

PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE RECONSTRUCTION OF A BRIDGE OVER THE EAST BRANCH OF THE PASSUMPSIC RIVER. THE PROJECT IS ON VT 114, A PAVED, MAJOR COLLECTOR IN THE TOWN OF LYNDON. THE EXISTING STEEL BEAM BRIDGE WILL BE REMOVED ALONG WITH THE EXISTING ABUTMENTS. A NEW TWO-LANE, SINGLE SPAN STEEL GIRDER BRIDGE WILL BE CONSTRUCTED ON THE EXISTING ALIGNMENT WHILE TRAFFIC IS MAINTAINED ON A TEMPORARY TWO-WAY BRIDGE DOWN STREAM OF THE EXISTING BRIDGE. TOTAL ROADWAY APPROACH WORK INCLUDING BOTH APPROACHES IS APPROXIMATELY 120 METERS. THE LIMITS OF CONSTRUCTION DO NOT APPROACH ANY BUILDINGS OR OTHER STRUCTURES. NATURAL RESOURCES WITHIN THE PROJECT AREA HAVE BEEN CLEARLY IDENTIFIED AND SHOWN IN THE EXISTING CONDITIONS.

IT IS ANTICIPATED THAT THIS WILL BE COMPLETED IN ONE CONSTRUCTION SEASON.

TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW AND STAGING AREAS): 0.27 HA (0.68 AC.)

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS MOSTLY OF WELL ESTABLISHED VEGETATION. THE DOWNSTREAM SIDE OF THE BRIDGE CONSISTS MOSTLY OF LOW GROWING SHRUBBERY WITH A FEW LARGER DECIDUOUS TREES ALONG THE STEEP RIVER BANKS. THE LEFT BANK OF THE UPSTREAM SIDE IS LONG AND STEEP AND CONSISTS MOSTLY OF MATURE DECIDUOUS TREES WHILE THE RIGHT BANK IS VERY FLAT WITH A MIX OF MATURE TREES AND LOW GROWING SHRUBBERY.

DRAINAGE, WATERWAYS, BODIES OF WATER:

THE PASSUMPSIC RIVER IS LOCATED WITHIN THE PROJECT AREA. THE PASSUMPSIC RIVER IS DESCRIBED AS STRAIGHT, ALLUVIAL, PROBABLY INCISED AND NOT BRAIDED OR ANABRANCHED. THE STREAMBED IS COMPOSED MOSTLY OF GRAVEL, COBBLES AND BOULDERS. THE LEFT BANK OF THE DOWNSTREAM SIDE AND THE RIGHT BANK OF THE UPSTREAM SIDE ARE RELATIVELY FLAT WITH LOTS OF PROTECTIVE VEGETATION. THE RIGHT BANK OF THE DOWNSTREAM SIDE AND THE LEFT BANK OF THE UPSTREAM SIDE ARE BOTH RELATIVELY STEEP AND ALSO ARE ABUNDANT IN VEGETATIVE COVER. THERE IS A CLASS III WETLAND IDENTIFIED WITHIN THE CONSTRUCTION LIMITS THAT IS CLEARLY IDENTIFIED WITHIN THE PLANS. THE CONTRIBUTING DRAINAGE AREA AT THE BRIDGE CROSSING IS APPROXIMATELY 200 SQ. KM.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

THE TOPOGRAPHY OF THE SITE IS DESCRIBED TO BE ROLLING HILLS TO MOUNTAINOUS. THE TOPOGRAPHY DIRECTLY AROUND THE SITE IS MOSTLY OPEN FIELDS AND GRASSLANDS ALONG THE SOUTH SIDE OF VT 114. TO THE NORTH MUCH OF THE LAND IS SLOPING WOODLANDS. VT 114 IS A PAVED MAJOR COLLECTOR. ELECTRICAL UTILITIES EXIST WITHIN THE AREA. DURING CONSTRUCTION THE EXISTING POLES WILL BE REPLACED WITH LARGER, TALLER POLES.

VEGETATION:

THE VEGETATION ALONG VT 114 IS A MIX OF GRASS, SMALL SHRUBS AND A FEW SMALL DECIDUOUS TREES WITH THE EXCEPTION OF THE NORTH EAST QUADRANT OF THE SITE. THIS AREA CONSISTS PRIMARILY OF LARGER MATURE DECIDUOUS TREES. THE RIVER BANKS ARE COVERED IN SMALL DECIDUOUS TREES MIXED IN WITH LOW GROWING SHRUBBERY. MUCH OF THE SURROUNDING AREA IS PRIMARILY GRASSLANDS.

SOILS:

THERE ARE TWO TYPES OF SOILS IDENTIFIED WITHIN THE PROJECT AREA. IN THE EASTERN HALF OF THE SITE THE SOILS PRIMARILY CONSIST OF PODUNK FINE SANDY LOAM. THESE SOILS ARE 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 1.5 TO 3.0 FEET BELOW THE SURFACE. PERMEABILITY IS MODERATE TO MODERATELY RAPID IN THE SOLUM AND RAPID OR VERY RAPID IN THE SUBSTRATUM. IN THE WESTERN HALF OF THE SITE THE SOILS PRIMARILY CONSIST OF DUMMERSTON VERY FINE SANDY LOAM. THESE SOILS ARE FORMED IN LOAMY GLACIAL TILL ON UPLANDS. THEY ARE VERY DEEP TO BEDROCK AND WELL DRAINED. PERMEABILITY IS MODERATE.

THE LISTED SOIL ERODABILITY COEFFICIENT (K-VALUE) FOR THESE SOIL TYPES ARE: PODUNK = 0.24 AND DUMMERSTON = 0.28. THESE VALUES ARE IN THE RANGE OF SOILS THAT ARE CLASSIFIED AS LOW TO MODERATELY ERODABLE.

