ENVIRONMENTAL CONCEPT PLAN
MAGNOLIA MANOR
SF LOTS 1 - 44, SFD LOTS 45 - 61, AND OPEN SPACE LOTS 62 & 63
OLD SCAGGSVILLE ROAD
HOWARD COUNTY, MD

GENERAL NOTES

1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
2. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A HOWARD COUNTY GIS.
3. THE PROJECT BOUNDARY IS BASED ON PLAT 9114 AND DEED MOSAIC AS COMPLIED BY ROBERT H. VOGEL ENGINEERING, INC.,
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 NOS. 47GE AND 47GD WERE USED FOR THIS PROJECT.
5. THE SUBJECT PROPERTY IS ZONED "R-SC" IN ACCORDANCE WITH THE 10/6/2013 COMPREHENSIVE ZONING PLAN AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
6. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
7. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
8. WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 24-1943-D AND CONTRACT NO. 1-W.
9. SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 20-1943-D.
10. THERE ARE NO FLOODPLAIN, AND STEEP SLOPES OVER 20,000 SF CONTIGUOUS.
11. THE FOREST CONSERVATION OBLIGATION WILL BE ADDRESSED WITH THE FINAL SUBDIVISION PLAN.
12. IN A REPORT/PLAN TITLED "WETLAND DELINEATION & SIMPLIFIED FOREST STAND DELINEATION REPORT" PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED AUGUST 16, 2016 AND UPDATED ON NOVEMBER 16, 2016; MR. CANOLES IDENTIFIED THE ONSITE FOREST, WETLANDS AND STREAMS.

    MR. CANOLES NOTED: SPECIMEN TREES ARE PRESENT WITHIN THE WETLANDS AND BUFFERS ON THE SITE. GIVEN THEIR PROTECTED POSITION WITHIN THESE RESOURCES THEIR SPECIFIC LOCATION WAS NOT DETERMINED.
13. A GEOTECHNICAL STUDY WILL BE PROPOSED IN CONJUNCTION WITH THE PRELIMINARY PLAN.
14. OLD SCAGGSVILLE ROAD IS CLASSIFIED AS A LOCAL ROAD. GIDDINGS CROSSING IS A PUBLIC ACCESS PLACE AND LAURENS WAY IS A PUBLIC ACCESS STREET.
15. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES ON THIS PROPERTY. THERE IS A HISTORIC STRUCTURE LOCATED ON THIS PROPERTY.
16. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION (M-6), RIO-SWALE, PERVIOUS PAVING (A-2), A GRAVEL TRENCH, AND DRYWELL (M-5). THESE FACILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED.
17. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PROCESS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
18. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.

Specimen Tree Chart

Key (X#)	Species	Size (to dbh)	CRZ (feet radius)	Comments	
1	White oak	33	49.5	good condition	TO BE REMOVED
2	Tulip poplar	41.5	62.25	fair condition	TO REMAIN
3	Tulip poplar	34.5	51.75	fair condition	TO REMAIN
4	Red maple	34	51	fair condition, trunk rot	TO REMAIN
5	Willow oak	34	51	good condition	TO BE REMOVED
6	Willow oak	33	49.5	good condition	TO REMAIN
7	Sweet Gum	33	49.5	poor condition, substantial crown dieback	TO BE REMOVED
8	Southern red oak	35	52.5	dead	TO REMAIN
9	Black oak	37	55.5	good condition	TO REMAIN
10	Chestnut oak	33	49.5	fair condition, leaning	TO REMAIN
11	Chestnut oak	34.5	51.75	good condition, multi-stem	TO REMAIN
12	Tulip poplar	56	84	good condition	TO REMAIN
13	Chestnut oak	33.5	50.25	fair condition, leaning	TO REMAIN
14	White oak	32.5	48.75	good condition	TO REMAIN
15	Black oak	44	66	fair condition, trunk rot noted	TO REMAIN
16	Slippery elm	31	46.5	fair condition	TO REMAIN
17	Willow oak	36	54	good condition, some trimming noted	TO BE REMOVED

