

	BIORETENTION GARDEN 1 PLANT SCHEDULE
Qty. Key	Botanical\Common Name
SHRU	3\$
4 CA	Clethra Ainfolia-Sweet Pepperbush (18"-24" container)
159 JP	Pschysandra terminalis - Japanese Pschysandra

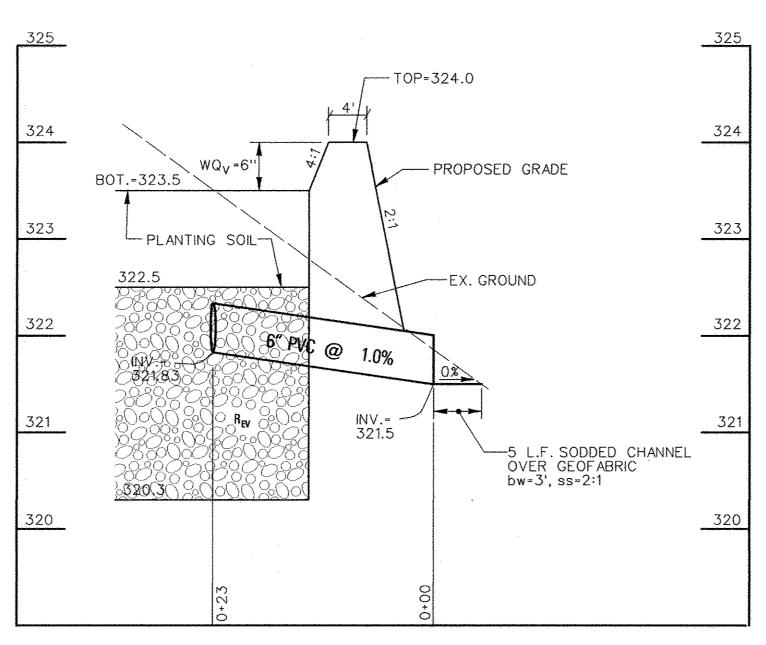
Hatching for Herbacious Cover

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREA (F-6)

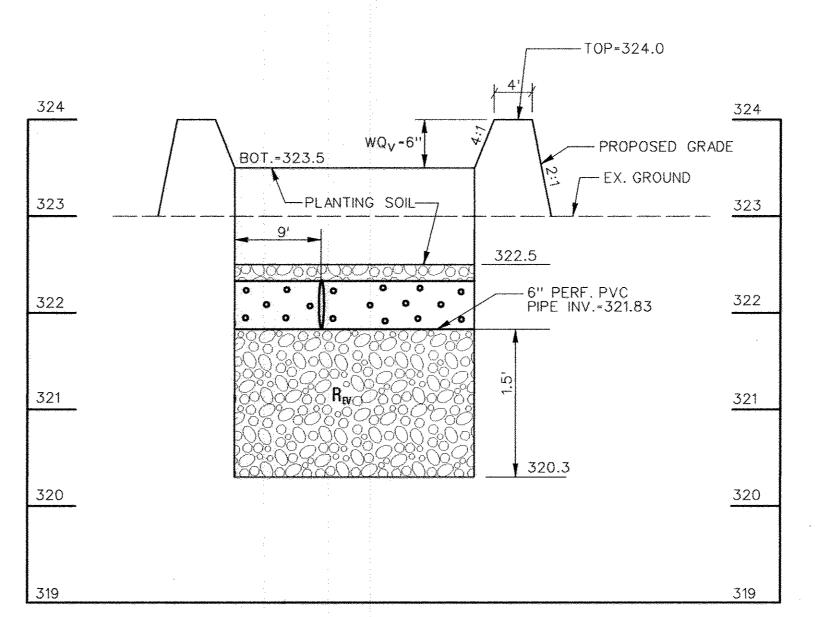
- 1. Annual maintenance of plant material, mulch layer and soil layer is required.

 Maintenance of mulch and soil is limited to correcting areas of erosion or wash out.

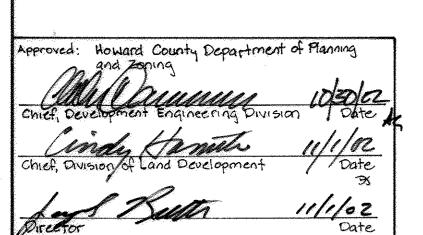
 Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material
- Schedule of plant inspection will be twice a year in spring and fall. This inspection
 will include removal of dead and diseased vegetation considered beyond treatment,
 treatment of all diseased trees and shrubs and replacement of all deficient stakes
- 3. Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer every 2 to 3 years.
- Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.



