

VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation

- i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berns, 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 tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

- i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis
- ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranty 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.

C. Seedbed Preparation

i. Temporary Seeding

- a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction 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 but left in the roughened 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.

ii. Permanent Seeding

- a. Minimum soil conditions required for permanent vegetative establishment:
- 1. Soil pH shall be between 6.0 and 7.0.
- 2. Soluble salts shall be less than 500 parts per million (ppm).
- 3. The soil shall contain less than 40% clay but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia Lespedeza is to be planted, then a sandy soil (\leq 30% silt plus clay) would be acceptable.
- 4. Soil shall contain 1.5% minimum organic matter by weight.
- 5. Soil must contain sufficient pore space to permit adequate root penatration.
- 6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standards and Specifications 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 to 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 areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen 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

- 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 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. Inoculate The inoculate for treating legume seed in the seed mixtures shall be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculates shall not be used later than the date indicated on the container. Add fresh inoculate as directed on package. Use four times the recommended rate when hydroseeding. (NOTE: It is very important to keep inoculate as cool as possible until used. Temperatures

above 75°-80° F can weaken bacteria and make the inoculate less effective.

E. Methods of Seeding

- i. Hydroseeding: A pply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
- a. If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following: nitrogen; maximum of 100 lbs. 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 interruption.
- ii. Dry Seeding: This in cludes 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" of soil covering. See dbed must be firm after planting.
- b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

- i. Straw shall consist of thoroughly threshed wheat, rye, or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the
- ii. Wood Cellulose Fiber Mulch (WCFM)
- a. W CFM 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 facilitata visual inspection of the uniformly spread slurry.
- c. WCFM, including dye, shall contain no germination or growth inhibiting factors.
- d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
- e. W CFM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.
- f. W CFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding
- (NOTE: Only sterile straw mulch should be used in areas where one species of grass is desired.)

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

- i. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be preformed in accordance with these specifications.
- ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be in creased to 2.5 tons/acre.
- iii. Wood cellu lose 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:
- 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) in ches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
- ii. Wood cellu lose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. 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 gallons of water.
- iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of the area should appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agro - Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
- iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommentations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

2/7/01 Date

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

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

PROFILE

PLAN VIEW

2. Width - 10' minimum, should be flared at the existing road to provide a turning

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

5. Surface Vater - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, naintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a

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.

6. 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.

DETAIL 33 - SUPER SILT FENCE

1. Fencing shall be 42' in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42' fabric and 6' length

2. Chain link fence shall be fastened securely to the fence posts with wire ties.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced

5. When two sections of filter cloth adjoin each other, they shall be overlapped by $\mathbf{6}^{\prime}$ and folded.

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall neet the following requirements for

50 lbs/in (nin.)

20 lbs/in (min.)

DETAIL 1 - EARTH DIKE

c-FLOW WIDTH

d-FLOW DEPTH

STANDARD SYMBOL --/--

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

4. Filter cloth shall be embedded a minimum of 8° into the ground.

Flow Rate 0.3 gal/ft*/minute (max.)
Filtering Efficiency 75% (min.)

2. Seed and cover with Erosian Control Matting or line with sod. 3. $4^\circ-7^\circ$ stone or recycled concrete equivalent pressed into

1. All temporary earth dikes shall have uninterrupted positive

6. Fill shall be compacted by earth moving equipment

It will not interfere with the functioning of the dike.

11/7/00

2. Runoff diverted from a disturbed area shall be conveyed to a sediment

Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.

All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.

The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.

7. All earth removed and not needed for construction shall be placed so that

Inspection and maintenance must be provided periodically and after each rain event.

cuntable bern with 5:1 slopes and a nininum of 6' of stone over the pipe. Pipe has

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

. Length - minimum of 50' (#30' for single residence lot).