ENVIRONMENTAL SITE DESIGN NARRATIVE:

1. THE ENVIRONMENTAL AREAS FOR THIS SITE ARE LOCATED IN THE EASTERN PORTION OF THE SITE INCLUDING AN INTERMITTENT PERENNIAL STREAM AND NON-TIDAL WETLANDS. MINOR DISTURBANCES TO THE STREAM BUFFER ARE REQUIRED FOR STORM DRAIN OUTFALL CONSTRUCTION AND THE CONSTRUCTION OF A PUBLIC ROAD (LAURENS WAY). THERE WILL BE ENVIRONMENTAL DISTURBANCES REQUIRED TO REMAIN EXISTING PAVING WHICH SERVE THE EXISTING HOUSES. LASTLEY, THERE ARE ALSO DISTURBANCES ASSOCIATED WITH UTILITY CONSTRUCTION WHICH ARE CONSIDERED "NECESSARY DISTURBANCES". THERE IS APPROXIMATELY 3.54 AC. OF FOREST ON SITE. DISTURBANCES TO ENVIRONMENTAL FEATURES AND NATURAL RESOURCES WILL BE MINIMIZED TO THE GREATEST EXTEND POSSIBLE.
2. THE SITE NATURALLY SLOPES FROM WEST TO EAST. THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO DRAMATIC CHANGES TO THE NATURAL DRAINAGE.
3. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT TO THE MAXIMUM EXTENT PRACTICABLE (MEP). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION". THE ESD CONCEPT INCLUDES THE USE OF MICRO-BIORETENTION FACILITIES (M-6), PERVIOUS PAVING (A-2), DRYWELLS (M-5), GRAVEL TRENCH, AND BIO SWALE.
4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED SEDIMENT TRAPS, EARTH DIKES, CLEAR WATER DIKES, SUPER AND STANDARD SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.
5. STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-BIORETENTION FACILITIES (M-6), PERVIOUS PAVING (A-2), DRYWELLS (M-5),GRAVEL TRENCH, AND BIO SWALE. THE PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PE) FOR THIS PROJECT IS 1.76", AND THE TOTAL RUNOFF VOLUME (ESDv) REQUIRED IS 23,112 CF.
6. AN ALTERNATIVE COMPLIANCE REQUEST FOR ENVIRONMENTAL DISTURBANCES AND REMOVAL OF SPECIMEN TREES IS REQUIRED IN ORDER FOR THE PROPOSED DESIGN TO BE DEVELOPED. SUBMISSION OF THE ALTERNATIVE COMPLIANCE REQUEST WILL OCCUR AT THE SKETCH PLAN STAGE. SIGNIFICANT DESIGN CHANGES MAY OCCUR BASED ON THE REVIEW OF THE SKETCH PLAN AND THE ALTERNATIVE COMPLIANCE REQUEST.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4.10.17

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-10-17

SITE ANALYSIS DATA CHART

TOTAL PROJECT AREA:	15.18 AC.
NET AREA OF PROJECT:	15.18 AC.
AREA OF WETLANDS AND WETLAND BUFFERS:	125,333 S.F. OR 2.88 AC.
AREA OF FLOODPLAIN:	0.00 AC.
AREA OF FOREST:	3.54 AC. (REFER TO FSD)
AREA OF MODERATE SLOPES (15% TO 24.99%):	0.70 AC.
AREA OF STEEP SLOPES (25% OR GREATER):	0.00 AC. (WITHIN BOUNDARY)
ERODIBLE SOILS:	0.00 AC.
LIMIT OF DISTURBED AREA:	13.18 AC.
PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL
GREEN OPEN AREA:	9.81 AC. (OPEN AND ENVIRONMENTAL)
PROPOSED IMPERVIOUS AREA:	3.37 AC.
PRESENT ZONING DESIGNATION:	R-SC
DPZ FILE REFERENCES:	F-88-153

