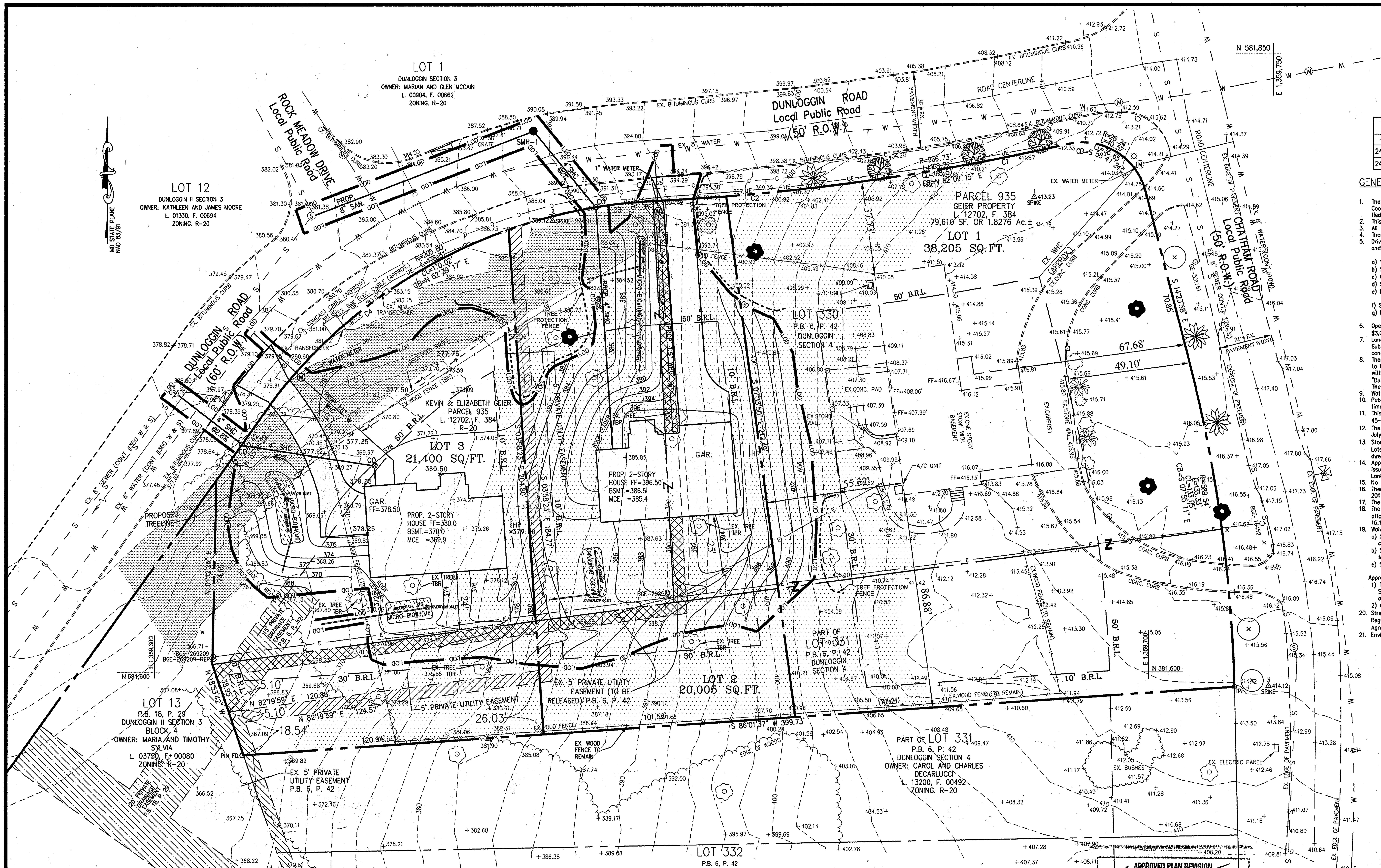
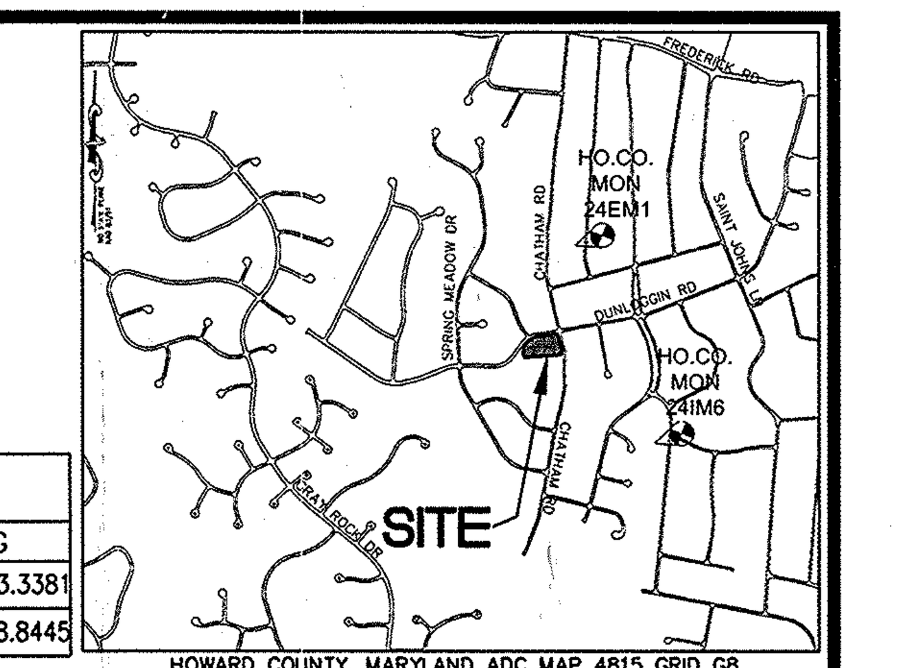




HOWARD COUNTY, MARYLAND ADC MAP 4815 GRID G8

VICINITY MAP

SCALE: 1" = 2000'

BENCHMARKS			
#	ELEVATION	NORTHING	EASTING
24EM1	128.021'	N 582,752.1754	E 1,359,883.3381
24IM6	381.632'	N 580,649.0916	E 1,360,728.8445

GENERAL NOTES:

1. 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 No. 24EM1 and No. 24IM6 was used for this project. Elevations shown hereon are tied to NAVD88 vertical datum.
2. This plan is based on a field run monumented boundary and topographic survey performed in March, 2011 by KCE Engineering, Inc.
3. All areas shown hereon have been rounded off and are more or less.
4. There is no existing forest on the site
5. Driveways shall be provided prior to issuance of a use and occupancy permit for any new dwellings to insure safe access for fire and emergency vehicles per the following minimum.

   a) Width = 12', (16' serving more than one residence);
   b) Surface = 6" of compacted crusher run base w/tar and chip coating (1-1/2" min.);
   c) Geometry = Max. 15% grade, max. 10% grade change and min. 45' 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 one foot depth over driveway surface;
   f) Structure clearances minimum 12 feet.
   g) Maintenance = sufficient to insure all weather use.

