

GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:
 MISS UTILITY: 1-800-257-7777
 VERIZON TELEPHONE COMPANY: 1-410-954-6281
 HOWARD COUNTY BUREAU OF UTILITIES: 1-800-393-3553
 AT&T CABLE LOCATION DIVISION: 410-590-4620
 B.G.&E. CO. CONTRACTOR SERVICES: 410-590-4620
 B.G.&E. CO. UNDERGROUND DAMAGE CONTROL: 410-531-5533
 STATE HIGHWAY ADMINISTRATION: 410-531-5533
- THIS PRELIMINARY EQUIVALENT SKETCH PLAN IS SUBJECT TO THE FOLLOWING DPZ FILES: ECP-13-024 (APPROVED 01/14/2013), CONT. #24-3108, WP-13-138
- THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN TOPOGRAPHIC SURVEY WITH 2-FOOT CONTOUR INTERVALS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JUNE 2012.
- THE PROJECT BOUNDARY SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JUNE 2012.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO CEMETERIES OR GRAVE SITES LOCATED ON THE SUBJECT PROPERTY.
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO BIO-RETENTION FACILITIES (M-6), GRASS SWALES (M-8), ROOFTOP DISCONNECTS (N-1), NON-ROOFTOP DISCONNECTS (N-2), AND PERVIOUS CONCRETE (A-2) AT THE END OF THE USE-IN-COMMON DRIVEWAY. FACILITIES TO BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
- WATER PROVIDED FOR THIS PROJECT IS PUBLIC. CONTRACT NUMBER 24-3108.
- SEWER PROVIDED FOR THIS PROJECT IS PUBLIC. CONTRACT NUMBER 24-3108.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
- THE SUBJECT PROPERTY IS ZONED "R-20" IN ACCORDANCE WITH THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON 7/28/06.
- THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
- THE PROPOSED SUBDIVISION AND RELATED CONSTRUCTION WILL HAVE MINIMAL IMPACT ON EXISTING ENVIRONMENTAL FEATURES AND BUFFERS.
- EXISTING UTILITIES ARE BASED ON 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 CONTRACTORS 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.
- 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. 3513 AND 41CC WERE USED FOR THIS PROJECT.
- NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THE PROPERTY.
- THERE IS NO 100-YR FLOODPLAIN WITHIN THE LIMITS OF THIS SITE.
- SEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
- THE WETLANDS DELINEATION STUDY FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED SEPTEMBER 12, 2012. THERE ARE NO PROPOSED DISTURBANCES TO THE WETLANDS OR ASSOCIATED BUFFERS.
- FOREST STAND DELINEATION PLAN WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED SEPTEMBER 12, 2012.
- A TOTAL OF 7 LOTS ARE PROPOSED UNDER THIS PLAN.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM(S), OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
- WETLANDS AND THEIR BUFFERS WILL NOT BE IMPACTED BY THE CONSTRUCTION OF THE SITE.
- A NOISE WALL IS REQUIRED FOR THIS SITE AND WILL BE CONSTRUCTED IN ACCORDANCE WITH SHA PROJECT HO-3175170 WHICH IS FUNDED FOR CONSTRUCTION.
- THERE ARE NO SPECIMEN TREES LOCATED ON THIS SITE.
- FOREST CONSERVATION REQUIREMENTS AS SET FORTH IN SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL: NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- THE FOREST CONSERVATION OBLIGATION TO BE FULFILLED BY THE PLACEMENT OF 2.76 AC. (2:1 RATIO) **INTO RETENTION EASEMENT, WITH AN ADJACENT FOREST CONSERVATION BANK IDENTIFIED AS BEST PRACTICES, APPROVED UNDER SFP-13-019FC.**
- UTILIZE HOWARD COUNTY STANDARD DETAIL NO. R-6.02 FOR THE USE-IN-COMMON DRIVEWAY ENTRANCE AT SHAKER DRIVE.
- DRIVEWAY(S) SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 a) WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
 b) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING.
 c) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45-FOOT DEPTH TURNING RADIUS.
 d) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
 e) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
 f) STRUCTURE CLEARANCES - MINIMUM 12 FEET.
 g) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- THERE IS AN EXISTING HOUSE TO REMAIN WHICH SHALL BE LOCATED ON LOT 3. THE EXISTING DRIVEWAY TO LOT 3 SHALL BE REMOVED PRIOR TO RELOCATION OF THE FINAL PLAT AND ACCESS TO LOT 3 SHALL BE FROM UIC SHARED DRIVEWAY FOR LOTS 1 TO 7. ANY NEW ADDITIONS OR NEW CONSTRUCTION TO THE EXISTING HOUSE SHALL CONFORM TO SETBACKS AS SHOWN ON THE FINAL PLAT FOR THIS SUBDIVISION.
- SHAKER DRIVE IS NOT A SCENIC ROAD.
- LOTS 1-7 WILL UTILIZE A USE-IN-COMMON DRIVEWAY. A USE-IN-COMMON MAINTENANCE AGREEMENT FOR THE SHARED DRIVEWAY SHALL BE RECORDED SIMULTANEOUSLY WITH THE FINAL PLAN.
- PERIMETER LANDSCAPING AND TRASH PAD SCREENING FOR THIS DEVELOPMENT SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL. POSTING OF FINANCIAL SURETY IS DEFERRED UNTIL FINAL PLAT SUBMISSION.
- DEED REFERENCE: L 8293/F. 433
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, INC., DATED JULY 12, 2012, AND WAS APPROVED ON 6/19/2013
- THIS PROPERTY IS NOT WITHIN THE METROPOLITAN DISTRICT.
- REFUSE COLLECTION, SNOW REMOVAL AND MAINTENANCE FOR LOTS 1-7 SHALL BE PROVIDED AT THE JUNCTION OF THE PRIVATE USE-IN-COMMON ACCESS EASEMENT AND THE EXISTING ROAD RIGHT-OF-WAY.
- A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT EACH DRIVEWAY ACCESS POINT ONTO SHAKER DRIVE AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-513-5752 FOR DETAILS AND COST ESTIMATES.
- CERTIFIED TEST PITS HAVE BEEN PROVIDED TO VERIFY THAT GROUNDWATER AND ROCK ARE NOT PRESENT AT RAIN GARDEN AND MICRO-BIORETENTION LOCATIONS.
- A DESIGN MANUAL WAIVER TO ALLOW SEVEN USERS ON A USE-IN-COMMON SHARED DRIVEWAY WAS APPROVED BY THE DEVELOPMENT ENGINEERING DIVISION ON MARCH 19, 2013.
- REFERENCE: WP-13-138, DENIED ON MARCH 25, 2013, TO ALLOW FOREST CONSERVATION EASEMENTS ON LOTS LESS THAN 10 ACRES.
- B.G.&E. HAS APPROVED PERIMETER LANDSCAPING FOR THIS PROJECT.
- A FEE-IN-LIEU OF OPEN SPACE FOR SIX LOTS SHALL BE PROVIDED WITH THE FINAL PLAN SUBMISSION.
- ALL EXISTING WELLS AND SEPTIC SYSTEM COMPONENTS MUST BE PROPERLY ABANDONED AND NOTIFICATION OF SUCH SENT TO THE HEALTH DEPARTMENT PRIOR TO HEALTH OFFICER SIGNATURE OF THE FINAL RECORD PLAT.

