

GENERAL NOTES

1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS OR ALTERNATIVE COMPLIANCE REQUESTS HAVE BEEN APPROVED.
2. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MAY 2015, MARCH 2017, AND NOVEMBER 2017. OFFSITE TOPOGRAPHY IS TAKEN FROM HOWARD COUNTY GIS AND AVAILABLE RECORD DRAWINGS.
3. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. ON JUNE 15, 2015.
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 MONUMENTS 46BE AND 46BF WERE USED FOR THIS PROJECT.
5. THE SUBJECT PROPERTY IS ZONED "B-1 AND RR-MXD-3" IN ACCORDANCE WITH THE 10/6/13 ZONING REGULATIONS, 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 WETLANDS, STREAM(S) OR THEIR REQUIRED BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
7. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
8. WATER FOR THIS PROJECT IS PROVIDED BY CONTRACT NO. 44-3505-D.
9. SEWER FOR THIS PROJECT IS PRIVATE, BUT SHALL BE CONNECTED TO PUBLIC CONTRACT 20-5003-D.
10. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
11. THERE ARE NO WETLANDS, STREAMS, OR THEIR BUFFERS ON-SITE.
12. THERE IS NO FOREST, 100 YEAR FLOODPLAIN, STEEP SLOPES OVER 20,000 SF CONTIGUOUS AREA, OR SPECIMEN TREES LOCATED ON SITE.
13. ENVIRONMENTAL REPORT AND FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED 12/05/17, UPDATED 12-05-18.
14. THE FOREST CONSERVATION OBLIGATION FOR THIS PROJECT IS 0.30 ACRES OF AFFORESTATION, WHICH SHALL BE SATISFIED BY ONSITE OR OFF-SITE PLANTING (IF AVAILABLE), THE PURCHASE OF CREDIT IN A FOREST CONSERVATION BANK, OR THROUGH PAYMENT OF THE COUNTY FEE-IN-LIEU. THE FOREST CONSERVATION OBLIGATION FOR THIS PROJECT SHALL BE ADDRESSED UNDER THE SITE DEVELOPMENT PLAN STAGE.
15. GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AND SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN.
16. A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
17. BUCH WAY IS CLASSIFIED AS A PRIVATE ROAD.
18. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF NON-STRUCTURAL MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. THE MICRO-SCALE PRACTICES USED TO FULFILL STORMWATER MANAGEMENT REQUIREMENTS ARE THREE MICRO-BIORETENTION (M-6) FACILITIES. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
19. 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 COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGHOUT THE PLAN REVIEW PROCESS.
20. 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.

