

VEGETATIVE STABILIZATION Using vegetation as cover to protect exposed soil from erosic

Conditions Where Practice Appli On all disturbed areas not stabilized by other methods. This specification is divided into sections on stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary

Effects on Water Quality and Quantity stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is tabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall,

educing sediment loads and runoff to downstream areas lanting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation increase organic matter content and improve the water holding capacity of the soil and subsequent plan egetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to ceiving waters. Plants will also help protect groundwater supplies by assimilating those substances

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching Adequate Vegetative Establishmen

inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and eseedings within the Adequate vegetative stabilization requires 95 percent groundcove 2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for time, fertilizer, seedbed preparation, and seeding.

If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rate

. Maintenance fertilizer rates for permanent seeding are shown in Table B.6. B-4-1 STANDARDS AND SPECIFICATIONS

INCREMENTAL STABILIZATION stablishment of vegetative cover on cut and fill slopes. o provide timely vegetative cover on cut and fill slopes as work progresse

Conditions Where Practice Applies Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed

and apply seed and mulch on all cut slopes as the work progresses. 2. Construction sequence example (Refer to Figure B.1): a. Construct and stabilize all temporary swales or dikes that will be used to convey runor

b. Perform Phase 1 excavation, prepare seedbed, and stabilize c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as  $\,$ d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previous

lote: 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

 Incremental Stabilization - Fill Slopes 1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progre 2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans. 3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

4. Construction sequence example (Refer to Figure 8.2): a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct slit fence on low side of fill unless other methods shown on the plans b. At the end of each day, install temporary water conveyance practice(s), as necessary, to

intercept surface runoff and convey it down the slope in a non-erosive manner. c. Place Phase 1 fill, prepare seedbed, and stabilize d. Place Phase 2 fill, prepare seedbed, and stabilize e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as

ote: 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 pplication of temporary stabilization.

## B-4-5 STANDARDS AND SPECIFICATIONS PERMANENT STABILIZATION

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils xposed soils where ground cover is needed for 6 months or more

. Seed Mixtures . General Use

To stabilize disturbed soils with permanent vegetation.

a Select one or more of the species or mixtures listed in Table 8.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan. b 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 in USDA-NRCS Technical Field Office Guild, Section 342 - Critical Area Planting. c For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil

testing agency.
d For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary. Turfgrass Mixtures

a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan. Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive management.

impation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid

establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total 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 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5

percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. 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 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet. Notes: Select turigrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" 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 consumer protection and assures a pure genetic line. c. Ideal Times of Seeding for Turf Grass Mixtures Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

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

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15

(Hardiness Zones: 7a, 7b)

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION(CONTINUED) d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty. e. if soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not

especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites. LSod: to provide quick cover on disturbed areas (2:1 grade or flatter).

a. Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector. b. Sod must be machine cut at a uniform soil thickness of % inch, plus or minus % inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and tom or uneven ends will not be acceptable. c. Standard size sections of sod must 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. d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

Sod installation a. During periods of excessively high temperature or in areas having dry subsoil, lightly imgate th subsoil immediately prior to laying the sod. b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength.

voids which would cause air drying of the roots. c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface. d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and

Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent

irrigating for any piece of sod within eight hours a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

**B-4-2 STANDARDS AND SPECIFICATIONS** SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

The process of preparing the soils to sustain adequate vegetative stabilization To provide a suitable soil medium for vegetative growt Conditions Where Practice Applies Where vegetative stabilization is to be established

Apply fertilizer and time as prescribed on the plans.

 Temporary Stabilization Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches 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 must not be olied or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.

Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other Permanent Stabilization a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil Soil pH between 6.0 and 7.0. Soluble salts less than 500 parts per million (ppm)

iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: If lovegrass will be planted, then a sandy soil (less than 30 percent silt iv. Soil contains 1.5 percent minimum organic matter by weight.

v. Soil contains sufficient pore space to permit adequate root penetration Application of amendments or topsoil is required if on-site soils do not meet the above Graded areas must be maintained in a true and even grade as specified on the

Apply soil amendments as specified on the approved plan or as indicated by the result Mix soil amendments into the top 3 to 5 Inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment

approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is 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

Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type Topsoiling is limited to areas having 2:1 or flatter slopes where:

The texture of the exposed subsoil/parent material is not adequate to produce The soil material is so shallow that the rooting zone is not deep enough to support lants or furnish continuing supplies of moisture and plant nutrients. The original soil to be vegetated contains material toxic to plant growth

The soil is so acidic that treatment with limestone is not feasible. Areas having slopes steeper than 2:1 require special consideration and design Topsoil Specifications: Soll to be used as topsoil must meet the following criteri Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders

stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison tvy, thistle, or others as specified.

Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of Topsoil Application

Erosion and sediment control practices must be maintained when applying topsoi Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum hickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any rregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation

lments (Fertilizer and Lime Specifications) Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled

according to the applicable laws and must bear the name, trade name or trademark and Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve Lime and tertilizer are to be evenly dist

soil by disking or other suitable means. 5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of

**B-4-4 STANDARDS AND SPECIFICATIONS** TEMPORARY STABLIZATION To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils. Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time,

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), 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 plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan. For sites having soil tests performed, use and show the recommended rates by the testing agency Soil tests are not required for Temporary Seeding.
 When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

H-5 STANDARDS AND SPECIFICATIONS

Controlling the suspension of dust particles from construction activities Purpose

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies

Areas subject to dust blowing and movement where on and off-site damage is likely without treatment <u>Specifications</u>
<u>Mulches:</u> See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.

Vegetative Cover: See Section B-4-4 Temporary Stabilization. illage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.

Imagation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must t be impated to the point that runoff occurs.

Barriers: Solid board fences, slit fences, snow fences, burlap fences, straw bales, and similar naterial can be used to control air currents and soil blowing. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan

> B-4-8 STANDARDS AND SPECIFICATIONS STOCKPILE AREA

A mound or pile of soil protected by appropriately designed erosion and sediment control measures. To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

concentrated flow in a non-erosive manner.

Conditions Where Practice Applies Stockpile areas are utilized when it is necessary to salvage and store soil for later use. 1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material

and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading. Runoff from the stockpile area must drain to a suitable sediment control practice. 4. Access the stockpile area from the upgrade side. 5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging

6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sedime control practice must be used to intercept the discharge.

7. Stockoiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization. 8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockoiles containing contaminated material must be covered with

Maintenance
The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

**B-4-3 STANDARDS AND SPECIFICATIONS** SEEDING AND MULCHING

The application of seed and mulch to establish vegetative cover To protect disturbed soils from erosion during and at the end of construction. Conditions Where Practice Applies To the surface of all perimeter controls, slopes, and any disturbed area not under active grading

permit dissipation of phyto-toxic materials.

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material of any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be vailable upon request to the inspector to verify type of seed and seeding rate. b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws. c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species, inoculants mus not be used later than the date indicated on the container. Add fresh inoculants as

lirected on the package. Use four times the recommended rate when hydrose Note: It is very important to keep inoculant as cool as possible until used. Temperature above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less d. Sod or seed must not be placed on soil which has been treated with soil stenlants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to

a. Dry Seeding: This includes use of conventional drop or broadcast spreaders. i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries. ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.

 b. Drill or Cultipacker Seeding; Mechanized seeders that apply and cover seed with soil i. 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 ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. c. Hydroseeding: Apply seed uniformly with hydroseeder (slury includes seed and i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble

nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre. ii. 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 iii. Mix seed and fertilizer on site and seed immediately and without interruption iv. When hydroseeding do not incorporate seed into the soil.

1. Mulch Materials (in order of preference) a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Marviand Seed Law and not musty, moldy, caked, decayed, or excessively dusty Note: Use only sterile straw mulch in areas where one species of grass is desired b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state. WCFM is to be dyed green or contain a green dye in the package that will

uniformly spread slurry.

iii. WCFM materials are to 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 sturry. The mulch material must form a blotter-like ground cover, on application having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings

provide an appropriate color to facilitate visual inspection of the

ii. WCFM, including dye, must contain no germination or growth inhibiting

concentration levels that will be phyto-toxic. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

 a. Apply mulch to all seeded areas immediately after seeding b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and dept so that the soil surface is not exposed. When using a mulch anchoring tool, increase the c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard: i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective

if used on sloping land, this practice should follow the contour. i. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a ne dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.

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

1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).

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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) THREE (3) CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) SEVEN (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

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 DRAINAGE

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 SEEDINGS (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 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.

7. SITE ANALYSIS: 7.66 TOTAL AREA OF SITE (THIS SUBMISSION) 4.30 AREA DISTURBED 1.30 AREA TO BE ROOFED OR PAVED 3.00 ACRES AREA TO BE VEGETATIVELY STABILIZED \_\_\_\_2500\_\_\_\_ cY 2500 TOTAL FILL

OFFSITE WASTE/BORROW AREA LOCATION \*IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY THE SPOIL/BORROW SITE AND NOTIFY AND GAIN APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR OF THE SITE AND ITS GRADING PERMIT NUMBER AT THE TIME OF CONSTRUCTION.

ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE

HOWARD COUNTY 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 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 CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY,

NOTE: THE AREAS OF ESD IMPLEMENTATION SHALL HAVE LIMITED ACCESS FROM HEAVY CONSTRUCTION EQUIPMENT TO AVOID UNNECESSARY COMPACTION WHEN PRACTICAL

