

GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH 2010, OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS.
- THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH 26, 2010.
- 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. 2411 AND 2413 WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "R-A-15" AND FOR IN ACCORDANCE WITH THE 10/2006 COMPREHENSIVE ZONING PLAN AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/06/13 PER COUNCIL BILL 75-2003.
- NO 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.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 266-W.
- SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 661 W&S AND 14-3855-D.
- 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.
- THERE IS AN EXISTING FLOODPLAIN IS LOCATED ONSITE ALONG THE SOUTHERN MOST BOUNDARY OF PARCEL 73 EXTENDING INTO ADJACENT "WORTHINGTON FIELDS". A ROAD CROSSING IS PROPOSED ON A FUTURE PLAN. SEE SHEET 4.
- STEEP SLOPES ARE AS SHOWN HEREON.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A SUBDIVISION OR SITE DEVELOPMENT PLAN.
- WETLANDS AND STREAMS SHOWN ONSITE ARE BASED ON ECOTONE, INC C/O MR. ERIC CHODNICKI, MAY 2015.
- IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THE OPEN SPACE REQUIREMENTS FOR THIS R-A-15 PROJECT IS 25% OF GROSS AREA (14.72 AC. GROSS AREA X 25 % = 4.18 AC.).
- GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AS PART OF THE FUTURE SITE DEVELOPMENT PLAN PACKAGE.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- FOREST STAND DELINEATION PLAN PREPARED BY ECOTONE, INC C/O MR. ERIC CHODNICKI, MAY 2015.
- COLLEGE AVENUE IS CLASSIFIED AS A MINOR COLLECTOR - SCENIC ROAD. NEW CUT ROAD IS CLASSIFIED AS A MINOR COLLECTOR - SCENIC ROAD. THE PROPOSED STREETS ARE CLASSIFIED AS PRIVATE ACCESS STREETS.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF ALTERNATIVE SURFACES, NON STRUCTURAL PRACTICES & MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION AND BIO SWALES AS WELL AS ALTERNATIVE SURFACES - PERMEABLE SURFACES. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- 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.
- THE LIMITS OF DISTURBANCE (LOD) IS SHOWN HEREON. ANY LETTERS OF PERMISSION FOR ANY REQUIRED OFFSITE GRADING WILL BE PROVIDED AS PART OF THE FINAL PLAN/SITE DEVELOPMENT PLAN SUBMISSION WHEN FINAL GRADING WILL BE APPROVED.
- 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.

ENVIRONMENTAL CONCEPT PLAN

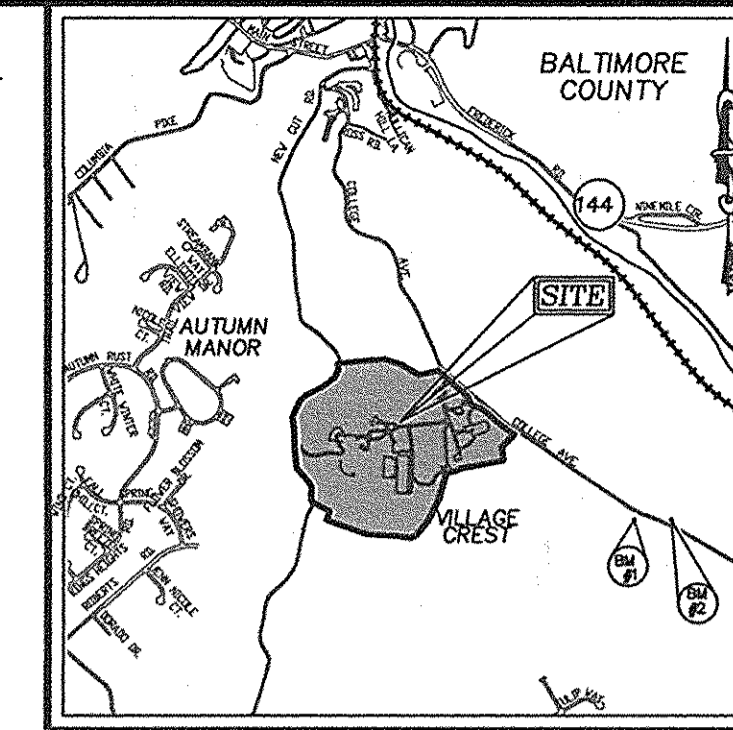
TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250

TAYLOR PLACE

PHASE 1

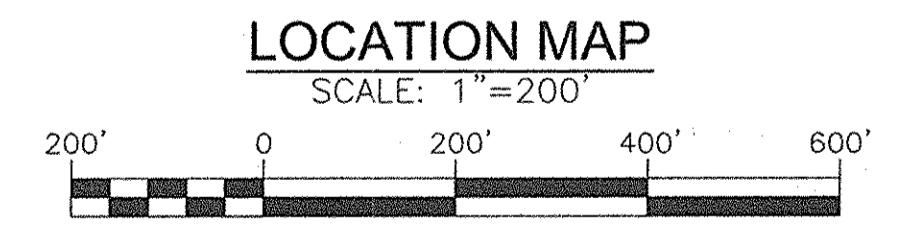
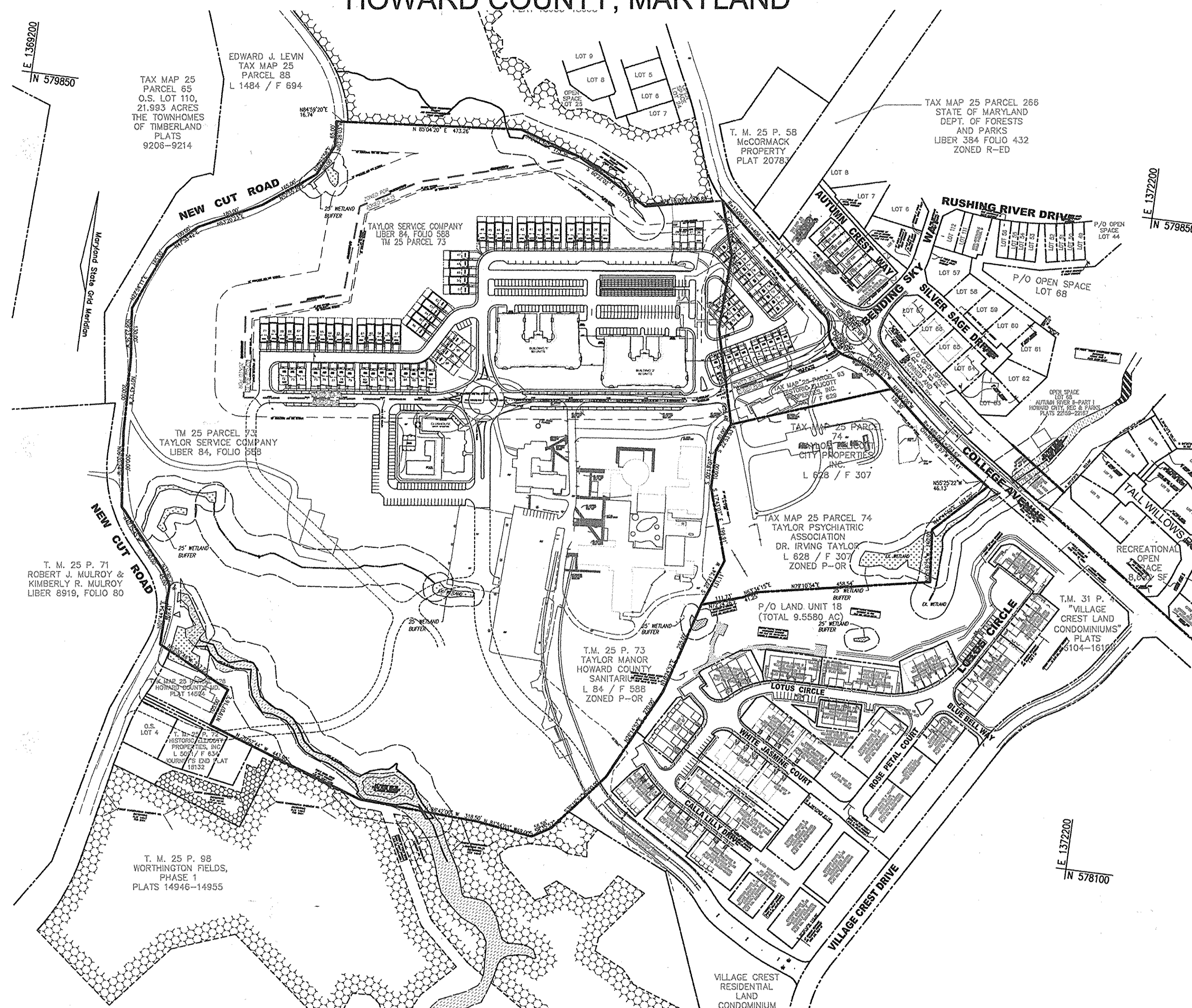
HOWARD COUNTY, MARYLAND

BENCHMARKS
 HOWARD COUNTY BENCHMARK 2411 (CONC. MON.)
 N 577298.65 E 1366075.16 ELEV. 437.12
 HOWARD COUNTY BENCHMARK 2413 (CONC. MON.)
 N 580648.90 E 1364974.47 ELEV. 463.77



VICINITY MAP
 SCALE: 1"=2000'
 ADC MAP COORDINATE: PG. 4815 G3

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 9
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LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN	4 OF 9
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ENVIRONMENTAL SITE DESIGN NARRATIVE:

- IN ACCORDANCE WITH THE DEVELOPMENT ENGINEERING DIVISION ECP CHECKLIST ITEM III.K.
- THE NATURAL AREAS ON THE TAYLOR PLACE PROJECT SITE ARE LOCATED TOWARD THE PROJECT BOUNDARIES. NO DISTURBANCE TO THE STREAM AND STREAM BUFFER, WETLAND AND WETLAND BUFFER OR THEIR WOODED RESOURCES IS PROPOSED UNLESS SHOWN HEREON.
 - NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED, PLEASE REFER TO THE PROPOSED GRADING SHEETS.
 - 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 FACILITIES AND BIO-SWALES AS WELL AS NON STRUCTURAL PRACTICES; PERMEABLE SURFACES, ROOFTOP DISCONNECTION.
 - SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED SEDIMENT TRAP (TO BE CONVERTED TO A MICRO-BIORETENTION FACILITY, 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.
 - STORMWATER MANAGEMENT FOR THE PROJECT HAS BEEN CONCEPTUALLY MET THROUGH THE USE OF MICRO-BIORETENTION FACILITIES, A BIORETENTION FACILITY, BIO-SWALES, PERMEABLE SURFACES, ROOFTOP DISCONNECTION. THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION".
- TARGET PE = 2.0" PROVIDED PE = 2.0"
 TARGET ESDv = 68,160 CUFT PROVIDED = 68,670 +/- CUFT
- AT THIS CONCEPT STAGE OF DEVELOPMENT, NO WAIVER PETITIONS FOR THE STORMWATER MANAGEMENT DESIGN ARE REQUIRED. ANTICIPATED WAIVER REQUESTS INCLUDE SPECIMAN TREE REMOVAL AND EXISTING STEEP SLOPE DISTURBANCE.

