MARGARET TILLMAN SUBDIVISION
A RESUBDIVISION OF LOT 6 - "NORDAU SUBDIVISION"
PARCEL 180
ENVIRONMENTAL CONCEPT PLAN

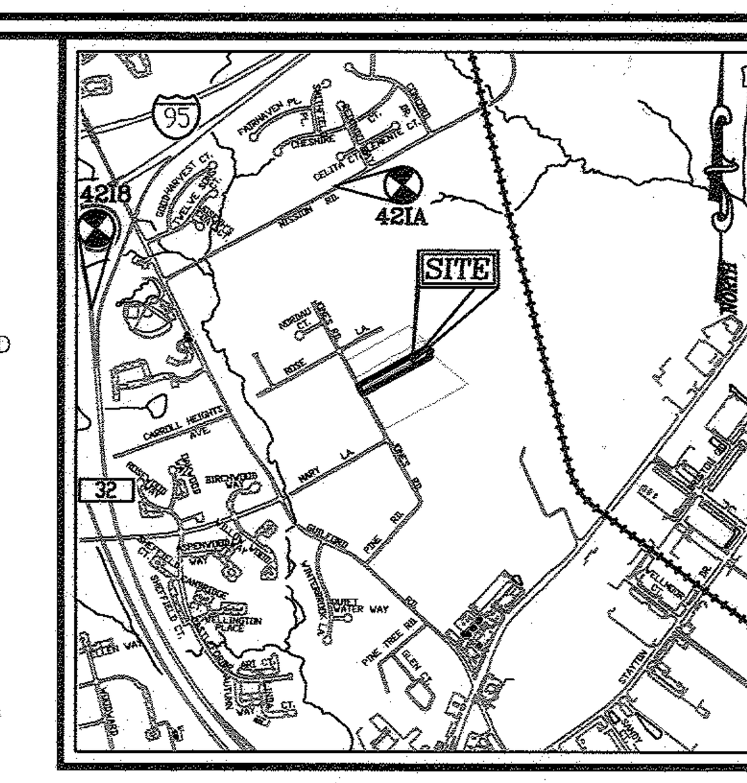
GENERAL NOTES

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 JANUARY 31 2013. OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS.
3. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JANUARY 31, 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. 42IA AND 4218 WERE USED FOR THIS PROJECT.
5. THE SUBJECT PROPERTY IS ZONED "R-12" IN ACCORDANCE WITH THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
6. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, AND FOREST CONSERVATION EASEMENT AREAS.
7. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
8. WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 24-0944-D.
9. SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 20-4108-D.
10. THERE IS NO 100 YEAR FLOODPLAIN ON THE PROJECT SITE.
11. NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ONSITE.
12. 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.
13. FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN.
14. WETLANDS AND STREAMS SHOWN ONSITE ARE BASED ON ENVIRONMENTAL REPORT BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED JULY 26, 2016.
15. A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
16. FOREST STAND DELINEATION PLAN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED JULY 25 2016.
17. JONES ROAD IS CLASSIFIED AS A LOCAL PUBLIC ROAD. THE PROPOSED STREET IS CLASSIFIED AS PRIVATE ACCESS STREETS.
18. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES ON THIS PROPERTY. THERE IS A HISTORIC STRUCTURE LOCATED ON THIS PROPERTY.
19. NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITAT WERE OBSEREVED ON THE 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 MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION, PERVIOUS PAVING, AND RAINWATER HARVESTING. THESE FACILITIES SHALL 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. 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.
24. THIS PROJECT IS SUBJECT TO COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/ GRADING PERMIT APPLICATIONS.
25. PERIMETER LANDSCAPING WILL BE PROVIDED AT THE FINAL SUBDIVISION PLAN STAGE.

BENCHMARKS

HOWARD COUNTY BENCHMARK 42IA
N 543,390.41 E 1,364,912.66 ELEV. 312.01
3/4" REBAR – NORTH EAST SIDE OF MISSION ROAD, 74.3' NORTH OF BG& E#297906

