

GENERAL NOTES

1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
2. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY 2014, OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS.
3. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED SEPTEMBER 2014.
4. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 3513 AND 41CC WERE USED FOR THIS PROJECT.
5. THE SUBJECT PROPERTY IS ZONED "R-20" IN ACCORDANCE WITH THE 10 / 2013 COMPREHENSIVE ZONING PLAN AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
6. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
7. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
8. WATER FOR THIS PROJECT IS TO BE SERVICE CONNECTIONS FROM CONTRACT NO. 14-4794-D.
9. SEWER FOR THIS PROJECT IS TO BE SERVICE CONNECTIONS FROM CONTRACT NO. 14-4794-D.
10. EXISTING UTILITIES LOCATED FROM TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
11. NO FLOODPLAIN IS LOCATED ONSITE.
12. NO STEEP SLOPES OVER 20.00% OF CONTIGUOUS ARE LOCATED ONSITE.
13. FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A FUTURE SUBDIVISION PLAN.
14. NO WETLANDS OR STREAMS ARE PRESENT ON OR IMMEDIATELY ADJACENT TO THE SUBJECT PROPERTY, BASED ON ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, NOVEMBER 2014
15. IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THE OPEN SPACE REQUIREMENTS FOR THIS R-20 PROJECT IS 6% OF GROSS AREA (1.48 AC. GROSS AREA x 6% = 0.09 AC.). SHALL BE MET BY PAYMENT OF FEE-IN-LIEU.
16. GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AS PART OF THE SITE DEVELOPMENT PLAN PACKAGE.
17. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT. A NOISE WALL IS REQUIRED FOR THIS SITE AND WILL BE CONSTRUCTED IN ACCORDANCE WITH SHA PROJECT HO-3175170 WHICH IS FUNDED FOR CONSTRUCTION.
18. NO PORTIONS OF THE SITE WOULD BE CONSIDERED FOREST AND NO SPECIMEN TREES ARE PRESENT ON THE SITE BASED ON ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, NOVEMBER 2014
19. SHAKER DRIVE IS CLASSIFIED AS A MAJOR COLLECTOR. ACCESS SHALL BE VIA EXISTING DRIVEWAY TO SHAKER DRIVE AND AN EXTENSION OF AN EXISTING USE-IN-COMMON DRIVEWAY / STELLA GLEN I (F14-049).
20. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
21. THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
22. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF NON STRUCTURAL PRACTICES AND MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE RAIN GARDENS (M-7) AND DRY WELLS (M-5), NON STRUCTURAL PRACTICES INCLUDE DISCONNECTION OF ROOFTOP (N-1) AND NON ROOFTOP RUNOFF (N-2). THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
23. 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.

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

ENVIRONMENTAL SITE DESIGN NARRATIVE:

- IN ACCORDANCE WITH THE DEVELOPMENT ENGINEERING DIVISION ECP CHECKLIST ITEM III.K.
1. PER MR. CANOLES OF ECO SCIENCE PROFESSIONALS INC. NO NATURAL AREAS / WETLANDS OR STREAMS ARE PRESENT ON OR IMMEDIATELY ADJACENT TO THE SUBJECT PROPERTY. NO DISTURBANCE TO A STREAM AND STREAM BUFFER, WETLAND AND WETLAND BUFFER RESOURCES IS PROPOSED.
 2. NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED, PLEASE REFER TO THE PROPOSED GRADING.
 3. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT. THE ESD CONCEPT INCLUDES THE USE OF MICRO-SCALE PRACTICES TO INCLUDE MICRO-BIORETENTION FACILITIES (M-6), DRYWELLS (M-5) AND NON-STRUCTURAL PRACTICES: ROOFTOP (N-1) AND NON-ROOFTOP DISCONNECTION (N-2).
 4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF PROPOSED SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD COUNTY CONSERVATION DISTRICT.
 5. STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-SCALE PRACTICES TO INCLUDE THE ESD CONCEPT INCLUDES THE USE OF MICRO-SCALE PRACTICES TO INCLUDE MICRO-BIORETENTION FACILITIES (M-6), DRYWELLS (M-5) AND NON-STRUCTURAL PRACTICES: ROOFTOP (N-1) AND NON-ROOFTOP DISCONNECTION (N-2). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION".
- TARGET PE = 1.2" PROVIDED PE = 1.2"
 TARGET ESDv = 844 CUFT PROVIDED = 857 CUFT
6. AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS AND/OR WAIVER PETITIONS FOR ENVIRONMENTAL AND/OR STORMWATER MANAGEMENT DESIGN ARE REQUIRED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John Coleman
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 3-13-15
 DATE

