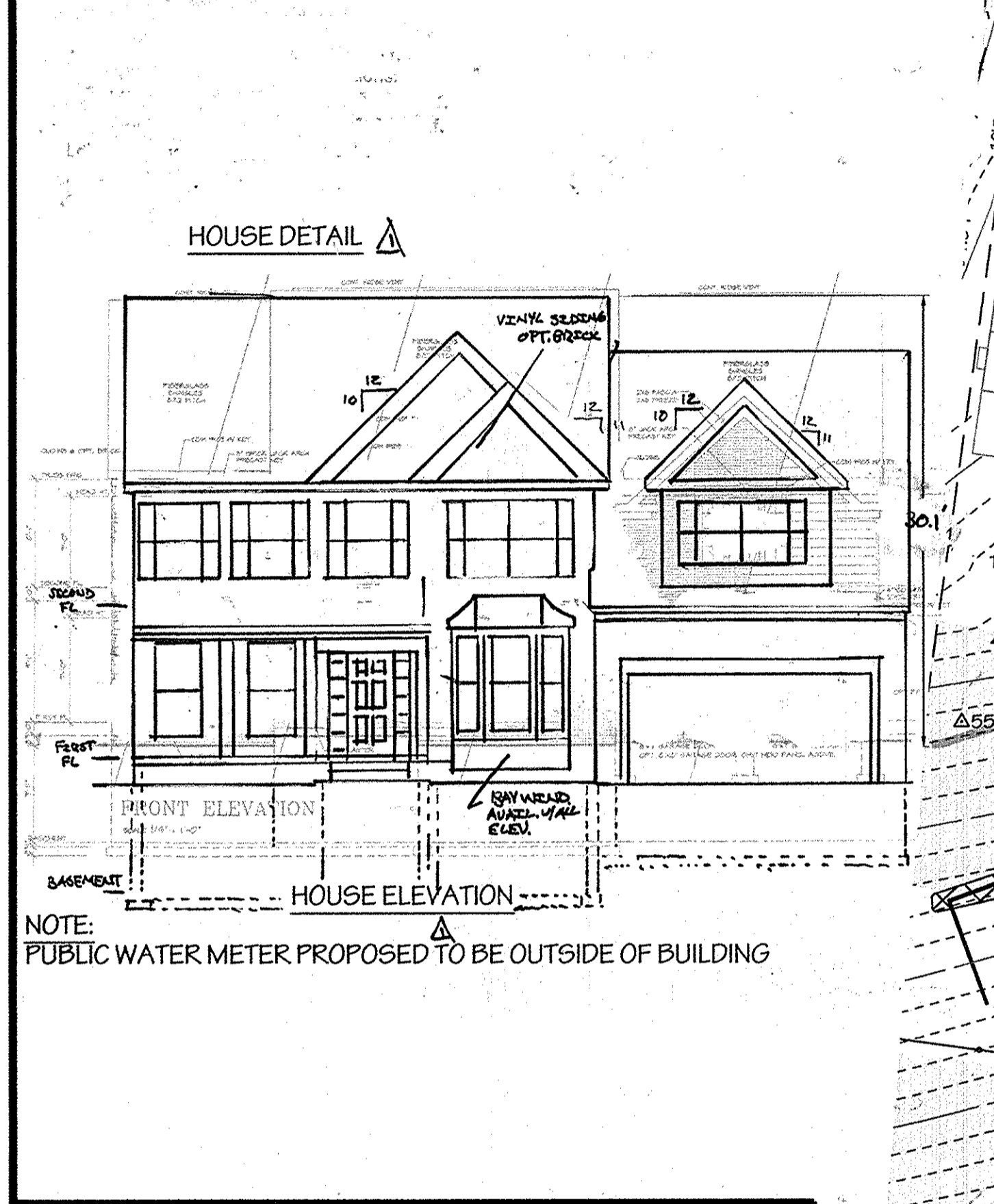


SOILS INFORMATION TABLE (HOWARD SOIL SURVEY MAP #5)

MAP SYMBOL	MAP UNIT NAME & SERIES	HYDROLOGIC SOIL GROUP
BtB	BENEVOLE SILT LOAM 3% TO 8% SLOPES	B
GgB	GLENELG LOAM 3% TO 8% SLOPES	B
GgC	GLENELG LOAM 8% TO 15% SLOPES	B
GmA	GLENVILLE SILT LOAM 0% TO 3% SLOPES	C
Hs	HATBORO CODORUS SILT LOAM 0% TO 3% SLOPES	D
MaD	MANOR LOAM 15% TO 25% SLOPES	B

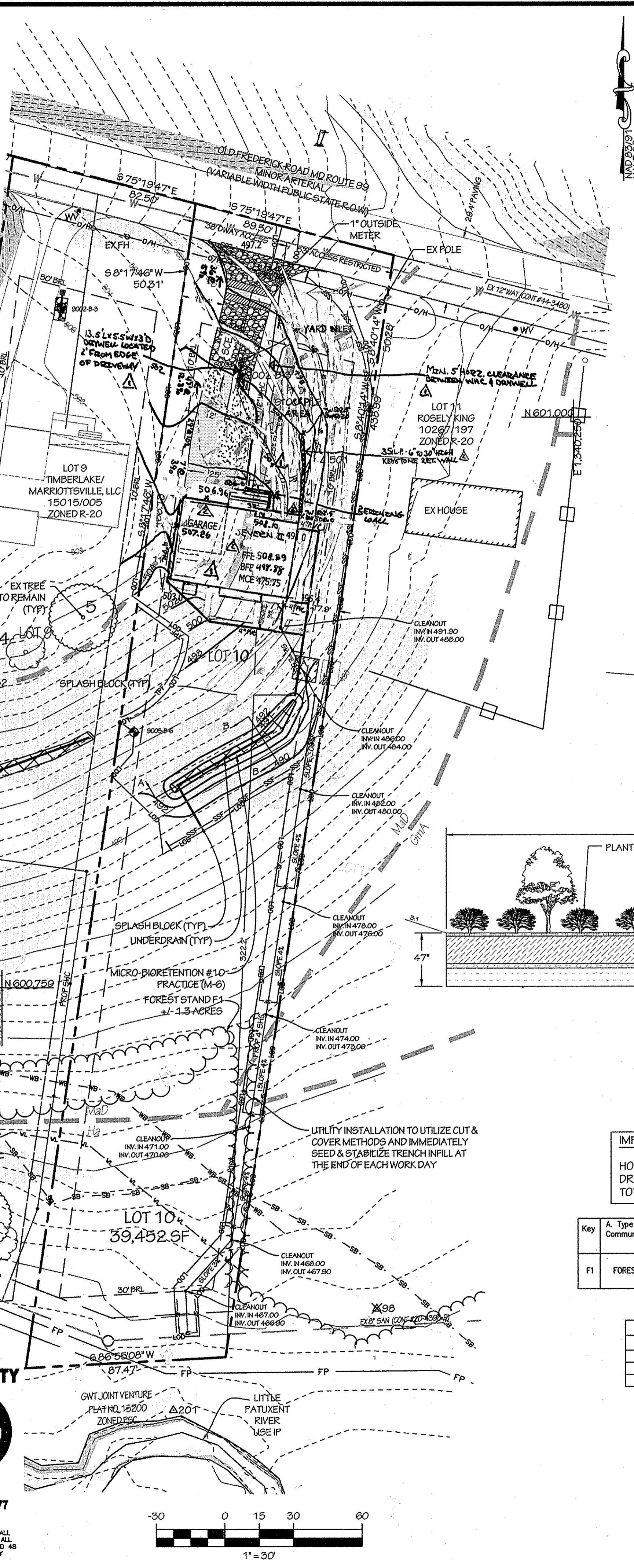


**ENGINEER'S CERTIFICATE**  
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PROFESSIONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 Signature: *Walter G. Zawislak* DATE: 2/19/14  
 SIGNATURE OF ENGINEER (PRINT NAME BELOW)

**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: *John M. Myer* DATE: 2/24/14  
 SIGNATURE OF DEVELOPER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 Signature: *John R. Blanton* DATE: 2/27/14  
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 Signature: *Paul E. Egan* DATE: 3/27/14  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 Signature: *Pat Schindler* DATE: 3-24-14  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 Signature: *Paul R. Angle* DATE: 3/27/14  
 DIRECTOR



**GENERAL NOTES**

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
3. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH 2 FOOT CONTOUR INTERVALS PREPARED BY AXIOM ENGINEERING DESIGN DATED JUNE 14, 2013.
4. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NO. 10H5 AND 10HA WERE USED FOR THIS PROJECT.
5. DRY WELLS (M-5) AND MICRO BIORETENTION (M-6) ARE TO BE OWNED AND MAINTAINED BY THE PROPERTY OWNER. REFERENCE ENVIRONMENTAL CONCEPT PLAN APPROVAL #13-078.
6. EXISTING UTILITIES ARE BASED ON THE ALPHA RIDGE WATER SUPPLY AS-BUILT CAPITAL PROJECT NUMBER W-9203, CONTRACT NUMBER 44-3480 DATED MARCH 1996 AND MARYLAND ROUTE 99 SEWER MAIN EXTENSION, CONTRACT NUMBER 20-4398-D DATED APRIL 2008.
7. ANY DAMAGE TO COUNTY RIGHT OF WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
8. SHC ELEVATIONS SHOWN ARE LOCATED AT THE PROPERTY LINE.
9. FOR DRIVEWAY ENTRANCE DETAILS REFER TO THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD DETAIL R-6.05.
10. THE SUBJECT PROPERTY IS ZONED R-20 PER THE 2013 HOWARD COUNTY COMPREHENSIVE ZONING PLAN APPROVED OCTOBER 6, 2013.
11. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING OR NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST OR EASMENT AREAS AND 100 YEAR FLOODPLAIN, EXCEPT AS DESCRIBED IN GENERAL NOTE #16 AS ESSENTIAL DISTURBANCE.
12. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
13. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING WILL BE POSTED AS PART OF THE GRADING PLAN APPROVED OCTOBER 6, 2013.
14. THIS PROJECT IS CONDITIONALLY EXEMPT FROM THE REQUIREMENTS OF SECTION 16 NO BURIAL GROUNDS, CEMETERY SITES, OR HISTORIC STRUCTURES EXIST ON SITE. THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION PER SECTION 16.1202 (B)(2)(A).
15. THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION PER SECTION 16.1202 (B)(2)(a), 12-06-15.
16. THE SEWER TRENCHING AND PIPE INSTALLATION WORK BEING DONE WITHIN THE STREAM BUFFER WETLANDS AND STEEP SLOPES IS NECESSARY DISTURBANCE UNDER SECTION 16.116(C)(1)(i).
17. THE 65DBA NOISE LINE ESTABLISHED BY HOWARD COUNTY HAS BEEN WAIVED BY DED 12/16/13. LOTS 7-10 WERE SUBDIVIDED BY A DEED PRIOR TO 1960 AND BY SURVEY PLAT IS 1956 PER LIBER 198 / FOLIO 337 AND ARE THEREBY GRANDFATHERED AS AN EXISTING LOT.
18. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLING TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING:

**MINIMUM REQUIREMENTS:**  
 A. WIDTH - 12 FEET (14 SERVING MORE THAN 1 RESIDENCE)  
 B. SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH 1-1/2" MIN. TAR AND CHIP COATING  
 C. GEOMETRY - MAX 14% GRADE, MAX 10% GRADE CHANGE, AND A 45 FOOT TURNING RADIUS.  
 D. STRUCTURES (BRIDGE/CULVERTS) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 - LOADING).  
 E. DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YR FLOOD WITH NO MORE THAN ONE FOOT DEPTH OVER DRIVEWAY SURFACE.  
 F. STRUCTURE CLEARANCE - MINIMUM 12 FEET.  
 G. MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE.

**SHEET INDEX**

SITE PLAN/SEDIMENT AND EROSION PLAN	SHEET 1
NOTES AND DETAILS	SHEET 2
NOTES AND DETAILS	SHEET 3
LANDSCAPE PLAN AND DETAILS	SHEET 4

