

o stabilize disturbed soils with permanent vegetation.

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils. Conditions Where Practice Applies

xposed soils where ground cover is needed for 6 months or more.

Seed Mixtures General Use

Turfgrass Mixtures

a. Select one or more of the species or mixtures listed in Table B.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 Guide, Section 342 - Critical Area Planting. c. For sites having disturbed area 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.

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.

ranging from 10 to 35 percent of the total mixture by weight.

i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each

Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas whererapid 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 v. 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: 1½ to 3 pounds per 1000 square feet.

Select turfgrass 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.

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)

and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty. 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

Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level

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

General Specifications Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.

Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable. 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 Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may

adversely affect its survival. m. 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

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

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. 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.

Wherever possible, lay sod with the long edges parallel to the contour and with staggering 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.

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

HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

10-9-19

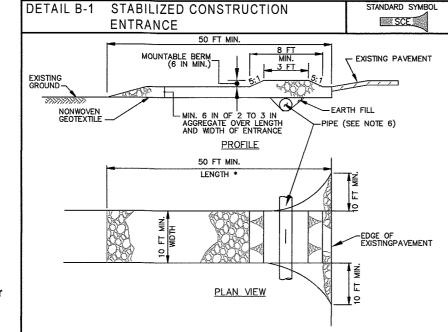
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DATE

IEF, DEVELOPMENT ENGINEERING DIVISION 1

and irrigating for any piece of sod within eight hours.



CONSTRUCTION SPECIFICATIONS PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS

PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION 2011

STANDARD SYMBOL DETAIL C-9 DIVERSION FENCE — DF — i MAXIMUM DRAINAGE AREA = 2 ACRES 10 FT MAX. -CHAIN LINK FENCE COVERED WITH IMPERMEABLE SHEETING ELEVATION OVER SHEETING ON BOTH SIDES OF FENCE FLOW

<u>SECTION</u> CONSTRUCTION SPECIFICATIONS USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2% INCH MAXIMUM OPENING). 2. USE 2¾ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCEPTS

3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE. 5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND, SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.

. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAN FACING DOWNGRADE.

KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

2011

U.S. DEPARTMENT OF AGRICULTURE URAL RESOURCES CONSERVATION SERVICE

DETAIL E-1 SILT FENCE	STANDARD SYMBOL
6 FT MAX. CENTER TO CENTER 36 IN MIN. FENCE IDRIVEN MIN. 16 IN	POST LENGTH INTO GROUND
	FILM GEOTEXTILE
ELEVATION	
J6 IN MIN. FENCE POST LENGTH WOVEN SLIT FILM GEOTEXTILE FLOW FENCE POST 18 IN MIN ABOVE GROUND UNDISTURBE GROUND FENCE POST 18 IN MIN ABOVE GROUND FENCE POST 18 IN MIN ABOVE GROUND FENCE POST DRIVEN A MIN. OF 16 IN INTO THE GROUND THE GROUND THE GROUND BOTH SIDES OF GEOTEXTILE.	ED
CROSS SECTION	
STAPLE STAPLE TWIST POSTS TOGETHER	STAPLE
STAPLE FINAL CONFIGURATION STAPLE	STAPLE
JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)	1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

A. Soil Preparation Temporary Stabilization a. 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 n construction equipment. After the soil is loosened, it must not be rolled 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. Apply fertilizer and lime as prescribed on the plans. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

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

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are: . Soil pH between 6.0 and 7.0.

ii. 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 plus clay) would be acceptable. . Soil contains 1.5 percent minimum organic matter by weight v. Soil contains sufficient pore space to permit adequate root penetration.

b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches. B.13 d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test. . 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 leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of oil 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 gradation. 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 can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS. Topsoiling is limited to areas having 2:1 or flatter slopes where: a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth. b. The soil material is so shallow that the rooting zone is not deep enough to support plants or

furnish continuing supplies of moisture and plant nutrients. c. The original soil to be vegetated contains material toxic to plant growth. . The soil is so acidic that treatment with limestone is not feasible. 4. Areas having slopes steeper than 2:1 require special consideration and design. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria: 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 1½ inches in diameter. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass,

Johnson grass, nut sedge, poison ivy, 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 natural topsoil. a. Erosion and sediment control practices must be maintained when applying topsoil. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness

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 irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets. c. 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 B.1

and seedbed preparation. Soil Amendments (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 warranty of the producer. 3. 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. 4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of 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 topsoil.

