

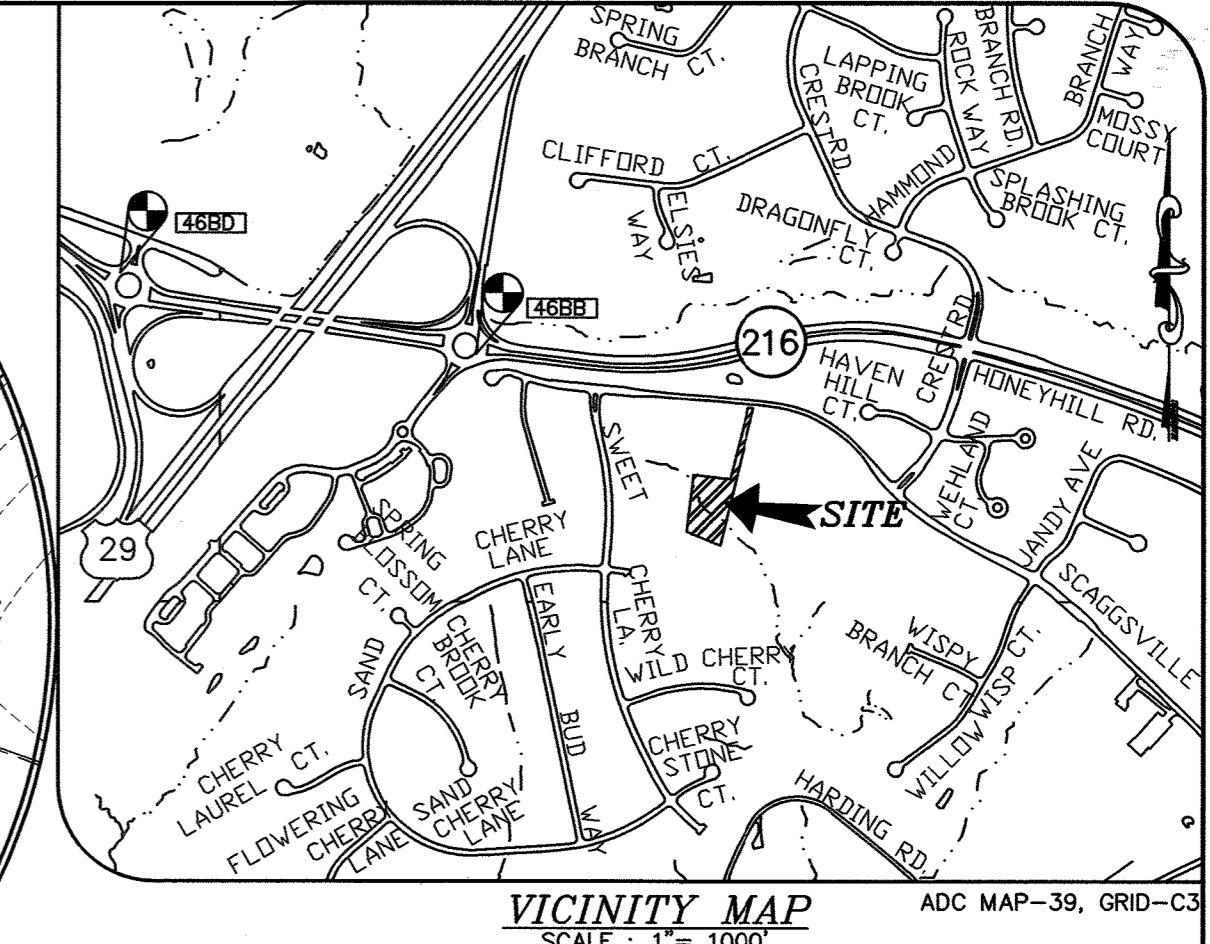
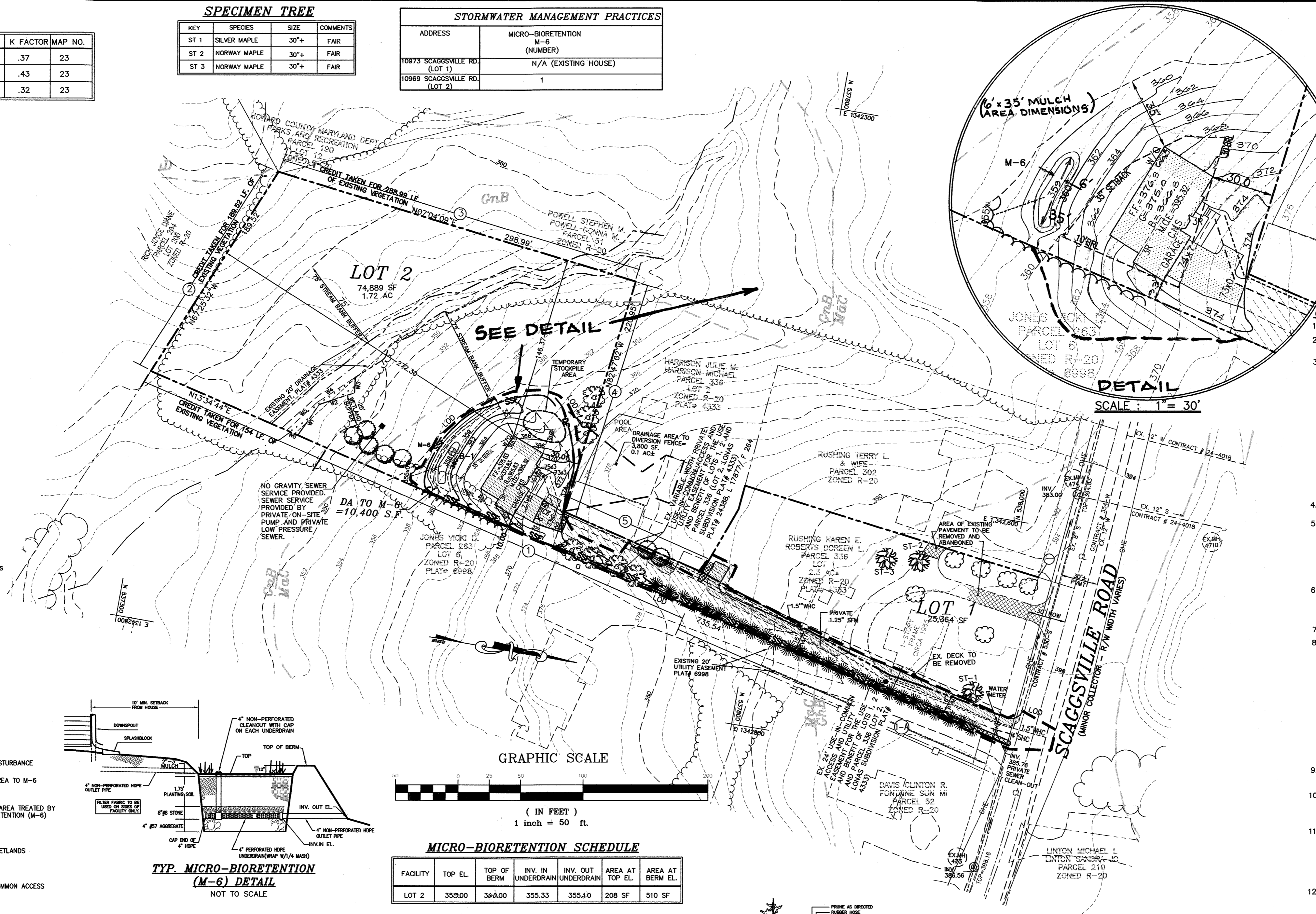
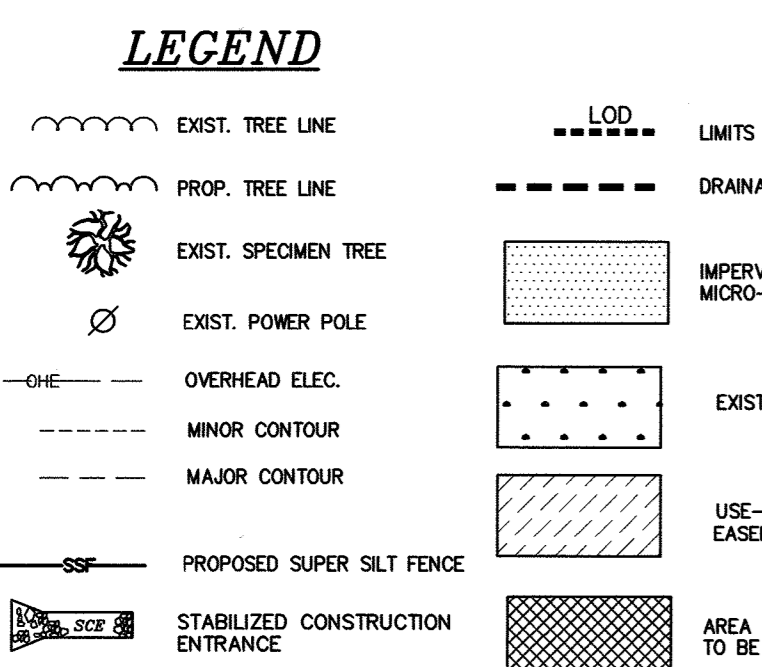
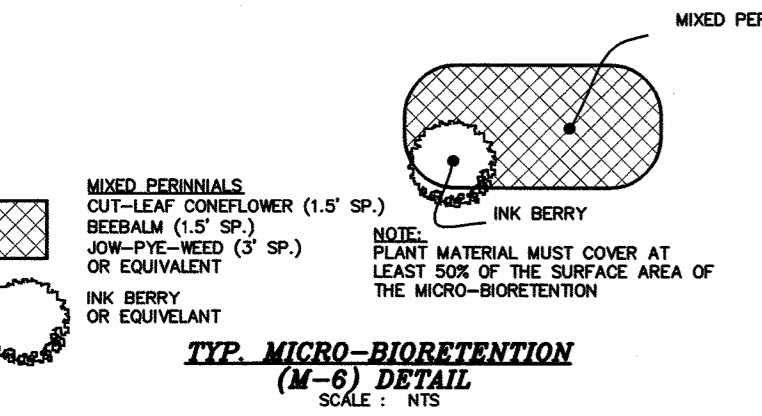