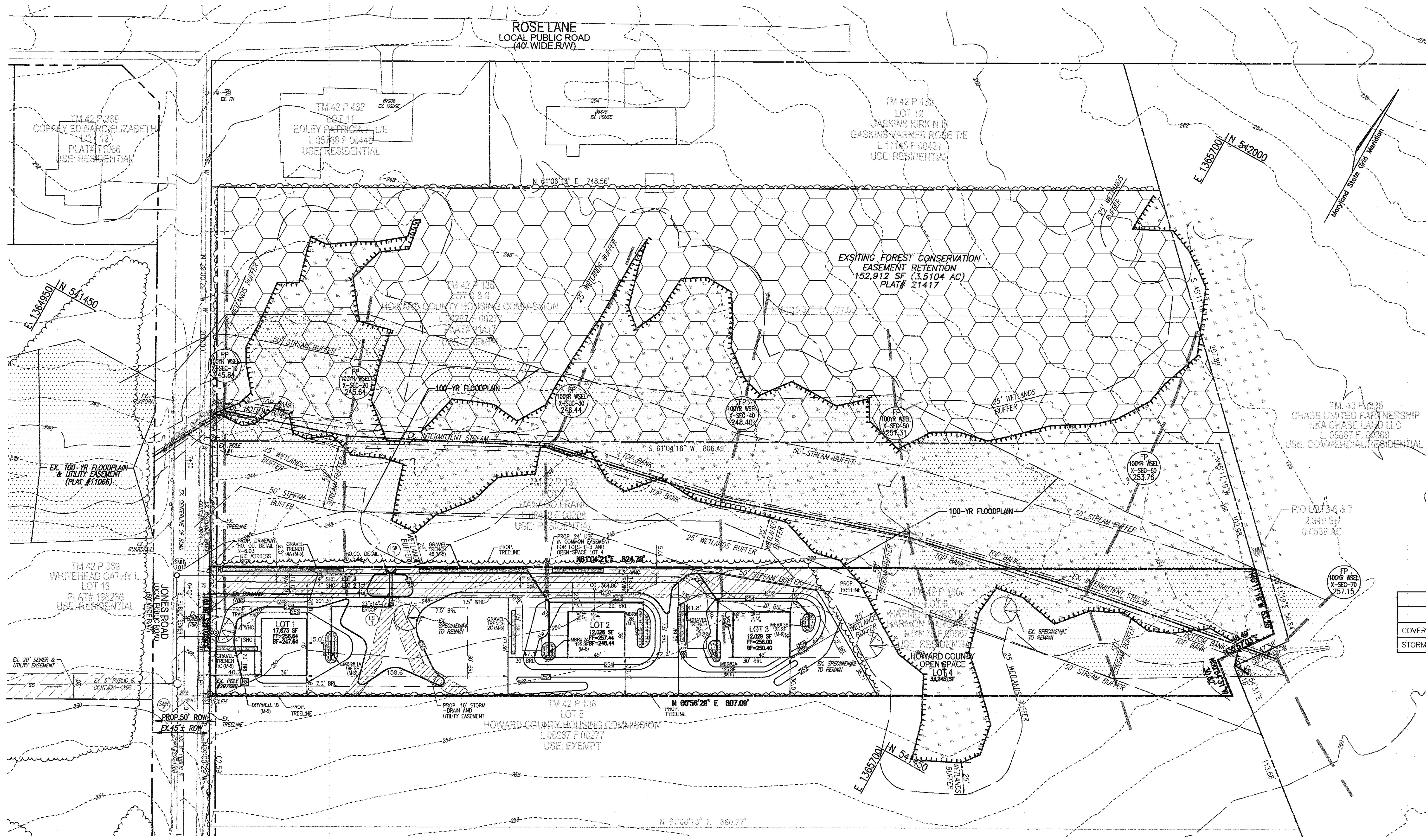
HOWARD COUNTY BENCHMARK 4218
N 542,107.89 E 1,362,386.04 ELEV. 301.47
CONCRETE MONUMENT – BETWEEN RT.32 WEST BOUND AND RT. 95 NORTH RAMP



VICINITY MAP
SCALE: 1"=2000'
ADC MAP COORDINATES: 5053 K6

LEGEND:

- 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 OVER HEAD LINE
- PROPOSED STORM DRAIN
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING FOREST CONSERVATION EASEMENT (RETENTION) PLAT# 21417
- EXISTING STREAM
- EXISTING STREAM BUFFER
- EXISTING FLOOD PLAIN
- EXISTING TREELINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- MICRO-BIORETENTION
- EX. SPECIMEN TREE
- PROP. 24' USE IN COMMON EASEMENT FOR LOTS 1-3 AND OPEN SPACE LOT 4
- PROP. 10' STORM DRAIN AND UTILITY EASEMENT



COVER SHEET
SCALE: 1"=50'

SCALE 1"=50'
25' 0' 50'

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET AND ESDv CONCEPT PLAN	1 OF 2
STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTE AND DETAILS	2 OF 2

ENVIRONMENTAL SITE DESIGN NARRATIVE:

1. ALL NATURAL AREAS OF THIS SITE ARE LOCATED IN THE NORTH AND EASTERN PORTION OF THE SITE. ON THE NORTH AND EASTERN PART OF THE SITE IS INTERMITTENT STREAM (50' BUFFER). THERE IS ALSO WETLANDS LOCATED ON THE EASTERN PORTION OF THE SITE. NO DISTURBANCE TO THE STREAM, WETLAND AND/OR WETLAND BUFFER IS PROPOSED. THE SITE IS CURRENTLY WOODED. THESE NATURAL RESOURCES WILL REMAIN UNDISTURBED, PROTECTED AND ENHANCED. ANY IMPACTS TO THE ENVIRONMENTAL RESOURCES SHALL BE THE LEAST NECESSARY FOR THE DEVELOPMENT OF THIS PROJECT.

2. THE SITE NATURALLY SLOPES FROM EAST TO WEST. THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO DRAMATIC CHANGES TO THE NATURAL DRAINAGE.

3. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT TO THE MAXIMUM EXTENT PRACTICABLE (MEP). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION". THE ESD CONCEPT INCLUDES THE USE OF MICRO-BIORETENTION FACILITIES (M-6), AND DRY WELLS (M-5).

4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED CLEAR WATER DIKES AND SUPER SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.

5. STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-BIORETENTION FACILITIES (M-6), AND DRY WELLS (M-5). PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PE) FOR THIS PROJECT IS 1.21", AND THE TOTAL RUNOFF VOLUME (ESDv) REQUIRED IS 1,566 CF.

6. AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS ARE REQUIRED. WAIVER PETITION FOR THE REMOVAL OF TWO SPECIMEN TREES SHALL BE SUBMITTED UNDER SEPARATE COVER AT THE FINAL PLAN PHASE OF THE PROJECT.