John Coleman
 CHIEF, DIVISION OF LAND DEVELOPMENT 3-09-15
 DATE

ENVIRONMENTAL CONCEPT PLAN

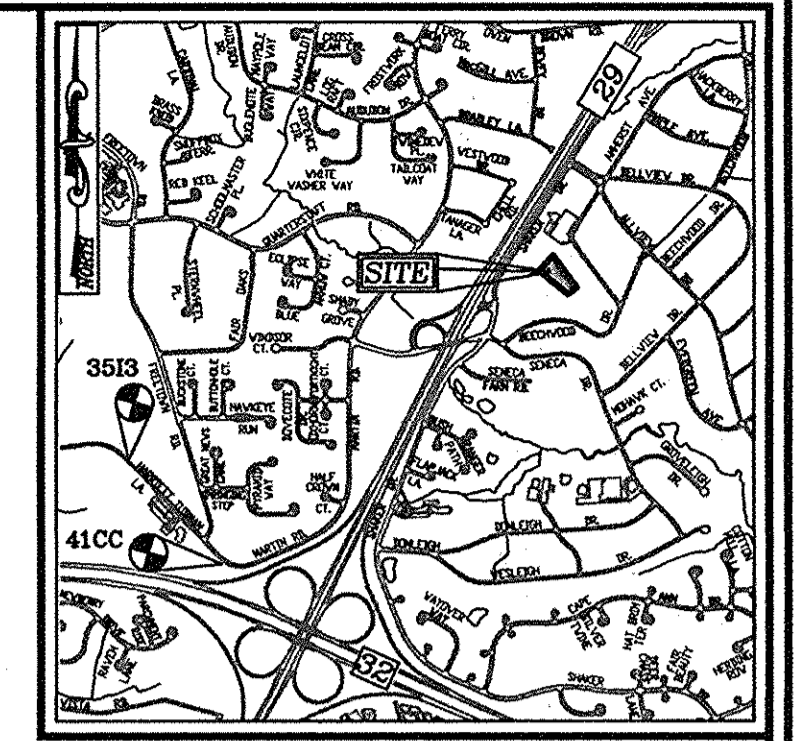
STELLA GLEN II

LOTS 1 - 3

A SUBDIVISION OF PARCEL 346

BENCHMARKS

HOWARD COUNTY BENCHMARK 3513 (CONC. MON.)
 N 553573.69 E 1348098.09 ELEV. 415.34
 HARRIET TUBMAN LA. BY ATHOLTON HS
 HOWARD COUNTY BENCHMARK 41CC (CONC. MON.)
 MARTIN RD. NEAR CORNER OF FREETOWN RD.
 N 552494.26 E 1347062.39 ELEV. 399.95



VICINITY MAP
 SCALE: 1"=2,000'
 ADC MAP COORDINATE: 49.35, B-10

SHEET INDEX

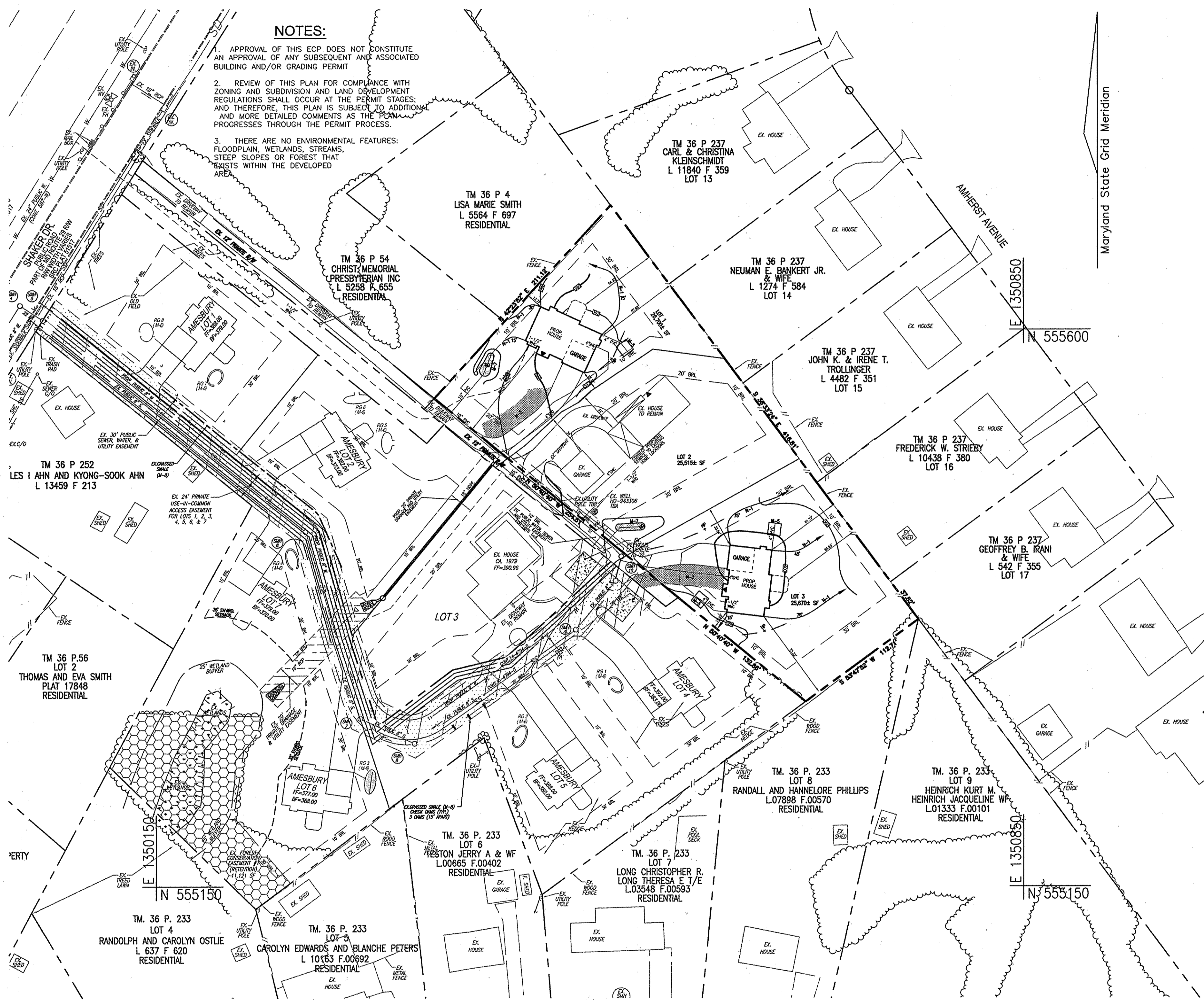
DESCRIPTION	SHEET NO.
COVER SHEET / LAYOUT PLAN	1 OF 3
SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN	2 OF 3
DRAINAGE AREA MAP	3 OF 3