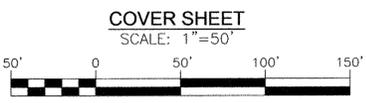
SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 5
SITE LAYOUT PLAN	2 OF 5
SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN	3 OF 5
DRAINAGE AREA MAP	4 OF 5
LANDSCAPE AND FOREST CONSERVATION PLAN	5 OF 5

MINIMUM LOT SIZE CHART				
LOT	GROSS AREA	PIPESTEM AREA	NET AREA	MIN. LOT SIZE
1	24,944 SF	NA	24,944 SF	20,000 SF
2	23,789 SF	765 SF	23,024 SF	20,000 SF
3	24,152 SF	1,484 SF	22,668 SF	20,000 SF
4	22,583 SF	2,530 SF	20,053 SF	20,000 SF
5	22,068 SF	1,869 SF	20,199 SF	20,000 SF
6	21,958 SF	1,439 SF	20,519 SF	20,000 SF
7	21,016 SF	898 SF	20,118 SF	20,000 SF

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Robert H. Vogel
 PLANNING DIRECTOR

9/25/12
 DATE



PRELIMINARY EQUIVALENT SKETCH PLAN

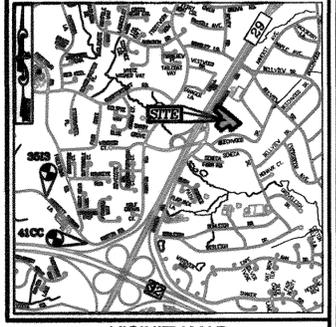
STELLA GLEN

LOTS 1-7

TAX MAP: 36 PARCELS: 57, 58 & 417

HOWARD COUNTY, MARYLAND

COORDINATE TABLE		
NO.	NORTH	EAST
104	555599.43	1350052.82
105	555727.21	1350132.96
106	555376.30	1350561.37
107	555383.56	1350571.44
108	555270.45	1350414.60
109	555131.86	1350230.26
110	555246.85	1350112.46
301	555444.84	1350374.55
302	555458.47	1350227.35
305	555143.65	1350461.46
308	555299.37	1350674.22
314	555342.71	1350163.84



VICINITY MAP
 SCALE: 1"=2,000'
 ADC MAP COORDINATE: 4935, B-10

BENCHMARKS
 HOWARD COUNTY BENCHMARK 3513 (CONC. MON.)
 N 55373.69 E 1348098.09 ELEV. 415.34
 HARRIET TUBMAN LA. BY ATHLTON HS
 HOWARD COUNTY BENCHMARK 41CC (CONC. MON.)
 MARTIN RD. NEAR CORNER OF FREETOWN RD.
 N 552494.26 E 1347062.39 ELEV. 359.95

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTERS
	EXISTING EDGE OF PAVING
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	PROP. VARIABLE WIDTH PRIVATE EASEMENT FOR LOTS 1-7
	PROP. 30' PUBLIC SEWER, WATER, & UTILITY EASEMENT
	PROP. 20' PRIVATE DRAINAGE & UTILITY EASEMENT
	EX. PUBLIC SEWER & UTILITY EASEMENT PLAT NO. 9987

SITE DATA
 LOCATION: TAX MAP 36, BLOCK 19
 PARCEL: 57, 58 & 417
 10580 SHAKER DRIVE, COLUMBIA, MARYLAND
 DEED REFERENCE: L 8293 / F. 433
 6TH ELECTION DISTRICT
 PRESENT ZONING: R-20
 GROSS AREA OF PROJECT: 3.68 AC.
 LIMIT OF DISTURBANCE: 2.32 AC.
 PROPOSED USE OF SITE: RESIDENTIAL (SFD)
 NUMBER OF RESIDENTIAL LOTS PROPOSED: 7 LOTS
 AREA OF RESIDENTIAL LOTS PROPOSED: 3.68 AC.
 AREA OF PROPOSED ROADS AND OPEN SPACE DEDICATION: 0.00 AC.
 IMPERVIOUS AREA: 0.79 AC.
 OPEN SPACE REQUIRED: 0.00 AC.
 OPEN SPACE PROVIDED: 0.00 AC.
 AREA OF STREAM/BUFFER: 0.00 AC.
 AREA OF WETLANDS/BUFFER: 0.23 AC.
 AREA OF STEEP SLOPES (25% OR GREATER): 0.01 AC.
 AREA OF FLOOD PLAIN: 0.00 AC.
 NET PROJECT AREA: 3.44 AC.
 AREA OF EXISTING FOREST COVER: 0.64 AC.
 AREA OF ERODIBLE SOILS: 1.13 AC.

