



Vermont Department of Environmental Conservation  
 Watershed Management Division  
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Agency of Natural Resources

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**AUTHORIZATION TO CONDUCT NEXT FLOOD MEASURES**

Pursuant to Section F of the Vermont Stream Alteration General Permit

Project Number: SA-3-132-2015  
 Applicant Name: Town of Barre Phone: 479-2595  
 Mailing Address: P.O. Box 116 Websterville VT 05678  
 Project Location: Cummings Road - Gunner Brook  
 Email: h.hinrichsen@barretown.org

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

1. This project authorizes Woody debris removal, culvert header, riprap, bed armoring and erosion control (as indicated - attached)
2. The proposed activity is eligible for coverage under the VT ANR Stream Alteration General Permit - Next Flood Measures.
3. The proposed activity will meet the terms and conditions of Section F of the General Permit provided:
  - a) The project will be completed and approved as shown on the plan dated 7/22/15, prepared by Town of Barre DEP and approved by the Vermont Agency of Natural Resources.
  - b) The project is proportional to the threat and conditioned to cease when the threat to life or to improved property has ended.
  - c) The project will not result in a threat to life, public health or safety.
  - d) The project will meet the standards detailed in subsection E.2.1 and E.2.2 of the General Permit.
  - e) The project will meet Stream Alteration Standards to the greatest extent possible.
  - f) A pre-construction meeting is held between the contractor, owner/applicant, and the ANR River Management Engineer.
  - g) The River Management Engineer is notified by phone or email when construction begins and when the project is complete.
  - h) A final construction inspection is required for any culvert and bridge related work.
  - i) Additional conditions: See attached narrative, sketch & debris

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.

David K. Mears, Commissioner  
 Department of Environmental Conservation

by: Patrick Ross Dated: 7/22/15  
 Patrick Ross, P.E., River Management Engineer

## 1. Cummings Road site:

### Required:

- **Woody debris removal:** remove any woody debris at culvert inlet and outlet immediately blocking the current structure and flow immediately downstream. Debris removal may be required at the large woody debris jam located approximately 100-200' upstream of the culvert crossing. Regarding the larger upstream debris jam, leave tree stumps in place if they are currently attached to the bank and any tree debris located outside the stream channel will remain in place. Debris removal will be limited to these areas.
- **Structure header:** 3'x6'x18" concrete block or equivalent granite block, approximately 30' w x 20' high (1-2 blocks deep). Blocks installed 3-4' below channel bed. Installed both at structure inlet and outlet.
- **Riprap:** Type IV stone, 3-4' keyway with up tiebacks. (See detail). Jim Ryan will define limits of riprap in the field at contractor pre-construction meeting.
- **Downstream channel bed elevation/armoring:** Install Type IV rock in channel bottom approximately 100' downstream of structure to address severe channel incision and headcutting which threaten structure by upstream migration. Type IV rock installation to approximately 3' from top of low bank height. Add natural channel armor material above Type IV to chink in. Final grade approximately 2-2.5' below top of low bank (see detail). Channel armoring location to be identified in the field.
- **Erosion control:** All disturbed areas will be immediately seeded and mulched as work is completed in each area.

