

**EROSION CONTROL NARRATIVE**

**1.1 PROJECT DESCRIPTION**

THIS PROJECT INVOLVES THE REHABILITATION OF THE HUTCHINS COVERED BRIDGE (BRIDGE NO. 34) OVER THE SOUTH BRANCH TROUT RIVER. THE PROJECT IS LOCATED ON THE T.H. NO. 27 AN UNPAVED CLASS 3 AND 4 TOWN HIGHWAY, IN THE TOWN OF MONTGOMERY. THE BRIDGE IS OPEN TO TRAFFIC BUT WILL BE CLOSED DURING CONSTRUCTION. TRAFFIC WILL BE DETOURED ON A 110 FT LONG DETOUR BRIDGE CONSTRUCTED SOUTH (UPSTREAM) OF THE EXISTING BRIDGE. THE PROJECT CONSISTS OF REPLACING THE DETERIORATED BRIDGE MEMBERS, NEW SIDING, CONSTRUCTION OF FOUR (4) NEW WINGWALLS, RECONSTRUCTION OF ABUTMENT NO. 1, INSTALLATION OF BRIDGE APPROACH RAILING AND REGRADING OF EXISTING ROADWAY APPROACHES. IN ADDITION, A ONE (1) LANE TEMPORARY BRIDGE WILL BE CONSTRUCTED UPSTREAM OF THE EXISTING COVERED BRIDGE. TOTAL ROADWAY APPROACH WORK, INCLUDING BOTH APPROACHES IS APPROXIMATELY 215 FT. THE LIMITS OF CONSTRUCTION ENCROACH ON PRIVATE PROPERTY, BUT TEMPORARY CONSTRUCTION EASEMENTS HAVE BEEN OBTAINED. THE SITE IS LOCATED, BASED UPON NAD 83 (92), AT N849646.41 E1612158.67 (HVCTRL #1 - SEE TRAVERSE AND GEODETIC CONTROL INFORMATION SHEET).

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST TWO (2) CONSTRUCTION SEASONS.

TOTAL AREA OF DISTURBANCE INCLUDING LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, INCLUDING ANY WASTE, STAGING AND BORROW AREAS WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS IS APPROXIMATELY 0.50 ACRES.

**1.2 SITE INVENTORY**

**1.2.1 OFF SITE DRAINAGE CHARACTERISTICS (UP AND DOWN-GRADIENT)**

THE EXISTING T.H. NO. 27 AND T.H. NO. 40 HAVE A GRAVEL ROADBED WITH DEFINED DRAINAGE DITCHES AND MODERATE TO STEEP SLOPES. THE AREA SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION INCLUDING BRUSHES, SOFTWOOD AND HARDWOOD. DUE TO THE NATURE OF THE SURROUNDING TERRAIN, RUNOFF WATER ENTERING THE PROJECT SITE WILL BE LIMITED TO THAT WHICH IS CONVEYED ALONG THE ROAD SIDE DITCHED AND THAT WHICH FOLLOWS T.H. NO. 27 ALONG THE 7.3% GRADE AT THE EAST APPROACH AND THAT WHICH FOLLOWS T.H. NO. 40 ALONG THE 4.8% GRADE AT THE WEST APPROACH OF THE PROJECT LIMITS.

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

THE SOUTH BRANCH TROUT RIVER IS LOCATED ON THE PROJECT AREA. THERE ARE NO OTHER WATER BODIES OR WETLANDS WITHIN THE PROJECT AREA. THE STREAMBED OF THE SOUTH BRANCH TROUT RIVER IS MAINLY COMPOSED OF SAND, GRAVEL AND LEDGE. THE STREAM BANKS ARE MODERATELY STEEP THROUGHOUT THE PROJECT. THE SOUTH BRANCH TROUT RIVER IS CLASSIFIED AS SINUOUS, SEMI-ALLUVIAL, MOUNTAINOUS AND FORESTED SURROUNDING THE CONTRIBUTING DRAINAGE AREA AT THE BRIDGE CROSSING IS 15.7 SQUARE MILES.

