

19.0 STANDARDS AND SPECIFICATION: LAND GRADING Reshaping of the existing land surface in accordance with a plan as determined by engineering survey and The purpose of a land grading specification is to provide for erosion control and vegetative establishment on those areas where the existing land surface is to be reshaped by grading according to plan. The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal and vegetative treatment, etc. Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed. The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope contours of the area(s) to be graded. The plan shall also thinked by the ditches, reverse slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope stabilization, safe disposal of runoff water and benches (include grade and cross section), grade stabilization structures, retaining waits, and surface and benches (include grade and cross section). subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated 1. Provisions shall be made to safely conduct surface runoff to storm drains, protected outlets or to stable water courses to insure that surface runoff will not damage slopes or other graded areas. 2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. (Where the slope is to be mowed the slope should be no steeper than 3:1; 4:1 is preferred because of safety factors related to moving steep slopes.) Slopes exceeding 2:1 shall require special design and stabilization considerations that shall be adequately shown on the plans. 3. Reverse benches shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches. a. Benches shall be a minimum of six-feet wide to provide for ease of maintenance. b. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and c. The flow length within a bench shall not exceed 800' unless accompanied by appropriate design and computations. For flow channel stabilization see temporary swale 4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of earth dikes, ditches and swales or conveyed downstope by the use of a designed structure, except where: a. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized. b. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainageways, graded swales, downspouts, etc. c. The face of the slope will be protected by special erosion control materials, to include, but not limited to: approved vegetative stabilization practices (see section G), rip-rap or other 5. Cut slopes occurring in ripable rock shall be serrated as shown on the following diagram. These serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1:1. These steps will weather and act to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to 6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions. 7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence 8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on 9. Stockpiles, borrow areas and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications. 10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with 20.0 Standards and Specifications for Vegetative Stabilization. DETAIL 28 - BENCHED SLOPES - DITCH OR DIVERSION TO DIVERT FLOW OR FLATTER - BENCH-2 TO 3 PERCENT GRADE AND DRAIN TO A STABLE QUILET Construction Specifications 1. All fills shall be compacted as required to reduce erosion. slippage. settlement, subsidence or other related problems.

Fill intended to support buildings, structures and conduits,
etc., shall be compared in accordance with local requirement. etc. shall be compacted in accordance with local requirements References: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Puh. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973. 2. All fill shall be placed and compacted in layers not to exceed 8" in thickness. 3. Except for approved landfills or nonstructural fills, fill material shall be free of brush rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills. 4. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills. Fill shall not be placed on a frozen foundation. 5. All benches shall be kept free of sediment during all Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain or other approved methods. 7. All graded areas shall be permanently stabilized immediately following finished grading. DETAIL 29 - SERRATED SLOPES TYPICAL SECTION 1. All fills shall be compacted as required to reduce erosian. 1. All fills shall be compacted as required to record stippage, settlement, subsidence or other related problems.
Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements 2. All fill shall be placed and compacted in layers not to exceed 8" in thickness. 3. Except for approved landfills or nonstructural fills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills. 4. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills. Fill shall not be placed on a frozen foundation. 5. All benches shall be kept free of sediment during all Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain or other approved methods. 7. All graded areas shall be permanently stabilized immediately following finished grading. REVISIONS DATE

21.0 STANDARD AND SPECIFICATIONS TOPSOIL Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation. Conditions Where Practice Applies I. This practice is limited to areas having 2:1 or flatter slopes where: a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients. c. The original soil to be vegetated contains material toxic to plant growth. d. The soil is so acidic that treatment with limestone is not feasible. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans. Construction and Material Specifications Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station. II. Topsoil Specifications - Soil to be used as topsoil must meet the following: i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 11/2" in diameter. ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified. iii. Where the subsoil is either highly acidic 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) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures. II. For sites having disturbed areas under 5 acres: Place topsoil (if required) and apply soil amendments as specified in <u>20.0 Vegetative</u> <u>Stabilization</u> - Section I - Vegetative Stabilization Methods and Materials. III. For sites having disturbed areas over 5 acres: On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following: dissipation of phyto-toxic materials. V. Topsoil Application maintained, albeit 4" - 8" higher in elevation. iii. Topsoil shall be uniformly distributed in a 4" -8" layer and lightly compacted to a minimum ion of depressions or water pockets.