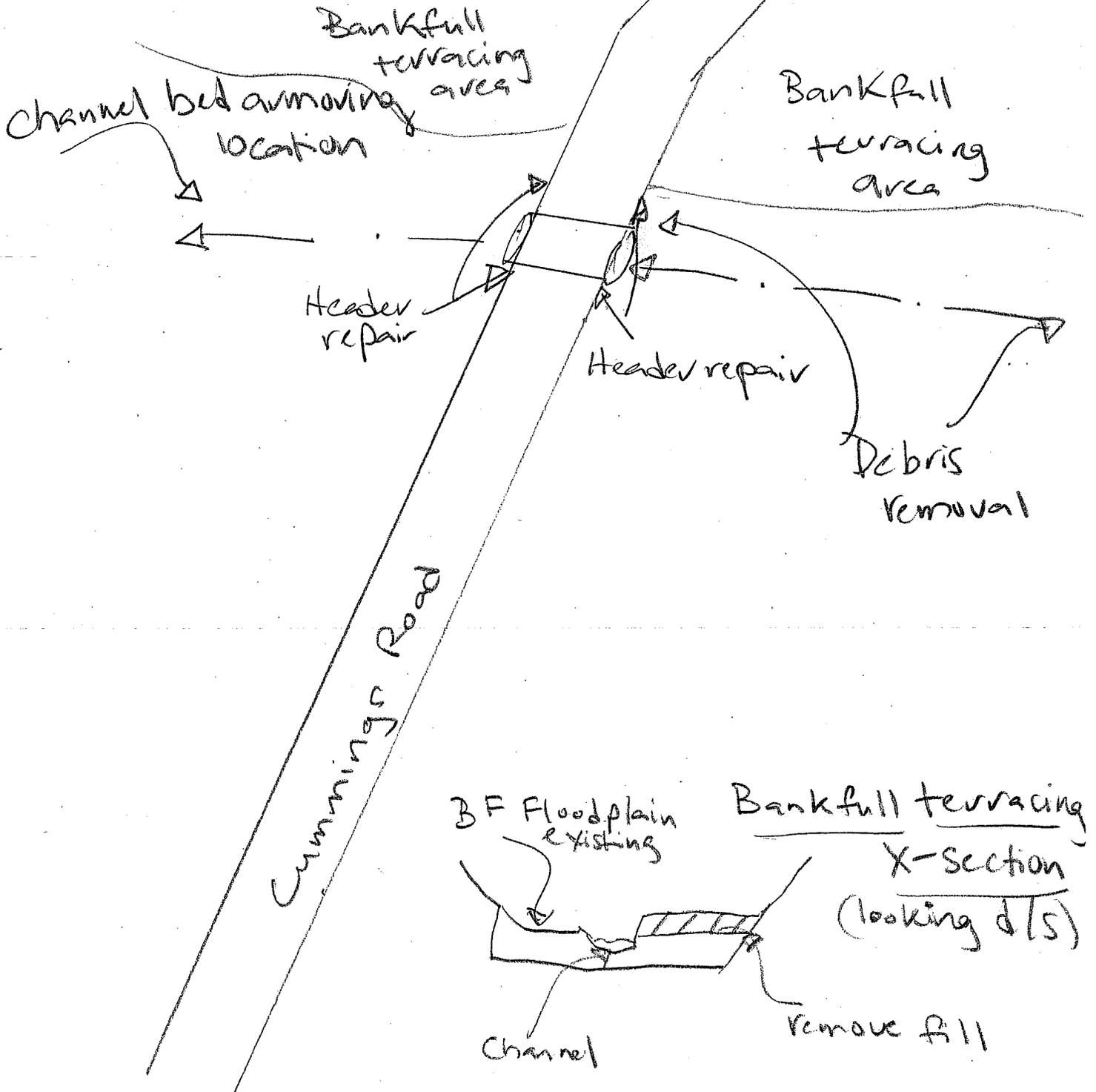
### Recommended:

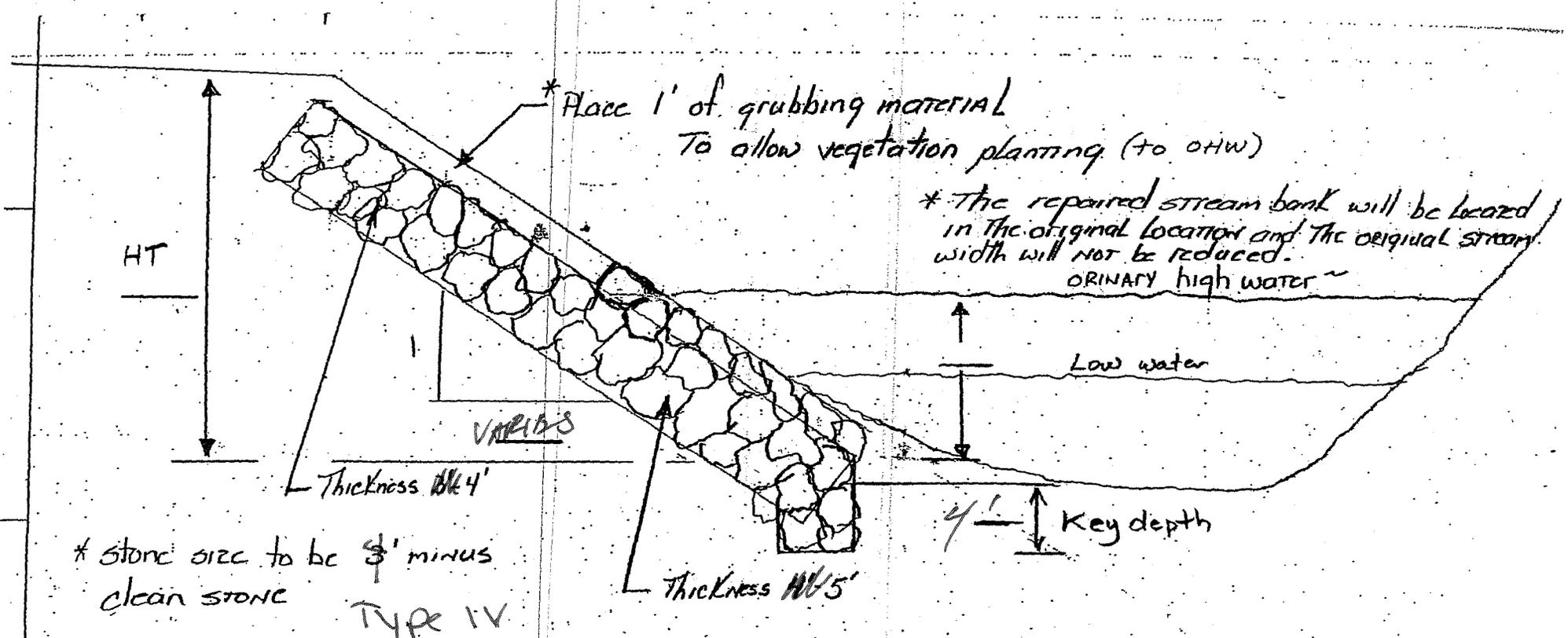
- **Bankfull floodplain terracing:** River right both upstream and downstream areas present an opportunity to reconnect the stream channel with active floodplain. Cut bank approximately 2-2.5' above channel bottom to create bankfull floodplain access area. Jim Ryan will flag in the field with contractor.
- **Stream crossing structure is undersized and should be replaced with bankfull plus sized structure.** Current structure is size at approximately 50% of bankfull width. A new bankfull plus sized structure would better accommodate the passage of flow, sediment and debris, reducing jam potential and related outflanking. DEC Stream Engineers and VTrans available to assist in correct structure sizing.
- **Rock-lined drainage ditches-** install rock lined drainage ditch stabilization on upstream road drainage networks on both river right and left.

Town of Barre - Cummings Road

Gunner Brook

▲ N  
(Not to Scale)





\* Place 1' of grubbing material  
To allow vegetation planting (to OHW)

\* The repaired stream bank will be located  
in the original location and the original stream  
width will not be reduced.  
ORDINARY high water ~

HT

VARIES

Thickness 16' 4"

Low water

4' 1" Key depth

Thickness 16' 5"