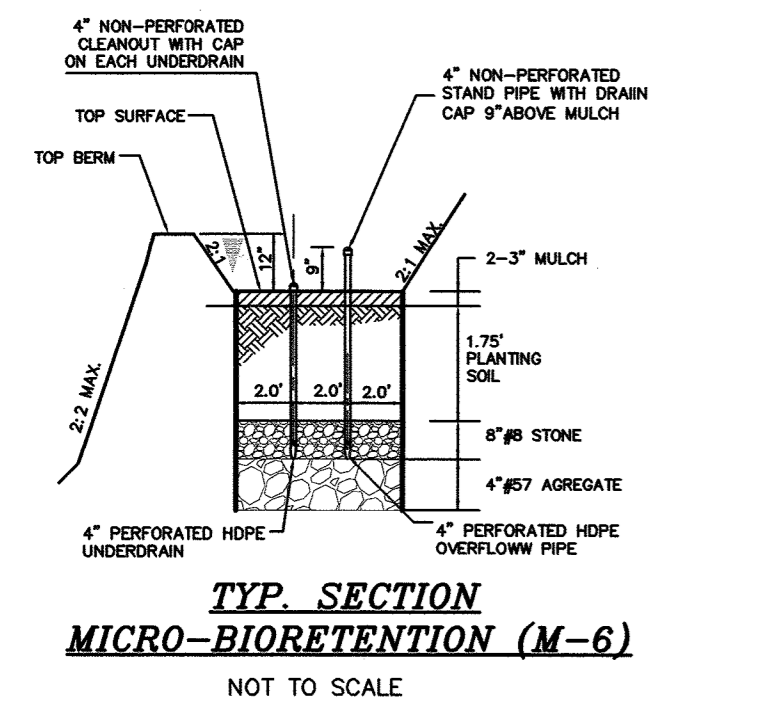
SOILS TABLE				
SYMBOL	RATING	NAME	K FACTOR	MAP NO.
GnB	(B)	GLENELG-URBAN LAND COMPLEX 0 TO 8 PERCENT SLOPES	.37	23
GnB	(C)	GLENVILLE-BAILEY SILT LOAMS (HIGHLY ERODIBLE SOIL) 0 TO 8 PERCENT SLOPES	.43	23
MoC	(B)	MANOR LOAM, 8-15% SLOPES	.32	23

