

EROSION CONTROL NARRATIVE

EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION

1.1. This project "Castleton RS 0142(10)" will replace Bridge 8 on VT 4A over the Castleton River in the Town of Castleton on existing alignment. It will reconstruct the nearby intersection with TH 8 (Crampton Road) east of the bridge. The new bridge will be a two lane, single span, voided concrete slab bridge. The project will maintain traffic on a temporary bridge downstream and south of the existing bridge during construction.

1.2. The total length of roadway work, including both approaches, drives and existing roadway is approximately 575 ft.

1.3. The total disturbed area (excluding waste, borrow and staging areas) is approx 0.9 ac. The temporary bridge will disturb approx 0.1 ac., work on the bridge and approaches will disturb approx. 0.8 ac. Should the area of disturbance changed from that proposed above and result in one or more acres of earth disturbance, or should the project become part of a common plan of development, then the contractor will be responsible for additional permitting with the Agency of Natural Resources.

1.4. This project should last one construction season. This Erosion Prevention and Sediment Control Plan is intended for use during the construction season. A separate winter plan shall be submitted for approval if work is to occur from Oct 15th to April 15th, or if vegetation has not been sufficiently established after the completion of construction and by Oct 15th.

2. SITE INVENTORY & ANALYSIS

2.1. Off Site Drainage Characteristics (Up And Down Gradient). The land in the project area is rolling former farmland. It consists of old fields and pasture growing in with brush, softwood and hardwood trees. The soil is "very deep, gently to very steep and excessively drained. The soils formed in gravelly, sandy, and loamy glacial deposits on stream terraces."

2.2. Drainage, Waterways, Bodies of Water. The bridges cross the Castleton River. The river is mostly flat and meandering in a river valley. The brook is typically 25 ft wide at the bottom and 35 ft wide at the top and 4 ft deep from top to bottom. The watershed area is 1200 ha.

2.3. Topography, Existing Roads, Buildings, Utilities.

2.3.1. Topography. The project site is a transition from a strip business area to an old winding road on a steep hillside.

2.3.2. Existing Roads. VT 4A is a Rural Collector State Highway. It parallels US 4, a principle arterial. TH 8 is a Class III paved town highway.

2.3.3. Buildings. A store is west of the bridge and outside the project area. TH 8 leads to a trailer park outside the project area. A driveway comes on to TH 8. Its home is out of sight of the project area. A second driveway intersects VT 4A on the SE side of the bridge. The home is out of sight of the project area too.

2.3.4. Utilities. Power and Utility poles run along the north side of VT 4A and TH 8 on the west side of the bridge. They run along the south side of VT 4A on the east side of the bridge.

2.4. Vegetation. The vegetation is lawns on the NW side, and riparian brush on the SW side of the bridge. The vegetation is large soft and hardwood on slopes of the NE side, and young softwood on the SE side of the bridge. Construction will replace some brush and trees. Stone Fill capped with grubbing material will stabilize slopes steeper than 66%. Seed & Mulch will stabilize slopes flatter than 66%.

2.5. Soils. The Soil Conservation Service "Soil Survey of Rutland County" identifies three soil types in the project site.

2.5.1. 110 Limerick Silt Loam. This soil is in the floodplain. It is very deep, poorly drained, and nearly level. It is frequently flooded for brief periods in late fall, winter and spring. The soil profile is typically: 0 to 7" brown silt loam; 7 to 60"+ gray silt loam. Its erodibility rating is High (kw = 0.49). The slope suggests low erodibility.

2.5.2. 149E Bomoseen & Pittstown Soils, 25 to 40% slopes. This soil is 40% Bomoseen, 40% Pittstown, and 20% other. Both soils are similar in use and management. This soil is on the steep hill on the east approach. It is moderately well drained and steep. It is shallow to moderately deep to dense basal till and very deep to bedrock. Flagstones are typically 5 to 25 ft apart. The soil profile is typically: 0 to 8" brown channery loam loam; 8 to 21" brown channery fine sandy loam; 21 to 60"+ olive channery silt loam. Its erodibility rating is low (kw = 0.20). The slope suggests high erodibility.

2.5.3. Urban Soils. This soil is in the northwest approach. The soil profile is probably similar to surrounding soils. Its erodibility rating is unknown. The slope is level and suggests low erodibility.

2.6. Sensitive Resource Areas.

2.6.1. The Castleton River runs through the project area. The project impacts it at the existing bridge and southern detour.

