

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

This project involves the removal of bridge #9 along with its piers and abutments. Bridge #9 will then be relocated and replaced by a new steel girder with concrete slab bridge on new abutments and a new alignment. The new bridge will be relocated about 14.5 meters down stream from its current location. Bridge #9 is located in the town of Stockbridge on Vt. Rt. 107 at the intersection of Rt. 107 and the Stony Brook Road. The new bridge is going to be 50.4 meters long spanning the Stony Brook. This project will also involve the construction of 267 meters of new approaches. There are also a number of overhead utilities that are going to be relocated as a result of this project. There are also a number of drop inlets that are going to be removed with several new drop inlets being installed. There are no historical or archeological or archeologically sensitive sites on or near the project site, nor are there any 'Threatened & Endangered Species' on or near the project site as well. However, there are a number of different wetland areas located within the project site.

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

Area of disturbance is 0.997 hectares (2.46 acres).

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS

The property surrounding the project site consists of steep slopes covered with trees. The road sides are steep with grass and a few trees. Due to the nature of the surrounding terrain the project site will see very little runoff onto it. The slopes in the project vicinity range from 0-18%.

DRAINAGE, WATERWAYS, BODIES OF WATER:

Stony Brook is the only water source on the project site. The brook is classified as slightly meandering, channel bend upstream from bridge with a streambed made up of gravel, cobbles, and boulders. The tributary area at the bridge crossing is 59.41 sq km. There are a number of drop inlets on site to help drain water from the roadway.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is rolling to mountainous with little to narrow flood plain. There are a few overhead utilities passing through the project site. Vt. Rt. 107, Stony Brook Road, and an old gravel drive are the only roadways located in the project site. There are no buildings located in the project site.

VEGETATION:

The vegetation in the project area is made up of mostly trees and some grass. The impact to vegetation will be limited to that which is affected by removal of bridge #9 along with its piers and abutments and the blending of the old approaches to match into the surrounding terrain, along with the construction of the new bridge, abutments, and approaches. After project completion, 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 Windsor, Vermont. There are two types of soils found in the project site, Croghan and Sheepscoot which are fine sandy loams with a k-value of 0.17 and slopes of 0 – 18%.

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 and there are no historical, archeological or archeologically sensitive areas on or near the project site. However, there are a number of small wetland areas located through out the project site and it is anticipated that 104.1 m² of class III wetlands will be affected by this project.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:

Disturbance of soils near natural or man-made waters consists of that which is necessary to the removal and relocation of bridge #9. Stabilization of disturbance to the stream banks will be accomplished with Stone Fill, Type IV under laid with erosion control matting. No erosion prevention is needed to protect the stream channel.

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 is needed on slopes greater than 1:3. In areas with large slopes, typically channel embankments, 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. . Mulch bare soil at the end of each construction day. Divert off-site and on-site storm water from disturbed soil each day.

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 per EPSC-1M Detail Sheet. Silt fence shall be installed prior to any upslope earthwork.

Drop inlets shall be protected per EPSC-3M Detail Sheet 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.

All temporary erosion control measures 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 waste disposal area.

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 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.) Special consideration must be given to the first pump-down of the cofferdams. This will contain the greatest volume of water with a high sediment load. The contractor may provide additional settling basins within the ROW if required or control the rate of draw-down. Additional settling basins must be approved by the resident engineer.

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:

Stone lining of the stream banks with Stone Fill, Type IV as specified by VTtrans Hydraulics personnel. This stone will protect the stream bank from 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. All 1:3 slopes shall be seeded and mulched promptly upon achieving final grade.

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 section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

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 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 / 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

PROJECT NAME:	STOCKBRIDGE		
PROJECT NUMBER:	BRF 022-1 (20) S		
FILE NAME: s:\tr4\85e039\de039ero.dgn	PLOT DATE:	04-MAR-2010	
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY:	H. I. SALLS	
DESIGNED BY: H. I. SALLS	CHECKED BY:		
EROSION CONTROL NARRATIVE	SHEET	14	OF 33