

B.S. LAND ACQUISITION, LLC AND BETH SHALOM CONGREGATION PROPERTIES TOWNHOUSES ENVIRONMENTAL CONCEPT PLAN

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH O.S.A. STANDARDS.
2. EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. 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. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
3. THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM AN FIELD RUN TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. DATED JULY, 2006.
4. COORDINATES AND ELEVATIONS ARE BASED ON MARYLAND COORDINATE SYSTEM - MDRX(1991) AS PRODUCED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 3513 AND 41CC.
5. THE PROPERTY LINES SHOWN HEREON IS BASED ON A FIELD-RUN BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. DATED JULY, 2006.
6. ALL ELEVATIONS ARE TO FLOWLINE/BOTTOM OF CURB UNLESS OTHERWISE NOTED.
7. GEOTECHNICAL INVESTIGATIONS SHALL BE COMPLETED AND SUBMITTED WITH THE FUTURE SUBDIVISION PLANS. THE GEOTECHNICAL ENGINEER TO CONFIRM PAVING SECTION PRIOR TO CONSTRUCTION. ALL PAVING TO BE PAVING PER GEOTECHNICAL RECOMMENDATIONS.
8. THE SUBJECT PROPERTY IS ZONED R-SA-8 IN ACCORDANCE WITH THE ZONING REGULATIONS EFFECTIVE ON OCT. 06, 2013, AND IS SUBJECT TO SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE OCT. 07, 2007 PER COUNCIL BILL 47-2007 & 48-2007. 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.
9. WATER AND SEWER TO BE PUBLIC.
10. THIS PROJECT IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
11. TO THE BEST OF THE OWNER'S KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
12. THERE IS NO 100 YEAR FLOODPLAIN OR STEEP SLOPES AREAS ON THIS SITE.
13. THE FOREST STAND DELINEATION AND LOCATION OF STREAMS, WETLANDS AND OTHER ENVIRONMENTAL FEATURES WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED 09/12/08.
14. THIS PROJECT COMPLES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST AFFORESTATION THROUGH THE ON-SITE RETENTION OF 0.30 ACRES (13,216.35 SF) UNDER THE TERMS OF A 4th DEVELOPER AGREEMENT, SDP-08-083. THE REMAINING OBLIGATION OF 0.72 ACRES HAS BEEN SATISFIED THROUGH THE PAYMENT OF A FEE-IN-LIEU IN THE AMOUNT OF \$23,522.40 (\$1,263.22 SF X \$0.75) TO THE HOWARD COUNTY FOREST CONSERVATION FUND.
15. A NOISE STUDY WAS PREVIOUSLY PREPARED BY ROBERT H. VOGEL ENGINEERING AND SUBMITTED WITH SDP-08-083 DATED SEPTEMBER 8, 2008.
16. HARRIET TUBMAN LANE IS A PUBLIC MAJOR COLLECTOR. ALL PROPOSED STREETS SHALL BE PRIVATE.
17. STORMWATER MANAGEMENT FOR THIS PROJECT IS BEING PROVIDED BY THE USE OF ENVIRONMENTAL SITE DESIGN UTILIZING NON-SCALE PRACTICES, INCLUDING MICRO-BIORETENTION FACILITIES TO ACCOMMODATE THE TOTAL ESD VOLUME REQUIRED. SIM FACILITIES TO BE PRIVATELY OWNED AND MAINTAINED.
18. TRASH AND RECYCLING COLLECTION TO BE PRIVATE.
19. THE PROPOSED UNITS WILL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
20. NO SPACEMEN OR CHAMPION TREES WERE IDENTIFIED ON THE SITE.
21. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAMS OR THEIR BUFFERS, FOREST CONSERVATION AREAS AND 100 YEAR FLOODPLAIN UNLESS ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED.
22. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS OF 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 DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
23. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHOULD INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING, AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.
24. ENVIRONMENTAL STUDIES AND REPORTS FOR THIS SITE WERE PREPARED FOR ROBERT H. VOGEL ENGINEERING, INC. BY ECO-SCIENCE PROFESSIONALS, INC., DATED SEPTEMBER, 2014.

