

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ENVIRONMENTAL CONCEPT PLAN

STORMWATER MANAGEMENT PRACTICES						
LOT NO.	PERMEABLE CONCRETE (A-2) Y/N, NUMBER	DISCONNECTION OF ROOFTOP RUNOFF (N-1) Y/N, NUMBER	DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2) Y/N, NUMBER	INFILTRATION BERMS (M-4) Y/N, NUMBER	DRY WELLS (M-5) Y/N, NUMBER	MICRO-BIORETENTION (M-6) Y/N, NUMBER
1	NO	NO	NO	NO	NO	YES, ONE (1)
2	NO	NO	NO	NO	NO	YES, ONE (1)
3	NO	NO	NO	NO	NO	YES, ONE (1)
4	NO	NO	NO	NO	NO	YES, ONE (1)

STORMWATER MANAGEMENT SUMMARY			
AREA ID.	ESDv REQUIRED CU.FT.	ESDv PROVIDED CU.FT.	REMARKS
SITE	1,416	2,266	MICRO-BIORETENTION (M-6)
TOTAL	1,416	2,266	

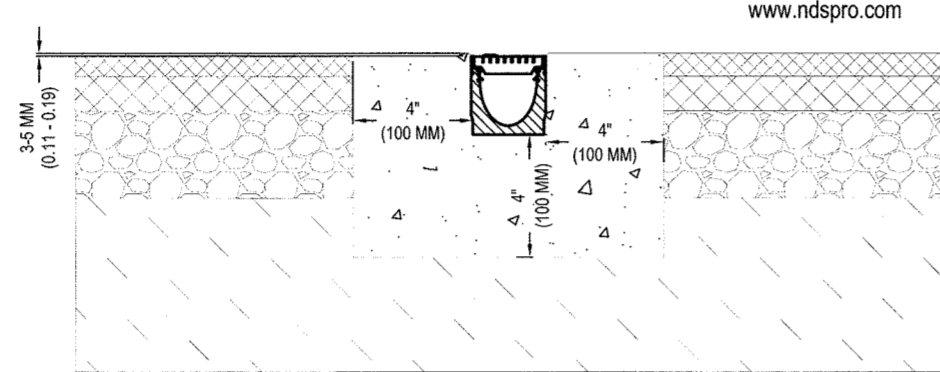
GROSS AREA = 2.14 AC. (TOTAL) 1.721 AC. (LOTS 1-4)
 LOD = 1.92 ACRES
 RCN = 72.4
 TARGET Pe = 1.0'
 $R_v = 0.05 + (0.009)(1); I = 13$
 $= 0.17$
 $R_v = 0.06 (66\% \text{ C' Soil, } 34\% \text{ D' Soils})$
 $R_v = (5)(0.17)(12)$
 $= (0.06)(0.17)(0.432)/12$
 $= 0.0004 \text{ ac-ft or } 17 \text{ cu-ft}$

STORMWATER MANAGEMENT NOTES

- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
- MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 1,000 SQ. FT. OR LESS.
- DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5%. THE SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET.
- FINAL GRADING IS SHOWN ON THIS SITE DEVELOPMENT PLAN.

OPERATION & MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)

- 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 AND 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.



INSTALLATION
 Filotren TEC V 100 GALVANIZED STEEL RAIL CLASS 5 ASPHALT PAVEMENT

OPERATION & MAINTENANCE
 Filotren TEC V 100 GALVANIZED STEEL RAIL CLASS 5 ASPHALT PAVEMENT

NOTES
 1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 2. DO NOT SCALE DRAWING.
 3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
 4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.

