

**GENERAL NOTES**

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A LOCATION SURVEY PREPARED BY VOGEL ENGINEERING + TIMMONS GROUP PERFORMED ON JULY 2019 AND UPDATED ON JULY 2020. THE OFFSITE TOPO IS FROM HOWARD COUNTY GIS.
- THE PROJECT BOUNDARY IS BASED ON A DEED PLOT PREPARED BY VOGEL ENGINEERING + TIMMONS GROUP.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NO. 41C2 AND 0057 WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "RC-DEO" 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.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT AREAS.
- THIS PROPERTY IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER AND SEWER SERVICE FOR THIS PROJECT IS TO BE PRIVATE.
- THERE ARE NO FLOODPLAIN ON THE PROPERTY.
- THERE ARE NO STEEP SLOPES OVER 20,000 CONTIGUOUS SQUARE FEET ON THE PROPERTY.
- THE FOREST CONSERVATION OBLIGATION WILL BE ADDRESSED WITH FUTURE SITE DEVELOPMENT PLAN. THERE ARE 15 SPECIMEN TREES ON THE SITE.
- THERE ARE NO WETLANDS, STREAMS OR BUFFERS PRESENT ON THE SITE.
- CARROLL MILL ROAD IS MINOR COLLECTOR ROAD AND FOLY QUARTER ROAD IS MAJOR COLLECTOR (SCENIC ROAD).
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES ON THIS PROPERTY. THERE IS ONE EXISTING STRUCTURE ON THIS SITE TO REMAIN. THE SITE IS NOT LISTED ON THE HISTORIC SITES INVENTORY.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA SYSTEM. THE MICRO-SCALE PRACTICES USED IS MICRO-BIORETENTION FACILITY (M-6), DRYWELLS (M-5), AND NON STRUCTURAL METHOD INCLUDING NON ROOFTOP DISCONNECT (N-2). THESE FACILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED.
- 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 RESUBMISSION 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 RESUBMISSION 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.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD COUNTY FOREST 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.
- NO WAIVER PETITIONS OR/AND ALTERNATIVE COMPLIANCE FOR ENVIRONMENTAL DISTURBANCE OR ENCROACHMENTS ARE REQUIRED FOR THIS PROJECT.

**ENVIRONMENTAL SITE DESIGN NARRATIVE:**

- THE PROPERTY IS A GENERALLY LEVEL LOT. THERE IS NO WETLAND, STREAM, AND THEIR BUFFERS ON SITE.
- THE SITE NATURALLY SLOPES FROM NORTH EAST TO SOUTH WEST. THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO DRAMATIC CHANGES TO THE NATURAL DRAINAGE.
- 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 FACILITY (M-6), NON ROOFTOP DISCONNECT (N-2), AND DRYWELLS (M-5).
- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF EARTH DIKE AND SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD COUNTY FOREST CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE MICRO-SCALE PRACTICE OF MICRO-BIORETENTION FACILITY (M-6), DRYWELLS (M-5), AND NON STRUCTURAL METHOD INCLUDING NON ROOFTOP DISCONNECT (N-2). THE CALCULATED RAINFALL TARGET (P) FOR THIS PROJECT IS 1.8". AND THE TOTAL RUNOFF VOLUME (ESDv) REQUIRED IS 872 CF.
- NO WAIVER PETITIONS OR/AND ALTERNATIVE COMPLIANCE FOR ENVIRONMENTAL DISTURBANCE OR ENCROACHMENTS ARE REQUIRED FOR THIS PROJECT.

**SITE ANALYSIS DATA CHART**

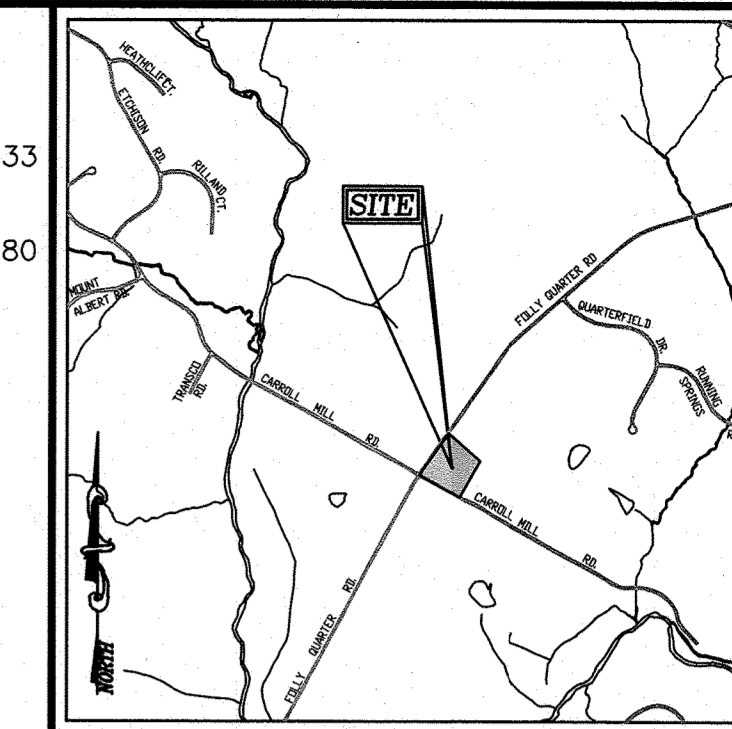
TOTAL PROJECT AREA:	5.03 AC.
NET AREA OF PROJECT:	5.03 AC.
AREA OF WETLANDS AND WETLAND BUFFERS:	0.00 AC.
AREA OF FLOODPLAIN:	0.00 AC.
AREA OF FOREST:	2.30 AC.
AREA OF MODERATE SLOPES (15% TO 24.99%):	0.00 AC.
AREA OF STEEP SLOPES (25% OR GREATER):	0.00 AC.
ERODIBLE SOILS:	0.00 AC.
LIMIT OF DISTURBED AREA:	0.37 AC.
PROPOSED USES FOR SITE AND STRUCTURES:	PET DAYCARE FACILITY
GREEN OPEN AREA:	0.23 AC. (OPEN AND ENVIRONMENTAL)
PROPOSED IMPERVIOUS AREA:	0.14 AC.
PRESENT ZONING DESIGNATION:	RC-DEO
DPZ FILE REFERENCES:	BA-19-042c

