

GENERAL NOTES

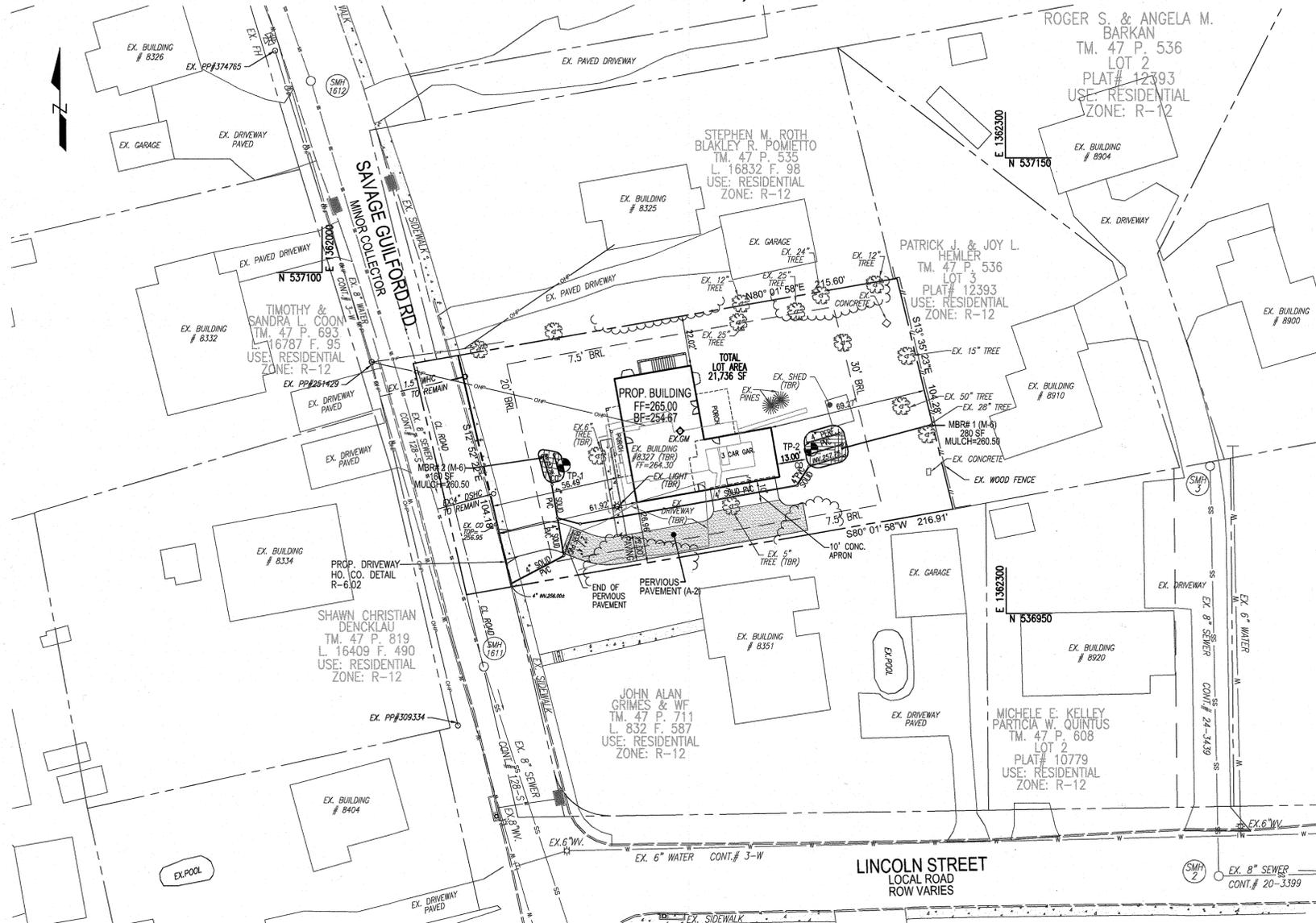
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE EXISTING ON-SITE TOPOGRAPHIC IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY VOGEL ENGINEERING + TIMMONS GROUP, PERFORMED ON MAY, 2022. OFFSITE TOPOGRAPHY IS FROM HOWARD COUNTY GIS.
- BOUNDARY INFORMATION IS BASED ON A BOUNDARY SURVEY PREPARED BY VOGEL ENGINEERING + TIMMONS GROUP, DATED MAY, 2022.
- 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. 47C1 AND 47C4 WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "R-12" 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 WITHIN THE METROPOLITAN DISTRICT.
-WATER SERVICE CONNECTION (W/C) FOR THIS PROJECT IS FROM PUBLIC CONTRACT NO. W-3.
-SEWER SERVICE CONNECTION (S/C) FOR THIS PROJECT IS FROM PUBLIC CONTRACT NO. 128-S.
- THERE ARE NO FLOODPLAIN ON THE PROPERTY.
- THERE ARE NO STEEP SLOPES OVER 20,000 CONTIGUOUS SQUARE FEET ON THE PROPERTY.
- THIS PROPERTY IS LESS THAN 40,000 SF. FOREST CONSERVATION IS NOT REQUIRED FOR THIS PROPERTY.
- THERE ARE NO WETLANDS, STREAMS OR BUFFERS PRESENT ON THE SITE.
- SAVAGE GUILFORD ROAD IS PUBLIC ACCESS STREET.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES ON THIS PROPERTY. THERE IS NO HISTORIC STRUCTURE ON THIS LOT.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES AND ALTERNATIVE SURFACES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA SYSTEM. THE MICRO-SCALE PRACTICES USED ARE 2 MICRO BIO-RETENTION (M-6), AND THE ALTERNATIVE SURFACES USED IS PERMEABLE PAVEMENTS (A-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 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.
- 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.
- NO WAIVER PETITIONS FOR ENVIRONMENTAL DISTURBANCE OR ENCROACHMENTS ARE REQUIRED.