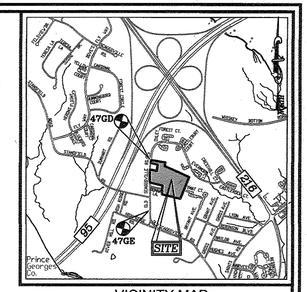
COVER SHEET
SCALE: 1"=60'

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 3
ESDv CONCEPT PLAN	2 OF 3
STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTE AND DETAILS	3 OF 3

BENCHMARKS

HOWARD COUNTY BENCHMARK – 47GE
N 529044.94 E 1350855.03 ELEV.: 337.61
HOWARD COUNTY BENCHMARK – 47GD
N 530494.49 E 1350872.35 ELEV.: 312.28



VICINITY MAP
SCALE: 1"=2,000'
ADC MAP COORDINATE: PAGE: 40 BLOCK: A6 & A7

LEGEND

- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- MICRO-BIORETENTION
- 24' PRIVATE USE IN COMMEN ACCESS EASEMENT
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- PROPOSED SIDEWALK
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN DRAIN INLET
- EX. FOREST CONSERVATION EASEMENT (REFORESTATION) PLATS# 23048-23055
- EX. WETLANDS
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- LOTLINES

DEVELOPER

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

REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN

COVER SHEET

MAGNOLIA MANOR

LOTS 1 – 61 AND OPEN SPACE LOTS 62 & 63
A SUBDIVISION OF TAX MAP 47 – PARCEL 465 AND A RESUBDIVISION OF
TAX MAP 47 – PARCEL 163 – GIDDINGS PROPERTY – SECTION 1 AREA 1 – LOTS 1-4 (PLAT 9114)

TAX MAP: 47 PARCELS: 163 & 465 — BLOCK: 19 ZONING: R-SC
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO 16193 — REGISTERED PROFESSIONAL ENGINEER — 3/31/17

ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV
DRAWN BY:	KG
CHECKED BY:	RHV
DATE:	MARCH 2017
SCALE:	AS SHOWN
W.O. NO.:	16-15

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: 09-27-2018

SHEET 1 OF 3

ECP-17-005

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- 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 FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- MICRO-BIORETENTION
- PROPOSED SIDEWALK
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN DRAIN INLET
- EX. FOREST CONSERVATION EASEMENT (REFORESTATION) PLAT# 23048-23055
- 24' PRIVATE USE IN COMMON ACCESS EASEMENT
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- EX. WETLANDS
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- SILT FENCE
- SUPER SILT FENCE
- EARTH DIKE
- CIP — CURB INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- LOD — LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- MODERATE SLOPES (15% – 24.99%)
- STEEP SLOPES (25% OR GREATER)
- CLEAN DIKE SWALE
- DF — DIVERSION FENCE
- LOT LINES

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.

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

DEVELOPER

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

REVISION	DATE

SILT FENCE PHASING DETAIL

N.T.S.

PHASE 1 SILT FENCE LOCATION SHALL BE REMOVED AND RELOCATED ABOVE THE OUTFALL ONCE OUTFALL INSTALLATION IS COMPLETE, AREA STABILIZED AND PERMISSION HAS BEEN OBTAINED BY THE SEDIMENT CONTROL INSPECTOR

ESDv CONCEPT PLAN

SCALE: 1"=50'

SCALE 1"=50'
25' 0' 50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/10/17

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-10-17

SOILS LEGEND

HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	HYDRIC	PRIME FARMLAND
Fa	FALLSINGTON SANDY LOAMS,0 TO 2 PERCENT SLOPES,NORTHERN COASTAL PLAIN	D	0.02	NO	YES	YES
CeB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	C	0.37	YES	NO	YES
SfB	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	B	0.24	NO	NO	YES
SrD	SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	0.32	NO	NO	NO
UcB	URBAN LAND-CHILLUM BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	0.43	YES	NO	NO