BIORETENTION GARDEN #1 SECTION A-A SCALE: HOR.: 1" = 10' VERT.: 1" = 1'



BIORETENTION GARDEN #1 SECTION B-B SCALE: HOR:: 1" = 10' VERT.: 1" = 1'



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THOMAS EUGENE FERGUSON
9051 DUMHART ROAD LAUREL, MD 20723 PARCEL 149, LOT 2

BIORETENTION GARDENS PLAN AND PROFILES



SINGLE FAMILY DETACHED

TAX MAP 47, GRID 19, PARCEL 149

L. 6176 / F. 202, ZONE R-20

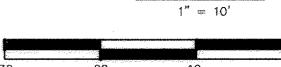
6th ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

WATER CODE: DO4 SEWER CODE: 215 3000

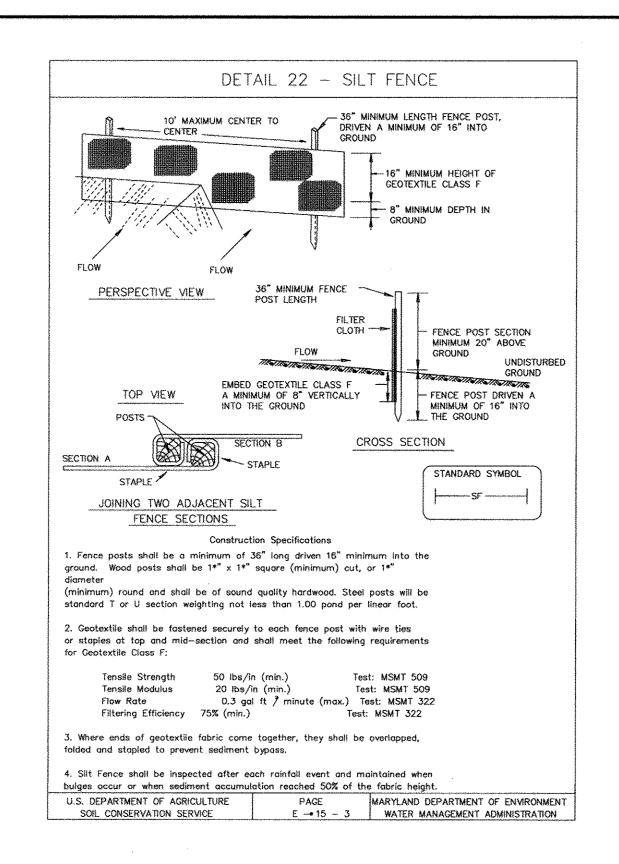
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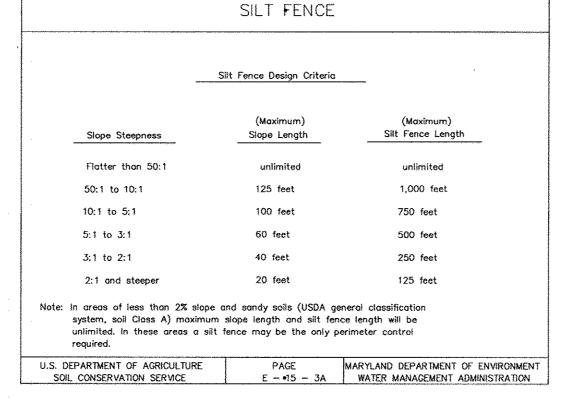
BAR SCALE