SPECIMEN TREE			
KEY	SPECIES	SIZE	COMMENTS
ST 1	SILVER MAPLE	30"+	FAIR
ST 2	NORWAY MAPLE	30"+	FAIR
ST 3	NORWAY MAPLE	30"+	FAIR

STORMWATER MANAGEMENT PRACTICES	
ADDRESS	MICRO-BIORETENTION (NUMBER)
10973 SCAGGSVILLE RD. (LOT 1)	M-6 (EXISTING HOUSE)
10969 SCAGGSVILLE RD. (LOT 2)	1

INDEX OF DRAWINGS	
NO.	DESCRIPTION
1	SITE DEVELOPMENT PLAN
2	SEDIMENT CONTROL NOTES AND DETAILS
3	NOTES AND DETAILS

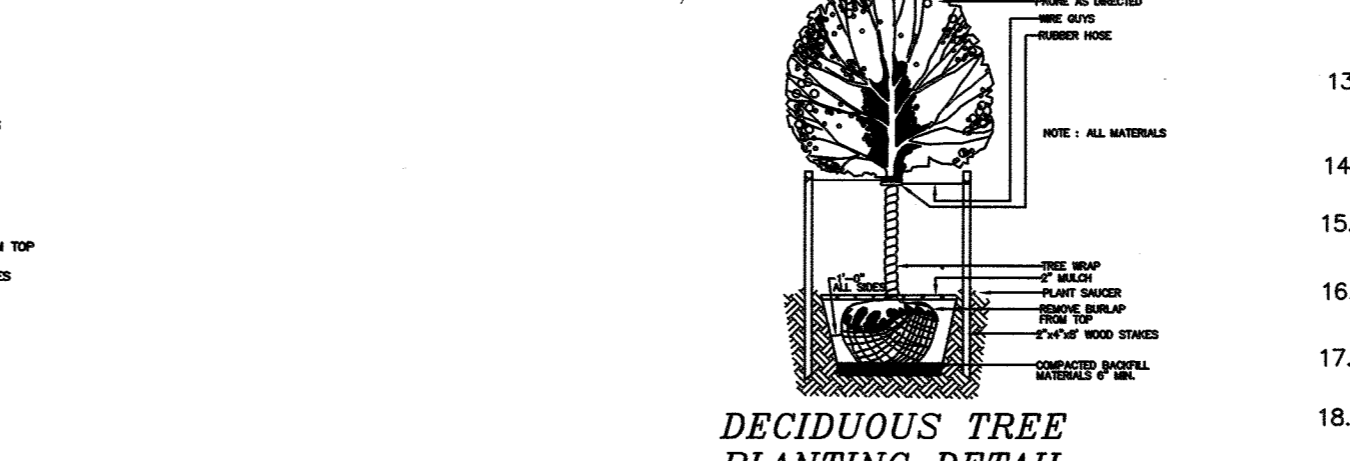
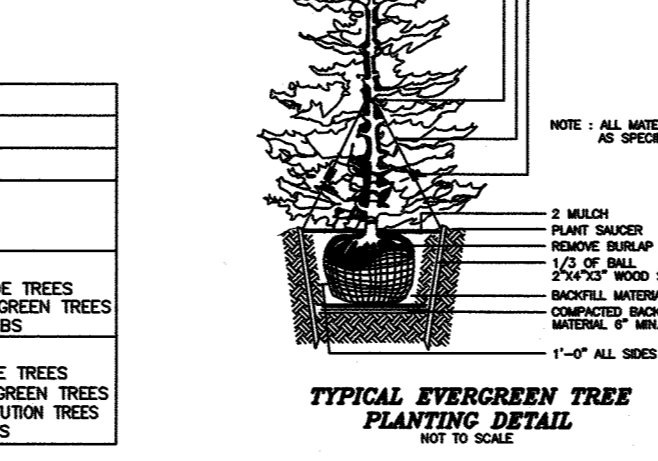
ADDRESS CHART	
LOT	ADDRESS
2	10969 SCAGGSVILLE ROAD



