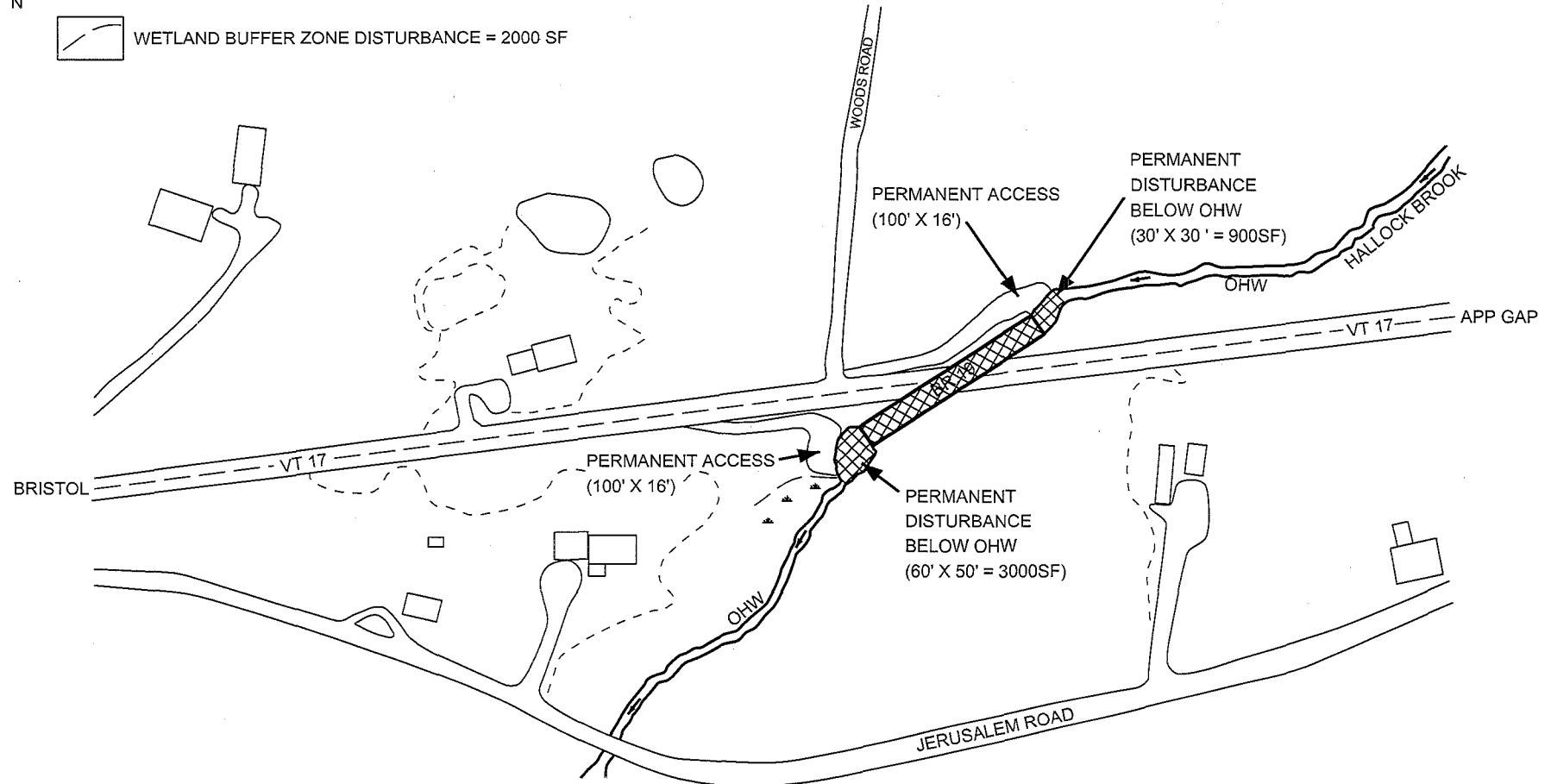
STATE OF VERMONT AGENCY OF TRANSPORTATION		DESIGN CHECKED DATE
 BRIDGE REPAIR PLANS		DATE SCALE NTS
TOWN OF STARKSBORO VT.RTE. 17		FILE JOB
BRIDGE # 19		SHEET NO. 1 OF 6