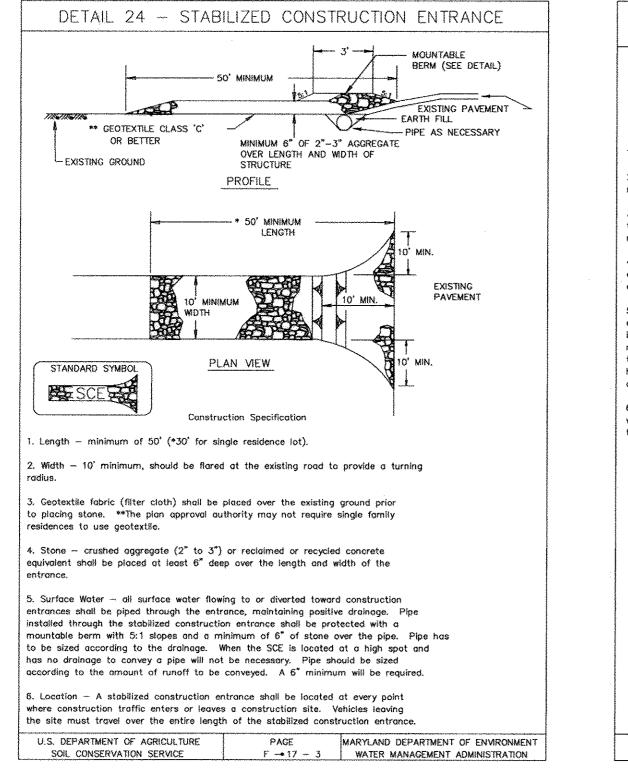


DATE: OCTOBER 21, 2002 SHEET 2 OF 5

FILE: 1602036/DRAWINGS/02_BIORETENTION.DGN



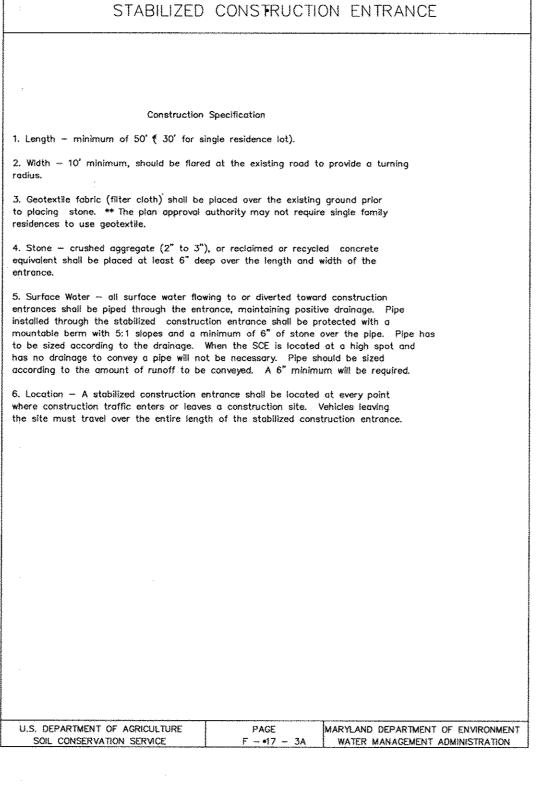




REVISIONS

Drafting ANL

lesign CGW



ENGINEERS

PLANNERS

TECHNOLOGIES CONSTRUCTION MANAGERS

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BY THE DEVELOPER: BY THE ENGINEER: WE CERTIFY THAT ALL DEVELOPMENT AND ICERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONSTRUCTION WILL BE DONE ACCORDING TO THIS CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN, FOR SEDIMENT AND EROSION CONTROL AND PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN SITE CONDITIONS AND THAT IT WAS PREPARED IN THE CONSTRUCTION PROJECT WILL HAVE A ACCORDANCE WITH THE REQUIREMENTS OF THE CERTIFICATE OF ATTENDANCE AT A DEPARTMENT HOWARD SOIL CONSERVATION DISTRICT. OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. LALSO 1 alianac Marson 10.21.02 AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT. DATE 11/1/02 DATE

GENERAL NOTES

- 1. A minimum of 24 hours notice must be given to the Howard County Sediment Control Division prior to the start of any construction (880-3450).
- 2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- 3. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calender days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the
- 4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm
- 5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51) sod (Sec. 54), temporary seeding (Sect. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

Total Area of Site Area Disturbed Area to be Roofed or Paved Area to be Vegetatively Stabilized Total Cut Total Fill Offsite Waste/Borrow Area Location	0.7213 0.3833 0.1399 0.2003 200 200 NONE	Acres Acres Acres Acres Cubic Yards Cubic Yards
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- 8. Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- 9. Additional sediment controls must be provided, if deemed necessary by the Howard County Department of Public Works Sediment Control Inspector.
- 10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of the 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.

