

#### EROSION AND SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.

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

4. ALL DISTURBED AREAS MUST BE STABILIZED WITH THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF

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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

6. SITE ANALYSIS:

TOTAL AREA OF SITE AREA DISTURBED AREA TO BE ROOFED OR PAVED

40664 SF (0.934 AC) 21284 SF (0.489 AC) 3496 SF (0.08 AC) AREA TO BE VEG. STABILIZED 17788 SF (0.408 AC) **TOTAL CUT** 1082 CY TOTAL FILL 396.CY OFFSITE WASTE/BORROW LOCATION

7. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

9. 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.

10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICH EVER IS SHORTER.

11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.

12. A PROJECT IS TO BE SEQUENCED SO 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 LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BE STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

13. A DOUBLE ROW OF "SUPER" SILT FENCE IS TO BE PROVIDED AT THE FRONT OF THE LOT AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

14.EITHER TEMPORARY OR PERMANENT STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME INTERVALS REQUIRED BY THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, WHICHEVER IS MORE

	9	ummary 1	Table Lot'	7		
Practice	DA	IMP	Pervious	Woods	ESDv Req	ESDv Prov
	Acres	Acres	Acres	Acres	CF	CF
Micro-Bioretention Area (M7)	0.38 ac	0.05 ac	0.33 ac	O ac	295 <i>c</i> f	448 cf
Drywell (D7)	0.02 ac	0.01 ac	0.01 ac	O ac	44 cf	60 cf
Total	0.40 ac	0.06 ac	0.34 ac	0.00 ac	339.0 <i>c</i> f	508.0 cf

# ESDv is met therefore CPv, Q10 and Q100 is not required

ENGINEER'S CERTIFICATE I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PROFESSIONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

## DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT THE 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.

SIGNATURE OF DEVELOPER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND

SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

3-24-14

#### PROPOSED DRAINAGE AREA SUMMARY

--- EXPOLE V

MIRIAM DORSEY

12302/436

ZONED R-20

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SHIGLE 4" DIAMETER PIPE WITH CAP, INSTALLED BY LITHLITY CONTRACTOR TO WITHIN 4" OF FINISHED GRADE.

4" PIPE SHC

Department of Public Work

2. INSTALL TREE PROTECTIVE FENCING AS SHOWN ON PLAN (2 DAYS)

4. CLEAR AND GRUB WITHIN LIMITS OF DISTURBANCE (5 DAYS)

6. CONSTRUCT BUILDING, UTILITIES, AND PAVEMENT (60 DAYS)

3. INSTALL SEDIMENT AND EROSION CONTROL DEVICES AS SHOWN ON PLAN (7 DAYS)

7. INSTALL PERMANENT STORMWATER MEASURES OTHER THAN THE MICRO-BIORETENTION (14 DAYS)

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SEQUENCE OF CONSTRUCTION

8. FINE GRADE SITE (5 DAYS)

CONTROL INSPECTOR (7 DAYS)

1. OBTAIN GRADING PERMIT (7 DAYS)

5. APPLY TEMPORARY SEEDING (2 DAYS)

9. APPLY PERMANENT SEEDING (2 DAYS)

10. INSTALL MICRO-BIORETENTION (3 DAYS)

11. INSTALL PROPOSED LANDSCAPING (7 DAYS)

RAINAGE AREA	ACREAGE	RCN	% IMPERVIOUS	SOIL TYPE
D7	0.02 AC	92	84.64%	100% TYPE B SOILS
. M7	0.38 AC	66	12.95%	100% TYPE B 50ILS

FORESHED GRADE-

--- MARKER BOARD, SEE NOTE 3.

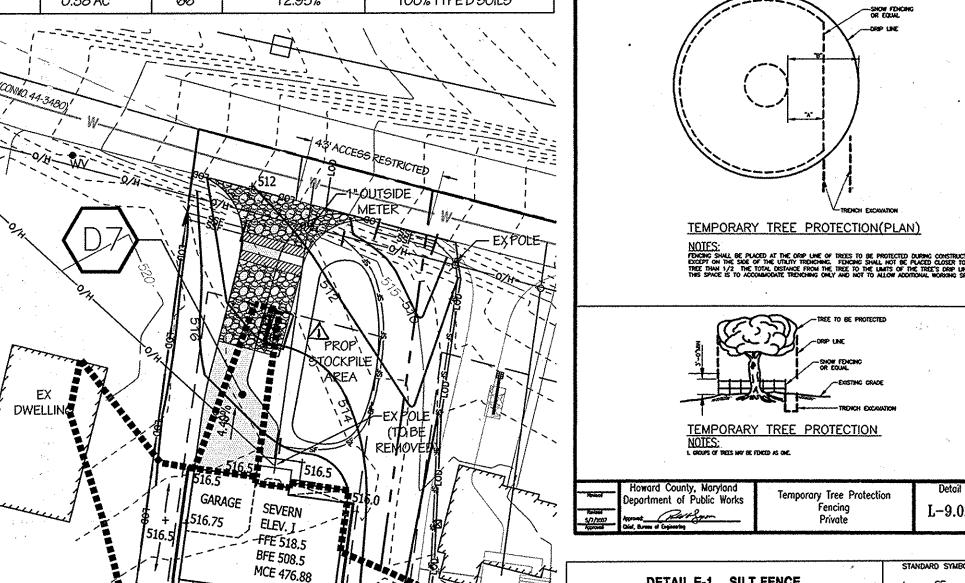
**ELEVATION** 

SEWER HOUSE CONNECTION

12. REMOVE EROSION AND SEDIMENT CONTROL DEVICES AS AREAS ARE STABILIZED AND PERMISSION IS GRANTED FROM SEDIMENT

DRAINAGE AREA MAP

▲ 4. FOR CLEANOUT COYER ASSEMBLY IN A PAYED AREA, SEE DETAIL 5-2.23.

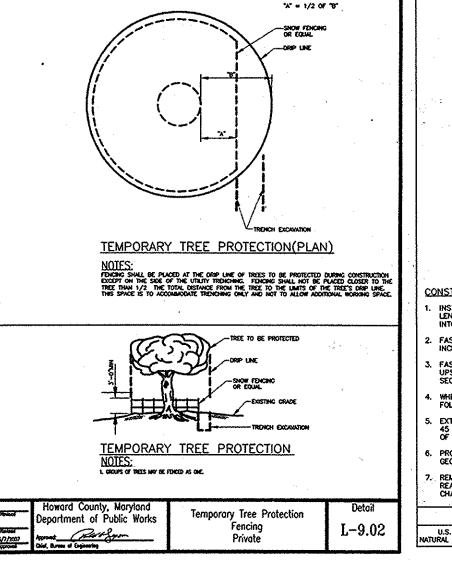


/TIMBERLAKE/

ARRIOTTSVILLE, LLC

**15015/005** 

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36 IN MIN. FENCE POST LENGTH DRIVEN MIN. 16 IN INTO GROUND

16 IN MIN. HEIGHT OF WOVEN SUIT FILM GEOTEXTILE

DETAIL E-1 SILT FENCE

CENTER TO CENTER

CROSS SECTION

IOINING TWO ADJACENT SILT

· NOS 24"SQ. POLYOCEPIA

GRATE W/U.V. WHISHOT

OF 9 PLACES AT BOM

MISS UTILITY

811 IN MD

or 1-800-257-7777

THE CONTRACTOR TO CALI MISS UTILITY TO HAVE AL EXISTING UTILITIES MARKED HOURS PRIOR TO ANY CONSTRUCTION.

