Town of Charleston

5063 Vt. Rte. 105
W Charleston VT 05872
Phone No: (802) 895-2814
Fax No: (802) 895-2814
charlestonadmin@comcast.net

April 12, 2016

Alan May
AOT Municipal Assistance Bureau
1 National Life Drive
Montpelier, VT 05633

Dear Alan:

The Town of Charleston appreciates the ongoing guidance and consultation of the various agencies collaborating in the Better Roads Grants program as we seek solutions to critical road erosion issues here in town. Please find attached the Town of Charleston's FY2017 applications to the Better Roads Grant Program.

For your reference, we are providing this list and brief comments about the relative priority of this year's proposed projects. All three roads have been identified on Charleston's Road Erosion Inventory & Capital Budget Plan, with Hudson Rd at the top of the list.

Hudson Rd Cement Culvert at Bowen Hill Road and **Hudson Rd Multiple Culverts Upgrade** are critical projects long overdue. Hudson is a key cross-town road with high traffic, and it has been the site of repeated closures due to washouts in recent federal disasters. As Hudson parallels the nearby Clyde River, erosion and culvert failure discharges sediment directly into the river. Both projects are included in a pending FEMA Hazard Mitigation Grant proposal first submitted in 2014, however, no award has been made and Charleston's eligibility is in question because the town does not participate in the NFIP. We have reason to believe that this will be resolved one way or the other before the award of Better Roads Grants, and we will update your office with any news. If Charleston is not awarded the FEMA grant, work must still proceed on Hudson Rd in 2016, and Better Roads funds will be essential.

East Echo Lake Rd Ditching and Crowning will remedy critical erosion issues at the site of the inlet leading from Seymour Lake to Echo Lake that compromise the road and discharge sediment and pollutants into Echo Lake. Working with the Echo Lake Protective Association, VT ANR, and Better Roads staff, this project is deemed high priority for 2016 with project outcomes expected to be highly effective.

Gratton Hill Rd Ditching and Culvert Upgrades Sites 1-3 (3 projects) cover a sizable segment of road that could be addressed one-by-one if needed. Ideally, completing all three projects in one year would enable the town to start at the top of the grade and also address critical ditch failures and bank erosion at the bottom of the road where ditches

feed into a brook leading directly to the Clyde River below. If the projects are not selected, Cbarleston will make spot repairs and reapply for assistance in FY2018.

Thank you for your time and consideration. Please don't hesitate to contact me or Colleen Kellogg in the Town Office if you have any questions or need additional information.

Sincerely,

Dean Bennett

Dean Bennett, Chair
Charleston Selectboard

FY17 Vermont Better Roads Grant Application

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

Town/Organization: Charleston Contact Person(s): Colleen Kellogg

Address: 5063 VT Route 105, West Charleston VT 05872

Street Address *Town* *Zip*

Email: charlestonadmin@comcast.net Phone: (802) 895 - 2814

DUNS #: 949772263 Fiscal Year End Month (MM): 12

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:

- [x] 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 Charleston

Project Name: Gratton Hill Rd Stone Ditches w/ Culvert Upgrades - Site 3

Road Name: Gratton Hill Rd TH #: 16 Structure # (if applicable): _____

Road Type: Unpaved Uncurbed

Class 3

Watershed: Clyde River, Memphremagog

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

3 sites over a +/-7500ft segment of highway lack sufficient ditching on the up-slope side of the road, and 15 culverts are undersized, causing water from the up-slope side of the road to cut-over and run lengthwise down the steep road (>5% grade), causing erosion and discharging silt/sediment into Charleston Pond and the Clyde River, which lie directly below the project areas.

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):

Work in Site 3--the bottom of the hill and the site in poorest condition--will involve +/-2000 ft of ditching (approx 3ft w x 2ft d) with installation of 6-8" minus erosion stone and check dams on the left (up-slope) side traveling uphill from Durgin Rd, and replacement of 4 undersized culverts with splash pools at select culvert outlets, with seeding and mulching to restore vegetation in disturbed areas. See attached list of culverts to be replaced and location maps detailing culvert locations and ditch

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

Stone-lined ditches with check dams will reduce the velocity of water and adequately capture water into culverts, to dissipate water onto the vegetated down-slope side of the road. Ditches and new properly sized HDPE culverts will prevent prevent erosion and water pollution due to highway runoff and sediment into the Clyde River Watershed.

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

Progress to Date:

Ditching and culvert replacement on Durgin Rd (the main branch road) has been completed.