OWNER
 MARY THERESE PFAU
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DEVELOPER
 TRINITY QUALITY HOMES, INC.
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 ELLICOTT CITY, MD 21043
 (410) 480-0023

NO.	REVISION	DATE

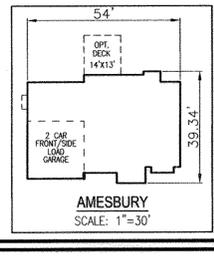
PRELIMINARY EQUIVALENT SKETCH PLAN
 COVER SHEET
STELLA GLEN
LOTS 1-7
 TAX MAP: 36 PARCELS: 57, 58 & 417
 HOWARD COUNTY, MARYLAND
 ZONED: R-20
 TAX MAP: 36 GRID: 19
 6TH ELECTION DISTRICT
 DPZ REF'S: SEE GENERAL NOTE #4 ON COVER SHEET
 PARCELS: 57, 58 & 417
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
ENGINEERS - SURVEYORS - PLANNERS
 8407 MAIN STREET
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 TEL: 410-461-7666
 FAX: 410-461-8961

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: August 2013
 SCALE: AS SHOWN
 W.O. NO.: 12-23

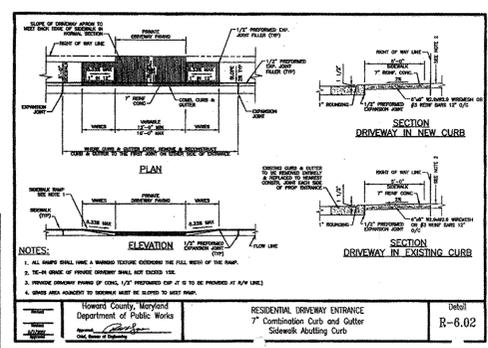
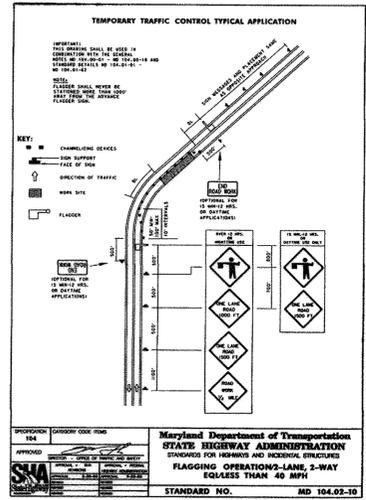
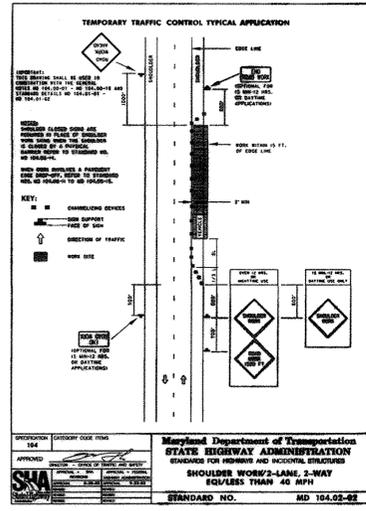
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183, EXPIRATION DATE: 09-27-2014

1 SHEET OF 5



MINIMUM LOT SIZE CHART

LOT	GROSS AREA	PIPESTEM AREA	NET AREA	MIN. LOT SIZE
1	24,944 SF	N/A	24,944 SF	20,000 SF
2	23,789 SF	785 SF	23,024 SF	20,000 SF
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LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF PAVING
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- PROP. VARIABLE WIDTH PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-7
- PROP. 30' PUBLIC SEWER, WATER, & UTILITY EASEMENT
- PROP. 24' PRIVATE DRAINAGE & UTILITY EASEMENT
- EX. PUBLIC SEWER & UTILITY EASEMENT PLAT MDR 9987
- 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 TREELINE
- EXISTING TREES
- EXISTING FENCE
- PROPOSED STORMDRAIN
- PROPOSED SIDEWALK
- PROPOSED TREELINE

OWNER
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DEVELOPER
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NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
SITE LAYOUT PLAN
STELLA GLEN
LOTS 1-7
TAX MAP: 36 PARCELS: 57, 58 & 417
HOWARD COUNTY, MARYLAND
ZONED: R-20
PARCELS: 57, 58 & 417
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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TEL: 410.461.7666
FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: August 2013
SCALE: AS SHOWN
W.O. NO.: 12-23

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A QUALIFIED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2014.

