

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THE TOTAL PROJECT INVOLVES A 4.28-MILE SECTION OF US ROUTE 2 BETWEEN THE TOWNS OF CABOT AND DANVILLE, VERMONT. THE PROJECT IS BEING DEVELOPED IN THREE SEGMENTS. THE FIRST SEGMENT, AND SUBJECT OF THIS APPLICATION, BEGINS AT A POINT ON US ROUTE 2 APPROXIMATELY 0.04 MILES NORTHEAST OF THE MARSHFIELD CABOT TOWN LINE AND EXTENDS IN A NORTHEASTERLY DIRECTION FOR APPROXIMATELY 1.46 MILES. THE SECOND SEGMENT BEGINS APPROXIMATELY 1.26 MILES EAST OF THE FIRST SEGMENT AND EXTENDS 1.49 MILES TO THE NORTHEAST. THE FINAL SEGMENT BEGINS APPROXIMATELY 0.92 MILES NORTHEAST OF THE SEGMENT TOWN AND EXTENDS 1.30 MILES TO THE EAST.

THIS APPLICATION ADDRESSES THE CONSTRUCTION OF THE FIRST SEGMENT OF THE PROJECT, FROM STATION 100+00 TO 177+00, WHICH INVOLVES APPROXIMATELY 20 ACRES OF EARTH DISTURBANCE. CONSTRUCTION OF THIS SEGMENT WILL CONSIST OF THE RECONSTRUCTION AND WIDENING OF US ROUTE 2, INCLUDING GRADING, DRAINAGE, SUBBASE, PAVEMENT, AND OTHER ASSOCIATED WORK. WORK ON THE FIRST SEGMENT IS ANTICIPATED TO BEGIN IN THE SPRING OF 2011. A DESCRIPTION OF THE WORK INVOLVED WITH THIS PROJECT IS DESCRIBED, AS FOLLOWS:

1.1.1 ROADWAY

THE TYPICAL ROADWAY SECTION CONSISTS OF TWO (2) 12 FOOT TRAVEL LANES WITH 8-FOOT SHOULDERS. A THIRD, CLIMBING LANE, APPROXIMATELY 3900 FEET LONG, WILL ALSO BE PROVIDED FOR EASTBOUND TRAVELERS BETWEEN STATIONS 124+50 TO 163+50. THE PROJECT HAS BEEN DESIGNED TO ROUGHLY FOLLOW THE EXISTING HORIZONTAL ALIGNMENT, ALTHOUGH SEVERAL PORTIONS HAVE BEEN ADJUSTED SLIGHTLY (TO A MAXIMUM OF 75'). THE VERTICAL GRADES HAVE ALSO BEEN MODIFIED SLIGHTLY. THE PURPOSE OF THESE MODIFICATIONS IS TO PROVIDE A SAFER ROADWAY THAT COMPLIES WITH THE CURRENT VERMONT AGENCY OF TRANSPORTATION'S DESIGN GUIDELINES.

1.1.2 STREAM CROSSINGS/WORK

THE PROJECT WILL ALSO INCLUDE APPROXIMATELY 300 FEET OF STREAM CHANNEL RELOCATION. A PORTION OF MOLLY'S FALLS BROOK LOCATED BETWEEN ROADWAY STATION 133+75 AND 136+75 WILL BE SHIFTED TO THE SOUTH. EITHER SIDE OF THE NEW CHANNEL WILL BE PLANTED WITH LIVE WILLOW STAKES AND OTHER RIPARIAN PLANTINGS. THE REMAINING SLOPE BETWEEN THE NEW CHANNEL AND ROADWAY WILL BE STABILIZED WITH BIOTECHNICAL METHODS. THE NATURAL CHANNEL DESIGN WAS DEVELOPED IN COOPERATION WITH THE AGENCY OF NATURAL RESOURCES STREAM ALTERATION ENGINEER AND THE U.S. ARMY CORPS OF ENGINEERS. WORK WITHIN THE WATER BODIES WILL BE LIMITED TO THE PERIOD OF JUNE 1 TO OCTOBER 1 IN ACCORDANCE WITH THE PROJECT'S 401 WATER QUALITY CERTIFICATE.