MAX SPEED

FENCE SECTIONS (TOP VIEW

RAIN DC " PE PS

"NOS 24" SQUARE TAPPERED

HOPE CATCH BASIN

W/ U.V. INHIBITORS

NDS 24"SO CATCH BASIN TYPICAL INSTALLATION

compacted boil

UTILITY TRENCH REPAIR IN THE SHA

RIGHT-OF-WAY/ROADWAY SHALL BE IN ACCORDANCE

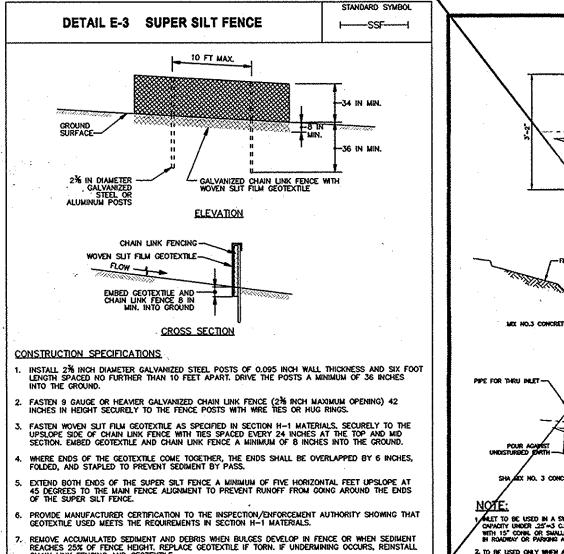
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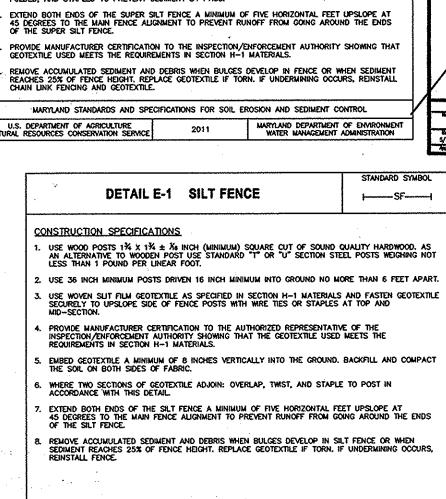
STANDING WATER

"4 GRAVEL BASE A'TO 6'DEEP" BELOW BASIN. TO PREVENT

TWIST POSTS TOGETHER

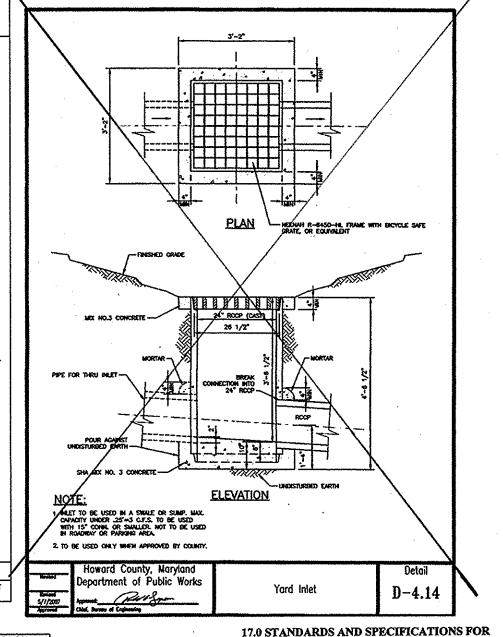
"B" - DISTANCE OF DRIP LINE EDGE FROM TRUNK OF TR





MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

2011



# STABILIZED CONSTRUCTION ENTRANCE

A stabilized layer of aggregate that is underlain with Geotextile Class C25. Stabilized entrances are located at any point where traffic enters or leaves a construction site.

#### Stabilized construction entrances reduce tracking of sediment onto streets or public right-of-ways and provide a stable area for entrance or exit from the construction site.

#### Conditions Where Practice Applies Stabilized construction entrances shall be located at points of construction ingress and egress.

2. For residential construction, the stabilized construction entrance should be located at the proposed driveway/entrance apron location.

#### 3. Stabilized construction entrances should not be used on existing pavement

1. Length - minimum of 50 feet from the existing edge of pavement which could be a shoulder or

2. Width - 20 feet minimum with 20 feet radii which are flared at the existing road to provide a

Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone.

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

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" stone over the pipe. End sections must be placed on both ends of the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey, a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be

 Location – a stabilized entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance. All mud and debris tracked and/or spilled on the state roadway shall be removed immediately to eliminate potential hazards and comply with sediment control

Stabilized/Temporary construction entrances are to be removed, graded, seeded and mulched or removed and replaced with the proposed driveway/entrance apron.

# O'MINIMUM LENGTH -

BAY SCE

**B-4-8 STANDARDS AND SPECIFICATIONS** 

STOCKPILE AREA

A mound or pile of soil protected by appropriately designed crossion and sediment control measur

Stockpile areas are utilized when it is necessary to salvage and store soil for later use

sedimentation, and changes to drainage patterns.

with Section B-3 Land Grading.

4. Access the stockpile area from the upgrade side

concentrated flow in a non-crosive manner

To provide a designated location for the temporary storage of soil that controls the potential for crosion,

3. Runoff from the stockpile area must drain to a suitable sediment control practice

Conditions Where Practice Applies

1. The stockpile location and all related sediment control practices must be clearly indicated on the

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

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/sediment

Stockpiles 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.

accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1

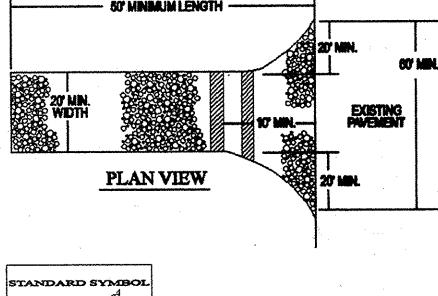
ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3

STABILIZED CONSTRUCTION ENTRANCE FOR TEMPORARY

AND/OR AGRICULTURAL USE

and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance

conveyed. A 6" minimum will be required.