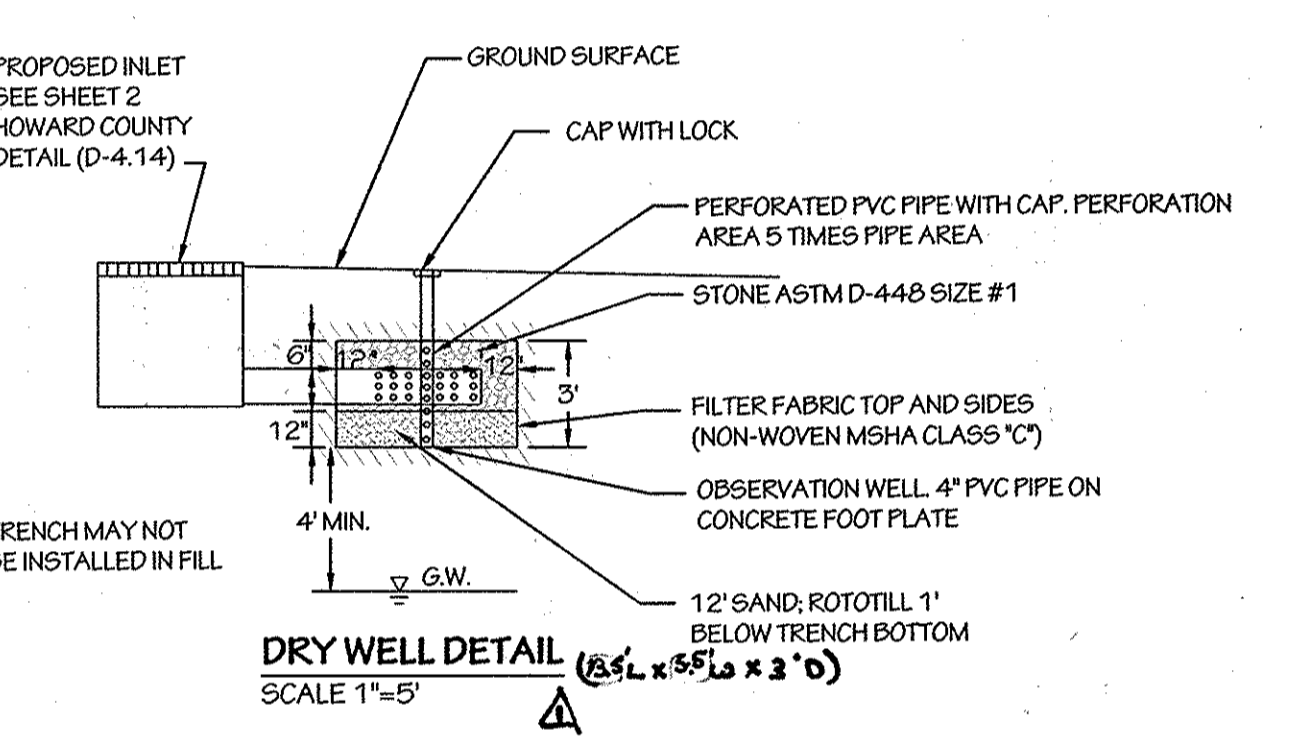
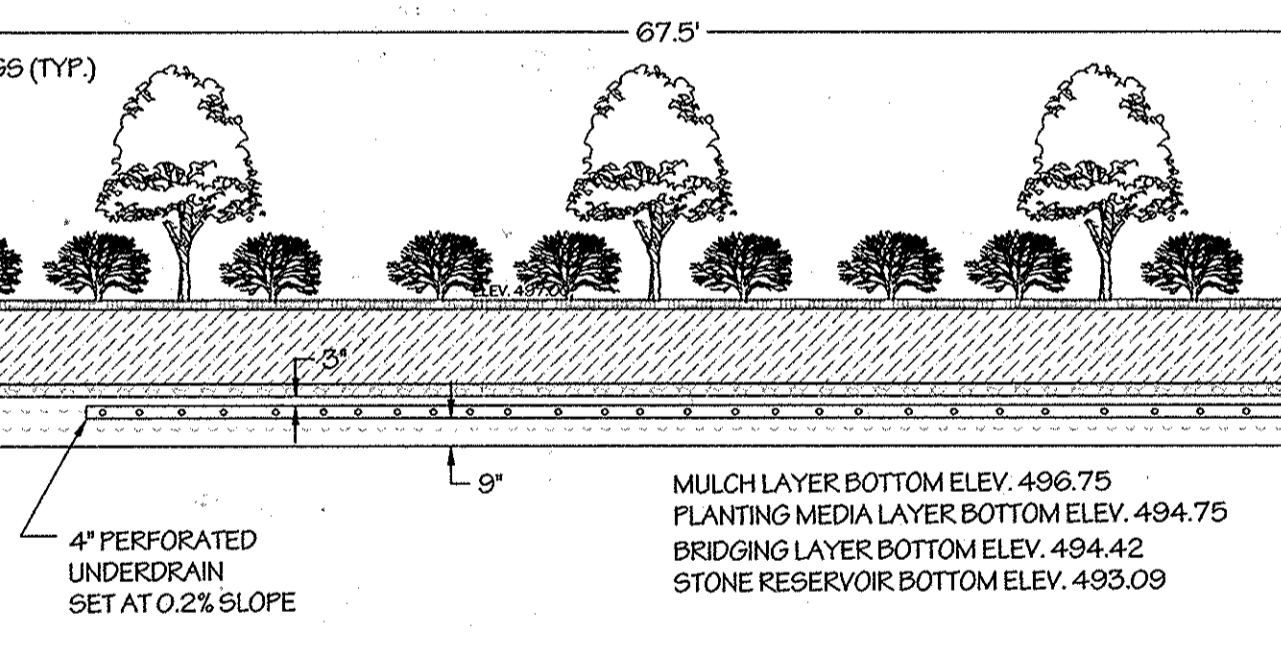
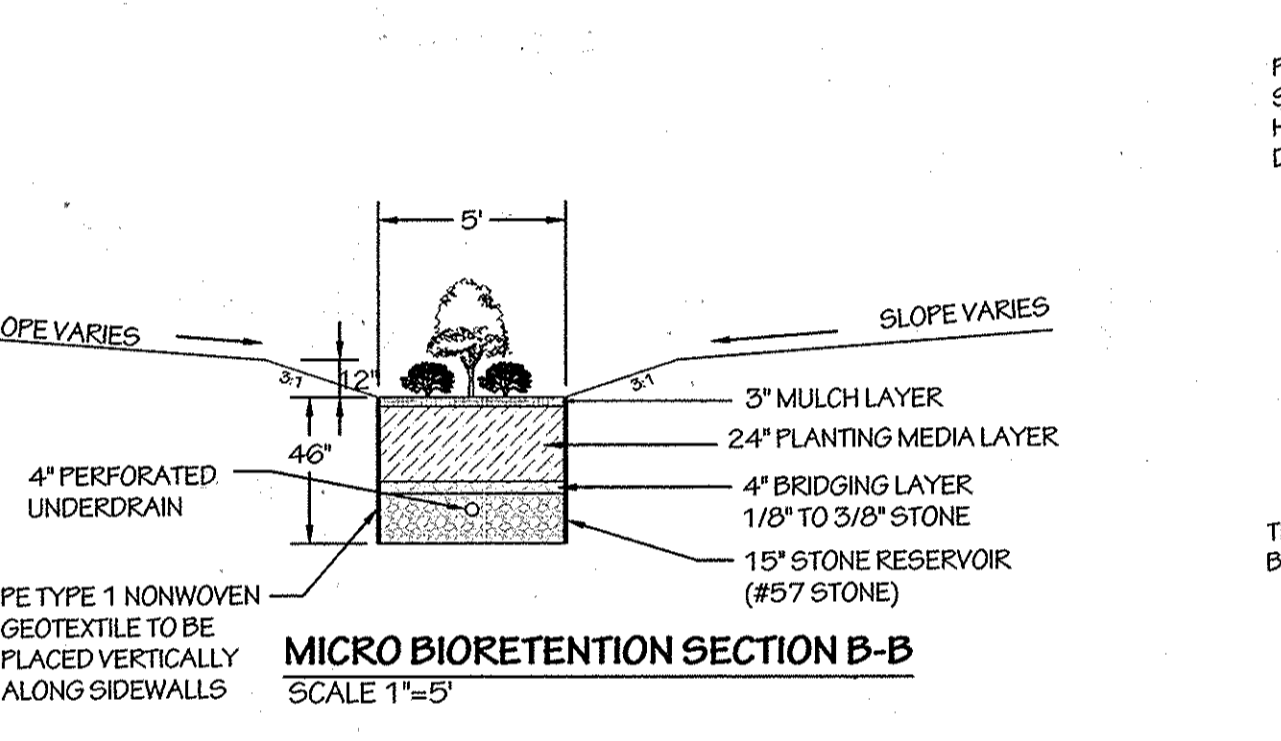
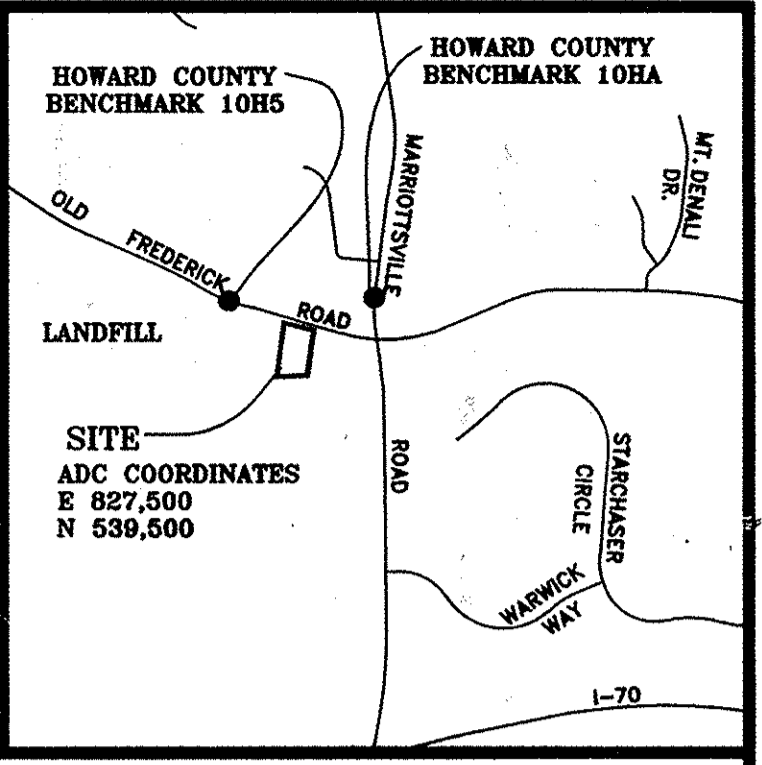
TEST PIT	EX GROUND	DEPTH	BOTTOM	GROUNDWATER
19003-B-4	501.90	9'	492.90	NONE ENCOUNTERED
19005-B-6	496.07	9'	487.07	NONE ENCOUNTERED

**HOWARD COUNTY CONTROL POINTS**

NO.	NORTHING	EASTING	ELEVATION
10H5	183246.69376	408322.37246	159.302
10HA	183248.14815	408710.88035	147.494

**SITE ANALYSIS DATA CHART**

SITE AREA:	0.906 AC +/-
LIMIT OF DISTURBANCE AREA:	39,452 SF +/-
	22,487 SF +/-
PRESENT ZONING:	R-20
PROPOSED USE:	RESIDENTIAL
TOTAL NUMBER OF UNITS:	1

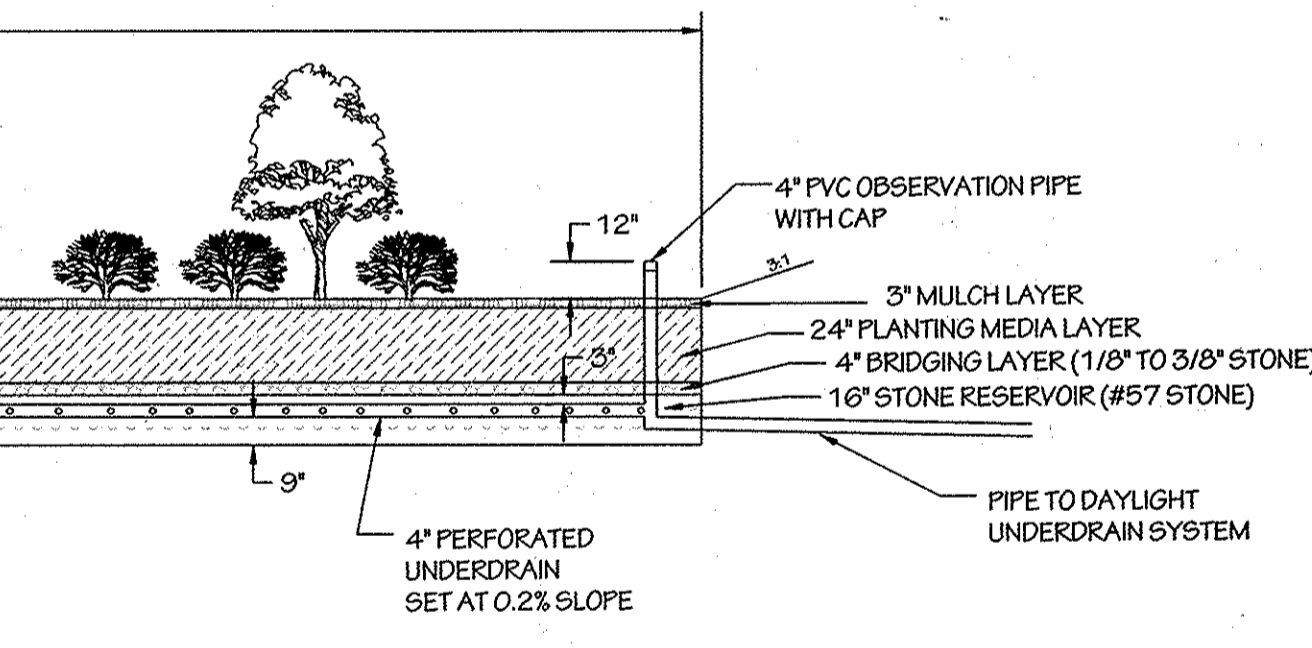


**IMPERVIOUS AREA CALCULATIONS**

HOUSE IMPERVIOUS AREA	1950 SF
DRIVEWAY IMPERVIOUS AREA	2047 SF
TOTAL	3997 SF

**ESD SUMMARY TABLE**

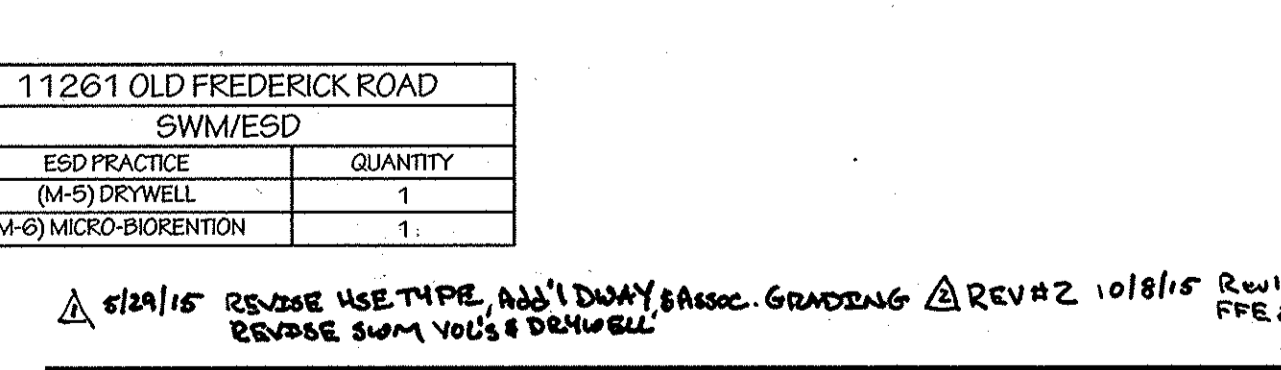
Key	A. Type of Community	B. Area (acres)	C. Soil Information	D. Existing Vegetation	E. Stand Characteristics	F. Forest Area in Sensitive Environments	G. Habitat Value	H. Specimen Trees					
F1	FOREST	1.3	MaD, Hs	MIXED UPLAND HARDWOODS, MAINLY TULIP POPLAR	30	BLACK LOCUST	18"-29"	40	GOOD	0.65	1	2	AND LOCUST