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

The project is identified as a 2016 priority by the Road Foreman and Selectboard because ditches are filled in and roadside berms have developed due to use by heavy farm and sugaring equipment. Road is compromised and further erosion discharges sediment and compromises 2015 culvert ugrades and paving of Durgin Rd.

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: Charleston Rd Erosion Site Inventory May 2014, updated 2015 ( ) 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.):

VTrans District 9 Technicians have consulted on the project including site visit, helped prepare cost estimate (attached), and provided a letter of support (attached).
NVDA has recommended the project as alligned with regional plan transportation policies and goals (see attached letter of support prepared for a TAP grant application - project was not selected)

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 Estimate attached

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

Labor, equipment use*, and gravel from Charleston's pit.
* Charleston purchased an excavator in 2015

Requested Grant Amount ($20,000 max Category B, $40,000 max Categories C & D): $ 18,517.60

Estimated Total Project Cost (including 20% local match): $ 23,147.00

Estimated Completion Date: 10/31/2016

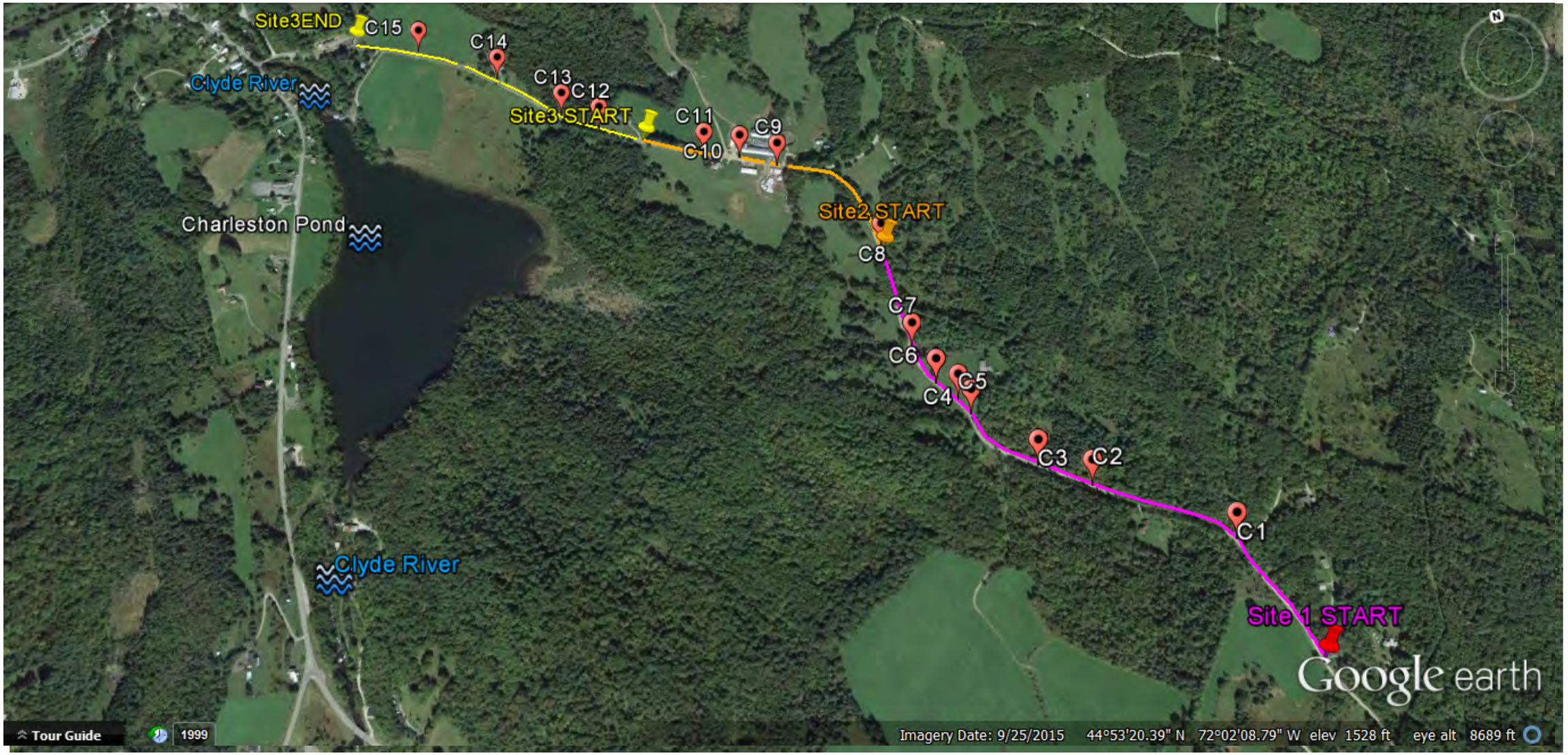
REQUIRED ATTACHMENTS:

- [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:
  - [ ] Distances (ft.)
  - [ ] Estimate of waste & borrow quantities
  - [ ] 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).
- [ ] 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:_____Dean Bennett_____ Title:___Selectboard Chair____



Google earth

miles 1

km 1

Site 1 START 44°53'2.56"N 72° 2'10.83"W (Ditching - Pink)

Site 2 START 44°53'25.28"N 72° 2'31.44"W(Ditching - Orange)

Site 3 START 44°53'36.19"N 72° 2'50.03"W END 44°53'48.68"N 72° 3'15.37"W (Ditching - Yellow)

Culverts 1-15 Shown above (C1 = 1st Culvert)

Gratton Hill Rd Stone Ditches w/ Culvert Upgrades Sites 1-3
(FY 2017 Better Roads Grant Applications)

List of undersized culverts to be replaced

See accompanying map/aerial for locations.

Site 1

(*MapID: VOBCIT Identifier, size, material, condition*)

C1: 19th on Gratton, 12", steel, critical

C2: 18th on Gratton, 12", steel, critical

C3: 17th on Gratton, 15", steel, fair

C4: 16th on Gratton, 15", steel, good

C5: 15th on Gratton, 15", steel, good

C6: 14th on Gratton, 12", steel, fair

C7: 13th on Gratton, 15", steel, fair

Site 2

C8: 11th on Gratton, 15", steel, good

C9: 8th on Gratton, 15", steel, good

C10: 7th on Gratton, 12", steel, critical

C11: 6th on Gratton, 12", steel, critical

Site 3

C12: 5th on Gratton, 15", steel, Fair

C13: 4th on Gratton, 15", steel, good

C14: 3rd on Gratton, 12", steel, good condition

C15: 2nd on Gratton, 12", steel, critical condition

Town of Charleston
Better Roads Application FY2017
Project: Gratton Hill Rd Stone Ditches w/ Culvert Upgrade - Sites 1-3 (Category B)
Construction Costs Estimate

Project
6000 LF of stone lined ditch
Replace 15 undersized culverts w/ 18" HDPE
Cost based on 15 days (3 weeks) at 10 hrs/day **(5 days per site)**

Labor		Site #3	Site #2	Site #1
1 Worker @ $20.42/hr including fringe benefits x 120 hrs	$2,450.40	816.80	816.80	816.80
1 Worker @ $23.09/hr including fringe benefits x 120 hrs	$2,770.80	923.60	923.60	923.60
1 Worker @ $27.78/hr including fringe benefits x 120 hrs	$3,333.60	1111.20	1111.20	1111.20
Total Reg Hours Cost	$8,554.80	2851.60	2851.60	2851.60
1 Worker @ $28.76/hr including fringe benefits x 30 hrs	$862.80	287.60	287.60	287.60
1 Worker @ $32.54/hr including fringe benefits x 30 hrs	$976.20	325.40	325.40	325.40
1 Worker @ $39.14/hr including fringe benefits x 30 hrs	$1,174.20	391.40	391.40	391.40
Total OT Cost	$3,013.20	1004.40	1004.40	1004.40
Total Labor	**$11,568.00**	3856.00	3856.00	3856.00
Equipment				
2 18yd Trucks @ $80/hr x 150hrs	$24,000.00	8000.00	8000.00	8000.00
Excavator @ $50/hr x 150 hrs	$7,500.00	2500.00	2500.00	2500.00
Total Equipment Cost	**$31,500.00**	10500.00	10500.00	10500.00
Materials				
6"-8" Erosion Stone @ $11.25/ton				
6000' x 7' x 0.67'(8")/27 x1.4 tons/CY = 1500 ton				
1500 ton x $11.25/ton =	$16,875.00	5625.00	5625.00	5625.00
600 LF of 18" HDPE (Gray HP) @ $14.10/LF =	$8,460.00	2256.00	2256.00	3948.00
240 yds 3/4" crushed gravel (16yds/culvert) at $9.50/yd	$2,280.00	760.00	760.00	760.00
Seed Mix	$250.00	83.33	83.33	83.33
Mulch Hay	$200.00	66.67	66.67	66.67
Total Materials Cost	**$28,065.00**	**$8,791.00**	**$8,791.00**	**$10,483.00**
Total Project Estimate	**$71,133.00**	**$23,147.00**	**$23,147.00**	**$24,839.00**
Requested Grant Amount	$56,906.40	18517.60	18517.60	19871.20
Local Match	$14,226.60	4629.40	4629.40	4967.80