OWNER LOT 6
FORSTER W. HARMON
MARGARET T. HARMON
8660 PINE ROAD
JESSUP, MD. 20794
(301) 776-9412

DEVELOPER
FORSTER W. HARMON
8660 PINE ROAD
JESSUP, MD 20794
(301) 776-9412

SOILS LEGEND
HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	HYDRIC	PRIME FARMLAND
FaaA	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES, NORTHERN COASTAL PLAIN	D	0.02	NO	YES	YES
CeC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B	0.37	YES	NO	YES
RuB	RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES	C	0.40	YES	NO	YES
RuC	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	C	0.24	YES	NO	YES

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

MINIMUM LOT SIZE CHART

LOT #	GROSS AREA	PIPESTEM AREA	NET AREA
1	17,873 SF	–	17,873 SF
2	14,849 SF	2,823 SF	12,026 SF
3	16,469 SF	4,441 SF	12,028 SF

SITE ANALYSIS DATA CHART

TOTAL PROJECT AREA:	1.90 AC.
NET AREA OF PROJECT:	1.45 AC. (1.90AC.-0.45AC.)
AREA OF WETLANDS AND WETLAND BUFFERS:	26,524.23 S.F. (0.61 AC.)
AREA OF FLOODPLAIN:	19,575.86 SF (0.45 AC.)
AREA OF FOREST:	1.90 AC. (REFER TO FSD)
AREA OF MODERATE SLOPES (15% TO 24.99%):	0.00 AC.
AREA OF STEEP SLOPES (25% OR GREATER):	0.00 AC
ERODIBLE SOILS:	1.88 AC.
LIMIT OF DISTURBED AREA:	1.27 AC.
PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL – SINGLE FAMILY DETACHED
GREEN OPEN AREA:	0.95 AC.
PROPOSED IMPERVIOUS AREA:	13,784 SF OR 0.32 AC.
PRESENT ZONING DESIGNATION:	R-12
DPZ FILE REFERENCES:	---

FOREST STAND DATA

KEY	COMMUNITY TYPE	ACREAGE	DOMINANT VEGETATION	GENERAL CONDITION	PRIORITY ACREAGE
F-1	MIXED OAK	1.45	QUERCUS PHELLOS, QUERCUS ALBA, QUERCUS FALCATA, ACER RUBRUM, FAGUS GRANDIFOLIA, NYSSA SYLVATICA	GOOD	1.45 WETLAND BUFFER, CONTIGUOS FOREST

PRELIMINARY FOREST CONSERVATION WORKSHEET
Version 1.0

Project: Nordau Subdivision Lot 6
Date: August 19, 2016

NET TRACT AREA			Acres
A. Total tract area			1.9
B. Area within 100 Year Floodplain			0.45
C. Area of existing impervious surface/gas line right of way			0
D. Net Tract Area			1.45
LAND USE CATEGORY: (from table 3.2.1, page 40, Manual) ARA MDR IDA HDR MPD CIA — X (HDR)			
E. Afforestation Threshold	(percentage)	15	0.22
F. Conservation Threshold	(percentage)	20	0.29
EXISTING FOREST COVER:			
G. Existing forest cover (excluding floodplain)			1.45
H. Area of forest above afforestation threshold			1.23
I. Area of forest above conservation threshold			1.16
BREAK EVEN POINT:			
J. Forest retention above threshold with no mitigation			0.23
	Break-Even Point		0.52
K. Clearing permitted without mitigation			0.93

Specimen Tree Chart

Key (X#)	Species	Size (in dbh)	CRZ (feet radius)	Comments	
1	Willow oak	30	45	good condition	TO BE REMOVED
2	American beech	30.5	45.75	good condition	TO REMAIN
3	Willow oak	31	46.5	good condition	TO REMAIN
4	Willow oak	32	48	poor condition, trunk rot and limb dieback	TO REMAIN

Eco-Science Professionals, Inc.
Consulting Ecologists
P.O. Box 5006 Glen Arm, Maryland 21057 Telephone (410) 832-2480 Fax (410) 832-2488

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification #: WDCP93MD0610044B2
[illegible]
John P. Canoles

FSD NOTES:

1. No rare, threatened or endangered species, or their habitats, were observed on the property.
2. Surrounding land use is medium density residential development and forest. The adjacent property is currently undeveloped but has approved development plans.
3. Approximately 3.9 acres of forest is currently present within 100 feet of the subject property. Some of this offsite forest will be impacted by development of adjacent property and some is within the 100 year floodplain.
4. The site lies within the watershed of the Middle Patuxent River (02-13-11). The wetlands will require a 25 foot buffers and the intermittent stream channel requires a 50 foot buffer.
5. No historic elements or cemeteries are known to occur on the property.
6. 100 year floodplain is present on the property. The floodplain occupies 0.45 acres of the site.
7. There are no steep slopes are present on the site.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[illegible]	2.10.17
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
[illegible]	2-8-17
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE

REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN

COVER SHEET AND ESDv CONCEPT PLAN

MARGARET TILLMAN SUBDIVISION

A RESUBDIVISION OF LOT 6 – NORDAU SUBDIVISION"
LIBER: 3 FOLIO: 51

TAX MAP: 42 PARCEL: 180 BLOCK: 24 ZONING: R-12
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No.16193 REGISTERED PROFESSIONAL ENGINEER 1/30/17

