

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	EXISTING CONDITIONS AND DEMOLITION PLAN
3	SUPPLEMENTAL PLAN
4	DETAILS AND SECTIONS

SOILS LEGEND			
SOIL	NAME	CLASS	"K" VALUE
GhB	Glenn-Urban land complex, 0 to 8 percent slopes	B	0.43
LoB	Legore-Montalto Urban land complex, 0 to 8 percent slopes	B	0.64

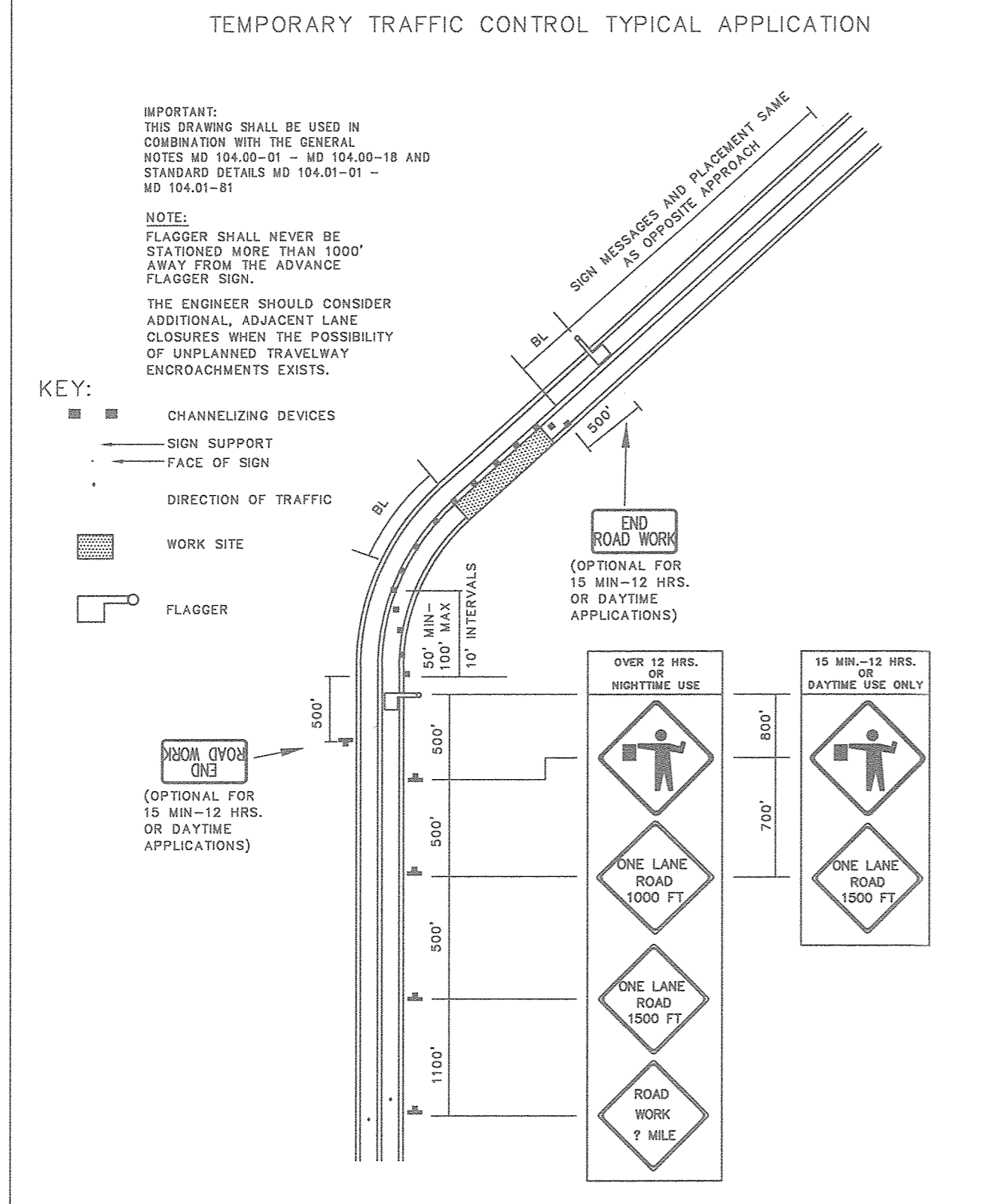
HOWARD COUNTY SOILS MAP PAGE 14

STORMWATER MANAGEMENT PRACTICES						
LOT NO.	ADDRESS	PERMEABLE CONCRETE (A-2) Y/N, NUMBER	DISCONNECTION OF ROOFTOP RUNOFF (N-1) Y/N, NUMBER	DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2) Y/N, NUMBER	INFILTRATION BEDS (M-5) Y/N, NUMBER	DRY WELLS (M-5) Y/N, NUMBER
1	8438 HIGH RIDGE ROAD	NO	NO	NO	NO	YES, THREE (3)
2	8440 HIGH RIDGE ROAD	NO	NO	NO	NO	YES, THREE (3)

STORMWATER MANAGEMENT SUMMARY		
AREA ID.	ESDV REQUIRED CU.FT.	ESDV PROVIDED CU.FT.
SITE	1,294 Cu.Ft.	2,037 Cu.Ft.

REMARKS: SIX (6) DRYWELLS (M-5) & TWO (2) MICRO-BIORETENTION (M-6)

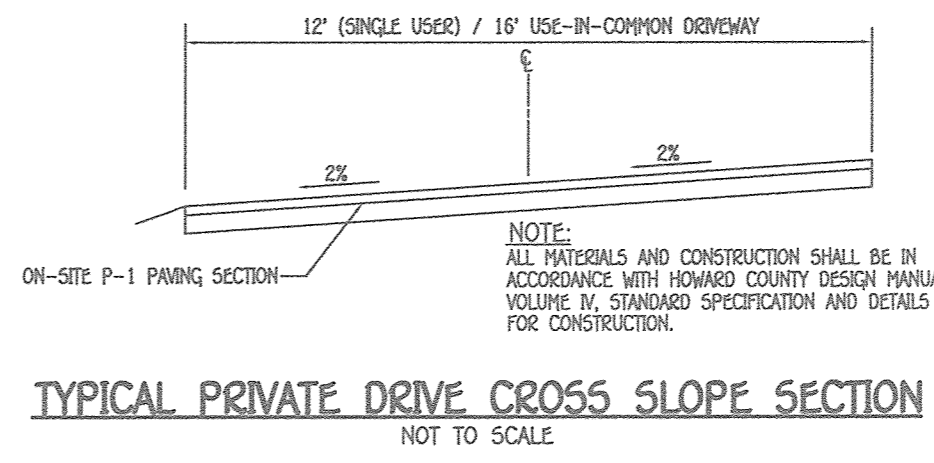
GROSS AREA = 1.29 ACRES  
 LOD = 0.99 ACRES+  
 RCN = 55  
 TARGET Pe = 1.4"