SITE ANALYSIS DATA CHART

A. TOTAL PROJECT AREA:	21.00 AC. +/-
B. AREA OF PLAN SUBMISSION:	21.00 AC. 16.72 AC. +/- (ZONED: R-A-15) 4.28 AC. +/- (ZONED: POR)
C. AREA OF WETLANDS AND BUFFERS:	3.55 AC. +/-
D. AREA OF FLOODPLAIN:	0.86 AC. +/-
E. AREA OF FOREST:	REFER TO FSD
F. AREA OF STEEP SLOPES (15% & GREATER):	1.06 AC.
G. ERODIBLE SOILS:	N/A
H. LIMIT OF DISTURBED AREA:	21.00 AC.
I. PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL SINGLE FAMILY ATTACHED (SFA) HOMES MULTI-FAMILY (APT)
J. GREEN OPEN AREA:	11.4 AC.
K. PROPOSED IMPERVIOUS AREA:	9.6 AC. +/-
L. PRESENT ZONING DESIGNATION:	R-A-15 / POR
M. OPEN SPACE REQUIRED:	25% X 16.72 ACRES +/- = 4.18 AC.
N. TOTAL NUMBER OF UNITS ALLOWED:	15.67 X 15/NET AC = 235
O. TOTAL NUMBER OF UNITS PROPOSED:	250
P. DPZ FILE REFERENCES:	N/A

NOTE:
 MAXIMUM SFA LOT COVERAGE FOR STRUCTURES:
 TYP. 20' x 40' = 800 ON MIN LOT SIZE OF 1,506 SF = 53%
 TYP. 24' x 50' END = 1,200 ON MIN LOT SIZE OF 2,165 SF = 55%
 TYP. 22' x 50' INTERIOR = 1,100 ON MIN LOT SIZE OF 1,892 SF = 58%
 SUBJECT TO CHANGE. 60% MAXIMUM PER SECTION 112.0.D.1.B.

DENSITY CALCULATIONS
 NUMBER OF PRINCIPAL DWELLING UNITS PER UNIT OF LAND AREA
 R-A-15 ZONE = 15.67 ACRES X 15 UNITS / NET AC = 235
 R-A-15 ZONE = 16.72 ACRES - 1.06 ACRE STEEP SLOPES = 15.67

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 6-15-16
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE 6-6-16

OWNER - PARCEL 93:
 HISTORIC ELLICOTT PROPERTIES INC
 4100 COLLEGE AVENUE
 P.O. BOX 396
 ELLICOTT CITY, MD 21041
 PHONE: 410-465-3500

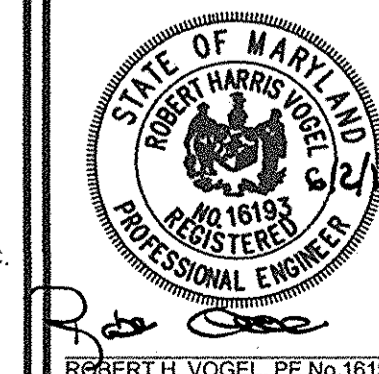
OWNER PARCEL 73:
 HOWARD COUNTY SANITARIUM CO INC.
 4100 COLLEGE AVENUE
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 ELLICOTT CITY, MD 21041
 PHONE: 410-465-3500

DEVELOPER
 TAYLOR PLACE DEVELOPMENT CORPORATION
 4100 COLLEGE AVENUE
 P.O. BOX 396
 ELLICOTT CITY, MD 21041
 PHONE: 410-465-3500

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 COVER SHEET
TAYLOR PLACE
 PHASE 1
 TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250
 TAX MAP: 25, BLOCK: 20 PARCEL: 73 & 93
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

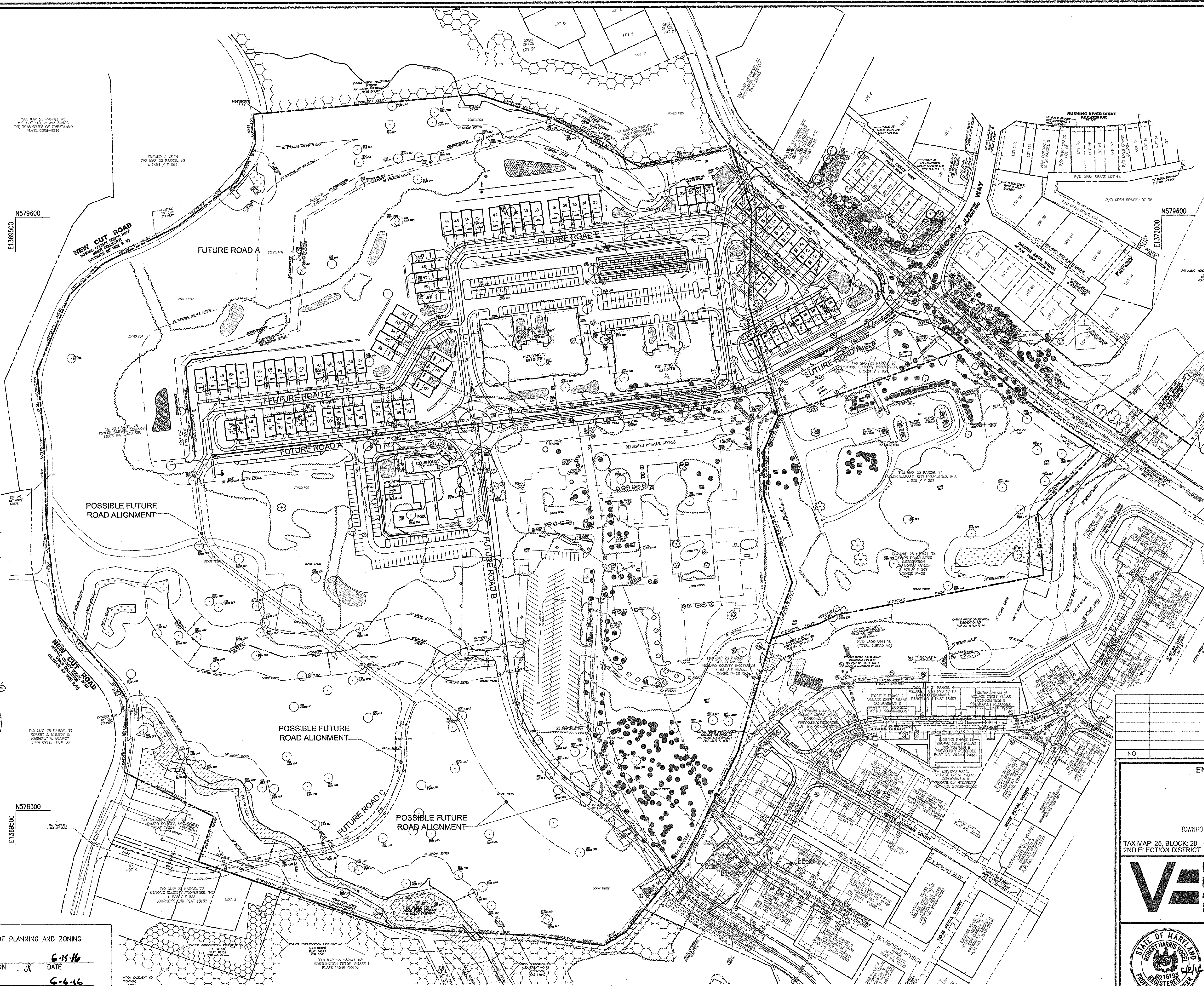
ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961



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: 09-27-2016

DESIGN BY: RVE/EDS
 DRAWN BY: RVE/MR
 CHECKED BY: RHR
 DATE: FEBRUARY 2016
 SCALE: AS SHOWN
 W.O. NO.: 08-59 2018121.00

COORDINATE TABLE		
NO.	NORTH	EAST
2	579106.0431	1371882.5907
3	578951.2625	1371729.4246
4	578811.8551	1371742.2926
5	578725.7897	1371291.9071
6	578707.4298	1371254.9683
7	578673.6591	1371148.4635
8	578429.0540	1371076.3989
9	578186.8966	1370956.9844
10	578032.2005	1370830.2205
11	578002.7211	1370781.9270
12	578023.7132	1370634.4132
13	578187.4558	1369897.0288
14	578286.6628	1369931.4233
15	578383.4295	1369736.9477
16	578542.7649	1369741.8114
17	578581.0619	1369718.1821
18	578733.6603	1369588.9242
19	578932.4571	1369566.8388
20	579132.3670	1369560.8363
21	579261.5586	1369546.3605
22	579431.9740	1369618.3575
23	579499.0232	1369692.5492
24	579579.7890	1369853.4121
25	579679.2617	1369985.0563
26	579760.5622	1370023.6597
27	579825.4432	1370019.7283
28	579749.4484	1371063.7914
29	579769.2888	1371056.8184
30	579316.6108	1371594.5461
31	579189.3710	1371748.3972
32	579638.1267	1371212.0235
33	579826.7347	1371310.7956
34	579618.6019	1371549.5435
35	579466.2814	1371416.7553
1030	579826.9052	1370036.4017
1044	579867.5825	1370507.9083
1045	579815.1202	1370673.1520
1046	579707.5799	1370862.2051
1100	578042.0480	1370316.4410



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 10' CONTOUR
	EXISTING 2' CONTOUR
	EXISTING TREE (FIELD LOCATED)
	EXISTING TREES (FIELD LOCATED)
	EXISTING FENCE
	CENTERLINE OF EXISTING STREAM
	PROPOSED STORMDRAIN INLET
	PROPOSED SIDEWALK
	PROPOSED TREE LINE
	PROPOSED CURB
	EX. WETLAND
	EX. WETLAND BUFFER
	MICRO BIORETENTION (MBR)
	BIORETENTION (BR)
	PERMEABLE SURFACE
	SAND FILTER

OWNER - PARCEL 93:
 HISTORIC ELLICOTT PROPERTIES INC
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OWNER PERCEL 73:
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NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 LAYOUT - OVERALL
TAYLOR PLACE
 PHASE 1
 TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250

TAX MAP 25, BLOCK 20 PARCEL: 73 & 93
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

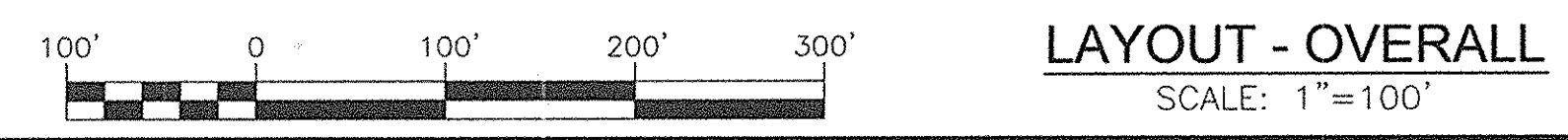
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	DRAWN BY: RVE / MR	
	CHECKED BY: RHV	
	DATE: FEBRUARY 2016	
	SCALE: AS SHOWN	
W.O. NO.: 2018121.00	2 SHEET OF 9	

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6-15-16

 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 6-6-16



NOTE: LOCATE STOCKPILE AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

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.