6. Open space requirements for the creation of the new lots will be satisfied by the payment of a fee-in-lieu in the amount of $3,000 to Howard County.
7. Landscaping will be provided for Lots 2 & 3 at the site development plan stage in accordance with Section 16.124 of the Subdivision and Land Development Regulations and the Landscape Manual. Landscaping shown on this supplemental plan is conceptual.
8. There is an existing dwelling located on Lot 1, to remain. No new buildings, extensions or additions to the existing dwellings are to be constructed at a distance less than the zoning regulations require. Existing house on Lot 1 was constructed in compliance with minimum setback requirements in effect at the time of construction. These setback requirements are shown on plat of "Dunloggin, Section 4". The existing house is in non-compliance with the current minimum setback requirements for zone R-20. The rear setback line on Lot 1 is shown as per current setback requirements.
9. Water and Sewer service to these lots will be granted under the provision of Section 18.122.B of the Howard County Code.
10. Public water and sewage allocation will be granted at the time of issuance of the building permit if capacity is available at that time.
11. This subdivision plan is subject to the amended Fifth Edition of the Subdivision and Land Development Regulations per Council Bill 45-2003 effective 10/2/03 and the Zoning Regulations amended by Council Bill 75-2003.
12. The subject property is zoned "R-20" per the 2/2/04 Comprehensive Zoning Plan and the Comp-Lite Zoning Amendments dated July 28, 2006.
13. Stormwater Management for Lots 2 is provided through two micro-bioretention facilities (M-6) and Stormwater Management for Lots 3 is provided through two micro-bioretention facilities (M-6). SWM for Lot 1 is not required since there is an existing dwelling on the Lot, which is to remain. Declaration of Covenants will be recorded simultaneously with plat.
14. Approval of a site development plan is required for the development of residential Lots 2 and 3 within this subdivision prior to issuance of any grading or building permits for new house construction in accordance with Section 16.155 of the Subdivision and Land Development Regulations.
15. No historic structures or cemeteries exist on the subject property.
16. There are no floodplains, wetlands, streams or their buffers located on-site as certified by KCE Engineering, Inc. on date April 6, 2011.
17. The contiguous area of on-site and off-site steep slopes is less than 20,000 square feet.
18. The Forest Conservation obligation for this subdivision will be fulfilled by payment of a fee-in-lieu of afforestation for 0.27 acres (11,761.2 sq.ft.) in the amount of $8,821.00 in accordance with Section 16.1200 of the Howard County Code and Forest Conservation Act.
19. Waiver Petition WP-12-062 was approved on December 1, 2011 to waive following sections,
    a) Section 16.132(a)(2)(i)-Construct road improvements up to one-half of the full designated pavement width for local or minor collector roads, or contribute to the County the funds necessary to do such construction.
    b) Section 16.134(a)(1)(ii)-Construct sidewalks along the portion of the development that fronts on a County road, or pay a fee-in-lieu of sidewalk construction.
    c) Section 16.135(a)-Provide street lighting in accordance with the Design Manual.

    Approval of waiver is subject to following conditions,
    1) The applicant shall provide the required street trees along the property frontage in accordance with Section 16.136 of the Subdivision and Land Development Regulations. Preservation of existing trees located along the road right-of-way can be taken as street tree credit.
    2) Compliance with the comments issued for final plat, F-12-017.
20. Street trees are provided for this project in accordance with Section 16.124(e)(1) of the Subdivision and Land Development Regulations and Landscape Manual. Financial surety in the amount of $2,700 will be posted as a part of the Developer's Agreement for the proposed nine (9) street trees.
21. Environmental Concept plan (ECP-12-005) for this subdivision was approved on August 15, 2011.

SITE DATA

1. LOCATION: TAX MAP 24, PARCEL 935 AND PARCEL 598, LOTS 330 & P/O 331
2. SECOND ELECTION DISTRICT
3. EXISTING ZONING: R-20
4. GROSS AREA OF PARCEL: 79,610 SFT.=1.8276 ACRES
5. AREA OF FLOODPLAIN: N/A
6. AREA OF CONTIGUOUS STEEP SLOPES 7,700 SQ.FT.
7. AREA OF PUBLIC UTILITY EASEMENT = 1,055 S.F.
8. NET AREA OF SITE = 79,610 S.F.
9. AREA OF REQUIRED OPEN SPACE = 4,777 S.F. (6% OF SITE AREA)
10. NUMBER OF PROPOSED RESIDENTIAL LOTS: 3
11. AREA OF PROPOSED RESIDENTIAL LOTS = 79,610 S.F.
12. AREA OF SMALLEST BUILDABLE LOT PROPOSED: 20,005 S.F.
13. LIMIT OF DISTURBANCE = 31,849 S.F.

STORMWATER MANAGEMENT SUMMARY TABLE - LOT 2			
Practice	Location	Area Treated	Volume (ESDv)
Micro-bioretention	Back of house Alongside driveway	2,875 sf	370 cf
Total ESDv required			294 cf
Total ESDv provided			370 cf
Total Rev required			85 cf
Total Rev provided			85 cf

STORMWATER MANAGEMENT SUMMARY TABLE – LOT 3			
Practice	Location	Area Treated	Volume (ESDv)
Micro-bioretention	Back of house Alongside driveway	2,850 sf	410 cf
Total ESDv required			309 cf
Total ESDv provided			410 cf
Total Rev required			74 cf
Total Rev provided			85 cf

PROPERTY LINE TABLE				
	RADIUS	LENGTH	CH. BEARING	CH. LENGTH
C1	966.73'	139.23'	N 81°16'48" E	139.11'
C2	966.73'	29.46'	N 86°16'44" E	29.46'
C3	205.00'	59.44'	N 78°50'47" E	59.24'
C4	205.00'	115.87'	N 54°20'50" E	114.33'

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	GRADING AND STORMWATER MANAGEMENT PLAN
2	SWM NOTES AND DETAILS
3	LANDSCAPE PLAN
4	SIMPLIFIED FOREST STAND DELINEATION & FOREST CONSERVATION PLAN
5	SEDIMENT AND EROSION CONTROL PLAN
6	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS

LEGEND

- EX. ROAD SIGN
- EX. SANITARY SEWER MANHOLE
- EX. POWER POLE
- EX. WATER VALVE
- EX. WATER METER
- CLEANOUT
- E — EX. OVERHEAD ELECTRICAL
- UE — EX. UNDERGROUND ELECTRICAL
- IPF, IPIN DENOTES IRON PIPE FOUND
- EX. TREE LINE
- 477 PROPOSED CONTOUR
- 480 EXISTING CONTOUR
- TBR TO BE REMOVED
- 417.73 EX. SPOT ELEVATION
- ×395.50 PROPOSED SPOT ELEVATION
- LOD LIMIT OF DISTURBANCE
- TREE PROTECTION FENCE
- PROPOSED & EXISTING EASEMENTS
- EX. SPECIMEN TREE TO BE RETAINED (30" OR MORE DBH)
- EX. TREE
- EX. WOOD FENCE
- EX. CHAINLINK FENCE
- W — EX. WATER LINE
- W — PROPOSED WATER
- PROPOSED SEWER
- S — EX. SEWER LINE
- PROPOSED TREE LINE
- UU — EX. COMCAST CABLE LINE
- 15% - 24.9% SLOPE
- >= 25% SLOPE CONTIGIOUS AREA = 7700 SF (ONSITE+OFF-SITE)
- PROPOSED EASEMENT
- EXISTING EASEMENT
- EXISTING EASEMENT TO BE RELEASED

APPROVED PLAN REVISION
SCD [signature] 9/15/15
NRCS
Technical Review Date

OWNER/DEVELOPER
KEVIN J. GEIER
3902 CHATHAM ROAD
ELLICOTT CITY, MD 21042
PHONE: 443 604 5791

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 8-12-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[signature] 9-17-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

SUPPLEMENTAL PLAN
GRADING AND STORMWATER MANAGEMENT PLAN
GEIER SUBDIVISION
LOTS 1 - 3

A SUBDIVISION OF PARCEL 935 AND A RESUBDIVISION OF DUNLOGGIN, SECTION 4, PARCEL 598, LOT 330 AND PART OF LOT 331
(P.B. 6, P.42 & L. 12702, F. 384)
TAX MAP 24 GRID 16 ZONING R-20
2nd ELECTION DISTRICT– HOWARD COUNTY, MARYLAND