NOTE: ALL SUPER SILT FENCES TO BE CHECKED DAILY TO ENSURE COMPLIANCE AND REPAIRED IMMEDIATELY AS REQUIRED

NOTE: NO CHANGES ARE ALLOWED TO THE SEQUENCE OF CONSTRUCTION WITHOUT PRIOR HOWARD SCD APPROVA

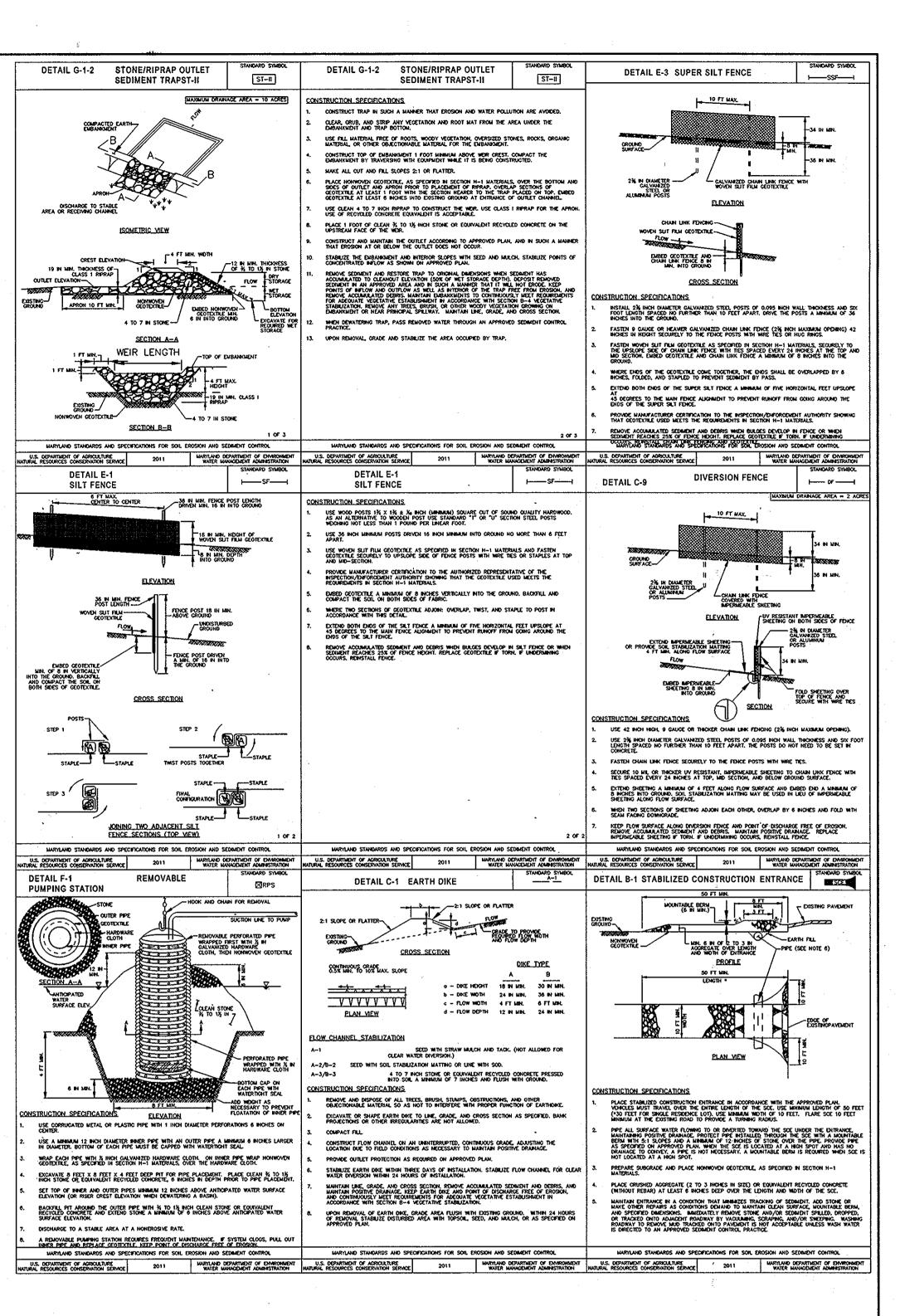
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	Seeding Rate 11		Seeding	Recommended Seeding Dates by Plant Hardiness Zone 3				
Plant Species	lb/se lb/1600 ft <sup>2</sup>		Depth 2 (inches)	5b and 6a	66	7a and 7b		
	7		30 30 30	A TOTAL BANK OF THE				
Annual Ryegrass (Lolium perenne ssp. multiflorum)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Barley (Hordeum vulgare)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Oats (Avena sativa)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Wheat (Triticum aestivum)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Cereal Ryo (Secale cereale)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Aug 15 to Dec 15		
	. 5			da la sala a la l				
Foxtail Millet (Setaria Italica)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May I to Aug 14		
Pearl Millet (Pennisetum glaucum)	20.	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May I to Aug 14		

Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as Adjustments are usually not needed for the cool-season grasses Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed infixes, use 1/3 of the seeding rate listed above for barley, eats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temp wary seedings. Cereal tyo has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above

Oats are the recommended purse crop for warm-season grasses.

For sandy soils, plant seeds at twice the depth listed above.