ENVIRONMENTAL SITE DESIGN NARRATIVE:

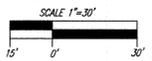
- THE PROPERTY IS A GENERALLY LEVEL LOT. THERE IS NO WETLAND, STREAM, AND THEIR BUFFERS ON THE SITE. THERE IS NO FOREST ON SITE. THIS PROPERTY IS LESS THAN 40,000 SF, AND FOREST CONSERVATION IS NOT REQUIRED FOR THIS PROPERTY.
- THE SITE NATURALLY SLOPES FROM NORTH TO SOUTH. THE SITE HAS BEEN DESIGNED 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 BIO-RETENTION (M-6) AND PERMEABLE PAVEMENTS (A-2).
- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF SILT FENCE AND CLEAN WATER EARTH DIME. 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.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE MICRO-SCALE PRACTICE OF MICRO BIO-RETENTION (M-6), AND PERVIOUS PAVEMENT (A-2). THE PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PE) FOR THIS PROJECT IS 1.6", AND THE TOTAL RUNOFF VOLUME (ESDv) REQUIRED IS 757 CF.
- NO WAIVER PETITIONS OR/AND ALTERNATIVE COMPLIANCE FOR ENVIRONMENTAL DISTURBANCE OR ENCROACHMENTS ARE REQUIRED FOR THIS PROJECT.

ENVIRONMENTAL CONCEPT PLAN WHITEHEAD RESIDENCE

8327 SAVAGE GUILFORD ROAD
HOWARD COUNTY, MD



ESDv CONCEPT PLAN
SCALE: 1"=30'



PROJECT Whitehead Residence											
DESIGNER	TIMMONS GROUP + VOGEL ENGINEERING										
DATE	Whitehead Residence										
ENVIRONMENTAL SITE DESIGN PRACTICE (CF)											
DRAINAGE AREA #	AREA TREATED	FACILITY NUMBER	PERMEABLE PAVEMENT	POROUS ASPHLAT	MICRO BIORTENTION	GRASS SWALE	BIO SWALE	NON SWALE	ROOFTOP DISCONNECT	DRY WELL	ESDv VOLUME
1	8200	1	0	0	373	0	0	0	0	0	373
2	3981	2	0	0	213	0	0	0	0	0	213
3	2969	3	170	0	0	0	0	0	0	0	170