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF PAVING
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EX. 24' USE-IN-COMMON ACCESS EASEMENT
- EX. 30' PUBLIC SEWER, WATER, & UTILITY EASEMENT
- NON-STRUCTURAL ROOFTOP DISCONNECTIONS
- PROPOSED DRYWELL
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE

OWNER
 MICHAEL PFALU
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

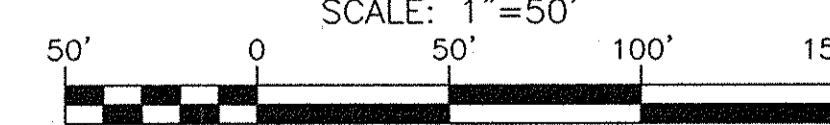
DEVELOPER
 TRINITY QUALITY HOMES, INC.
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023



SITE ANALYSIS DATA CHART

- | | |
|---|---|
| A. TOTAL PROJECT AREA: | 1.48 AC. |
| B. AREA OF PLAN SUBMISSION: | 1.48 AC. & RESUB OF STELLA GLEN I |
| C. AREA OF WETLANDS AND BUFFERS: | 0.0 AC. +/- |
| D. AREA OF FLOODPLAIN: | 0.0 S.F. OR 0.00 AC. (REFER TO FSD) |
| E. AREA OF FOREST: | 0 S.F. OR 0.00 AC. |
| F. AREA OF STEEP SLOPES (15% & GREATER): | N/A |
| G. ERODIBLE SOILS: | 0.54 AC. +/- |
| H. LIMIT OF DISTURBED AREA: | RESIDENTIAL SINGLE FAMILY DETACHED (SFD) HOMES |
| I. PROPOSED USES FOR SITE AND STRUCTURES: | 1.29 AC. |
| J. GREEN OPEN AREA: | 0.19 AC. |
| K. PROPOSED IMPERVIOUS AREA: | 0.09 ACRES (6%) |
| L. PRESENT ZONING DESIGNATION: | R-20 |
| M. OPEN SPACE REQUIRED: | 4 |
| N. TOTAL NUMBER OF UNITS ALLOWED: | 4 |
| O. TOTAL NUMBER OF UNITS PROPOSED: | 4 |
| P. DPZ FILE REFERENCES: | ECP-13-024, CONT.#24-3108, WP-13-138, SP-13-009 & F-14-049. |

LAYOUT PLAN



MINIMUM LOT SIZE CHART

LOT	GROSS AREA	PIPESTEM AREA	NET AREA	MIN. LOT SIZE
1	26,700 SF	6,400 SF	20,300 SF	20,000 SF
2	25,515 SF	2,052 SF	23,463 SF	20,000 SF
3	25,670 SF	2,074 SF	23,596 SF	20,000 SF

Eco-Science Professionals, Inc.
 Consulting Ecologists
 P.O. Box 5004 Cliva Ave., Maryland 21087 Telephone (410) 832-3480 Fax (410) 832-3488

MD DNR Qualified Professional
 USACOE Wetland Delineator
 Certification # WDCP93MD0610044B2
 John T. Canoles

1. SURROUNDING LAND USE INCLUDES HIGH DENSITY RESIDENTIAL.
2. NO PORTIONS OF THE SITE WOULD BE CONSIDERED FOREST AND NO SPECIMEN TREES ARE PRESENT ON THE SITE.
3. NO WETLANDS OR STREAMS ARE PRESENT ON OR IMMEDIATELY ADJACENT TO THE SUBJECT PROPERTY.

