



# FY17 Vermont Better Roads Grant Application

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

Town/Organization: Mendon Contact Person(s): Sara Tully

Address: 22825 US Route 4, Mendon, VT 05701

Street Address Town Zip  
Email: mendonadmin@comcast.net Phone: ( 802 ) 775 - 1662

DUNS #: 35757004 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
- D. Structure/culvert upgrades

Town/Organization: Town of Mendon

Project Name: 07-47 Culvert Replacement

Road Name: Wheelerville Road TH #: 7 Structure # (if applicable): 747

Road Type: Unpaved Uncurbed  
Class 3

Watershed: \_\_\_\_\_

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

The culvert is collapsing and breaking apart in the middle. The outlet has an embankment failure that is causing the culvert to break apart as the outlet end drops. It is very steep embankment at the outlet end. The problem is severe and close to a complete failure of the culvert. The bank and culvert failure are causing roadway erosion.

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):

The project would replace an 18" culvert with a 24" culvert in accordance with Enman Kesselring Consulting Engineers plan. Install headwalls on inlet and outlet as designed by McFarland Johnson, Inc.

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

Erosion will be eliminated by stabilizing the bank and increasing water quality of the Cold River.



Distance from end of project to nearest water (stream, lake, or stormwater system that outlets directly to water). 250'+

**Progress to Date:**

The town has completed engineering of the culvert and headwalls and is ready to go out to bid.

Is there an emergency reason this project must be completed quickly? If yes, please explain:

Yes, the culvert is collapsing from the erosion of the outlet and if it fails the road will need to be closed. Monitoring over the winter made the project a top priority and engineers were contracted so that a solution could be determined.

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: Culvert Inventory

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.):

The town has consulted with the Agency of Natural Resources River Management Engineer, the Army Corps of Engineers (no permit required) and hired Enman Kesselring Consulting Engineers for the culvert replacement design and McFarland Johnson, Inc for the headwall specifications.

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

Yes, the project is located in the the town's right of way. There may be a need for some stabilization just outside the right of way on the uphill side. We obtained a right of way agreement from the property owner, Matthew Partalis in case the project does go outside the right of way.

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

No



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

See attached budget.

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

The 20% match will be taken from the town's bridge and culvert fund earmarked for matching grant requirements.

Requested Grant Amount (\$20,000 max Category B, \$40,000 max Categories C & D): \$ 23,440.00

Estimated Total Project Cost (including 20% local match): \$ 5,860.00

Estimated Completion Date: \_\_\_\_\_

**REQUIRED ATTACHMENTS:**

- Itemized Cost Estimate (labor, equipment, materials)  
(For assistance, call Better Backroads at 802-828-4585)
- Project Location Map  
(Please show location of affected water; 1:12,000 USGS map, if possible)
- Sketch of proposed erosion control measures, including:
  - Distances (ft.)
  - Estimate of waste & borrow quantities
  - Approx. location of town/other right-of-way and/or property lines
- Photo(s) of the project area.
- Agreement for Entry and/or Deed of Easement (if project is outside Town ROW).
- If project involves stream or river/road conflict, include documentation of consultation with a River Management Engineer.
- 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: **Sara Tully**  
Digitally signed by Sara Tully  
Date: 2016.04.14 16:44:06  
-04'00'

Title: Town Administrator

# TOWN OF MENDON CULVERT REPLACEMENT 07-47

MAY 2016

WORK DESCRIPTION - CULVERT REPLACEMENT 07-47	Quantity	Unit	Unit Cost	Cost
24" x 32' PIPE	32	LF	\$20.00	\$640
400 SF RIP RAP	60	T	\$12.00	\$720
INLET HEADWALL	1	EA		\$2,800
OUTLET HEADWALL	1	EA		\$3,000
INLET GRADING	10	CY	\$7.00	\$70
OUTLET GRADING	40	CY	\$7.00	\$280
FABRIC	400	SF	\$2.50	\$1,000
PIPE EXCAVATION	12	CY	\$10.00	\$120
BACKFILL	12	CY	\$10.00	\$120
OUTLET WINGWALL	1	EA		\$2,000
GUARDRAIL	100	LF	\$22.00	\$2,200
SEED	50	LB	\$9.00	\$450
HAY MULCH	0.5	TN	\$600.00	\$300
PIPE BEDDING	3	TN	\$12.00	\$36
GUARDRAILS ENDS	4	EA	\$500.00	\$2,000
GUARDRAIL ANCHORS	4	EA	\$700.00	\$2,800
BARRICADES/SIGNAGE ALLOWANCE				\$1,000
EROSION FENCING/FABRIC	100	LF	\$0.85	\$85

Sub-Total	\$19,621
20% Contingency	\$3,700
Engineer Construction Support	\$5,000
Road Commissioner Oversight	\$1,000
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$29,321</b>

## Culvert Replacement Project 07-47

Wheelerville Road, Mendon, VT

Date: Fri, 15 Apr 2016 03:03:28 +0000  
From: "Carvajal, Joshua" <[Joshua.Carvajal@vermont.gov](mailto:Joshua.Carvajal@vermont.gov)>  
Reply-To: "Carvajal, Joshua" <[Joshua.Carvajal@vermont.gov](mailto:Joshua.Carvajal@vermont.gov)>  
Subject: Mendon\_Wheelerville Road Culvert  
To: Bill Ellis <[mendon.rds@myfairpoint.net](mailto:mendon.rds@myfairpoint.net)>

Hi Bill,

Thanks for meeting with me to discuss this culvert replacement project on Wheelerville Road that the Town plans to apply for funding under the Better Roads grant program.

Based on my field observations there are no perennial stream involved within the limits of the proposed project and coverage under the Stream Alteration General Permit (SAGP) will not be required.

Please let me know if you have any questions.

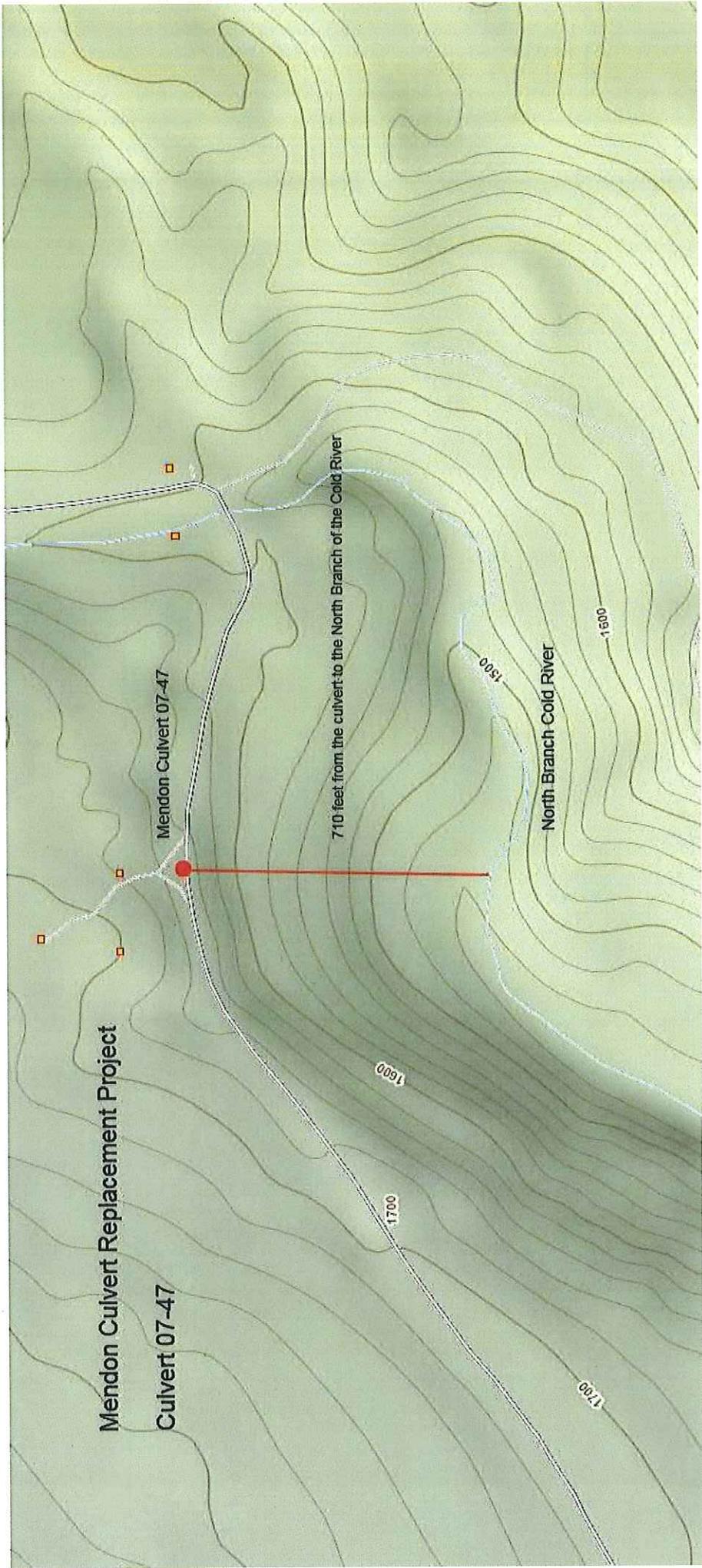
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**Josh Carvajal, P.E. CFM**  
Rivers Program  
**Agency of Natural Resources**  
**Department of Environmental Conservation**

cell: (802) 490-6163

[www.watershedmanagement.vt.gov/rivers.htm](http://www.watershedmanagement.vt.gov/rivers.htm)  
[floodready.vermont.gov](http://floodready.vermont.gov)

**Our email addresses have changed** ([@vermont.gov](mailto:@vermont.gov))  
**NEW:** [joshua.carvajal@vermont.gov](mailto:joshua.carvajal@vermont.gov)  
**Please update your address book!**







April 14, 2016

Mr. Alan May  
Better Backroads Coordinator  
VTrans  
I National Life Drive  
Montpelier, VT 05633

Dear Alan:

This letter supports the application from the Town of Mendon's Better Roads Grant application for a Category D for a culvert replacement project on Wheelerville Road. The culvert is undersized and eroded, drainage is inadequate and a steep bank at the outlet is failing. This project would address these. The potential adverse impact on the road dictates its immediate replacement.

This work is necessary and vital for the Town's infrastructure and we strongly support this application.

Sincerely,

A handwritten signature in black ink that reads "Susan Schreibman". The signature is written in a cursive, flowing style.

Susan Schreibman  
Assistant Director







# Mendon\_Wheelerville Road culvert

Vermont Agency of Natural Resources

vermont.gov



1: 3,500  
April 14, 2016

178.0 Meters  
0 89.00 178.0 Meters  
WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
1" = 292 Ft 1cm = 35 Meters  
THIS MAP IS NOT TO BE USED FOR NAVIGATION  
© Vermont Agency of Natural Resources

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.



### LEGEND

- Hazard Class**
  - High Hazard Potential
  - Significant Hazard Potential
  - Low Hazard Potential
  - Undetermined Hazard Potential
- Historical Dam Location**
- Wetlands - VSWI**
  - Class 1 Wetland
  - Class 2 Wetland
- Wetlands Advisory Layer**
- DFIRM Floodways**
- DFIRM Preliminary Floodways**
- Special Flood Hazard Areas (A Counties)**
  - AE (1-percent annual chance flood)
  - A (1-percent annual chance flood)
  - AO (1-percent annual chance zone feet)
  - 0.2-percent annual chance flood ha
- Special Flood Hazard Areas (F DFIRM)**
  - AE (1-percent annual chance flood)
  - A (1-percent annual chance flood)
  - AO (1-percent annual chance zone feet)
  - 0.2-percent annual chance flood ha
- Buildings (E911)**
- VTRANS State and Town Long**
- VTRANS State Short Structure**

### NOTES

Map created using ANR's Natural Resources Atlas

VT AGENCY OF TRANSPORTATION      PROGRAM DEVELOPMENT DIVISION  
**HYDRAULICS UNIT**

**TO:** Tom Roberts, District 3 Project Manager  
**FROM:** Leslie Russell, P.E., Hydraulics Project Supervisor  
**DATE:** 5 May 2014  
**SUBJECT:** Mendon TH 7 – 1.71 mi. from TH 2 – near pole #70  
N 43.610 W 72.8950

#07-47

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

**Hydrology**

This site has a hilly to mountainous drainage basin. It is mostly forested. The total contributing drainage area is about 8 acres. There is an overall length of 2510 feet from the divide to the site, with a 515 foot drop in elevation, giving an average overall channel slope of over 20%. The stream slope at the site was estimated to be over 10%. Using several hydrologic methods, we selected the following design flow rates:

<u>Recurrence Interval in Years</u>	<u>Flow Rate in Cubic Feet per Second (CFS)</u>
Q2.33	5
Q10	8
Q25	10 - Town Highway Design Flow
Q50	11
Q100	12 - Check flow

**Existing Conditions**

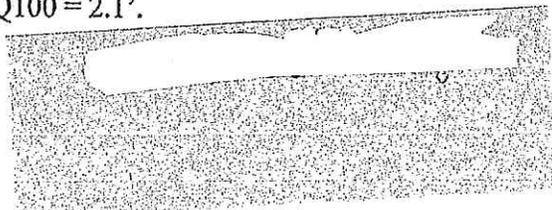
The existing structure is an 18" HDPE pipe that provides a waterway opening of 1.8 sq. ft. The channel is very steep at the outlet. The road shoulder is eroding on the downstream side due to the way the shoulder drops steeply from the road.

Our calculations show the existing structure is not adequate hydraulically. Headwater to depth ratios exceed the allowable values and water overtops the roadway below the design Q25.

**Recommendations**

In sizing a new structure we attempt to select structures that meet the hydraulic standards, fit the natural channel width, the roadway grade and other site conditions. Based on our calculations and the information available, we recommend any of the following structures as a replacement at this site:

1. A 24" diameter corrugated pipe, with 3.1 sq. ft. of waterway area. This structure will result in a headwater depth at Q25 = 1.8' and at Q100 = 2.1'.



2. A 28" wide by 20" high corrugated metal pipe arch, with 2.9 sq. ft. of waterway area. This structure will result in a headwater depth at Q25 = 1.5' and at Q100 = 1.7'.
3. A concrete box with a 2' wide by 2' high inside opening that provides 4.0 sq. ft. of waterway area. This structure will result in a headwater depth at Q25 = 1.6' and at Q100 = 1.8'.
4. Any similar structure with a minimum clear span of 2' and at least 3 sq. ft. of waterway area, that fits the site conditions, could be considered.

#### **General comments**

If the pipe arch or round pipe option 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 manufactures can provide specific recommendations for minimum and maximum fill heights and required pipe thickness.

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.

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 II 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.

**The Agency of Natural Resources (ANR), Corps of Engineers, or other permitting agency may have additional concerns regarding replacement of this structure, or any channel work. The River Management Engineer should be contacted with respect to those concerns, before a replacement structure is ordered.**

Please keep in mind 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 the replacement of this structure should take into consideration matching the natural channel conditions, the roadway grade, environmental concerns, safety, and other requirements of the site.

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

LGR

cc: Jaron Borg, A.N.R. River Management Engineer  
Hydraulics Project File via NJW  
Hydraulics Chrono File

Culvert 07-47  
Wheelerville Road



Looking through culvert to outlet end failing.



The town has performed repairs to try and reinforce the bank. The culvert is collapsing along with the roadway.