Hardiness Zone (from Figure B.3): <u>6b</u>

Seeding Dates

DETAIL E-3 SUPER SILT FENCE

CHAIN LINK FENCING-WOVEN SLIT FILM GEOTEXTILE-

FLOW _

Seed Mixture (from Table B.1):

Application Rate

GROUND SURFACE-

Application Rate (lb/ac)

TEMPORARY STABILIZATION SPECIFICATIONS TABLE

JUNE 1 - JULY 31 0.5 INCHES

PERMANENT STABILIZATION SPECIFICATIONS TABLE

Seeding Depths

1/4-1/2 in

1/4-1/2 in

GALVANIZED CHAIN LINK FENCE WITH WOVEN SLIT FILM GEOTEXTILE

ELEVATION

CROSS SECTION

INSTALL 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.

FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.

FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.

WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.

EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.

PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL FROSION AND SEDIMENT CONTROL

2011

0.5 INCHES

N

per acre

1000 sf)

STANDARD SYMBOL

├──SSF-----

(1.0 lb/

45 pounds 90 lb/ac

Seeding Dates

Fertilizer Rate

436 lb/ac

Fertilizer Rat (10-20-20)

P205

(10-20-20)

(2lb/1000 sf) | lb/1000 sf)

Lime Rate

2 tons/gr

(10 lb/1000 sf) | (90 lb/1000 sf)

K20

90 lb/ac (90 | 2 tons/ac

(90 lb/

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

The application of seed and mulch to establish vegetative cover.

. Specifications

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. A. Seeding

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 f months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available 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 must not be used later than the date indicated on the container. Add fresh inoculants as directed on the 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 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective. d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

a. Dry Seeding: This includes use of conventional drop or broadcast spreaders. 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. i. 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.16 o. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting

í. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer). 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; P2 05 (phosphorous), 200 pounds per acre; K2 0 (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 hydroseeding, iii. Mix seed and fertilizer on site and seed immediately and without interruption. . 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 Maryland 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 provide an appropriate color to facilitate visual inspection of the uniformly spread slurry. ii. WCFM, including dye, must contain no germination or growth inhibiting factors. ii. 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 slurry. 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. iv. WCFM material must not contain elements or compounds at concentration levels that will v. 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. B.17 Application 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 depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre. 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 on large areas, but is limited to flatter slopes where equipment can operate safely. 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 net 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. i. 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 nanufacturer. 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.

DUST CONTROL

DUST CONTROL METHOD FOR THIS SITE TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES: CALCIUM CHLORIDE SHALL BE APPLIED TO EXPOSED SURFACES AT A RATE THAT WILL KEEP SURFACE MOIST UNTIL SOIL IS STABILIZED ACCORDING TO VEGETATIVE SPECS. FOR THIS SITE AND AREAS TO BE PAVED ARE COMPLETED.

STANDARD STABILIZATION NOTE

OLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT R TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN: THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND B. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED

4. Access the stockpile area from the upgrade side.

HIGHLY ERODIBLE SOILS IN PROJECT AREA 0.729

SITE ANALYSIS DATA SHEET

FORESTS
STEEP SLOPES (15-24%)
STEEP SLOPES (25% OR GREATER

WETLANDS BUFFE

TOTAL PROJECT AREA

REEN OPEN SPACE AREA

. IMPERVIOUS AREA

PROP. IMPERVIOUS AREA

TOTAL UNITS ALLOWED

PARKING PROVIDED DPZ FILE REFERENCES

FLOODPLAIN

OD AREA

ZONING

A mound or pile of soil protected by appropriately designed erosion and sediment

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns. <u>Conditions Where Practice Applies</u>
Stockpile areas are utilized when it is necessary to salvage and store soil for later

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.

0.00

0.00

R-20

AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

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 concentrated flow in a

non-erosive manner. 6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and itandard 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. Stockpiles containing ontaminated material must be covered with impermeable sheeting.