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
COVER SHEET / LAYOUT PLAN
STELLA GLEN II
LOTS 1 - 3
A SUBDIVISION OF PARCEL 346

TAX MAP: 36 GRID: 19
 6TH ELECTION DISTRICT

ZONED: R-20
 PARCELS: 346
 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

DESIGN BY: RHE
 DRAWN BY: KG
 CHECKED BY: RHV
 DATE: FEBRUARY 2015
 SCALE: AS SHOWN
 W.O. NO.: 14-37

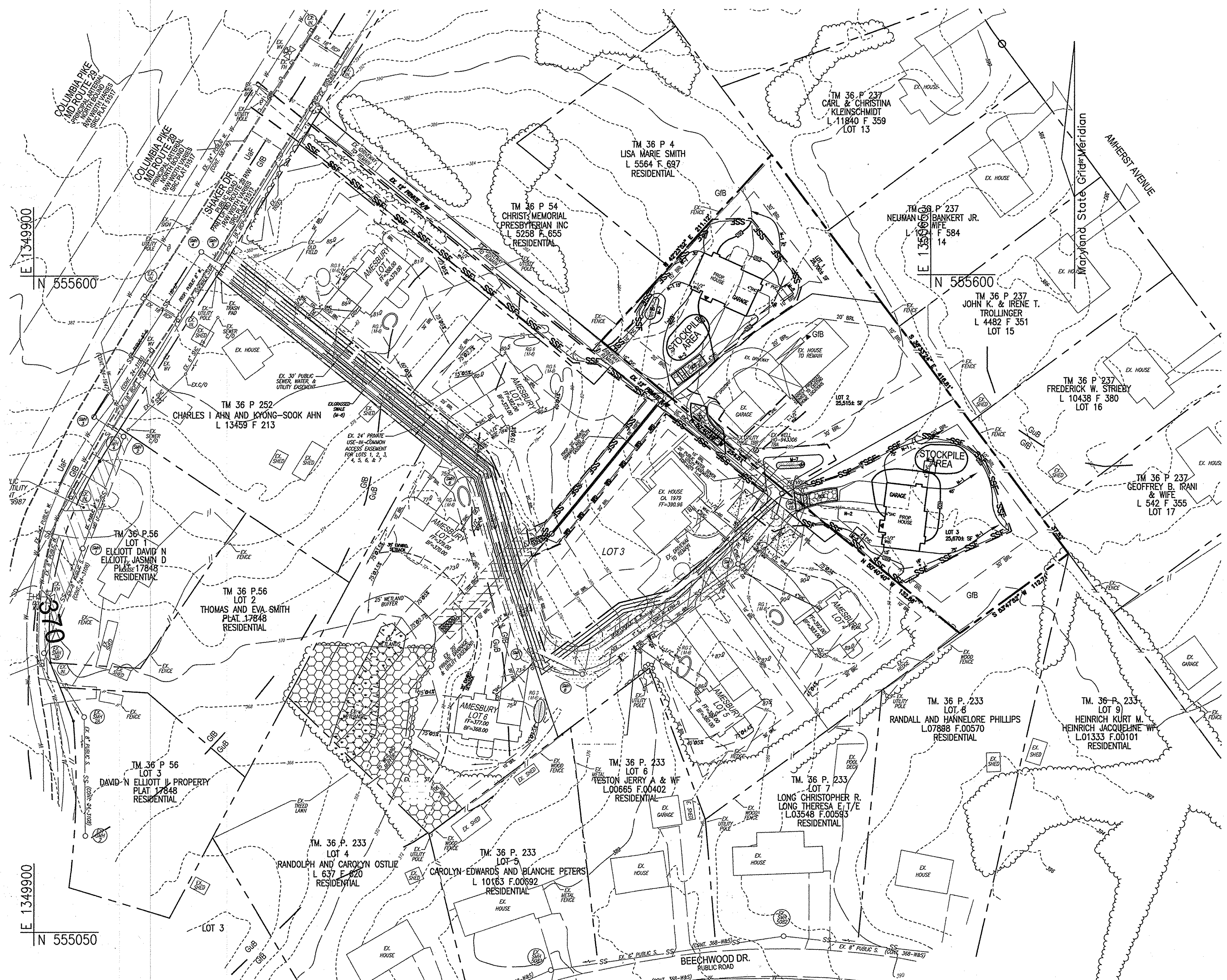
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18193 EXPIRATION DATE: 09-27-2016

1 SHEET OF 3

NOTES:

APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME.

1. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING
2. THE PROJECT SHALL ADDRESS ANY TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.
3. THE FINAL PLAN SUBMISSION SHALL PROVIDE A DRAINAGE AREA MAP SPECIFIC TO CHOSEN SEDIMENT CONTROLS
4. THE FINAL PLAN SUBMISSION SHALL PROVIDE COMPUTATIONS TO VERIFY VELOCITIES ALONG DIKES, SWALES AND AT DIKES OUTLET LOCATIONS



GRADING PLAN

SCALE: 1"=50'



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:
 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

[Signature] 3-13-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3-09-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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

LEGEND:

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- EX. USE-IN-COMMON ACCESS EASEMENT
- EX. 30" PUBLIC SEWER, WATER, & UTILITY EASEMENT
- EX. FOREST CONSERVATION EASEMENT (RETENTION)
- EX. PUBLIC SEWER & UTILITY EASEMENT PLAT MOR 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
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING STEEP SLOPES
- EXISTING MODERATE SLOPES
- PROPOSED SUPER SILT FENCE
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED EROSION CONTROL MATTING
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED RAIN GARDEN
- PROPOSED INLET PROTECTION

