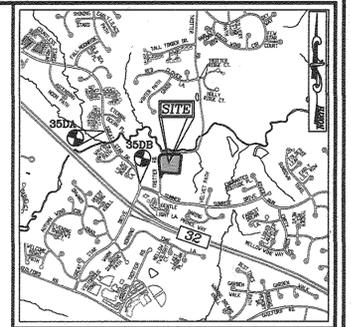


- LEGEND:**
- PROPERTY LINE
  - RIGHT-OF-WAY LINE
  - ADJACENT PROPERTY LINE
  - EXISTING CURB AND GUTTER
  - EXISTING EDGE OF PAVING
  - EXISTING WETLANDS
  - EXISTING WETLAND BUFFER
  - EXISTING STREAM BUFFER
  - EXISTING STREAM
  - EXISTING UTILITY POLE
  - EXISTING LIGHT POLE
  - EXISTING MAILBOX
  - EXISTING SIGN
  - EXISTING SANITARY MANHOLE
  - EXISTING SANITARY LINE
  - EXISTING CLEANOUT
  - EXISTING FIRE HYDRANT
  - EXISTING WATER LINE
  - EXISTING TREELINE
  - EXISTING TREES
  - F-15-111 LANDSCAPE PLANTINGS
  - SPECIMAN TREE
  - EXISTING WOOD FENCE
  - EXISTING METAL FENCE
  - PROPOSED TREELINE
  - EXISTING WATERLINE CONT# 34-4899-D
  - EXISTING SEWERLINE CONT# 34-4899-D
  - PRIVATE USE-IN-COMMON ACCESS EASEMENT
  - VARIABLE WIDTH PUBLIC SEWER, WATER, & UTILITY EASEMENT
  - 10' PRIVATE DRAINAGE & UTILITY EASEMENT
  - FOREST CONSERVATION EASEMENT (RETENTION)
  - MICRO-BORSTENTATION FACILITY (M-6)
  - LEVEL SPREADER
  - DRY WELL



**VICINITY MAP**  
SCALE: 1"=2,000'  
ADC MAP COORDINATE: MAP: 31, GRID: F3

**DRIVEWAY NOTE - LOTS 1-8:**

1. INDIVIDUAL HOUSE SITES SHALL PROVIDE PRIVATE DRIVEWAYS A MINIMUM 18 FOOT DEPTH FROM THE FACE OF GARAGE TO THE EDGE OF THE USE-IN-COMMON DRIVEWAY SO THAT A CAR, IF PARKED IN THE DRIVEWAY, WILL NOT OVERHANG INTO THE PAVED AREA OF THE SHARED DRIVEWAY. THE SHARED DRIVEWAY SHALL PROVIDE ADEQUATE UNOBSTRUCTED ACCESS TO ALL DWELLINGS AT ALL TIMES AS REQUIRED BY HOWARD COUNTY DEPARTMENT OF FIRE & RESCUE.

NO.	REVISION	DATE
2	REVISE SWM PRACTICE CHART, CHANGES TO LOTS 7 AND 8, AND ETC.	10/14/16
1	REVISE HOUSE TYPE ON LOT 8; REVISE BASEMENT ELEVATIONS, AND ADD STAIRS TO DECKS	8/10/16

**SITE DEVELOPMENT PLAN**

**SITE LAYOUT**

**THE PRESERVE AT RIVER HILL**  
LOTS 1-8 - SINGLE FAMILY DETACHED  
AND OPEN SPACE LOTS 10 & 11

**OWNER**  
ESTATES AT RIVER HILL, LLC  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

**DEVELOPER**  
TRINITY HOMES MARYLAND, LLC  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELLCOTT CITY, MD 21043  
TEL: 410.461.7666  
FAX: 410.461.8951

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

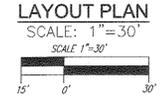
*Chad Egan* 5-18-16  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Kate Schindler* 5-24-16  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Walter J. J. J.* 5-24-16  
DIRECTOR DATE

**NOTES:**

1. ALL WATER CONNECTIONS SHALL BE 1-1/2" WITH 1" OUTSIDE METER SETTINGS, UNLESS OTHERWISE NOTED. REFER TO HOWARD COUNTY DETAILS W-3.28 OUTSIDE METER SETTINGS.



**NOTE:**

1. TYPICAL DRIVEWAY WIDTH SHOWN HEREON IS 18 FEET WIDE FOR THE PROPOSED 2 CAR GARAGE. WIDTH SUBJECT TO CHANGE WITH BUILDER RESIST.

2. SECTION 128.A.1.J OF THE ZONING REGULATIONS (CB-2-2012) WHICH ALLOWS SUNROOMS AND ROOM EXTENSIONS TO EXTEND NOT MORE THAN 10 FEET INTO THE REAR SETBACK ALONG NOT MORE THAN 60% OF THE REAR FACE OF A DWELLING ON A LOT WHICH ADJOINS OPEN SPACE ALONG A MAJORITY OF THE REAR LOT LINE FOR R-ED LOTS RECORDED AFTER THE EFFECTIVE DATE OF CB-2-2012 (MAY 13, 2012).

**PROFESSIONAL CERTIFICATE**

DESIGN BY: RVE  
DRAWN BY: MDL  
CHECKED BY: RHV  
DATE: MAY 2016  
SCALE: AS SHOWN  
W.O. NO.: 13-38

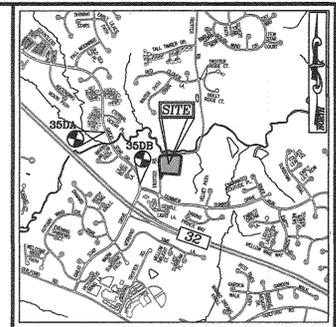
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

2 SHEET OF 6



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF PAVING
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING UTILITY POLE
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- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- PROPOSED TREELINE
- PRIVATE USE-IN-COMMON ACCESS EASEMENT
- VARIABLE WIDTH PUBLIC SEWER, WATER, & UTILITY EASEMENT
- 10' PRIVATE DRAINAGE & UTILITY EASEMENT
- FOREST CONSERVATION EASEMENT (RETENTION)
- MICRO-BIORETENTION FACILITY (M-6)
- SUPER SILT FENCE
- LIMITS OF DISTURBANCE
- PROPOSED 10FT CONTOUR
- PROPOSED 2FT CONTOUR
- SPOT ELEVATION
- STABILIZED CONSTRUCTION ENTRANCE
- EXISTING WATERLINE CONIF # 34-8899-D
- EXISTING SEWERLINE CONIF # 34-4899-D
- STORMWATER MANAGEMENT TEST PIT



**VICINITY MAP**  
SCALE: 1"=2,000'  
ADC MAP COORDINATE: MAP: 31, GRID: F3

**NOTE: STOCKPILING WILL BE PERMITTED ON EACH LOT ONLY.**

**NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. ANY STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.**

**NOTE: EITHER PERMANENT OR TEMPORARY SEEDING AND/OR STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES REQUIRED BY THE 2011 STANDARDS AND SPECIFICATIONS WHICHEVER IS MORE RESTRICTIVE.**

**NOTE: SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR. SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART. DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.**

**GRADING PLAN**  
SCALE: 1"=30'  
SCALE 1"=30'

\* GRACE MARIE DRIVE SHALL DRAIN TO MBR-2 DRIVE SHALL BE CONSTRUCTED PER F-15-111.

