

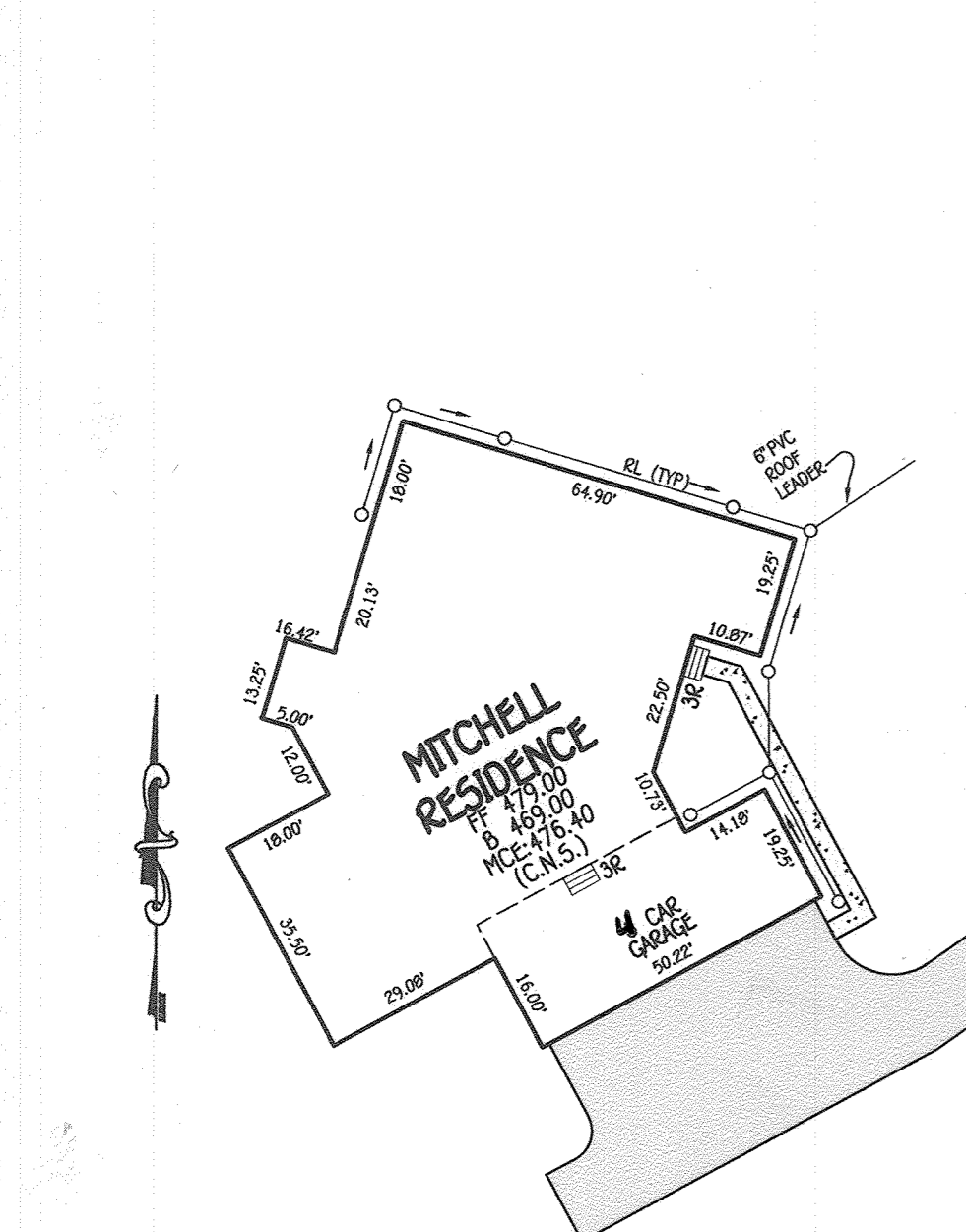
SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE DEVELOPMENT AND SEDIMENT/EROSION CONTROL PLAN
3	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
4	STORMWATER MANAGEMENT NOTES AND DETAILS

SOILS LEGEND			
SOIL	NAME	CLASS	Kc VALUE
UcB	Urban land-Chillum-Belleville complex, 0 to 5 percent slopes	D	0.37

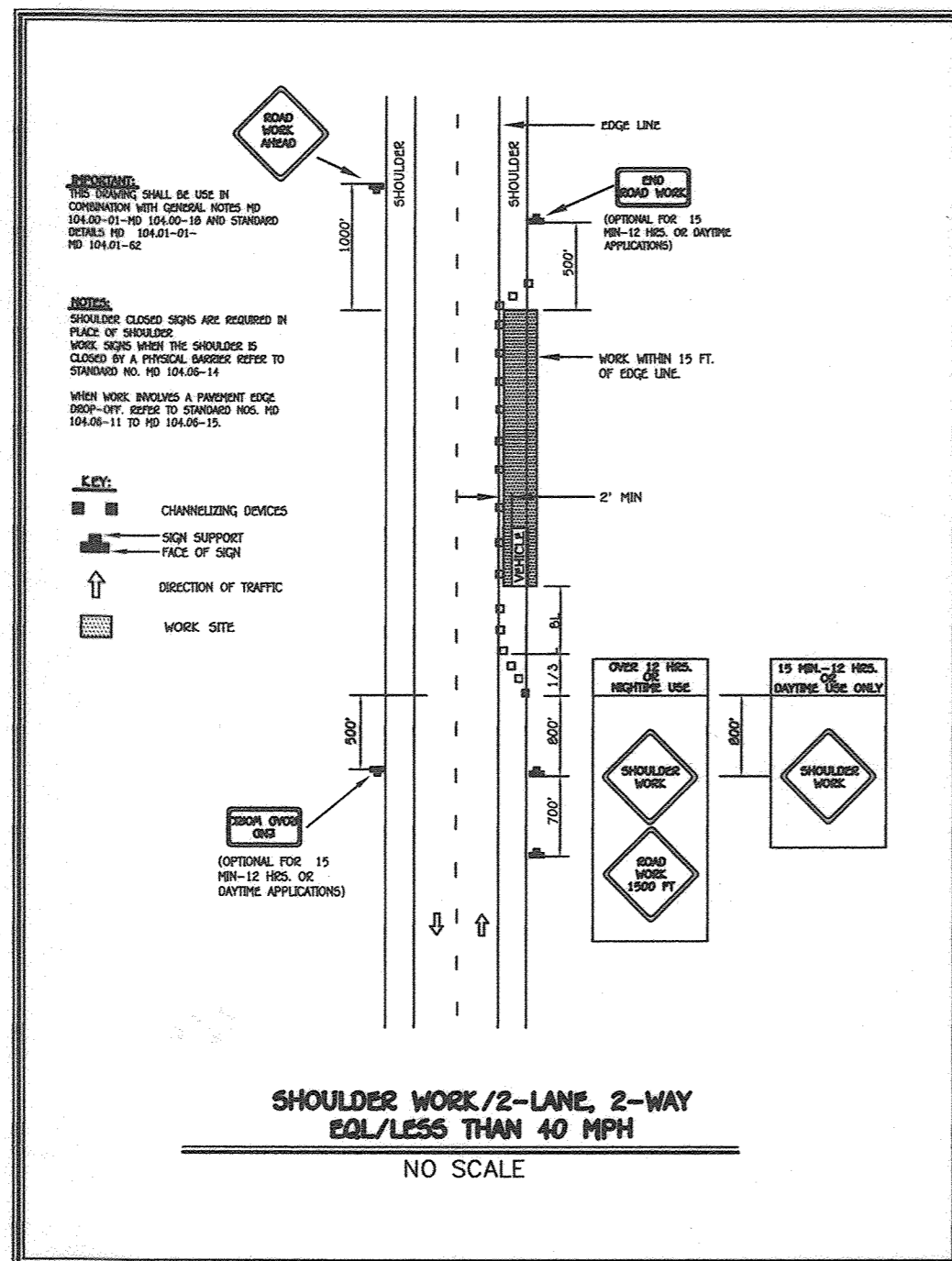
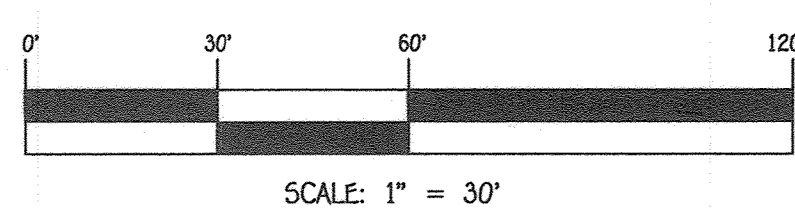
HOWARD COUNTY WEBSOILS SURVEY 05/06/19