ROBERT H. VOGEL, PE No.16193

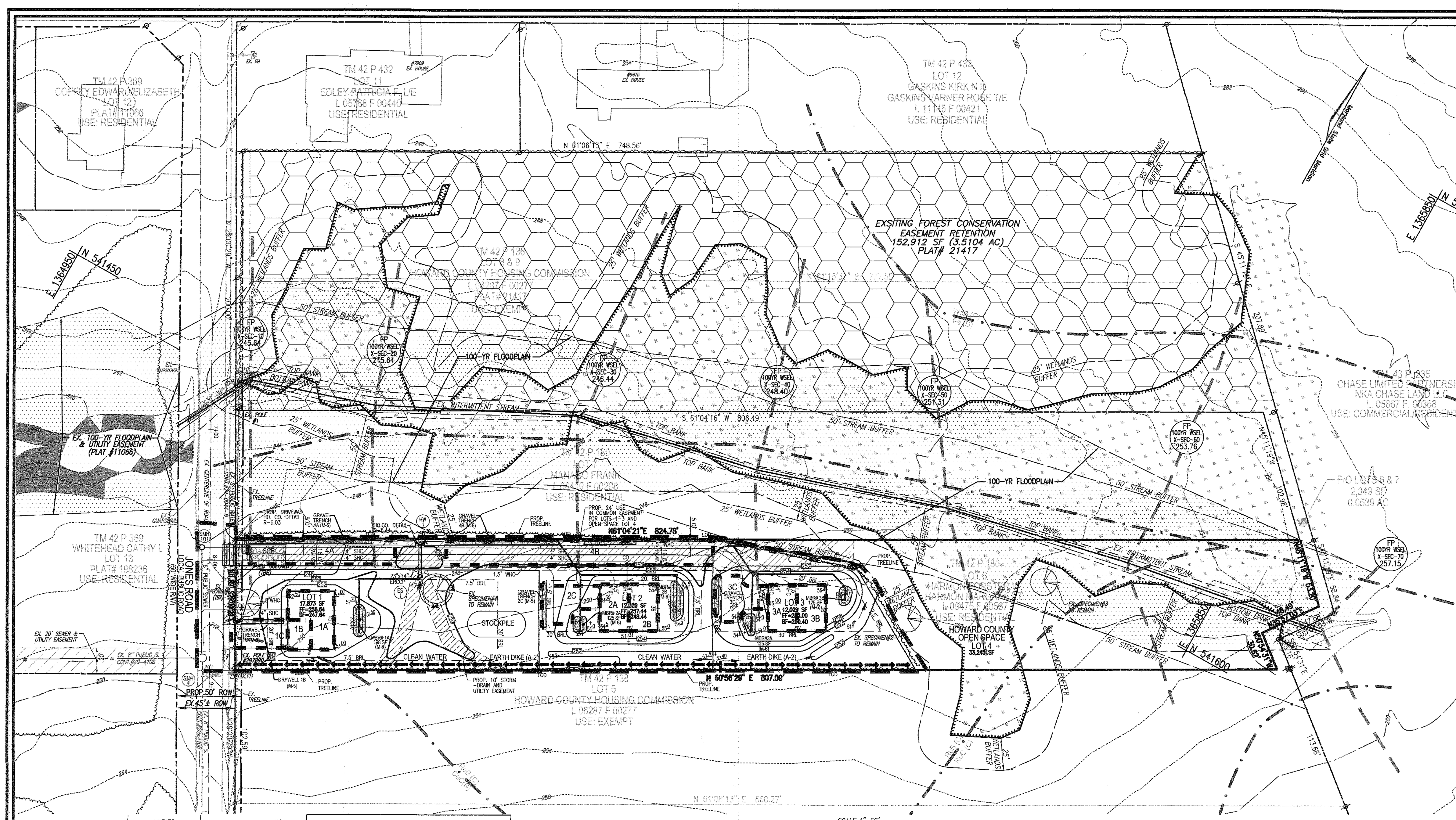
DESIGN BY:	RHV
DRAWN BY:	KG
CHECKED BY:	RHV
DATE:	JANUARY 2017
SCALE:	AS SHOWN
W.O. NO.:	12-05

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: 09-27-2018

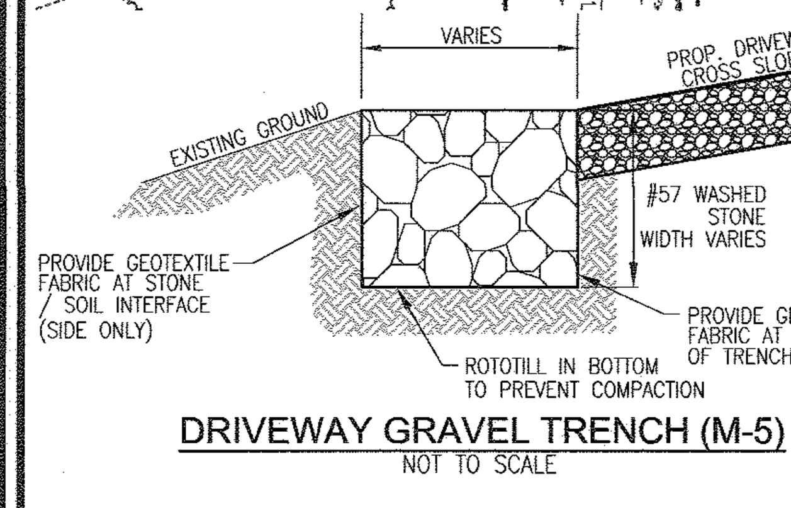
1 SHEET OF 2

ECP-17-006



PLAN VIEW

SCALE: 1"=50'



DRIVEWAY GRAVEL TRENCH (M-5)

NOT TO SCALE

NOTE:
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SUPER 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.