\* Stone size to be 3' minus  
clean stone  
TYPE IV

Streambank Protection  
w/ Keyed Toe

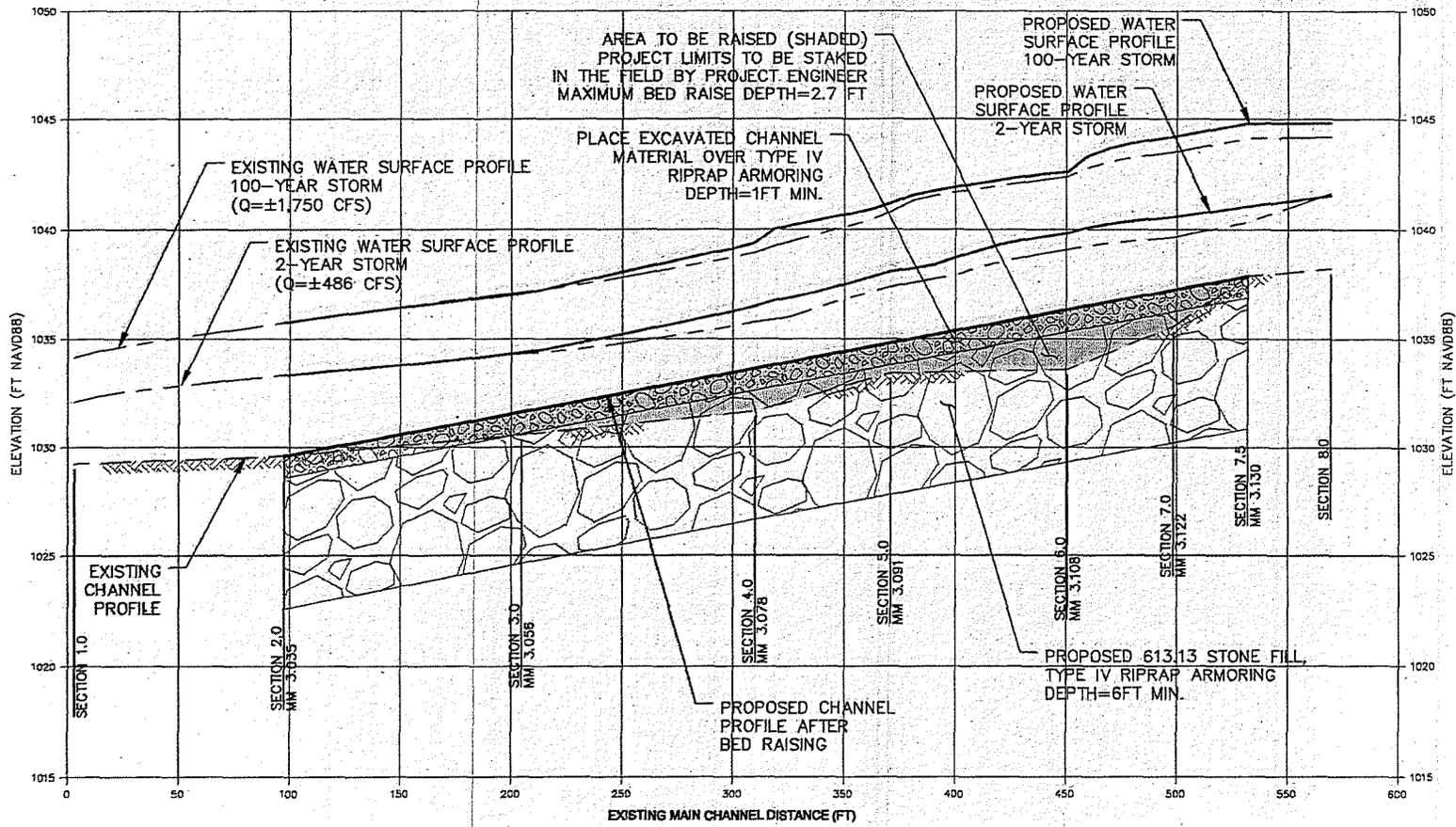


Figure 5.4-10: Longitudinal profile of bed armoring to elevate channel bed on Black River in Plymouth, Vermont along VT Route 100. (Source: Milone & MacBroom, Inc. and Fitzgerald Environmental)

EXAMPLE