FILOTREN TRENCH DRAIN

FILOTREN TEC V 100 GALVANIZED STEEL RAIL CLASS 5 ASPHALT PAVEMENT

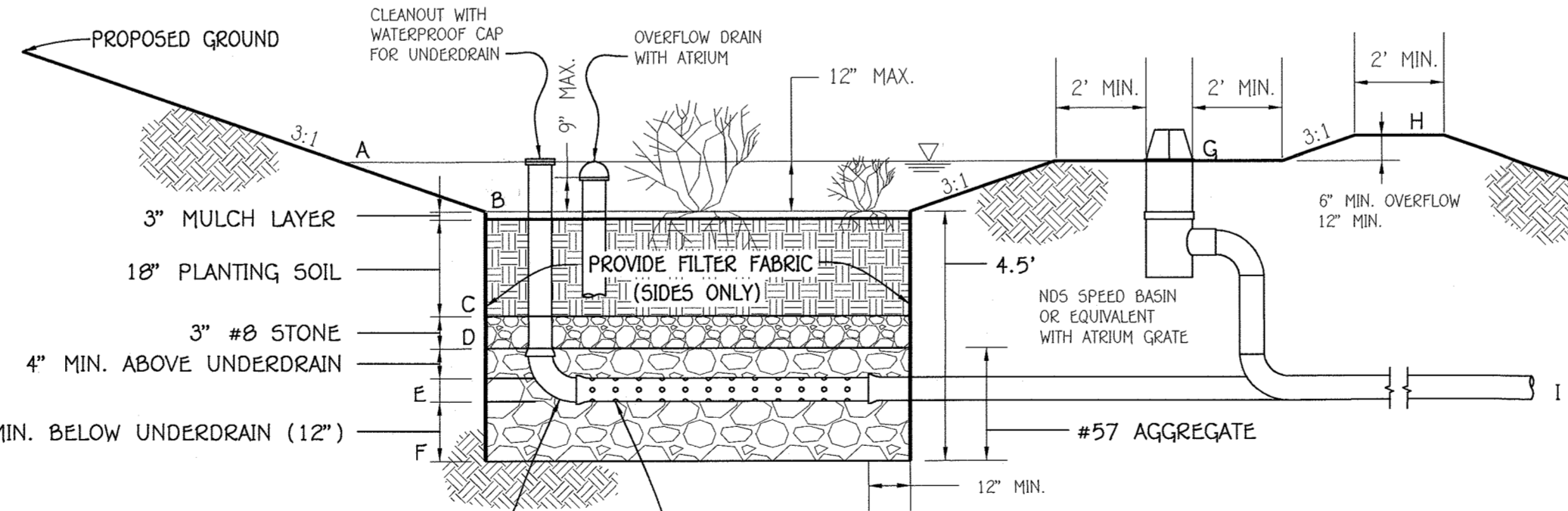


MICRO-BIORETENTION PLANTING DETAIL

NOT TO SCALE

Table B.4. Materials Specifications for Micro-Bioretentation, Rain Gardens & Landscape Infiltration

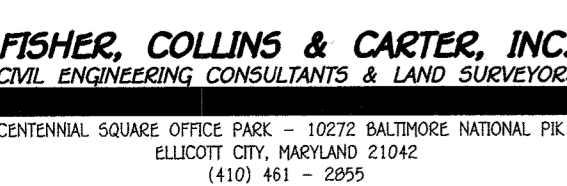
Material	Specification	Size	Notes
Plantings	see Appendix A Table A.4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum
Pea gravel diaphragm	pea gravel: ASTM-D-449	No. 8 or No. 9 (1/8" to 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	ASTM M-43	No. 57 or No. Aggregate (3/8" to 3/4")	
Underdrain piping	F 750, Type F5 2B or ASTM M-27B	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" per 6" on center; 4 holes per row; minimum of 3" of gravel over pipe; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 28 days, normal weight, air-entrained, reinforcing to meet ASTM-619-60	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 site 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 350.8.109; vertical loading 10-10 or H-202; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	ASTM-M-6 or ASTM-C-33	0.075" to 0.04"	Sand substitutions such as Diabase and Graystone (ASTM) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.