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 1-25-24  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*[Signature]* 1/18/24  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

# ENVIRONMENTAL CONCEPT PLAN FURRY FRIENDS FARM HOWARD COUNTY, MD

**BENCHMARKS**  
 HOWARD COUNTY BENCHMARK - 0057  
 N 550835.21 E 1347017.68 ELEV.: 398.933  
 HOWARD COUNTY BENCHMARK - 41C2  
 N 551616.41 E 1348104.23 ELEV.: 395.180



**VICINITY MAP**  
 SCALE: 1"=2,000'  
 ADC MAP COORDINATE: PAGE: 25, GRID: E1

**LEGEND:**

—	PROPERTY LINE	—x—	PROPOSED CHAIN LINK FENCE
---	RIGHT-OF-WAY LINE	—o—	EXISTING UTILITY POLE
- - -	ADJACENT PROPERTY LINE	—x—	EXISTING LIGHT POLE
---	EXISTING PAVING	—x—	EXISTING MAILBOX
○	EXISTING TREES	—x—	EXISTING SIGN
○	EXISTING SPECIMEN TREES	—x—	PROPOSED TREES
—x—	EXISTING FENCE	—x—	
—o—	PROPOSED PAVING	—o—	
—o—	PROPOSED PRIVACY FENCE	—o—	

**SHEET INDEX**

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

**SPECIMEN TREE CHART**

SYMBOL	KEY	SPECIES	SIZE (IN)	CRZ (FT RADII)	COMMENT
○	3	WHITE OAK	36	54.0	FAIR, SOME LARGE DEAD, SOME TIP DIEBACK
○	5	WHITE OAK	54	81.0	POOR, 1 LARGE CODDOMINANT LEAD BROKE OUT, ROT AT ROOT PLATE, POTENTIAL WETWOOD
○	7	BLACK WALNUT	33	49.5	GOOD/FAIR, CODDOMINANT AT 6', SOME LIGHT STORM DAMAGE
○	9	NORTHERN RED OAK	40	60.0	FAIR/POOR, TIP DIEBACK POLYPORE PRESENT GROWING AT THE BASE
○	10	WHITE OAK	36.5	54.8	GOOD
○	17	TULIP POPLAR	32	48.0	GOOD
○	18	WHITE OAK	39.5	59.3	GOOD
○	20	WHITE OAK	45	67.5	FAIR, LARGE DEADWOOD PRESENT
○	21	WHITE OAK	36	54.0	GOOD
○	23	WHITE OAK	33	49.5	GOOD
○	26	WHITE OAK	31	46.5	FAIR, CODDOMINANT AT HEAD HEIGHT
○	28	BLACK OAK	30	45.0	POOR, HALF OF THE CROWN HAS BLOWN OUT, LARGE DEAD PRESENT
○	29	BLACK OAK	35	52.5	FAIR, TIP DIEBACK, SOME LARGE DEADWOOD
○	35	TULIP POPLAR	43.5	65.3	GOOD
○	36	WHITE OAK	41.5	62.3	GOOD

**STORMWATER MANAGEMENT AND ADDRESS CHART**

ADDRESS	DRYWELL (M-5)	MICRO-BIORETENTION (M-6)	NON-ROOFTOP DISCONNECT(N-2)
11762 CARROLL MILL ROAD	2	1	1

**DEVELOPER**  
 FURRY FRIENDS FARM  
 11762 CARROLL MILL ROAD  
 ELLICOTT CITY, MD 21042  
 410-461-5760

**OWNER**  
 GARY & SUSAN WITT  
 11762 CARROLL MILL ROAD  
 ELLICOTT CITY, MD 21042  
 410-461-5760

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN  
 COVER SHEET  
 AND ESDv CONCEPT PLAN  
 FURRY FRIENDS FARM  
 PET DAYCARE FACILITY**  
 11762 CARROLL MILL ROAD, ELLICOTT CITY, MD 21042

TAX MAP 23 BLOCK 14  
 RD ELECTION DISTRICT

ZONE: RC-DEO  
 PARCEL 146  
 HOWARD COUNTY, MARYLAND

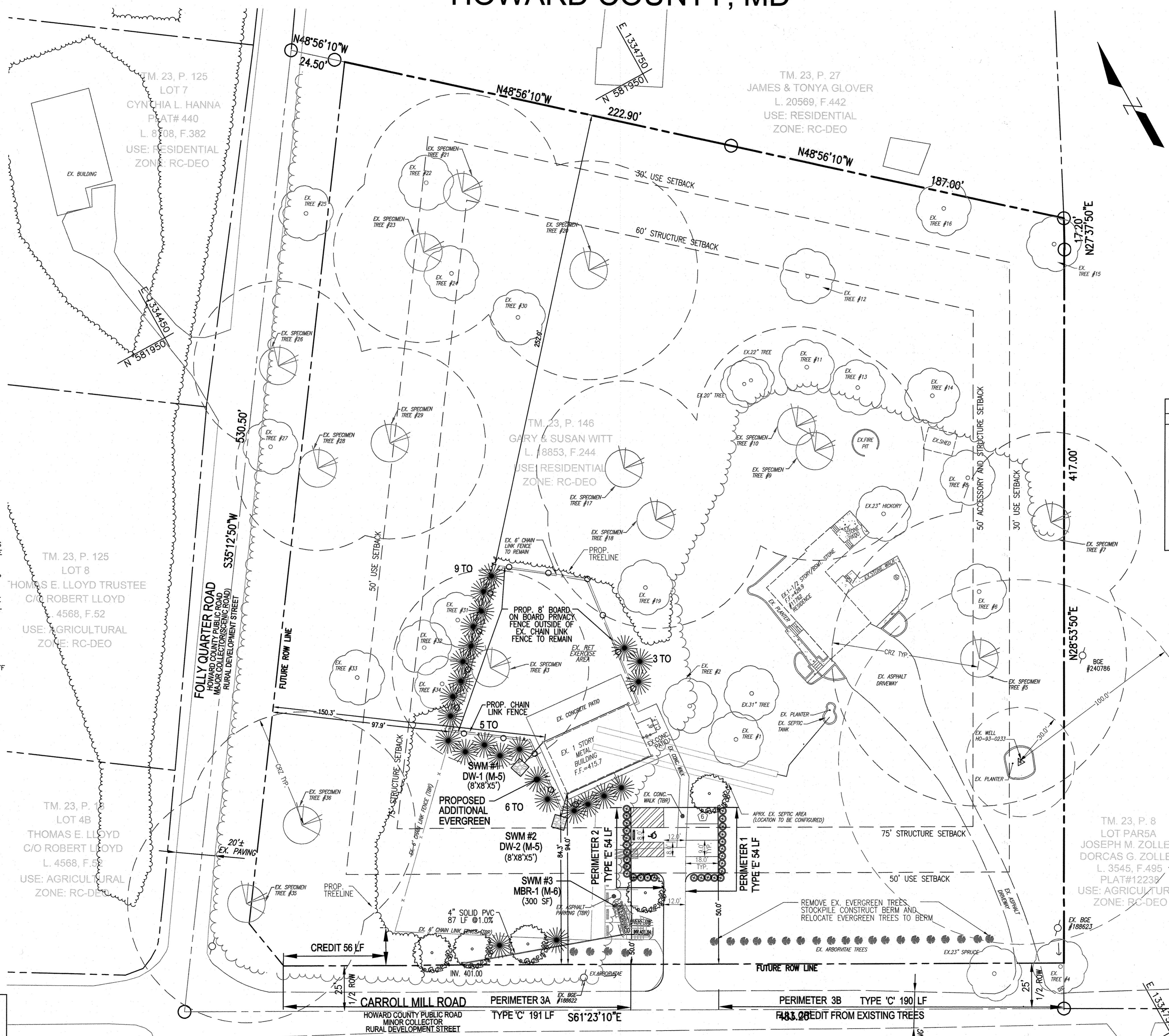
**VOGEL ENGINEERING**  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
 P: 410.461.7666 F: 410.461.8951 www.timmons.com