SEQUENCE OF CONSTRUCTION

INSTALL SEDIMENT CONTROLS AS SHOWN ON THIS SDP. INSPECT AND MAINTAIN EXISTING PRACTICES INSTALLED UNDER F-13-004 TO BE UTILIZED UNDER THIS PLAN. UPON APPROVAL OF HOWARD COUNTY SEDIMENT CONTROL INSPECTOR EXCAVATE FOR FOUNDATIONS AND ROUGH GRADE LOT, TAKING CARE TAYOOD COMPACTION OF SOILS IN THE ESD IMPLEMENTATION AREAS.

STABILIZE IN ACCORDANCE WITH TEMPORARY SEEDBED NOTES. CONSTRUCT PROPOSED DWELLINGS (UTILIZE APPLICABLE SINGLE LOT SEC PRACTICES) INCLUDING THE DRIVEWAY AND CULVERTS AS APPLICABLE. CONSTRUCT ON-LOT SWM-ESD PRACTICES, FINAL GRADE AND STABILIZE IN ACCORDANCE WITH PERMANENT SEEDBED NOTES.

DAY 101-105 ONCE LOTS 10 THRU 14 ARE CONSTRUCTED AND PERMANENTLY STABILIZED, AND APPROVAL OBTAINED FROM HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT TRAP (THIS ACTIVITY TO OCCUR WITHIN A 5-DAY NO PRECIPITATION FORECAST FROM THE NWS) DAY 106-110 UPON APPROVAL OF HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. REMOVE REMAINING SEDIMENT CONTROL DEVICES AND PERMANENTLY

STABILIZE ANY REMAINING DISTURBED AREAS.

\* - INDICATES SINGLE HOUSE CONSTRUCTION.

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TÓ THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN 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." 9/24/13

BY THE DEVELOPER:

DEVELOPER: BY THE ENGINEER: "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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 DISTRICT."

9/24/2013 THIS DEVELOPMENT PLAN IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 10.58.13 CHIEF, DEVELOPMENT ENGINEERING DIVISION H-13.13

ENGINEERS A LAND SURVEYORS A PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE A SUITE 418 A ELLICOTT CITY, MARYLAND 21043 60 THOMAS JOHNSON DRIVE ▲ FREDERICK, MARYLAND 21702 BUILDER: PHONE: 410-792-2565

NO. DATE

OWNER/DEVELOPER: TROTTER POINT, L.L.C. 9695 NORFOLK AVENUE LAUREL. MD 20723 PHONE: 410-792-2565 CORNERSTONE HOMES, INC. 9695 NORFOLK AVENUE LAUREL, MD 20723

Design: MCR | Draft: MCR | Check: BFC

BENCHMARK

(P) 410-465-6105 (F) 410-465-6644

(P) 301-371-3505 (F) 301-371-3506

WWW.BEI-CIVILENGINEERING.COM

REVISION PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland License No. 28559: Exer

LOTS 1-14 14 SINGLE FAMILY DETACHED DWELLINGS LOCATION: TAX MAP 35 - GRID 2 PARCELS 8, 9 & 165 5th ELECTION DISTRICT HOWARD COUNTY, MARYLAND SITE DEVELOPMENT PLAN SEDIMENT & EROSION CONTROL NOTES AND DETAILS PROJECT NO. 2283

SDP-13-083

AS SHOWN

DRAWING  $\frac{4}{}$  OF  $\frac{5}{}$ 

SCALE:

P:\2283 Trotters Point\dwg\8000V2-FINAL.dwg, SEC DETAILS, 9/24/2013 2:33:54 PM, mcr

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

c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless

NOTE: EROSION CONTROL MATTING SHALL BE PLACED IN SWALES WHERE DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR UNTIL VEGETATION IS ESTABLISHED OR SOLID

MATERIAL	SPECIFICATION	SIZE	NOTES:
Plantings	see Appendix A, Table A.4	n/a 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	plantings are site-specific
Planting soil [2" to 4" deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	w/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Malch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone; washed cobbles	stone: 2" to 5"	
Geotextile	84 y a principilia, a arce i a cr	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per tow; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; F <sub>e</sub> =3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	a/a	on-site testing of poured-in-place concrete required:  28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings scaled and approved by a professional structural engineer licensed in the State of Maryland-design to include meeting ACI Code 350,R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Send substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or doloratic sand substitutions are acceptable. No "rock dust" can be used for sand

### OPERATION & MAINTENANCE SCHEDULE FOR (M-6) MICRO-BIORETENTION

. The Owner shall maintain the plant material, mulch layer and soil layer annually. 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 and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.

b. The Owner shall perform a plant in the spring and in the fall of each year. During the inspection, the Owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs, and replace all deficient stakes and wires. . The Owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The d. The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each

# MICRO-BIORETENTION (M-6) CONSTRUCTION SPECIFICATIONS

FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING INDISTURBED MATERIAL. EMBANKMENTS SHALL PREPARED BY STRIPPING TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE AREAS. AND BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY REFERENCED TO AASHTO (I-99 (STANDARD PROCTOR).

. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE

3. GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE AMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR

STONE FOR THE RIP-RAP OR LEVEL SPREADERS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING IATERIALS. THE STONE FOR THE RIP-RAP OR LEVEL SPREADERS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS FOR ASCNABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES, STONE SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE ABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT

5. THE STONE LINER SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

#### MICRO-BIORETENTION (M-6) PLANTING DATA

heavy storm.

ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE

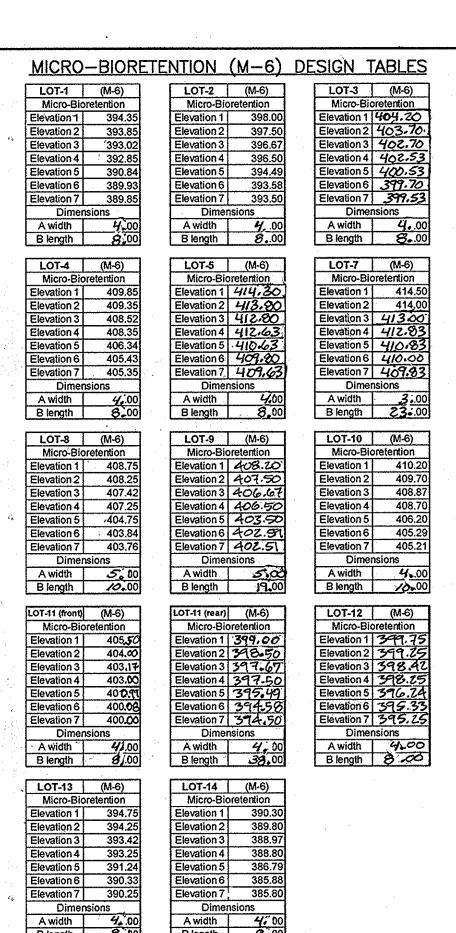
2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE LS INFILTRATION ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE SUGGESTED SPECIES:(PERENNIALS/ANNUALS)
IRIS (IRIS VERSICOLOR)
DAYLILY (HEMEROCALLIS SP.)
WHITE GLORY (ASTIBLE SP.)

MICRO-BIORETENTION (M-6) LANDSCAPE DATA HYDROLOGIC ZONE 3 - REGULARLY INUNDATED SHORELINE FRINGE
(HIGH MARSH)
HYDROLOGIC CONDITION — 0" TO 1'-0" DEEP HARDINESS - TEMPERATE ZONE 66 (-5" TO 0")
SEE SHEET - FOR SEQUENCE OF CONSTRUCTION

NOTE: REFER TO MDE 2000 MD STORMIVATER
DESIGN MANUAL VOLUMES 1 & 2 FOR LANDSCAPE
CONTRACTOR RESPONSIBILITIES, PRACTICES AND MAINTENANCE DUTIES