- GENERAL NOTES:**
- SUBJECT PROPERTY ZONED "R-20" PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
 - ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS.
 - SITE ANALYSIS DATA:**
 ADDRESS: 10969 SCAGGSVILLE ROAD LAUREL, MD 20723
 LOCATION: TAX MAP 46 PARCEL: 336 GRID: 5 LOT: 2
 ELECTION DISTRICT: SIXTH
 ZONING: R-20
 TOTAL AREA: 1.72 AC±
 NUMBER OF OPEN SPACE LOTS: 0
 AREA OF ROAD DEDICATION: 0 AC±
 AREA OF BUILDABLE LOT: 1.72 AC±
 LIMIT OF DISTURBED AREA: 0.48 AC±
 PROPOSED USE FOR SITE: RESIDENTIAL
 TOTAL NUMBER OF UNITS: 1
 TYPE OF PROPOSED UNIT: SFD
 NUMBER OF PARKING SPACES REQUIRED: 2.5 SPACES
 NUMBER OF PARKING SPACES PROVIDED: 4 SPACES (2 IN GARAGE + 2 DRIVEWAY)
 COUNTY FILE NUMBERS: ECP-16-062, F-17-047
 - ON-SITE TOPOGRAPHY SHOWN HEREON IS BASED ON A FIELD RUN SURVEY CONDUCTED BY MILDENBERG, BOENDER & ASSOCIATES ON OR ABOUT FEBRUARY 2016.
 - COORDINATES BASED ON NAD '83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 46B8 & 46B9
 STA. No. 46B8 N 538306.5015 ELEV. 422.637
 STA. No. 46B9 N 538656.7632 ELEV. 431.169
 STA. No. 46B8 E 1339461.5542
 STA. No. 46B9 E 1339461.5542
 - IN ACCORDANCE WITH SECTION 128.0 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACK, PORCHES OR DECKS, OPEN OR ENCLOSED, MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
 - STEEP SLOPES GREATER THAN 25% AND OVER 20,000 SQ. FT. IN AREA DO NOT EXIST ON SITE.
 - DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 A) WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
 B) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2").
 C) GEOMETRY - MAX. 15% GRADE, MAX. 10% GRADE CHANGE AND MIN. OF 45 FOOT TURNING RADIUS.
 D) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
 E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD PLAIN WITH NO MORE THAN 1 FOOT OF DEPTH OVER DRIVEWAY SURFACE.
 F) STRUCTURE CLEARANCES - MINIMUM 12 FEET.
 G) MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE.
 - THIS PROJECT IS EXEMPT FROM FOREST CONSERVATION OBLIGATIONS IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT AS DETERMINED UNDER F-17-047.
 - LANDSCAPING FOR LOT 2 IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. SURETY FOR THE REQUIRED 14 SHADE AND 27 EVERGREEN TREES IN THE AMOUNT OF \$3,250.00 WILL BE PROVIDED WITH THE GRADING PERMIT FOR LOT 2.
 - THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES, AND WALKS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
 - AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTION OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
 - FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM LOT AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
 - STORMWATER MANAGEMENT REQUIREMENTS WILL BE SATISFIED VIA A MICRO-BIORETENTION FACILITY AND WILL BE PRIVATELY OWNED AND MAINTAINED, APPROVED UNDER F-17-047.
 - THE OPEN SPACE REQUIREMENTS WERE SATISFIED VIA A PAYMENT OF FEE-IN-LIEU UNDER F-17-047.
 - THIS PROJECT IS IN THE METROPOLITAN DISTRICT. WATER AND SEWER ARE PUBLIC (CONTRACT# 354-W AND CONTRACT # 530-S).
 - THIS SDP IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 45-2003.
 - ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
 - WETLANDS AND ITS BUFFER EXIST ON SITE AS CERTIFIED IN THE WETLAND AND FSD LETTER PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. IN FEBRUARY 25, 2016 UNDER F-17-047.
 - LOT 2 IS SUBJECT TO THE MHU FEE-IN-LIEU REQUIREMENT THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTIONS AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT.
 - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MARYLAND STATE HIGHWAY ADMINISTRATION STANDARDS AND SPECIFICATIONS IF APPLICABLE.
 - THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410)313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
 - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
 - THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO EXCAVATION WORK BEING DONE:
 MISS UTILITY 800-257-7777
 VERIZON TELEPHONE COMPANY (410) 725-9978
 HOWARD COUNTY BUREAU OF UTILITIES (410) 313-4900
 AT&T CABLE LOCATION DIVISION (410) 393-3533
 BALTIMORE GAS AND ELECTRIC (410) 685-0123
 STATE HIGHWAY ADMINISTRATION (410) 531-5533
 - NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
 - NO 100 YEAR FLOODPLAIN EXISTS ON THIS SITE. DRAINAGE AREA IS LESS THAN 30 ACRES.
 - EXISTING UTILITIES ARE BASED ON AS-BUILT PLANS FOR WATER AND SEWER CONTRACTS AND ARE VERIFIED BY FIELD RUN SURVEY CONDUCTED BY MILDENBERG, BOENDER & ASSOC., INC.
 - ON 11/15/2016, A WAIVER TO PROVIDE GUYARD SEWER SERVICE WAS APPROVED FOR LOT 2. THE REQUEST IS TO PROVIDE BASEMENT SEWER SERVICE BY PRIVATE ON-SITE PUMP AND PRIVATE LOW-PRESSURE SEWER.
 - SHC ELEVATIONS SHOWN ARE LOCATED AT THE PROPERTY LINE.