BY RELOCATED DRYWELL 8/29/14 LDD AND CHANGE INLET TEMPORARY SEEDING SUMMARY

SEED MIXTURE: SEEDING DEPTHS FERTILIZER RATE (10-20-20) ANNUAL RYEGRASE AUGUST 1 TO OCTOBER 1 4:56 lb/sf (10 lb/1000 sf) 2 tons/ac (901b/1000 sf MAY 16 TO JULY 31 0.5" PEAKL MILLET HARDINESS ZONE: 66

SEED MIXTURE: FERTILIZER RATE (10-20-20) SEEDING DEPTHS APPLICATION RATE (Ib/ac) SEEDING DATES LIMERATE P205 MARCH 1 TOMAY 15 0.25 to 0.5° SWITCH GRASS MAY 16 TO JUNE 15 CREEPING RED FESQUE 0.25 to 0.5° **BUSHICLOVER** MAY 16 TO JUNE 15 15 lb/sf (1 lb/1000 sf) | 90 lb/sf (2 lb/1000 sf) | 90 lb/sf (2 lb/1000 sf) | 2 tans/sc (90 lb/1000 sf) MARCH 1 TO MAY 15 0.25 to 0.5° TALL PESCUE AUGUST 1 TO OCTOBER 15 MARCH 1 TOMAY 15 PERENNIAL RYE GRASS 0.25 to 0.5° WHITE CLOVER AUGUST 1 TO OCTOBER 15

# APPLICANT/OWNER:

## TIMBERLAKE/MARRIOTTSVILLE, LLC

888 BESTGATE ROAD SUITE 411 ANNAPOLIS, MD 21401 240-388-0873

ADDRESS CHART LOT/PARCEL #: STREET ADDRESS 11269 OLD FREDERICK RD PROPOSED SITE IMPROVEMENT: SINGLE FAMILY HOME PERMIT INFORMATION CHART LOT/PARCEL NO. SECTION/AREA PROJECT PATUXENT VIEW - LOT 7 7/65 TAX MAP NO. | ELECT DIST. CENSUS TRACT PLAT # OR L/F GRID# ZONING THIRD 6030.00 15015/005 SEWER CODE: WATER CODE: 20-4398-D 44-4380 NOTES AND DETAILS DP/WZ

Jom Lengineering Design Professional Engineer Civil Engineering ◆Land Surveying ◆Landscape Architecture ◆Land Planning

2" MIN. HOT MIX ASPHALT SURFACE

Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION

REPAIRING PAVEMENT OPENINGS FOR

UTILITY TRENCHES

RIGID PAVEMEN

THIS STANDARD IS TO BE USED IN ACCORDANCE WITH SECTIONS SOS AND S22. THE ROADWAY SHALL BE PATCHED WITH THE SAME TYPE MATERIAL REMOVED UNILSS MOTED IN THE SPECIFICATIONS. PORTLAND CEMENT COMMERCE PAYEREMY REPAIR SHALL BE IN ACCORDANCE WITH STANDARDS ST7.02-577.03. 577.04. 577.05. 577.06. 07.577.10

2. THE TOP 1 FT. OF THE TRENCH SHALL BE FILLED WITH NO. ST AGGREGATE. TRENCH TO BE EXTENDED TO DITCH LINE.

3. WHEREVER A TRENCH CROSSES A COMCRETE ROADWAY THAT HAS JOINT INSTALLATIONS THE ENTIRE SLAB BETWEEN THE EDOC OF THE TRENCH AND MERSEST JOINT SHALL BE REWOVED IF TWE DISTANCE IS LESS THAN 6 FT.

4. CLEAN AND WET EDGES OF CUT AND SUBBASE BEFORE PLACING CONCRETE.

5. ALL WORK SUCH AS TRENCH BACKFILL. CURING OF CONCRETE, MATERIALS USED, ETC. SHALL BE IN ACCORDANCE WITH SECTIONS 201-505 AND 522 OF THE SPECIFICATIONS OR AS SPECIFIED IN THE PERMIT. 6. ALL COSTS FOR SAWCUTS. TRENCH EXCAVATION. BACKFILL. HOT MIX ASHALT. CONCRETE. NO. 57 AGGREGATE. MATERIALS. TOOLS. LABOR AND INCIDENTALS SHALL BE INCLUDED IN THE PRICE OF THE UTILITY ITEMS.

. RIGIO PAYEMENT REPAIRS AS SHOWN SHALL BE MADE USING CONCRETE MIX NO. 9 (NINE) MEETING THE REQUIREMENTS OF SECTION 902 ( THE SPECIFICATIONS UNLESS OTHERWISE SPECIFIED IN THE SPECIAL PROVISIONS. ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STANDARD NO.

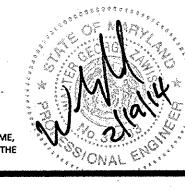
6990 Columbia Gateway Dr, Ste 150 Columbia, Maryland 21046 www.axiom-ed.com

Office: 443.276.6220 Fax: 443.276.6221 info@axiom-ed.com

WALTER G. ZAWISLAK, P.E.

n: 443-276-6220 Fax: 443-276-6221 W.Zawislak@axiom-ed.com HERERY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME. AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE

STATE OF MARYLAND. LICENSE NO. 32033, EXPIRATION DATE 06/20/2015



PATUXENT VIEW Checked: LOT 7 11269 OLD FREDERICK ROAD MARRIOTTSVILLE, MD 21104 TAX MAP 10, PARCEL 65 Project No. : 3rd Election District Howard County, Maryland

SDP-14-035

FEB. 11, 2014

13 0028

AS SHOWN

M-5) DRY WELL OPERATION AND MAINTENANCE

A-6) MICRO BIORETENTION OPERATION AND MAINTENANCE

. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.

3. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.

NNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED

2. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE

I. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION

THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER, AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO

XORRECTING AREAS OF EROSION OR WASH OUT, ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR

XSEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS

GENERAL (M-6) MICRO-BIORETENTION CONSTRUCTION NOTES

USED NEAR THE PROPOSED LOCATION.

CONSTRUCTION CRITERIA THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH MICRO-BIORETENTION EROSION AND SEDIMENT CONTROL: MICRO-BIORETENTION PRACTICES SHOULD NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED. IF THIS IS IMPRACTICAL, RUNOFF FROM

5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE SOIL COMPACTION: EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE PRACTICE TO MINIMIZE BOTTOM AND SIDEWALL COMPACTION, ONLY LIGHTWEIGHT, LOW GROUND-CONTACT EQUIPMENT SHOULD BE USED WITHIN MICRO-BIORETENTION 3. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.