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

ENVIRONMENTAL CONCEPT PLAN

ESDv CONCEPT PLAN

MAGNOLIA MANOR

LOTS 1 – 61 AND OPEN SPACE LOTS 62 & 63
A SUBDIVISION OF TAX MAP 47 – PARCEL 465 AND A RESUBDIVISION OF
TAX MAP 47 – PARCEL 163 – GIDDINGS PROPERTY – SECTION 1 AREA 1 – LOTS 1–4 (PLAT 9114)

TAX MAP: 47 PARCELS: 163 & 465 — BLOCK: 19 ZONING: R-SC
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV
DRAWN BY:	KG
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DATE:	MARCH 2017
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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: 09-27-2018

SHEET 2 OF 3

ECP-17-005

SWM DRAINAGE AREA MAP

SCALE: 1"=60'

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- MICRO-BIORETENTION
- PROPOSED SIDEWALK
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- DRAIN INLET
- EX. FOREST CONSERVATION EASEMENT (REFORESTATION) PLATS# 23048-23055
- EX. WETLANDS
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- 24' PRIVATE USE IN COMMON ACCESS EASEMENT
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- PERVIOUS DRIVEWAY
- NRCS/MDE/HSCD STEEP SLOPES (>20%)
- HIGHLY ERODABLE SOILS
- LOT LINES

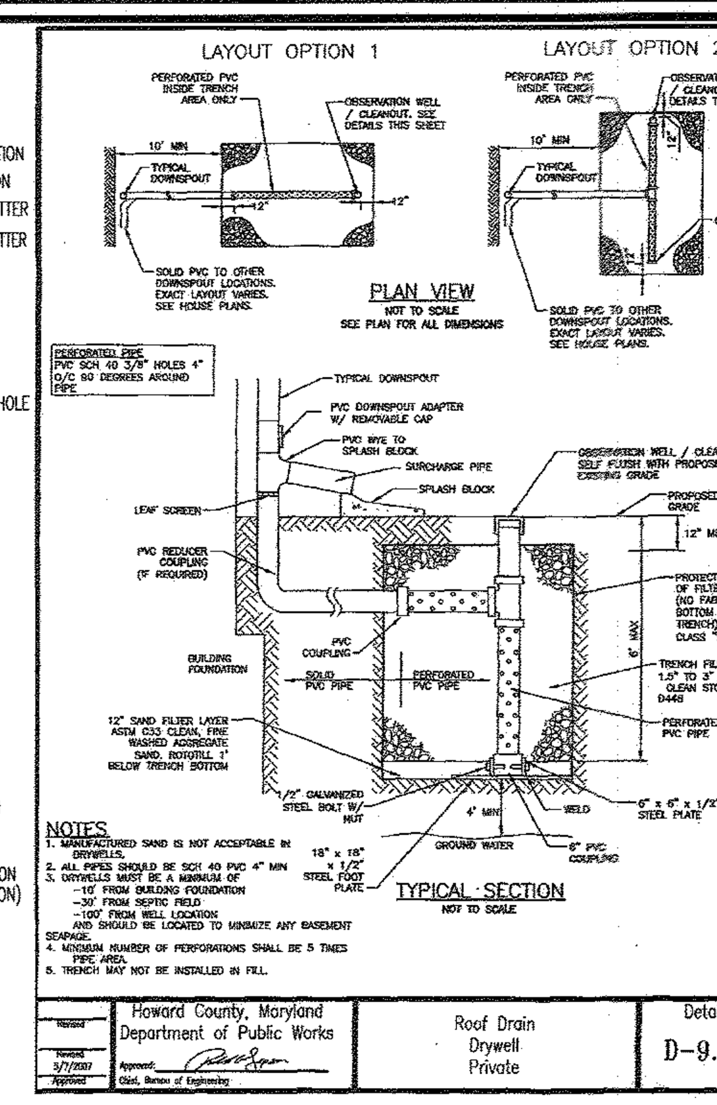
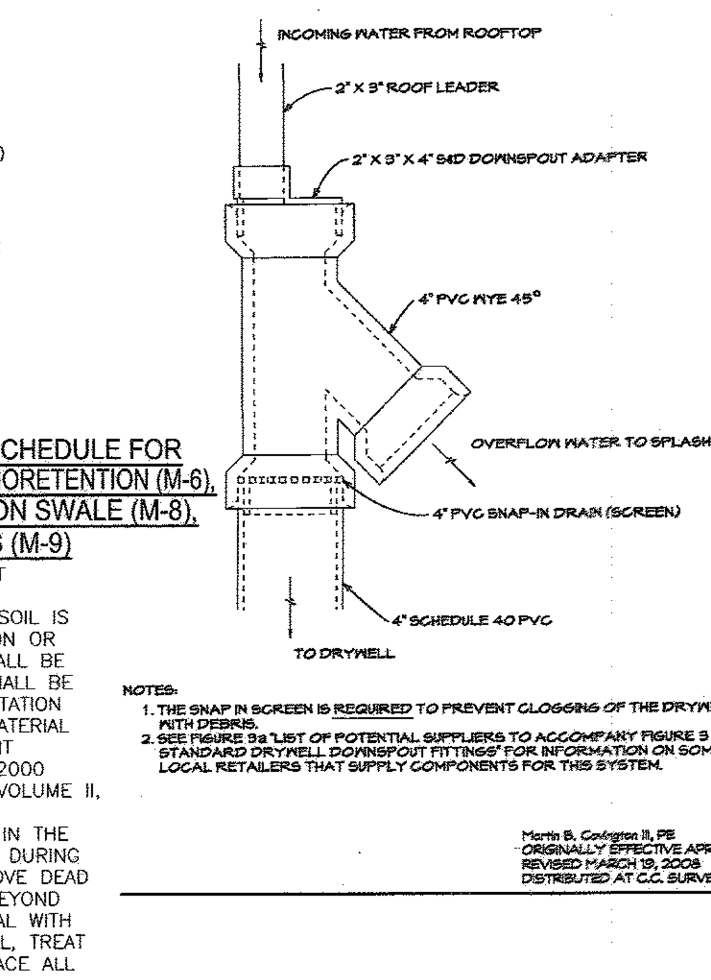