LEGEND:

<p>PROPERTY LINE</p> <p>RIGHT-OF-WAY LINE</p> <p>ADJACENT PROPERTY LINE</p> <p>EXISTING CURB AND GUTTER</p> <p>EXISTING UTILITY POLE</p> <p>EXISTING LIGHT POLE</p> <p>EXISTING MAILBOX</p> <p>EXISTING SIGN</p> <p>EXISTING SANITARY MANHOLE</p> <p>EXISTING SANITARY LINE</p> <p>EXISTING CLEANOUT</p> <p>EXISTING FIRE HYDRANT</p> <p>EXISTING WATER LINE</p> <p>EXISTING 10' CONTOUR</p> <p>EXISTING 2' CONTOUR</p> <p>SSP</p> <p>DRAINAGE DIVIDE</p> <p>EARTH DIKE</p> <p>PROPOSED STABILIZED CONSTRUCTION ENTRANCE</p> <p>LOD</p>	<p>SOILS</p> <p>EXISTING TREELINE (FIELD LOCATED)</p> <p>EXISTING TREES (FIELD LOCATED)</p> <p>EXISTING FENCE</p> <p>CENTERLINE OF EXISTING STREAM</p> <p>PROPOSED STORMDRAIN</p> <p>PROPOSED STORMDRAIN INLET</p> <p>PROPOSED SIDEWALK</p> <p>PROPOSED TREELINE</p> <p>PROPOSED CURB</p> <p>PROPOSED STREET LIGHT</p> <p>PROPOSED 10' CONTOUR</p> <p>PROPOSED 2' CONTOUR</p> <p>EX MODERATE SLOPES</p> <p>EX STEEP SLOPES</p> <p>EX WETLAND</p> <p>EX WETLAND BUFFER</p> <p>MICRO BIORETENTION (MBR) (M-4)</p> <p>BIO-SWALE (M-6)</p> <p>BIORETENTION (BR)</p> <p>PERMEABLE SURFACE (A-2)</p> <p>SAND FILTER</p>
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MAPPED SOILS TYPES - ELLICOTT CITY SE MAP #14

SYMBOL	NAME / DESCRIPTION	GROUP	HYDROLOGIC	PERCENT	K FACTOR	PERCENT	PERCENT	PERCENT
LcC	LEONARD - SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B	NO	NO	0.02	NO	NO	NO
LmB	LEONARD-MONTICELLO - SILT LOAMS, 3 TO 8 PERCENT SLOPES	B	NO	NO	0.02	NO	NO	NO
LfD	LEONARD-RELAY - GRAVELLY LOAMS, 15 TO 25 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO	YES
LfF	LEONARD-RELAY - GRAVELLY LOAMS, 25 TO 85 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO	YES
WcB	WACHUNG - SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	C	PARTIALLY PERVIOUS	NO	0.32	NO	NO	NO
WcB	WACHUNG - SILT LOAM, 3 TO 15 PERCENT SLOPES, STONY	D	YES	YES	0.28	NO	NO	NO

NOTE: IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL SECTION A-3, FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL, STEEP SLOPES ARE DEFINED AS THOSE WITH GRADIENTS OF 20 PERCENT OR MORE (USDA NRCS SOIL SURVEY MANUAL, OCTOBER, 1993). 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. CERTAIN PROJECTS (E.G. THOSE LOCATED IN THE CHESAPEAKE AND ATLANTIC COASTAL BAYS CRITICAL AREA) MAY BE SUBJECT TO A MORE RESTRICTIVE DEFINITION FOR STEEP SLOPES OR HIGHLY ERODIBLE SOILS.

NOTE:
 CONTRACTOR TO PROVIDE IMMEDIATE REPAIR OF ANY EARTH DIKES INTERRUPTED DURING CONSTRUCTION.

NOTE:
 EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

OWNER - PARCEL 93:
 HISTORIC ELLICOTT PROPERTIES INC
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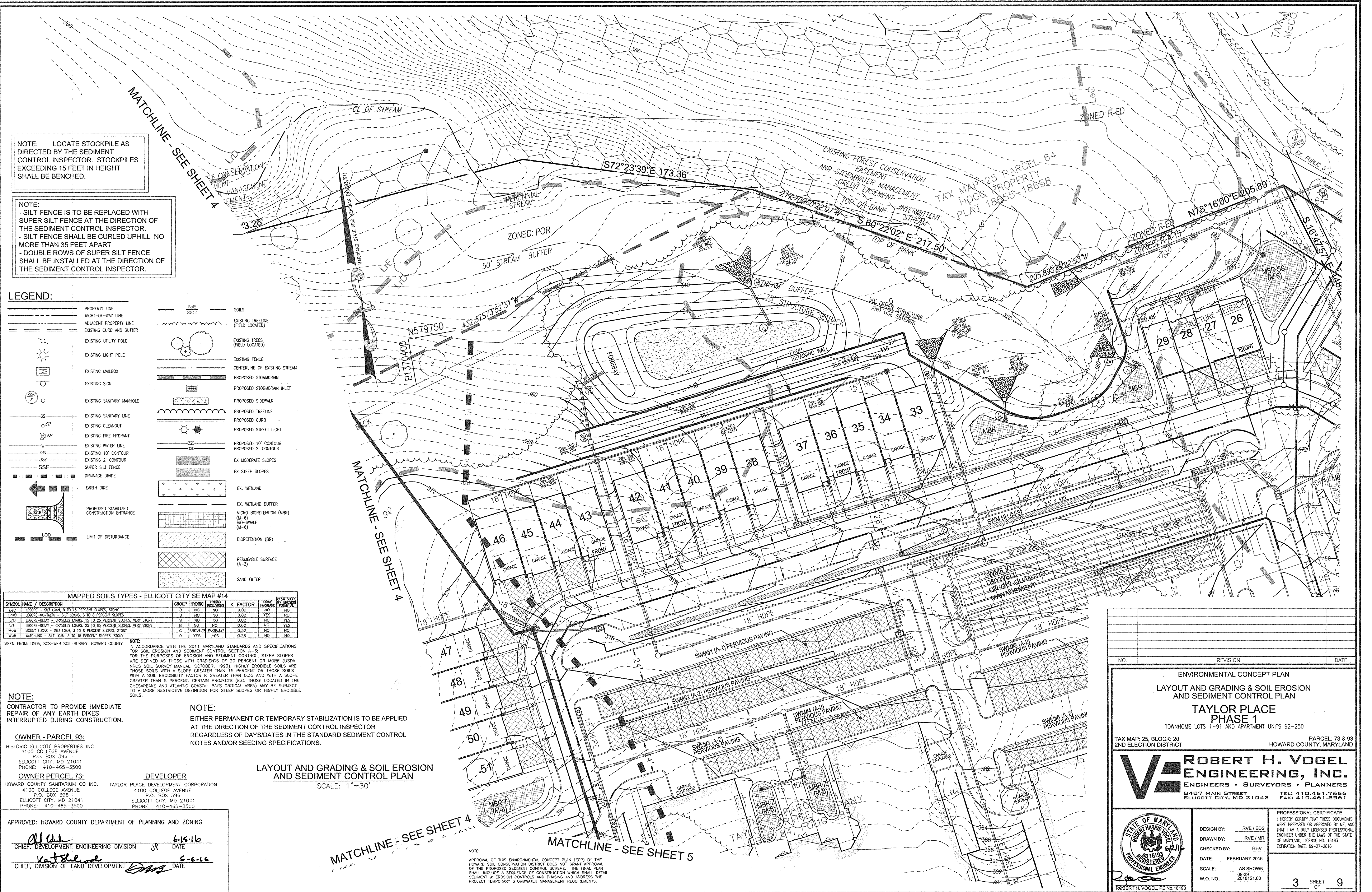
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR DATE 6-16-16

 CHIEF, DIVISION OF LAND DEVELOPMENT DMS DATE 6-16-16

LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN
 SCALE: 1"=30'

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.



NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN
TAYLOR PLACE PHASE 1
 TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250

TAX MAP: 25, BLOCK: 20
 2ND ELECTION DISTRICT

PARCEL: 73 & 93
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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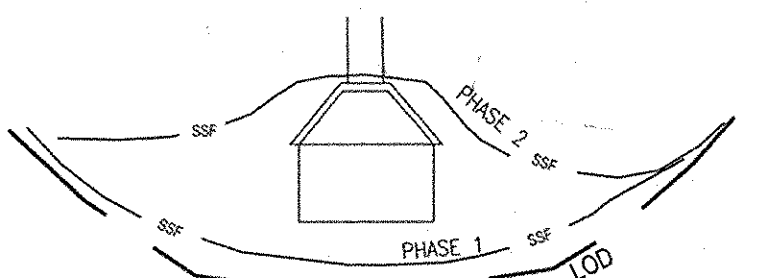
DESIGN BY: RVE / EDS
 DRAWN BY: RVE / MR
 CHECKED BY: RHV
 DATE: FEBRUARY 2016
 SCALE: AS SHOWN
 W.O. NO.: 09-28121.00

3 SHEET OF 9

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.

