

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

Project Bethel BRF 0241 (33) Contract 2 consists of the replacement of Bridge 31 over the Third Branch of the White River in the town of Bethel, VT. This project is located on VT 12 in Bethel beginning at a point approximately 0.75 km from the VT 107 junction, and it extends southerly along VT 12 for a distance of 140 meters. The length of the existing closed Bridge 31 is approximately 56 meters while the length of the roadway portion of the project is about 85 meters. Construction extends along VT 12 and includes the reconstruction of Bridge 31 and the adjacent retaining wall, as well as the rebuilding of the current drainage system within the project limits. The project also involves new bituminous concrete pavement, the removal of the temporary bridge, which was erected during Contract 1, and the re-grading of the land disturbed by the temporary bridge and detour.

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

Riparian buffer zone is 15.24 m from river banks. Minimize all impacts within this buffer zone.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS

Due to the nature of the topography of this site there is very little off-site "run-on" to areas which will be disturbed at the time of construction. However, there are critical regions on the site that will be prone to sediment mobilization if proper erosion and sediment control measures are not correctly implemented during construction.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Third Branch of the White River is the only water source on or near the project location. The river is classified as perennial, sinuous, not braided, and equi-width, with a streambed made up of gravel, cobbles, boulders, and ledge. The drainage area at the bridge crossing is 352 sq km.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The land on and immediately adjacent to the site is urban, and consists of residential and commercial property. The slope of the land ranges from 0 to 80%, with the steeper portions located in close proximity to the river and railroad tracks.

VEGETATION:

The vegetative cover on the project varies from grass lawns to small, lightly wooded areas located next to the river bank and railroad tracks.

SOILS:

The soil types for this project have been identified as Windsor Loamy Fine Sand, K factor = 0.32, slopes = 25 – 65%, and Urban Land – Windsor – Agawam Complex, K factor = .28, slopes = 0 – 8%. The former is classified as highly erodible and can be found on the steep slopes adjacent to the railroad tracks as well as the river bank on the southwest side of the White River. The latter soil encompasses the remainder of the project and is considered not highly erodible due to soil classification and gentle slopes.

Generally, K-values indicate the following: 0.0-0.23 = low erodibility, 0.24-0.36 = moderate erodibility, 0.37 and higher = higher erodibility.

The United States Department of Agriculture Soil Conservation Service (USDA SCS) is the source of the above soil data.

SENSITIVE RESOURCE AREAS:

There are no 'Threatened & Endangered Species' living on or near the project site. There are also no historical, archeological, wetland or farmland areas on the project site.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:

Soil disturbance near natural or man-made waters will be due to the removal and replacement of Bridge 31 and its abutments, removal of the temporary bridge and some minor approach work. Disturbed stream banks of the White River will be stabilized with Stone Fill, Type III under laid with geo-textile fabric.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:

"Project Demarcation Fencing," denoted -PDF- on the plans, will be used to 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 an equivalent product is needed on slopes greater than 3:1. In areas with large slopes, stone fill under laid with geo-textile fabric is required. All 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 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 Control Details" sheet. 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.

Sand bags filled with clean, small diameter stone, or an equivalent barrier, will be utilized around any drop inlets 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 area where they will not be subject to further 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'X50' (3700X15, 000). All surface water flowing to or diverted toward a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipe smaller than 6" (150) 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 will be utilized on this project at both ends of the bridge for dewatering of the cofferdams. The settling basins 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 the stream banks with Stone Fill, Type III topped with grubbing material as specified by VTrans Hydraulics personnel. This stone will protect the stream bank from erosion during design storm events. Stone Fill, Type II will be utilized at culvert outlets to dissipate water velocities and reduce erosion potential. Urban seeding formula used to establish turf on Top Soil will be used outside of the roadway limits where stone fill has not been specified.

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 into 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.

SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE	REQUIRED SURFACE AREA	LENGTH WIDTH = 2:1			
		L (ft)	W (ft)	L (m)	W (m)
Q (gpm)	Q (m ³ /s)	(ft ²)	(m ²)		
50	0.0032	595	55	35.0	17.0
100	0.0063	1200	111	49.0	24.5
150	0.0095	1776	165	59.6	29.8
200	0.0126	2368	220	68.8	34.4
250	0.0158	2970	276	77.0	38.5
300	0.0189	3560	330	84.4	42.2
350	0.0221	4155	386	91.2	45.6

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IPARM FILE NAME: s02c180eronarr.i	PLOT DATE: 14-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
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