STORMWATER MANAGEMENT PRACTICES							
AREA ID	LOCATION	DRAINAGE AREA SF	% IMPERVIOUS	ESDV REQUIRED (STORAGE) CUFT.	ESDV PROVIDED (STORAGE) CUFT.	BIO-RETENTION F-6 (Y/N)	MICRO-RETENTION M-6 (Y/N)
F-6(1)	PARCEL 35	55,592	16.0%	1,020	1,031	Y	Y
M-6(1)	PARCEL 35	10,025	36.0%	376	401	Y	Y

GROSS AREA = 1.99 ACRES  
 LOD = 1.03 ACRES  
 RCN = 77.0  
 TARGET Pe = 1.2"



HOUSE FOOTPRINT DETAIL  
SCALE: 1" = 30'



SHOULDER WORK / 2-LANE, 2-WAY  
EQL/LESS THAN 40 MPH  
NO SCALE



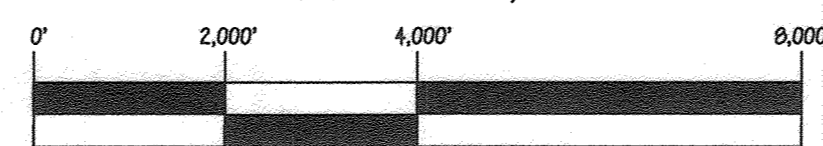
HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 3104  
 N 571,700.664 E 1,369,606.417  
 ELEVATION: 494.445'

HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 3108  
 N 569,563.589 E 1,359,155.211  
 ELEVATION: 429.348'

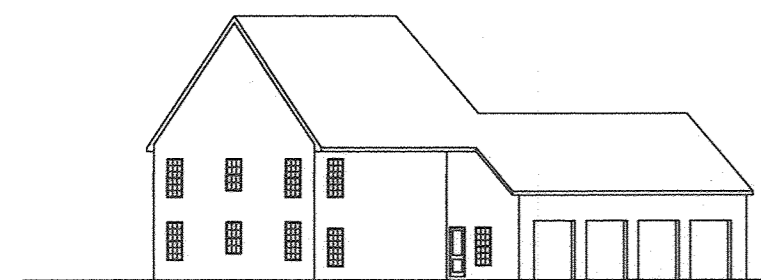
REFER TO HOWARD CO. ADC MAP 28-A6

VICINITY MAP

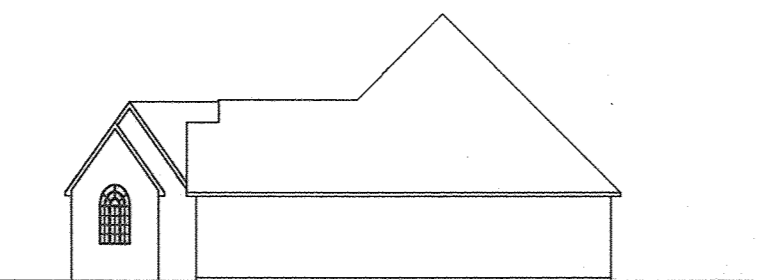
SCALE: 1" = 2,000'



SCALE: 1" = 2,000'



SOUTH-EAST ELEVATION



NORTH-WEST ELEVATION



EAST ELEVATION



WEST ELEVATION

SCALE: 1" = 30'

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PLACE  
 ELICOTT CITY, MARYLAND 21042  
 (410) 461-2095



PROFESSIONAL CERTIFICATION

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21476, EXPIRATION DATE, 7/14/21.

Frank J. Manalansan II 2/11/20  
 FRANK J. MANALANSAN II DATE

OWNER/DEVELOPER

GROVE ANGLE LLC,  
 8511 HAYSHED LANE  
 COLUMBIA, MARYLAND 21043  
 443-506-3043

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development VJ 3/10/2020  
 Chief, Development Engineering Division HCP 3-9-20  
 Director Department of Planning and Zoning 3-13-2020

PROJECT	PHASE	PARCEL NO.
GROVE ANGLE PROPERTY	N/A	35
DEED 18444 F. 117	BLOCK NO. 13 ZONE R-20 TAX/ZONE 31 ELEC. DIST. 2 CENSUS TR. 602302	
PREVIOUS HOWARD COUNTY FILES: ECP-19-099, WP-20-042		

GENERAL NOTES

- SUBJECT PROPERTY ZONED R-20 PER 10/06/13 COMPREHENSIVE ZONING PLAN.
- THIS SUBMISSION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE 2013 ZONING REGULATIONS IN EFFECT AT THE TIME OF APPROVAL OF THIS SITE DEVELOPMENT PLAN.
- SITE ANALYSIS:
  - GROSS TRACT ACAGE = 1.99 AC +/-
  - LIMIT OF DISTURBANCE = 1.03 AC +/-
  - FLOODPLAIN AREA = 0 AC
  - STEEP SLOPES AREA = 0 AC
  - NET TRACT AREA = 1.99 AC
- PROPERTY DEED REFERENCE: LIBEX 18444 AT FOLD 117.
- MODERATE INCOME HOUSING UNITS REQUIRED = N/A
- EXISTING TOPOGRAPHY INFORMATION SHOWN IS TAKEN FROM A FIELD SURVEY TOPOGRAPHIC SURVEY WITH (MAYBE TWO FOOT) CONTOUR INTERVALS PERFORMED BY FISHER, COLLINS & CARTER, INC. ON OR ABOUT JANUARY, 2019 BY FISHER, COLLINS & CARTER, INC.
- BOUNDARY INFORMATION IS BASED ON A SURVEY PERFORMED ON OR ABOUT MARCH, 2019 BY FISHER, COLLINS & CARTER, INC.
- COORDINATES BASED ON HANCOCK HORIZONTAL COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 3104 AND NO. 3108:  
 HOWARD COUNTY MONUMENT NO. 3104 N 571,700.664 E 1,369,606.417 ELEV. 494.445'  
 HOWARD COUNTY MONUMENT NO. 3108 N 569,563.589 E 1,359,155.211 ELEV. 429.348'
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT AND PUBLIC WATER AND SEWER SHALL BE UTILIZED WITHIN THIS DEVELOPMENT.
  - PUBLIC SEWER FRONTAGE PROVIDED BY CONTRACT NO. 302-5.
  - PUBLIC WATER SERVICE PROVIDED BY CONTRACT NO. 64-W.
- STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH CHAPTER 5 OF THE MARYLAND DEPARTMENT OF ENVIRONMENT STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009. WE ARE PROVIDING STORM WATER MANAGEMENT BY THE USE OF ONE (1) F-6 BIORETENTION FACILITY AND ONE (1) M-6 MICRO-BIORETENTION FACILITY AND EXCEED THE REQUIRED 520 VOLUME. THE STORAGE AREA BELOW THE F-6 BIORETENTION FACILITY HAS BEEN PROVIDED WITH AN ADDITIONAL 1" OF STORAGE TO STORE THE ONE YEAR STORM.
- NO CONCRETE ARE LOCATED ON-SITE BASED ON THE HOWARD COUNTY CEMETERY INVENTORY MAP.
- B.S.L. DENOTES BUILDING RESTRICTION LINE.
- A SIMPLIFIED FOREST STAND DELINEATION AND AN ENVIRONMENTAL FINDINGS LETTER DATED: 5/6/2019 WERE PREPARED BY 202-SCIENCE PROFESSIONALS INC. AND HAVE BEEN PROVIDED WITH THIS SUBMISSION. IT HAS BEEN DETERMINED THAT AT THE TIME OF ANY SUBSEQUENT SUBMISSION OF THIS PROPERTY, SAID FUTURE SUBMISSION WILL BE REQUIRED TO COMPLY WITH THE FOREST CONSERVATION ACT.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
  - WIDTH - 12 FEET (16 FEET SPOKING HOSE THAN ONE RESIDENCE)
  - SURFACE - 18" (6") INCHES OF COMPACTED CRUSHED GRANITE BASE WITH TAG AND CHIP COUNTER.
  - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 TURNING RADIUS.
  - STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (15 TONS LOADING).
  - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
  - STRUCTURE CLEARANCES - MINIMUM 12 FEET.
  - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- STORMWATER MANAGEMENT TEST PITS WERE PERFORMED BY FISHER, COLLINS AND CARTER INC. ON 9/11/19 AND A REPORT HAS BEEN PROVIDED WITH THIS SUBMISSION.
- NO GRADING, REMOVAL OF VEGETATION COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
- THE EXISTING HOUSE WAS DEMOLISHED SEPTEMBER, 2019.
- A PRE-SUBMISSION COMMUNITY MEETING WAS HELD ON MARCH 20, 2019.
- THERE ARE NO WETLANDS, STREAMS, 100 YEAR FLOODPLAIN OR STEEP SLOPES WITH A CONTIGUOUS AREA GREATER THAN 20,000 SQUARE FEET LOCATED ON THIS PROPERTY. THERE ARE NO WETLANDS ON-SITE THAT WILL BE DISTURBED OR THAT WILL REQUIRE 401 AND 404 WETLANDS PERMITS FROM THE STATE OF MARYLAND.
- SITE IS NOT ADJACENT TO A SCENIC ROAD.
- ALL LOT/PARCEL AREAS ARE MORE OR LESS.
- DISTANCES SHOWN ARE BASED ON SURFACE MEASUREMENT AND NOT REDUCED TO HAD "3" GRID.
- THE PRODUCT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS OTHERWISE HAVE BEEN APPROVED.
- THE SWM FACILITIES WILL BE PERMANENTLY OWNED AND MAINTAINED BY THE HOMEOWNER.
- TRAFFIC CONTROL DEVICES:
  - THE R1-1 (STOP) SIGN AND THE STREET NAME SIGN (S) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
  - THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD ADJUSTED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
- ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED (SQUARE TUBE POST 1 1/4 GAUGE) REGISTERED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (1 1/2 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO (2) INCHES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLY COP SHALL BE MOUNTED ON TOP OF EACH POST.
- A NOISE STUDY IS NOT REQUIRED BECAUSE THE PROJECT DOES NOT FALL WITHIN THE GUIDELINES OF DESIGN MANUAL VOLUME II, SOUND AND VIBRATION, SECTION 5.2, F.2.
- IN ACCORDANCE WITH SECTION 128.0 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SIDEWALKS, PORCHES, OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
- LANDSCAPE OBLIVATIONS, IF REQUIRED WILL BE PROPOSED UNDER ANY FUTURE SUBDIVISION OF THE PROPERTY.
- THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.102(b)(2)(ii) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WHICH STATES EXCEPTIONS REQUIRING A DECLARATION OF INTENT, THE TOTAL CUTTING, CLEARING OR GRADING OF FOREST RESOURCES IS LESS THAN 20,000 SQUARE FEET.
- THE PLANNING DIRECTOR ON DECEMBER 20TH APPROVED THE REQUEST FOR AN ALTERNATIVE COMPLIANCE OF SECTION 16.102(b)(2)(ii) FOREST RESTORATION PROVISIONS. STATE CHAMPION TREES, TREES 7% PERCENT OF THE DIAMETER OF STATE CHAMPION TREES, AND TREES 30 INCHES IN DIAMETER OR LARGER. THE ENACTMENT OF COUNCIL BILL 42-2019 ON FEBRUARY 5, 2020 VOTED IN APPROVAL OF THE ALTERNATIVE COMPLIANCE REQUEST DUE TO THE PLANS NOT REACHING THE REQUIRED MILESTONES OF GRANDFATHERING.