SEQUENCE OF CONSTRUCTION

1.	Obtain grading and MDE Permit.		1 DAY
2.	Notify Howard County Sediment Control Inspector for pre-construction meetings as required by note number one (No. 1) of the Standard Erosion and Control Notes shown on this sheet. Notify Miss Utility.		1 DAY
3.	Install sediment control measures (i.e. sce & silt fence).		1 DAY
4,	With inspectors approval, grade site within the limits of disturbance. Remove existing foundation and existing gravel drive.		3 DAYS
5.	Construct house and garage.		3 MONTHS
6.	Install sewer and water house connections.		1 WEEK
7.	Install driveway.	:	3 DAYS
8.	Stabilize all disturbed areas. Install Bioretention Gardens.	. :	1 DAY
9.	With inspector's aspproval, remove all sediment control measures.		1 DAY

PLANTING NOTES

- 1. Plants shall conform to current "American Standards for Nursery Stock" by American Association of Nurserymen (AAN), particularly with regards to size, growth, size of ball, and density of branch structure.
- 2. All plants (B&B or container) shall be property identified by weather-proof labels securely attached thereto before delivery to project site. Labels shall identify plants by name species, and size. Labels shall not be removed until the final inspection by the Landscape Architect.
- 3. Any material and/or work may be rejected by the Landscape Architect if it does not meet the requirement of the specifications. All rejected materials shall be removed from the site by the Landscape Contractor.
- 4. The Landscape Contractor shall furnish all plants in quantities and sizes to complete the work as specified on the landscape plan. The Landscape Contractor shall be responsible to verify on the plan all plant quantities prior to commencement of work. Quantities in the schedule are the Landscape Contractor's convenience.
- 5. Substitutions in plant species or size shall not be permitted except with the written approval of the Landscape Architect.
- scaling or as designated in the field by the Landscape

6. Plants shall be located as shown on the drawings and by

- 7. Landscape Contractor shall contact Miss Utility prior to any excavation.
- 8. If utility lines are encountered in excavation of tree pits, other locations for trees shall be selected by the Landscape Architect. Such changes shall be made by the contractor without additional compensation. No changes of location shall be made without the approval of the Landscape Architect.
- 9. Landscape Contractor shall first locate and mark the underground utilities, prior to locating and digging the pits for the trees.
- 10. All equipment and tools shall be placed so as not to interfere or hinder the pedestrian and vehicular traffic flow.
- 11. During planting operations, excess and waste materials shall be promptly and frequently removed from the site.
- 12. All disturbed areas of the site not planted with shrubs or ground cover shall be sodded. Till soil to a depth of 6". Apply fertilizer of analysis 5-10-5 at the rate of 20 lbs. per square feet. Water sod daily until established.
- 13. All plant beds to received perennials, bulbs or ground cover are to be tilled to a depth of 6" prior to installation of plants. Apply fertilizer of analysis 5-10-5 at the rate specified by manufacturer. Water plants until established.

THOMAS EUGENE FERGUSON

9051 DUMHART ROAD

LAUREL, MD 20723

PARCEL 149, LOT 2

14. All beds containing shrubs, ground covers, perennials, bulbs or trees are to received 2"-3" of shredded hardwood bark mulch after planting and clean up operations have been completed.

I. BIORETENTION AREA SOIL SPECIFICATIONS

A. Planting Soil

The bioretention areas shall consist of a planting soil having a composition of at least 10 to 25 percent clay and shall be of a sandy loam or loamy sand texture. Loamy soils may be utilized for the planting soil but must consist of 35% sand. In addition, the furnished planting soil shall be of uniform composition, free of stones, stumps, roots or similar objects larger than one inch, brush, or any other material or substance which may be harmful to plant growth, or a hindrance to planting or maintenance operations.

The planting soil shall be free of plants or plant parts of Bermuda grass, Quack grass, Johnson grass, Mugwort, Nutsedge, Poison Ivy, Canadian Thistle or others as specified.

Is shall not contain toxic substances harmful to plant growth.

The planting soil shall be tested and meet the following criteria:

pH range 5.5 - 6.5 Organic matter 1.5 - 3.0% Magnesium - Mg 35 lbs./acre Phosphorus - P205 100 lbs./acre Potassium - K20 85 lbs./acre Soluble salts not to exceed 500ppm

The following testing frequencies shall apply to the above soil constituents:

pH, Organic Matter: 1 test per 90 cubic yards, but no more than 1 test per Bioretention Area

Magnesium, Phosphorus, Potassium, Soluble Salts:

1 test per 500 cubic yards, but no less than 1 test per borrow source

One grain size analysis shall per performed per 90 cubic yards of planting soil, but no less than 1 test per Bioretention Area.

B. Mulch Layer Specifications

A mulch layer shall be provided on top of the planting soil. An acceptable mulch layer shall include shredded hardwood or shredded wood chips or other similar product approved by the Maryland Department of Environment (MDE).