DISTURBED AREAS SHALL BE DIVERTED AWAY AND NO SEDIMENT CONTROL PRACTICES SHALL BE

UNDERDRAIN INSTALLATION: GRAVEL FOR THE UNDERDRAIN SYSTEM SHOULD BE CLEAN, WASHED AND FREE OF FINES, UNDERDRAIN PIPES SHOULD BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS. THE UPSTREAM ENDS OF THE UNDERDRAIN PIPE SHOULD BE CAPPED PRIOR TO INSTALLATION.

FILTER MEDIA INSTALLATION: BIORETENTION SOILS MAY BE MIXED ON-SITE BEFORE PLACEMENT. HOWEVER, SOILS SHOULD NOT BE PLACED UNDER SATURATED CONDITIONS. THE FILTER MEDIA SHOULD BE PLACED AND GRADED USING EXCAVATORS OR BACKHOES OPERATING ADJACENT TO THE PRACTICE AND BE PLACED IN HORIZONTAL LAYERS (12 INCHES PER LIFT MAXIMUM). PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRAYING OR SPRINKLING WATER ON EACH LIFT UNTIL SATURATED MAY QUICKEN SETTLING TIMES.

LANDSCAPE INSTALLATION: THE OPTIMUM PLANTING TIME IS DURING THE FALL. SPRING PLANTING IS ALSO ACCEPTABLE BUT MAY REQUIRE WATERING

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

O DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS. O DURING PLACEMENT OF FILTER MEDIA. O DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.

O UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF MICRO-BIORETENTION PRACTICES: PRIVATELY OWNED PRACTICES SHALL HAVE A MAINTENANCE PLAN AND SHALL BE PROTECTED BY EASEMENT, DEED RESTRICTION, ORDINANCE, OR OTHER LEGAL MEASURES PREVENTING ITS NEGLECT,

FOR MORE THAN 48 HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEEDS ONE INCH. WHERE PRACTICES ARE USED TO TREAT AREAS WITH HIGHER CONCENTRATIONS OF HEAVY METALS

THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS

(E.G., PARKING LOTS, ROADS), MULCH SHOULD BE REPLACED ANNUALLY. OTHERWISE, THE TOP TWO TO THREE INCHES SHOULD BE REPLACED AS NECESSARY.

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.

CONTACT HARFORD COUNTY DPW SWM INSPECTIONS DEPARTMENT PRIOR TO ANY REPAIRS. GENERAL (M-6) MICRO-BIORETENTION LANDSCAPING NOTES

A.2.3 BIORETENTION

SOIL BED CHARACTERISTICS

THE CHARACTERISTICS OF THE SOIL FOR THE BIORETENTION FACILITY ARE PERHAPS AS IMPORTANT AS THE FACILITY LOCATION, SIZE, AND TREATMENT VOLUME. THE SOIL MUST BE PERMEABLE ENOUGH TO ALLOW RUNOFF TO FILTER THROUGH THE MEDIA. WHILE HAVING CHARACTERISTICS SUITABLE TO PROMOTE AND SUSTAIN A ROBUST VEGETATIVE COVER CROP. IN ADDITION, MUCH OF THE NUTRIENT POLLUTANT UPTAKE (NITROGEN AND PHOSPHORUS) IS ACCOMPLISHED THROUGH ABSORPTION AND MICROBIAL ACTIVITY WITHIN THE SOIL PROFILE. THEREFORE, SOILS MUST BALANCE THEIR CHEMICAL AND PHYSICAL PROPERTIES TO SUPPORT BIOTIC COMMUNITIES ABOVE AND BELOW GROUND.

THE PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MI) (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND. BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BE LESS THAN 25% BY VOLUME [ENVIRONMENTAL QUALITY RESOURCES (EQR), 1996; ENGINEERING TECHNOLOGY INC. AND BIOHABITATS, INC. (ETAB), 1993]. SOILS SHOULD FALL WITHIN THE SM. ML SC CLASSIFICATIONS OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.5"/HR) IS REQUIRED (A CONSERVATIVE VALUE OF 0.5 FEET PER DAY IS USED FOR DESIGN). THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. BRUSH OR SEEDS FROM NOXIOUS WEEDS (E.G. JOHNSON GRASS MILGWORT NUTSEDGE AND CANADA THISTLE OR OTHER NOXIOUS WEEDS AS SPECIFIED LINDER COMAR 15.08.01.05.) SHOULD NOT BE PRESENT IN THE SOILS. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12" TO 18" LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVERSED BY DOZER TRACKS). THE SPECIFIC CHARACTERISTICS ARE

PLANTING SOIL CHARACTERISTICS

(ADAPTED FROM EQR. 1996; ETAB. 1993) PARAMETER PHRANGE ORGANIC MATTER MAGNESIUM PHOSPHORUS (PHOSPHATE - P205) POTASSIUM (POTASH - K20) SOLUBLE SALTS CLAY SAND

5.2 TO 7.00 1.5 TO 4.0% (BY WEIGHT) 35 LBS. PER ACRE, MINIMUN 75 LBS. PER ACRE, MINIMUM 85 LBS. PER ACRE, MINIMUN 500 PPM 10TO 25% 30 TO 55% 35 TO 60%

MULCH LAYER

THE MULCH LAYER PLAYS AN IMPORTANT ROLE IN THE PERFORMANCE OF THE BIORETENTION SYSTEM. THE MULCH LAYER HELPS MAINTAIN SOIL MOISTURE AND AVOIDS SURFACE SEALING WHICH REDUCES PERMEABILITY, MULCH HELPS PREVENT EROSION, AND PROVIDES A MICROENVIRONMENT SUITABLE FOR SOIL BIOTA AT THE MULCH/SOIL INTERFACE. IT ALSO SERVES AS A PRETREATMENT LAYER, TRAPPING THE FINER SEDIMENTS WHICH REMAIN SUSPENDED AFTER THE PRIMARY PRETREATMENT. THE MULCH LAYER SHOULD BE STANDARD LANDSCAPE STYLE, SINGLE OR DOUBLE SHREDDED HARDWOOD MULCH OR CHIPS THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12. MONTHS), LINIFORM IN COLOR, AND FREE OF OTHER MATERIALS, SUCH AS WEED SEEDS, SOIL, ROOTS. ETC. THE MULCH SHOULD BE APPLIED TO A MAXIMUM DEPTH OF THREE INCHES, GRASS CLIPPINGS SHOULD NOT BE USED AS A MULCH MATERIAL

