

EPSC PLAN NARRATIVE

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1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF AN EXISTING 108-INCH CORRUGATED METAL CULVERT UNDER INTERSTATE 89 AS WELL AS INSTALLING A NEW PIPE ADJACENT TO THE EXISTING CULVERT USING TRENCHLESS TECHNOLOGY. THE CULVERT IS LOCATED NORTH OF EXIT 15 APPROXIMATELY 300 FEET SOUTH OF THE BRIDGE OVER BAY ROAD IN COLCHESTER, VT. THE CULVERT IS DESIGNATED AS BR 75-3. THE 332 FOOT LONG CULVERT CONVEYS AN UNNAMED BROOK WEST AND OUTLETS INTO MALLETS BAY OF LAKE CHAMPLAIN. THE EXISTING CULVERT WILL BE SLIP LINED WITH A PROPOSED 60-INCH CORRUGATED ALUMINUM ALLOY PIPE (CAAP) AS THE EXISTING CULVERT IS BEYOND ITS DESIGN LIFE AND SHOWS SIGNS OF DETERIORATION AND STRUCTURAL DEFICIENCY. A NEW CULVERT IS TO BE INSTALLED 20 FEET SOUTH OF THE EXISTING PIPE. THE NEW CULVERT IS A 60 INCH SMOOTH WALLED PIPE TO BE INSTALLED USING TRENCHLESS TECHNOLOGY SUCH AS PIPE JACKING OR AUGERING. THE PROJECT ALSO INCLUDES THE CONSTRUCTION OF A FULLY BEVELED HEADWALL AT THE INLET OF BOTH CULVERTS TO IMPROVE HYDRAULICS. DISTURBANCE TO TRAFFIC WILL BE ONLY THAT WHICH CONSTRUCTION VEHICLES NEED TO ACCESS THE SITE. NO FULL ROAD CLOSURES WILL BE NECESSARY. TEMPORARY LANE CLOSURES WILL BE ALLOWED (SEE SPECIAL PROVISIONS). TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW, AND CONTRACTORS OFF-SITE STAGING AREAS) EQUALS 1.31 ACRES. THE TOTAL DISTURBED AREA EQUALS THE ENTIRE AREA LOCATED WITHIN THE BARRIER FENCE.

IT IS ANTICIPATED THAT THIS WILL BE A SINGLE SEASON PROJECT.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE PROPERTY SURROUNDING THE SITE CONSISTS OF WOODS WITH LIGHT UNDERBRUSH. THE SIDE SLOPES OF THE INTERSTATE ARE GRASSED. THE TERRAIN CAN BE DESCRIBED AS FLAT WITH WELL DEFINED WATERWAYS. AFTER THE WATER TRAVELS UNDER THE INTERSTATE, IT FLOWS TO ANOTHER CULVERT UNDER BAY ROAD AND THROUGH A RESIDENTIAL AREA TO OUTLET INTO MALLETS BAY. THE SIDE SLOPES OF THE STREAM ARE LOW. DUE TO THE FLAT TERRAIN IN THE AREA, HIGH FLOW RATES WOULD CREATE SIGNIFICANT PONDING ON BOTH THE UPSTREAM AND DOWNSTREAM ENDS OF THE CULVERT. THE ROADWAY EMBANKMENTS ARE GRASSED WITH WELL ESTABLISHED VEGETATION AND WERE CONSTRUCTED AT 1:2 (VERTICAL: HORIZONTAL) SLOPES.

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

THE UNNAMED BROOK IS LOCATED WITHIN THE PROJECT AREA. THE BROOK FLOWS EAST TO WEST BENEATH BOTH BARRELS OF INTERSTATE 89. THERE ARE NO OTHER WATERWAYS OR BODIES OF WATER WITHIN THE PROJECT AREA. STORMWATER ENTERING THE PROJECT AREA WILL BE LIMITED TO THE RUNOFF FROM INTERSTATE 89 AND RUNOFF FROM THE SIDESLOPES OF THE EMBANKMENT.