**11261 OLD FREDERICK ROAD SWM/ESD**

ESD PRACTICE (M-5) DRY WELL	QUANTITY
1	1

**APPLICANT/OWNER:**  
 TIMBERLAKE/MARRIOTTVILLE, LLC  
 888 BESTGATE ROAD SUITE 411 ANNAPOLIS, MD 21401 240-388-0873



**Axiom Engineering Design**  
 Civil Engineering • Land Surveying • Landscape Architecture • Land Planning  
 6990 Columbia Gateway Dr. Ste 150 Columbia, Maryland 21046  
 Office: 443.276.8220 Fax: 443.276.8221 info@axiom-ed.com

**WALTER G. ZAWISLAK, P.E.**  
 Professional Engineer  
 8990 Columbia Gateway Drive, Suite 150, Columbia, Maryland 21046  
 Ph: 443-276-6220 Fax: 443-276-6221 W.Zawislak@axiom-ed.com  
 PROFESSIONAL CERTIFICATION  
 I 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. 32053, EXPIRATION DATE 06/20/2015

**LEGEND**

- EX FIRE HYDRANT
- EX UTILITY POLE
- EX OVERHEAD ELECTRIC
- EX WATER
- EX SEWER
- EX STREAM
- EX STREAM BUFFER
- EX FLOORPLAIN
- EX TREE LINE
- EX SOIL LINE
- EX CONTOUR
- PROP CONTOUR
- EX RIGHT OF WAY
- EX LOT LINE
- LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
- DRAINAGE AREA DIVIDE (E50)
- PROP PAVING
- PROP STABILIZED CONSTRUCTION ENTRANCE
- PROP MICRO-BIORETENTION
- EX SLOPES > 25%
- EX SLOPES 15% TO 25%
- WETLAND
- WETLAND BUFFER

**ADDRESS CHART**

LOT/PARCEL #:	10	STREET ADDRESS	11261 OLD FREDERICK RD
PROPOSED SITE IMPROVEMENT: SINGLE FAMILY HOME			