PLANTING GUIDANCE

PLANT MATERIAL SELECTION SHOULD BE BASED ON THE GOAL OF SIMULATING A TERRESTRIAL FORESTED COMMUNITY OF NATIVE SPECIES. BIORETENTION SIMULATES AN UPLAND-SPECIES FCOSYSTEM. THE COMMUNITY SHOULD BE DOMINATED BY TREES, BUT HAVE A DISTINCT COMMUNIT OF UNDERSTORY TREES, SHRUBS AND HERBACEOUS MATERIALS, BY CREATING A DIVERSE DENSE PLANT COVER, A BIORETENTION FACILITY WILL BE ABLE TO TREAT STORMWATER RUNOFF AND WITHSTAND URBAN STRESSES FROM INSECTS, DISEASE, DROUGHT, TEMPERATURE, WIND, AND EXPOSURE. THE PROPER SELECTION AND INSTALLATION OF PLANT MATERIALS IS KEY TO A SUCCESSFUL SYSTEM. THERE ARE ESSENTIALLY THREE ZONES WITHIN A BIORETENTION FACILITY (FIGURE A.5). THE LOWEST ELEVATION SUPPORTS PLANT SPECIES ADAPTED TO STANDING AND FLUCTUATING WATER LEVELS. THE MIDDLE FLEVATION SUPPORTS PLANTS THAT LIKE DRIER SOIL CONDITIONS, BUT CAN STILL TOLERATE OCCASIONAL INUNDATION BY WATER, THE OUTER EDGE IS THI HIGHEST ELEVATION AND GENERALLY SUPPORTS PLANTS ADAPTED TO DRYER CONDITIONS. A SAMPLE OF APPROPRIATE PLANT MATERIALS FOR BIORETENTION FACILITIES ARE INCLUDED IN TABLE A.4. THE MATERIAL SHOULD BE FLEXIBLE, BUT SHOULD FOLLOW THE GENERAL PRINCIPALS DESCRIBED IN TABLE

A.5. THE OBJECTIVE IS TO HAVE A SYSTEM WHICH RESEMBLES A RANDOM AND NATURAL PLANT MAINTAINING OPTIMAL CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. FOR A MORE

BIORETENTION PLAN, CONSULT ETA&B, 1993 OR CLAYTOR AND SCHUELER, 1997.

"NOTE: TABLES AND FIGURES REFER TO THE 2000 MARYLAND STORMWATER DESIGN MANUAL

GENERAL (M-6) MICRO-BIORETENTION SPECIFICATIONS:

B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION. RAIN GARDENS, LANDSCAPE INFILTRATION &

MISS UTILITY

MATERIAL SPECIFICATIONS

811 IN MD or 1-800-257-7777 MENERAL PROPERTY.

THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

FILTERING MEDIA OR 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 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA: SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)

> 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 (40%). 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

ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974), IN GENERAL

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 EXCAVATED.

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 REDUCE! 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

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 MARSHTRACKS.

RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BI 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 ONL' 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 TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE

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.

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA: PIPE- SHOULD BE 4" TO 6" DIAMETER SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).

PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE "X" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 14" (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH

GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN. THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE. A RIGID. NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVER 1,0000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER. A 4" LAYER OF PEA GRAVEL (%" TO %" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN, THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24.

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS

B-4-2 STANDARDS AND SPECIFICATIONS FOR 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 GROWTH. CONDITIONS WHERE PRACTICE APPLIES WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

A. SOIL PREPARATION

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 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.

2. PERMANENT STABILIZATION

A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

I. 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.

IV.SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT. v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT

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.

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.

B. TOPSOILING

GRADATION.

1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR B. MULCHING VEGETATIVE GROWTH, SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL

2. 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

3. 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 VEGETATIVE GROWTH. 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. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING

a. 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 1 1/2

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

6. TOPSOIL APPLICATION 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.

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.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. 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.

2. 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 AUTHORIT 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 B SUBSTITUTED EXCEPT WHEN HYDROGEEDING) 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
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS. 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 0 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-3 STANDARDS AND SPECIFICATIONS FOR 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

A. SEEDING 1. SPECIFICATIONS

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 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.

MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MOISTURE MUST BE APPLIED WHEN THE GROUND THAWS

INOCULANTS: THE INOCULANTS 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 INOCULANTS AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKI THE INOCULANTS LESS EFFECTIVE.

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.

2. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST

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. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL

FASHION AS TO PROVIDE AT LEAST 14 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A

HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY NCLUDES 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; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200

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.

II. 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 MARYLAND SEED LAW AND NOT A. SEED MIXTURES MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS

b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

i. 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.

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 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 BE PHYTO-TOXIC. v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS:FIBEI 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.

2. 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:

 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.

WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER 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 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.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

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, PERMANENT STABILIZATION PRACTICES ARE REQUIRED. 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 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 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.

3. 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.

IS PLACED ON THE PLAN

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

 GENERAL USE a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTE MIXTURES(S), APPLICATIONS RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

CONDITIONS WHERE PRACTICE APPLIES

TO USE LONG-LIVED PERENNIAL GRASSES LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

ADDITIONAL PLANTING SPECIFICATION FOR EXCEPTIONAL SITE SUCH AS SHORELINES, STREAM BANKS OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE, SECTION 342-CRITICAL AREA PLANTING

FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 } 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. 2. TURFGRASS MIXTURES

AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVED A MEDIUM TO HIGH LEVEL OF MAINTENANCE SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSI ENTER SELECTED MIXTURES(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMAR

THE SUMMARY IS TO BE PLACED ON THE PLAN. i. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN 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

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/CERTIFED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 100 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE WEIGHT.

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

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 \$ TO 3 POUNDS PER 1000 SQUARE FEET. SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND

Publications, 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 OF TURF GRASS MIXTURES NESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES, 5b, 6a)

ENTRAL MD: MARCH 1 TO MAY 15. AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6b) OUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7a, 7b TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL A RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 3 INCHES IN DIAMETER THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOVING OF GRASSES WILL POSE NO

IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (\$\frac{1}{2}\$ TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOW SEASONS, OR ON ADVERSE SITES

SOD: TO PROVIDE QUICK COVER ON DISTURBED AREA (2:1 GRADE OR FLATTER). GENERAL SPECIFICATIONS a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO TH JOB FOREMAN AND INSPECTOR.

SOD MUST BE MACHINE CUT AT A UNIFORM THICKNESS OF \$\frac{1}{2}INCH, PLUS OR MINUS \$\frac{1}{2}INCH, AT THE TIME OF CUTTING MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN STANDARDIZED 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 SECTIONS. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY

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 FOR SOIL SCIENTIST PRIÖR TO ITS INSTALLATION. 2. 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 LING WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTI ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO

PREVENT VOIDS WHICH CAUSE AIR DRYING OF THE ROOTS. WHEREVER POSSIBLE, LAY SOD WITH A 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 TS BETWEEN SOD ROOTS AND THE HINDER YING SOIL SHREACE

WATER SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOLID SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND 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 AFTER THE FIRST WEEK, SOD WATERING IS REQUIRE AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT

DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN \$ OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS

CURRENT REGULATIONS.