Price based on actual town labor rates including fringe benefits, and standard town equipment use rates (based on FEMA equipment rates and cost codes)

Gratton Hill Rd Stone Ditches w/ Culvert Upgrades – Site 3
Charleston FY2017 Better Roads Application

Gratton Hill Rd Stone Ditches w/ Culvert Upgrades – Site 3
Charleston FY2017 Better Roads Application

Undersized culvert inlet and inadequately sized, eroded ditch

Culvert outlet showing sediment discharge and eroded hillside leading to Charleston Pond. Properly sized stone-lined ditches on upslope, with check dams to reduce water velocity on this steep road, along with armored outlets will prevent erosion.

Gratton Hill Rd Stone Ditches w/ Culvert Upgrades – Site 3
Charleston FY2017 Better Roads Application

Poorly constructed curb-cuts on upslope side increase overland drainage/discharge onto road and wash sediment into ditches. Ditching before and after with a larger road culvert above will help prevent erosion.

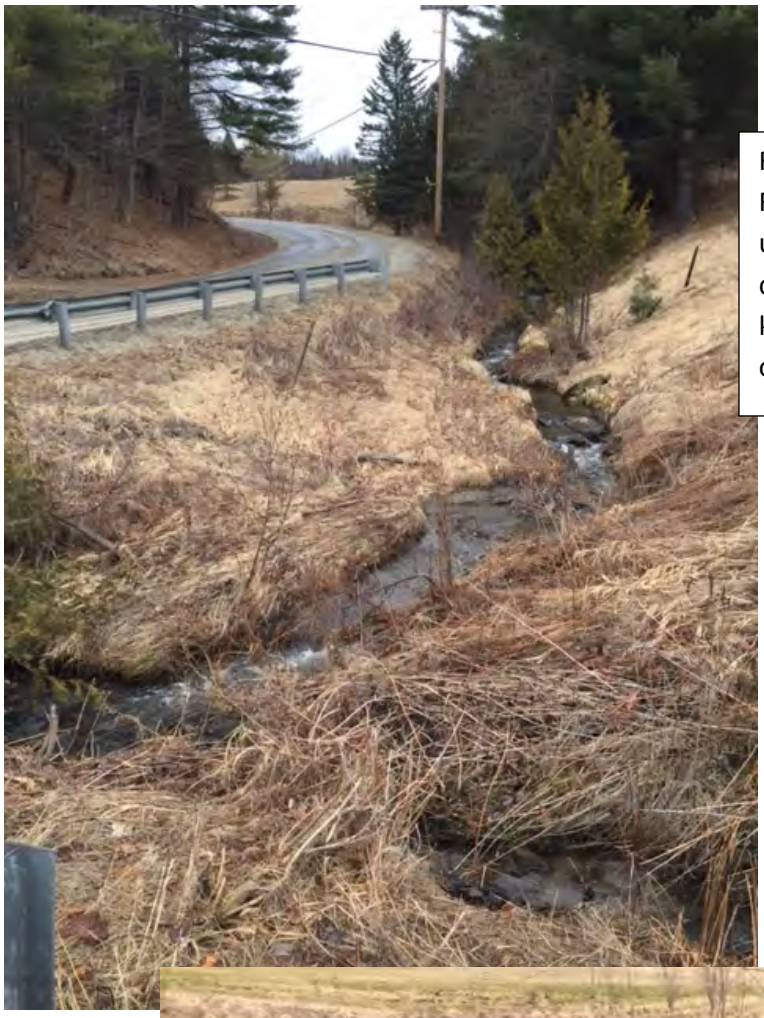
Charleston will work with landowners, whose responsibility it is to install the recommended size driveway culvert, or cut across drives per the policy.

This undersized and collapsed driveway culvert chokes ditches and undermines road.

Intersecting brook runs along Durgin Rd from uphill (right) to Clyde River below (left)

At left, eroded ditch and road shoulders - just down the grade from the above driveways. At the foot of Gratton where it intersects Durgin Rd, ditch discharges into a brook served by a 42h x 60w ellipse culvert that runs directly into Clyde River.

Gratton Hill Rd Stone Ditches w/ Culvert Upgrades – Site 3
Charleston FY2017 Better Roads Application



Feeder brook to Clyde River paralleling Durgin Rd – runs through 42h x 60w ellipse culvert under the foot of Gratton Hill Rd. Uphill ditching and culvert replacements combine to keep water and sediment out of here and out of the Clyde River below.