PERMIT INFORMATION CHART			
PROJECT	PATUXENT VIEW - LOT 10	SECTION/AREA	N/A
LOT/PARCEL NO.	10/85		
PLAT # OR L/F	GRID#	ZONING	TAX MAP NO.
15015/005	22	R20	10
ELECT. DIST.	THIRD	CENSUS TRACT	8030.00
WATER CODE:	44-4380	SEWER CODE:	20-4398-D

**SITE PLAN / SEDIMENT AND EROSION PLAN**

Checked:	ADT
Drawn:	DP/MZ
Date:	FEB. 11, 2014
Project No.:	130028
Scale:	AS SHOWN
Sheet:	1 OF 4

**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 (3-13-1955).
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 THERE TO.
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 GRASSES.
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	39452 SF (0.906 AC)
AREA TO BE ROOFED OR PAVED	22487 SF (0.516 AC)
AREA TO BE VEG. STABILIZED	3891 SF (0.089 AC)
TOTAL CUT	18596 SF (0.427 AC)
TOTAL FILL	1080 CY +/-
OFFSITE WASTE/BORROW LOCATION	389 CY +/-
7. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR LAYOUT 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 BEEN 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 RESTRICTIVE.

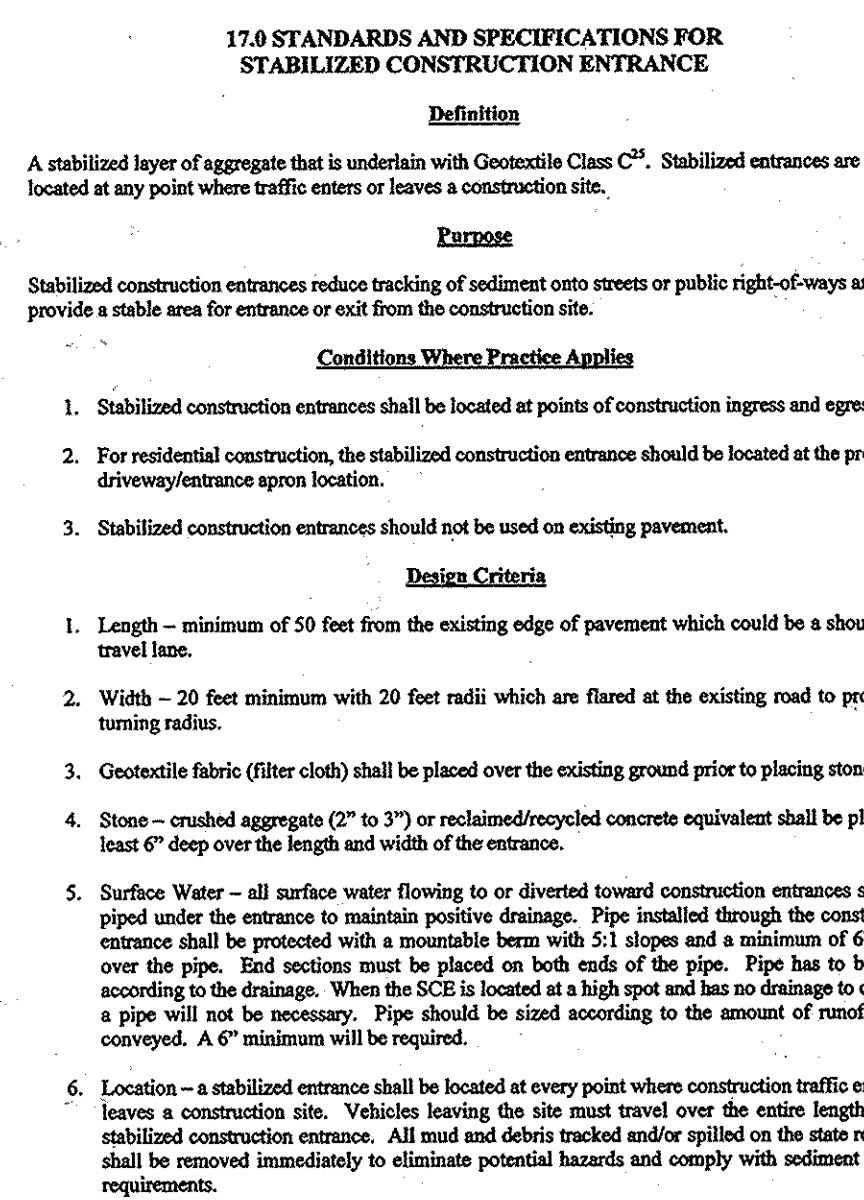
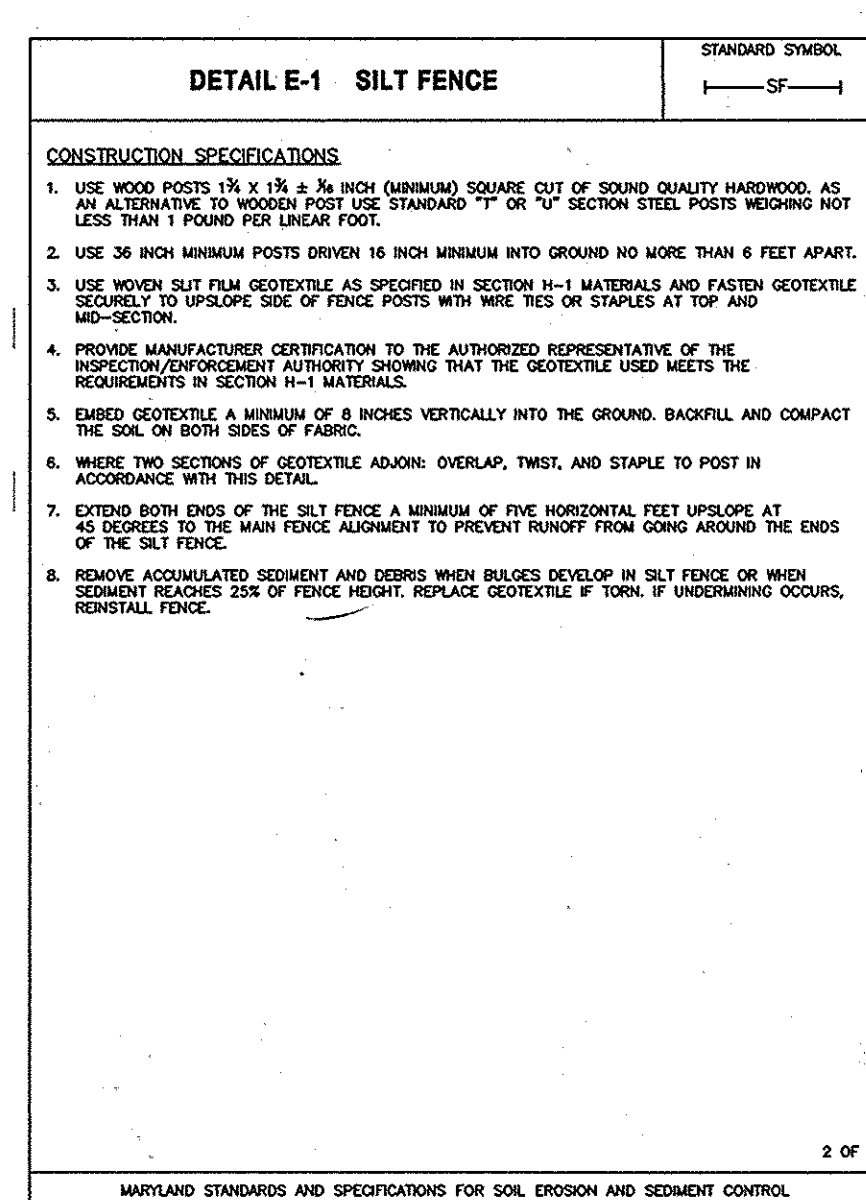
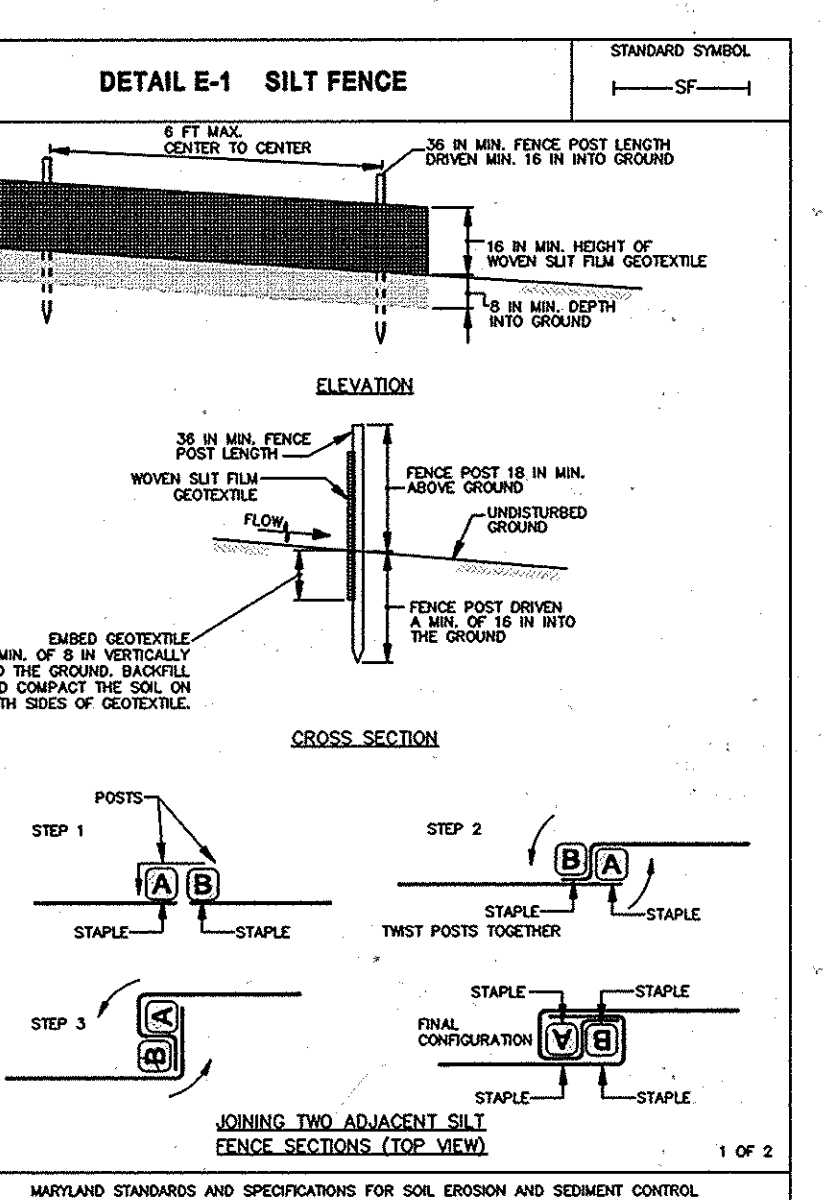
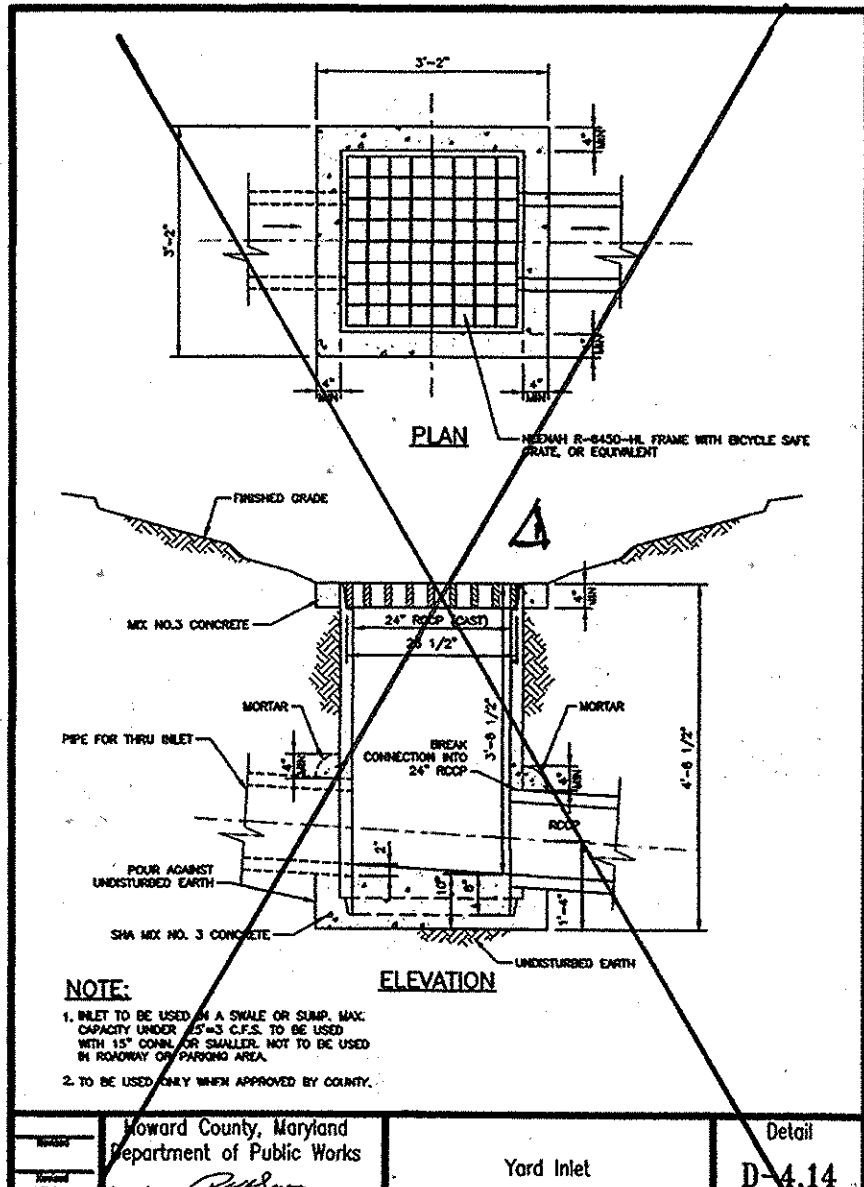
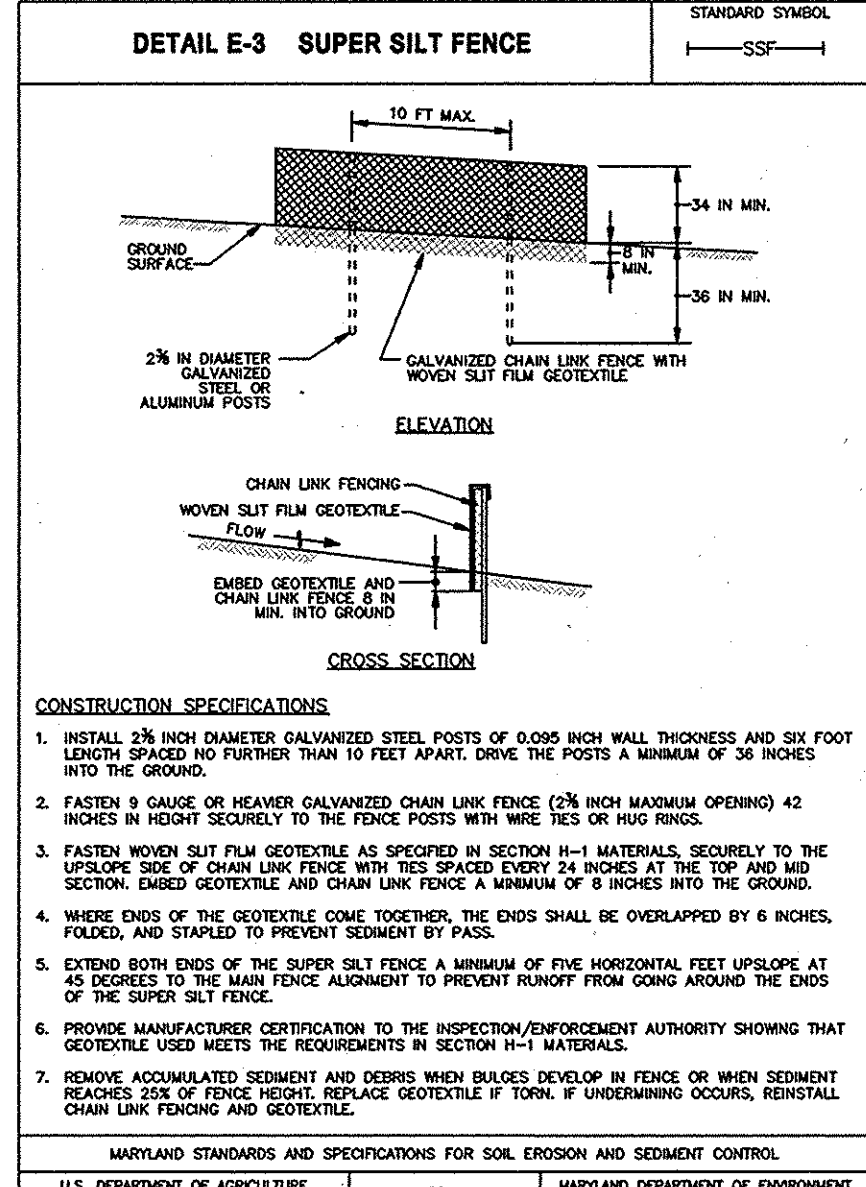
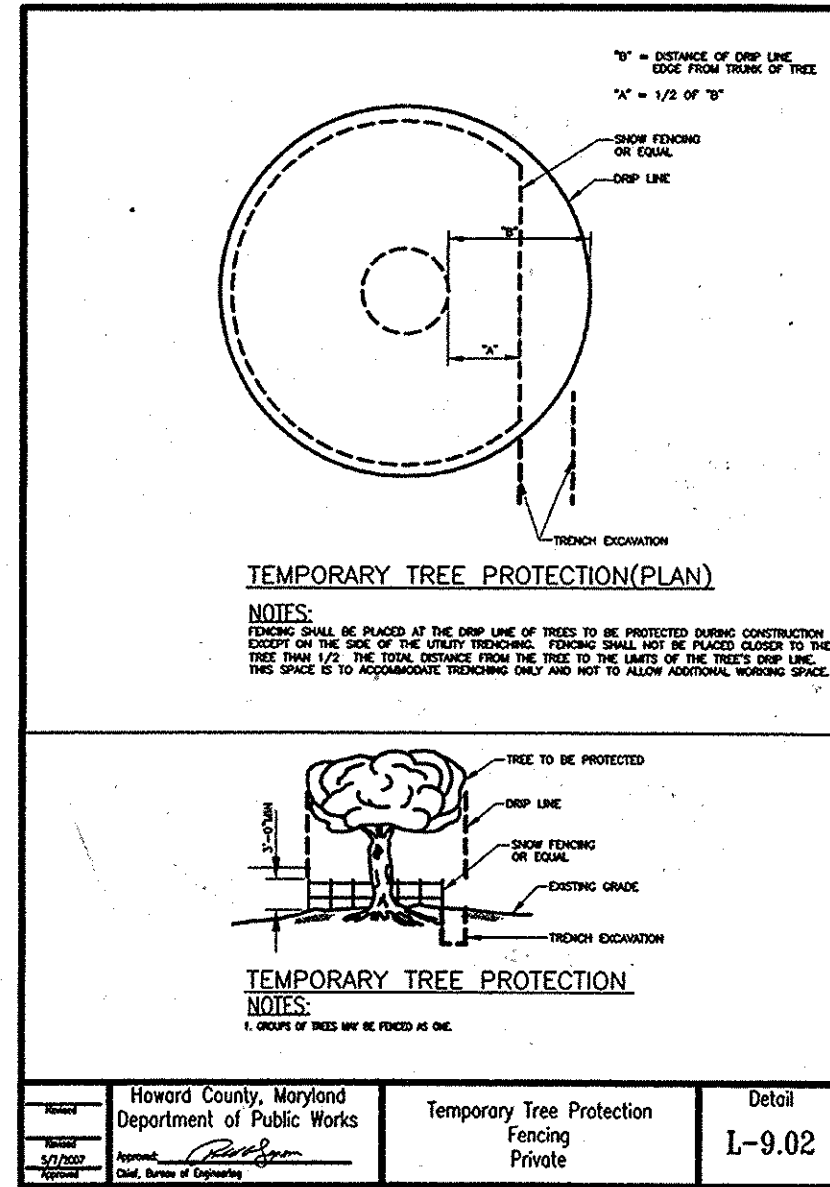
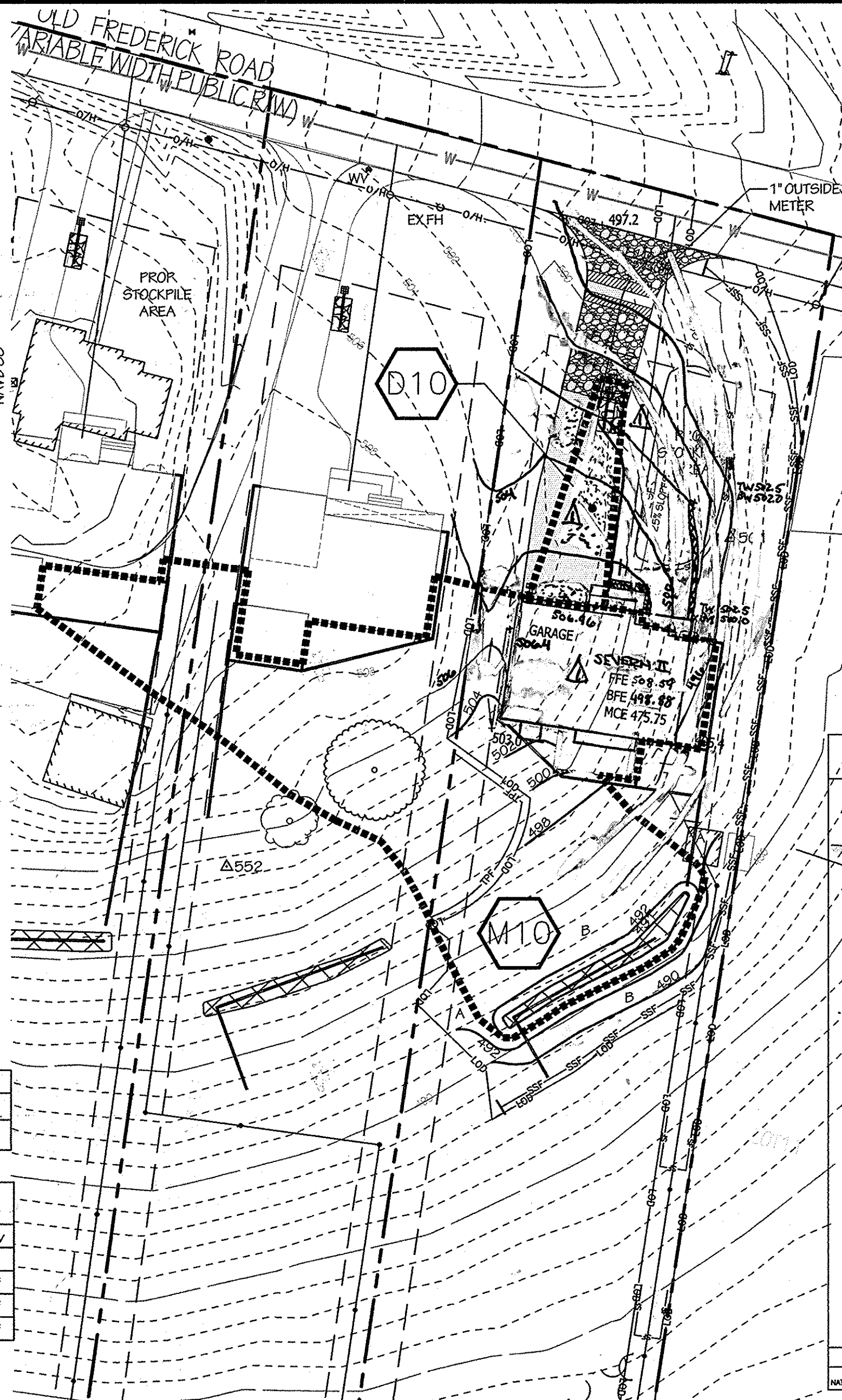
**PROPOSED DRAINAGE AREA SUMMARY**