FIGURE 3
STANDARD DRYWELL DOWNSPOUT FITTINGS



NOTES:
1. THE SNAP IN SCREEN IS REQUIRED TO PREVENT CLOGGING OF THE DRYWELL WITH DEBRIS.
2. SEE FIGURE 3a "LIST OF POTENTIAL SUPPLIERS TO ACCOMPANY FIGURE 3 STANDARD DRYWELL DOWNSPOUT FITTINGS" FOR INFORMATION ON SOME LOCAL RETAILERS THAT SUPPLY COMPONENTS FOR THIS SYSTEM.

Martin B. Covington III, PE
ORIGINALLY EFFECTIVE APRIL, 2006
REVISED MARCH 19, 2008
DISTRIBUTED AT C.C. SURVEYORS MTG.

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

1. MATERIAL SPECIFICATIONS

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

2. FILTERING MEDIA OR PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

* SOIL COMPONENT – LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
* ORGANIC CONTEN – MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
* CLAY CONTENT – MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
* PH RANGE – SHOULD BE BETWEEN 5.5 – 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. 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 LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

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

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE 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 PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

* PIPE – SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).
* PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" 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. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
* THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
* A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 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 MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

THIS 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).

7. MISCELLANEOUS

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

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

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULTCH 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 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.
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.
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.

