

## EROSION CONTROL NARRATIVE

### 1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF THE PULP MILL COVERED BRIDGE (BRIDGE NO. 1) OVER THE OTTER CREEK. THE PROJECT IS LOCATED ON T.H. NO. 3, A PAVED CLASS 2 TOWN HIGHWAY, IN THE TOWN OF WEYBRIDGE AND ON T.H. NO. 5, A PAVED CLASS 2 TOWN HIGHWAY, IN THE TOWN OF MIDDLEBURY. THE BRIDGE IS OPEN TO TRAFFIC BUT WILL BE CLOSED DURING CONSTRUCTION WHILE TRAFFIC IS DETOURED. THE PROJECT CONSISTS OF REPLACING DETERIORATED BRIDGE MEMBERS, INSTALLATION OF NEW SIDING AND NEW ROOF, SUBSTRUCTURE REPAIRS, INSTALLATION OF APPROACH RAILING AND LIMITED RECONSTRUCTION OF ROADWAY APPROACHES. TOTAL ROADWAY APPROACH WORK, INCLUDING BOTH APPROACHES IS APPROXIMATELY 190 FT. THE SITE IS LOCATED, BASED UPON NAD 83 (96), AT N556424.73 E1464112.91 (HVCTRL #1 - SEE TRAVERSE & GEODETIC CONTROL INFO. SHEET).

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

THE AREA OF DISTURBANCE, SHOWN IN THESE PLANS WITHIN THE PROJECT VICINITY IS 0.28 ACRES. EARTH DISTURBANCE FOR ANY WASTE, STAGING AND BORROW AREAS WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS IS ESTIMATED TO BE APPROXIMATELY 0.24 ACRES. TOTAL AREA OF DISTURBANCE IS 0.52 ACRES.

### 1.2 SITE INVENTORY

#### 1.2.1 TOPOGRAPHY AND EXISTING UTILITIES

THE TOPOGRAPHY OF THE PROJECT SITE IS FLAT WITH SOME WOODED AREAS. RESIDENTIAL PROPERTIES ARE GENERALLY FLAT WITH THE GROUND SLOPING STEEPLY ADJACENT TO THE CHANNEL. WOODED AREAS ALSO SLOPE STEEPLY DOWN TO THE CHANNEL AS WELL. RESIDENTIAL BUILDINGS LOCATED ADJACENT TO THE PROJECT SITE ARE SHOWN ON THE EXISTING CONDITIONS PLANS. OVERHEAD UTILITY LINES ARE ON EACH ROADWAY APPROACH AND ARE SHOWN ON THE EXISTING CONDITIONS PLANS. THERE IS AN UNDERGROUND WATER LINE THAT RUNS PARALLEL TO THE ROADWAY AND CROSSES OTTER CREEK. THE WATER LINE IS SUPPORTED ON A STEEL TRUSS UPSTREAM OF THE COVERED BRIDGE. CARE SHALL BE TAKEN TO PROTECT THE WATER LINE DURING CONSTRUCTION. THERE IS AN UNDERGROUND SEWER LINE AND STORM DRAIN ON THE EAST APPROACH OF THE PROJECT. OVERHEAD UTILITY SERVICE LINES CROSS T.H. NO.5 AT MULTIPLE LOCATIONS ON THE EAST APPROACH OF THE BRIDGE. IT IS EXPECTED THAT THE UTILITY POLE AT STA. 205+03 ± LT WOULD BE REQUIRED TO BE REMOVED OR TEMPORARILY SUPPORTED DURING CONSTRUCTION TO AVOID UNDERMINING DURING THE INSTALLATION OF THE DRAINAGE LINE.

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

THE OTTER CREEK IS LOCATED IN THE PROJECT AREA. OTTER CREEK IS A MEANDERING WATERWAY THAT FLOWS IN NORTH-SOUTH DIRECTION WITHIN THE VICINITY OF THE PROJECT. THE STREAMBED OF THE OTTER CREEK IS MAINLY COMPOSED OF GRAVEL, COBBLES AND LEDGE. THE STREAM BANKS ARE MODERATELY STEEP THROUGHOUT THE PROJECT AREA. THERE IS A DAM DOWNSTREAM OF THE COVERED BRIDGE THAT BACKS WATER UP UNDER THE BRIDGE, AND CONTROLS THE HYDRAULICS AT THE SITE. THE CONTRIBUTING DRAINAGE AREA AT THE BRIDGE CROSSING IS 631 SQUARE MILES.

THERE ARE NO OTHER WATER BODIES OR WETLANDS WITHIN THE PROJECT AREA. ARCHAEOLOGICAL AND HISTORICAL RESOURCES ARE LOCATED WITHIN THE PROJECT AREA AND ARE SHOWN ON THE RESOURCE LAYOUT SHEET.

THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF RESIDENTIAL PROPERTIES EXCEPT THE NORTHEAST AND NORTHWEST QUADRANTS IN WHICH THERE ARE A MIXTURE OF HARDWOOD AND SOFTWOOD WOODED AREAS. THE RESIDENTIAL AREAS HAVE WELL ESTABLISHED VEGETATION AND ARE GENERALLY FLAT, WHILE THE WOODED AREAS SLOPE DOWN TO THE RIVER. THERE ARE SCATTERED SMALL AND MEDIUM HARDWOOD AND SOFTWOOD TREES LOCATED WITHIN THE RESIDENTIAL PROPERTIES. ON THE SOUTHEAST QUADRANT OF THE PROJECT THERE ARE REMAINS OF A STONE FOUNDATION WHICH ACT AS A RETAINING WALL. THE EXISTING T.H. NOS. 3 AND 5 HAVE A PAVED SURFACE WITH MODERATE SIDE SLOPES AND NO DEFINED DRAINAGE DITCHES. THE WEST APPROACH ON T.H. NO. 3 HAS A GRADE OF APPROXIMATELY 2% WHILE THE EAST APPROACH ON T.H. NO. 5 IS FAIRLY FLAT WITH A MAXIMUM GRADE OF 2.5%. ROADWAY RUNOFF IS CONVEYED VIA OVERLAND FLOW ALONG THE ROADWAY.

#### 1.2.3 VEGETATION

THE LAND ON AND ADJACENT TO THE PROJECT SITE IS RURAL AND CONSISTS OF A MIX OF SMALL AND MEDIUM HARDWOOD AND SOFTWOOD TREES, UNDERGROWTH AND WELL ESTABLISHED VEGETATION. NO FIELDS OR AGRICULTURAL CROPS EXIST NEAR THE PROJECT. THERE IS EXPOSED LEDGE ON BOTH RIVER BANKS. FOLLOWING CONSTRUCTION OF THE REHABILITATED COVERED BRIDGE, THE EXISTING ROADWAY APPROACHES WILL BE RECONSTRUCTED WITH 12-INCHES OF GRAVEL, 6-INCHES OF CRUSHED GRAVEL SUBBASE AND 3½" OF BITUMINOUS CONCRETE PAVEMENT. DISTURBED SLOPES WILL BE STABILIZED AS SPECIFIED ON THE PLANS AND VEGETATION REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

#### 1.2.4 SOILS

ACCORDING TO THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI), THERE IS ONE (1) SOIL TYPE PRESENT ON THIS PROJECT SITE. VERGENNES CLAY (K=0.49) IS FOUND ON EACH APPROACH OF THE COVERED BRIDGE. THIS TYPE OF SOIL IS CONSIDERED HIGHLY ERODIBLE DUE TO PHYSICAL SOIL PROPERTIES.

THE MAJORITY OF THE PROJECT IS WITHIN A PREVIOUSLY DISTURBED AREA COMPRISING THE EXISTING ROADWAY AND BRIDGE EMBANKMENTS. EXISTING CHANNEL BANKS APPEAR STABLE UPSTREAM AND DOWNSTREAM OF THE COVERED BRIDGE.

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.

#### 1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO

HISTORICAL OR ARCHAEOLOGICAL AREAS: YES. AN ARCHAEOLOGICAL FIELD INVESTIGATION PERFORMED BY THE CONSULTING ARCHAEOLOGY PROGRAM OF THE UNIVERSITY OF VERMONT ON MAY 27, 1997 IDENTIFIED THE REMAINS OF TWO STONE FOUNDATIONS FOR A RESIDENCE AND DRY HOUSE WHICH WERE PART OF A NINETEENTH-CENTURY PAPER MILL COMPLEX ON THE SOUTHWEST QUADRANT OF THE PROJECT. THIS ARCHAEOLOGICAL SENSITIVE AREA SHALL BE CORDONED OFF WITH PROTECTIVE CONSTRUCTION FENCING.

HARTGEN ASSOCIATES PERFORMED AN ARCHAEOLOGICAL FIELD INVESTIGATION ON APRIL 9, 2009 AND IDENTIFIED PRESENCE OF PRECONTRACT ARCHAEOLOGICAL SITES WITHIN ONE MILE OF THE PROJECT AREA. THESE ARCHAEOLOGICAL SENSITIVE AREAS ARE OUTSIDE OF PROJECT LIMITS AND ARE NOT EXPECTED TO BE AFFECTED. IF OTHER ARCHAEOLOGICAL SENSITIVE AREAS ARE FOUND CONTACT JEANNINE RUSSELL AT 802-828-3981.

PRIME AGRICULTURAL LAND: NO

THREATENED AND ENDANGERED SPECIES: YES. ENDANGERED SPECIES HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS. THE PROJECT IS WITHIN THE KNOWN RANGE OF THE FEDERALLY ENDANGERED INDIANA BAT. IN ORDER TO ENSURE THAT THE PROJECT WILL NOT IMPACT THIS SPECIES, TIMING RESTRICTIONS HAVE BEEN PLACED ON THE REMOVAL OF THE BRIDGE'S ROOF, WHICH CAN BE USED AS POTENTIAL ROOSTING HABITAT. THE ROOF WILL BE REMOVED BETWEEN OCTOBER 15 AND APRIL 1. BAT HOUSES WILL BE PLACED IN THE VICINITY OF CONSTRUCTION TO PROVIDE POTENTIAL ROOSTING HABITAT TO ANY BATS THAT MAY HAVE ROOSTED UNDER THE BRIDGE'S ROOF.