DRAINAGE AREA	ACREAGE	RCN	% IMPERVIOUS	SOIL TYPE
D10	0.02 AC	89	76.78%	100% TYPE B SOILS
M10	0.31 AC	67	16.95%	100% TYPE B SOILS

**Summary Table Lot 10**

Practice	DA		IMP		Pervious		Woods		ESDv Req		ESDv Prov	
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	CF	CF	CF	CF
Micro-Bioretention Area (M10)	0.31 ac	0.05 ac	0.11 ac	0 ac	2.28 cf	366 cf						
Drywell (D10)	0.02 ac	0.01 ac	0.01 ac	0 ac	49 cf	60 cf						
<b>Total</b>	<b>0.33 ac</b>	<b>0.06 ac</b>	<b>0.12 ac</b>	<b>0.00 ac</b>	<b>51.3 cf</b>	<b>426.0 cf</b>						

\* ESDv is met therefore CFv, Q10 and Q100 is not required



**1.6.8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**

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

**Purpose:**  
To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

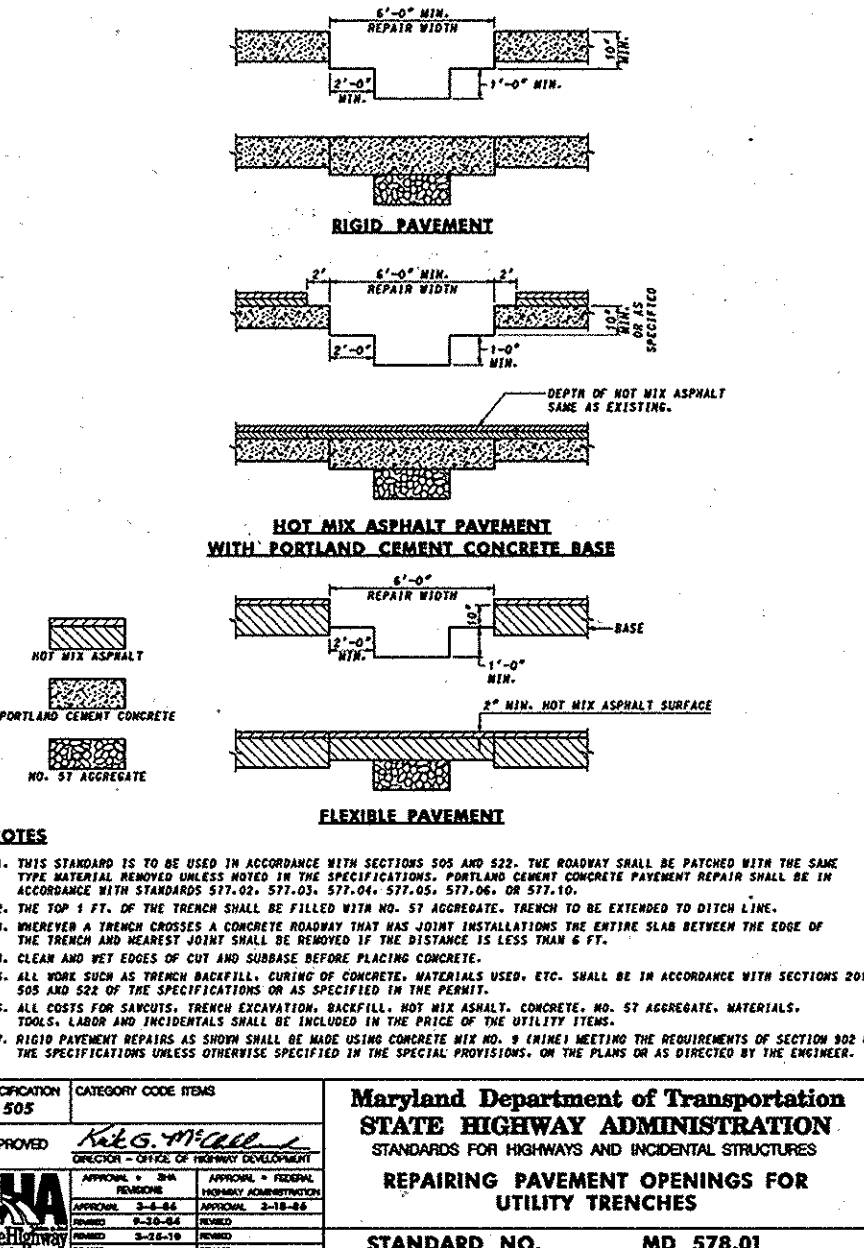
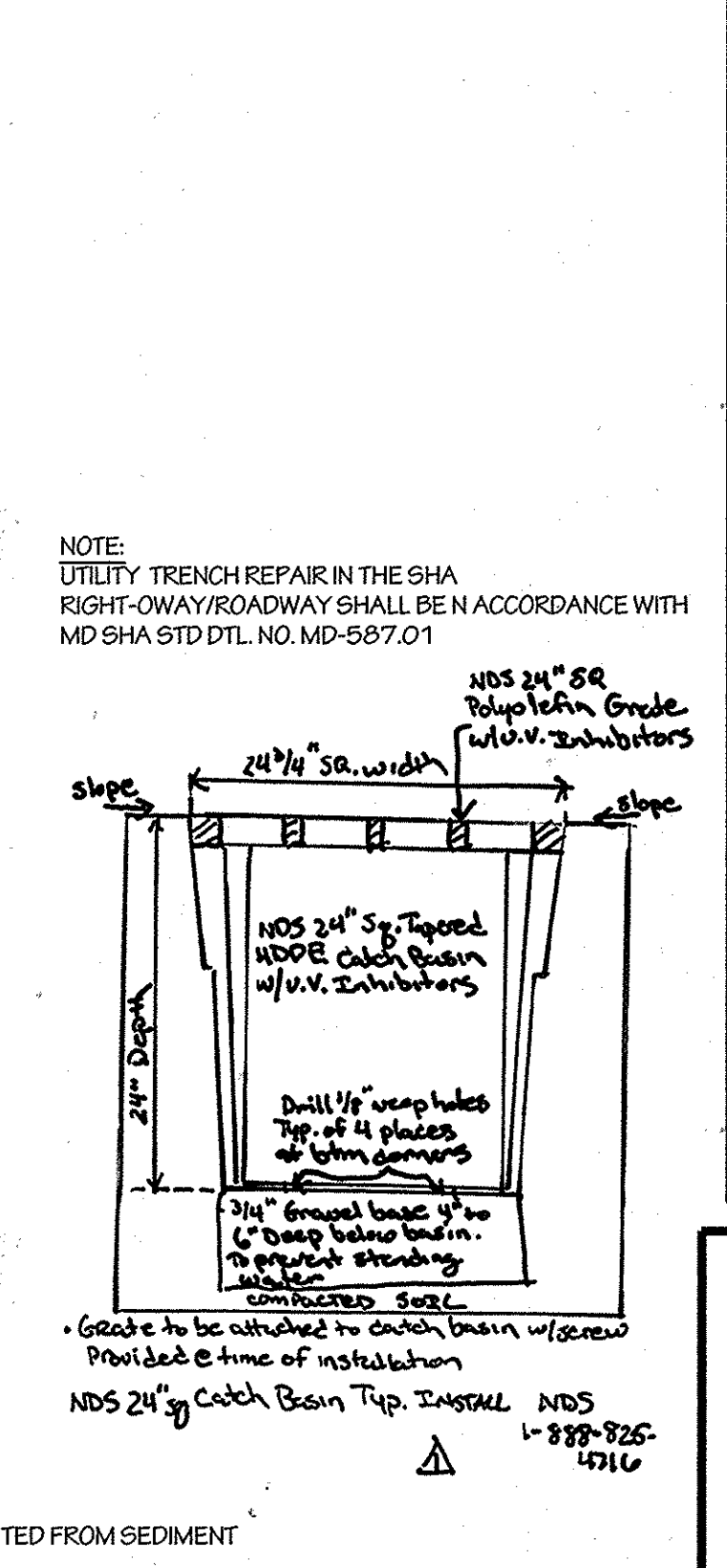
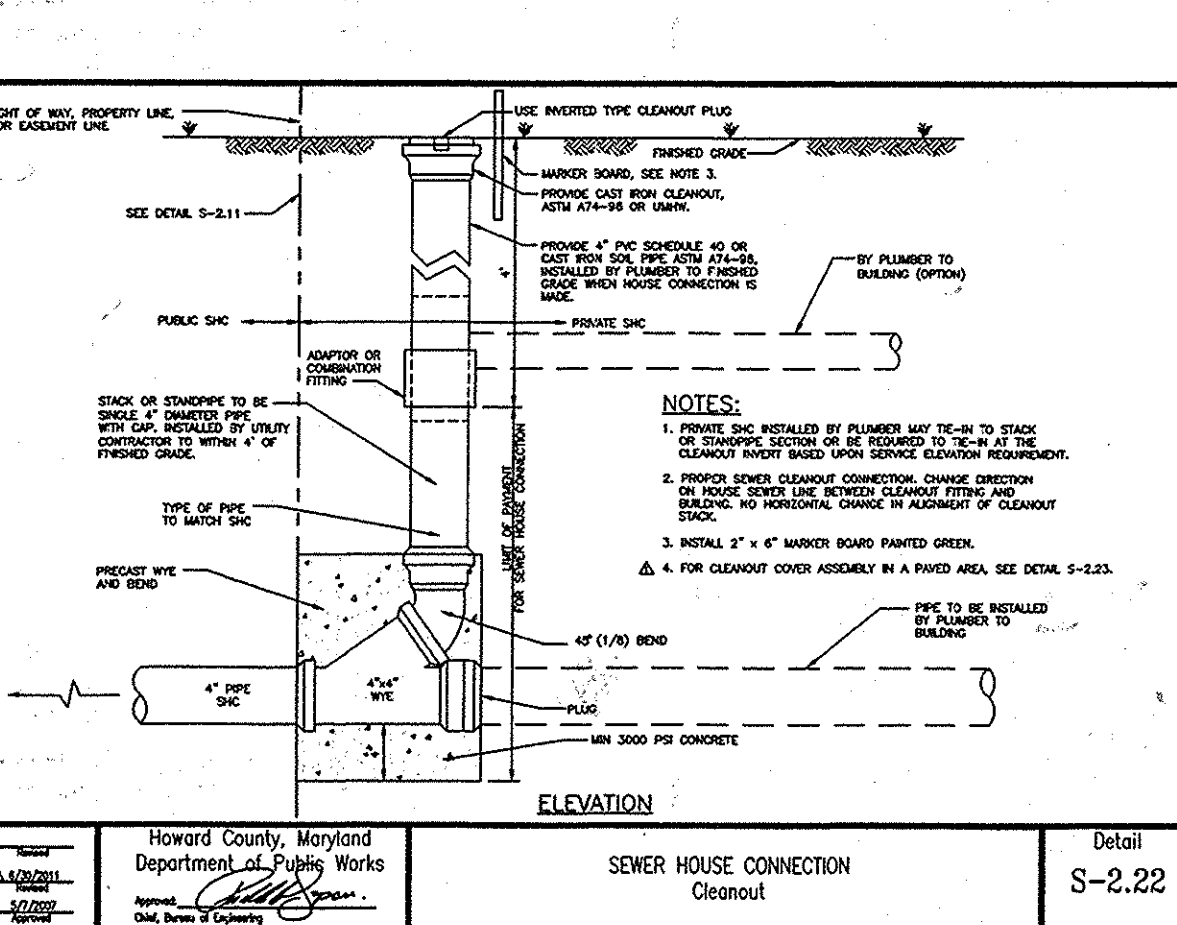
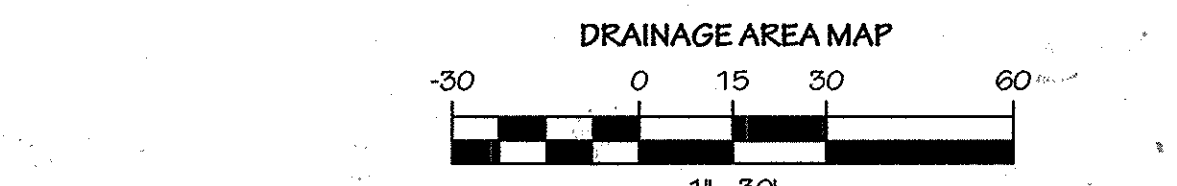
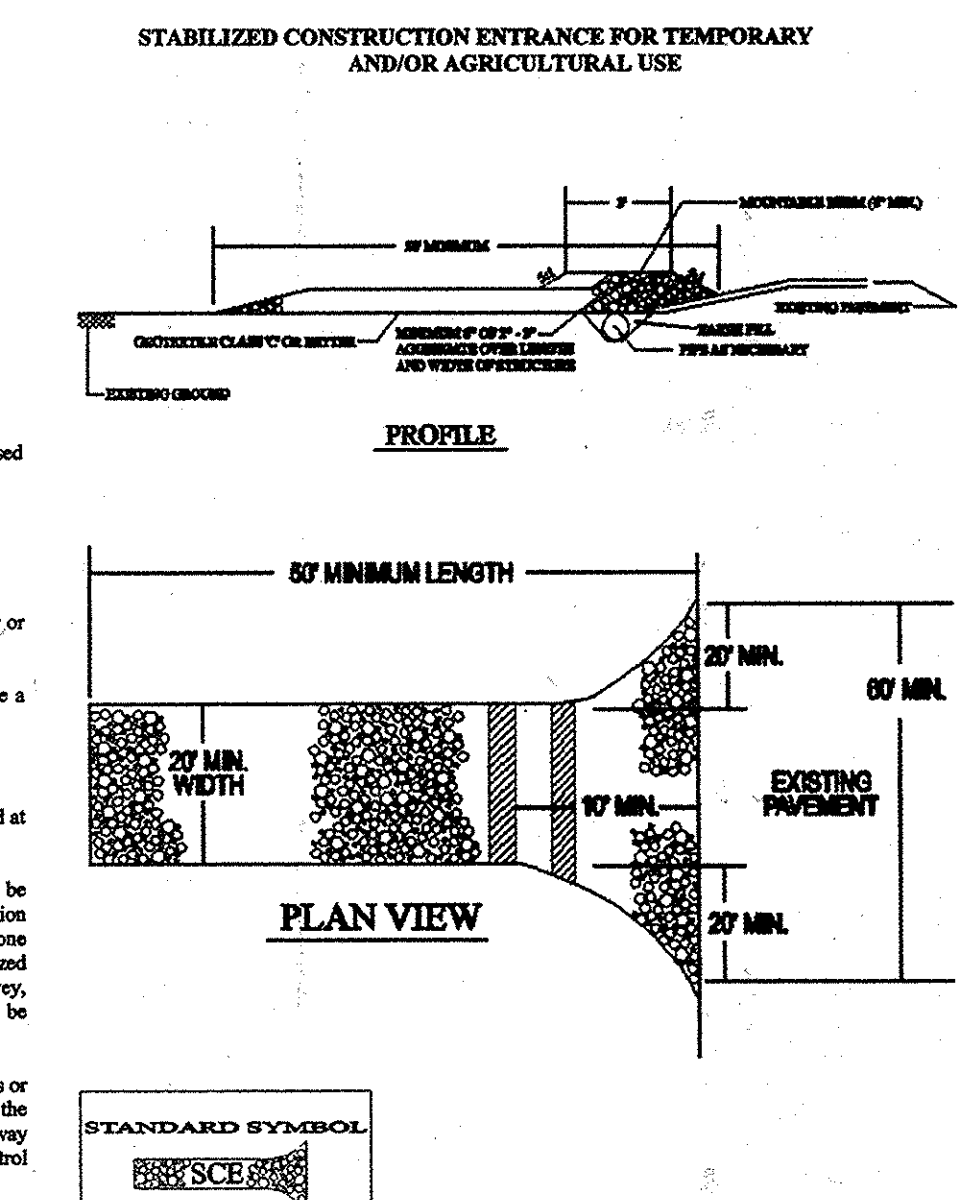
**Conditions Where Practice Applies:**  
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

**Criteria:**

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. Ditching must be provided in accordance with Section B-3.1 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access to the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion trench. 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.
7. Stockpiles must be stabilized in accordance with the 37 day stabilization requirement as well as Standard B-4.1 Incremental Stabilization and Standard B-4-6 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 contaminated material must be covered with impervious sheeting.

**Minimums:**

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4.1 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, bunding must be provided in accordance with Section B-3.1 Land Grading.