1.2.3 VEGETATION

THE VEGETATION ON THE SITE CONSISTS OF BRUSH AND TREES ON BOTH SIDES OF THE INTERSTATE. THE DOWNSTREAM END CONTAINS MANY SHRUBS WITH SOME FORESTED AREAS. THE UPSTREAM TERRAIN IS MARSHY WITH A MIX OF HERBACEOUS AND FORESTED VEGETATION. THE INTERSTATE EMBANKMENTS ARE GRASSED ON BOTH SIDES. THE IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY IMPACTED BY THE SLIP-LINING, NEW CULVERT INSTALLATION, AND HEADWALL CONSTRUCTION OPERATIONS. DISTURBED SOILS AND VEGETATION WILL BE REESTABLISHED USING STONE AND STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

THE SOIL FOUND ON THE UPSTREAM SIDE OF THE PROJECT IS A MIX OF WINOOSKI VERY FINE SANDY LOAM AND TERRACE ESCARPMENTS. THE DOWNSTREAM END IS COMPOSED OF TERRACE ESCARPMENTS, WINOOSKI VERY FINE SANDY LOAM, AND MUNSON AND BELGRADE SILT LOAMS, 12-25% SLOPES. WINOOSKI VERY FINE SANDY LOAM HAS AN ERODIBILITY FACTOR (K-VALUE) OF 0.49. MUNSON AND BELGRADE SILT LOAM HAS AN ERODIBILITY FACTOR OF 0.49. THE ROADWAY EMBANKMENTS ARE MOST LIKELY A COMMON FILL MATERIAL THAT WAS PLACED DURING CONSTRUCTION OF THE INTERSTATE. GENERALLY, K-VALUES INDICATE THE FOLLOWING:

- 0.23 AND LOWER LOW ERODIBILITY
- 0.24 TO 0.36 MODERATE ERODIBILITY
- 0.36 AND HIGHER HIGH ERODIBILITY

1.2.5 SENSITIVE RESOURCE AREAS

DISTURBANCE OF THE SOILS NEAR THE WATERWAY WILL CONSIST OF THAT WHICH IS NECESSARY TO CONSTRUCT THE PROPOSED HEADWALL, SLIP-LINE THE EXISTING PIPE, AND INSTALL THE NEW PIPE. BARRIER FENCE (BF) WILL BE CONSTRUCTED ALONG THE PROJECT LIMITS TO PREVENT DISTURBANCE OUTSIDE THE PROJECT LIMITS.

CRITICAL HABITATS: NO
HISTORIC OR ARCHAEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCES: NO
WETLANDS: YES, SEE BELOW FOR IMPACTS

WETLAND IMPACTS: 12,927 SF TEMPORARY; 1,783 SF PERMANENT
WETLAND BUFFER IMPACTS: 24,046 SF TEMPORARY; 456 SF PERMANENT
OHW IMPACTS: 1,408 SF TEMPORARY; 2,788 SF PERMANENT

1.3 RISK EVALUATION

THIS PROJECT FALLS UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES FOR LOW RISK PROJECTS. ANY MODIFICATIONS TO THE PROJECT THAT INCREASE THE RISK TO ENVIRONMENTAL RESOURCES SHALL BE EVALUATED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING. THE RISK EVALUATION WAS BASED ON HAVING LESS THAN 2 ACRES OF DISTURBANCE AND NO AREAS OF DISTURBANCE FOR MORE THAN 14 CONSECUTIVE DAYS WITHOUT TEMPORARY OR FINAL STABILIZATION.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING. ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION. 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 SHALL USE ADDITIONAL EROSION CONTROL MEASURES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION, FIELD CONDITIONS, AND AS DIRECTED BY THE ENGINEER OR ON-SITE COORDINATOR. SEE SUBSECTION 105.23 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN IN THE EROSION CONTROL PLAN OR AS DIRECTED BY THE ENGINEER OR ON-SITE COORDINATOR. DO NOT MODIFY THE TYPE, SIZE, OR LOCATION OF ANY CONTROL OR PRACTICE WITHOUT APPROVAL OF THE ENGINEER OR ON-SITE COORDINATOR. 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 THAT PRODUCES RUNOFF FROM THE PROJECT SITE. REPAIR MEASURES PROMPTLY ONCE DAMAGE IS DISCOVERED. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR EACH PRACTICE REQUIRED ON THE PROJECT TO INCLUDE BUT NOT LIMITED TO THE FOLLOWING:

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED. BARRIER FENCE (BF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, BARRIER FENCE SHALL BE USED INSTEAD OF PROJECT DEMARCATION FENCE WITHIN 100 FT OF A WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC). DISTURBANCE OUTSIDE THE LIMITS OF THE BARRIER FENCE WILL REQUIRE ADDITIONAL PERMIT COVERAGE.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME. 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. DO NOT ALLOW CONSTRUCTION EQUIPMENT TO OPERATE OUTSIDE OF PERIMETER CONTROL MEASURES.

1.4.3. SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT TEMPORARY ACCESS ROADS AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES. IF SEDIMENT IS STILL BEING TRACKED ONTO PUBLIC ROADS, THE LENGTH OF THE PAD SHALL BE EXTENDED OR VEHICLES SHALL BE RINSED WITH A HOSE PRIOR TO LEAVING THE SITE.

1.4.4. INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK. SILT FENCE TO BE INSTALLED AS PROPOSED ON THE EPSC PLAN. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, WOVEN WIRE REINFORCED SILT FENCE SHALL BE USED INSTEAD OF SILT FENCE WITHIN 100 FEET UPSLOPE OF RECEIVING WATERS.

1.4.5. DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE. THE EXISTING STREAM WILL BE DIVERTED AS DESCRIBED IN THE DEWATERING SECTION BELOW. IT IS NOT ANTICIPATED THAT ANY OTHER UPLAND FLOW DIVERSION WILL BE REQUIRED.

1.4.6. SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS. CHECK DAMS TO BE USED AS DETERMINED NECESSARY BY THE RESIDENT ENGINEER. IT IS ANTICIPATED THAT STONE CHECK DAMS WILL BE REQUIRED AS A RESULT OF THE TEMPORARY ACCESS ROADS.

1.4.7. CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS. ALL DISTURBED SOIL SHALL BE STABILIZED WITH SEED AND MULCH OR STONE FILL AS SHOWN ON THE PLANS. IT IS NOT ANTICIPATED THAT ANY OTHER PERMANENT STORMWATER TREATMENT DEVICES WILL BE NECESSARY.

1.4.8. STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION. SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3. THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9. WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK HANDBOOK FOR GUIDANCE. IF ANY EARTHWORK IS TO BE PERFORMED OUTSIDE THE CONSTRUCTION SEASON, A WINTER EROSION AND SEDIMENT CONTROL PLAN DESCRIBING ALTERNATIVE STABILIZATION METHODS SHALL BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO AUGUST 15 FOR APPROVAL.

1.4.10. STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE. SEEDING, MULCHING, AND BIODEGRADABLE EROSION CONTROL MATTING OR EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

1.4.11. DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE HEADWALLS AND CRADLE WALLS. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSIONS WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO THE EXISTING CULVERT DURING THE NEW CULVERT INSTALLATION AND INTO THE NEW CULVERT DURING THE LINING OF THE EXISTING CULVERT. FILTER BAGS MAY BE NECESSARY FOR TREATMENT WHILE DEWATERING AS NECESSARY FOR CONSTRUCTION ACTIVITIES. HOWEVER, THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT A PLAN FOR ANY DEWATERING AREAS TO THE RESIDENT ENGINEER FOR APPROVAL.

1.4.12. INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

THE CONTRACTOR SHALL DEVELOP THE TRAFFIC MANAGEMENT PLAN USING THE STANDARD PLANS AND THE MOST RECENT EDITION OF THE MUTCD.

1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25 - 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046ern01.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
EPSC NARRATIVE - COLCHESTER 75-3

PLOT DATE: 08-FEB-2011
DRAWN BY: M. LOVETT
CHECKED BY: D. BENOIT
SHEET 19 OF 36