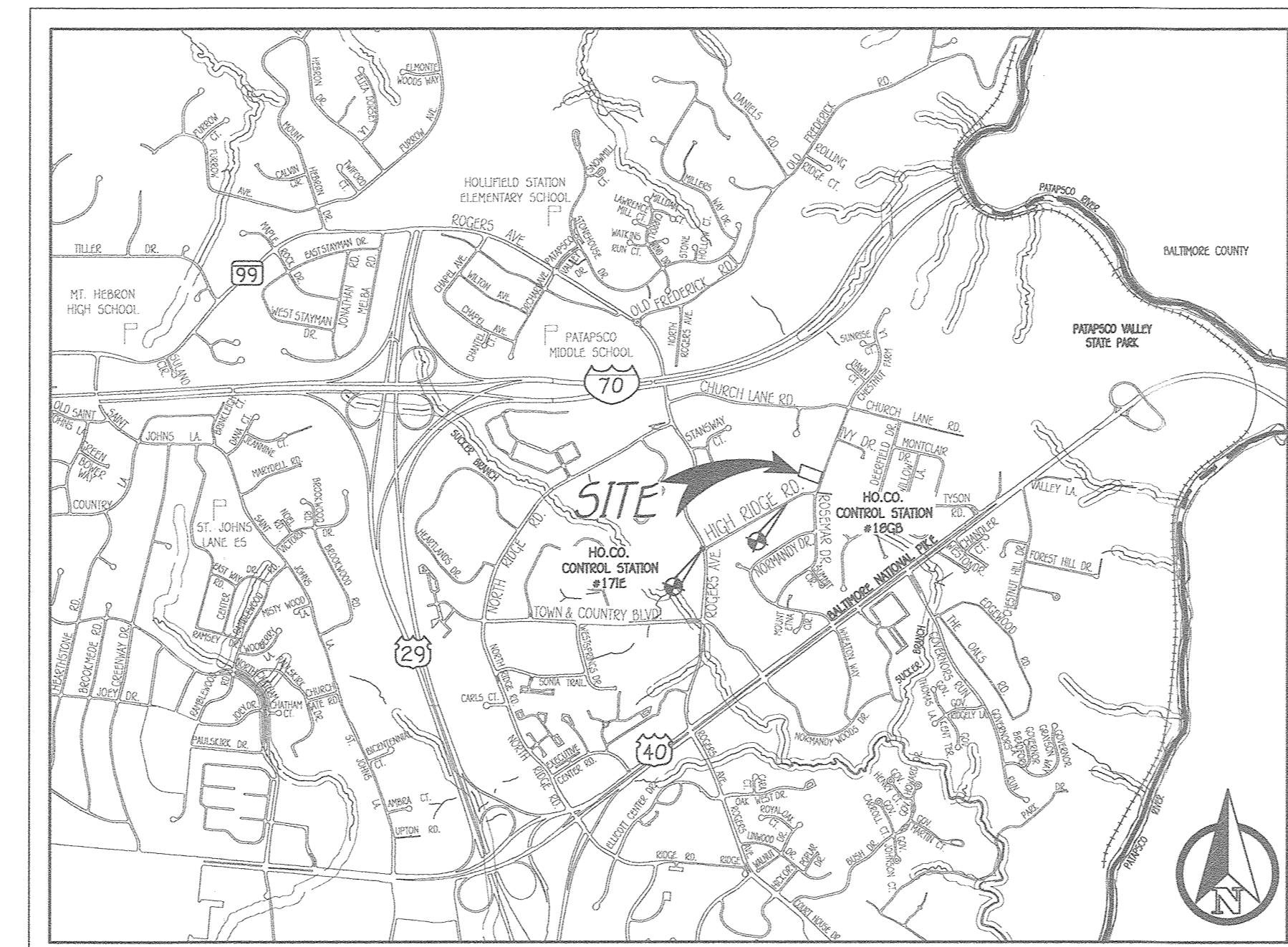
MICRO-BIORETENTIONS PLANT MATERIAL			
QUANTITY	MB2	NAME	MAXIMUM SPACING (FT.)
10	70	MIXED PERENNIALS	1.5 TO 3.0 FT.
1	2	SILKY DOGWOOD	PLANT AWAY FROM INFLOW LOCATION

# SUPPLEMENTAL PLAN GROVE PROPERTY

## LOTS 1 & 2 ZONING: R-20 (RESIDENTIAL: SINGLE DISTRICT) TAX MAP No. 18 GRID No. 13 PARCEL No. 047 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND



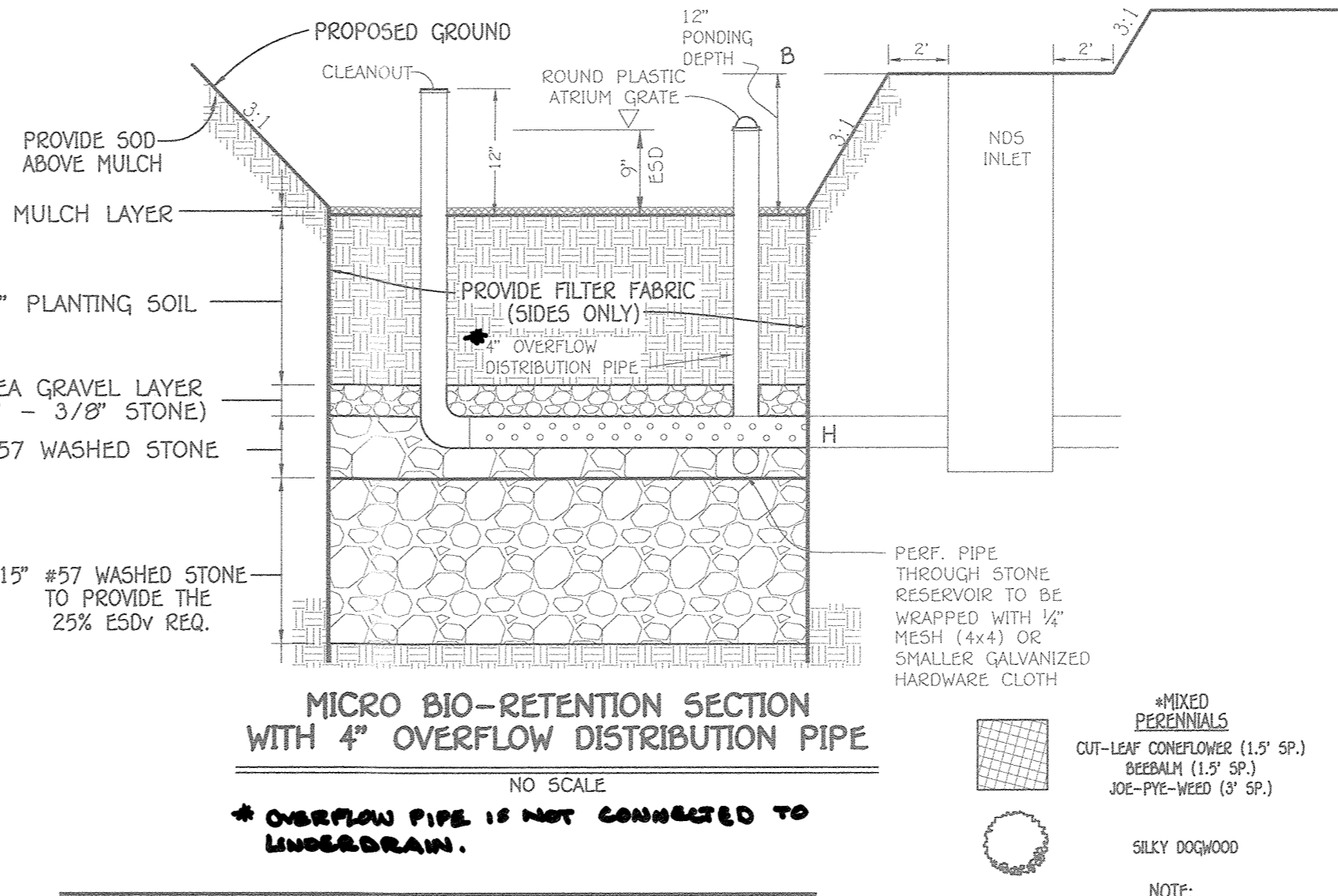
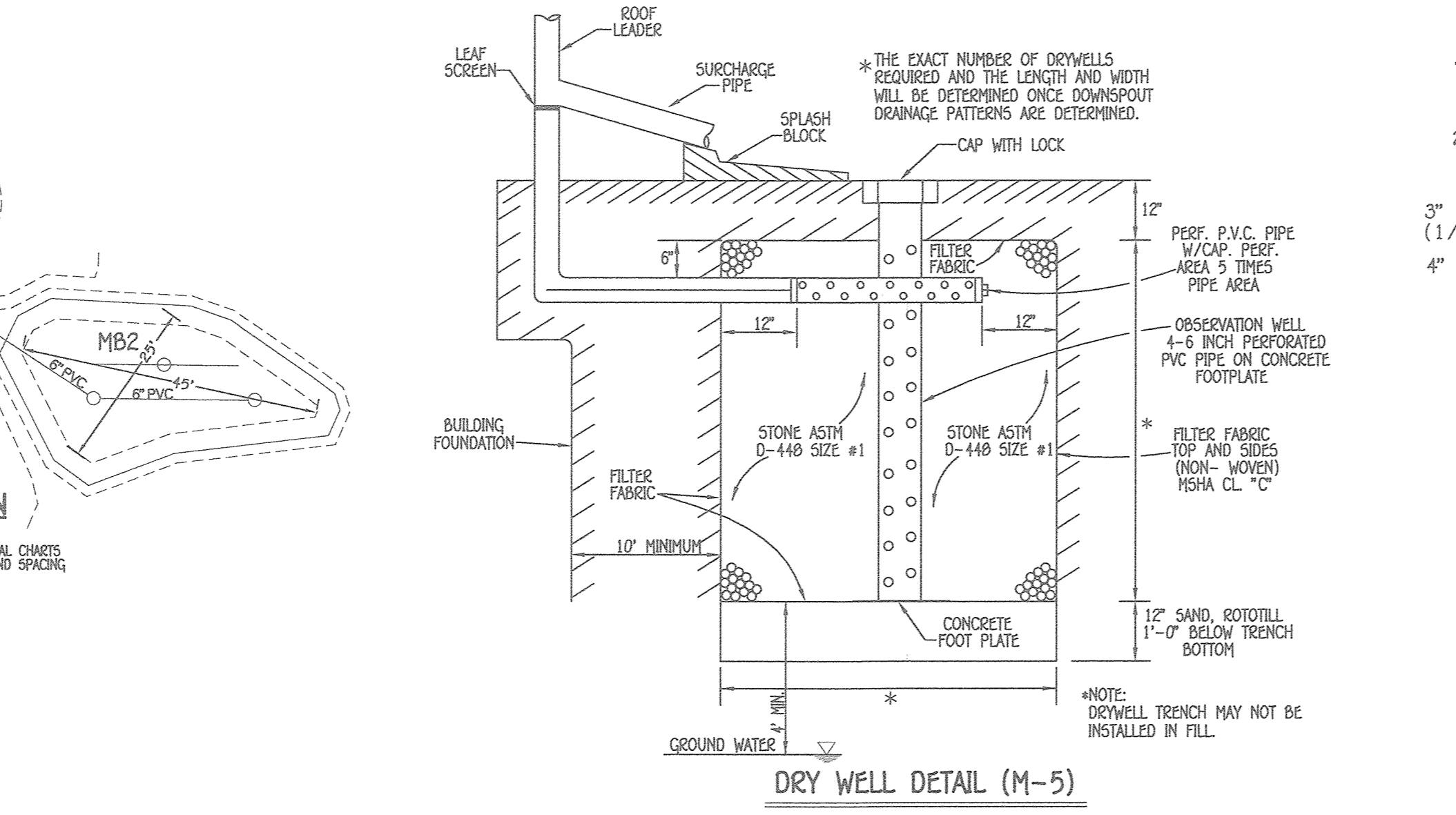
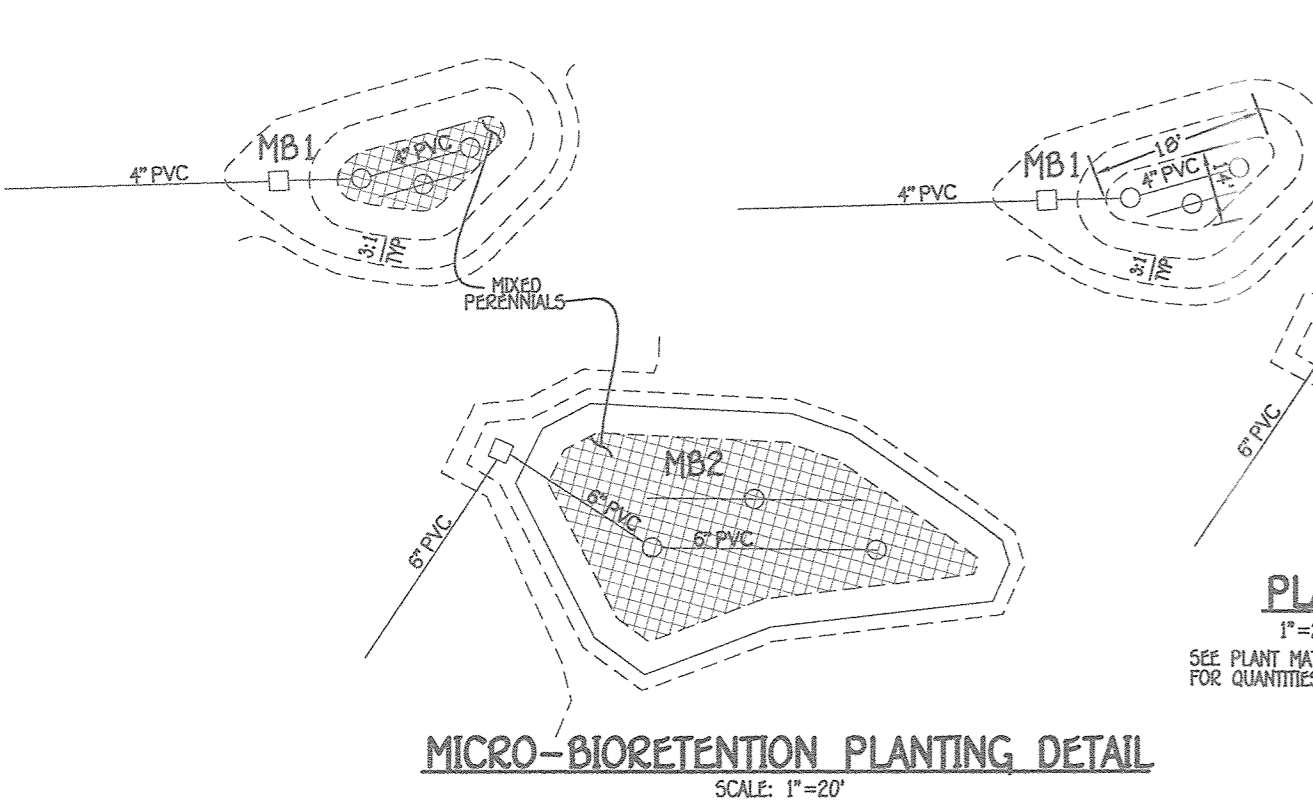
LEGEND	
SYMBOL	DESCRIPTION
-----	EXISTING CONTOUR 2' INTERVAL
-----	EXISTING CONTOUR 10' INTERVAL
-----	PROPOSED CONTOUR 10' INTERVAL
-----	PROPOSED CONTOUR 2' INTERVAL
-----	SPOT ELEVATION
-----	EXISTING STORM DRAIN
-----	PROPOSED STORM DRAIN PIPE
-----	EXISTING WATER LINE
-----	EXISTING SEWER LINE
-----	PROPOSED SEWER
-----	PROPOSED WATER
-----	EXISTING CABLE LINE
-----	EXISTING GAS LINE
-----	EXISTING OVERHEAD WIRE
-----	BUILDING AND DRIVES TO BE REMOVED
-----	EXISTING PAVING
-----	PROPOSED SIDEWALKS/PATHS
-----	FOREST CONSERVATION EASEMENT (RETENTION)
-----	FOREST CONSERVATION EASEMENT (REFORESTATION)
-----	LIMIT OF DISTURBANCE
-----	SUPER SILT FENCE
-----	SILT FENCE
-----	EXISTING TREE LINE
-----	PROPOSED TREE LINE
-----	DRAINAGE DIVIDE
-----	DRYWELL (M-5)-TYPICAL
-----	SOIL LINES AND TYPES
-----	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
-----	PROPOSED ROOF LEADER
-----	DENOTES EXISTING TREES TO BE REMOVED
-----	DENOTES EXISTING TREES TO REMAIN
-----	CRITICAL ROOT ZONE