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	EXISTING FENCE
X 448.5	SPOT ELEVATION
---	EXISTING STORM DRAIN
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING
---	PRIVATE UIC EASEMENT
---	PRIVATE DRAINAGE & UTILITY EASEMENT
---	LIMIT OF DISTURBANCE
---	SILT FENCE
---	SSS/TP
---	DIFF/TP
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	DRAINAGE DIVIDE
---	PERMANENT SOIL STABILIZATION CONTROL MATTING
GhB	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
ST 3	SPECIMEN TREE
---	CRITICAL ROOT ZONE
B-1	DENOTES SWM TEST BORING LOCATION

SITE ANALYSIS DATA CHART

- |   |  |
|---|--|
| A. TOTAL AREA OF THIS SUBMISSION = 1.99 AC.±            |  |
| B. LIMIT OF DISTURBED AREA = 1.03 AC.±                  |  |
| C. PRESENT ZONING DESIGNATION = R-20 (SWM BASED ON LOD) |  |
| D. PROPOSED USE: RESIDENTIAL SINGLE FAMILY DETACHED     |  |
| E. PREVIOUS HOWARD COUNTY FILES: ECP-19-099             |  |
| F. TOTAL AREA OF FLOODPLAIN LOCATED ON-SITE = 0 AC      |  |
| G. TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0 AC         |  |
| H. TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0 AC         |  |
| I. TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0 AC     |  |
| J. TOTAL AREA OF STREAM (INCLUDING BUFFER) = 0 AC       |  |
| K. TOTAL AREA OF EXISTING FOREST = 0 AC                 |  |
| L. TOTAL AREA OF FOREST TO BE RETAINED = 0 AC           |  |
| M. TOTAL AREA OF LOTS / BUILDABLE PARCELS = 1.99 AC     |  |
| N. TOTAL IMPERVIOUS AREA = 0.27 AC                      |  |
| O. TOTAL AREA OF ERODIBLE SOILS = 0 AC                  |  |
| P. TOTAL AREA OF GREEN OPEN SPACE = 1.72 AC             |  |

ADDRESS CHART

PARCEL	STREET ADDRESS
35	8325 GROVE ANGLE ROAD

TITLE SHEET

SINGLE FAMILY HOUSE  
**GROVE ANGLE PROPERTY**  
 8325 GROVE ANGLE ROAD  
 ZONED R-20

TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 35  
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE: AS SHOWN DATE: JANUARY, 2020  
 SHEET 1 OF 4



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
---	PROPOSED PAVING
---	PRIVATE UIC EASEMENT
---	PRIVATE DRAINAGE & UTILITY EASEMENT
---	LIMIT OF DISTURBANCE
---	SILT FENCE
---	SUPER SILT FENCE/TREE PROTECTION FENCE
---	DIVERSION FENCE/TREE PROTECTION FENCE
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	DRAINAGE DIVIDE
---	PERMANENT SOIL STABILIZATION CONTROL MATTING
---	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
ST 3	SPECIMEN TREE
---	CRITICAL ROOT ZONE
B-1	DENOTES SWM TEST BORING LOCATION

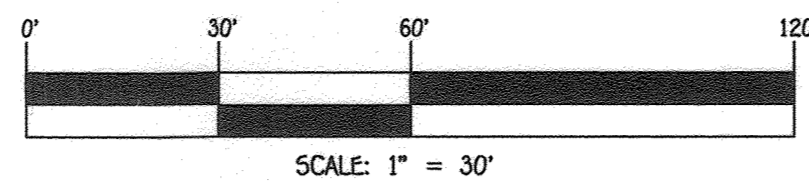
**SEDIMENT CONTROL NOTES**

- 1) WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE CONTRACTOR MAY SUBSTITUTE SILT FENCE FOR SUPER SILT FENCE WHERE APPROPRIATE.
- 2) AT THE REQUEST OF THE SEDIMENT CONTROL INSPECTOR, THE CONTRACTOR MAY BE REQUIRED TO PROVIDE SUPER SILT FENCE WHERE SILT FENCE IS SHOWN ON THESE PLANS.
- 3) BIO RETENTION FACILITIES MAY BE USED IN AN INTERIM CONDITION FOR SEDIMENT CONTROL—SEE DETAIL SHEET 3.
- 4) ALL SPECIMEN TREES AND WOODS TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION PER HOWARD COUNTY FOREST CONSERVATION GUIDELINES.
- 5) FOR SEDIMENT CONTROL NOTES AND DETAILS—SEE SHEET 3.

**Specimen Tree Chart**

Key (X#)	Species	Size (in dbh)	CRZ (feet radius)	Comments
1	Norway maple	30.5	45.75	good condition - not native
2	Norway maple	32	48	good condition - not native
3	Norway maple	40	60	good condition - not native
4	Norway maple	32	48	good condition - not native
5	White pine	33.5	50.25	good condition
6	White oak	30.5	45.75	fair condition, limb dieback
7	White oak	37	55.5	fair condition, limb dieback
8*	White oak	38.5	57.75	fair condition, limb dieback

\* Specimen Tree #8 to be removed per WP-20-042 - See Sheet 1 - General Note 32



SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
UcB	Urban land-Chillum-Beltville complex, 0 to 5 percent slopes	D	0.37

HOWARD COUNTY WEBSOILS SURVEY 05/06/19

**PLANTING SPECIFICATIONS**

PLANTS, RELATED MATERIAL, AND OPERATIONS SHALL MEET THE DETAILED DESCRIPTION AS GIVEN ON THE PLANS AND AS DESCRIBED HEREIN.

