

| REVISIONS | BY |
|-----------|----|
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |

COPYRIGHT © 2001  
CHAMPLAIN CONSULTING ENGINEERS  
ALL RIGHTS RESERVED

**CHAMPLAIN CONSULTING ENGINEERS**  
85 PRIM ROAD, P.O. BOX 453  
COLCHESTER, VERMONT 05446  
(802) 863-8060  
(802) 864-1878 FAX



**INTERSTATE 89 NORTHBOUND**  
**WILLISTON INFORMATION CENTER**  
**EROSION CONTROL DETAILS**  
VERMONT  
PROJECT # IM-BLDG(4)  
WILLISTON

|         |          |
|---------|----------|
| DRAWN   | CCE      |
| CHECKED | PD       |
| SCALE   | NONE     |
| DATE    | 01/16/01 |
| JOB NO. | 93114    |
| SHEET   |          |

**C10nb**  
OF 22 SHEETS

**EROSION CONTROL**

1. General Notes

a. The Contractor shall construct and maintain all erosion measures in accordance with the "Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites, Special Publication no. 3".

2. Construction Sequence

- a. The Contractor shall be responsible for establishing all erosion control measures delineated on the plans and any additional measures that are necessary to minimize erosion. The Contractor shall have erosion control materials and installation equipment on site at all times.
- b. Silt fences shall be installed along the base of the fill slopes. This shall remain in place until the project site has been stabilized. Install hay bales in grass-lined swales 50 feet on center to prevent silt from washing into the drainage system during construction. Hay bales shall be removed when vegetation is established.
- c. Dust shall be controlled through the application of calcium chloride or water.
- d. Excavated material from earth excavation and ditch digging shall be disposed of offsite or used for project fill material if determined suitable by the Owner's Representative.
- e. All temporary erosion control measures required for any proposed winter work shall be installed prior to October 1. These measures shall be in place prior to the commencement of any site work or earth-moving.

3. Temporary Measures

- a. Hay Bale Check Dam and Inlet Protection - Bales shall be placed in a row with ends tightly abutting the adjacent bales. Each bale shall be imbedded in the soil a minimum of 4 inches. Bales shall be securely anchored in place by stakes driven through the bales. The first stake in each bale shall be driven toward the previously laid bale to force the bales together.

Bales shall be repaired or replaced as needed. Once vegetation is established and the bales are no longer needed for erosion control, they shall be removed. Sediment deposits shall then be removed and placed in an upland area where there is no danger of further erosion.

- b. Silt Fences - The silt fences shall be constructed in accordance with the construction detail. The fence shall generally be placed 10 feet from the toe of the slope or as shown on the plan. The ends of the fence shall be placed uphill to form a horseshoe shape to trap all runoff.

The silt fences shall be inspected periodically for damage or buildup of sediment. All damaged silt fence shall be repaired or replaced. Sediment deposits shall be removed from the fence as they accumulate and placed in an area where there is no danger of further erosion.

- c. Erosion Matting - Erosion matting shall be placed on all grass-lined swales with profile grades exceeding 5.0% and shall be placed and maintained in accordance with the Vermont Agency of Transportation Standard Specifications Sections 654 and 755.07.

- d. Dust Control - During construction, dust will be controlled with water distributed by a truck-mounted spray bar. At the direction of the Engineer, Calcium Chloride AASHTO M 144 or Sodium Chloride M 143 may be used.

- e. All stockpile material (topsoil, borrow, etc.) will have a hay bale dike or silt fence constructed around the perimeter. Seed and mulch stockpile material as soon as possible to prevent soil erosion and sedimentation off site. Locate stockpiles on the uphill side of disturbed areas, if possible. During windy conditions, stockpiled material shall be covered or watered appropriately to prevent wind erosion.

- f. Slopes greater than 1:3 shall have erosion control netting installed to stabilize the slope and reduce the erosion potential. Install netting over mulched slopes so that all parts are in contact with the soil and mulch. Pin netting with wire staples 3 feet o.c. to ensure full bonding with soil surface.

4. Permanent Measures

- a. Grass Lined Swales - All swales that are not stone-lined shall be topsoiled, seeded, fertilized and mulched. Any area which shows signs of erosion shall be reseeded immediately and maintained until permanent vegetation is established.

- b. Restoration - As soon as construction is completed in a given area, it shall be topsoiled, seeded, fertilized and mulched.

