

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 TOPOGRAPHIC SURVEY PREPARED BY VOGEL ENGINEERING + TIMMONS GROUP, DATED AUGUST 2018. OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS.
3. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY VOGEL ENGINEERING + TIMMONS GROUP, DATED SEPTEMBER 2018.
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. 176A AND 176B WERE USED FOR THIS PROJECT.
5. THE SUBJECT PROPERTY IS ZONED "R-20" 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 SERVICE CONNECTIONS FROM CONTRACT NO. 71-W.
9. SEWER FOR THIS PROJECT IS TO BE SERVICE CONNECTIONS FROM CONTRACT NO. 412-S.
10. EXISTING UTILITIES LOCATED FROM TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS; CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
11. NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ONSITE.
12. FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A SUBDIVISION OR SITE DEVELOPMENT PLAN.
13. WETLANDS ARE PRESENT ONSITE PER ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, JULY, 2018.
14. IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THE OPEN SPACE REQUIREMENTS FOR THIS R-20 PROJECT (20,000 SF LOT) IS 6% OF GROSS AREA (5.27 AC. GROSS AREA X 6% = 0.32 AC.).
15. GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AS PART OF THE SITE DEVELOPMENT PLAN PACKAGE.
16. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
17. FOREST STAND DELINEATION PLAN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, ON SEPTEMBER 2018.
18. MR. CANOLES NOTED 7 SPECIMEN TREES ON THE PROJECT SITE. THIS PLAN PROPOSAL REQUIRES THE REMOVAL OF ZERO SPECIMEN TREES.
19. BETHANY LANE IS CLASSIFIED AS A MINOR ARTERIAL. SITE ACCESS SHALL BE VIA A USE-IN-COMMON DRIVEWAY.
20. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS PROPERTY.
21. THE EXISTING DWELLING (CIRCA 1955) ON PROPOSED LOT 4 IS TO REMAIN. THE EXISTING OUT BUILDING ON PROPOSED LOT 1 WILL BE REMOVED.
22. THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
23. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF MICRO-SCALE AND NON STRUCTURAL PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE RAIN GARDEN (M-7) FACILITIES AND RAIN BARRELS (M-1) AS WELL AS NON STRUCTURAL PRACTICES; DISCONNECTION OF ROOFTOP RUNOFF (N-1) AND SHEET FLOW TO CONSERVATION AREA (N-3). THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
24. 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.
25. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME.

ENVIRONMENTAL SITE DESIGN NARRATIVE:

- IN ACCORDANCE WITH CHECKLIST ITEM III.K.
1. THE NATURAL AREAS ON THE PROJECT SITE ARE LOCATED TOWARD THE CENTER OF THE SITE DRAINING FROM NORTH TO SOUTH. WETLAND DEVELOPMENT IS PRESENT ALONG THE STREAM VALLEY AND ALONG THE SOUTHEASTERN PROPERTY BOUNDARY. MINIMAL DISTURBANCE TO THE STREAM BUFFER, WETLAND AND WETLAND BUFFER OR WOODED RESOURCES IS PROPOSED WITH THE ADDITION OF A PROPOSED USE-IN-COMMON DRIVEWAY. NO STREAM DISTURBANCE IS PROPOSED WITH THE ADDITION OF A BRIDGE TO SPAN OVER THE EXISTING STREAM.
 2. NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED, PLEASE REFER TO THE PROPOSED GRADING, SHEET 2.
 3. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT. THE ESD CONCEPT INCLUDES THE USE OF MICRO-SCALE AND NON STRUCTURAL PRACTICES INCLUDING A RAIN GARDEN (M-7), MICRO BIORETENTION (M-6) FACILITIES AND DRYWELLS (M-5). ALSO, NON STRUCTURAL PRACTICES AS SHEET FLOW TO CONSERVATION AREA (N-3) IS PROPOSED. THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION".
 4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED SUPER SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.
 5. STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-SCALE AND NON STRUCTURAL PRACTICES INCLUDING A RAIN GARDEN (M-7), MICRO BIORETENTION (M-6) FACILITIES AND DRYWELLS (M-5). ALSO, NON STRUCTURAL PRACTICES AS SHEET FLOW TO CONSERVATION AREA (N-3) IS PROPOSED. THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION".
- TARGET PE = 1.43" PROVIDED PE = 1.43"
 TARGET ESDV = 2,564 CUFT PROVIDED = 2,574 CUFT
6. AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS AND/OR ALTERNATIVE COMPLIANCE FOR ENVIRONMENTAL AND STORMWATER MANAGEMENT DESIGN ARE REQUIRED.
 7. THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING CONSIDERS THE PROPOSED STREAM CROSSING AS "NECESSARY DISTURBANCE IN ACCORDANCE WITH SECTION 16.116(C)(1) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER EMAIL DATED NOV 26, 2018."