ENVIRONMENTAL CONCEPT PLAN

BUCH CONSTRUCTION OFFICES

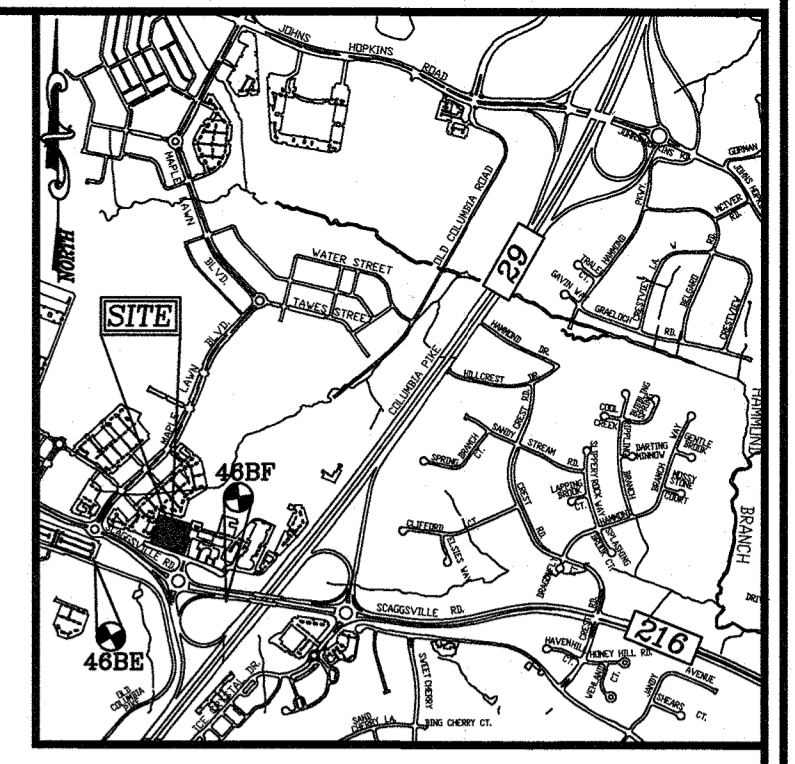
11296 AND 11292 BUCH WAY

HOWARD COUNTY, MARYLAND

BENCHMARKS

HOWARD COUNTY BENCHMARK - 46BE (CONC. MONUMENT)
 N 538853.83 E 1336643.54 ELEV. 443.345
 LOCATION: OLD COLUMBIA PIKE AT SCAGGSVILLE PARK AND RIDE

HOWARD COUNTY BENCHMARK - 46BF (CONC. MONUMENT)
 N 538448.18 E 1340010.43 ELEV. 446.602
 LOCATION: MD-216 AT SCAGGSVILLE NEAR RT-29 BRIDGE



VICINITY MAP
 SCALE: 1"=2000'
 ADC MAP COORDINATE: PAGE: 39 BLOCK: 2B-3B

LEGEND

	EXISTING CONTOUR		SOILS BOUNDARY
	PROPOSED CONTOUR		PROPOSED SIDEWALK
	EXISTING CURB AND GUTTER		EXISTING TREELINE
	EXISTING UTILITY POLE		PROPOSED TREELINE
	EXISTING LIGHT POLE		PROPOSED STORM DRAIN
	EXISTING MAILBOX		PROPOSED STORM DRAIN INLET
	EXISTING SIGN		SILT FENCE
	EXISTING SANITARY MANHOLE		LIMIT OF DISTURBANCE
	EXISTING SANITARY LINE		CONSERVATION INLET PROTECTION
	EXISTING CLEANOUT		STANDARD INLET PROTECTION
	EXISTING FIRE HYDRANT		STABILIZED CONSTRUCTION ENTRANCE
	EXISTING WATER LINE		ZONING LINE
	EXISTING FENCE		EXISTING OVERHEAD WIRE
	PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	MICRO-BIORETENTION		
	EXISTING PAVING WITHIN BUCH WAY		

FOREST CONSERVATION WORKSHEET
 Version 1.0

Project: Buch Construction Offices
 Date: December 11, 2018

NET TRACT AREA	Acres
A. Total tract area + SHA right of way to be acquired	2.5
B. Area within 100 Year Floodplain	0
C. Area of existing impervious surface/unchanged use	0.5
D. Net Tract Area	2.0

LAND USE CATEGORY:	ARA	MDR	IDA	HDR	MPD	CJA	X
E. Afforestation Threshold (percentage)	15						0.3
F. Conservation Threshold (percentage)	15						0.3

EXISTING FOREST COVER:	Acres
G. Existing forest cover (excluding floodplain)	0
H. Area of forest above afforestation threshold	0
I. Area of forest above conservation threshold	0

BREAK EVEN POINT:	NA
J. Forest retention above threshold with no mitigation	Break-Even Point
K. Clearing permitted without mitigation	Break-Even Point

PROPOSED FOREST CLEARING	Acres
L. Total area of forest to be Cleared or Retained Outside FCE	0
M. Total area of forest to be Retained in FCE	0

PLANTING REQUIREMENTS	Acres
N. Reforestation for clearing above Conservation Threshold	0
O. Reforestation for clearing below Conservation Threshold	0
P. Credit for retention above conservation threshold	0
R. Total reforestation required	0
S. Total afforestation required	0.3
T. Total reforestation and afforestation required	0.3