**HARDNESS ZONE: 6a**

NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)	LIME RATE
1	ANNUAL RYEGRASS	40	MARCH 1 TO MAY 15 AUGUST 1 TO OCTOBER 15	0.5"	4.56 lb/af (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
2	PEARL MILLET	20	MAY 16 TO JULY 31	0.5"		

**PERMANENT SEEDING SUMMARY**

NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)	LIME RATE
1	SWITCH GRASS	10	MARCH 1 TO MAY 15 MAY 16 TO JUNE 15	0.25 to 0.5"	N	P <sub>2</sub> O <sub>5</sub>
2	CREeping RED FESCUE	15	MARCH 1 TO MAY 15 MAY 16 TO JUNE 15	0.25 to 0.5"		
3	BUSH CLOVER	2	MARCH 1 TO MAY 15 MAY 16 TO JUNE 15	0.25 to 0.5"		
4	FALL FESCUE	40	MARCH 1 TO MAY 15 AUGUST 1 TO OCTOBER 15	0.25 to 0.5"	4.56 lb/af (1 lb/1000 sf)	90 lb/af (2 lb/1000 sf)
5	PERENNIAL RYE GRASS	25	MARCH 1 TO MAY 15 AUGUST 1 TO OCTOBER 15	0.25 to 0.5"		
6	WHITE CLOVER	5	MARCH 1 TO MAY 15 AUGUST 1 TO OCTOBER 15	0.25 to 0.5"		

**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.

*Walter G. Zawislak* 2/19/14  
DATE

*Walter G. Zawislak*  
SIGNATURE OF ENGINEER (PRINT NAME BELOW)

**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.

*John M. May* 2/24/14  
DATE

*John M. May*  
SIGNATURE OF DEVELOPER

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

*John M. May* 2/24/14  
DATE

HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*John M. May* 3-24-14  
DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

*John M. May* 3-24-14  
DATE

CHIEF, DIVISION OF LAND DEVELOPMENT

*John M. May* 3-24-14  
DATE

DIRECTOR

- SEQUENCE OF CONSTRUCTION**
1. OBTAIN GRADING PERMIT (7 DAYS)
  2. INSTALL TREE PROTECTIVE FENCING AS SHOWN ON PLAN (2 DAYS)
  3. INSTALL SEDIMENT AND EROSION CONTROL DEVICES AS SHOWN ON PLAN (7 DAYS)
  4. CLEAR AND GRUB WITHIN LIMITS OF DISTURBANCE (5 DAYS)
  5. APPLY TEMPORARY SEEDING (2 DAYS)
  6. CONSTRUCT BUILDING, UTILITIES, AND PAVEMENT (60 DAYS)
  7. INSTALL PERMANENT STORMWATER MEASURES OTHER THAN THE MICRO-BIORETENTION (14 DAYS)
  8. FINE GRADE SITE (5 DAYS)
  9. APPLY PERMANENT SEEDING (2 DAYS)
  10. INSTALL MICRO-BIORETENTION (3 DAYS)
  11. INSTALL PROPOSED LANDSCAPING (7 DAYS)
  12. REMOVE EROSION AND SEDIMENT CONTROL DEVICES AS AREAS ARE STABILIZED AND PERMISSION IS GRANTED FROM SEDIMENT CONTROL INSPECTOR. (7 DAYS)

**Axiom Engineering Design**

Civil Engineering • Land Surveying • Landscape Architecture • Land Planning

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**APPLICANT/OWNER:**

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SUITE 411  
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240-388-0873

**NOTES AND DETAILS**

**PATUXENT VIEW LOT 10**

11261 OLD FREDERICK ROAD  
MARRIOTTVILLE, MD 21104  
TAX MAP 10, PARCEL 65

3rd Election District, Howard County, Maryland

Drawn: ADT  
Checked: DP/WZ  
Date: FEB. 11, 2014  
Project No.: 13-0028  
Scale: AS SHOWN  
Sheet: 2 OF 4

- (M-5) DRY WET OPERATIONAL MAINTENANCE
1. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.
  2. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE DRAINAGE.
  3. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
  4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
  5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
  6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.
- (M-6) MICRO-BIORETENTION OPERATION AND MAINTENANCE
1. 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 REPLACE DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME 1, TABLE A.4.1 AND 2.
  2. THE OWNER SHALL REFORM 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.
  3. 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.
  4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

GENERAL (M-6) MICRO-BIORETENTION CONSTRUCTION NOTES:

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 DISTURBED AREAS SHALL BE DIVERTED AWAY AND NO SEDIMENT CONTROL PRACTICES SHALL BE USED NEAR THE PROPOSED LOCATION.

SOIL COMPACTION: EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE BARE BOTTOM AND SIDEWALL COMPACTION ONLY. LIGHTWEIGHT, LOW-GROUND-CONTACT EQUIPMENT SHOULD BE USED WITH MICRO-BIORETENTION PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.

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: BIOTRETENTION SOLLS MAY BE MIXED ON-SITE BEFORE PLACEMENT. HOWEVER, SOLLS 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 (1/2 INCHES PER LIFT MAXIMUM). PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRAYING OR SPRINKLING WATER ON EACH LIFT UNTIL SATURATED MAY QUICKEN SETTING TIMES.

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

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

- DURING EXCAVATION TO SURGRADE AND PLACE AND BACKFILL OF BIOTRETENTION SYSTEMS.
- DURING PLACEMENT OF FILTER MEDIA.
- DURING CONSTRUCTION OF APPURTENANCE CONVEYANCE.
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE CRITERIA:

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 NEGLIGENCE, ADVERSE ALTERATION, AND REMOVAL.

THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS 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 (E.G., PARKING LOTS, ROADS), MULCH SHOULD BE REPLACED ANNUALLY. OTHERWISE, THE TOP TWO TO THREE INCHES SHOULD BE REPLACED AS NEEDED.

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 SHM INSPECTIONS DEPARTMENT PRIOR TO ANY REPAIRS.

B. TOPSOILING

1. 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.
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 THE TOPSOIL TO BE SALVAGED FOR A GIVEN PRACTICE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION OF THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
3. TOPSOILING IS LIMITED TO AREAS HAVING 2" 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.
  - 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 DESIGN.
5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
  - i. 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 TEXTURES. SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF ORGANICS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
  - ii. 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.
  - iii. 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.

6. TOPSOIL APPLICATION

- a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
- b. 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 LAYER 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 MOIST CONDITION WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDING PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATES AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 1/4 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 AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAW 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 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 90 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 MEANS OF A SPECIALIZED MEANS.
5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4.0 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE APPLICATION OF TOPSOIL.

B. MULCHING

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 SEEDING LAW AND NOT MUSTY, MOLTY, CANKY, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS BEING ESTABLISHED.
  - b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBERED PHYSICAL STATE.
  - c. WCFM IS TO BE DRY GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORM SPREAD SLURRY.
  - d. WCFM INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
  - e. 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 SEEDS IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
  - f. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATIONS THAT WILL BE DETRIMENTAL TO PLANT GROWTH.
  - g. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH WATER OF 4.0 TO 5.5, ASH CONTENT OF 1.0 PERCENT, MINIMUM RANGE HOLDING CAPACITY OF 50 PERCENT MAXIMUM.
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 ALL SEEDED AREAS AT THE RATE OF 1 TON PER ACRE THAT THE SOIL SURFACE IS TO BE EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
  - c. WOOD CELLULOSE FIBER 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.
3. ANCHORING
  - a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR EROSION. 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 FACTOR OR AN 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. THE EQUIPMENT CAN OPERATE AT A RATE OF 1/2 ACRE PER HOUR. THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
    - ii. WOOD CELLULOSE FIBER MULCH IS 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 COLUR (ACRO-TACK), DCA-70, PORESEET, TERRA TAIL TERRA TACK, AR, OR OTHER APPROVED EQUIVAL 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 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 500 TO 3,000 FEET LONG.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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

CRITERIA

- a. SEED MIXTURES
  - i. GENERAL USE
    - A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOLLOWS 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 INFORMATION 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, SECTION 342-CRITICAL AREA PLANTING.
    - C. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
    - D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING AND ADDITIONAL TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
  - ii. TURFGRASS MIXTURES
    - A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES.
    - 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.
    - C. KENTUCKY BLUEGRASS: FULL SUN MIXTURE. FURNISH 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 TONS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 1.0 TO 3.5 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
    - D. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE. FURNISH IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHERE 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 1.0 TO 3.5 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
    - E. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE. FURNISH IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS TO 5 PERCENT SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
    - F. KENTUCKY BLUEGRASS/RYE FESCUE: SHADE MIXTURE. FURNISH IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 50 TO 60 PERCENT AND CERTIFIED RYE FESCUE AND GO TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.
  - iii. NOTES:
    - A. SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATIONS, AGRONOMY NEWS #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.
    - B. IDEAL TIMES OF SEEDING OF TURF GRASS MIXTURES: WESTERN MD: MARCH 15 TO JUNE 1, MARCH 1 TO OCTOBER 1 (HARDNESS ZONES: 5b, 6a) EASTERN MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: 9b) SOUTHERN MD: MARCH 15 TO JUNE 1, MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 7a, 7b) TALL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH A CONDITION THAT FUTURE MOVING OF GRASSES WILL POSE NO DIFFICULTY.
    - C. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1 TO 1 1/2 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDING AREAS MADE LATE IN THE PLANTING SEASON. AN ANNUAL DRY OR DROUGHT YEAR OR DROUGHT ADVERSE SITE.
    - D. SOO: TO PROVIDE QUICK COVER ON DISTURBED AREA (2-1 GRADE OR FLATTER).
- b. CLASS OF TURFGRASS SOO MUST BE MARYLAND STATE CERTIFIED. SOO LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
- c. SOO MUST BE MACHINE CUT AT A MINIMUM THICKNESS OF 3/4 INCH PLUS OR MINUS 1/4 INCH. AT THE TIME OF CUTTING, MEASUREMENT FOR THICKNESS MUST INCLUDE TOP GROWTH AND THAT CORN BRANS PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
- d. STANDARDIZED SIZE SECTIONS OF SOO MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SHAPE AND SIZE AND BE USED WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 1/2 PERCENT OF THE SECTIONS.
- e. SOO MUST NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT IT SURVIVAL.
- f. SOO MUST BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOO NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST FOR SOO SCIENTIST PRIOR TO ITS INSTALLATION.

2. SOO INSTALLATION

- a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOO.
- b. IN THE FIRST ROW, LAY SOO IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO, AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGERED JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOO IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUILT UP IN ORDER TO PREVENT VOIDS WHICH CAUSE AIR DRYING OF THE ROOTS.
- c. WHEREVER POSSIBLE, LAY SOO WITH A LONG EDGE PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. ROLL AND TAMPEGE OR OTHERWISE SECURE THE SOO TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOIL CONTACT EXISTS BETWEEN SOO ROOTS AND THE UNDERLYING SOIL SURFACE.
- d. WATER SOO IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE SOO PAD AND A SOLID SURFACE BELOW THE SOO ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PACE OF SOO WITH EIGHT HOURS.
- e. SOO MUST BE HARVESTED AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOO NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST FOR SOO SCIENTIST PRIOR TO ITS INSTALLATION.

3. SOO MAINTENANCE

- 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 SOO DURING THE HEAT OF THE DAY TO PREVENT WILTING.
- b. AFTER THE FIRST WEEK, SOO WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
- c. DO NOT MOW UNTIL THE SOO IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

Appendix B.4. Construction Specifications for Environmental Site Design Practices

Table B.4.1 Material Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltrations	Specification	Size	Notes
Planting soil (2" to 4" deep)	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (4" to 6" deep)	loamy sand (60-65%) & loess (35-40%) or sandy loam (50%), or compost (40%)	n/a	USDA soil types: loam sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	aged 6 months, minimum no pine or wood chips
Mulch	shredded hardwood	No. 1 OR NO. 9 (18" to 3/8")	
Pea gravel/drainpan	pea gravel: ASTM-D-448	1/8" to 5/16"	
Coarse drain	conventional stone: washed	3/8" to 1/2"	PE Type 1 nonwoven
Geotextile	n/a	n/a	
Gravel (underdrains and infiltration basins)	ASASTM-M-43	No. 37 OR NO. 6 (1/4" to 3/8")	
Underdrain piping	P 754, Type PS 28 or ASASTM M-275	4" to 6" rigid schedule 40 PVC or HDPE	Slotted or perforated pipe, 3/8" perf. @ 6" on center, 4 holes per foot; minimum of 3" of gravel over pipe; underdrain pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth.
In-situ concrete (if required)	MISHA Mix No. 3, F = 3500 psi @ 28 days, normal weight, self-consolidating, reinforcing to meet ASTM-A-615-42C	n/a	on-site testing of precast 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 and approval by a professional structural engineer licensed in the State of Maryland; design to include meeting ACI Code 308.2R-09 vertical loading (15-10 or 1-20) allowable horizontal loading (based on soil pressure); and analysis of potential cracking.
Sand	ASASTM-M-6 or ASTM-C-33	0.075" to 0.04"	Sand substitution must be in accordance with Geotechnical Engineering & Soil Substitutions are acceptable. No "rock dust" can be used for sand.

B-4-2 STANDARDS AND SPECIFICATIONS FOR

DEFINITION

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH

CONDITIONS WHERE PRACTICE APPLIES

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

A. SOIL PREPARATION

1. 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 ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR GRADED 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.
  - b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
  - c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
2. PERMANENT STABILIZATION
  - 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:
    - 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 WATER AND 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 15 PERCENT OR MORE 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.
  - c. 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.
  - d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
  - e. 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 REAP THE AREA. FERTILIZER APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN.

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

DEFINITION

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE

TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES

TO THE SURFACE OF ALL PERMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

A. SEEDING

1. SPECIFICATIONS
  - 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 WHICH 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 THE RATE.
  - b. 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 THAWES.
  - c. INOULNANTS: THE INOULNANTS FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOULNANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOULNANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOULNANTS AND FERTILIZER UNTIL USED. TEMPERATURES ABOVE 75 TO 90 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOULNANTS LESS EFFECTIVE.
  - d. SOO MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (4 DAYS MIN.) TO PERMIT DEGRADATION OF PHYTO-TOXIC MATERIALS.
2. APPLICATION
  - a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
    - i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1. PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
    - ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
    - iii. APPLY SOIL AMENDMENTS AS SPECIFIED, MECHANIZING SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
  - b. MULTISPECIES SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDED MIXTURES MUST BE FROM AFTER PLANTING.
  - c. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
  - d. 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, 200 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN P2O5 (PHOSPHORUS), 200 POUNDS PER ACRE, K2O (POTASSIUM), 200 POUNDS PER ACRE.
    - ii. LIME: USE ONLY GRADE AGRICULTURAL LIMESTONES (UP TO 3 TONS PER ACRE) MAY BE APPLIED TO SOILS WITH A PH OF 5.5 OR LOWER. FERTILIZER 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE

TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONGS WITH APPLICATION RATES, SEEDING DATES, AND SEEDING METHODS. IF THIS SUMMARY IS NOT PART OF THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
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 AND FERTILIZER IN SECTION B-4-3, B.1 AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

\*NOTE: THE TEMPORARY & PERMANENT SEEDING SUMMARY TABLES ARE LOCATED ON SHEET 2 OF 4.