MICRO-BIORETENTION FACILITY WITH 4" OVERFLOW DISTRIBUTION PIPE

NO SCALE

MICRO-BIORETENTION / BIORETENTION									
BIORETENTION FILTER	A	B	C	D	E	F	G	H	I
LOT 1	206.0	205.0	203.25	203.0	202.33	201.33	206.0	206.5	203.02
LOT 2	206.0	205.0	203.25	203.0	202.33	201.33	206.0	206.5	202.86
LOT 3	202.0	201.0	199.25	199.0	198.17	197.17	201.0	201.5	198.05
LOT 4	202.0	201.0	199.25	199.0	198.17	197.17	201.0	201.5	197.56



Approved: Department of Planning And Zoning

Signature of Chief Development Engineering Division
 Date: 1/15/20
 Signature of Chief, Division of Land Development
 Date: 12/20/19

PROFESSIONAL CERTIFICATION

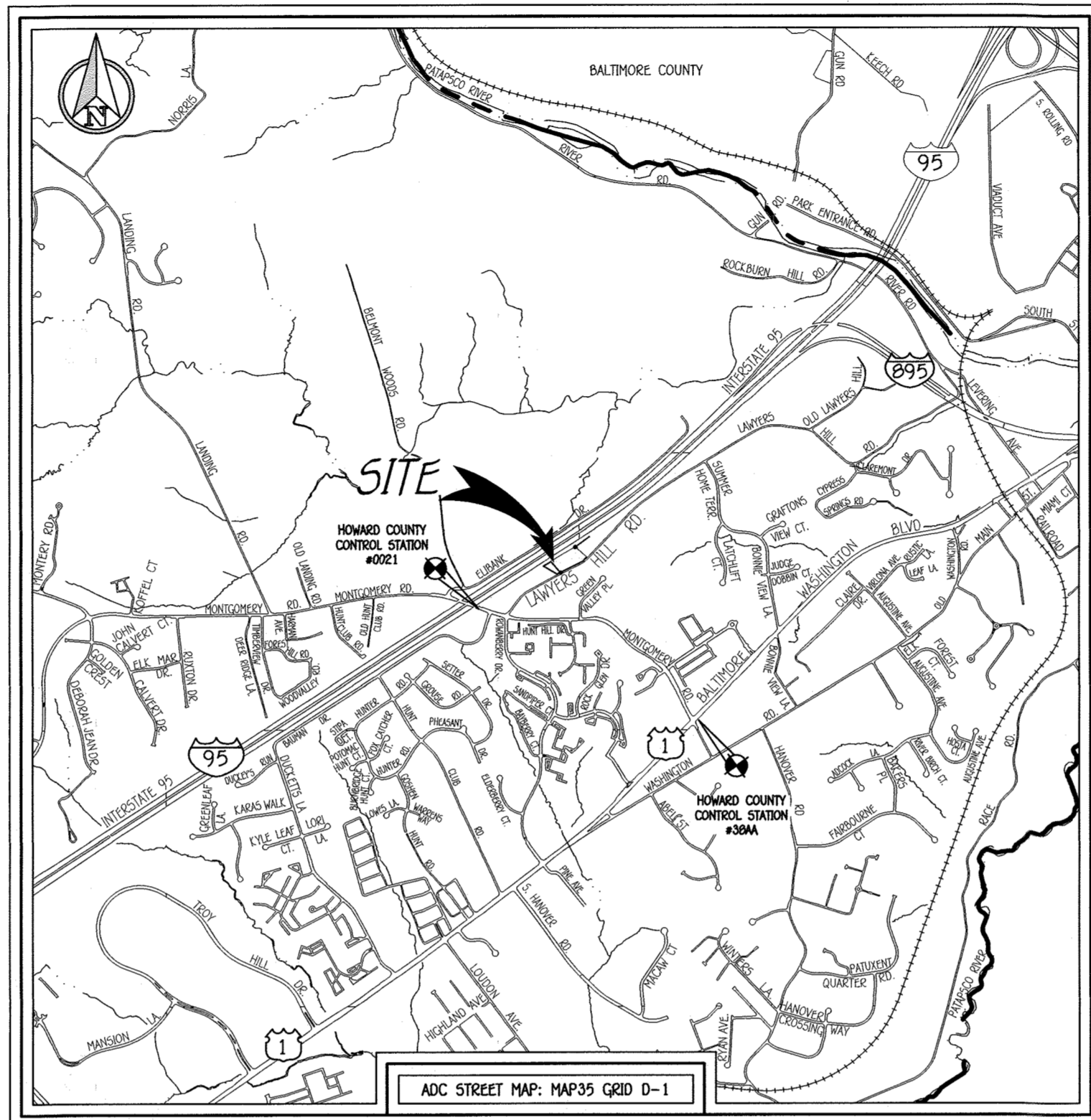
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21351. EXPIRATION DATE: 07/15/2021.