Of the approved mulch products all must be well aged, uniform in color, and free of foreign material including plant material. Well aged mulch is defined as mulch that has been stockpiled or stored for at least twelve (12) months.

C. Sand Specifications

The sand shall be free of deleterious material and rocks greater than 1 inch in diameter.

D. Compaction

Soil shall be placed in lifts less than 18 inches and lightly compacted (minimal compactive effort) by tamping with a bucket from a dozer or a backhoe.

II. BIORETENTION AREA PLANT SPECIFICATIONS

General Planting Specifications

Root stock of the plant material shall be kept moist during transport from the source to the job site and until

Walls of planting pit shall be dug so that they are vertical.

The diameter of the planting pit must be a minimum of six inches (6") larger than the diameter of the ball of the

The planting pit shall be deep enough to allow $\frac{1}{4}$ " of the ball to be above the existing grade. Loose soil at

the bottom of the pit shall be tamped by hand.

The appropriate amount of fertilizer is to be placed at the bottom of the pit (see below for fertilization rates). The plant shall be removed from the container and placed in the planting pit by lifting and carrying the plant by its' ball (never lift by branches or trunk).

Set the plant straight and in the center of the pit so that the top of the ball is approximately $\frac{1}{4}$ above the

Backfill planting pit with existing soil.

Make sure plant remains straight during backfilling procedure.

Never cover the top of the ball with soil. Mound soil around the exposed ball (1/4").

Trees shall be braced by using 2" by 2" white oak stakes. Stakes shall be placed parallel to walkways and buildings. Stakes are to be equally spaced on the outside of the tree ball. Utilizing hose and wire the tree is braced to the stakes.

BIORETENTION AREA SEQUENCE OF CONSTRUCTION

1. Install Phase I Silt Fence as shown on the plan. -Construction time: $\frac{1}{2}$ Day

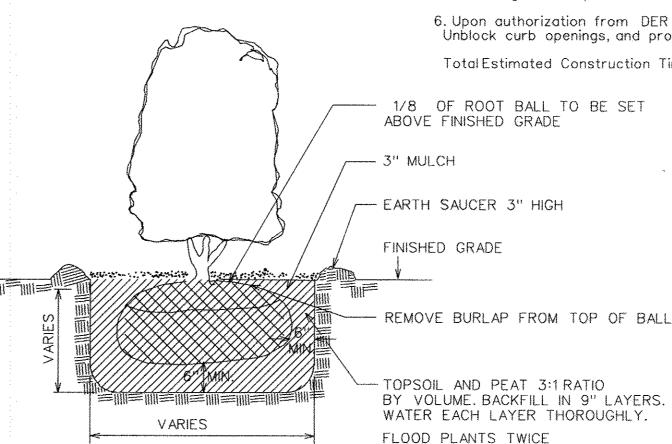
2. Stabilize grading within Limit of Disturbance except for Bioretention Area. -Construction time: $\frac{1}{2}$ Day

3. Excavate Bioretention Area to proposed depth. -Construction time: 1/2 Day

4. Fill Bioretention Area with planting soil and sand, as shown in the plans and detailed in the specifications. Construction time: 1 Day

5. Plant vegetation specified in the planting plan Bioretention Area. -Construction time: $\frac{1}{2}$ Day

6. Upon authorization from DER inspector, remove all sediment controls and stabilize all disturbed areas. Unblock curb openings, and provide drainage to the Bioretention Areas. -Construction time: $\frac{1}{2}$ Day Total Estimated Construction Time - 3.5 Days



BIORETENTION

NOT TO SCALE

WITHIN FIRST 24 HOURS

PROVIDE EROSION

4' WIDE IN SWALE

3:1 MAX.

GRASS SWALE 1 & 2 DETAIL

NOT TO SCALE

CONTROL MATTING

THOMAS E. & DIANNE C. FERGUSON PROPERTY SINGLE FAMILY DETACHED

TAX MAP 47, GRID 19, PARCEL 149 L. 6176 / F. 202, ZONE R-20 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND WATER CODE: DO4 SÉWER CODE: 215 3000

SDP-03-027

DATE: OCTOBER 21, 2002 SHEET 3 OF 5

GRADING, SEDIMENT CONTROL, AND BIORETENTION DETAILS

SHRUB PLANTING DETAIL **B&B AND CONTAINER GROWN**

FILE:1602036/DRAWINGS/03_SEDDT.DGN

<u>Section I - Vegetative Stabilization Methods and Materials</u> 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 required soil test to determine soil amendment composition and application rates for sites having disturbed area over 5 acres. 3. 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 preformed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by 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 the applicable state fertilizer laws and shall bear the name. trade name or trademark and warrantee of the producer.

iii. Lime materials shall 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 through a #100 mesh sieve and 98 - 100% will pass through a #20 mesh sieve.

iv. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

. 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 equipment, such as disc harrows or chiselplows or rippers mounted on construction equipment. After the soil is 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 disking or other suitable means.