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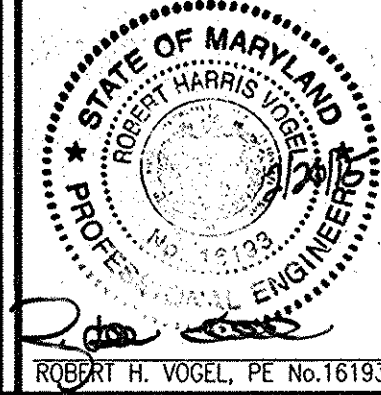
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NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
 SOILS MAP, GRADING, EROSION, AND
 SEDIMENT CONTROL PLAN
 STELLA GLEN II
 LOTS 1-3
 A SUBDIVISION OF PARCEL 346**

TAX MAP: 36 GRID: 19 ZONED: R-20
 6TH ELECTION DISTRICT PARCELS: 346
 HOWARD COUNTY, MARYLAND

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PROFESSIONAL CERTIFICATE

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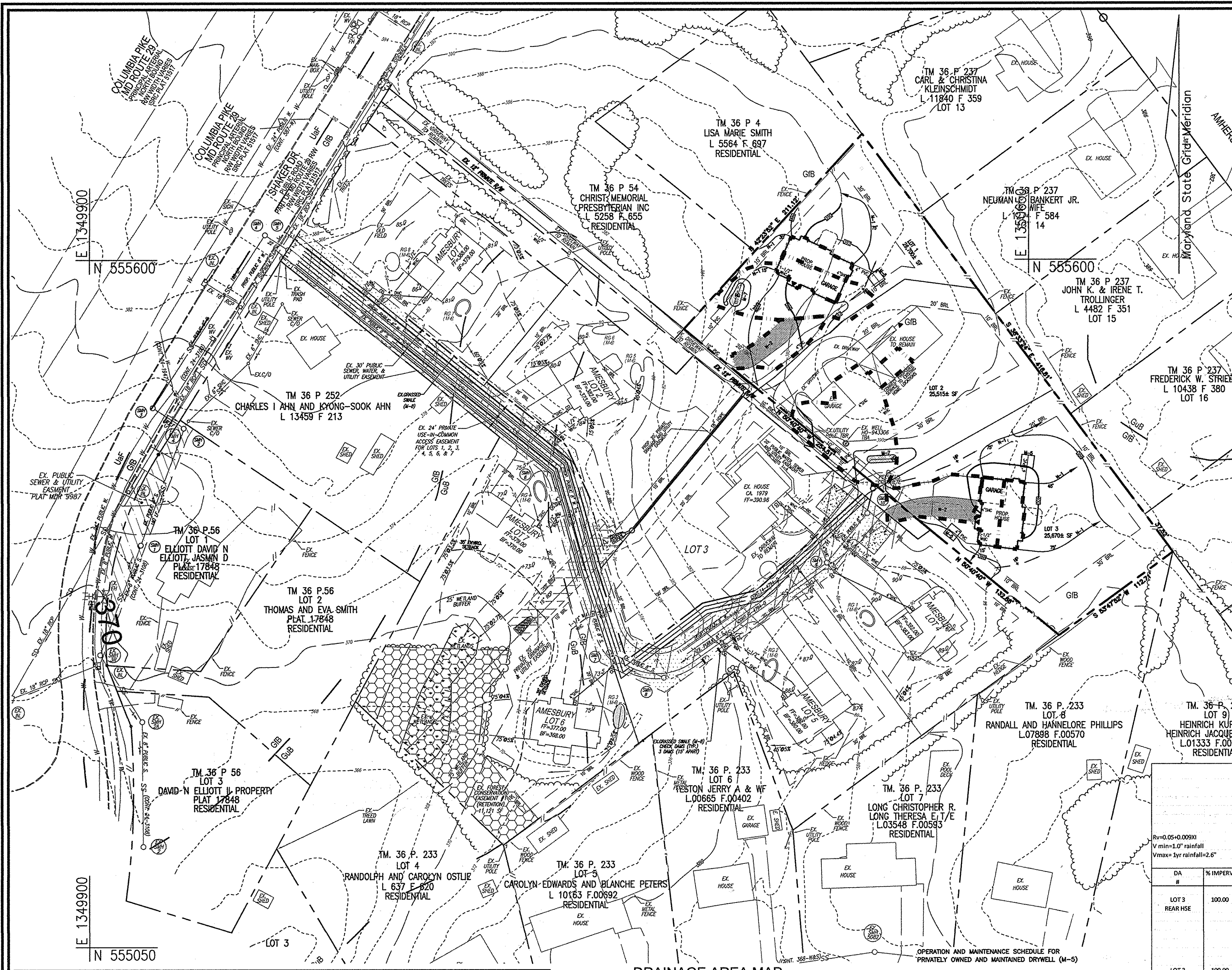
2 SHEET OF 3

MAPPED SOILS TYPES - SAVAGE NW MAP #18

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDRIC	HYDRIC INCLUSIONS	FARMLAND	<15% SLOPE W/ EROSION POTENTIAL
GIB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	0.20	NO		0.20	NO

TAKEN FROM: USDA, SCS-WEIL 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



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

1. MATERIAL SPECIFICATIONS
 THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING MEDIA OR PLANTING SOIL
 THE SOIL SHALL BE A UNIFORM MIX FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05.