SCHEDULE A: PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES					TOTAL
	A (PERIMETER 1)	D (PERIMETER 1-A)	A (PERIMETER 3)	B (PERIMETER 4)	A (PERIMETER 5)	
LINEAR FEET OF PERIMETER	469.54 LF	268.00 LF	189.52 LF	298.99 LF	120.86 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	NO	YES, 154 LF OF EXISTING TREES	YES, 169.52 LF OF EXISTING TREES	NO	NO	
NUMBER OF PLANTS REQUIRED	8 SHADE TREES 0 EVERGREEN TREES 0 SHRUBS	4 SHADE TREES 27 EVERGREEN TREES 0 SHRUBS	3 SHADE TREES 0 EVERGREEN TREES 0 SHRUBS	5 SHADE TREES 0 EVERGREEN TREES 0 SHRUBS	3 SHADE TREES 0 EVERGREEN TREES 0 SHRUBS	25 SHADE TREES 27 EVERGREEN TREES 0 SHRUBS
NUMBER OF PLANTS PROVIDED	8 SHADE TREES 27 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS (10:1 SUBSTITUTION)	4 SHADE TREES 27 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS	0 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS	0 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS	3 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS	14 SHADE TREES 27 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS



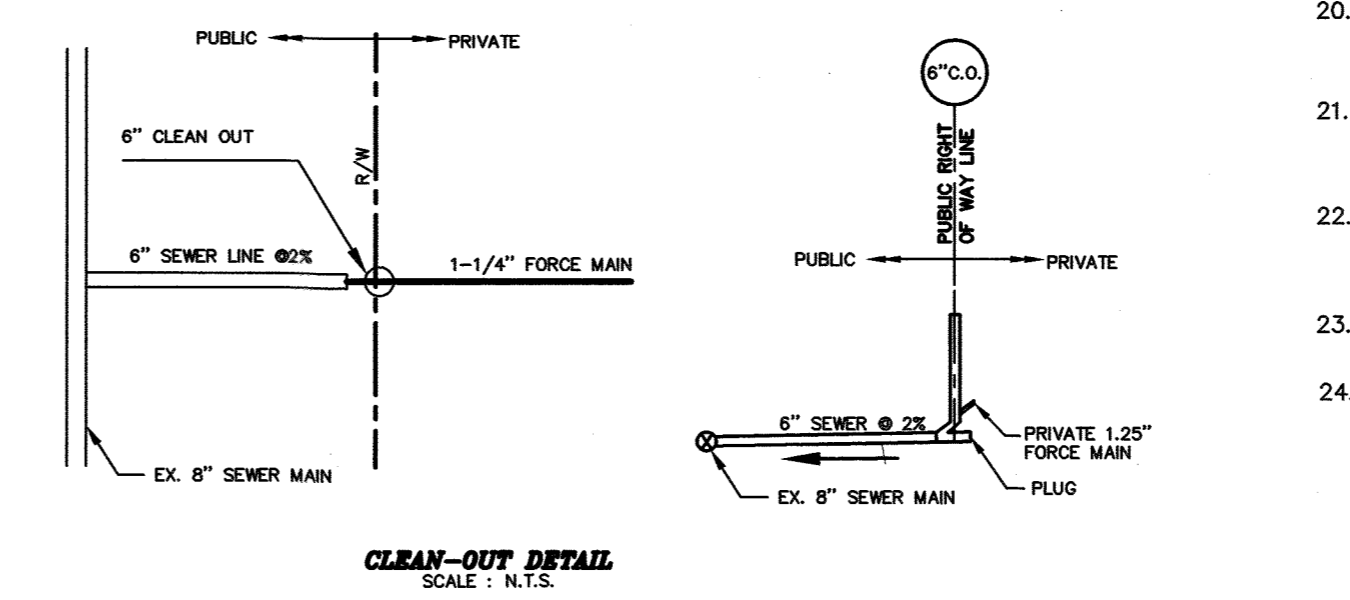
DEVELOPER'S CERTIFICATE
 I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 Signature: Brian Flanders
 DATE: 2/26/18