SITE DATA

LOCATION: CLARKSVILLE, MD.; TAX MAP 35, BLOCK 24, PARCEL 153 & P/O 256
5TH ELECTION DISTRICT
PRESENT ZONING: R-SA-8
PARCEL AREA: PARCEL 153=3.34 AC, / PART OF PARCEL 256= 0.03 AC
DPZ REFERENCE: L1,010/F.451, L2,049/F.388, BA-528/3-D, BA-07-008C, ZRA-071, F-07-050 (VOIDED), WP-07-076, WP-09-027, WP-10-041, WP-11-066, WP-12-012, WP-12-136, WP-13-052, WP-13-135, WP-14-127, SDP-08-083, SDP-08-083C, Z-07-024, SDP-07-024-031
USE OF STRUCTURES: SINGLE FAMILY ATTACHED RESIDENTIAL
TOTAL BUILDING COVERAGE: 19160 SF (0.44 AC OR 13.05% OF GROSS AREA)
PAVING AREA ON SITE: 30,310 SF (0.70 AC OR 20.65% OF GROSS AREA)
AREA OF LANDSCAPE ISLAND: 0 SF (0 AC OR 0% OF GROSS AREA)
LIMIT OF DISTURBED AREA: 131,131 SF / 3.01 AC
WETLANDS ON SITE: 0.01 AC
WETLAND BUFFERS ON SITE: 0.54 AC
STREAMS AND THEIR BUFFERS ON SITE: 0.18 AC
AREA OF ON-SITE 100 YEAR FLOODPLAIN: 1.00 AC
AREA OF EXISTING FOREST ON SITE: 0.30 AC
AREA OF STEEP SLOPES (15% OR GREATER): 0.00 AC
AREA OF ERODIBLE SOILS: 0.00 AC
AREA MANAGED BY ESDV (THIS PLAN): 3.09 AC
*IMPERVIOUS AREA: 1.14 AC
*GREEN AREA: 1.95 AC

