

GENERAL NOTES

1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
 2. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JUNE 27, 2014, OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS AND DRAWINGS OF RECORD.
 3. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED NOVEMBER 16, 2013.
 4. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 3000 AND 31AC WERE USED FOR THIS PROJECT.
 5. THE SUBJECT PROPERTY IS ZONED "R-APT" IN ACCORDANCE WITH THE 10/6/2014 COMPREHENSIVE ZONING PLAN AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
 6. A SMALL WETLAND BUFFER DISTURBANCE, FOR A STORM DRAIN OUTFALL, IS PROPOSED AND SHOULD BE CONSIDERED AN ESSENTIAL DISTURBANCE. NO OTHER DISTURBANCES WITHIN THE ONSITE ENVIRONMENTAL FEATURES: STREAM AND STREAM BUFFER, WETLANDS AND WETLAND BUFFER ARE PROPOSED.
- NO OTHER GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
7. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
 8. WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 223-W/S.
 9. SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 223-W/S AND 14-1374.
 10. EXISTING UTILITIES LOCATED FROM TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS, CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
 11. NO FLOODPLAIN IS LOCATED ONSITE.
 12. NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ONSITE.
 13. FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A SUBDIVISION OR SITE DEVELOPMENT PLAN.
 14. WETLANDS AND STREAMS SHOWN ONSITE ARE BASED ON ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, AUGUST 2014.
 15. GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AS PART OF THE SITE DEVELOPMENT PLAN PACKAGE.
 16. A NOISE STUDY SHALL BE PREPARED BY ROBERT H. VOGEL ENGINEERING AS PART OF THE SITE DEVELOPMENT PLAN PACKAGE.
 17. FOREST STAND DELINEATION PLAN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, AUGUST 2014.
 18. OLD ROUTE 108 IS CLASSIFIED AS A LOCAL ROAD TO REMAIN / IMPROVED. ROUTE 108 IS CLASSIFIED AS A MINOR ARTERIAL. COLUMBIA ROAD IS A MAJOR COLLECTOR. THE PROPOSED STREETS ARE CLASSIFIED AS PRIVATE ALLEY.
 19. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
 20. THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
 21. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF ALTERNATIVE SURFACES AND MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION AND RAIN GARDENS. ALTERNATIVE SURFACES - PERMEABLE SURFACES. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
 22. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION 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.
 23. IN ACCORDANCE WITH SECTION 16.121(A)(4) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, RECREATION OPEN SPACE FOR THIS R-APT PROJECT IS 400 SF / UNIT (90 X 400 = 36,000 SF). THE OVERALL REQUIREMENT SHALL BE MET AS ALLOWED BY THE JUNE 2012 POLICY.
 24. THE LIMITS OF DISTURBANCE (LOD) SHOWN ON THE PLAN EXTENDS OFFSITE. LETTERS OF PERMISSION AND/OR LAND ACQUISITIONS SHALL BE OBTAINED AND PROVIDED AS PART OF THE FINAL PLAN/SITE DEVELOPMENT PLAN SUBMISSION.
 25. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.
 26. SUBJECT TO VARIANCES:
 - a. SECTION 16.120(A)(2)(c): REDUCE THE REQUIRED 30' APARTMENT AND STRUCTURE SETBACK FROM PROPERTY LINE AND TO 24.45' (AT NORTH PROPERTY LINE)
 - b. SECTION 16.120(B)(1)(c): REDUCE THE REQUIRED 30' USE SETBACK (COLUMBIA ROAD) TO 8.5' TO ACCOMMODATE A RAIN GARDEN FOR A SIDEWALK.
- * SEE GEN. NOTE # 27, BELOW.

ENVIRONMENTAL SITE DESIGN NARRATIVE:

- IN ACCORDANCE WITH CHECKLIST ITEM 18K.
1. THE NATURAL AREAS ON THE DORSEY OVERLOOK PROJECT SITE ARE LOCATED ON THE NORTHERNMOST PORTION OF THE SITE. A SMALL WETLAND BUFFER DISTURBANCE, FOR A STORM DRAIN OUTFALL, IS PROPOSED AND SHOULD BE CONSIDERED AN ESSENTIAL DISTURBANCE. NO OTHER DISTURBANCES WITHIN THE ONSITE ENVIRONMENTAL FEATURES: STREAM AND STREAM BUFFER, WETLANDS AND WETLAND BUFFER ARE PROPOSED.
 2. NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED. PLEASE REFER TO THE PROPOSED GRADING.
 3. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT. THE ESD CONCEPT INCLUDES THE USE OF MICRO-SCALE PRACTICES TO INCLUDE MICRO-BIORETENTION AND RAIN GARDEN FACILITIES AS WELL AS PERMEABLE SURFACES.
 4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED SEDIMENT TRAP, EARTH DIKES, AND SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.
 5. STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF:
 - A. MICRO-SCALE PRACTICES
 - M-6 MICRO-BIORETENTION
 - M-7 RAIN GARDENS
 - B. ALTERNATIVE SURFACE
 - A-2 PERMEABLE SURFACES.
 THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- TARGET PE = 2.0" PROVIDED PE = 2.0"
 TARGET ESDv = 17,233 CUFT PROVIDED = 19,247+ CUFT
6. AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS AND/OR WAIVER PETITIONS FOR ENVIRONMENTAL AND STORMWATER MANAGEMENT DESIGN ARE REQUIRED.

AT THIS CONCEPT STAGE OF DEVELOPMENT, THIS ITEM IS NOT APPLICABLE TO THIS PROJECT.

GENERAL NOTES (CONT'D)

27. THIS PROJECT IS SUBJECT TO WP 16-112, ON MAY 24, 2016 THE PLANNING DIRECTOR APPROVED THE REQUEST TO WAIVE SECTIONS 16.120(A)(1)(i) AND 16.120(A)(7) TO ALLOW:

- 1) PERFORM ACTIVITIES IN STREAM BUFFERS, WETLAND BUFFERS AND STEEP SLOPES.
- 2) CONSTRUCT PROPOSED CONDOMINIUM UNITS ITLAND 18 WITHIN 15 FEET OF A WETLAND BUFFER.
- 3) REMOVE NINE (9) SPECIMEN TREES.

THESE WAIVERS ARE SUBJECT TO THE CONDITIONS OUTLINED IN THE APPROVAL LETTER.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Ch. Ch... 17-15-16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

K. S. ... 1-15-16
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

ENVIRONMENTAL CONCEPT PLAN

DORSEY OVERLOOK

LOTS 1-90 & OPEN SPACE LOT 91

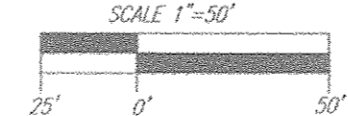
HOWARD COUNTY, MARYLAND



SITE ANALYSIS DATA CHART

A. TOTAL PROJECT AREA:	5.4673 AC. +/-
PAR 67	61,266 SQ.FT. OR 1.4065 AC.
PAR 51	26,721 SQ.FT. OR 0.6533 AC.
PAR 52	22,463 SQ.FT. OR 0.5157 AC.
PAR 288	28,830 SQ.FT. OR 0.6619 AC.
PAR 53	10,508 SQ.FT. OR 0.2412 AC.
PAR 54	10,397 SQ.FT. OR 0.2387 AC.
PAR 55	33,593 SQ.FT. OR 0.7712 AC.
OLD RT 108 R/W	42,376 SQ.FT. OR 0.9728 AC.
B. AREA OF PLAN SUBMISSION:	5.8 AC. +/-
C. AREA OF WETLANDS AND BUFFERS:	22,450 S.F. OR 0.51 AC.
D. AREA OF FLOODPLAIN:	0.5 F. OR 0.00 AC.
E. AREA OF FOREST:	0.5 AC. (REFER TO FSD)
F. AREA OF STEEP SLOPES (15% & GREATER):	0.5 F. OR 0.00 AC.
G. ERODIBLE SOILS:	N/A
H. LIMIT OF DISTURBED AREA:	5.33 AC.
I. PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL SINGLE FAMILY ATTACHED HOMES
J. GREEN OPEN AREA:	1.0 AC +/- WITHIN DEVELOPABLE AREA
K. PROPOSED IMPERVIOUS AREA:	2.4 AC +/- (0.6 AC +/- OLD RTE 108 IMPERVIOUS TO REMAIN)
L. PRESENT ZONING DESIGNATION:	R-APT
M. OPEN SPACE REQUIRED:	N/A
N. TOTAL NUMBER OF UNITS ALLOWED:	117
O. TOTAL NUMBER OF UNITS PROPOSED:	90
P. DPZ FILE REFERENCES:	CONT. #223-W&S, CONT. 14-1374