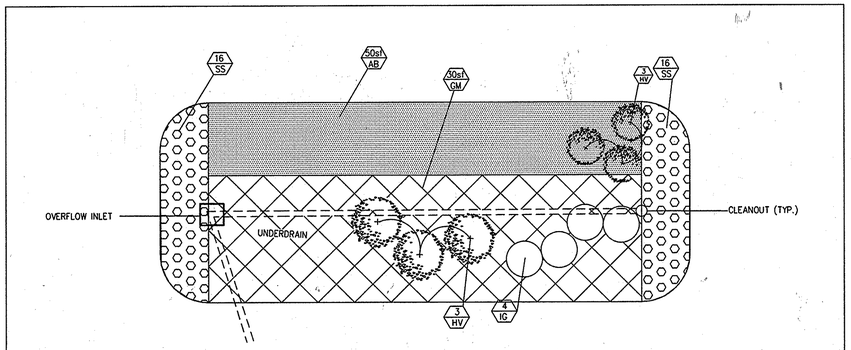
KCE ENGINEERING, INC.
EXECUTIVE CENTER
3300 NORTH RIDGE ROAD, SUITE 315
ELLICOTT CITY, MARYLAND 21043
PHONE (410) 203--9800 FAX (410) 203-9228

Professional Certification: 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. 8818, Expiration Date: 10/17/16

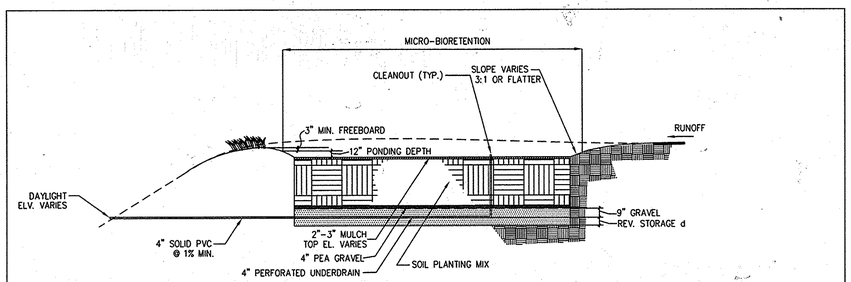
STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — NO. 8818
[signature] 7/31/15
SEAL

DRAWN BY: SPK
CHECKED BY: DVK
SCALE: 1"=20'
DATE: 7/30/2015

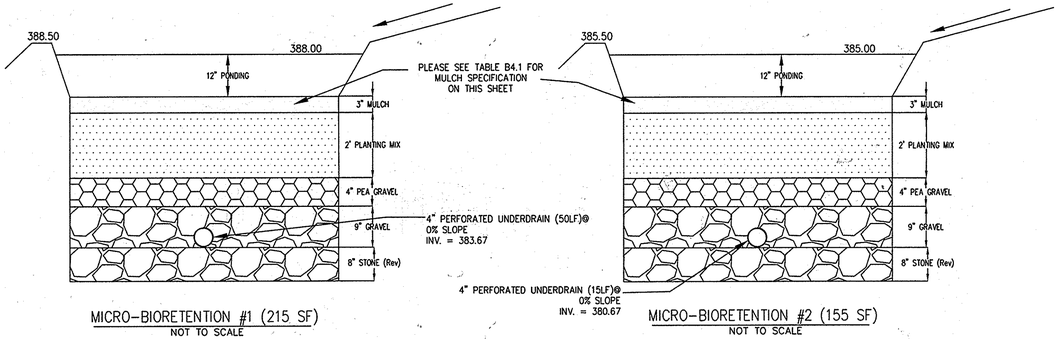
F-12-017



MICRO-BIORETENTION DETAIL
NTS

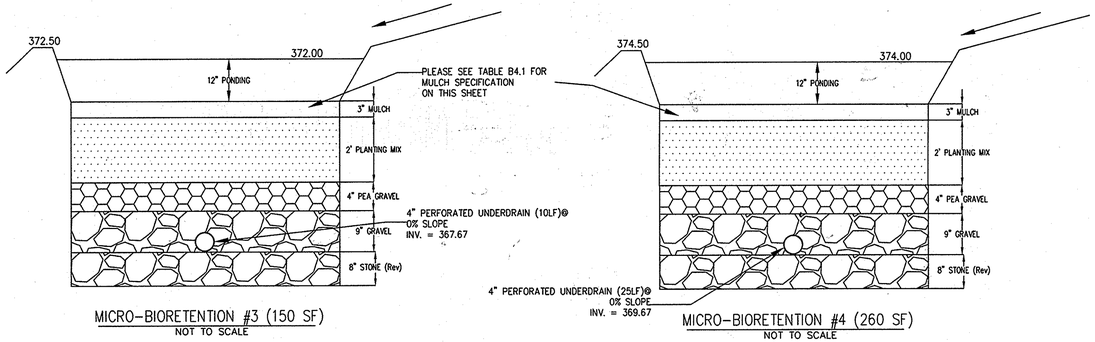


TYPICAL MICRO-BIORETENTION CROSS-SECTION
NOT TO SCALE



MICRO-BIORETENTION #1 (215 SF)
NOT TO SCALE

MICRO-BIORETENTION #2 (155 SF)
NOT TO SCALE



MICRO-BIORETENTION #3 (150 SF)
NOT TO SCALE

MICRO-BIORETENTION #4 (260 SF)
NOT TO SCALE

B.4.C Specifications for Micro-Bioretention. Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

- Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
- Organic 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%), coarse sand (30%), and compost (40%).
- Clay Content - Media shall have a clay content of less than 5%.
- pH Range – Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the 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.

4. Plant Material

Recommended plant material for micro-bioretention practices can be found in planting schedule on this sheet

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains should meet the following criteria:

- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be ⅜" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a ¼" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel – The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (¼" to ⅝" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when 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

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

a. 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 and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.

b. 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.

c. 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.

d. The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm..

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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 – 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

MICRO-BIORETENTION FACILITY (APPLIES TO FACILITY # 1, 2, 3 AND 4)

PLANTING SCHEDULE

QUANT.	KEY	BOTANICAL NAME	COMMOMN NAME	CONDITION	SIZE	REMARKS
4	IG	ILEX GABRA	INKBERRY	CONTAINER	12"	
6	HV	HAMEMELIS VIRGINIANA	WITCH HAZEL	CONYAINER	12"-24"	
50 sf	AB		ANNUALS BED	SEEDINGS	SEASONAL VARIETY	
30 sf	GM	GERANIUM MACULATUM	CRANESBILL			PLANT 15" APART
32	SS	SOLIDAGO SPHACELATA	GOLDEN FLEECE			PLANT 15" APART

I. ADDITIONAL MATERIAL SPECIFICATIONS:

MULCH LAYER SPECIFICATION: A MULCH LAYER SHALL BE PROVIDED ON TOP OF PLANTING SOIL. AN ACCEPTABLE MULCH LAYER SHALL INCLUDE SHREDDED HARDWOOD OR SHREDDED WOOD CHIPS OR OTHER SIMILAR PRODUCTS APPROVED BY THE HOWARD COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES. OF THE APPROVED MULCH PRODUCTS, ALL MUST BE WELL AGED, UNIFORM IN COLOR, AND FREE OF FOREIGN MATERIALS, INCLUDING PLANT MATERIAL. WELL AGED MULCH IS DEFINED AS MULCH THAT HAS BEEN STOCK PILED OR STORED FOR AT LEAST TWELVE (12) MONTHS.

PLANTING NON-GRASS GROUND COVER:
__ THE GROUND COVER PLANTING HOLES SHALL BE DUG THROUGH THE MULCH WITH ONE OF THE FOLLOWINGS: HAND TROWEL, SHOVEL, BULB PLANTER, OR HOE (THIS DOES NOT APPLY TO GRASS OR LEGUMES).
__ BEFORE PLANTING BIODEGRADABLE POTS, THEY SHALL BE SPLIT, AND NON BIODEGRADABLE POTS SHALL BE REMOVED. ROOT SYSTEMS OF THE POTTED PLANTS SHALL BE SPLIT OR CRUMBLED.
__ THE GROUND COVER SHALL BE PLANTED SO THAT ROOTS ARE SURROUNDED BY THE SOIL BELLOW THE MULCH. POTTED PLANTS SHALL BE SET SO THAT THE TOP OF THE POT IS EVEN WITH THE EXISTING GRADE. THE ROOTS OF BARE-ROOT PLANTS SHALL BE COVERED TO THE CROWN.
__ THE MULCH AND PLANTED GROUND COVER BED SHOULD BE SHOULD BE COVERED WITH A PRE-EMERGENT HERBICIDE.
__ THE ENTIRE GROUND COVER BED SHALL BE THOROUGHLY WATERED.

