

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

This project involves the replacement of Bridge #29, an existing 10' Corrugated Galvanized Metal Plate Pipe (CGMPP) culvert with a pre-cast concrete box culvert and the related approach work. Bridge #29 is located on Vermont Route 100 in the County of Windham, Town of Whitingham, Vermont. The new culvert will be a concrete box approximately 154' long, 12' tall and 14' wide. The new culvert will be on the same alignment as the one it replaces. Traffic will be maintained on VT 100 through the use of a temporary one way bridge, with signal light control.

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

Area of disturbance is approximately 0.61 acres.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS

The property surrounding the project site consists of well established vegetation with moderate to steep slopes at the project site. Due to the nature of the surrounding terrain the project site could receive runoff water from nearby slopes and Russel Lane.

DRAINAGE, WATERWAYS, BODIES OF WATER:

Bridge #29 carries VT 100 over Sadawga Brook, which flows into Harriman Reservoir. The tributary area at the bridge crossing is 4.4 sq mi.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography surrounding the project site is hilly, forested with open areas, lakes, ponds and swamps. The stream embankment slopes within the project site range approximately from 1:1 ½ to 1:3. The town of Whitingham septic plant is in the vicinity of the project. There is an underground sewer line within the project limits which must be relocated to allow installation of the new culvert.

VEGETATION:

The vegetation in the project area is trees and brush. The impact to vegetation will be limited to that which is affected by removal of the temporary bridge and the removal and replacement of the culvert. 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 Windam, Vermont. The soils in the project vicinity are classified as Worden Loam, very bouldery, with 15-25% slopes. This soil is considered highly erodible. The soil 'K' factor is 0.49.

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.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:

Disturbance of soils near natural or man-made waters will consist of that which is necessary for the placement of the temporary bridge, the removal and replacement of bridge #29 and its wing and head walls, and roadway approach work. Stabilization of disturbance to the stream banks will be accomplished with Stone Fill, Type IV 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, 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 and mulching is needed on areas flatter than 1:3, and biodegradable erosion control matting or equivalent product is needed on slopes greater than or equal to 1:3

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. If an area will be without construction activity for 7 days, it must be mulched within 48 hours. If the area is to be without construction activity for 14 days, it must be seeded and mulched within 48 hours. The forecast of rainfall events shall also trigger protection of exposed slopes. If rainfall is predicted the Contractor must stabilize the site accordingly prior to the forecasted event.

TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:

Silt fence will be installed a distance of 5' to 10' 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'. 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'X50'. 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. 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.) The proposed location of the basin must be included in the contractors plan submittal for approval before use.

Measurements such as temporary stone check dams, construction entrances, sediment basins, 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 such that they will not be subject to erosion.

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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 VTrans 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. This document serves as a guide for the Contractor to make an Erosion Prevention and Sediment Control Plan which shall be submitted to the Construction Environmental Engineer for approval.

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)		
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: WHITINGHAM	PROJECT NO. : ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128exce1.dgn	PLOT DATE: 08-MAR-2006
IPARM FILE NAME: s05c128ecnarr. i	DRAWN BY: M. FESSEL
DESIGNED BY: E. L. RUSTAY	CHECKED BY: M. GAGULIC
SQUAD LEADER: C. P. WILLIAMS	SHEET: 26 OF 34
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