MINIMUM 6' DF 2'-3' AGGREGATE DVER LENGTH AND VIDTH DF STRUCTURE

WE GEOTEXTILE CLASS COLONIA

1/0/2

IF MULTIPLE LAYERS AR REQUIRED TO ATTAIN 48

Tensile Strength Tensile Hodulus

EXISTING PAVEMENT

EARTH FILL

PIPE AS NECESSARY

- i. 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 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 special purposes such as wildlife or aesthetic treatment may be found in USDA - SCS Technical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod and V 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.
- iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 ½ lbs/1000 sq.ft. (150 lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

PERMANENT SEEDING SUMMARY

	SEED MIXTURE (HARDIN FROM TAB	FERTILIZER RATE (10—10—10)			LIME			
No.	SEED MIX	APPLICATION RATE (lb/ac)	SEEDING DATES	Ν	P205	K20	RATE	
1	TALL FESCUE (75%) CANADA BLUEGRASS (10%) KENTUCKY BLUEGRASS (10%) REDTOP (5%)	150 lbs/ac	3/1-5/15 8/15-10/15	90 lb/ac (2.0 lb/ 1000 st)	175 lb/ac (4 lb/ 1000 sf)	175 lb/ac (4 lb/ 1000 sf)	2 tons/ac (100 lb/ 1000 sf)	
2	KENTUCKY BLUEGRASS (50%) CREEPING RED FESCUE OR A HARD FESCUE (40%) REDTOP (5%)	150 lbs/ac	3/1-5/15 8/15-10/15					
3	TALL FESCUE (85%) PERENNIAL RYEGRASS (10%) KENTUCKY BLUEGRASS (5%)	125 lbs/dc 15 lbs/dc 10 lbs/dc	3/1-5/15 8/15-10/15					
4	RED FESCUE OR CHEWNGS FESCUE (80%) PERENNIAL RYEGRASS (20%)	60 lbs/ac 60 lbs/ac 15 lbs/ac	3/1-5/15 8/15-10/15					
5	TALL FESCUE (85%) OR, PERENNIAL RYEGRASS (50%) PLUS CROWNVETCH OR FLATPEA	110 lbs/ac 20 lbs/ac 20 lbs/ac 20 lbs/ac	3/1-5/15 8/15-10/15					
7	TALL FESCUE (83%) WEEPING LOVEGRASS (2%) PLUS SERECIA LESPEDEZA	110 ibs/ac 3 ibs/ac 20 ibs/ac	3/1-5/15 5/16-8/14 8/15-10/15					
8	REED CANARYGRASS (75%) REDTOP (6%) PLUS BIRDSFOOT TREEFOIL (19%)	40 lbs/ac 3 lbs/ac 10 lbs/ac	3/1-5/15 8/15-10/15					
9	TALL FESCUE (86%) POA TRIVIALIS (7%) BIRDSFOOT TREEFOIL (7%)	125 lbs/ac 10 lbs/ac 10 lbs/ac	3/1-5/15 8/15-10/15					
10	TALL FESCUE (80%) HARD FESCUE (20%)	120 lbs/ac 30 lbs/ac	3/1-5/15 8/15-10/15					
11	HARD FESCUE (100%)	75 lbs/ac	3/1-5/15 8/15-10/15					

SEQUENCE OF CONSTRUCTION

- 1) OBTAIN GRADING PERMIT.
- 2) INSTALL SEDIMENT CONTROLS AS SHOWN ON PLAN. (1 DAY)
- 3) (LEAR AND GRUB TO LIMITS OF DISTURBANCE AND MASS GRADE TO SUB-BASE (3 DAYS)
- 4) INSTALL TEMPORARY SEEDING. (I DAY)
- 5) CONSTRUCT UTILITIES (W & S HOUSE CONNECTIONS). (I DAY)
- 6) CONSTRUCT BUILDINGS. (120 DAYS)
- 7) GRADE DRIVEWAY. (I DAY)
- 8) FINE GRADE SITE AND INSTALL PERMANENT SEEDING, (2 DAYS)
- 9) REMOVE SEDIMENT CONTROL DEVICES AS UPLAND AREAS ARE STABILIZED AND PERMISSION IS GRANTED BY E/S CONTROL

Water Code

E19

TEMPORARY SEEDING

Vegetative - 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.

