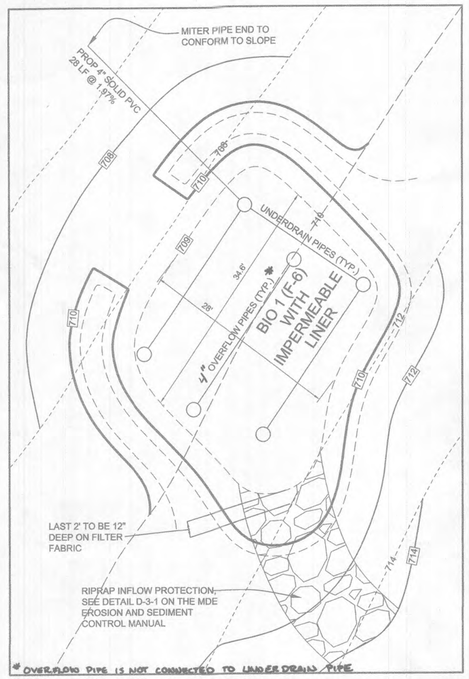
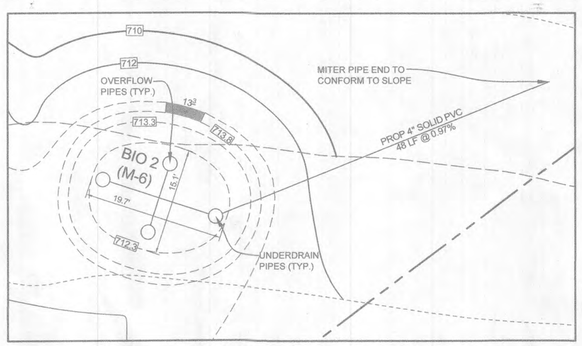


PLAN VIEW - MICROBIORETENTION FACILITY #1

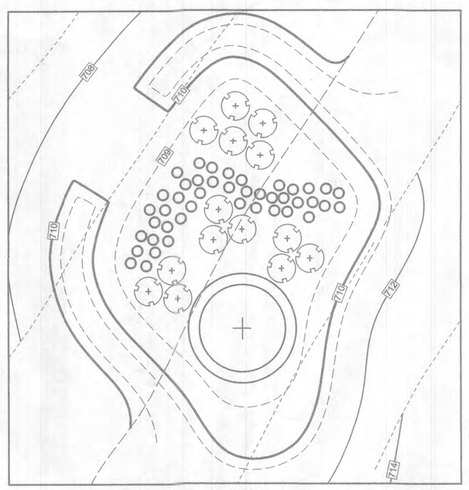
SCALE: 1"=10'



PLAN VIEW - MICROBIORETENTION FACILITY #2

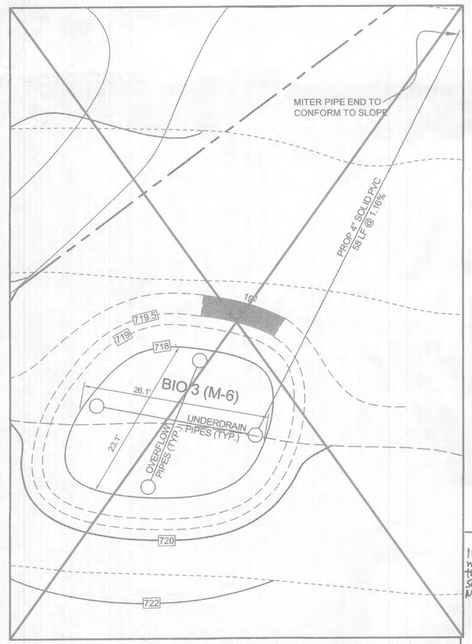
SCALE: 1"=10'

NOTE: BIO TO BE THE RESPONSIBILITY OF THE FUTURE OWNER OF LOT 3 AND WILL BE CONSTRUCTED UNDER THE HOMES BUILDING AND GRADING PERMITS.