F-15-111 SEDIMENT CONTROLS  
F PLAN CONTROLS OUTSIDE OF THE PROPOSED LOTS ARE EXISTING PER F15-111 TO BE REMOVED AT THE DISCRETION OF THE SEDIMENT CONTROL INSPECTOR.

NO.	REVISION	DATE
2	REVISE SWMPRACTICE CHART, CHANGES TO LOTS 7 AND 8 AND ESC.	10/14/16
1	REVISE HOUSE TYPE LOT 8, REVISE BASEMENT ELEVATIONS AND ADD STEPS TO DECKS	8/16/16

**SITE DEVELOPMENT PLAN**  
**GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN AND SOILS MAP**

**THE PRESERVE AT RIVER HILL**  
**LOTS 1-8 - SINGLE FAMILY DETACHED**  
**AND OPEN SPACE LOTS 10 & 11**

**OWNER**  
ESTATES AT RIVER HILL, LLC  
3675 PARK AVE., SUITE 301  
ELlicOTT CITY, MD 21043  
(410) 480-0023

**DEVELOPER**  
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FAX: 410.461.6991

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Old Clark* 5-13-16  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Kat Lademan* 5-24-16  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*William J. Jui* 5-24-16  
DIRECTOR DATE

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

*John R. Roberts* 5/13/16  
HOWARD S.C.D. DATE

BY THE DEVELOPER:

"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 A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

*Michael J. Gray* 5/3/16  
SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER:

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

*Robert H. Vogel*  
SIGNATURE OF ENGINEER DATE

**MAPPED SOILS TYPES - CLARKSVILLE NE MAP #17**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE	HYDRIC SOIL
GbE	GLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	B	.20	NO	NO
Gbc	GLAUSTONE LOAM, 8 TO 15 PERCENT SLOPES	B	.20	NO	NO
Gmc	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	.37	YES	NO
Ho	HARBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	.37	NO	YES
Md	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	.24	YES	NO

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

**PROFESSIONAL CERTIFICATE**

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

DESIGN BY: RVE  
DRAWN BY: MDL  
CHECKED BY: RHV  
DATE: MAY 2016  
SCALE: AS SHOWN  
W.O. NO.: 13-38

3 SHEET OF 6

**HOWARD SOIL CONSERVATION DISTRICT  
STANDARD SEDIMENT CONTROL NOTES**

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE PUBLIC LOG AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO MUST BE GIVEN AT THE FOLLOWING STAGES:  
 A. PRIOR TO THE START OF EARTH DISTURBANCE.  
 B. PRIOR TO THE START OF PERMANENT VEGETATION INSTALLATION AND SEEDING CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.  
 C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.  
 D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

OTHER BUILDING OR GRADING APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.

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 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THEREOF.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PRIMER CONTROLS, DICES, SWALES, DITCHES, FURROWS, SLOPES, AND ALL SLOPES STEEPER THAN 1:1 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING UNDER THE PERMITS OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), 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 APPLIED BETWEEN THE INITIAL SPRING SEEDING DATE AND THE GRASSING PERIOD. PERMANENT SEEDING AND STABILIZATION (SEC. B-4-5) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH 5:1 OF CUT AND/OR TALL STOCKPILES (SEC. B-4-3) IN EXCESS OF 20 FT. MUST BE RESEED WITH GRADE-TYPE ALL CONCENTRATED FLOW, STEP SLOPES, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).

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 CID.

6. SITE ANALYSIS:

TOTAL AREA OF SITE:	2.02 ACRES
AREA TO BE PROTECTED:	0.74 ACRES
AREA TO BE REVEGETATED OR PAVED:	0.59 ACRES
AREA TO BE PERMANENTLY STABILIZED:	2.475 ACRES
TOTAL CUT:	2.475 CU. YDS.
TOTAL FILL:	2.475 CU. YDS.

OFFSITE WASTE/BORROW AREA LOCATION: \*\*

7. ESTIMATE ONLY CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION. TALL BE DETERMINED BY CONTRACTOR WITH APPROVAL OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE PUBLIC LOG AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO MUST BE GIVEN AT THE FOLLOWING STAGES:  
 A. PRIOR TO THE START OF EARTH DISTURBANCE.  
 B. PRIOR TO THE START OF PERMANENT VEGETATION INSTALLATION AND SEEDING CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.  
 C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.  
 D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY AND THE NEXT DAY AFTER EACH RAIN EVENT A WRITTEN REPORT BY THE CONTRACTOR MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHALL INCLUDE:  
 - INSPECTION DATE  
 - INSPECTION TYPE (ROUTINE, PRE-Storm Event, DURING Rain Event)  
 - NAME AND TITLE OF INSPECTOR  
 - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)  
 - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE)  
 AND/OR CURRENT ACTIVITIES  
 - PRESENCE OF SEDIMENT DISCHARGES  
 - IDENTIFICATION OF PLAN DEFICIENCIES  
 - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE  
 - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS  
 - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS  
 - OBSERVATIONS  
 - MONITORING/SAMPLING  
 - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED  
 - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (APCS, LMS, etc.)

9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE (3) PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKING DAY. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID) PER THE LIST OF HSCD-APPROVED FIELD CHANGES.

10. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.L.O.D. A PROJECT TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MINIMUM AREA 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 CID, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CONSECUTIVELY MAY BE DISTURBED AT A GIVEN TIME. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

11. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO GRADE.  
 12. ALL SALT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-COUNTOUR, AND BE IMBERICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPWELL BY 18" ELEVATION.  
 13. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUDES):  
 - MARCH 1 - JUNE 15  
 - USE IN AND UP OCTOBER 1 - APRIL 30  
 - USE IN MARCH 1 - MAY 31

14. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

**B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

**DEFINITION**  
 TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

**PURPOSE**  
 TO USE LONG-LIVED PERMANENT GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

**CONDITIONS WHERE PRACTICE APPLIES**  
 EXPOSED SOILS WHERE GROUND COVER IS REQUIRED FOR 6 MONTHS OR MORE.

**CRITERIA**

A. SEED MIXTURES  
 1. GENERAL USE  
 A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE (FROM TABLE B.2). ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.  
 B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DAMS OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.  
 C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.  
 D. FOR AREAS REQUIRING LOW MAINTENANCE, APPLY URN FORM FERTILIZER (46-0-0) AT 3-1/2 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. SPECIAL MIXTURES  
 A. AREAS WHERE TURFGRASSES MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.  
 B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.  
 I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE; FOR USE IN AREAS THAT RECEIVE INTERMEDIATE MAINTENANCE IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS: SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE, BY WEIGHT.  
 II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE; FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTERMEDIATE MAINTENANCE. CERTIFIED PERENNIAL RYEGRASS CULTIVARS: SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE, BY WEIGHT.  
 III. TALL FESCUE/NUSSLEHAGEN PARSIVAL: FULL SUN MIXTURE; FOR USE IN FULL SUN AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 85 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET, ONE OR MORE CULTIVARS MAY BE BLENDED.  
 IV. KENTUCKY BLUEGRASS/PINE FESCUE: SHADE MIXTURE; FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED RYEGRASS CULTIVARS 50 TO 40 PERCENT, TALL FESCUE CULTIVARS 50 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.

**NOTES:**  
 SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND". THE BEST GUARANTEE OF CULTIVAR PURITY, THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES  
 - WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 10 TO OCTOBER 1 (HARDNESS ZONES: 5B, 6A)  
 - CENTRAL MD: MARCH 15 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 6B)  
 - SOUTHERN MD, EASTERN SHORE: MARCH 15 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 7A, 7B)

D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1/2 INCHES DIAMETER. THE SEEDBED SHOULD BE MOIST BUT NOT IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL BE WITHOUT PROBLEMS.  
 E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TYPE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ANABNOUALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

B. SOO: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).  
 1. GENERAL SPECIFICATIONS  
 A. CLASS OF TURFGRASS SOO MUST BE MARYLAND STATE CERTIFIED. SOO LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN INSPECTOR.  
 B. SOO MUST BE MACHINED OUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/8 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE MOISTURE AND THATCH. BROWN PATCHES AND TOM OR UNWEED DINGS WILL NOT BE ACCEPTABLE.  
 C. STANDARD SIZE SECTIONS OF SOO MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUBJECTED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.  
 D. SOO MUST NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (DETERMINED BY TRY OR WEI) MAY ADVERSELY AFFECT ITS SURVIVAL.  
 E. SOO MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOO NOT TRANSPORTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

2. SOO INSTALLATION  
 A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOO.  
 B. LAY THE FIRST ROW OF SOO IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOO IS NOT STITCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TOGETHER IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRIPPING OF THE ROOTS.  
 C. WHEREVER POSSIBLE, LAY SOO WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS, ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOO TO PREVENT SLIP ON SLOPES. ENSURE SOO CONTACT EXISTS BETWEEN SOO ROOTS AND THE SURFACE OF THE SOIL SURFACE.  
 D. WATER THE SOO IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOO PAD AND SOIL SURFACE BELOW THE SOO ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING, AND SPRINKLING FOR ANY PIECE OF SOO WITHIN EACH HOUR.

3. SOO MAINTENANCE  
 A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS NECESSARY AND SUFFICIENT 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.

15. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

16. THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

BY THE DEVELOPER:  
 "I, Michael H. Vogt, 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 A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF DEVELOPER: Michael H. Vogt DATE: 5/3/16

**PERMANENT SEEDING SUMMARY**

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)	
					N	P <sub>2</sub> O <sub>5</sub>
1	COOL SEASON & WINTER TOLERANT OR EQUAL	1.5 TO 2.0 LB / AC	MAR 15 TO MAY 15 AUG 15 TO OCT 15	1/4-1/2"	45 LB/AC (15 LB PER 1000 SF)	90 LB/AC (30 LB PER 1000 SF)

BY THE ENGINEER:  
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER: Robert H. Vogel DATE: 5/10/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John R. Blanton DATE: 5-24-16  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

John R. Blanton DATE: 5-24-16  
 CHIEF, DIVISION OF LAND DEVELOPMENT

John R. Blanton DATE: 5-24-16  
 DIRECTOR

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

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

**PURPOSE**  
 TO PROMOTE 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. SELECTED 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 CASE PLOWS, OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SOIL. SOIL TESTS MUST BE AVAILABLE. IF 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 ROOFS 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 METHODS.  
 2. PERMANENT STABILIZATION  
 A. SOIL TESTS ARE 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. SOIL CONTAINS LESS THAN 500 PARTS PER MILLION (PPM) OF HEAVY METALS.  
 III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH THE GRANULAR MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTIONAL LOW LONGNESS 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 PENETRATION.  
 B. APPLICATION OF AMENDMENTS FOR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE RESULTS OF A SOIL TEST.  
 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 LINES ARE TO SMOOTH THE SURFACE, REMOVE LARGE ROCKS, LIMES STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN THE SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT. DISBURSE THE SURFACE WIDE SITE CONDITIONS WILL NOT BE SOIL AMENDMENTS.  
 F. PREPARATION TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRABLE. SEEDING LOOSING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING  
 1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PRACTICE IS REQUIRED TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW ORGANIC MATTER, AND/OR ARE UNDESIRABLE FOR VEGETATION.  
 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 DETERMINED BY THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.  
 3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:  
 A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.  
 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. SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:  
 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.  
 B. THE APPROPRIATE APPROVAL, AUTHORITY, TOPSOIL MUST BE A MIXTURE OF CONTRASTING TEXTURED SUBSTRATES AND MUST CONTAIN 5 PERCENT BY VOLUME OF CONCRETE, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1/2 INCHES IN DIAMETER.  
 C. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, PISON WAX, TRISTLE, OR OTHERS AS SPECIFIED.  
 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 ANALYSIS.  
 2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FINE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE AUTHORITY.  
 3. 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.  
 4. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING WHICH CONTAINS AT LEAST 90 PERCENT TOTAL OXIDE (CALCIUM OXIDE PLUS MANGANESE OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 85 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.  
 5. WHERE THE SUBSOIL IS EITHER HEAVILY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