# MICEO-BIORETENTION (M-6) PLANTING TABLES

MICRO-	-BIO	<u> REI</u>	ENTION (M—	<u>s) PL</u>	<u>AN</u>	IING TABLES		
LOT	(M-6)	ŀ	LOT-2	(M-6)	l	LOT-3	(M-6)	ļ
Micro-Bioretentio			Micro-Bioretentic			Micro-Bioretentic	ก	İ
		1		Quantity		Name	Quantity	
Name	Quantity	ı	Name	Quartity			Quantity	
VINCA MINOR	3		VINCA MINOR	3		VINCA MINOR	3	ı
(Common Periwinkle)			(Common Periwinkle)			(Common Periwinkle)	_	ĺ
AJUSTA REPTANS	-		AJUSTA REPTANS	•		AJUSTA REPTANS	,	ĺ
(Creeping Bungleweed)	3		(Creeping Bungleweed)	3	ł	(Creeping Bungleweed)	3	İ
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(Dayfilly)		1	(Daylily)	•		(Dayally)	•	ĺ
IL EX VERTICILLATA			(Daylily)		1	ILEX VERTICILLATA		ı
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MINTERBERRY		}	TOTA TEXALISTE	····		Land to Keeker		ı
	·							ı
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(Common Periwinkle)			(Common Penwinkle)		l	(Common Periwinkle)		١.
AJUSTA REPTANS	3	ar.	AJUSTA REPTANS	3		AJUSTA REPTANS	6	İ
(Creeping Bungleweed)	3		(Creeping Bungleweed)	3		(Creeping Bungleweed)	. "	ı
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(his)			(his)					ı
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(Dayfilly)			(Dayfilly)			(Daylily)	_	i
ILEX VERTICILLATA			1 LEX VERTICILLATA	4		ILEXVERTICILLATA		ı
WINTERBERRY	1		WINTERBERRY	1	. '	WINTERBERRY	1	j
			LIST SERVICE AND AND AND AND AND AND AND AND AND AND		•			,
	/6.6.C)	1	1.242	(14.6)	٠.	LOT-10	/M.G.	ı
LOT-8	(M-6)		LOT-9	(M-6)			(M-6)	ĺ
Micro-Bioretentio	n		Micro-Bioretentic	ภ	•	Micro-Bioretentic	n	ı
Name	Quantity	1	Name	Quantity	l	Name	Quantity	ı
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		1			1	AJUSTA REPTANS		ı
AJUSTA REPTANS	4		AJUSTA REPTANS	10			3	1
(Creeping Bungleweed)		l	(Creeping Bungleweed)	10.		(Creeping Bungleweed)		ı
IRIS VERSICOLOR	- 2		IRIS VERSICOLOR	5		IRIS VERSICOLOR	2	ı
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(Dayfily)			(Dayfily)			(Dayfily)		1
COMMON	1		Common	- 1		JUENVERTICIELATA	1	ı
WINTERBERRY	· · · · · · · · · · · · · · · · · · ·		WINTERBERRY			WINTERBERRY		ŀ
		_			5			
LOT-11 (front)	(M-6)		LOT-11 (rear)	(M-6)		LOT-12	(M-6)	Ł
Micro-Bioretentio		1	Micro-Bioretentic		1	Micro-Bioretentio		t
								İ
Name	Quantity		Name	Quantity	l	Name	Quantity	t
VINCA MINOR	3		VINCA MINOR	15		VINCA MINOR	3	ı
(Common Periwinkle)	, 3		(Common Periwinkle)	10	ł	(Common Periwinkle)	,	ı
AJUSTA REPTANS		1	AJUSTA REPTANS		]	AJUSTA REPTANS		
(Creeping Bungleweed)	3	l .	(Creeping Bungleweed)	13		(Creeping Bungleweed)	3	ĺ
		12			{ ·	IRIS VERSICOLOR		Ĺ.
IRIS VERSICOLOR	1		IRIS VERSICOLOR	. 7	1	1	1	
(iris)	······	l	(Iris)			(tris)		1
HERMEROCALLIS SP		]	HERMEROCALLIS SP	4		HERMEROCALLIS SP	1	į
(Daylilly)	1	1	(Dayfilly)	4	l	(Daylilly)		ĺ
LEX VERTICILLATA		1	MEY VERTICIALATA	_	7	ILEX VERTICILLATA		
Common	1	1	WINTERBERRY	2		WINTERBERRY	1	
WINTER BERRY		1	MINTERBERRY.	L	į	MINIEKBEKKI	L	ı
	<u> </u>					1		
LOT-13	(M-6)		LOT-14	(M-6)	j .			
Micro-Bioretentio	n	]	Micro-Bioretentio	n	1			
Name	Quantity	1	Name	Quantity	i			
VINCA MINOR	20011019	1	VINCA MINOR		,.			
	3			3	i	•		
(Common Periwinkle)		l	(Common Periwinkle)		ļ	* *		
AJUSTA REPTANS	3	1	AJUSTA REPTANS	- 3	l			
(Creeping Bungleweed)	Ģ	1	(Creeping Bungleweed)		1 .	100		
IRIS VERSICOLOR		1	IRIS VERSICOLOR		1			
(his)	. 1	l	(lris)	1	]	to the second of the second		



B length 8,

SECTION ROAD AND STREET	DOAD AND OTDEET OF ACCIETOATION	CALIFORNIA BEARING RATIO (CBR)	3 to <5	5 to <7	≥7	3 to <5	5 to <7	≥7
	ROAD AND STREET CLASSIFICATION	PAVEMENT MATERIAL (INCHES)	MIN.	HMA WITH	GAB	HMA WIT	H CONST	INT GAE
PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY PARKING BAYS: RESIDENTIAL AND NON-RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	-1.5	1.5	
	THAN 2 HEAVY TRUCKS PER DAY PARKING BAYS:	HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM PG 64-22, LEVEL 1 (LOW ESAL)	N/A	N/A	N/A	N/A	N/A	N/A
	HMA SUPERPAVE BASE 9.0 MM PG 64-22, LEVEL 1 (LOW ESAL)	2.0	2.0	2.0	3.5	3.0	2.5	
		GRADED AGGREGATE BASE (GAB)	8.5	7.0	5.0	4.0	4.0	4.0

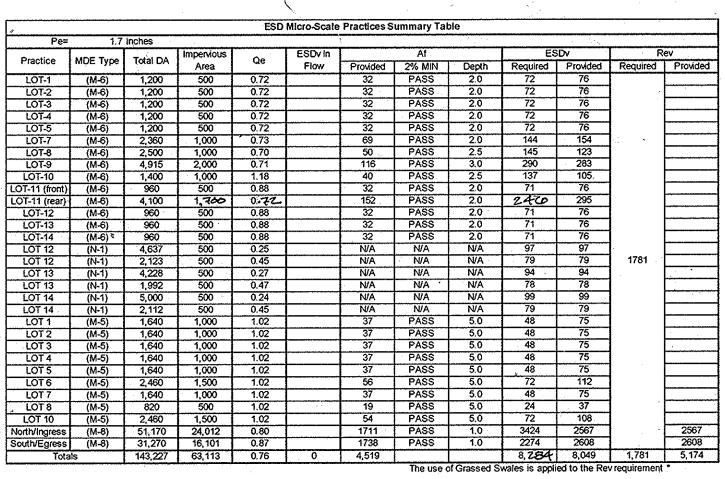
PAVING SPECIFICATIONS (HO.CO. STD R-2.01)