LANDSCAPE - MICROBIORETENTION FACILITY #1

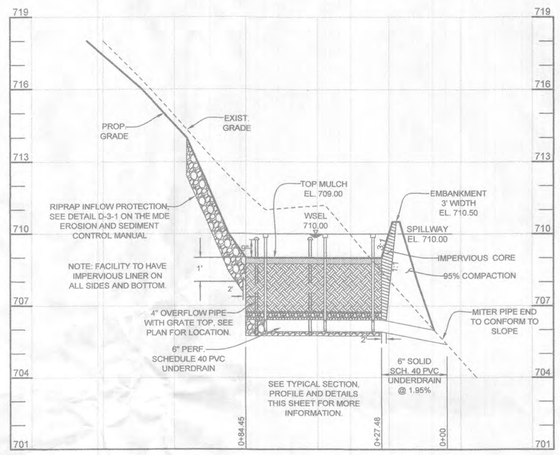
SCALE: 1"=10'



~~PLAN VIEW - MICROBIORETENTION FACILITY #3~~

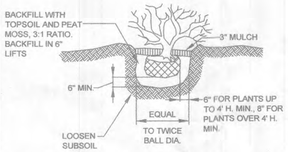
~~SCALE: 1"=10'~~

~~NOTE: BIO TO BE THE RESPONSIBILITY OF THE FUTURE OWNER OF LOT 4 AND WILL BE CONSTRUCTED UNDER THE HOMES BUILDING AND GRADING PERMITS.~~



MICROBIORETENTION FACILITY #1 (M-6) PROFILE

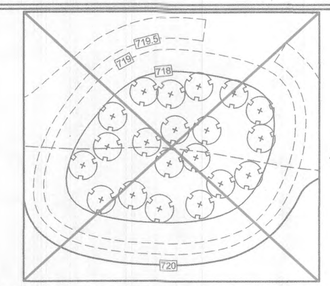
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



TYP. SHRUB PLANTING DETAIL

NOT TO SCALE

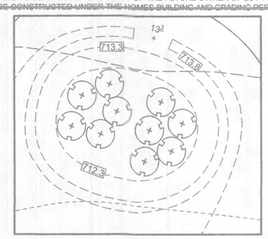
FOR MBR-3 (LOT 1) CONSTRUCTION & PLANTING DETAILS SEE SHEET 10



~~PLANTING - MICROBIORETENTION FACILITY #3~~

~~GOALS: 4 trees~~

~~NOTE: BIO TO BE THE RESPONSIBILITY OF THE FUTURE OWNER OF LOT 4 AND WILL BE CONSTRUCTED UNDER THE HOMES BUILDING AND GRADING PERMITS.~~



PLANTING - MICROBIORETENTION FACILITY #2

SCALE: 1"=10'

NOTE: BIO TO BE THE RESPONSIBILITY OF THE FUTURE OWNER OF LOT 3 AND WILL BE CONSTRUCTED UNDER THE HOMES BUILDING AND GRADING PERMITS.

BIORETENTION PLANT LIST

SYMBOL	KEY	BOTANICAL NAME	COMMON NAME	SIZE @ FULL GROWTH	SPACING	SIZE	QUANTITY BIO 1	QUANTITY BIO 2	~~QUANTITY BIO 3~~	NOTES	BIO 4
		SHRUBS									
+	HA	HAMAMELIS X INTERMEDIA 'JELENA'	WITCH HAZEL 'JELENA'	17'-6" SF	AS SHOWN (MIN. 15' O.C.)	36"-48" HT.	1	0	~~0~~		0
+	VDE	ILEX VERTICULATA	WINTERBERRY	12.56 SF	AS SHOWN (MIN. 5' O.C.)	18"-24" HT.	14	10	~~8~~	ONE MALE SPECIES PER BIO	23
○	EC	ECHINCEA	PURPLE CONEFLOWER	3.14 SF	AS SHOWN (MIN. 2' O.C.)	#1	43	0	~~0~~		0

NOTE: PLANT MATERIAL MUST COVER 50% OF THE MULCH AREA AT MATURE GROWTH.
BIO 1 - BIORETENTION AREA = 973 S.F. OR 0.015 AC. 50% = 486.5 S.F. 1 HA (176.7 SF) + 14 VDE (12.56 SF) + 43 EC (3.14 SF) = 487.56 SF