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

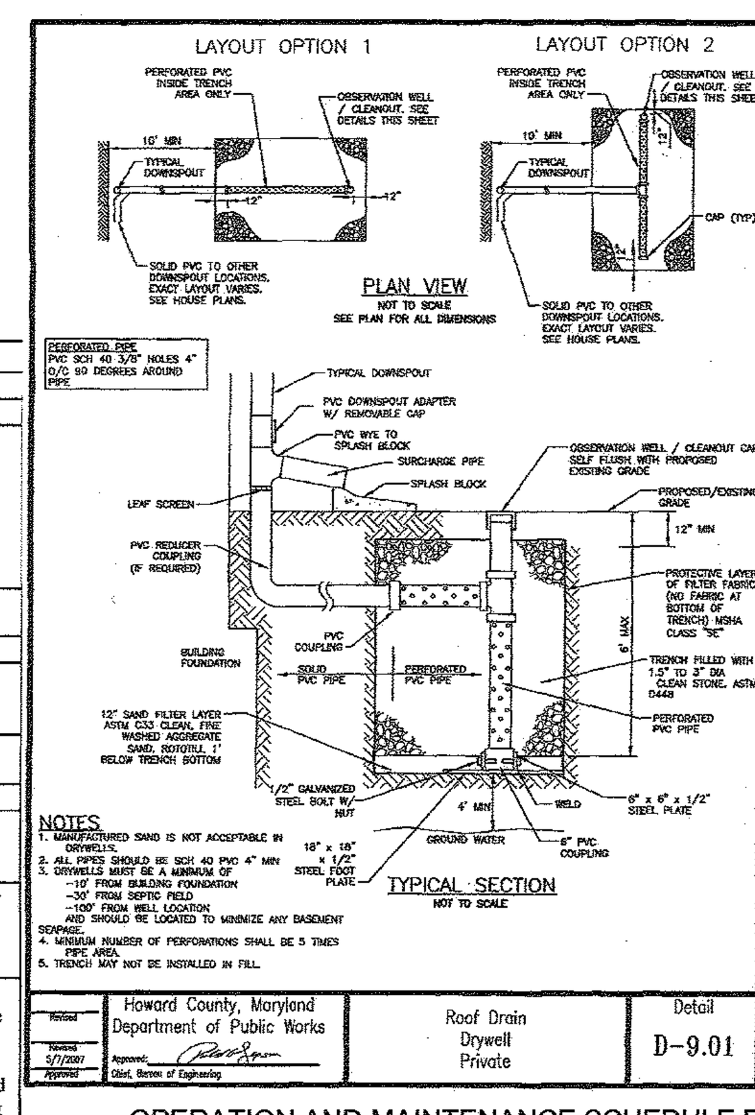
Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration-

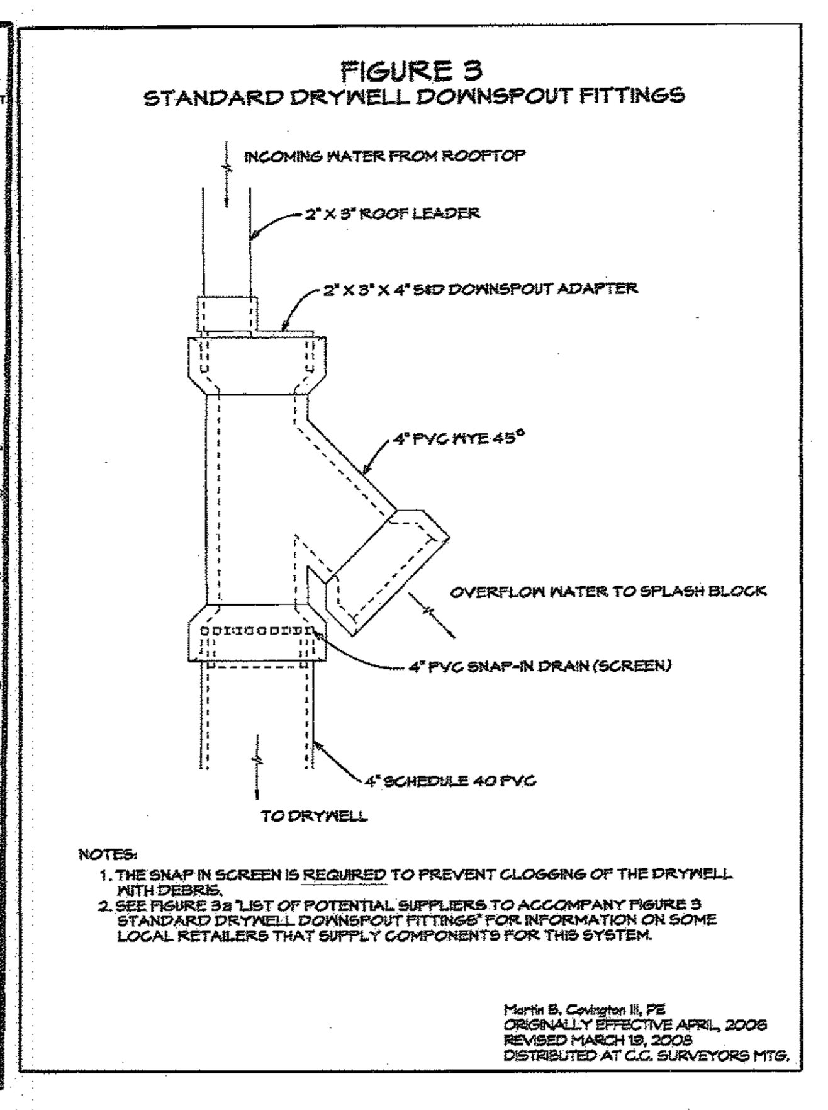
Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 – 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'_c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/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	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (**AASHTO**) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.10.17

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/8/17





OPERATION AND MAINTENANCE SCHEDULE FOR LANSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULTCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.