1.1.3 PENSTOCK RELOCATION

AS PART OF THIS PROJECT, AN APPROXIMATELY 380' LONG SECTION OF THE PENSTOCK WILL BE REPLACED NEAR ROADWAY STATION 142+00, WHERE THE EXISTING 6' DIAMETER PENSTOCK CROSSES UNDER US ROUTE 2. THE NEW SECTION OF PENSTOCK WILL CROSS UNDER THE ROADWAY WITHIN 20' WEST OF THE CURRENT CROSSING.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE PROJECT BEGINS AT A POINT ON EXISTING US ROUTE 2, JUST EAST OF THE MARSHFIELD/CABOT LINE, AND EXTENDS APPROXIMATELY 1.46 MILES TO THE NORTHEAST.

WITHIN THE PROJECT AREA, US ROUTE 2 IS A RURAL TWO-LANE HIGHWAY AND REPRESENTS A CRUCIAL EAST-WEST CORRIDOR IN NORTHERN VERMONT. THERE IS A LOCAL HIGHWAY (TH 58) THAT INTERSECTS WITH US ROUTE 2 WITHIN THE PROJECT LIMITS, SEVERAL SMALL PRIVATE DRIVEWAYS, AN ACCESS DRIVE TO THE DAM AT MOLLY'S FALLS POND, AND A BOAT ACCESS AREA FOR THE POND. THE AREA ADJACENT TO THE ROADWAY IS OTHERWISE UNDEVELOPED.

THROUGH THE PROJECT AREA, US ROUTE 2 IS LOCATED IN A VALLEY BETWEEN DANVILLE HILL AND DREW MOUNTAIN. LAND SLOPES ALONG THE ROADWAY ARE IN THE RANGE OF <1 TO 8% FROM EAST TO WEST. DANVILLE HILL, ON THE NORTH SIDE OF THE VALLEY, SLOPES DOWN TO THE ROADWAY AT GRADES RANGING FROM 10 TO 26%. IMMEDIATELY SOUTH OF THE ROADWAY, THESE SLOPES CONTINUE BRIEFLY BEFORE REACHING THE VALLEY FLOOR AT MOLLY'S FALLS POND AND MOLLY'S FALLS BROOK. FURTHER SOUTH OF THE POND AND BROOK, THE LOWER SLOPES OF DREW MOUNTAIN RISE AT GRADIENTS SIMILAR TO THE NORTH SIDE OF THE VALLEY.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE PROJECT DRAINS TO TWO CONNECTED RECEIVING WATERS: MOLLY'S BROOK AND MOLLY'S FALLS RESERVOIR. AS THIS IS A LINEAR PROJECT THAT RUNS ROUGHLY PARALLEL TO THESE WATERS, THERE ARE BOTH DISCRETE DISCHARGES FROM STORMWATER COLLECTED IN SWALES AND CULVERTS, AS WELL AS INDISCRETE DISCHARGES FROM STORMWATER FLOWING OVERLAND ALONG THE LENGTH OF THE PROJECT.

DRAINAGE FROM THE SOUTHERN HILLSIDE IS HYDRAULICALLY ISOLATED FROM THE PROJECT AREA BY THE POND AND BROOK.

THE DISCRETE DISCHARGES INCLUDE ONE 84" PRE-CAST CONCRETE BOX CROSSING, TWO (2) 48" CULVERTS, AND ELEVEN (11) OTHER SMALL CULVERT CROSSINGS LESS THAN 48" IN DIAMETER. THE LOCATION AND SIZE OF THESE CROSSINGS IS SHOWN IN THE TABLE BELOW:

Sta 108+00	30" x 88'
Sta 111+65	30" x 116'
Sta 115+28	42" x 86'
Sta 119+00	48" x 86'
Sta 121+67	48" x 104'
Sta 131+93	30" x 140'
Sta 137+00	30" x 122'
Sta 144+32	30" x 116'
Sta 150+94	18" x 78'
Sta 156+00 LT - 156+60 RT	30" x 110'
Sta 162+00	30" x 104'
Sta 164+27	84" x 78'
Sta 170+20.5	24" x 112'
Sta 173+64	18" x 108'

THE PROJECT INCLUDES THESE FOURTEEN (14) CULVERT CROSSINGS, AND THERE WILL ALSO BE APPROXIMATELY 300' OF CHANNEL RELOCATION WORK ON MOLLY'S BROOK.