2.6.2. Class III Wetlands are in the riparian corridor upstream of the project impacts.

2.6.3. Trout are in the Castleton River. This part of the river is important trout habitat and has a high population of trout.

2.6.4. Non-Sensitive Resources

2.6.4.1. No Threatened & Endangered Species are present within the project area.

2.6.4.2. No Historic Features are located within the project area.

2.6.4.3. No Archaeologically Sensitive Areas are present within the project area.

2.7. Proximity to Natural or Man-Made Water Features.

2.7.1. Castleton River at the bridge.

2.7.2. Ditch on the SE side of the bridge.

2.7.3. Culvert at Drive 2 700+26.

3. GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

3.1. The Erosion Prevention and Sediment Control Plans are guidelines for preventing erosion and controlling sediment transport throughout the life of the project. The purpose of the plan is to minimize soil loss and the pollution and sedimentation of receiving waters.

3.2. 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. Plan construction sequence to minimize the area of erodible soil exposed at any one time. Within 48 hours of final grading, seed and mulch or use erosion control matting to stabilize the area. Use additional erosion control measures as necessary during the sequence of construction and as directed by the Engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

3.3. Maintain existing and planted vegetated buffers along stream banks, wetlands or other sensitive areas wherever possible.

3.4. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes. Control only sediment-laden runoff from the project site.

3.5. Install erosion and sediment control measures as shown in the Erosion Prevention and Sediment Control Plan or as directed by the Engineer. Do not modify the type, size or location of any control or practice without approval of the Engineer. Note any changes on the plans, in the weekly inspection report, and report them to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures promptly once damage is discovered.

3.6. Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Establish temporary vegetation if the disturbed area is to be without construction activity for a period of 14 days. Install perimeter control measures following clearing and before the start of any grubbing or grading activity. Install other temporary controls in incremental stages as construction proceeds.

3.7. Operate construction equipment only within perimeter control measures.

3.8. The contractor shall be responsible for ensuring that proposed waste and borrow areas meet the requirements of the General Permit, either separately under an existing plan, or as an addendum to this plan.

4. Sequence of Construction

4.1. Phase I (Establish Perimeter Controls)

4.1.1. Prior to any construction or staging, construct vehicle tracking pads for entrances to staging areas and the project site to prevent tracking of sediment offsite. Coarse stone over filter fabric should be used where an existing stable entrance does not exist. The stone used for pads shall be monitored for sediment accumulation and replaced as necessary. Vehicle tracking pads shall also be established and maintained at offsite waste or borrow areas. The minimum size of a pad shall be 12 x 50 ft.

4.1.2. Prior to any clearing, grubbing, and excavation, construct perimeter controls to ensure that disturbed sediment does not leave the site. Use diversion swales to divert offsite drainage through the project site, as necessary. Those portions of the diversion channels that run along natural streambeds shall not be lined with plastic.

4.2. Phase II (Intermediate Controls/Stabilization)

4.2.1. Apply intermediate controls (inlet protection and check dams) before rough grading and temporary pipe installation operations. Obtain the Engineer's approval before installing any controls not specified in the Erosion Prevention and Sediment Control Plan (this provision does not apply to emergency situations where the Engineer may not be immediately available). The Engineer may direct the installation of certain controls in order to forestall or mitigate potential or existing erosion problems or to respond to storm events or damage by construction operations. Clean erosion control measures (sediment traps, silt fences etc.) when 1/2 full of sediment.

4.2.2. Provide double silt fence around stockpiled excavated roadway material. Apply temporary mulch or temporary turf establishment to stockpiles remaining in place longer than 14 days or when directed by the Engineer.

4.2.3. Upon completion of temporary detour fill slopes, seed and mulch slopes to establish vegetation. Maintain silt fence at toe of slopes for added protection from sediment being transported to the Castleton River. See 'Seeding Formula for Rural Areas' on sheet 19.

4.3. Phase III (Final Controls/Stabilization)

After completion of bridge and/or roadway construction, do the following as directed by the Engineer:

4.3.1. Finish grading, riprap and apply permanent turf establishment to channels if required.

4.3.2. Where necessary, replace damaged matting and reapply permanent turf establishment to disturbed areas where vegetation has not taken.

4.3.3. Remove silt fence only after all upslope areas are stabilized and vegetation is well established.

4.3.4. Remove all perimeter silt fence and sediment traps only after toe-of-fill ditches have stabilized and vegetation is well established.