PERMANENT DISTURBANCE BELOW OHW = 4,690 SF




WETLAND BUFFER ZONE DISTURBANCE = 2000 SF

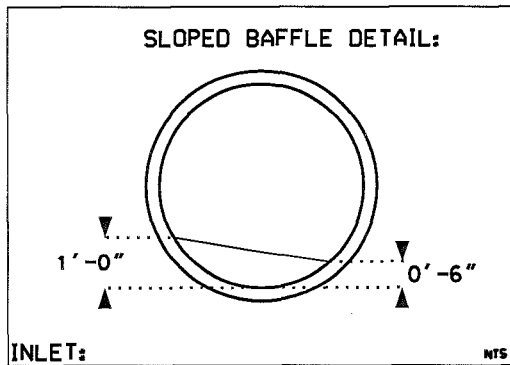
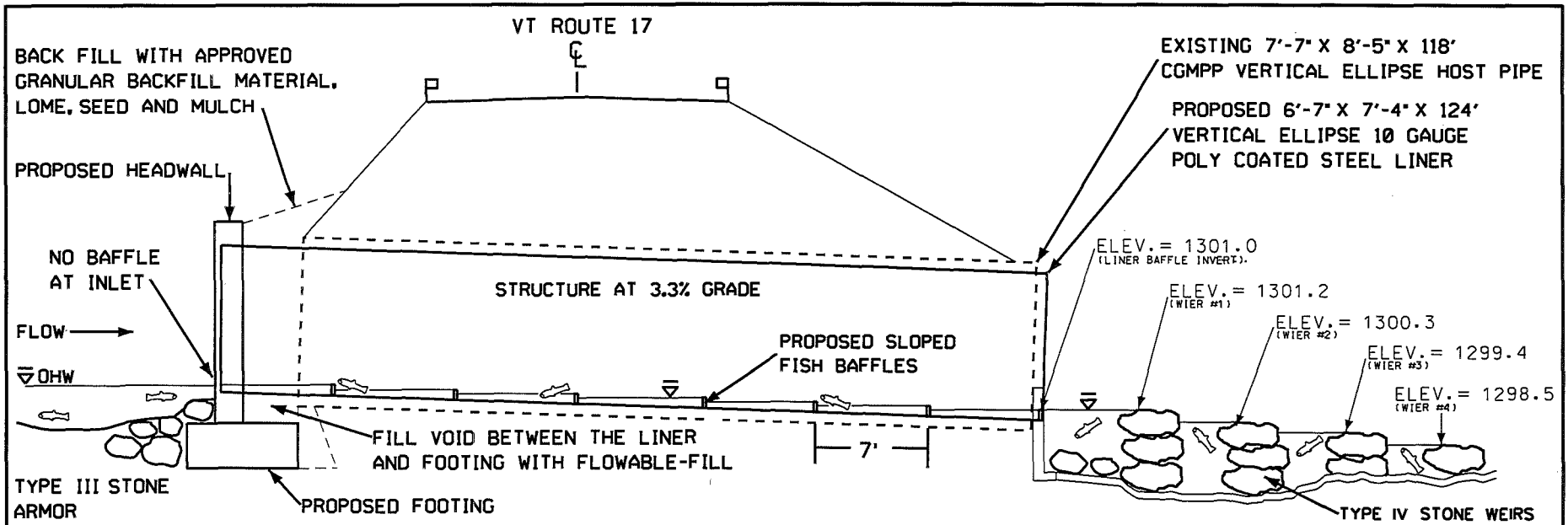


NOTES:

WATER BY-PASS SYSTEM WILL CONSIST OF SUMP/SAND BAG DAM AND PUMP, PLUMBED THROUGH PROPOSED LINER, DAY LIGHTING PAST PLUNGE POOL.

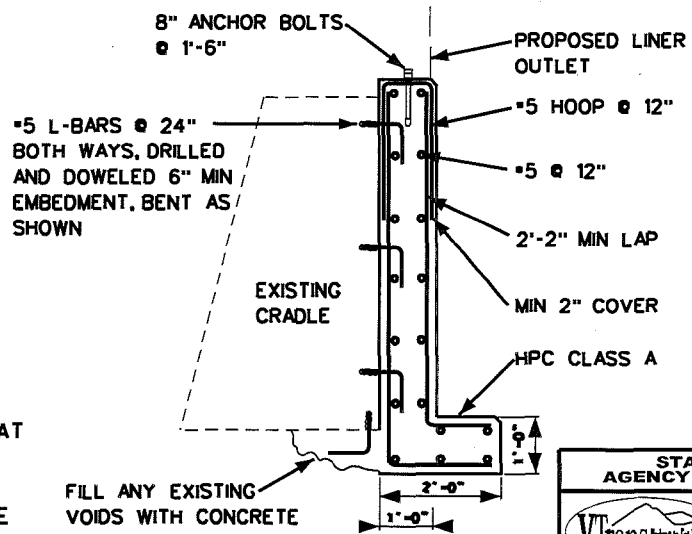
PLAN VIEW:

		STATE OF VERMONT AGENCY OF TRANSPORTATION	
		BRIDGE REPAIR PLANS TOWN OF STARKSBORO VT RTE 17 BRIDGE # 19	
DESIGNED	DATE	SCALE	FILE
DRAWN	BY	NO.	
CHECKED	DATE		
APPROVED			
SHEET NO.		2 OF 2	



NOTES:

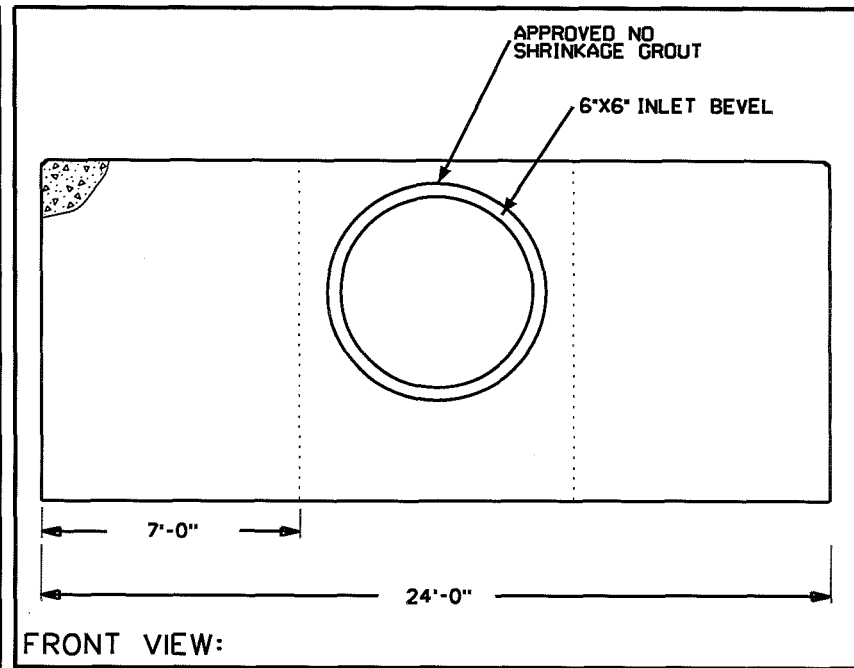
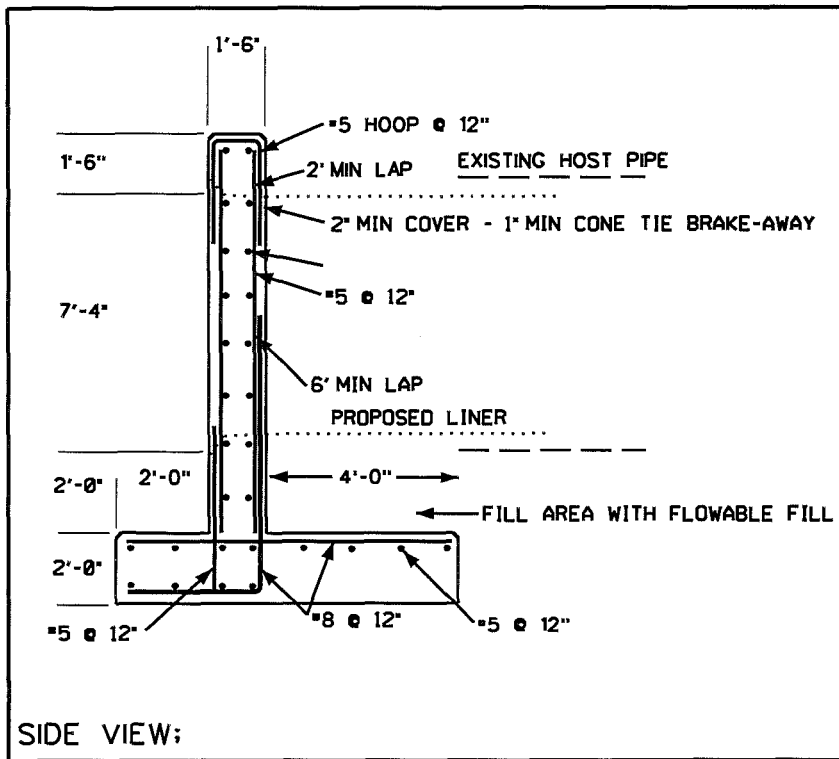
- (1) THERE WILL ANGLED FISH BAFFLES IN LINER AT EVERY 7'-0".
- (2) THERE WILL NOT BE A BAFFLE AT THE INLET.
- (3) THERE WILL BE A BAFFLE RIGHT AT THE OUTLET.



