

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

Project Description:

This project involves the placement of a temporary bridge, the removal and replacement of bridge #20 and its abutments, and some minor approach work. Bridge #20 is located in the town of Vershire on TH 45 at the intersection of VT Rte 113 and TH 45. The temporary and permanent bridges are one lane bridges. The new bridge is a concrete slab 8.5 meters in length spanning the Ompompanoosuc River. The new bridge will be located on the same alignment and therefore require only minor work to the approaches. There is an overhead power line that will be relocated.

It is anticipated that this project will last one construction season.

Area of disturbance is approximately 0.098 hectares (0.24 acres).

Site Inventory and Analysis:

OFF SITE DRAINAGE CHARACTERISTICS

The property surrounding the project site consists of well established vegetation with moderate slopes at the project site and very steep slopes at the edges of river. The property surrounding the project site is mostly grass land with woods in the distance. Due to the nature of the surrounding terrain the project site could receive runoff water on to the project site from nearby slopes.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Ompompanoosuc River is the main water source. A small brook enters the river east of the project location. The river is classified as meandering and perennial with a streambed of gravel, cobbles, and ledge. The tributary area at the bridge crossing is 26.4 sq km. This river does have a tendency of rising fast.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is mostly open fields with patches of wooded areas. The land at the project site is predominately flat. The embankment slopes within the project site range from approximately 1:1 to 1:6. The bridge is located at an intersection providing the only access to a single house. An overhead power line at the south end of the bridge will be relocated.

VEGETATION:

The vegetation in the project area is made up of grass. The impact to vegetation will be limited to that which is affected by construction of the temporary bridge and the removal and replacement of the new abutments. After the project it finished the slopes will be stabilized with stone fill and vegetation will be reestablished with standard seed and mulch practices.

SOILS:

All soil data came from the U.S. Department of Agriculture Soil Conservation Service for the county of Orange, Vermont. There is only one type of soil present in the project area. The soil in the project area is classified as Windsor, loamy fine sand, with a K-value of 0.17, and slopes ranging from 0-25%.

Note: Generally, K-values indicate the following: 0.0 – 0.23 = low erode ability; 0.24 – 0.36 = moderate erode ability; 0.37 and higher = higher erode ability.

SENSITIVE RESOURCE AREAS:

There are no 'Threatened & Endangered Species' living on or near the project site and there are no historical or archeologically sensitive areas on or near the project site.

PROXIMTY TO NATURAL OR MAN-MADE FEATURES:

Disturbance of soils near natural or man-made waters consists of that which is necessary to the placement of the temporary bridge, the removal and replacement of bridge #20 and its abutments, and some minor approach work. Stabilization of disturbance to the stream banks will be accomplished with stone fill, type IV and under laid with erosion control matting.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

Temporary erosion prevention measures to be utilized include:

"Project Demarcation Fencing," denoted -PDF- on the plans and/or Silt Fence delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching, and biodegradable erosion control matting or equivalent product shall be utilized on slopes steeper than 1:3 that are not lined with stone fill. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

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

If temporary ditches are required, stone check dams will be placed 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 Control Detail sheet EPSC2M". The check dams may be removed once the stone lining of the ditch is complete and the surrounding area stabilized.

Temporary measures to control sediment transport include:

Silt fence will be installed a distance of 5' to 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.

Measures such as temporary stone check dams, silt fence, and sand bags shall be checked regularly for accumulation of sediment. Sediment built-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 area such that they will not be subject to erosion. Sand bags will be used to divert the stream in lieu of cofferdams as shown on the Erosion Prevention and Sediment Control Plan.

PERMANENT EROSION CONTROL MEASURES

Stone lining of the stream banks with stone fill, type IV as specified by VTrans Hydraulics personnel. This stone will protect from stream bank erosion during design storm events. Stone fill, Type I will be utilized behind the wing walls at Abutment 1 to reduce erosion potential.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transportation. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sediment of receiving waters. The measures include stabilization and structural practices, storm water 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 shall be taken as needed.

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 using diversion berms, diversion channels, culverts and/or temporary pipes.

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

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

SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH / WIDTH = 2:1			
Q (gpm)	Q (m ³ /s)	(ft ²)	(m ²)	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	59.6	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

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EROSION CONTROL NARRATIVE	