OWNER/DEVELOPER
KEVIN J. GEIER
3902 CHATHAM ROAD
ELLICOTT CITY, MD 21042
PHONE: 443 604 5791

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8-12-15

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-17-15

SUPPLEMENTAL PLAN
SWM NOTES AND DETAILS

GEIER SUBDIVISION
LOTS 1 - 3

A SUBDIVISION OF PARCEL 935 AND A RESUBDIVISION OF DUNLOGGIN, SECTION 4, PARCEL 598, LOT 330 AND PART OF LOT 331
(P.B. 6, P.42 & L. 12702, F. 384)
TAX MAP 24 GRID 16 ZONING R-20
2nd ELECTION DISTRICT- HOWARD COUNTY, MARYLAND

KCE ENGINEERING, INC.
EXECUTIVE CENTER
3300 NORTH RIDGE ROAD, SUITE 315
ELLICOTT CITY, MARYLAND 21043
PHONE (410) 203-9800 FAX (410) 203-9228

Professional Certification: 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. 8818, Expiration Date: 10/17/16

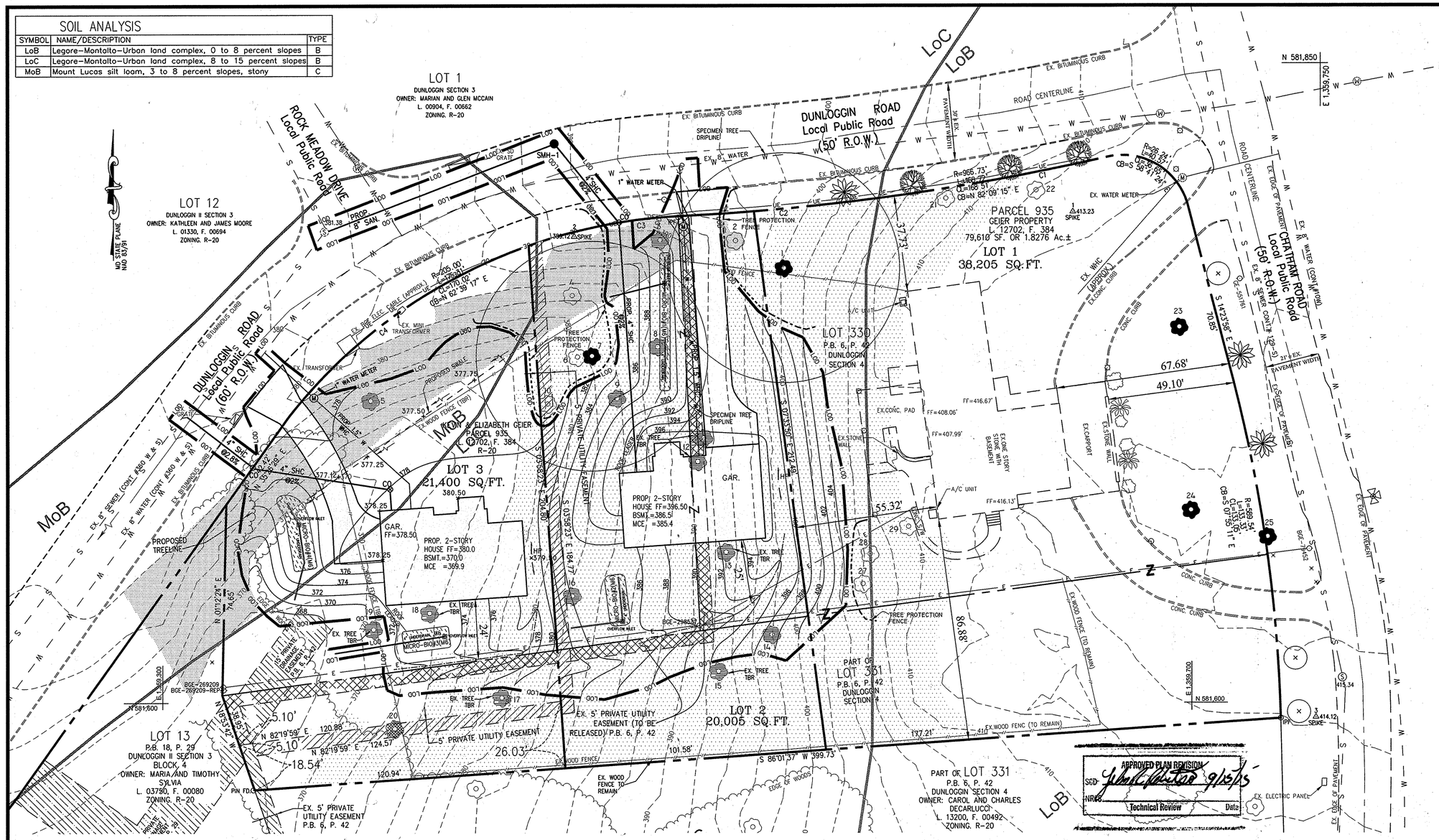
STATE OF MARYLAND — DAVID V. KNIGHT — No. 8818 — REGISTERED PROFESSIONAL ENGINEER — SEAL — 7/31/15

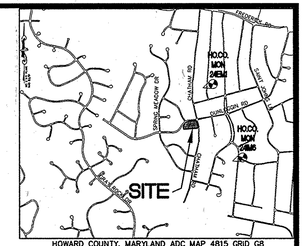
DRAWN BY: SPK
CHECKED BY: DVK
SCALE: AS SHOWN
DATE: 7/30/15

SHEET: 2 OF 6

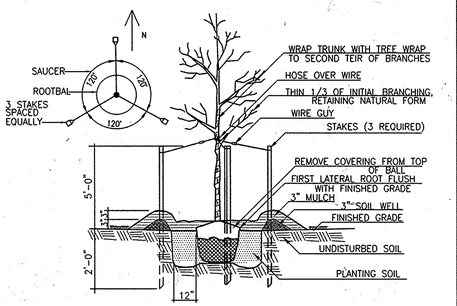
F-12-017

SOIL ANALYSIS		
SYMBOL	NAME/DESCRIPTION	TYPE
LoB	Legore–Montalto–Urban land complex, 0 to 8 percent slopes	B
LoC	Legore–Montalto–Urban land complex, 8 to 15 percent slopes	B
MoB	Mount Lucas silt loam, 3 to 8 percent slopes, stony	C





VICINITY MAP
SCALE: 1" = 2000'



DECIDUOUS TREE DETAIL
NOT TO SCALE

LEGEND

EX. LIGHT POLE	417.73 EX. SPOT ELEVATION
EX. ROAD SIGN	×395.50 PROPOSED SPOT ELEVATION
EX. SANITARY SEWER MANHOLE	EX. TREE TO REMAIN
EX. POWER POLE	EX. WOOD FENCE
EX. WATER VALVE	EX. CHAINLINK FENCE
EX. WATER METER	EX. WATER LINE
CLEANOUT	PROPOSED WATER
E EX. OVERHEAD ELECTRICAL	PROPOSED SEWER
UE EX. UNDERGROUND ELECTRICAL	S EX. SEWER LINE
IPF, IPIN DENOTES IRON PIPE FOUND	PROPOSED TREE LINE
TBR TO BE REMOVED	UU EX. COMCAST CABLE LINE
EX.TREE LINE	15% - 24.9% SLOPE
477 PROPOSED CONTOUR	> = 25% SLOPE
480 EXISTING CONTOUR	PROPOSED EASEMENT
SSF SUPER SILT FENCE	EX. TREE TO BE REMOVED
SF SILT FENCE	LoB EXISTING SOIL CLASSIFICATION
LOD LIMIT OF DISTURBANCE	EXISTING-EASEMENT
SCE STABILIZED CONSTRUCTION ENTRANCE	EXISTING EASEMENT HEREBY RELEASED
EXISTING TREES CREDITED TOWARD LANDSCAPE REQUIREMENT	
EX. SPECIMEN TREE TO BE RETAINED (30" OR-MORE DBH TREE)	
PROPOSED & EXISTING EASEMENTS	
TREE PROTECTION FENCE	

