

PROJECT DESCRIPTION

This project involves the replacement of a single span bridge carrying VT Route 114 over the Passumpsic River in the Town of Lyndon. The existing bridge is approximately 24.9 meters long and 6.4 meters wide. The alignment for Route 114 will shift approximately 0.9 meters to the south and the new bridge will be 1.37 meters wider to the north and 3.32 meters wider to the south. One lane of alternating two-way traffic will be maintained on a temporary bridge at all times. It is anticipated that this project will last one construction season. The total length of roadway approach work is approximately 149.43 meters. The site is located at 227810.379 N, 540410.275 E based upon NAD 83/92. Total disturbed area (excluding waste, borrow and staging areas): 0.9 ha (2.3 ac.).

No "Threatened & Endangered Species" or Historic Resources have been identified in the project area.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The roadway is generally a built up section through the project area with well established farm fields on each side that are gently sloping towards the Passumpsic River. Runoff water entering the project site will be primarily limited to that which is conveyed along the toe of the roadway embankments. The roadway is on a vertical curve through the project area with the highest point being on the bridge. The roadway is also on a horizontal curve throughout the project limits and is superelevated with the high side at the southern shoulder. Roadway surface drainage will generally be towards the north shoulder.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The East Branch of the Passumpsic River is located in the project area. There are no other water bodies or wetlands that are located in the impact area of the project. There is class III wetlands located south of the bridge along Water Street. The East Branch of the Passumpsic River is characterized by a moderately wide river valley surrounded by mountainous topography. This character causes the river to flow relatively slowly as evidenced by the sandy streambed and very little bank erosion. The contributing drainage area at the bridge crossing is 208 sq. km.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is generally flat along each side of VT Route 114, gently sloping towards the Passumpsic River with open fields on each side. Development along this portion of VT 114 consists of two permanent residences with lawns and open fields abutting the project in the southwest quadrant. Overhead utility service follows VT 114 and will need to be relocated to cross the Passumpsic River just north of the bridge location.

VEGETATION:

There are very few trees along VT Route 114 with several small hardwoods located along the river banks. The two residences near the bridge site have small areas of lawn adjacent to the roadway. Fields and agricultural crops exist in the northwest, northeast, and southeast quadrants of the project. Impacts to vegetation will be limited to that which is affected by the widening of the bridge and roadway approaches. Some immature 50 - 150 diameter trees will be removed. Following the construction of the bridge superstructure 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 Caledonia County. The soil type identified for the entire project area is Podunk fine sandy loam. This soil type is described as "formed in loamy over sandy alluvial deposits on flood plains that are occasionally flooded for brief duration. They are very deep to bedrock and moderately well drained." These soils have a seasonal high water table at depths of 450 to 900 mm below the surface. Permeability is moderate or moderately rapid in the solum and rapid or very rapid in the substratum. Flooding is a hazard, but is of short duration and usually occurs in the spring. The hazard of erosion is low.

The listed soil erodability coefficient (K-value) for this type is 0.24. Generally, K-value indicate 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 widening of 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 and there will be no adverse effect to Historic or Archaeological features.

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 new abutments and wingwalls, stabilize slopes around wingwalls with stone fill and supplement existing heavy riprap above ordinary high water.

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 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.

Sand bags filled with clean, small diameter stone, or an equivalent barrier, will be utilized around the proposed pipe inlet to create a temporary ponding area for particles to settle out as water drains through the barrier. Inlet protection shall be installed as soon as there is the possibility of water flowing to the structure. The height of the barrier shall be limited such that the ponding area does not present a hazard to the traveling public. Alternative inlet control measures shall be approved by the Engineer prior to implementation.

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 15 000 (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 150mm diameter shall be used. See typical erosion control detail sheets for materials and construction methods to be utilized when constructing a stabilized entrance.

PERMANENT EROSION CONTROL MEASURES

Several permanent erosion control measures will be utilized:

Stone lining with Stone Fill, Type IV will be used above the existing heavy riprap to protect fill slopes around wingwalls up to Q100 elevation.

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. These areas shall be seeded and mulched promptly upon achieving final grade. In areas disturbed by installation of the temporary bridge and its approaches, trees and shrubs will be planted.

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 and sediment control measures as shown in the Erosion Prevention and Sediment Control (EPSC) 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.

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| STATE OF VERMONT AGENCY OF TRANSPORTATION | | |
| Town Of | LYNDON | Bridge No. 2 |
| | | Log Sta. |
| Highway No. | VT 114 | Surv. Sta. |
| VT 114 OVER PASSUMPSIC RIVER | | |
| EROSION CONTROL NARRATIVE | | |
| Designed By | VTRANS/M.A.C. | Drawn By B.J. MASSE |
| Checked By | Date | Bridge Design Supervisor |
| J.T. KLEIN | 3/06 | M.A. COLGAN Date 3/06 |
| PROJECT | LYNDON | PROJECT NO. BRF 0269(10) |
| I.G.C. Info. | | |
| Bridge Sheet No. 50544ECN | | Sheet 61 of 72 |