BIO 2 - BIORETENTION AREA = 241 S.F. OR 0.005 AC. 50% = 120.5 S.F. 10 VDE (12.56 SF) = 125.60 SF

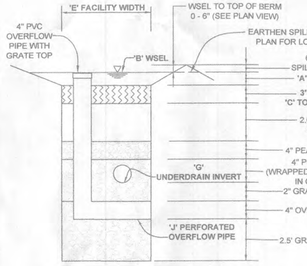
~~BIO 3 - BIORETENTION AREA = 480 S.F. OR 0.011 AC. 50% = 240 S.F. 20 VDE (12.56 SF) = 251.20 SF~~

MICRO-BIORETENTION ELEVATIONS AND DIMENSIONS

DESCRIPTION	BIO 1	BIO 2	~~BIO 3~~	BIO 4
'A' PONDING DEPTH	1.00'	1.00'	~~1.00'~~	1.00'
'B' WSEL	710.00'	713.30'	~~710.00'~~	692.5'
'C' TOP OF MULCH	709.00'	712.30'	~~710.00'~~	691.5'
'D' FACILITY LENGTH	34.6'	19.7'	~~20.1'~~	46.0'
'E' FACILITY WIDTH	28.0'	15.1'	~~18.1'~~	19.5'
'F' PERF. UNDERDRAIN DIMENSION	73.63'	18.57'	~~38.03'~~	64.0'
'G' UNDERDRAIN INVERT	706.09'	709.22'	~~710.00'~~	688.33'
'H' SOLID UNDERDRAIN DIMENSION	27.48'	46.81'	~~67.55'~~	75.8'
'I' OUTFALL INVERT	705.55'	708.75'	~~710.00'~~	675.2'
'J' OVERFLOW PIPE	705.75'	708.72	~~710.75'~~	688.33'

PIPE SCHEDULE

SIZE	TYPE	LENGTH
4" PERFORATED	SCH 40 PVC	99 LF
4" SOLID	SCH 40 PVC	28 LF



BIORETENTION FACILITY TYPICAL SECTION

NOT TO SCALE

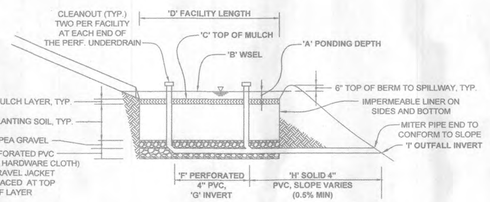
PROFESSIONAL CERTIFICATION

I hereby certify that the red line markups shown hereon were prepared or approved by me, and that I am a duly licensed Professional Land Surveyor under the laws of the State of Maryland, License # 11094 EXPIRES 2/10/23.

STATE OF MARYLAND MOHAMED NAJIB BOSHAN No. 11094 REGISTERED PROFESSIONAL LAND SURVEYOR

10/3/22
M. Najib Boshan DATE

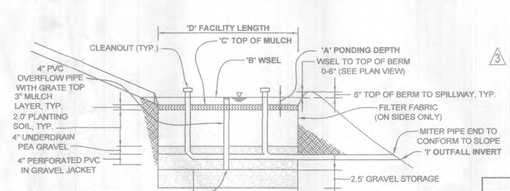
(FOR LOT 2 ONLY)



NOTES:
- FOR ADDITIONAL INFORMATION, SEE THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II.
- SEE CHART, THIS SHEET, FOR ELEVATIONS AND DISTANCES
- BIORETENTION FACILITIES 1 AND FUTURE BIORETENTION RG 1B ARE TO BE WRAPPED IN IMPERMEABLE LINERS.

BIORETENTION FACILITY WITH IMPERMEABLE LINER PROFILE

NOT TO SCALE



NOTES:
- FOR ADDITIONAL INFORMATION, SEE THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II.
- SEE CHART, THIS SHEET, FOR ELEVATIONS AND DISTANCES