Eco-Science Professionals, Inc.
 Consulting Ecologists
 P.O. Box 2086 Glen Arden, Maryland 21057 Telephone (410) 832-2488 Fax (410) 832-2488

MD DNR Qualified Professional USACOE Wetland Delineator
 Certification # WD061004B2
 John P. Canoles

1. NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR APPROPRIATE HABITATS WERE OBSERVED ON THE PROPERTY DURING FIELD REVIEW BY ECO-SCIENCE PROFESSIONALS, INC.
2. SURROUNDING LAND USE IS HIGH DENSITY RESIDENTIAL DEVELOPMENT.
3. THROUGH THE REAR OF THE PROPERTY IS SURROUNDED BY AN OAK/POPLAR FOREST, NO FOREST RESOURCES ARE PRESENT ON THE SITE. TREE AND SHRUB ENCROACHMENT ALONG THE PERIMETER OF THE SITE IS NOT SUFFICIENT TO BE CONSIDERED FOREST ON THE PROPERTY.
4. THE WETLANDS AND STREAMS ON THE SUBJECT PROPERTY ARE PART OF THE USE IV WATERSHED OF THE LITTLE PATUXENT RIVER (02-13-11). THE WETLANDS WILL REQUIRE 25' BUFFERS, THE STREAM WILL REQUIRE 100 FOOT BUFFERS.
5. THERE ARE NO KNOWN HISTORIC STRUCTURES OR CEMETERIES ON THE PROPERTY.
6. THE SITE CONTAINS 0.42 ACRES OF 100 YEAR FLOODPLAIN.
7. THERE ARE 7 SPECIMEN TREES ON THE PROPERTY. THERE ARE NO KNOWN TREES THAT ARE STATE CHAMPION TREES AND OR TREES 75% OF THE SIZE OF THE STATE CHAMPION TREE ON THE PROPERTY.
8. WETLAND AND STREAM LIMITS WERE FIELD DELINEATED IN JULY 2018.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Blumhagen 2/15/19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kent E. Jones 2/12/19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

ENVIRONMENTAL CONCEPT PLAN

SCHNEIDER SUBDIVISION

3071 BETHANY LANE
 ELLICOTT CITY, MD. 21042
 HOWARD COUNTY, MD

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.



SPECIMEN TREE CHART

TREE	SPECIES	SIZE (IN. DBH)	CRZ (FT. RADIUS)	COMMENTS
ST-1	ORNAMENTAL CYPRESS	36	54	GOOD CONDITION - TO REMAIN
ST-2	BLACK WALNUT	55.5	83.25	GOOD CONDITION - TO REMAIN
ST-3	BLACK WALNUT	36.5	54.75	GOOD CONDITION - TO REMAIN
ST-4	BLACK CHERRY	40	60	FAIR CONDITION, LIMITED CROWN - TO REMAIN
ST-5	WILLOW OAK	37	55.5	POOR CONDITION, SPLIT TRUNK - TO REMAIN
ST-6	WHITE OAK	37	55.5	GOOD CONDITION - TO REMAIN
ST-7	WHITE OAK	37	55.5	FAIR CONDITION, WRAPPED IN WIRE - TO REMAIN

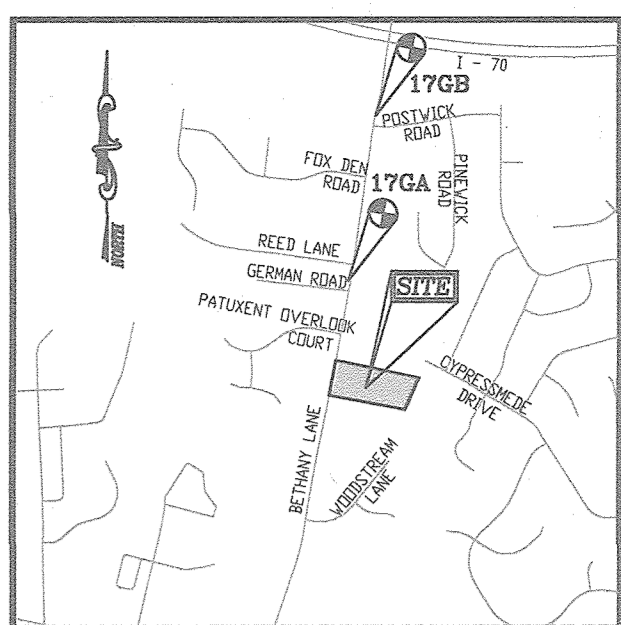
MINIMUM SETBACK COMPUTATIONS

ADDRESS	CLOSEST HOUSE CORNER TO CL OF ROAD
3029 BETHANY LANE	99.38'
3033 BETHANY LANE	99.54'
3037 BETHANY LANE	97.88'
3041 BETHANY LANE	62.35'
3071 BETHANY LANE (PROPOSED LOT 4)	57.81'
3081 BETHANY LANE	107.71'
3085 BETHANY LANE	64.42'
3093 BETHANY LANE	64.01'
3101 BETHANY LANE	66.29'
AVERAGE SETBACK FROM CL ROAD	79.93'