C. MULCHING  
 1. MULCH MATERIALS (IN ORDER OF PREFERENCE)  
 A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY PLAIN MATERIALS SUCH AS CORN, SOYBEAN, AND UNWEEDED SORGHUM.  
 B. WOOD CHIPS OR BARK. WOOD CHIPS MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS AND REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.  
 C. WOOD CHIPS MUST BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LINES ARE TO SMOOTH THE SURFACE, REMOVE LARGE ROCKS, LIMES STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN THE SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT. DISBURSE THE SURFACE WIDE SITE CONDITIONS WILL NOT BE SOIL AMENDMENTS.  
 D. PREPARATION TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRABLE. SEEDING LOOSING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FINE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE AUTHORITY.  
 3. 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.  
 4. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING WHICH CONTAINS AT LEAST 90 PERCENT TOTAL OXIDE (CALCIUM OXIDE PLUS MANGANESE OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 85 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.  
 5. WHERE THE SUBSOIL IS EITHER HEAVILY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

2. APPLICATION  
 A. APPLY MULCH TO ALL SEEDING AREAS IMMEDIATELY AFTER SEEDING.  
 B. WHEN STRAW IS USED AS MULCH, APPLY OVER LIME SEEDS AT THE RATE OF 2 TONS PER ACRE. WHEN TOPSOIL IS USED AS MULCH, APPLY AT THE RATE OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.  
 C. WOOD CHIPS OR BARK MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. 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 WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE):  
 I. A MULCH ANCHORING TOOL IS A TRACTOR DRIVEN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SOONER OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.  
 C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION. WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDING PREPARATION.  
 4. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING WHICH CONTAINS AT LEAST 90 PERCENT TOTAL OXIDE (CALCIUM OXIDE PLUS MANGANESE OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 85 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.  
 5. WHERE THE SUBSOIL IS EITHER HEAVILY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

**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. SELECTIONS  
 A. SOIL TESTS MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBMITTED TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEEDS USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TESTS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY THE TYPE OF SEED AND SEEDING RATE.  
 B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAW.  
 C. INCULCATE THE INCULCATOR FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INCULCATORS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INCULCATOR AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INCULCATOR AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INCULCANT LESS EFFECTIVE.  
 D. SOO AND SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL. UNLESS SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.  
 2. APPLICATION  
 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 CHARTS.  
 II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER, APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDING AREA WITH A WHEELED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.  
 III. DRILL OR CULPICKER/SEEDER: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. CULPICKER/SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4" MIN OF SOIL COVERING. SEEDING MUST BE FROM AFTER PLANTING.  
 IV. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER, APPLY HALF THE SEEDING RATE IN EACH DIRECTION.  
 V. WOOD CHIP MULCH: APPLY SEED UNIFORM WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).  
 VI. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: 150 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN P205 (PHOSPHORUS), 200 POUNDS PER ACRE K2O (POTASSIUM), 200 POUNDS PER ACRE LIME. USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING) NORMALLY UP TO 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR IMMEDIATE LIME WHEN HYDROSEEDING.  
 VII. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

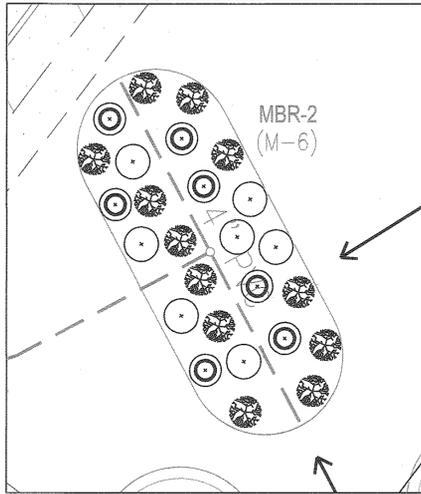
3. MULCHING  
 I. MULCH MATERIALS (IN ORDER OF PREFERENCE)  
 A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY PLAIN MATERIALS SUCH AS CORN, SOYBEAN, AND UNWEEDED SORGHUM.  
 B. WOOD CHIPS OR BARK. WOOD CHIPS MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS AND REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.  
 C. WOOD CHIPS MUST BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LINES ARE TO SMOOTH THE SURFACE, REMOVE LARGE ROCKS, LIMES STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN THE SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT. DISBURSE THE SURFACE WIDE SITE CONDITIONS WILL NOT BE SOIL AMENDMENTS.  
 D. PREPARATION TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRABLE. SEEDING LOOSING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

2. APPLICATION  
 A. APPLY MULCH TO ALL SEEDING AREAS IMMEDIATELY AFTER SEEDING.  
 B. WHEN STRAW IS USED AS MULCH, APPLY OVER LIME SEEDS AT THE RATE OF 2 TONS PER ACRE. WHEN TOPSOIL IS USED AS MULCH, APPLY AT THE RATE OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.  
 C. WOOD CHIPS OR BARK MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. 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 WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE):  
 I. A MULCH ANCHORING TOOL IS A TRACTOR DRIVEN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SOONER OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.  
 C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION. WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDING PREPARATION.  
 4. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING WHICH CONTAINS AT LEAST 90 PERCENT TOTAL OXIDE (CALCIUM OXIDE PLUS MANGANESE OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 85

**"MICRO-BIORETENTION" PLANTING SCHEDULE NOTES:**

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT MAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY.
- FILTER AREA SHALL BE SOLE COVERED BY PLANTINGS AT FULL GROWTH.

FOR INFORMATIONAL PURPOSES ONLY - SEE F-15-111

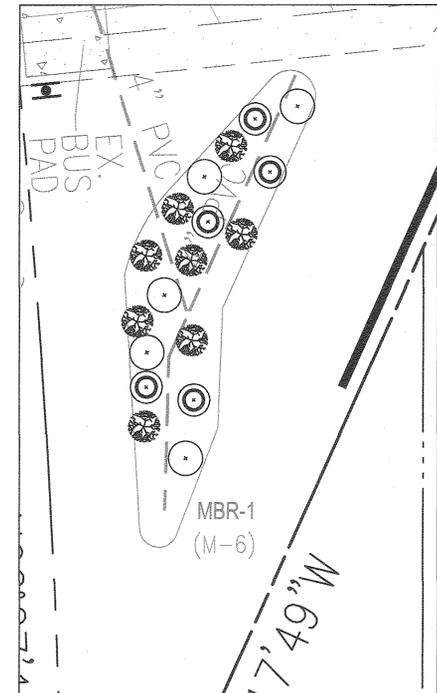


F 15-111 MBR-2 - PLANTING DETAIL (772 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
7	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
7	ILEX GLABRA INKBERRY	3 GALLON	CONT
12	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED

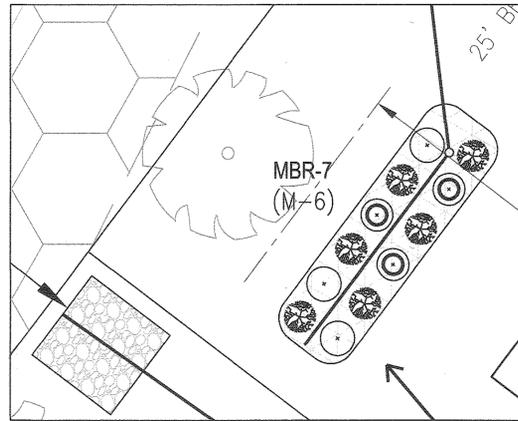
FOR INFORMATIONAL PURPOSES ONLY - SEE F-15-111



F15-111 MBR-1 - PLANTING DETAIL (517 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
5	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
5	ILEX GLABRA INKBERRY	3 GALLON	CONT
8	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

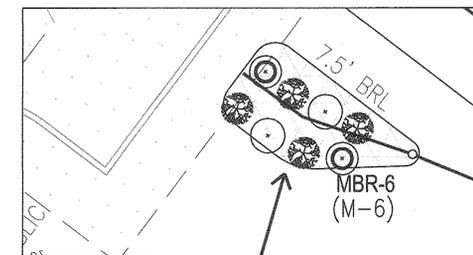
SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED



MBR-7 - PLANTING DETAIL (324 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
3	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
3	ILEX GLABRA INKBERRY	3 GALLON	CONT
6	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

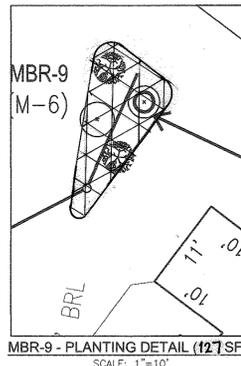
SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED



MBR-6 - PLANTING DETAIL (198 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
2	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
2	ILEX GLABRA INKBERRY	3 GALLON	CONT
4	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

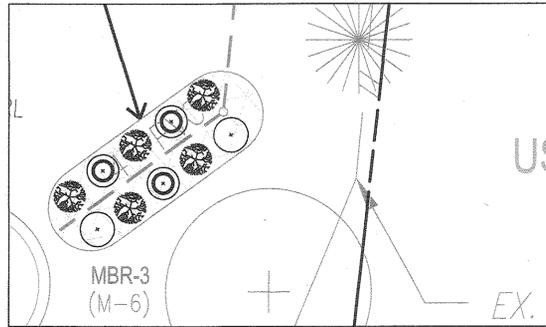
SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED



MBR-9 - PLANTING DETAIL (127 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
1	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
1	ILEX GLABRA INKBERRY	3 GALLON	CONT
2	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

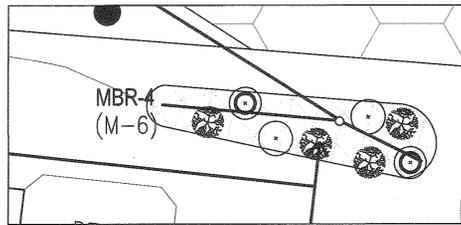
SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED



MBR-3 - PLANTING DETAIL (267 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
2	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
2	ILEX GLABRA INKBERRY	3 GALLON	CONT
5	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

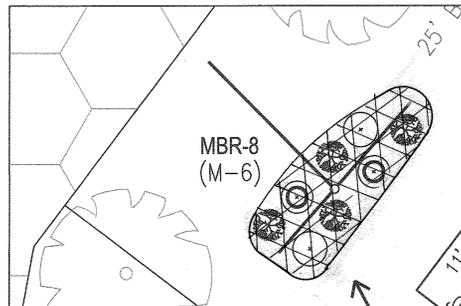
SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED



MBR-4 - PLANTING DETAIL (222 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
2	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
2	ILEX GLABRA INKBERRY	3 GALLON	CONT
4	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED

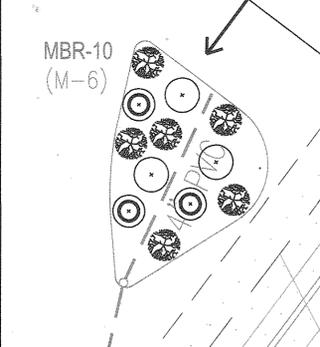


MBR-8 - PLANTING DETAIL (241 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
2	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
2	ILEX GLABRA INKBERRY	3 GALLON	CONT
4	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED

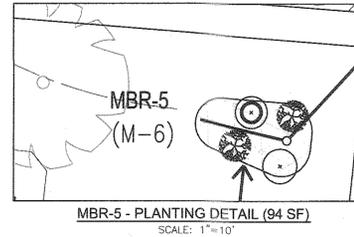
FOR INFORMATIONAL PURPOSES ONLY SEE F-15-111



F 15-111 MBR-10 - PLANTING DETAIL (349 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
3	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
3	ILEX GLABRA INKBERRY	3 GALLON	CONT
6	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED



MBR-5 - PLANTING DETAIL (94 SF)  
SCALE: 1"=10'

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
1	LINDERA BENZON SPICEBUSH	5 GALLON	CONT
1	ILEX GLABRA INKBERRY	3 GALLON	CONT
2	VIBURNUM TRILOBUM AMERICAN Highbush CRANBERRY	3 GALLON	CONT

SF X 75% X .0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED

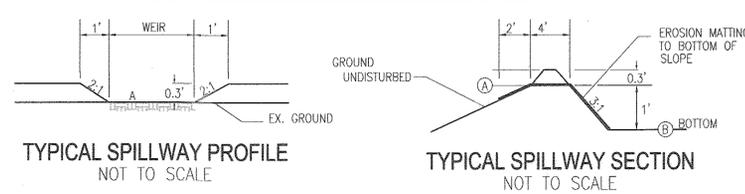
**MICRO-BIORETENTION FACILITY - DESIGN ELEVATION CHART**

MBR FACILITY #	ESD WSEL A	TOP MULCH B	BOTTOM PLANT SOIL C	INV STONE D	INV STONE E	APPROX DIM
1	365.60	364.60	362.35	361.02	361.35	SEE PLAN
2	381.60	380.60	378.35	377.02	377.35	SEE PLAN
3	389.60	388.60	386.35	385.02	385.35	SEE PLAN
4	381.80	380.80	378.55	377.22	377.55	SEE PLAN
5	381.80	380.80	378.55	377.22	377.55	SEE PLAN
6	381.60	380.60	378.35	377.02	377.35	SEE PLAN
7	371.60	370.60	368.35	367.02	367.35	SEE PLAN
8	375.60	374.60	372.35	371.02	371.35	SEE PLAN
9	375.60	374.60	372.35	371.02	371.35	SEE PLAN
10	377.00	376.00	373.75	372.42	372.75	SEE PLAN

