FY17 Vermont Better Roads Grant Application

Please complete this page ONCE and return with your Grant Category Application(s)

Town/Organization: Rupert Contact Person(s): Tom Wilson

Address: P O Box 140 West Rupert 05776

Street Address *Town* *Zip*

Email: ruperthighway153@gmail.com Phone: (802) 394 - 2926

DUNS #: 949847065 Fiscal Year End Month (MM): 6

Accounting System: ☐ Automated ☐ Manual ☒ Combination

Please use the suggested documentation checklist below to ensure that all of the relevant items regarding your application have been included.

- ☑ Grant application cover sheet (Only submit one)
- ☑ Grant application form (One per category/project)
- ☑ Itemized Cost estimate for labor, equipment, and materials (see enclosed Cost Estimate Worksheet). If applicable, please break down funding by source (i.e. different grant sources)
- ☑ Project Location Map (please show location of affected water)
- ☑ Sketch of proposed erosion control measures or other management practices, including distances in feet
  - Also show approximate location of town/other right-of-way and/or property lines
- ☑ Photo(s) of the project area
- ☑ Letters of Support (RPC, VTrans District Technical Staff, ANR Rivers and Streams Engineers, etc.)
- ☐ If Category C River/Road Conflict or Category D River/Stream Structure or Culvert, you must attach ANR/ACOE consultation

Vermont Better Roads Grant Program Application

Please complete one application per category and/or project you are applying for. You may make copies of the application for multiple applications per category and/or multiple categories.

Please check the Category you are applying for:

- [ ] B. Correction of a Road Related Erosion Problem and/or Stormwater Mitigation Retrofit for both gravel and paved roads
- [ ] C. Correction of a Stream Bank or Slope Related Problem
- [x] D. Structure/culvert upgrades

Town/Organization: Rupert

Project Name: Rogers Rd Culvert & Road Stabilization

Road Name: Rogers Rd **TH #:** 17 **Structure # (if applicable):**

Road Type: Unpaved Uncurbed Class 3

Watershed: Poultney/Mettawee

Please provide a thorough description of the problem (ex. Roadway has steep slope with no ditch which is causing roadway erosion):

600' Roadway is entrenched without ditches and water runs down edges of roadway creating erosion issues. Culvert is undersized and occasionally overtops; also erosion issues with big pools and around inlet and outlet.

Description of Project and how you plan to complete the work (ex. Stone line 500' of ditch by reshaping ditch and stone lining, working from the top of the project down to the bottom):

Reshape road, raise road bed, add shotrock to edges of roadway to allow sheet flow without the need to create ditches.
Replace undersized culvert (3') with CMP 71" x 47" with baffles and buried to allow passage.

Expected Effects (+ & -) on water quality (ex. Erosion will be eliminated by placing the stone ditch):

10 - 15 cy of sediment enters stream every year due to instability. This will be eliminated with the construction of this project.

Distance from end of project to nearest water (stream, lake, or stormwater system that outlets directly to water). 0-50'

Progress to Date:
None

Is there an emergency reason this project must be completed quickly? If yes, please explain:
No

Has this project been identified through a municipal road inventory, capital budget plan, tactical basin plan, culvert inventory, or other management plan? If yes, please list which.

(●) Yes: On road erosion map as high risk ( ) No

Please list any professionals you may have contacted for assistance with this project (ANR River Management Engineer, Army Corps of Engineers, VTrans District Technical staff, Basin Planner etc.):
ANR - Josh Carjaval
VTrans D1 - Chris Taft
VTrans MAB - Rachel Beauregard
BCRC - Jim Henderson
BCCD - Shelley Stiles

Is the project located in the town **"Right of Way?"** Yes, No, Both (if "Both" please explain further).
Yes

Will the town road crew complete this work? Yes, No, Some (if "some" please explain further).
Yes

Describe how the grant funds will be spent and/or attach a project budget:
Budget attached

How do you plan to meet the required 20% match on this grant?:
Town labor & equipment

Requested Grant Amount ($20,000 max Category B, $40,000 max Categories C & D): $ 29,200.00

Estimated Total Project Cost (including 20% local match): $ 5,840.00

Estimated Completion Date: 10/31/2016

REQUIRED ATTACHMENTS:

- [x] Itemized Cost Estimate (labor, equipment, materials)
  (For assistance, call Better Backroads at 802-828-4585)
- [x] Project Location Map
  (Please show location of affected water; 1:12,000 USGS map, if possible)
- [x] Sketch of proposed erosion control measures, including:
  - [x] Distances (ft.)
  - [x] Estimate of waste & borrow quantities
  - [x] Approx. location of town/other right-of-way and/or property lines
- [x] Photo(s) of the project area.
- [ ] Agreement for Entry and/or Deed of Easement (if project is outside Town ROW).
- [x] If project involves stream or river/road conflict, include documentation of consultation with a River Management Engineer.
- [x] Other appropriate supporting documents.