PROPOSED SITE IMPROVEMENT: SINGLE FAMILY HOME

ADDRESS CHART

PERMIT INFORMATION CHART

PLAT # OR L/F GRID# ZONING TAX MAP NO. | ELECT DIST. | CENSUS TRACT

STREET ADDRESS

SECTION/AREA

11269 OLD FREDERICK RD

\*\*NOTE: THE TEMPORARY & PERMANENT SEEDING

SUMMARY TABLES ARE	LOCATED ON SHEET 2 OF 4.**		
		STORMWATER MAINTENANCE SCHEDULE MICRO-BIO-RETENTION	
INSPECTION ITEM MICRO- BIORETENTION	FREQUENCY OF INSPECTION SEASONALLY AND AFTER A MAJOR STORM	INSPECTION REQUIREMENTS	REMEDIAL ACTION
MULCH LAYER	MONTHLY	CHECK MULCH FOR ADEQUATE COVER, SEDIMENT ACCUMULATION, OR DISCOLORATION.	REPLACE AND REMOVE OLD MULCH AND EXCESS SEDIMENTS. PROVIDE ADEQUATE MULCH COVER ACCORDING TO APPROVED DESIGN.
VEGETATION	AS NEEDED		MOW GRASS AREAS WATER PLANTS DAILY FOR 2 WEEKS AFTER PROJECT IS COMPLETE
PLANT COMPOSITION AND HEALTH	YEARLY	COMPARE PLANT COMPOSITION WITH APPROVED PLANS. CHECK FOR INVASIVE SPECIES OR WEEDS. CHECK FOR DEAD OR DYING VEGETATION.	PRUNING AND REPLACEMENT OF DEAD VEGETATION AS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING IS REQUIRED DURING PROLONGED DRY PERIODS.
VEGETATIVE COVER AND EROSION	YEARLY	CHECK FOR EVIDENCE OF EROSION, RUNOFF, CHANNELIZING, OR BARE SPOTS	RE-SEED OR RE-PLANT IN ACCORDANCE WITH APPROVED LANDSCAPING PLANS. RE-GRADING MAY BE REQUIRED WHEN CONCENTRATED FLOW CAUSES RILLS OR GULLYING THROUGH THE FACILITY.
DEBRIS AND TRASH	MONTHLY	CHECK THAT THE FACILITY IS CLEAN OF TRASH AND DEBRIS, INLETS, OUTLETS, AND	TRASH AND DEBRIS MUST BE DISPOSED OF IN AN ACCEPTABLE MANNER ACCORDING TO

CONTRIBUTING AREAS AROUND THE FACILITY

LOT/PARCEL #:

PROJECT

MUST BE CHECKED.

SOD MAINTENANCE

APPLICANT/OWNER:

TIMBERLAKE/MARRIOTTSVILLE, LLC

888 BESTGATE ROAD SUITE 411 ANNAPOLIS, MD 21401 240-388-0873

15015/005 WATER CODE: SEWER CODE: 44-4380 NOTES AND DETAILS PATUXENT VIEW 11269 OLD FREDERICK ROAD MARRIOTTSVILLE, MD 21104 TAX MAP 10, PARCEL 65

PATUXENT VIEW - LOT 7

20-4398-D ADT Drawn: DP/WZ Checked: FEB. 11, 2014 Date: 13-0028 Project No.: AS SHOWN 3rd Election District Howard County, Maryland 3 OF 4

LOT/PARCEL NO.

6030.00

**\**Engineering Design Civil Engineering ◆ Land Surveying ◆ Landscape Architecture ◆ Land Planning

6990 Columbia Gateway Dr, Ste 150

Columbia, Maryland 21046

www.axiom-ed.com

Office: 443.276.6220 Fax: 443.276.6221 info@axiom-ed.com

Professional Engineer

CLEANOUT

n: 443-276-6220 Fax: 443-276-6221 W.Zawislak@axiom-ed.com PROFESSIONAL CERTIFICATION

WALTER G. ZAWISLAK, P.E 990 Columbia Gateway Drive, Suite 150, Columbia, Maryland 21046

HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 32033, EXPIRATION DATE 06/20/2015

### GENERAL PLANTING NOTES

1. ALL PLANT MATERIAL TO MEET A.A.N. STANDARDS.

2. LANDSCAPE CONTRACTOR TO FOLLOW LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE WASHINGTON METRO APPROVED BY LCAMW.

3. NO SUBSTITUTIONS TO BE MADE WITHOUT CONSENT OF LANDSCAPE ARCHITECT OR OWNER.

4. IN THE EVENT OF VARIATION BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND THE PLANS, THE PLANS SHALL CONTROL. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL PLANT QUANTITIES PRIOR TO THE COMMENCEMENT OF WORK. SOD QUANTITY TAKE-OFFS ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL DISCREPANCIES SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT FOR CLARIFICATION PRIOR TO BIDDING. THE CONTRACTOR SHALL FURNISH PLANT MATERIAL IN SIZES AS SPECIFIED IN THE PLANT LIST.

5. ALL BEDS TO BE TOPPED WITH THREE INCHES OF HARDWOOD MULCH.

6. LANDSCAPE CONTRACTOR TO VERIFY LOCATION OF UTILITIES WITH OWNERS BEFORE PLANTING.

7. LANDSCAPE ARCHITECT/OWNER SHALL SELECT, VERIFY AND/OR APPROVE ALL PLANT MATERIAL. AT OWNER'S DISCRETION, SPECIMEN AND OTHER PLANT MATERIAL WILL BE SELECTED.

8. LANDSCAPE CONTRACTOR SHALL COORDINATE PLANT BED FILLING OPERATIONS AND PLANT MATERIAL INSTALLATION WITH GENERAL CONTRACTOR AND UTILITIES CONTRACTOR. AT THE TIME OF FINAL INSPECTION WITH ACCEPTANCE, ALL ELECTRIC, WATER, DRAINAGE, AND FOUNTAIN UTILITIES, AS WELL AS ALL PLANT MATERIALS, SHALL REMAIN UNDAMAGED. LIKEWISE, LANDSCAPE CONTRACTOR AND UTILITIES CONTRACTOR SHALL COORDINATE EFFORTS TO ENSURE THAT SURFACE UTILITIES ARE AT THE PROPER ELEVATION RELATIVE TO FINAL GRADES.

