

## EROSION CONTROL NARRATIVE

### 1. PROJECT DESCRIPTION

CAMBRIDGE BRF 027-1 (4) WILL REPLACE BRIDGE 21 ON VT 108 OVER THE LAMOILLE RIVER IN THE TOWN OF CAMBRIDGE ON THE EXISTING ALIGNMENT. THIS PROJECT WILL BE BUILT IN CONJUNCTION WITH CAMBRIDGE STP 030 -2 (27) WHICH WILL RE-BUILD THE INTERSECTION OF VT 108 AND VT 15 IN CAMBRIDGE. STP 030-2 (27) INCLUDES CONSTRUCTION OF A ROUNDABOUT AND FULL-DEPTH RECONSTRUCTION OF THE APPROACHES TO THE INTERSECTION OF VT 15 AND VT 108 IN CAMBRIDGE.

THE NEW BRIDGE WILL BE A TWO LANE, THREE SPAN, CONCRETE DECK ON CURVED STEEL GIRDER. THE PROJECT WILL MAINTAIN TRAFFIC ON A TEMPORARY BRIDGE, LOCATED DOWNSTREAM OF THE EXISTING STRUCTURE, DURING CONSTRUCTION. THE EXISTING BRIDGE AND APPROACHES WILL BE REMOVED ONCE THE TEMPORARY BRIDGE IS IN PLACE AND PRIOR TO CONSTRUCTION OF THE NEW BRIDGE. THE TOTAL LENGTH OF WORK, INCLUDING APPROACHES AND INCLUDING THE WORK ASSOCIATED WITH BOTH BRF 027-1 (4) AND STP 030-2 (27), IS APPROXIMATELY 969 METERS (3179 FT).

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST TWO CONSTRUCTION SEASONS.

### 2. AREA OF DISTURBANCE

AREA OF DISTURBANCE SHALL INCLUDE LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, INCLUDING ANY WASTE, STAGING AND BORROW AREAS WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS.

TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW & STAGING AREAS) IS APPROX 2.98 HECTARES (7.36 ACRES). THIS IS THE TOTAL DISTURBED AREA FOR BOTH CAMBRIDGE BRF 027 -1 (4) AND CAMBRIDGE STP 030-2 (27) WHICH WILL BOTH BE BUILT AS PART OF THE SAME CONSTRUCTION CONTRACT.

### 3. CONSTRUCTION SEQUENCE

THE CONTRACTOR SHALL SEQUENCE CONSTRUCTION ACTIVITIES TO MINIMIZE THE EXTENT OF DISTURBED SOILS LEFT OPEN TO A MAXIMUM OF 5 DISTURBED ACRES AT ANY GIVEN TIME. CONSTRUCTION SEQUENCING PHASING AREAS ARE SHOWN AND DEFINED ON THE "CONSTRUCTION SEQUENCE PHASING" SHEET. A PROPOSED GENERAL SEQUENCE FOR EACH OF THE CONSTRUCTION ZONES IS AS FOLLOWS:

- ROUNDABOUT (STP 030-2(27) PROJECT)
  - 1) ESTABLISH PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS, INCLUDING WETLANDS.
  - 2) INSTALL SEDIMENT CONTROL MEASURES.
  - 3) CLEAR AND GRUB.
  - 4) CONSTRUCT TEMPORARY ROADWAY FOR PHASE IV TRAFFIC, STABILIZE TEMPORARY SLOPES, AND PLACE TEMPORARY PAVEMENT.
  - 5) BEGIN CUT AND FILL OPERATIONS, LIMITING TOTAL DISTURBED AREA TO 5 ACRES.
  - 6) FORM, ROUGH GRADE AND STABILIZE ANY DITCHES.
  - 7) CONCURRENTLY INSTALL TEMPORARY STABILIZATION AND EPSC MEASURES AS WORK PROGRESSES.
  - 8) INSTALL ANY APPLICABLE STORM DRAIN PIPES AND STRUCTURES.
  - 9) PLACE SUBBASE MATERIAL FOR ROADWAY, FINAL GRADE AND STABILIZE ALL EARTH DISTURBANCE AS WORK PROGRESSES.
  - 10) BEGIN PHASE V CONSTRUCTION, SHIFT TRAFFIC TO TEMPORARY ROADWAY.
  - 11) REPEAT STEPS 4 THROUGH 10 FOR PHASE V, VI, VII, AND VIII CONSTRUCTION.
- SOUTH OF THE LAMOILLE RIVER (BRF 027-1(4) PROJECT)
  - 1) ESTABLISH PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS, INCLUDING WETLANDS AND RIPARIAN BUFFER ZONES.
  - 2) INSTALL SEDIMENT CONTROL MEASURES.
  - 3) CLEAR AND GRUB.
  - 4) CONSTRUCT TEMPORARY ROADWAY FOR PHASE 1 TRAFFIC, STABILIZE TEMPORARY SLOPES, AND PLACE TEMPORARY PAVEMENT.
  - 5) BEGIN CUT AND FILL OPERATIONS, LIMITING TOTAL DISTURBED AREA TO 5 ACRES.
  - 6) FORM, ROUGH GRADE AND STABILIZE DITCHES.
  - 7) CONCURRENTLY INSTALL TEMPORARY STABILIZATION AND EPSC MEASURES AS WORK PROGRESSES.
  - 8) INSTALL STORM DRAIN PIPES AND STRUCTURES.
  - 9) PLACE SUBBASE MATERIAL FOR ROADWAY, FINAL GRADE AND STABILIZE ALL EARTH DISTURBANCE AS WORK PROGRESSES.
  - 10) PAVE ROADWAY.
  - 11) BEGIN PHASE 2 CONSTRUCTION, SHIFT TRAFFIC TO TEMPORARY ROADWAY PAVEMENT, SPLIT TRAFFIC FLOW AND CONSTRUCT FINAL ROADWAY BETWEEN EASTBOUND AND WESTBOUND TRAFFIC.
  - 12) REPEAT STEPS 5 THROUGH 10 CONCURRENT WITH PHASE 2 CONSTRUCTION.
  - 13) BEGIN PHASE III CONSTRUCTION, SHIFT TRAFFIC TO NEW ROADWAY PAVEMENT, REMOVE TEMPORARY ROADWAY, AND CONSTRUCT FINAL ROADWAY.