**NOTE:**

- MICRO-BIORETENTION FACILITIES MBR-1, MBR-3, AND MBR-10 MANAGE USE-IN-COMMON DRIVEWAY RUNOFF AND ARE CONSTRUCTED UNDER F15-111.
- MICRO-BIORETENTION FACILITIES MBR-2, MBR-4, MBR-5, MBR-6, MBR-7, MBR-8, AND MBR-9 ARE PRIVATE ON-LOT FACILITIES AND SHALL BE CONSTRUCTED WITH THE DEVELOPMENT OF THEIR RESPECTIVE LOTS UNDER THIS SITE DEVELOPMENT PLAN.
- PROVIDE 0.85 REV STORAGE BELOW UNDERDRAIN PIPE ON ALL FACILITIES.

**WEIR OUTLET MICRO-BIORETENTION/RAINGARDEN**



TYPICAL SPILLWAY PROFILE  
NOT TO SCALE

TYPICAL SPILLWAY SECTION  
NOT TO SCALE

**OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)**

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL, PRUNING, ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 WATLAND STORMWATER DESIGN MANUAL, VOLUME 8, TABLE A.4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

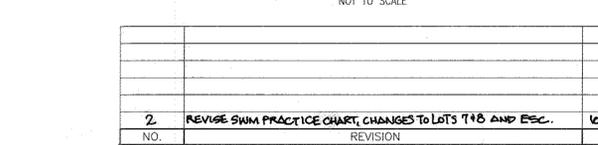
**Appendix B.4 - Construction Specifications for Environmental Site Design Practices**

Material	Specification	Size	Notes
Plantings	See Appendix A, Table A.4	As specified	Plantings are site-specific
Planting soil	loamy sand (60-85%) & compost (15-40%) or sandy loam (50%) & compost (20%) & compost (30%)	As specified	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2924)	As specified	aged 6 months, minimums on pile or wood chips
Pipe ground diaphragm	ASTM A 133-03	12" x 12" x 1/2"	Min. 10% by dry weight (ASTM D 2924)
Concrete drain	conventional assoc. washed cobble	stone: 2" to 3"	
Geotextile	ASTM D 4853	As specified	Min. 10% by dry weight (ASTM D 2924)
Ground (underdrains and infiltration basins)	F 758, Type PS 28 or AASHTO M-278	12" x 12" x 1/2"	Min. 10% by dry weight (ASTM D 2924)
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	12" x 12" x 1/2"	Slotted or perforated pipes; 3/8" perf. @ 4" on center, 4 holes per row; minimum of 3" of gravel over pipe, not necessary; underdrain pipes; perforated pipes shall be wrapped with 1/4" galvanized hardware cloth or equal material.
Power in place concrete (if required)	MHA Min. No. 3, C, F, -3000 psi @ 28 days, normal weight, air-entrained, conforming to meet ASTM A-111-00	As specified	on-site testing of poured-in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or precast) not using previously approved flow or load standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland; design to include meeting ACI Code 190.9.9.9; vertical loading (20 ft or 10 ft); allowable horizontal loading based on soil pressure; and analysis of potential cracking.
Soil	AASHTO M 68 or ASTM C-31	0.075" to 0.04"	Soil substitutions such as Diatomaceous Earth (ASTM D 1717) are not acceptable. No volcanic ash or other deleterious materials are acceptable. No "rock dust" can be used for sand.

**APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BASINS**

- MATERIAL SPECIFICATIONS**  
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 SUBSTITUTES SHALL BE MIXED OR COMBINED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH OR FROM A HINDERANCE 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 15.06.01.02.  
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
\* SOIL COMPOSITION - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)  
\* ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2924). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).  
\* CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 2%  
\* PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.  
THESE 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.
- COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.  
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.  
ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY POKED WATER BEFORE PREPARING (ROTOTILLING) BASE.  
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.  
WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12 TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
- PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3" SHREDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA. DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDED 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 1/2 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 BALL.  
GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUSS 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, DEBRIS, OR AT A MINIMUM, IMPROVES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL LATER FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.**
- UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:  
\* PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).  
\* PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 1/8" DIAMETER LOCATED 4" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.  
\* GRAVEL - THE GRAVEL LAYER (NO. 37 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 EVERY 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.  
\* A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MORTAR OF FINES IN TO 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 MINIMUM SLOPE OF 0.5% OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).
- MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

**TYPICAL SMALL MICRO-BIORETENTION**



TYPICAL SMALL MICRO-BIORETENTION  
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 5-18-16  
  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 5-24-16  
  
 DIRECTOR  
 DATE: 5-24-16

**OWNER**

ESTATES AT RIVER HILL, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**

TRINITY HOMES MARY, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**SITE DEVELOPMENT PLAN  
 MICRO-BIORETENTION  
 PLANTING SPECIFICATIONS, NOTES & DETAILS  
 THE PRESERVE AT RIVER HILL  
 LOTS 1-8 - SINGLE FAMILY DETACHED  
 AND OPEN SPACE LOTS 10 & 11**