The topsoil shall be submitted to the Extension Service for analysis. Fertilizer shall be applied at approximately a rate of 800 pounds per acre depending on soil analysis. If necessary, lime shall be applied to the topsoil to produce a soil PH of approximately 6.0.

After the finished grade has been established and the fertilizer spread, plant the specific seed mixture and work firmly into the soil. Apply seed on the prepared seed bed with approved mechanical seeders or hydroseeding equipment. Upon completion of the above planting operations, roll all areas, leaving the surface of all area true to grade, smooth, and free from hollows or other irregularities.

Thoroughly water all newly planted areas immediately after planting using a fine spray. Protect banks and swales from erosion and repair erosion that occurs. Banks, swales or other graded areas that have been washed out or have become damaged shall be repaired immediately. Unless approval is granted by the Engineer to plant off season, seeding will be conducted only during the period from April 15th to October 15th. Seeding shall not proceed before other phases of the work have progressed sufficiently and shall not interfere with other phases of work.

After seeding, mulch shall be applied at a rate of 2 bales per 1000 square feet.

5. Winter Construction

- a. If due to the project schedule, construction during the winter months is necessary, the contractor shall follow the winter construction procedures outlined in the "Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites"

- i. Minimize disturbance between October and May.
- ii. All erosion control measures shall be in place prior to the ground freezing.
- iii. Mulch shall be applied to all disturbed area at a rate of 90 pounds per 1,000 square feet. The Contractor shall maintain all areas that are mulched until permanent vegetation can be established.

6. Maintenance, Guarantee and Acceptance

- a. The Contractor shall be responsible for the care and maintenance including watering of seeded areas, until the seeding is inspected and accepted by the Owner.
- b. Reseeding shall be done until all areas are completely covered with a mature stand of grass. An area shall be considered covered when the entire surface contains a verdurous stand of grass. Areas that, in the opinion of the Engineer, are predominantly weeds shall be plowed up, fine graded, fertilized and reseeded in the manner specified previously, exercising caution not to cause damage to new or existing plant material.
- c. Maintain and guarantee all seeded area until acceptance.

SEEDING SPECIFICATION

| URBAN MIX GRASS SEED |                          |                             |
|----------------------|--------------------------|-----------------------------|
| % BY WEIGHT          | LIBS. LIVE SEED PER ACRE | TYPE OF SEED                |
| 37.5                 | 45                       | CREeping RED FESCUE         |
| 31.25                | 37.5                     | KENTUCKY BLUEGRASS          |
| 31.25                | 37.5                     | WINTER HARDY, PERENNIAL RYE |
| 100                  | 120 # LIVE SEED/ACRE     |                             |

| CONSERVATION MIX GRASS SEED |                          |   |
|-----------------------------|--------------------------|---|
| % BY WEIGHT                 | LIBS. LIVE SEED PER ACRE | TYPE OF SEED  |
| 35                          | 35                       | CREeping RED FESCUE   |
| 23                          | 23                       | KENTUCKY BLUEGRASS  |
| 15                          | 15                       | ANNUAL RYE  |
| 11                          | 11                       | WINTER HARDY, PERENNIAL RYE (VARIETY PENNSYLVANIA OR SIMILAR VARIETY) |
| 8                           | 6                        | WHITE CLOVER  |
| 10                          | 10                       | HIGHLAND BENTGRASS  |
| 100                         | 100 # LIVE SEED/ACRE     |   |

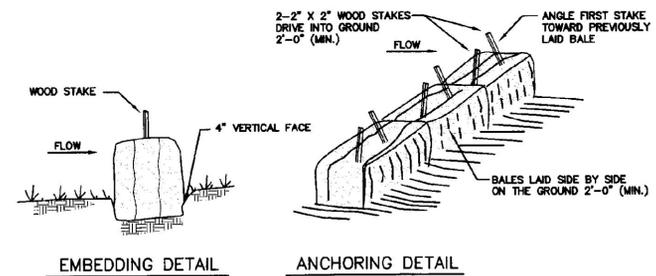
FERTILIZER - 20 LIBS PER 1000 S.F.  
SPRING SEEDING  
FALL SEEDING  
LIME - 80 LIBS PER 1000 S.F.  
BIOLOGIC GROUND LIMESTONE  
NOT LESS THAN 85% OF THE TOTAL CARBONATE