**1.2.3 TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES**

THE TOPOGRAPHY OF THE PROJECT SITE IS HILLY WITH WOODED AREAS. VERMONT ROUTE 118 IS PARALLEL TO THE SOUTH BRANCH TROUT RIVER ON THE EAST. THE WEST AND EAST BANKS OF THE RIVER ARE RELATIVELY STEEP WITHIN THE PROJECT VICINITY. THE HUTCHINS BRIDGE SERVES ONE RESIDENCE AT THE END OF T.H. NO. 40, A DEAD END ROAD. THERE ARE NO UNDERGROUND OR OVERHEAD UTILITIES WITHIN THE PROJECT AREA.

**1.2.4 VEGETATION**

THE LAND ON AND ADJACENT TO THE PROJECT SITE IS RURAL AND CONSISTS OF A MIX OF HARDWOOD AND SOFTWOOD TREES OF ALL SIZES AND UNDERGROWTH. NO FIELDS OR AGRICULTURAL CROPS EXIST NEAR THE PROJECT. IMPACTS TO VEGETATION WILL BE LIMITED TO THAT WHICH IS AFFECTED BY THE CONSTRUCTION OF THE DETOUR WITHIN THE ACQUIRED TEMPORARY CONSTRUCTION EASEMENT AND EXISTING RIGHT-OF-WAY. SOME SMALL TREES, BOTH SOFTWOOD AND HARDWOOD WILL BE REMOVED AND REPLACED TO ALLOW THE CONSTRUCTION AND INSTALLATION OF THE TEMPORARY ONE (1) LANE BRIDGE. THERE IS LEDGE ON BOTH RIVER BANKS. FOLLOWING CONSTRUCTION OF THE REHABILITATED COVERED BRIDGE, THE EXISTING ROADWAY APPROACHES WILL BE RECONSTRUCTED WITH 12-INCHES OF CRUSHED GRAVEL SUBBASE. DISTURBED SLOPES WILL BE STABILIZED WITH STONE FILL AS SPECIFIED ON THE PLANS AND VEGETATION REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

**1.2.5 SOILS**

ACCORDING TO THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI), THERE ARE THREE SOIL TYPES PRESENT ON THIS PROJECT SITE. COLTON GRAVELLY LOAMY SAND (K=0.15) IS LOCATED ON THE WEST SIDE OF THE PROJECT UP TO STA. 11+50. DUE TO RELATIVE STEEPNESS OF SLOPES IN THIS REGION THERE IS THE POTENTIAL FOR THEM BEING MODERATE ERODIBLE. MISSISQUOI LOAMY SAND (K=0.17) IS FOUND ON THE EAST SIDE OF THE PROJECT AWAY FROM STA. 13+25. THIS AREA HAS THE POTENTIAL TO BE MODERATELY ERODIBLE DUE TO STEEP SLOPES. RUMNEY VARIANT SILT LOAM (K=0.37) IS FOUND ALONG THE RIVER FROM STA. 11+50 TO STA. 13+25, AND IS CONSIDERED MODERATE ERODIBLE. SLOPES WITHIN THE VICINITY OF THE PROJECT RANGE FROM 0-100%.

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

**1.2.6 SENSITIVE RESOURCE AREAS**

NO THREATENED & ENDANGERED SPECIES HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS. AN ARCHAEOLOGICAL FIELD REVIEW IDENTIFIED THE REMAINS OF THE HUTCHINS MILL ON THE NORTHWEST CORNER OF THE BRIDGE AND CELLAR HOLE LOCATED AT THE SOUTHWEST END OF T.H. NO. 27 OUTSIDE THE LIMITS OF THE DETOUR BRIDGE. THESE ARCHEOLOGICAL SENSITIVE AREAS SHALL BE CORDONED OFF WITH PROTECTIVE CONSTRUCTION FENCING. THE SOUTH BRANCH TROUT RIVER IS THE ONLY WATER RESOURCE WITHIN THE PROJECT SITE. THERE ARE NO IDENTIFIED WETLANDS. STATEWIDE AGRICULTURAL LAND IS IDENTIFIED WITHIN THE VICINITY OF THE PROJECT. THERE WILL BE MINIMAL IMPACTS TO THIS TYPE OF LAND IN SOUTHEAST CORNER OF THE BRIDGE FOR THE CONSTRUCTION AND INSTALLATION OF THE TEMPORARY DETOUR BRIDGE.