STREET TREES REQUIREMENTS			
PUBLIC ROAD FRONTAGE DUNLOGGIN RD.+CHATHAM RD.	REQUIRED	CREDIT FOR EX. TREES	PROVIDED
631 FT.	16	7	9

EX. TREES CREDITED TOWARD STREET TREES		
NO.	SPECIES	SIZE (DIA.)
1	WHITE OAK	46"
4		18"
21	FLOWERING DOGWOOD	11"
22	SOUTHERN MAGNOLIA	15"
23	WHITE OAK	46"
24	WHITE OAK	42"
25	WHITE OAK	39"

STREET TREES TABLE

PROPOSED PLANTING SCHEDULE			
QUANTITY	SYMBOL	BOTANICAL NAME	SIZE
3	×	ACER RUBRUM 'AUTUMN FLAME' AUTUMN FLAME RED MAPLE	2.5"-3" CAL. B&B
3		ACER RUBRUM 'BOWHALL' BOWHALL RED MAPLE	2.5"-3" CAL. B&B
3		GLEDITSIA TRIACANTHOS INERMIS 'IMPERIAL' IMPERIAL THORNLESS HONEYLOCUST	2.5"-3" CAL. B&B

STREET TREES COST ESTIMATE

PROPOSED PLANTING SCHEDULE		
NO. OF STREET TREES	UNIT RATE	TOTAL COST
9	$300	$2,700

SCHEDULE A
PERIMETER LANDSCAPE EDGE

Category	Adjacent to Roadways	Adjacent to Perimeter Properties			
Perimeter	1	2	3	4	5
Landscape Type	–	A	A	–	B
Linear Feet of Roadway Frontage/Perimeter	256.76'	113.60'	399.73'	230.42'	155.29'
Credit for Existing Vegetation (Yes, No, Linear Feet) (Describe below if needed)	No 0 0	Yes* 70' of ex.woods	Yes* 60' ex. woods * 1 shade tree	–	Yes 2 shade tree
Credit for Wall, Fence or Berm (Yes, No, Linear Feet) (Describe below if needed)	–	NO	Ex. 268 LF wood fence	–	–
Number of Plants Required Shade Trees Evergreen Trees Shrubs	– – –	2 – –	7 – –	– – –	3 4 –
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 substitution) Shrubs (10:1 substitution) (Describe plant substitution credits below if needed)	– – – – –	1 – – – –	0 – – – –	– – – – –	1 4 – – –

* 20' wide landscape buffer

TREE TABLE		
NO.	SPECIES	SIZE (DIA.)
1	WHITE OAK	46"
2	PAWLOWNIA	16"
3		16"
4		18"
5	BOX ELDER	25"
6	BLACK GUM	12"
7	WHITE OAK	44"
8	RED MAPLE	20"
9	RED MAPLE	16"
10	RED MAPLE	20"
11	BLACK GUM	20"
12	MAPLE	23"
13	BLACK GUM	25"
14	ASH	25"
15	ASH (Dead)	21"
16	BLACK WALNUT	29"
17	FLOWERING DOGWOOD	14"
18	ASH	17"
19	RED MAPLE	29"
20	BLACK GUM	18"
21	FLOWERING DOGWOOD	11"
22	SOUTHERN MAGNOLIA	15"
23	WHITE OAK	46"
24	WHITE OAK	42"
25	WHITE OAK	39"
27	WHITE OAK	23"
28	WHITE OAK	22"
29	WHITE OAK	23"

NOTES

1. "TREES SHALL BE PLANTED 6 FEET BEHIND THE CURB WHEN THERE ARE NO SIDEWALKS."
2. "TREES SHALL BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTION WHEN PLANTED BETWEEN SIDEWALK AND CURB, AND BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES. STREET TREES MAY NOT BE PLANTED WITHIN 5 FEET OF DRAIN INLET STRUCTURES, 5 FEET OF AN OPEN SPACE ACCESS STRIP OR 10 FEET OF A DRIVEWAY".
3. THE PROPOSED CONSTRUCTION ACTIVITIES WILL NOT IMPACT THE SPECIMEN TREES # 1 AND 7.

OWNER/DEVELOPER
KEVIN J. GEIER
3902 CHATHAM ROAD
ELLICOTT CITY, MD 21042
PHONE: 443 604 5791

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8.12.15

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-17-15

SUPPLEMENTAL PLAN
LANDSCAPE PLAN
GEIER SUBDIVISION
LOTS 1 - 3

A SUBDIVISION OF PARCEL 935 AND A RESUBDIVISION OF DUNLOGGIN, SECTION 4, PARCEL 598, LOT 330 AND PART OF LOT 331
(P.B. 6, P.42 & L. 12702, F. 384)
TAX MAP 24 GRID 16 ZONING R-20
2nd ELECTION DISTRICT– HOWARD COUNTY, MARYLAND

KCE ENGINEERING, INC.
EXECUTIVE CENTER
3300 NORTH RIDGE ROAD, SUITE 315
ELLICOTT CITY, MARYLAND 21043
PHONE (410) 203-9800 FAX (410) 203-9228

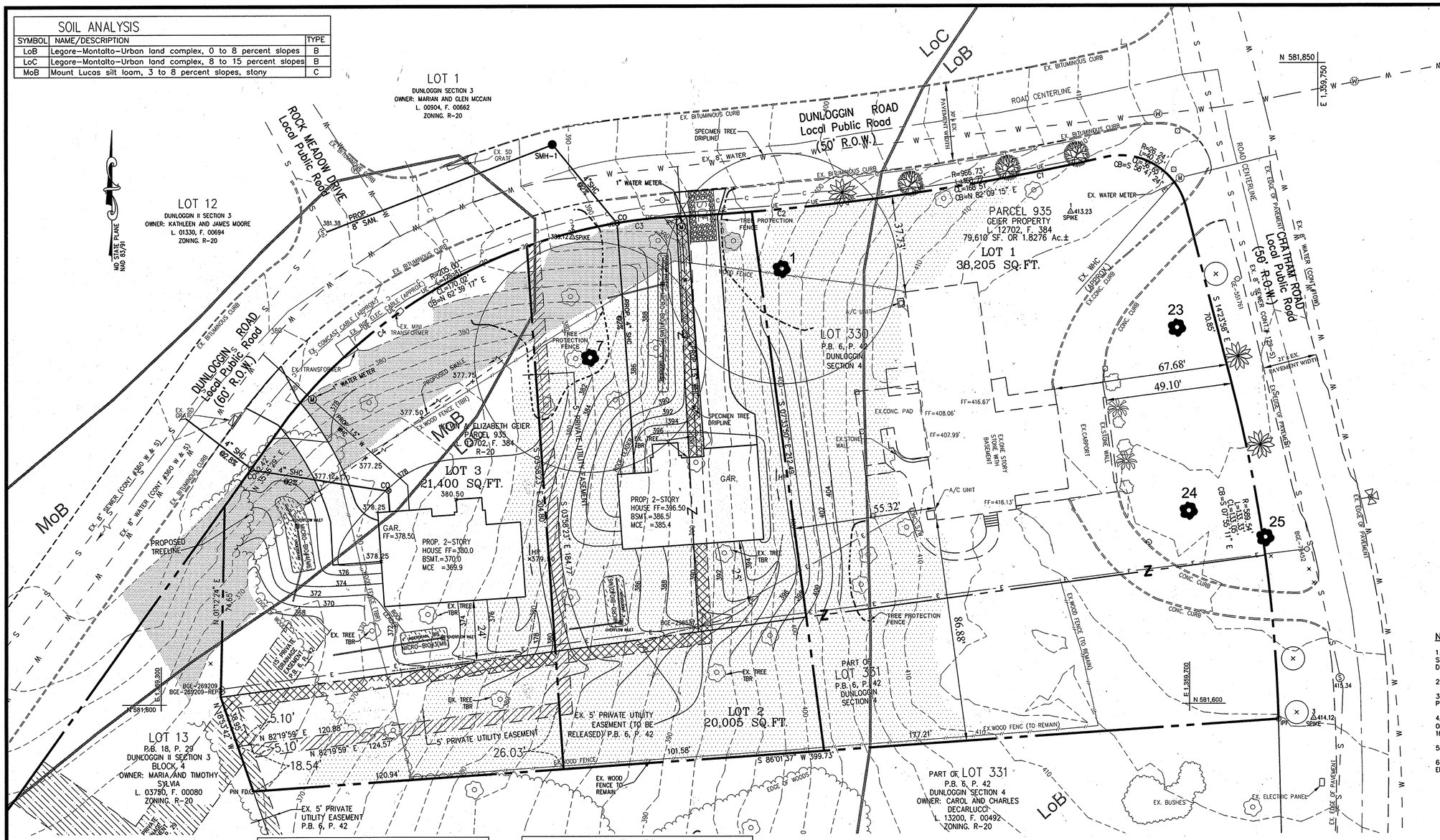
DRAWN BY: SPK
CHECKED BY: MG
SCALE: 1"=20'
DATE: 7/30/15
SHEET: 3 OF 6

