

Vermont Department of Environmental Conservation

Watershed Management Division
1 National Life Drive, Main 2
Montpelier VT 05620-3522
www.watershedmanagement.vt.gov

Agency of Natural Resources

[phone] 802-828-1535
[fax] 802-828-1544

AUTHORIZATION TO CONDUCT STREAM ALTERATION ACTIVITIES

Pursuant to Section C.2.2 of the VT Stream Alteration General Permit (Reporting activities not requiring an application)

Project Number: **SA-06-006-2015**

Applicant Name: Town of Roxbury

Mailing Address: PO Box 53, Roxbury, VT 05669

Phone: 802-485-7860

Project Location: 44° 03.153, -72° 44.377

Email: townrox@tds.net, roxlisters@tds.net

The Secretary of the Vermont Agency of Natural Resources (VT ANR) has determined that:

1. This project authorizes installation of a 4-sided pre-cast box culvert 6' x 3' x 34" (WxHxL) on Cram Hill Road.
2. The proposed activity is eligible for coverage under the VT ANR Stream Alteration General Permit.
3. The proposed activity will meet the terms and conditions of the General Permit provided:
 - a) The project will be completed and approved as shown on the plans developed by the Town of Roxbury and approved by the Vermont Agency of Natural Resources.
 - b) The project will not adversely affect the public safety by increasing flood hazards.
 - c) The project will not significantly damage fish life or wildlife.
 - d) The project will not significantly damage the rights of riparian owners.
 - e) The project will not obstruct the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction. AOP not necessary.
 - f) The project is conducted in a manner which minimizes or avoids any discharge of sediment or other pollutants to surface waters in violation of the VT Water Quality Standards.
 - g) The ANR River Management Engineer is notified by phone or email when construction begins and when the project is complete.
 - h) In-stream working dates for all GP activities are from July 1st through October 1st; any in-stream work outside these dates will require an Individual Stream Alteration Permit authorization by the River Management Engineer.
 - i) This authorization has been posted for three days public comment. This authorization constitutes final approval.

If there are any changes in the project plan or deviation in construction from the plan, the Permittee must notify the River Management Engineer immediately.

If the project is constructed as you have described, as shown on the above referenced approved plans and according to the above conditions, there is no reason to expect any violation of Vermont Water Quality Standards.

Signed this 3rd day of April, 2015
David K. Mears, Commissioner
Department of Environmental Conservation

This permit expires October 1, 2015.

by: 
Jaron Borg, River Management Engineer

HYDRAULICS UNIT

TO: Tom Anderson, District Project Manager, District 6

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

DATE: 21 October 2011

SUBJECT: Roxbury TH 27 over unnamed brook – Site 6A
Cram Hill Road N 44 03.153 W 72 44.377

We have completed our preliminary 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 130 acres. There is an overall length of 7215' from the divide to the site, with a 860' drop in elevation, giving an average slope of 11.9%. Slope at the site is estimated to be approximately 2%. Using several hydrologic methods, we determined the following design flow rates:

<u>Recurrence Interval in Years</u>	<u>Flow Rate in Cubic Feet per Second (CFS)</u>
Q2.33	40
Q10	70
Q25	85 - Town Highway Design Flow
Q50	100
Q100	120 - Check flow

Existing Structure

The existing 3' reinforced concrete pipe provides a waterway opening of about 7.1 sq. ft. This structure is not hydraulically adequate. Headwater to depth ratios are not within the state standards. Water overtops the roadway below the Q25 flow. There is not much cover at this site. There is a scour hole at the outlet and a 90 degree bend downstream. There is bank erosion upstream of the structure.

This structure was damaged during Hurricane Irene in August 2011.

Recommendations

In sizing a new structure we attempted to select structures that meet the hydraulic standards, fit the natural channel width, the roadway grade and other site conditions. Based on these considerations the following would best fit the site:

- A concrete box with a 6' wide by 3' high inside opening, which has a waterway area, of 18.0

sq. ft., that results in a headwater depth at $Q_{25} = 3.1'$ and at $Q_{100} = 4.1'$.

- Other structures with a minimum span of 6' and at least 18 sq. ft. of waterway area that fit the site could be considered.

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.

It is always desirable for any new structure 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.

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 the Town orders a new structure. If ANR requires a burial depth on this structure, the structure size should be increased to provide the same waterway opening.

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: Patrick Ross, A.N.R. River Management Engineer
Hydraulics Project File via NJW
Hydraulics Chrono File

Non_PMS_Projects\Hydraulics\ProjectFiles_NonCADD\Roxbury\TH 27\Roxbury TH 27 prel
hyd memo