3. COMPACTION
 IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

4. PLANT MATERIAL
 RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

5. PLANT INSTALLATION
 COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE. ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THROUGHOUT WATER DRAINAGE SHOULD BE MAINTAINED. 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.

6. UNDERDRAINS
 UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
 • PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE 28, OR ASHTO-M-276) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HOPE).
 • PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PERFORATIONS SHALL BE WROUGHT WITH A 1/4" (NO. 4 OR 4-0) GALVANIZED HARDWARE CLOTH.
 • GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
 • 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 P-38 GRAVEL (1 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".

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

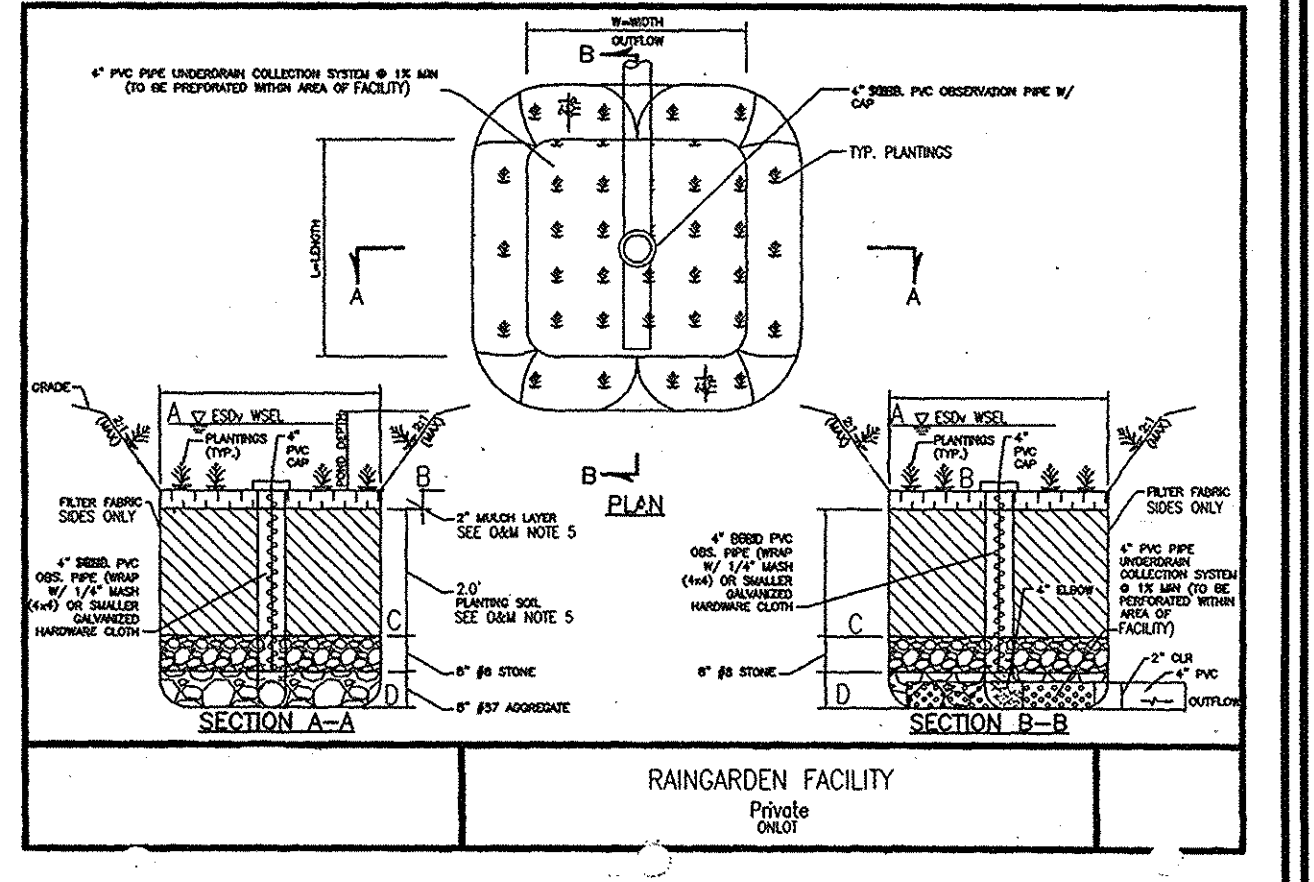


Table B.4.1 Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Planting soil (2" to 4" deep)	See Appendix A, Table A.4	n/a	USDA soil type: heavy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	aged 6 months, minimum no pine or wood chips
Mulch	Shredded hardwood	n/a	aged 6 months, minimum no pine or wood chips
Post-gravel diaphragm	poly gravel: ASTM-D-448	NO. 8 OR NO. 9 (1 1/4" TO 3/8")	n/a
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	PE Type I nonwoven
Geotextile	ASHTO M-43	NO. 57 OR NO. 6 ACCORDING TO (ASTM D 2974)	n/a
Underdrain piping	F 758, Type PS 28 or ASHTO M-276	4" or 6" rigid schedule 40 PVC or SDR335	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipe; no necessary underdrain pipe. Perforated pipe shall be wrapped with 1/2 inch geotextile fabric.
Perforated pipe concrete (if required)	MSHA Mix No. 3; F _c = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM A615-60	n/a	on-site testing of ground-in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using pre-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 308.9R; vertical loading (10' to 10-20' allowable horizontal loading based on soil pressure); and analysis of potential cracking.
Sand	ASHTO M-4 or ASTM C-33	0.075" to 0.04"	Sand substitutes used in Drainage and Geotextiles (ASHTO M-4) are not acceptable. No calcium carbonate or dolomitic sand substitutes are acceptable. No "rock dust" can be used for sand.