14) REPEAT STEPS 5 THROUGH 10 CONCURRENT WITH PHASE III CONSTRUCTION.

- NORTH OF THE LAMOILLE RIVER
  - 1) ESTABLISH PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS, INCLUDING WETLANDS, RIPARIAN BUFFER ZONES, AND ARCHEOLOGICALLY SENSITIVE AREAS.
  - 2) INSTALL SEDIMENT CONTROL MEASURES.
  - 3) CLEAR AND GRUB.
  - 4) CONSTRUCT TEMPORARY ROADWAY FOR PHASE 1 TRAFFIC, STABILIZE TEMPORARY SLOPES, AND PLACE TEMPORARY PAVEMENT.
  - 5) BEGIN CUT AND FILL OPERATIONS, LIMITING TOTAL DISTURBED AREA TO 5 ACRES.
  - 6) FORM, ROUGH GRADE AND STABILIZE DITCHES.
  - 7) CONCURRENTLY INSTALL TEMPORARY STABILIZATION AND EPSC MEASURES AS WORK PROGRESSES.
  - 8) INSTALL STORM DRAIN PIPES AND STRUCTURES.
  - 9) PLACE SUBBASE MATERIAL FOR ROADWAY AND FINAL GRADE AND STABILIZE ALL EARTH DISTURBANCE AS WORK PROGRESSES.
  - 10) PAVE ROADWAY.
  - 11) BEGIN PHASE 2 CONSTRUCTION, SHIFT TRAFFIC TO TEMPORARY ROADWAY PAVEMENT, SPLIT TRAFFIC FLOW AND CONSTRUCT FINAL ROADWAY BETWEEN NORTHBOUND AND SOUTHBOUND TRAFFIC.
  - 12) REPEAT STEPS 5 THROUGH 10 CONCURRENT WITH PHASE 2 CONSTRUCTION.
  - 13) BEGIN PHASE 3 CONSTRUCTION, SHIFT TRAFFIC TO NEW ROADWAY PAVEMENT, REMOVE TEMPORARY ROADWAY, AND CONSTRUCT FINAL ROADWAY.
  - 14) REPEAT STEPS 5 THROUGH 10 CONCURRENT WITH PHASE 3 CONSTRUCTION.
- LAMOILLE RIVER BRIDGE
  - 1) ESTABLISH PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS (THE GIANT FLOATER AND THE CREEK HEELSPLITTER HAVE BEEN IDENTIFIED AND WILL BE DEALT WITH PER CONDITIONS IN THE PERMIT), INCLUDING WETLANDS AND RIPARIAN BUFFER ZONES.
  - 2) INSTALL SEDIMENT CONTROL MEASURES.
  - 3) CLEAR AND GRUB.
  - 4) BEGIN CUT AND FILL OPERATIONS, LIMITING TOTAL DISTURBED AREA TO 5 ACRES.
  - 5) FORM, ROUGH GRADE AND STABILIZE DITCHES.
  - 6) CONCURRENTLY INSTALL TEMPORARY STABILIZATION AND EPSC MEASURES AS WORK PROGRESSES.
  - 7) INSTALL TEMPORARY STABILIZATION AND EPSC MEASURES BEYOND 6-METER CLEARING OF OVERBURDEN.
  - 8) INSTALL STORM DRAIN PIPES AND STRUCTURES.
  - 9) PLACE SUBBASE MATERIAL FOR ROADWAY AND FINAL GRADE AND STABILIZE ALL EARTH DISTURBANCE AS WORK PROGRESSES.
  - 10) PAVE ROADWAY.
  - 11) BEGIN PHASE 2 CONSTRUCTION, SHIFT TRAFFIC TO NEW ROADWAY PAVEMENT, REMOVE TEMPORARY ROADWAY, AND CONSTRUCT FINAL ROADWAY.
  - 12) REPEAT STEPS 4 THROUGH 11 CONCURRENT WITH PHASE 2 CONSTRUCTION.