ALL PLANT MATERIAL UNLESS OTHERWISE SPECIFIED, SHALL BE NURSERY GROWN, UNIFORMLY BRANCHED, HAVE A VIGOROUS ROOT SYSTEM, AND SHALL CONFORM TO THE SPECIES, SIZE, ROOT AND SHAPE SHOWN ON THE PLANT LIST AND THE AMERICAN ASSOCIATION OF NURSERMEN (AAN) STANDARDS. PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS, FREE FROM DEFECTS, DECAY, DISFIGURING ROOTS, SUN SCALD INJURIES, ABNORMALS OF THE BARK, PLANT DISEASE, INSECT PEST EGGS, BORERS AND ALL FORMS OF INSECT INFESTATIONS OR OBJECTIONABLE DISFIGUREMENTS. PLANT MATERIAL THAT IS WEAK OR WHICH HAS BEEN CUT BACK FROM LARGER GRADES TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED. TREES WITH FORKED LEADERS WILL NOT BE ACCEPTED. ALL PLANTS SHALL BE FRESHLY DUG; NO HEALED-IN PLANTS FROM COLD STORAGE WILL BE ACCEPTED.

UNLESS OTHERWISE SPECIFIED, ALL GENERAL CONDITIONS, PLANTING OPERATIONS, DETAILS AND PLANTING SPECIFICATION SHALL CONFORM TO "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" (HEREINAFTER "LANDSCAPE GUIDELINES") APPROVED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF METROPOLITAN WASHINGTON AND THE POTOMAC CHAPTER OF THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECT, LATEST EDITION, INCLUDING ALL AGENDA.

CONTRACTOR SHALL BE REQUIRED TO GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR AFTER DATE OF ACCEPTANCE IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THE LANDSCAPE GUIDELINES. CONTRACTOR'S ATTENTION IS DIRECTED TO THE MAINTENANCE REQUIREMENTS FOUND WITHIN THE ONE YEAR SPECIFICATIONS INCLUDING WATERING AND REPLACEMENT OF SPECIFIED PLANT MATERIAL.

BID SHALL BE BASED ON ACTUAL SITE CONDITIONS. NO EXTRA PAYMENT SHALL BE MADE FOR WORK ARISING FROM SITE CONDITIONS DIFFERING FROM THOSE INDICATED ON DRAWINGS AND SPECIFICATIONS.

ALL SHRUBS SHALL BE PLANTED IN CONTINUOUS TRENCHES OR PREPARED PLANTING BEDS AND MULCHED WITH COMPOSTED HARDWOOD MULCH AS DETAILS AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.

POSITIVE DRAINAGE SHALL BE MAINTAINED IN PLANTING BEDS 2 PERCENT SLOPE.

PLANTING MIX SHALL BE AS FOLLOWS: DECIDUOUS PLANTS - TWO PARTS TOPSOIL, ONE PART WELL-ROTTED COW OR HORSE MANURE, ADD 3 LBS. OF STANDARD FERTILIZER PER CUBIC YARD OF PLANTING MIX. EVERGREEN PLANTS - TWO PARTS TOPSOIL, ONE PART HUMUS OR OTHER APPROVED ORGANIC MATERIAL, ADD 3 LBS. OF EVERGREEN (ACIDIC) FERTILIZER PER CUBIC YARD OF PLANTING MIX. TOPSOIL SHALL CONFORM TO THE LANDSCAPE GUIDELINES.

WEED CONTROL: INCORPORATE A PRE-EMERGENT HERBICIDE INTO THE PLANTING BED FOLLOWING RECOMMENDED RATES ON THE LABEL. CAUTION: BE SURE TO CAREFULLY CHECK THE CHEMICAL USED TO ASSURE ITS ADAPTABILITY TO THE SPECIFIC GROUND COVER TO BE TREATED.

ALL AREAS WITHIN CONTRACT LIMITS DISTURBED DURING OR PRIOR TO CONSTRUCTION NOT DESIGNATED TO RECEIVE PLANTS AND MULCH SHALL BE FINE GRADED AND SEEDED.

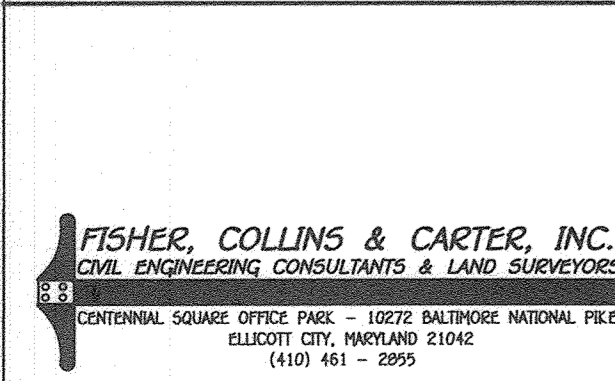
**NOTES**

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE PROPOSED LANDSCAPING WILL BE POSTED AS PART OF THE GRADING PERMIT IN THE AMOUNT OF \$600,000 BASED ON 2 SHADE TREES @ \$300,000 EACH.
2. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREBY LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR REDUCTIONS OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
3. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BENCHES, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
4. FOR ANY TREE DESIGNATED FOR PRESERVATION, FOR WHICH CREDIT IS GIVEN, BE REMOVED OR DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR, IF THE TREE IS LISTED AS A PROHIBITED OR INVASIVE SPECIES ON THE CRZ TREE LIST IT SHOULD BE REPLACED WITH A RECOMMENDED TREE SPECIES WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE LANDSCAPE MANUAL.

LANDSCAPING PLANT LIST			
QTY.	KEY	NAME	SIZE
2 (1)	○	ACER RUBRUM 'OCTOBER GLO®' (OCTOBER RED MAPLE)	2 1/2" - 3" CALIPER FULL CROWN, 8-8B

TOTAL: 2 SHADE TREES  
(1) FOR WP-20-042 ALTERNATIVE COMPLIANCE PETITION: CONDITIONS OF APPROVAL - SEE SHEET 1, GENERAL NOTE 32.

SEWER CLEANOUT CHART							
EX. SMH	CO1B	CO2	CO3	CO4	CO5	CO6	RV @ HOUSE
1740	R/W						MCE
RV OUT	465.00	465.74	467.34	368.94	370.54	371.82	373.42
IN. IN	464.5	465.54	467.24	368.84	370.44	371.72	373.32



**PROFESSIONAL CERTIFICATE**  
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."  
*Frank John Manalansan II*  
SIGNATURE OF LICENSED PROFESSIONAL FRANK JOHN MANALANSAN II  
DATE: 2/11/20

**BUILDER/DEVELOPER'S CERTIFICATE**  
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, FOR SEDIMENT AND EROSION CONTROL AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."  
*William R. [Signature]*  
SIGNATURE OF DEVELOPER  
DATE: 2-11-20

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*John K. [Signature]*  
DATE: 2/13/20  
HOWARD SOIL CONSERVATION DISTRICT

**OWNER/DEVELOPER**  
GROVE ANGLE LLC,  
8611 HAYSHED LANE  
COLUMBIA, MARYLAND 21043  
443-506-3043

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
Chief, Division of Land Development: *[Signature]* 3/10/2020  
Date: 3-9-20  
Chief, Development Engineering Division: *[Signature]*  
Date: 3-13-2020  
Director, Department of Planning and Zoning: *[Signature]*

PROJECT: GROVE ANGLE PROPERTY  
PHASE: N/A  
PARCEL NO.: 35

DEED	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
L 18444 F. 117	13	-R-20	31	2	602302

PREVIOUS HOWARD COUNTY FILES: ECP-19-09, WP-20-042

**SITE DEVELOPMENT AND SEDIMENT / EROSION CONTROL PLAN**

SINGLE FAMILY HOUSE  
**GROVE ANGLE PROPERTY**  
8325 GROVE ANGLE ROAD  
ZONED R-20

TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 35  
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: JANUARY, 2020  
SHEET 2 OF 4

SOP-20-011







**INFILTRATION AND FILTER SYSTEM CONSTRUCTION SPECIFICATIONS**

INFILTRATION AND FILTER SYSTEMS EITHER TAKE ADVANTAGE OF EXISTING PERMEABLE SOILS OR CREATE A PERMEABLE MEDIUM SUCH AS SAND OR GRAVEL, AND IN SOME INSTANCES WHERE PERMEABILITY IS GREAT, THESE FACILITIES MAY BE USED FOR QP AS WELL. THE MOST COMMON SYSTEMS INCLUDE INFILTRATION TRENCHES, INFILTRATION BASINS, SAND FILTERS, AND ORGANIC FILTERS. WHEN PROPERLY PLANTED, VEGETATION WILL THRIVE AND ENHANCE THE FUNCTIONING OF THESE SYSTEMS. FOR EXAMPLE, PRE-TREATMENT BUFFERS WILL TRAP SEDIMENTS THAT OFTEN ARE BOUND WITH PHOSPHORUS AND METALS. VEGETATION PLANTED IN THE FACILITY WILL AID IN NUTRIENT CAPTURE AND WATER STORAGE. ADDITIONALLY, PLANT ROOTS WILL PROVIDE ARTERIES FOR STORMWATER TO PERMEATE SOIL FOR GROUNDWATER RECHARGE. FINALLY, SUCCESSFUL PLANTINGS PROVIDE AESTHETIC VALUE AND WILDLIFE HABITAT MAKING THESE FACILITIES MORE DESIRABLE TO THE PUBLIC.