SECTION VIEW:

STATE OF VERMONT AGENCY OF TRANSPORTATION		DESIGN CHECKED DATE SCALE FILE SHEET NO. 3 OF 8
BRIDGE REPAIR PLANS TOWN OF STARKSBORO VT. RTE. 17 BRIDGE # 19		






NOTES:

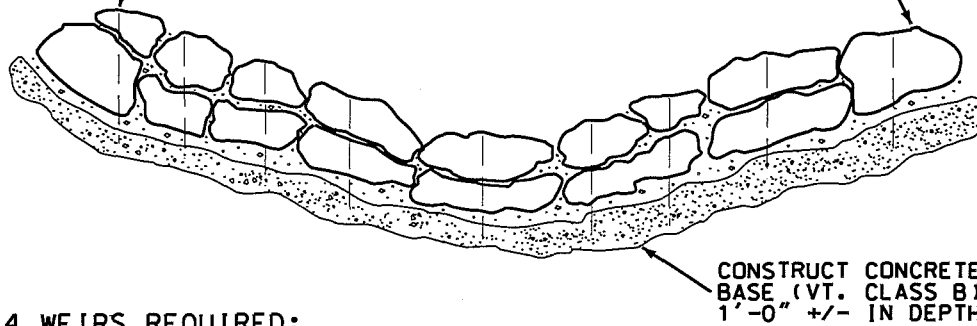
- (1) ALL CONCRETE WILL BE HPC CLASS A
- (2) FIT HEAD WALL TO EXISTING SLOPES
- (3) ROUGH UP CONCRETE BETWEEN THE UPRIGHT FOOTING/WALL REBAR AT COLD JOINT.

HEADWALL DETAIL:

STATE OF VERMONT AGENCY OF TRANSPORTATION		DESIGN CHECKED DATE
 BRIDGE REPAIR PLANS TOWN OF STARKSBORO		SCALE DATE
VT.RTE. 17 BRIDGE # 19		SHEET NO. # OF 2

DRILL AND MORTAR #10 RE-BAR
THROUGH ALL WEIR STONES TO
PIN TO BASE (DRILL HOLES
2X RE-BAR SIZE FOR MORTAR)

SELECTED TYPE IV
WEIR STONE



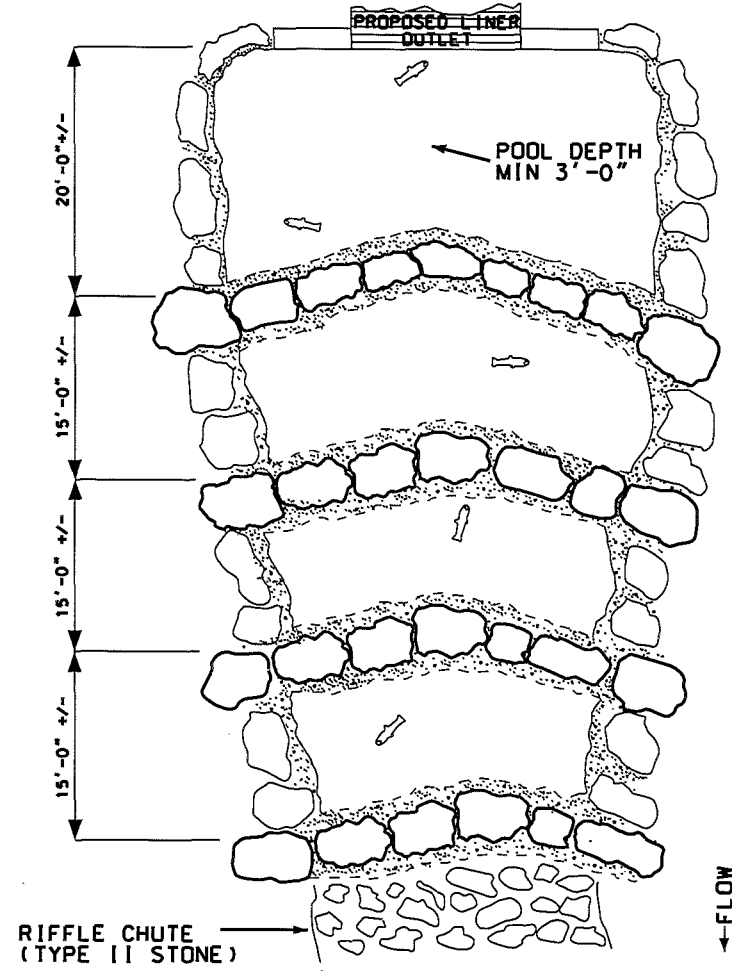
4 WEIRS REQUIRED:

CONSTRUCT CONCRETE
BASE (VT. CLASS B)
1'-0" +/- IN DEPTH

NOTES:

- (1) DISTANCE BETWEEN WEIRS, NUMBER OF WEIRS, AND WEIR HEIGHT, IS SITE SPECIFIC.
- (2) THE CENTER OF THE BACK-WATERING WEIRS WILL BE LOWER IN ELEVATION THAN AT THE STREAM BANK.
- (3) WEIRS WILL BE RECESSED A MIN. OF 6' INTO THE STREAM BANK TO PREVENT THE WATER FROM BY-PASSING AROUND THE BACK SIDE OF THE WEIRS.
- (4) CONCRETE (VT. CLASS B) WILL BE ROUGHLY FORMED AND VIBRATED INTO ALL VOIDS BETWEEN THE WEIR STONE SYSTEM.
- (5) WEIRS WILL POINT UPSTREAM AT THE CENTER OF THE WEIR SYSTEM (SEE DETAIL).
- (6) THE STREAM BANK WILL BE ARMORED WITH TYPE IV STONE AROUND THE PERIMETER OF THE WEIR AREA.

BACK-WATERING WEIR PLAN VIEW DETAIL:




PROPOSED LINER
OUTLET

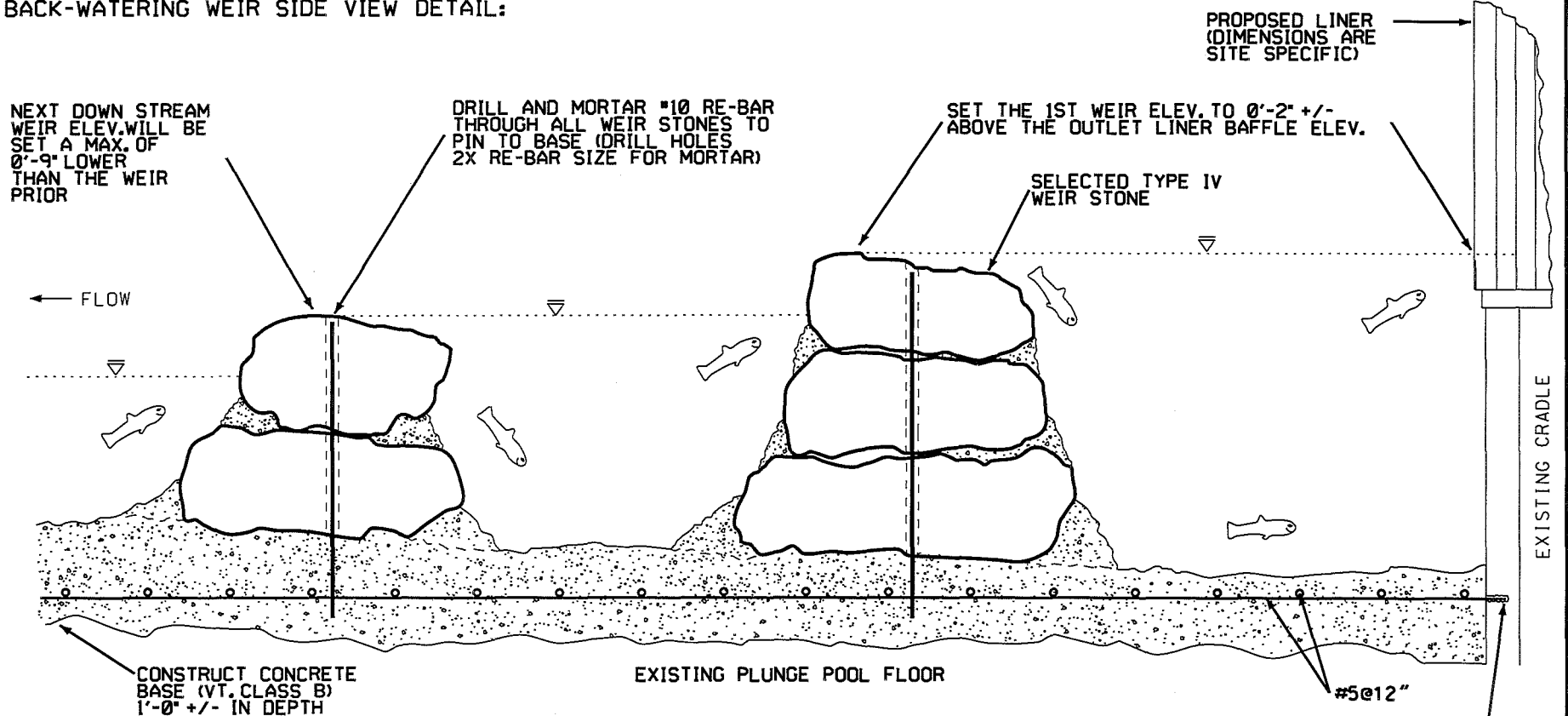
POOL DEPTH
MIN 3'-0"

RIFFLE CHUTE
(TYPE II STONE)