### 4. STABILIZATION OF EXPOSED SOILS

A DETAILED DESCRIPTION OF THE SOIL TYPES EXPECTED TO BE ENCOUNTERED IN THE PROJECT AREA IS INCLUDED IN THE PROJECT PLAN SHEET TITLED "EXISTING CONDITIONS SITE PLAN".

THREE SOILS ARE IDENTIFIED WITHIN THE PROJECT AREA. THEY ARE:  
**ADAMS LOAMY FINE SAND**, 2 % TO 8% SLOPE. DEPTH IS 0 METERS TO 5 METERS. THIS SOIL IS NOT HIGHLY ERODIBLE. K (EROSION FACTOR) = 0.17.  
**BOOTHBAY SILT LOAM**, 3 % TO 8% SLOPE. DEPTH IS 0 METERS TO 5 METERS. THIS SOIL HAS THE POTENTIAL TO BE HIGHLY ERODIBLE. K (EROSION FACTOR) = 0.32.  
**ONDAWA FINE SANDY LOAM**. DEPTH IS 0 METERS TO 5 METERS. THIS SOIL IS NOT HIGHLY ERODIBLE. K (EROSION FACTOR) = 0.24.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING: 0.0-0.18 = LOW EROSION POTENTIAL; 0.18-0.36 = MODERATE EROSION POTENTIAL; 0.37 AND HIGHER = HIGH EROSION POTENTIAL.

- SEED AND MULCH WILL BE USED FOR BOTH TEMPORARY AND PERMANENT STABILIZATION MEASURES. ROLLED EROSION CONTROL PRODUCT (RECP) WILL BE USED IN PLACE OF MULCH FOR SLOPES GREATER THAN 1V:3H. MULCH IS TO BE APPLIED AT A MINIMUM APPLICATION RATE SHOWN ON THE EPSC DETAILS, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- DISTURBED AREAS AND SOIL STOCKPILES THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY STABILIZED WITH MULCH/ROLLED EROSION CONTROL PRODUCT (RECP) WITHIN 48 HOURS.
- DISTURBED AREAS AND SOIL STOCKPILES THAT WILL NOT BE WORKED FOR MORE THAN 30 DAYS SHALL BE TEMPORARILY STABILIZED WITH SEED AND MULCH/ROLLED EROSION CONTROL PRODUCT (RECP) WITHIN 48 HOURS.

- EXPOSED AREAS THAT HAVE ACHIEVED FINAL GRADE SHALL BE PERMANENTLY STABILIZED WITHIN 48 HOURS.
- IN AREAS WHERE VEGETATIVE COVER WILL PROVIDE PERMANENT STABILIZATION, SEEDING SHALL BE COMPLETED BETWEEN APRIL 15 AND SEPTEMBER 15.

### 5. DRAINAGE AREAS AND DISCHARGE POINTS

THE LAND SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION, WITH MODERATE TO STEEP SLOPES OF LAWN, HAYFIELDS, VARIOUS GRASSES, BRUSH, AND DECIDUOUS AND CONIFEROUS TREES LEADING DOWN TO FLAT FIELDS OR INTO DITCHES. ALONG VT 15 THERE ARE SEVERAL WELL VEGETATED DITCHES THAT RUN ALONG THE NORTHWEST, SOUTHWEST AND SOUTHEAST QUADRANT OF VT 15. THE TOPOGRAPHY GENERALLY RUNS TOWARD THE RIVER FROM THE NORTH AND SOUTH ALONG VT 108 AND RUNS TOWARD THE RIVER FROM THE SOUTH ON VT 15. RUNOFF GENERALLY LEAVES THE SITE THROUGH A COMBINATION OF OVERLAND FLOW, CULVERTS, AND DITCHES.