Signature of Professional Land Surveyor
 DATE: DEC. 19, 2019



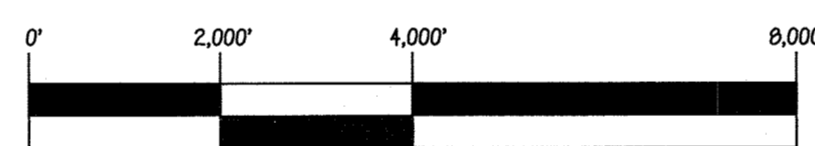
ENVIRONMENTAL CONCEPT PLAN ARRINGTON MANOR

LOTS 1 THRU 4
AND OPEN SPACE LOT
TAX MAP No. 38 GRID No. 02 PARCEL NO. 19
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



VICINITY MAP

SCALE: 1" = 2,000'



SCALE: 1" = 2,000'

GENERAL NOTES

- BOUNDARY SHOWN HEREON IS BASED ON FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. DATED JAN. 2018. TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. IN JAN. 2018 AND SUPPLEMENTED WITH HOWARD COUNTY QS TOPOGRAPHY AT 2' CONTOUR INTERVAL. INTERPOLATED FOR 2' CONTOUR INTERVAL.
- 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. 0021 AND 88A WERE USED FOR THIS PROJECT.
 59a. 0021 N 562,745.797 E 1,386,542.119 Elev. = 226.200
 88A N 561,156.815 E 1,389,726.428 Elev. = 220.036
- PREVIOUS OFD FILE NUMBERS: N/A
- STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009. NON-STRUCTURAL PRACTICES IN ACCORDANCE WITH CHAPTER 5 ARE BEING UTILIZED.
- THIS PROPERTY IS LOCATED INSIDE THE METROPOLITAN DISTRICT. LOTS TO BE SERVED PUBLIC WATER AND PUBLIC SEWER, CONTRACT #44-4280 & 10-1216.
- ANY DAMAGE TO THIS COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
- THE SUBJECT PROPERTY IS ZONED R-ED (PER DATE 10/06/2013 COMPREHENSIVE ZONING PLAN).
- NO STEEP SLOPES, STREAMS AND/OR WETLANDS EXIST ON-SITE (WETLANDS AND STREAM ARE ON THE ADJACENT PARCEL).
- THE SITE DOES CONTAIN 100 YEAR FLOODPLAIN, WETLAND BUFFERS AND STREAM BUFFERS.
- A FORESTS EXIST ON-SITE. SEE ENVIRONMENTAL FINDINGS LETTER PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. DATED MARCH 15, 2019
- LANDSCAPING WILL BE PROVIDED AT THE FINAL PLAN STAGE OF THIS PROJECT.
- FOREST CONSERVATION REQUIREMENTS FOR THIS PROPOSED SUBDIVISION WILL BE PROVIDED AT THE FINAL PLAN STAGE OF THIS PROJECT TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION ACT. IT IS ANTICIPATED THAT A FEE-IN-LIEU OF REFORESTATION WILL BE REQUESTED.
- A SOIL BORING WILL BE REQUIRED FOR THIS PROJECT SINCE MICRO-BIORETENTION POND IS BEING UTILIZED.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT SUBDIVISION, FOREST CONSERVATION, OR SITE DEVELOPMENT PLANS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS THAT MAY ALTER THE SITE DESIGN, HOUSE LOCATION, GRADING, TREE CLEARING, AND/OR OTHER REQUIREMENTS AS THE DEVELOPMENT PLAN PROGRESSES THROUGH THE PLAN REVIEW PROCESS IN ACCORDANCE WITH THE SUBDIVISION AND ZONING REGULATIONS AND THE FOREST CONSERVATION REQUIREMENTS.
- APPROVAL OF THIS ECP BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT PROVIDE APPROVAL OF THE SHOWN SEDIMENT CONTROLS.
- NO STRUCTURES EXIST ON THE PROPERTY.
- SOILS SHOWN HEREON ARE BASED ON THE NECS WEBSOIL SURVEY AND HOWARD COUNTY SOIL MAP #20.
- NO HISTORICAL FEATURES OR CHARACTERISTICS ARE ON-SITE.
- THE REMOVAL OF SPECIFIC TREES #1-4 WILL REQUIRE APPROVAL OF AN ALTERNATIVE COMPLIANCE.
- THIS SUBDIVISION IS ZONED R-ED BUT WILL BE DEVELOPED UNDER R-20 REGULATIONS ACCORDING TO SECTION 107.01.1.