SITE ANALYSIS DATA CHART	
A.	TOTAL AREA OF THIS SUBMISSION = 56,295 Sq.Ft. (1.29 AC.+)
B.	LOT 1 = 31,099 Sq.Ft. (0.71 AC.)
C.	LOT 2 = 23,115 Sq.Ft. (0.53 AC.)
D.	R.O.W. = 1,295
E.	LIMIT OF DISTURBED AREA = 0.99 AC.+
F.	PRESENT ZONING DESIGNATION = R-20;
G.	PROPOSED USE: SINGLE FAMILY DETACHED HOUSING
H.	DENSITY ALLOWED:
I.	2 UNITS/ACRES X 1.3 = 2.6 UNITS
J.	OPEN SPACE, FEE-IN-LIEU REQUIRED
K.	BUILDING COVERAGE OF SITE: 5,280 Sq.Ft. OR 9%
L.	PREVIOUS HOWARD COUNTY FILE NOS.: ECP-19-036, WP-19-080.
M.	TOTAL AREA OF FLOODPLAIN LOCATED ON SITE = 0 AC.
N.	TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0.54 FT. (0.54 FT. 25% OR GREATER)
O.	TOTAL AREA OF WETLANDS (INCLUDING BUFFER) LOCATED ON SITE = 0 AC.+
P.	TOTAL FOREST = 0 AC.
Q.	TOTAL GREEN OPEN AREA = 1.01 AC.+
R.	TOTAL IMPERVIOUS AREA = 0.28 AC.+
S.	AREA OF ERODIBLE SOILS = 1.29 AC.

- ### OPERATION & MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)
- 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.
  - 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.
  - THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
  - THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

- ### OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRY WELLS (M-5)
- THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.
  - THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO ENSURE TRENCH DRAINAGE.
  - THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
  - WHEN OFF FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
  - THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
  - ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.



SWM SUMMARY TABLE				
ESDV	Pe	CPV	QP	Qf
REQUIRED	1.4"	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
1,294 CU.FT.				
PROVIDED				
2,037 CU.FT.				

Approved: Department of Planning And Zoning

*[Signature]* Chief, Development Engineering Division 9-10-19 Date

*[Signature]* Chief, Division of Land Development 9-17-19 Date

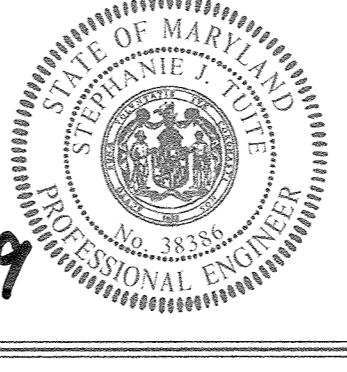
### STORMWATER MANAGEMENT NOTES

- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
- MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 500 SQ. FT. OR LESS.

