

# EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

## PROJECT DESCRIPTION

This project involves the placement of a temporary bridge, the removal and replacement of Bridge #15 on TH 23 in Granville, and the temporary relocation of an overhead power line. The project site is located at the intersection of Rt. 12A and TH 23 in the town of Granville. The current bridge is a steel beam wooden deck spanning 7.6 meters over the Third Branch of the White River. The proposed bridge is a single span concrete slab bridge that will span the same distance over the Third Branch of the White River.

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 around the outer edges of the project location. The property surrounding the project site is mostly grass and bushes with some trees in the area. Due to the nature of the surrounding terrain the project site could receive runoff water onto the project site from a few nearby slopes. If this is the case it should be minimal at best.

### DRAINAGE, WATERWAYS, BODIES OF WATER:

The Third Branch of the White River is the only water source in or near the project location. The river is classified as perennial but flashy, incised, sinuous, and laterally unstable with a streambed made up of mostly cobbles, with some gravel and boulders. The tributary area at the bridge crossing is 60.4 sq km. This river does have a tendency of rising fast.

### TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is classified as mountainous and mostly forested. The land at the project site is mostly flat but the land in the distance is very steep in spots. There is one house near the project site, a stone retaining wall at the bridge site, and an overhead power line that is going to be relocated.

### VEGETATION:

The vegetation in the project area is made up of grass, bushes, and trees. 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 is finished, the slopes will be stabilized with stone fill and vegetation will be reestablished with standard seed and mulch practices.

### SOILS:

The U.S. Department of Agriculture Conservation Service soil survey of Addison County provided all soils information. There are three types of soils present in the project location: Hadley, Stetson, and Cobby alluvial land. The Hadley soil is a fine sandy loam in hydrologic group B, with a K-value of 0.49. The Stetson type soils are found on the South-West side of the project area with a K-value of 0.1. This soil is a gravely, fine sandy loam from hydrologic group B with slopes of 0-5% and it is not a highly erodible soil. Cobby alluvial land is found on the North-East side of the project area and is made up of many layers of silt and clay.

### SENSITIVE RESOURCE AREAS:

There are no 'Threatened & Endangered Species' living on or near the project site. The southwestern quadrant of the project area is sensitive for historic and archaeological resources. There are also portions of the project site that do get flooded out on a regular basis.

### PROXIMITY 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 #15, its abutments, and some minor approach work. Stabilization of disturbance to the stream banks will be accomplished with Stone Fill, Type III 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, to delineate the limits the contractor can access with construction equipment. The area that can be disturbed and exposed to erosion is limited by this measure.

Stabilization is required for any soil exposed for more than 48 hours. Seeding, and biodegradable erosion control matting or equivalent product is needed for slopes greater than 1:3. In areas with large slopes stone fill under laid with erosion control matting is required. Areas at stations 1+020 – 1+024LT – RT, 1+028 – 1+031.8LT – RT all require this technique. 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 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 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 area where 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'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. When constructing a stabilized entrance, utilize the materials and construction method shown on the 'Erosion & Sediment Control Plan' sheet.

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:

A stone lining of the stream bank with Stone Fill, Type III will be employed as a control measure as specified by VTrans Hydraulics personnel. This stone will protect from stream bank erosion during design storm events. In order to dissipate water velocities and reduce erosion potential, utilize Stone Fill, Type I at culvert outlets. 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 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 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	Q (gpm)	Q (m <sup>3</sup> /s)	REQUIRED SURFACE AREA		LENGTH WIDTH = 2:1			
			(ft <sup>2</sup> )	(m <sup>2</sup> )	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: <b>GRANVILLE</b>	PROJECT NO.: <b>BRF 1444 (34)</b>
DESIGN FILE NAME: pw94j100/s94j100ecnotes.dgn	
IPARM FILE NAME: sj100ecnor.i	PLOT DATE: 03-MAR-2006
SURVEYED BY: R. MOREAU	SURVEY DATE: 3/93
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