SEAL

F-12-017

SOIL ANALYSIS

SYMBOL	NAME/DESCRIPTION	TYPE
LoB	Legore–Montalto–Urban land complex, 0 to 8 percent slopes	B
LoC	Legore–Montalto–Urban land complex, 8 to 15 percent slopes	B
MoB	Mount Lucas silt loam, 3 to 8 percent slopes, stony	C



VICINITY MAP
SCALE: 1" = 2000'

FOREST CONSERVATION WORKSHEET
Howard County-R-20 Zoned

5-Aug-02

NET TRACT AREA:		
A. Total tract area ...		1.83
B. Land dedication acres (parks, county facility, etc.) ...		0.00
C. Land dedication for roads or utilities (not being constructed by this plan) ...		0.00
D. Area to remain in commercial agricultural production/use ...		0.00
E. Other deductions (specify)		0.00
F. Net Tract Area	=	1.83

LAND USE CATEGORY: (from *Trees Technical Manual*)
Input the number "1" under the appropriate land use, limit to only one entry.

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

G. Afforestation Threshold ...	15%	x F =	0.27
H. Conservation Threshold ...	20%	x F =	0.37

EXISTING FOREST COVER:

I. Existing forest cover	=	0.00
J. Area of forest above afforestation threshold	=	0.00
K. Area of forest above conservation threshold	=	0.00

BREAK EVEN POINT:

L. Forest retention above threshold with no mitigation	=	0.00
M. Clearing permitted without mitigation	=	0.00

PROPOSED FOREST CLEARING:

N. Total area of forest to be cleared	=	0.00
O. Total area of forest to be retained	=	0.00

PLANTING REQUIREMENTS:

P. Reforestation for clearing above conservation threshold	=	0.00
Q. Reforestation for clearing below conservation threshold	=	0.00
R. Credit for retention above conservation threshold	=	0.00
S. Total reforestation required	=	0.00
T. Total afforestation required	=	0.27
U. Credit for landscaping (may not exceed 20% of "S")	=	0.00
V. Total reforestation and afforestation required	=	0.27

NOTES

1. NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE. THERE ARE FIVE SPECIMEN TRESS PRESENT ON THE SITE. PLEASE SEE SPECIMEN TREE TABLE ON THIS SHEET FOR DETAIL.
2. THERE ARE NO ISOLATED FOREST STANDS ON THIS SITE.
3. THE EXISTING FEATURES AND CONTOURS SHOWN HEREON ARE BASED ON A FIELD RUN SURVEY PREPARED BY KCE ENGINEERING, INC. DATED MARCH 2011.
4. THE FOREST CONSERVATION OBLIGATION FOR THIS SUBDIVISION WILL BE FULFILLED BY PAYMENT OF A FEE-IN-LIEU OF AFFORESTATION FOR 0.27 ACRES (11,761.2 SQ.FT.) IN THE AMOUNT OF $8,821.00 IN ACCORDANCE WITH SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT.
5. CONTRACTOR TO PROTECT EXISTING TREES MARKED TO REMAIN DURING CONSTRUCTION.
6. THERE ARE NO FLOODPLAINS, WETLANDS, STREAMS OR THEIR BUFFERS LOCATED ON-SITE AS CERTIFIED BY KCE ENGINEERING, INC. ON DATE APRIL 6, 2011.

Specimen Tree

Do Not Remove

Machinery, Dumping or Storage of any materials

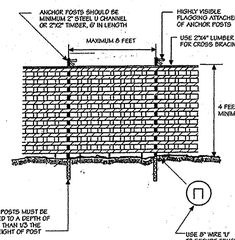
Prohibited

Violators are subject to fines imposed by the Howard County Forest Conservation Act

Notes:
1. Signs to be a minimum of 11" wide by 15" high.
2. Place signs on metal or wood posts 5' above finished grade.
3. Place forest retention, reforestation and or/forest conservation signs 100' on center around the perimeter of the forest conservation area.
4. Place 2 specimen tree protection signs per each specimen tree to be retained.
5. Signs may not be attached to trees.

Source: Howard County Department of Planning and Zoning

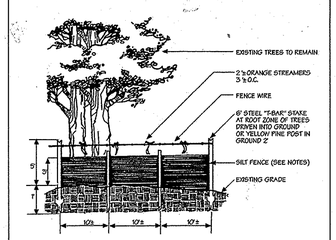
Figure E-3
Plastic Mesh Tree Protection Fence



Notes:
1. Blaze orange or blue plastic mesh fence for forest protection device, only.
2. Boundaries of Retention Area will be established as part of the Forest Conservation Plan review process.
3. Boundaries of Retention Area should be staked and flagged prior to installing device.
4. Avoid damage to critical root zone. Do not damage or sever large roots when installing posts.
5. Protection signs are required, see Figures E-1 and E-2.
6. Device should be maintained throughout construction.

Source: Adapted from Prince George's County, Maryland: Woodland Conservation Manual and State Forest Conservation Technical Manual, 1995

Figure E-6
Silt Fence and Tree Protection



Notes:
1. Silt fence to be heeled into the soil.
2. Boundaries of Retention Area will be established as part of the Forest Conservation Plan review process.
3. Boundaries of Retention Area should be staked and flagged prior to installing device.
4. Avoid root damage when placing anchor posts.
5. Device should be properly maintained throughout construction.
6. Protection signs are also required, see Figures E-1 and E-2.
7. Locate fence outside the Critical Root Zone.
8. Tree protection fence must be a minimum of 3' from trunk or dripline, whichever is greater.

Source: Adapted from Steve Clark & Associates/AGRT, Inc.