SITE ANALYSIS DATA CHART

A. TOTAL PROJECT AREA:	5.27 AC.
B. AREA OF PLAN SUBMISSION:	5.27 AC.
C. AREA OF WETLANDS AND BUFFERS:	58,668 S.F. OR 1.35 AC +/-
D. AREA OF FLOODPLAIN:	0.42 AC +/-
E. AREA OF FOREST:	0.00 AC. (REFER TO FSD)
F. AREA OF STEEP SLOPES (15% & GREATER):	51,898 S.F. OR 1.14 AC.
G. ERODIBLE SOILS:	0.00 AC.
H. LIMIT OF DISTURBED AREA:	1.80 AC. +/-
I. PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL SINGLE FAMILY DETACHED (SFD) HOMES
J. GREEN OPEN AREA:	2.23 AC.
K. PROPOSED IMPERVIOUS AREA:	0.45 AC.
L. PRESENT ZONING DESIGNATION:	R-20
M. OPEN SPACE REQUIRED:	0.32 ACRES (6%)
N. TOTAL NUMBER OF UNITS ALLOWED:	4
O. TOTAL NUMBER OF UNITS PROPOSED:	3 PROPOSED, 1 EXISTING
P. DPZ FILE REFERENCES:	-

BENCHMARKS
 COORDINATES BASED ON NAD 83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 0080, 47CMT3.
 HOWARD COUNTY BENCHMARK
 176A N 591048.516 E 1352732.111 ELEV. 432.027
 176B N 592656.774 E 1353019.981 ELEV. 441.515



SHEET INDEX

DESCRIPTION	SHEET NO.
LAYOUT PLAN	1 OF 3
SOILS MAP, GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN	2 OF 3
SWM DRAINAGE AREA MAP, NOTES & DETAILS	3 OF 3

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 HOWARD COUNTY FLOODPLAIN
- 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
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- PROPOSED TREELINE
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PRIVATE SEWER & UTILITY EASEMENT

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DEVELOPER
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 5850 WATERLOO ROAD, #140
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ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN
SCHNEIDER SUBDIVISION
 LOTS 1 - 4, OPEN SPACE LOTS 5 & 6 AND NON-BUILDABLE BULK PARCEL A
 A SUBDIVISION OF TAX MAP 17 - PARCEL 136

TAX MAP: 17 PARCEL 136
 2ND ELECTION DISTRICT

ZONING: R-20
 HOWARD COUNTY, MARYLAND

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PROFESSIONAL CERTIFICATE
 DESIGN BY: RHV/EDS
 DRAWN BY: MDL/EDS
 CHECKED BY: RHV
 DATE: FEBRUARY 2019
 SCALE: AS SHOWN
 W.O. NO.: 41899

1 SHEET OF 3

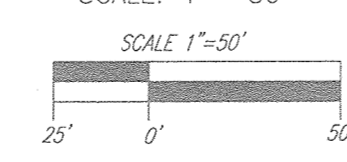


- LEGEND:**
- PROPERTY LINE
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 - EXISTING CURB AND GUTTER
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 - EXISTING WETLANDS
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 - EXISTING SANITARY LINE
 - EXISTING CLEANOUT
 - EXISTING FIRE HYDRANT
 - EXISTING WATER LINE
 - EXISTING TREE LINE
 - EXISTING TREES
 - EXISTING WOOD FENCE
 - EXISTING METAL FENCE
 - PROPOSED 2' CONTOUR
 - PROPOSED 10' CONTOUR
 - PROPOSED WATER HOUSE CONNECTION
 - PROPOSED SEWER HOUSE CONNECTION
 - PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
 - PROP. PRIVATE SEWER & UTILITY EASEMENT
 - SLOPES 15% TO 24.9%
 - SLOPES 25% AND GREATER
 - MICRO-BIORETENTION
 - LIMIT OF DISTURBANCE
 - STABILIZED CONSTRUCTION ENTRANCE
 - SSF SUPER SILT FENCE

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SOILS MAP, GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN



MAPPED SOILS TYPES - HOWARD COUNTY, MARYLAND (MD027)				<15% SLOPE	
SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	Ks RANGE	PERCENT FLOODABLE	W/ EROSION POTENTIAL
GhB (LENNILLE-BALE Silt Loams, 0 to 8 Percent Slopes)	G	YES	0.37/0.32	NO	NO
MhC (MAJOR LOAM, 8 to 15 Percent Slopes)	B	NO	0.24	YES*	NO
MhD (MAJOR LOAM, 15 to 25 Percent Slopes)	B	NO	0.24	NO	YES

NOTE:
 *TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
 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