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

ii. Permanent Seeding

a. Minimum soil conditions required for permanent vegetative

SoilpH shall be between 6.0 and 7.0

The soil shall contain less that 40% clay but enough fine argined 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 an sandy soil (< 30% silt plus clay) would be acceptable.

Soil shall contain 1/5% minimum organic matter of weight. Soil must contain sufficient pore space to permit

6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and specification 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 disking or other suitable means. Lawn greas 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 note permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular 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.

D. Seed Specifications

. 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 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.

Methods of Seeding

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 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

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

> b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

> > DATE

11/1/02

REVISIONS

BY THE DEVELOPER

6/29/02 I/WE CERTIFY THAT ALL DEVELOPMENT AND

CONSTRUCTION WILL BE DONE ACCORDING TO THIS

PLAN, FOR SEDIMENT AND EROSION CONTROL AND

THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN

CERTIFICATE OF ATTENDANCE AT A DEPARTMENT

PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO

AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE

HOWARD COUNTY SOIL CONSERVATION DISTRICT.

OF THE ENVIRONMENT APPROVED TRAINING

THE CONSTRUCTION PROJECT WILL HAVE A

iii. Drill or Cultipacker Seeding: Mechanized seeder that apply and cover

a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 4 inch of soil covering. Seedbed must be firm

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 the Maryland Seed Law.

ii. Wood Cellulose Fiber Mulch (WCFM)

a. WCFM shall consist of specially prepared 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 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 homogenous 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 requires: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, as content of 1.6% maximum and water holding capacity of 90%

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

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately

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/acres. Mulch shall be applied to a uniform loose depth of between and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchorina 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 acres. 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 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

ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acres. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gailons 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 N, Terra TAck AR or other approved equal may be used at rates recommended by the 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' to 15 feet wide and 300 to 3,000 feet long.

I. Incremental Stabilization - Cut Slopes

i. All cut slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments

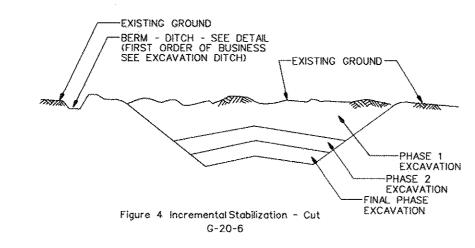
ii. Construction sequence (refer to Figure 4, page G-20-6):

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation

b. Perform phase 1 excavation, dress, and stabilize. c. Perform phase 1 excavation, dress, and stabilize.

d. Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as necessary.

Overseed phase 1 areas as necessary



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.

BY THE ENGINEER:

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 manner to a sediment trapping device.

iv. Construction sequence: Refer to Figure 4, page G-20-7.

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct Slope Silt Fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.

b. Place phase 1 embankment, dress and stabilize.

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

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.

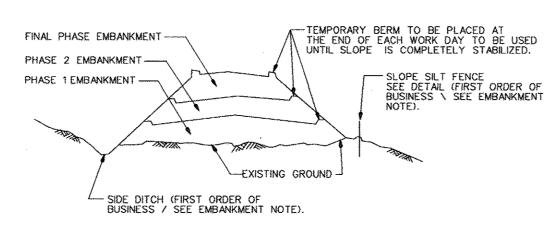


Figure 5 Incremental Stabilization - Fill G-20-7

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

A. Seed Mixtures - Temporary Seeding

. 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, page G-20-8, along with application rates, seeding dates and seeding depths. 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 emporary Seeding.

Temporary Seeding Summary

	Seed Mixture (Fertilizer					
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Rate (10-10-10)	Lime Rate	
	RYE PLUS FOXTAIL MILLET	150	2/1 TO 11/30	111			
				- CANALAGE CONTRACTOR	600 lb/ac (15 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)	
							
						·	

Section II - Permanent Seeding

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance. A. Seed Mixtures - Permanent Seeding

Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness 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 use Table 26. If this Summary is no 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, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found USDA-SCS Technical Field Office Guide, Section 342 -Critical Area Planting. For special lawn maintenance areas, see sections I(Typ) Sod and (Typ) Turfgrass.

ii. For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.