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 Signature: R. Jacob Hikmat P.E.
 DATE: 2/26/18

DEVELOPER'S/OWNER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE, AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.
 Signature: Brian Flanders
 DATE: 2/26/18

PERIMETER LANDSCAPE REQUIREMENT PLANTING SCHEDULE

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
7	(Symbol)	PRUNUS SARGENTI	SARGENT CHERRY	2 1/2" - 3" CAL.
7	(Symbol)	ACER RUBRUM (AR)	RED MAPLE	2 1/2" - 3" CAL.
27	(Symbol)	THUJA OCCIDENTALIS 'ELEGANTISSIMA'	ELEGANTISSIMA ARBORVITAE	2" - 2 1/2" HGT.
TOTAL				14 SHADE TREES, 27 EVERGREENS



APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Signature: [Official Seal]
 DATE: 3-19-18
 Signature: [Official Seal]
 DATE: 3-15-18
 Signature: [Official Seal]
 DATE: 3-16-18

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. 17942, EXP DATE 09/03/18.
 Signature: R. Jacob Hikmat P.E.
 DATE: 2/26/18

OWNER/DEVELOPER
 BRIAN FLANDERS
 5157 EVANGELINE WAY
 COLUMBIA, MD. 21044
 301-821-7236

PERMIT INFORMATION CHART

SUBDIVISION NAME:	SECTION/AREA:	PARCEL:			
KAREN RUSHING PROPERTY	N/A	336			
PLAT NO.	BLOCK(S)	ZONING	TAX MAP NO.	ELECTION DISTRICT	CENSUS TRACT
24388	5	R-20	46	SIXTH	606805

project	date	description	revisions
15-014	FEB. 2018	engineering	
		illustration	
		MM/M/AMT	MM
		scale	1"=50'

REV.	DATE	DESCRIPTION
1	10/25/17	
2		

KAREN RUSHING PROPERTY
 LOTS 1 AND 2
 TAX MAP 46 GRID 5 PARCEL 336
 HOWARD COUNTY, MARYLAND
 6TH ELECTION DISTRICT
SITE DEVELOPMENT PLAN

MILDENBERG, BOENDER & ASSOC., INC.
 Engineers Planners Surveyors
 7350-B Grace Drive, Columbia, Maryland 21044
 (410) 997-0296 Fax: (410) 997-0296

GEOTECHNICAL ENVIRONMENTAL TESTING CONSULTANTS, INC.
 P.O. Box 2071
 Columbia, MD 21045-2071
 Phone: (410) 381-5330
 Fax: (410) 381-1064
 e-mail: mounir54@getinc.com

November 5, 2016

Mildenberg, Boender & Associates, Inc.
 7350-B Grace Drive
 Columbia, Maryland 21044

Attn: Ms. Myra M. Mildenberg
 Vice President

Re: Limited Subsurface Exploration
 Proposed Development
 Karen Rushing Property
 Tax map 46, grid 5, Parcel 336
 10973 Saggoville Road, Laurel, MD 20723
 GE&T Project No. G-249

Dear Ms. Mildenberg:

On October 29th, 2016, GE&T Consultants, Inc. utilized a hand auger to bore one (1) soil boring at the location shown on the attached Hand-Auger Location Map. The purpose of the hand auger was to evaluate the presence/absence of bedrock and local groundwater at the location shown, within six (6) feet below existing site grades. The number, location, and depth of the boring were determined by others and the boring was staked-out in the field by others.

Our field observations are summarized below:

Hand Auger No.	Depth to Groundwater (ft)	Depth to Hand-Auger Refusal (ft)	Boring Termination Depth (ft)	Remarks
HA-1	N/A	N/A	75.0	--

Note: All depths are below existing site grades.