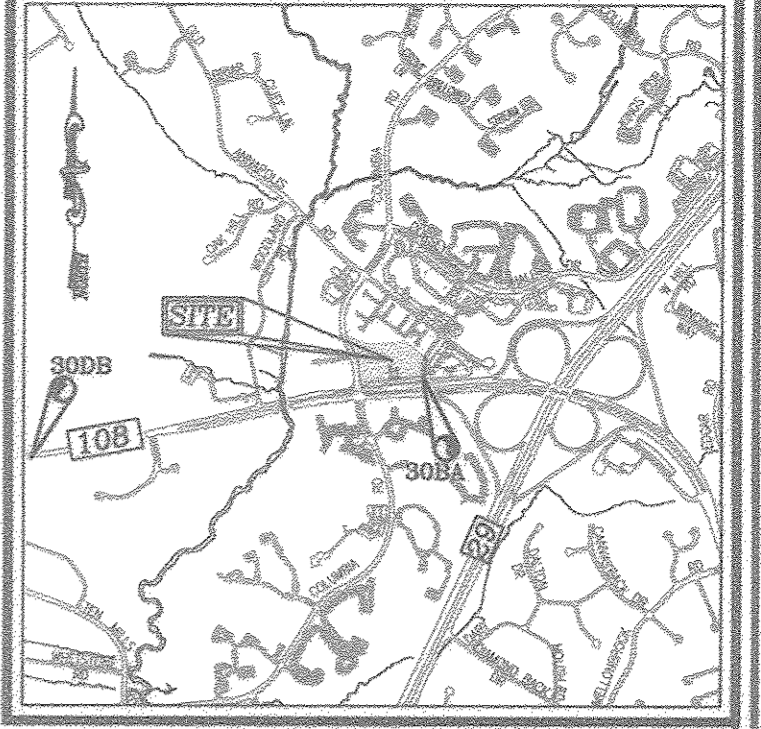
LOCATION MAP
SCALE: 1"=50'



BENCHMARKS

HOWARD COUNTY BENCHMARK - 308A (CONC. MONUMENT)
 N 57349.04 E 1357083.21 ELEV. 397.20
 LOCATION: OLD ROUTE 108, 480' SOUTH OF OLD ANNAPOLIS ROAD

HOWARD COUNTY BENCHMARK - 300B (CONC. MONUMENT)
 N 572298.12 E 1353001.79 ELEV. 409.16
 LOCATION: SOUTH SIDE OF ROUTE 108, 700' EAST ENTRANCE TO CENTENNIAL PARK

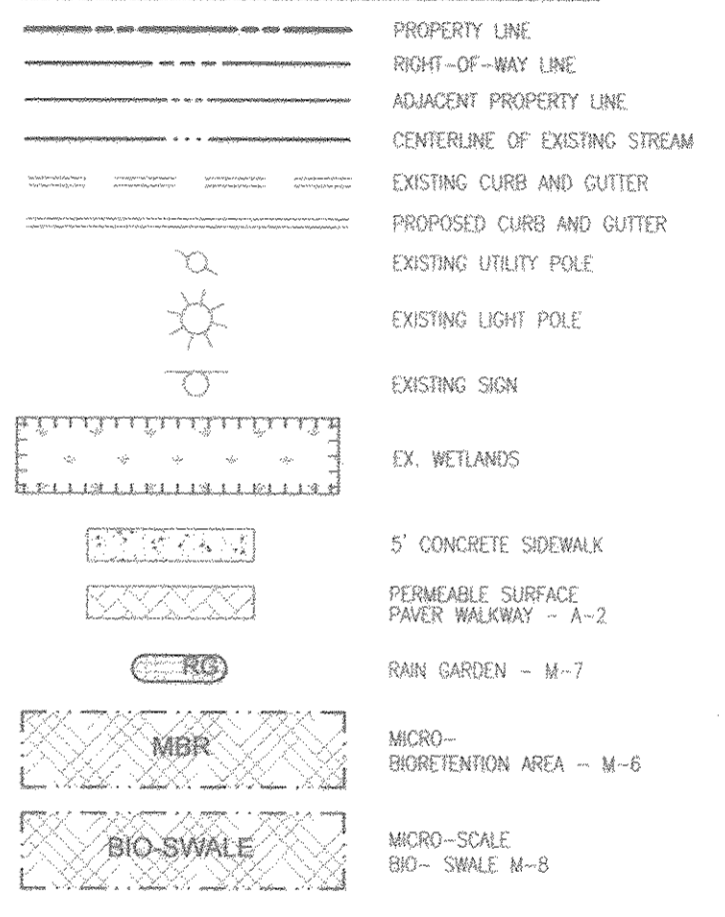


VICINITY MAP
SCALE: 1"=2000'
ADC MAP COORDINATE: 15/J,K 1

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 6
LAYOUT SHEET	2 OF 6
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SWM NOTES AND DETAILS	5 OF 6
SWM NOTES AND DETAILS	6 OF 6

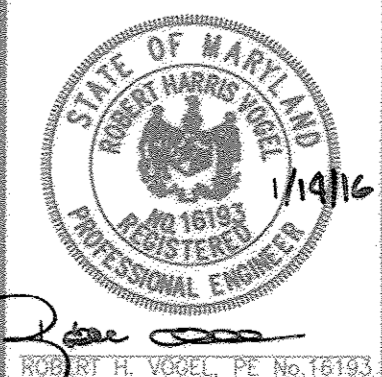
LEGEND



PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION / AREA	LOT / PARCEL			
DORSEY OVERLOOK		PARCELS 51, 53, 54, 55, 65, 67 & 288			
PLAT REF.	BLOCK NO.	ZONE	TAX MAP	ELECT. DIST.	CENSUS TR.
	9	R-APT	30	2ND	602306

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET, ELICOTT CITY, MD 21043
 TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: RHV/EDS
 DRAWN BY: RVE/KG
 CHECKED BY: RHV
 DATE: SEPTEMBER 2015
 SCALE: AS SHOWN
 W.O. NO.: 12-68

DEVELOPER
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC.
 MR. J. CHRIS PIPPEN
 453 SOUTH POLK DRIVE
 SARASOTA, FLORIDA 34236
 PHONE: (410) 404-8246

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2016

1 SHEET OF 6



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREE LINE (FIELD LOCATED)
- EXISTING SPECIMEN TREE
- EXISTING FENCE
- CENTERLINE OF EXISTING STREAM
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- 5' CONCRETE SIDEWALK
- PERMEABLE SURFACE PAVEMENT WALKWAY 4'-2'
- PROPOSED TREE LINE
- PROPOSED CURB
- MBR - MICRO-BIORETENTION AREA - M-6
- BIO-SWALE - MICRO-SCALE BIO-SWALE M-8
- PUBLIC SEWER EASEMENT
- PUBLIC WATER & SEWER EASEMENT
- PUBLIC WATER EASEMENT
- RAIN GARDEN - M-7

NOTE
1. FOR ARCHITECTURAL ELEVATION OF DWELLING PRODUCT, SEE SHEET 6

Specimen Tree Chart

Key	Species	Size (inches)	CRZ (feet)	Comments
1	Horseshoe maple	41	61.6	not mature, good condition
2	Horseshoe maple	38	57	not mature, poor condition
3	Red maple	32	48	good condition
4	Horseshoe maple	42	63	not mature, poor condition, storm damage
5	Horseshoe maple	39	57	not mature, poor condition, aster growth around
6	Horseshoe maple	31	46.5	not mature, poor condition, trunk damage
7	Horseshoe maple	34	51	good condition
8	Horseshoe maple	36	54	good condition
9	Red maple	35	52.5	good condition
10	Tulip poplar	33	49.5	good condition, in buffer

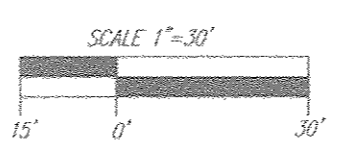
NOTES:
1. ALL WATER CONNECTIONS SHALL BE 1-1/2" WITH 1" OUTSIDE METER SETTINGS, UNLESS OTHERWISE NOTED. REFER TO HOWARD COUNTY DETAILS W-3.28 OUTSIDE METER SETTINGS.

NOTES:
1. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMIT
2. REVIEW OF THIS PLAN FOR COMPLIANCE WITH ZONING AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE PERMIT STAGES, AND THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN PROGRESSES THROUGH THE PERMIT PROCESS.
3. THERE ARE 2 AREAS OF WETLANDS AND AN INTERMITTENT STREAM ON-SITE WITHIN THE DEVELOPED AREA.

