## Standard Detail & Specifications
# Topsoiling

### Construction Notes:

1. **Site Preparation** (Where Topsoil is to be added)

   Note: When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stablization structures, berms, dikes, waterways and sediment basins.

   a. Grading - Grades on the areas to be topsoiled which have been previously established shall be maintained.

   b. Liming - Where the topsoil is either highly acid or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet). Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

   c. Tilling - After the areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade shall be loosened by discing or by scarifying to a depth of a least 3 inches to permit bonding of the topsoil to the subsoil. Pack by passing a bulldozer up and down over the entire surface area of the slope to create horizontal erosion check slots to prevent topsoil from sliding down the slope.

2. **Topsoil Material and Application**

   Note:Topsoil salvaged from the existing site may often be used but it should meet the same standards as set forth in these specifications. The depth of topsoil to be salvaged shall be no more than the depth described as a representative profile for that particular soil type as described in the soil survey published by USDA-SCS in cooperation with Delaware Agricultural Experimental Station.

| Source: | Symbol: | Detail No. |
|---|---|---|
| USDA - NRCS | | **DE-ESC-3.4.1** Sheet 1 of 2 Date: 12/03 |

## Standard Detail & Specifications
# Topsoiling

### Construction Notes (cont.)

a. Materials - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand or other soil as approved by an agronomist or soil scientist. It shall not have a mixture of contrasting textured subsoil and contain no more than 5 percent by volume of cinders, stones, slag, coarse fragment, gravel, sticks, roots, trash or other extraneous materials larger than 1-1/2 inches in diameter. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistles, or others as specified. All topsoil shall be tested by a reputable laboratory for organic matter content, pH and soluble salts. A pH of 6.0 to 7.5 and an organic content of not less than 1.5 percent by weight is required. If pH value is less than 6.0 lime shall be applied and incorporated with the topsoil to adjust the pH to 6.5 or higher. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Note: No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed to permit dissipation of toxic materials.

b. Grading - The topsoil shall be uniformly distributed and compacted to a minimum of four (4) inches. Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Note:Topsoil substitutes or amendments as approved by a qualified agronomist or soil scientist, may be used in lieu of natural topsoil.

| Source: | Symbol: | Detail No. |
|---|---|---|
| USDA - NRCS | | **DE-ESC-3.4.1** Sheet 2 of 2 Date: 12/03 |

## Standard Detail & Specifications
# Vegetative Stabilization

**PERMANENT SEEDING AND SEEDING DATES (cont.)**

| Mix No. | Seeding Mixtures: Certified Seed[2] / Poorly Drained Soils | Seeding Rate[3] lb/Ac | lb/1000 sq.ft. | Optimum Seeding Dates[2] O = Optimum Planting Period A = Acceptable Planting Period: Coastal Plain 2/1-4/30 | Coastal Plain 5/1-8/14 | Piedmont 8/15-10/31 | Piedmont 3/1-4/30 | Piedmont 5/1-7/31 | Piedmont 8/1-10/31 | All[4] 10/31-2/1 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | Redtop<br>Creeping Bentgrass<br>Sheep Fescue<br>Rough Bluegrass | 75<br>35<br>30<br>45 | 1.72<br>0.8<br>0.69<br>1 | O | A | O | O | A | O | | Quick stabilization of disturbed sites and waterways |
| 10 | Reed Canarygrass[5] | 10 | 0.23 | A | | O | A | | O | | Good erosion control, wildlife cover, and wetland revegetation. |
| | **Residential Lawns** | | | | | | | | | | |
| 11 | Tall Fescue<br>Perennial Ryegrass<br>Kentucky Bluegrass Blend | 100<br>25<br>30 | 2.3<br>0.57<br>0.69 | O | A | O | O | A | O | | High value, high maintenance, light traffic, irrigation necessary. Well drained soils, full sun. |
| 12 | Tall Fescue<br>Perennial Ryegrass<br>Sheep Fescue | 100<br>25<br>25 | 2.3<br>0.57<br>0.57 | O | A | O | O | A | O | | Moderate value; low maintenance, traffic tolerant |
| 13 | Creeping Red Fescue<br>Chewings Fescue<br>Rough Bluegrass<br>Kentucky Bluegrass | 50<br>50<br>20<br>20 | 1.15<br>1.15<br>0.4<br>0.4 | O | A | O | O | A | O | | Shade tolerant; moderate traffic tolerance, moderate maintenance. |
| 14 | Creeping Red Fescue<br>Rough Bluegrass **or**<br>Chewings Fescue | 50<br>90 | 1.15<br>2.1 | O | A | O | O | A | O | | Shade tolerant; moisture tolerant. |
| 15 | K-31 Tall Fescue | 150 | 3.5 | O | A | O | O | A | O | | Monoculture; but performs well alone in lawns. Discouraged. |

1. When hydroseeding is the chosen method of application, the total rate of seed should be increased by 25%.
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.
3. All seed shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Section 1, Chapter 24, Title 3 of the Delaware Code.
4. Cool season species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
5. All leguminous seed must be inoculated.
6. Warm season grass mix and Reed Canary Grass cannot be moved more than 4 times per year.
7. Warm season grasses require a soil temperature of at least 50 degrees in order to germinate, and will remain dormant until then.