SITE DATA

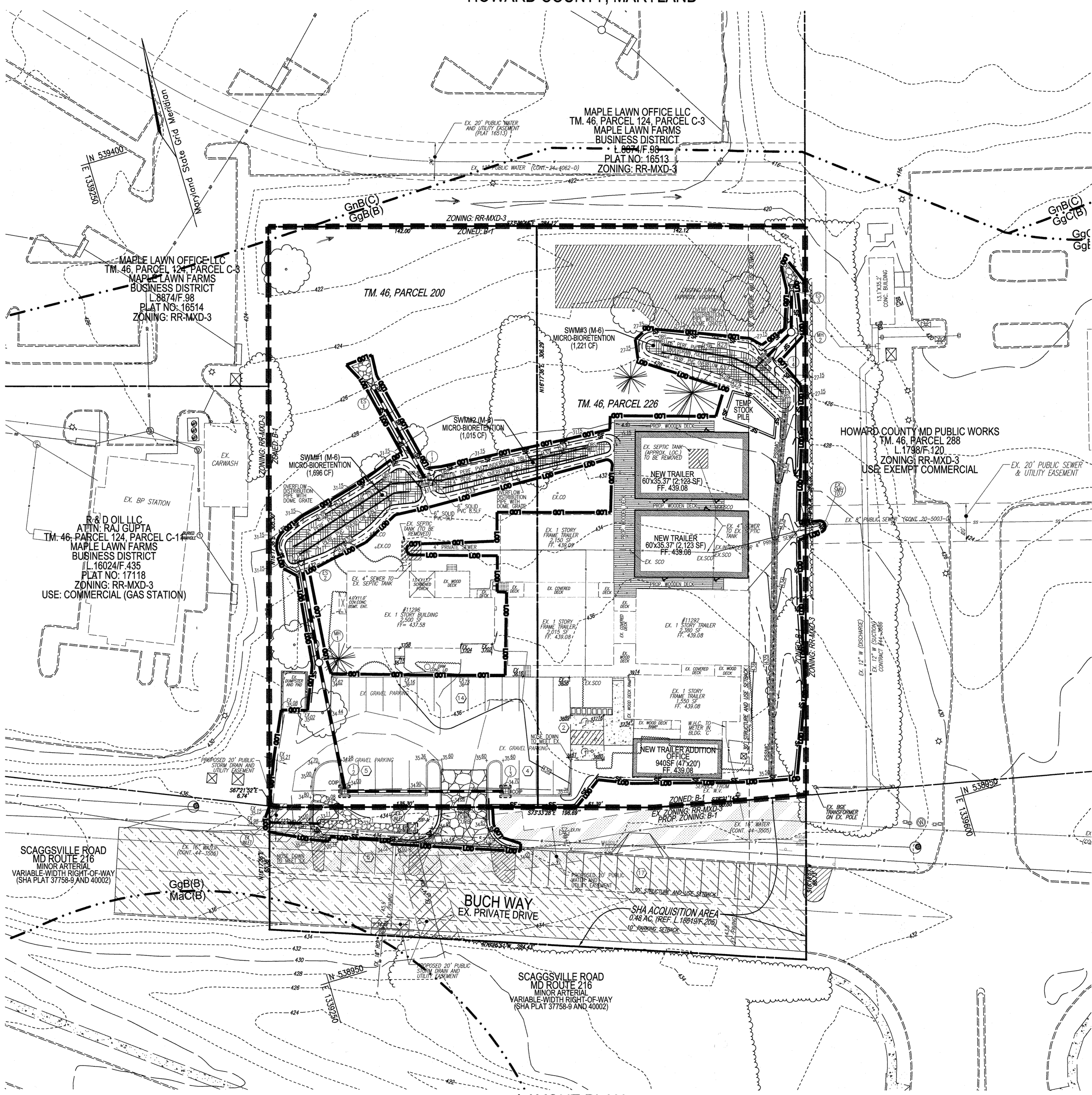
LOCATION: FULTON, MD.; TAX MAP 46, BLOCK 4, PARCELS 200 AND 226
 5TH ELECTION DISTRICT
 PRESENT ZONING: B-1, RR-MXD-3
 TOTAL PROJECT AREA: 2.46 AC. (INCLUDES SHA ACQUISITION AREA)
 DPZ REFERENCES: L 16439/F.35, L 16439/F.40, L 18619/F.205
 USE OF STRUCTURE: OFFICE BUILDING
 LIMIT OF DISTURBED AREA: 1.08 AC. (INCLUDES P/O SHA ACQUISITION AREA)
 IMPERVIOUS AREA WITHIN LOD: 24,585 SF OR 0.56 AC. (INCLUDES P/O SHA ACQUISITION AREA)
 WETLANDS ON SITE: 0.00 AC.
 WETLAND BUFFERS ON SITE: 0.00 AC.
 STREAMS AND THEIR BUFFERS ON SITE: 0.00 AC.
 AREA OF ON-SITE 100 YEAR FLOODPLAIN: 0.00 AC.
 AREA OF EXISTING FOREST ON SITE: 0.00 AC.
 AREA OF STEEP SLOPES (15% OR GREATER): 0.00 AC.
 AREA OF ERODIBLE SOILS ON SITE: 0.00 AC.
 AREA MANAGED BY ESDV (*THIS PLAN): 1.04 AC.
 IMPERVIOUS AREA (MANAGED BY ESDV): 0.57 AC.
 GREEN AREA (MANAGED BY ESDV): 0.47 AC.