- DESIGN CONSTRAINTS:**
- > PLANTING BUFFER STRIPS OF AT LEAST 20 FEET WILL CAUSE SEDIMENTS TO SETTLE OUT BEFORE REACHING THE FACILITY, THEREBY REDUCING THE POSSIBILITY OF CLOGGING.
  - > DETERMINE AREAS THAT WILL BE SATURATED WITH WATER AND WATER TABLE DEPTH SO THAT APPROPRIATE PLANTS MAY BE SELECTED (HYDROLOGY WILL BE SIMILAR TO BIORETENTION FACILITIES, SEE FIGURE A.5 AND TABLE A.4 FOR PLANTING MATERIAL GUIDANCE).
  - > PLANTS KNOWN TO SEND DOWN DEEP TAPROOTS SHOULD BE AVOIDED IN SYSTEMS WHERE FILTER FABRIC IS USED AS PART OF FACILITY DESIGN.
  - > TEST SOIL CONDITIONS TO DETERMINE IF SOIL AMENDMENTS ARE NECESSARY.
  - > PLANTS SHALL BE LOCATED SO THAT ACCESS IS POSSIBLE FOR STRUCTURE MAINTENANCE.
  - > STABILIZE HEAVY FLOW AREAS WITH EROSION CONTROL MATS OR SOO.
  - > TEMPORARILY DIVERT FLOWS FROM SEEDED AREAS UNTIL VEGETATION IS ESTABLISHED.
  - > SEE TABLE A.5 FOR ADDITIONAL DESIGN CONSIDERATIONS.

**SOIL CHARACTERISTICS**  
THE CHARACTERISTICS OF THE SOIL FOR THE BIORETENTION FACILITY ARE PERHAPS AS IMPORTANT AS THE FACILITY LOCATION, SIZE, AND TREATMENT VOLUME. THE SOIL MUST BE PERMEABLE ENOUGH TO ALLOW RUNOFF TO FILTER THROUGH THE MEDIA, WHILE HAVING CHARACTERISTICS SUITABLE TO PROMOTE AND SUSTAIN A ROBUST VEGETATIVE COVER CROP. IN ADDITION, MUCH OF THE NUTRIENT POLLUTANT UPTAKE (NITROGEN AND PHOSPHORUS) IS ACCOMPLISHED THROUGH ABSORPTION AND MICROBIAL ACTIVITY WITHIN THE SOIL PROFILE. THEREFORE, SOILS MUST BALANCE THEIR CHEMICAL AND PHYSICAL PROPERTIES TO SUPPORT BIOTIC COMMUNITIES ABOVE AND BELOW GROUND.

THE PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND, BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BE LESS THAN 25% BY VOLUME (ENVIRONMENTAL QUALITY RESOURCES (EQR), 1996; ENGINEERING TECHNOLOGY INC. AND BIOMATERIALS, INC. (ET&B), 1993). SOILS SHOULD FALL WITHIN THE SM, ML, SC CLASSIFICATIONS OR THE UNIFIED SOIL CLASSIFICATION (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.5"/HR) IS REQUIRED (A CONSERVATIVE VALUE OF 0.5 FEET PER DAY IS USED FOR DESIGN). THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. BRUSH OR SEEDS FROM NOXIOUS WEEDS (E.G., JOHNSON GRASS, MUIGWORT, NUTEGGE, AND CANADA THISTLE OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.) SHOULD NOT BE PRESENT IN THE SOILS. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12 TO 18 LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVELLED BY DOZER TRACKS). THE SPECIFIC CHARACTERISTICS ARE PRESENTED IN TABLE A.3.

**TABLE A.3 PLANTING SOIL CHARACTERISTICS**

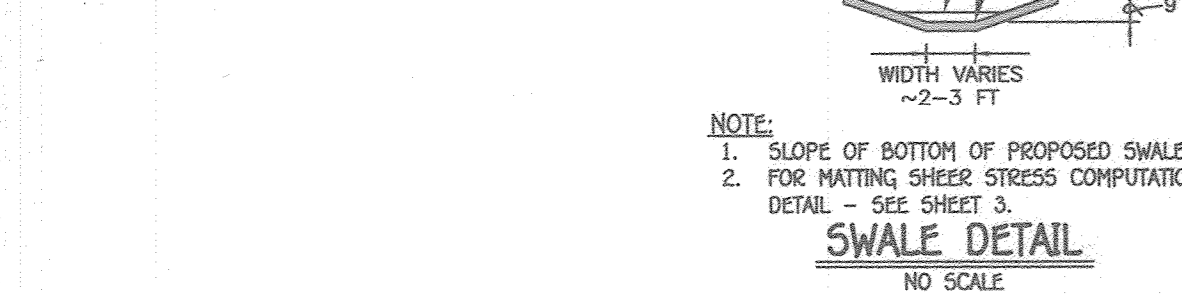
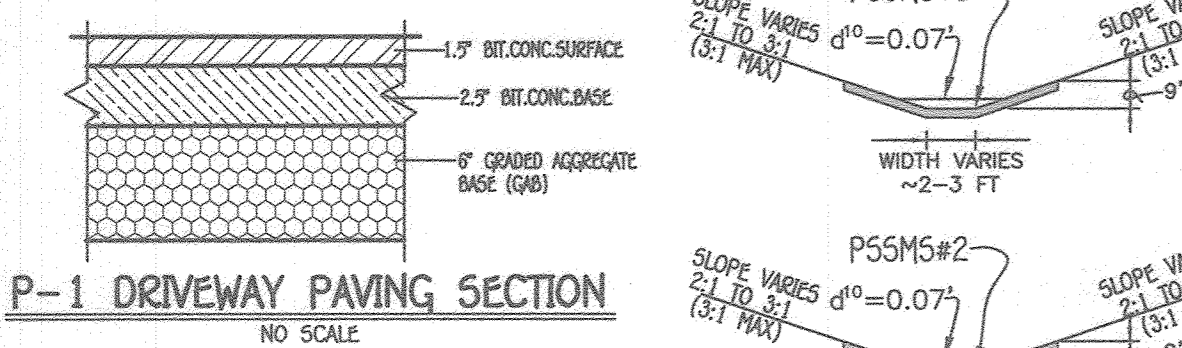
PARAMETER	VALUE
PH RANGE	5.2 TO 7.00
ORGANIC MATTER	1.5 TO 4.0% (BY WEIGHT)
MAGNESIUM	35 LBS. PER ACRE, MINIMUM
PHOSPHORUS (PHOSPHATE - P2O5)	75 LBS. PER ACRE, MINIMUM
POTASSIUM (POTASH - K2O)	85 LBS. PER ACRE, MINIMUM
SOLUBLE SALTS	500 PPM
CLAY	10 TO 25 %
SILT	30 TO 55 %
SAND	35 TO 60 %

**MULCH LAYER**  
THE MULCH LAYER PLAYS AN IMPORTANT ROLE IN THE PERFORMANCE OF THE BIORETENTION SYSTEM. THE MULCH LAYER HELPS MAINTAIN SOIL MOISTURE AND AVOIDS SURFACE SEALING, WHICH REDUCES PERMEABILITY. MULCH HELPS PREVENT EROSION, AND PROVIDES A MICROENVIRONMENT SUITABLE FOR SOIL BIOTA AT THE MULCH/SOIL INTERFACE. IT ALSO SERVES AS A PRETREATMENT LAYER, TRAPPING THE FINER SEDIMENTS, WHICH REMAIN SUSPENDED AFTER THE PRIMARY PRETREATMENT.

THE MULCH LAYER SHOULD BE STANDARD LANDSCAPE STYLE, SINGLE OR DOUBLE SHREDED HARDWOOD MULCH OR CHIPS. THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12 MONTHS), UNIFORM IN COLOR, AND FREE OF OTHER MATERIALS, SUCH AS WEED SEEDS, SOIL, ROOTS, ETC. THE MULCH SHOULD BE APPLIED TO A MAXIMUM DEPTH OF THREE INCHES. GRASS CLIPPINGS SHOULD NOT BE USED AS A MULCH MATERIAL.

