

# EROSION CONTROL NARRATIVE

**DESCRIPTION OF PROJECT**

This project involves the reconstruction of a bridge #8 over the White River. The project is on TH4 (FAS 166) which is paved and in the village of West Hartford. A new two lane, three span bridge, plate girder main span with concrete Slab approach spans will be constructed downstream of the existing bridge. Traffic is to be maintained on the existing truss bridge during construction. Following completion of the new bridge, the existing truss bridge and abutments will be removed. The length of the project including approach work on VT route 14, TH5 and a field drive is approximately 1,160 feet. The project is in close proximity to a house and involves the relocation of a historic barn to the recreational park. approximately 1 mile from the project site.

The site is located, based upon NAD 83/92 at 41767.5900 N, 61947.5463 E (point 3 - see Tie sheets)

It is anticipated that this project will last two construction seasons.

Total disturbed area (including waste, borrow and staging areas):  
1.30 acre

**SITE INVENTORY & ANALYSIS**

**OFF SITE DRAINAGE CHARACTERISTICS:**

The property surrounding the project site consists of well established vegetation, moderate to steeply sloping, mixed softwood and hardwood trees with well defined drainageways. Runoff water entering the project site will be primarily limited to that which is conveyed along roadway ditches, and that follows TH4 (15.3%) The current roadway ditches are fairly well defined and consist of gravel and grass but are not lined with stone.

**DRAINAGE, WATERWAYS, BODIES OF WATER:**

The White River is located in the project area. There are no other waterbodies or wetlands within the project area. The White River is classified as hilly to mountainous, containing a straight streambed of mostly ledge with some gravel, cobbles and boulders. The contributing drainage area at the bridge crossing is 692 square miles.

**TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:**

The topography of the project site is hilly with wooded areas along with residential lawns. Vermont Route 14 runs parallel along the east side of the river while TH 5 and a field drive runs parallel along the west side. The west bank the river, along TH 5 and the field drive is steep. There is an existing house and a historic barn within close proximity to the bridge. There are utility lines and poles which are to remain in place. Except those being temporarily located during the barn relocation.

**VEGETATION:**

The land on and adjacent to the site is rural and consists of woods, farmland and residential property. The vegetative cover on the project varies greatly as it ranges from grass lawns to wooded areas. The majority of the wooded areas on the project site can be found on the western side of the White River. There is a great deal of ledge along the river banks.

**SOILS:**

According to a soil survey completed by the United States Department of Agriculture Soil Conservation, there are three soil types present on this project site. Hitchcock Silt Loam (k=0.49) is located between stations 27+00 and 29+25. Due to the relative steepness of the land, this region has potential for being highly erodible. Windsor Loamy Fine Sand (k=0.32) is found from approximate station 29+25 to the west river bank. This area is moderate to highly erodible as slopes reach as much as 60%. Ninegret Fine Sandy Loam (K=0.17) is found on the east side of the river and is considered potentially low for erodibility. Slopes in this region range from 0-8%.

**SENSITIVE RESOURCE AREAS:**

Carex Garberi, an endangered plant species, is located on the east bank of the river. Approximate locations have been outlined on the plans. see the project general notes for required treatment of affected areas. The moving of a historic barn located on the west side of the river will be necessary prior to constructing the new bridge.

**PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:**

Disturbance of soils near natural or made-made waterways consists of that which is necessary to construct two new concrete bridge abutments, two piers, applicable roadway approaches as well as the removal of the existing bridge. Stabilization of disturbances to stream banks will be accomplished with Stone Fill, Type IV.

**TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL**

Temporary erosion prevention measures to be utilized include:

"Project Demarcation Fencing," denoted -PDF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion. Payment for this fencing is under the item 620.70 "Snow Fence (Mod-PDF)

Seeding, mulching and biodegradable erosion control matting, or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill. See the road way and channel sections for sideslope grades. These slopes shall be stabilized with in 48 hours of reaching final grade or during intermitant phases of the construction activity.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

Temporary stone check dams will be placed in ditches to reduce flow velocities and thus reduce the potential for erosion. Check dams will be placed along the ditches such that the elevation of the top of each check dam corresponds with the elevation of the toe of the preceding upslope check dam. See 'Erosion Controls Details' sheet. The check dams may be removed once the stone lining of the ditches is complete and the surrounding area stabilized.

