

# VEGETATIVE STABILIZATION

## A. SITE PREPARATION

- i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
- iii. Schedule requires soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

## B. SOIL AMENDMENTS (Fertilizer and Lime Specifications)

- i. Soil test must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
- ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate by approved equipment. Manure may be substituted for fertilizer with prior approval from the Soil Conservation District. Fertilizers shall all be delivered to the site fully labeled according to applicable State fertilizer laws and shall bear the name or trademark and warrantee of the producer.
- iii. Lime materials shall all be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass thru a #100 and 98-100% will pass thru a #20 mesh sieve.
- iv. Incorporate lime and fertilizer into the top 3-5" of soil by discing or other suitable means.

## C. SEEDBED PREPARATION

- i. Temporary Seeding
  - a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is mounted on loosened, it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.

- b. Apply fertilizer and lime as prescribed on the plans.
  - c. Incorporate lime and fertilizer into the top 3–5" of soil by discing or other suitable means.
- ii. Permanent Seeding
- a. Minimum soil conditions required for permanent vegetative establishment:
    - 1. Soil pH shall be between 6.0 and 7.0
    - 2. Soluble salts shall be less than 500 parts per million(ppm).
    - 3. The soil shall contain less than 40% clay but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if Lovegrass or Serecia Lespedeza is to be planted, then a sandy soil (<30% silt plus clay) would be
    - 4. Soil shall contain 1.5% minimum organic matter by weight.
    - 5. Soil must contain sufficient pore space to permit adequate root penetration.
    - 6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Sect. 21 Standards and Specs. for Topsoil.
  - b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3"–5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
  - c. Apply soil amendments as per soil test or as included on the plans.
  - d. Mix soil amendments into the top 3"–5" of topsoil by discing or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in a irregular condition with ridges running parallel to the running contour of the slope. The top 1"–3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

#### D. SEED SPECIFICATIONS

- i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the months immediately preceding the date of sowing such material on this job.

Note: Seed Tags shall be made available to the Inspector to verify type and rate of seed used.

- ii. Inoculant – The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75–80 deg. F. can weaken bacteria and make the inoculant less effective.

#### E. METHODS OF SEEDING

- i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
  - a. If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following:
    - nitrogen: maximum of 100 lbs/acre total of soluble nitrogen.
    - P205 (phosphorous): 200 lbs/acre; and K20 (potassium): 200 lbs/acre.
  - b. Lime: use only ground agricultural limestone, (up to 3 tons / acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime.
  - c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
  - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries (or Tables 25 or 26). The seeded area shall be rolled with a weighted roller to provide good seed to seed to soil contact.
  - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

- iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
  - a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
  - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. MULCH SPECIFICATIONS (In Order of Preference)

- i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in MD State Law.
- ii. Wood Cellulose Fiber Mulch (WCFM)
  - a. WCFM shall consist of specially prepares wood cellulose processed into a uniform fibrous physical state.
  - b. WCFM shall be dyed green or contain a green dye in the package that will that provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
  - c. WCFM, including dye, shall contain no germination or growth inhibiting factors.
  - d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
  - e. WCFM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.

- f. WCFM must conform to the following physical requirements:  
fiber length to approximately 10 mm., diameter approx. 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% max. and water holding capacity of 90% ~~min.~~

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

#### G. MULCHING SEEDED AREAS

Mulch shall be applied to all seeded areas immediately after seeding.

- i. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons / acre.
- iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs / acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs of wood cellulose fiber per 100 gallons of water.

#### H. SECURING STRAW MULCH (Mulch Anchoring):

Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference) depending upon size of area and erosion hazard:

- i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2". This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour, if possible.
- ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 lbs / acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lbs. shall contain a of wood cellulose fiber per 100 gallons of water.
- iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys, and on crests of banks. The remainder of the area should appear uniform after binder application. Synthetic binders, such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR, or other approved equal, may be used at rates recommended by manufacturer to anchor mulch.
- iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4 feet to 15 feet wide and 300 feet to 3,000 feet long.

# SOD ESTABLISHMENT

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To provide quick cover on disturbed areas (2:1 grade or flatter).