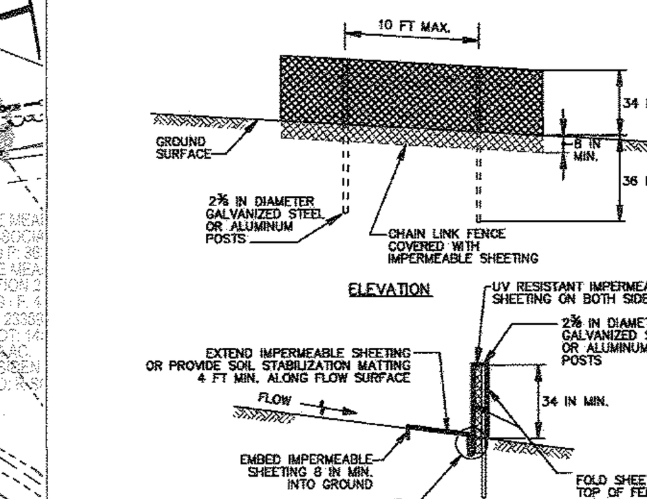
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 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.

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL — DF —

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

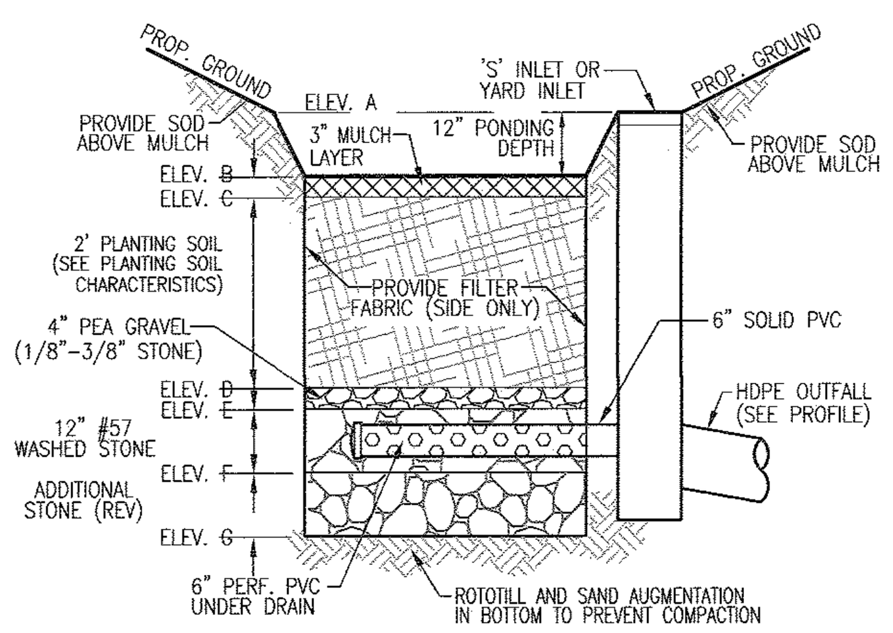
1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

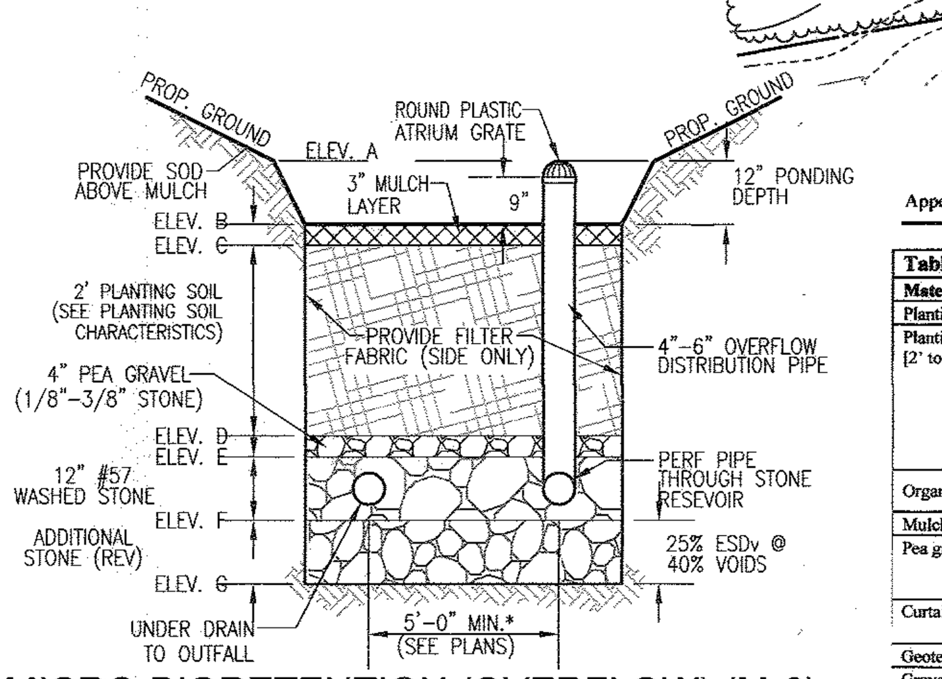
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MICROBIORETENTION NOTES:

1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETNTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESIVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)



MICRO-BIORETENTION (UNDERDRAIN) (M-6)
NOT TO SCALE

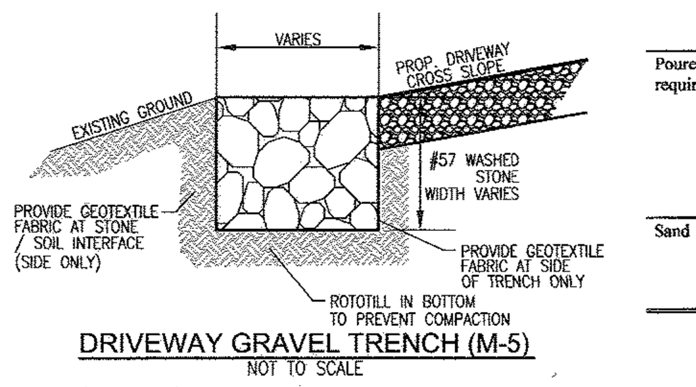


MICRO-BIORETENTION (OVERFLOW) (M-6)
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 4.10.17
CHIEF, DEVELOPMENT ENGINEERING DIVISION JP — DATE

[signature] 4-10-17
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE



DRIVEWAY GRAVEL TRENCH (M-5)
NOT TO SCALE

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

Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration-

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

PROJECT MAGNOLIA MANOR
DESIGNER RHV
DATE 08/20/16

ROBERT H. VOGEL ENGINEERING, INC.
MAGNOLIA MANOR
ENVIRONMENTAL SITE DESIGN PRACTICE (CF)

DRAINAGE AREA #	AREA TREATED	FACILITY NUMBER	PERMEABLE PAVEMENT	GRAVEL BELOW PP	MICRO BIORTENTION	GRAVEL BELOW MBR	SAND FILTER	GRAVEL BELOW SF	DRY WELL	X X	ESDv VOLUME
1	1240	1AB	0	0	0	0	0	0	87	0	87
	1240	1C	0	0	173	0	0	0	0	0	173
	800	1D	0	0	0	0	0	0	111	0	111
2	1240	2AB	0	0	0	0	0	0	174	0	174
	1240	2C	0	0	173	0	0	0	0	0	173
3	1880	3A	0	0	348	0	0	0	0	0	348
	1240	3B	0	0	173	0	0	0	0	0	173
4	1240	4A	0	0	173	0	0	0	0	0	173
5	23186	5A	0	0	1156	0	0	0	0	0	1156
6	2480	6ABCD	0	0	0	0	0	0	346	0	346
	45652	6E	0	0	2343	0	0	0	0	0	2343
7	2400	7A-F	0	0	0	0	0	0	494	0	494
	4920	PERV	876	0	0	0	0	0	0	0	876
	1625	7G	0	0	226	0	0	0	0	0	226
	45261	7H	0	0	2379	0	0	0	0	0	2379
8	1058	8AB	0	0	0	0	0	0	147	0	147
	1863	8CDE	0	0	0	0	0	0	260	0	260
	2160	8FGHI	0	0	0	0	0	0	301	0	301
	27015	8J	0	0	1128	0	0	0	0	0	1128
9	1104	9AB	0	0	0	0	0	0	154	0	154
	1104	9CD	0	0	0	0	0	0	154	0	154
	1620	9EFG	0	0	0	0	0	0	226	0	226
	540	9H	0	0	0	0	0	0	75	0	75
	28624	9I	0	0	1085	0	0	0	0	0	1085
10	1242	10AB	0	0	0	0	0	0	173	0	173
	1863	10CDE	0	0	0	0	0	0	296	0	296
	1242	10FG	0	0	0	0	0	0	173	0	173
	19092	10H	0	0	843	0	0	0	0	0	843
11	1140	PERV	282	0	0	0	0	0	0	0	282
	3967	11A	0	0	45	0	0	0	0	0	45
12	3420	PERV	670	0	0	0	0	0	0	0	670
	28676	12A	0	0	1825	0	0	0	0	0	1825
13	16400	13A	0	0	0	0	818	0	0	0	818
14	14956	14A	0	0	0	0	648	0	0	0	648
15	1600	15A-E	0	0	0	0	0	0	223	0	223
	13356	15F	0	0	522	0	0	0	314	0	836
16	3000	PERV	480	0	0	0	0	0	0	0	480
	26978	16A	0	0	1850	0	0	0	0	0	1850

ROBERT H. VOGEL ENGINEERING, INC.

PROJECT:	MAGNOLIA MANOR		
AREA:	14.33	AC	GROSS AREA
AREA:	9.52	AC	LIMIT OF DISTURBANCE
IMPERVIOUS	3.48	AC	
TARGET Pe:	1.76	IN	
Rv	0.38		
ESDv	23113	CF	TOTAL ESDv TARGET

MAGNOLIA MANOR

DRAINAGE AREA	IMPERVIOUS AREA	GRASS AREA	TOTAL AREA	PERCENT IMPERVIOUS	RV	ESDv MIN	ESDv MAX	ESDv TARGET	ESDv PROVIDED
1*	3280	0	3280	1.00	0.95	260	675	457	457
2*	2480	0	2480	1.00	0.95	196	510	346	347
3*	3740	0	3740	1.00	0.95	296	770	521	521
4*	1240	0	1240	1.00	0.95	98	255	173	173
5	17685	30447	48132	0.37	0.38	1527	3970	2687	2689
6	17685	30447	48132	0.37	0.38	1527	3970	2687	2689
7	27450	26756	54206	0.51	0.51	2285	5940	4021	3975
8	12147	19949	32096	0.38	0.39	1045	2716	1839	1836
9	10834	22158	32992	0.33	0.35	950	2470	1672	1694
10	9851	13588	23439	0.42	0.43	836	2175	1472	1485
11	2189	2772	4961	0.44	0.45	185	481	325	327
12	17031	15065	32096	0.53	0.53	1411	3669	2483	2495
13	5200	11200	16400	0.32	0.34	458	1192	807	818
14	4000	11780	15780	0.25	0.28	366	951	644	648
15	4800	10156	14956	0.32	0.34	422	1098	743	745
16	15934	14044	29978	0.53	0.53	1320	3432	2323	2330

* THIS AREA IMPERVIOUS AREA ONLY

TOTAL ESDv PROVIDED 23229 CF

SCALE 1"=60'
30' 0' 60'

DEVELOPER

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

	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP
MAGNOLIA MANOR

LOTS 1 – 61 AND OPEN SPACE LOTS 62 & 63
A SUBDIVISION OF TAX MAP 47 – PARCEL 465 AND A RESUBDIVISION OF
TAX MAP 47 – PARCEL 163 – GIDDINGS PROPERTY – SECTION 1 AREA 1 – LOTS 1-4 (PLAT 9114)

TAX MAP: 47 PARCELS: 163 & 465 — BLOCK: 19 ZONING: R-SC
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 3/7/17
[signature]
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV
DRAWN BY: KG
CHECKED BY: RHV
DATE: MARCH 2017
SCALE: AS SHOWN
W.O. NO.: 16-15

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: 09-27-2018

ECP-17-005