| Source: | Symbol: | Detail No. |
|---|---|---|
| Delaware ESC Handbook | | **DE-ESC-3.4.3** Sheet 3 of 4 Date: 12/03 |

## Standard Detail & Specifications
# Vegetative Stabilization

**PERMANENT SEEDING AND SEEDING DATES**

| Mix No. | Seeding Mixtures: Certified Seed[2] / Well Drained Soils | Seeding Rate[3] lb/Ac | lb/1000 sq.ft. | Optimum Seeding Dates[2] O = Optimum Planting Period A = Acceptable Planting Period: Coastal Plain 2/1-4/30 | Coastal Plain 5/1-8/14 | Piedmont 8/15-10/31 | Piedmont 3/1-4/30 | Piedmont 5/1-7/31 | Piedmont 8/1-10/31 | All[4] 10/31-2/1 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Tall Fescue<br>**or**<br>Weeping Lovegrass | 140<br>10 | 3.2<br>0.23 | A | O | A | A | O | A | Add 100 lbs./ac Winter Rye | Good erosion control mix<br>Tolerant of low fertility soils<br>Lovegrass very difficult to mow;<br>Germinates only in hot weather |
| 2 | Deertongue<br>Sheep Fescue<br>Common Lespedeza[6]<br>inoculated | 30<br>30<br>15 | 0.69<br>0.69<br>0.35 | A | O | A | A | O | A | Add 100 lbs./ac Winter Rye | Good erosion control mix<br>Tolerant of low fertility soils<br>Good wildlife cover and food |
| 3 | Tall Fescue (turf-type) **or**<br>Strong Creeping Red Fescue **or**<br>Perennial Ryegrass<br>**plus** Flatpea[8] | 50<br>50<br>50<br>15 | 1.15<br>1.15<br>1.15<br>0.34 | O | A | O | O | A | O | Add 100 lbs./ac. Winter Rye | Good erosion control mix<br>Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation. |
| 4 | Strong Creeping Red Fescue<br>Kentucky Bluegrass<br>Perennial Ryegrass **or**<br>Redtop<br>**plus** White Clover[9] | 100<br>70<br>15<br>5<br>3 | 2.3<br>1.61<br>0.35<br>0.11<br>0.07 | O | A | O | O | A | O | Add 100 lbs./ac. Winter Rye | Suitable waterway mix.<br>Canada Bluegrass more drought tolerant.<br>Use Redtop for increased drought tolerance. |
| 5 | Switchgrass[7] **or**<br>Coastal Panicgrass<br>Big Bluestem<br>Little Bluestem<br>Indian Grass | 10<br>10<br>5<br>5<br>5 | 0.23<br>0.23<br>0.11<br>0.11<br>0.1 | | O | | | O | | | Native warm-season mixture.<br>Tolerant of low fertility soils.<br>Drought tolerant<br>Poor shade tolerance.<br>N fertilizer discouraged - weeds |
| 6 | Tall Fescue (turf-type)<br>(Blend of 3 cultivars) | 150 | 3.5 | O | A | O | O | A | O | | Managed filter strip for nutrient uptake |
| 7 | Tall Fescue<br>Ky. Bluegrass (Blend)<br>Perennial Ryegrass | 150<br>20<br>20 | 3.5<br>0.46<br>0.46 | O | A | O | O | A | O | | Three cultivars of Kentucky Bluegrass. Traffic tolerant. |
| 8 | Big Bluestem[7]<br>Indian Grass[7]<br>Little Bluestem[7]<br>Creeping Red Fescue<br>**plus one of:**<br>Partridge Pea<br>Bush Clover<br>Wild Indigo<br>Showy Tick-Trefoil | 10<br>10<br>8<br>30<br>5<br>3<br>3<br>2 | 0.23<br>0.23<br>0.18<br>0.69<br>0.11<br>0.07<br>0.07<br>0.05 | O | A | | O | A | | | All species are native.<br>Indian Grass and Bluestem have fluffy seeds. Plant with a specialized native seed drill.<br>Creeping Red Fescue will provide erosion protection while the warm season grasses get established |

| Source: | Symbol: | Detail No. |
|---|---|---|
| Delaware ESC Handbook | | **DE-ESC-3.4.3** Sheet 2 of 4 Date: 12/03 |