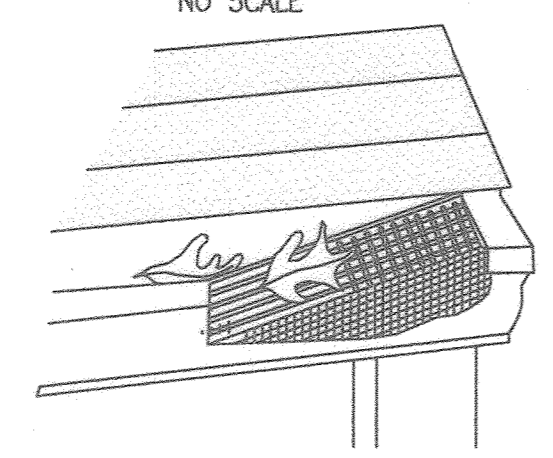
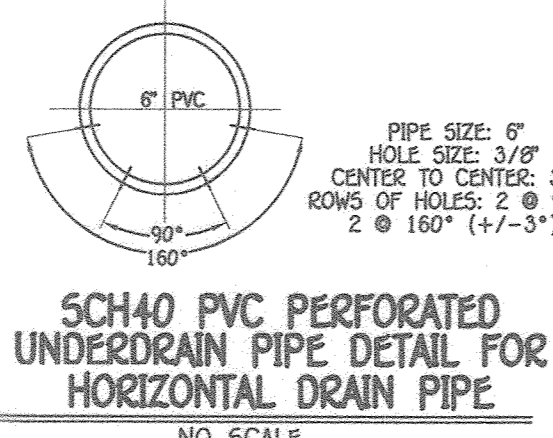
**PLANTING GUIDANCE**  
PLANT MATERIAL SELECTION SHOULD BE BASED ON THE GOAL OF SIMULATING A TERRESTRIAL FORESTED COMMUNITY OF NATIVE SPECIES. BIORETENTION SIMULATES AN UPLAND-SPECIES ECOSYSTEM. THE COMMUNITY SHOULD BE DOMINATED BY TREES, BUT HAVE A DISTINCT COMMUNITY OF UNDERSTORY TREES, SHRUBS AND HERBACEOUS MATERIALS. BY CREATING A DIVERSE, DENSE PLANT COVER, A BIORETENTION FACILITY WILL BE ABLE TO TREAT STORMWATER RUNOFF AND WITHSTAND URBAN STRESSORS FROM INSECTS, DISEASE, DROUGHT, TEMPERATURE, WIND, AND EXPOSURE.

THE PROPER SELECTION AND INSTALLATION OF PLANT MATERIALS IS KEY TO A SUCCESSFUL SYSTEM. THERE ARE ESSENTIALLY THREE ZONES WITHIN A BIORETENTION FACILITY (FIGURE A.5). THE LOWEST ELEVATION SUPPORTS PLANT SPECIES ADAPTED TO STANDING AND FLUCTUATING WATER LEVELS. THE MIDDLE ELEVATION SUPPORTS PLANTS THAT LIKE DRIER SOIL CONDITIONS, BUT CAN STILL TOLERATE OCCASIONAL INUNDATION BY WATER. THE OUTER EDGE IS THE HIGHEST ELEVATION AND GENERALLY SUPPORTS PLANTS ADAPTED TO DRIER CONDITIONS. A SAMPLE OF APPROPRIATE PLANT MATERIALS FOR BIORETENTION FACILITIES ARE INCLUDED IN TABLE A.4. THE LAYOUT OF PLANT MATERIAL SHOULD BE FLEXIBLE, BUT SHOULD FOLLOW THE GENERAL PRINCIPLES DESCRIBED IN TABLE A.5. THE OBJECTIVE IS TO HAVE A SYSTEM, WHICH RESEMBLES A RANDOM, AND NATURAL PLANT LAYOUT, WHILE MAINTAINING OPTIMAL CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. FOR A MORE EXTENSIVE BIORETENTION PLAN, CONSULT ET&B, 1993 OR CLAYTOR AND SCHUELEER, 1997.

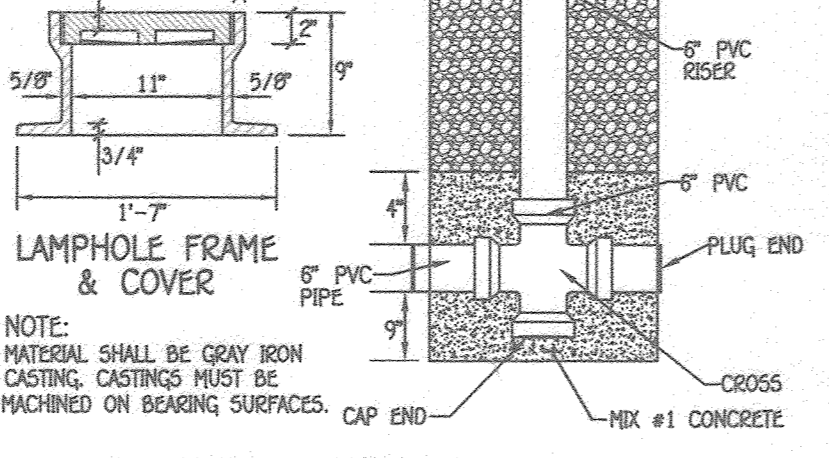
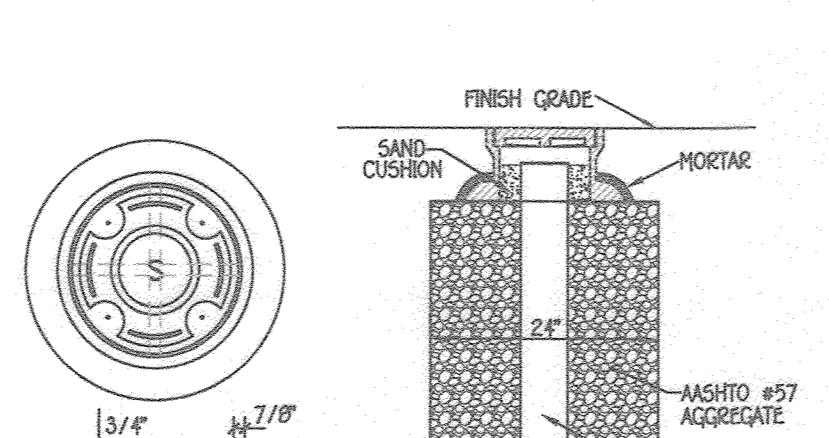


**SOILS LEGEND**

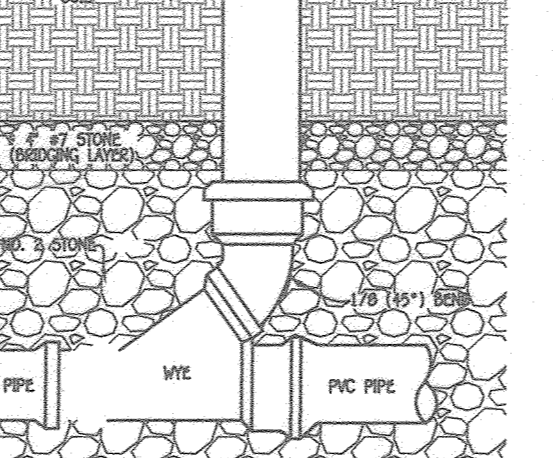
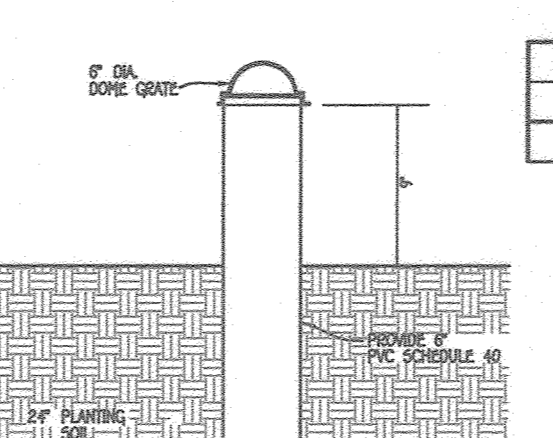
SOIL	NAME	CLASS	K VALUE
Ucb	Urban land-Chillum-Belleville complex, 0 to 5 percent slopes	D	0.37