the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains than 6.0, sufficient lime shall be perscribed to raise the pH to 6.5 or higher. at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98 - 100% will pass through a #20 b. Organic content of topsoil shall be not less than 1.5 percent by weight. c. Topsoil having soluble salt content greater than 500 parts per million shall not be used. iv. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means. d. 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 (14 days min.) to permit Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable scientistand approved by the appopriate approval authority, may be used in lieu of natural topsoil. agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials. 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. When topsoiling, maintain needed erosion and sediment control practices such as diversions 2. Incorporate time and fertilizer into the top 3 - 5" of soil by disking or other suitable means. Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins. ii. Grades on the areas to be topsoiled, which have been previously established, shall be

thickness of 4. 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 iv. Topsoil shall not be placed while the topsoil or set spill stage stages are each condition. When the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercia fertilizer, composted sludge and amendments may be applied as specified below: . Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres

a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of agquisition of the compost) by the Maryland Department of the d. Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn sees should be raked to smooth the surface, remove large objects like stones and branches, and read) the area for seed application. Where site conditions will not permit normal seedbed preparation. ment under COMAR 26.04.06. loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, condition with ridges running parallel to the 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. the appropriate constituents must be added to meet the requirements prior to use. c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet. v. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,600 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 square feet, and 1/3 the normal lime application rate.

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° F. can weaken bacteria and make the inoculant less effective.

20.0 STANDARDS AND SPECIFICATIONS

VEGETATIVE STABILIZATION

Vegetative Stabilization specifications are used to promote the establishment of vegetation on exposed soil.

When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of

rainfall, thereby reducing sediment loads and runoff to downstream areas, and improving wildlife habitat and

Conditions Where Practice Applies

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or

cover for short duration (up to one year), and Permanent Seeding, for long term vegetative cover. Examples

of applicable areas for Temporary Seeding are temporary soil stockpiles, cleared areas being left idle between

Effects on Water Quality and Quantity

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to

receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present

Sediment control devices must remain in place during grading, seedhed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from

grade stabilization structures, berms, waterways, or sediment control basins.

Install erosion and sediment control structures (either temporary or permanent) such as diversions,

ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually

iii. Schedule required soil tests to determine soil amendment composition and application rates for sites

. Soil tests must be performed to determine the exact ratios and application rates for both lime and

ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by

a. Minimum soil conditions required for permanent vegetative establishment:

4. Soil shall contain 1.5% minimum organic matter by weight.

with Section 21 Standard and Specification for Topsoil.

c. Apply soil amendments as per soil test or as included on the plans.

Soil pH shall be between 6.0 and 7.0

Soluble salts shall be less than 500 parts per million (ppm).

The soil shall contain less than 40% clay but enough fine grained material (> 30% six plus The soil shall contain less than 40% clay but enough fine grained material (> 30% six plus clay) as persone the capacity to hook a moderate amount of material. So see some day

Soil must contain sufficient pore space to permit adequate root penetration. If these conditions cannot be met by soils on site, adding topsoil is require

b. Areas previously graded in conformance with the drawings shall be maintained in a true and even

grade, then scarified or otherwise loostened 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

Soil pH shall be between 6.0 and 7.0

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

approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to

construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other

ritically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

areas at final grade, former stockpile and staging areas, etc.

Section I - Vegetative Stabilization Methods and Materials

necessary for temporary seeding.

having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

purposes may also be used for chemical analyses.

visual resources.

washing into surface waters.

E. Methods of Seeding

Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following:

nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorous): 200 lbs/ac; K20 (potassium): 200 lbs/ac. b. Lime - use only ground agricultural limestone, (Up to 3 tons per 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 when hydroseeding.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without 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 then be rolled with a weighted roller to provide good 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) 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 the Maryland Seed Law. ii. Wood Cellulose Fiber Mulch (WCFM)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous b. WCFM shall be dyed green or contain a green dye in the package that will 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

e. WCFM material shall contain no elements or compounds at concentration levels that will be

f. WCPM must conform to the following physical requirements: fiber length to approximately mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas

Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardines

Zone (from Figure 5) and enter them in the Permanent Seeding Summary below, along with

application rates and seeding dates. Seeding depths can be estimated using Table 26. If this Summary

is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional

planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for specia

ii. For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the

iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq.ft. (150

Permanent Seeding Summary

lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will

receive a medium to high level of maintenance. Areas to receive seed shall be tilled by disking or other

debris over 1 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that

Note: Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of

Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management.

Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of

three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35%

establishment is necessary and when turf will receive medium to intensive management. Certified

Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar

receiving low to medium management in full sun to medium shade. Recommended mixture includes; certified Tall Fescue Cultivars 95 - 100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding

v. Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in Bluegrass lawns.

Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication. Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland".

Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a, 7b)

If soil moisture is deficient supply new seedings with adequate water for plant growth (1/2" - 1" every

3 to 4 days depending on soil feature) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

nspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the

Once the vegetation is established, the tite shall have 95% groundcover to be considered

iii If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be accounty

Table 21 Recommended Varieties of Grasses and Legumes for Disturbed Areas

Areas Receiving Low Maintenance'/

laguar, Kentucky 312/, Mustang, Olympic, Rebel II, Tribute

Aurora, Biljart, Reliant, Scaldis, Spartan, Waldin

Penngift, Chemu

Interstate, Interstate 76, Appalo

Turfgrass Cultivars recommended for Maryland. This publication is updated annually.

/ Refer to latest Agronomy Memo #77, University of Maryland - Cooperative Extension Service, for the

Empire, Norcen, Viking

Maintenance fertilizer rates his permanent seedings are shown in Table 24. For lawns and other

medium to high maintenance turigrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 171.

Adventure, Apache, Arid, Bonanza, Falcon, Clemfine, Finelawn I, Hounddo

All-Star, Blazer, Manhattan, Palmer, Pennant, Pennfine, Premier, Prelude, Rega

For establishment in high quality, intensively managed turf area. Mixture includes; certified Kentucky

Bluegrass Cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 - 3 lbs/1000

square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging

ii. Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid

iii. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas

oved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and

175 lb/ac

(100 lb/

90 lb/ac | 175 lb/ac |

1000 sh 1000 sh

(2.0 lb/ (4 lb/ (4 lb/

rates recommended by the soil testing agency shall be written in.

purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office

Juide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod

generally receiving low maintenance

time of seeding.

Seed Mixture (For Hardiness Zone 66/7a)

(From Table 25

TABLE #25

future mowing of grasses will pose no difficulty.

consumer protection and assures a pure genetic line.

ranging from 10% to 35% of the mixture by weight.

rate: 5 to 8 lb/1000 sf. One or more cultivars may be blended.

from a minimum of 10% to a maximum of 35% of the mixture by weight.

Western MD; March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)

Central MD: March 1 - May 15, August 15 - October 15 (Hardiness Zone - 6b)

of the mixture by weight.

A. Seed Mixtures - Permanent Seeding

water holding capacity of 90% minimum. Note: Only sterile straw mulch should be used in areas where one species of grass is desired. 3. 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 I" 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. per 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: A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. 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. Wood cellulose fiber may be used for anchoring straw. The fiber hinder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall he mixed with water and the mixture shall

contain a maximum of 50 pounds 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 area should be 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 the manufacturer to

J. Incremental Stabilization of Embankments - Fill Slopes i. Embankments shall be constructed in lifts as prescribed on the plans.

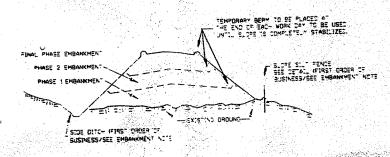
ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15', or when the grading operation ceases as prescribed in the plans. iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top

edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive iv. Construction sequence: Refer to Figure 4 (below). a. Excavate and stabilize all temporary swales, side ditches, or herms that will be used to divert

runoff around the fill. Construct Slope Sill Fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area. h. Place phase I embankment, dress and stabilize.

e. Place phase 2 embankment, dress and stabilize. d. Place final phase embankment, dress and stabilize. Overseed previously seeded areas as