**TIMMONS GROUP**  
 PROFESSIONAL CERTIFICATE

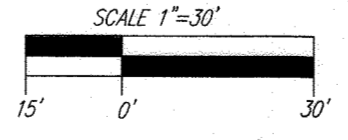
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 DRAWN BY: KG  
 CHECKED BY: RHY  
 DATE: JANUARY 2024  
 SCALE: AS SHOWN  
 W.O. NO.: 44194

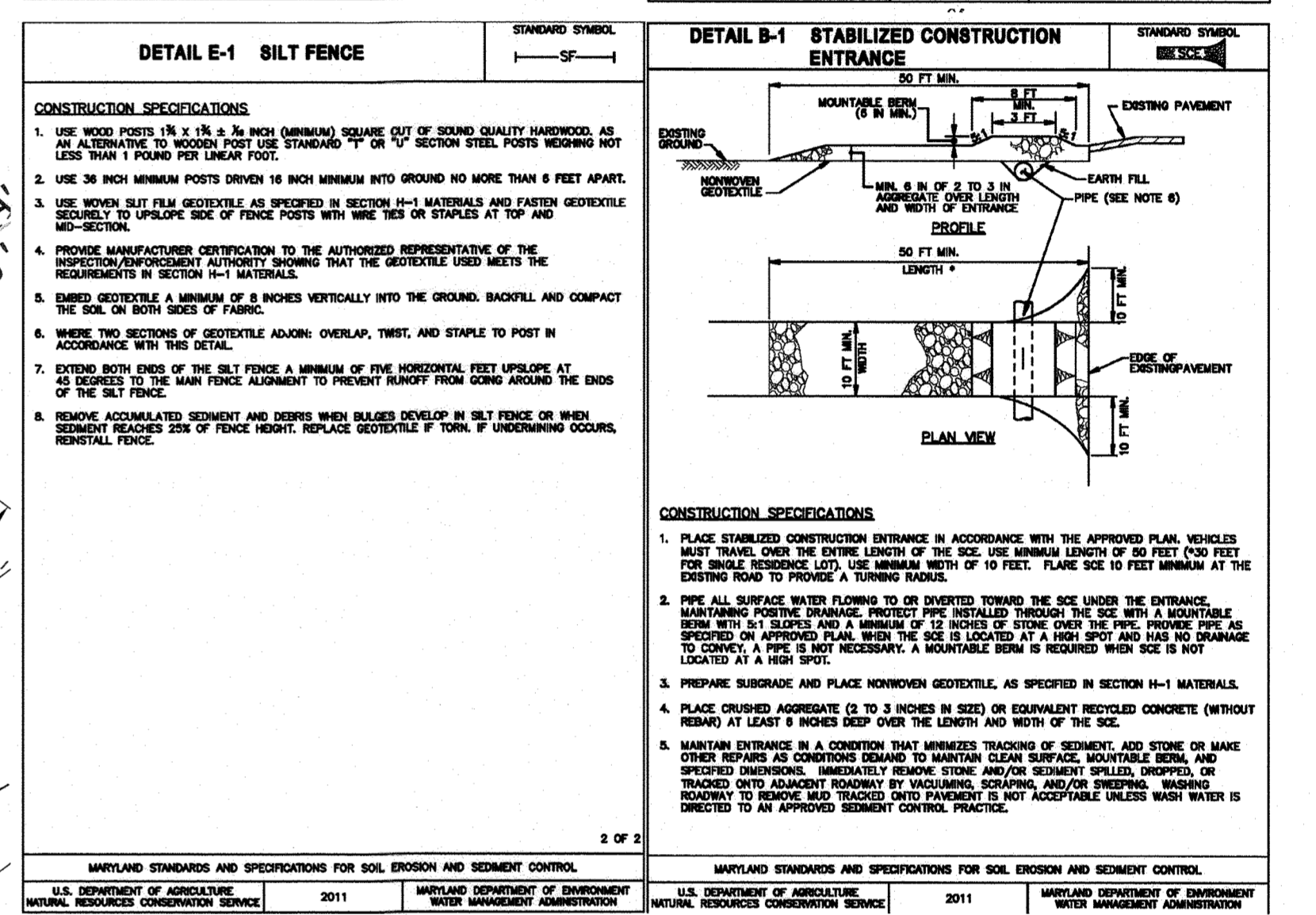
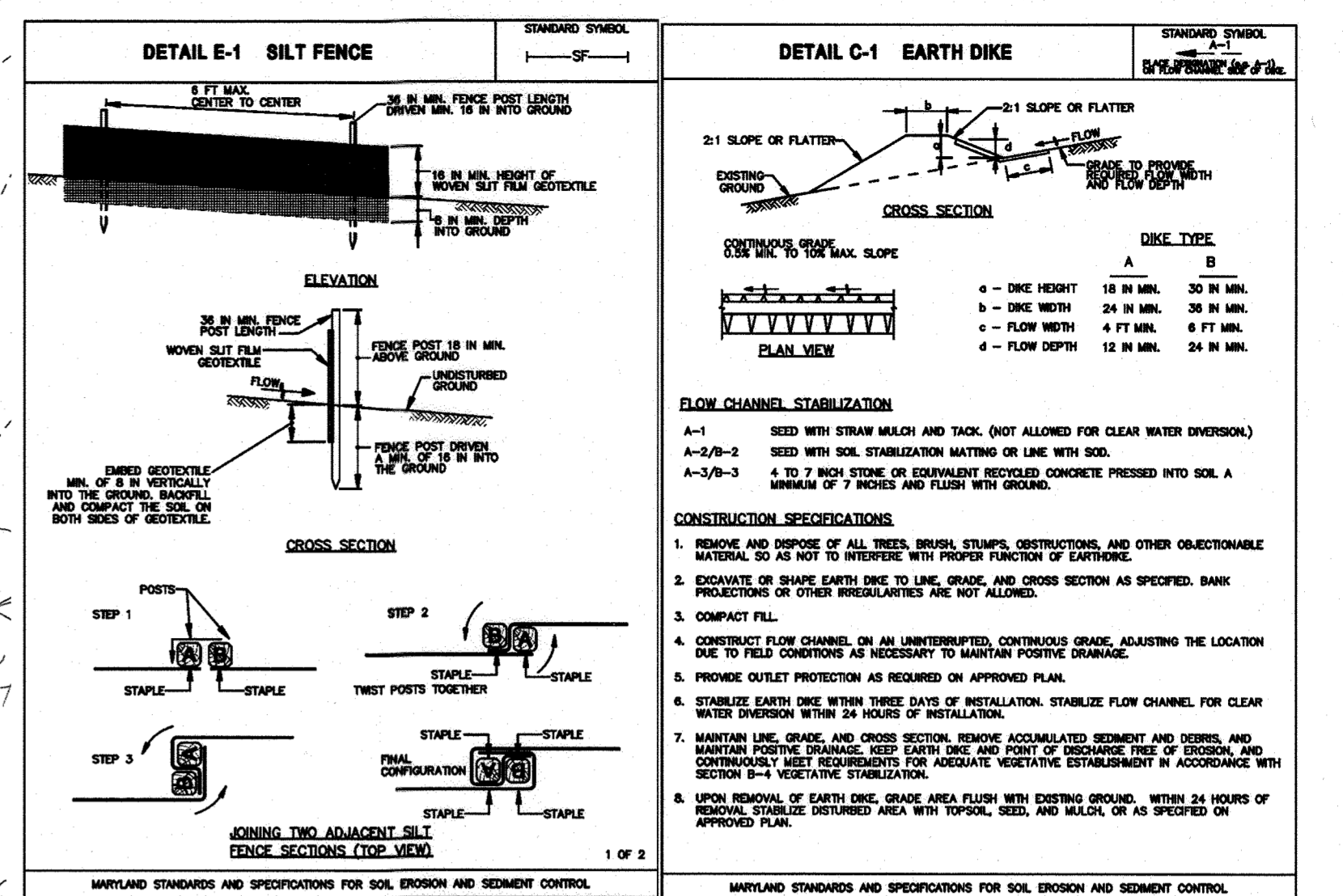
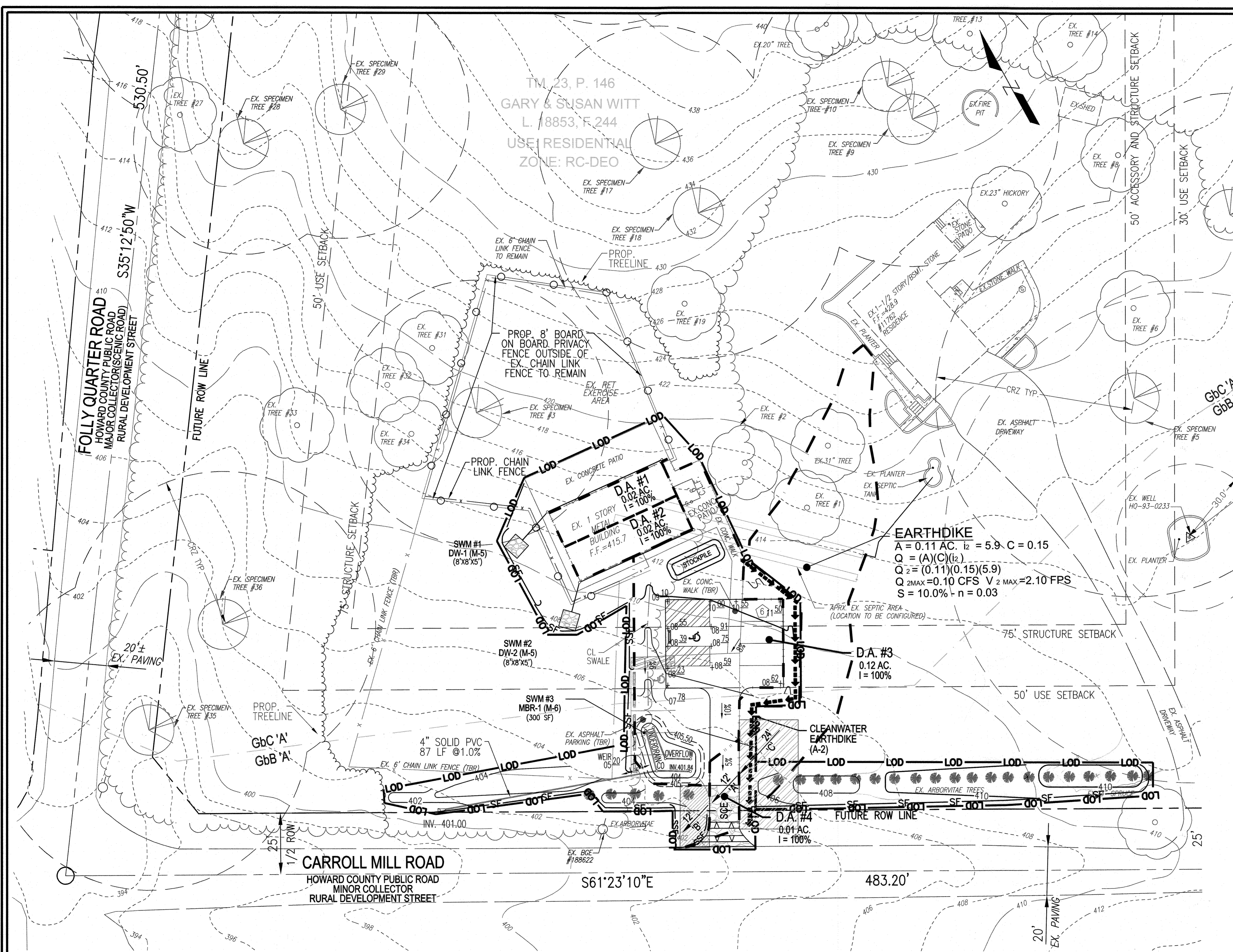
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NO. IS 16193 AND MY EXPIRATION DATE IS 08-27-2024.

