

EROSION CONTROL NARRATIVE

DESCRIPTION OF PROJECT

This project involves the reconstruction of a bridge over the Willard Stream. The project is on VT 102, a paved, Major Collector, in the town of Canaan. A new two lane, single span, steel beam bridge will be constructed at the location of the existing bridge while traffic is maintained on the temporary bridge during construction. Following completion of the new bridge, the temporary bridge and abutments will be removed. The bridge spans the Willard Stream approximately 1/2 of a mile upstream of its confluence with the Connecticut River. This portion of the brook and its flood plain are located outside of the Connecticut River flood plain. Total roadway approach work, including both approaches, is approximately 680 feet. The limits of construction do not approach any buildings or other structures. Wetlands have been identified in the project area.

The land outside of the state right of way is privately owned.

It is anticipated this project will last two construction seasons.

Total disturbed area (excluding waste, borrow and staging areas):
is .510 ha (1.26 ac.)

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The property surrounding the project site consists of well established vegetation with moderate sloping banks. The surrounding area consists of terraces and plains with hay cover with defined drainage ways. Due to the nature of the surrounding terrain, runoff water entering the project site will be primarily limited to that which is conveyed along roadway embankment, and that which follows VT 102 along the .5% grade at the beginning of the project limits. The current roadway ditches are not well defined and are not lined with stone.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Willard Stream is located in the project area. There are wetlands within the project area. The Willard Stream is classified as a sinuous river. At normal water levels, it is a slow velocity river. The river bed is shallow to deep with a sandy silt bottom. Around the bridge abutments there are sandy silt beaches, at ordinary high water these beaches are submerged. The contributing drainage area is 15.42 square miles.

The portion of the wetland and buffer zone in the area of proposed impact, lies within a wet meadow, agricultural field, and swamp wetland. The wetland is located adjacent to the Willard Stream and receives water from the Willard Stream in flood events. The wetland provides the function of flood storage.

The proposed project does impact this function because it minimizes permanent construction in the wetland. The only construction that will occur in the wetland is for the temporary bypass that will be completely removed at the end of the project. Before placement of temporary fill for the detour, geotextile will be placed on original grade to facilitate restoration of pre-existing grade and preservation of plant roots and seeds. After removal of the temporary bridge and approaches, the area will be planted with appropriate native species.

The wetlands occur in the floodplain of a medium size stream. Wetlands vegetation is fairly dense and likely to stabilize soil during flood events. The wetlands provide this function. The wetlands can readily be observed from the bridge by passing motorists.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is level terraces and plains at the base of a mountain side. The site lies within the Connecticut River valley and most structures within the vicinity of the site are residential or agricultural and none lie in the limits of the project. VT 102 runs perpendicular to Willard Stream which is contained by moderately sloping stream banks along each side as it meanders through a level plain before entering the Connecticut River. Overhead utility service follows along VT 102 and will be required to be relocated.

VEGETATION:

A mix of hardwood and softwood trees of all sizes exist along VT 102. Fields and agricultural crops exist in the vicinity of the project. Impacts to vegetation will be limited to that which are effected by the construction of the new bridge and temporary bridge on existing alignment. Some small 6 inch to 12 inch trees, both softwood and hardwood, may have to be removed.

The buffer zone consists of the fill placed for the existing road embankment. The buffer is typically vegetated with field grass

Following construction of the new bridge, the temporary bridge and roadway

approaches will be removed, the slopes stabilized with stone fill and vegetation reestablished with standard seed and mulch practices.

SOILS:

The Soil Conservation Service has mapped the soils throughout Essex County. The soil types identified for this are Rumney Very Fine Sandy Loam(0%-2% slope). This soil type is described as "...very deep to bedrock and well drained. Permeability is moderate or moderately rapid in the solum, and rapid or very rapid in the substratum." These soils formed in flood plains. Another soil type is Colton-Duxbury Complex(8%-15%). This soil type is described as "...very deep to bedrock and excessively drained. Permeability is moderately rapid to very rapid in the solum, and very rapid in the substratum." These soils formed in terraces and plains. The last soil found on this project is Croghan Loamy Fine Sand(3%-8%). This soil type is described as "...very deep to bedrock and poorly drained. Permeability is moderately rapid or rapid in the surface layer, and rapid or very rapid in the subsoil and stratum."

The listed Soil Erodibility Coefficient (K-value) for Rumney Very Fine Sandy Loam ranges from 0.20 to 0.37, Colton-Duxbury Complex ranges from 0.10 to 0.49, and Croghan Loamy Fine Sand is 0.17.

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

Soils are saturated during at least part of the growing season. Because this wetland is located within the floodplain of the Willard stream, it is capable of being inundated by many feet of water. However, in most years inundation does not occur in the project area.

SENSITIVE RESOURCE AREAS:

No 'Threatened & Endangered Species' have been identified within the project limits and there will be no adverse effect to Historic or Archaeological features. Willard Stream is the only identified resource. There are wetlands in the vicinity of the project.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made waterways consists of that which is necessary to construct two new concrete bridge abutments and applicable roadway approaches as well as the removal of the existing temporary bridge. Stabilization of disturbances to stream banks will be accomplished with Stone Fill, Type III.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

Temporary erosion prevention measures to be utilized include:

Project Demarcation Fence denoted -PDF- and Barrier Fence denoted -BF- 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.

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.

Before placement of temporary fill for the detour, geotextile will be placed on original grade to facilitate restoration of pre-existing grade and preservation of plant roots and seeds. All disturbed area will be top soiled, fertilized, seeded, and mulched. The construction area will be protected by erosion and sedimentation controls until disturbed areas are stabilized.

Geotextile placed under the temporary bridge approaches shall be Road Bed Separator in accordance with section 649 and will be paid incidental to the temporary bridge item in the contract.

Temporary measures to control sediment transport include:

Silt fence will be installed and maintained as indicated in "erosion & sediment control plan". The contractor may need to adjust locations as indicated on the plans to better suit their construction needs. Proposed and or alternate silt fence locations will 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.

Filter curtains will be installed and maintained as indicated in "erosion &

sediment control plan". The contractor may need to adjust locations as indicated on the plans to better suit their construction needs. Proposed and or alternate filter curtain locations will prevent sediment transport to the Willard stream. Filter curtain shall be installed prior to any in stream construction.

Measures such as 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 approved area such that 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 feet X 50 feet. 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 and 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 settling basin is to be used for dewatering a cofferdam, it should be sized based upon the pumping rate and target particle size to be settled out for the project site. The following sizing criteria is based upon a target particle size of .01 millimeters and is provided as general guidance on sheet 18.

PERMANENT EROSION CONTROL MEASURES

Several permanent erosion control measures will be utilized:

Stone lining of the stream banks with Stone Fill, Type III as specified by Vtrans Hydraulics personnel is specified. This stone will protect from stream bank erosion during design storm events.

Grass, or other suitable ground cover will be established outside of the roadway limits where stone lining has been determined. Specifically at the toes of slopes and any other disturbed area.

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, 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 prevention and sediment control measures as shown in the Erosion Prevention and Sediment Control Plan or as directed by the Resident Engineer. Do not modify the type, size or location of any control or practice without approval of the Resident 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 promptly once damage is discovered.

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 utilized 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.

PROJECT NAME:	CANAAN	
PROJECT NUMBER:	ER ST 0271 (16)	
FILE NAME:	M:/structures/s04c098ecn.dgn	PLOT DATE: 8/18/2008
PROJECT LEADER:	M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY:	S.S. SCRIBNER	CHECKED BY: G. ROKES
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