THERE ARE AREAS OF CLASS II AND III WETLANDS THAT ARE LOCATED BETWEEN THE ROADWAY AND MOLLY'S FALLS BROOK NEAR THE WESTERN END OF THE PROJECT ALIGNMENT. PROJECT-BASED IMPACTS TO THESE WETLANDS AND BUFFERS ARE BEING PERMITTED THROUGH A CONDITIONAL USE PERMIT AND AN US ARMY CORPS OF ENGINEERS PERMIT.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA MOSTLY CONSISTS OF EVERGREEN TREES AND UNDERGROWTH. IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY THE MODIFICATION OF THE ROADWAY, IN CONJUNCTION WITH INSTALLATION OF SEVERAL CULVERTS VARYING IN SIZE ALONG THE PROJECT AREA. ALSO AFFECTING THE IMPACT TO VEGETATION, WILL BE A STREAM CHANNEL RELOCATION, WITH A SHIFTING OF MOLLY'S FALLS BROOK. THE RELOCATION OF THE PENSTOCK WILL ALSO AFFECT THE VEGETATION IMPACT. TOPSOIL, SEED, MULCH, OR STONE FILL SHALL BE APPLIED TO ALL DISTURBED AREAS.

1.2.4 SOILS

DUE TO THE LENGTH OF THE PROJECT, MANY DIFFERING SOIL TYPES ARE DOCUMENTED, THE FOLLOWING TABLE DEPICTS SOILS TYPES, SLOPES, AND K FACTORS FOUND:

MUNAME - Soil Name	Slope	KFACTOR
Cabot silt loam	3 TO 8%	0.32
Cabot silt loam	8 TO 15%	0.32
Cabot silt loam, very stony	0 TO 8%	0.28
Cabot silt loam, very stony	8 TO 15%	0.28
Colonel fine sandy loam, very stony	8 TO 15%	0.17
Rumney fine sandy loam	0 TO 2%	0.24
Vershire-dummerston complex, rocky	8 TO 15%	N/A
Vershire-dummerston complex, rocky	15 TO 25%	0.24
Buckland silt loam, very stony	15 TO 35%	0.28
Cabot silt loam, extremely bouldery	8 TO 15%	0.15

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF WASHINGTON VERMONT.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
 0.0-0.23 = LOW EROSION POTENTIAL;
 0.24-0.36 = MEDIUM EROSION POTENTIAL;
 0.37 AND HIGHER = HIGH EROSION POTENTIAL.

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
 HISTORICAL OR ARCHEOLOGICAL AREAS: NO
 PRIME AGRICULTURAL LAND: NO
 THREATENED AND ENDANGERED SPECIES: NO
 WATER RESOURCE: YES, MOLLY'S BROOK AND MOLLY'S FALLS POND
 WETLANDS: YES, CLASS II PSSY AND CLASS III

THERE ARE EIGHT DISTINCT SUB-AREAS (GREATER THAN 0.5 ACRES) THAT HAVE BEEN IDENTIFIED WITHIN THE PROJECT.

SUB-AREA 1

SIZE: 0.5 ACRES

SOILS: CABOT SILT LOAM, VERY STONY (K = 0.28)

AVERAGE SLOPE: 37%

DESCRIPTION: THIS AREA INVOLVES THE CONSTRUCTION OF THE ROADSIDE SWALE BETWEEN STATIONS 103+00 AND 111+00, ALONG WITH THE CULVERT THAT CROSSES THE ROAD AT STATION 108+00. THIS SUB-AREA HAS A DISCRETE DISCHARGE TO MOLLY'S BROOK AT STATION 108+00.

SUB-AREA 2

SIZE: 1.1 ACRES

SOILS: CABOT SILT LOAM, EXTREMELY BOULDERY (K = 0.15)

AVERAGE SLOPE: 34%

DESCRIPTION: THIS AREA INVOLVES THE CONSTRUCTION OF THE ROADSIDE SWALE AND STABILIZED EMBANKMENT BETWEEN STATIONS 124+50 AND 131+00. THIS SUB-AREA HAS A DISCRETE DISCHARGE TO MOLLY'S BROOK AT STATION 121+67.