ENVIRONMENTAL SITE DESIGN NARRATIVE

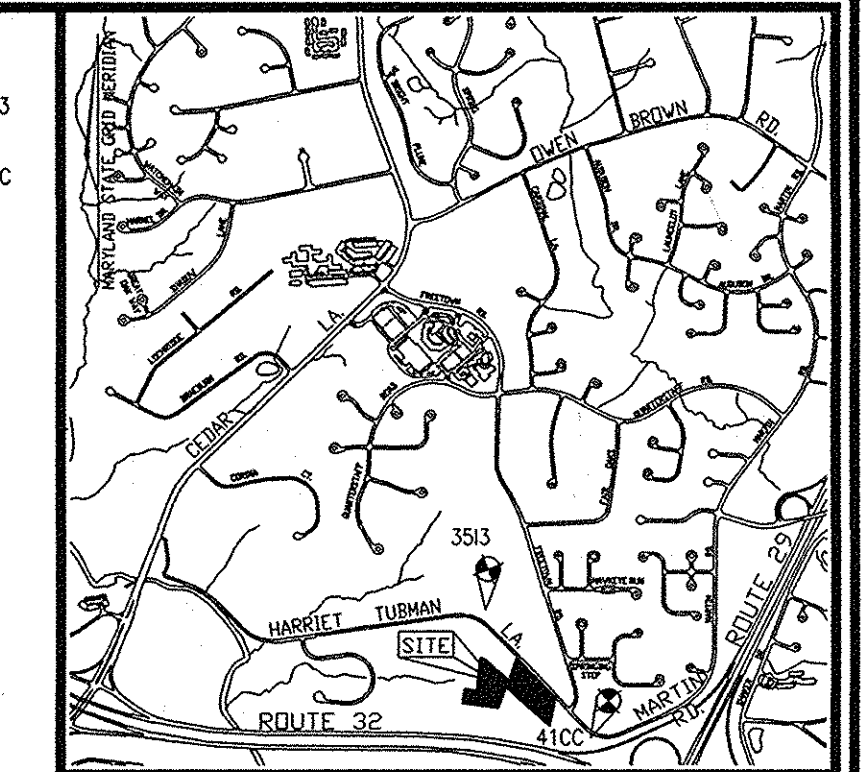
1. THERE IS A SHORT LENGTH OF INTERMITTENT STREAM WHICH CROSSES THE SOUTHWEST CORNER OF THE SITE AND HAS A 10' STREAM BUFFER. A WETLAND ASSESSMENT ALSO FOUND A SMALL AREA OF WETLANDS ON OTHER SIDE OF THIS STREAM. IN THE SOUTHWEST CORNER OF THE SITE, THE TOPOGRAPHY DOES NOT RESULT IN ANY STEEP SLOPES. ACCORDING TO CURRENT DFRM APPROVED BY FEMA AND HOWARD COUNTY, THERE IS NO 100YR FLOODPLAIN LOCATED ON THIS PROPERTY. THE NATURAL RESOURCES WILL REMAIN UNDISTURBED, PROTECTED AND ENHANCED WITH THE EXCEPTION OF A NECESSARY DISTURBANCE TO THE EXISTING PUBLIC FOREST CONSERVATION RETENTION EASEMENT TO ACCOMMODATE THE MAIN STORM DRAIN OUTFALL FOR THE SITE. ALL REQUIRED APPROVALS AND PERMITS SHALL BE OBTAINED AND MITIGATION OF DISTURBED FOREST SHALL BE PROVIDED AS REQUIRED.
2. THE SITE'S TOPOGRAPHY NATURALLY SLOPES FROM NORTHEAST TO SOUTHWEST. THE SITE HAS BEEN DESIGNED TO ALSO MAINTAIN THESE NATURAL FLOW PATTERNS.
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 ESD CONCEPT PROPOSES THE USE OF 6 MICRO-BIORETENTION FACILITIES (M-6). THE M-6'S WILL DISCHARGE THE STORM DRAIN SYSTEM WHICH OUTFALLS AT THE SOUTH WEST CORNER OF THE SITE. THE PROPOSED ESD PRACTICES SHALL BE PRIVATELY OWNED AND MAINTAINED.
4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF PERIMETER CONTROLS (SILT FENCE, SUPER SILT FENCE, CLEAN WATER DIVERSION DIKE/SWALE, EARTH DIKES) AND INLET PROTECTION. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.
5. AS STATED IN #3 ABOVE, STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF 6 MICRO BIORETENTION FACILITIES (M-6).
6. NO DESIGN MANUAL WAIVERS ARE ANTICIPATED TO FULFILL THIS SIM CONCEPT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6-26-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 6-19-15
CHIEF, DIVISION OF LAND DEVELOPMENT