TAX MAP: 35 GRD: 14  
 ZONED: R-40  
 DPZ REF'S: SEE GENERAL NOTE #4  
 PARCELS: 64  
 HOWARD COUNTY, MARYLAND

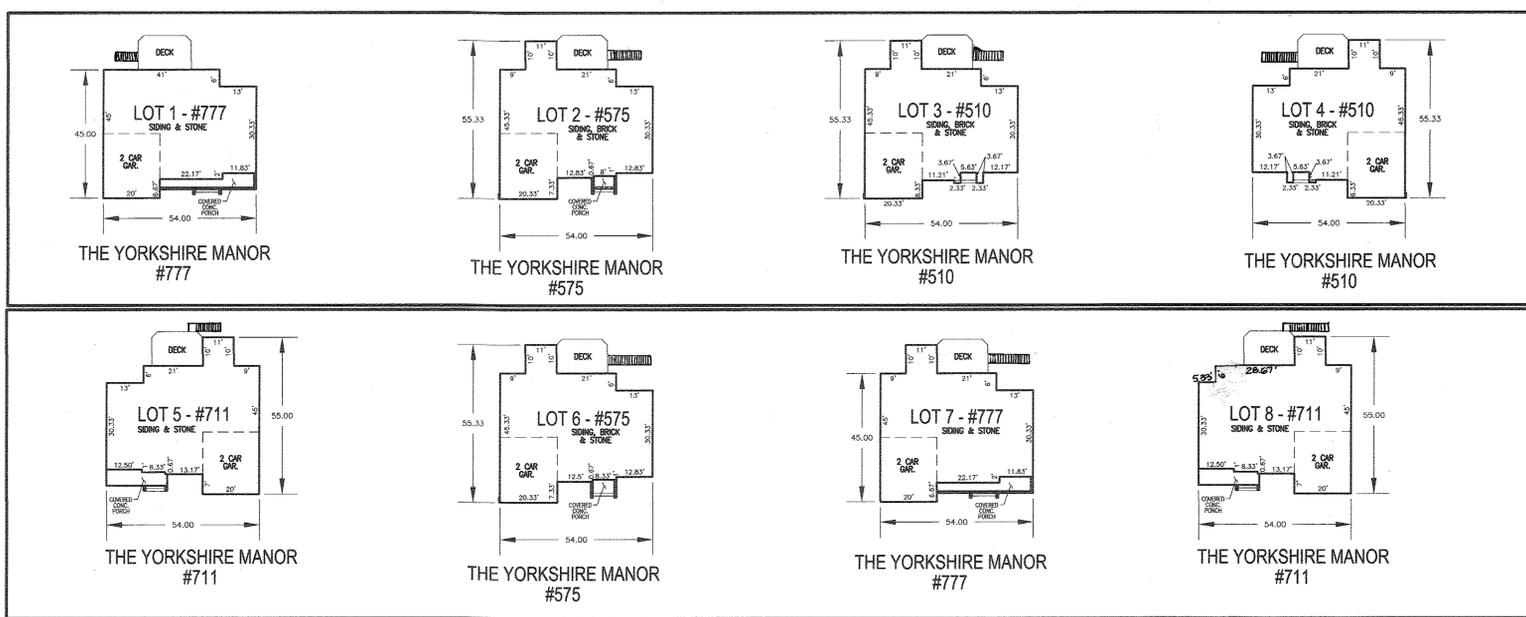
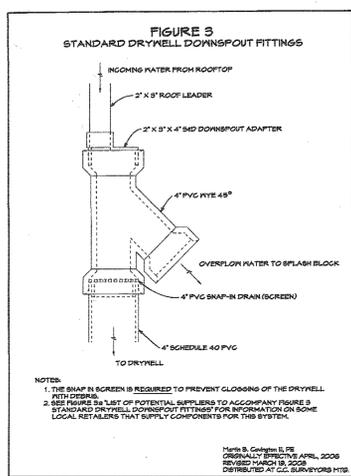
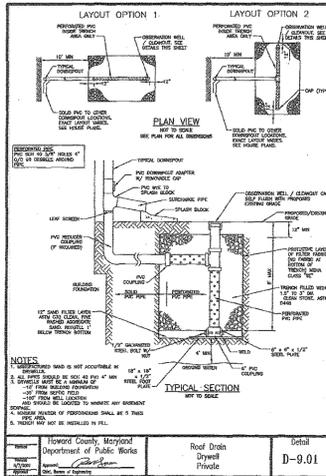
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8991

NO.	REVISION	DATE
2	REVISE SWM PRACTICE CHART, CHANGES TO LOTS 1+8 AND ESC.	6/14/16

DESIGN BY: RVE  
 DRAWN BY: MDL  
 CHECKED BY: RHV  
 DATE: MAY 2016  
 SCALE: AS SHOWN  
 W.D. NO.: 13-38

PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2018

5 SHEET OF 6



**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)**

- THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
- WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
- A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
- THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- 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.

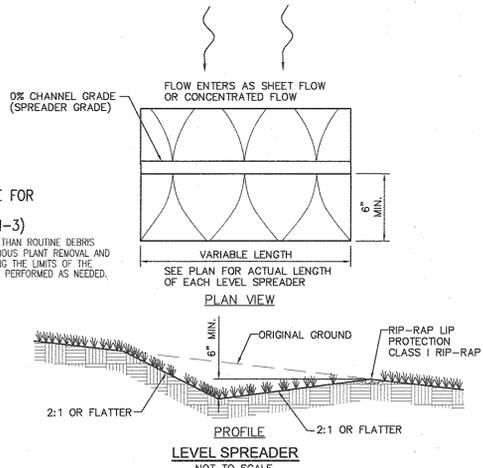
ON-LOT DRYWELL - DESIGN ELEVATION CHART

DW LOT #	NUMBER OF DW'S	PROP GRADE OVER	TOP STONE	INV STONE	SURFACE SIZE FT X FT	STONE DEPTH FT
4R	1	376.00	377.00	372.00	8.2X8.2	5
SR	2	376.00	375.00	370.00	11.6X11.6	5
		364.00	363.00	358.00	8.2X8.2	5
6	1	376.00	375.00	370.00	8.2X8.2	5
7R	1	368.00	367.00	362.00	11.6X11.6	5

R= REAR OF LOT

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SHEETFLOW TO CONSERVATION AREA (N-3)**

CONSERVATION AREAS SHALL REMAIN UNDISTURBED AND UNMANAGED OTHER THAN ROUTINE DEBRIS REMOVAL AND REPAIRING AREA OF CONCENTRATED FLOW. INVASIVE AND NOXIOUS PLANT REMOVAL AND 6-MONTHLY MOWING FOR MEADOW AREAS MAY BE NEEDED. SIGNS DELINEATING THE LIMITS OF THE CONSERVATION AREA SHOULD BE MAINTAINED AND SUPPLEMENTAL PLANTINGS PERFORMED AS NEEDED.



**N-1. DISCONNECTION OF ROOFTOP RUNOFF**

**CONSTRUCTION CRITERIA:**

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:

- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF.
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARPING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

**INSPECTION:**

A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAVE BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

**MAINTENANCE CRITERIA:**

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

**HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)**

- MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: *[Signature]* 5-19-16  
 Chief, Division of Land Development: *[Signature]* 5-24-16  
 Director: *[Signature]* 5-24-16

**THE PRESERVE AT RIVER HILL**  
STORMWATER TEST PITS

TEST PIT	BORING DEPTH		CONDITION
	SURFACE ELEVATION	PROPOSED	
TP1	369.1	8	DRY
TP2	387.9	8	DRY
TP3	389.9	8	DRY
TP4	379.2	8	DRY
TP5	384.8	8	DRY
TP6	364.8	8	BROKEN ROCK
TP7	373.2	8	DRY
TP8	380.7	8	DRY

**PROJECT CONGEDO PROPERTY**

DESIGNER: RHY  
 DATE: 05/23/14  
 ROBERT H. VOGEL ENGINEERING, INC.

ENVIRONMENTAL SITE DESIGN PRACTICE

AREA TREATED	FACILITY	PERMEABLE PAVEMENT	MICRO BIOTRETION	SHEET FLOW BUFFER	DRY WELL	ROOFTOP DISCONNECT	X	X	X	ESDv VOLUME
16690	MBR-1	0	690	0	0	0	0	0	0	690
17442	MBR-2	0	1029	0	0	0	0	0	0	1029
15829	MBR-4	0	125	0	0	0	0	0	0	125
	LEVEL SPREADER	0	0	96	0	0	0	0	0	96
	MBR-5	0	296	0	0	0	0	0	0	296
14198	MBR-6	0	264	0	0	0	0	0	0	264
	LEVEL SPREADER	0	0	96	0	0	0	0	0	96
	DRY WELL LOT 4	0	0	0	135	0	0	0	0	135
	DRY WELL LOT 5A	0	0	0	135	0	0	0	0	135
	DRY WELL LOT 5B	0	0	0	270	0	0	0	0	270
26259	MBR-7	0	432	0	0	0	0	0	0	432
	MBR-8	0	288	0	0	0	0	0	0	288
	MBR-9	0	144	0	0	0	0	0	0	144
	DRY WELL LOT 6	0	0	0	125	0	0	0	0	125
	DRY WELL LOT 7	0	0	0	625	0	0	0	0	625
	DISCONNECTIONS	0	0	0	0	39	0	0	0	39
9271	MBR-10	0	465	0	0	0	0	0	0	465
4857	MBR-3	0	288	0	0	0	0	0	0	288

TOTAL AREA: 0 SF / 0.00 AC  
 TOTAL ESDv PROVIDED: 0

NOTE: MICRO BIOTRETION VOLUMES ARE BASED FULL ESDv AND DO NOT REPRESENT THE REQUIRED STORAGE RATIO OF 75%

**NOTES:**

- ADDITIONAL HOUSE TYPES AND OPTIONS MAY FIT ON ANY GIVEN LOT.
- THE STAKING OF FOUNDATIONS PRIOR TO CONSTRUCTION TO ENSURE COMPLIANCE WITH REGULATORY BUILDING RESTRICTION LINES IS RECOMMENDED.
- A MINIMUM OF 10 FEET SHALL BE PROVIDED BETWEEN THE CHOSEN HOME MODEL AND A MICRO-BIOTRETION FACILITY.
- MODEL ELEVATION SHALL NOT EXCEED 34' MAX HEIGHT AS ALLOWED BY R-ED ZONE.
- IN ACCORDANCE WITH SECTION 128.0.A OF THE HOWARD COUNTY ZONING REGULATIONS:
  - MAX ENCROACHMENT INTO SETBACK FOR CORNICES, EAVES AND CANTILEVERED BUILDING FEATURES WHICH DO NOT CONTRADICT ANY FLOOR AREA OR EXTENSION OF INTERIOR LIVING SPACE IS: 3 FEET INTO ANY SETBACK.
  - MAX ENCROACHMENT INTO SETBACK FOR BAY WINDOWS, WINDOW WELLS, ORIELS, VESTIBULES, BALCONIES AND CHIMNEYS IS: 4 FEET INTO ANY SETBACK OR A REQUIRED DISTANCE BETWEEN BUILDINGS, PROVIDED THE FEATURE HAS A MAXIMUM WIDTH OF 16 FEET AS MEASURED HORIZONTALLY ALONG THE WALL FROM WHICH THE FEATURE EXTENDS.
  - MAX ENCROACHMENT INTO SETBACK FOR EXTERIOR STAIRWAYS OR RAMPS, ABOVE OR BELOW GROUND LEVEL EXCLUDING THOSE ATTACHED TO A PORCH OR DECK (SEE E) IS: 10 FEET INTO A FRONT SETBACK OR A SETBACK FROM A PROJECT BOUNDARY OR DIFFERENT ZONING DISTRICT; 16 FEET INTO A REAR SETBACK; 4 FEET INTO A SIDE SETBACK OR A REQUIRED DISTANCE BETWEEN BUILDINGS.
  - MAX ENCROACHMENT INTO SETBACK FOR OPEN OR ENCLOSED PORCHES AND DECKS, AND THE STAIRWAYS OR RAMPS ATTACHED THERETO IS: 10 FEET INTO A FRONT OR REAR SETBACK, A SETBACK FROM A PROJECT BOUNDARY, A SETBACK FROM A DIFFERENT ZONING DISTRICT, OR A REQUIRED DISTANCE BETWEEN BUILDINGS.
- REFER TO SECTION 128.0.A.1.J. PREVIOUS SECTION 128.A.1.1 OF THE ZONING REGULATIONS (CB-2-2012) WHICH ALLOWS SUNROOMS AND ROOM EXTENSIONS TO EXTEND NOT MORE THAN 10 FEET INTO THE REAR SETBACK ALONG NOT MORE THAN 60% OF THE REAR FACE OF A DWELLING ON A LOT WHICH ADJAINS OPEN SPACE ALONG A MAJORITY OF THE REAR LOT LINE FOR R-ED LOTS RECORDED AFTER THE EFFECTIVE DATE OF CB-2-2012 (MAY 13, 2012).

**SITE DEVELOPMENT PLAN**  
**HOUSE TYPES AND STORMWATER MANAGEMENT NOTES AND DETAILS**  
**THE PRESERVE AT RIVER HILL**  
 LOTS 1-8 - SINGLE FAMILY DETACHED AND OPEN SPACE LOTS 10 & 11

OWNER: ESTATES AT RIVER HILL, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

DEVELOPER: TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

REVISION: ADD STEPS TO DECKS VARIOUS LOTS  
 DATE: 8/16/16

ROBERT H. VOGEL ENGINEERING, INC.  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET, ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2016

DESIGN BY: RVE  
 DRAWN BY: MDL  
 CHECKED BY: RHY  
 DATE: MAY 2016  
 SCALE: AS SHOWN  
 W.O. NO.: 13-38

6 SHEET OF 6