SUB-AREA 3

SIZE: 6.0 ACRES

SOILS: CABOT SILT LOAM, EXTREMELY BOULDERY (K = 0.15)

AVERAGE SLOPE: 30%

DESCRIPTION: THIS AREA INVOLVES THE ROADWAY AND SWALE CONSTRUCTION BETWEEN STATIONS 131+00 AND 144+00, WITH THE SWALE CONSTRUCTION EXTENDING TO STATION 151+00. THIS SECTION OF THE PROJECT WILL ALSO INCLUDE THREE CULVERT CROSSINGS AND THE STREAM RELOCATION COMPONENT OF THE PROJECT. THIS SUB-AREA DRAINS TO MOLLY'S BROOK ALONG ITS ENTIRE LENGTH, AS WELL AS AT THE THREE CULVERT OUTLETS AT STATIONS 131+93, 137+00 AND 144+50.

SUB-AREA 4

SIZE: 0.5 ACRES

SOILS: VERSHIRE-DUMMERSTON COMPLEX, ROCKY (K = 0.24) ASSUMED, BASED ON PUBLISHED K-VALUES FOR OTHER VERSHIRE-DUMMERSTON COMPLEXES)

AVERAGE SLOPE: 25%

DESCRIPTION: THIS AREA INVOLVES THE CONSTRUCTION OF THE ROADSIDE SWALE BETWEEN STATIONS 157+00 AND 163+00, ALONG WITH THE CULVERT THAT CROSSES THE ROAD AT STATION 162+00. THIS SUB-AREA HAS A DISCRETE DISCHARGE TO MOLLY'S FALLS RESERVOIR AT STATION 162+00.

SUB-AREA 5

SIZE: 0.6 ACRES

SOILS: VERSHIRE-DUMMERSTON COMPLEX, ROCKY (K = 0.24)

CABOT SILT LOAM, EXTREMELY BOULDERY (K = 0.15)

AVERAGE SLOPE: 18%

DESCRIPTION: THIS AREA INVOLVES THE CONSTRUCTION OF THE ROADSIDE SWALE BETWEEN STATIONS 163+00 AND 168+50, ALONG WITH THE CULVERT THAT CROSSES THE ROAD AT STATION 164+50. THIS SUB-AREA HAS A DISCRETE DISCHARGE TO MOLLY'S FALLS RESERVOIR AT STATION 164+00.

SUB-AREA 6

SIZE: 5.7 ACRES

SOILS: COLONEL FINE SANDY LOAM, VERY STONY (K = 0.17)

CABOT SILT LOAM, VERY STONY (K = 0.28)

CABOT SILT LOAM (K = 0.32)

CABOT SILT LOAM, EXTREMELY BOULDERY (K = 0.15)

AVERAGE SLOPE: 14%

DESCRIPTION: THIS AREA INVOLVES THE ROADWAY CONSTRUCTION BETWEEN STATIONS 100+00 AND 128+00. THIS SUB-AREA DRAINS TO MOLLY'S BROOK ALONG ITS ENTIRE LENGTH.

SUB-AREA 7

SIZE: 0.6 ACRES

SOILS: CABOT SILT LOAM, EXTREMELY BOULDERY (K = 0.15)

AVERAGE SLOPE: 8%

DESCRIPTION: THIS AREA INVOLVES THE ROADWAY AND SWALE CONSTRUCTION BETWEEN STATIONS 145+00 AND 149+00. THIS SUB-AREA HAS A DISCRETE DISCHARGE TO MOLLY'S BROOK AT STATION 144+50.

SUB-AREA 8

SIZE: 5.3 ACRES

SOILS: CABOT SILT LOAM, EXTREMELY BOULDERY (K = 0.15)

VERSHIRE-DUMMERSTON COMPLEX, ROCKY (K = 0.24)

AVERAGE SLOPE: 14%

DESCRIPTION: THIS AREA INVOLVES THE ROADWAY CONSTRUCTION BETWEEN STATIONS 149+00 AND 177+00. THIS SUB-AREA DRAINS TO MOLLY'S FALLS RESERVOIR ALONG ITS ENTIRE LENGTH.

PROJECT NAME: CABOT-DANVILLE

PROJECT NUMBER: FECC F 028-3(26) C/I

FILE NAME: d78d058frm.dgn

PROJECT LEADER: K. ROBBIE

DESIGNED BY: I. SHEA

EPSC NARRATIVE SHEET I

PLOT DATE: 13-OCT-2010

DRAWN BY: I. SHEA

CHECKED BY: S. Menard

SHEET 58 OF 250