BENCHMARKS

HOWARD COUNTY BENCHMARK 3513
N. 553573.698 E. 1346098.104
HOWARD COUNTY BENCHMARK 41CC
N. 552494.254 E. 1347062.412



VICINITY MAP
SCALE: 1"=2000'
ADC MAP COORDINATE: 5052-K1

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET, ECP PLAN	1 OF 2
SWM DRAINAGE AREA MAP, SWM DETAILS	2 OF 2

LEGEND

	EXISTING CONTOUR		M1B2		SOILS BOUNDARY
	PROPOSED CONTOUR		M1D3		PROPOSED SIDEWALK
	EXISTING CURB AND GUTTER				EXISTING TREELINE
	PROPOSED CURB AND GUTTER				PROPOSED TREELINE
	EXISTING UTILITY POLE				PROPOSED STORM DRAIN
	EXISTING LIGHT POLE				PROPOSED STORM DRAIN INLET
	EXISTING MAILBOX				SILT FENCE
	EXISTING SIGN				SUPER SILT FENCE
	EXISTING SANITARY MANHOLE				LIMIT OF DISTURBANCE
	EXISTING SANITARY LINE				CURB INLET PROTECTION
	EXISTING CLEANOUT				AT GRADE INLET PROTECTION
	EXISTING FIRE HYDRANT				CLEAN WATER DIVERSION DIKE/SWALE
	EXISTING WATER LINE				EARTH DIKE
	EXISTING FENCE				STABILIZED CONSTRUCTION ENTRANCE
	PROPERTY LINE				UNIT OF EXISTING WETLANDS
	RIGHT-OF-WAY LINE				PROPOSED USE-IN-COMMON ACCESS
	LIMIT OF EXISTING WETLANDS				PROPOSED USE-IN-COMMON WITH OTHERS
	PROPOSED USE-IN-COMMON ACCESS				EXISTING PUBLIC FOREST CONSERVATION/RETENTION EASEMENT
	PROPOSED USE-IN-COMMON WITH OTHERS				EXISTING 24' PUBLIC WATER ACCESS & UTILITY EASEMENT
	EX. 12' RIGHT OF WAY WITH USE-IN-COMMON WITH OTHERS				EXIST. 15' PRIVATE ACCESS EASEMENT
	EX. ON-SITE 20' PUBLIC WATER AND UTILITY EASEMENT TO BE ABANDONED				
	EX. OFF-SITE 20' PUBLIC WATER AND UTILITY EASEMENT TO BE ABANDONED				
	PROP. OFF-SITE 20' PUBLIC WATER AND UTILITY EASEMENT				
	PROP. OFF-SITE 20' PUBLIC WATER AND UTILITY EASEMENT TO BE ABANDONED				

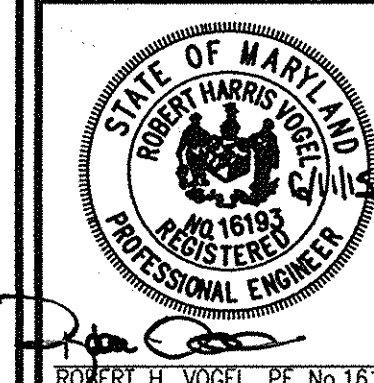
OWNER (PARCEL 256)
TEMPLE BETH SHALOM OF HOWARD COUNTY
8070 HARRIET TUBMAN LANE
COLUMBIA, MD. 21044

OWNER/DEVELOPER (PARCEL 153)
BS LAND ACQUISITION, LLC
5100 DORSEY HALL DRIVE
ELLCOTT CITY, MD. 21042
C/O RICHARD TALKIN
(410) 964-0300

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
COVER SHEET AND ENVIRONMENTAL CONCEPT PLAN
B.S. LAND ACQUISITION, LLC AND BETH SHALOM CONGREGATION PROPERTIES
8034 HARRIET TUBMAN LANE TOWNHOUSES
TAX MAP 35 BLOCK 24 5TH ELECTION DISTRICT PARCEL 153; P/O 256 L.09101/F.0461/L.02548/F.0388 HOWARD COUNTY, MARYLAND