CURVE DATA

CURVE	ARC	RADIUS	TANGENT	DELTA	CHORD
C1	171.31'	250.00'	89.17'	39°15'57"	509°59'43"W 167.97'

SITE LAYOUT PLAN
SCALE: 1"=30'



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Engineering Division
 Chief, Division of Land Development
 7-15-16 DATE
 1-15-16 DATE

Eco-Science Professionals, Inc.
 Consulting Ecologists
 P.O. Box 5066 Glen Aris, Maryland 21087
 Telephone (410) 832-3450 Fax (410) 832-2358
 MD DNR, Qualified Professional
 USACE Wetland Designer
 Certification # W22CPS212061004411
 John F. Cvettes

1. NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITAT WERE OBSERVED WITHIN THE STUDY AREA SURROUNDING LAND USE CONSISTS OF HIGH DENSITY RESIDENTIAL DEVELOPMENT AND COMMERCIAL USES.
 2. PROJECT SITE IS APPROXIMATELY 5.5 ACRES IN SIZE.
 3. NO HISTORIC ELEMENTS ARE KNOWN TO BE PRESENT ON THIS SITE.
 4. THERE IS 0.5 ACRES OF FOREST ON THE PROPERTY. ALL FOREST ON THE SITE IS WITHIN WETLANDS AND BUFFERS AND WILL NOT BE IMPACTED BY PROPOSED SITE DEVELOPMENT.
 5. THERE IS LESS THAN 1 ACRE OF FOREST PRESENT ON ADJACENT PROPERTY WITHIN 100 FEET OF THE PROPERTY. NO 100 YEAR FLOODPLAIN IS PRESENT ON THE SITE.
 6. DEVELOPMENT OF THE SITE WILL REQUIRE 0.8 ACRES OF FOREST CONSERVATION OBLIGATION. THIS OBLIGATION CAN BE ADDRESSED WITH ON-SITE PLANTING, OFF-SITE PLANTING, PURCHASE OF CREDIT IN A FOREST CONSERVATION BANK, PAYMENT OF THE COUNTY FEE-IN-LIEU OR SOME COMBINATION THEREOF (0.3 AC. APPROPRIATION / 0.5 AC. RETENTION)

DEVELOPER
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC
 MR. J. CHRIS PIPPEN
 453 SOUTH POLK DRIVE
 SARASOTA, FLORIDA 34236
 PHONE: (410) 404-8246

NO. _____ REVISION _____ DATE _____

ENVIRONMENTAL CONCEPT PLAN
SITE LAYOUT
DORSEY OVERLOOK
 LOTS 1-90 & OPEN SPACE LOT 91
 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
 TAX MAP: 30 GRID: 9
 DRP REF: _____

ZONED: R-4PT
 PARCELS: 67, 51, 52
 288, 53, 54, 55
 HOWARD COUNTY, MARYLAND

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 EXPIRATION DATE: 09-27-2016

DESIGN BY: RHW/EDS
 DRAWN BY: RVE/KG
 CHECKED BY: RHW
 DATE: SEPTEMBER 2015
 SCALE: AS SHOWN
 W.O. NO.: 12-69

2 SHEET OF 6

SOILS LEGEND						
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRO	PERCENT SAND	PERCENT CLAY	K _w
GmE	GLENLEIG LOAM, 3 TO 8 PERCENT SLOPES	B	0	PRIME FARMLAND	0.20	NO
GmC	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0	STATEWIDE IMPORTANCE	0.37	NO
MgC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	0	STATEWIDE IMPORTANCE	0.24	NO
MgD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0	NOT PRIME FARMLAND	0.24	NO
UgF	UDORTHENTS, HIGHWAY, 0 TO 65 PERCENT SLOPES	D	0	NOT PRIME FARMLAND	NO	NO
UuB	URBAN LAND-UDORTHENTS COMPLEX, 0 TO 8 PERCENT SLOPES	D	0	NOT PRIME FARMLAND	NO	NO

NOTE:
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

NOTE:

APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.

NOTE:

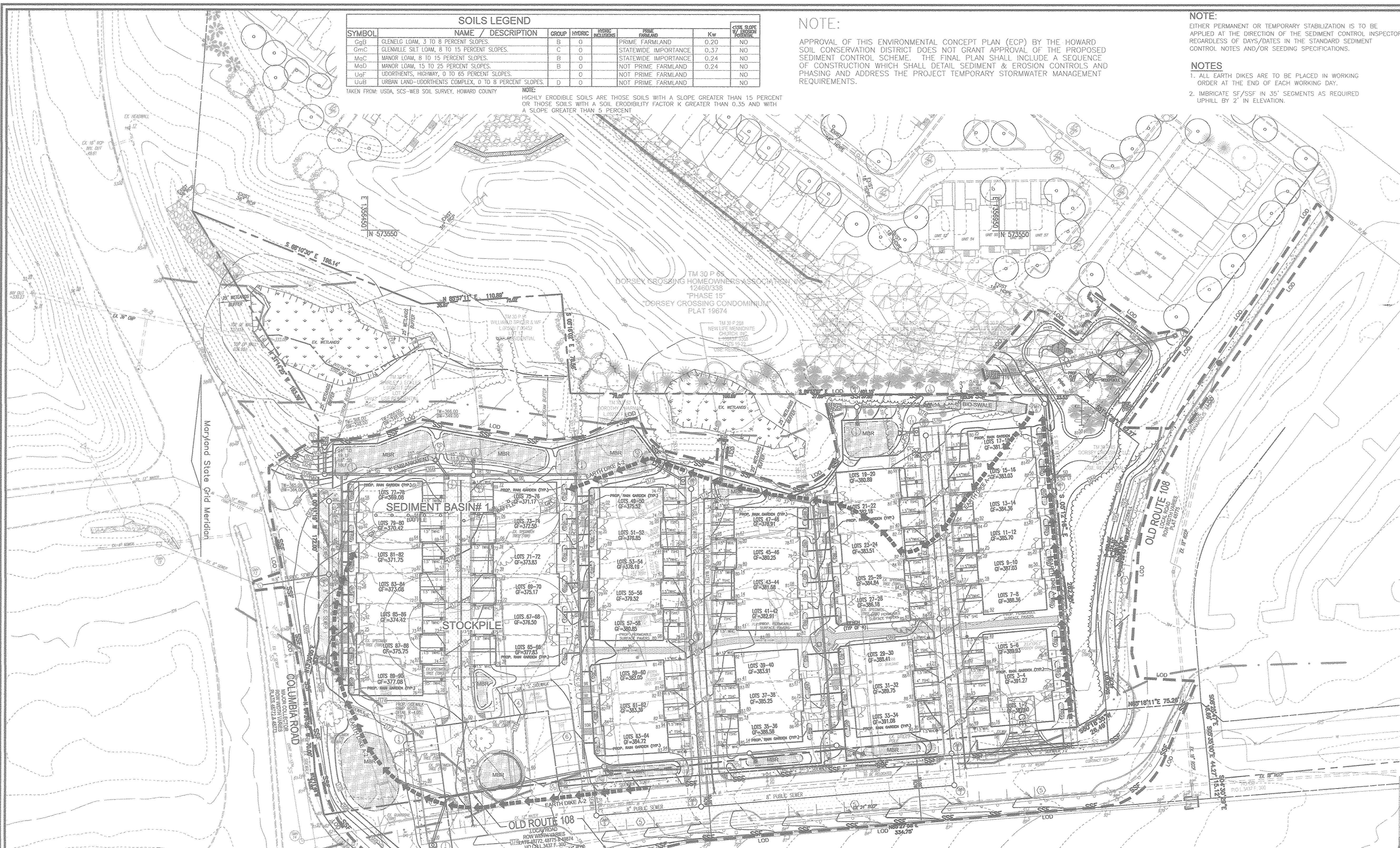
EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE END OF EACH WORKING DAY, REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

NOTES

1. ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
2. IMBRICATE SF/SF IN 35' SEGMENTS AS REQUIRED UPHILL BY 2' IN ELEVATION.