By signing this application I certify that all the information provided is accurate to the best of my knowledge. We will comply with all the requirements of the grant including making our books available for audit if required.

SIGNATURE OF APPLICANT: (Must be Town Administrator/Manager or Select Board Chair)

Name: [signature] Title: selectboard chair

Cost Estimate Worksheet

Town and Road Name: Rupert, Rogers Road

Project Name: Rogers Road

Labor	Rate	# Hours	Total (Rate x Hours)
Foreman & 4-6 workers	33/hr	40 hr each	6000.00
		Labor Total	6000.00

Equipment	Rate	# Hours	Total (Rate x Hours)
Rented Excavator	60/hr	50	3000.00
Dozer	60/hr	50	3000.00
Truck - qty 4		40	5000.00
		Equipment Total	11,000.00

Materials	Rate	Amount	Total (Rate x Amount)
Culvert	1 ea	1	6000.00
Gravel		600 yd	6000.00
Shot Rock		1000 yd	
		Materials Total	12,000.00

Miscellaneous	Rate	Amount	Total (Rate x Hours)
permit		200.00	200.00
		Miscellaneous Total	200.00
		Grand Total	29,200.00
		Match	5840.00

Bennington County Conservation District
Promoting rural livelihoods and protecting natural resources in southwestern Vermont

April 11, 2016

Mr. Alan May
Municipal Assistance Bureau
Vermont Agency of Transportation
1 National Life Drive
Montpelier, VT 05633

RE: Town of Rupert Better Roads application

Dear Alan,

The Bennington County Conservation District is pleased to support the application for a Vermont Better Roads program grant by and for the Town of Rupert to 1) replace culverts and raise the road bed on Youlin Road (a high priority in the recently completed Rupert Stormwater Master Plan) and 2) to repair a drainage issue on Roger Road, a high priority of the Rupert highway crew. We look forward to working with the Town on these initiatives.

Sincerely,

Shelly Stiles, district manager

310 Main Street, PO Box 505, Bennington, VT 05201
Phone: 802 442-2275 E-mail: bccd@sover.net Website: www.bccdvt.org

BCRC

Bennington County Regional Commission

111 SOUTH STREET • SUITE 203 • BENNINGTON, VERMONT 05201 • (802) 442-0713 OR 442-0682 •
FAX (802) 442-0439

Alan May
Agency of Transportation
Municipal Assistance Bureau
1 National Life Drive
Montpelier, Vermont 05633

April 11, 2016

Dear Alan,

Please accept this letter expressing BCRC's support of The Town of Rupert's proposal for funding through the Vermont Better Roads Grant Program to conduct a road and culvert inventory and improve stormwater drainage on Youlin and Roger's Roads. Although a Stormwater Master Plan was created for the Mill Brook watershed in 2015, a town-wide road and culvert inventory has not been completed. BCRC considers this a priority project.

BCRC staff have visited the Youlin Road and Rogers Road sites with the Rupert Highway Department. Youlin Road is a high priority site identified in the recently completed Stormwater Master Plan. The road bed is below grade and water flows down the bed of the road leading to erosion and the transport of large amounts of sediment into Mill Brook. The road base in the mid-section of this project is a severely deteriorated driving surface that exacerbates problems with erosion and sedimentation. The road bed will be raised, grass lined ditches installed and two damaged culverts will be replaced.