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET AND ESDv PLAN	1 OF 2
SWM DRAINAGE AREA MAP AND SWM DETAILS	2 OF 2

ENVIRONMENTAL SITE DESIGN NARRATIVE:

1. THERE ARE NO ENVIRONMENTAL FEATURES INCLUDING WETLANDS, STREAMS OR THERE BUFFERS, FOREST, 100-YEAR FLOODPLAIN AND SPECIMEN TREES LOCATED ON THIS PROPERTY.
2. THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO CHANGES TO THE NATURAL DRAINAGE PATTERN.
3. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT TO THE MAXIMUM EXTENT PRACTICABLE (MEP). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION". THE ESD CONCEPT INCLUDES THE USE OF MICRO-BIORETENTION FACILITIES (M-6).
4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF SILT FENCE AND SUPER-SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.
5. STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-BIORETENTION FACILITIES (M-6). PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PE) FOR THIS PROJECT IS 1.80", AND THE TARGET (ESDv) VOLUME REQUIRED IS 3,646 CF. THE ESDv PROVIDED IS 3,932 CF.
6. WE DO NOT ANTICIPATE ANY ALTERNATIVE COMPLIANCE PETITIONS BEING REQUIRED FOR THIS PLAN.



LAYOUT PLAN
 SCALE: 1"=30'

OWNER/DEVELOPER
 OLDE SCAGGSVILLE, LLC
 11292 BUCH WAY
 LAUREL, MD 20723
 301-358-3500
 C/O MIKE BUCH

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 12-11-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12-5-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

ENVIRONMENTAL CONCEPT PLAN
COVER SHEET AND ESDv PLAN

BUCH CONSTRUCTION OFFICES
 11296 AND 11292 BUCH WAY
 SHA ACQUISITION AREA

TAX MAP 46 BLOCK 4
 5TH ELECTION DISTRICT

ZONED: B-1, RR-MXD-3
 PARCELS 200 & 226
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

