

# EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE

## DESCRIPTION OF PROJECT

The Interstate maintenance project involves the rehabilitation of Bridges 56 North and South on I-89 over US2 at exit 11 in Richmond, Vermont. It is limited to the removal of pier caps and columns from the existing steel bridge beams down to the footings, and then replacement of the pier caps and columns. Traffic will be maintained at all times on the Interstate. US 2 will remain open to both east and west bound traffic but minor disturbances to traffic flows can be expected during project construction activities.

The entire project area involves less than 2.5 acres of land. This includes about 1.2 acres of land in the southwest quadrant of the interchange which has been designated as available for locating the Engineer's office trailer and contractor's parking and storage area. The project does not involve exposing raw ground slopes, grading of soils, or affecting drainage patterns.

## SITE INVENTORY & ANALYSIS

The Richmond Interchange is located in the Winooski River Valley. A mixture of open fields, woods, and hedge rows lines the valley which is approximately half a mile wide at this location. It is dominated by reasonably level to slightly undulating terrain that has been the site of farming and agricultural activities for many years.

The soil conservation service has classified the soil within the project area as Winooski Very Fine Sandy Loam and Hadley Very Fine Sandy Loam. The next plan sheet shows the boundaries of these soils classes.

## VEGETATION:

All slopes are fill areas with grass cover or in the case of the old park-in-ride are gravel subbase covered with top soil & grassed.

## SOILS:

Unknown as soils are fill slopes.

## SENSITIVE RESOURCE AREAS:

No 'Threatened & Endangered Species' have been identified within the project limits and there will be no adverse effect to agricultural or archaeological features.

## PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

There are no streams or other watercourses within the immediate project area. Approximately 400 feet northerly of the project area is a small stream. The Winooski River is approximately a thousand feet west of the project area. None of these features will be affected by this project as no earth slopes will be exposed to the elements.

There is a Class II wetland located north of northbound pier #1, as shown on sheet 21. All runoff from disturbed areas are directed south, away from any wetlands.

## 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 an equivalent product, will be utilized on all slopes steeper than 3:1 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. All disturbed slopes shall be seeded, fertilized, and mulched.

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 if stone lining is not being accomplished simultaneously with the ditch work. Check dams reduce flow velocities and thus reduce the potential for erosion. They 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 Controls Details' sheet). The check dams may be removed once the stone lining of the ditches is complete and the surrounding area is stabilized.

### TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:

Silt fence will be installed a distance of 5 to 10 feet 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 feet. Silt fence shall be installed prior to any upslope earthwork.

Stabilized construction entrances to the project site, staging areas, as well as waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12 ft. by 50 ft. All surface water flowing to or diverted towards a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipes smaller than 6 inches diameter shall be used. See typical detail on 'Erosion Prevention & Sediment Control Plan' sheet for materials and construction method to be utilized when constructing a stabilized construction entrance (see sheet 24).

The sediment settling basin, if one is deemed necessary for dewatering purposes, should be sized based upon the pumping rate, and target particle size to be settled out. The following sizing criteria is based upon a target particle size of 0.01 mm and is provided as general guidance. (See Sediment Settling Basin Sizing Criteria.)

## PERMANENT EROSION CONTROL MEASURES

### PERMANENT EROSION CONTROL MEASURES TO BE UTILIZED INCLUDE:

Stone lining of roadway ditches (if disturbed) with clean, angular Stone Fill, Type I will be used to prevent erosion during storm events. See 'Erosion Control Details' sheet for typical ditch section.

Grass, or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified.

## GRADING PLAN & CONSTRUCTION TIME TABLE

Grading plan and construction time table appears on sheet 21 of 43.

## GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, stormwater 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 all erosion prevention and sediment control measures as shown in the Erosion Prevention and Sediment 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 and On-site Coordinator. 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. Initiate repair measures promptly once damage is discovered.

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

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. Collect and route clean offsite runoff around or through 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.

## SIZING REQUIREMENT FOR SEDIMENT SETTLING BASIN

PUMP FLOW RATE	REQUIRED SURFACE AREA	LENGTH WIDTH = 2:1					
		L (ft)	W (ft)	L (m)	W (m)		
Q (gpm)	Q (m <sup>3</sup> /s)	(ft <sup>2</sup> )	(m <sup>2</sup> )				
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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PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	IM 089-2(38)		
FILE NAME:	/05A236/str/sa236erosion.xls	PLOT DATE:	4/27/2006
PROJECT LEADER:	FARNSWORTH	DRAWN BY:	R. PELLETT
DESIGNED BY:	STR6	CHECKED BY:	FARNSWORTH
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