LEGEND

- EX. ROAD SIGN
- EX. SANITARY SEWER MANHOLE
- EX. POWER POLE
- EX. WATER VALVE
- EX. WATER METER
- CLEANOUT
- E — EX. OVERHEAD ELECTRICAL
- UE — EX. UNDERGROUND ELECTRICAL
- IPF, IPIN DENOTES IRON PIPE FOUND
- TBR TO BE REMOVED
- EX. TREE LINE
- 480 EXISTING CONTOUR
- LoB EXISTING SOIL CLASSIFICATION
- TREE PROTECTION FENCE
- 417.73 EX. SPOT ELEVATION
- EX. TREE TO REMAIN
- EX. WOOD FENCE
- x — x — EX. CHAINLINK FENCE
- W — EX. WATER LINE
- S — EX. SEWER LINE
- UU — EX. COMCAST CABLE LINE
- 15% - 24.9% SLOPE
- > = 25% SLOPE
- EX. SPECIMEN TREE TO BE RETAINED (30" OR MORE DBH TREE)

SPECIMEN TREE TABLE

NO.	SPECIES	SIZE (DBH)
1	WHITE OAK	46"
7	WHITE OAK	44"
23	WHITE OAK	46"
24	WHITE OAK	42"
25	WHITE OAK	39"

OWNER/DEVELOPER
KEVIN J. GEIER
3902 CHATHAM ROAD
ELLICOTT CITY, MD 21042
PHONE: 443 604 5791

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8-12-15

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-17-15

SUPPLEMENTAL PLAN
SIMPLIFIED FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN
GEIER SUBDIVISION
LOTS 1 - 3

A SUBDIVISION OF PARCEL 935 AND A RESUBDIVISION OF DUNLOGGIN, SECTION 4, PARCEL 598, LOT 330 AND PART OF LOT 331
(P.B. 6, P.42 & L. 12702, F. 384)
TAX MAP 24 GRID 16 ZONING R-20
2nd ELECTION DISTRICT– HOWARD COUNTY, MARYLAND

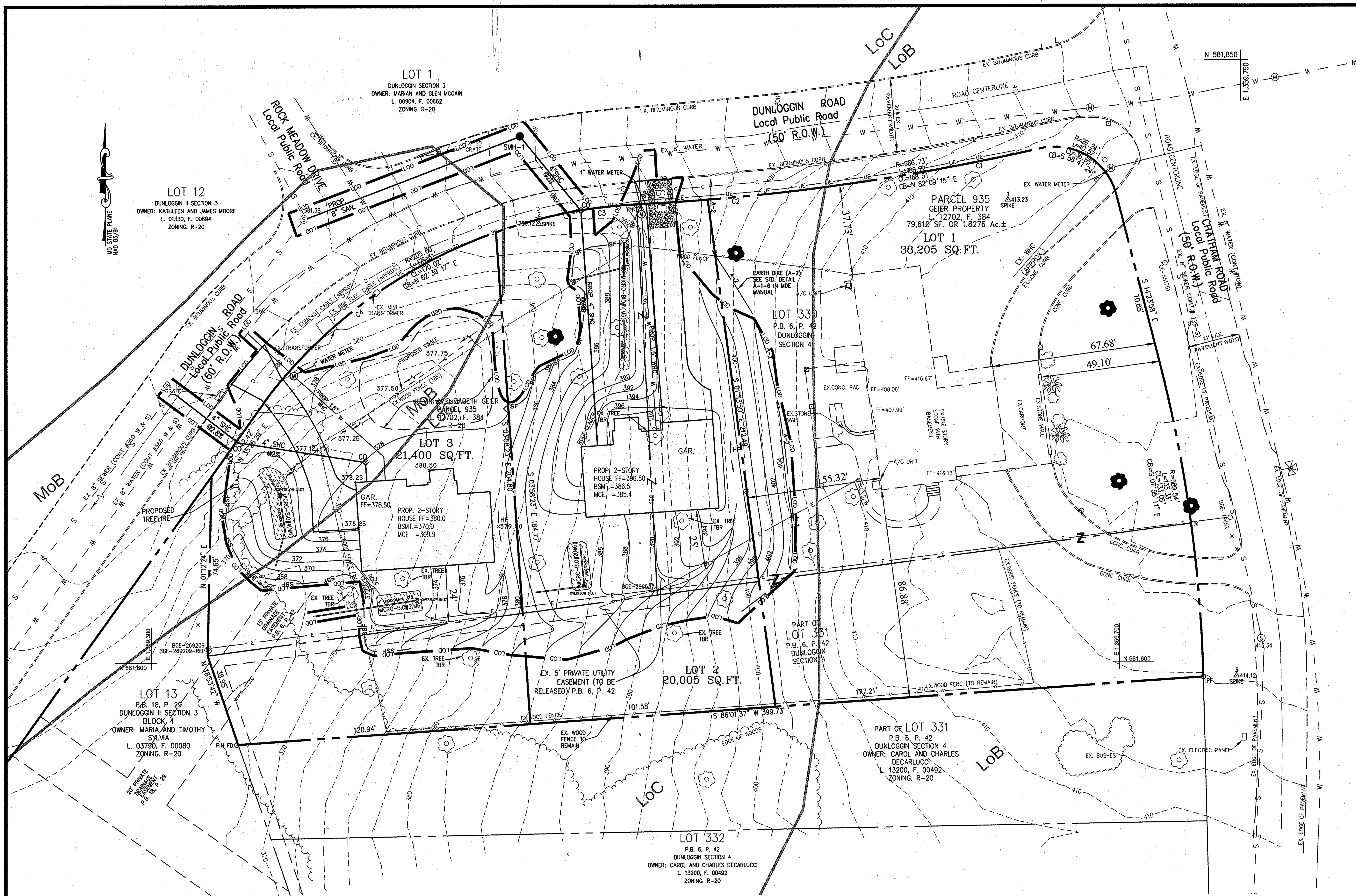
KCE ENGINEERING, INC.
EXECUTIVE CENTER
3300 NORTH RIDGE ROAD, SUITE 315
ELLICOTT CITY, MARYLAND 21043
PHONE (410) 203-9800 FAX (410) 203-9228

SEAL

DRAWN BY: SPK
CHECKED BY: MG
SCALE: 1"=20'
DATE: 7/30/15

SHEET: 4 OF 6

F-12-017



PROPERTY LINE TABLE				
	RADIUS	LENGTH	CH. BEARING	CH. LENGTH
C1	966.73'	139.23'	N 81°16'48" E	139.11'
C2	966.73'	29.46'	N 86°16'44" E	29.46'
C3	205.00'	59.44'	N 78°50'47" E	59.24'
C4	205.00'	115.87'	N 54°20'50" E	114.33'

SOIL ANALYSIS

SYMBOL	NAME/DESCRIPTION	TYPE
LoB	Legore–Montalto–Urban land complex, 0 to 8 percent slopes	B
LoC	Legore–Montalto–Urban land complex, 8 to 15 percent slopes	B
MoB	Mount Lucas silt loam, 3 to 8 percent slopes, stony	C

LEGEND

- EX. ROAD SIGN
- EX. SANITARY SEWER MANHOLE
- EX. POWER POLE
- EX. WATER VALVE
- EX. WATER METER
- CLEANOUT
- E — EX. OVERHEAD ELECTRICAL
- UE — EX. UNDERGROUND ELECTRICAL
- IPF, IPIN DENOTES IRON PIPE FOUND
- EX. TREE LINE
- 477 — PROPOSED CONTOUR
- 478 — EXISTING CONTOUR
- SSF — SUPER SILT FENCE
- SF — SILT FENCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- LOD — LIMIT OF DISTURBANCE
- PROPOSED & EXISTING EASEMENTS
- A-2 — EARTH DIKE
- 417.73 EX. SPOT ELEVATION
- ×395.50 PROPOSED SPOT ELEVATION
- EX. TREE
- EX. WOOD FENCE
- EX. CHAINLINK FENCE
- W — EX. WATER LINE
- W — PROPOSED WATER
- PROPOSED SEWER
- S — EX. SEWER LINE
- PROPOSED TREE LINE
- UU — EX. COMCAST CABLE LINE
- PROPOSED EASEMENT
- LoB EXISTING SOIL
- EXISTING EASEMENT
- EXISTING EASEMENT HEREBY RELEASED
- EX. SPECIMEN TREE TO BE RETAINED (30" OR MORE DBH TREE)

NOTE: THIS PLAN TO BE USED FOR EROSION AND SEDIMENT CONTROL ONLY

OWNER/DEVELOPER
KEVIN J. GEIER
3902 CHATHAM ROAD
ELLICOTT CITY, MD 21042
PHONE: 443 604 5791

SUPPLEMENTAL PLAN
SEDIMENT & EROSION CONTROL PLAN
GEIER SUBDIVISION
LOTS 1 - 3

A SUBDIVISION OF PARCEL 935 AND A RESUBDIVISION OF DUNLOGGIN, SECTION 4, PARCEL 598, LOT 330 AND PART OF LOT 331
(P.B. 6, P.42 & L. 12702, F. 384)
TAX MAP 24 GRID 16 ZONING R-20
2nd ELECTION DISTRICT- HOWARD COUNTY, MARYLAND

