

GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS OR ALTERNATIVE COMPLIANCE REQUESTS HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY SHOWN 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.
- THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. ON JUNE 15, 2015.
- 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.
- 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.
- 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.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER FOR THIS PROJECT IS PROVIDED BY CONTRACT NO. 44-3505-D.
- SEWER FOR THIS PROJECT IS PRIVATE, BUT SHALL BE CONNECTED TO PUBLIC CONTRACT 20-5003-D.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- THERE ARE NO WETLANDS, STREAMS, OR THEIR BUFFERS ON-SITE.
- THERE IS NO FOREST, 100 YEAR FLOODPLAIN, STEEP SLOPES OVER 20,000 SF CONTIGUOUS AREA, OR SPECIMEN TREES LOCATED ON SITE.
- ENVIRONMENTAL REPORT AND FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED 12/05/17, UPDATED 12/05/18, AND APPROVED WITH ECP-18-022.
- 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.
- GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AND SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN.
- A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
- BUCH WAY IS CLASSIFIED AS A PRIVATE ROAD.
 - DEED L18619 F.205, ON APRIL 1, 2019, OLDE SCAGGSVILLE LLC, ACQUIRED MARYLAND STATE HIGHWAY ADMINISTRATION PROPERTY.
- 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 MICRO-BIORETENTION (M-6) FACILITIES AND PERVIOUS CONCRETE (A-2). THESE FACILITIES WILL 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 PROCEEDING IN 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 COUNTY 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

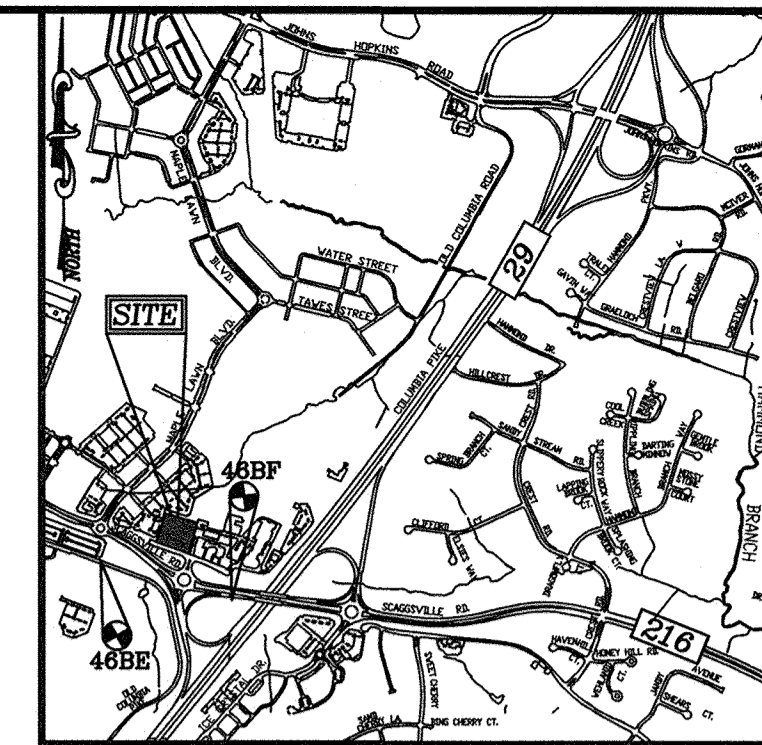
11296 AND 11292 BUCH WAY

HOWARD COUNTY, MARYLAND

BENCHMARKS

HOWARD COUNTY BENCHMARK - 46BE (CONC. MONUMENT)
 N 538853.83 E 1338643.51 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
	PROPOSED CURB AND GUTTER		PROPOSED TREELINE
	EXISTING UTILITY POLE		PROPOSED STORM DRAIN
	EXISTING LIGHT POLE		PROPOSED STORM DRAIN INLET
	EXISTING MAILBOX		SILT FENCE
	EXISTING SIGN		LIMIT OF DISTURBANCE
	EXISTING SANITARY MANHOLE		COMBINATION INLET PROTECTION
	EXISTING SANITARY LINE		STANDARD INLET PROTECTION
	EXISTING CLEANOUT		STABILIZED CONSTRUCTION ENTRANCE
	EXISTING FIRE HYDRANT		ZONING LINE
	EXISTING WATER LINE		EXISTING OVERHEAD WIRE
	EXISTING FENCE		PROPOSED PAVING
	PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	MICRO-BIORETENTION		
	EXISTING PAVING		

FOREST CONSERVATION WORKSHEET FOR BUCH CONSTRUCTION OFFICES

Net Tract Area			
A. Total (Gross) Tract Area	A =	2.47	
B. Area within 100-year Floodplain	B =	0.00	
C. Other Deductions (Identify...)	C =	0.00	
D. Net Tract Area	D =	1.61	
Land Use Category			
Insert the number "1" under the appropriate land use (limit to only one entry)			
Rural LD	Rural MD	Suburban	Linear
Recreation	Office	Public Use	
E. Afforestation Threshold (Net Tract Area x 15%)	E =	0.24	
F. Reforestation Threshold (Net Tract Area x 15%)	F =	0.24	
Existing Forest Cover			
G. Existing Forest Cover within the Net Tract Area	G =	0.00	
H. Area of Forest above Afforestation Threshold	H =	0.00	
I. Area of Forest above Reforestation Threshold	I =	0.00	
Break Even Point			
J. Break Even Point	J =	0.00	
K. Forest Clearing Permitted without Mitigation	K =	0.00	
Proposed Forest Clearing			
L. Total Area of Forest to be Cleared	L =	0.00	
M. Total Area of Forest to be Retained	M =	0.00	
Planting Requirements Inside Watershed			
N. Reforestation for Clearing above the Reforestation Threshold	N =	0.00	
P. Reforestation for Clearing below the Reforestation Threshold	P =	0.00	
Q. Credit for Retention above the Reforestation Threshold	Q =	0.00	
R. Total Reforestation Required	R =	0.00	
S. Total Afforestation Required	S =	0.00	
T. Total Reforestation and Afforestation Requirement	T =	0.20	
U. 75% of Total Obligation (Retention + Planting)	U =	0.15	
V. Planting Required Onsite to meet 75% Obligation	V =	0.20	
Planting Requirements Outside Watershed			
W. Total Planting within Development Site Watershed	W =	0.00	
X. Total Afforestation Required	X =	0.00	
Y. Remaining Planting within Watershed for Reforestation Credit	Y =	0.00	
Z. Reforestation for Clearing above the Reforestation Threshold	Z =	0.00	
AA. Reforestation for Clearing below the Reforestation Threshold	AA =	0.00	
BB. Credit for Retention above the Reforestation Threshold	BB =	0.00	
CC. Total Reforestation Required	CC =	0.00	
DD. Total Afforestation and Reforestation Requirement	DD =	0.20	

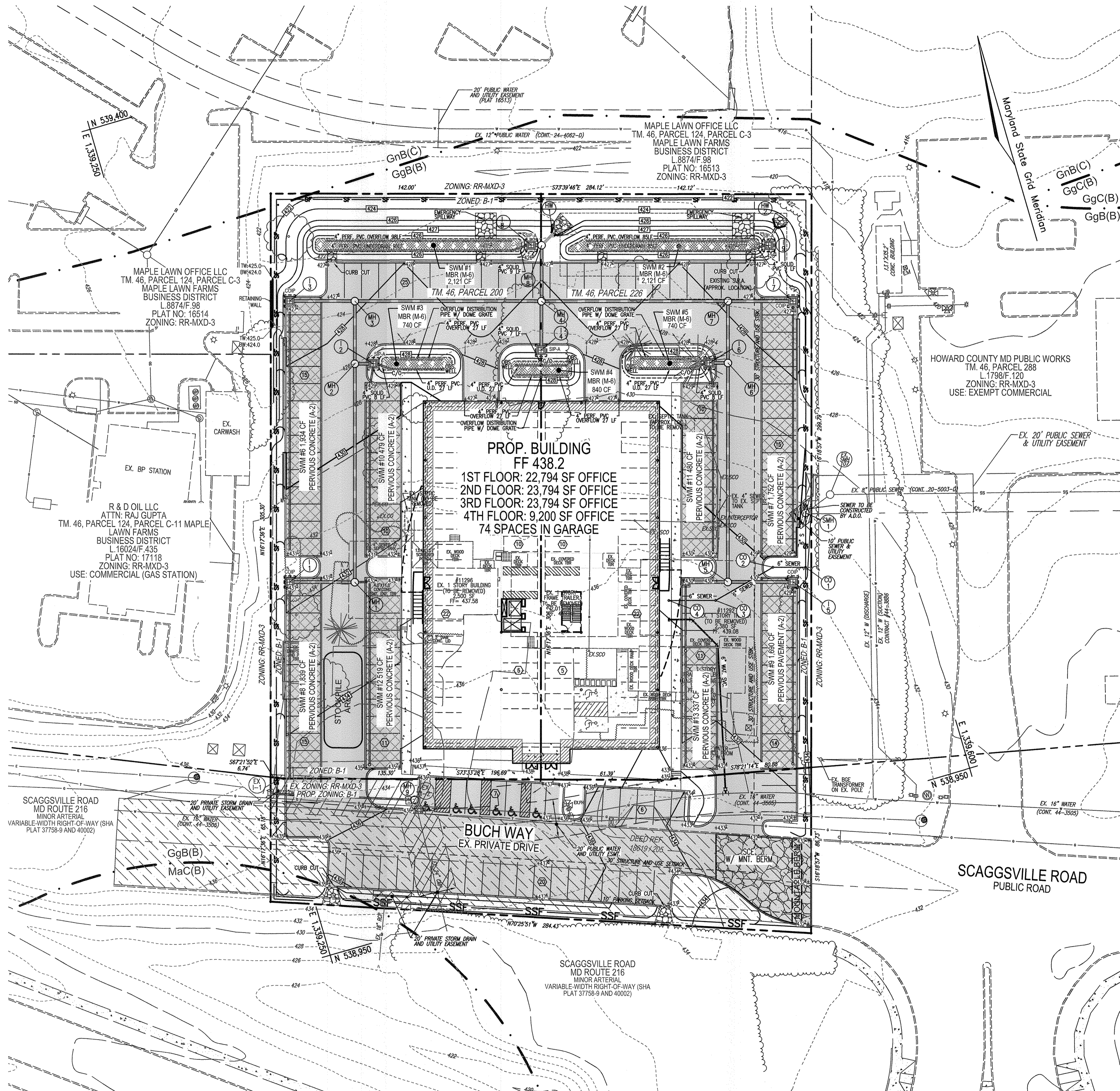
SITE DATA

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: 2.47 AC.
 DPZ REFERENCES: L16439/F.35, L16439/F.40, ECP-18-022 (VOIDED)
 USE OF STRUCTURE: OFFICE BUILDING
 TOTAL IMPERVIOUS COVERAGE: 76,224 SF OR 1.75 AC
 LIMIT OF DISTURBED AREA: 2.47 AC
 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 (25% OR GREATER): 0.00 AC
 AREA OF ERODIBLE SOILS ON SITE: 2.46 AC
 AREA MANAGED BY ESDV (*THIS PLAN): 1.70 AC
 IMPERVIOUS AREA (MANAGED BY ESDV): 1.44 AC
 GREEN AREA (MANAGED BY ESDV): 0.26 AC
 * TOTAL PROJECT AREA INCLUDES 0.47 AC. SHA ACQUISITION AREA.

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

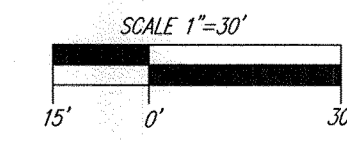
ENVIRONMENTAL SITE DESIGN NARRATIVE:

- THERE ARE NO ENVIRONMENTAL FEATURES INCLUDING WETLANDS, STREAMS OR THERE BUFFERS, FOREST, 100-YEAR FLOODPLAIN AND SPECIMEN TREES LOCATED ON THIS PROPERTY.
- THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO CHANGES TO THE NATURAL DRAINAGE PATTERN.
- 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) AND PERVIOUS CONCRETE (A-2).
- 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 COUNTY CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-BIORETENTION FACILITIES (M-6) AND PERVIOUS CONCRETE (A-2). PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PT) FOR THIS PROJECT IS 2.20", AND THE TARGET (ESDv) VOLUME REQUIRED IS 13,580 CF. THE ESDv PROVIDED IS 13,625 CF.
- WE DO NOT ANTICIPATE ANY ALTERNATIVE COMPLIANCE PETITIONS BEING REQUIRED FOR THIS PLAN.



ESDv CONCEPT PLAN

SCALE: 1"=30'



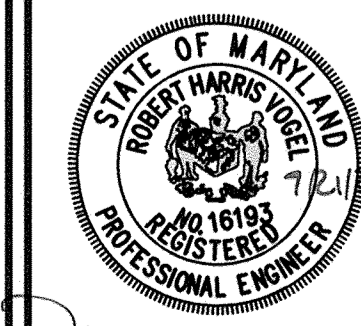
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] DATE: 8/18/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] DATE: 8/10/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER/DEVELOPER

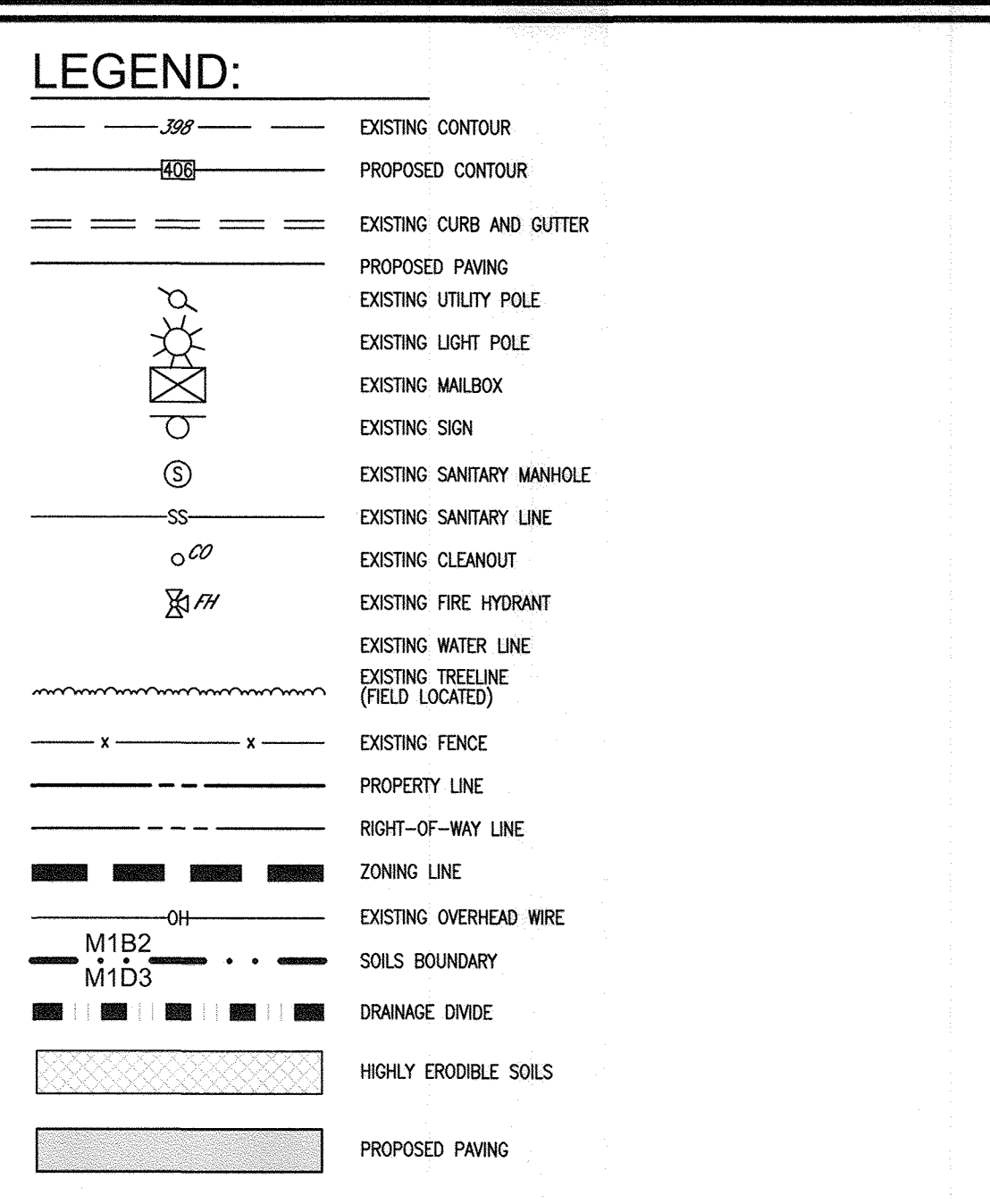
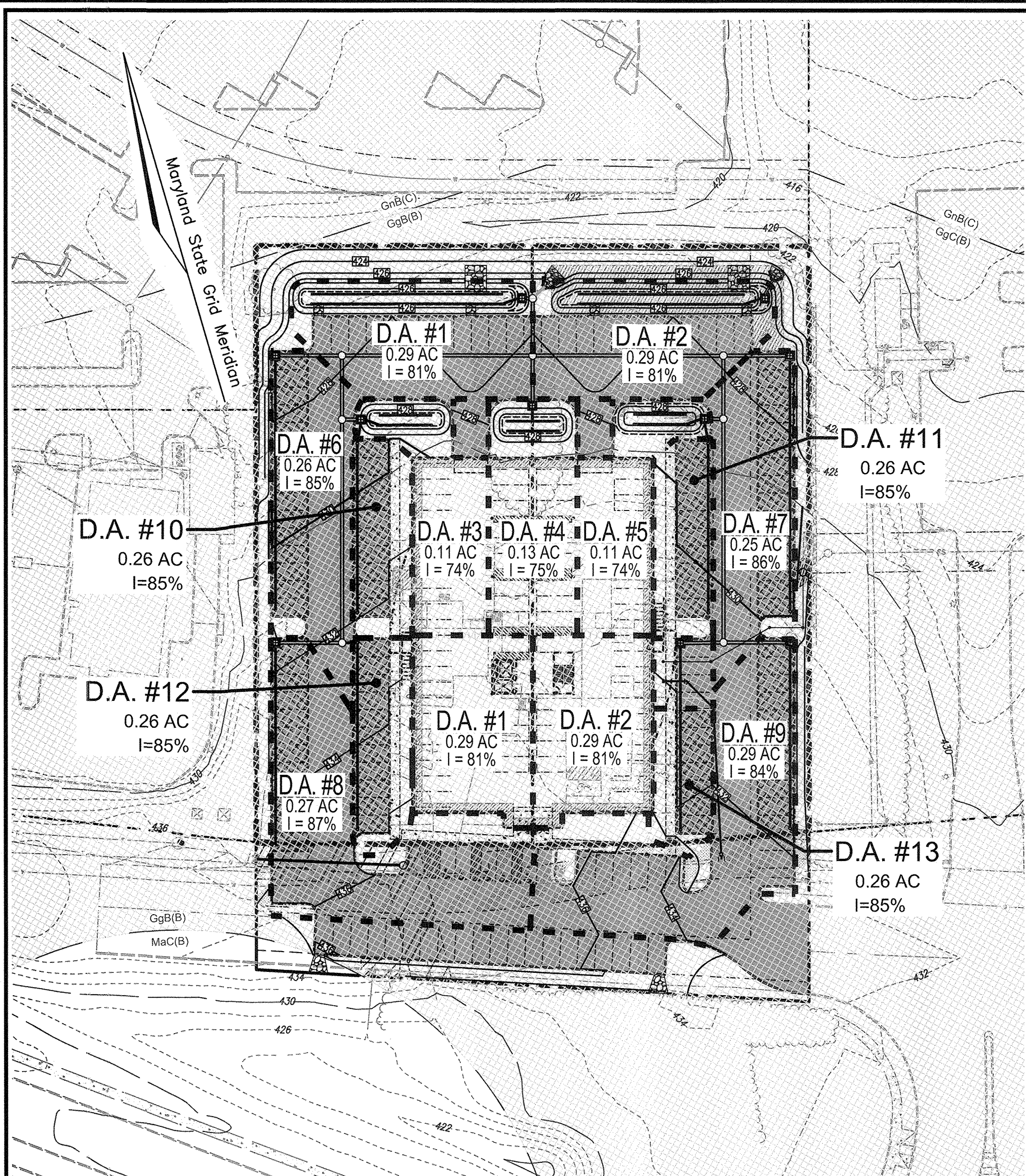
OLDE SCAGGSVILLE, LLC
 11292 BUCH WAY
 LAUREL, MD 20723
 301-359-3500
 C/O MIKE BUCH



PROFESSIONAL CERTIFICATE

DESIGN BY: JPT/DZE
 DRAWN BY: JPT/DZE
 CHECKED BY: RHV
 DATE: JUNE 2020
 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, LICENSE NO. 16193, EXPIRES DATE: 06-30-2020



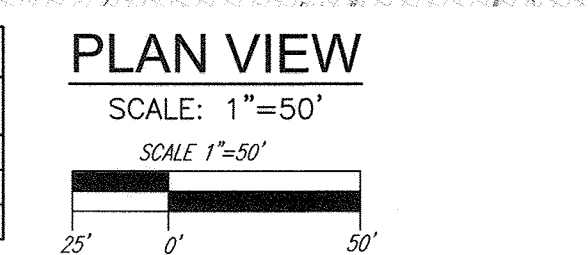
Appendix B.4. Construction Specifications for Environmental Site Design Practices

Table B.4.1 Materials Specifications for Micro-Bioretenement, 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-D448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	AASHTO M-43	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(8); 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.

SOILS LEGEND HOWARD COUNTY SOILS MAP # 23

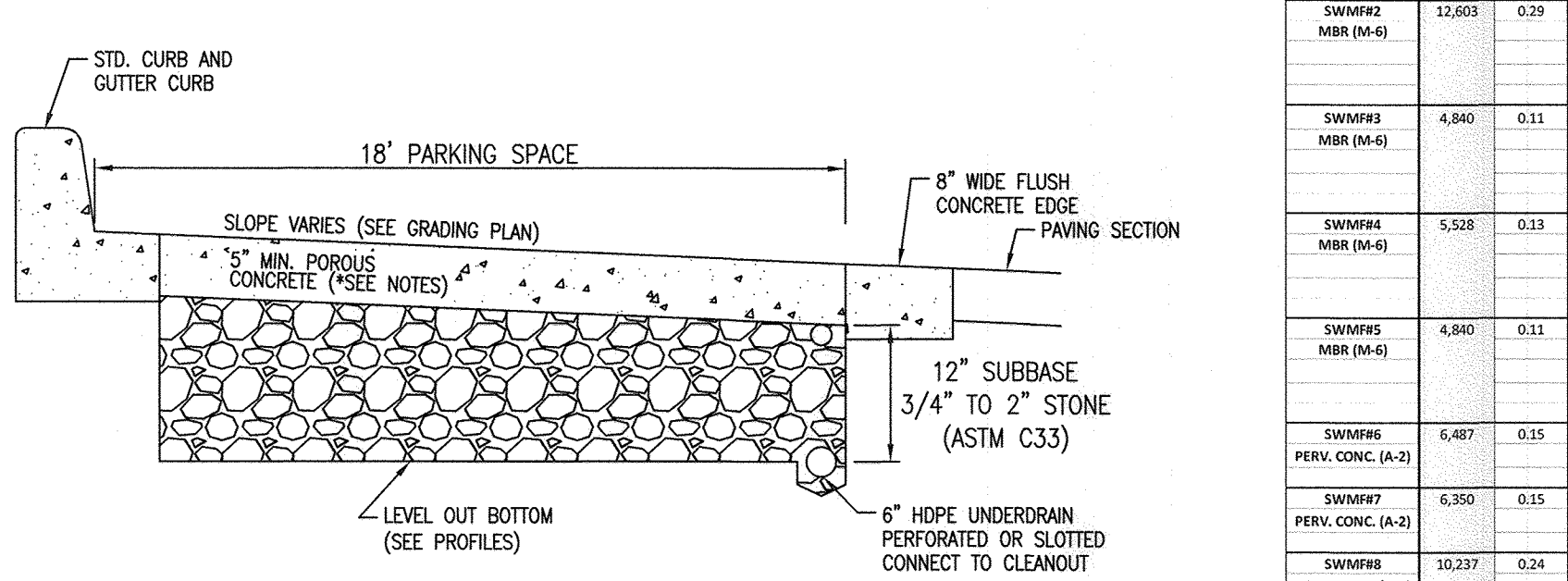
SYMBOL	NAME/DESCRIPTION	SOIL TYPE	ERODIBLE	'K' VALUE	HYDRIC
GgB	GLENELO LOAM, 3-8% SLOPES	B	YES	0.37	NO
GgB	GLENNVILLE-BAILE SILT LOAMS, 0-8% SLOPES	C	YES	0.49	YES
MacC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	NO	0.32	NO



- NOTES:
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMIT
 - 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.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

- THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM PERMEABLE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
- THE OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 8/13/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 8/10/2020
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

INDIVIDUAL PRACTICE ESDV DESIGN COMPUTATIONS

Project 1: BUCH OFFICE (CONCEPT) 2.47 AC. Net Project Area (0.00): 2.47 AC. Site % Impervious: 0.69. Site Target P_r: 2.30. Target Site ESDV + ESDV(Fraction)(12): 15,989 e.L. Run off coefficient = 1". Vmax 1/2 year rainfall = 2.6".

PRACTICE	PRACTICE DA (AC)	IMPERV (SQ)	PERV (AC)	PERV (SQ)	PRACTICE P _r	MIN PRACTICE VOLUME (2.7)	TARGET SITE P _r VOLUME (L.P)	ADD PRACTICE VOLUME (2.7)	TOTAL PRACTICE VOLUME (2.7)	REMARKS
SWM#1 MBR (M-6)	12,603	0.29	10,187	0.33	2,415	0.06	81	0.78	817	MICROSCALE MICRO-BIO RETENTION (M-6) 1,481 1,481 Surface Area of MBR @ 1.0 ponding (75% above) 494 1,481 Stone Below Underdrain (25%) 0.83 x 0.4
SWM#2 MBR (M-6)	12,603	0.29	10,187	0.33	2,415	0.06	81	0.78	817	MICROSCALE MICRO-BIO RETENTION (M-6) 1,351 1,351 Surface Area of MBR @ 1.0 ponding (75% above) 450 1,351 Stone Below Underdrain (25%) 0.83 x 0.4
SWM#3 MBR (M-6)	4,840	0.11	3,582	0.08	1,258	0.03	74	0.72	289	MICROSCALE MICRO-BIO RETENTION (M-6) 555 555 Surface Area of MBR @ 1.0 ponding (75% above) 185 555 Stone Below Underdrain (25%) 0.83 x 0.4
SWM#4 MBR (M-6)	5,528	0.13	4,156	0.10	1,372	0.03	75	0.73	335	MICROSCALE MICRO-BIO RETENTION (M-6) 430 430 Surface Area of MBR @ 1.0 ponding (75% above) 220 430 Stone Below Underdrain (25%) 0.83 x 0.4
SWM#5 MBR (M-6)	4,840	0.11	3,582	0.08	1,258	0.03	74	0.72	289	MICROSCALE MICRO-BIO RETENTION (M-6) 555 555 Surface Area of MBR @ 1.0 ponding (75% above) 185 555 Stone Below Underdrain (25%) 0.83 x 0.4
SWM#6 PERV CONC. (A-2)	6,487	0.15	6,303	0.14	184	0.00	97	0.92	500	PERVIOUS CONCRETE (A-2) 1,090 1,090 Surface Area 913 2,430 Additional Stone Below 1.25 x 0.3
SWM#7 PERV CONC. (A-2)	6,300	0.15	6,171	0.14	179	0.00	97	0.92	489	PERVIOUS CONCRETE (A-2) 1,072 1,072 Surface Area 913 2,430 Additional Stone Below 1.25 x 0.3
SWM#8 PERV CONC. (A-2)	10,237	0.24	9,933	0.21	924	0.03	91	0.87	741	PERVIOUS CONCRETE (A-2) 1,549 1,549 Surface Area 913 2,430 Additional Stone Below 2.00 x 0.3
SWM#9 PERV CONC. (A-2)	10,647	0.24	9,901	0.21	1,346	0.03	87	0.84	742	PERVIOUS CONCRETE (A-2) 1,690 1,690 Surface Area 913 2,430 Additional Stone Below 2.50 x 0.3
SWM#10 PERV CONC. (A-2)	3,074	0.07	2,288	0.05	786	0.02	74	0.72	184	PERVIOUS CONCRETE (A-2) 479 479 Surface Area 388 1,630 Additional Stone Below 1.00 x 0.3
SWM#11 PERV CONC. (A-2)	3,077	0.07	2,292	0.05	785	0.02	74	0.72	185	PERVIOUS CONCRETE (A-2) 480 480 Surface Area 388 1,630 Additional Stone Below 1.00 x 0.3
SWM#12 PERV CONC. (A-2)	3,283	0.08	2,477	0.06	806	0.02	75	0.73	199	PERVIOUS CONCRETE (A-2) 487 487 Surface Area 388 1,630 Additional Stone Below 1.00 x 0.3
SWM#13 PERV CONC. (A-2)	2,212	0.05	1,606	0.04	606	0.01	73	0.70	130	PERVIOUS CONCRETE (A-2) 287 287 Surface Area 220 1,134 Additional Stone Below 1.00 x 0.3
TOTALS	74,135	1.70	62,283	1.44	13,353	0.36			13,720	

- APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS
2. FILTERING MEDIA OR PLANTING SOIL: THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE AN OBSTACLE TO GROWTH OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
- SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
 - CLAY 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 (50%), COARSE SAND (30%), AND COMPOST (40%).
 - 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.
 - 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 TEXTURAL 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. 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 TIRE TYRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TYRES, RUBBER TYRES WITH LARGE LUGS, OR HIGH-PRESSURE TYRES 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, RIPPERS, OR SUBSOILERS. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTED 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.
5. PLANT INSTALLATION: COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOCATIONS SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH, PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL KEPT (6 TO 12 MONTHS) FOR ACCEPTANCE. ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE GREATER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. PRIMARY NUTRIENT DEFICIENCIES TO IMPROVE WATER QUALITY FROM THE BIORETENTION FACILITY ARE NITROGEN, PHOSPHORUS, POTASSIUM, AND CALCIUM. FERTILIZERS SHOULD BE APPLIED AT A MINIMUM. IMPROVE THIS GOAL ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.
6. UNDERDRAINS: UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
- PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR AASHTO 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 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PERFE PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.
 - GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
 - THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
 - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
 - A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8") 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 2".
 - 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.
- 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.

ENVIRONMENTAL CONCEPT PLAN

STORMWATER MANAGEMENT DRAINAGE AREA MAP AND SWM DETAILS

BUCH CONSTRUCTION OFFICES
11296 AND 11292 BUCH WAY
SHA ACQUISITION AREA

TAX MAP 46 BLOCK 4
5TH ELECTION DISTRICT

ZONED: B-1, RR-MD-3
PARCEL 283 & 228
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

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