It should be noted that the actual level of groundwater and the amount and level of perched water should be anticipated to fluctuate through the year, depending on variations in precipitation, surface run-off, infiltration, site topography, drainage, and other factors not evident at the time of our exploration. GE&T can not be responsible for changes in groundwater conditions at the site due to seasonal variations and changes caused by other factors such as grading operations at the site.

GE&T appreciates the opportunity to provide this geotechnical engineering service to you. Should you have any questions regarding this letter report, or require additional services, please feel free to contact our office.

Sincerely,

GE&T Consultants, Inc.

Mounir Abouzakem, PE



2

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

Base Course - The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).

3. Reinforced Turf

Reinforced Grass Pavement (RGP) - Whether used with grass or gravel, the RGP thickness shall be at least 1 1/2" thick with a load capacity capable of supporting the traffic and vehicle types that will be carried.

B.4.C Specifications for Micro-Bioretenment, Rain Gardens, Landscape Infiltration & Infiltration Basins

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, 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-bioretenment 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 Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.02.

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 (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (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 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. 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 backfill. When possible, use excavation hoers to remove original soil. If practices are

Supp. 1 B.4.4

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

excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf 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.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction 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.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply 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-bioretenment 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. Fine 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.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8" 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. Thoroughly water ground bed cover after installation.

B.4.5 Supp. 1

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

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. The primary function of the bioretention structure is to improve water quality. Adding fertilizers, defolts, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill area 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 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 1/2" (No. 4 or 4ex) 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 (3/4" to 1 1/4" 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".

The 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

Supp. 1 B.4.6

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

Material	Specification	Size	Note
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 type loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	
Mulch	shredded hardwood	n/a	aged 6 months, minimum 1/8" or wood chips
Pea gravel (depth)	pea gravel: ASTM C-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	essentially stone: washed cobble	stone: 2" to 5"	
Geotextile	AASHTO M-43	n/a	PE Type 1 nonwovens
Gravel (underdrains and infiltration basins)	AASHTO M-43	NO. 57 OR NO. 6 (3/8" TO 1 1/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid subsurface 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipe; not necessary; underdrain pipe; perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Formed in place concrete (if required)	MSEA Mix No. 3, C ₁ = 3000 psi @ 28 days, normal weight, air-entrained conforming to most ASTM A-115-0	n/a	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 308.3R; vertical loading (20-15 to 10); allowable moment; loading (based on soil pressure); and analysis of potential cracking
Soil	AASHTO-M-4 or ASTM-C-33	0.075" to 0.04"	used construction such as Siltex and Cripstone (AASHTO) fill are not acceptable. No calcium carbide or dolomite sand substitutions are acceptable. No "rock dust" can be used for sand.

Project	date	date	date
15-014	FEB. 2018		
Illustration	engineering	approval	
MM/M/MT	MMH	MMH	
scale	1"=50'		

	no.	description	date
		revisions	

KAREN RUSHING PROPERTY
 LOTS 1 AND 2
 TAX MAP 46 GRID 5 PARCEL 336
 HOWARD COUNTY, MARYLAND
 6TH ELECTION DISTRICT
NOTES AND DETAILS

DEVELOPERS CERTIFICATE

I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer: *Belaw Flanoy* DATE: 2/26/18
 PRINTED NAME OF DEVELOPER: **Belaw Flanoy**

ENGINEER'S CERTIFICATE

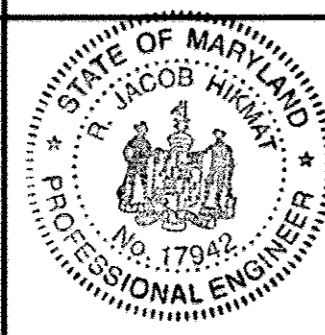
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Engineer: *R. Jacob Hikmat P.E.* DATE: 2/20/18
 PRINTED NAME OF ENGINEER: **R. JACOB HIKMAT P.E.**

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of District Director: *John R. Robertson* DATE: 3/7/18
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division: *[Signature]* DATE: 3-13-18
 Chief, Division of Land Development: *[Signature]* DATE: 3/15/18
 Director: *[Signature]* DATE: 3-16-18



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. 17942, EXP. 09/03/18.
 R. JACOB HIKMAT P.E. DATE: 2/20/18

MILDENBERG, BOENDER & ASSOC., INC.
 Engineers, Planners, Surveyors
 7350-B Grace Drive, Columbia, Maryland 21044
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