NOTE: LOCATE STOCKPILE AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

MAPPED SOILS TYPES - ELLICOTT CITY SE MAP #14									
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT SAND	PERCENT SILT	PERCENT CLAY	K FACTOR	PERCENT ROCK	PERCENT COBBLES
LAC	LEGORE - SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B	NO	NO	NO	NO	0.02	NO	NO
LMB	LEGORE-MONTELEONE - SILT LOAMS, 3 TO 8 PERCENT SLOPES	B	NO	NO	NO	NO	0.02	YES	NO
LLO	LEGORE-RELAY - GRAVELLY LOAMS, 15 TO 25 PERCENT SLOPES, VERY STONY	B	NO	NO	NO	NO	0.02	NO	NO
LRF	LEGORE-RELAY - GRAVELLY LOAMS, 25 TO 65 PERCENT SLOPES, VERY STONY	B	NO	NO	NO	NO	0.02	NO	NO
MAR	MOUNT LIZARD - SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	C	POTENTIALLY	POTENTIALLY	POTENTIALLY	POTENTIALLY	0.32	NO	NO
WCB	WATCHDOG - SILT LOAM, 3 TO 15 PERCENT SLOPES, STONY	D	YES	YES	YES	YES	0.28	NO	NO



STORM DRAIN OUTFALL SILT FENCE PHASING DETAIL

PHASE 1 SILT FENCE LOCATION SHALL BE REMOVED AND RELOCATED ABOVE THE OUTFALL ONCE OUTFALL INSTALLATION IS COMPLETE. AREA STABILIZED AND PERMISSION HAS BEEN OBTAINED BY THE SEDIMENT CONTROL INSPECTOR.

LEGEND:

PROPERTY LINE	EXISTING TREELINE (FIELD LOCATED)
RIGHT-OF-WAY LINE	EXISTING TREES (FIELD LOCATED)
ADJACENT PROPERTY LINE	EXISTING FENCE
EXISTING CURB AND GUTTER	CENTERLINE OF EXISTING STREAM
EXISTING UTILITY POLE	PROPOSED STORMDRAIN
EXISTING LIGHT POLE	PROPOSED STORMDRAIN INLET
EXISTING MAILBOX	PROPOSED SIDEWALK
EXISTING SIGN	PROPOSED TREELINE
EXISTING SANITARY MANHOLE	PROPOSED CURB
EXISTING SANITARY LINE	PROPOSED STREET LIGHT
EXISTING CLEANOUT	PROPOSED 10' CONTOUR
EXISTING FIRE HYDRANT	PROPOSED 2' CONTOUR
EXISTING WATER LINE	EX MODERATE SLOPES
EXISTING 10' CONTOUR	EX STEEP SLOPES
EXISTING 2' CONTOUR	SUPER SILT FENCE
EX. WETLAND	DRAINAGE DIVIDE
EX. WETLAND BUFFER	EARTH DIKE
MICRO BIORETENTION (MBR) (M-4)	LIMIT OF DISTURBANCE
BIO-SWALE (M-8)	
BIORETENTION (BR)	
PERMEABLE SURFACE (A-2)	
SAND FILTER	
DRYWELL (M-3)	

OWNER - PARCEL 93:
 HISTORIC ELLICOTT PROPERTIES INC
 4100 COLLEGE AVENUE
 P.O. BOX 396
 ELLICOTT CITY, MD 21041
 PHONE: 410-465-3500

OWNER PARCEL 73:
 HOWARD COUNTY SANITARIUM CO INC.
 4100 COLLEGE AVENUE
 P.O. BOX 396
 ELLICOTT CITY, MD 21041
 PHONE: 410-465-3500

DEVELOPER
 TAYLOR PLACE DEVELOPMENT CORPORATION
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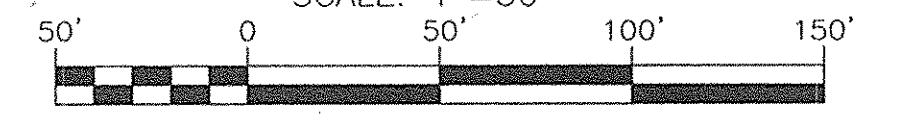
NOTE:
 EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

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

NOTE:
 APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 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.

LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=50'



NO.	REVISION	DATE
ENVIRONMENTAL CONCEPT PLAN LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN TAYLOR PLACE PHASE 1 TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250		
TAX MAP: 25, BLOCK: 20 2ND ELECTION DISTRICT	PARCEL: 73 & 93 HOWARD COUNTY, MARYLAND	
ROBERT H. VOGEL, INC. ENGINEERS • SURVEYORS • PLANNERS 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961		
	DESIGN BY: RVE / EDS DRAWN BY: RVE / MR CHECKED BY: RHY DATE: FEBRUARY 2016 SCALE: AS SHOWN W.O. NO.: 2018121.00	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: 09-27-2016
4		9

MAPPED SOILS TYPES - ELLICOTT CITY SE MAP #14						
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRO	PERCENT SAND	K FACTOR	PERCENT SILT
L6c	LEGORE - SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B	NO	NO	0.02	NO
L6b	LEGORE-MONTANO - SILT LOAMS, 3 TO 8 PERCENT SLOPES	B	NO	NO	0.02	NO
L6d	LEGORE-RELY - GRAVELLY LOAMS, 15 TO 25 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO
L7f	LEGORE-RELY - GRAVELLY LOAMS, 25 TO 65 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO
M6b	MOUNT LUCAS - SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	C	PARTIALLY	PARTIALLY	0.32	NO
W6b	WATSON - SILT LOAM, 3 TO 15 PERCENT SLOPES, STONY	D	YES	YES	0.28	NO

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

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 WATER LINE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SUPER SILT FENCE
- DRAINAGE DIVIDE
- EARTH DIKE
- EX. WETLAND
- EX. WETLAND BUFFER

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.

NOTE: LOCATE STOCKPILE AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

MATCHLINE - SEE SHEET 3

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 ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.

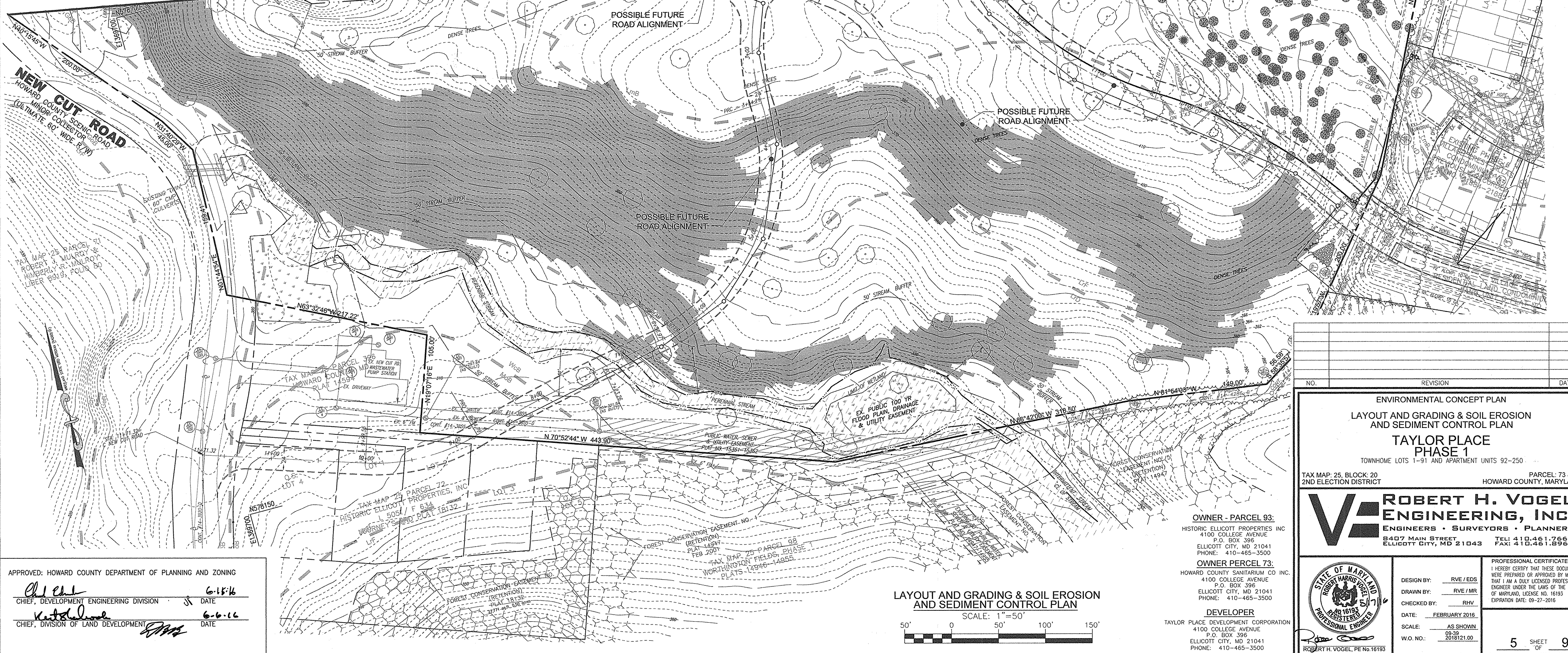
NOTE:

EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

NOTE: IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, SECTION A-3, FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL, STEEP SLOPES ARE DEFINED AS THOSE WITH GRADIENTS OF 20 PERCENT OR MORE (USDA NRCS SOIL SURVEY MANUAL, OCTOBER, 1993). HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT. CERTAIN PROJECTS (E.G. THOSE LOCATED IN THE CHESAPEAKE AND ATLANTIC COASTAL BAYS CRITICAL AREA) MAY BE SUBJECT TO A MORE RESTRICTIVE DEFINITION FOR STEEP SLOPES OR HIGHLY ERODIBLE SOILS.

SOILS

- EXISTING TREELINE (FIELD LOCATED)
- EXISTING TREES (FIELD LOCATED)
- MICRO BIORETENTION (MBR) (M-6) BIO-SWALE (M-6)
- BIORETENTION (BR)
- PERMEABLE SURFACE (A-2)



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6-15-16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6-6-16
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=50'

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 LAYOUT AND GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN
TAYLOR PLACE PHASE 1
 TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250

TAX MAP: 25, BLOCK: 20
 2ND ELECTION DISTRICT

PARCEL: 73 & 93
 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

OWNER - PARCEL 93:
 HISTORIC ELLICOTT PROPERTIES INC
 4100 COLLEGE AVENUE
 P.O. BOX 396
 ELLICOTT CITY, MD 21041
 PHONE: 410-465-3500

OWNER PARCEL 73:
 HOWARD COUNTY SANITARIUM CO INC.
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DEVELOPER
 TAYLOR PLACE DEVELOPMENT CORPORATION
 4100 COLLEGE AVENUE
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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: 09-27-2016

DESIGN BY: RVE/EDS
 DRAWN BY: RVE/MR
 CHECKED BY: RHV
 DATE: FEBRUARY 2016
 SCALE: AS SHOWN
 W.O. NO.: 2018121.00

5 SHEET OF 9

UNDERGROUND SWMF #1

Q10 / Q100 QUANTITY
STORAGE BEHIND PARKING
ESDv STONE RESERVOIR BENEATH PIPE INVERT

SWMF SAND FILTER #2

HAZARD CLASS A SAND FILTER ESDv
Q10 / Q100 QUANTITY

THE PROJECT IS LOCATED IN AN UPSTREAM DRAINAGE AREA OF THE TIBER BRANCH ABOVE THE PATAPSCO RIVER DRAINAGE BASIN. PER THE HOWARD COUNTY DESIGN MANUAL VOLUME 1 SECTION 5.2.1.A 10 AND 100 YEAR PEAK MANAGEMENT IS REQUIRED. A COMBINATION ESDv / QUALITY SAND FILTER AND QUANTITY CONTROL FACILITY IS PROPOSED.