WATER RESOURCE: YES. THE OTTER CREEK IS THE ONLY WATER RESOURCE WITHIN THE PROJECT SITE. THERE ARE NO IDENTIFIED WETLANDS. STATEWIDE AND NPSL (NOT PRIME, STATEWIDE, OR LOCAL) AGRICULTURAL LAND IS IDENTIFIED WITHIN THE VICINITY OF THE PROJECT. THERE WILL BE NO IMPACTS TO THIS TYPE OF LAND. DISTURBANCE OF SOIL NEAR NATURAL WATERWAYS CONSISTS OF THAT WHICH IS NECESSARY TO CONSTRUCT THE PROJECT AS SHOWN ON THE PLANS.

WETLANDS: NO

### 1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF CONSTRUCTION GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES BASED ON THE PROJECT IMPACT AREA. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

### 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.

#### 1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED. PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

#### 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 OTTER CREEK BANKS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

#### 1.4.3 STABILIZE CONSTRUCTION EXIT

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 ENTRANCE AND EXIT ARE NOT ANTICIPATED IN THIS PROJECT.

#### 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 WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

#### 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 PROJECT AREA IS RELATIVELY FLAT. THERFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

#### 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.

STONE CHECK DAMS WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN, AT A MINIMUM.

#### 1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS. PERMANENT CONTROL MEASURES ARE NOT ANTICIPATED IN THIS PROJECT.

#### 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. 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 SITE HANDBOOK FOR GUIDANCE. THE FOLLOWING REQUIREMENTS MUST BE ADHERED TO:

- ENLARGED ACCESS POINTS STABILIZED TO PROVIDE FOR SNOW STOCKPILING.
- A MINIMUM 25 FOOT BUFFER SHALL BE MAINTAINED FROM PERIMETER CONTROLS SUCH AS SILT FENCE.
- IN AREAS OF DISTURBANCE THAT DRAIN TO A WATER BODY WITHIN 100 FEET, TWO ROWS OF SILT FENCE MUST BE INSTALLED ALONG THE CONTOUR.
- SILT FENCE AND OTHER PRACTICES REQUIRING EARTH DISTURBANCE MUST BE INSTALLED AHEAD OF FROZEN GROUND.
- MULCH USED FOR TEMPORARY STABILIZATION MUST BE APPLIED AT DOUBLE THE STANDARD RATE, OR A MINIMUM OF 3 INCHES WITH AN 80-90% COVER.
- 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.
- PRIOR TO STABILIZATION, SNOW OR ICE MUST BE REMOVED TO LESS THAN 1 INCH THICKNESS.
- 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

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE. SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

#### 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. TREATMENT OF DEWATERING TRENCHED EXCAVATION AREA IS ANTICIPATED. A LOCATION FOR TREATMENT HAS BEEN PROPOSED AND IS SHOWN ON THE PLANS. HOWEVER THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR.

#### 1.4.12 INSPECT YOUR SITE

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

#### 1.4.13 SECTION 106 STIPULATIONS

- FINAL PLANS AND ANY CHANGES THERETO WILL BE SUBJECT TO REVIEW APPROVAL BY THE VTRANS HISTORIC PRESERVATION OFFICER BEFORE SUCH CHANGES ARE IMPLEMENTED.
- AS APPROPRIATE THE CONTRACTOR SHALL, EARLY IN THE CONSTRUCTION PHASE OF THE PROJECT, MAKE A GOOD FAITH EFFORT TO IDENTIFY ANY ADDITIONAL MEMBERS THAT ARE TARGETED FOR REPLACEMENT AND ARRANGE A SITE MEETING WITH THE VTRANS PROJECT MANAGER AND HISTORIC PRESERVATION OFFICER TO REVIEW THESE CHANGES.
- PROTECTIVE FENCING WILL BE PLACED AROUND ARCHAEOLOGICAL SITE VT-AD-928 IN THE SOUTHWEST QUAD OF THE PROJECT AREA AND AVOIDED DURING PROJECT CONSTRUCTION.

### 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

#### 1.5.2 OFF-SITE ACTIVITIES

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

**Hoyle, Tanner**  
& Associates, Inc.

HTA PROJECT NO. 904217 MODEL Notes

PROJECT NAME: MIDDLEBURY-WEYBRIDGE

PROJECT NUMBER: BHO 1445(33)

FILE NAME: z061086notesero.dgn  
PROJECT LEADER: M.D.SARGENT  
DESIGNED BY: J.BICJA  
**EPSC EROSION CONTROL NARRATIVE**

PLOT DATE: 9/20/2011  
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SHEET 16 OF 66