9. CONTRACTOR SHALL NOTIFY MISS UTILITY 72 HOURS PRIOR TO CONSTRUCTION.

10. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

#### 11. TOPSOIL MIX

- A. PLANTING MIX SHALL BE PREPARED AT APPROVED ON-SITE STAGING AREA USING APPROVED ON-SITE EXISTING SOIL. MIX MINIMUM QUANTITIES OF 20 CUBIC YARDS OR SUFFICIENT MIX FOR ENTIRE JOB IF LESS THAN 20 CUBIC YARDS IS REQUIRED.
- B. THOROUGHLY MIXED IN THE FOLLOWING PROPORTIONS FOR TREE AND SHRUB PLANTING MIX: .5 CY EXISTING SOIL .2 CY SHARP SAND .3 CY WOOD RESIDUALS 4.5 LBS TREBLE SUPERPHOSPHATE 5 LBS DOLOMITE LIMESTONE (ELIMINATE FOR ACID LOVING PLANTS).
- C. FOR BED PLANTING, SHRUBS AND GROUNDCOVER SPACES 24 INCHES OR CLOSER, INCORPORATE THE FOLLOWING INGREDIENTS ER 20 SF AND INCORPORATE INTO TOP 8 INCHES OF EXISTING SOILS BY ROTOTILLING OR SIMILAR METHOD OF INCORPORATION .2 CY SHARP SAND .3 CY ORGANIC MATERIAL 4.5 LBS TREBLE SUPERPHOSPHATE 5 LBS DOLOMITE LIMESTONE (ELIMINATE FOR ACID LOVING PLANTS).
- 12. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL WITH FIVE (5) SHADE TREES, AND TWO (2) ORNAMENTAL TREES PROVIDED WITH A LANDSCAPE SURETY IN THE AMOUNT OF \$ 1,800.00.

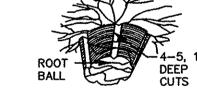
13. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.

14. SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INSHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.

NOTES: -FOR CONTAINER SHRUBS. COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOT BALL -FOR B&B SHRUBS, CUT AND REMOVE

METAL CAGE, TWINE, BURLAP CAN

NOT TO SCALE



LOT 6 MIRIAM DORSEY

12302/436

ZONED R-20

----

PERIMETER 2 - 78 L.F.

TYPE 'A' BUFFER

GWT JOINT VENTURE

PLAT NO. 15200

ZONED PSC

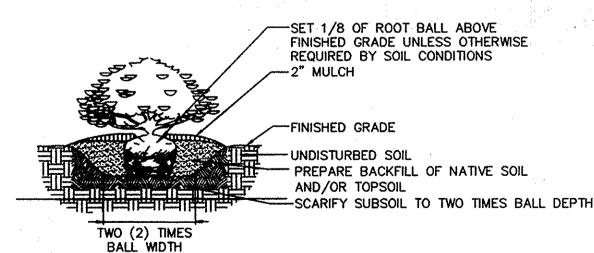
1'' = 30'

RED MAPLE

----/LOT7\_}

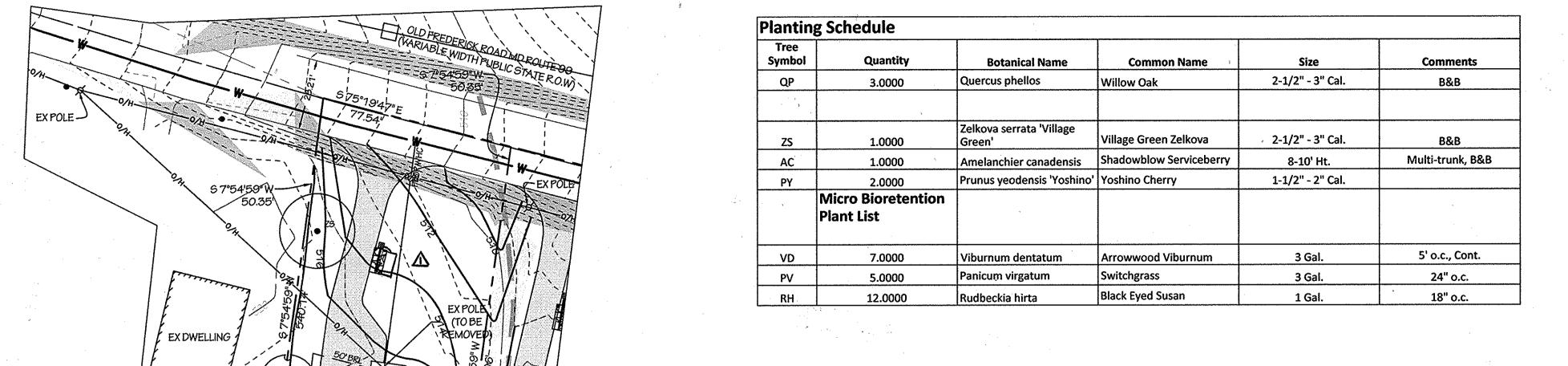
TIMBERLAKE/

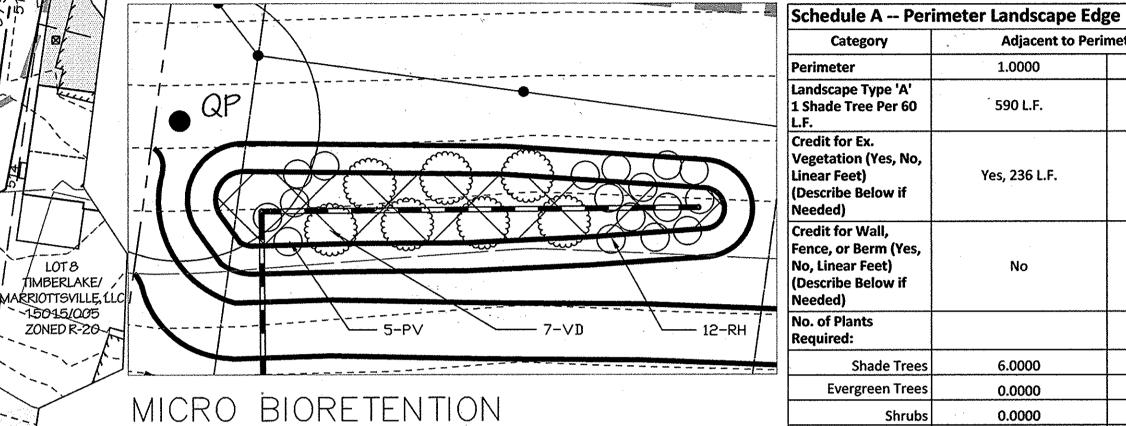
15015/005



SHRUB PLANTING DETAIL

APPROVED: DEPARTMENT OF PLANNING AND ZONING Church Edward 3.24.14 CHIEF, DEVELOPMENT ENGINEERING DIVISION 3-24-14





PLANTING DETAIL

(2) TIMES THE

NOT TO SCALE

DECIDIOUS TREE PLANTING DETAIL

6990 Columbia Gateway Dr, Ste 150

Columbia, Maryland 21046

www.axiom-ed.com

SCALE: 1" = 1'-10'