INSPECTION ITEM	FREQUENCY OF INSPECTION	STORMWATER MAINTENANCE SCHEDULE	
		MICRO-BIOTRETENTION	REMEDIAL ACTION
MICRO-BIOTRETENTION	AFTER A MAJOR STORM	CHECK MULCH FOR ADEQUATE COVERAGE AND FOR ACCUMULATION OR DISCOLORATION.	REPLACE AND REMOVE OLD MULCH AND EXCESS SEDIMENTS. PROVIDE ADEQUATE MULCH COVER ACCORDING TO APPROVED DESIGN.
MULCH LAYER	MONTHLY	CHECK MULCH FOR ADEQUATE COVERAGE AND FOR ACCUMULATION OR DISCOLORATION.	MOW GRASS AREAS WATER PLANTS DAILY FOR 2 WEEKS AFTER PROJECT IS COMPLETE.
VEGETATION	AS NEEDED	CHECK FOR EVIDENCE OF EROSION RUNOFF, CHANNELIZING, OR BARE SPOTS.	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.
PLANT COMPOSITION AND HEALTH	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 GULLING THROUGH THE FACILITY.
DEBRIS AND TRASH CLEANOUT	MONTHLY	CHECK THAT THE FACILITY IS CLEAN OF TRASH AND DEBRIS, INLETS, OUTLETS, AND CONDUITING AREAS AROUND THE FACILITY MUST BE CHECKED.	TRASH AND DEBRIS MUST BE DISPOSED OF IN AN ACCEPTABLE MANNER ACCORDING TO CURRENT REGULATIONS.

B.4.7 Supp. 1

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.

Walter G. Zawislak 2/19/14  
DATE

Signature of Engineer (PRINT NAME BELOW)

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.

John M. [Signature] 2/24/14  
DATE

Signature of Developer

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

John K. [Signature] 2/19/14  
DATE

HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 3-24-14  
DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 3-24-14  
DATE

CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 2/24/14  
DATE

DIRECTOR

B.4.1 MATERIAL SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS & LANDSCAPE INFILTRATIONS

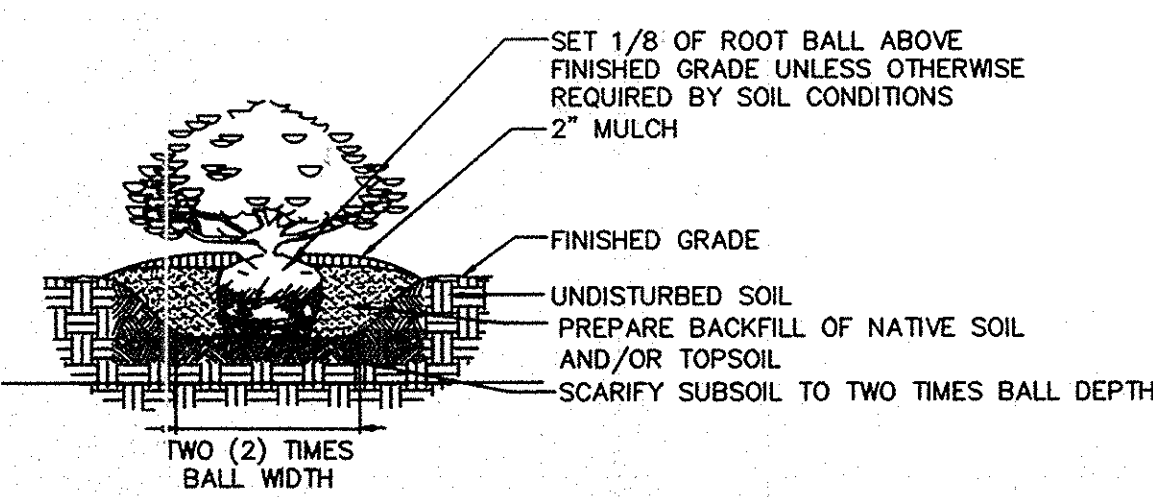
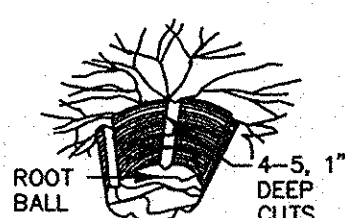
Table B.4.1 Material Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltrations

Material	Specification	Size	Notes
Planting soil (2" to 4" deep)	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (4" to 6" deep)	loamy sand (60-65%) & loess (35-40%) or sandy loam (50%), or compost (40%)	n/a	USDA soil types: loam sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	

**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, TRAVEL 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 GROUND COVER SPACES 24 INCHES OR CLOSER, INCORPORATE THE FOLLOWING INGREDIENTS TO TOP 2" 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 FOUR (4) SHADE TREES, TWO (2) EVERGREEN 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 INCHES 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 REMAIN



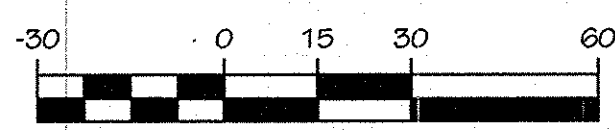
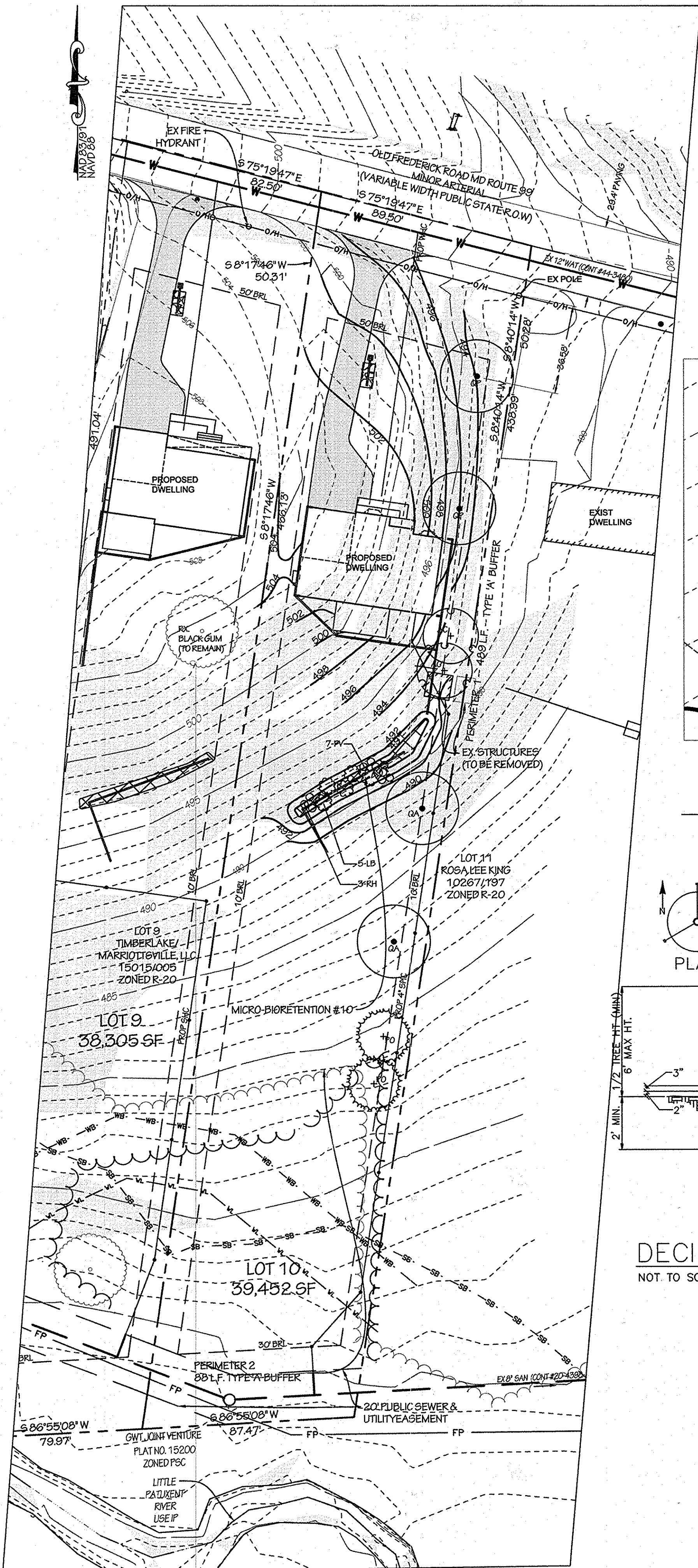
**SHRUB PLANTING DETAIL**  
NOT TO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Chad Clark* 3/24/14  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

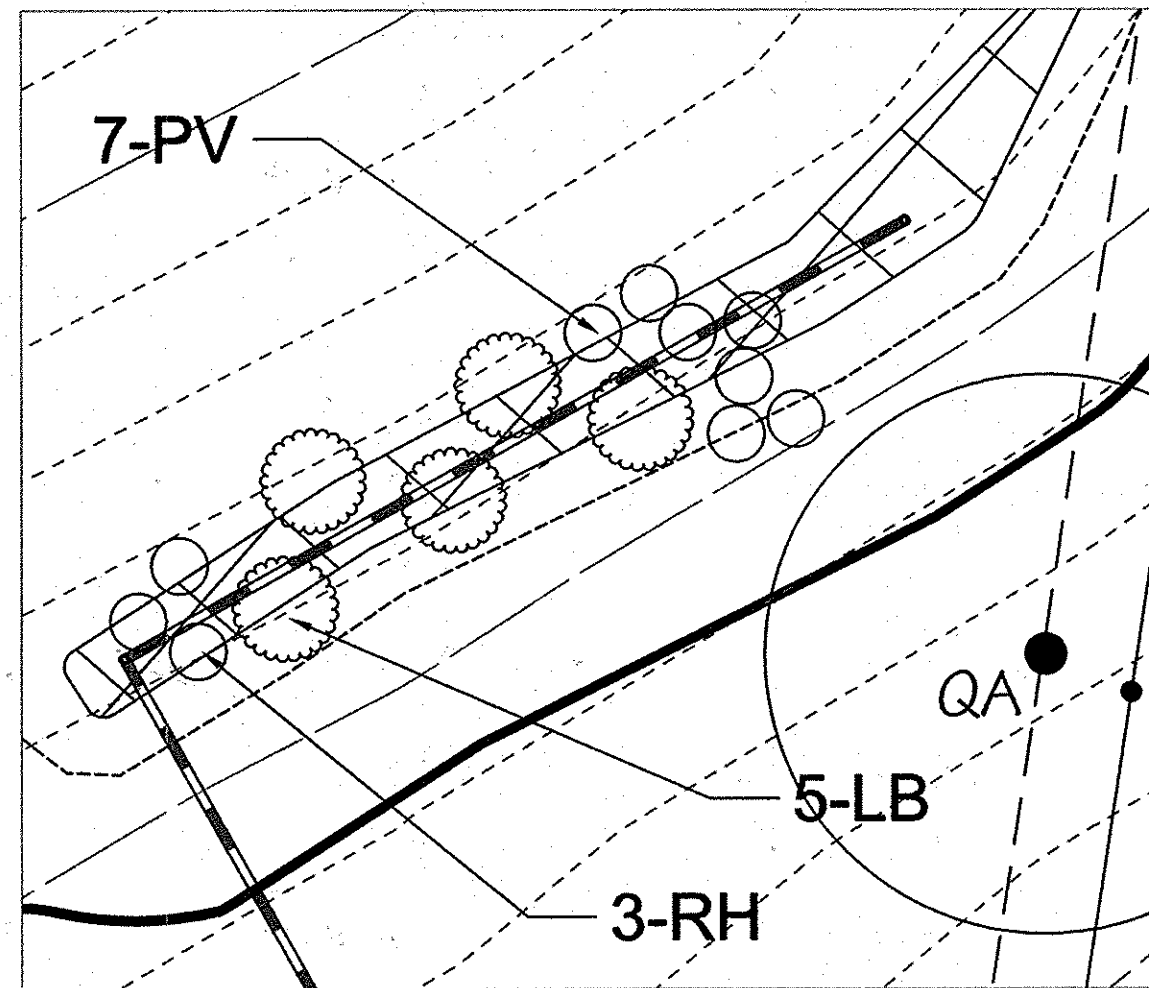
*Kevin L. ...* 3-24-14  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Frank ...* 3/24/14  
 DIRECTOR DATE



