

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

This project is located on Town Highway (TH) 27, Bridge No. 22 in the County of Orange, Town of Bradford, Vermont. Construction will consist of the rehabilitation of the Creamery Road Bridge over the Waits River. This will include replacement of the abutments, portions of the superstructure and installation of a Fiber Reinforced Polymer (FRP) bridge deck.

Area of disturbance is 0.20 acres.

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

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 outer edges of the project location. 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 from a few nearby slopes. If this is the case it should be minimal.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Waits River is the only water source on or near the project location. The river is classified as sinuous, wide flood plain with a streambed made up of sand and gravel, with some silt closer to the dam. The tributary area at the bridge crossing is 153 square miles.

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 mostly flat but the land in the distance is very steep in spots. The North side of the site has several homes in the area, along with a factory building. The South side of the site has no buildings near the project. There are overhead utilities which will be moved prior to the start of the project. The embankment slopes within the project site range from 1:1.5 to 1:4.

VEGETATION:

The vegetation in the project area is made up of grass and brush. The impact to vegetation will be limited to that which is affected by rehabilitation of the existing bridge and the removal and replacement of the abutments. After the project is 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. Soils on the West side of the bridge are Agawam Fine Sandy Loam, 0-3% slopes, "k - factor" = 0.28, considered not highly erodible. Soils on the East side of the bridge are Windsor Loamy Fine Sand, 25-50% slopes, "k - factor" = 0.17, considered highly erodible due to significant slopes.

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

SENSITIVE RESOURCE AREAS:

There are no 'Threatened & Endangered Species' living on or near the project site. Bridge No. 22 is listed as historic. The Waits River and its 50 foot Riparian Buffer are Sensitive Resources requiring protection. There are no archeological or archeologically sensitive areas on or near the project site.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:

Disturbance of soils near natural or man-made waters consists of that which is necessary for the rehabilitation of the existing bridge superstructure, removal and replacement of bridge abutments, and some minor approach work. Stabilization of disturbance to the stream banks will be accomplished with Stone Fill, under laid with geotextile fabric.

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.

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. 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 48 hours 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 at a distance of 5' to 10' from the toe of slopes (if possible, while remaining inside the ROW limits) 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'. Silt fence shall be installed prior to any upslope earthwork.

Measures such as temporary stone check dams, silt fence, and turbidity curtains 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 such that they will not be subject to erosion.

Stabilized construction entrances to the project site, staging areas, and waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12' x 50'. 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" diameter shall be used. When constructing a stabilized entrance, utilize the materials and construction method shown on the "Erosion Prevention & Sediment Control" detail sheet (EPSC4).

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:

Stream banks shall be lined with Stone Fill, Type III as specified by VTrans Hydraulics personnel. This stone will protect the stream bank from erosion during design storm events. Stone Fill, Type I will be utilized as indicated in the Plans. Disturbed soil must be seeded and mulched within 48 hours after final grade has been established.

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 to 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 subsection 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

Install erosion and sediment control measures as shown in the Erosion Control Plan as needed 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 within 48 hours 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 = 2:1 WIDTH			
Q (gpm)	Q (m ³ /s)	Q (ft ²)	Q (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

PROJECT: BRADFORD	PROJECT NO.: STP 1447 (28)
DESIGN FILE NAME: 96j286/Structures/s96j286x1s.dgn	
IPARM FILE NAME: s96j286ecnarr.i	PLOT DATE: 22-NOV-2006
DESIGNED BY: M. GAGULIC	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: M. GAGULIC
EROSION CONTROL NARRATIVE	SHEET: 43 OF 63