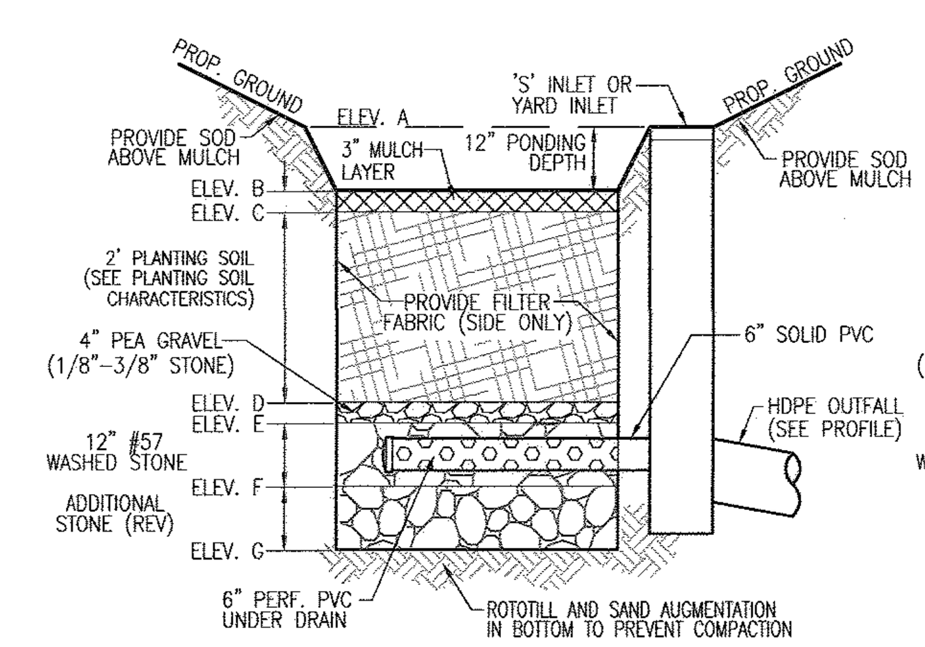
2. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.

3. 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.

4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

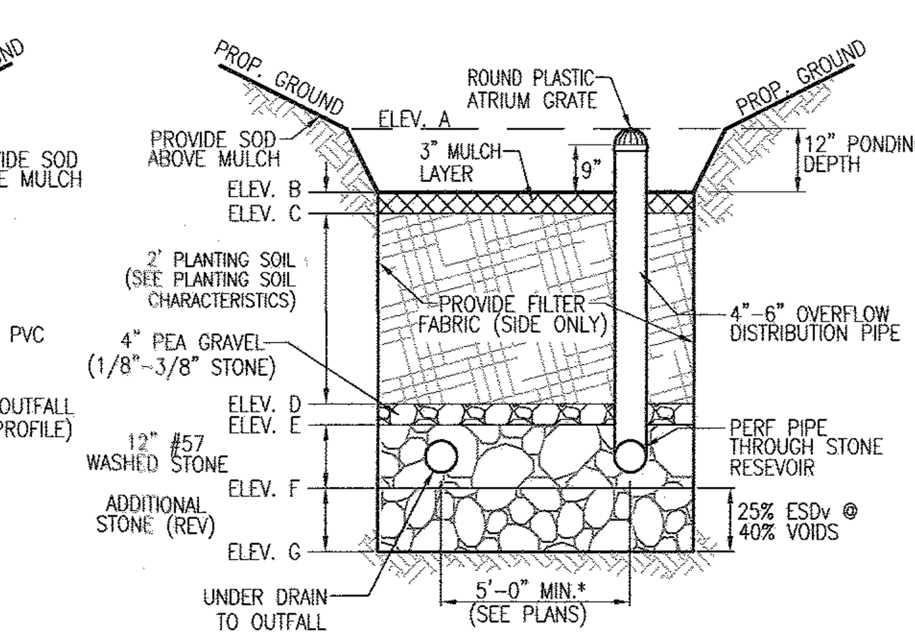
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.



MICRO-BIORETENTION (UNDERDRAIN) (M-6)

NOT TO SCALE



MICRO-BIORETENTION (OVERFLOW) (M-6)

NOT TO SCALE

MICROBIORETENTION NOTES:

1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETNTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESIVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

ROBERT H. VOGEL ENGINEERING, INC.

PROJECT: MARGARET TILLMAN MINOR SUBDIVISION
ECP-17-006

TOTAL AREA:	1.27	AC	LOD
TARGET Pe:	1.21	IN	
IMPERVIOUS:	25.2	PERCENT	
SITE Rv:	0.28		
SITE ESDv:	1566	CF	FULL ESDv

RAINAGE AREA	DESC	SURFACE	TREATMENT	Pe	IMPERVIOUS AREA	PERCENT IMPERVIOUS	RV	ESDv MIN	ESDv MAX	ESDv PROVIDED	Rev
1A	LOT 1	HOUSE	MBR	2.6	282	1.00	0.95	101	264	264	66
1B		HOUSE	DW	1.21	1428	1.00	0.95	34	88	48	
1C		DRIVE	DW	1	420	1.00	0.95	33	86	40	
2A	LOT 2	HOUSE	MBR	2.6	810	1.00	0.95	64	167	167	42
2B		HOUSE	MBR	2.6	810	1.00	0.95	64	167	167	42
2C		DRIVE	DW	1	648	1.00	0.95	51	133	56	
3A	LOT 3	HOUSE	MBR	2.6	810	1.00	0.95	64	167	167	42
3B		HOUSE	MBR	2.6	810	1.00	0.95	64	167	167	42
3C		PAVE	DW	1	648	1.00	0.95	51	133	61	
4A	UIC	PAVE	DW	1	1760	1.00	0.95	139	362	179	
4B	UIC	PAVE	DW	1	2560	1.00	0.95	203	527	250	429

TOTAL IMPERVIOUS AREA MANAGED (sf) 10986 — TOTAL ESDv PROVIDED (cf) 1566

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

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-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

* SOIL COMPONENT – LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
* ORGANIC CONTEN – 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 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 HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING 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 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 BIORETENION 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-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE 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 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 DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

* PIPE – SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).
* PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.
* GRAVEL – THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
* THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
* A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 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 CONSIDERED PART OF THE 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 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

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

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 IS A INTERMITTENT STREAM WHICH CROSSES THE NORTH OF THE SITE AND HAS A 50' STREAM BUFFER. THERE IS ALSO WETLAND LOCATED ON THE EASTERN PORTION OF THE SITE.