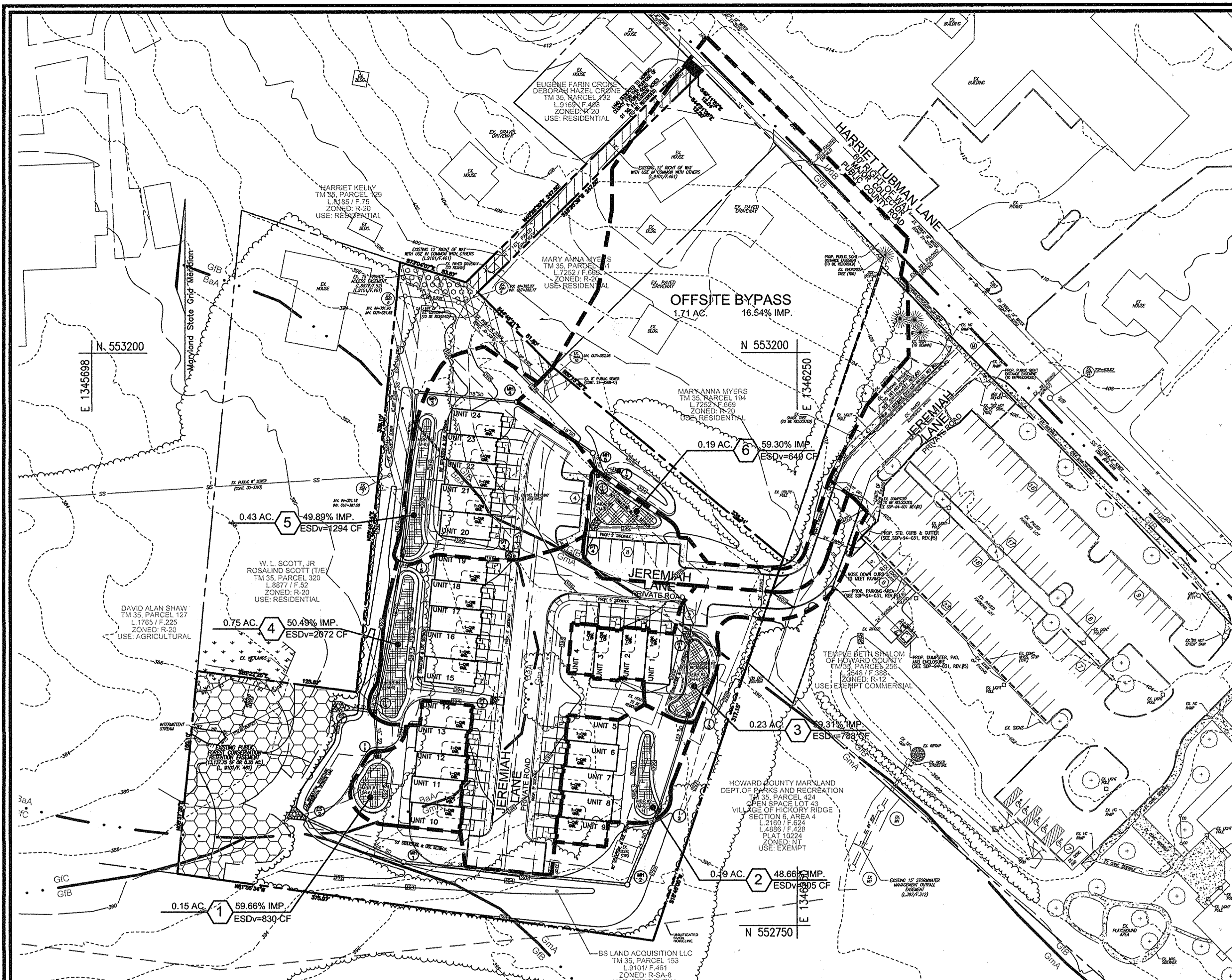
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: RHV
DRAWN BY: GAH
CHECKED BY: RHV
DATE: JUNE 2015
SCALE: AS SHOWN
W.O. NO.: 05-84