BIORETENTION FACILITY TYPICAL PROFILE

NOT TO SCALE

MATERIALS SPECIFICATIONS FOR MICROBIORETENTION FACILITIES

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE PLANT LIST THIS SHEET	N/A	PLANTINGS ARE SITE-SPECIFIC, SEE PLANT LIST THIS SHEET
PLANTING SOIL [2'-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 AND CURTAIN DRAIN, IF REQUIRED	PEA GRAVEL: ASTM-D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL: NO. 8 OR NO. 9 (1/8" TO 3/8") STONE: 2" TO 5"	
GEOTEXTILE		N/A	PE TYPE 1 NONWOVEN
UNDERDRAIN GRAVEL	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 1/4" GALVANIZED HARDWARE CLOTH.
IMPERMEABLE LINER (IF REQUIRED)	ASTM-D-4833 (THICKNESS) ASTM-D-412 (TENSILE STRENGTH 1,100 LB, ELONGATION 200%) ASTM-D-282 (TEAR RESISTENCE - 150 LB/IN) ASTM-D-471 (WATER ABSORPTION: + 8 TO -2% MASS)	30 MIL THICKNESS	LINER TO BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHOULD BE USED TO PROTECT THE LINER FROM PUNCTURE.

B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION. RAIN GARDENS, 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 CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
- PH RANGE – SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE 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 TOPS OIL 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 A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

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

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

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 (ASTM# 758, TYPE PS28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G. PVC OR HDPE).
- PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE ⅜" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A ½" (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 (⅜" TO ¾" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEDS 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).

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

FOREST PROTECTION NOTES

PRE-CONSTRUCTION ACTIVITIES
1. FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
2. FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
3. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNE TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

CONSTRUCTION PHASE:
1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.
3. IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.

POST-CONSTRUCTION ACTIVITIES
1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
3. DO NOT REMOVE SIGNS.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED MICRO-BIORETENTION FACILITIES (F-6 AND M-6)

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.
2. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD OR 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.

OWNER/DEVELOPER

DORSEY CONTRACTORS, INC
MR. PHILLIP H. DORSEY, PRESIDENT
13090 OLD FREDERICK ROAD
SYKESVILLE, MARYLAND 21784

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER

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: 09-27-2024

ROBERT H. VOGEL, PE No.16193

FOR LOT 1 ONLY

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1.23.20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1.9.20

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS MK — DATE 12/30/2019

NO.	DESCRIPTION	DATE
	REVISIONS	
3	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 1	2/14/24
	AND THE GRADING ON LOT 3	
2	UPDATED HOUSE TYPE, GRADING, SWM	6/5/22
1	NEW SHEET, REVISED SWM NOTES AND DETAILS	7/24/18

REVISED BIORETENTION NOTES AND DETAILS
HAY MEADOW OVERLOOK

LOTS 1-4, BUILDABLE PRESERVATION PARCEL A, NON-BUILDABLE PRESERVATION PARCEL B, AND NON-BUILDABLE BULK PARCEL C

WATERSVILLE ROAD

TAX MAP 2 GRID 15,21 — PARCEL 18
4TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

STATE OF MARYLAND MICHAEL J. SILL No. 32025 PROFESSIONAL ENGINEER

SILL ENGINEERING GROUP, LLC
11130 Dovedale, Suite 200
Marriottsville, Maryland 21104
Phone: 443.325.5076
Fax: 410.696.2022
Email: info@sillengineering.com
Civil Engineering for Land Development

DESIGN BY: PS
DRAWN BY: NM
CHECKED BY: PS
SCALE: AS SHOWN
DATE: JUNE 20, 2019
PROJECT #: 17-067
SHEET #: 7 of 10

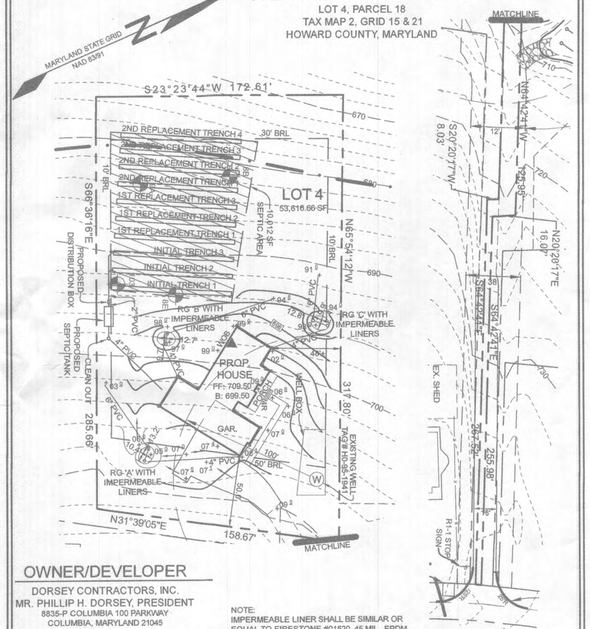
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32025, EXPIRATION DATE: JUNE 20, 2020

