

DESCRIPTION OF PROJECT

This project involves the rehabilitation of the historic Braley Covered Bridge (No. 38) carrying Town Highway 64 over the Second Branch White River in the Town of Randolph. The bridge is approximately 41 feet long and 16 feet wide. The total length of the approach work is approximately 219 feet.

Under a separate contract, a single lane temporary detour bridge was constructed adjacent (downstream) to the existing bridge. This separate contract also included the removal of the covered bridge superstructure where it is stored at a Town garage until it is rehabilitated and reinstalled under this contract.

During this contract, the remaining superstructure portions and both abutments will be removed. The alignment of TH 64 will be shifted north about three feet at the east approach; however the roadway profile will essentially be unchanged. New concrete abutments will be constructed within closed cofferdams and flanked with stone fill slope protection. During construction, traffic will be maintained on the temporary bridge. Following completion of the bridge rehabilitation, the temporary bridge will be removed and the temporary approach work will be regraded. It is anticipated that this project will last one construction season.

The site is located at Latitude 43 degrees 55.6 minutes N., Longitude 72 degrees 33.4 minutes W.

Total disturbed area (excluding waste, borrow and staging areas): 0.21 ac.

No "Threatened & Endangered Species" have been identified in the project area. In addition, no prehistoric or historic sites (except for the covered bridge itself) have been identified.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The land within the project consists of a relatively steep and well vegetated river valley with a narrow floodplain. TH 64 is a single lane class III dirt road with brush and a narrow band of mixed hardwood and softwood forest on each side. Off-site drainage from the east is collected and conveyed in a well defined, deep, stone-lined ditch that runs along the south edge of the road and discharges to the river. A small portion of the roadway runoff entering from the east is conveyed via overland flow along the roadway and north of the road. There is no significant off-site drainage from the west within the project.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Second Branch White River is located within the project. There are no other bodies of water. The drainage basin for this river is generally characterized by steep slopes with little to no storage and the floodplains tend to be relatively narrow with high stream banks. During flood events, the river rises rapidly and the flow is moderate. The channel bed material consists of fine silty sand and the banks are highly susceptible to erosion. The contributing drainage area at the bridge is approximately 47 square miles.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project is characterized by steep slopes along the east and west approaches with a relatively narrow, flat floodplain near the bridge. The floodplain at the southeast corner of the project is a cultivated agricultural field.

TH 64 runs parallel to the river along the west approach to the bridge until the river bends sharply south under the bridge. TH 64 continues east and quickly ascends up a relatively steep grade unit it intersects with VT 14 (approx. 0.1 miles). TH 64 is a dead end road that serves several dwellings on the west side of the river. There is also a drive to a dwelling on the east side of the river on the north side of TH 64 (approximately 100 feet from the bridge).

Existing overhead utilities run along the northeast side of TH 64 until they cross over to the south side of the road about 75 feet east of the bridge. The wires continue along the south side of the road and cross the river. Utility relocations for this project are not anticipated.

VEGETATION:

In general, the east approach is lightly forested with a mix of hardwoods and softwoods and the west approach is comprised of assorted brush, a couple of small to medium sized hardwood trees, and some field grass. Several small hardwoods and areas of brush will be removed within the existing right-of-way and around the bridge to allow for the stone fill slope protection and to accommodate the temporary detour bridge. Following the construction of the new abutments and the removal of the temporary bridge, the embankment slopes will be stabilized with stone fill and/or vegetation will be reestablished with standard seed and mulch practices.

SOILS:

The Soil Conservation Service has mapped soils throughout Orange County. The soil types identified within the project area are Winooski Very Fine Sandy Loam (Wo) and Hartland Silt Loam (HdE). The Winooski soil is the primary soil type near the bridge and west approach. Test pits indicate that this soil type is approximately 2.5 feet deep near the project site. East of the bridge, the soil is Hartland Silt Loam.

Both of the loam type soils have a listed erodability coefficient (K-value) of 0.49. Generally, K-value indicates the following: 0.0 - 0.23 = low erodability; 0.24 - 0.36 = moderate erodability; 0.37 and higher = high erodability.

The majority of the project is within the previously disturbed area comprising the existing roadway and bridge embankments. Much of this soil is fill comprised of silty gravelly sand or silty sand. The erodability of these fill materials shall be considered relatively high based on the silt content and relatively steep grades within the project limits.

Approach roadway construction will be limited to minor widening and reconstruction. The small amount of fill material needed for approach roadway widening will be subject to engineering requirements for selective fill and will need to be brought in from an off-site source. Since the borrow pit source location is unknown, the erodability properties of the new fill cannot be provided.

SENSITIVE RESOURCE AREAS:

No "Threatened & Endangered Species" have been identified with the project limits.

The existing bridge is Historic and the rehabilitation is based on the objectives of the Vermont Historic Covered Bridge Plan along with the participation of the Town and the Historic Covered Bridge Committee.

Based on the Phase I Site Identification Survey completed for this project and the limited impact of the project, there will be no adverse effect to archaeological features or prime agricultural land.

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

During construction, in-stream work will be restricted. Refer to project permit conditions.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made water ways consist of that which is necessary to replace the existing abutments, armor the banks upstream and downstream from the bridge, and to remove the temporary detour bridge and regrade the associated approaches. Stabilization of disturbances to the river banks will be accomplished with cofferdams and Stone Fill, Type III.

TEMPORARY EROSION & 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 to prevent sediment transport to down gradient areas. Each line of silt fence shall be installed per Silt Fence Detail (EPSC-1). Silt fence shall be installed prior to any upslope earthwork.

Measures such as silt fence and check dams 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.

Temporary sediment settling basins may be used 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 III is specified. This stone will protect from river bank erosion during design storm events. Grubbing material will be placed on top of the stone fill that is adjacent to the channel except for directly under the bridge.

Grass 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. (Refer to Seeding Formula on sheet 3).

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 Subsection 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

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.

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.

* The anticipated areas of disturbance for this project (0.21ac.) and the temporary bridge project (0.12ac.) total approximately 0.33ac. The estimated area of waste, borrow, and staging is less than 0.67 acres for an overall total of less than 1.00 acres. Should conditions change and result in one or more total acres of earth disturbance, then the Contractor will be responsible for additional permitting with the Agency of Natural Resources.

SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE	REQUIRED SURFACE AREA	LENGTH / WIDTH = 2:1			
		L (ft)	W (ft)	L (m)	W (m)
Q (gpm)	Q (m ³ /s)	(ft ²)	(m ²)		
50	0.0032	595	55	35.0	17.0
100	0.0063	1200	111	49.0	24.5
150	0.0095	1776	165	59.6	29.8
200	0.0126	2368	220	68.8	34.4
250	0.0158	2970	276	77.0	38.5
300	0.0189	3560	330	84.4	42.2
350	0.0221	4155	386	91.2	45.6

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146ecnar.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
EROSION CONTROL NARRATIVE

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 13 OF 39