DESIGN NARRATIVE

Introduction:

This report will demonstrate how the criteria set forth in the Maryland Stormwater Design Manual, Volumes I and II (effective October 2000, revised May 2009) will be satisfied on this project. The goal of creating hydrology similar to that of "woods in Good Condition" will be accomplished through the use of the practices contained within Chapter 5 of said manual. The achievement of this goal will remove the requirement of providing Channel Protection Volume.

General Site Conditions:

The subject property is 2.14 acres parcels located between Lawyers Hill Road and I-95 in the Elkridge section of Howard County, Maryland. The parcels is shown as parcel 19 on county tax map 38 and is known as SHA parcel 2, respectively, on SHA Plat #60561, the property is approximately 0.2 miles north of the intersection of Lawyers Hill Road and Montgomery Road. The surrounding land use includes low density residential. The site is located at the western edge of the coastal plain physiographic province of Maryland, this province is somewhat similar to the piedmont, consisting of rolling hills drained by numerous small streams. The subject property is made up of two currently undeveloped parcels. It appears that an old road or driveway may have crossed the property and numerous ornamental/invasive vines are present on the property which could suggest that the site was previously utilized for residential purposes. The site is primarily forested with a community that is dominated by tulip poplar. The forest is well established and several mature trees are present, invasive species colonization within the community is well established. Field review has determined that no wetlands or streams are present on the site. A stream channel with some adjacent wetland development is present offsite on the property immediately northeast of the subject property. The wetland and stream buffers generated from this resource do extend onto the property. An upland drainage channel is present to the south of the stream channel. This drainage conveys run-off from the road to the stream. This channel showed no evidence of flow or groundwater influence at the time of our field review, an old driveway/road crossing with a 24" culvert pipe crosses the channel. The old crossing likely concentrated surface flows in this area creating the eroded channel. The wetlands and streams just off site are part of the use i watershed of Rockburn branch within the patapasco river drainage (02-13-09).

I. Natural Resource Protection:

Environmentally sensitive features such as wetlands, streams, and steep slopes do not exist on-site. The site contains four (4) existing specimen trees, the tree set in the middle of the parcel and will need to be removed. A wetland buffer, stream buffer and floodplain do exist in the northeast side of the site being designated for open space.

II. Maintenance of Natural Flow Patterns:

Natural flow patterns will be maintained. Existing and proposed runoff flows mostly toward the northern portion of the site.

III. Reduction of Impervious Areas through better site design, alternative surfaces and Nonstructural Practices

Two (2) shared driveway are proposed that will reduce the amount of new impervious area needed to serve the new development.