A. Seed Mixtures - Temporary Seeding

- i. 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 Seeding.

TEMPORARY SEEDING SUMMARY

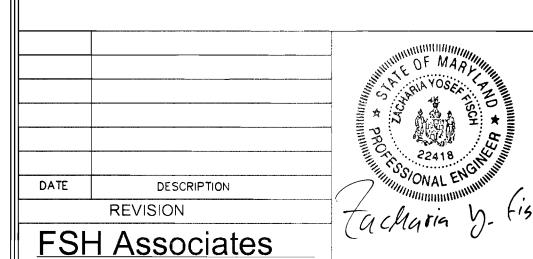
SEED MIXTURE (HARDINESS ZONE <u>6b</u>) FROM TABLE 26					FERTILIZER RATE (10-10-10)	LIME RATE
No.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	(10 10 10)	
1	RYE	140 lb/ac	3/1- 4/30 & 8/15 - 11/15	1" - 2"		
2	BARLEY	150 lb/ac	5/1 - 8-14	1" - 2"	600 lb/ac (15 lb/1000 sf)	2 t o ns/ac (100 lb/1000 sf)
3	ANNUAL RYEGRASS	50 lb/ac	3/1 - 4/30 & 8/15 - 11/1	1/4"-1/2"		

SEDIMENT CONTROL NOTES

- 1) A minimum of 48 hours notice must be given to the Howard County Department of inspections, licences and permits, Sediment Control Division prior to the start of any construction (410) 313-1859.
- 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 most current Maryland Standards and Specifications for Soil Erosion and Sediment Control and revisions thereto. 3) Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed
- within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes steeper than 3:1, b) 14 days as to all other disturbed or graded areas on the project site. 4) All sediment traps/basins shown must fenced and warning signs posted around their perimeter in accordance with
- Volume I, Chapter 12 of the Howard County Design Manual, Storm Drainage. 5) All disturbed areas must be stabilized within the time period specified above in accordance with the 1994
- Maryland Standards and Specifications for Soil Erosion and Sediment Control for Permanent Seeding (sec. 51). Sod (sec. 54), Temporary Seeding (sec. 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
- 6) 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.
- 7) Site Analysis:

Total Area of Site:	0.859	Acre
Area Disturbed:	0,689	Acre
Area to be Roofed or Paved:	0,142	Acre
Area to be Vegetatively Stabilized:	<u>0.54</u> 7	Acre
Total Cut:	1900	Cu.Y
Total Fill:	1900	Cu.Y
Offsite Waste/Borrow Area Location:	N/A	Cu.Y

- 8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired
- 9) Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control 10) 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.
- 11) Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.



Engineers Planners Surveyors

8318 Forrest Street Ellicott City, MD 21043

Tel:410-750-2251 Fax: 410-750-7350

E-mail: FSHAssociates@cs.com

APPROVED: DEPARTMENT OF PLANNING AND ZONING

ENGINEER'S CERTIFICATE I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation 11/7/00 Date **DEVELOPER'S CERTIFICATE**

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Signature of Developer (Print Name Below Signature)

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 the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on—site inspection by the Howard Soil Conservation District."

Reviewed for Howard SCD and meets Technical Requirements um 111-hus 1/24/01 Date OWNER/DEVELOPER CORNER STONE HOMES INC. 9691 NORFOLK AVE. LAUREL, MD 20723 TEL: (410) 792-2565 FAX: (410) 792-2567

8625 TOWER DRIVE 8629 TOWER DRIVE LOT/PARCEL # STREET ADDRESS ADDRESS CHART PERMIT INFORMATION CHART Lot/Parcel No. TOWER ACRES N/A 1\$2 ax Map No. Elect. Distr Census Tract 14292 6068.02

Sewer Code

7450000

SITE DEVELOPMENT PLAN

LILLY'S ADDITION TO TOWER ACRES

RECORDED AS PLAT NO. 14292 TAX MAP : 46 PARCEL : 90 GRID : 12 SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: NO SCALE DATE: NOVEMBER 6, 2000

SHEET 2 OF 2