### 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. 36366, EXPIRATION DATE: 01/12/2020.

*[Signature]* 6/29/19 DATE



**OWNER/DEVELOPER**

COLUMBIA BUILDERS  
 P.O. BOX 999  
 COLUMBIA, MD 21044  
 443-324-4732

DRYWELL CHART						
LOT	DRYWELL No.	AREA OF ROOF PER DRYWELL	VOLUME REQUIRED	VOLUME PROVIDED	AREA OF TREATMENT	L W D
LOT 1	1A	828 SQ.FT.	92 CU.FT.	120 CU.FT.	100%	10' x 6' x 5'
LOT 1	1B	700 SQ.FT.	78 CU.FT.	78 CU.FT.	100%	8' x 6' x 5'
LOT 1	1C	1,020 SQ.FT.	114 CU.FT.	140 CU.FT.	100%	10' x 7' x 5'
LOT 2	2A	700 SQ.FT.	78 CU.FT.	78 CU.FT.	100%	8' x 6' x 5'
LOT 2	2B	828 SQ.FT.	92 CU.FT.	120 CU.FT.	100%	10' x 6' x 5'
LOT 2	2C	1,020 SQ.FT.	114 CU.FT.	140 CU.FT.	100%	10' x 7' x 5'

**TITLE SHEET**

**GROVE PROPERTY**  
 8438 HIGH RIDGE ROAD  
 ELLICOTT CITY, MD 21043

TAX MAP No.: 18 GRID: 13 PARCEL No.:47  
 ZONED R-20  
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE: AS SHOWN DATE: JUNE, 2019  
 SHEET 1 OF 4

F-19-080



SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	0.43
LoB	Legore-Montalto Urban land complex, 0 to 8 percent slopes	B	0.64

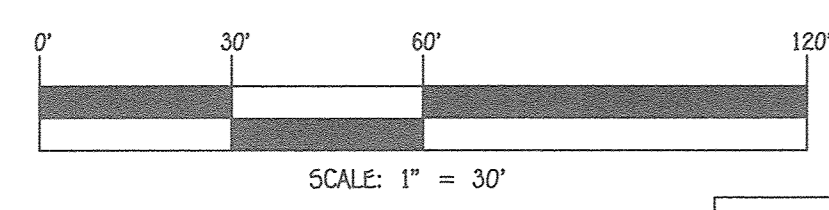
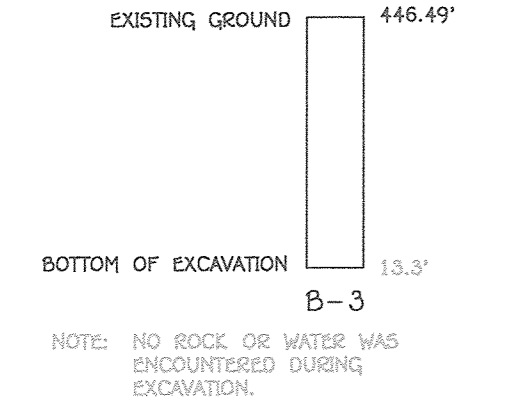
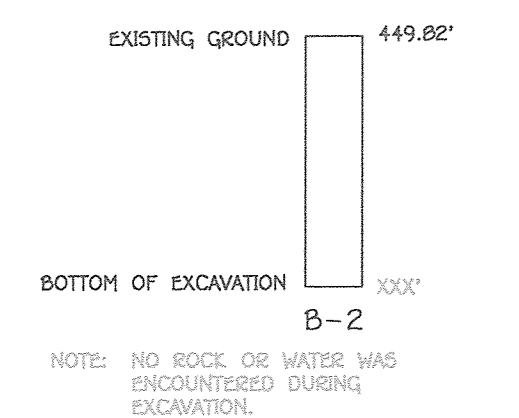
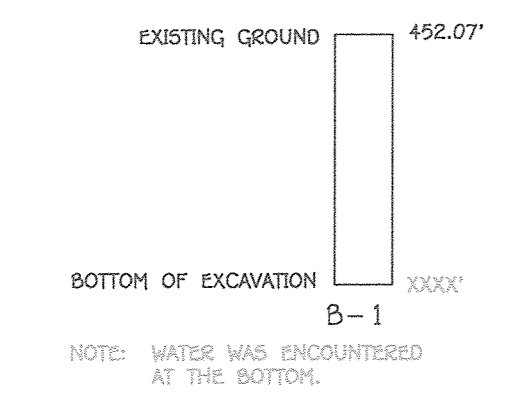
HOWARD COUNTY SOILS MAP PAGE 14

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	EXISTING FENCE
---	EXISTING STORM DRAIN
---	EXISTING WELL
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING OVERHEAD WIRE
---	BUILDING AND DRIVES TO BE REMOVED
---	EXISTING PAVING
---	EXISTING TREE LINE
---	SOIL LINES AND TYPES
---	DENOTES EXISTING TREES TO BE REMOVED
---	DENOTES EXISTING TREES TO REMAIN
---	SPECIMEN TREE
---	CRITICAL ROOT ZONE
---	SLOPES 15% - 24.9%
---	SLOPES 25% & ^

SPECIMEN TREE LIST				
KEY (#)	SPECIES	SIZE (in. dbh)	CRZ (feet radius)	COMMENTS
1	WHITE ASH	34	51	GOOD TO BE REMOVED
2	TULIP POPLAR	39	58.5	FAIR CONDITION, SOME DIEBACK TO REMAIN
*3	RED MAPLE	30.5	45.75	FAIR CONDITION, SOME DIEBACK TO BE REMOVED
4	RED MAPLE	32	48	POOR CONDITION, MAJOR TRUNK ROT TO BE REMOVED
5	TULIP POPLAR	31.5	47.25	TWIN STEMS BELOW BH TO REMAIN
6	TULIP POPLAR	31	46.5	TRIPLE STEMS BELOW BH TO REMAIN
7	WHITE ASH	48	72	MULTI-STEMMED ABOVE BH; LIKELY OFFSITE; POOR CONDITIONS, EVIDENCE OF ASH BORER TO REMAIN
8	WHITE ASH	32	48	FAIR CONDITION, SOME DIEBACK TO BE REMOVED

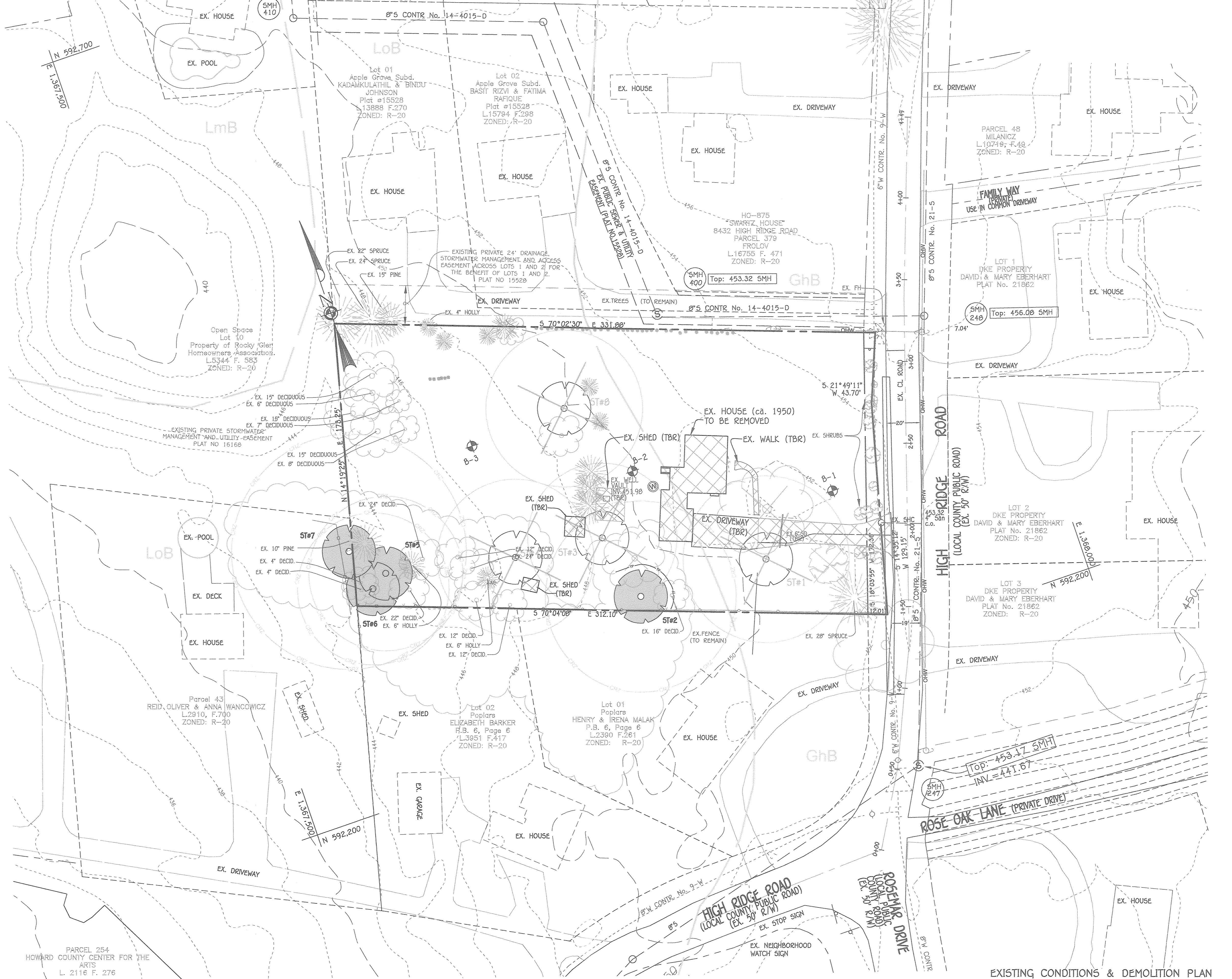
\* ATTEMPT SHALL BE MADE TO SAVE SPECIMEN TREE 3 DURING CONSTRUCTION

NOTE: SOIL PROFILES BASED ON ON-SITE OBSERVATION ON MAY 3, 2019.

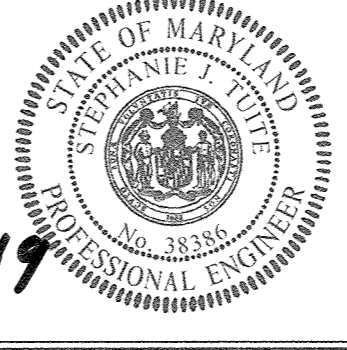


**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELLICOTT CITY, MARYLAND 21042  
 (410) 481-3292

Approved: Department Of Planning And Zoning  
*[Signature]*  
 Chief, Development Engineering Division  
 Date: 9-16-19  
*[Signature]*  
 Chief, Division Of Land Development  
 Date: 9-17-19



**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. 36366, EXPIRATION DATE: 01/12/2020.  
*[Signature]*  
 SIGNATURE OF PROFESSIONAL ENGINEER DATE: 6/21/19



**OWNER/DEVELOPER**  
 COLUMBIA BUILDERS  
 P.O. BOX 999  
 COLUMBIA, MD 21044  
 JIM GREENFIELD  
 443-324-4732

**EXISTING CONDITIONS & DEMOLITION PLAN**  
**GROVE PROPERTY**  
 8438 HIGH RIDGE ROAD  
 ELLICOTT CITY, MD 21043

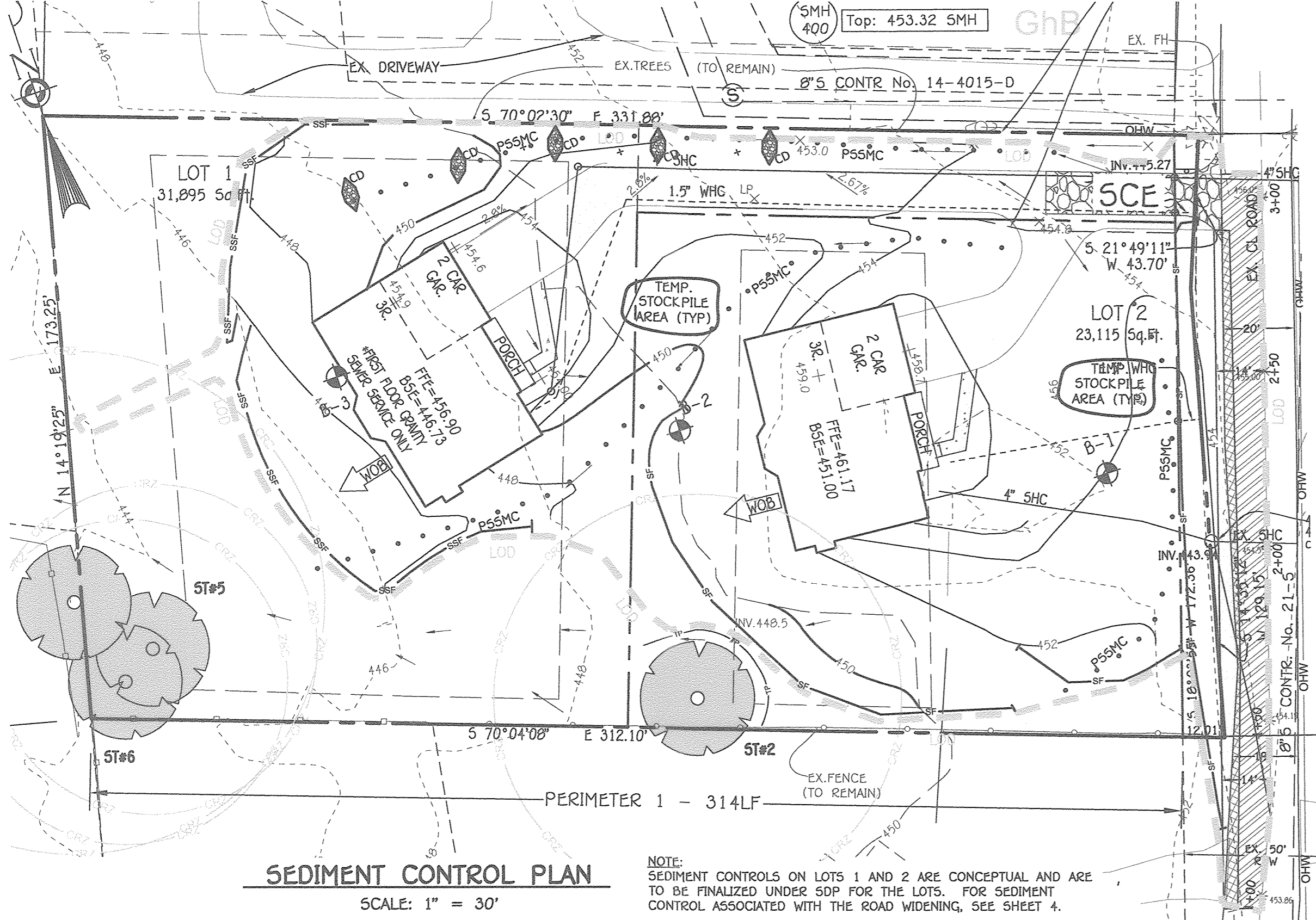
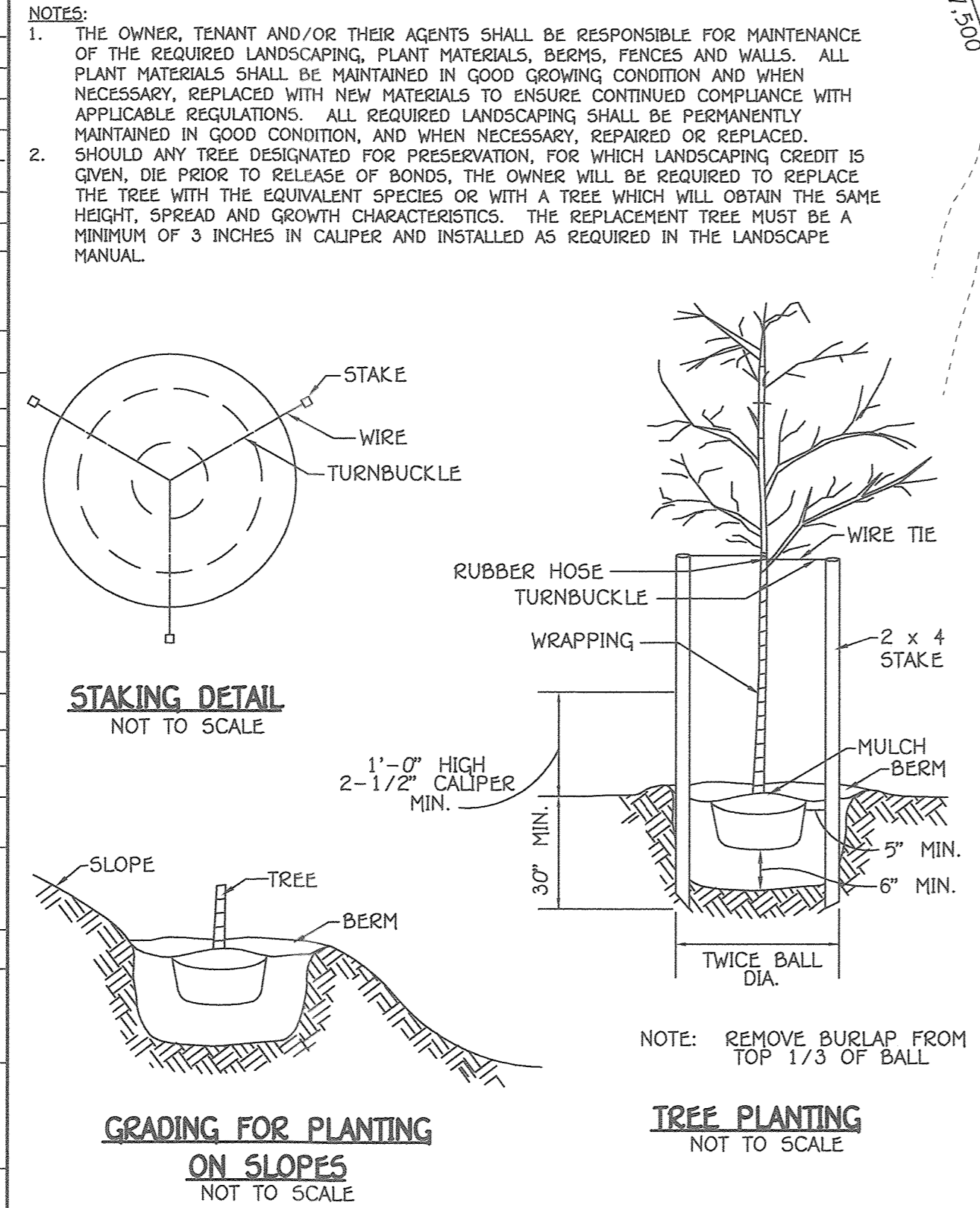
SAX MAP NO.: 18 GRID: 13 PARCEL NO:47  
 ZONED R-20  
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE: AS SHOWN DATE: JUNE, 2019  
 SHEET 2 OF 4



SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	0.43
LoB	Legore-Montalto Urban land complex, 0 to 8 percent slopes	B	0.64

NOTES:  
 1. WELL AND SEPTIC TO BE ABANDONED PER HOWARD COUNTY HEALTH DEPARTMENT GUIDELINES.  
 2. 7" BRL SHOWN ON LOT 2 WITH "F" IS SHOWN IN ACCORDANCE WITH SECTION 16.127(C)(4)(D) OF THE SUBDIVISION REGULATIONS WHICH REQUIRES THE BRL BE AN AVERAGE OF THE FRONT SETBACKS WITHIN THE BLOCK FACE OF THE PROPOSED LOTS OR THE AREA WITHIN 500 FEET IN EITHER DIRECTION OF THE SUBJECT PROPERTY, WHICHEVER IS LESS.

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	EXISTING FENCE
---	SPOT ELEVATION
---	EXISTING STORM DRAIN
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING OVERHEAD WIRE
---	EXISTING & PROPOSED PAVING
---	PROPOSED SIDEWALKS
---	LIMIT OF DISTURBANCE
---	SUPER SILT FENCE
---	SILT FENCE
---	CHECK DAM
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	DRAINAGE DIVIDE
---	DRYWELL (M-5)-TYPICAL
---	SOIL LINES AND TYPES
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO REMAIN
---	SPECIMEN TREE
---	CRITICAL ROOT ZONE
---	MILL AND OVERLAY

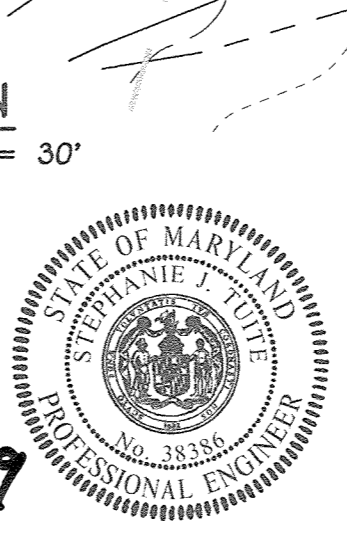


LANDSCAPING PLAN LIST			
QTY.	KEY	NAME	SIZE
7	(Symbol)	ACER RUBRUM (OCTOBER GLORY OCTOBER RED MAPLE)	2 1/2" - 3" CALIPER FULL CROWN, 8x8
4	(Symbol)	TILIA CORODATA (GREENSPRING GREENSPRING LITTLELEAF LINDEN)	2 1/2" - 3" CALIPER FULL CROWN, 8x8

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.  
 APPROVED: *[Signature]* 8/28/19  
 HOWARD COUNTY SOIL CONSERVATION DISTRICT  
 Approved: Department of Planning and Zoning  
*[Signature]* 9-16-19  
 Chief, Development Engineering Division  
*[Signature]* 9-17-19  
 Chief, Division of Land Development

PERIMETER	SCHEDULE A - PERIMETER LANDSCAPE EDGE				TOTAL
	P-1	P-2	P-3	P-4	
CATEGORY	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	
LANDSCAPE TYPE					
LINEAR FEET OF PERIMETER	314 LF.	173 LF.	325 LF.	172 LF.	
NUMBER OF PLANTS REQUIRED	(314'/60" = 5.2 OR 5)	(173'/60" = 2.9 OR 3)	(325'/60" = 5.4 OR 5)		13
EVERGREEN TREES					0
CREDIT FOR EXISTING VEGETATION					0
SHADE TREES	5	3	0	0	8
EVERGREEN TREES	0	0	0	0	0
NUMBER OF PLANTS PROVIDED	0	0	5	0	5
SHADE TREES	0	0	0	0	0
EVERGREEN TREES	0	0	0	0	0

NOTE: CREDIT ALONG P-1 FOR EXISTING 6" TREE, 12" TREE, TWO 18" TREES, AND EXISTING 30" TULIP POPLAR (ST#2) AND ALONG P-2 FOR EXISTING 15" TREES AND AN EXISTING 31" TULIP POPLAR (ST#6).  
 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. 36366, EXPIRATION DATE: 01/19/2020.  
**PROFESSIONAL CERTIFICATION**  
*[Signature]* 6/24/19  
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



PLAN  
 SCALE: 1" = 30'  
 OWNER/DEVELOPER  
 COLUMBIA BUILDERS  
 P.O. BOX 999  
 COLUMBIA, MD 21044  
 JIM GREENFIELD  
 443-324-4732

DEVELOPER'S / BUILDER'S CERTIFICATE  
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A LETTER OF LANDSCAPE INSTALLATION ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
 NAME: *[Signature]*  
 DATE: 8-20-19  
 SUPPLEMENTAL PLAN  
 GROVE PROPERTY  
 8438 HIGH RIDGE ROAD  
 ELLICOTT CITY, MD 21043  
 TAX MAP NO.: 18 GRID: 13 PARCEL NO: 47  
 ZONED R-20  
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE: AS SHOWN DATE: JUNE, 2019  
 SHEET 3 OF 4  
 F-19-080



# SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS (B-4-2)

### A. Soil Preparation

1. Temporary Stabilization

2. Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows, spaced and mounted on construction equipment. After the soil is loosened, it must be rolled or disped enough but left in the roughened condition. Slopes 3:1 or flatter are to be treated with ridges running parallel to the contour of the slope.

3. Apply fertilizer and lime as prescribed on the plan.

4. Topsoil and mulch shall be applied to the top 3 to 5 inches of soil by disk or other suitable means.

5. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are: I. Soil pH between 6.0 and 7.0. II. Soluble salts less than 500 parts per million (ppm). III. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: If longways will be planted, then a sandy soil (less than 30 percent silt plus clay) will be acceptable.

6. Soil contains 1.5 percent minimum organic matter by weight.

7. Soil contains sufficient pore space to permit adequate root penetration.

8. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.

9. Graded surface must be maintained in a true and even grade as specified on the approved plan, then seeded or otherwise loosened to a depth of 3 to 5 inches.

10. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

11. Wet soil amendments into the top 3 to 5 inches of soil by disk or other suitable means. Make sure areas to amend the surface, remove large objects like stones and branches, and ready the areas for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Walk slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seeded loosening may be unnecessary on newly disturbed areas.

### D. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is 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.

2. Topsoil salvaged from an existing site may be used provided it meets the standards to 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 USGS-NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil is not adequate to produce vegetation.

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.

4. Areas having slopes steeper than 2:1 require special consideration and design:

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silty loam, silty clay loam, or loamy sand. Other soils may be used if recommended by an approved soil scientist and approved by the appropriate authority. Topsoil must not be a mixture of contrasting textures, subsoils, and must contain less than 5 percent by volume of chert, stones, shells, gravel, cinders, roots, trash, or other materials larger than 1 1/2 inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, net sege, poison ivy, thistle, or others as specified.

c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate authority, may be used in lieu of natural topsoil.

d. Erosion and sediment control practices must be maintained when applying topsoil.

e. Minimum depth of topsoil is 5 to 8 inch layer and lightly covered with a minimum of 1/4 inch of mulch. Topsoil shall be applied in the surface resulting from topsoiling or other operations must be covered in order to prevent the formation of depressions or water impurities. Any impurities in the surface soil must not be placed if the topsoil is to be used in a true and even grade. The subsoil to be amended is excessively wet or in a condition that requires are detrimental to proper grading and seedbed preparation.