## Standard Detail & Specifications
# Vegetative Stabilization

**TEMPORARY SEEDING BY RATES, DEPTHS AND DATES**

| Mix # | Species[6] Certified Seed | Seeding Rate lb/Ac[3] | Seeding Rate lb/1000 sq.ft. | Optimum Seeding Dates[1] O = Optimum Planting Period; A = Acceptable Planting Period: Coastal Plain 2/1-4/30 | Coastal Plain 5/1-8/14 | Piedmont 8/15-10/31 | Piedmont 5/1-4/30 | Piedmont 5/1-7/31 | Piedmont 8/1-10/31 | All 10/31-2/1 | Planting Depth[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Barley | 125 | 4 | O | A | O | O | A | O | | 1-2 inches<br>2-3" sandy soils |
| 2 | Oats | 125 | 4 | O | A | A | O | A | A | | 1-2 inches<br>2-3" sandy soils |
| 3 | Rye | 125 | 4 | O | A | O | O | A | O | A | 1-2 inches<br>2-3" sandy soils |
| 4 | Perennial Ryegrass | 125 | 4 | O | A | O | O | A | O | | 0.5 inches<br>1-2" sandy soils |
| 5 | Annual Ryegrass | 125 | 4 | O | A | O | O | A | O | A | 0.5 inches<br>1-2" sandy soils |
| 6 | Winter Wheat | 125 | 4 | O | A | O | O | A | O | A | 1-2 inches<br>2-3" sandy soils |
| 7 | Foxtail Millet | 30 PLS | 0.7 | | O | | | O | | | 0.5 inches<br>1-2" sandy soils |
| 8 | Pearl Millet | 20 PLS | 0.5 | | O | | | O | | | 0.5 inches<br>1-2" sandy soils |

1. Winter seeding requires 3 tons per acre of straw mulch for proper stabilization.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Applicable on slopes 3:1 or less.
4. Fifty pounds per acre of Annual Lespedeza may be added to 1/2 the seeding rate of any of the above species.
5. Use varieties currently recommended for Delaware. Contact a County Extension Office for information.
6. Warm season grasses such as Millet or Weeping Lovegrass may be used between 5/1 and 9/1 if desired. Seed at 3-5 lbs. per acre. Good on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

| Source: | Symbol: | Detail No. |
|---|---|---|
| Delaware ESC Handbook | | **DE-ESC-3.4.3** Sheet 1 of 4 Date: 12/03 |

## Standard Detail & Specifications
# Vegetative Stabilization

### Construction Notes:

1. Site Preparation
   a. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.
   b. Final grading and shaping is not necessary for temporary seedings.
2. Seedbed Preparation

   It is important to prepare a good seedbed to insure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform, and free of large clods, rocks, and other objectionable material. The soil surface should not be compacted or crusted.
3. Soil Amendments
   a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.
   b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soils.
4. Seeding
   a. For **temporary stabilization**, select a mixture from **Sheet 1 .** For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions.
   b. Apply seed uniformly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.
   c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall be done immediately and without interruption.
5. Mulching

   All mulching shall be done in accordance with detail **DE-ESC-3.4.5**.

| Source: | Symbol: | Detail No. |
|---|---|---|
| Delaware ESC Handbook | | **DE-ESC-3.4.3** Sheet 4 of 4 Date: 12/03 |

## Standard Detail & Specifications
# Dust Control

**Temporary Methods:**

1. Mulches - See **DE-ESC-3.4.5**, Standard Detail and Specifications for Mulching.
2. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
3. Adhesives - Use on mineral soils only (not effective on muck soils). Keep traffic off these areas. The following table may be used for general guidance.

| Type of Emulsion | Water Dilution | Type of Nozzle | Apply Gal/Ac. |
|---|---|---|---|
| Latex emulsion | 12.5:1 | Fine spray | 235 |
| Resin-in-water emulsion | 4:1 | Fine spray | 300 |
| Acrylic emulsion (non-trafffic) | 7:1 | Coarse spray | 450 |
| Acrylic emulsion (traffic) | 3.5:1 | Coarse spray | 350 |

4. Tillage - For emergency temporary treatment, scarify the soil surface to prevent or reduce the amount of blowing dust until a more appropriate solution can be implemented. Begin the tillage operation on the windward side of the site using a chisel-type plow for best results.
5. Sprinkling - Sprinkle site with water until the surface is moist . Repeat as needed.
6. Calcium Chloride - Apply as flakes or granular material with a spreader at a rate that will keep the soil surface moist. Re-apply as necessary.
7. Barriers - Place barriers such as soild board fences, snow fences, hay bales, etc. at right angles to the prevailing air currents at intervals of approx. 10X their height.

**Permanent Methods:**

1. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
2. Stone - Apply layer of crushed stone or coarse gravel to protect soil surface.

| Source: | Symbol: | Detail No. |
|---|---|---|
| Adapted from VA ESC Handbook | | **DE-ESC-3.4.8** Sheet 1 of 1 Date: 12/03 |

*Additions:* | *Date:*

*Revisions:*

*Consultants*

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Drawing Scale: N/A
Drawing Start Date:
Drawing Finish Date:
Drawing Approved:

Drawing Title: EROSION AND SEDIMENT CONTROL DETAILS
Approved: Associate Director for Operations:
Approved: Chief, Facilites Engineer:
Approved: Director, Medical Center:

Project Title: BUILDING 5 RENOVATION
Building No: 5
Checked: AJD
Drawn: RDT
Location: VAMHCS MEDICAL CENTER WILMINGTON, DELAWARE

Date: 6–15–2012
Project No: 460–13–111
DRAWING NO: L-7
Dwg. 8 of 67

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