**GUTTER DRAIN FILTER DETAIL**  
NO SCALE



**CLEANOUT/WATER QUALITY SAMPLING PORT DETAIL**  
NO SCALE

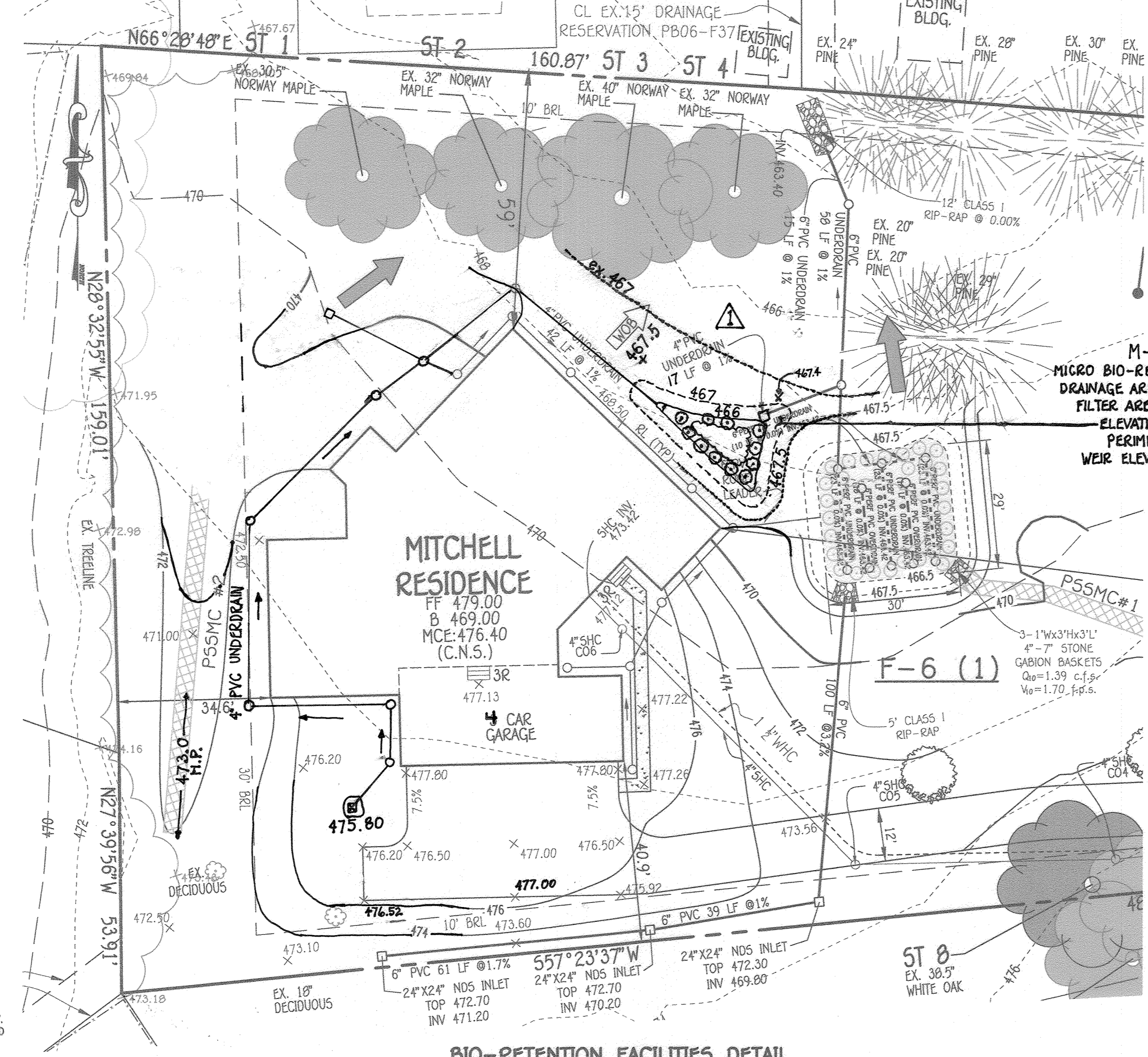


**TYPICAL SECTION MICRO BIO-RETENTION FACILITY (M-6)**  
NO SCALE

FACILITY NO.	A	B
F-6 (1)	467.50	464.42
M-6 (1)	466.00	462.92

**LEGEND**

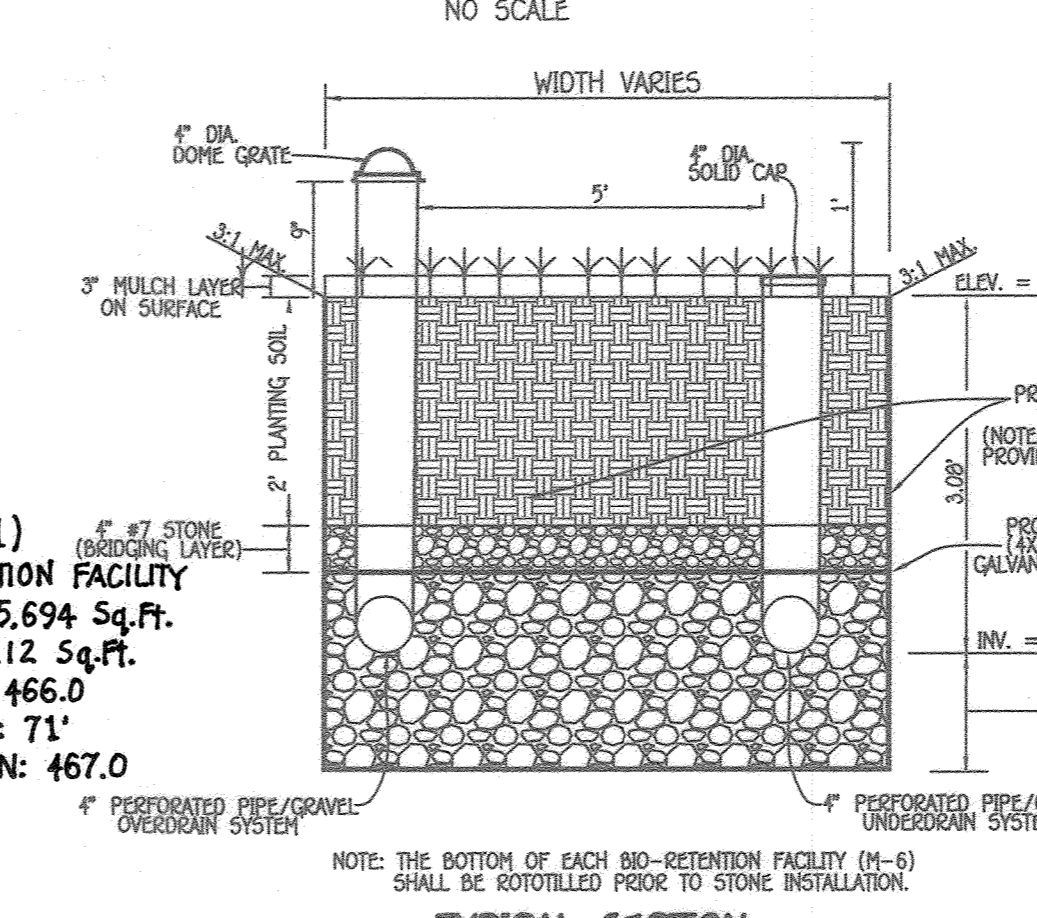
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL	---	EXISTING TREE LINE
---	EXISTING CONTOUR 10' INTERVAL	---	PROPOSED TREE LINE
---	PROPOSED CONTOUR 10' INTERVAL	---	DRAINAGE DIVIDE
---	PROPOSED CONTOUR 2' INTERVAL	GhB	SOIL LINES AND TYPES
---	EXISTING FENCE	LoB	PERMANENT SOIL STABILIZATION CONTROL MATTING
---	SPOT ELEVATION	---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	EXISTING STORM DRAIN	---	PROPOSED ROOF LEADER
---	EXISTING WATER LINE	---	NOTES EXISTING TREES TO BE REMOVED
---	EXISTING SEWER LINE	---	NOTES EXISTING TREES TO REMAIN
---	EXISTING OVERHEAD WIRE	---	SPECIMEN TREE
---	PROPOSED PAVING	---	CRITICAL ROOT ZONE
---	PRIVATE UIC EASEMENT	---	
---	PRIVATE DRAINAGE & UTILITY EASEMENT	---	
---	LIMIT OF DISTURBANCE	---	
---	SUPER SILT FENCE/TREE PROTECTION FENCE	---	
---	DF/TP	---	
---	DIVERSION FENCE/TREE PROTECTION FENCE	---	
---	---	---	