Temporary measures to control sediment transport include:

Silt fence will be installed a distance of 5'-10' (1500 - 3000) from the toe of slopes to prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. The maximum slope length between separate runs of silt fence is 100' (30 000). Silt fence shall be installed prior to any upslope earthwork.

Sand bags filled with clean, small diameter stone, or an equivalent barrier, will be utilized around the drop inlet to create a temporary ponding area for particles to settle out as water drains through the barrier. Inlet protection shall be installed as soon as there is the possibility of water flowing to the structure. The height of the barrier shall be limited such that the ponding area does not present a hazard to the traveling public. Alternative inlet control measures shall be approved by the Engineer prior to implementation.

Measures such as temporary stone check dams, silt fence, and sand bags shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an approved area such that they will not be subject to erosion.

Stabilized construction entrances to the project site, staging areas, as well as to waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12' x 50' (3700 x 15 000). All surface water flowing to or diverted towards a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipes smaller than 150mm diameter shall be used. See typical detail on 'Erosion & Sediment Control Plan' sheet for materials and construction method to be utilized when constructing a stabilized entrance.

Temporary sediment settling basins may or may not be utilized on this project. If a sediment settling basin is to be used for dewatering a cofferdam, it should be sized based upon the following criteria:  
(See Sediment Settling Basin Sizing Criteria.)

**PERMANENT EROSION CONTROL MEASURES**

Several permanent erosion control measures will be utilized:

Stone lining of roadway ditches with clean, angular Stone Fill, Type I will be used to prevent erosion during storm events. See 'Erosion Control Details' sheet for typical ditch section.

Stone lining of the stream banks with Stone Fill, Type IV as specified by VTrans Hydraulics personnel is specified. This stone will protect from stream bank erosion during design storm events.

Stone Fill, Type I will be utilized at culvert outlets to dissipate water velocities and reduce erosion potential.

Grass, or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified. Top soil shall be used to establish residential lawn at approximate station 30+25 to 31+25 LT. Seeding, mulching and biodegradable erosion control matting or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill. See the road way and channel sections for sideslope grades. These slopes shall be stabilized with in 48 hours of reaching final grade.

**GENERAL EROSION & SEDIMENT CONTROL GUIDELINES**

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, stormwater controls and other pollution prevention controls.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the Engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

Install all erosion and sediment control measures as shown in the Erosion Control Plan or as directed by the Engineer. Do not modify the type, size or location of any control or practice without approval of the Engineer. Any changes shall be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial erosion and sediment control measure that should be established wherever possible.

Control only sediment-laden runoff generated by the project site. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

Do not allow construction equipment to operate on the downslope side of perimeter control measures.

**SEDIMENT SETTLING BASIN SIZING CRITERIA**

| PUMP FLOW RATE | REQUIRED SURFACE AREA | LENGTH / WIDTH = 2:1 |        |       |       |      |      |
|----------------|-----------------------|----------------------|--------|-------|-------|------|------|
|                |                       | L (ft)               | W (ft) | L (m) | W (m) |      |      |
| 50             | 0.0032                | 595                  | 55     | 35.0  | 17.0  | 10.6 | 5.3  |
| 100            | 0.0063                | 1200                 | 111    | 49.0  | 24.5  | 15.0 | 7.5  |
| 150            | 0.0095                | 1776                 | 165    | 59.5  | 29.8  | 18.2 | 9.1  |
| 200            | 0.0126                | 2368                 | 220    | 68.8  | 34.4  | 21.0 | 10.5 |
| 250            | 0.0158                | 2970                 | 276    | 77.0  | 38.5  | 23.4 | 11.7 |
| 300            | 0.0189                | 3560                 | 330    | 84.4  | 42.2  | 25.8 | 12.9 |
| 350            | 0.0221                | 4155                 | 386    | 91.2  | 45.6  | 27.8 | 13.9 |

|                           |                  |             |              |
|---------------------------|------------------|-------------|--------------|
| PROJECT NAME:             | HARTFORD         |             |              |
| PROJECT NUMBER:           | BRO-BTN 2004(1)  |             |              |
| FILE NAME:                | erosionnotes.xls | PLOT DATE:  | 4/1/2004     |
| PROJECT LEADER:           | C.P. Williams    | DRAWN BY:   | K.M. Higgins |
| DESIGNED BY:              | J.L. Schultz     | CHECKED BY: | K.M. Higgins |
| EROSION CONTROL NARRATIVE |                  | SHEET       | 88 OF 97     |