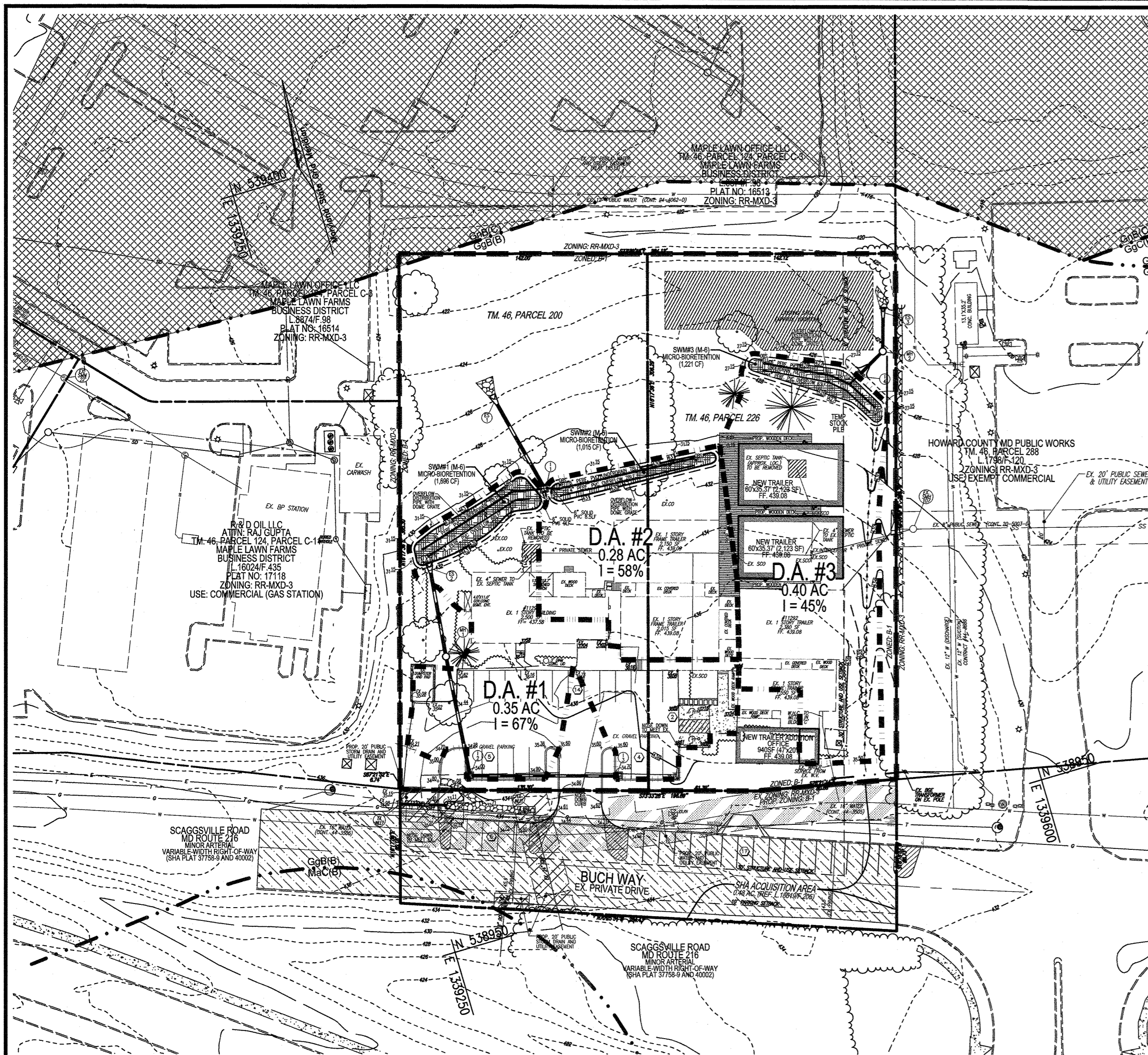
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE

DESIGN BY: DZE
 DRAWN BY: DZE
 CHECKED BY: RHY
 DATE: NOVEMBER 2019
 SCALE: AS SHOWN
 W.O. NO.: 15-10

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. EXPIRES: 08-27-2020

1 SHEET OF 2



SOILS LEGEND
HOWARD COUNTY SOILS MAP # 23

SYMBOL	NAME/DESCRIPTION	SOIL TYPE	ERODIBLE	'K' VALUE	HYDRIC
GgB	GLENNELG LOAM, 3-8% SLOPES	B	NO	0.28	NO
GnB	GLENNVILLE-BAILE SILT LOAMS, 0-8% SLOPES	C	YES	0.43	YES
McC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	NO	0.24	NO

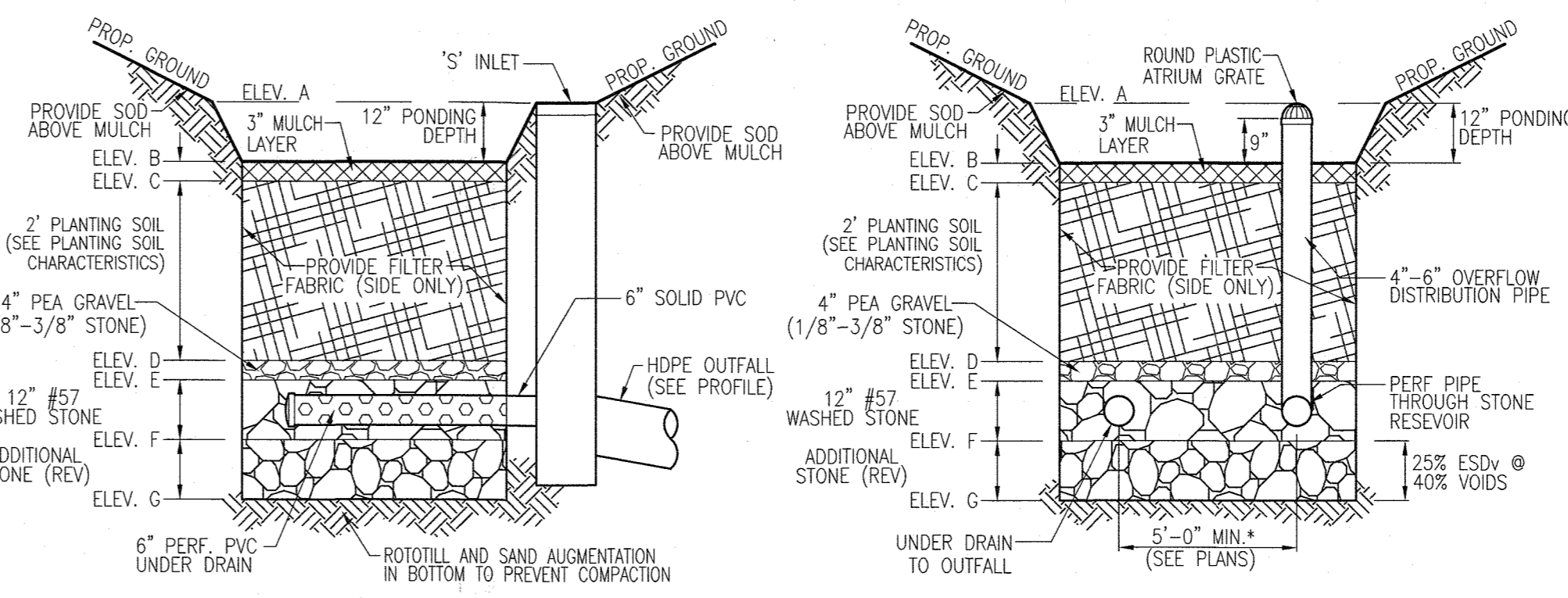
PLAN VIEW
SCALE: 1"=50'

SOILS NOTE:
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.

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

LEGEND:

- 300 --- EXISTING CONTOUR
- 400 --- PROPOSED CONTOUR
- 402.88 --- PROPOSED SPOT ELEVATION
- 402.88 --- EXISTING CURB AND GUTTER
- 402.88 --- EXISTING UTILITY POLE
- 402.88 --- EXISTING LIGHT POLE
- 402.88 --- EXISTING MAILBOX
- 402.88 --- EXISTING SIGN
- 402.88 --- EXISTING SANITARY MANHOLE
- 402.88 --- EXISTING SANITARY LINE
- 402.88 --- EXISTING CLEANOUT
- 402.88 --- EXISTING FIRE HYDRANT
- 402.88 --- EXISTING WATER LINE
- 402.88 --- EXISTING TREE LINE (FIELD LOCATED)
- 402.88 --- EXISTING FENCE
- 402.88 --- PROPERTY LINE
- 402.88 --- RIGHT-OF-WAY TOPSOIL
- 402.88 --- ZONING LINE
- 402.88 --- EXISTING OVERHEAD WIRE
- 402.88 --- SOILS BOUNDARY
- 402.88 --- DRAINAGE DVIDE
- 402.88 --- HIGHLY ERODIBLE SOILS
- 402.88 --- EXISTING PAVING WITHIN BUCHWAY



MICRO-BIORETENTION (UNDERDRAIN) NOT TO SCALE
MICRO-BIORETENTION (OVERFLOW) NOT TO SCALE

- 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 (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
 - PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

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

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

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

ENVIRONMENTAL SITE DESIGN PRACTICE

DRAINAGE AREA #	TREATED AREA	FACILITY	GREEN ROOF (A-1)	PERMEABLE PAVEMENT (A-2)	ADD STONE UNDERPAVE	LANDSCAPE INFILTRATION (M-3)	GRAVEL TRENCH (M-5)	MICRO BIO RETENTION (M-6)	ADD STONE UNDER BIO	RAIN GARDEN (M-7)	BIO SWALE (M-8)	ESDv VOLUME
1	16,400	SWM#1	0	0	0	0	0	1,696	0	0	0	1,696
		SUBTOTAL	0	0	0	0	0	1,696	0	0	0	1,696
2	11,381	SWM#2	0	0	0	0	0	1,015	0	0	0	1,015
		SUBTOTAL	0	0	0	0	0	1,015	0	0	0	1,015
3	17,626	SWM#3	0	0	0	0	0	1,221	0	0	0	1,221
		SUBTOTAL	0	0	0	0	0	1,221	0	0	0	1,221
		TOTALS:	0	0	0	0	0	3,932	0	0	0	3,932
TOTAL AREA:	45,407 SF											
	1.04 AC											3,932

DA #	PRACTICE DA (SF)	PRACTICE DA (AC)	IMPERV (SF)	IMPERV (AC)	PERV (SF)	PERV (AC)	PRACTICE % IMPERV	PRACTICE Rv	PRACTICE MIN VOLUME	PRACTICE TARGET P _i VOLUME	PRACTICE MAX VOLUME	TOTAL VOLUME PROVIDED	Rev REQUIRED	Rev PROVIDED	REMARKS
SWM#1	16,400	0.38	11,058	0.25	5,343	0.12	67	0.66	898	1,616	2,334	1,696	424	424	MICROSCALE MICRO-BIO RETENTION (M-6) 1,696 1,272 Surface Area of MBR @ 1.0 ponding (75% above) 424 1,272 Rev Recharge 0.83 x 0.4 (Recharge Vol Req. = 25% of total volume provided below) 0 1,272 ADDITIONAL STONE 0.00 x 0.3
SWM#2	11,381	0.26	5,722	0.13	5,658	0.13	50	0.50	477	858	1,239	1,015	254	254	MICROSCALE MICRO-BIO RETENTION (M-6) 1,015 761 Surface Area of MBR @ 1.0 ponding (75% above) 254 761 Rev Recharge 0.83 x 0.4 (Recharge Vol Req. = 25% of total volume provided below) 0 761 ADDITIONAL STONE 0.00 x 0.3
SWM#3	17,626	0.40	7,980	0.18	9,645	0.22	45	0.46	672	1,210	1,747	1,221	305	305	MICROSCALE MICRO-BIO RETENTION (M-6) 1,221 916 Surface Area of MBR @ 1.0 ponding (75% above) 305 916 Rev Recharge 0.83 x 0.4 (Recharge Vol Req. = 25% of total volume provided below) 0 916 ADDITIONAL STONE 0.00 x 0.3
TOTALS	45,407	1.04	24,761	0.57	20,646	0.47						3,932	983	983	

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12.11.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 12-5-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER/DEVELOPER
 OLDE SCAGSVILLE, LLC
 11292 BUCHWAY
 LAUREL, MD 20723
 301-359-3500
 C/O MIKE

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

1. MATERIAL SPECIFICATIONS 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. OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR BLENDED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF PERENNIAL GRASS, QUACKGRASS, JOHNSON GRASS, OR ANY OTHER 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 TEXTURE 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%) AND COMPOST (40%)
 • CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%
 • PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH
 THERE SHALL BE AT LEAST ONE SOIL TEST PER PRACTICE. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURE ANALYSIS IS REQUIRED FOR 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 BASE. WHERE POSSIBLE, USE EXCAVATION TRUCKS TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED UNDER LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT OR LIGHT EQUIPMENT WITH TURF TYRE 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 SHALL BE REQUIRED TO BE DESIGNED TO DESIGNED FAILURE.
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. ONE INCH 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.
 STOCKPILE 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 DRAINING 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 GRADED USING 2" x 4" STAKES 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, DEFECTS, OR AT A MINIMUM IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS MULCH ARE USED TO AMEND THE SOIL. ROTILLIN UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

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

- 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.
- 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.
- 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.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

NO. _____ REVISION _____ DATE _____

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT
DRAINAGE AREA MAP AND SWM DETAILS

BUCH CONSTRUCTION OFFICES
 11296 AND 11292 BUCHWAY
 SHA ACQUISITION AREA
 ZONED: B-1, RR-MD-3
 PARCEL: 200 & 226
 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: DZE
 DRAWN BY: DZE
 CHECKED BY: RHV
 DATE: NOVEMBER 2019
 SCALE: AS SHOWN
 W.O. NO.: 15-10

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE: 08-27-2020

ROBERT H. VOGEL, PE No. 16193

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