1 SHEET OF 3



**ESDv CONCEPT PLAN**  
 SCALE: 1"=30'





**EARTHDIKE**  
 $A = 0.11 \text{ AC}$ ,  $i_2 = 5.9$ ,  $C = 0.15$   
 $Q = (A)(C)(i_2)$   
 $Q_2 = (0.11)(0.15)(5.9)$   
 $Q_{2\text{MAX}} = 0.10 \text{ CFS}$ ,  $V_2 \text{ MAX} = 2.10 \text{ FPS}$   
 $S = 10.0\%$ ,  $n = 0.03$

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Chief, Development Engineering Division  
 Chief, Division of Land Development  
 DATE: 1/25/24  
 DATE: 1/18/24

**LEGEND:**

— 399 —	EXISTING CONTOUR	— SF —	PROPOSED CHAIN LINK FENCE
— 400 —	PROPOSED CONTOUR	— SF —	SILT FENCE
+ 402.50	PROPOSED SPOT ELEVATION	— SF —	SUPER SILT FENCE
— — —	PROPOSED PROPERTY LINE	— LOD — LOD	LIMIT OF DISTURBANCE
— — —	RIGHT-OF-WAY LINE	— — —	STABILIZED CONSTRUCTION ENTRANCE
— — —	ADJACENT PROPERTY LINE	— — —	
— — —	EXISTING PAVING	— — —	
○	EXISTING TREES	— — —	
○	EXISTING SPECIMEN TREES	— — —	
— — —	EXISTING UTILITY POLE	— — —	
— — —	EXISTING LIGHT POLE	— — —	
— — —	EXISTING MAILBOX	— — —	
— — —	EXISTING SIGN	— — —	
— — —	EXISTING TREELINE (FIELD LOCATED)	— — —	
— — —	SOILS BOUNDARY	— — —	
— — —	EXISTING FENCE	— — —	

**MAPPED SOILS TYPES - HOWARD COUNTY, MARYLAND**

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	Kw	RANGE	HIGHLY ERODIBLE
GGB	GLADSTONE LOAM, 3-8 PERCENT SLOPES	A	NO	0.28	NO	
GBC	GLADSTONE LOAM, 8-15 PERCENT SLOPES	A	NO	0.28	NO	
Mbd	MANOR LOAM, 15-25 PERCENT SLOPES	B	NO	0.28	YES	

NOTE: TAKEN FROM: USDA, SCS—WEB SOIL SURVEY, AND HOWARD COUNTY SOIL CONSERVATION DISTRICT WEBSITE DOCUMENTS. <https://www.howardscd.org/documents>  
 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

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NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**STORMWATER MANAGEMENT**  
**DRAINAGE ARE MAP**  
**FURRY FRIENDS FARM**  
**PET DAYCARE FACILITY**  
 11762 CARROLL MILL ROAD, ELLICOTT CITY, MD 21042

TAX MAP 23 BLOCK 14  
 3RD ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

ZONE: RC-DEO  
 PARCEL 146

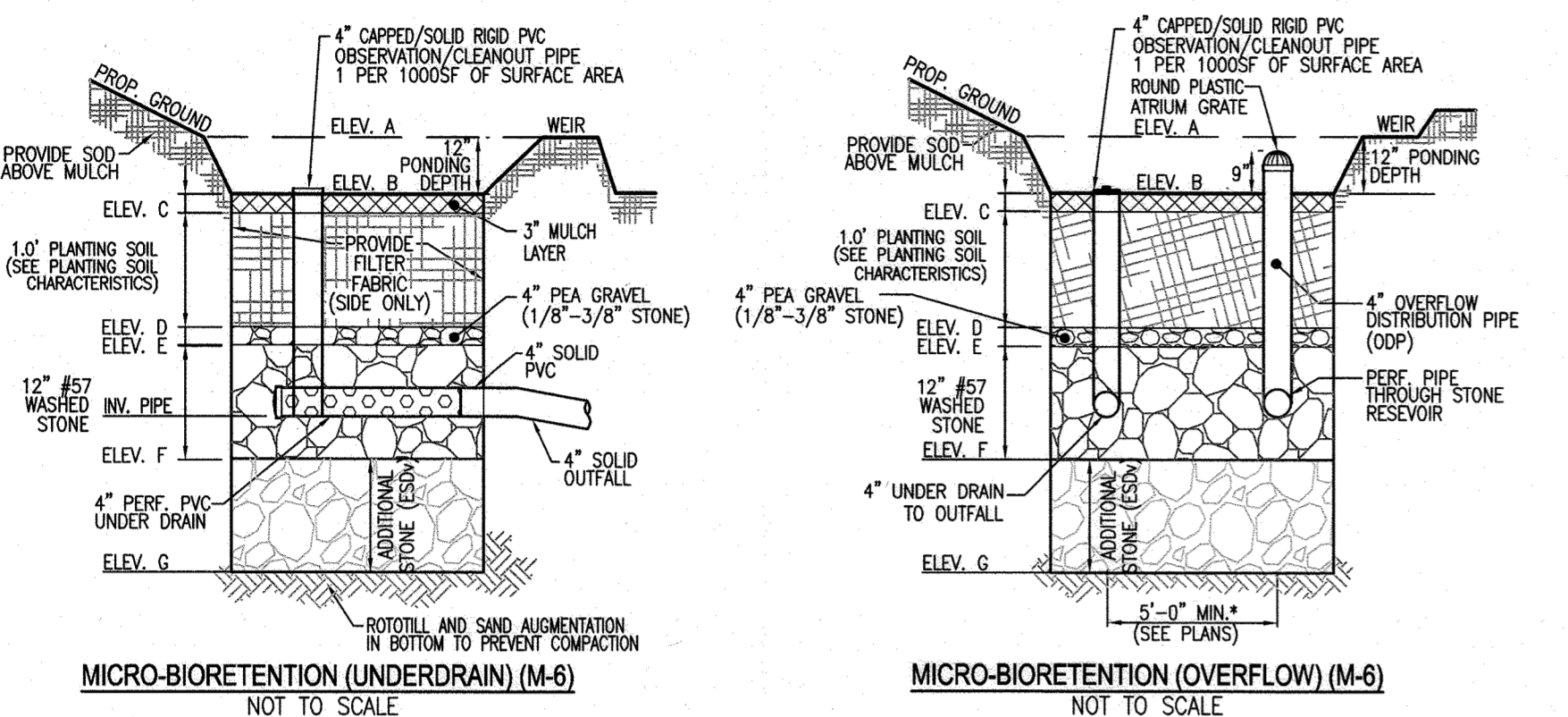
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DESIGN BY: RHV  
 DRAWN BY: KG  
 CHECKED BY: RHV  
 DATE: JANUARY 2024  
 SCALE: AS SHOWN  
 W.O. NO.: 44194