(46-0-0) at $3\frac{1}{2}$ lbs/1000 s.f. (150 lbs/ac), in addition to the above soil amendments shown in the table, page G-20-9, to be performed at the time of seeding.

Permanent Seeding Summary

Seed Mixture (Hardiness Zone <u>7A</u>) From Table 25					Fertilizer Rate (10-20-20)			
No.	Species	Application Rate (lb/ac)		Seeding Depths	4	P205	K20	Lime Rate
~	TALL FESCUE PEN. RYE GRASS KENT BLUEGRASS	125 15 10	3/1 TO 5/15 OR 8/15 TO 11/15	1 /2"	90 lb/ac	175 lb/ac (4 lb/	175 lb/ac (4 lb/	2 tons/ac
				-	(2.0 lb/ 1000 sf)	1000 sf)	1000 sf)	1000 sf)

* FOR 5-16 to 8-14 add 10 lbs. OF Millet to Mixture #3

Section IV - Sod: To provide quick cover on disturbed areas (2:1 grade

A. General specifications

. Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman

ii. Sod shall be machine cut at a uniform soil thickness of $\frac{1}{4}$ ", plus or minus/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. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.

iii. 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 the upper 10 percent of the section.

iv. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

v. 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.

B. Sod Installation

. During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.

ii. 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.

iii. 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.

iv. 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 eight hours.

C. Sod Maintenance

i. 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.

ii. After the first wee, sod watering is required as necessary to maintain adequate moisture content.

iii. The first mowing of 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.

Section IV- Turfgrass Establishment

Areas where turfarass may be desired include lawns, parks, playarounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future moving of grasses will pose no difficulty.

Note: Choose certified material. Certified materialis the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

A. Turfgrass Mixtures

. Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management, Irrigation required in the areas of central Maryland and eastern share. 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 ximum of 35% of the mixture by weight

ii. Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use 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 ranging from 10% to 35% of the mixture by weight iii. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to

medium shade. Recommended mixture includes; certified Tall Fescue Cultivars 100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/ 1000 s.f. One or more cultivars may be blended. iv. Kentucky Bluegrass/Fine Fescue - Shade mixture - For use in areas with shade in Bluegrass lawns. 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: 1/2- 3 lbs/1000 square feet. A

minimum of 3 Kentucky bluegrass cultivars must be chosen, with each

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

B. Ideal times of seeding 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 Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zone - 7a, 7b)

C. Irrigation

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 texture) 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. D. Repairs and Maintenance

Inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season

i. Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized ii. If the stand provides less that 40% ground coverage, reestablish following

original lime, fertilizer, seedbed preparation and seeding recommendations.

V. Topsoil Application iii. If the stand provides between 40% and 94% ground

coverage, overseeding and fertilizing using half of the rates originally When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.

Table 24. For lawns and other medium to high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Grades on the areas to be topsoiled, which have been previously

established, shall be maintained, albeit 4" - 8" higher in elevation. iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum 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 formation of depressions or

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that my otherwise be detrimental to proper grading and seedbed preparation.

Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial 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 shall conform to the following requirements:

prior to use.

a. Composted Sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements

c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet ii. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

Construction and Material Specifications to the placement of topsoil. Lime shall be disturbed

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

iv. Maintenance fertilizer rates for permanent seedings are shown in

Placement of topsoil over a prepared subsoil prior to establishment of

To provide a suitable soil medium for vegetative growth. Soils of

I. This practice is limited to areas having 2:1 or flatter slopes

a. The texture of the exposed subsoil/parent materialis not

b. The soil material is so shallow that the rooting zone is not

c. The original soil to be vegetated contains material toxic to

d. The soil is so acidic that treatment with limestone is not

II. For the purpose of these Standards and Specifications, areas

design for adequate stabilization. Areas having slopes steeper

than 2:1 shall have the appropriate stabilization shown on the

having slopes steeper than 2:1 require special consideration and

deep enough to support plants or furnish continuing supplies

concern have low moisture content, low nutrient levels, low pH,

adequate to produce vegetative growth

of moisture and plant nutrients.

materials toxic to plants, and/or unacceptable soil gradation.