Maintenance
The stockpile area must continuously meet the requirements for Adequate 'egetative Establishment in accordance with Section B-4 Vegetative itabilization. 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 2:1slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3

48 HOURS BEFORE START OF CONSTRUCTION

1) A pre-construction meeting must occur with the Howard County Department of

to CID must be given a the following stages:

grading unit,

a. Prior to the start of earth disturbance,

receive soil stabilization matting (Sec. B-4-6).

6) Site Analysis:

Total Area of Site

Area to be roofed or paved

Area to be vegetatively stabilized

Offsite waste/borrow area location

utilities must be repaired on the same day of disturbance.

request, is part of every inspection and should include:

* Inspection type (routine, pre-storm event, during rain event)

* Identification of sediment controls that require maintenance

* Maintenance and/or corrective action performed

Associated with Construction Activities (NPDES, MDE).

* Identification of missing or improperly installed sediment controls

Area Disturbed

Total Fill

* Inspection date

activities

requirements

* Monitoring/sampling

whichever is shorter.

disturbed at a given time.

* Use I and IP March 1 - June 15

* Use IV March 1 - May 31

available when the site is active.

* Use III and IIIP October 1 - April 30

* Photographs

* Name and title of inspector

* Evidence of sediment discharges

* Identification of plan deficiencies

recorded precipitation)

Public Works, Construction Inspection Division (CID), 410-313-1855 after the future

b. Upon completion of the installation of perimeter erosion and sediment controls,

but before proceeding with any other earth disturbance or grading,

c. Prior to the start of another phase of construction or opening of another

Other building or grading inspection approvals may not be authorized until this

2) All vegetative and structural practices are to be installed according to the provisions

stabilization is required within three (3) calendar days as to the surface of all

perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper

than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other

disturbed areas on the project site except for those areas under active grading.

accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL

EROSION AND SEDIMENT CONTROL FOR TOPSOIL (Sec. B-4-2), permanent seeding

Temporary stabilization (Sec. B-4-8) in excess of 20 ft. must be benched with

stable outlet. All concentrated flow, steep slope, and highly erodible areas shall

5) 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

Any sediment control practice which is disturbed by grading activity for placement of

Additional sediment control must be provided, if deemed necessary by the CID. The

site and all controls shall be inspected by the contractor weekly; and the next day

after each rain event. A written report by the contractor, made available upon

* Weather information (current conditions as well as time and amount of last

* Brief description of project's status (e.g. percent complete) and/or current

* Compliance status regarding the sequence of construction and stabilization

* Other inspection items as required by the General Permit for Stormwater

9) Trenches for the construction of utilities is limited to three pipe lengths or that

which can and shall be back-filled and stabilized by the end of each workday,

10) Any major changes or revisions to the plan or sequence of construction must be

revisions may allowed by the CID per the list of HSCD-approved field changes.

11) Disturbance shall not occur outside the L.O.D. A project is to be sequenced so

reviewed and approved by the HSCD prior to proceeding with construction. Minor

that grading activities begin on one grading unit (maximum acreage of 20 ac. per

grading unit at a time. Work may proceed to a subsequent grading unit when at

stabilized and approved by the HSCD. Unless otherwise specified and approved by

the Howard Soil Conservation District, no more than 30 acres cumulatively may be

13) Top soil shall be stockpiled and preserved on—site for redistribution onto final grade.

15) Stream channels must not be disturbed during the following restricted time periods

16) A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL

EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and

imbricated at 25' minimum interval, with lower ends curled uphill by 2' in elevation.

least 50 percent of the disturbed area in the preceding grading unit has been

12) Wash water from any equipment, vehicles, wheels, pavement, and other sources

must be treated in a sediment basin or other approved washout structure.

14) All Silt Fence and Super Silt Fence shall be placed on—the—contour, and be

0.795 Acres.

0.42 Acres.

.31 Acres.

1 Acres.

(Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3).