F-09-110

ACREAGE: 10.00
AGRICULTURAL
ZONING: RC-DEO
S57°58'08"E 1037.96'
EX. WELL
175.65
NON-BUILDABLE
PRESERVATION
PARCEL B
808,701 SF OR 18.5652 AC±
OcB
100' EXISTING
VEGETATION
50' EXISTING
VEGETATION
PERIMETER 2
PROP. SEPTIC EASEMENT
18,003 SF
10' PUBLIC TREE
MAINTENANCE
EASEMENT
PUBLIC SIGHT
DISTANCE &
UTILITY
EASEMENT
EXISTING
UTILITY
POLE
LOT 2
53,662.29 SF
B10-4
N 615,600
E 1,285,600
N 615,250
E 1,285,400
177.20
234.85
119.20
181.59'
178.69'
148.00'
S44°27'00"W
PROP. SEPTIC EASEMENT
10,065 SF
LOT 3
54,951.73 SF
PROP.
HOUSE
FF: 718.10
B: 708.10
PROP. MAC
DRIVEWAY
WELL LINE. NO TREES TO BE
PLANTED IN THIS LOCATION
(10 FEET)
EXISTING
UTILITY
POLE
EXISTING 20'
PAVING
LAND DEDICATED TO HOWARD
COUNTY, MARYLAND FOR THE
PURPOSE OF A PUBLIC ROAD
WATERSVILLE ROAD
SCENIC ROAD MINOR
COLLECTOR 50' RIGHT-OF-WAY
APPROVED
SEWAGE
DISPOSAL AREA
(10,000 SF)
151.15'
180.12' BRL
NON-BUILDABLE
BULK PARCEL C
256,661 SF OR 5.8921 AC±
PROPOSED VARIABLE
WIDTH ACCESS, STORM
WATER MANAGEMENT &
UTILITY ESMT
VARIABLE WIDTH PRIVATE USE IN
COMMON ACCESS AND DRAINAGE
EASEMENT FOR THE USE AND
BENEFIT OF LOTS 1, 3, 4, BUILDABLE
PRESERVATION PARCEL A, &
NON-BUILDABLE PARCEL C
PROP. 12"
CULVERT
PROP.
HOUSE
FF: 704.66
B: 694.66
LOT 1
46,834.24 SF
6" FLUSH CURB AT
DRAINAGE FILLET TYP
OF 4 TH SIDES
EXISTING
UTILITY
POLE
PC:STA. 0+00=
10+29.44
12' LT.
TC.ELEV.=734.00
PT:STA. 0+38.78=
0+37.08
8' LT.
TC.ELEV.=736.10
PC:STA. 0+00=
9+67.17
12' LT.
TC.ELEV.=738.10
R1-1 STOP
SIGN
PROPOSED
8'X10' BUS
STOP &
STANDING PAD
EX. SHED
TO REMAIN
EX. POOL
TO REMAIN
EX. WELL
PERIMETER 1
317.88'
LOT 4
53,616.88 SF
PROP.
HOUSE
FF: 705.50
B: 699.50
285.66'
158.67'
172.64'
MATCHLINE SHEET 9
MATCHLINE SHEET 9
BtF
BrD
OcC
Co
BeB
CmB
CmC
BaB
BaC
BaD
BeB
BeC
BeD
CmB
CmC
BtF
BrD
OcC
Co
BeB
CmB
CmC
BaB
BaC
BaD
BeB
BeC
BeD
CmB
CmC
MODERATE SLOPES
2.18 AC.±
FOREST CONSERVATION
RETENTION
588,060 SF (13.5 AC.±)
STEEP SLOPES
6.50 AC.±
100' STREAM BUFFER
PERENNIAL STREAM
INTERMITTENT STREAM
HAY MEADOW
BARREN LAND
AGRICULTURAL
ZONING: RC-DEO
AGRICULTURAL
ZONING: RC-DEO
TAX MAP 2
PARCEL 18, L. 8125
F. 672
33.284 AC.
ZONING: RE-DEO
MARYLAND STATE GRID
N21°58'34"E 480.97'
N35°14'56"E 603.15'
E 1,284,000
N 615,600
594.97
595.98
597.86
597.86
605.17
603.15
617.72'
417.61'
175.41'
LOD
LOD
LOD
LOD
30' BRL
10' BRL
18' BRL
BIO RG-8C WITH IMPERMEABLE LINER
BIO RG-8B
PROP. SWM EASEMENT
10,075 SF
PROP. 8" SEWER
PROP. 12" WATER
EX. 8" WATER
EX. 8" SEWER
EX. 12" WATER
EX. 8" SEWER
EX. 12" WATER
EX. 8" SEWER
EX. 12