Maryland" Bulletin No. 171

21.0 STANDARD AND SPECIFICATIONS

Conditions Where Practice Applies

plant growth.

TOPSOIL

Definition:

Purpose

permanent vegetation.

II. Topsoil Specifications - Soil to be used as topsoil must meet the

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 1/2" 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 uniformly over designate areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

IL For sites having disturbed areas under 5 acres:

Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials. IV. For site having disturbed areas over 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following: a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5

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 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 as elapsed

Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

(14 days min.) to permit dissipation of phyto-toxic materials, agronomist or soil

scientist and approved by the appropriate approval authority, may be used in

lieu of natural topsoil ii. Place topsoil (if required) and apply soil amendments as specified in 20.0

24.0 MATERIALS AND SPECIFICATIONS TABLE 27 GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI MIN.	
A	0.30**	250	500	
В	0.60	200	320	
С	0.30	200	320	
D	0.60	90	145	
E	0.30	90	145	
F (SILT FENCE)	0.40 — 0.80 °	90	190	

 US STD. SIEVE CW-02215 ** .50 MM. MAX. FOR SUPER SILT FENCE HE PROPERTIES SHALL BE DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES: APPARENT OPENING SIZE MSMT 323

-GRAB TENSILE STRENGHT ASTM D 1682 4"x8" SPECIMEN 1"x2" CLAMPS, 12"/ MIM. STRAIN RATE IN BOTH PRINCIPAL DIRECTIONS OF GEOTEXTILEFABRIC

-BURST STRENGHT ASTM D 3786

THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDRCARBONS, AND WILL BE ROT AND MILDEW RESISTANT. IT SHALLBE MANUFACTTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNHETIC POLYMERS, AND COMPPOSED OF A MINIMUM OF 85% BY WEIGHT OF POLYOLEPHINS, POLYESTERS, OR POLYAMIDES. THE GEOTEXTILE FABRIC SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE

IN ADDITION CLASSES A THROUGH E SHALL HAVE A 0.01 CM/SEC MINIMUM PERMEABILITY WHEN TESTED IN ACCORDANCE

WITH MSMT 507, AND AN APPARENT MINIMUM ELONGATION OF 20 PERCENT (20%) WHEN TESTED IN ACCORDANCE WITH

THE GRAB TENSILE STRENGTH REQUIREMENTS LISTED ABOVE. CLASS F GEATEXTILE FABRICS FOR ALL SILT FENCE SHALL HAVE A 50LB./IN. MINIMUM TENSILE STRENTH AND A 20 LB/IN MINIMUM TENSILE MODULES WHEN TESTED IN ACCORDANCE WITH MSMT 509. MATERIAL SHALL ALSO HAVE A 0.3 GAL./FT.SQUARED/MIN. FLOW RATE ND SEVENTY-FIVE PERCENT (75%) MINIMUMFILTERING EFFICIENCY WHEN TESTED IN ACCORDANCE

SECTEXTILE FABRICS USED IN THE CONSTRUCTION OF THE SILT FENCE SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE. THE FABRIC SHALL CONTAIN SUFFICIENT AMOUNTS OF ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A

MINIMUM OF 12 MOUNTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERTURE RANGE OF 0 TO 120 DEGREES F.

THOMAS E. & DIANNE C. FERGUSON PROPERTY SINGLE FAMILY DETACHED

L. 6176 / F. 202, ZONE R-20 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND WATER CODE: D04 SEWER CODE: 215 3000 SDP-03-027

TAX MAP 47, GRID 19, PARCEL 149

DATE: OCTOBER 21, 2002

SHEET 4 OF 5 FILE: 1602036/DRAWINGS/ 04_SEDNOTES.DGN

Check CGV Design CGW

ENGINEERS Planners FECHNOLOGIES CONSTRUCTION MANAGERS

ICERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION

CONTROL REPRESENTS A PRACTICAL AND WORKABLE

PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE

ACCORDANCE WITH THE REQUIREMENTS OF THE

HOWARD SOIL CONSERVATION DISTRICT.

Paliance Munan

SITE CONDITIONS AND THAT IT WAS PREPARED IN

14502 Greenview Drive, Suite 424 Laurel, Maryland 20708 (301) 953-1821 (410) 792-8086 fax: (410) 792-7419 www.kci.com

THOMAS EUGENE FERGUSON 9051 DUMHART ROAD LAUREL, MD 20723 PARCEL 149, LOT 2

SEDIMENT CONTROL NOTES