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization



iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

be excavated and stabilized in equal incre ii. Construction sequence (Refer to Figure 3 below): 8. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to course runoff from the excavation.

b. Perform phase I excavation, dress, and stabilize c. Perform phase 2 excavation, dress, and stabilize. Overseed phase 1 areas as necessary. d. Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

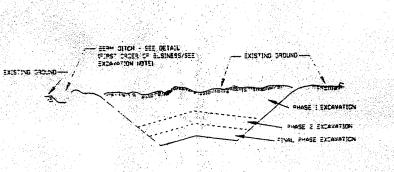


Figure 4 Incremental Stabilization - Cut

Section II - Temporary Seeding on - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this Summary is not put on the plans and completed, then Table 26 must be put on the plans. ii. For sites having soil tests performed, the rates shown on this table shall be deleted and the rates

recommended by the testing agency shall be written in: Soil tests are not required for Temporary Temporary Seeding Summary

Seeding Dates

50

Lime Rate 100 lb/1000 s 5 lb/1000 s REEPING RED FESCUE OR A HARD FESCUE (40

2/ Kentucky 31 Tall Fescue shall not be used to stabilize wetlands or wetland buffer areas. Contact Maryland nent of Natural Resources, Nontidal Wetlands Division for more information. Table 25 Permanent Seeding for Low Maintenance Areas

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE EARTH FILL - PIPE AS NECESSARY ** GEDIEXTILE CLASS 'C'-MINIMIN 6" OF 2"-3" AGGREGATE OVER LENGTH AND WIDTH OF STRUCTURE PROF ILE PLAN VIEW STANDARD SYMBOL

1. Length - minimum of 50' (+30' for single residence lot). 2. Width - 10' minimum, should be figred at the existing road to provide a turning

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family

4. Stone - crushed aggregate (2" to 3") or rectained or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the

5. Surfage Water - all surface water flowing to or diverted toward construction, entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable bern with 5:1, slopes and a minimum of 5" of stone over the pipe. Pipe has to be sized encoding to the protected with specifical tendence of the pipe and the stabilized and the to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required. . Location - A stabilized construction entrance shall be located at every point

where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance SOIL CONSERVATION SERVICE F-17-3 WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE O' MAXIMUM CENTER TO: PERSPECTIVE VIEW - FENCE POST DRÍVE STANDARD SYMBOL _____SF -----JOINING TWO ADJACENT SILT FENCE SECTIONS Construction Specifications . Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be the x the square (minimum) cut. or the diameter mum) round and shall be of sound quality hardwood. Steel posts will be

standard T or U section weighting not less than 1.00 pond per linear foot.

Geotextile shall be fastened securety to each fence post with wire fles

or staples at top and mid-section and shall meet the following requirements:

20 lbs/in (min.)

Where ends of geotextile fabric come together, they shall be overlapped.

bulges occur or when sediment occumulation reached 50% of the fabric height.

. Silt Fence shall be inspected after each rainfall event and maintained when

U.S. DEPARTMENT OF AGRICULTURE PAGE MARYLAND DEPARTMENT OF ENVIRONMENT SOIL CONSERVATION SERVICE E - 15 - 3 WATER MANAGEMENT ADMINISTRATION

0.3 ggl ft*/ minute (mox.) Test: MSMT 322

Tensile Modulus

olded and stapled to prevent sediment bypass

Test: MSMT 509 Test: MSMT 509

SEQUENCE OF CONSTRUCTION 1 day 3 days Set-up pre-inspection/construction meeting 2. Install stabilized construction entrance and silt fencing 3 days 3. Install 48" storm drain, str #1 to #2 4. Clear and grub area for driveway installation 1 week 1 week 5. Rough grade driveway, install 15" storm drain str #3 to #4, and install straw bale dikes Fine grade driveway/site and install gravel base Begin building construction. Install asphalt paving
 Permanently stabilize any temaining disturbed areas Once all disturbed areas are stabilized and only upon approval by the inspector, remove any remaining sediment control devices

> a. The developer is responsible for the acquisition of all required easements, right, and/or rights-of-way pursuant to the discharge from the sediment and erosion control practices, storm water management practices and the discharge of storm water onto or across and grading or other work to be performed on adjacent or downstream properties affected by this plan.