OPERATION AND MAINTENANCE SCHEDULE FOR (M-7) MICROBIORETENTION AREAS

1. 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.1.1 AND 2.

2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.

3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.

4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDRIC	HYDRIC INCLUSIONS	FARMLAND	<15% SLOPE W/ EROSION POTENTIAL
GIB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	0.20	NO		0.20	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

CONSTRUCTION CRITERIA:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:

- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARIFYING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

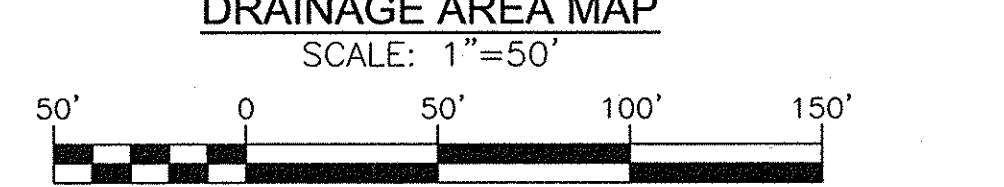
INSPECTION:
 A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:
 MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPE AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AND REPLACED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad E. ... 3-13-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Robert H. Vogel 3-09-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRYWELL (M-5)

A. THE OWNER SHALL INSPECT & CLEAN ANNUALLY, INCLUDING PIPES, GUTTERS, DOWNSPOUTS AND FILTERS.

B. PONDING STANDING WATER OR ALGAL GROWTH ON THE TOP OF A DRYWELL MAY INDICATE FAILURE DUE TO SEDIMENTATION IN THE GRAVEL MEDIA. IF WATER PONDING FOR MORE THAN 48 HOURS AFTER A MAJOR STORM OR MORE THAN SIX INCHES OF SEDIMENT HAS ACCUMULATED, THE GRAVEL MEDIA SHOULD BE EXCAVATED AND REPLACED.

N-1. DISCONNECTION OF ROOFTOP RUNOFF
 N-2. DISCONNECTION OF NON-ROOFTOP RUNOFF

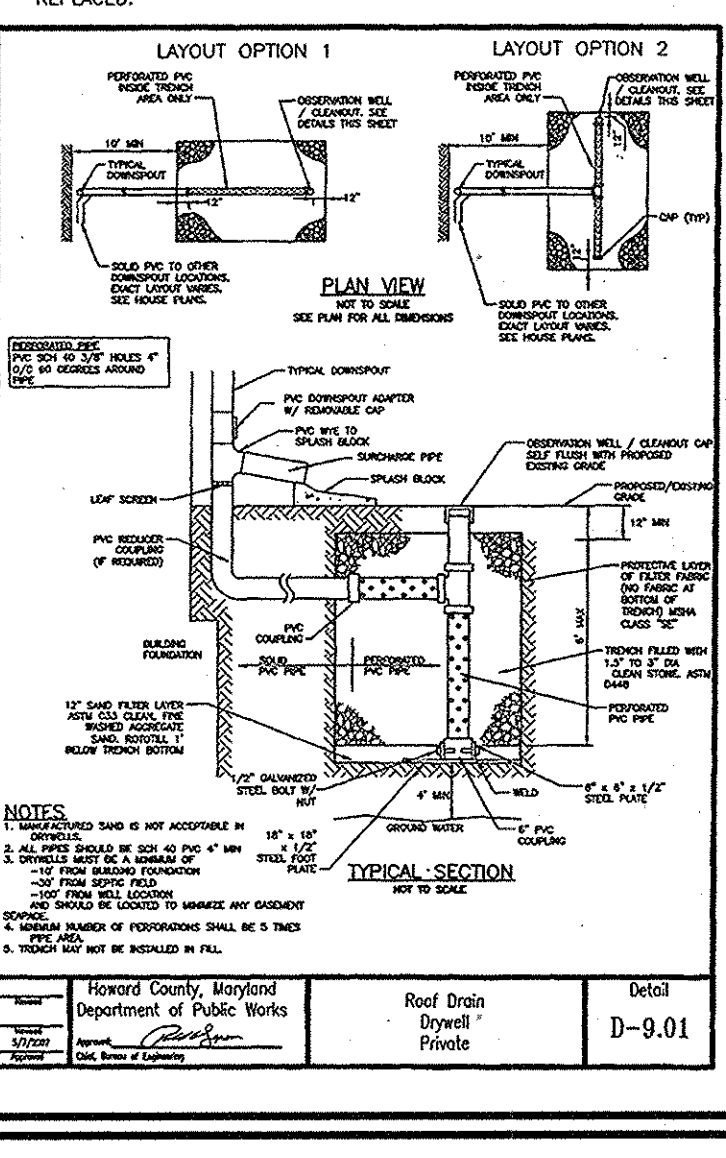
CONSTRUCTION CRITERIA:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:

- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARIFYING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

INSPECTION:
 A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:
 MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPE AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AND REPLACED.