NOTE:
 - SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 - SUPER SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 33 FEET APART.
 - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] **2/15/19**
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] **2/12/19**
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 SOILS MAP, GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN
SCHNEIDER SUBDIVISION
 LOTS 1 - 4, OPEN SPACE LOTS 5 & 6 AND NON-BUILDABLE BULK PARCEL A
 A SUBDIVISION OF TAX MAP 17 - PARCEL 136

TAX MAP: 17 PARCEL 136 ZONING: R-20
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

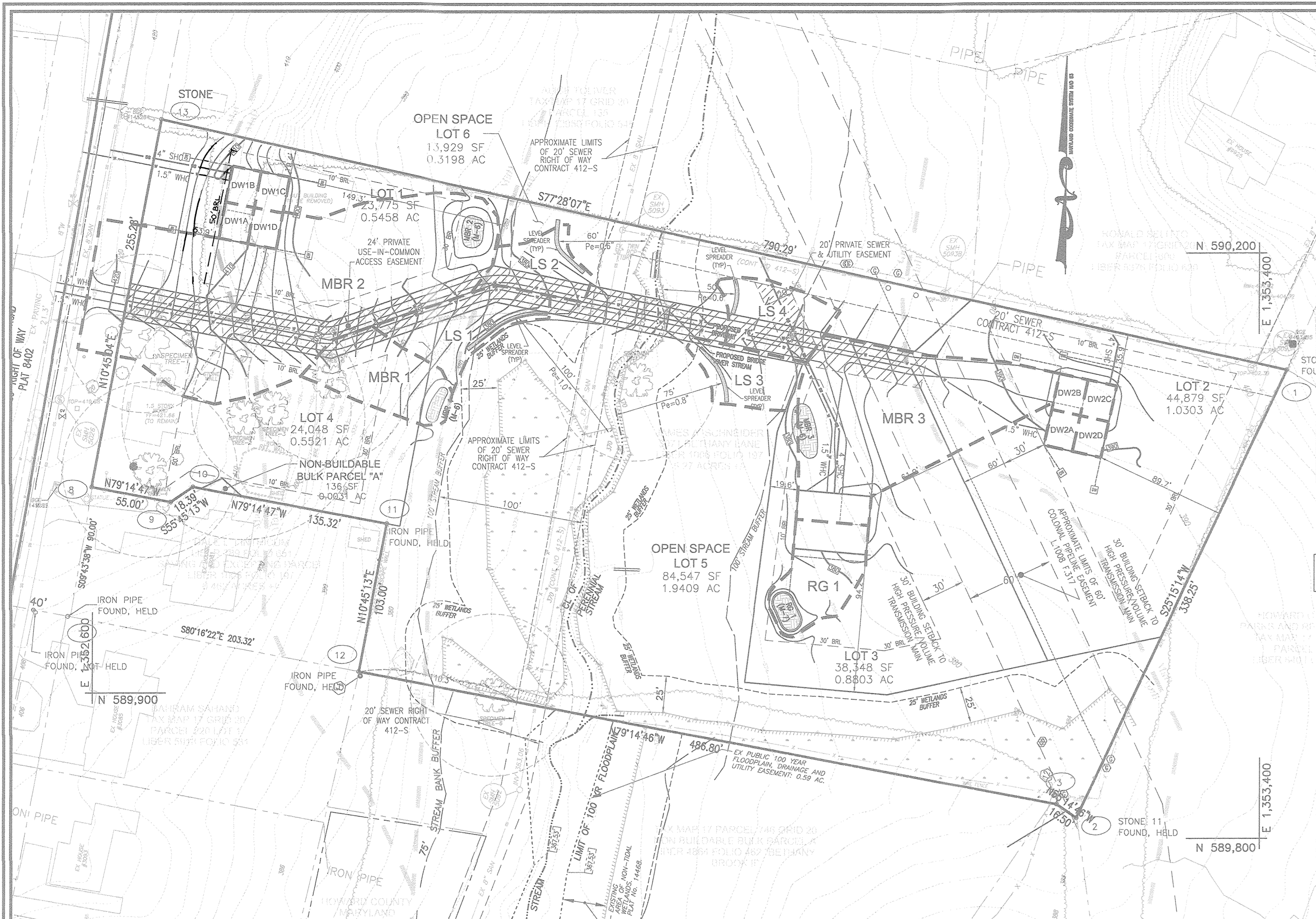
ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
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PROFESSIONAL CERTIFICATE

DESIGN BY: RHV/EDS
 DRAWN BY: MOL/EDS
 CHECKED BY: RHY
 DATE: FEBRUARY 2019
 SCALE: AS SHOWN
 W.O. NO.: 41899

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: 02-27-2020

2 OF 3
 SHEET



PROJECT:	SCHNEIDER PROPERTY		TOTAL ESDv TARGET	
AREA:	1.09	AC	GROSS AREA	47480.4
AREA:	1.81	AC	LIMIT OF DISTURBANCE	78843.6
IMPERVIOUS	0.45	AC		19602
B'	1.02	AC		0.56
C'	0.79	AC		0.44
TARGET PE:	1.43	IN		
Rv	0.27			24.86
ESDv	2564	CF		