4.3.5. Remove all other perimeter controls when directed by the Engineer. Backfill, regrade and apply permanent turf establishment.

5. TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

5.1. Temporary Measures To Prevent Erosion include:

5.1.1. "Project Demarcation Fencing" will delineate the construction area for construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

5.1.2. "Tracking & Mulching" will temporarily stabilize slopes. Use tracking for short term (two weeks) exposed slopes. Drive heavy equipment on the slopes to leave level tracks (small check dams) that will catch water flow. Stabilize slopes within 48 hours or sooner considering rain.

5.1.3. "Seeding & Mulching" will stabilize slopes ranging from 0% to 66%. Add biodegradable "Erosion Control Matting" (or equivalent) to slopes ranging from 33% to 66%. Use seeding for long term exposed slopes. Grass takes 2 weeks to establish itself. Stabilize slopes within 48 hours or sooner considering rain.

5.1.3.1. ML 398+50 to 404+25 left and right
5.1.3.2. TH8 500+25 to 501+00 left and right

5.1.4. "Stone Check Dams" placed in ditches will reduce flow velocities and prevent erosion. Place dams in ditches so that the elevation of the top of a check dam is level with the toe of the next upslope check dam. The check dams may be removed once the stone lining of the ditches is complete and the surrounding area stabilized.

5.1.4.1. ML 401+50 to 404+25 right

5.2. Temporary Measures To Control Sediment Transport include:

5.2.1. "Silt Fence" placed level on slopes will control sheet flow sediment transport. Place level silt fence 5 to 10 ft from the toe of slopes. Turn the ends of silt fence slightly uphill to stop concentrated water from flowing around the ends. The maximum slope length between separate runs of silt fence is 100 ft. Place silt fence before beginning upslope earthwork.

5.2.2. "Sand Bags" placed around culvert inlets will control concentrated flow sediment transport. The bags create a temporary puddle for particles to settle out as water drains through the barrier. Install inlet protection before water flows through the structure. Fill the bags with clean, small diameter stone. Limit the height of the barrier so it is not an accident hazard. Get the Engineer's approval before using alternative inlet control measures.

5.2.3. "Vehicle Tracking Pads" will control tracking of sediment transport on to public roads. The pad is made of stabilized crushed stone located wherever construction vehicles leave construction areas. The sites include: the project site; staging areas; and waste and borrow areas. The minimum area is 12 x 50 ft. Pipe all surface water flowing to or diverted towards a construction entrance under the stone. Size pipes for their watersheds. The minimum pipe diameter is 6 inches.

5.3. Check measures (e.g. stone check dams, silt fence, and sand bags) regularly for accumulation of sediment. Remove sediment build-up when the level of sediment reaches one-half the height of the control measure. Dispose of sediments in an approved area where they will not be subject to erosion.

5.4. Hay Bales are unacceptable alternatives to silt fences, sand bags, or check dams.

6. FINAL EROSION CONTROL MEASURES

6.1. Roadway Typical Section

6.1.1. "Bituminous Concrete Pavement" on the road surface will prevent erosion.

6.1.2. "Gravel or Crushed Stone Subbase" beneath the surface will prevent erosion.

6.1.3. "Sand" beneath the subbase will prevent erosion.

6.1.4. "Seeding & Mulching" will establish vegetation on side slopes less than 66% that will prevent erosion and control sediment transport. Add biodegradable "Erosion Control Matting" (or equivalent) to slopes ranging from 33% to 66%.

6.1.5. Roadway Ditches beside the road will control concentrated flows and prevent erosion.

6.1.5.1. "Stone Fill, Type I" in roadway ditches will prevent erosion and control sediment transport.

6.1.5.2. "Culverts" will convey concentrated flow under roads and prevent erosion.

6.1.6. "Stone Fill, Type I" at culvert outlets will dissipate water velocities and prevent erosion and control sediment transport.

6.2. Channel Typical Section

6.2.1. "Stone Fill, Type I" at the ends of the wing walls will prevent erosion and control sediment transport.

6.2.2. "Stone Fill, Type III" around the abutments on slopes greater than 66% will prevent erosion and control sediment transport.

6.2.3. "Geotextile under Stone Fill" will prevent erosion and control sediment transport.

PROJECT NAME:	Castleton	
PROJECT NUMBER:	RS 0142(10)	
FILE NAME:	sf193ero.dgn	PLOT DATE: 2/1/2007
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