IV. Integration of Erosion and Sediment Controls into Stormwater Strategy:

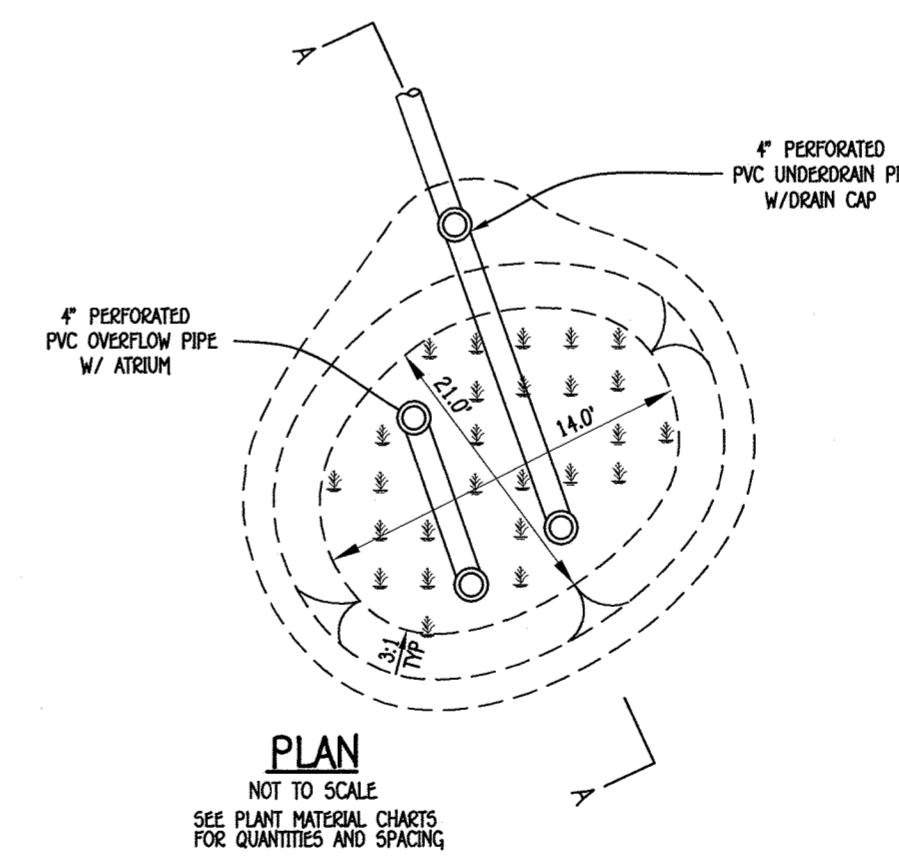
Super Silt Fence will be utilized to provide erosion and sediment control.

V. Implementation of ESD Planning Techniques and practices to the Maximum Extent Practicable (MEP)

The full required ESD volume is being provided.

VI. Request for a Design Manual Waiver:

No waivers related to stormwater management are required.



PLAN

NOT TO SCALE
SEE PLANT MATERIAL CHARTS FOR QUANTITIES AND SPACING

SITE ANALYSIS DATA CHART

- TOTAL AREA OF THIS SUBMISSION = 2.14 AC.±
- LIMIT OF DISTURBED AREA = 83,023 SQ.FT. OR 1.91 AC.±
- PRESENT ZONING DESIGNATION = R-ED (USING R-20) (PER 10/06/2013 COMPREHENSIVE ZONING PLAN)
- PROPOSED USE: RESIDENTIAL
- PREVIOUS HOWARD COUNTY FILES: N/A
- TOTAL AREA OF FLOODPLAIN LOCATED ON-SITE = 0.03 AC.±
- TOTAL AREA OF STEEP SLOPES:
MODERATE STEEP SLOPES: 15%-24.9% = 0.00 AC.±
STEEP SLOPES: 25% OR GREATER = 0.00 AC.±
- TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0.04 AC.± (BUFFER)
- TOTAL AREA OF STREAM (INCLUDING BUFFER) = 0.30 AC.± (BUFFER)
- TOTAL AREA OF EXISTING FOREST = 2.14 AC.±
- TOTAL AREA OF FOREST TO BE RETAINED = 0.28 AC.±
- TOTAL AREA OF BUILDABLE PARCELS = 1.721 AC.±
- TOTAL IMPERVIOUS AREA = 1.380 AC.±
- TOTAL AREA OF FORESBLE SOILS = 0.341 AC.±
- TOTAL AREA OF FORESBLE SOILS = 0.902 AC.± (Rub)
- TOTAL AREA OF ROAD DEDICATION = 0.130 AC.±