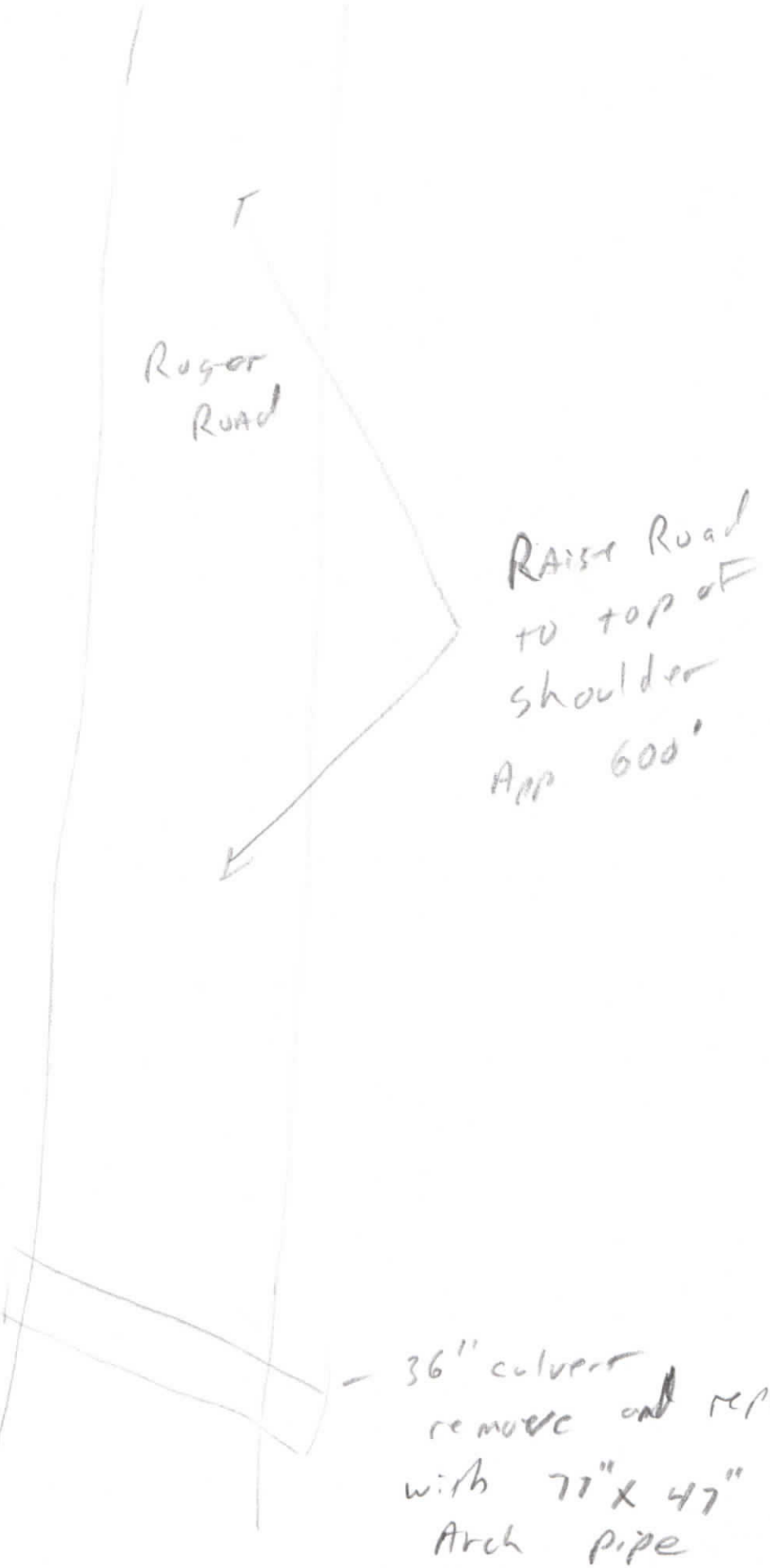
Rogers Road is also below grade and is served by an undersized, deteriorated culvert. The roadbed will be raised to allow sheet flow off the road eliminating the erosion and transport of sediment into the brook. The deteriorated 36 inch culvert will be replaced with a 71 inch by 47 inch squashed culvert as recommended by AOT and DEC staff who have visited the site.

Thank you for your consideration of these important projects.

