

DESCRIPTION OF PROJECT

This project involves the replacement of a single span truss bridge carrying Town Highway 29 over the Black River in the Town of Cavendish. The existing bridge is approximately 26 400 (87 ft) long with 3600 (11.8 ft) clear width. The existing trusses will be carefully removed and stored for potential reuse in the future. The remainder of the bridge will be completely removed. The alignment for TH 29 will be shifted approximately 10 000 (33 ft) east of the existing alignment over the river. Traffic will be maintained on the existing bridge until the new bridge is constructed. It is anticipated that this project will last two construction seasons. The total length of roadway approach work is approximately 112 000 (368 ft) on TH 29 and approximately 42 000 (138 ft) on TH 62. The site is located at Latitude 43 degrees 24.3 minutes N., Longitude 72 degrees 34.5 minutes W.

Total disturbed area (excluding waste, borrow and staging areas): 0.26 ha (0.63 ac).

No "Threatened & Endangered Species" have been identified in the project area. The existing bridge is listed on the National Register of Historic Places; an agreement has been reached with the State Historic Preservation Officer on the removal and final disposition of this structure.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The project area is primarily rural and undeveloped except for roads. Off-site drainage, in the vicinity of the new bridge, from north of VT 131 flows overland from moderately steep wooded slopes, collects in ditches and is carried under the roadway via two culverts. One of these culverts will be relocated to maintain this existing condition. The drainage west of TH 62 flows overland from moderately steep wooded slopes toward the road, collects in a swale above the roadway and also in the roadway ditch. These two drainage channels converge and direct flow via an open channel to the river. This ditch will be recreated adjacent to the relocated roadway to maintain the existing flow pattern. Drainage south of TH 29 flows overland through a field, collects at a culvert and is carried below the roadway. This culvert will be replaced at the same location to maintain this existing flow pattern.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Black River and its associated wetlands are located in the project area. There are no other water bodies or wetlands that are located in the impact area of the project. The drainage basin for the Black River is characterized by a narrow river valley within steeply sloped hills. This character also causes the river to rise rapidly and flow swiftly as evidenced by the rocky/cobbly bottom and the bank erosion observed along the river. The contributing drainage area at the bridge crossing is 279 sq. km.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site characterized by moderately steep slopes north of VT 131 and west of TH 62 with gentle slopes and an open field east of TH 62. The river banks upstream and downstream from the proposed bridge are steeply sloped.

VT 131 parallels the Black River on the north side of the river just beyond the top of bank. One home is located in the immediate project vicinity northwest of the intersection of TH 29 and VT 131. TH 29 crosses from VT 131 to the south side of the river and then turns sharply toward the east and parallels the river just above the top of bank. TH 62 intersects with TH 29 just south of the proposed bridge and continues south up the hill. Both TH 29 and TH 62 are dead end roads.

Existing overhead utilities are located over TH 29 south of the Black River and cross the river west of the existing bridge. The utilities also run on the north side of VT 131 and cross-country to the south toward TH 62. Overhead utility service and two poles will be relocated along TH 29 to permit construction.

VEGETATION:

In general, the area between VT 131 and the Black River consists of small trees/brush. The area north of VT 131 is generally wooded. TH 62 is heavily wooded on both sides of the road. TH 29 is flanked by a line of small trees to the north along the river bank and an open field to the south. Several small hardwoods will be removed immediately adjacent to TH 29 and TH 62 and a 400 maple will be removed at the intersection of TH 62 and TH 29. Following the construction of the bridge and substructures, the existing slopes will be stabilized with stone fill and/or vegetation will be reestablished with standard seed & mulch practices.

SOILS:

The Soil Conservation Service has mapped the soils throughout Windsor County. The soil type identified within the project area is Marlow. The Marlow soil is described as loamy, compact glacial till on uplands. They are very deep to bedrock, shallow to moderately deep to dense basal till and well drained. Permeability is moderate in the solum and moderately slow in the substratum. "This soil is poorly suited to cultivated crops, hay and pasture because of slope and the stones and boulders on surface". These soils have a perched water table at depths of 2.0 to 3.5 feet below the surface from late Winter through early Spring.

The listed soil erodability coefficient (K-value) is 0.20. Generally, K-value indicates the following: 0.0 - 0.23 = low erodability; 0.24 - 0.36 = moderate erodability; 0.37 and higher = higher erodability.

The majority of the roadway is "in a fill typical", meaning the roadway is higher than the surrounding mean ground elevation. Due to engineering requirements for selective fill material for the roadway, much of this fill material will need to be brought in from an outside source. Since we do not know where this source pit will be, we can not provide erodability properties for the fill. See the roadway cross sections for fill areas.

SENSITIVE RESOURCE AREAS:

No "Threatened & Endangered Species" have been identified within the project limits. The existing bridge is historic; however, an agreement has been reached with the State Historic Preservation Officer on its removal and storage for potential reuse at another location. There will be no adverse effect to Archaeological features.

The limits of the Riparian Buffer for the Black River are identified on the following sheets. All work proposed within these limits shall be completed with extreme care so as to minimize impacts to this buffer zone.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made waterways consist of that which is necessary to remove the existing abutments and to armor the banks upstream and downstream from the new structure. Stabilization of disturbances to the river banks will be accomplished with cofferdams and Stone Fill, Type IV.

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.

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 MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:

Silt fence will be installed a distance of 1800 (5.9') from the toe of slopes where permitted by R.O.W. or construction easements, to prevent sediment transport to down gradient areas. Each line of silt fence shall 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. Silt fence shall be installed prior to any upslope earthwork.

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 entrances to waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 3700 x 15000 (12' x 50'). 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 inch diameter shall be used. See typical erosion control detail sheets for materials and construction methods to be utilized when constructing a stabilized entrance.

Temporary sediment settling basins will be utilized on this project for dewatering cofferdams.

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:

Stone lining of the river banks with Stone Fill, Type IV is specified. This stone will protect from river bank erosion during design storm events.

Stone Fill, Type I will be utilized at ditches and culvert outlets to reduce erosion potential.

Grass or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified. These areas shall be seeded and mulched promptly upon achieving final grade.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Prevention and Sediment 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 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 and schedule 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.

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 to 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)		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

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of CAVENDISH	Bridge No. 45
Highway No. TH 29	Log Sta. Surv. Sta.
TH 29 OVER BLACK RIVER	
EROSION CONTROL NARRATIVE	
Designed By S.M. HODGDON	Drawn By C.L. CILLEY
Checked By S.W. JOHNSON Date 5/06	Bridge Design Supervisor C.D. BAKER Date 5/06
PROJECT CAVENDISH	PROJECT NO. BRO 1442(23)
I.G.C. Info.	
Bridge Sheet No. 50499ecnr	Sheet 13 of 47