SWMF #2 SAND FILTER Q10/Q100 QUANTITY MANAGEMENT

LEGEND:

- | | |
|--|---|
| <ul style="list-style-type: none"> 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 10' CONTOUR EXISTING 2' CONTOUR EX. WETLAND EX. WETLAND BUFFER MICRO BIOTRETION (MBR) (M-6) BIOTRETION (BR) PERMEABLE SURFACE (A-2) SAND FILTER | <ul style="list-style-type: none"> SOILS EXISTING TREELINE (FIELD LOCATED) EXISTING TREES (FIELD LOCATED) EXISTING FENCE CENTERLINE OF EXISTING STREAM PROPOSED STORMDRAIN PROPOSED STORMDRAIN INLET PROPOSED SIDEWALK PROPOSED TREELINE PROPOSED CURB PROPOSED STREET LIGHT PROPOSED 10' CONTOUR PROPOSED 2' CONTOUR EX MODERATE SLOPES EX STEEP SLOPES DRAINAGE AREA LABEL DRAINAGE DIVIDE |
|--|---|

OWNER - PARCEL 93:

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4100 COLLEGE AVENUE
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ELLCOTT CITY, MD 21041
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OWNER PERCEL 73:

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DEVELOPER

TAYLOR PLACE DEVELOPMENT CORPORATION
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P.O. BOX 396
ELLCOTT CITY, MD 21041
PHONE: 410-465-3500

MAPPED SOILS TYPES - ELLICOTT CITY SE MAP #14									
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT ORGANIC	K FACTOR	PERCENT SAND	PERCENT SILT	PERCENT CLAY	PERCENT STONY
LcB	LEGGERS - SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B	NO	NO	0.02	NO	NO	NO	NO
LmB	LEGGERS - MONTVALLO - SILT LOAMS, 3 TO 8 PERCENT SLOPES	B	NO	NO	0.02	YES	NO	NO	NO
LcD	LEGGERS - RELAY - GRAVELLY LOAMS, 15 TO 25 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO	NO	NO
LmD	LEGGERS - RELAY - GRAVELLY LOAMS, 35 TO 65 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO	NO	NO
MmB	MOUNT LUCAS - SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	C	PARTIALLY	PARTIALLY	0.32	NO	NO	NO	NO
WcB	WACHUNG - SILT LOAM, 3 TO 15 PERCENT SLOPES, STONY	D	YES	YES	0.28	NO	NO	NO	NO

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

NOTE: IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL SECTION A-3, FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL, STEEP SLOPES ARE DEFINED AS THOSE WITH GRADIENTS OF 20 PERCENT OR MORE (USDA NRCS SOIL SURVEY MANUAL, OCTOBER, 1993). 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. CERTAIN PROJECTS (E.G. THOSE LOCATED IN THE CHESAPEAKE AND ATLANTIC COASTAL BAYS CRITICAL AREA) MAY BE SUBJECT TO A MORE RESTRICTIVE DEFINITION FOR STEEP SLOPES OR HIGHLY ERODIBLE SOILS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6-15-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
[Signature] 6-6-16
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

STORMWATER MANAGEMENT DRAINAGE AREA MAP

SCALE: 1"=50'



NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT
DRAINAGE AREA MAP
TAYLOR PLACE
PHASE 1**

TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250
TAX MAP: 25, BLOCK: 20
2ND ELECTION DISTRICT
PARCEL: 73 & 93
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410-461-7666
FAX: 410-461-8961

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: 09-27-2016

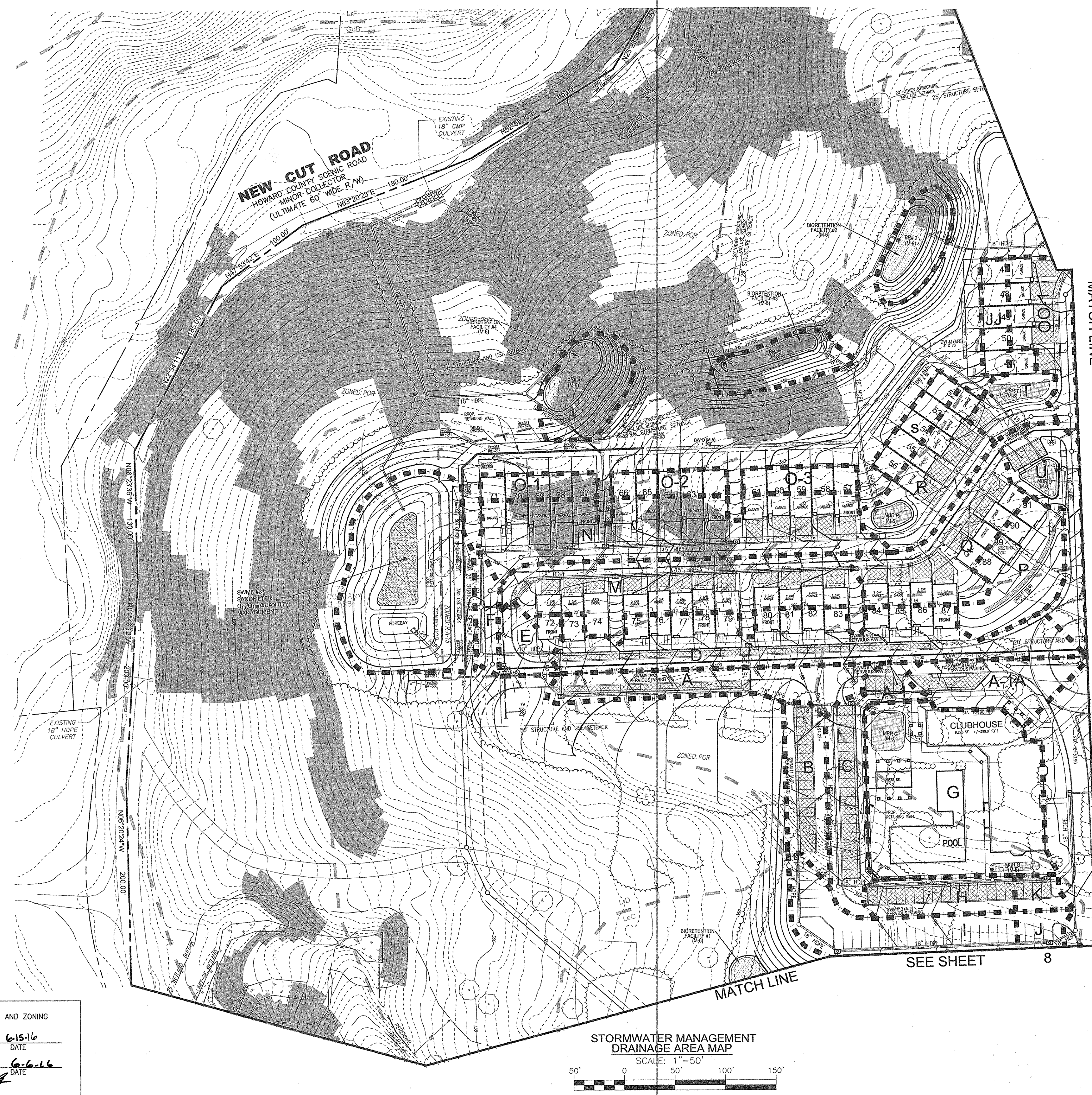
DESIGN BY: RVE / EDS
DRAWN BY: RVE / MR
CHECKED BY: RHV
DATE: FEBRUARY 2016
SCALE: AS SHOWN
W.O. NO.: 2016121.00

6 SHEET OF 9

SWMF SAND FILTER #3

HAZARD CLASS A SAND FILTER ESDv / Q10 / Q100 QUANTITY

THE PROJECT IS LOCATED IN AN UPSTREAM DRAINAGE AREA OF THE TIBER BRANCH ABOVE THE PATAPSCO RIVER DRAINAGE BASIN. PER THE HOWARD COUNTY DESIGN MANUAL VOLUME 1 SECTION 5.2.1.A 10 AND 100 YEAR PEAK MANAGEMENT IS REQUIRED. A COMBINATION ESDv / QUALITY SAND FILTER AND QUANTITY CONTROL FACILITY IS PROPOSED.



MAPPED SOILS TYPES - ELLICOTT CITY SE MAP #14

SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT SLOPES	K FACTOR	ERODIBLE	CRITICAL SLOPE
LcC LEGGERS - SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B	NO	NO	0.02	NO	NO
LvMB LEGGERS-MIDLAND - SILT LOAMS, 3 TO 8 PERCENT SLOPES	B	NO	NO	0.02	NO	NO
LvD LEGGERS-DELAWARE - GROWELLY LOAMS, 15 TO 25 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO
LvF LEGGERS-DELAWARE - GROWELLY LOAMS, 25 TO 65 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO
MdSB MOUNT LEBANON - SILT LOAM, 3 TO 6 PERCENT SLOPES, STONY	C	PARTIALLY	PARTIALLY	0.32	NO	NO
WcB WOODBRIDGE - SILT LOAM, 3 TO 15 PERCENT SLOPES, STONY	D	YES	YES	0.28	NO	NO

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

NOTE: IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, SECTION A-3: FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL, STEEP SLOPES ARE DEFINED AS THOSE WITH GRADIENTS OF 20 PERCENT OR MORE (USDA NRCS SOIL SURVEY MANUAL, OCTOBER, 1993). 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. CERTAIN PROJECTS (E.G. THOSE LOCATED IN THE CHESAPEAKE AND ATLANTIC COASTAL BAYS CRITICAL AREA) MAY BE SUBJECT TO A MORE RESTRICTIVE DEFINITION FOR STEEP SLOPES OR HIGHLY ERODIBLE SOILS.