← FLOW

STATE OF VERMONT AGENCY OF TRANSPORTATION		DESIGN CHECKED DATE
BRIDGE REPAIR PLANS TOWN OF STARKSBORO VT. RTE. 17 BRIDGE #19		2/24/2016
		SCALE FILE SHEET NO.
		5 OF 8

BACK-WATERING WEIR SIDE VIEW DETAIL:



NEXT DOWN STREAM WEIR ELEV. WILL BE SET A MAX. OF 0'-9" LOWER THAN THE WEIR PRIOR

DRILL AND MORTAR #10 RE-BAR THROUGH ALL WEIR STONES TO PIN TO BASE (DRILL HOLES 2X RE-BAR SIZE FOR MORTAR)

SET THE 1ST WEIR ELEV. TO 0'-2" +/- ABOVE THE OUTLET LINER BAFFLE ELEV.

PROPOSED LINER (DIMENSIONS ARE SITE SPECIFIC)

SELECTED TYPE IV WEIR STONE

← FLOW

CONSTRUCT CONCRETE BASE (VT, CLASS B) 1'-0" +/- IN DEPTH

EXISTING PLUNGE POOL FLOOR


#5@12"

EXISTING CRADLE

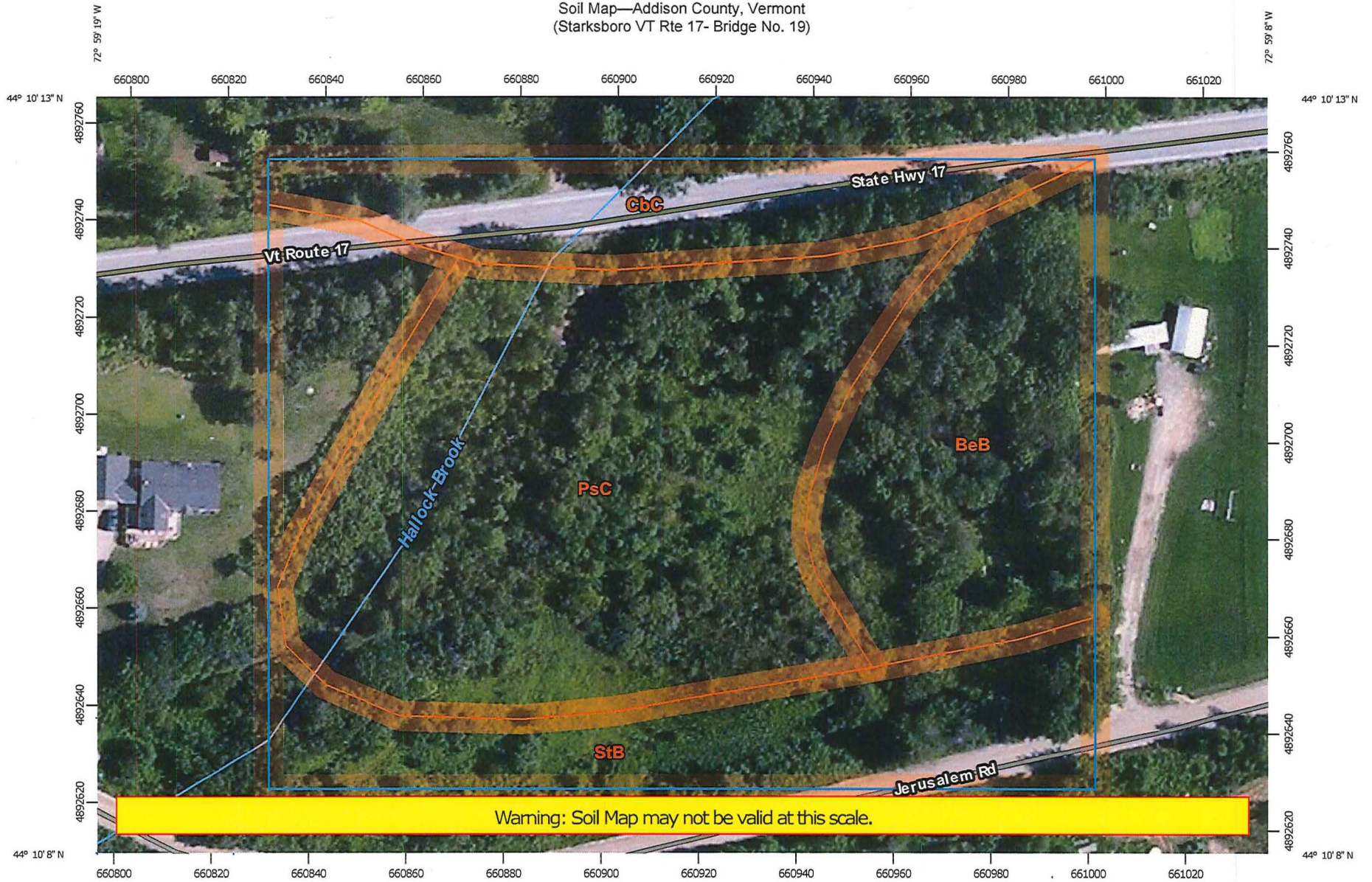
DRILL AND EPOXY #5 RE-BAR WITH A MIN. EMBEDMENT OF 0'-6"