2 SHEET OF 5

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

[Signature]
PLANNING DIRECTOR

9/25/13
DATE

SECTION NUMBER	ROAD AND STREET	DESCRIPTION	CALIFORNIA BOARDING BOARD (S)	2 TO 45 TO 10' (2)				
P-1	SHAKER DR	PROPOSED SIDEWALK	1.2	1.0	1.0	1.0	1.0	1.0
P-2	SHAKER DR	PROPOSED SIDEWALK	1.2	1.0	1.0	1.0	1.0	1.0
P-3	SHAKER DR	PROPOSED SIDEWALK	1.2	1.0	1.0	1.0	1.0	1.0
P-4	SHAKER DR	PROPOSED SIDEWALK	1.2	1.0	1.0	1.0	1.0	1.0

PHASE SECTIONS P-1 to P-4

Detail R-2.01

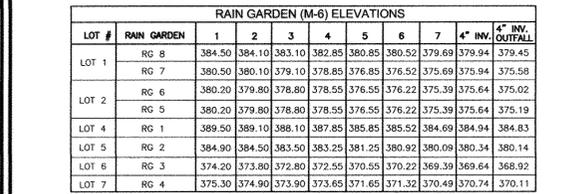
APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

- 1. MATERIAL SPECIFICATIONS**
THE ALLOTTED 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 LOADED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOxious WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.
THE PLANTING SOIL SHALL MEET THE FOLLOWING CRITERIA:
* SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (SOIL 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 (50%-65%) AND COMPOST (5% TO 10%) OR SANDY LOAM (50% SAND LOAM), AND COMPOST (40%).
* CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
* PH BUFFER - 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 TEST FOR PH, AND ADDITIONAL TESTS OF DRINKING WATER AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TESTS, 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 TOES TO BRIDGE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR WALK BEHIND EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TYPES. 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 FAILING.
COMPACTION CAN BE AVOIDED 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 REFRACURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLING 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 AND PAVED WATER BEFORE PREPARING (ROTOTILLING) BASE.
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 2 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 FINISH 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 SURFACE SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MESH 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 KEPT (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTKILL OF THE PLANT MATERIAL SHALL BE KEPT MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED 50% (1/2) OF THE BALL IS ABOVE FINISH 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 DURING AND 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 ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, AT A MINIMUM, THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL AREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.
- 6. UNDERDRAINS**
UNDERDRAINS SHALL MEET THE FOLLOWING CRITERIA:
* PPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR ASHITO-M-278) IN A GRAVEL LAYER. THE PERFORATED 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 INCH. PIPE SHALL BE WRAPPED WITH A 1/4" OR 4 OR 44 GALVANEZED POLYESTER 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 18" DIAMETER (18" TO 24" DIAMETER) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE UNDERDRAIN SYSTEM.
* 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. THE PEA GRAVEL SHALL BE AT LEAST 18" THICK WITH BED THICKNESS EXCEEDS 24".
* THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).
- 7. MISCELLANEOUS**
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

- 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 SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS SHALL FOLLOW EITHER STANDARD PAVEMENT PROCEDURES (E.G., ASPHALT, AC 325.95, ACI 309) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.
MIX & INSTALLATION - TYPICAL PERVIOUS CONCRETE MIXTURES (E.G., 10% TO 15% AGGREGATE) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOTOGRAPHIC ADJUSTMENTS MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TENSILE STRENGTH) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTLING TIME, RATE OF STRENGTH DEVELOPMENT, PERMEABILITY) ARE MET.
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. 20) SIZES. SINGLE-SIZED AGGREGATE (UP TO 1 INCH) MAY ALSO BE USED.
WATER CONTENT - WATER-TO-CEMENT RATIO BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADJUSTMENTS. 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 ASHOTO 157 MAY ALSO BE USED.
ADJUSTERS - CHEMICAL ADJUSTERS (E.G., RETARDERS OR HYPHENATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADJUSTERS SHOULD MEET ASTM C 494 (CHEMICAL ADJUSTERS) AND ASTM C 260 (AIR ENTRAINING ADJUSTERS) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.
BASE COURSE - THE BASE COURSE SHALL BE ASPHALT NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).
 - 2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)**
FRIDGE BLOCKS - BLOCKS SHOULD BE EITHER 8" OR 4" IN THICK AND MEET ASTM C 938 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD MEET 20% OPEN PORE SPACE (PERVIOUS) OF THE SURFACE AREA. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT SLOPE AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.
WELL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.
BASE COURSE - THE BASE COURSE SHALL BE ASPHALT NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).
 - 3. REINFORCED TURF**
REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.

RAIN GARDEN (M-6) ELEVATIONS

LOT #	RAIN GARDEN	1	2	3	4	5	6	7	4" INV. OUTFALL
LOT 1	RG 8	384.50	384.10	383.10	382.85	380.85	380.52	379.69	379.94
	RG 7	380.50	380.10	379.10	378.85	376.85	376.52	375.69	375.94
LOT 2	RG 6	380.20	379.80	378.80	378.55	376.55	376.22	375.39	375.64
	RG 5	380.20	379.80	378.80	378.55	376.55	376.22	375.39	375.64
LOT 4	RG 1	389.50	389.10	388.10	387.85	385.85	385.52	384.69	384.94
	RG 2	384.90	384.50	383.50	383.25	381.25	380.92	380.09	380.34
LOT 5	RG 3	374.20	373.80	372.80	372.55	370.55	370.22	369.39	369.64
	RG 4	375.30	374.90	373.90	373.65	371.65	371.32	370.49	370.74