5 to <7	≥7	<u> </u>				HMA SUP	
H CONST	ANT GAB					Final Sup HMA Sup	ERPAVE
1.5	1.5	<del>                                     </del>		•	-		IATE SURFAC ERPAVE BAS
N/A	N/A		188		<u> </u>	CRADED	AGGREGATE
3.0	2.5	- ₿				BASE (GA	B)
4.0	4.0		COL		TIA	DAVÍNO	DETA
	·		SUF	<u>ILMA</u>	<u>110</u>	<b>PAVING</b>	ULIA

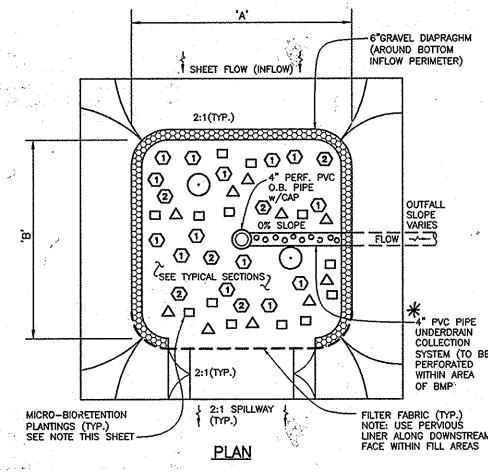
..... HMA SUPERPAVE INTERMEDIATE SURFACE - HMA SUPERPAVE BASE

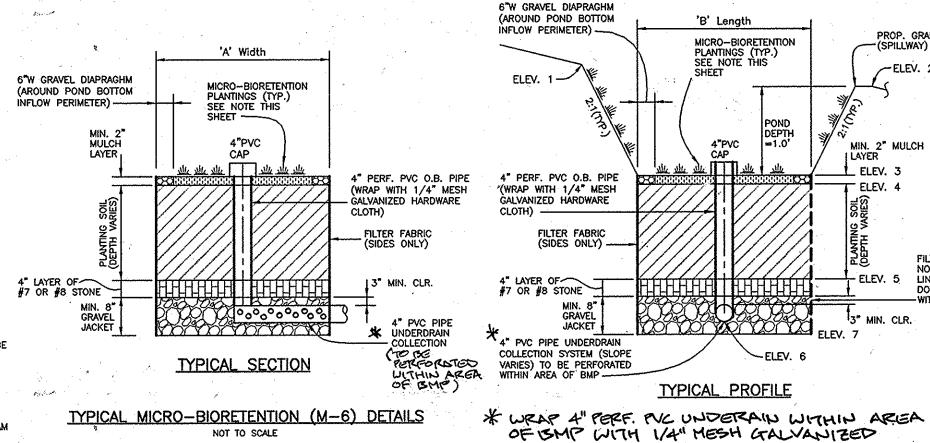
PAVING DETAIL

NOT TO SCALE



NOTE: THE DESIGN OF THE MBR'S WERE APPROVED BY HOWARD COUNTY USING 40% POPOSITY OF THE FILTER MEDITA WITHIN THE MBR'S, AS PART OF A RECENT REDCINE REVISION, LOTS 3, 5 AND THAVE BEEN ADJUSTED TO ALLOW FOR, A MINIMUM OF 75% STORAGE VOLUME ABOVE THE MULCH LAYER.





NOT TO SCALE

PLANTINGS (TYP.) SEE NOTE THIS ELEV. 2 4" PERF. PVC O.B. PIPE "(WRAP WITH 1/4" MESH GALVANIZED HÁRDWARE NOTE: USE PERVIOUS LINER ALONG DOWNSTREAM FACE ELEV 5 \*4" PVC PIPE UNDERDRAIN COLLECTION SYSTEM (SLOPE VARIES) TO BE PERFORATED TYPICAL PROFILE

'B' Length

MICRO-BIORETENTION

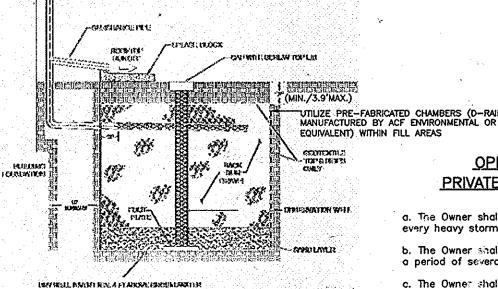
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1)

a. Maintenance of areas receiving disconnected runoff is generally no different than that required for other lawn or landscaped areas. The Owner shall ensure the areas receiving runoff are protected from future compaction or development of impervious area. In commercial areas, foot traffic should be discouraged as well.