SCHNEIDER PROPERTY		GRASS	TOTAL	PERCENT	Rv	ESDv	ESDv	ESDv	ESDv
DRAINAGE AREA #	IMPERVIOUS	AREA	AREA	IMPERVIOUS	MIN	MAX	TARGET	PROVIDED	
Lot 1 DW A-D	2000	0	2000	1.00	0.95	158	412	226	269
MBR 2	4960	17140	22100	0.22	0.25	464	1207	817	655
MBR 1	510	5340	5850	0.09	0.13	63	163	110	163
LS 1	760	1760	2520	0.30	0.32	68	176	68	68
LS 2	640	2460	3100	0.21	0.24	61	158	37	37
Lot 2 DW A-D	2000	0	2000	1.00	0.95	158	412	226	269
MBR 3	3920	3205	7125	0.55	0.55	324	842	461	653
Lot 3 DW A&B	1000	0	1000	1.00	0.95	79	206	139	139
LS 3	660	2490	3150	0.21	0.24	63	163	50	50
LS 4	600	1500	2100	0.29	0.31	54	140	32	32
RG 1	1000	3050	4050	0.25	0.27	92	239	131	239

* LS=Level Spreader for Sheet Flow to Buffer

TOTAL ESDv PROVIDED 2574

DRAINAGE AREA #	AREA TREATED	FACILITY NUMBER	PERMEABLE PAVEMENT	SHT FLOW TO BUFFER	SCHNEIDER PROPERTY ENVIRONMENTAL SITE DESIGN PRACTICE (CF)									ESDv VOLUME	
					PERMEABLE PAVEMENT	BIOTENTION	SWALE	SWALE	ROOFTOP DISCONNECT	DRY WELL	NON-ROOFTOP				
					BIOTENTION	SWALE	SWALE	ROOFTOP DISCONNECT	DRY WELL	ROOFTOP DISCONNECT	DRY WELL	DRY WELL	DRY WELL		
Lot 1	2000	1A-1D	0	0	0	0	0	0	0	0	269	269			
UIC DW	22100	MBR 2	0	0	855	0	0	0	0	0	0	855			
UIC DW	5850	MBR 1	0	0	163	0	0	0	0	0	0	163			
UIC DW	2520	LS 1	0	0	68	0	0	0	0	0	0	68			
UIC DW	3100	LS 2	0	0	37	0	0	0	0	0	0	37			
Lot 2	2000	2A-2D	0	0	0	0	0	0	0	0	269	269			
Lot 3	7125	MBR 3	0	0	863	0	0	0	0	0	0	863			
Lot 3	1000	3A&B	0	0	0	0	0	0	0	0	0	139			
UIC DW	3150	LS 3	0	0	50	0	0	0	0	0	0	50			
UIC DW	2100	LS 4	0	0	32	0	0	0	0	0	0	32			
Lot 3	4050	RG 1	0	0	239	0	0	0	0	0	0	239			

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIOTRETION, 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-BIOTRETION 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 BERMOUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COWAR 15.02.01.05.
 THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
 * SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
 * ORGANIC MATTER - MINIMUM 1.0% BY 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. AMMONIUMS (E.G. UREA, 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.

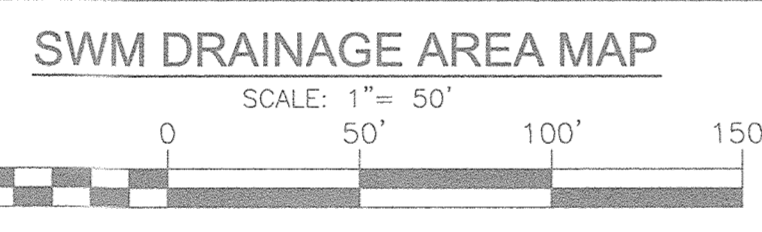
3. COMPACTION
 IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIOTRETION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT 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 BIOTRETION 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. SUSTAINING 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 BIOTRETION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PUMPED 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 GRADED ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINISH GRADE.
 WHEN BACKFILLING THE BIOTRETION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIOTRETION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOIL AND SAND. GRADE BIOTRETION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