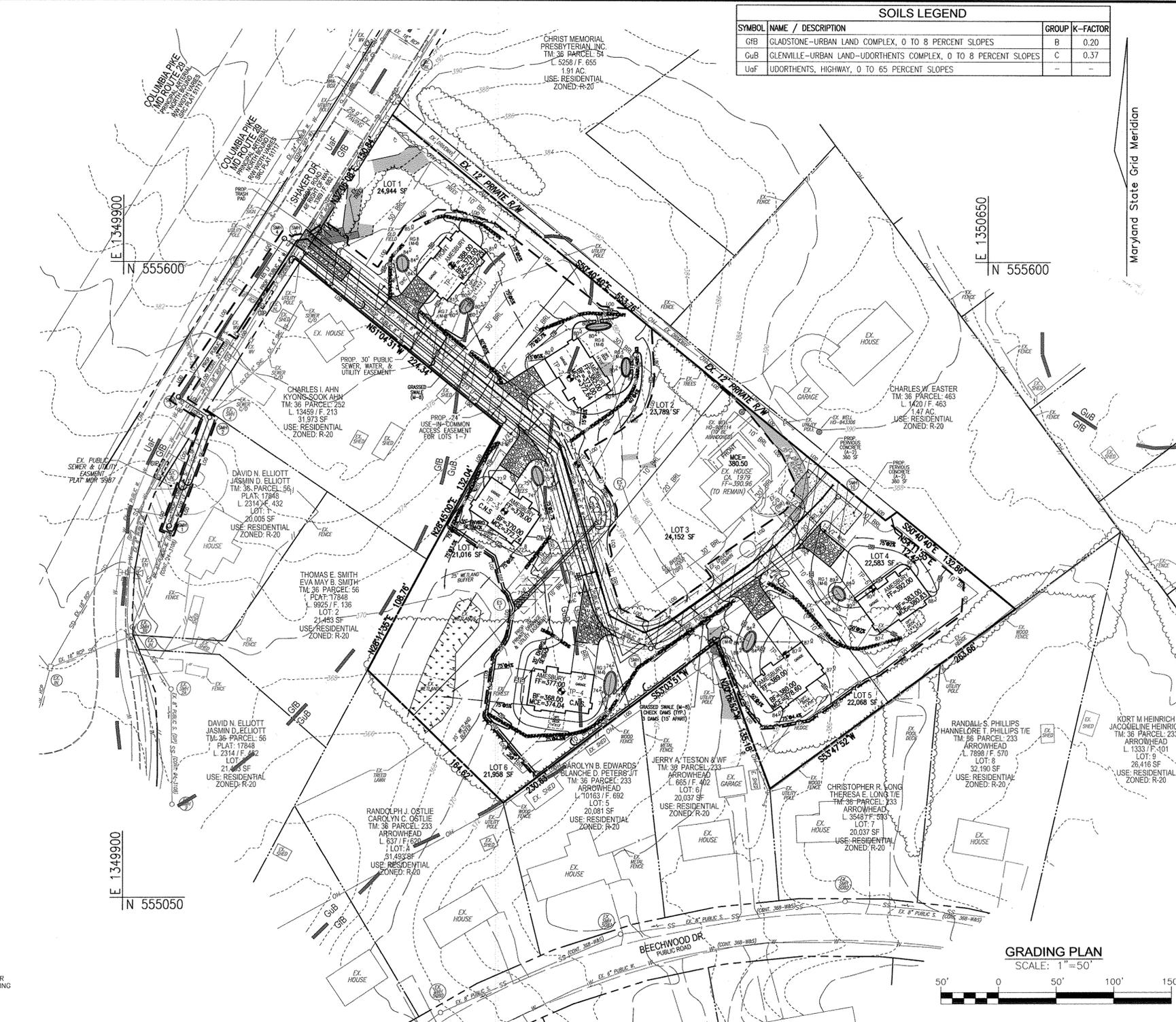


DETAIL - MICROBIORETENTION/RAIN GARDEN (M-6)
NOT TO SCALE

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Mark A. Coyle
PLANNING DIRECTOR

9/25/13
DATE



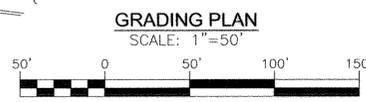
SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR
GIB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	0.20
GUB	GLENVILLE-URBAN LAND-UDORTHENTS COMPLEX, 0 TO 8 PERCENT SLOPES	C	0.37
UOF	UDORTHENTS, HIGHWAY, 0 TO 65 PERCENT SLOPES	-	-

- LEGEND:**
- PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - ADJACENT PROPERTY LINE
 - EXISTING CURB AND GUTTER
 - EXISTING EDGE OF PAVING
 - EXISTING WETLANDS
 - EXISTING WETLAND BUFFER
 - PROP. VARIABLE WIDTH PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-7
 - PROP. 30" PUBLIC SEWER, WATER, & UTILITY EASEMENT
 - PROP. 20" PRIVATE DRAINAGE & UTILITY EASEMENT
 - EX. PUBLIC SEWER & UTILITY EASEMENT
 - FLAT MESH BRST
 - EXISTING UTILITY POLE
 - EXISTING LIGHT POLE
 - EXISTING MALEBOX
 - EXISTING SIGN
 - EXISTING SANITARY MANHOLE
 - EXISTING SANITARY LINE
 - EXISTING CLEANOUT
 - EXISTING FIRE HYDRANT
 - EXISTING WATER LINE
 - EXISTING TREELINE
 - EXISTING TREES
 - EXISTING FENCE
 - PROPOSED STORMDRAIN
 - PROPOSED SIDEWALK
 - PROPOSED TREELINE
 - EXISTING 10' CONTOUR
 - EXISTING 2' CONTOUR
 - SOILS
 - PROPOSED 10' CONTOUR
 - PROPOSED 2' CONTOUR
 - PROPOSED SPOT ELEVATION
 - EXISTING STEEP SLOPES
 - EXISTING MODERATE SLOPES
 - PROPOSED SUPER SALT FENCE
 - PROPOSED SALT FENCE
 - PROPOSED LIMIT OF DISTURBANCE
 - PROPOSED EROSION CONTROL MATTING
 - PROPOSED STABILIZED CONSTRUCTION ENTRANCE
 - PROPOSED TEST PIT
 - PERVIOUS CONCRETE (A-2)
 - ROOFTOP DISCONNECT
 - PROPOSED RAIN GARDEN (M-6)
 - PROPOSED GRASS SWALE (M-8)

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

1. THE 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. AIRS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
2. THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
3. THE OWNER SHALL USE DECISERS IN MODERATION. DECISERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
4. THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

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)

1. 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.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 REPLACE 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.