Sincerely,

Jim Henderson
Environmental Program Manager


New 71" x 47"
Squashed Culvert
600 Feet Raised Road Bed
to Promote Sheet Flow
RUPERT
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


T
Rugar Road
RAISE Road to top of shoulder App 600'
36" culvert remove and replace with 77" x 49" Arch Pipe

VERMONT

State of Vermont
Agency of Transportation
359 Bowen Road
Bennington, VT 05201
www.aot.state.vt.us

[phone] 802-447-2790
[fax] 802-447-2793
[ttd] 800-253-0191

Agency of Transportation

April 8, 2016

Town of Rupert
P.O. Box 95
West Rupert, VT 05776

Re: Better Roads Candidate Rogers Road

Dear Mr. Wilson,

In review of the proposed Better Roads project the Vtrans District One Technical Staff would agree that Roger Road would be improved from a water quality stand point. We are in agreeance that, the culvert on (TH-17) Rogers Road, a Class 3 roadway, in Rupert is a strong candidate for the Better Roads program.

The scope of work presented:

- Upgrading an undersized culvert
- Armor and protect the inlet and outlet of the new culvert
- Build the roadway up and create a crowned road cross section.

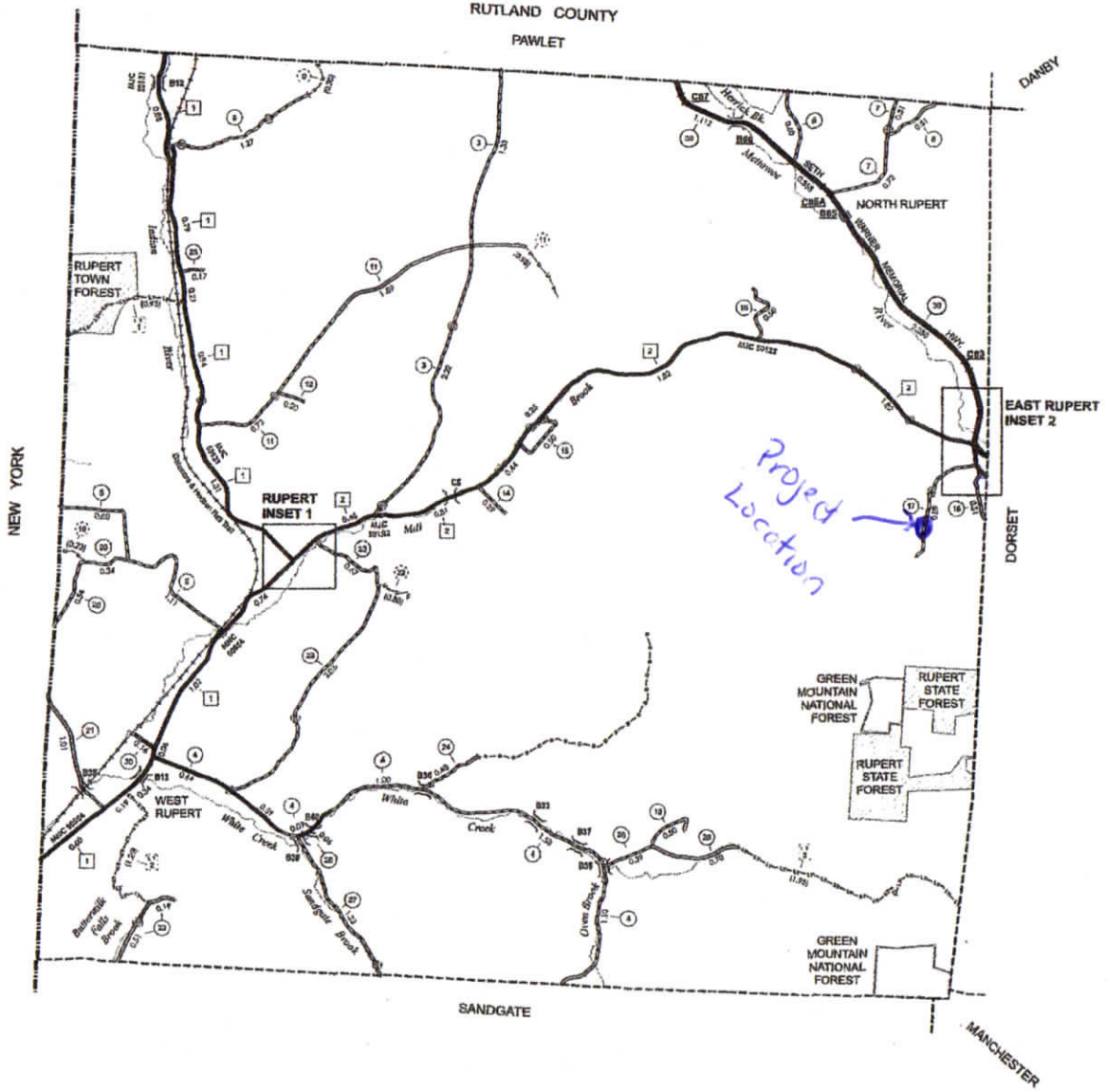
In closing, the town highway would benefit greatly in a water quality, maintenance and safety stand point on this back road. This culvert is undersize and limits AOP. With the structure being inadequate hydraulically it promotes erosion and scour decreasing downstream water quality.