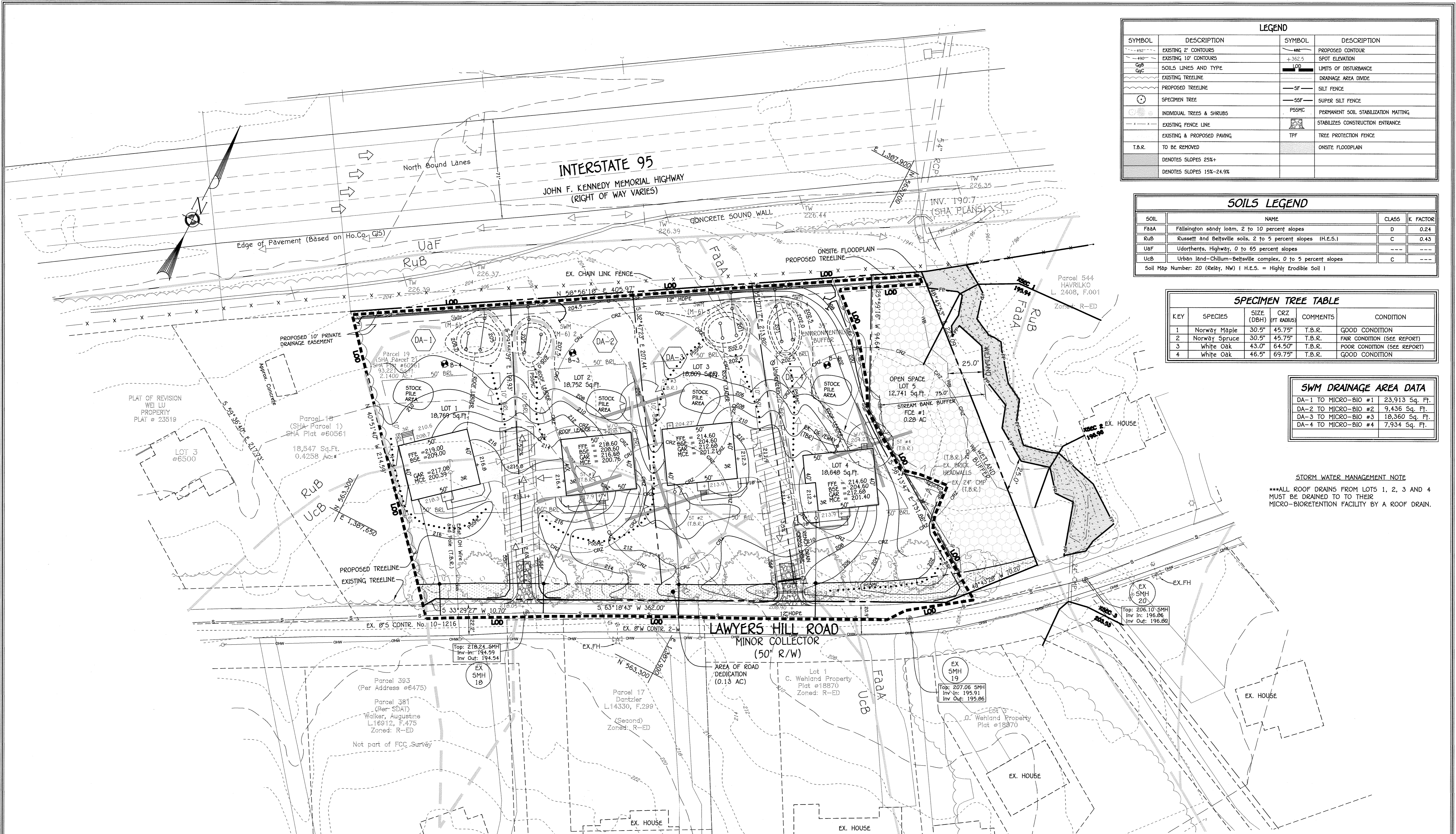
TITLE SHEET

ARRINGTON MANOR
LOTS 1 THRU 4
AND OPEN SPACE LOT 5
LAWYERS HILL ROAD
ZONED R-ED

TAX MAP No. 38 GRID No. 02 PARCEL No. 19
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: DEC. 19, 2019
SHEET 1 OF 2