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	Notes
Planting Soil	See Appendix A, Table A.4	Plantings are site-specific.
Planting Soil (2" to 4" deep)	USDA soil type loamy sand or sandy loam; clay content < 5% organic content	
Organic content	Min. 10% by dry weight (ASTM D 2974)	
Mulch	Shredded hardwood	Apply 6" minimum, minimum no pine or wood chips.
Pea gravel displacement	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")
Curtain drain	non-synthetic wool cloth	none: 2" to 5"
Geotextile	ASTM M-43	NO. 57 OR NO. 6 AGGREGATE (1/2" TO 3/4")
Underdrain piping	F758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or HDPE
Placed in place concrete (if required)	MSHA Min No. 3, F _c = 3500 psi (28 days, normal weight, non-air-entrained, resting on next ASTM 415-60	Shaded or perforated pipe, 3/8" perf. @ 6" on center, 4 holes per foot. minimum of 2" of gravel over pipe, no necessary professional structural engineer stamped in the State of Maryland - design to include meeting ACI Code 330.8(R)(9) vertical loading (14.18 or 16.25), allowable horizontal loading (based on soil properties), and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM C-137	0.075 to 0.08"

NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
SOILS MAP, GRADING, EROSION, AND SEDIMENT CONTROL PLAN
STELLA GLEN
LOTS 1-7
TAX MAP: 36 PARCELS: 57, 58 & 417
HOWARD COUNTY, MARYLAND

TAX MAP: 36 GRID: 19
8TH ELECTION DISTRICT
DPZ REF'S: SEE GENERAL NOTE #4 ON COVER SHEET

ZONED: R-20
PARCELS: 57, 58 & 417
HOWARD COUNTY, MARYLAND

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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. 19183, EXPIRATION DATE: 09-27-2014.

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: August 2013
SCALE: AS SHOWN
W.O. NO.: 12-23

3 SHEET OF 5

ROBERT H. VOGEL, PE No. 16193

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR
GfB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	0.20
GuB	GLENVILLE-URBAN LAND-UDORTHENTS COMPLEX, 0 TO 8 PERCENT SLOPES	C	0.37
UoF	UDORTHENTS, HIGHWAY, 0 TO 65 PERCENT SLOPES	-	-



LEGEND:	
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTER
	EXISTING EDGE OF PAVING
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	PROP. VARIABLE WIDTH PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-7
	PROP. 30' PUBLIC SEWER, WATER, & UTILITY EASEMENT
	PROP. 20' PRIVATE DRAINAGE & UTILITY EASEMENT
	EX. PUBLIC SEWER & UTILITY EASEMENT PLAT MDR 9987
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREE LINE
	EXISTING TREES
	EXISTING FENCE
	PROPOSED STORMDRAIN
	PROPOSED SIDEWALK
	PROPOSED TREE LINE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING STEEP SLOPES
	EXISTING MODERATE SLOPES
	DRAINAGE AREA DIVIDE
	NON-ROOFTOP DISCONNECT (N-2)
	ROOFTOP DISCONNECT (N-1)
	PERVIOUS CONCRETE (A-2)
	ROOFTOP DISCONNECT
	PROPOSED RAIN GARDEN (M-6)
	PROPOSED GRASS SWALE (M-8)

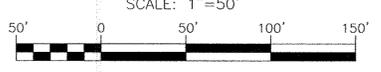
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ESDv PRACTICES BY DRAINAGE AREA

Drainage Area A	Rooftop Disconnect N-1	962 sf
	Non-rooftop Disconnect N-2	1100 sf
	Micro Bioretention M-6	962 sf
	Pervious Concrete A-2	196 sf
Drainage Area B	Rooftop Disconnect N-1	962 sf
	Grass Swale M-8	1680 sf
	Micro Bioretention M-6	1488 sf
Drainage Area C	Rooftop Disconnect N-1	1441 sf
	Non-rooftop Disconnect N-2	1100 sf
	Micro Bioretention M-6	782 sf
Drainage Area D	Rooftop Disconnect N-1	1925 sf
	Grass Swale M-8	1600 sf
	Micro Bioretention M-6	1001 sf
Drainage Area E	Rooftop Disconnect N-1	1925 sf
	Grass Swale M-8	1600 sf
	Micro Bioretention M-6	962 sf
Drainage Area F	Rooftop Disconnect N-1	1445 sf
	Grass Swale M-8	1920 sf
	Micro Bioretention M-6	962 sf