**BIO-RETENTION FACILITIES DETAIL**  
SCALE: 1" = 20'

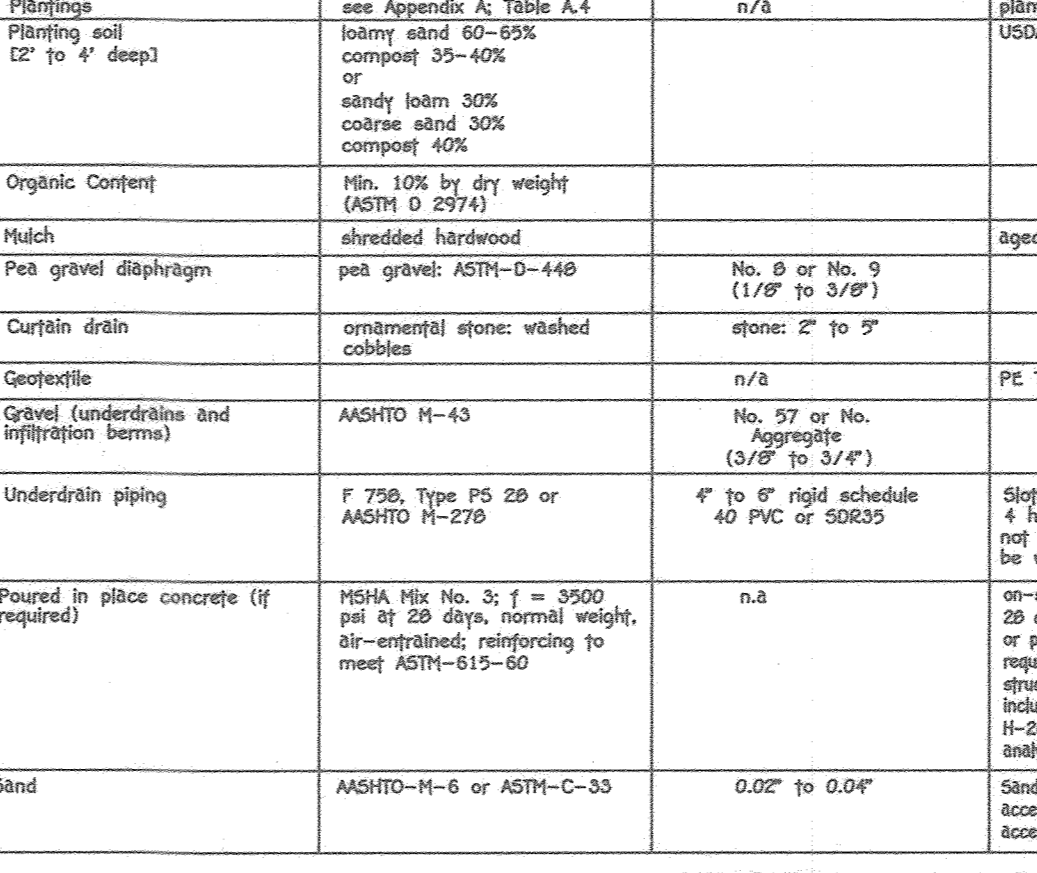
PLANT MATERIAL- BIO-RETENTION M-6 (1)	PLANT MATERIAL- BIO-RETENTION F-6 (1)																		
<table border="1"> <thead> <tr> <th>QUANTITY</th> <th>NAME</th> <th>MAXIMUM SPACING (FT.)</th> </tr> </thead> <tbody> <tr> <td>24 (73 sq.ft.)</td> <td>GRASSES</td> <td>36" o.c.</td> </tr> <tr> <td>11</td> <td>SHRUBS</td> <td>36"-40" o.c.</td> </tr> </tbody> </table>	QUANTITY	NAME	MAXIMUM SPACING (FT.)	24 (73 sq.ft.)	GRASSES	36" o.c.	11	SHRUBS	36"-40" o.c.	<table border="1"> <thead> <tr> <th>QUANTITY</th> <th>NAME</th> <th>MAXIMUM SPACING (FT.)</th> </tr> </thead> <tbody> <tr> <td>72 (216 sq.ft.)</td> <td>GRASSES</td> <td>36" o.c.</td> </tr> <tr> <td>31</td> <td>SHRUBS</td> <td>36"-40" o.c.</td> </tr> </tbody> </table>	QUANTITY	NAME	MAXIMUM SPACING (FT.)	72 (216 sq.ft.)	GRASSES	36" o.c.	31	SHRUBS	36"-40" o.c.
QUANTITY	NAME	MAXIMUM SPACING (FT.)																	
24 (73 sq.ft.)	GRASSES	36" o.c.																	
11	SHRUBS	36"-40" o.c.																	
QUANTITY	NAME	MAXIMUM SPACING (FT.)																	
72 (216 sq.ft.)	GRASSES	36" o.c.																	
31	SHRUBS	36"-40" o.c.																	

**TYPICAL SECTION MICRO BIO-RETENTION FACILITY (F-6) WITH ADDITIONAL STORAGE TO MANAGE IN EXCESS OF 1 YR. STORM EVENT**



**TYPICAL SECTION MICRO BIO-RETENTION FACILITY (F-6) WITH ADDITIONAL STORAGE TO MANAGE IN EXCESS OF 1 YR. STORM EVENT**  
NO SCALE

**TYPICAL SECTION BIO-RETENTION FACILITY (M-6)**



**TYPICAL SECTION BIO-RETENTION FACILITY (M-6)**  
NO SCALE

**Table B.4. Materials Specifications for Micro-Bioretenion, 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% compost 30%	n/a	USDA soil types loamy sand or sandy loam; clay content <3% not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Organic Content	Min. 10% by dry weight (ASTM D 2974)	n/a	
Mulch	shredded hardwood pea gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	aged 6 months, minimum
Curbin drain	ornamental stone: washed cobble	stone: 2" to 3"	
Geotextile	AGSHT M-63	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AGSHT M-63	No. 57 or No. 40 aggregate (3/8" to 3/4")	
Underdrain piping	F 750, Type P5 2B or AGSHT M-278	4" to 6" rigid schedule 40 PVC or 50835	slotted or perforated pipe; 3/8" perft. @ 6" on center. 4 holes per row; minimum of 9" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi 45 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 308.8P; vertical loading 10-10 or 14-20; allowable horizontal loading (based on soil pressure); and analysis of potential cracking
Sand	AGSHT-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Dolomite and Gypstone (AGSHT) #10 are not acceptable. No calcium carbonate or dolomite sand substitutions are acceptable. No "rock dust" can be used for sand.

**OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6) AND (F-6)**

- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDER BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
- SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

**STORMWATER MANAGEMENT STORAGE SUMMARY**

AREA ID	ESDv REQUIRED CU.FT.	ESDv PROVIDED CU.FT.	REMARKS
P/O HOUSE & DRIVEWAY	799	1,031	BIO RETENTION (F-6)
P/O HOUSE & DRIVEWAY	376	401	MICRO BIO RETENTION (M-6)
TOTAL	1,175	1,432	

GROSS AREA = 1.99 ACRES  
LOD = 1.03 ACRES  
RCN = 77  
TARGET Pe = 1.2"

**STORMWATER MANAGEMENT NOTES**

- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE 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.

**SHRUBS**  
BAYBERRY  
SPOKESHAW  
AZORWOOD  
WINTERBERRY  
INEBERRY  
WITCH HAZEL  
BUTTERNUT  
BUCKEYE  
BOTTLEBRUSH  
BUCKEYE

**GRASS**  
SMITHGRASS  
HEAVY METAL SMITHGRASS

ANY OF THE SHRUBS LISTED MAY BE USED  
ANY OF THE GRASS LISTED MAY BE USED

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
11072 BALTIMORE NATIONAL PLACE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2000

HOWARD COUNTY WEBSOILS SURVEY 05/06/19

NO.	REVISION	DATE
1	MOVE MICRO BIO-RETENTION FACILITY	4/26/24

**STATE OF MARYLAND**  
FRANK J. MARALANSAN II  
PROFESSIONAL LAND SURVEYOR  
No. 21476

**PROFESSIONAL CERTIFICATION**  
"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21476, EXPIRATION DATE, 7/14/21."

Frank J. Maralansan II  
2/11/20

**OWNER/DEVELOPER**  
GROVE ANGLE LLC,  
8611 HAYSHED LANE  
COLUMBIA, MARYLAND 21043  
443-506-3043

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
Chief, Division of Land Development  
Chief, Development Engineering Division  
Director, Department of Planning and Zoning

1/16/2020  
3-5-20  
3-13-2020

PROJECT: GROVE ANGLE PROPERTY  
PHASE: N/A  
PARCEL NO.: 35

DEED	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
L 19444 F 117	13	R-20	31	2	602302

PREVIOUS HOWARD COUNTY FILES:  
ECP-19-059, WP-20-042

TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 35  
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: JANUARY, 2020  
SHEET 4 OF 4

SCALE: 1" = 20'

0' 20' 40' 60'

**STORMWATER MANAGEMENT NOTES AND DETAILS**

SINGLE FAMILY HOUSE  
**GROVE ANGLE PROPERTY**  
8325 GROVE ANGLE ROAD  
ZONED R-20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development  
Chief, Development Engineering Division  
Director, Department of Planning and Zoning

1/16/2020  
3-5-20  
3-13-2020

PROJECT: GROVE ANGLE PROPERTY  
PHASE: N/A  
PARCEL NO.: 35

DEED	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
L 19444 F 117	13	R-20	31	2	602302

PREVIOUS HOWARD COUNTY FILES:  
ECP-19-059, WP-20-042

TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 35  
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: JANUARY, 2020  
SHEET 4 OF 4