## 1. GENERAL SPECIFICATIONS

- a. Class of turfgrass sod shall be Maryland or Virginia State certified or approved. Sod labels shall be made available to the job foreman and the Inspector.
- b. Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4" at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Max. allowable deviation from standard widths and lengths shall be 5%. Broken pads and torn or uneven ends will not be acceptable.
- c. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on 10% of the section.
- d. Sod shall not be harvested or transplanted when moisture content (excessively wet or dry) may adversely affect its survival.
- e. Sod shall be harvested, delivered and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

**MDE Specifications for seeding  
and Sodding**

## 2. SOD INSTALLATION

- a. During period of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
- b. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- c. Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
- d. Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within 8 hours.

## 3. SOD MAINTENANCE

- a. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.
- b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
- c. The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3", unless otherwise specified.

# TEMPORARY SEEDING SUMMARY

| SEED MIXTURE FOR HARDINESS ZONE 7a<br>(From Table B.1) |                  |                 |   |                   | FERTILIZER<br>RATE *<br>(10-20-20)       | LIME RATE *                             |
|--|------------------|-----------------|---|-------------------|--|---|
| SPECIES  | SEEDING<br>RATES |                 | SEEDING<br>DATES                            | SEEDING<br>DEPTHS |  |   |
|  | lbs/<br>acre     | lbs/<br>1000 sf |   |                   |  |   |
| ANNUAL RYEGRASS  | 40               | 1.0             | Feb 15 to Apr 30<br>and<br>Aug 15 to Nov 30 | 1/2"              | 436 lbs/acre<br>or<br>10 lbs/<br>1000 sf | 2 tons/acre<br>or<br>90 lbs/<br>1000 sf |
| CEREAL RYE   | 112              | 2.8             | Feb 15 to Apr 30<br>and<br>Aug 15 to Dec 15 | 1"                |  |   |
| FOXTAIL MILLET   | 30               | 0.7             | May 1 to Aug 14                             | 1/2"              |  |   |

# PERMANENT SEEDING SUMMARY

| SEED MIXTURE FOR HARDINESS ZONE 7a<br>(From Table B.3) |  |                                    |                              |                   | FERTILIZER RATE*<br>(10-20-20)               |  |  | LIME<br>RATE*                               |
|--|--|------------------------------------|------------------------------|-------------------|--|--|--|---|
| NO.  | SPECIES  | APPLICATION<br>RATES<br>(PER ACRE) | SEEDING<br>DATES             | SEEDING<br>DEPTHS | N  | P <sub>2</sub> O <sub>5</sub>                | K <sub>2</sub> O                             |   |
| 8  | TALL FESCUE  | 100                                | 2/15-4/30<br>8/15-10/31**    | 1/4-<br>1/2 IN    | 45 lbs/<br>acre<br>or<br>1.0 lbs/<br>1000 sf | 90 lbs/<br>acre<br>or<br>2.0 lbs/<br>1000 sf | 90 lbs/<br>acre<br>or<br>2.0 lbs/<br>1000 sf | 2 tons/<br>acre<br>or<br>90 lbs/<br>1000 sf |
| 9  | TALL FESCUE<br>PERENNIAL RYEGRASS<br>KENTUCKY BLUEGRASS      | 60<br>20<br>40                     | 2/15-4/30<br>8/15-10/31***   | 1/4-<br>1/2 IN    |  |  |  |   |
| 11   | CREEPING RED FESCUE<br>CHEWINGS FESCUE<br>KENTUCKY BLUEGRASS | 30<br>30<br>20                     | 2/15-4/30<br>8/15-10/31 **** | 1/4-<br>1/2 IN    |  |  |  |   |

\* FERTILIZER AND LIME RATES FOR FINAL STABILIZATION SHALL BE BASED ON SOIL TEST. A COPY OF THE RECOMMENDED RATES SHALL BE FURNISHED TO THE SEDIMENT CONTROL INSPECTOR.

\*\* FOR SEEDING DATES BETWEEN 5/1-8/14 ADD 5 LB/AC OF EITHER FOXTAIL MILLET OR PEARL MILLET TO SEED MIX #8 ABOVE.

\*\*\* FOR SEEDING DATES BETWEEN 5/1-8/14 ADD 6 LB/AC OF EITHER FOXTAIL MILLET OR PEARL MILLET TO SEED MIX #9 ABOVE.

\*\*\*\* FOR SEEDING DATES BETWEEN 5/1-8/14 ADD 4 LB/AC OF EITHER FOXTAIL MILLET OR PEARL MILLET TO SEED MIX #11 ABOVE.