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

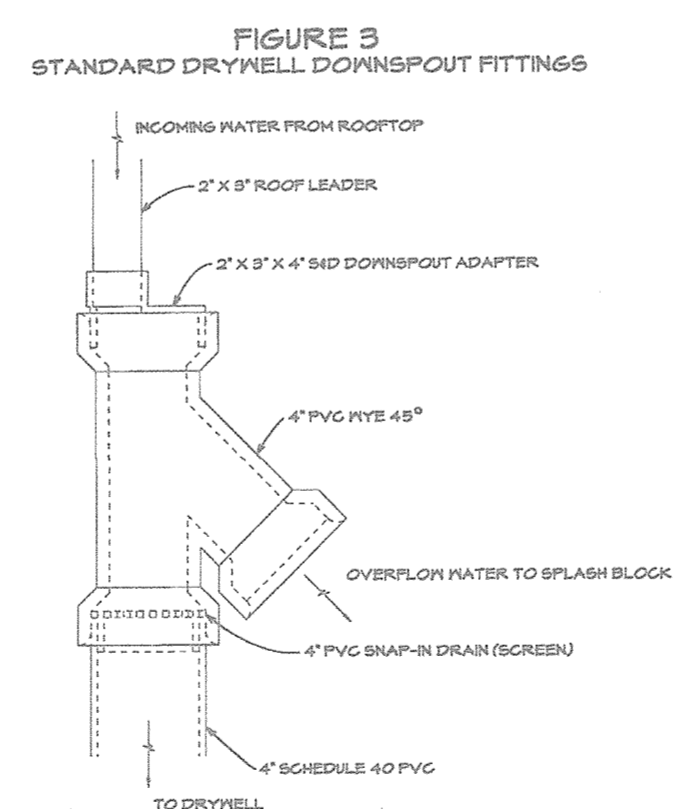
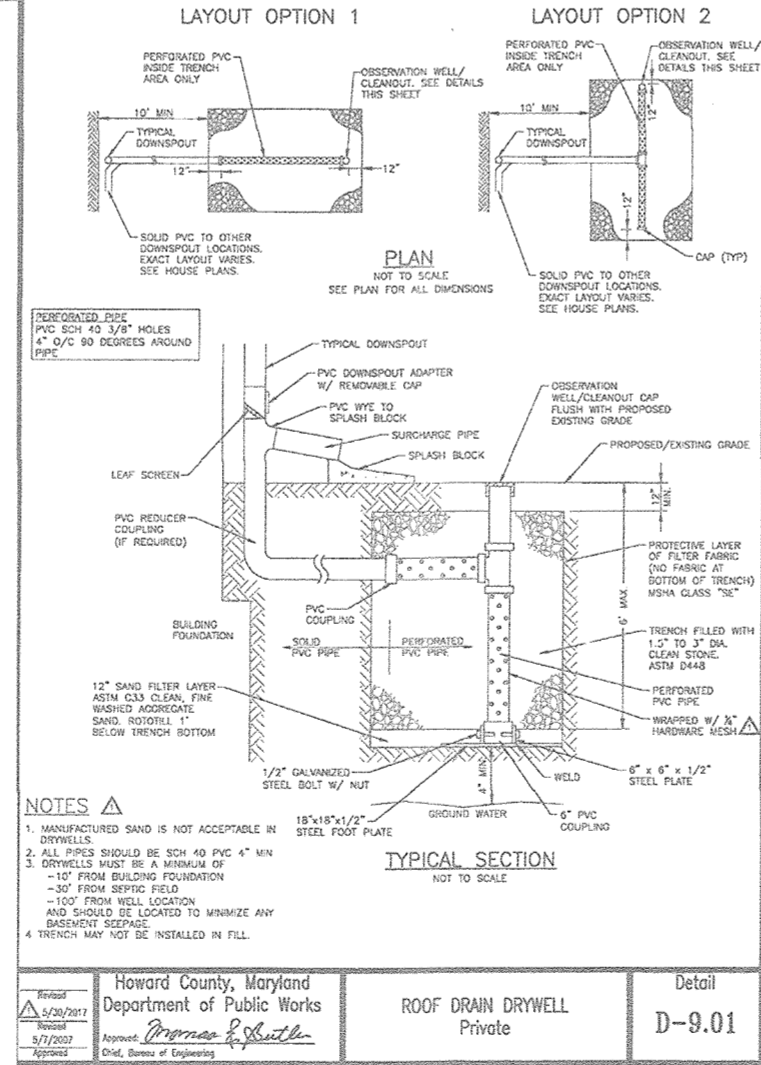
5. PLANT INSTALLATION
 COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUSTAINING 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 BIOTRETION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PUMPED 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 GRADED ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINISH GRADE.
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6. PLANT MATERIAL
 RECOMMENDED PLANT MATERIAL FOR MICRO-BIOTRETION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