SITE ANALYSIS DATA CHART

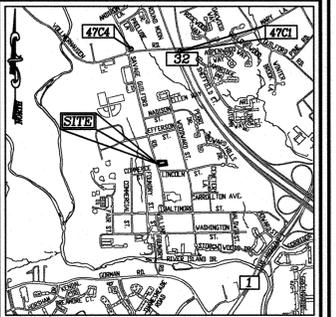
TOTAL PROJECT AREA:	21,736 SF/0.50 AC.
NET AREA OF PROJECT:	0.50 AC.
AREA OF WETLANDS AND WETLAND BUFFERS:	0.00 AC.
AREA OF FLOODPLAIN:	0.00 AC.
AREA OF FOREST:	0.00 AC.
AREA OF MODERATE SLOPES (15% TO 24.99%):	0.00 AC.
AREA OF STEEP SLOPES (25% OR GREATER):	0.00 AC.
ERODIBLE SOILS:	0.00 AC.
LIMIT OF DISTURBED AREA:	0.34 AC.
PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL
GREEN OPEN AREA:	0.38 AC. (OPEN AND ENVIRONMENTAL)
PROPOSED IMPERVIOUS AREA:	0.12 AC.
PRESENT ZONING DESIGNATION:	R-12
DPZ FILE REFERENCES:	N/A

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/22/23
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3/20/23
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

BENCHMARKS
HOWARD COUNTY BENCHMARK 47C1
N 539,613.714 E 1,362,608.438 ELEV.: 261.650
HOWARD COUNTY BENCHMARK 47C4
N 539,645.665 E 1,351,379.426 ELEV.: 288.807



VICINITY MAP
SCALE: 1"=2000'
ADC MAP COORDINATE: 40 - E4

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING PAVING
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING STORM DRAIN
	MICRO BIO-RETENTION (M-6)
	EXISTING SIDEWALK
	PROPOSED TEST PIT
	PERVIOUS PAVEMENT (A-2)

SHEET INDEX

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

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC FACTOR	ERODIBLE
U8B	Urban land-Chillum-Beltsville complex, 0 to 5% slope	C	NO	0.43
U8D	Urban land-Chillum-Beltsville complex, 5 to 15% slope	C	NO	0.43

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

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

OWNER
GENEVIE R. DICK
L/E ETAL
8922 BALTIMORE ST
SAVAGE, MD 20763

DEVELOPER
JUSTIN WHITEHEAD
L/E ETAL
8236 WELLINGTON PLACE
JESSUP, MD 20794
301-873-4676

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
COVER SHEET
AND ESDv CONCEPT PLAN
WHITEHEAD RESIDENCE**
8327 SAVAGE GUILFORD ROAD
L. 13840 F. 393