4) All disturbed areas must be stabilized within the time period specified above in

of this plan and are to be in conformance with the 2011 "MARYLAND STANDARDS"

AND SPECIFICATIONS FOR THE SOIL EROSION AND SEDIMENT CONTROL", and revisions

initial approval by inspection agency is made. Other related state and federal

permits shall be referenced, to ensure coordination and to avoid conflicts with this

d. Prior to the removal or modification of sediment control practices.

3) Following initial soil disturbance or re-disturbance, permanent or temporary

LOD and protected area marked clearly in the field. A minimum of 48 hour notice

SEQUENCE OF CONSTRUCTION

1. OBTAIN ALL REQUIRED GRADING, MDE PERMITS, APPROVALS AND LICENSES FROM APPROPRIATE AGENCIES. (1 WEEK)

2. NOTIFY SEDIMENT CONTROL INSPECTOR AT LEAST THREE (3) WORKING DAYS PRIOR TO STARTING WORK. (1 WEEK)

4. STABILIZE ALL THE GRADED AREAS UP TO 20' OUTSIDE OF THE LIMIT OF GRADING AS PER PERMANENT SEEDING NOTES. (1 WEEK)

6. ANY AREAS THAT CAN BE TEMPORARILY SEEDED DURING CONSTRUCTION

8. STABILIZE DISTURBED AREAS PER PERMANENT SEEDING NOTES. (1 WEEK)

B-4-8 STANDARDS AND SPECIFICATIONS

STOCKPILE AREA

<u>Definition</u>

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

<u>Conditions Where Practice Applies</u>
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Incremental Stabilization and Standard B—4—4 Temporary Stabilization.

slopes, benching must be provided in accordance with Section B-3 Land Grading

Stockpiles containing contaminated material must be covered with impermeable sheeting.

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and

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.

3. 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,

. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1

8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup.

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 2:1slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1

temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.

6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be

MUST BE TEMPORARILY STABILIZED PER SEEDING NOTES. (1 WEEK)

7. INSTALL DRIVEWAY AND LANDSCAPE INFILTRATION. (2 WEEKS)

10. NOTIFY INSPECTOR FOR FINAL INSPECTION. (1 WEEK)

changes to drainage patterns.

5. EXCAVATE HOUSE FOUNDATION, HOUSE CONSTRUCTION. UTILITIES. (12 WEEKS)

9. UPON APPROVAL OF SEDIMENT CONTROL INSPECTOR; REMOVE ALL TEMPORARY SEDIMENT CONTROL DEVICES FOR HOUSE CONSTRUCTION. (1 WEEK)

3. INSTALL STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, SUPER SILT FENCE AND OTHER SEDIMENT CONTROL DEVICES AS SHOWN IN THE SEDIMENT CONTROL PLAN. (1 WEEK)

CALL "MISS UTILITY" AT 1-800-257-7777

John Clawso

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. HOWARD SOIL CONSERVATION DISTRICT

MULLINEAUX HEIGHTS ELECTION DISTRICT: No. 2

GRID NO: 19 PARCEL NO: 217

HOWARD COUNTY, MARYLAND EX. ZONING: R-20

PROFESSIONAL CERTIFICATION I hereby certify that these documents were prepared or approved by me and that I am a duly licenced professional engineer under the laws of the State of Maryland, License No. <u>18417</u>, Expiration Date: <u>9-18-21</u>.

OWNER / DEVELOPER

GEORGE & SUSAN VARGHESE

3028 MULLINEAUX LANE

ELLICOTT CITY, MD. 21042

610-653-4253

DATE REVISIONS 07/30/19 COUNTY COMMENTS

RELATED DPZ FILES: ECP-19-052 VANMAR

ASSOCIATES, INC. Engineers Surveyors Planners 310 South Main Street Mount Airy, Maryland 21771 (301) 829-2890 (301) 831-5015 (410) 549-2751 vanmar.com Fax (301) 831-5603 ©Copyright, Latest Date Shown

SITE DEVELOPMENT PLAN SEDIMENT AND EROSION CONTROL. NOTES AND DETAILS 3028 MULLINEAUX LANE, LOT 4

SCALE: 1'' = 30'DATE: MAY 2019 SHEET 2 OF 3

SDP-19-067

1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR

The planting soil shall be tested and shall meet the following criteria: Soil Component — Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost

Clay Content — Media shall have a clay content of less than 5%. pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was

Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base. When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on—site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

MAINTENANCE CRITERIA

- 1. The following items should be addressed to ensure proper maintenance and long—term performance of landscape infiltration:
- 2. Privately owned practices shall have a maintenance plan and shall be protected by easement, deed restriction, ordinance, or other legal measures preventing its neglect, adverse alteration, and removal.
- 3. During the first year of operation, inspection frequency should be after every major storm and poorly established areas revegetated.
- 4. Sediment accumulation on the surface of the facility should be removed and the top two to three inches of surface layer replaced as needed.
- 5. The top few inches of the planting soil should be removed and replaced when water ponds for more than 48 hours or there is algal growth on the surface of the facility.
- 6. If standing water persists after filter media has been maintained, the gravel, soil, and sand may need to be cleaned and/or replaced.
- 7. Occasional pruning and replacement of dead vegetation is necessary. If specific plants are not surviving, more appropriate species should be used. Watering may be required during prolonged dry periods.

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	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%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	·	
Mulch	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		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 row; 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' _c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/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 sealed 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"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand

OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3)

a. 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.

- c. The Owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.
- d. The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

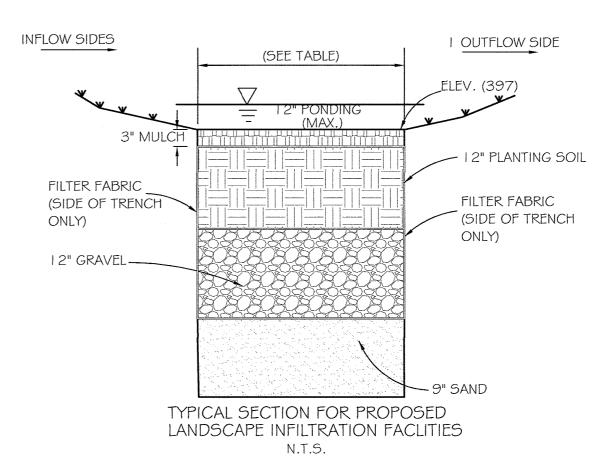
SWM FACILITY TABLE							
SWM	M-3 LANDSCAPED INFILTRATION 70' x 4.0' -12" PONDING						

SWM	TREATMENT	SUMMARY

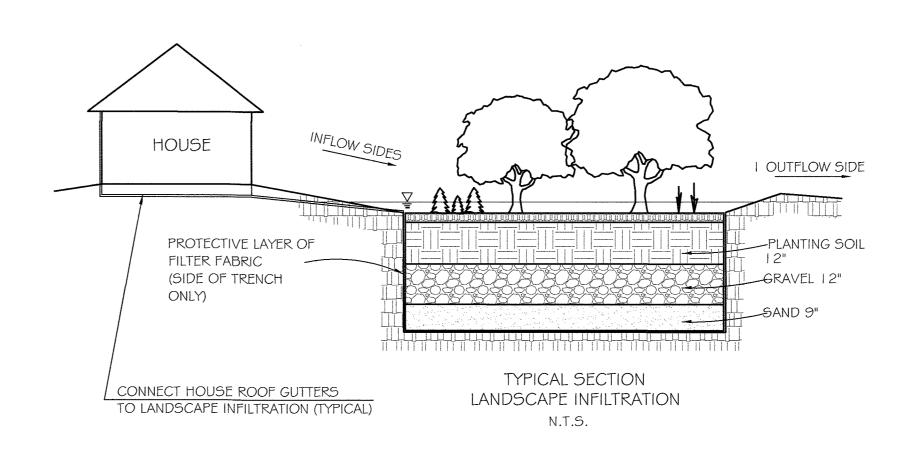
-	Area		ESDv Volume (cft)		
Practice	Treated	Methodology	Required	Provided	
Mullineaux Heights Lot-4	4734 sf		429		
		ESDv = Pe*Rv*DA/12 where			
M-3 Landscape Infiltration	4734 sf	Pe=2.6" & Rv=0.95		616	
TOTAL			429	616	