LEGEND

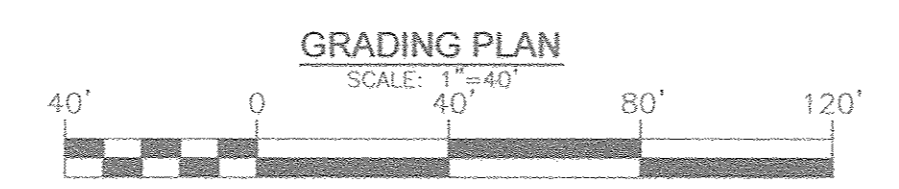
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- CENTERLINE OF EXISTING STREAM
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING FENCE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED CURB AND GUTTER
- EX. WETLANDS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- SOILS BOUNDARY
- SILT FENCE
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE
- PROPOSED DRAINAGE DIVIDE
- EXISTING DRAINAGE DIVIDE
- STANDARD INLET PROTECTION
- 5' CONCRETE SIDEWALK
- PERMEABLE SURFACE PAVEMENT WALKWAY - A-2
- PROPOSED CURB
- MICRO-BORRETATION AREA - M-6
- MICRO-SCALE BIO-SWALE M-8
- PUBLIC SEWER EASEMENT
- PUBLIC WATER & SEWER EASEMENT
- PUBLIC WATER EASEMENT
- RAIN GARDEN - M-7



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 Chief, Division of Land Development

NOTE:
 1. THE FUTURE SITE DEVELOPMENT PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION OUTLINING INSTALLATION OF EARTHDIKE, PERIMETER CONTROLS AND BASIN CONSTRUCTION. ALSO INCLUDED WILL BE TIMING RELATED TO THE PROPOSED RETAINING WALL INSTALLATION

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. STOCKPILES SHALL BE IN ACCORDANCE WITH SECTION B.4.



NOTE:
 - SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 - SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART
 - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

DEVELOPER
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, L.L.C.
 MR. J. CHRIS PIPPEN
 453 SOUTH POLK DRIVE
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 PHONE: (410) 404-8246

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 GRADING AND SOIL EROSION
 AND SEDIMENT CONTROL PLAN
DORSEY OVERLOOK
 LOTS 1-90 & OPEN SPACE LOT 91
 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
 TAX MAP: 30 GRID: 9
 DPZ REF'S:

ZONED: R-APT
 PARCELS: 67, 51, 52
 208, 151, 54, 53
 HOWARD COUNTY, MARYLAND

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PROFESSIONAL CERTIFICATE
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 EXPIRATION DATE: 09-27-2016

DESIGN BY: RHW/EDS
 DRAWN BY: RVE/KG
 CHECKED BY: RHW
 DATE: SEPTEMBER 2015
 SCALE: AS SHOWN
 W.O. NO.: 12-89

3 SHEET OF 6



LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING FENCE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	CENTERLINE OF EXISTING STREAM
	PROPOSED DRAINAGE AREA DIVIDE
	SOILS
	EXISTING TREE LINE
	EXISTING WETLANDS
	PROPOSED STORM DRAIN INLET
	PROPOSED TREE LINE
	PROPOSED CURB
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	5' CONCRETE SIDEWALK
	PERMEABLE SURFACE PAVEMENT WALKWAY - A-2
	PROPOSED CURB
	MBR - MICRO-BIORETENTION AREA - M-6
	BIO-SWALE - MICRO-SCALE M-8
	PUBLIC SEWER EASEMENT
	PUBLIC WATER & SEWER EASEMENT
	PUBLIC WATER EASEMENT
	RAIN GARDEN - M-7

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 7.15.16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR DATE

[Signature] 1.15.16
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

SWM DRAINAGE AREA MAP
 SCALE: 1" = 30'

GRAPHIC SCALE 1"=30'
 10' 0' 30'

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRO	HYDRO INCLUSIVE	PRIME FARMLAND	Kw	STATE SLOPE W/ 15% PERCENT
CyB	GLENELEC LOAM, 3 TO 8 PERCENT SLOPES	B	0		PRIME FARMLAND	0.20	NO
CnC	GLENEVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0		STATEWIDE IMPORTANCE	0.37	NO
MoC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	0		STATEWIDE IMPORTANCE	0.24	NO
MoD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0		NOT PRIME FARMLAND	0.24	NO
UaF	UBORTHENTS, HIGHWAY, 0 TO 65 PERCENT SLOPES		0		NOT PRIME FARMLAND		NO
UuB	URBAN LAND-UBORTHENTS COMPLEX, 0 TO 8 PERCENT SLOPES	D	0		NOT PRIME FARMLAND		NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

DEVELOPER
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC.
 MR. J. CHRIS PIPPEN
 453 SOUTH POLK DRIVE
 SARASOTA, FLORIDA 34236
 PHONE: (410) 404-8246

NO. _____ REVISION _____ DATE _____

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP
DORSEY OVERLOOK
 LOTS 1-90 & OPEN SPACE LOT 91
 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT PARCELS: 87, 91, 92
 TAX MAP: 30 GRID: 9 PAGES: 87, 91, 92, 93, 94, 95
 DPZ REF'S: HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
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DESIGN BY: *[Signature]*
 DRAWN BY: *[Signature]*
 CHECKED BY: *[Signature]*
 DATE: SEPTEMBER 2015
 SCALE: AS SHOWN
 W.O. NO.: 12-69

PROFESSIONAL CERTIFICATE
 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 EXPIRATION DATE: 08-27-2016

4 SHEET OF 6

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

- MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- 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 HINDERANCE 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 15.08.01.05.
THE PLANTING SOIL SHALL MEET THE FOLLOWING CRITERIA:
• SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (SEE 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 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 PER 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.

- COMPACTION**
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION PILES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR WASH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH FLUID TYRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION 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 CHisel PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE 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 OFFICIAL SAND LAYER. PUMP ANY PONDING 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 MICRO-BIORETENTION BASIN TO COMPACT SUBS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH WASH TRACKS.

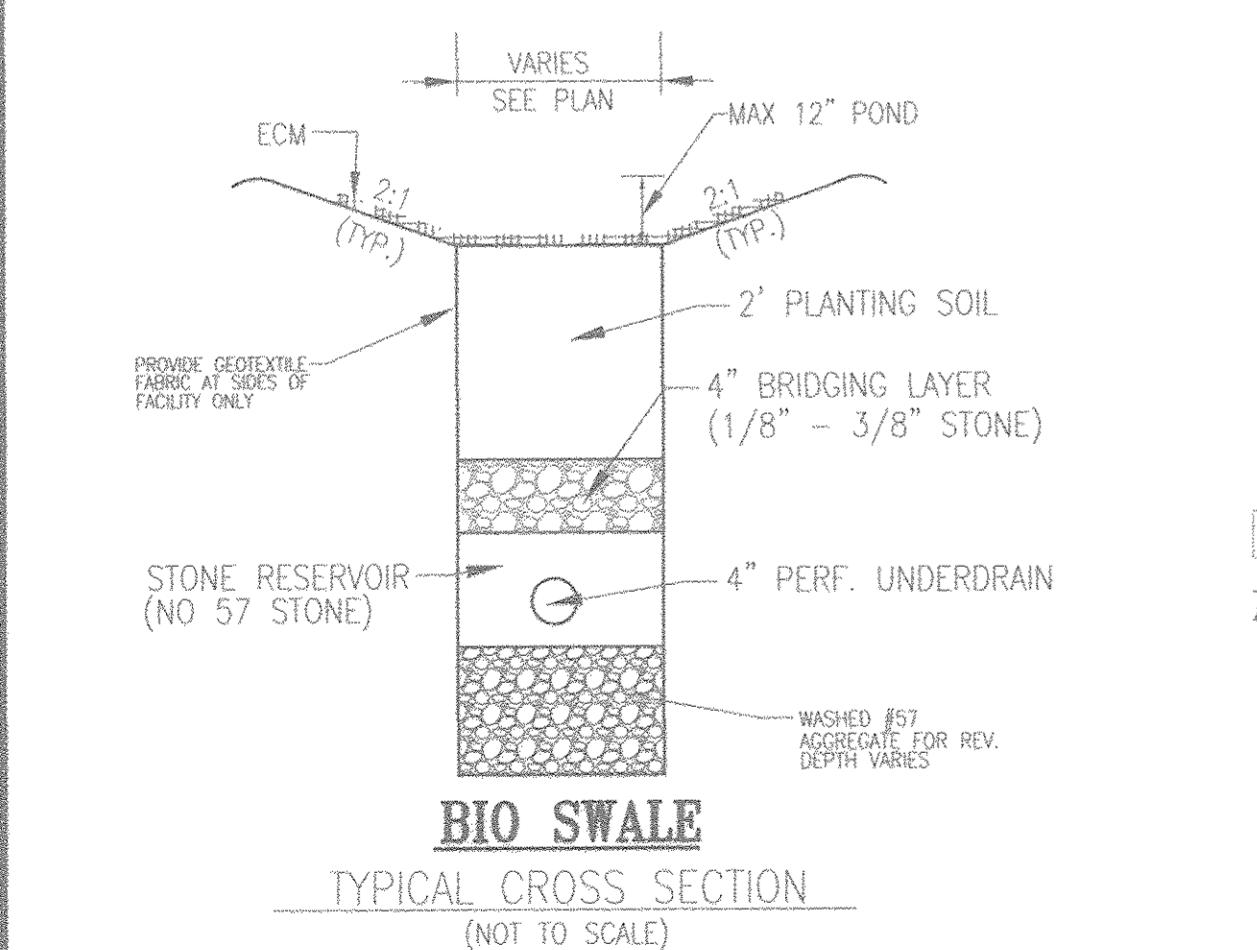
- PLANT MATERIAL**
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED 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. SHREDED 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 1/3RD 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. 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 PLANTS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

- UNDERDRAINS**
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED. 4" RIGID PIPE (E.G., PVC, UPE, HDPE).
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER RING. PIPE SHALL BE WRAPPED WITH 1/4" (NO. 10 OR 44) GALVANIZED HARDWARE CLOTH.
• CORNELL - THE GRAVEL LAYER (AND 57 STONE FILTERBED) 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" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
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 1,000 SQUARE FEET OF SURFACE AREA).