TAX MAP 47 GRID 11
8TH ELECTION DISTRICT

PARCEL 547 - ZONED: R-12
HOWARD COUNTY, MARYLAND

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

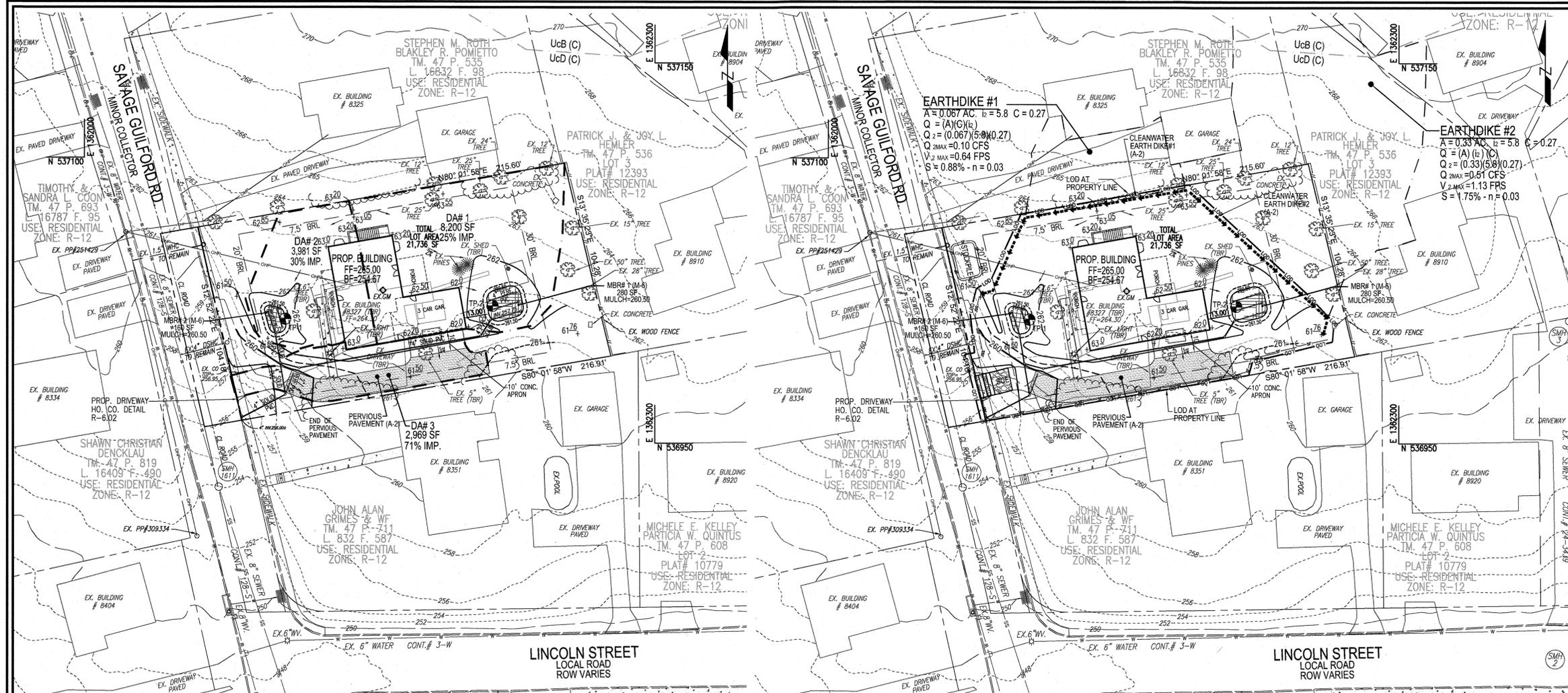


PROFESSIONAL CERTIFICATE

DESIGN BY: RHY
DRAWN BY: KG
CHECKED BY: RHY
DATE: MARCH 2023
SCALE: AS SHOWN
W.O. NO.: 53170

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 DATE 10-27-2024.

1 SHEET OF 2



LEGEND:

—	PROPERTY LINE	—	EXISTING SIDEWALK
- - -	RIGHT-OF-WAY LINE	—	EXISTING CONTOUR
---	ADJACENT PROPERTY LINE	—	SPOT ELEVATION
---	EXISTING PAVING	—	SILT FENCE
---	EXISTING UTILITY POLE	—	EARTH DIKE (CLEAN WATER)
---	EXISTING LIGHT POLE	—	LIMIT OF DISTURBANCE
---	EXISTING SIGN	—	DRAINAGE AREA
---	EXISTING SANITARY MANHOLE	—	STABILIZED CONSTRUCTION ENTRANCE
---	EXISTING SANITARY LINE	—	PERVIOUS PAVEMENT (A-2)
---	EXISTING CLEANOUT	—	PROPOSED TEST PIT (A-2)
---	EXISTING FIRE HYDRANT	—	
---	EXISTING WATER LINE	—	
---	EXISTING STORM DRAIN	—	
---	SOILS	—	

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 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 HURDLE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMION 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 (10%+40%) AND COMPOST (50% TO 40% OR SANDY LOAM (50%+50%), COARSE SAND (50%), 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. F 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 MARCH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH LARGE 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 TILLAGE OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLAGE OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
ROTILL TO 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY POOLED WATER BEFORE PREPARING BACKFILLING. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, FILL SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION FACILITY. A TEXTURE ANALYSIS CAN BE USED AROUND THE PERIMETER OF THE BASIN TO VERIFY 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.

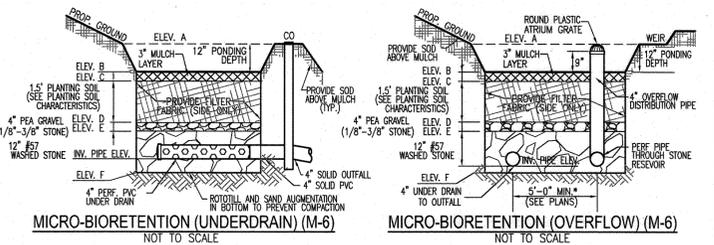
5. PLANT INSTALLATION
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED OR CHIPPED HORIZONAL MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDED MULCH MUST BE WELL AGED (9 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. THEREAFTER WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE GRACED 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 SHALL BE BROADCAST INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLOTS SHALL BE PLANTED FOLLOWING THE HIGH-GROUND 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, DEFERS, OR AT A MINIMUM, IMPROVES THIS. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTILLURE 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 F268, TYPE PS 28, OR ASTM-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 AT 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER FOOT. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4M) 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 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT POINT 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 INTO 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.