LANDSCAPE INFILTRATION FACILITY DIMENSION TABLE

		L/ \	INDOOM L		IN I ACILITI	DIVILIVOIOI	N INDLL		
FACILITY NO.	LOCATION	LENGTH	WIDTH	SQUARE FT.	PLANTING SOIL DEPTH	GRAVEL DEPTH	SAND DEPTH		GROUND ELEV. OUTFLOW SIDE
1	MULLINEAUX HEIGHTS LOT 4	70¹	4.0'	280	12"	12"	9"	396.7	398



LANDSCAPE INFILTRATION PLANTING DETAIL VARIES NOTE: PLANTING DETAIL IS TYPICAL FOR ALL FACILITIES. N.T.S.



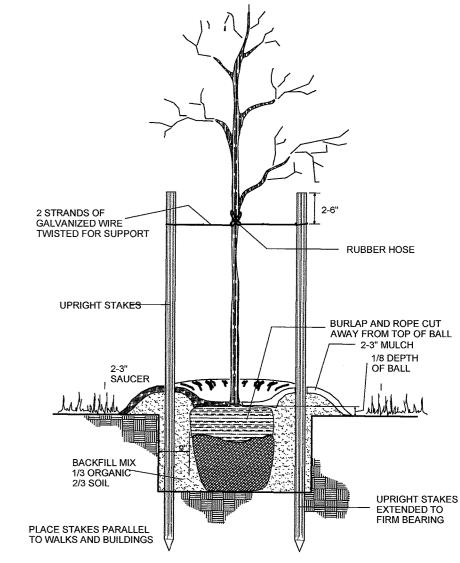
PLANT SPACING

PERENNIALS - 12" ON CENTER FOR QUART SIZE 18" ON CENTER FOR GALLON SIZE

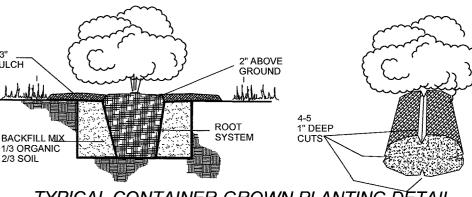
SHRUBS - 3'-4' ON CENTER FOR QUART / GALLON SIZE

PLANT SPECIES

PLANT SPECIES SHALL BE SELECTED FROM "PLANT SPECIES APPROPRIATE FOR USE IN BIORETENTION AREAS", PRINCE GEORGE COUNTY DEP, MD. (www.lowimpactdevelopment.org)



TREE PLANTING/ STAKING DETAIL (N.T.S)



TYPICAL CONTAINER-GROWN PLANTING DETAIL (N.T.S)

CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS BEFORE START OF CONSTRUCTION

OWNER / DEVELOPER GEORGE & SUSAN VARGHESE 3028 MULLINEAUX LANE ELLICOTT CITY, MD. 21042

PROFESSIONAL CERTIFICATION I hereby certify that these documents were prepared or approved by me, and that I am a duly licenced professional engineer under the laws of the

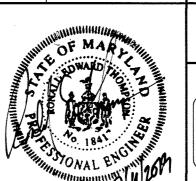
State of Maryland, License No. <u>18417</u>, Expiration Date: <u>9-18-21</u>.

610-653-4253

DATE REVISIONS 07/30/19 COUNTY COMMENTS

SITE DEVELOPMENT PLAN PRIVATE LANDSCAPE INFILTRATION 3028 MULLINEAUX LANE, LOT 4 MULLINEAUX HEIGHTS

ELECTION DISTRICT: No. 2



HOWARD COUNTY, MARYLAND GRID NO: 19 PARCEL NO: 217 EX. ZONING: R-20 RELATED DPZ FILES: ECP-19-052

ASSOCIATES, INC. | Engineers Surveyors Planners 310 South Main Street Mount Airy, Maryland 21771 (301) 829–2890 (301) 831–5015 (410) 549–2751 vanmar.com Fax (301) 831-5603 ©Copyright, Latest Date Shown

SDP-19-067

SCALE: AS SHOWN

DATE: MAY 2019

SHEET 3 OF 3

APPROVED

HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

HIEF, DEVELOPMENT ENGINEERING DIVISION 💃

DATE

10.7.19

10-9-19