DRAINAGE AREA MAP



PROJECT STELLA GLEN		DESIGNER RHV		DATE 01/04/13		ROBERT H. VOGEL ENGINEERING, INC.	
ENVIRONMENTAL SITE DESIGN PRACTICE							
DRAINAGE AREA #	TREATED AREA	FACILITY NUMBER	ROOFTOP DISCONNECT N-1	NONROOFTOP DISCONNECT N-2	GRASS SWALE M-8	BIORETENTION M-6	PERVIOUS CONCRETE A-2
A	13454	1	64	73	0	79	282
B	13970	2	64	0	166	245	0
C	11000	3	120	92	0	140	0
D	10817	4	160	0	158	158	0
E	12210	5	79	0	158	190	0
F	11781	6	112	0	106	253	0
TOTAL AREA	73232 SF						
	1.68 AC						

PROJECT: STELLA GLEN		TOTAL AREA: 3.68 AC		NET DEVELOPABLE AREA 3.36 AC		TARGET Pe: 1.20 IN	
DRAINAGE AREA	IMPERVIOUS AREA	GRASS AREA	TOTAL AREA	PERCENT IMPERVIOUS	RV	ESDv MIN	ESDv MAX
A	4789	8665	13454	0.36	0.37	415	1080
B	4405	9565	13970	0.32	0.33	389	1010
C	3326	7674	11000	0.30	0.32	295	768
D	2700	8117	10817	0.25	0.27	248	644
E	4125	8085	12210	0.34	0.35	360	937
F	4545	7236	11781	0.39	0.40	390	1014
TOTAL AREA	73232 SF	11781 SF	73232 SF				
	1.68 AC						2516 CF

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark W. ...
 PLANNING DIRECTOR

9/27/13
 DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
 DRAINAGE AREA MAP
 STELLA GLEN
 LOTS 1-7
 TAX MAP: 36 PARCELS: 57, 58 & 417
 HOWARD COUNTY, MARYLAND

TAX MAP: 36 GRID: 19
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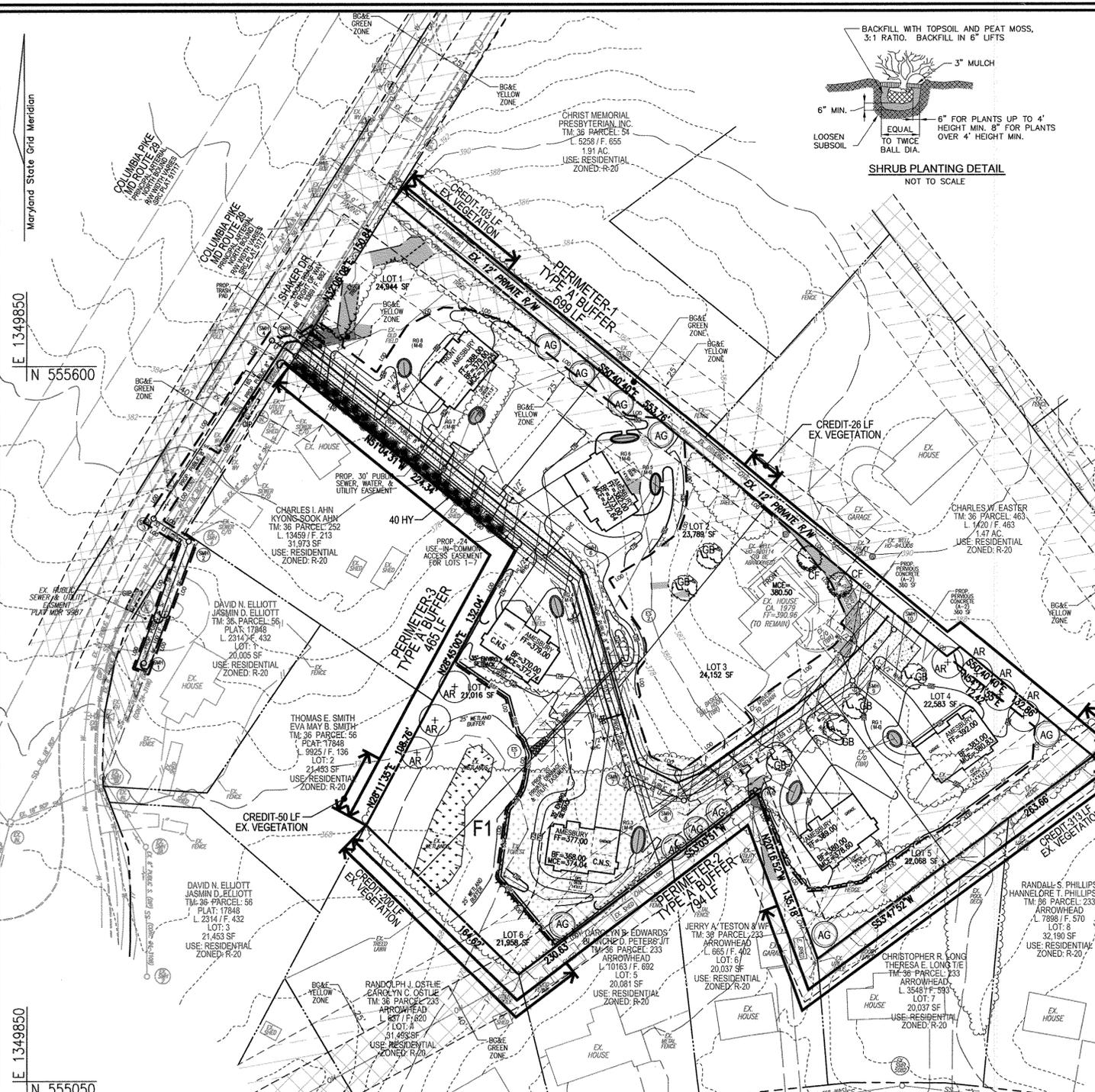
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DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: AUGUST 2013
 SCALE: AS SHOWN
 W.O. NO.: 12-23

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: 09-27-2014

4 SHEET OF 5



LANDSCAPE NOTES

- AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPE CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD, AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.