### C. Soil Amendments (Fertilizer and Lime Specifications)

1. Fertilizer and lime shall be applied to both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.

2. Fertilizers must be uniform composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate authority. Fertilizers must be delivered to the site fully labeled according to the manufacturer's instructions and must be in the original container.

3. Lime materials must be ground limestone (hydrated or burnt lime) may be substituted except when hydroxyapatite which contains at least 50 percent total calcium (total plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 90 to 100 percent will pass through a #200 mesh sieve.

4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disk or other suitable means.

5. Where the subsoil is either highly acidic or contains a high percentage of heavy clay, spread ground limestone at the rate of 4 to 6 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

## B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

The application of seed and mulch to establish vegetative cover.

To protect disturbed soils from erosion during and at the end of construction.

To the surface of all perimeter control, slopes, and any disturbed area not under active grading.

### A. Seeding

1. General Specifications

a. All seed must meet the requirement of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4. regarding the quality of seed. Seed lots must be available upon request to the inspector to verify type of seed and seeding rates.

b. Much alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding method must be applied when the ground thaws.

c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria produced specifically for the species. Inoculants must not be used later than the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 70 degrees Fahrenheit may weaken bacteria and the inoculant loses its effectiveness.

d. Soil or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.

2. Application

a. Dry Seeding: This includes use of conventional row or broadcast spreaders.

b. Incorporate seed into the subsoil as the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.

c. Seeding in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with weighted roller to provide good seed to soil contact.

d. Drill or Cultivator Seeding: Mechanized seeders that apply and cover seed with soil.

e. Calculating seeders are required to bury seeds to such a depth as to provide a minimum of 1/4 inch of soil covering. Seeded must be firm after planting.

f. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).

g. Fertilizer: Fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre (rate of soluble nitrogen P<sub>2</sub>O<sub>5</sub> (phosphorus), 200 pounds per acre. 0 (potassium), 200 pounds per acre.

h. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.

i. Fertilizer and lime on site and used immediately without interruption.

ii. When hydroseeding do not incorporate seed into the soil.

### B. Mulching

1. Mulch Materials (in order of preference)

a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland State Seed Law. Straw must be free of mold, decay, and insect infestation. Note: Use only sterile straw much in areas where one species of grass is desired.

b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into uniform fibrous physical state. WCFM is to be dried green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformity spread slurry.

c. WCFM, including dye, must contain no germination or growth inhibiting factors.

d. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a batter, having moisture absorption and retention properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.

e. WCFM materials must not contain elements or compounds at concentrations levels that will be phytotoxic.

f. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 16 percent maximum and water holding capacity of 90 percent minimum.

2. Application

a. Apply mulch to all seeded areas immediately after seeding.

b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.

c. Wood cellulose fiber used as mulch must be applied to a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

3. Anchoring

a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:

i. A mulch anchoring implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be limited to the contour.

ii. Wood cellulose fiber may be used for anchoring. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

iii. Synthetic binders such as Acrylic DLE (Aqua-Tack), DOW-TOL, Petro-Tack, Terra-Tac, Terra-Tac 40 or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches much, such as in valleys and on crests of banks. Use of liquid binders is acceptable.

iv. Lightweight plastic netting may be applied over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4-15 feet wide and 300 to 3,000 feet long.

## TEMPORARY SEEDING NOTES (B-4-4)

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose: To establish growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies: Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.

2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.

3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	PAVEMENT MATERIAL	HMA WITH GAB	HMA WITH CONSTANT GAB	
P-1	PARKING DRIVE ADJACENT TO RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE N/A	N/A	N/A	N/A
P-2	PARKING DRIVE ADJACENT TO RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1	2.0	2.0	2.0
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1	2.0	2.0	2.0

Approved: Department of Planning And Zoning

*Chief, Development Engineering Division*

*Chief, Division of Land Development*

9-16-19 Date

9-17-19 Date

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
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## PERMANENT SEEDING NOTES (B-4-5)

### A. Seed Mixtures

1. General Specifications

a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on the B.2. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USGS-NRCS Technical Field Office Guide, Section 3142 - Cultural Planting and Seeding Practices.

c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency. d. For areas receiving low maintenance, apply urea fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

2. Turfgrass Mixtures

a. Areas where turfgrasses may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of Central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

ii. Kentucky Bluegrass/Perennial Ryegrass: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in roughed pre areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes Certified Tall Fescue Cultivars and Certified Kentucky Bluegrass Cultivars with each ranging from 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Manual 77, "Turfgrass Cultivar Recommendations for Maryland".

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

c. Ideal Times of Seeding for Turf Grasses: Western MD: March 15 to June 1, August 1 to October 1 (Hardness Zone: 5b, 6a) Central MD: March 1 to May 15, August 15 to October 15 (Hardness Zone: 6) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardness Zone: 7a, 7b)

d. Till areas to receive seed by disk or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

No.	Species	Application Rate (lb./ac)	Seeding Dates	Seeding Depth (in.)	F <sub>20</sub> O <sub>5</sub> (lb./ac)	K <sub>2</sub> O (lb./ac)	Lime Rate (tons/ac)
1	TALL FESCUE	100	Mar. 1-May 15 Aug. 15-Oct. 15	1 1/4-1/2	90 lb./ac (2 lb./1000 sf)	90 lb./ac (2 lb./1000 sf)	2 tons/ac (90 lb./1000 sf)

Permanent Seeding Summary

Hardness Zone (from Figure B.3): 6b Fertilizer Rate (10-20-20) Lime Rate Seed Mixture (from Table B.3):

## B. Sod:

To provide quick cover on disturbed areas (2:1 grade or flatter).

### A. General Specifications

a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.

b. Sod must be machine cut at a uniform soil thickness to 3/4 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven edges will not be acceptable.

c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

d. Sod must not be heaved or transplanted when moisture content (excessively dry wet) may adversely affect its survival.

e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

### B. Soil Installation

a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.

b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger the joints to promote even uniform growth and drainage. Ensure that sod is not stretched or overlapped and that all joints are buttered (joint wet) in order to prevent voids which would cause air drying of the roots.

c. Whenever possible, lay sod with the long edges parallel to the contour and with overlapping joints. Roll and tamp, peg or otherwise seal the sod to prevent slippage on slopes. Ensure soil contact exists between sod roots and the underlying soil surface.

d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping, and irrigating for the size of sod within eight hours.

### C. Sod Maintenance

a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

b. After the first week, sod watering is required as necessary to maintain adequate moisture content.

c. Do not mow until the sod is firmly rooted. No more than 1/8 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

## B-4-6 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREAS

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Stockpile areas are utilized when it is necessary to stabilize and store soil for later use.

### A. Stockpile Location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

1. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.

2. Runoff from the stockpile area must drain to a suitable sediment control practice.

3. Access to the stockpile area from the upgrade side.

4. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike.

5. Where runoff concentrations along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.

7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.

8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 1:1 slopes, 30 feet for 2:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

Material	Specification	Size	Notes
Plantings	see Appendix A, Table 4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand 60-65% composite 35-40% or sandy loam 30% loamy sand 30% composite 40%	n/a	USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)	n/a	
Peat	shredded hardwood	aged 6 months, minimum	
Mulch	peat gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curbin drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	PE Type 1 nonwoven	
Aggregate	ASHSTO M-43	No. 57 or No. Aggregate (3/4" to 3/8")	
Underdrain piping	F 750, Type PS 2B or ASHTO M-27B	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" per. @ 6" on center. 4 holes per row; minimum of 3" of gravel over pipe; 2B dry strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved resin 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 308.2(b) for loading (0.1-1.0 psi); allowable (perforated) loading (based on soil pressures); and analysis of potential cracking
Poured in place concrete (if required)	NHSA Mix No. 3, f = 3500 (ASTM C 309)	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 resin 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 308.2(b) for loading (0.1-1.0 psi); allowable (perforated) loading (based on soil pressures); and analysis of potential cracking
Sand	ASHSTO M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Gneiss (ASHSTO #10) are not acceptable. No calcium chlorinated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

**ENGINEER'S 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. 30366, EXPIRATION DATE: 01/12/2020.

*Signature* 8/28/19 DATE

*Signature* 6/24/19 DATE

**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. 30366, EXPIRATION DATE: 01/12/2020.

*Signature* 6/24/19 DATE

## HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1895 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:

a. Prior to the start of earth disturbance.

b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading.

c. Prior to the start of another phase of construction or opening of another grading.

d. Prior to the removal or modification of sediment control practices.

2. Any grading or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure consistency with a avoid conflicts with the following:

a. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 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 is required within three (3) calendar days at the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3:1 horizontal to 1:1 vertical (3:1) and seven (7) calendar days at all other disturbed areas on the project site except for those areas under active grading.

4. All disturbed areas must be established within a time period specified below in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for Topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >19 of cut and/or fill. Stockpiles (Sec. B-4-6) in excess of 20 ft. must be benched with stable outer. All concentrated flow, steep slopes, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).

5. 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 CID.