LEGEND:

<ul style="list-style-type: none"> 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 10' CONTOUR EXISTING 2' CONTOUR EX. WETLAND EX. WETLAND BUFFER MICRO BIORETENTION (MBR) (M-9) BOX WALK (M-8) BIORETENTION (BR) PERMEABLE SURFACE (A-2) SAND FILTER DRYWELL (M-5) 	<ul style="list-style-type: none"> SOILS EXISTING TREELINE (FIELD LOCATED) EXISTING TREES (FIELD LOCATED) EXISTING FENCE CENTERLINE OF EXISTING STREAM PROPOSED STORMDRAIN PROPOSED STORMDRAIN INLET PROPOSED SIDEWALK PROPOSED TREETLINE PROPOSED CURB PROPOSED STREET LIGHT PROPOSED 10' CONTOUR PROPOSED 2' CONTOUR EX MODERATE SLOPES EX STEEP SLOPES DRAINAGE AREA LABEL DRAINAGE DIVIDE
--	--

MATCH LINE
SEE SHEET

OWNER - PARCEL 93:
HISTORIC ELLICOTT PROPERTIES INC
4100 COLLEGE AVENUE
P.O. BOX 396
ELLICOTT CITY, MD 21041
PHONE: 410-465-3500

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DEVELOPER
TAYLOR PLACE DEVELOPMENT CORPORATION
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P.O. BOX 396
ELLICOTT CITY, MD 21041
PHONE: 410-465-3500

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT
DRAINAGE AREA MAP
**TAYLOR PLACE
PHASE 1**
TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250

TAX MAP: 25, BLOCK 20
2ND ELECTION DISTRICT

PARCEL: 73 & 93
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL
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EXPIRATION DATE: 09-27-2016

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DRAWN BY: RVE / MR
CHECKED BY: RHV
DATE: FEBRUARY 2016
SCALE: AS SHOWN
W.O. NO.: 09-38 / 2018121.00

ROBERT H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6-15-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6-6-16
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

STORMWATER MANAGEMENT
DRAINAGE AREA MAP
SCALE: 1"=50'

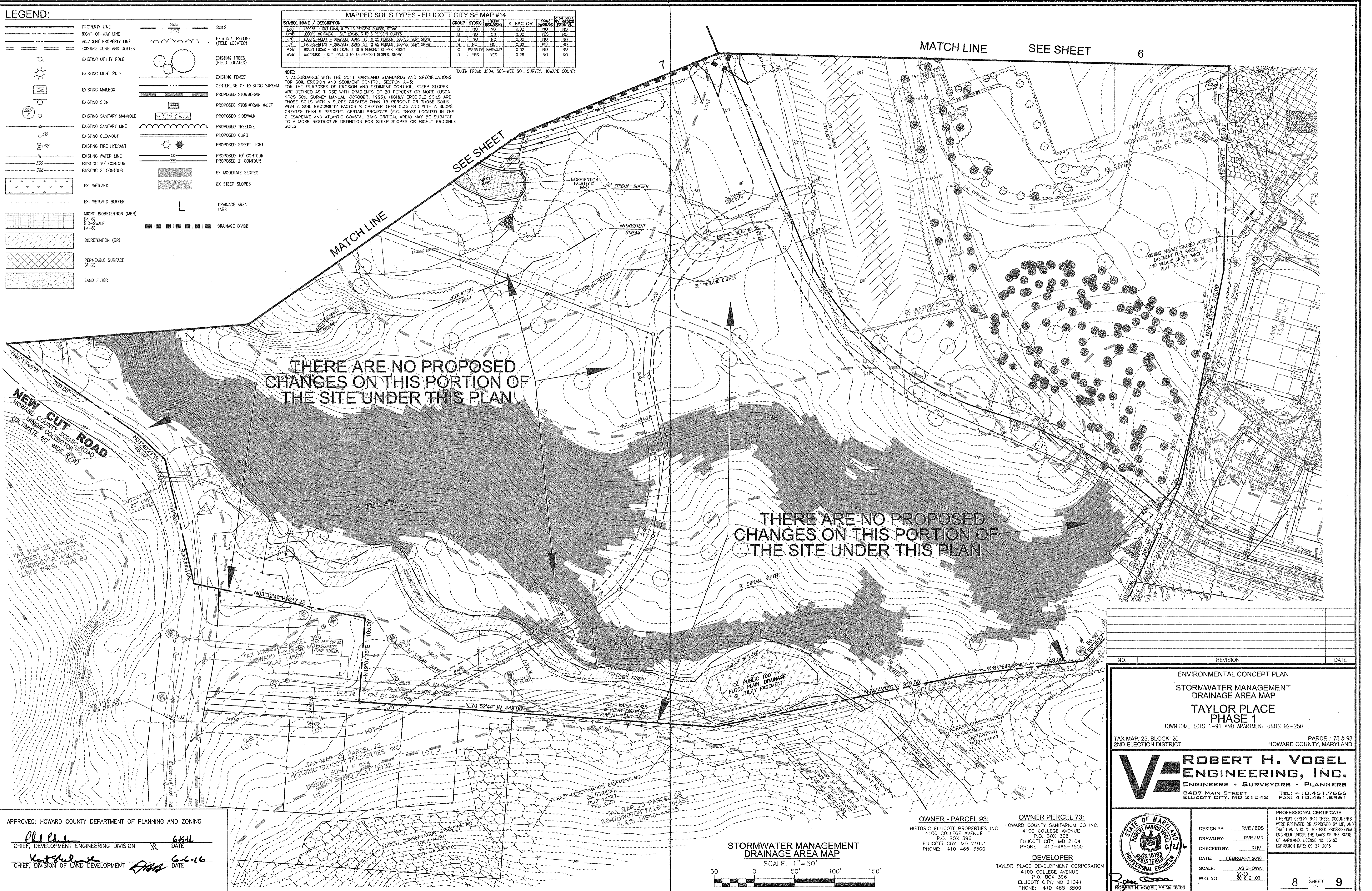
LEGEND:

	PROPERTY LINE		SOILS
	RIGHT-OF-WAY LINE		EXISTING TREELINE (FIELD LOCATED)
	ADJACENT PROPERTY LINE		EXISTING TREES (FIELD LOCATED)
	EXISTING CURB AND GUTTER		EXISTING FENCE
	EXISTING UTILITY POLE		CENTERLINE OF EXISTING STREAM
	EXISTING LIGHT POLE		PROPOSED STORMDRAIN
	EXISTING MAILBOX		PROPOSED STORMDRAIN INLET
	EXISTING SIGN		PROPOSED SIDEWALK
	EXISTING SANITARY MANHOLE		PROPOSED TREELINE
	EXISTING SANITARY LINE		PROPOSED CURB
	EXISTING CLEANOUT		PROPOSED STREET LIGHT
	EXISTING FIRE HYDRANT		PROPOSED 10' CONTOUR
	EXISTING WATER LINE		PROPOSED 2' CONTOUR
	PROPOSED 10' CONTOUR		EX MODERATE SLOPES
	PROPOSED 2' CONTOUR		EX STEEP SLOPES
	EX WETLAND		DRAINAGE AREA LABEL
	EX WETLAND BUFFER		DRAINAGE DIVIDE
	MICRO BIORETENTION (M-5)		
	BIO-RETENTION (M-8)		
	BIORETENTION (BR)		
	PERMEABLE SURFACE (A-2)		
	SAND FILTER		

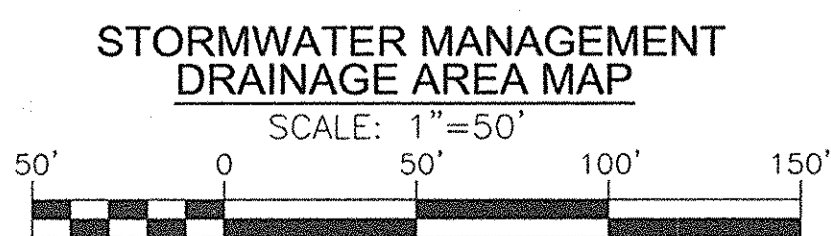
MAPPED SOILS TYPES - ELLICOTT CITY SE MAP #14

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	MOISTURE	K FACTOR	PERM	EROD
L0C	LEGORE - SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B	NO	NO	0.02	NO	NO
L0B	LEGORE-MONTOLO - SILT LOAMS, 3 TO 8 PERCENT SLOPES	B	NO	NO	0.02	NO	NO
L0D	LEGORE-RELAY - GRAVELLY LOAMS, 15 TO 25 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO
L0F	LEGORE-RELAY - GRAVELLY LOAMS, 25 TO 45 PERCENT SLOPES, VERY STONY	B	NO	NO	0.02	NO	NO
M0B	MOUNT LUCAS - SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	C	PARTIALLY	PARTIALLY	0.32	NO	NO
W0B	WATCHUNG - SILT LOAM, 3 TO 15 PERCENT SLOPES, STONY	D	YES	YES	0.28	NO	NO

NOTE:
 IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, SECTION 4-3, FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL, STEEP SLOPES ARE DEFINED AS THOSE WITH GRADIENTS OF 20 PERCENT OR MORE (USDA NRCS SOIL SURVEY MANUAL, OCTOBER, 1993). 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. CERTAIN PROJECTS (E.G. THOSE LOCATED IN THE CHESAPEAKE AND ATLANTIC COASTAL BAYS CRITICAL AREA) MAY BE SUBJECT TO A MORE RESTRICTIVE DEFINITION FOR STEEP SLOPES OR HIGHLY ERODIBLE SOILS.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6-15-16
 [Signature] CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 6-2-16



OWNER - PARCEL 93:
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OWNER PERCEL 73:
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 TAYLOR PLACE DEVELOPMENT CORPORATION
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NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 STORMWATER MANAGEMENT DRAINAGE AREA MAP
TAYLOR PLACE PHASE 1
 TOWNHOME LOTS 1-91 AND APARTMENT UNITS 92-250

TAX MAP: 25, BLOCK: 20, 2ND ELECTION DISTRICT
 PARCEL: 73 & 93
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
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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: 09-27-2016

DESIGN BY: RVE/EDS
 DRAWN BY: RVE/MR
 CHECKED BY: RHV
 DATE: FEBRUARY 2016
 SCALE: AS SHOWN
 W.O. NO.: 08-28-2016121.00

8 SHEET OF 9

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 PROVIDE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BARNYARD GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOxious WEEDS AS SPECIFIED UNDER COWAR 15.01.01.02.

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 TOP 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 SPECIFIC TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURAL 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 FACILITY AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TRUCKS, USE OF EQUIPMENT WITH NARROW TRACKS OR MARSH TIRES, RUBBER TIRES WITH LARGE LOGS, 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, FLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE 12" INCH COMPACTION ZONE. SUBSTITUTE METHODS SHOULD 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 COMPACTION 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 SURROUNDINGS TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. FINE MULCH AND WOOD CHIPS WILL FLOW 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 1/3H 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, DEERES, OR AT A MINIMUM, IMPROVES 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.