LANDSCAPE SCHEDULE NOTE:

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AND SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

B & E NOTES:

- THE LANDSCAPING ON WIREZONE (40' FROM BGE POLES) IS IN ACCORDANCE WITH BGE LIST OF TREES AND PLANTS.
- BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
- THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT, IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ UNDERSTANDS CONSTELLATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLY WITHHOLD PERMISSION.

GENERAL NOTES:

- PERIMETER LANDSCAPING AND TRASH PAD SCREENING FOR THIS DEVELOPMENT SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL. POSTING OF FINANCIAL SURETY IS DEFERRED UNTIL FINAL PLAT SUBMISSION.
- THERE IS NO 100-YEAR FLOODPLAIN WITHIN THE LIMITS OF THIS PROJECT.
- WETLANDS SHOWN ON-SITE ARE BASED ON A FIELD INVESTIGATION PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED SEPTEMBER 12, 2012. THERE ARE NO PROPOSED DISTURBANCES TO THE WETLANDS OR ASSOCIATED BUFFERS.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, WETLANDS BUFFER, STREAM BANK BUFFER OR FOREST CONSERVATION EASEMENTS.
- THE SUBJECT PROPERTY IS ZONED "R-20" IN ACCORDANCE WITH THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON 7/28/06, AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
- THE PROJECT BOUNDARY SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JUNE 2012.
- THE TOPOGRAPHY SHOWN HEREON IS BASED ON AN A FIELD R/W TOPOGRAPHIC SURVEY WITH 2-FOOT CONTOURS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JUNE 2012.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO GRAVE SITES, OR CEMETERIES LOCATED ON THE SUBJECT PROPERTY.
- THE REMOVAL OF TREES 30' OR GREAT DHB IS PROHIBITED WITHOUT COUNTY WAIVER APPROVAL.

TRASH PAD LANDSCAPING

SYMBOL	QTY.	DESCRIPTION	SIZE	REMARKS
(Symbol)	5	DWARF JAPANESE YEW	3'-4" HT	B & B

SCHEDULE A: PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES			INTERIOR PLANTINGS					TOTAL
	2	3	A	LOT 2	LOT 3	LOT 4	LOT 5		
PERIMETER FRONTAGE DESIGNATION	2	3	A	LOT 2	LOT 3	LOT 4	LOT 5		
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	699'	794'	485'	N/A	N/A	N/A	N/A		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	157'	YES	513'	50'	NO	NO	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED (IF REMAINING) SHADY TREES EVERGREEN TREES SHRUBS	542'	281'	415'	1:60	7	2	2	2	29
NUMBER OF PLANTS PROVIDED SHADY TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	9	5	3	2	2	2	2	2	25

OWNER
 MARY THERESE PFAU
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY QUALITY HOMES, INC.
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

Forest Conservation Worksheet 2.2

Net Tract Area	Value
A. Total Tract Area	A = 3.68
B. Deductions	B = 0.00
C. Net Tract Area	C = 3.68

Input the number "1" under the appropriate land use zoning, and limit to only one entry

ARA	MDR	IDA	HDR	MPD	CIA
0	1	0	0	0	0

D. Afforestation Threshold (Net Tract Area x 20%) D = 0.74
 E. Conservation Threshold (Net Tract Area x 25%) E = 0.92

Existing Forest Cover

Category	Value
F. Existing Forest Cover within the Net Tract Area	F = 0.64
G. Area of Forest Above Conservation Threshold	G = 0.00

Break Even Point

Category	Value
H. Break Even Point	H = 0.84
I. Forest Clearing Permitted Without Mitigation	I = 0.00

Proposed Forest Clearing

Category	Value
J. Total Area of Forest to be Cleared	J = 0.84
K. Total Area of Forest to be Retained	K = 0.00

Planting Requirements

Category	Value
L. Reforestation for Clearing Above the Conservation Threshold	L = 0.00
M. Reforestation for Clearing Below the Conservation Threshold	M = 1.28
N. Credit for Retention above the Conservation Threshold	N = 0.00
P. Total Reforestation Required	P = 1.28
Q. Total Afforestation Required	Q = 0.10
R. Total Planting Requirement	R = 1.38

2.76 Acres to be addressed via purchase of off site forest retention bank

LANDSCAPE & FOREST CONSERVATION PLAN
 SCALE: 1" = 50'

WETLAND DATA

WETLAND SYSTEM	COWARDIN CLASSIFICATION	DOMINANT VEGETATION	SIZE
A	PFO/EM1A	ACER RUBRUM, IMPATIENS CAPENSIS, JUNCUS EFFUSUS, CAREX LURIDA, GLYCERIA STRIATA, ONOCLEA SENSIBILIS	0.2 ACRES

FOREST STAND DATA

KEY	COMMUNITY TYPE	ACREAGE	DOMINANT VEGETATION	GENERAL CONDITION	PRIORITY ACREAGE
F1	SUCCESIONAL	0.6 NTA	ACER RUBRUM, ACER SACCHARINUM, ACER NEGUNDO, PRUNUS SEROTINA, JUGLANS NIGRA	GOOD	0.6 WETLANDS AND BUFFERS

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SYMBOL	KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
(Symbol)	AR	7	ACER RUBRUM 'RED SUNSET' RED SUNSET RED MAPLE	2 1/2"-3" CAL.	B & B
(Symbol)	AG	10	ACER GINNALA AMUR MAPLE	2 1/2"-3" CAL.	B & B
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