11	Commencement						
	A Street and A str	SHEET INDEX					
	SHEET NO.	DESCRIPTION					
	1	TITLE SHEET					
	2	EXISTING CONDITIONS, DEMOLITION AND SOILS PLAN					
	3	ENVIRONMENTAL CONCEPT PLAN					
on contractors	4	CONCEPTUAL GRADING, SEDIMENT & EROSION CONTROL PLAN					
	5	STORMWATER MANAGEMENT NOTES AND DETAILS SHEET					

	LEGEND
5YMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	EXISTING CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
1 <i>8</i> ° 50	EXISTING STORM DRAIN
15" RCCP	PROPOSED STORM DRAIN PIPE
「	EXISTING WATER LINE
8"5⊖	EXISTING SEWER LINE
	PROPOSED SEWER
8'W	PROPOSED WATER
	BUILDING AND DRIVES TO BE DEMOLISHED
	PROPOSED PAVING
	PROPOSED SIDEWALKS
	DENOTES EXISTING FOREST TO BE REMOVED
	FOREST CONSERVATION EASEMENT (RETENTION)
+ + + + + + + + + + + + + + 	FOREST CONSERVATION EASEMENT (REFORESTATION)
historial III. proportius-representations	LIMIT OF DISTURBANCE
55F	SUPER SILT FENCE
SF excessions	SILT FENCE
	EXISTING TREE LINE
	PROPOSED TREE LINE
appetimisery testinos de viror — es ven hi forentes estradorios es construir de viror de viro	DRAINAGE DIVIDE
$\boxtimes$	DRYWELL (M-5)-TYPICAL
CINC historia de la constitución de la c LA CI	SOIL LINES AND TYPES
	BIO RETENTION FACILITY  (F-6) OR (M-6)  AS NOTED
0	PROPOSED ROOF LEADER
Ø X	DENOTES EXISTING TREES TO BE REMOVED
	DENOTES EXISTING TREES TO REMAIN
	-CRITICAL ROOT ZONE
	DENOTES 15%-24.9% SLOPES
	DENOTES 25% AND GREATER SLOPE

THIS REPORT WILL DEMONSTRATE HOW THE CRITERIA SET FORTH IN THE MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II (EFFECTIVE OCTOBER 200, REVISED MAY 2009) WILL BE SATISFIED FOR THESE LOTS. THE GOAL OF CREATING HYDROLOGY SIMILAR TO THAT OF "WOODS IN GOOD CONDITION" WILL BE ACCOMPLISHED THROUGH THE USE OF MICRO BIO-RETENTION FACILITIES, BIO-RETENTION FACILITIES, AND DRYWELLS, AS SUGGESTED WITHIN CHAPTER 5 OF PREVIOUSLY MENTIONED MANUAL. THE ACHIEVEMENT OF THIS GOAL WILL REMOVE THE REQUIREMENT OF PROVIDING CHANNEL PROTECTION VOLUME.

GENERAL SITE CONDITIONS: THE LAWYERS HILL OVERLOOK PROJECT IS ZONED R-ED AND LOCATED ON TAX MAP 32, PARCEL NO. 13 OF THE HOWARD COUNTY, MARYLAND TAX MAP DATABASE SYSTEM. THIS PROPERTY CONSISTS OF 8.76 ACRES OF WHICH NO ACRES ARE ENCUMBERED WITH A PRESERVATION EASEMENT DEDICATED TO HOWARD COUNTY MARYLAND AGRICULTURAL LAND PRESERVATION PROGRAM. THE LAWYERS HILL OVERLOOK PROJECT HAS FRONTAGE ON LAWYERS HILL ROAD TO THE NORTH WITH THE REAR OF THE PROPERTY ADJOINING OPEN SPACE LOT 63. THE GABLES AT LAWYER HILL WHICH HAS FRONTAGE ON SUMMER HOME TERRACE. THE FIELD RUN TOPOGRAPHIC SURVEY OF THE SITE INDICATES VARYING SLOPES ACROSS THE PROPERTY WITH A CENTRALLY LOCATED HIGH POINT CREATING TWO DISTINCT DRAINAGE AREAS. THE NORTHERN TWO THIRDS OF THE WOODED SITE DISCHARGING TO A LOW POINT ON ADJACENT OPEN SPACE LOT 60, THE GABLES AT LAWYER HILL WHERE AN EXISTING CULVERT DIRECTS THE OVERLAND FLOW UNDER LAWYERS HILL ROAD. THE REAR MORE STEEPLY WOODED THIRD OF THE SITE CONTAINS A LOW LYING WETLAND AREA CONTRIBUTING TO A STREAM BEGINNING ON THE PROPERTY, WHICH CONTINUES ON ADJACENT OPEN SPACE LOT 60, THE GABLES AT LAWYER HILL WHERE AN EXISTING 18" STORM DRAIN CULVERT DIRECTS THE OVERLAND FLOW UNDER SUMMER HOME TERRACE. THE SITE PREDOMINATELY CONTAINS CLASS 'B' AND 'C' SOILS WITH A SMALL AREA OF ERODIBLE 'D' SOILS LOCATED NEAR THE AFOREMENTIONED LOW POINT ON ADJACENT OPEN SPACE LOT 60, THE GABLES AT LAWYER HILL. THE SITE IS LOCATED IN THE PATAPSCO RIVER L N BRANCH ( 02130906) WATERSHED.