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

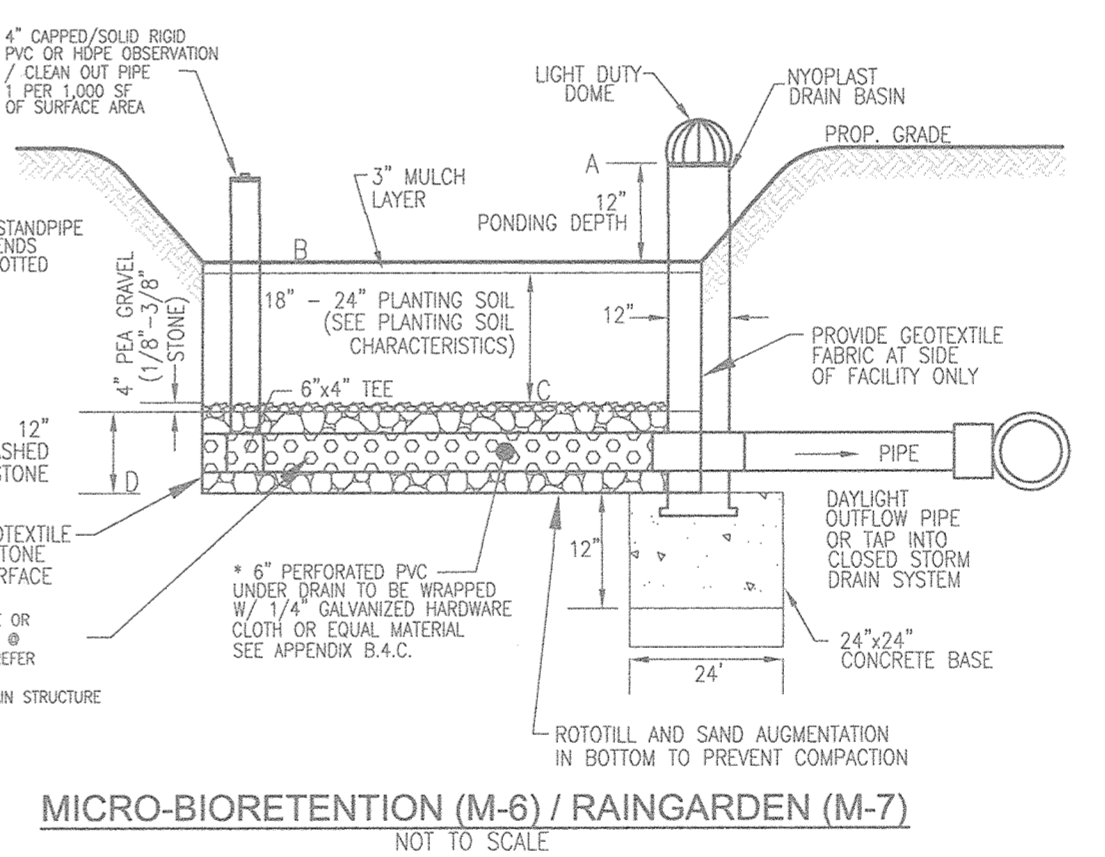


- NOTES:**
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMITS.
 - REVIEW OF THIS PLAN FOR COMPLIANCE WITH ZONING AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE PERMIT STAGE; AND THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN PROGRESSES THROUGH THE PERMIT PROCESS.