NOTES:

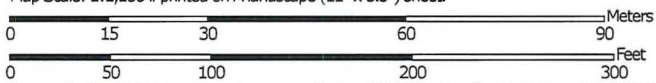
- (1) SELECTION OF APPROVED SQUARED TYPE IV WEIR STONE IS REQUIRED FROM QUARRY BY CONTRACTOR.
- (2) TOP WEIR STONES MUST BEVEL DOWN ON THE UPSTREAM SIDE TO FACILITATE ADP (SEE DETAIL).
- (3) CONCRETE (VT, CLASS B) WILL BE ROUGHLY FORMED AND VIBRATED INTO ALL VOIDS BETWEEN THE WEIR STONE SYSTEM, AND WEIR BASE.
- (4) DISTANCE BETWEEN WEIRS, NUMBER OF WEIRS, AND WEIR HEIGHT, IS SITE SPECIFIC AND IS DEPENDENT UPON THE AMOUNT OF PERCH DROP BEING BACK-WATERED AND THE LENGTH AND DEPTH OF THE SITE'S PLUNGE POOL BEING RETROFITTED.
- (5) TYPE I STONE WILL BE RANDOMLY PLACED ALONG THE BOTTOM OF EACH WEIR BAY TO FACILITATE ROUGHNESS.

STATE OF VERMONT AGENCY OF TRANSPORTATION		<small>DESIGN</small> <small>SCALE</small> <small>DATE</small> <small>BY</small> <small>CHECKED</small> <small>DATE</small> <small>BY</small>
		BRIDGE REPAIR PLANS TOWN OF STARKSBORO VT. RTE. 17 BRIDGE #19
		<small>SHEET NO.</small> <small>OF 2</small>

Soil Map—Addison County, Vermont
(Starksboro VT Rte 17- Bridge No. 19)



Map Scale: 1:1,100 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils

 Soil Map Unit Polygons


 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp


 Mine or Quarry


 Miscellaneous Water

 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Addison County, Vermont
Survey Area Data: Version 17, Sep 25, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 1, 2011—Sep 26, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Addison County, Vermont (VT001)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Berkshire and Marlow stony loams, 3 to 12 percent slopes	1.1	20.2%
CbC	Cabot silt loam, 0 to 15 percent slopes, very stony	0.7	12.9%
PsC	Peru fine sandy loam, 0 to 20 percent slopes, very stony	2.3	42.9%
StB	Stetson gravelly fine sandy loam, 5 to 12 percent slopes	1.3	24.0%
Totals for Area of Interest		5.5	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Starksboro RT 17 Bridge No. 19 City/County: Addison Sampling Date: 9/4/2016
 Applicant/Owner: Vtrans State: VT Sampling Point: U-19
 Investigator(s): Emmalee Cherington Section, Township, Range: Starksboro
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): _____ Slope %: 0-15%
 Subregion (LRR or MLRA): [REDACTED] Lat: 44.17005 Long: 72.98765 Datum: _____
 Soil Map Unit Name: Cabot silt loam NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: U-19