OWNER/DEVELOPER

SPEEDFLOOR MID-ATLANTIC LLC
C/O TIMOTHY HARMAN
7115 JOHN CALVERT CT.
ELK RIDGE, MARYLAND 21075
443-506-6180



LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
---	EXISTING 2' CONTOURS	---	PROPOSED CONTOUR
---	EXISTING 10' CONTOURS	+	SPOT ELEVATION
---	SOILS LINES AND TYPE	---	LIMITS OF DISTURBANCE
---	EXISTING TREELINE	---	DRAINAGE AREA DIVIDE
---	PROPOSED TREELINE	---	SILT FENCE
○	SPECIMEN TREE	---	SUPER SILT FENCE
○	INDIVIDUAL TREES & SHRUBS	---	PERMANENT SOIL STABILIZATION MATING
---	EXISTING FENCE LINE	---	STABILIZES CONSTRUCTION ENTRANCE
---	EXISTING & PROPOSED PAVING	---	TREE PROTECTION FENCE
T.B.R.	TO BE REMOVED	---	ONSITE FLOODPLAIN
---	DENOTES SLOPES 25%+		
---	DENOTES SLOPES 15%-24.9%		

SOILS LEGEND			
SOIL	NAME	CLASS	K FACTOR
FaaA	Fallsington sandy loam, 2 to 10 percent slopes	D	0.24
RuB	Russett and Beltsville soils, 2 to 5 percent slopes (H.E.S.)	C	0.43
UaF	Udorthents, Highway, 0 to 65 percent slopes	---	---
UcB	Urban land-Chillum-Beltsville complex, 0 to 5 percent slopes	C	---

Soil Map Number: 20 (Relay, NW) 1 H.E.S. = Highly Erodible Soil 1

SPECIMEN TREE TABLE					
KEY	SPECIES	SIZE (DBH)	CRZ (FT RADIUS)	COMMENTS	CONDITION
1	Norway Maple	30.5"	45.75'	T.B.R.	GOOD CONDITION
2	Norway Spruce	30.5"	45.75'	T.B.R.	FAIR CONDITION (SEE REPORT)
3	White Oak	43.0"	64.50'	T.B.R.	POOR CONDITION (SEE REPORT)
4	White Oak	46.5"	69.75'	T.B.R.	GOOD CONDITION

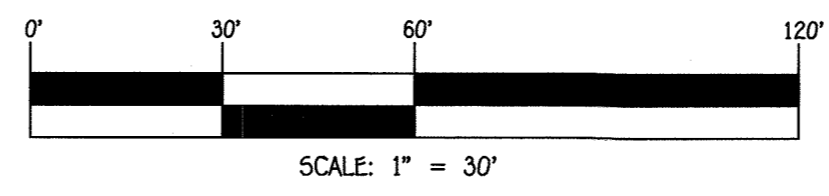
SWM DRAINAGE AREA DATA	
DA-1 TO MICRO-BIO #1	23,913 Sq. Ft.
DA-2 TO MICRO-BIO #2	9,436 Sq. Ft.
DA-3 TO MICRO-BIO #3	10,360 Sq. Ft.
DA-4 TO MICRO-BIO #4	7,934 Sq. Ft.

STORM WATER MANAGEMENT NOTE
 ***ALL ROOF DRAINS FROM LOTS 1, 2, 3 AND 4 MUST BE DRAINED TO THEIR MICRO-BIORETENTION FACILITY BY A ROOF DRAIN.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLSWORTH CITY, MARYLAND 21042
 (410) 481-3925

Approved: Department Of Planning And Zoning
 Chief, Development Engineering Division
 Date: 1/15/20
 Date: 12/26/19

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 21351, EXPIRATION DATE: 07/15/2021.
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 TAX MAP No. 38 GRID No. 02 PARCEL No. 19
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 SHEET 2 OF 2