572 WATERVILLE ROAD

LOT 4, PARCEL 18
TAX MAP 2, GRID 15 & 21
HOWARD COUNTY, MARYLAND



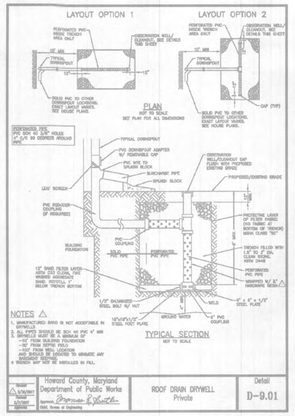
NOTE:
IMPERMEABLE LINER SHALL BE SIMILAR OR EQUAL TO FIRESTONE #01520, 45 MIL., EPDM.

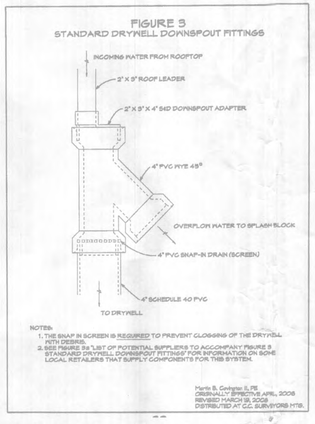
OWNER/DEVELOPER

DORSEY CONTRACTORS, INC.
MR. PHILLIP H. DORSEY, PRESIDENT
8835-P COLUMBIA 100 PARKWAY
COLUMBIA, MARYLAND 21045
410.730.1810

Adcock & Associates · LLC
Engineers · Surveyors · Planners
5389 Enterprise Street Suites B-C Sykesville, Maryland 21784 Phone: 443.325.7682 Email: mike@saaland.com

DATE: 09-17-2020
SCALE: 1"=50'
FILE NO.: 18-070



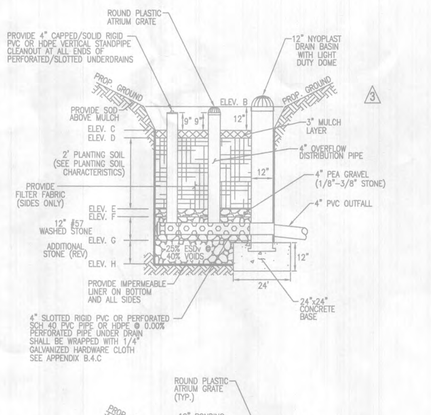


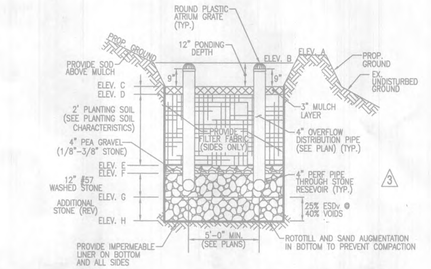
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES (I-1) AND DRY WELLS (M-5)

1. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS, AND AFTER EVERY LARGE STORM EVENT.
2. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED, SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY–TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOGBOOK 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.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N–1) AND DISCONNECTION OF NON–ROOFTOP RUNOFF (N–2)

1. 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 OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.