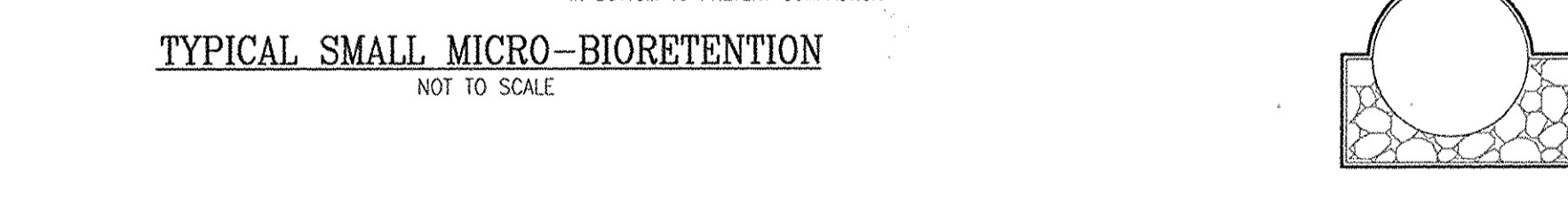
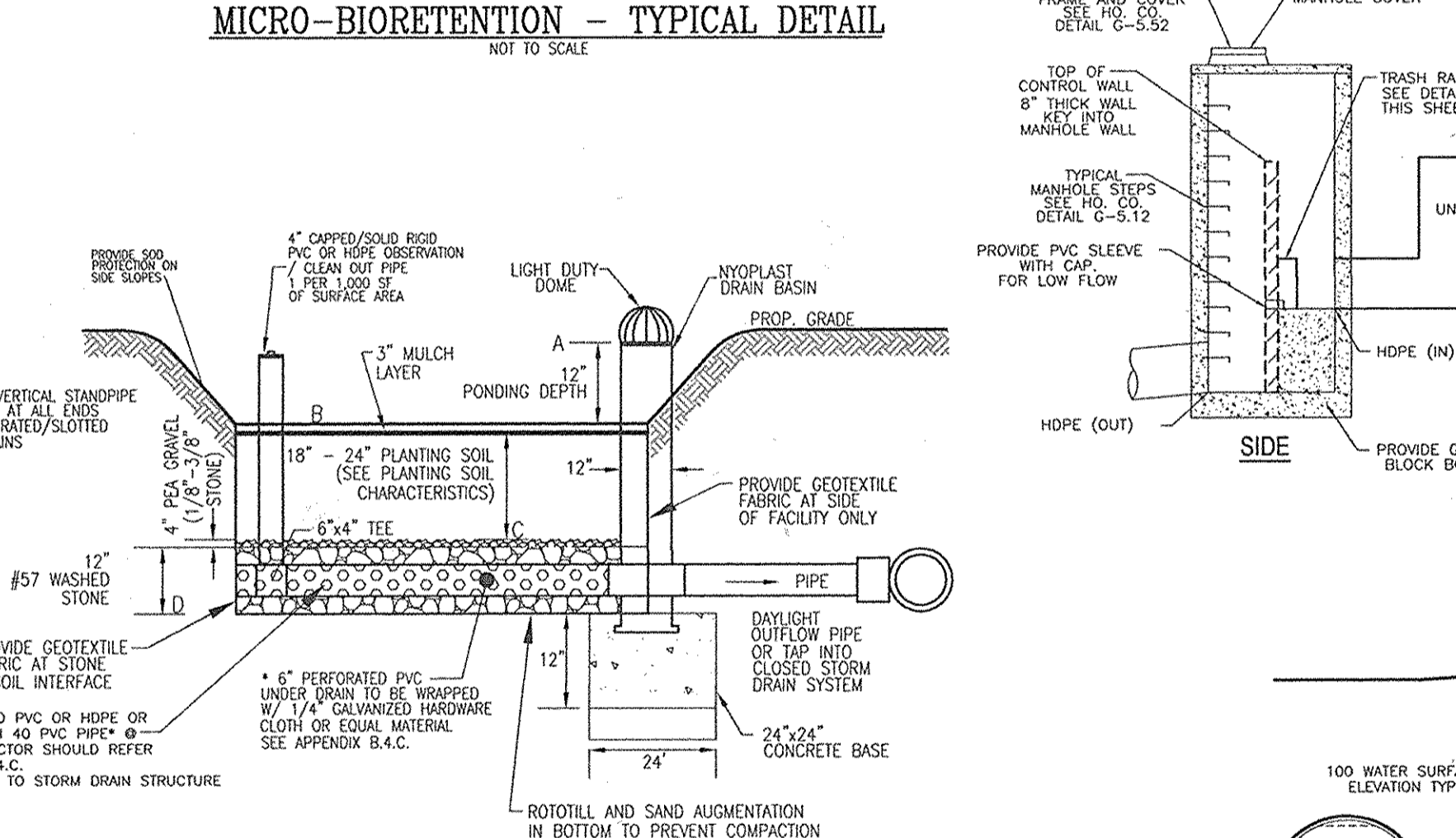
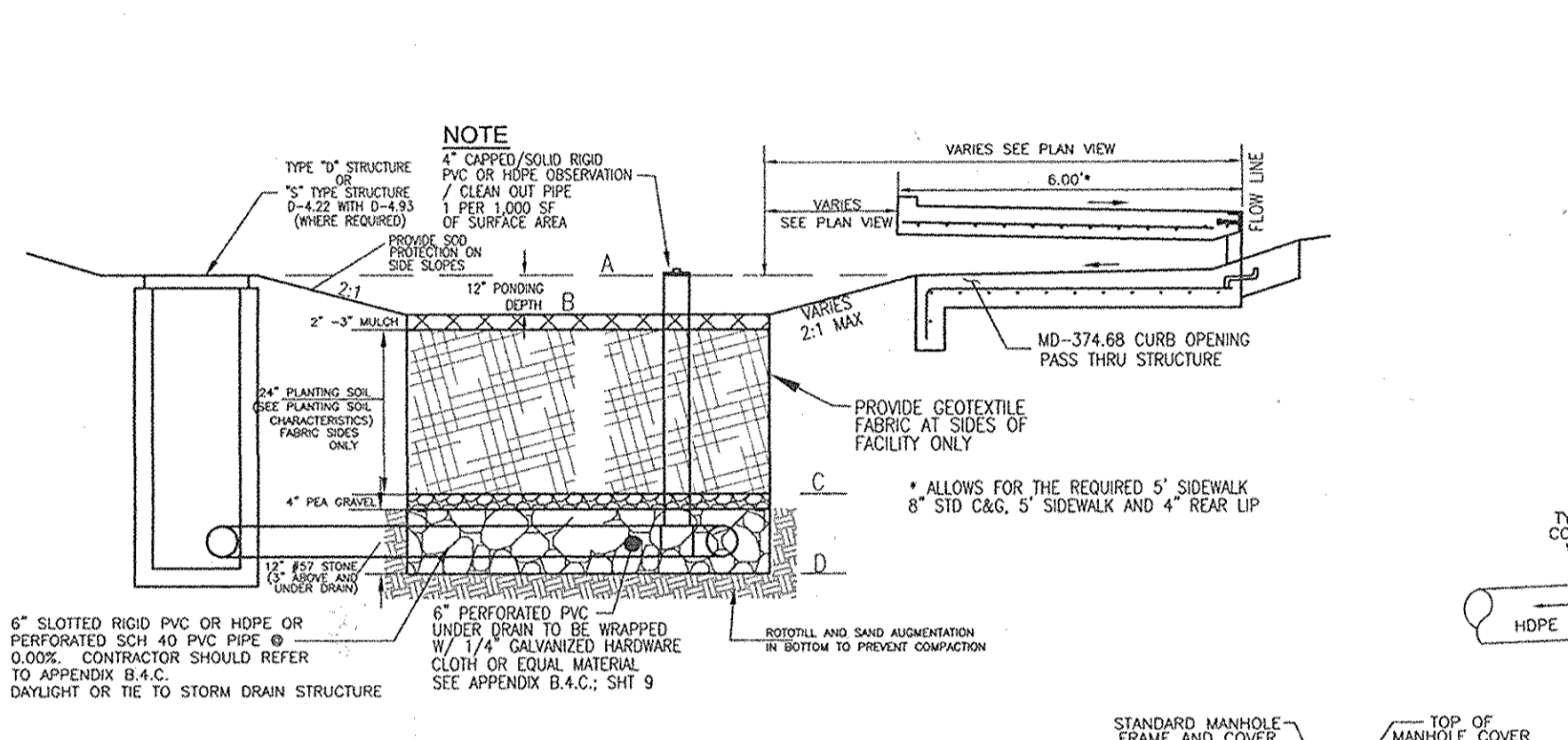
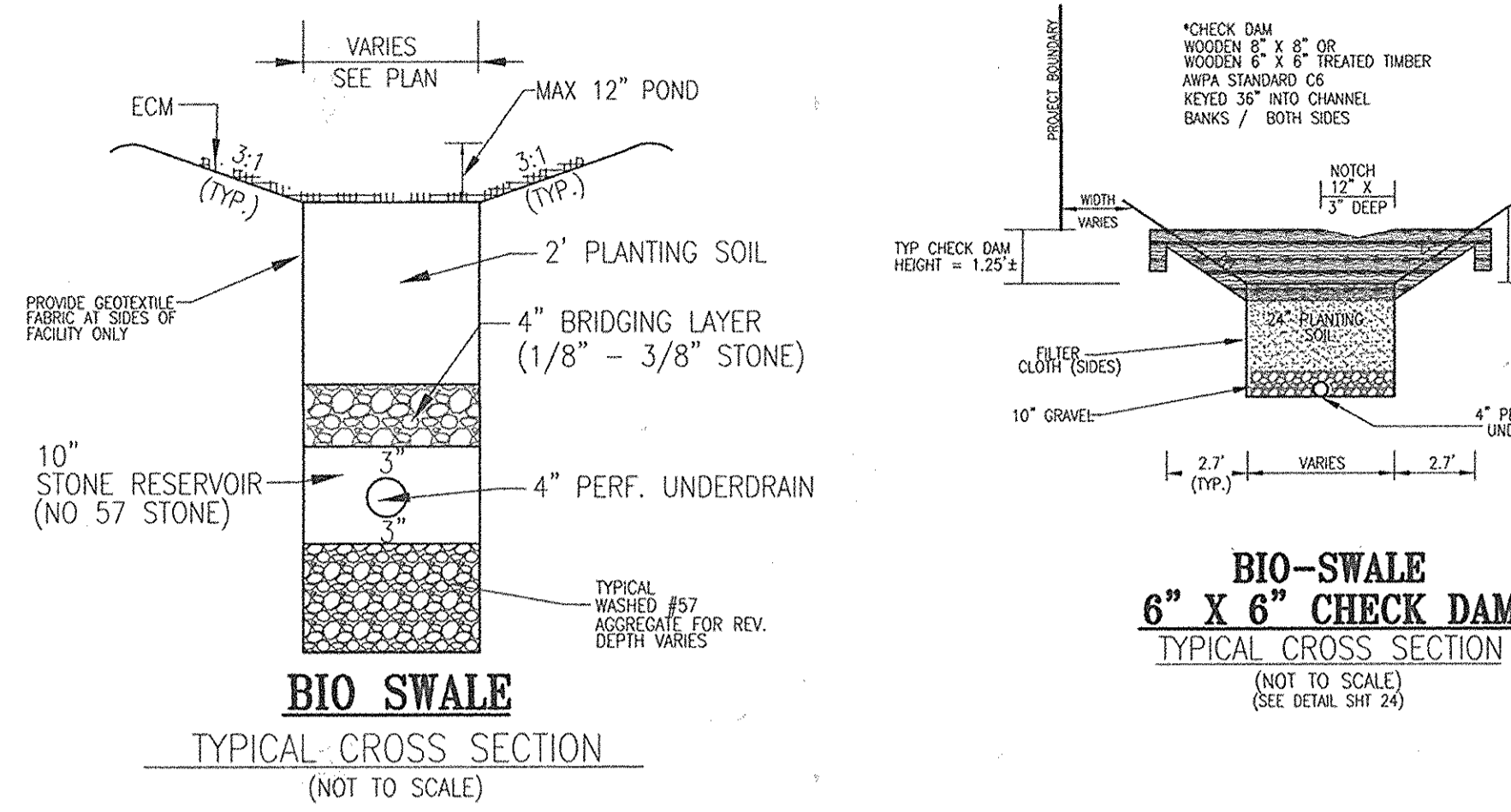
6. UNDERDRAINS
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 1/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER FOOT. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 44) GALVANIZED HARDWARE CLOTH.
• THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM SLOPE OF 1/8".
• A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE UNDERDRAIN SYSTEM.
• A 4" LAYER OF PEA GRAVEL (1/2" 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.

OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORRETENTION (M-6) / BIO-SWALE AREAS (M-8)

- 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.
- 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 SPECIES AND WIRES.
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
- SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



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

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)	n/a	
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	AASHTO M-43	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)		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 pipe; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'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 309 R.09; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil pressure); and analysis of potential cracking
Sand	AASHTO M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Grystones (AASHTO #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "took dust" can be used for sand.

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:

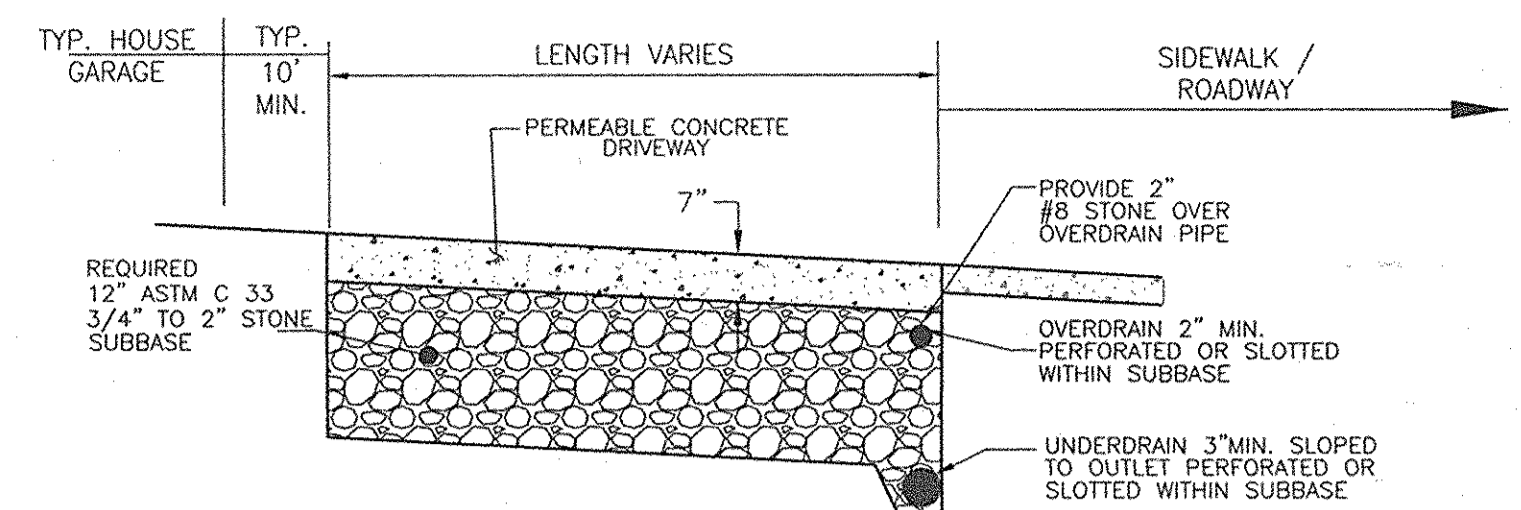
- REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:
- DURING EXCAVATION TO SUB GRADE.
 - DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S).
 - DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
 - UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT 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 REMOVE 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 ABOVE 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 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.



NOTE:
1. PAVEMENT CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER
2. UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DAYLIGHT TO THE CURB, STORM DRAIN, INTO A BIO-RETENTION FACILITY OR OTHER ACCEPTABLE OUTFALL
3. OVERDRAIN SHALL COMBINE WITH UNDERDRAIN OR DAYLIGHT AS DETAILED FOR UNDERDRAIN, SEE NOTE 2.

DETAIL - PERMEABLE CONCRETE DRIVEWAY - 5% OR LESS

NOT TO SCALE
ALL PERMEABLE CONCRETE THICKNESS, MIX AND SUB-BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER ON-SITE.

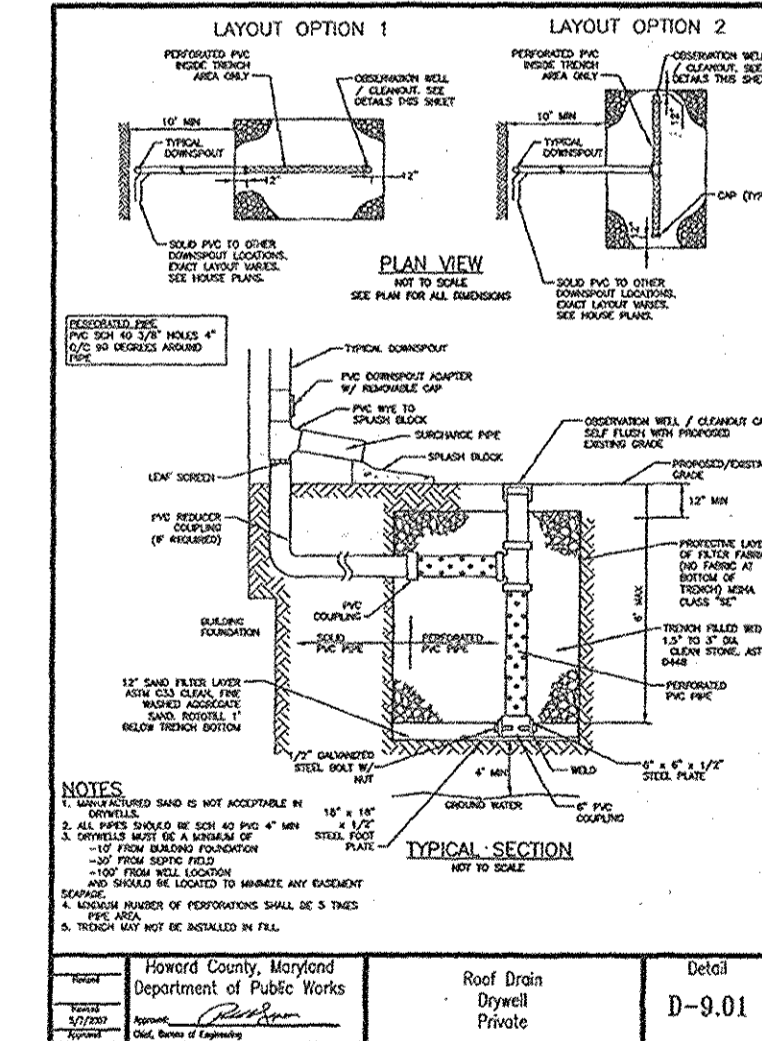
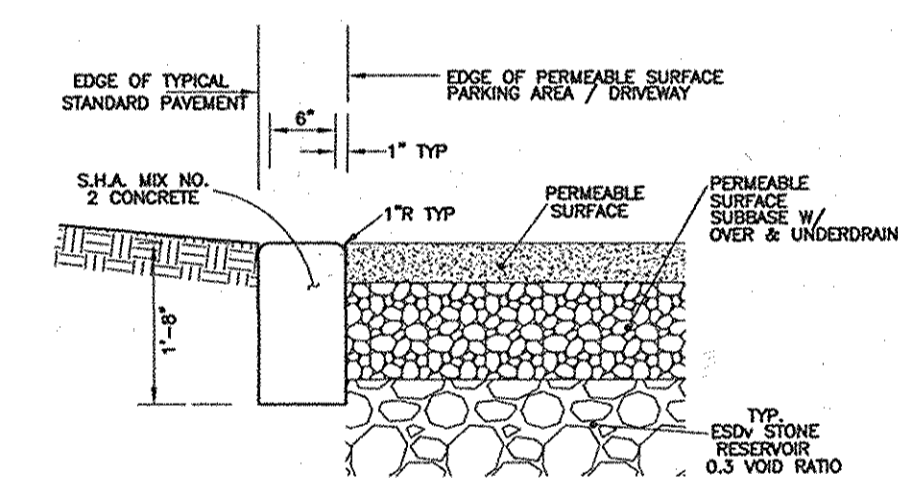
B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

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.

1. 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, ACI 323.5R, ACI 309R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.
MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADJUNCTIVES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TROTT Batching) 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 (3/8 IN. TO NO. 16) AND NO. 89 (3/8 IN. TO NO.50) SIEVES. SINGLE-SIZED 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 ADJUNCTIVES. WATER QUALITY SHOULD MEET ACI 308. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR ASHMI M 157 MAY ALSO BE USED.
ADJUNCTIVES - CHEMICAL ADJUNCTIVES (E.G., RETARDERS OR HYDRATION STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADJUNCTIVES SHOULD MEET ASTM C 494 (CHEMICAL ADJUNCTIVES) AND ASTM C 260 (FOR ENTRAINING ADJUNCTIVES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.
BASE COURSE - THE BASE COURSE SHALL BE ASHFO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).

2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)
PAVER BLOCKS - BLOCKS SHOULD BE EITHER 11 IN. OR 4 IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (40% 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 MATERIAL 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 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 ROP 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.



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

- THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
- WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
- A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
- THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- 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.

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ROBERT H. VOGEL, PE No.16193