LEGEND:

398	EXISTING CONTOUR		EXISTING FLOOD PLAIN
406	PROPOSED CONTOUR		EXISTING TREELINE
+02.68	PROPOSED SPOT ELEVATION		EXISTING FENCE
+02.68	EXISTING SPOT ELEVATION		PROPERTY LINE
	EXISTING CURB AND GUTTER		RIGHT-OF-WAY LINE
	EXISTING UTILITY POLE		SOILS BOUNDARY
	EXISTING LIGHT POLE		MICRO-BIORETENTION
	EXISTING MAILBOX	LOD	LIMIT OF DISTURBANCE
	EXISTING SIGN		DRAINAGE DIVIDE
	EXISTING SANITARY MANHOLE	S C E	STABILIZED CONSTRUCTION ENTRANCE
S	EXISTING SANITARY LINE	SSF	SUPER SILT FENCE
CO	EXISTING CLEANOUT		CLEAN WATER EARTHDIKE
FH	EXISTING FIRE HYDRANT		EX. SPECIMEN TREE
W	EXISTING WATER LINE		
	EXISTING WATER LINE		
	PROPOSED STORM DRAIN		
	EXISTING WETLAND		
	EXISTING WETLAND BUFFER		
	EXISTING FOREST CONSERVATION EASEMENT (RETENTION) PLAT# 21417		
	EXISTING STREAM		
	PROP. 24' USE IN COMMON EASEMENT FOR LOTS 1-3 AND OPEN SPACE LOT 4		
	PROP. 10' STORM DRAIN AND UTILITY EASEMENT		

APPENDIX B.2. CONSTRUCTION SPECIFICATIONS FOR INFILTRATION PRACTICES B.2.A INFILTRATION TRENCH GENERAL NOTES AND SPECIFICATIONS AN INFILTRATION TRENCH MAY NOT RECEIVE RUN-OFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA TO THE INFILTRATION TRENCH HEAVY EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE PROPOSED LOCATION OF