I. NATURAL RESOURCE PROTECTION: TO ENSURE THE PROTECTION OF NATURAL RESOURCES LOCATED ON THIS SITE, ALL BUFFERS WILL BE HONORED AND ALL IMPROVEMENT WILL BE LOCATED OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS. THE DESIGN WILL REMOVE FOURTEEN SPECIMEN TREES IN ORDER TO PROPERLY TREAT STORMWATER RUNOFF ON-SITE.

II. MAINTENANCE OF NATURAL FLOW PATTERNS:

THE PROPOSED DEVELOPMENT IS DESIGNED WITH THE INTENT OF CREATING DRAINAGE DIVIDES SIMILAR TO THOSE OF THE NATURAL FLOW PATTERS IN THE PROJECT AREA. III. <u>REDUCTION OF IMPERVIOUS AREAS THROUGH BETTER SITE DESIGN,</u>

ALTERNATIVE SURFACES AND NONSTRUCTURAL PRACTICES THIS SITE PROPOSES THE MINIMUM IMPERVIOUS AREAS NECESSARY TO PROVIDE ADEQUATE ACCESS TO THE PROPOSED LOTS. ALL PROPOSED IMPERVIOUS SURFACES ARE RECEIVING TREATMENT THROUGH THE USE OF ESD STORMWATER MANAGEMENT FACILITIES.

IV. INTEGRATION OF EROSION AND SEDIMENT CONTROLS INTO STORMWATER STRATEGY: SEDIMENT AND EROSION CONTROLS FOR THIS PROJECT HAVE BEEN DESIGNED

UTILIZING THE STORMWATER MANAGEMENT DRAINAGE DIVIDES.

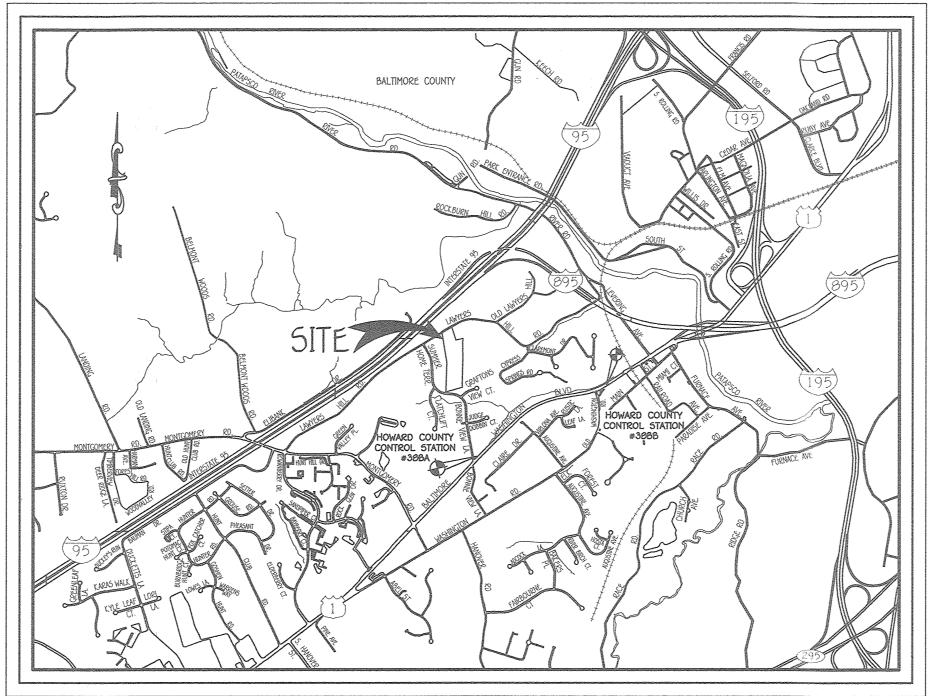
V. IMPLEMENTATION OF ESD PLANNING TECHNIQUES AND PRACTICES TO THE MAXIMUM EXTENT PRACTICABLE (MEP) THIS SUBMISSION PROPOSES ONE (F-6) BIO-RETENTION FACILITY, TWO (M-6) MICRO BIO-RETENTION FACILITIES AND SIX (M-5) DRYWELLS TO MEET AND EXCEED ENVIRONMENTAL SITE DESIGN TO THE MAXIMUM EXTENT PRACTICABLE (ESD TO THE MEP).