KCE ENGINEERING, INC.
EXECUTIVE CENTER
3300 NORTH RIDGE ROAD, SUITE 315
ELLICOTT CITY, MARYLAND 21043
PHONE (410) 203-9800 FAX (410) 203-9228

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8-12-15

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-17-15

Professional Certification: 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. 8818, Expiration Date: 10/17/16

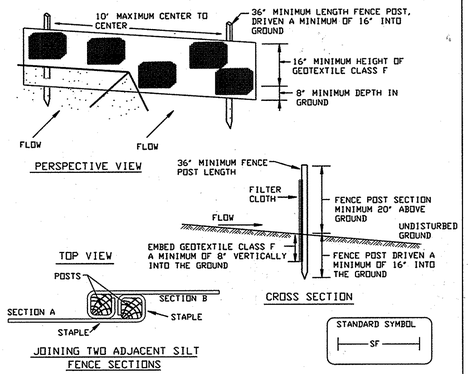
STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER NO. 8818
SEAL 7/31/15

DRAWN BY: SPK
CHECKED BY: DVK
SCALE: 1"=20'
DATE: 7/30/15

SHEET: 5 OF 6

F-12-017

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

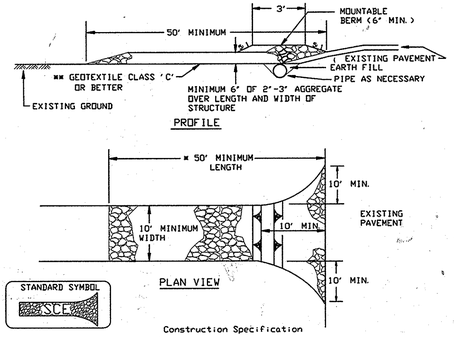
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.

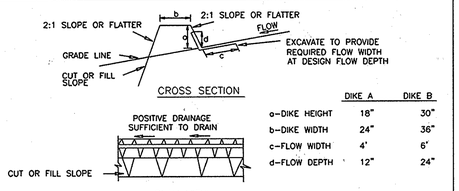
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 17 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1 - EARTH DIKE



	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.

2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.

3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.

4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.

5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.

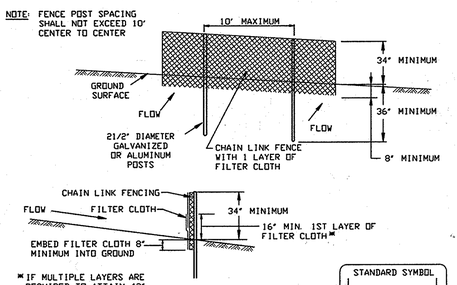
6. Fill shall be compacted by earth moving equipment.

7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.

8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A - 1 - 6	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be enbedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/Ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
   A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
   B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
   C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
   D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
   i. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR A SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1.5-INCH IN DIAMETER.
   ii. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS, SUCH AS BERMUDA GRASS QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
   iii. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

III. FOR THIS SITE, WHICH HAS A DISTURBED AREA UNDER 5 ACRES:
   i. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
   i. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
      A. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH PF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
      B. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
      C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
      D. NO SOD OR SEED SHALL BE PLACED ON SOIL. SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

   ii. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMMENDMENTS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION-SECTION I-VEGETATIVE STABILIZATION METHODS AND METERIALS.

V. TOPSOIL APPLICATION
   i. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, SILT FENCE, SEDIMENT TRAPS AND BASINS.
   ii. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.
   iii. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH MINIMUM ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
   iv. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

1. Preferred - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq. ft.)
2. Acceptable - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.

Seeding - For the periods March 1 - April 20, and August 1 - October 20, inclusive, seed the appropriate seed mixtures:
Seed Mixture No. 1 - (relatively flat areas regularly mowed and exposed to normal conditions) with 192 lbs PLS/acre of 85% certified turf-type Tall Fescue, 28 lbs PLS/acre of 10% certified Kentucky Bluegrass and 14 lbs PLS/acre of 5% Perennial Ryegrass. Supplemental seed - Annual Ryegrass 25 lbs PLS/acre.
Seed Mixture No. 2 - (sloped areas not subject to regular mowing) with 85 lbs PLS/acre of 75% Hard Fescue, 23 lbs PLS/acre of 20% Chewings Fescue and 7 lbs PLS/acre of 5% Kentucky Bluegrass. Supplemental seed - Redtop 3 lbs PLS/acre.
Seed Mixture No. 3 - (wetland areas and their associated buffer zones) with 83 lbs PLS/acre of 60% Fowl Meadow Grass, 34 lbs PLS/acre of 30% Chewings Fescue and 14 lbs PLS/acre of 10% Perennial Ryegrass. Supplemental seed - Redtop 3 lbs PLS/acre.
Seeding performed after October 20 should be a temporary cover of annual ryegrass and followed by overseeding of the appropriate seed mixture during the spring seeding season.

Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq.ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

Maintenance - Inspect all seeding areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

Seedbed preparation: - Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: - Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

Seeding: - For periods March 1 - April 30 and from August 1 - November 30, inclusive, seed with 2-1/2 bushel per acre of Annual Rye/ Redtop (3.2 lbs/1000 sq. ft.). For the period May 1 - July 31, inclusive, seed with 13.6 lbs PLS/acre of Little Bluestem. For the period November 16 - February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: - Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8 gal/1000 sq. ft.) for anchoring.

Refer to the "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" for additional rates and methods not covered.

SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).

2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

7. Site Analysis:
Total Area of Site 1.8 Acres
Area Disturbed: 0.73 Acres
Area to be roofed or paved: 0.15 Acres
Area to be vegetatively stabilized: 0.58 Acres
Total Cut: 1574 Cu. Yds.
Total Fill: 1174 Cu. Yds.
Excess material to be hauled to an approved site.

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.

10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.

SEQUENCE OF CONSTRUCTION

		DURATION
1.	Obtain grading permit.	1 DAY
2.	Notify Howard County Bureau of Inspections and Permits (313-1880) at least 24 hours before starting any work.	1 DAY
3.	Construct stabilized construction entrance.	1 DAY
4.	Install perimeter silt fence, super silt fence, protective fencing.	1 DAY
5.	With Inspector's approvals, clear and grub site to LOD.	1 WEEK
6.	Rough grade site.	5 DAYS
7.	Construct homes, driveways, retaining walls.	4 MONTHS
8.	Install perimeter landscaping as shown in Schedule 'A' sheet 3.	1 DAY
9.	Stabilize all disturbed areas with seed and mulch.	1 WEEK
10.	Construct bioretention facilities, and stabilize any disturbed area.	2 WEEKS
11.	With approval of Inspector, remove sediment control devices.	1 DAY

SUPPLEMENTAL PLAN
SEDIMENT & EROSION CONTROL NOTES AND DETAILS
GEIER SUBDIVISION
LOTS 1 - 3

A SUBDIVISION OF PARCEL 935 AND A RESUBDIVISION OF DUNLOGGIN, SECTION 4, PARCEL 598, LOT 330 AND PART OF LOT 331
(P.B. 6, P.42 & L. 12702, F. 384)
TAX MAP 24 GRID 16 ZONING R-20
2nd ELECTION DISTRICT- HOWARD COUNTY, MARYLAND

KCE ENGINEERING, INC.
EXECUTIVE CENTER
3300 NORTH RIDGE ROAD, SUITE 315
ELLICOTT CITY, MARYLAND 21043
PHONE (410) 203-9800 FAX (410) 203-9228

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8.17.15

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9.17.15

Professional Certification: 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. 8818, Expiration Date: 10/17/16

STATE OF MARYLAND — DAVID V. KAYHART — NO. 8818 — REGISTERED PROFESSIONAL ENGINEER
SEAL 7/31/15

DRAWN BY: SPK
CHECKED BY: DVK
SCALE: AS SHOWN
DATE: 7/30/15

SHEET: 6 OF 6

F-12-017