MICRO BIORETENTION DATA CHART

MBR Facility	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
1	1.00	261.50	260.50	260.25	1.50	258.75	258.42	1.00	257.42	257.75
2	1.00	261.50	260.50	260.25	1.50	258.75	258.42	1.00	257.42	257.75



MICROBIORETENTION NOTES:

- 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.
- WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (#44) OR SMALLER GALVANIZED HARDWARE CLOTH.
- PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESINOR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

3-22-23
DATE

3/20/23
DATE

CHIEF, DIVISION OF LAND DEVELOPMENT

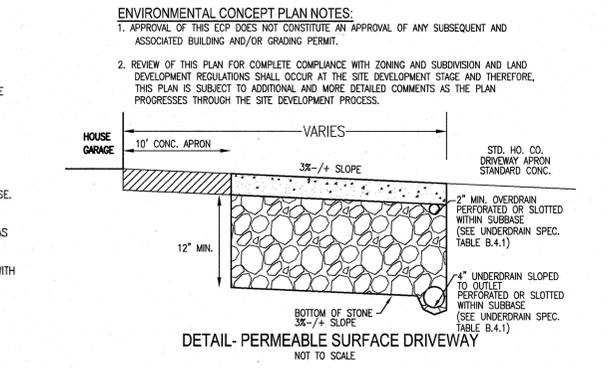
VOGEL ENGINEERING + TIMMONS GROUP
3300 North Ridge Road, Suite 110, Ellicott City, MD 21043
P 410.461.7666 F 410.461.8961 www.timmons.com

INDIVIDUAL PRACTICE ESDv DESIGN COMPUTATIONS

Project:	Whitehead Residence	Designed by:	KG
Property Area:	0.50 Ac.	Date:	9/8/2022
LOD Area:	0.34 Ac.	Checked by:	RHV
Post Development Impervious:	0.12 Ac.		
Site % Impervious:	36%		
Total weighted P _{av} :	1.60 inches		
Target ESDv Required:	757 c.f.		
ESDv Provided:	788 c.f.		
ESDv (Perforated) (12)	Rev 4/10/21/12/14/35/60		
Rvd (0.5+0.009)			
Wm (1 yr rainfall) = 1"	(1,000.95AA)/12		
Wmax (1 yr rainfall) = 2.8"	(2,600.95AA)/12		

PRACTICE	PRACTICE DA (SF)	PRACTICE DA (AC)	(SF)	(AC)	PERV (SF)	PERV AREA	PRACTICE % IMPERV	PRACTICE Rv	PRACTICE 1" TARGET VOLUME	PRACTICE 2.6" MAX VOLUME	Rev REQUIRED	Rev PROVIDED	TOTAL VOLUME PROVIDED	REMARKS
DA #1	8,200	0.19	2,033	0.05	6,167	0.14	25	0.27	187	485	93	93	373	MICROSCALE MICRO-BIORETENTION (M-6)
DA #2	3,981	0.09	1,195	0.03	2,786	0.06	30	0.32	106	276	54	54	215	MICROSCALE MICRO-BIORETENTION (M-6)
DA #3	2,969	0.07	2,105	0.05	864	0.02	71	0.69	170	443	NA	NA	170	
TOTALS	*62	147	788											

* See Page 2 of ESDv SWM Computations.



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

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	NO. 8 OR NO. 9 (1/8" TO 3/8")	aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448		
Curtain drain	ornamental stone, washed cobble	stone: 2" to 5"	
Geotextile		n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 (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 underdrain pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MESHA Min No. 3; f' = 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 308.8.8.9; vertical loading (10-10 or 10-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.075" to 0.04"	Sand substitutions such as Diabase and Gynstone (AASHTO #10) are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

OWNER
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8922 BALTIMORE ST
SAVAGE, MD 20763

DEVELOPER
JUSTIN WHITEHEAD
8236 WELLINGTON PLACE
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301-873-4676

NO. _____ REVISION _____ DATE _____

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP & DETAILS
WHITEHEAD RESIDENCE
8327 SAUSAGE GUILFORD ROAD
L. 13840 F. 393

TAX MAP 47 GRID 11
6TH ELECTION DISTRICT

PARCEL 547 - ZONED: R-12
HOWARD COUNTY, MARYLAND

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

DESIGN BY: _____
DRAWN BY: _____
CHECKED BY: _____
DATE: MARCH 2023
SCALE: AS SHOWN
W.O. NO.: 53170

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. EXPIRATION DATE: 08-27-2024

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