Level spreader at the bottom of ditches on Site 3 will dissipate water and trap any sediment before brook.

Brook approaching culvert inlet

Gratton Hill Rd Stone Ditches w/ Culvert Upgrades – Site 3
Charleston FY2017 Better Roads Application

Bottom of project site

With not much room to work on the shoulder above the outlet, berm/debris will be cleaned up, with shallow stone-lined trench installed to left of guardrail.

Culvert outlet and bank will be armored with erosion stone to prevent further erosion at this site just above the Clyde River

VERMONT

State of Vermont
Highway Division
Maintenance & Operations Bureau
District 9
4611 US Route 5
Newport, VT 05855
vtrans.vermont.gov

Agency of Transportation

[phone] 802-334-7934
[fax] 802-334-3337
[ttd] 800-253-0191

April 11, 2016

Letter of Recommendation

To Whom It May Concern,

The Town of Charleston has expressed concern over the condition of Gratton Hill Rd. The Town has been in close contact with the District 9 office and we have performed site visits to investigate and concur with their concern. In order to eliminate erosion resulting in sediment entering Charleston Pond and the Clyde River, the town is proposing to do approximately 6000' of stone-lined ditching and install check dams where appropriate. To additionally support healthy water flow and drainage on Gratton Hill Rd, they also intend to replace 15 Culverts that are undersized and/or underperforming, installing splash pools at outlets when needed.

It is of our opinion, being the District Project Manager and Tech Team, that this project is a good fit for a Better Roads Grant. We have assisted the town to determine best practices and will continue to provide support and assistance throughout the project.

Thank You.

Sincerely,

Eric Pope
District 9 Technician

VTrans Working to Get You There
Vermont Agency of Transportation

October 7th 2015

Scott Robertson
TAP Coordinator
VT Agency of Transportation
Municipal Assistance Bureau
1 National Life Drive
Montpelier, VT 05633

RE: Charleston Transportation Alternatives Grant Application

Dear Scott,

The Town of Charleston is applying for a Transportation Alternatives Program Grant. The project will involve 6000 ft of ditching and replacement of 15 undersized culverts to improve stormwater management, reducing erosion and preventing water pollution due to highway runoff in the Clyde River watershed. This proposal is supported by the regional plan transportation policies and goals in a number of areas, among them:

- Identify a Variety of Funding Mechanisms to Assist Towns in Maintaining Local Road Infrastructure
- Slow the deterioration of individual modes, and assist in reducing/averting costly repairs.

NVDA strongly supports the selection of this project for funding through the Transportation Alternatives Grant Program.

Sincerely,

--
Douglas C. Morton
Senior Transportation Planner
Northeastern Vermont Development Association
P.O. Box 630
36 Eastern Ave
St. Johnsbury VT 05819
Ph (802) 748-5181
Fx (802) 748-1223
dmorton@nvda.net

Charleston Road Erosion Site Inventory May 2014 (Update)			
Site: Gratton Hill Rd from 1487 to Durgin Rd			
Date of Update: 5/14/15	Name/Signature: notes taken by Colleen Kellogg		
Priority/Project Year	2016		
Road Name	Gratton Hill Rd		
TH#	16		
Location	from 1487 driveway down to Durgin Rd intersection		
Nearest Body of Water	Clyde River/Charleston Pond		
Distance to Water Body	at closest point (Durgin Intersection) ~300ft		
Current Condition	At 4/23/15 Selectboard Meeting: board agreed to apply for a Better Backroads grant to ditch Gratton Hill Rd. At 5/14/15 Selectboard meeting: Foreman reports that a culvert at Durgin and Gratton Rd (1st Culvert on Gratton Hill Rd) is not working property—water runs under, and structure around is falling. It has been stabilized with rip-rap.		
Proposed Solution	All undersized culverts on Gratton should be replaced in and stone-lined ditches installed along this 6000 feet of road.		
Estimate Costs to Improve/Repair			
Culvert, Ditch & Bank Stabilization			
Materials:		Cost:	
Materials:		Cost:	
Materials:		Cost:	
Materials:		Cost:	
Materials:		Cost:	
Materials:		Cost:	
	Total Culvert, Ditch & Bank Stabilization		
Crowning and Re-grading			
Materials		Cost:	
Materials		Cost:	
Equipment		Cost:	
Equipment		Cost:	
Equipment		Cost:	
Labor		Cost:	
	Total Crowning and Regrading		
Total Estimate for this project			