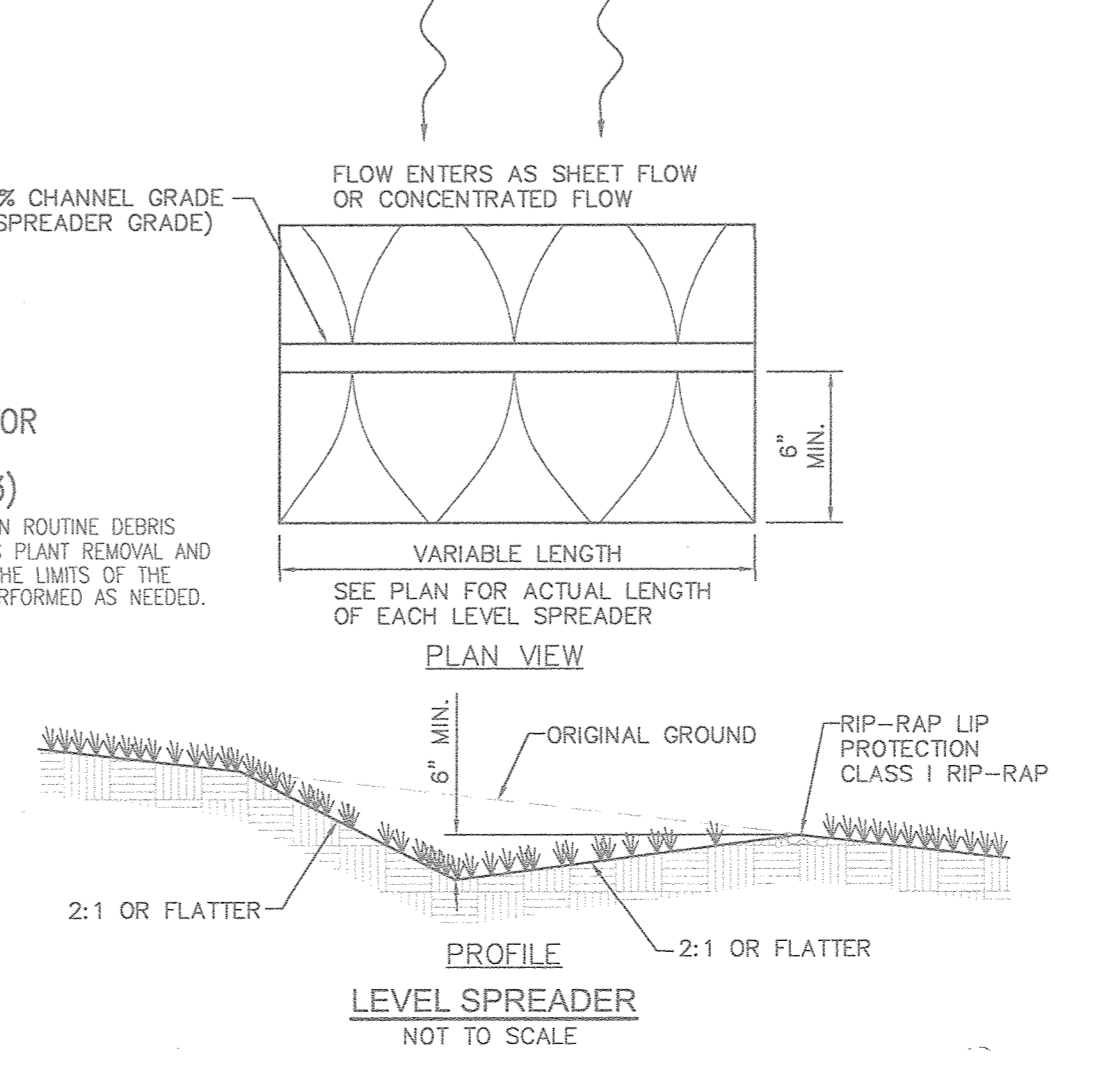


- OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)**
- THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
 - WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED EVERY 4 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.

- 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 BI-ANNUAL MOWING FOR MEADOW AREAS MAY BE NEEDED. SIGNS DELINEATING THE LIMITS OF THE CONSERVATION AREA SHOULD BE MAINTAINED AND SUPPLEMENTAL PLANTINGS PERFORMED AS NEEDED.



- OPERATION AND MAINTENANCE SCHEDULE FOR RAINGARDENS (M-7)**
- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EXPOSURE 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.
 - SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEFORE TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DECEDENT STAKES AND WIRES.
 - MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
 - SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil	loamy sand (60 - 65%) & compost (35 - 40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5% (2" to 4" deep)
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	
Mulch	shredded hardwood	n/a	used 6 months, minimum no pine or weed chips
Geotextile	Min. 10% by dry weight (ASTM D 5910)	n/a	
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	
Geotextile	AASHTO M-43	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	57 OR NO. 6 AGGREGATE (38" to 34")	n/a	
Underdrain piping	F-758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR335	Slotted or perforated pipe, 3/8" per' @ 6" center; 4 holes per row; minimum of 3" of gravel over pipe; no necessary underdrain pipe. Perforated pipe shall be wrapped with 1/4-inch geotextile fabric.
Poured in place concrete (if required)	MSEA Min No. 3: 1", -3500 psi 28 day normal weight air-entrained; reinforcing to meet ASTM-A-640	n/a	in-place 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 308.2.6.2, vertical loading [11-10 or 11-20], allowable horizontal loading based on soil pressure); and analysis of potential cracking
Sand	AASHTO M-6 or ASTM-C-33	0.02" to 0.04"	Standard specifications such as D950 and C950 (AASHTO) #10 are not acceptable. No calcium sulfonated or dolomitic sand substitution are acceptable. No "rock dust" can be used for sand.

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 JAMES SCHNEIDER
 3071 BETHANY LANE
 ELLICOTT CITY, MD 21042
 (240) 375-1052

DEVELOPER
 BURKARD HOMES
 5850 WATERLOO ROAD, #140
 COLUMBIA, MD 21045
 (240) 375-1052

ENVIRONMENTAL CONCEPT PLAN
SWD DRAINAGE AREA MAP,
NOTES & DETAILS
SCHNEIDER SUBDIVISION
 LOTS 1 - 4, OPEN SPACE LOTS 5 & 6 AND NON-BUILDABLE BULK PARCEL A
 A SUBDIVISION OF TAX MAP 17 - PARCEL 136

TAX MAP: 17 PARCEL 136
 2ND ELECTION DISTRICT

ZONING: R-20
 HOWARD COUNTY, MARYLAND

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 3300 N. RIDGE ROAD, SUITE 110
 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 FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 07-27-2020

DESIGN BY: RHV/EDS
 DRAWN BY: MDL/EDS
 CHECKED BY: RHV
 DATE: FEBRUARY 2019
 SCALE: AS SHOWN
 W.O. NO.: 41899

3 SHEET OF 3

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] **2/15/19**
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] **2/12/19**
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE