



# Vermont Better Roads Grant Program



## Cover Sheet

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

Town/Organization: Town of Cambridge

Primary Contact Person (Responsible for Signing Grant Agreement): Jonathan DeLaBruere

Title: Town Administrator

Address: P.O. Box 127 Jeffersonville 05464  
Street Address Town Zip

Primary Contact Person Email: see below Phone: (802) 644 - 2251

SAM unique ID #: XA7BW77Y0GZ5 Fiscal Year End Month (MM): 12

Town Clerk / Admin email: townadmin@cambridge.vt.org

Road Foreman Name: Eric Boozan Road Foreman Email: eric@cambridgevt.org



## **CATEGORY B/C/D**

Please complete one application per project you are applying for.

Please check the Category you are applying for:

B. Correction of a Road Related Erosion Problem and/or Stormwater Mitigation

C. Correction of a Stream Bank, Lake Shore or Slope Related Problem

D. Structure/culvert 36" diameter or greater

Municipality: Town of Cambridge

Road Name: Upper Pleasant Valley TH #: 5 Structure # (if applicable): \_\_\_\_\_

Road Type:  Paved or Unpaved (select one) Road Class: 1  2 3 4 (select one)

Please provide a thorough description of the erosion/water quality problem (ex. Roadway has steep slope with no ditch which is causing severe roadway erosion, which outlets into the Lamoille River):

Existing 48" CMP is undersized and has perforations from corrosion. Due to current sizing, a scour pool has developed with a 3-foot drop. Water is flowing under the culvert and eroding sediment around structure.

Has the town completed an MRGP compliant road erosion inventory?

Yes  No  In progress

Project Length (linear feet along roadway): 328 ft.

Number of structures/culverts replaced/repared: 1

Average slope of roadway:  0-5%  5-10%  >10%

Provide a VERY detailed map of project location showing start and end points:  Included

Provide a sketch of project location showing distances and project details:  Included



Please provide the Road Segment ID (RSID) for your project. If several, please list all. In addition to the RSID please indicate what the resulting rating of each segment before construction as well as after construction in accordance with the MRGP.\* (i.e., Fully Meets Standard, Partially Meets, Does Not Meet) For assistance, please contact Better Roads Staff (802)828-4585.

RSID	Hydrologically Connected?		Pre-construction MRGP Conformance			Post-construction MRGP Conformance		
	Yes	No	Fully Meets	Partially Meets	Does Not Meet	Fully Meets	Partially Meets	Does Not Meet
68384.1	X				X	X		

\*In order to “Fully Meet” the standards the road segment must have proper crown, removal of shoulder berms, proper ditching, proper conveyance and no erosion present at culvert inlets and outlets.



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### Environmental Concerns:

All projects require a review of potential impacts by our environmental team. To expedite the review process, please check the boxes below that describe existing structures/conditions to be replaced/maintained (if any) and the project description that applies (if any).

Existing Structures:	
<input checked="" type="checkbox"/> Steel/Plastic Culvert	<input type="checkbox"/> Concrete Box Culvert
<input type="checkbox"/> Stone Culvert – <b>Take pictures</b>	<input type="checkbox"/> Concrete Bridge
<input type="checkbox"/> Ditch	<input type="checkbox"/> Rolled Beam/Plate Girder Bridge
<input type="checkbox"/> Foundation remains, mill ruins, stone walls, other – <b>Take pictures</b>	<input type="checkbox"/> Stone abutments or piers – <b>Take pictures</b>
<input type="checkbox"/> Buildings within 300 feet of work - <b>Take pictures</b>	
Project Description:	
<input type="checkbox"/> New ditches will be established	<input checked="" type="checkbox"/> All work will be completed from the existing road or shoulder
<input checked="" type="checkbox"/> Reestablishing existing ditches only	<input checked="" type="checkbox"/> There will be excavation within 300 feet or a river or stream – <b>Take pictures</b>
<input checked="" type="checkbox"/> The structure is being replaced on existing location/alignment	<input type="checkbox"/> Road reclaiming, reconstruction, or widening
<input type="checkbox"/> Excavation within a floodplain – <b>Take pictures</b>	<input type="checkbox"/> Temporary off-road access is required
<input type="checkbox"/> Tree cutting/clearing – <b>Take pictures</b>	<input type="checkbox"/> The roadway will be realigned

Please describe the project and how it will create a positive water quality benefit (ex. Reshape 500' of ditch and line with 12 inch minus stone, to prevent sediment from entering the Lamoille River at the bottom of the hill):

Proper sizing as advised in Hydraulic memo provided by state will reduce sediment movement and prevent future culvert failure.