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 06-27-2016

1 SHEET OF 2

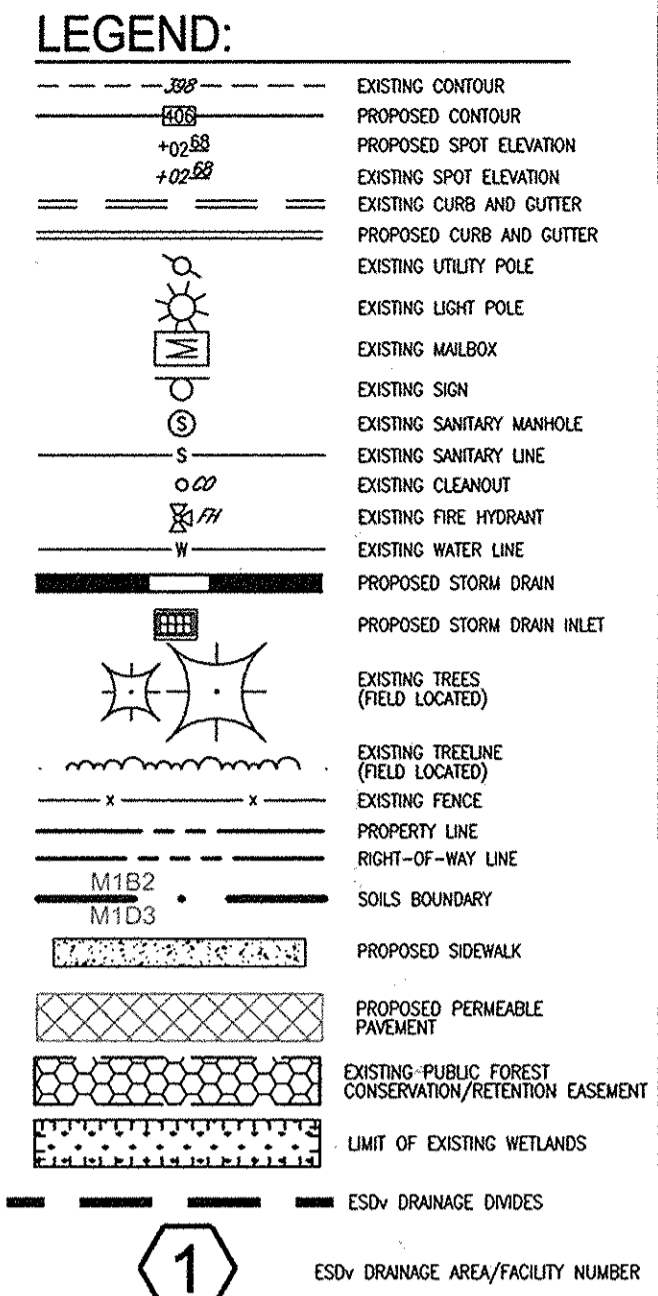


APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

- MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- FILTERING MEDIA OR PLANTING SOIL**
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BROMUS 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 (SOLO SOIL TEXTURAL CLASSIFICATION).
 - ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COMPOST (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.
- COMPACTION**
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BIORETENTION PRACTICES 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 TIRE 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 FLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
 ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
- PLANT MATERIAL**
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA. DURING STORM EVENT AND ARE NOT ACCEPTABLE. SHREDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE. THE ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOST 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 STRONG 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 DEFATS, 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.
- UNDERDRAINS**
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
 - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR ASHTO-M-270) 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 4" 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 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
 - A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER SHALL 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).
- MISCELLANEOUS**
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

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

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.1.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRDS.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AFTER EACH HEAVY STORM.



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

Material	Specification	Size	Notes
Planting soil	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	aged 6 months, minimums no pine or wood chips
Mulch	shredded hardwood	n/a	aged 6 months, minimums 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	omamental stone: washed cobble	stone: 2" to 2"	
Geotextile	AASHTO M-43	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	NO. 57 OR NO. 6 AGGREGATE (1/2" to 3/4")	n/a	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" x 4" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf @ 4" on center, 4 holes per row; minimums of 3" of gravel over pipe; not necessary underdrain pipe; perforated pipe 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 includes meeting ACT Code 300.09(b); vertical loading (10' to 10'); allowable horizontal loading (based on soil parameters); and analysis of potential cracking.
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 includes meeting ACT Code 300.09(b); vertical loading (10' to 10'); allowable horizontal loading (based on soil parameters); and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.075" to 0.04"	Sand substitutions such as Dulles and Ceylanite (AASHTO) #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

OWNER/DEVELOPER (PARCEL 153)
 BS LAND ACQUISITION, LLC
 5100 DORSEY HALL DRIVE
 ELLICOTT CITY, MD, 21042
 C/O RICHARD TALKIN
 (410) 964-0300

OWNER (PARCEL 256)
 TEMPLE BETH SHALOM OF HOWARD COUNTY
 8070 HARRIET TUBMAN LANE
 COLUMBIA, MD, 21044

NOTES:

- APPROVAL OF THIS SIMPLIFIED ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMIT.
- 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.
- THERE IS AN INTERMITTENT STREAM WHICH CROSSES THE SOUTHWEST CORNER OF THE SITE AND HAS A 50' STREAM BUFFER. THERE IS A SMALL AREA OF WETLANDS ALSO IN THE SOUTHWEST CORNER OF THE SITE. THE TOPOGRAPHY DOES NOT RESULT IN ANY STEEP SLOPES. ACCORDING TO CURRENT DFRM APPROVED BY FEMA AND HOWARD COUNTY, THERE IS NO 100YR FLOODPLAIN LOCATED ON THIS PROPERTY.

PLAN VIEW
SCALE: 1"=50'

SYMBOL NAME / DESCRIPTION	GROUP	HYDROIC	PERCENT	K FACTOR	PERCENT	PERCENT	PERCENT
BaA BAILE SILTY LOAM, 0 TO 3 PERCENT SLOPES	D	YES	0.37	NO	NO	NO	NO
G1B GLADSTONE - URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	A	NO	0.28	NO	NO	NO	NO
G1c1 GLENVALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C	NO	0.43	NO	NO	NO	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
 NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

PROJECT:	BS LAND
TOTAL AREA:	3.16 AC
TARGET Pe:	1.58 IN
IMPERVIOUS:	32.29 PERCENT
SITE Rv:	0.34
APPROX SITE ESDv:	6173 CF

DRAINAGE AREA	IMPERVIOUS AREA	GRASS AREA	TOTAL AREA	PERCENT IMPERVIOUS	RV	ESDv MIN	ESDv MAX	TARGET ESDv
1	3994	2701	6695	59.66	0.59	327	851	517
2	3994	4214	8208	48.66	0.49	334	868	527
3	5866	4024	9890	59.31	0.58	481	1251	760
4	16527	16207	32734	50.49	0.50	1376	3577	2174
5	9261	9301	18562	49.89	0.50	772	2007	1220
6	4811	3302	8113	59.30	0.58	395	1026	624
TOTAL AREA	84202 SF							5822 CF
	1.93 AC							

PROJECT BS LAND DESIGNER RHV/GAH	DATE 11/13/14	REV. 2/25/2015	ROBERT H. VOGEL ENGINEERING, INC.								
ENVIRONMENTAL SITE DESIGN PRACTICE VOLUMES PROVIDED											
DRAINAGE AREA #	TREATED AREA	FACILITY NUMBER	PERMEABLE PAVEMENT	BIO RETENTION	LANDSCAPE INFILTRATION	GREEN ROOF	BIO SWALE	GRAVEL TRENCH	X	X	ESDv VOLUME
1	6695	1	0	623	0	0	0	0	0	0	623
2	8208	2	0	604	0	0	0	0	0	0	604
3	9890	3	0	866	0	0	0	0	0	0	866
4	32734	4	0	1554	0	0	0	0	0	0	1554
5	18562	5	0	971	0	0	0	0	0	0	971
6	8113	6	0	763	0	0	0	0	0	0	763
* STORAGE, 75% OF ESD TREATED				5381							
EQUIVALENT ESDv PROVIDED				7175							
ESDv REQUIRED				7086							
TOTAL ESDv PROVIDED 7175											

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE 6-26-15

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE 6-19-15

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP; SWM DETAILS
 B.S. LAND ACQUISITION, LLC
 AND BETH SHALOM CONGREGATION PROPERTIES
 8034 HARRIET TUBMAN LANE
 TOWNHOUSES
 ZONED: R-SA-5
 TAX MAP 35, BLOCK 24, 5TH ELECTION DISTRICT
 L.09101F.0461/L. 02548/F. 0388 HOWARD COUNTY, MARYLAND
 PARCEL 153: PIO 256

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

DESIGN BY: RHV
 DRAWN BY: GAH
 CHECKED BY: RHY
 DATE: JUNE 2015
 SCALE: AS SHOWN
 W.O. NO.: 05-84

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRES 08-29-2016

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