Tree Stratum (Plot size: <u>30'rad</u>)	Absolute % Cover	Dominant Species?	Indicator Status																		
1. <u><i>Acer rubrum</i></u>	<u>95</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40.0%</u> (A/B)																	
2. <u><i>Prunus serotina</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																		
3. <u><i>Fagus grandifolia</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																		
4. <u><i>Fraxinus americana</i></u>	<u>8</u>	<u>No</u>	<u>FACU</u>																		
5. <u><i>Betula papyrifera</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																		
6. _____																					
7. _____																					
	<u>118</u>	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:right;">Total % Cover of:</td> <td style="width:50%; text-align:left;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>100</u></td> <td>x 3 = <u>300</u></td> </tr> <tr> <td>FACU species <u>43</u></td> <td>x 4 = <u>172</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>143</u> (A)</td> <td><u>472</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>3.30</u></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>100</u>	x 3 = <u>300</u>	FACU species <u>43</u>	x 4 = <u>172</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>143</u> (A)	<u>472</u> (B)	Prevalence Index = B/A = <u>3.30</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>0</u>	x 2 = <u>0</u>																				
FAC species <u>100</u>	x 3 = <u>300</u>																				
FACU species <u>43</u>	x 4 = <u>172</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>143</u> (A)	<u>472</u> (B)																				
Prevalence Index = B/A = <u>3.30</u>																					
Sapling/Shrub Stratum (Plot size: _____)																					
1. <u><i>Quercus rubra</i></u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is $\leq 3.0^1$ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																	
2. <u><i>Fraxinus americana</i></u>	<u>2</u>	<u>No</u>	<u>FACU</u>																		
3. <u><i>Fagus grandifolia</i></u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																		
4. <u><i>Amelanchier canadensis</i></u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																		
5. _____																					
6. _____																					
7. _____																					
	<u>14</u>	=Total Cover																			
Herb Stratum (Plot size: _____)																					
1. <u><i>Pteridium aquilinum</i></u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																	
2. <u><i>Solidago altissima</i></u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																		
3. <u><i>Dryopteris campyloptera</i></u>	<u>1</u>	<u>No</u>	<u>FACU</u>																		
4. _____																					
5. _____																					
6. _____																					
7. _____																					
8. _____																					
9. _____																					
10. _____																					
11. _____																					
12. _____																					
	<u>11</u>	=Total Cover																			
Woody Vine Stratum (Plot size: _____)																					
1. _____				Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																	
2. _____																					
3. _____																					
4. _____																					

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point U-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/3	100						
2-8	10YR 4/4	100						
8-14	2.5YR 6/8	100						

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

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7)</p>	<p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Marl (F10) (LRR K, L)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (F22)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
--	--	--

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
--	--

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Starksboro Bridge #19 City/County: Addison Sampling Date: 9/4/2016

Applicant/Owner: Vermont Agency of Transportation State: VT Sampling Point: W-19

Investigator(s): Emmalee Cheringtin Section, Township, Range: Starksboro, VT

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): _____ Slope %: 0-20%

Subregion (LRR or MLRA): [Yellow Box] Lat: 44.16998 Long: 72.98766 Datum: _____

Soil Map Unit Name: Peru fine sandy loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) It has been an extremely dry summer.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) <u>x</u> Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) <u>x</u> Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) _____ Surface Soil Cracks (B6) <u>x</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) ? Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: W-19

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u><i>Betula populifolia</i></u>	40	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)	
2. <u><i>Prunus serotina</i></u>	5	No	FACU	Total Number of Dominant Species Across All Strata: <u>6</u> (B)	
3. <u><i>Acer rubrum</i></u>	10	No	FAC	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)	
4. <u><i>Ulmus americana</i></u>	20	Yes	FACW		
5. <u><i>Amelanchier canadensis</i></u>	10	No	FAC		
6. _____					
7. _____					
	85	=Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u><i>Acer rubrum</i></u>	60	Yes	FAC	Total % Cover of: _____ Multiply by: _____	
2. <u><i>Betula papyrifera</i></u>	10	No	FACU	OBL species <u>0</u> x 1 = <u>0</u>	
3. <u><i>Spiraea alba</i></u>	70	Yes	FACW	FACW species <u>108</u> x 2 = <u>216</u>	
4. <u><i>Alnus incana</i></u>	10	No	FACW	FAC species <u>162</u> x 3 = <u>486</u>	
5. <u><i>Amelanchier canadensis</i></u>	2	No	FAC	FACU species <u>15</u> x 4 = <u>60</u>	
6. _____				UPL species <u>0</u> x 5 = <u>0</u>	
7. _____				Column Totals: <u>285</u> (A) <u>762</u> (B)	
	152	=Total Cover		Prevalence Index = B/A = <u>2.67</u>	
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <u><i>Symphytotrichum novae-angliae</i></u>	3	No	FACW	<u>1</u> - Rapid Test for Hydrophytic Vegetation	
2. <u><i>Matteuccia struthiopteris</i></u>	35	Yes	FAC	<u>X</u> 2 - Dominance Test is >50%	
3. <u><i>Onoclea sensibilis</i></u>	5	No	FACW	<u>X</u> 3 - Prevalence Index is ≤3.0 ¹	
4. _____				<u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. _____				<u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)	
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	43	=Total Cover			
<u>Woody Vine Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Definitions of Vegetation Strata:	
1. <u><i>Clematis virginiana</i></u>	5	Yes	FAC	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
2. _____				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
3. _____				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
4. _____				Woody vines – All woody vines greater than 3.28 ft in height.	
	5	=Total Cover			
				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point W-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
1-18	10YR 2/1	100						Soil is uniform
								Restricted layer at 18"

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

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input checked="" type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)			
<input checked="" type="checkbox"/> Dark Surface (S7)					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Depth (inches): _____ 18 _____	

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)