6. Site Address: Total Area of Site: 1.29 Acres (ROAD WIDENING ONLY) Area Disturbed: 0.22 Acres Area to be roofed or paved: 0.09 Acres Area to be vegetatively stabilized: 0.03 Acres Total FFE: 75 Cu. Yds.

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

8. Additional stabilization as required by the HSCD, if deemed necessary by the CID, the site and all controls shall be inspected by the contractor weekly, and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:

- Inspection date
- Inspection time (routine, pre-rain event, during rain event)
- Name and title of inspector
- Weather information (current conditions as well as time and amount of last recorded precipitation)
- Brief description of project's status (e.g., percent completed) and/or current activities
- Evidence of sediment discharges
- Identification of plan deficiencies
- Identification of sediment controls that require maintenance
- Identification of missing or improperly installed sediment controls
- Compliance status regarding the sequence of construction and stabilization requirements
- Photographs
- Monitoring/sampling
- Maintenance and/or corrective action performed
- Other inspection items as required by the Inspector for Stormwater Associated with Construction Activities (NHDES, HCD).

9. Trending for the construction of utilities is limited to three pipe lengths or two that can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.

10. Any major changes or revisions to the plan must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.

11. All grading and soil stabilization work must occur outside the L.O.D. A project is to be sequenced so that grading activities begin on a grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the HSCD. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.

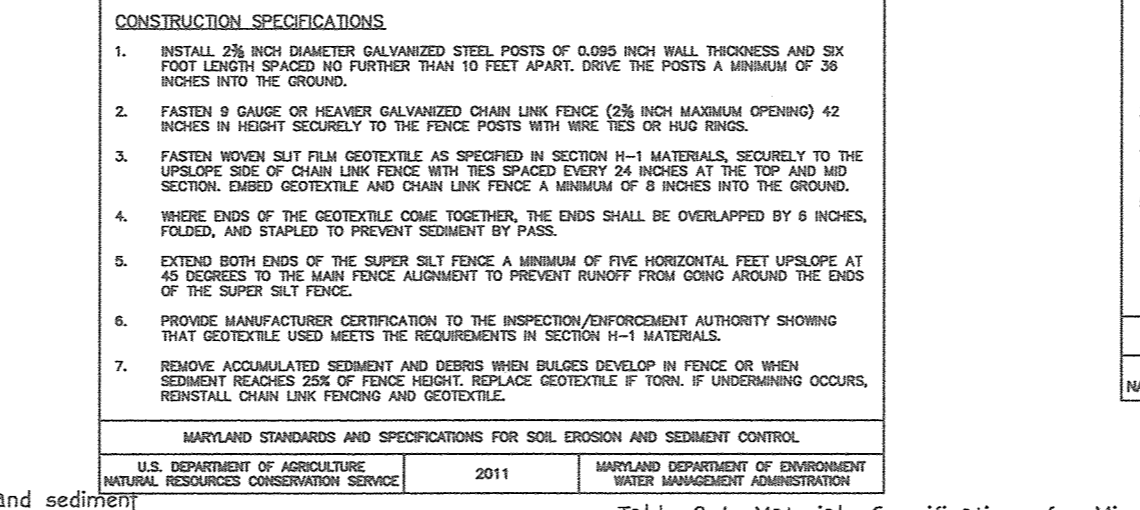
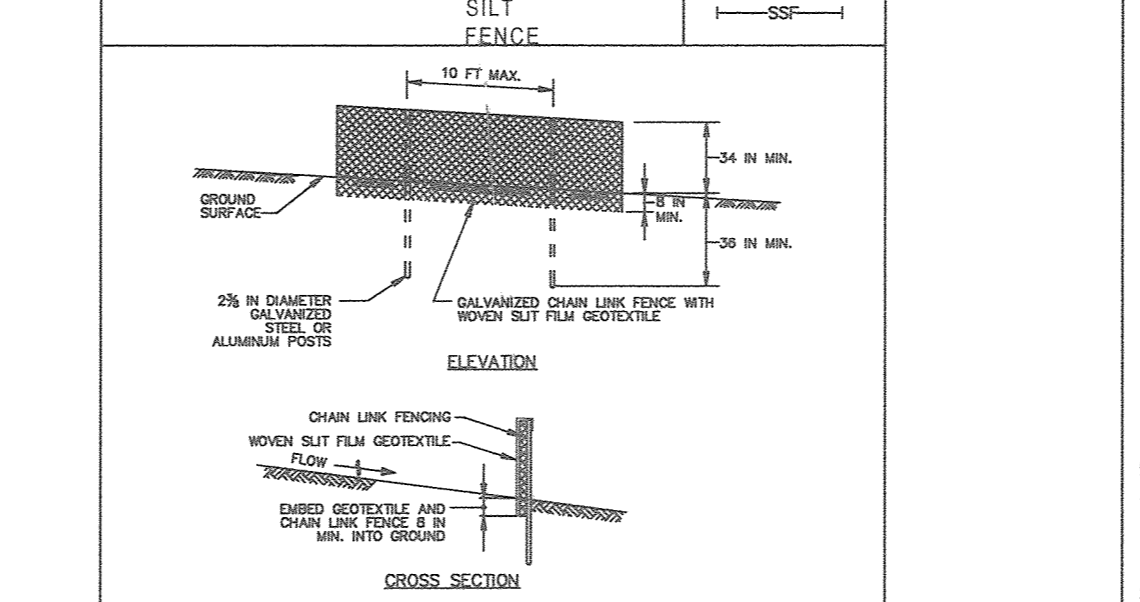
12. Wash water from any equipment, vehicles, wheel, pavement, and other sources must be treated in a sediment basin or other approved wash structure.

13. Topsoil shall be stockpiled and preserved on-site for redistribution upon final grade.

14. All Site Fences and Super Silt Fences shall be installed within 48 hours of the contour, and be lubricated at 25 minimum intervals, with least ends curled up by 2" in elevation.

15. Stream channels must not be disturbed during the following restricted time periods (inclusive): Use III and III October 1 - April 30 Use IV March 1 - May 31

16. A copy of the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.



CONSTRUCTION SPECIFICATIONS

- INSTALL 24 IN. DIA. GALVANIZED STEEL POSTS OF 6005 HIGH WALL PHOSPHORUS AND SIX INCHES LONGER THAN TO FEET APART. DRIVE THE POSTS A MINIMUM OF 18 INCHES INTO THE GROUND.
- FASTEN A GAGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (NOT MORE MASSIVE EQUIV. 42 FENCE) TO THE POSTS TO PROVIDE A MINIMUM OF 8 INCHES TO THE GROUND.
- FASTEN WOVEN SILT FILL GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UNDERLIEING SOIL AND TO THE POSTS TO PROVIDE A MINIMUM OF 8 INCHES TO THE GROUND.
- WEDGE ENDS OF THE GEOTEXTILE TOGETHER, THE ENDS MUST BE OVERLAPPED BY 6 INCHES, AND STAPLED TO PREVENT SEPARATION BY THE WIND.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPLOAF AT 90 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- REMOVE ACCUMULATED STONE AND DEBRIS WHEN BUILT UP DEVELOP IN SILT FENCE OR WHEN REMOVAL REQUIRES SIX FEET DEEP HOLE. REPLACE GEOTEXTILE IF TORN, IF UNDERGOING COLLAPSE, HORIZONTAL FENCE.
- REMOVE ACCUMULATED STONE AND DEBRIS WHEN BUILT UP DEVELOP IN SILT FENCE OR WHEN REMOVAL REQUIRES SIX FEET DEEP HOLE. REPLACE GEOTEXTILE IF TORN, IF UNDERGOING COLLAPSE, HORIZONTAL CHAIN LINK FENCE AND GEOTEXTILE.

Table B.4. Materials Specifications for Micro-Bioretenment, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Plantings	see Appendix A, Table 4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand 60-65% composite 35-40% or sandy loam 30% loamy sand 30% composite 40%	n/a	USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)	n/a	
Peat	shredded hardwood	aged 6 months, minimum	
Mulch	peat gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curbin drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	PE Type 1 nonwoven	
Aggregate	ASHSTO M-43	No. 57 or No. Aggregate (3/4" to 3/8")	
Underdrain piping	F 750, Type PS 2B or ASHTO M-27B	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" per. @ 6" on center. 4 holes per row; minimum of 3" of gravel over pipe; 2B dry strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved resin 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 308.2(b) for loading (0.1-1.0 psi); allowable (perforated) loading (based on soil pressures); and analysis of potential cracking
Poured in place concrete (if required)	NHSA Mix No. 3, f = 3500 (ASTM C 309)	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 resin 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 308.2(b) for loading (0.1-1.0 psi); allowable (perforated) loading (based on soil pressures); and analysis of potential cracking
Sand	ASHSTO M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Gneiss (ASHSTO #10) are not acceptable. No calcium chlorinated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

**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. 30366, EXPIRATION DATE: 01/12/2020.

*Signature* 6/24/19 DATE