GUTTER DRAIN FILTER DETAIL

NOT TO SCALE

MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS (IF REQUIRED)	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2:5'-TO 4.0' DEEP)	SAND: 35-60% SILT: 30-35% CLAY: 10-25%	N/A	USDA SOIL TYPES: LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD	N/A	2" TO 3" DEPTH, AGED 6 MONTHS, MINIMUM
GEOTEXTILE (CLASS "C")	APPARENT OPENING SIZE: (ASTM D-4751) GRAB TENSILE STRENGTH: (ASTM D-4632) PUNCTURE RESISTANCE: (ASTM D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	0.375" TO 0.750"	
Underdrain Piping	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC OR SDR35	3/8" PERF. • 6" O/C, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES
POURED—IN—PLACE CONC. (IF REQUIRED)	MSHA MIX NO.3; f'c=3500psl © 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM 615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONC. REQUIRED; 28 DAY STRENGTH TEST AND SLUMP TEST: ALL CONC. DESIGN (CAST -IN-PLACE' OF PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND. — DESIGN TO INCLUDE MEETING ACI CODE 350.R/B9: VERTICAL LOADING (H-10 or H-20) ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND AVALYSIS OF POTENTIAL CRACKING
CHECK DAM (TREATED WOOD)	AWPA STANDARD C6	6"X6" OR 8"X8"	DO NOT COAT WITH CREOSOTE; EMBED AT LEAST 3' INTO SIDE SLOPES



TYPICAL (M-5) DRYWELL DETAIL

NOT TO SCALE

DRY WELL (M-5) DESIGN TABLES

DryWell Length (Ld) 4.33
Drywell Width (Wd) 4.33
Drywell Width (Wd) 5.00

| Dry Well | Drywell Length (Ld) | 4.33 | | Drywell Width (Wd) | 4.33 | Drywell Depth (Dd) | 5.00 | Number on Lot | 2

Drywell Length (Ld) 4.33 Drywell Width (Wd) 4.33 Drywell Depth (Dd) 5.00

HARDWARE CLOTH

a. The Owner shall inspect the monitoring wells and structures on a quarterly basis and after

Drywell Length (Ld) 4.25 Drywell Width (Wd) 4.25 Drywell Depth (Dd) 5.00

b. The Owner shall record the water levels and sediment build up in the monitoring wells over a period of several days to insure trench drainage. c. The Owner shall maintain a log book to determine the rate at which the facility drains. d. When the facility becomes clagged so that it does not drain down within a seventytwo (72) hour time period, corrective action shall be taken. e. The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.

OPERATION & MAINTENANCE SCHEDULE FOR

PRIVATELY OWNED & MAINTAINED DRY WELLS (M-5)

f. Once the performance characteristics of the infiltration facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING CHIEF, DEVELOPMENT ENGINEERING DIVISION 10.28.13 11-13-13 DATE Marshe hi leng le

6 3-9-16 CORRECT MB TABLES TO MATCH MB DETAIL DIMENSIONS NO. DATE REVISION



Professional Certification. I hereby certify that thesa Cocuments were prepared or approved by me, and that 8 am a duly licensed professional engineer under the laws of the State of Maryland. 22390



Rev. #2 ONLY REV. #3 ONLY (10-1-14)
REV. #4 ONLY (2-11-15) CAM
REV. #5 ONLY (11-9-15) CAM-

5 11-6-15 REVISE DRY WELL DESIGN TABLE FOR LOT 3 \$ ADJUST PLAN ACCORDINGLY 4 2-11-15 REVISE MB PLANTING TABLES TO REPLACE TREES WITH SHRUBS 3 9-29-14 RE-SITE HOUSES ON LOTS 10-13 AND REVISE PLANS ACCORDINGLY 2 8-7-14 ROVINE M-6 DESIGN TABLES FOR LOTS 9 111 PER HOUSE TYPE REVISIONS; FIX

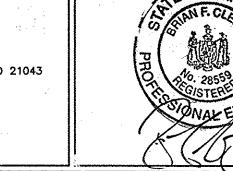
1 5-17-2014 REVISE DRY WELL DESIGN TABLE FOR LOT 1 NO. DATE REVISION

# **BENCHMARK**

ENGINEERS A LAND SURVEYORS A PLANNERS ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 60 THOMAS JOHNSON DRIVE ▲ FREDERICK, MARYLAND 21702 (P) 301-371-3505 (F) 301-371-3506

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I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professi

PROFESSIONAL CERTIFICATION:

OWNER/DEVELOPER: TROTTER POINT, L.L.C. 9695 NORFOLK AVENUE LAUREL, MD 20723 PHONE: 410-792-2565

BUILDER: CORNERSTONE HOMES. INC. 9695 NORFOLK AVENUE LAUREL, MD 20723 PHONE: 410-792-2565

TROTTER POINT LOTS 1-14 14 SINGLE FAMILY DETACHED DWELLINGS PARCELS 8, 9 & 165 5th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SITE DEVELOPMENT PLAN SITE DEVELOPMENT PLAN NOTES AND DETAILS JUNE, 2013 PROJECT NO. 2283

SCALE: Design: MCR Draft: MCR Check: BFC DRAWING 5 OF 3 NWOHR 2A

HERMEROCALLIS SP

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