THE BRIDGE CROSSES THE LAMOILLE RIVER WHICH IS CHARACTERIZED AS PERENNIAL, SINOUS RIVER IN MODERATE RELIEF WITH A WIDE FLOODPLAIN AND HAS A STREAMBED OF GRAVEL WITH SAND AND COBBLES AND SOME LEDGE OUTCROPS. THE BREWSTER RIVER FLOWS INTO THE LAMOILLE RIVER JUST UPSTREAM OF THE RIVER CROSSING BUT IS NOT AFFECTED BY THE PROJECT. THREE AREAS OF DEFINED WETLANDS ARE PRESENT IN THE PROJECT AREA. THE WATERSHED AREA IS 1264 SQUARE KILOMETERS (488 SQUARE MILES).

- DRAINAGE AREA 1 INCLUDES THE MAJORITY OF THE INTERSECTION OF VT ROUTE 15 AND VT ROUTE 108, FROM VT ROUTE 15 STA. 20+060 TO 20+303 AND VT ROUTE 108 STA. 9+915, RT. AND STA. 9+938, LT. TO 10+200. THE ASSOCIATED AREA OF DISTURBANCE IS 3.16 ACRES. RUNOFF FROM THE INTERSECTION AND ALONG THE APPROACHES WILL FLOW TO A CLOSED COLLECTION SYSTEM AND DISCHARGED TO THE LAMOILLE RIVER VIA A GRASS CHANNEL.
- DRAINAGE AREA 2 LOCATED ON VT ROUTE 15, STA. 19+960 TO STA. 20+060. THE ASSOCIATED AREA OF DISTURBANCE IS 0.61 ACRES. RUNOFF IN THE AREA ALONG VT 15 WILL FLOW TO AN EXISTING CULVERT AND DITCH TO THE LAMOILLE RIVER.
- DRAINAGE AREA 3 LOCATED ON VT ROUTE 108, STA. 9+869 TO STA. 9+915, RT. AND STA. 9+938, LT. THE ASSOCIATED AREA OF DISTURBANCE IS 0.15 ACRES. RUNOFF IN THIS AREA WILL SHEET FLOW OFF-PROJECT ULTIMATELY DISCHARGING TO THE LAMOILLE RIVER, VIA A LOW-LYING FIELD AND THE BREWSTER RIVER. THE MAJORITY OF THIS AREA IS COLD PLANING AND RESURFACING ONLY AND THEREFORE IS NON-JURISDICTIONAL.
- DRAINAGE AREA 4 LOCATED TO THE LEFT OF VT ROUTE 108, STA. 10+059, LT. TO STA. 10+200. THE ASSOCIATED AREA OF DISTURBANCE IS 1.19 ACRES. RUNOFF ALONG VT 108 WILL SHEET FLOW AND DISCHARGE INTO THE LAMOILLE RIVER.
- DRAINAGE AREA 5 LOCATED NORTH OF THE RIVER, ON VT 108, STA. 10+223 TO STA. 10+256. THE ASSOCIATED AREA OF DISTURBANCE IS 0.24 ACRES. RUNOFF FROM THIS DRAINAGE AREA WILL SHEET FLOW TO THE LAMOILLE RIVER.
- DRAINAGE AREA 6 LOCATED ON VT 108, STA. 10+256, RT. TO STA. 10+308, RT. THE ASSOCIATED AREA OF DISTURBANCE IS 0.24 ACRES. RUNOFF FROM THE AREA SHEET FLOW TO THE LAMOILLE RIVER.
- DRAINAGE AREA 7 LOCATED ON VT 108, STA. 10+256, LT. TO STA. 10+338. THE ASSOCIATED AREA OF DISTURBANCE IS 0.53 ACRES. RUNOFF FROM THIS AREA WILL SHEET FLOW TO THE LAMOILLE RIVER.
- DRAINAGE AREA 8 LOCATED ON VT 108, STA. 10+308, RT. TO STA. 10+532, RT. THE ASSOCIATED AREA OF DISTURBANCE IS 0.69 ACRES. RUNOFF FROM THIS AREA WILL SHEET FLOW TO THE LAMOILLE RIVER.
- DRAINAGE AREA 9 LOCATED ON VT 108, STA. 10+338, LT. TO STA. 10+519, LT. THE ASSOCIATED AREA OF DISTURBANCE IS 0.59 ACRES. RUNOFF FROM THIS AREA WILL SHEET FLOW TO THE LAMOILLE RIVER.

## EPSC NARRATIVE SHEET 1

PROJECT NAME:	CAMBRIDGE		
PROJECT NUMBER:	BRF 027-1(4) / STP 030-2 (27)		
FILE NAME:	s78f163ern.1	PLOT DATE:	05-JUN-2012
PROJECT LEADER:	M.E-MONGEON/J.SCHULTZ	DRAWN BY:	S. SCRIBNER
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		SHEET	8 OF 214