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. 16183, EXPIRATION DATE 09-27-2024.

2 SHEET OF 3

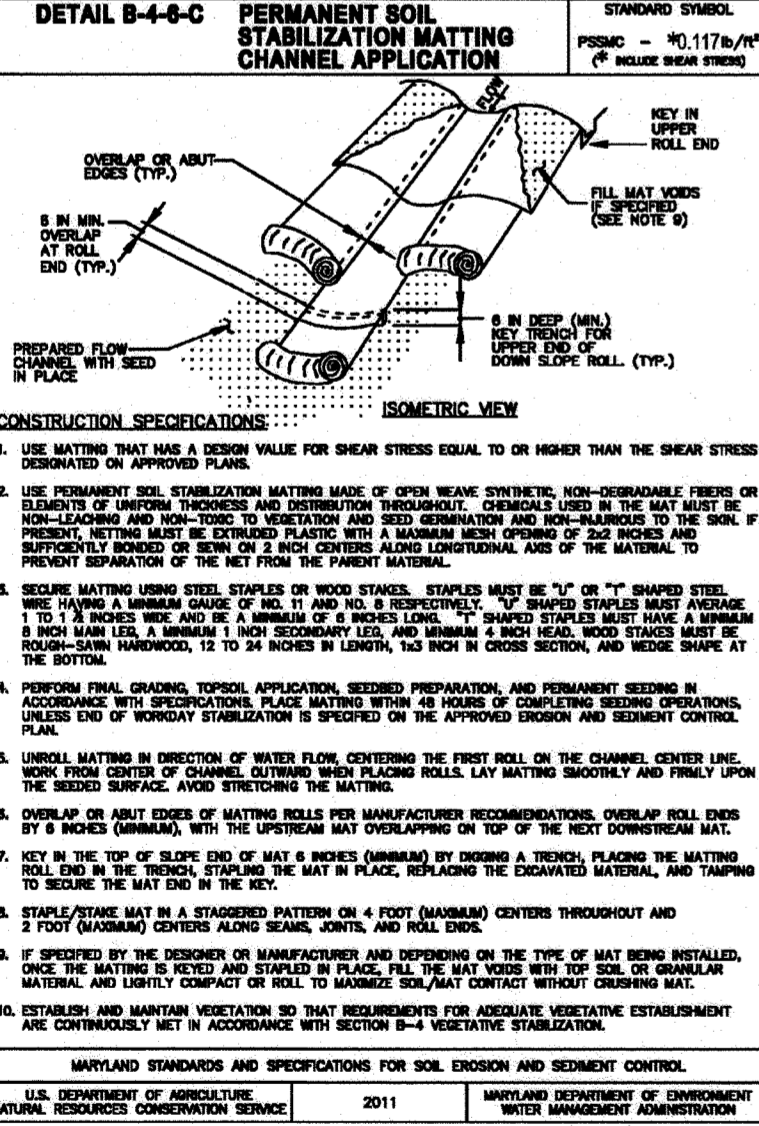
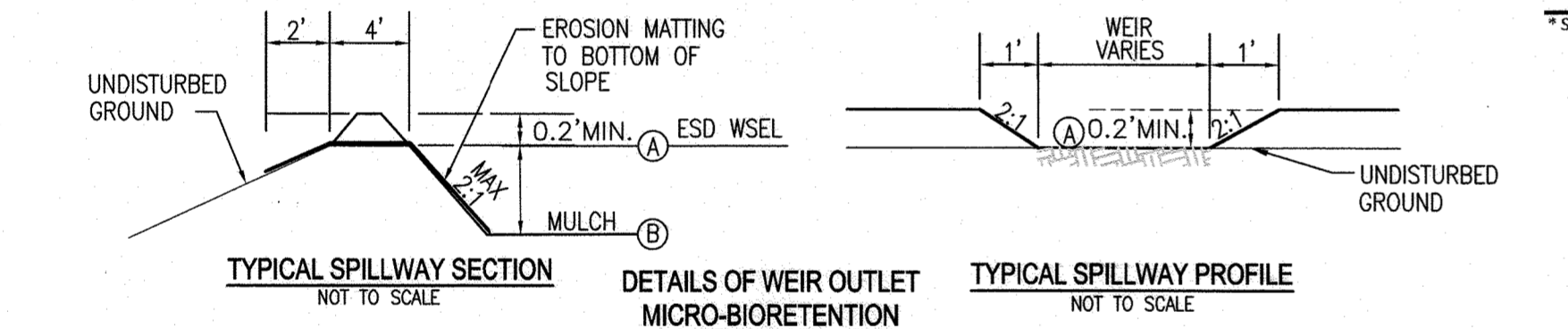
MICRO BIORETENTION DATA CHART												
MBR Facility Number	Ponding Depth (ft)	Ponding Elevation ELEV. A	Top of Mulch ELEV. B	Bottom of Mulch ELEV. C	Depth of Plant Mix	Bottom of Plant Mix ELEV. D	Bottom of Pea Gravel ELEV. E	Depth of Stone (ft.)	Bottom of Stone ELEV. F	Invert of Underdrain ELEV. G	Depth of Addition al Rev Stone (ft.)	Bottom of REV Stone ELEV. G
1	1	405	404	403.75	1	402.75	402.42	1	401.42	401.84	1.00	400.42



**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 MICROBIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.  
 2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4\"/>

**OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-4), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)**

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 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.