MICRO-BIORETENTION (MBR-3)

W/ INLET STRUCTURE AND UNDERDRAIN OUTFALL

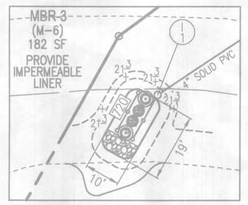
NOT TO SCALE

MICRO-BIORETENTION FACILITY ELEVATIONS (M-6)

FACILITY	A	B	C	D	E	F	G	H	WQE ELEV.	UNDERDRAIN INVERT	OUTFALL ELEVATION	FACILITY SIZE
MBR–3	721.30	721.00	720.00	719.75	717.75	717.42	716.42	715.59	N/A	716.75	716.00	182 SF

geotextile fabric (if required)	ASTM-D-4833 (puncture strength - 125 lb.) ASTM-D-4632 (Tensile Strength - 300 lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to "separate" sand filter layers.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength at break, elongation 200%) ASTM-D-624 (Tear resistance - 150 lbf/in) ASTM-D-471 (water absorption: 1.0 to 2.5% max)	30 mil thickness	Liner to be stress/crack resistant. A geotextile fabric should be used to protect the liner from puncture.

GEOTEXTILE FABRIC & IMPERMEABLE LINER SPECIFICATIONS



MBR-3 PLANTING DETAIL (182 SF)

SCALE: 1"=20'

MICRO-BIORETENTION PLANTING SCHEDULE (MBR-3)

	QTY.	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	2	LINDERA BENZOIN SPICEBUSH	3 GALLON	CONT.
	2	ILEX GLABRA INKBERRY	3 GALLON	CONT.

1. SF x 0.0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
2. PLANTINGS REQUIRED: 4

SWM PLAN

SCALE: 1"=40'

OWNER	DEVELOPER
PHILLIP H. DORSEY 13090 OLD FREDERICK ROAD SYKESVILLE, MD 21784 240–755–7378	M. GREGORY HOME BUILDING, LLC 6310 WINTERS LANE HANOVER, MD 21076 240–755–7378

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 P: 410.461.8961 www.timmons.com

SCALE	AS SHOWN
DRAWN BY	JMR
CHECKED BY	RHV
DATE	FEBRUARY 2024
W. O. #	03–117
SHEET#	3 OF 7

PLOT PLAN
HAY MEADOW OVERLOOK - LOT 1
540 WATERSVILLE ROAD
MOUNT AIRY, MD 21771

L. 19022 / F. 322
4TH ELECTION DISTRICT
TAX MAP: 2 GRID: 15

PARCEL: 18
ZONED: RC–DEO
HOWARD COUNTY, MARYLAND

STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	TOP EL.	INV. IN	INV. OUT	COMMENTS
I–1	12" NYOPLAST DRAIN BASIN	N 615205.77 E 1284908.03	721.00	716.75	716.65	PROVIDE LIGHT DUTY BEEHIVE DOME

LOT 1 SWM DETAILS
VOGEL ENGINEERING + TIMMONS GROUP

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: 09–27–2024

ROBERT H. VOGEL, PE No.16193

STATE OF MARYLAND ROBERT HARRIS VOGEL No 16193 REGISTERED PROFESSIONAL ENGINEER

FOR LOT 1 ONLY

NO.	DESCRIPTION	DATE
3	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 1 AND THE GRADING ON LOT 3	2/14/24

REVISIONS

PURPOSE STATMENT

THE PURPOSE OF THIS SHEET 10 IS TO CLARIFY REVISION OF THE HOUSE AND GRADE FOR HAY MEADOWS OVERLOOK BUILDABLE LOTS FROM A GENERAL BOX TO A NEW HOUSE TYPE.

REVISED FINAL ROAD CONSTRUCTION PLAN
REVISED HAY MEADOWS OVERLOOK

LOTS 1–4, BUILDABLE PRESERVATION PARCEL A, NON-BUILDABLE PERSERVATION PARCEL B, AND NON-BUILDABLE BULK PARCEL C

TAX MAP 2 GRID 15 & 21
4TH ELECTION DISTRICT

PARCEL 18
HOWARD COUNTY, MARYLAND

Adcock & Associates · LLC
Engineers · Surveyors · Planners
5389 Enterprise Street, Suites B-C
Sykesville, Maryland 21784
Phone: 443.325.7682
Email: info@saaland.com

DESIGN BY:	DR
DRAWN BY:	JT
CHECKED BY:	MA
SCALE:	AS SHOWN
DATE:	OCTOBER 9, 2020
PROJECT #:	18-070
SHEET #:	10 of 10

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR, UNDER THE LAWS OF THE STATE OF MARYLAND, REG. NO. 21257, EXPIRATION DATE: 08-16-2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11.4.20

F-09-110