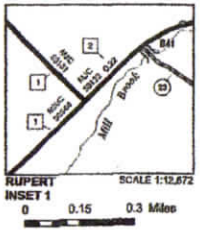
Any questions you can reach the District 1 office of the Agency of Transportation at (802) 447-2790.

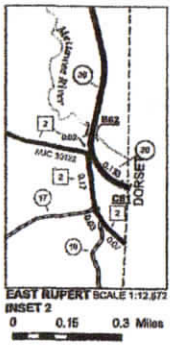
Respectfully,

Christopher Taft
Project Manager, District 1

VTrans Working to Get You There







HIGHWAYS
- INTERSTATE
- U.S. ROUTE
- STATE ROUTE
- CLASS 1
- CLASS 2
- CLASS 3
- CLASS 4
- LEGAL TRAIL

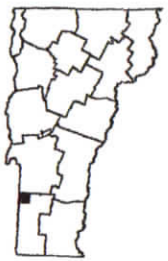
- INTERSTATE OR DIVIDED HIGHWAY
- STATE - HARD SURFACE OR PAVED
- TOWN - HARD SURFACE OR PAVED
- GRAVEL
- SOIL OR GRADED AND DRAINED EARTH
- UNIMPROVED OR PRIMITIVE
- IMPASSABLE OR UNTRAVELED
- LEGAL TRAIL
- DISCONTINUED
- HIGHWAY CLASS CHANGE
- RAILROAD
- INACTIVE RAILROAD

- PUBLIC LAND - GREEN MOUNTAIN NATIONAL FOREST
- PUBLIC LAND - STATE/MUNICIPAL

POLITICAL SUBDIVISIONS
- STATE BOUNDARY
- COUNTY BOUNDARY
- TOWN BOUNDARY
- VILLAGE BOUNDARY
- URBAN COMPACT BOUNDARY
- WATER BODY
- STREAM OR BROOK

BRIDGE OR CULVERT
- BRIDGE OR CULVERT > 20'

FEDERAL CLASSIFICATION IDENTIFIER
FAU URBAN ARTERIAL OR COLLECTOR



VERMONT
GENERAL HIGHWAY MAP

Town of Rupert

BENNINGTON COUNTY

Transportation District #1

Prepared by the
Vermont Agency of Transportation
Division of Policy, Planning and Intermodal Development
in cooperation with
U.S. Department of Transportation
Federal Highway Administration

Mileage as of February 10, 2015
Map prepared June 09, 2015

SCALE 1:31,680

0.5 0 0.5 1 1.5 2

VT AGENCY OF TRANSPORTATION PROGRAM DEVELOPMENT DIVISION

HYDRAULICS UNIT

TO: Chris Taft, District 1 Project Manager
Michael Yannotti, District 1 Technician

FROM: Leslie Russell, P.E., Hydraulics Project Manager

DATE: 16 February 2016

SUBJECT: Rupert TH 17 (Rogers Road)
Site about 100' north of TH 49 (Carlton Hill Road)
GPS coordinates: N 43° 15' 55.41" W 73° 7' 53.81"

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

Hydrology

This site has a mountainous drainage basin. It is a mixture of forest and fields. The total contributing drainage area is about 0.1 sq. mi. (58 acres). The stream slope at the site was estimated to be about 15%. Using several hydrologic methods, we selected the following design flow rates:

Annual Exceedance Probability (% AEP)	Flow Rate in Cubic Feet per Second (CFS)
43	30
10	45
4	53 - Local Road Design Flow
2	62
1	70 - Check flow

Channel Morphology

The channel is steep gradient. There is likely coarse sediment transport at the site. The channel has been widened due to flood damage. The measured bankfull widths were measured after the flood damage. Field measurements of bankfull width varied from 11' – 13'. The Vermont Hydraulic Geometry Relationships anticipate a bankfull width of 5' for stream channels in equilibrium at this watershed size. Those curves may not be valid for this size drainage area. There is heavy bank erosion on both the up and downstream sides of this structure.

Existing Conditions

The existing structure is a 36" corrugated metal pipe that provides 7.1 sq. ft. of waterway area.

Our calculations, field observations and measurements indicate the existing structure does not meet the current standards of the VTrans Hydraulic Manual nor does the existing structure meet state stream equilibrium standards for bankfull width (span length). The existing structure constricts the channel width, resulting in an increased potential for debris blockage. Headwater to depth ratios exceed allowable values established in the current VTrans Hydraulics Manual. Water overtops the road just above the design 4% AEP.

This structure results in a headwater depth of 4.9' at 4% AEP.

Replacement Recommendations

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

The low height from the stream bed to the road limits the replacement options to a box structure and a pipe arch, if adequate cover can be obtained, as the roadway would have to be raised substantially for a pipe.

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

1. A concrete box with a 5' wide by 3.5' high inside opening. The box should have 6" high baffles in it to help slow down the velocity. That will result in a 5' wide by 3' high waterway opening above streambed, providing 15 sq. ft. of waterway area. This structure will result in a headwater depth of 2.6' at 4% AEP and of 3.1' at 1% AEP, with no roadway overtopping up to 1% AEP.

2. A 64" wide by 43" high corrugated metal pipe arch that provides 14.7 sq. ft. of waterway area, if adequate cover can be obtained. This structure will result in approximate headwater depth of 2.7' at 4% AEP and of 3.3' at 1% AEP, with no roadway overtopping up to 1% AEP.

3. Any similar structure with a minimum clear span of 5' and at least 15 sq. ft. of waterway area, that fits the site conditions, could be considered.

Prior to any further action toward implementation of any of the above recommendations, structure size and type must be confirmed, and may be modified, by the VT ANR River Management Engineer to ensure compliance with state environmental standards for stream crossing structures.

Other regulatory authorities including the US Army Corps of Engineers may have additional concerns or requirements regarding replacement of this structure.

General Comments

If a new box is installed, we recommend it have full headwalls at the inlet and outlet. The headwalls should extend at least four feet below the channel bottom, or to ledge, to act as cutoff walls and prevent undermining.

If the pipe arch is installed, concrete headwalls should be constructed at the inlet and outlet. The headwalls may be either half height or full height. The headwalls should extend at least four feet below the channel bottom or to ledge, to prevent undermining of the structure. We recommend a minimum cover of 3' over all pipe structures. Obtaining the minimum cover of 3' may be a problem at this site. Pipe manufacturers can provide specific recommendations for minimum and maximum fill heights and required pipe thickness.

It is always desirable for a new structure of this size to have flared wingwalls at the inlet and outlet, to smoothly transition flow through the structure, and to protect the structure and roadway approaches from erosion. The wingwalls should match into the channel banks. Any new structure should be properly aligned with the channel, and constructed on a grade that matches the channel. A new structure should span the natural channel width.

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

Please note that while a site visit was made, these recommendations were made without the benefit of a survey and are based on limited information. The final decision regarding replacement of this structure must

comply with state regulatory standards, and should take into consideration matching natural channel conditions, roadway grade, environmental concerns, safety, and other requirements.

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

LGR

cc: Josh Carvajal, A.N.R. River Management Engineer
Hydraulics Project File via NJW

Tom,

Thanks for meeting with me to discuss this project

A CMP pipe arch will be suitable for this site and will need to be 71"x47" with internal baffles 6 inches high to satisfy bankfull width and AOP requirements. The pipe will need to be buried 12" below the stream bed then filled with native stone and gravel.

A SAGP reporting form will need to be completed and the $200 fee submitted to Montpelier. This form is available at http://www.watershedmanagement.vt.gov/rivers/docs/SA/Stream%20Alt%20Application_11052015.pdf

Once the form is received, authorization under the Stream Alteration General Permit will be issued.

Thanks and let me know if you have any questions.

****

Josh Carvajal, P.E. CFM
Rivers Program
Agency of Natural Resources
Department of Environmental Conservation

cell: (802) 490-6163