SEDIMENT CONTROL NOTES

. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within:
a.) seven calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1) and b.) fourteen days as to all other disturbed or graded areas on the project site. The implace sediment control measures will be maintained on a continuing basis until the site is permanently stabilized and all permit requirements are met. c. On all sites with disturbed areas in excess of 2 acres.

approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made; and

. Approval shall be requested upon final stabilization of all sites with disturbed areas in excess of 2 acres before removal of controls.

Disturbed surface area 0.0607 ac. Volume of spoil material -0-

List predominant soil types and general description per PGSCD soil survey. 40%: Wacz-Westphalia fine sandy loam, G-12°10 35%: Sa E = Sandy lond, Steep 15%: AdBZ 10%: Wa D3

OWNER'S DEVELOPER'S CERTIFICATION "I/We hereby certify that I have reviewed this erosion and sediment control plan and that all clearing, grading,

construction and/or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a certificate of attendance at Department of the Environment training program for the control of sediment and erosion before beginning the project." andre P. Granatt

Name ANDREW P GRAVATT Title OWNER Phone No. 577-8449 Complete Address Landover Hills, MD 20784

CONSULTANT'S CERTIFICATION

"I certify that this plan of erosion and sediment control represents a practicable and workable plan based on my personal knowledge of the site, and this plan was prepared in accordance with the requirements of the Prince George's Soil Conservation District and "Standards and Specifications for Soil Erosion and Sediment Control." I have reviewed this erosion and sediment control plan with the owner/developer.

Signature Willia O Byson MD License No. 17263 Date 3-28-96

Name William JV Burrows

OWNER, DEVELOPER, APPLICANT: landerign

ENGINEERS · SURVEYORS · PLANNERS SUITE NO. III 2905 MITCHELLVILLE ROAD BOWIE , MARYLAND 20716 (301) 249-8802

MR. ANDREW P. GRAVATT 4205 70 TH AVENUE LANDOVER HILLS, MD. 20784 (301) 577-8449 H

(301) 464-8200 W

LOT 4 PLAT TWO NICHOLSON SUBDIVISION

TCP II GENERAL NOTES

Cutting or clearing of woodland not in conformance with this

Plan or without the expressed written consent of the Planning

The Forest Resources Unit of the Department of Environmental

Resources (DER) must be contacted at (301) 925-5820 prior to

the start of any work on the site to address implementation

Selective Clearing Areas) located on their lot or parcel of

land and the associated fines for unauthorized disturbances

Official prior to the issuance of any permits. These bonds will be retained as surety by the Building Official until all

The location of all Tree Protective Devices (TPD's) shown or

this Plan shall be flagged or staked in the field prior to

the pre-construction meeting with the Forest Resources Unit

DER and the Sediment and Erosion Control Inspector from

DER. Upon approval of the flagged or staked TPD locations by

M-NCPPC

Prince George's County Planning Department

Environmental Planning Section

APPROVAL

TCP2 - 105 - 94

Approved by

TREE CONSERVATION PLAN

the Forest Resources Unit, installation of the TPD's may

installation of initial Sediment Controls. No cutting or

begin. TPD installation shall be completed prior to

clearing of trees may begin before final approval of

owner/developer or owners representative shall notify the purchaser of the property of any Woodland Conservation Areas. All appropriate bonds will be posted with the Building

Property owners shall be notified by the Developer or Contractor of any Woodland Conservation Areas (Tree Save

of Tree Conservation measures shown on this Plan.

Areas, Reforestation Areas, Afforestation Areas, or

to these areas. Upon the sale of the property the

required activities have been satisfied.

Director or designee shall be subject to a \$1.50 per sqft.

PLAT BOOK : YJ 164 PLAT NO : 29 MARLBORD ELECTION DISTRICT NO. 3 PRINCE GEORGE'S COUNTY, MARYLAND

SCALE: As-Shown DATE: March, 1996 DRAWN BY: J.F. DESIGN BY: J.C. CHECKED BY: W.B. SHEET NO. : 2 OF 2 JOB NO.: 24-032 PERMIT Na:

