

DESIGN NARRATIVE

FOR THE CONCEPT DESIGN PHASE OF THIS PROJECT, WE HAVE DELINEATED THE FEM SITE AND NATURAL RESOURCES, PROVIDED A SITE DEVELOPMENT LAYOUT, AND LOCATED PROPOSED ESD PRACTICES. BASED UPON THE PROPOSED SITE LAYOUT, THERE ARE NO EXISTING PERENNIAL OR INTERMITTENT STREAMS AND STREAM BUFFERS, NO WETLANDS OR WETLAND BUFFERS, NO 100-YR FLOODPLAIN, AND NO WOODS OR FORESTS WITHIN THE PROPERTY BOUNDARY. STEEP SLOPES, LOCATED AT DRIVEWAY BERMS AND EXISTING STORMWATER MANAGEMENT FACILITIES, AND TOPOGRAPHY ARE IDENTIFIED FOR THE SITE. NO SLOPES EXCEEDING 25% ARE FOUND ON-SITE. SOILS ON SITE CONSIST OF ULD - URBAN LAND - UDORTHTENS COMPLEX.

EFFORTS HAVE BEEN IMPLEMENTED TO GRADE THE SITE SUCH THAT DRAINAGE PATTERNS HAVE BEEN RETAINED, AND PROVISIONS FOR STABLE CONVEYANCE OF RUNOFF HAVE BEEN MADE.

FOR THIS PROJECT, THE ESD PRACTICES PROPOSED ARE MICRO-BIORETENTION FACILITIES AND LANDSCAPE CONCRETE CONTAINERS (FOR EXAMPLE FILTERRA SYSTEMS). THESE SMM PRACTICES ARE PROPOSED THROUGHOUT THE LIMIT OF WORK TO CAPTURE AND TREAT RUNOFF FROM IMPERVIOUS AREAS. THE RUNOFF IS TEMPORARILY STORED THESE FACILITIES WHERE DRAINAGE WILL FILTER THROUGH A SYSTEM OF LAYERED PLANTING MEDIA, SAND, AND GRAVEL WITHIN A LANDSCAPED AREA. ESDs HAVE BEEN DESIGNED TO PROTECT NATURAL RESOURCES, MAINTAIN NATURAL FLOW PATTERNS, AND MINIMIZE THE AMOUNT OF IMPERVIOUS AREA PROPOSED AS PART OF THIS DEVELOPMENT PROJECT.

GENERAL NOTES

1. THIS IS NOT A BOUNDARY OR TOPOGRAPHIC SURVEY. SURVEY FOR THIS SITE HAS BEEN ORDERED AND WILL BE INCLUDED FOR THE SGP.
2. THE INFORMATION SHOWN ON THIS PLAN WAS ACQUIRED FROM THE HOWARD COUNTY GIS AND IS INTENDED FOR ILLUSTRATIVE INFORMATION ONLY. SITE RESOURCES CANNOT VERIFY THE ACCURACY OF THE INFORMATION SHOWN.
3. THE INFORMATION SHOWN ON THIS EXHIBIT IS NOT FIELD VERIFIED AND SHALL NOT BE USED FOR DESIGN OR CONSTRUCTION.
4. THE COORDINATES SHOWN HEREON ARE BASED ON NAD '83 COORDINATE VALUES.
5. EXISTING UTILITIES ARE BASED ON HOWARD COUNTY GIS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION OF UTILITIES BY DIGGING TEST PITS, BY HAND, AT ALL UTILITY CROSSINGS PRIOR TO CONSTRUCTION.
6. THE SITE LIES ENTIRE WITHIN SOIL TYPE ULD - URBAN LAND - UDORTHTENS COMPLEX OF THE HYDROLOGIC SOIL GROUP D.
7. STORMWATER MANAGEMENT WILL BE PROVIDED BY ENVIRONMENTAL SITE DESIGN (ESD) PRACTICES. THE FACILITIES ARE TO BE PRIVATELY MAINTAINED.
8. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN, SITE DEVELOPMENT PLAN, OR GRADING OR BUILDING PERMIT. 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, SITE PLAN, OR GRADING AND BUILDING PERMIT STAGES.
9. THREE EXISTING SMM FACILITIES ON SITE WERE DESIGNED IN ACCORDANCE WITH MD 510 CRITERIA PER SDP-44-94.

SITE ANALYSIS DATA	
TOTAL PROPERTY AREA	31.08 AC
EXISTING IMPERVIOUS AREA	24.1 AC
WETLANDS / WETLAND BUFFER	0 AC
FLOODPLAINS / BUFFER	0 AC
FORESTS	0 AC
STEEP SLOPES (15% AND GREATER)	1.6 +/- AC
LIMIT OF WORK / LIMIT OF DISTURBANCE	5.60 AC / 4.14 AC
EXISTING IMPERVIOUS AREA (LOD)	2.61 AC
PROPOSED IMPERVIOUS AREA (LOD)	2.54 AC
PROPOSED SITE USAGE	COMMERCIAL DEVELOPMENT

SOIL TABLE	
SOIL NAME	*ULD - URBAN LAND/UDORTHTENS COMPLEX (100% SITE)
K FACTOR (EROSION)	UDORTHTENS 0.28
SOIL MAP NUMBER	SHEET 25 (SAVAGE SE QUAD)

*ULD SOIL UNIT ENCOMPASSES THE ENTIRE PROJECT BOUNDARY.

URBAN LAND COMPONENT MAKES UP 60% OF THE MAP UNIT. THIS SOIL IS NOT FLOODED AND IS NOT PONDED. THE WATER TABLE IS DEEPER THAN 6 FEET. IT IS IN NON-IRRIGATED LAND CAPABILITY CLASS B5. THIS COMPONENT IS NOT HYDRIC SOIL.

UDORTHTENS COMPONENT MAKES UP 40% OF THE MAP UNIT. THE ASSIGNED K_n EROSION FACTOR IS 0.28. THIS SOIL IS WELL DRAINED. THE SLOWEST PERMEABILITY WITH 60 INCHES IS SLOW. AVAILABLE WATER CAPACITY IS VERY HIGH AND SHRINK SWELL POTENTIAL IS MODERATE. THIS SOIL IS NOT FLOODED AND IS NOT PONDED. THE TOP OF THE SEASONAL HIGH WATER TABLE IS AT 60 INCHES. THIS COMPONENT IS NOT A HYDRIC SOIL. THE DEPTH TO A RESTRICTIVE FEATURE IS GREATER THAN 60 INCHES.

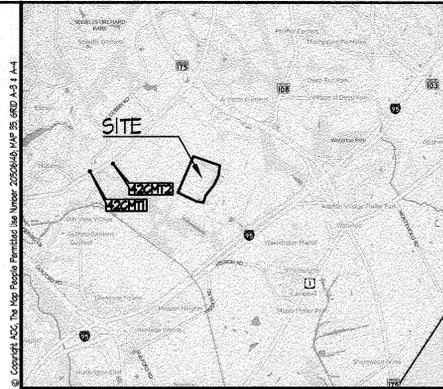
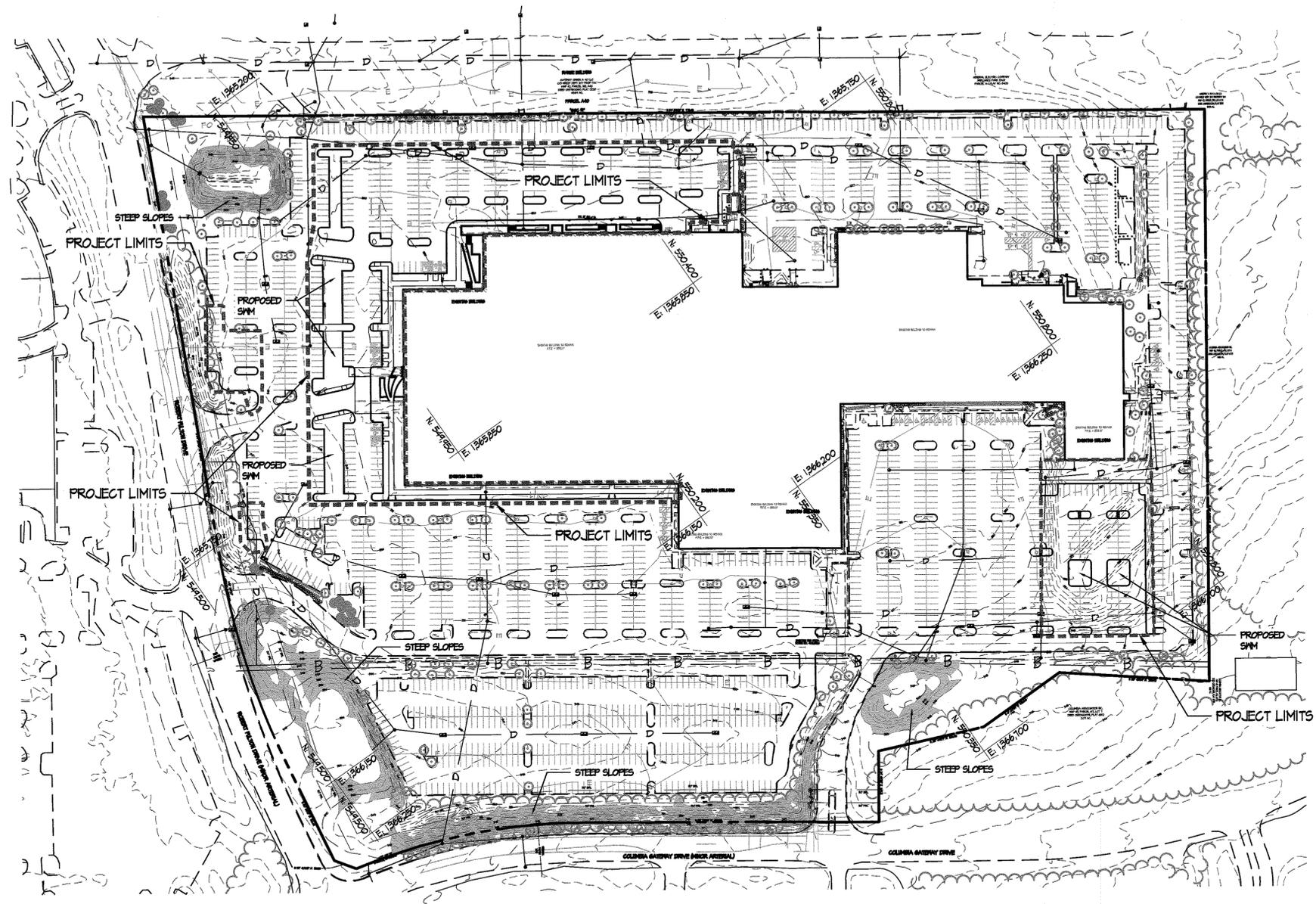
FIELD VERIFICATION

THE SITE NATURAL RESOURCES MAPPED ON THESE PLANS HAVE BEEN FIELD VERIFIED AS PER THE REQUIREMENTS OF SECTION 5.1.3.1 OF THE 2007 MARYLAND STORMWATER DESIGN MANUAL AND UPDATES. THIS VERIFICATION IS LIMITED TO THOSE NATURAL RESOURCES LISTED IN TABLE 5.1 OF THE MANUAL. NOTE THAT NOT ALL OF THE RESOURCES LISTED IN THE TABLE MAY BE PRESENT ON THIS SITE.

THE MAPPING OF THE NATURAL RESOURCES SHOWN ON THESE PLANS IS BASED ON THE FOLLOWING INFORMATION:

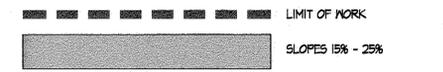
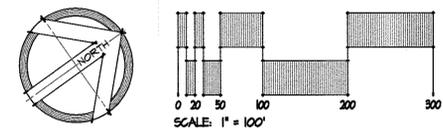
- HOWARD COUNTY GIS TOPOGRAPHY
- AN ALTA SURVEY PREPARED BY DBS & ASSOCIATES, LLC ON MARCH 14, 2000.
- SITE VISIT

Jennifer Harrington
 PRINTED NAME
Jennifer Harrington 1.29.15
 SIGNED DATE



BENCHMARKS

NAD83/91 & NAVD83 IN USE.
 *ST1M5 ALSO KNOWN AS R-125 N66 P1D: JY0620 ELEV: 123.961 BRASS DISC ON BRIDGE ABUTMENT ON US-1 0.5 MI. NORTHEAST OF RT-100.
 *ST1M4 ALSO KNOWN AS N/A N66 P1D: N/A ELEV: 170.156 LIGHT POLE BOLT AT END OF RAMP FROM I-100 TO US-1 SBL.



DRAWING INDEX		
SHEET #	DRAWING #	DRAWING TITLE
1 OF 5	ECPO.01	ECP COVER SHEET
2 OF 5	ECPO.02	ECP EXISTING CONDITIONS PLAN
3 OF 5	ECPO.03	ECP STORMWATER MANAGEMENT PLAN
4 OF 5	ECPO.04	ECP EROSION & SEDIMENT CONTROL PLAN
5 OF 5	ECPO.05	ECP SMM DETAILS

APPROVED: DEPARTMENT OF PLANNING & ZONING
Kate L. Devan
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9-26-16

OWNER/DEVELOPER:
 CORPORATE OFFICE PROPERTIES TRUST
 6701 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046
 PHONE: 443-295-5641

ADDRESS / PERMIT INFORMATION
 7125 COLUMBIA GATEWAY DRIVE,
 COLUMBIA, MARYLAND 21046
 ZONE: M4, TAX MAP NO. 43, PARCEL NO. 0671, L46494 / FA11
 ELECTION DISTRICT 9

SITE RESOURCES
 Comprehensive Land Planning & Site Design Services
 14165 Arrettsville Pike • Poolesville, Maryland 21134
 (410) 885-3300 • Fax (410) 885-3300

DES: SRI
 DRN: SRI
 CHK: SRI
 DATE: 01/20/16

**ENVIRONMENTAL CONCEPT PLAN
 COVER SHEET**

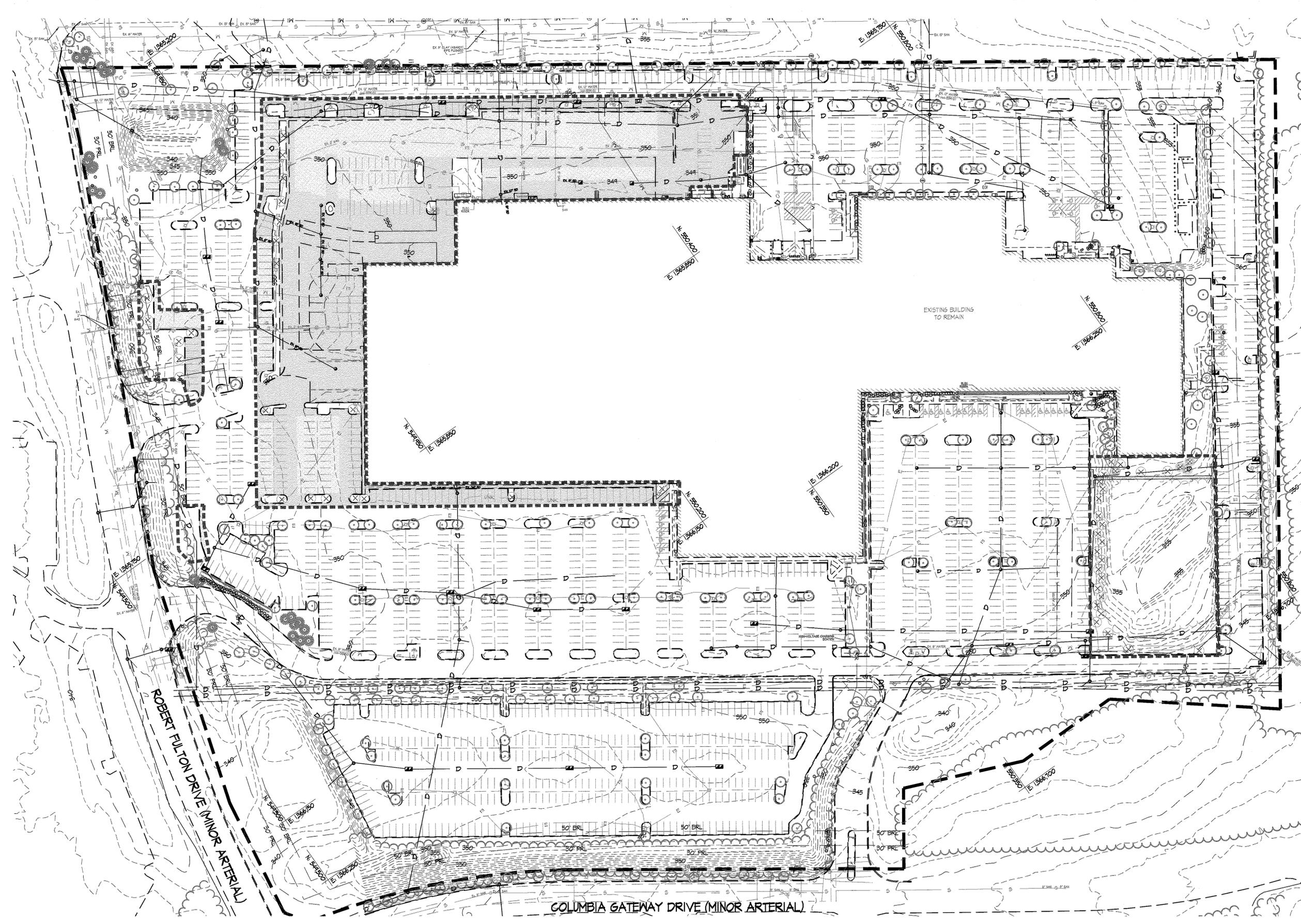
600' SCALE MAP NO. BLOCK NO.

**7125 COLUMBIA GATEWAY DRIVE
 WAREHOUSE**

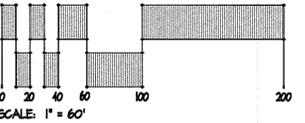
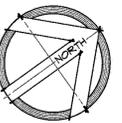
SCALE: 1"=100'
 ECPO.01
 SHEET 1 OF 5
 HOWARD COUNTY, MARYLAND
 ECP-17-003

NOTES

1. THIS IS NOT A BOUNDARY OR TOPOGRAPHIC SURVEY.
2. THE INFORMATION SHOWN ON THIS PLAN WAS ACQUIRED FROM THE HOWARD COUNTY GIS AND IS INTENDED FOR ILLUSTRATIVE INFORMATION ONLY. SITE RESOURCES CANNOT VERIFY THE ACCURACY OF THE INFORMATION SHOWN.
3. THE INFORMATION SHOWN ON THIS EXHIBIT IS NOT FIELD VERIFIED AND SHALL NOT BE USED FOR DESIGN OR CONSTRUCTION.



- PROPERTY BOUNDARY (37.08 ACRES)
- PROJECT LIMITS (5.60 ACRES)
- EX. IMPERVIOUS COVER (2.61 ACRES)
- EX. IMPERVIOUS COVER MILL AND OVERLAY AREA (1.28 ACRES)



APPROVED: DEPARTMENT OF PLANNING & ZONING
 K. St. John
 CHIEF, DIVISION OF LAND DEVELOPMENT
 9-20-16
 DATE
 10:11L
 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

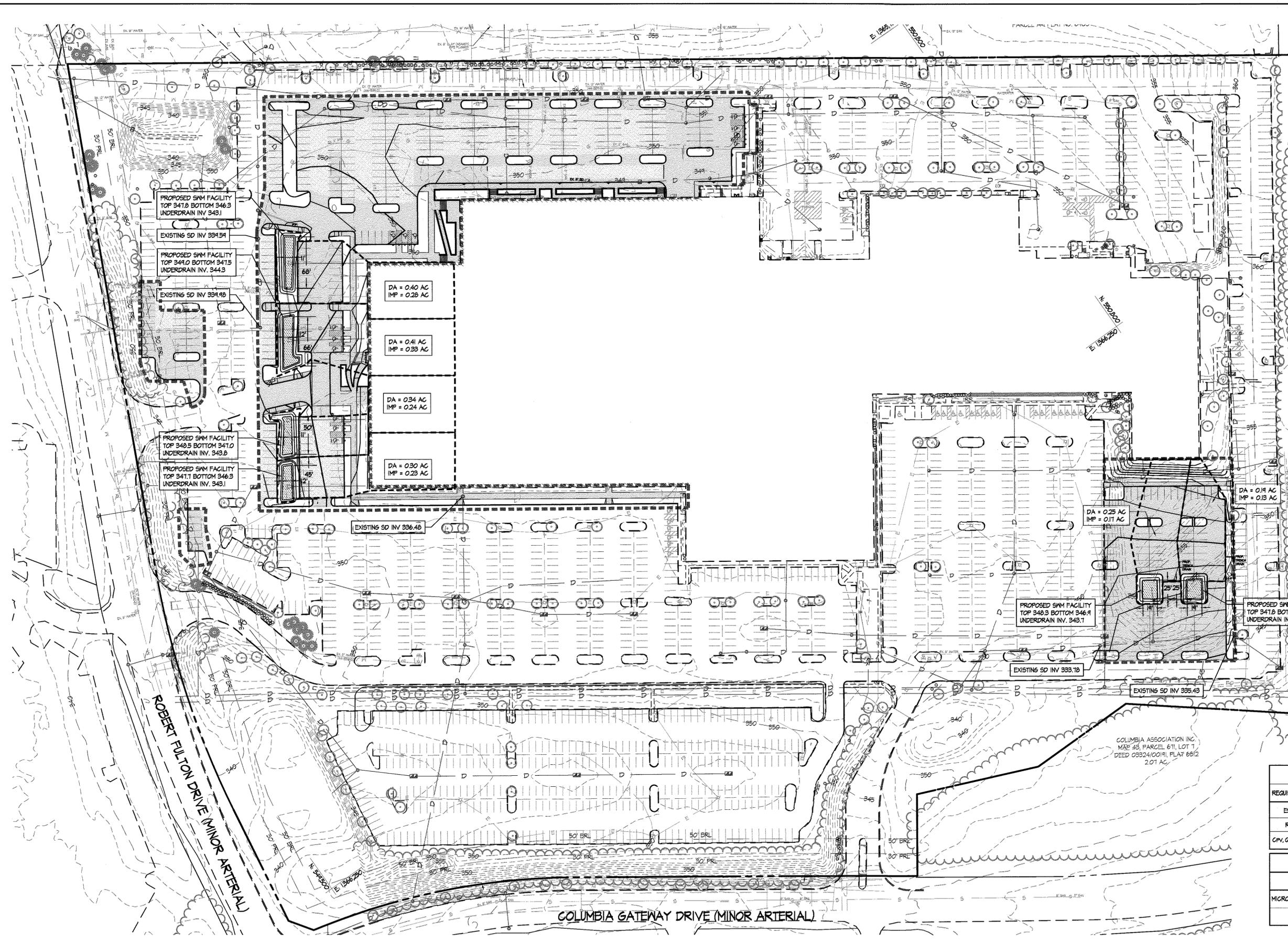
ADDRESS / PERMIT INFORMATION
 7125 COLUMBIA GATEWAY DRIVE,
 COLUMBIA, MARYLAND 21046
 ZONE: I-41, TAX MAP NO. 43, PARCEL NO. 0671, L 4649 / F 411
 ELECTION DISTRICT 3
 OWNER/DEVELOPER:
 CORPORATE OFFICE PROPERTIES TRUST
 6711 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046
 PHONE 443-285-5647



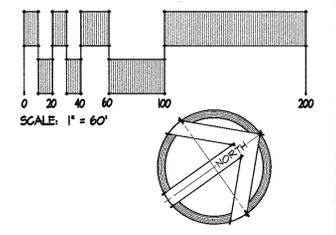
DES: SRI					
DRN: SRI					
CHK: SRI					
DATE: 09/20/16	BY	NO.	REVISION	DATE	

ENVIRONMENTAL CONCEPT PLAN
 EXISTING CONDITIONS PLAN
 600' SCALE MAP NO. BLOCK NO.

7125 COLUMBIA GATEWAY DRIVE
 WAREHOUSE
 HOWARD COUNTY, MARYLAND
 SCALE: 1" = 60'
 ECPO.02
 SHEET 2 OF 5
 ECP-17-003



- NOTES**
- THIS IS NOT A BOUNDARY OR TOPOGRAPHIC SURVEY.
 - THE INFORMATION SHOWN ON THIS PLAN WAS ACQUIRED FROM THE HOWARD COUNTY GIS AND IS INTENDED FOR ILLUSTRATIVE INFORMATION ONLY. SITE RESOURCES CANNOT VERIFY THE ACCURACY OF THE INFORMATION SHOWN.
 - THE INFORMATION SHOWN ON THIS EXHIBIT IS NOT FIELD VERIFIED AND SHALL NOT BE USED FOR DESIGN OR CONSTRUCTION.



- PROPOSED IMPERVIOUS AREA (2.91 AC)
- IMPERVIOUS AREA FOR MILL AND OVERLAY (1.28 AC)
- PROPOSED ESD FACILITIES
- SSM DRAINAGE AREA
- STORMWATER MANAGEMENT STUDY AREA / LIMITS OF DISTURBANCE

SITE AREA TABULATION	
TOTAL PROPERTY AREA	= 37.08 AC
EX. IMPERVIOUS AREA	= 24.10 AC > 40%
SSM STUDY AREA	= 4.19 +/- AC
EX. IMPERVIOUS AREA	= 2.61 +/- AC
PROP. IMPERVIOUS AREA	= 2.91 +/- AC
TARGET Pe	= 1.0 inches

THIS REDEVELOPMENT PROJECT IS REQUIRED TO PROVIDE AN IMPERVIOUS AREA REDUCTION AND/OR TREATMENT FOR 50% OF THE EXISTING IMPERVIOUS.

50% X EXISTING IMPERVIOUS = 50% X 2.61 AC = 1.31 AC
 IMPERVIOUS AREA REDUCTION = -0.02 AC
 IMPERVIOUS AREA REQUIRING TREATMENT = 1.29 AC

ESDV REQUIRED =
 $PE \times RV \times A = 1.0 \times 0.95 \times 1.29 \times 43560 = 4448 \text{ CF}$

THE SIX ESD FACILITIES SHOWN PROVIDE THE REQUIRED SSM TREATMENT FOR THIS REDEVELOPMENT PROJECT.

CONCEPTUAL UNDERDRAIN INVERTS SHOWN PROVIDE SUFFICIENT ELEVATION CAPABILITY TO CONNECT INTO EXISTING ADJACENT STORM DRAIN SYSTEMS.

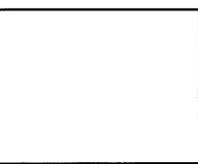
SSM STORAGE REQUIREMENTS			
REQUIREMENT	VOLUME REQ'D (CUBIC FEET)	VOL. PROV'D (CUBIC FEET)	NOTES
ESDV	4448 +/-	5050 +/-	MICRO-BIORETENTION FACILITIES
REV	-	-	NOT REQUIRED FOR REDEV PROJECTS
CPV, Q10, Q100	-	-	PROVIDED WITHIN EXISTING SSM FACILITIES

TREATMENT SUMMARY TABLE				
PRACTICE	DRAINAGE AREA (AC)	IMP. AREA TREATED (AC)	ESD VOL. PROV'D (CF)	Pe TREATED (IN)
MICRO-BIORETENTION	1.84 +/-	1.31 +/-	5050 +/-	> 1.0

APPROVED: DEPARTMENT OF PLANNING & ZONING
Karl Schuchman
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9-26-16
 DATE: 10-11-16

ADDRESS / PERMIT INFORMATION
 7125 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046
 ZONE: M4, TAX MAP NO. 43, PARCEL NO. 0671, L4694 / F411
 ELECTION DISTRICT 5

OWNER/DEVELOPER:
 CORPORATE OFFICE PROPERTIES TRUST
 6711 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046
 PHONE: 443-285-5641



DES: SRI
 DRN: SRI
 CHK: SRI
 DATE: 01/20/16

BY	NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 STORMWATER MANAGEMENT PLAN

600' SCALE MAP NO. BLOCK NO.

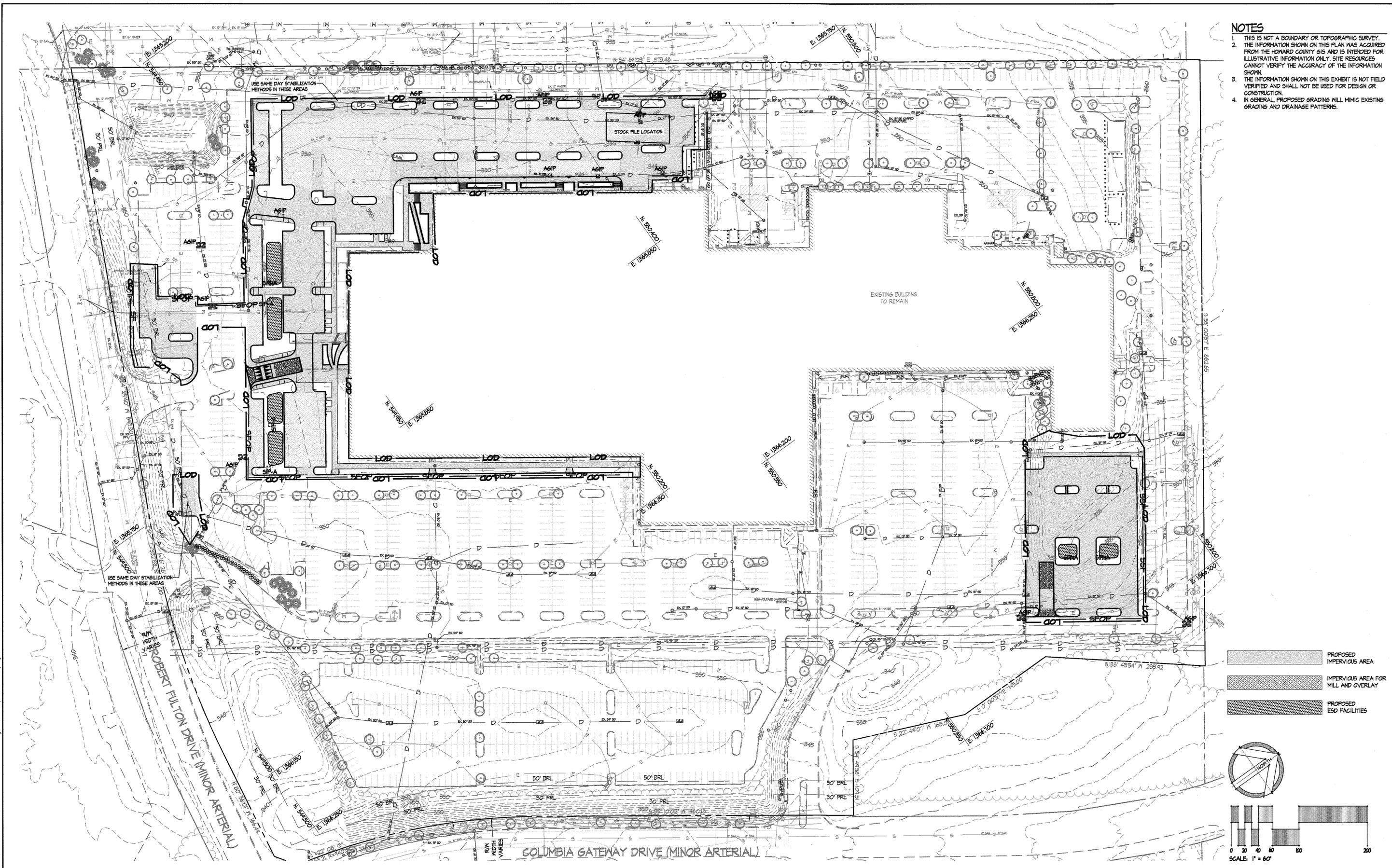
7125 COLUMBIA GATEWAY DRIVE
 WAREHOUSE

HOWARD COUNTY, MARYLAND

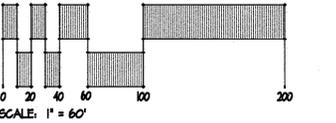
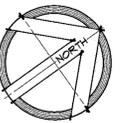
SCALE: 1"=60'
 ECPO.03
 SHEET 3 OF 5
 ECF-17-003

NOTES

1. THIS IS NOT A BOUNDARY OR TOPOGRAPHIC SURVEY.
2. THE INFORMATION SHOWN ON THIS PLAN WAS ACQUIRED FROM THE HOWARD COUNTY GIS AND IS INTENDED FOR ILLUSTRATIVE INFORMATION ONLY. SITE RESOURCES CANNOT VERIFY THE ACCURACY OF THE INFORMATION SHOWN.
3. THE INFORMATION SHOWN ON THIS EXHIBIT IS NOT FIELD VERIFIED AND SHALL NOT BE USED FOR DESIGN OR CONSTRUCTION.
4. IN GENERAL, PROPOSED GRADING WILL MIMIC EXISTING GRADING AND DRAINAGE PATTERNS.



- PROPOSED IMPERVIOUS AREA
- IMPERVIOUS AREA FOR MILL AND OVERLAY
- PROPOSED ESD FACILITIES



APPROVED: DEPARTMENT OF PLANNING & ZONING
Ket Shulman
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9.26.16
 DATE: 10.2.16

ADDRESS / PERMIT INFORMATION
 7125 COLUMBIA GATEWAY DRIVE,
 COLUMBIA, MARYLAND 21046
 ZONE: M-1, TAX MAP NO. 43, PARCEL NO. 0671, L46491 / F.411
 ELECTION DISTRICT 3
 OWNER/DEVELOPER:
 CORPORATE OFFICE PROPERTIES TRUST
 6711 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046
 PHONE: 443-285-5641

SITE RESOURCES
 Comprehensive Land Planning & Site Design Services
 16155 Arretville Pike • Pikesville, Maryland 21115
 (410) 803-3300 • Fax (410) 803-3380

DES: SRI			
DRN: SRI			
CHK: SRI			
DATE: 09/20/16	BY NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 EROSION AND SEDIMENT
 CONTROL PLAN
 600' SCALE MAP NO. BLOCK NO.

7125 COLUMBIA GATEWAY DRIVE
 WAREHOUSE
 HOWARD COUNTY, MARYLAND
 SCALE: 1" = 60'
 ECPO.04
 SHEET 4 OF 5
 ECP-17-003

MARYLAND STORMWATER DESIGN MANUAL CONSTRUCTION SPECIFICATIONS FOR MICRO-BIORETENTION

B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION AND INFILTRATION BERMS

1. MATERIAL SPECIFICATIONS
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.I.

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 HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERTRAM GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05.

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 A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TIRE 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.

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. 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 AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

6. UNDERDRAINS
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 156, TYPE PS 28, OR AASHTO M-218) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G. PVC OR HDPE).
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/4" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1" (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 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

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

920.01.05 MDSHA BIORETENTION SOIL MIX

920.01.05 BIORETENTION SOIL MIX (BSM). A HOMOGENEOUS MIXTURE COMPOSED BY LOOSE VOLUME OF 5 PARTS COARSE SAND, 3 PARTS BASE SOIL, AND 2 PARTS FINE BARK. BSM SHALL CONFORM TO THE FOLLOWING:

- (a) COMPONENTS, COMPONENTS OF BSM SHALL BE SAMPLED, TESTED AND APPROVED BEFORE MIXING AS FOLLOWS:
(1) COARSE SAND, MSMT 356. COARSE SAND SHALL BE WASHED SILICA SAND OR CRUSHED GLASS THAT CONFORMS TO ASTM FINE AGGREGATE C-39. COARSE SAND SHALL INCLUDE LESS THAN 1% BY WEIGHT OF CLAY OR SILT SIZE PARTICLES, AND LESS THAN 5% BY WEIGHT OF ANY COMBINATION OF DIABASE, GREYSTONE, CALCAREOUS OR DOLOMITIC SAND.
(2) BASE SOIL. BASE SOIL SHALL BE TESTED AND CERTIFIED BY THE PRODUCER TO CONFORM TO THE FOLLOWING REQUIREMENTS:

COMPOSITION - BASE SOIL					
TEST PROPERTY	TEST METHOD	TEST VALUE AND AMENDMENT			
PROHIBITED NEEDS	-	FREE OF SEED AND VIABLE PLANT PARTS OF SPECIES IN 920.06.02(a)(b)(c) WHEN INSPECTED.			
DEBRIS	-	NO OBSERVABLE CONTENT OF CEMENT, CONCRETE, ASPHALT, CRUSHED GRAVEL OR CONSTRUCTION DEBRIS WHEN INSPECTED.			
GRADING ANALYSIS	T 87	SIEVE SIZE	PASSING BY WEIGHT MINIMUM %		
		2 IN.	100		
		No. 4	90		
		No. 10	80		
TEXTURAL ANALYSIS	T 88	PARTICLE SIZE	% PASSING BY WEIGHT		
		SAND	2.0-0.050	55	85
		SILT	0.050-0.002	5	45
		CLAY	LESS THAN 0.002	1	8
SOIL PH	D 4912	PH OF 5.7 TO 6.9			
ORGANIC MATTER	T 194	MINIMUM 1.5% BY WEIGHT			
SOLUBLE SALTS	ECL-2 (V-V)	500 ppm (1.25 mmhos/cm) OR LESS			
HARMFUL MATERIALS	-	920.01.01(a)			

(b) FINE BARK. FINE BARK SHALL BE THE BARK OF HARDWOOD TREES THAT IS MILLED AND SCREENED TO A UNIFORM PARTICLE SIZE OF 2 IN. OR LESS. FINE BARK SHALL BE COMPOSTED AND AGED FOR 6 MONTHS OR LONGER, AND BE FREE FROM SAWDUST AND FOREIGN MATERIALS. A 1 TO 2 LB SAMPLE OF FINE BARK SHALL BE SUBMITTED TO THE LANDSCAPE OPERATIONS DIVISION FOR EXAMINATION.

(c) AMENDMENT OR FAILURE. BSM THAT DOES NOT CONFORM TO COMPOSITION REQUIREMENTS FOR PH OR NUTRIENT ANALYSIS SHALL BE AMENDED AS SPECIFIED BY THE NMP. BSM THAT EXCEEDS MAXIMUM PHOSPHORUS CONCENTRATION OR FAILS OTHER COMPOSITION REQUIREMENTS WILL NOT BE ACCEPTED, AND SHALL NOT BE DELIVERED OR USED AS BSM.

(d) STORAGE. 920.01.02(b). BSM SHALL BE STORED IN A STOCKPILE THAT IS PROTECTED FROM WEATHER UNDER TARP OR SHED. BSM STORED FOR 6 MONTHS OR LONGER SHALL BE RESAMPLED, RETESTED, AND REAPPROVED BEFORE USE.

(e) APPROVAL. 920.01.02(c).

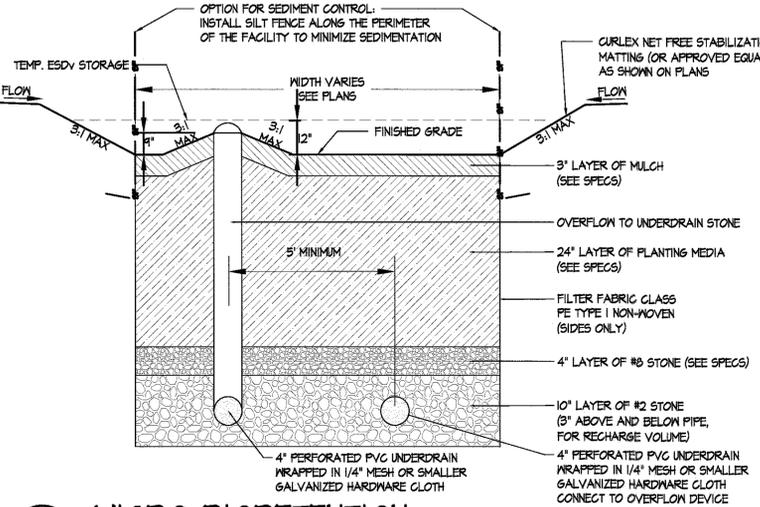
(f) CERTIFICATION AND DELIVERY. 920.01.02(d).

COMPOSITION - BIORETENTION SOIL MIX (BSM)						
TEST PROPERTY	TEST METHOD	TEST VALUE AND AMENDMENT				
NEEDS	-	FREE OF SEED AND VIABLE PLANT PARTS OF SPECIES IN 920.06.02(a)(b)(c) WHEN INSPECTED.				
DEBRIS	-	920.01.05(a)(2)				
TEXTURAL ANALYSIS	T 88	PARTICLE SIZE	% PASSING BY WEIGHT			
		mm	MINIMUM	MAXIMUM		
		SAND	2.0-0.050	55	85	
		SILT	0.050-0.002	-	20	
SOIL PH	D 4912	PH OF 5.7 TO 7.1				
		MINIMUM 1.5% BY WEIGHT				
		CONCENTRATION				
		ELEMENT	MINIMUM	MAXIMUM		
NUTRIENT ANALYSIS AND SOLUBLE SALTS	MEHLICH-3	ppm	FIV	ppm	FIV	
		CALCIUM (Ca)	32	25	NO LIMIT	NO LIMIT
		MAGNESIUM (Mg)	15	25	NO LIMIT	NO LIMIT
		PHOSPHORUS (P)	18	25	42	100
		POTASSIUM (K)	22	25	NO LIMIT	NO LIMIT
		SULFUR (SO ₄)	25	N/A	NO LIMIT	NO LIMIT
		SOLUBLE SALTS	ECL-2 (V-V)	40	N/A	500
HARMFUL MATERIALS	-	920.01.01(a)				

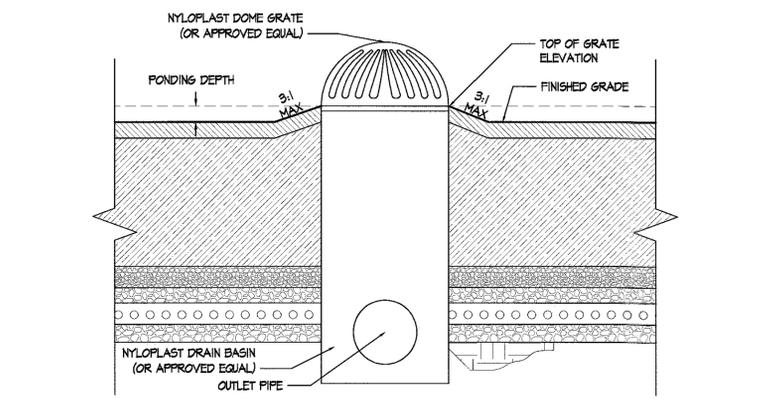
TABLE B.4.I MATERIAL SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS & LANDSCAPE INFILTRATION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE-SPECIFIC
* PLANTING MEDIA (2" TO 4" DEEP)	LOAMY SAND (60-65%) & COMPOST (35-40%) OR SANDY LOAM (30%) & COMPOST (40%)	N/A	USDA SOIL TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT - 1.8%
* ORGANIC CONTENT	MIX 10% BY DRY WEIGHT (ASTM D-871)		
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS
FEA GRAVEL DIAPHRAGM	FEA 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 I NONWOVEN
GRAVEL (UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M-43	NO. 8 (BRIDGING LAYER) NO. 2 (BEDDING LAYER)	
UNDERDRAIN PIPING	F 156, TYPE PS 28 OR AASHTO M-218	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR 35	SLOTTED OR PERFORATED PIPE, 3/8" PERFOR. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDER DRAIN 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 HEATING AND COOLING LOADS, VERTICAL LOADING (H-D 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 CARBOATE OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

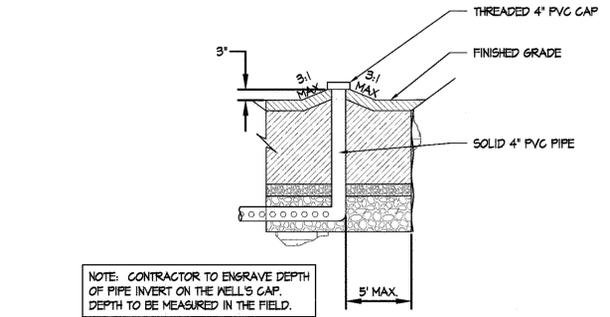
* SEE MATERIAL SPECIFICATIONS FOR SHA BIORETENTION SOIL MIX (BSM) THIS SHEET FOR SPECIFIC BIORETENTION SOIL MIX FOR THIS PROJECT.



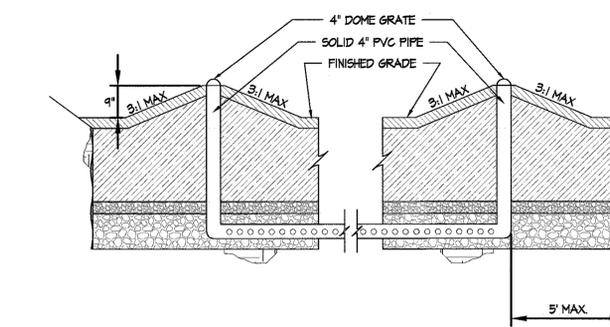
1 MICRO-BIORETENTION NOT TO SCALE



2 OVERFLOW DEVICE APPLIES TO ALL MICRO-BIORETENTION FACILITIES NOT TO SCALE



3 CLEAN-OUT / OBSERVATION WELL NOT TO SCALE



4 OVERFLOW TO UNDERDRAIN STONE NOT TO SCALE

APPROVED: DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 DATE: 9-26-16
 DATE: 12-2-16

OWNER/DEVELOPER:
 CORPORATE OFFICE PROPERTIES TRUST
 6711 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046
 PHONE: 443-205-5647

ADDRESS / PERMIT INFORMATION
 7125 COLUMBIA GATEWAY DRIVE,
 COLUMBIA, MARYLAND 21046
 ZONE: M-1, TAX MAP NO. 43, PARCEL: NO. 0671, L 4644 / F V 411
 ELECTION DISTRICT 3

SITE RESOURCES
 Comprehensive Land Planning & Site Design Services
 1616 Jernettville Pike • Pikesville, Maryland 21113
 (410) 663-3300 • Fax (410) 663-3300

DES: SRI
 DRN: SRI
 CHK: SRI
 DATE: 09/20/16
 BY: NO.
 REVISION
 DATE: 600' SCALE MAP NO.
 BLOCK NO.

ENVIRONMENTAL CONCEPT PLAN
 STORMWATER MANAGEMENT
 DETAILS

7125 COLUMBIA GATEWAY DRIVE
 WAREHOUSE
 HOWARD COUNTY, MARYLAND
 SCALE: 1"=100'
 ECP-05
 SHEET 5 OF 5
 ECP-17-003