TOPSOIL - MINIMUM APPROVED TOPSOIL  
STRAW MULCH - 2 BALES PER 1000 S.F.  
APPLY BEDDER OR NETTING AS NEEDED

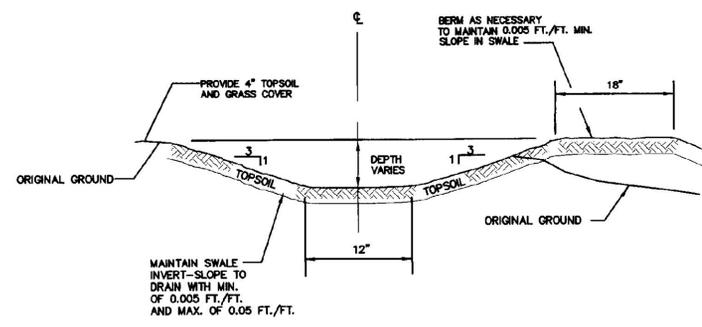
MAINTENANCE, GUARANTEE AND ACCEPTANCE OF SEEDING  
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND MAINTENANCE, INCLUDING WATERING, OF SEEDING AREA UNTIL THE SEEDING IS INSPECTED AND ACCEPTED BY THE ENGINEER. INSPECTION SHALL BE MADE AFTER THE SECOND MOWING. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS IN ADVANCE WHEN THE SECOND MOWING IS SCHEDULED.

RESEEDING SHALL BE DONE UNTIL ALL AREAS ARE COMPLETELY COVERED WITH A MATURE STAND OF GRASS. AN AREA SHALL BE CONSIDERED COVERED WHEN THE ENTIRE SURFACE CONTAINS A VERDUROUS STAND OF GRASS. AREAS THAT, IN THE OPINION OF THE ENGINEER, ARE PREDOMINANTLY WEEDS SHALL BE TILLED, FINE GRADED, FERTILIZED AND RESEEDED IN THE MANNER SPECIFIED ABOVE.

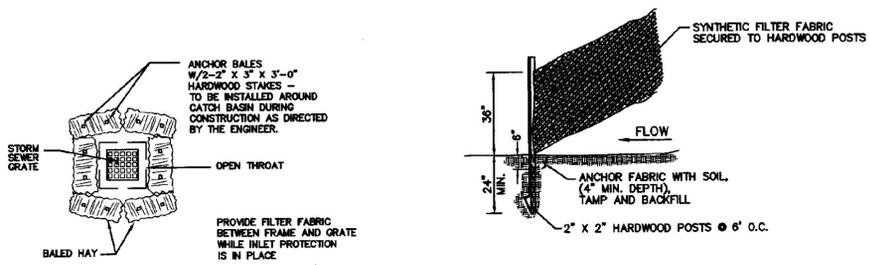
3 SITE RESTORATION



5 BALED HAY EROSION CHECKS  
N.T.S.

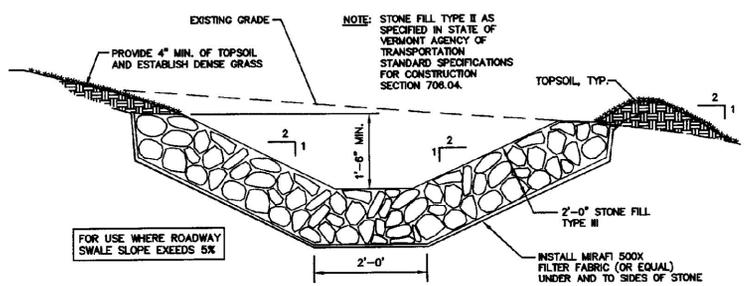


7 TYPICAL SHALLOW DIVERSION SWALE  
N.T.S.

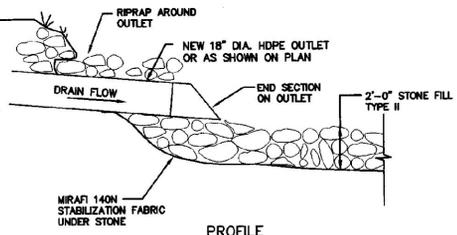
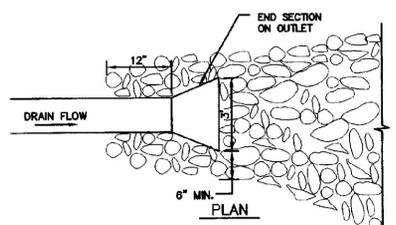


1 INLET PROTECTION  
N.T.S.

2 SILT FENCE DETAIL  
N.T.S.



4 STONE LINED SWALE  
N.T.S.



6 TYPICAL OUTLET DETAIL  
N.T.S.