**GRASS SWALE TYPICAL CROSS SECTION (NOT TO SCALE)**  
 Q = CIA  
 C = 0.15 l<sub>z</sub> = 5.90 in/h h<sub>0</sub> = 8.50 in/h  
 A = 0.041 ac. n = 0.03 SLOPE = 11%+/-  
 Q<sub>2</sub> = 0.036 cfs V<sub>2</sub> = 1.04 fps Max Shear Stress = 0.117 lb/ft<sup>2</sup>  
 Q<sub>10</sub> = 0.052 cfs V<sub>10</sub> = 1.21 fps Max Shear Stress = 0.144 lb/ft<sup>2</sup>

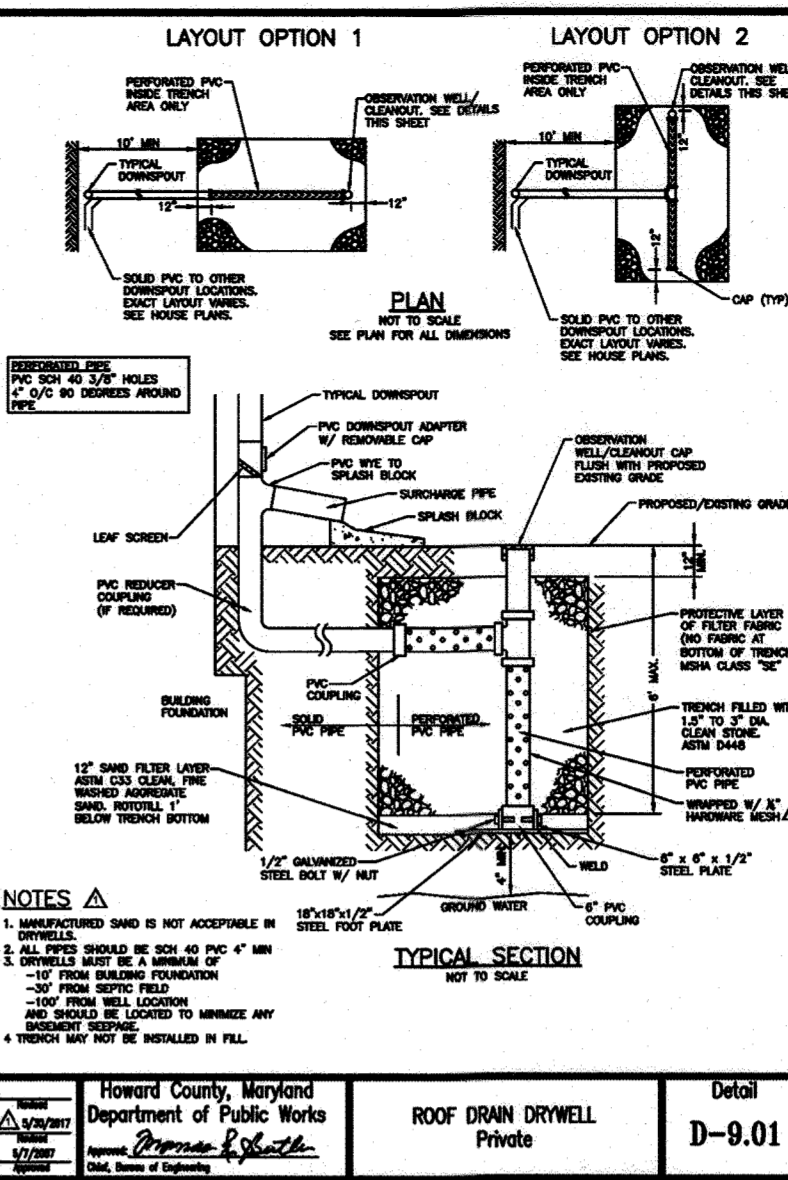
**Appendix B.4 Construction Specifications for Environmental Site Design Practices**

Material	Specification	Notes
Planting soil	See Appendix A, Table A.4 loamy sand (85 - 65%) & compost (15 - 40%) or sandy loam (50%), coarse sand (50%) & compost (50%)	USDA soil type loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	aged 6 months, minimum; no pine or wood chips
Mesh	stainless hardware cloth	1/2\"/>

ON-LOT DRYWELL - SIZING CHART							
SWM NUMBER	NUMBER OF DW'S	SURFACE SIZE		STONE		OWNER	MAINTENANCE
		FT X FT	DEPTH (FT)	DEPTH (FT)	DEPTH (FT)		
1	1	8.00	X	8.00	4	PRIVATE	PRIVATE
2	1	8.00	X	8.00	4	PRIVATE	PRIVATE

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

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED 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.