Please list any professionals or partners that assisted with planning this project (ANR River Management Engineer, Army Corps of Engineers, VTrans staff, Basin Planner, RPC staff, etc.):

ANR River Management, VTrans staff, RPC staff

Is the project located in the town "Right of Way? (select one)  Yes  No  Both

Please be aware, Municipalities are required to have an Agreement for Entry & Liability Release for any impacted properties (prior to the start of construction.)



# Vermont Better Roads Grant Program



## Budget:

Please attach a project budget and confirm below that is attached:

Project budget IS attached

Are you applying to other grant programs to help fund this project? If so, what programs? Please note that Better Roads requires a 20% local match and Better Roads funding may not be used as match for other state or federally funded programs.

No

Requested Grant Amount:	\$ 48,000.00
+	
Local Match:	\$ 12,000.00
=	
<b>Total Project Cost:</b>	<b>\$ 60,000.00</b>

### Requested Grant Amount Max:

\$20,000 Category B

\$40,000 Category C

\$60,000 Category D

See page 6 for more information on calculating match

Estimated Completion Date: September 30, 2025

### REQUIRED ATTACHMENTS:

Please use the documentation checklist below to ensure that all of the relevant items regarding your application have been included. **It is preferred that your application is a single PDF file.**

Grant application cover sheet

Grant application form, including chart with RSID and MRGP compliance before and after project completion

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).

Detailed Project Location Map

Sketch of proposed project and erosion control measures or other management practices, including distances in feet

- o Also show approximate location of town/other right-of-way and/or property lines and limits of work

**Photos must be color and clear to see.**

- o **Please make sure there are enough photos to get a good idea of the project area**

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:

Name: Jonathan DeLaBriere Title: Town Administrator  
**MUST BE TOWN ADMINISTRATOR/MANAGER OR SELECT BOARD CHAIR**



## Cost Estimate Worksheet

Town and Road Name:

Project Name:

Labor	Rate	# Hours	Total (Rate x Hours)
Foreman	55.52	40	2,220.80
Equipment Operator	49.25	40	1,970.00
Maintenance Worker	35.50	80	2,840.00

Labor Total 7,500.00

Equipment	Rate	# Hours	Total (Rate x Hours)
Excavator - Hired w/ operator	200	18	3,600.00
Excavator	82.48	40	3,299.20
Truck (Tandem) x 3	78.59	36	8,487.72
Loader	46.45	15	696.75
Grader	100.61	4	402.44
Compactor	100.00	1	100.00
MISC	500.00	1	500.00

Equipment Total 17,500.00

Materials	Rate	Amount	Total (Rate x Amount)
Stone - Type 1	20.00	33	660.00
Stone - Type 2+3	20.00	40	800.00
1" Stone	18.00	26	468.00
Gravel	18.00	160	2,880.00
Seed Mulch	650	1	650.00
Culvert	250	80	20,000
Fittings/Couplings	600	2	1,200
Freight	1500	1	1,500

Materials Total 28,000

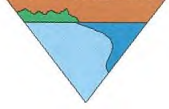
Miscellaneous	Rate	Amount	Total (Rate x Hours)
Layout/Inspection	55.52	24	1,332.48

Miscellaneous Total 1,500.00

Grand Total 60,000

Match 12,000

Total - 54,500  
 ~10% - 5,500  
 \$ 60,000



## River Management Engineer Support Letter

I am providing this letter of support to the Town/City/Village of Cambridge for their Better Roads grant application on TH#5, which will have an impact on unnamed tributary.  
Mile Marker, Road Name/TH Number  
Name of River/Stream

Stream Alteration Permit Required for this project:  Yes  No

Upon review of the site, I have determined that the proposed project is eligible for a Stream Alteration Permit. Additionally, if this project is constructed according to the recommendations described below (see Comments), the following stream equilibrium and connectivity benefits will be achieved:

- Restores or enhances floodplain/access to floodplain
- Restores or enhances natural channel dimensions
- Establishes tree/shrub buffer
- Restores habitat (including aquatic organism passage)
- No additional benefits
- Further restricts or impacts the stream

Thank you for your consideration,

Chris Brunelle, River Management Engineer

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Signature

### Comments:

The installation of the new structure as recommended in the hydraulics memo would facilitate the transport of water sediment, and debris during flooding and will eliminate an existing grade, depth, and velocity barrier to fish passage.



**State of Vermont**  
**Structures and Hydraulics Section**  
 One National Life Drive  
 Montpelier, Vermont 05633-5001  
[vtrans.vermont.gov](http://vtrans.vermont.gov)

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

Agency of Transportation

**TO:** James Cota, District 8 Project Manager  
 John Wilkin, District 8 Technician

**CC:** Chris Brunelle, ANR River Management Engineer

**FROM:** Christian Boisvert, Hydraulics Project Engineer

**DATE:** January 24, 2020

**SUBJECT:** Cambridge TH-5, Upper Pleasant Valley Road, over unnamed tributary to Seymour River  
 Site location: 2.8 miles South of VT-108  
 Coordinates: [44.61034, -72.85644](#)

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

**Hydrology**

The following physical characteristics are descriptive of this drainage basin:

Drainage Area	0.27 square miles
Land Cover	Mostly Forested / Some Open Fields
Water Bodies and Wetlands (NLCD 2006)	2.6 %

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

Annual Exceedance Probability (AEP)	Flow Rate in Cubic Feet per Second (cfs)
43 %	14
10 %	27
4 %	37
2 %	46 Design Flow – Major Collector
1 %	56 Check Flow

**Channel Morphology**

The channel for this perennial stream is straight to sinuous with an estimated local channel slope of 4 to 6%. Field measurements of bankfull width varied from 4 to 6 feet upstream of the structure.

**Existing Conditions**

The existing structure is a 4 foot diameter corrugated metal pipe, providing a waterway opening of 13 square feet. A 3-foot vertical drop and scour pool are present at the outlet. Our calculations, field observations and measurements indicate the existing structure does meet current standards of the VTrans Hydraulic Manual. However, it does not meet the state stream equilibrium standards for bankfull width (span length). The existing structure constricts the channel width, resulting in an increased potential for debris blockage.





This structure results in a headwater depth of approximately 3.1 feet at 2% AEP and 3.6 feet at 1% AEP.

### Replacement Recommendations

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

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

- A concrete box with an inside opening span of 5 feet and minimum height of 5 feet. The box invert should be buried 2 feet. This will result in a clear height of 3 feet above streambed, providing 15 square feet of waterway area. Bed retention sills should be added in the bottom of the structure. Sills should be 12 inches high across the full width of the structure, and should be buried so the top of the sills will not be visible. Sills should be spaced no more than 8 feet apart throughout the structure with one sill placed at both the inlet and the outlet. The structure should be filled level to the streambed with E-Stone, Type II, allowing flow to be kept above the surface, providing the conditions necessary for aquatic organism passage. This structure results in a headwater depth of 2.3 feet at 2% AEP and 2.6 feet at 1% AEP.
- A pipe arch with a clear span of 81 inches and height of 59 inches. The invert should be buried 2 feet. This will result in a clear height of 2.9 feet above streambed, providing 16 square feet of waterway area. Bed retention sills need to be added and filled as described for the box above. This structure results in a headwater depth of 2.2 feet at 2% AEP and 2.5 feet at 1% AEP.

*Note: Any similar structure that fits the site conditions could be considered. Any structure with a closed bottom should have bed retention sills and a buried invert as described above.*

To match the local stream slope, the structures recommended above have been modeled with a culvert slope of 4.0%. With this slope, the channel at the outlet will need to be built up to connect E-Stone through the culvert to the upstream end. When complete, there should be no drop at the outlet.

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.

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

### General Comments

It is always desirable for a new structure to have flared wingwalls, matched into the channel banks at the inlet and outlet, to smoothly transition flow and protect the structure and roadway approaches from erosion. It is also recommended that full height concrete headwalls be constructed at the inlet and outlet. Any closed bottom structure should also be equipped with cutoff walls, extending to a depth equal to the culvert rise, up to 4 feet, or to ledge, to serve as undermining prevention. Any new structure should be properly aligned with the channel, span the natural channel width, and be constructed on a grade that matches the channel.

The structures recommended above have been sized with respect to hydraulic and environmental standards and do not consider debris blockage complications. To minimize maintenance and ensure constructability, it is recommended that the structure height be adequate for installation of E-Stone and passage of debris.

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.



Holes developing on inlet side of shoulder



Debris interfering with flow



Road settling on inlet side



3 Feet of vertical drop to scour pool



Large scour pool



Water entering to the right of the inlet



3 feet vertical drop to scour pool