STELLA "2" - ECP ESDv COMPUTATIONS

SITE AREA: 1.30 AC 47936 SF
 TARGET PMP: 2.00 IN
 SITE IMPERVIOUS: 37.6 PERCENT
 SITE RV: 0.2084
 SITE ESDV: 999 CF +/-

Rv=0.05+0.00991
 V=mins(1.0", rainfall)
 Vmax=1yr rainfall=2.6"

DA	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	I.P. VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
LOT 3 REAR HSE	100.00	0.9500	1100	0.03	87	226	105	107	1100	0.03	0.00	NON STRUCTURAL (N-1) - ROOFTOP DISCONNECT 28 25.75 CF EA 30 DISCON 1 PROVIDED 40 39.58 CF EA 75 DISCON 1 PROVIDED MICROSCALE DRYWELL (M-5) 43 6' X 6' X 4' DEEP DRYWELL 4 DRYWELL
LOT 3 FRONT HSE	100.00	0.9500	1100	0.03	87	226	105	124	1100	0.03	0.00	NON STRUCTURAL (N-1) - ROOFTOP DISCONNECT 8 7.92 CF EA 30 DISCON 1 PROVIDED NON STRUCTURAL (N-1) - ROOFTOP DISCONNECT 40 39.58 CF EA 75 DISCON 1 PROVIDED MICROSCALE DRYWELL (M-5) 77 7' X 7' X 4' DEEP DRYWELL 4 DRYWELL
LOT 3 DRIVEWAY	61.33	0.6020	2250	0.05	113	293	135	113	1380	0.03	0.02	NON STRUCTURAL (N-2) - NON ROOFTOP DISCONNECT 113 CF PER 1" SUCCESSFUL DISCONNECT *LARGER "FRONT" DRYWELL PROVIDES ADDITIONAL VOLUME ACCOUNTING FOR DRIVEWAY'S ADDITIONAL 0.2" REQUIREMENT
TOTAL REQUIRED ESDv LOT 3 = 344												
TOTAL PROVIDED ESDv LOT 3 = 344												
LOT 2 NEW DRIVEWAY	21.82	0.2464	5500	0.13	113	294	136	140	1200	0.03	0.10	MICROSCALE RAIN GARDEN (M-7) 140 105 SF MICRO BIO
TOTAL REQUIRED ESDv LOT 2 = 136												
TOTAL PROVIDED ESDv LOT 2 = 140												
LOT 1 REAR HSE	100.00	0.9500	1100	0.03	87	226	105	114	1100	0.03	0.00	NON STRUCTURAL (N-1) - ROOFTOP DISCONNECT 16 15.83 CF EA 30 DISCON 1 PROVIDED NON STRUCTURAL (N-1) - ROOFTOP DISCONNECT 40 39.58 CF EA 75 DISCON 1 PROVIDED MICROSCALE DRYWELL (M-5) 59 6' X 6' X 4' DEEP DRYWELL 4 DRYWELL
LOT 1 FRONT HSE P/O DRIVE	33.09	0.3478	4306	0.10	125	325	150	168	1425	0.03	0.07	NON STRUCTURAL (N-1) - ROOFTOP DISCONNECT 8 7.92 CF EA 30 DISCON 1 PROVIDED MICROSCALE RAIN GARDEN (M-7) 160 120 SF MICRO BIO
LOT 1 P/O DRIVEWAY	68.48	0.6664	1650	0.04	92	238	110	92	1130	0.03	0.01	NON STRUCTURAL (N-2) - NON ROOFTOP DISCONNECT 92 CF PER 1" SUCCESSFUL DISCONNECT *LARGER "FRONT" RAIN GARDEN PROVIDES ADDITIONAL VOLUME ACCOUNTING FOR DRIVEWAY'S ADDITIONAL 0.2" REQUIREMENT
TOTAL REQUIRED ESDv LOT 1 = 364												
TOTAL PROVIDED ESDv LOT 1 = 374												
PROJECT TOTALS	49.6	0.4964	17006	0.39	703	1829	844	857	8435	0.19	0.20	

OWNER
 MICHAEL 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

ENVIRONMENTAL CONCEPT PLAN
DRAINAGE AREA MAP
STELLA GLEN II
 LOTS 1 - 3
 A SUBDIVISION OF PARCEL 346

TAX MAP: 36 GRID: 19
 6TH ELECTION DISTRICT

ZONED: R-20
 PARCELS: 346
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING & SURVEYORS, PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.1896

PROFESSIONAL CERTIFICATE
 DESIGN BY: RHE
 DRAWN BY: KHG
 CHECKED BY: RHV
 DATE: FEBRUARY 2015
 SCALE: AS SHOWN
 W.D. NO.: 14-37

1 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

3 SHEET OF 3