DISTURBANCE OF SOIL NEAR NATURAL OR MAN-MADE WATERWAYS CONSISTS OF THAT WHICH IS NECESSARY TO CONSTRUCT AND INSTALL THE TEMPORARY DETOUR BRIDGE, WINGWALL NO. 2 AND APPLICABLE ROADWAY APPROACHES. STABILIZATION OF DISTURBANCES TO STREAM BANKS ON THE SOUTHWEST QUADRANT OF THE EXISTING COVERED BRIDGE WILL BE ACCOMPLISHED WITH STONE FILL, TYPE IV.

**1.3 RISK EVALUATION**

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF CONSTRUCTION GENERAL PERMIT 3-9020 BASED ON THE PROJECT IMPACT AREA. SHOULD CHANGES PRIOR TO, OR DURING CONSTRUCTION, RESULT IN ONE (1) OR MORE ACRES OF EARTH DISTURBANCE, OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THEN THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL PERMITTING WITH THE VERMONT AGENCY OF NATURAL RESOURCES VIA FILING OF THE APPROPRIATE "NOTICE OF INTENT" UNDER THE GENERAL CONSTRUCTION PERMIT PROCESS.

**1.4 EROSION PREVENTION AND SEDIMENT CONTROL**

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 MINIMIZING SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION CONTROLS.

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. 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.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

**1.4.1 MARK SITE BOUNDARIES**

PROJECT DEMARCATION FENCING, DENOTED -PDF- ON THE PLANS IS USED TO DELINEATE THE LIMITS THE CONTRACTOR CAN ACCESS WITH CONSTRUCTION EQUIPMENT. THIS MEASURE LIMITS THE AREA THAT CAN BE DISTURBED AND EXPOSED TO EROSION.

**1.4.2 LIMIT DISTURBANCE AREA**

EMPLOY TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES (PHASING) AS CONSTRUCTION PROCEEDS. ADDITIONAL MEASURES MAY BE NEEDED DUE TO THE PHASING OF THE PROJECT AND AS DIRECTED BY THE ENGINEER.

**1.4.3 STABILIZE CONSTRUCTION EXIT**

STABILIZED CONSTRUCTION ENTRANCE AND EXIT ARE NOT USED IN THIS PROJECT.

**1.4.4 INSTALL SILT FENCE**

SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK AS SHOWN ON THE PLANS OR AS NECESSARY.

**1.4.6 SLOW DOWN CHANNELIZED RUNOFF**

CHECK DAMS SHALL BE UTILIZED AS NECESSARY.

**1.4.7 CONSTRUCT PERMANENT CONTROLS**

THERE WILL BE A NEW STONE FILL SLOPE SURROUNDING THE SOUTH CORNER OF ABUTMENT NO. 1. THE STONE FILL WILL BE TYPE IV AND WILL BE APPROXIMATELY AT 1:1.5 SLOPE.

**1.4.8 STABILIZE EXPOSED SOILS**

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING, OR AN EQUIVALENT PRODUCT, WILL BE UTILIZED ON ALL SLOPES THAT ARE NOT LINED WITH STONE FILL. SEE ROADWAY SECTIONS FOR SIDESLOPE GRADES. 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.

**1.4.9 WINTER STABILIZATION**

IF CONSTRUCTION ACTIVITIES INVOLVING EARTH DISTURBANCE CONTINUE PAST OCTOBER 15 OR BEGIN BEFORE APRIL 15, THE FOLLOWING REQUIREMENTS MUST BE ADHERED TO:

1. ENLARGED ACCESS POINTS STABILIZED TO PROVIDE FOR SNOW STOCKPILING.
2. A MINIMUM 25 FOOT BUFFER SHALL BE MAINTAINED FROM PERIMETER CONTROLS SUCH AS SILT FENCE.
3. IN AREAS OF DISTURBANCE THAT DRAIN TO A WATER BODY WITHIN 100 FEET, TWO ROWS OF SILT FENCE MUST BE INSTALLED ALONG THE CONTOUR.
4. SILT FENCE AND OTHER PRACTICES REQUIRING EARTH DISTURBANCE MUST BE INSTALLED AHEAD OF FROZEN GROUND.
5. MULCH USED FOR TEMPORARY STABILIZATION MUST BE APPLIED AT DOUBLE THE STANDARD RATE, OR A MINIMUM OF 3 INCHES WITH AN 80-90% COVER.
6. TO ENSURE COVER OF DISTURBED SOIL IN ADVANCE OF A MELT EVENT, AREAS OF DISTURBED SOIL MUST BE STABILIZED AT THE END OF EACH WORK DAY, WITH THE FOLLOWING EXCEPTIONS:
  - IF NO PRECIPITATION WITHIN 24 HOURS IS FORECAST AND WORK WILL RESUME IN THE SAME DISTURBED AREA WITHIN 24 HOURS, DAILY STABILIZATION IS NOT NECESSARY.
  - DISTURBED AREAS THAT COLLECT AND RETAIN RUNOFF, SUCH AS HOUSE FOUNDATIONS OR OPEN UTILITY TRENCHES.
7. PRIOR TO STABILIZATION, SNOW OR ICE MUST BE REMOVED TO LESS THAN 1 INCH THICKNESS.
8. USE STONE TO STABILIZE AREAS WHERE CONSTRUCTION VEHICLE TRAFFIC IS ANTICIPATED. STONE PATHS SHOULD BE 10-20 FEET WIDE TO ACCOMMODATE VEHICULAR TRAFFIC.

**1.4.10 STABILIZE SOIL AT FINAL GRADE**

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES THAT ARE NOT LINED WITH STONE FILL. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

**1.4.11 DE-WATERING ACTIVITIES**

SEDIMENT BASINS FOR SUBSTRUCTURE AND TEMPORARY RETAINING WALL "A" WORK SHALL BE USED AS NECESSARY.

**SEDIMENT SETTLING BASIN SIZING CRITERIA TABLE:**

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

**1.4.12 INSPECT YOUR SITE**

INSPECT SITE BASED ON PERMIT AUTHORIZATION OR SPECIAL PROVISION REQUIREMENTS.

**1.4.13 SECTION 106 STIPULATIONS**

ALL IDENTIFIED RESOURCES WITHIN THE PROJECT LIMITS ARE TO BE PROTECTED AND AVOIDED AS IT HAS BEEN DETERMINED THAT THIS PROJECT WILL NOT:

REQUIRE A TEMPORARY DETOUR OUTSIDE EXISTING RIGHT-OF-WAY, OR A TEMPORARY WETLAND OR STREAM CROSSING WHICH WILL REQUIRE NON-ROUTINE MITIGATION, OR A RAMP CLOSURE, UNLESS THE FOLLOWING CONDITIONS ARE MET

- (1) PROVISIONS ARE MADE FOR ACCESS BY LOCAL TRAFFIC AND THE FACILITY IS POSTED ACCORDINGLY,
- (2) BUSINESSES DEPENDENT UPON THROUGH TRAFFIC WILL NOT BE UNDULY AFFECTED,
- (3) THE TEMPORARY DETOUR OR RAMP CLOSURE WILL NOT INTERFERE WITH LOCAL SPECIAL EVENTS,
- (4) THE TEMPORARY DETOUR, RAMP CLOSURE, WETLAND OR STREAM CROSSING WILL NOT SUBSTANTIALLY INCREASE THE ENVIRONMENTAL CONSEQUENCES OF THE ACTION (PROJECT).

INVOLVE CONSTRUCTION IN WETLANDS AND/OR STREAMS (BELOW ORDINARY HIGH WATER) TOTALING MORE THAN 5,000 SQUARE FEET, REQUIRING THE ARMY CORP OF ENGINEERS TO COORDINATE WITH RESOURCE AGENCIES PER GENERAL PERMIT #NAE-2007-24.

REQUIRE A RISK ANALYSIS FOR AN INCREASE IN 100-YEAR FLOOD WATER SURFACE ELEVATIONS, PER EO 11988.

MODEL
det2
HTA PROJECT NO.
904214

PROJECT NAME:	MONTGOMERY	FILE NAME:	Z96J302noteserol.dgn	PLOT DATE:	8/1/2008
PROJECT NUMBER:	BHO 1448(23)	PROJECT LEADER:	J.H.WEAVER	DRAWN BY:	J.B.McQUAID
		DESIGNED BY:	J.BICJA	CHECKED BY:	S.T.JAMES
		<b>EPSC EROSION CONTROL NARRATIVE</b>		SHEET	16 OF 54

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