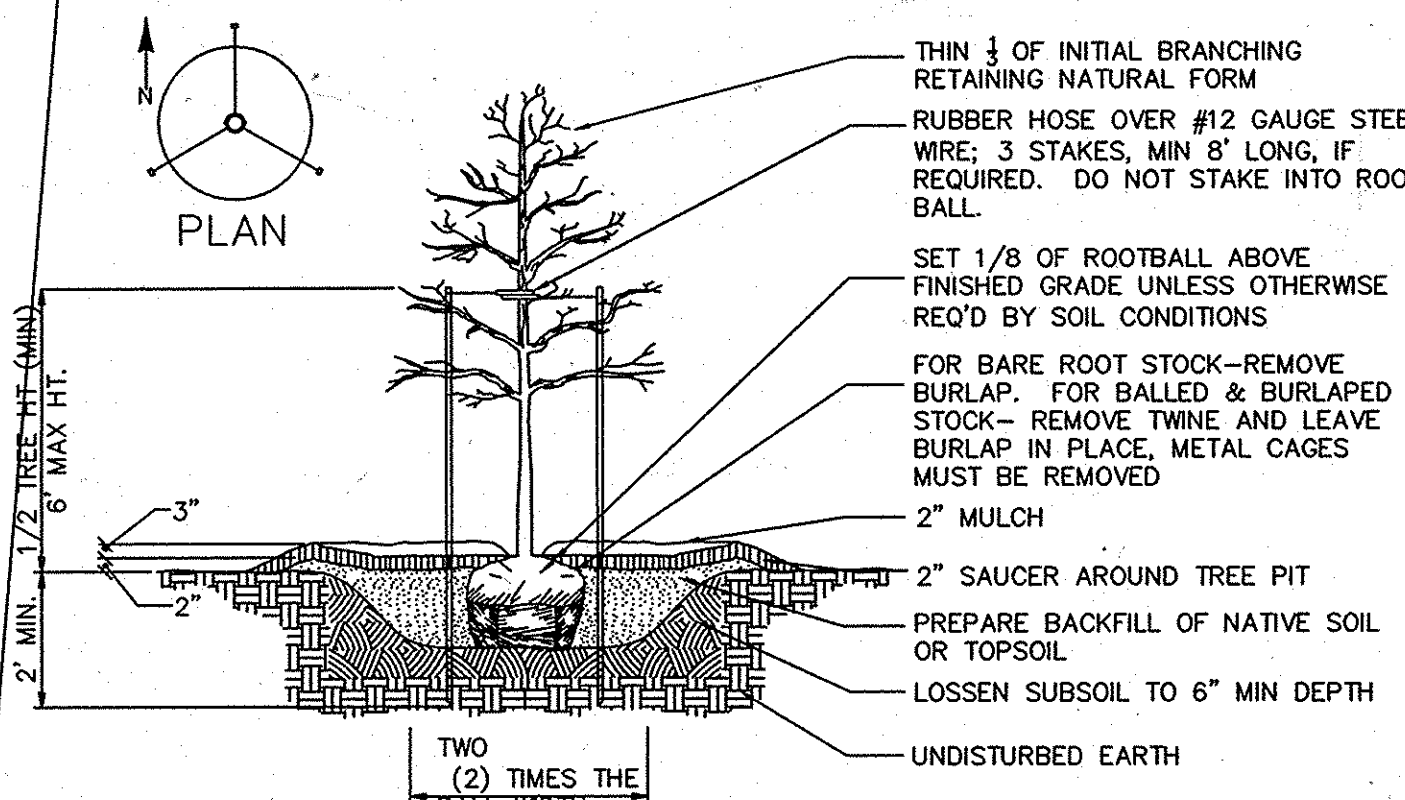
**Planting Schedule**

Tree Symbol	Quantity	Botanical Name	Common Name	Size	Comments
QP	2	Quercus phellos	Willow Oak	2-1/2" - 3" Cal.	B&B
QA	2	Quercus palustris	Pin Oak	2-1/2" - 3" Cal.	B&B
AC	2	Amelanchier canadensis	Shadowblow Serviceberry	8-10' Ht.	Multi-trunk, B&B
PO	2	Picea omorika	Serbian Spruce	6-8' Ht.	Full to ground, B&B
<b>Micro Bioretention Plant List</b>					
LB	5	Lindera benzoin	Spicebush	3 Gal.	3' o.c.
PV	7	Panicum virgatum	Switchgrass	3 Gal.	24" o.c.
RH	3	Rudbeckia hirta	Black Eyed Susan	1 Gal.	18" o.c.

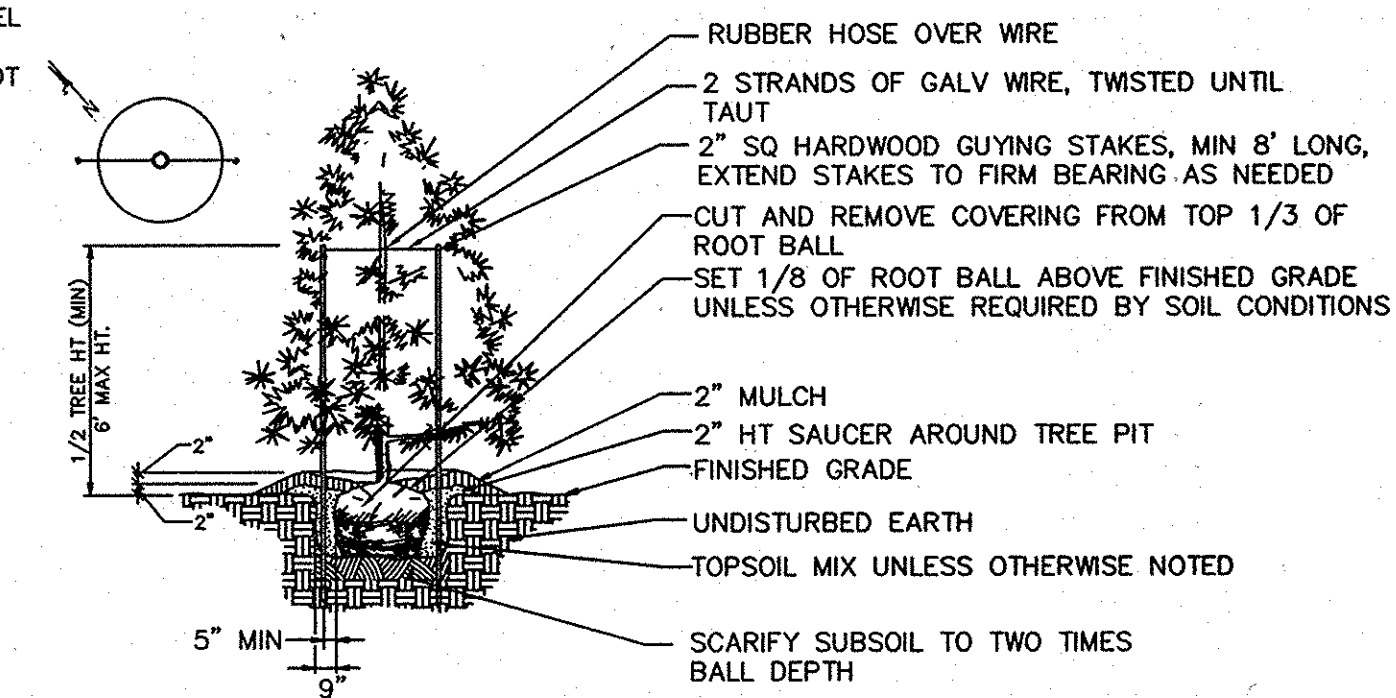


**MICRO BIORETENTION PLANTING DETAIL**  
SCALE: 1" = 1'-10"

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



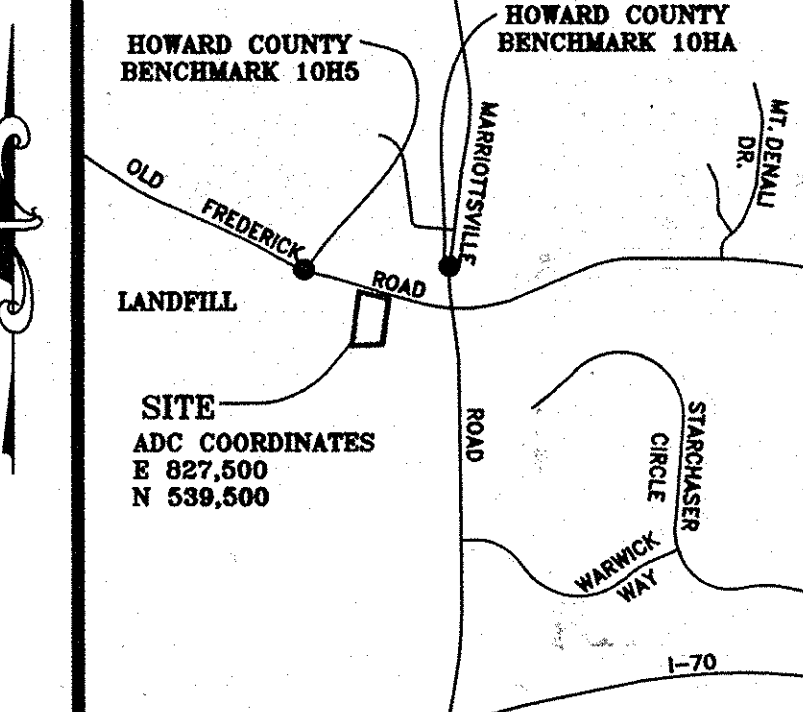
**DECIDUOUS TREE PLANTING DETAIL**  
NOT TO SCALE



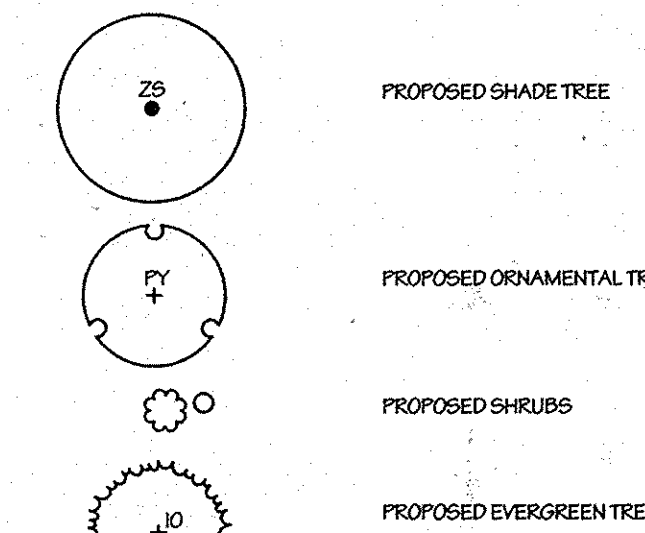
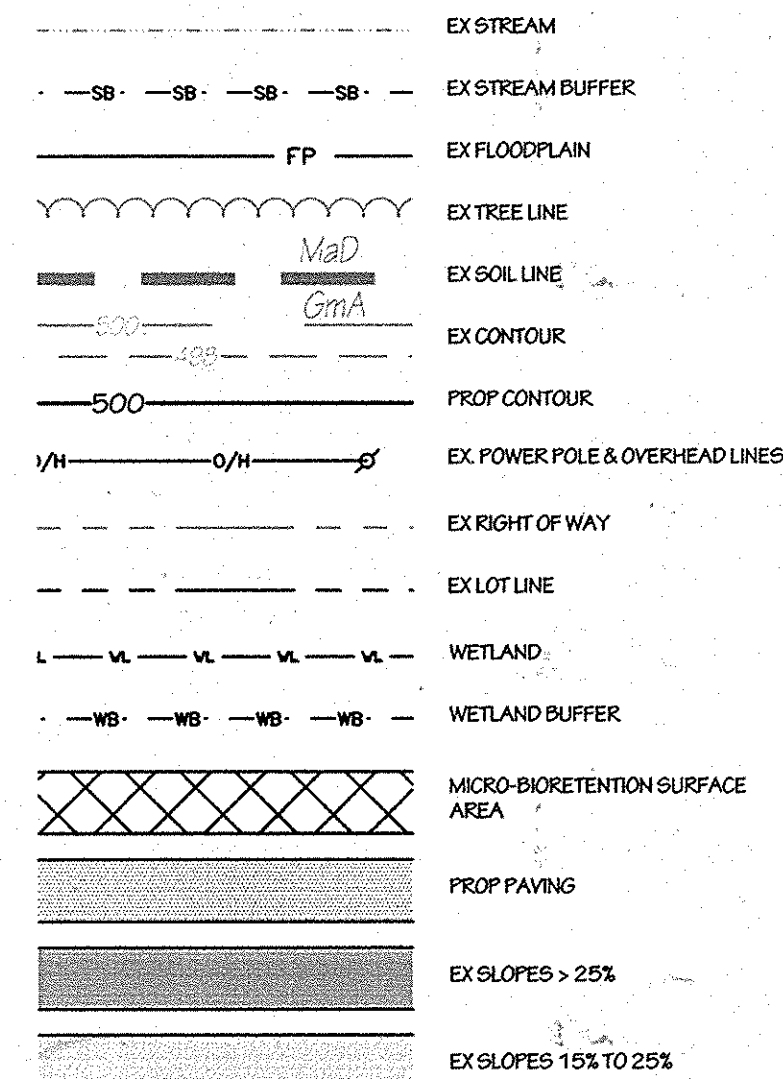
**EVERGREEN TREE PLANTING DETAIL**  
NOT TO SCALE

**Schedule A - Perimeter Landscape Edge**

Category	Adjacent to Perimeter Properties 1	Adjacent to Perimeter Properties 2	
<b>Perimeter</b>			
Landscape Type 'A' 1 Shade Tree Per 60 L.F.	498 L.F.	88 L.F.	
Credit for Ex. Vegetation (Yes, No, Linear Feet) (Describe Below if Needed)	Yes, 146 L.F.	YES, 88 L.F.	
Credit for Wall, Fence, or Berm (Yes, No, Linear Feet) (Describe Below if Needed)	No	No	
<b>No. of Plants Required:</b>			<b>Plant Totals:</b>
Shade Trees	6	0	6 Shade Trees
Evergreen Trees	0	0	0 Evg. Trees
Shrubs	0	0	0 Shrubs
<b>No. of Plants Provided:</b>			
Shade Trees	4	0	4 Shade Trees
Evergreen Trees	2	0	2 Evg. Trees
Other Trees	2	0	2 Other Trees
Shrubs	0	0	0 Shrubs



**VICINITY MAP**  
1"=2000'  
**LEGEND**



**APPLICANT/OWNER:**

TIMBERLAKE/MARRIOTTVILLE, LLC  
 888 BESTGATE ROAD  
 SUITE 411  
 ANNAPOLIS, MD 21401  
 240-388-0873

ADDRESS CHART					
LOT/PARCEL #:	STREET ADDRESS				
10	11261 OLD FREDERICK RD				
PROPOSED SITE IMPROVEMENT: SINGLE FAMILY HOME					
PERMIT INFORMATION CHART					
PROJECT	SECTION / AREA	LOT / PARCEL NO.			
PATUXENT VIEW - LOT 10	N/A	10/65			
PLAT # OR L/F	GRID#	ZONING	TAX MAP NO.	ELECT. DIST.	CENSUS TRACT
15015/005	22	R20	10	THIRD	6030.00
WATER CODE:	SEWER CODE:				
44-4380	20-4380-D				

**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 UPON TREES 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.

NAME: *[Signature]* DATE: 2/24/14

**Axiom Engineering Design**  
 Civil Engineering Land Surveying Landscape Architecture Land Planning  
 6950 Columbia Gateway Dr., Ste 150  
 Columbia, Maryland 21046  
 Office: 443.276.6220  
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**PROFESSIONAL CERTIFICATION**  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED AND/OR APPROVED BY ME, AND THAT I AM A LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 3444, EXPIRATION DATE 12/31/2015

**LANDSCAPE ARCHITECT**  
 LICENSE NO. 3444  
 LE SHANDA N. GIBBS  
 STATE OF MARYLAND

**LANDSCAPE PLAN & DETAILS**  
 PATUXENT VIEW  
 LOT 10  
 11261 OLD FREDERICK ROAD  
 MARRIOTTVILLE, MD 21104  
 TAX MAP 10, PARCEL 65  
 3rd Election District: Howard County, Maryland

Drawn: *[Signature]* UNS  
 Checked: *[Signature]* DP/WZ  
 Date: 2.11.14  
 Project No.: 13-0028  
 Scale: 1" = 30'  
 Sheet: 4 OF 4