SENSITIVE RESOURCE AREAS:

THERE HAS BEEN A SINGLE WETLAND IDENTIFIED WITHIN THE PROJECT AREA. THIS AREA HAS BEEN CLEARLY IDENTIFIED IN THE PLANS. DURING CONSTRUCTION IT WILL BE TEMPORARILY DISTURBED DUE TO THE TEMPORARY DETOUR. DURING CONSTRUCTION, TEMPORARY EROSION CONTROL MEASURES WILL BE UTILIZED IN ORDER TO MINIMIZE EFFECTS TO THE WETLAND. FINAL EROSION CONTROL MEASURES SUCH AS SEEDING, MULCHING AND EROSION MATTING WILL BE USED WITHIN THE AREA WHEN CONSTRUCTION IS COMPLETE.

NO OTHER AREAS HAVE BEEN IDENTIFIED AS RESOURCES WITHIN THE PROJECT CONSTRUCTION LIMITS.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

THE ONLY WATER FEATURE THAT WILL BE AFFECTED BY CONSTRUCTION WILL BE THE PASSUMPSIC RIVER. THE DISTURBANCE OF SOILS WILL BE NECESSARY TO REMOVE THE EXISTING CONCRETE ABUTMENTS. THE AREA AROUND THE NEW ABUTMENTS WILL BE STABILIZED WITH STONE FILL, TYPE IV ONCE THE CONSTRUCTION OF THE NEW ABUTMENTS IS COMPLETE.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL MEASURES TO BE UTILIZED INCLUDE:

"PROJECT DEMARICATION 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.

TRACKING OF ALL 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. SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF FORECASTED RAIN.

SEEDING MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING, OR AN EQUIVALENT, SHALL BE USED TO STABILIZE ALL SLOPES GREATER THAN 1:3. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INTERMITTENT PHASES OF CONSTRUCTION.

DITCHES SHALL BE LINED WITH STONE FILL, TYPE I, IMMEDIATELY AFTER REACHING FINAL GRADE. TEMPORARY STONE CHECK DAMS SHALL ALSO BE USED IN DITCHES TO REDUCE FLOW VELOCITIES UNTIL DITCHES ARE COMPLETELY STONE LINED. STONE CHECK DAMS SHALL BE PLACED IN DITCHES SUCH THAT THE ELEVATION AT THE TOP OF EACH DAM CORRESPONDS TO THE SAME ELEVATION OF THE TOE OF THE PRECEDING UPSLOPE DAM AS SHOWN ON THE 'EROSION CONTROL DETAILS' SHEET. STONE CHECK DAMS SHALL REMAIN IN DITCHES UNTIL THE FULL LENGTH OF DITCHES HAVE BEEN STONE LINED.

SILT FENCE WILL BE INSTALLED ALONG SLOPES SO AS TO PREVENT SEDIMENT TRANSPORT TO DOWN GRADIENT AREAS. EACH LINE OF SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH THE LOWER EDGE BURIED 150 (6") TO PREVENT UNDERFLOW AND ENDS TURNED SLIGHTLY UP GRADE TO CREATE A PONDING EFFECT SHOULD WATER TRY TO RUN ALONG THE FENCING AND AROUND THE ENDS. SILT FENCE SHALL BE PLACED PRIOR TO ANY UPSLOPE EARTHWORK.

SAND BAGS FILLED WITH CLEAN, SMALL DIAMETER STONE, OR AN EQUIVALENT BARRIER WILL BE UTILIZED AROUND THE DROP INLET TO CREATE A TEMPORARY PONDING AREA FOR PARTICLES TO SETTLE OUT AS WATER DRAINS THROUGH 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.

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 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 150MM 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 WILL BE NECESSARY ON THIS PROJECT. SETTLING BASINS SHALL BE SIZED BASED UPON THE FOLLOWING CRITERIA:

PUMP FLOW RATE	REQUIRED SURFACE AREA	LENGTH = 2:1					
		L (ft)	W (ft)	L (m)	W (m)		
Q (gpm)	Q (m ³ /s)	(ft ²)*2)	(m ²)				
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

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 THE VTRANS HYDRAULICS UNIT. THE STONE LINING WILL STABILIZE THE EXISTING BANK IN ORDER TO PROTECT IT FROM EROSION DURING STORM AND HIGH WATER EVENTS.

DITCHES WILL BE LINED WITH STONE FILL TYPE I TO PREVENT EROSION BY REDUCING FLOW VELOCITIES. STONE CHECK DAMS WILL SERVE THE SAME PURPOSE UNTIL DITCHES HAVE BEEN COMPLETELY LINED.

ALL DISTURBED AREAS WILL BE SEEDED AND MULCHED. SLOPES GREATER THAN 1:3 WILL UTILIZE EROSION CONTROL MATTING TO ALLOW VEGETATION TO BE ESTABLISHED.

STREAM BANK VEGETATION WILL BE INTRODUCED IN THE GRUBBING MATERIAL THAT IS TO BE PLACED OVER THE STREAM BANK RIP RAP.

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 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 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 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 THE 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 CHANNELS, CULVERTS AND/OR TEMPORARY PIPES.

DO NOT ALLOW CONSTRUCTION EQUIPMENT TO OPERATE ON THE DOWN SLOPE SIDE OF PERIMETER CONTROL MEASURES.

EROSION CONTROL NARRATIVE

PROJECT NAME: LYNDON	PLOT DATE: 29-NOV-2005
PROJECT NUMBER: BRS 0269 (8)S	DRAWN BY: G. ROY
FILE NAME: 85e04\N\structures\se04le01i	CHECKED BY: M. LOZIER
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