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

OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORETENTION, RAIN GARDEN & BIOSWALE AREAS

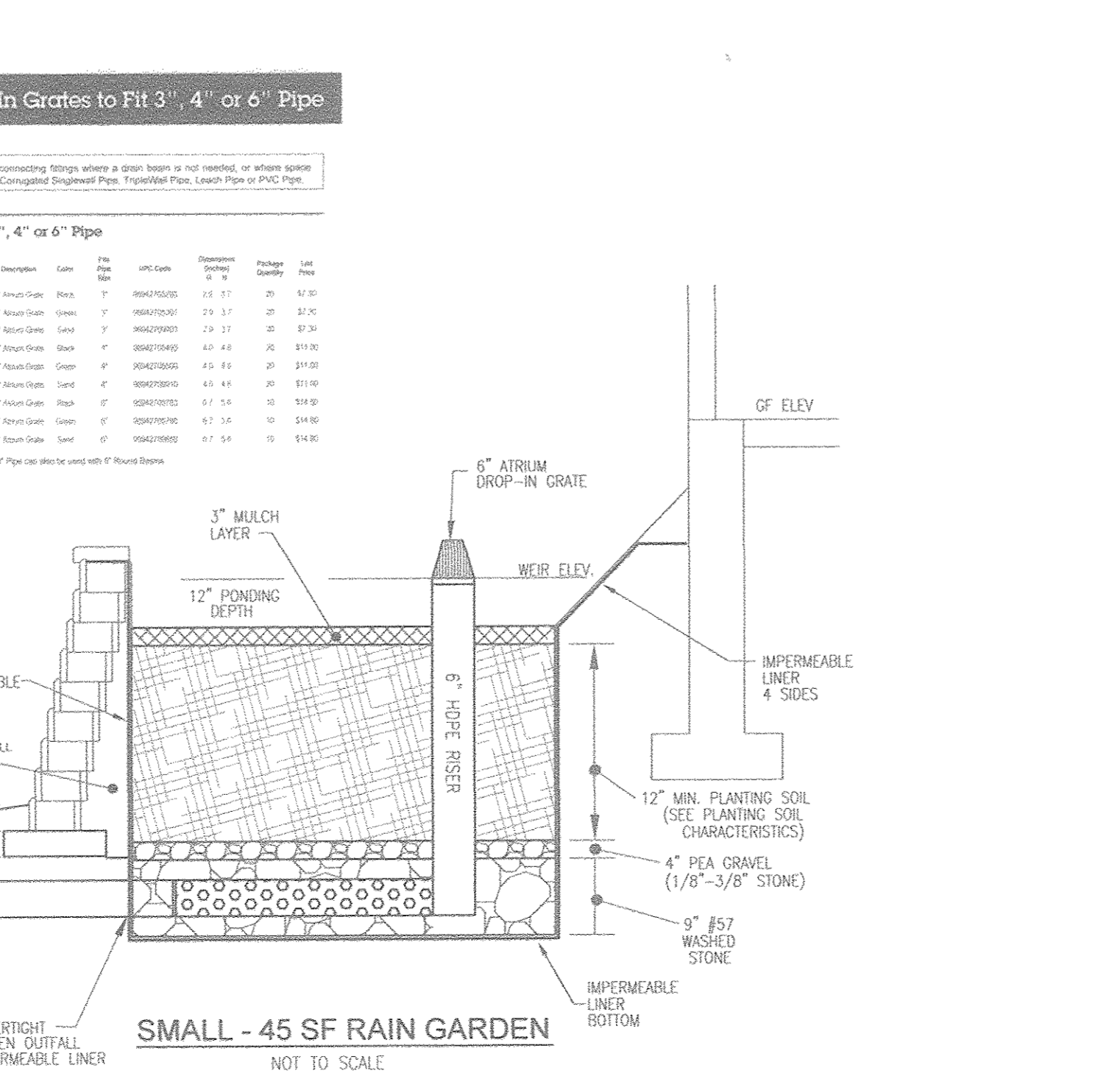
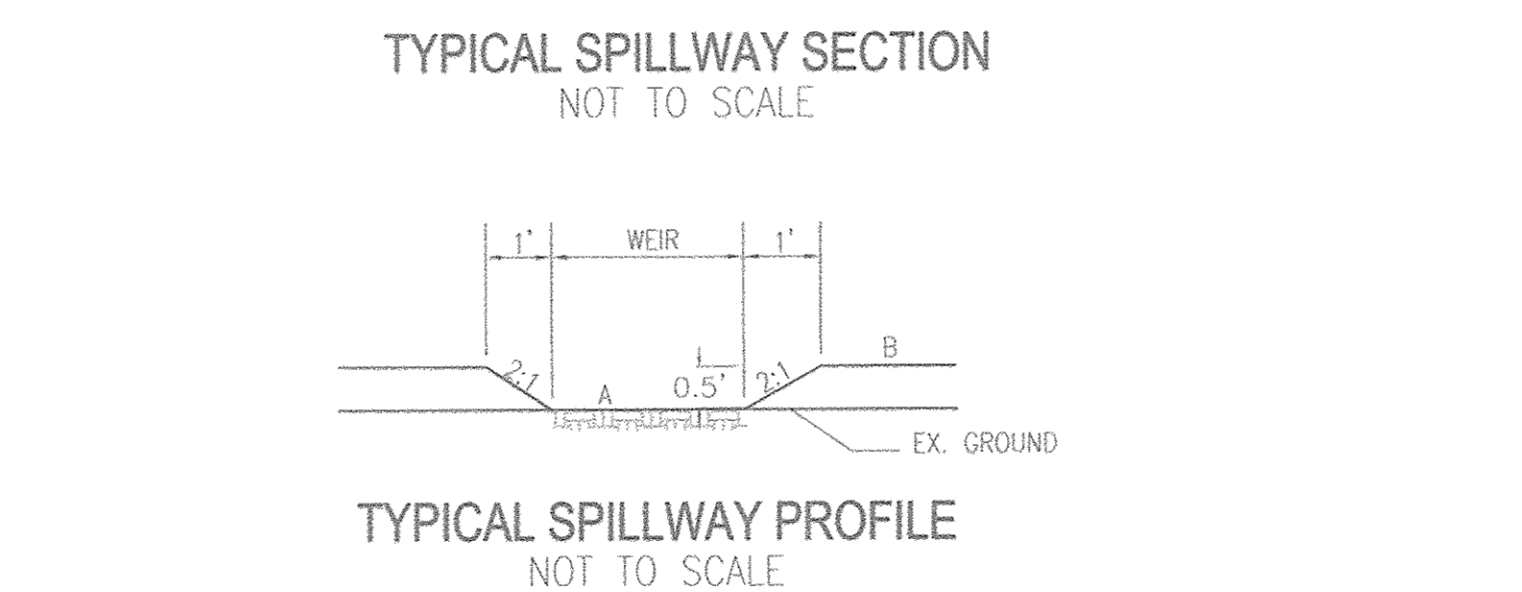
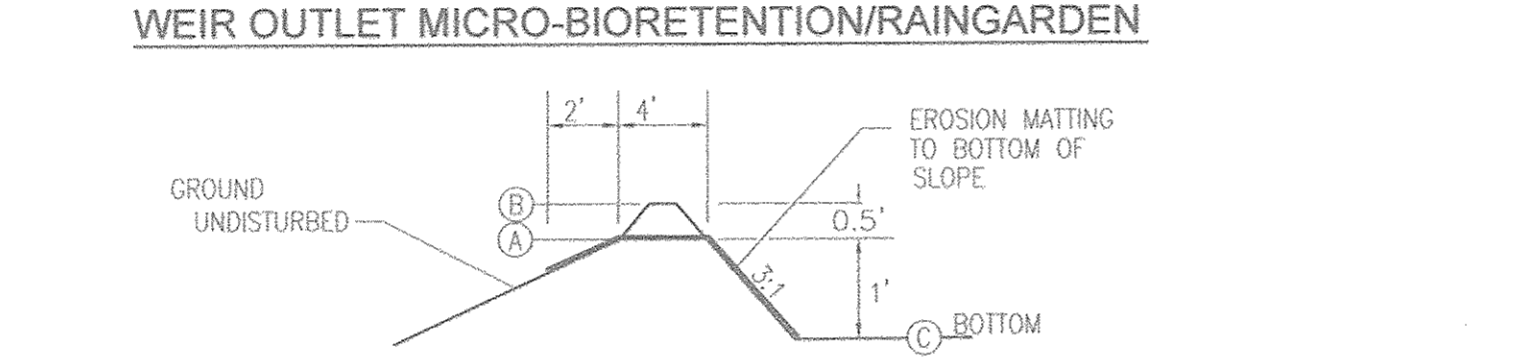
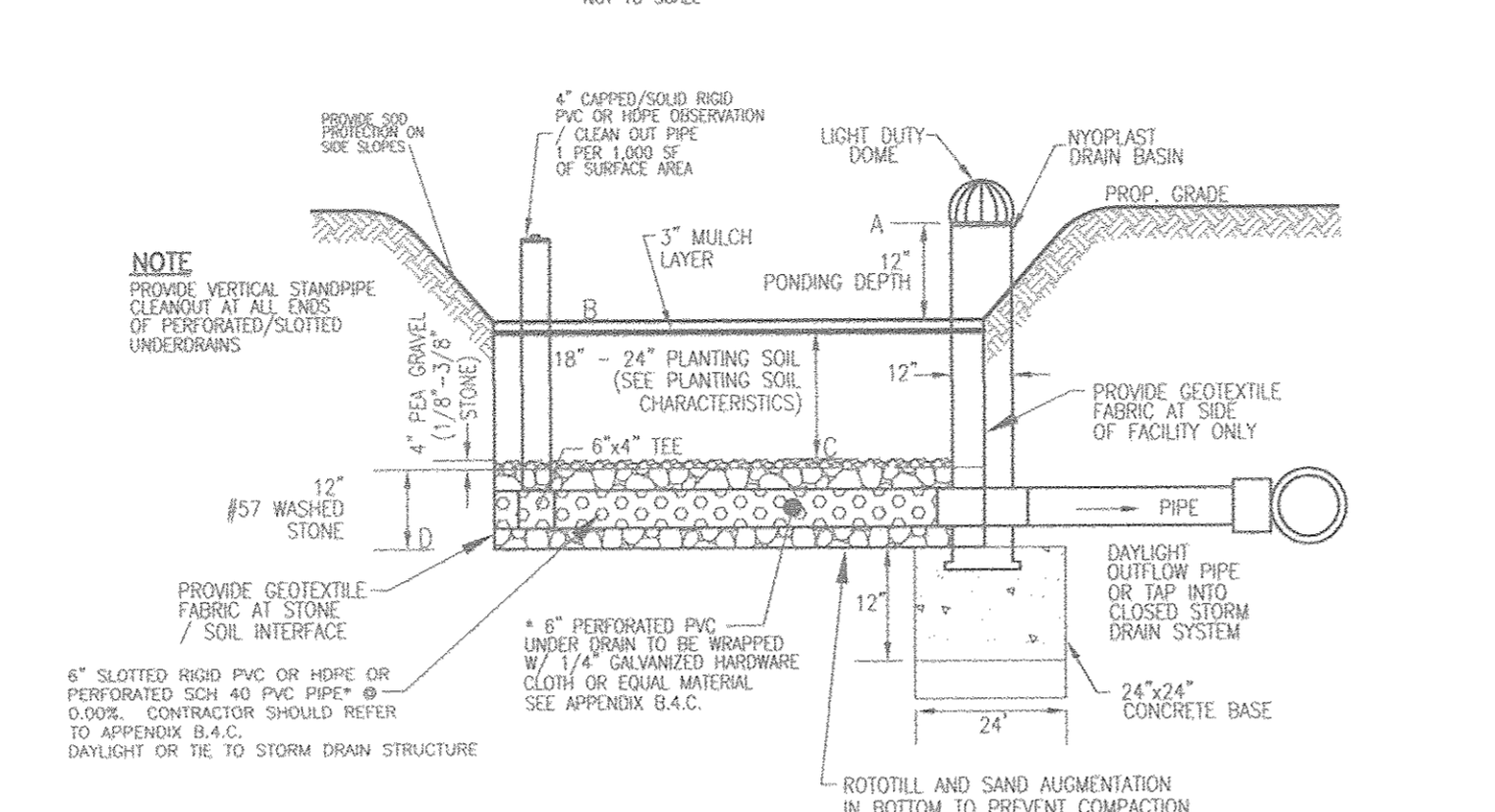
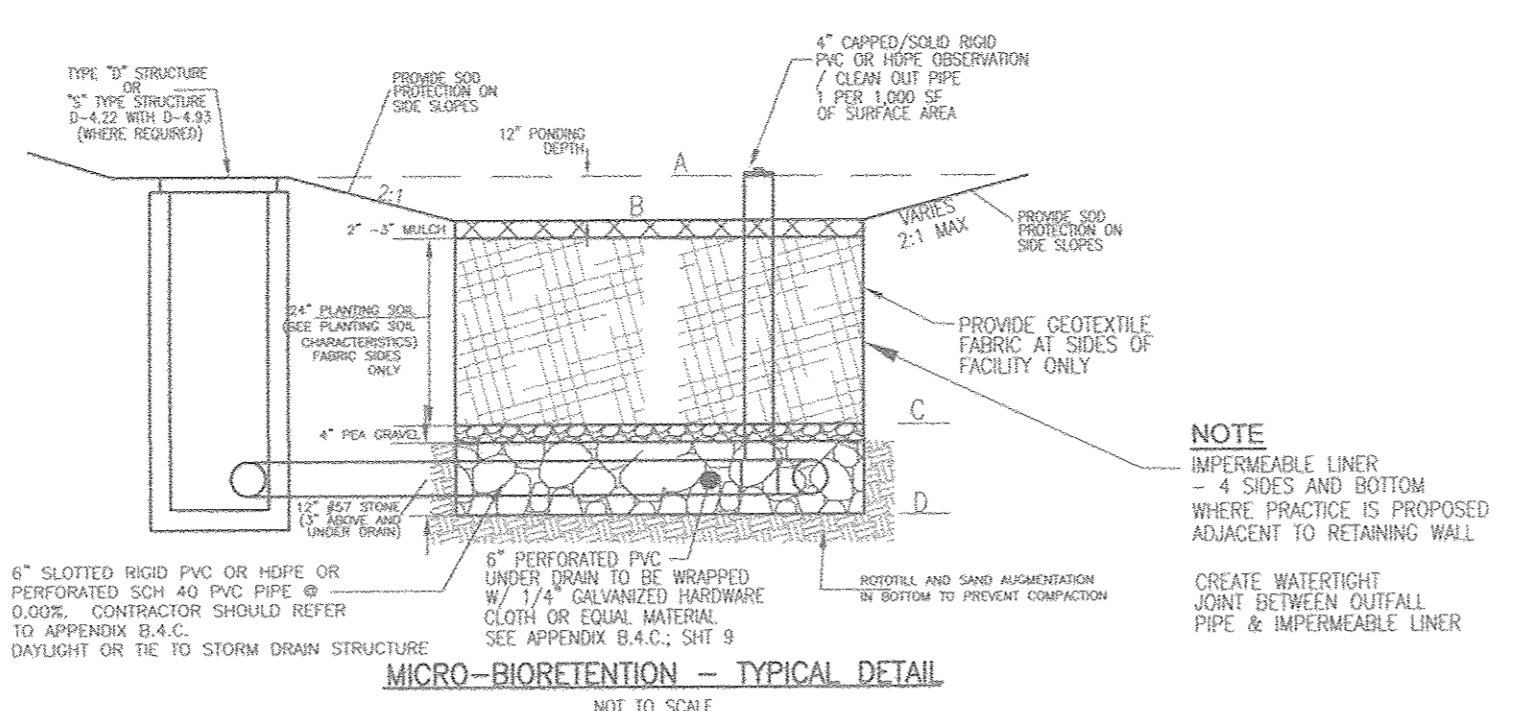
- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL 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.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *[Signature]* 7-15-16
DATE

Chief, Division of Land Development *[Signature]* 7-15-16
DATE



Atrium Drop-In Grates to Fit 3", 4" or 6" Pipe

Applications: Use with open and connecting fittings where a drain beam is not required, or where space allows (see the use of a beam. Use with Connected Drainage Pipe. Translated from Lexipon or PVC Pipe.

Product	Description	Color	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
100000	1" Atrium Drop	Black	10000000	10000001	10000002	10000003	10000004	10000005
100001	2" Atrium Drop	Black	10000100	10000101	10000102	10000103	10000104	10000105
100002	3" Atrium Drop	Black	10000200	10000201	10000202	10000203	10000204	10000205
100003	4" Atrium Drop	Black	10000300	10000301	10000302	10000303	10000304	10000305
100004	6" Atrium Drop	Black	10000400	10000401	10000402	10000403	10000404	10000405
100005	8" Atrium Drop	Black	10000500	10000501	10000502	10000503	10000504	10000505
100006	10" Atrium Drop	Black	10000600	10000601	10000602	10000603	10000604	10000605
100007	12" Atrium Drop	Black	10000700	10000701	10000702	10000703	10000704	10000705
100008	14" Atrium Drop	Black	10000800	10000801	10000802	10000803	10000804	10000805
100009	16" Atrium Drop	Black	10000900	10000901	10000902	10000903	10000904	10000905

Grates 6" or 8" Pipe can also be used with 6" Round Bore.

A-2. PERMEABLE PAVEMENTS

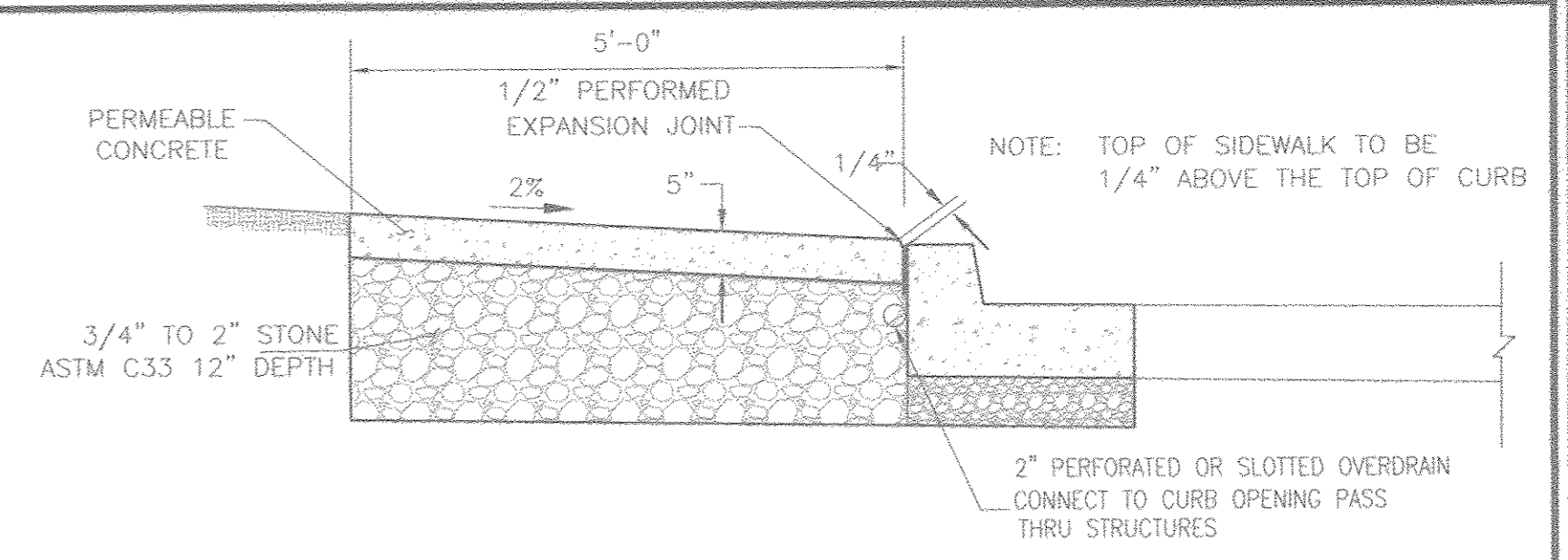
- CONSTRUCTION CRITERIA:**
- THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT:
- EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AROUND PROPOSED PAVEMENT LOCATIONS.
 - SOIL COMPACTION: SUB SOILS SHALL NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACKED EQUIPMENT TO MINIMIZE COMPACTION. EXCAVATED MATERIALS SHOULD BE PLACED IN A CONTAINED AREA.
 - DISTRIBUTION SYSTEMS: OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B. 4). THE UPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION. ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED FLAT ALONG THE BED BOTTOM.
 - SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

- INSPECTION:**
- REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:
- DURING EXCAVATION TO SUB GRADE.
 - DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEMS.
 - DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
 - DURING PLACEMENT OF THE SURFACE MATERIAL.
 - UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

- MAINTENANCE CRITERIA:**
- THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:
- PAVEMENTS SHOULD BE USED ONLY WHERE REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENTS SHOULD CLEARLY SPECIFY HOW TO CONDUCT ROUTINE TASKS TO ENSURE LONG-TERM PERFORMANCE.
 - PAVEMENT SURFACES SHOULD BE SWEEP AND VACUUMED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
 - DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
 - TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
 - DEICERS SHOULD BE USED IN MODERATION. WHEN USED, DEICERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

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

- THE INDIVIDUAL LOT OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE 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 INDIVIDUAL LOT OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
- THE INDIVIDUAL LOT OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE INDIVIDUAL LOT OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.



- NOTES**
- SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
 - EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
 - 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
 - WHEN SIDEWALK ADJACENT TO CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
 - ON LONGITUDINAL SIDEWALK GRABES OF 4" OR GREATER A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
 - SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5" MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BUILDS MAY BE 4'-0" WIDE.
 - Cement shall be per ASTM M85 Air Entraining - Type II Portland type, gray color. Mix and Deliver concrete in accordance with ASTM C94/C94M, Option C with the following criteria: Tensile Strength: 500 psi at 28 days, Compressive Strength: 3000 psi at 28 days, Unit Weight: 130 pounds/cu ft. Stones shall be No. 8 coarse aggregate per ASTM C33.
 - CONCRETE MIX SHALL BE DESIGNED BY GEO TECHNICAL CONSULTANT.
 - BASE BELOW THE CURB SHALL CONSIST OF GRADED AGGREGATE BASE (GAB).

B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

- THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.
- PERVIOUS CONCRETE SPECIFICATIONS**
DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO A3.05, A3.06, A3.07) OR USING STRUCTURAL ANALYSIS DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.
MIX & INSTALLATION - PERVIOUS CONCRETE SHALL BE PERVIOUS CONCRETE (ASTM C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADMIXTURES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TENSILE STRENGTH) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.
AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4" IN. TO NO. 4), NO. 8 (5/8" IN. TO NO.10) AND NO. 8S (5/8" IN. TO NO.10) SIZES. SINGLE-SIZE AGGREGATE (UP TO 1" INCH) MAY ALSO BE USED.
WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.
ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.
BASE COURSE - THE BASE COURSE SHALL BE ASTM NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (+/-0.30).
 - PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)**
PAVER BLOCKS - BLOCKS SHOULD BE EITHER 32 IN. OR 4 IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (WIDE PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.
INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM.
PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.
BASE COURSE - THE BASE COURSE SHALL BE ASTM NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (+/-0.30).
 - REINFORCED TURF**
REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR TRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.

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

Table B.4.1 Materials 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 soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (10%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	aged 6 months, minimum; no pine or wood chips
Mulch	shredded hardwood	n/a	
Pen gravel diaphragm	pen gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	
Geotextile	n/a	n/a	PE Type I 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 318.2R/89; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASHTO-M-6 or ASTM-C-33	0.075" to 0.425"	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.

NO. REVISION DATE

ENVIRONMENTAL CONCEPT PLAN

STORMWATER MANAGEMENT NOTES AND DETAILS

DORSEY OVERLOOK

LOTS 1-90 & OPEN SPACE LOT 91 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
TAX MAP 30 GRID: 9
DPZ REF'S:

ZONED: R-APT
PARCELS: 67, 51, 52
798, 53, 54, 55
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.

ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET
ELIGOTT CITY, MD 21043

TEL: 410.461.7666
FAX: 410.461.8961

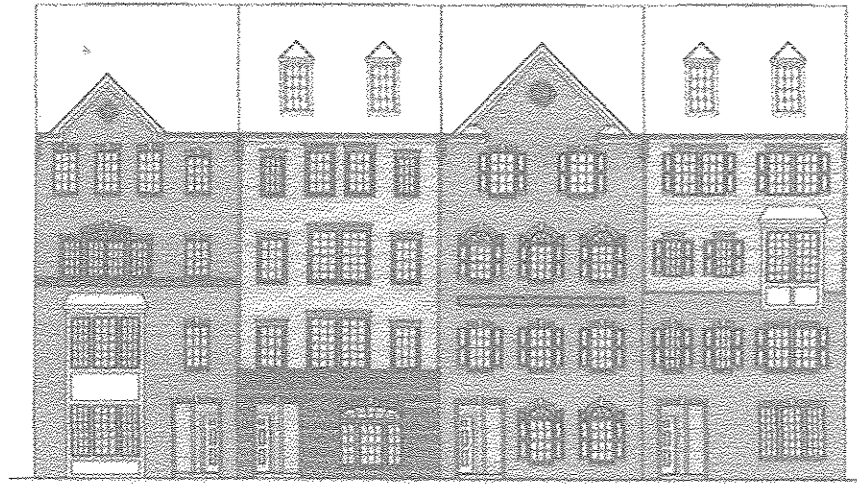
DESIGN BY: *[Signature]* RHV/EDS
DRAWN BY: *[Signature]* RVE/KCO
CHECKED BY: *[Signature]* RHV
DATE: SEPTEMBER 2016
SCALE: AS SHOWN
W.G. NO.: 12-69

PROFESSIONAL CERTIFICATE
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. 18153
EXPIRATION DATE: 09-27-2016

STATE OF MARYLAND
ROBERT H. VOGEL
LICENSED PROFESSIONAL ENGINEER
18153

DEVELOPER
TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC.
MR. J. CHRIS PIPPEN
453 SOUTH POLK DRIVE
SARASOTA, FLORIDA 34236
PHONE: (410) 404-8246

5 SHEET OF 6



TYPICAL UNIT ELEVATION VIEW
NOT TO SCALE

DORSEY OVERLOOK - R-APT - JUNE 2016 ECP ESDv COMPUTATIONS

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	2.0' VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
SITE AREA: 3.75 AC 163186 SF TARGET Pp: 2.00 IN SITE IMPERVIOUS: 88.88 PERCENT SITE Rv: 0.6237 SITE ESDv: 1.7233 CF +/- Rev Req. 2215 cuft Rev Prov. 2305 cuft Rv=0.05+0.0028X V min=1.0' rainfall Vmax=1yr rainfall=2.6' (1.0x0.95x4)/12 (2.6x0.95x4)/12												
1	54.65	0.5418	12800	0.29	578	1503	1156	1359	6,995	0.16	0.13	MICROSCALE RAIN GARDENS X 9 UNITS 540 45 SF RAIN GARDEN EACH 45 X 9 UNITS EACH MICROSCALE BIO-SWALE 333 498.75 SF BIOSWALE @ 0.5' POND REV STONE BELOW UNDERDRAIN 2 FEET 400 500 SF ALTERNATIVE SURFACE - PAVER CENTRAL WALK 34 35 LF PERM SURFACE SIDEWALK @ .196 REV STONE UNDER SUBBASE 0.75 FEET 53 175 SF
2	80.82	0.7774	27925	0.64	1809	4704	3618	1536	22,570	0.52	0.12	MICROSCALE MICRO-BIO RETENTION #1 1400 1050 SF MICRO BIO ALTERNATIVE SURFACE - PAVER CENTRAL WALK 54 55 LF PERM SURFACE SIDEWALK @ .196 REV STONE UNDER SUBBASE 0.75 FEET 83 275 SF
3	57.13	0.5642	17329	0.40	815	2118	1629	1460	9,900	0.23	0.17	MICROSCALE RAIN GARDENS X 13 UNITS 780 45 SF RAIN GARDEN EACH 45 X 13 UNITS EACH MICROSCALE MICRO-BIO RETENTION 420 315 SF MICRO BIO ALTERNATIVE SURFACE - PAVER CENTRAL WALK 103 105 LF PERM SURFACE SIDEWALK @ .196 REV STONE UNDER SUBBASE 0.75 FEET 158 525 SF
4	95.91	0.9132	22235	0.51	1692	4399	3384	2736	21,325	0.49	0.02	MICROSCALE MICRO-BIO RETENTION #4 2530 1897.5 SF MICRO BIO ALTERNATIVE SURFACE - PAVER CENTRAL WALK 81 83 LF PERM SURFACE SIDEWALK @ .196 REV STONE UNDER SUBBASE 0.75 FEET 125 415 SF
5	54.38	0.5394	17966	0.41	808	2100	1615	2779	9,770	0.22	0.19	MICROSCALE MICRO-BIO RETENTION #5 1500 1425 SF MICRO BIO MICROSCALE RAIN GARDENS X 12 UNITS 720 45 SF RAIN GARDEN EACH 45 X 12 UNITS EACH ALTERNATIVE SURFACE - PAVER CENTRAL WALK 63 64 LF PERM SURFACE SIDEWALK @ .196 REV STONE UNDER SUBBASE 0.75 FEET 96 320 SF
6	77.66	0.7490	19160	0.44	1196	3109	2392	2200	14,880	0.34	0.10	MICROSCALE MICRO-BIO RETENTION #5 2200 1650 SF MICRO BIO
7	64.86	0.6338	7030	0.16	371	965	743	420	4,560	0.10	0.06	MICROSCALE RAIN GARDENS X 7 UNITS 420 45 SF RAIN GARDEN EACH 45 X 7 UNITS EACH
8	62.21	0.6099	13712	0.31	697	1812	1394	2930	8,530	0.20	0.12	MICROSCALE MICRO-BIO RETENTION #5 2930 2197.5 SF MICRO BIO
9	57.73	0.5696	3175	0.07	151	392	301	290	1,833	0.04	0.03	MICROSCALE MICRO-BIO RETENTION #5 290 217.5 SF MICRO BIO
10	49.48	0.4954	2425	0.06	100	260	200	2217	1,200	0.03	0.03	MICROSCALE MICRO-BIO RETENTION #5 465 348.75 SF MICRO BIO REV STONE BELOW UNDERDRAIN 2 FEET 280 350 SF MICROSCALE MICRO-BIO RETENTION 920 690 SF MICRO BIO REV STONE BELOW UNDERDRAIN 2 FEET 552 690 SF
11	52.40	0.5216	2290	0.05	100	259	199	745	1,200	0.03	0.03	MICROSCALE MICRO-BIO RETENTION #5 465 348.75 SF MICRO BIO REV STONE BELOW UNDERDRAIN 2 FEET 280 350 SF
12	44.61	0.4515	2690	0.06	101	263	202	745	1,200	0.03	0.03	MICROSCALE MICRO-BIO RETENTION #5 465 348.75 SF MICRO BIO REV STONE BELOW UNDERDRAIN 2 FEET 280 350 SF
PROJECT TOTALS	69.9	0.6791	148737	3.41	8417	21884	16834	19418	103963	2.39	1.03	
TOTAL AREA ACCOUNTED FOR: 3.41 ACRES - REMAINING ACREAGE IS NOT BEING DISTURBED (NORTH ENVIRONMENTAL AREAS) -MANAGEMENT FOR EXISTING OLD RTE 108 ROAD IMPERVIOUS NOT REQUIRED. *PROPOSED IMPERVIOUS AREA IS LESS THAN OR EQUAL TO THE PROPOSED IMPERVIOUS AREA TO EXISTING INLET @ THE INTERSECTION OF CLARKSVILLE PIKE (RTE 108) AND COLUMBIA ROAD												

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division JR 07-15-16
 Chief, Division of Land Development 07-15-16

DEVELOPER
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC.
 MR. J. CHRIS PIPPEN
 45.5 SOUTH POLK DRIVE
 SARASOTA, FLORIDA 34236
 PHONE: (410) 404-8246

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
 STORMWATER MANAGEMENT
 NOTES AND DETAILS
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PROFESSIONAL CERTIFICATE
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 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. 18183
 EXPIRATION DATE: 09-27-2016

DESIGN BY: RHV/EDS
 DRAWN BY: RVE/KG
 CHECKED BY: RHV
 DATE: SEPTEMBER 2015
 SCALE: AS SHOWN
 W.O. NO.: 12-69

6 SHEET OF 6