1. THE INFILTRATION TRENCH OT MINIMIZE COMPACTION OF THE SOIL. EXCAVATE THE INFILTRATION TRENCH TO THE DESIGN DEMENSIONS. EXCAVATED MATERIALS SHALL BE
2. PLACED AWAY FROM THE TRENCH SIDES TO ENHANCE TRENCH WALL STABILITY. LARGE TREE ROOTS MUST BE TRIMMED FLUSH WITH THE TRENCH SIDES IN ORDER TO PREVENT FABRIC PUNCTURING OR TEARING OF THE FILTER FABRIC DURING SUBSEQUENT INSTALLATION PROCEDURES. THE SIDE WALLS OF THE TRENCH SHALL BE ROUGHENED WHERE SHEARED AND SEALED BY HEAVY EQUIPMENT.
3. A CLASS "C" GEOTEXTILE OR BETTER (SEE SECTION 24.0 , MATERIAL SPECIFICATIONS, 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, MDE, 1994) SHALL INTERFACE BETWEEN THE TRENCH SIDE WALLS AND BETWEEN THE STONE RESERVOIR AND GRAVEL FILTER LAYERS. A PARTIAL LIST OF NON-WOVEN FILTER FABRICS THAT MEET THE CLASS "C" CRITERIA FOLLOWS. ANY ALTERNATIVE FILTER FABRIC MUST BE APPROVED BY THE PLAN APPROVAL AUTHORITY. AMOCO 4552 CARTHAGE FX-80S GEOLON N70 MIRAFI 180-N WEBTEC NO7 THE WIDTH OF THE GEOTEXTILE MUST INCLUDE SUFFICIENT MATERIAL TO CONFORM TO TRENCH PERIMETER IRREGULARITIES AND FOR A 6-INCH MINIMUM TOP OVERLAP. THE FILTER FABRIC SHALL BE TUCKED UNDER THE SAND LAYER ON THE BOTTOM OF THE INFILTRATION TRENCH FOR A DISTANCE OF 6 TO 12 INCHES. STONES OR OTHER ANCHORING OBJECTS SHOULD BE PLACED ON THE FABRIC AT THE EDGE OF THE TRENCH TO KEEP THE TRENCH OPEN DURING WINDY PERIODS. WHEN OVERLAPS ARE REQUIRED BETWEEN ROLLS, THE UPHILL SHOULD LAP A MINIMUM OF 2 FEET OVER THE DOWNHILL ROLL IN ORDER TO PROVIDE A SHINGLED EFFECT.
4. IF A 6 INCH SAND FILTER LAYER IS PLACED ON THE BOTTOM OF THE INFILTRATION TRENCH, THE SAND FOR THE INFILTRATION TRENCH SHALL BE WASHED AND MEET AASHTO-M-43, SIZE NO. 9 OR NO. 10. ANY ALTERNATIVE SAND GRADATION MUST BE APPROVED BY THE PLAN APPROVAL AUTHORITY. THE STONE AGGREGATE SHOULD BE PLACED IN A MAXIMUM LOOSE LIFT THICKNESS OF 12 INCHES. THE
5. GRAVEL (ROUNDED "BANK RUN" GRAVEL IS PREFERRED) FOR THE INFILTRATION TRENCH SHALL BE WASHED AND MEET ON OF THE FOLLOWING AASHTO-M-43, SIZE NO. 2 OR NO. 3.
6. FOLLOWING THE STONE AGGREGATE PLACEMENT, THE FILTER FABRIC SHALL BE FOLDED OVER THE STONE AGGREGATE TO FORM A 6-INCH MINIMUM LONGITUDINAL LAP. THE DESIRED FILL SOIL OR STONE AGGREGATE SHALL BE PLACED OVER THE LAP AT SUFFICIENT INTERVALS TO MAINTAIN THE LAP DURING SUBSEQUENT BACKFILLING. CARE SHALL BE EXERCISED TO PREVENT NATURAL OR FILL SOILS FROM INTERMIXING WITH THE STONE
7. AGGREGATE. ALL CONTAMINATED STONE AGGREGATE SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED STONE AGGREGATE. VOIDS MAY OCCUR BETWEEN THE FAVRIC AND THE EXCAVATION SIDES SHALL BE AVOIDED. REMOVING
8. BOULDERS OR OTHER OBSTACLES FROM THE TRENCH WALLS IS ONE SOURCE OF SUCH VOIDS. THEREFORE, NATURAL SOILS SHOULD BE PLACED IN THESE VOIDS AT THE MOST CONVENIENT TIME DURING CONSTRUCTION TO ENSURE FABRIC CONFORMITY TO THE EXCAVATION SIDES.
9. VERTICALLY EXCAVATED WALLS MAY BE DIFFICULT TO MAINTAIN IN AREAS WHERE SOIL MOISTURE IS HIGH OR WHERE SOFT COHESIVE OR COHESIONLESS SOILS ARE DOMINANT. THESE CONDITIONS MAY REQUIRE LAYING BACK OF THE SIDE SLOPE TO MAINTAIN STABILITY. PVC DISTRIBUTION PIPES ASHALL BE SCHEDULE 40 AND MEET ASTM-D-1785. ALL FITTINGS SHALL MEET
10. ASTM-D-2729. PERFORATIONS SHALL BE 3/8 INCH IN DIAMETER. A PERFORATED PIPE SHALL BE PROVIDED ONLY WITHIN THE INFILTRATION TRENCH AND SHALL TERMINATE 1 FOOT SHORT OF THE INFILTRATION TRENCH WALL. THE END OF THE PVC PIPE SHALL BE CAPPED. NOTE: PVC PIPE WITH A WALL THICKNESS CLASSIFICATION OF SDR-35 MEETING ASTM-D-3034 IS AN ACCEPTABLE SUBSTITUTE FOR THE SCHEDULE 40 PIPE.
11. THE OBSERVATION WELL IS TO CONSIST OF 6-INCH DIAMETER PERFORATED PVC SCHEDULE 40 PIPE (M 278 OR F758, TYPE PS 28) WITH A CAP SET 6 INCHES ABOVE GROUND LEVEL AND IS TO BE LOCATED NEAR THE LONGITUDINAL CENTER F THE INFILTRATION TRENCH. THE PIPE SHALL HAVE A PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING THE CAP. THE SCREW TOP LID SHALL BE A CLEANOUT WITH A LOCKING MECHANISM OR SPECIAL BOLT TO DISCOURAGE VANDALISM. THE DEPTH TO THE INVERT SHALL BE MARKED ON THE LID. THE PIPE SHALL BE PLACED VERTICALLY WITHIN THE GRAVEL PORTION OF THE INFILTRATION TRENCH AND A COP PROVIDED AT THE BOTTOM OF THE PIPE. THE BOTTOM OF THE CAP SHALL REST ON THE INFILTRATION TRENCH BOTTOM CORRUGATED METAL DISTRIBUTION PIPES SHALL CONFORM TO AASHTO-M-36, AND SHALL BE ALUMINIZED IN
12. ACCORDANCE WITH AASHTO-M-274. ALUMINIZED PIPE CONTACT WITH CONCRETE SHALL BE COATED WITH AND INERT COMPOUND CAPABLE OF PREVENTING THE DELETERIOUS EFFECT OF THE ALUMINUM ON THE CONCRETE. PERFORATED DISTRIBUTION PIPES SHALL CONFORM TO AASHTO-M-36, CLASS 2 AND SHALL BE PROVIDED ONLY WITHIN THE INFILTRATION TRENCH AND SHALL TERMINATE 1 FOOT SHORT OF THE INFILTRATION TRENCH WALL. AN ALUMINIZED METAL PLATE SHALL BE WELDED TO THE END OF THE PIPE.
13. IF A DISTRIBUTION STRUCTURE WITH A WET WELLIS USED, A 4-INCH DRAIN PIPE SHALL BE PROVIDED AT OPPOSITE ENDS OF THE INFILTRATION TRENCH DISTRIBUTION STRUCTURE. TWO (2) CUBIC FEET OF POROUS BACKFILL MEETING AASHTO-M-43, SIZE NO. 57 SHALL BE PROVIDED AT EACH DRAIN. IF A DISTRIBUTION STRUCTURE IS USED, THE MANHOLE COVER SHALL BE BOLTED TO THE FRAME.
14. IF A DISTRIBUTION STRUCTURE IS USED, THE MANHOLE COVER SHALL BE BOLTED TO THE FRAME.

OWNER LOT 6	DEVELOPER
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REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN

STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTE AND DETAILS

MARGARET TILLMAN SUBDIVISION

A RESUBDIVISION OF
LOT 6 – NORDAU SUBDIVISION"
LIBER: 3 FOLIO: 51

TAX MAP: 42 PARCEL: 180 — BLOCK: 24 ZONING: R-12
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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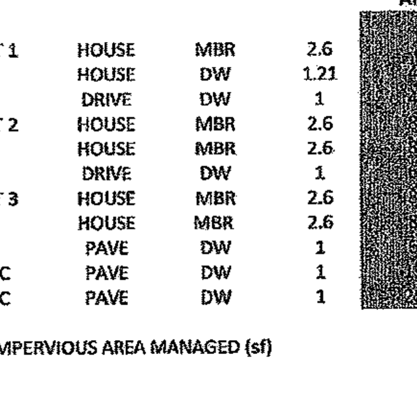

ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV
DRAWN BY:	KG
CHECKED BY:	RHV
DATE:	JANUARY 2017
SCALE:	AS SHOWN
W.O. NO.:	12-05

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: 09-27-2018

ECP-17-006