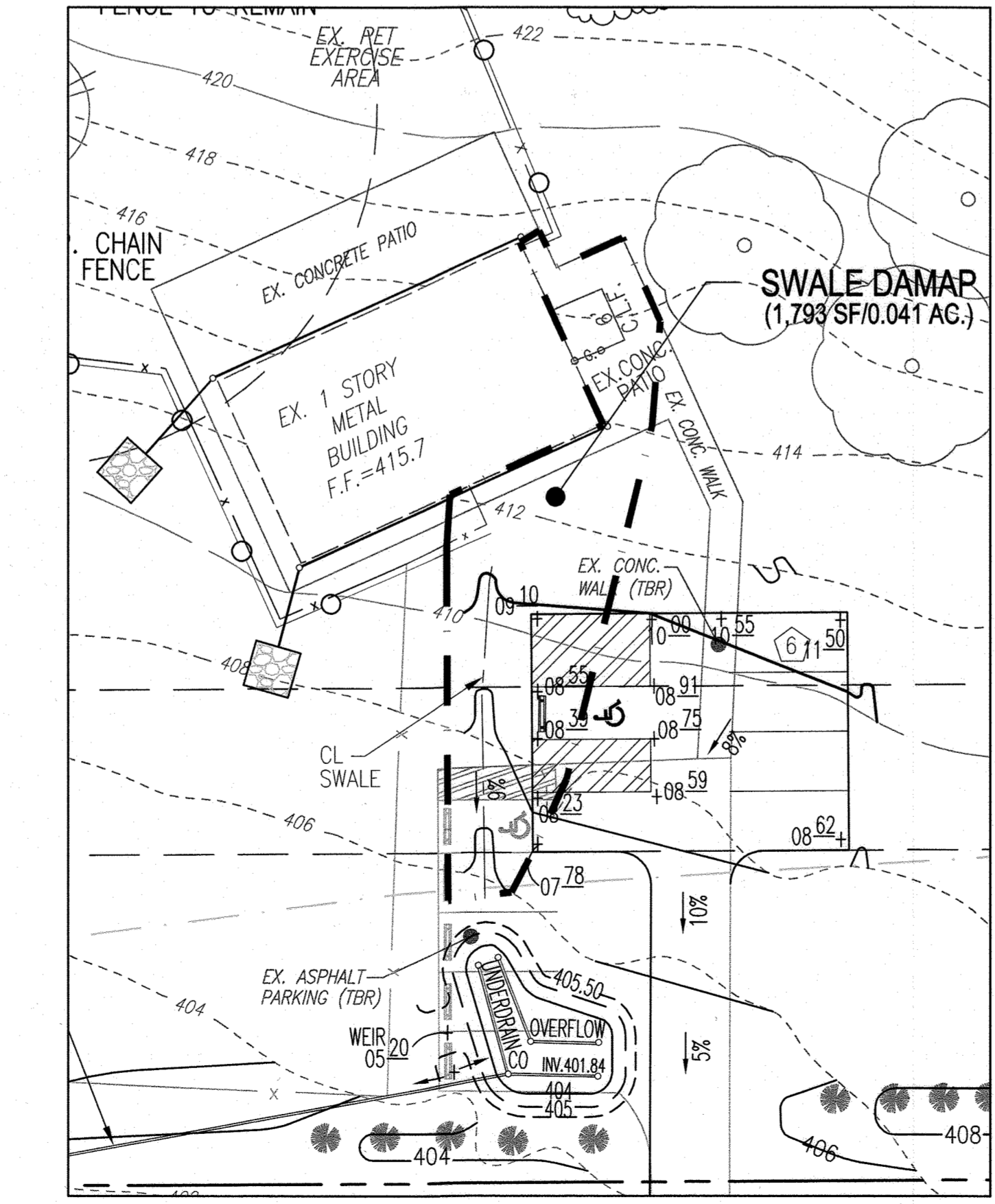
**FIGURE 3 STANDARD DRYWELL DOWNSPOUT FITTINGS**  
 NOTES:  
 1. THE SHAP-IN SCREEN IS REQUIRED TO PREVENT CLOGGING OF THE DRYWELL WITH DEBRIS.  
 2. SEE FIGURE 3A FOR POTENTIAL SUPPLIERS TO ACCOMPANY FIGURE 3.  
 3. STANDARD DRYWELL DOWNSPOUT FITTINGS FOR INFORMATION ON HOW TO LOCAL RETAILERS THAT SUPPLY COMPONENTS FOR THIS SYSTEM.

**VOGEL ENGINEERING + TIMMONS GROUP**

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**INDIVIDUAL PRACTICE ESDV DESIGN COMPUTATIONS**

PRACTICE DA #	DA (SF)	DA (AC)	IMPERVIOUS (SF)	IMPERVIOUS (AC)	PERVIOUS (SF)	PERVIOUS (AC)	PRACTICE 1* TARGET VOLUME	PRACTICE 2* TARGET VOLUME	Rev REQUIRED	Rev PROVIDED	TOTAL VOLUME PROVIDED	Depth	Porosity	
DA #1	763	0.02	763	0.02	0	0.00	100	0.95	60	157	N/A	23	128	
DW #1												8.0	0.4	
DA #2	763	0.02	763	0.02	0	0.00	100	0.95	60	157	N/A	23	128	
DW #2												8.0	0.4	
DA #3	5,068	0.12	2,639	0.06	2,429	0.06	52	0.52	219	570	100	100	590	
MBR														
DA #4	490	0.01	490	0.01	0	0.00	100	0.95	39	101	N/A	15	39	
NON ROOFTOP DISCONNECT														
<b>TOTALS</b>											<b>*184</b>	<b>161</b>	<b>584</b>	



**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 OF 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 FACILITY THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, CUCKEROSS, 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 COMPOSITION - 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 (50%-55%) AND COMPOST (55% TO 40%) IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (50%-55%) AND COMPOST (55% TO 40%), COARSE SAND (30%), AND COMPOST (40%).  
 • CLAY CONTENT - MUST 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 TEST PER PRACTICE. EACH TEST SHALL COMPLY WITH 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 LOADERS, 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 ALLEVATED 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 REFRACATURE 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.
4. PLANT MATERIAL RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.  
 COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE WERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2\"/>

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature]  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 1-25-24  
 [Signature]  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1/18/24

**DEVELOPER**  
 FURRY FRIENDS FARM  
 11762 CARROLL MILL ROAD  
 ELLICOTT CITY, MD 21042  
 410-461-5760

**OWNER**  
 GARY & SUSAN WITT  
 11762 CARROLL MILL ROAD  
 ELLICOTT CITY, MD 21042  
 410-461-5760

**ENVIRONMENTAL CONCEPT PLAN STORMWATER MANAGEMENT DETAILS**  
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 PET DAYCARE FACILITY  
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DESIGN BY: RHW  
 DRAWN BY: KG  
 CHECKED BY: RHW  
 DATE: JANUARY 2024  
 SCALE: AS SHOWN  
 W.O. NO.: 44194

NO. REVISION DATE

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, EXPIRES 09-27-2024

3 SHEET OF 3