L.F.			٠ .
Credit for Ex. Vegetation (Yes, No, Linear Feet) (Describe Below if Needed)	Yes, 236 L.F.	YES, 78 L.F.	
Credit for Wall, Fence, or Berm (Yes, No, Linear Feet) (Describe Below if Needed)	No	No	
No. of Plants Required:			Plant Totals:
Shade Trees	6.0000	0	6 Shade Trees
Evergreen Trees	0.0000	0.0000	0 Evg. Trees
Shrubs	0.0000	0.0000	0 Shrubs
No. of Plants Provided:			
Shade Trees	5.0000	0	5 Shade Trees
Evergreen Trees	0.0000	0.0000	0
Other Trees	2.0000	0.0000	2 Other Trees
Shrubs	0.0000	0.0000	0 Shrubs

**Adjacent to Perimeter Properties** 

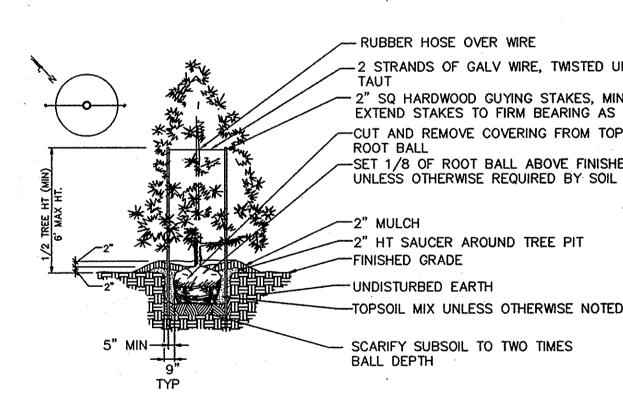
1.0000

590 L.F.

2.0000

78 L.F.

Category



- RUBBER HOSE OVER WIRE -2 STRANDS OF GALV WIRE, TWISTED UNTIL - 2" SQ HARDWOOD GUYING STAKES, MIN 8' LONG, EXTEND STAKES TO FIRM BEARING AS NEEDED -CUT AND REMOVE COVERING FROM TOP 1/3 OF -SET 1/8 OF ROOT BALL ABOVE FINISHED GRADE UNLESS OTHERWISE REQUIRED BY SOIL CONDITIONS

-2" MULCH -2" HT SAUCER AROUND TREE PIT -FINISHED GRADE -- UNDISTURBED EARTH

SCARIFY SUBSOIL TO TWO TIMES BALL DEPTH

# APPLICANT/OWNER:

HOWARD COUNTY

BENCHMARK 10HA

HOWARD COUNTY

BENCHMARK 10H5

ADC COORDINATES

VICINITY MAP

1"=2000"

LEGEND

EX FIRE HYDRANT

EXUTILITY POLE

EXSTREAM

EX SOIL LINE

PROP CONTOUR ...

EX RIGHT OF WAY

WETLAND BUFFER

PROP PAVING

EX SLOPES > 25%

EX SLOPES 15% TO 25%

PROPOSED SHADE TREE

EX LOT LINE

EX. POWER POLE & OVERHEAD LINES

MICRO-BIORETENTION SURFACE

EX STREAM BUFFER

EX OVERHEAD ELECTRIC

LANDFILL

E 827,500 N 539,500

## TIMBERLAKE/MARRIOTTSVILLE, LLC

ADDRESS CHART

888 BESTGATE ROAD SUITE 411 ANNAPOLIS, MD 21401 240-388-0873

## EVERGREEN TREE PLANTING DETAIL NOT TO SCALE

revision By relocated drywell

29/14 LDD AND CHANGE INLET

DEVELOPER'S/BUILDER'S CERTIFICATE I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY

THAT UPONTREES COMPLETION, A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

NOTE: STAKING OF DECIDUOUS TREES IS NOT REQUIRED UNLESS TREE WILL

-RUBBER HOSE OVER #12 GAUGE STEEL

WIRE: 3 STAKES, MIN 8' LONG, IF REQUIRED. DO NOT STAKE INTO ROOT

FOR BARE ROOT STOCK-REMOVE
BURLAP. FOR BALLED & BURLAPED

STOCK- REMOVE TWINE AND LEAVE

BURLAP IN PLACE, METAL CAGES

- PREPARE BACKFILL OF NATIVE SOIL

LOSSEN SUBSOIL TO 6" MIN DEPTH

NOT REMAIN PLUMB

THIN 1 OF INITIAL BRANCHING RETAINING NATURAL FORM

SET 1/8 OF ROOTBALL ABOVE FINISHED GRADE UNLESS OTHERWISE

REQ'D BY SOIL CONDITIONS

2" SAUCER AROUND TREE PIT

MUST BE REMOVED

- UNDISTURBED EARTH

- 2" MULCH

OR TOPSOIL

iom **\**Engineering Design Civil Engineering Land Surveying Landscape Architecture Land Planning

Office: 443.276.6220 ROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED AND/OR APPROVED BY Fax: 443.276.6221

info@axiom-ed.com

eShanda N. Gibbs, RLA Registered Landscape Architect 990 Columbia Gateway Drive, Suite 150, Columbia, Maryland 21046 n; 443-276-6220 Fax; 443-276-6221 S.Gibbs@axiom-ed.com

ME, AND THAT I AM DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE

STATE OF MARYLAND. LICENSE NO. 3444, EXPIRATION DATE 12/03/2015

LOT/PARCEL#: STREET ADDRESS 11269 OLD FREDERICK RD PROPOSED SITE IMPROVEMENT: SINGLE FAMILY HOME PERMIT INFORMATION CHART PROJECT SECTION/AREA LOT/PARCEL NO. PATUXENT VIEW - LOT 7 7/65 PLAT # OR L/F GRID# ZONING TAX MAP NO. ELECT DIST. CENSUS TRACT R-20 6030.00 15015/005 22 WATER CODE: SEWER CODE: 44-4380 20-4398-D LANDSCAPE PLAN & DETAILS Drawn:

WZ Checked: **PATUXENT VIEW** LOT 7 2.11.14 Date: 11269 OLD FREDERICK ROAD MARRIOTTSVILLE, MD 21104 13-0028 Project No.: TAX MAP 10. PARCEL 65 Scale: 1" = 30' Sheet: 4 OF 4 3rd Election District Howard County, Maryland

SDP-14-035