VI. REQUEST FOR DESIGN MANUAL WAIVER: NO WAIVERS ARE EXPECTED TO BE REQUESTED ON THIS PROJECT RELATING TO SWM REQUIREMENTS.

FISHER, COLLINS & CARTER, INC. IVIL ENGINEERING CONSULTANTS & LAND SURVEYORS NNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE ELLICOTT CITY, MARYLAND 21042 (410) 461 - 2855

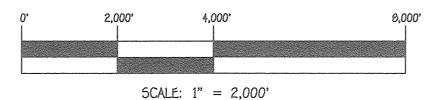
# ENVIRONMENTAL CONCEPT PLAN LAWYERS HILL OVERLOOK

LOTS 1 THRU 17, OPEN SPACE LOTS 18 AND 19 ZONING: R-ED (RESIDENTIAL: ENVIRONMENTAL DEVELOPMENT) DISTRICT TAX MAP No. 32 GRID No. 20 PARCEL No. 13 FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 38BA GEODETIC SURVEY CONTROL NO. 38BB N 562,553.31 E 1,390,967.96 ÉLEVATION: 166.74

HOWARD COUNTY N 564,007.65 E 1,393,649.93 REFER TO HOWARD CO. ADC MAP 29-D8 & 35-E1



#### 50ILS LEGEND 501L CLASS KW'VALÜE C || 0.37 Chillum loam, 2 to 5 percent slopes C 0.31 Chillum-Russett loams, 2 to 5 percent slopes ChC C 0.32 Chillum-Russett loams, 5 to 10 percent slopes Jab D | 0.43 Jackland silt loam, 3 to 8 percent slopes LaB Legore silt loam, 3 to 8 percent slopes C | 0.28 Legore silt loam, 8 to 15 percent slopes LaC C | 0.28 C 0.24 Russett fine sandy loam, 5 to 10 percent slopes Russett and Beltsville soils, 5 to 10 percent slopes | C | 0.20 Sassafras and Croom soils, 10 to 15 percent slopes B



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

EDMUND M. POLLARD & JOYCE E. ADCOCK 6349 BASKET SWITCH ROAD NEWARK, MARYLAND 21841

OWNERS DEVELOPER LAND DESIGN & DEVELOPMENT, INC. 8318 FORREST STREET SUITE 200 ELLICOTT CITY, MARYLAND 21043 TEL: 410-992-6400 ATTN: MR. DONALD R. REUWER, JR. Approved: Department Of Planning And Zoning

## SITE ANALYSIS DATA CHART

. LIMIT OF DISTURBED AREA = 6.30 Ac. ± PRESENT ZONING DESIGNATION = R-ED

PROPOSED USE: SINGLE FAMILY DETACHED HOUSING TOTAL NUMBER OF UNITS PROPOSED: 17 UNITS

OPEN SPACE TABULATION SEE TABULATION SUMMARY THIS SHEET. G. RECREATIONAL OPEN SPACE SEE TABULATION SUMMARY THIS SHEET.

H. BUILDING COVERAGE OF SITE: 0.91 AC+ OR 0.10% NO PREVIOUS HOWARD COUNTY FILES J. TOTAL AREA OF FLOODPLAIN LOCATED ON SITE 0.0 AC.

K. TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0.08 AC L. NET TRACT AREA = 8.76 AC. (TOTAL SITE AREA - FLOODPLAIN - STEEP SLOPES AREA)  $(8.76 \text{ Ac} - (0.0 \text{ Ac} + 0.00 \text{ Ac})) = 8.752 \text{ AC} \pm$ 

M. TOTAL AREA OF WETLANDS (INCLUDING BUFFER) LOCATED ON SITE = 0.5 AC.\*

N. TOTAL FOREST 6.69 Ac. ± O. TOTAL GREEN OPEN AREA = 6.86 Ac. ±

. TOTAL IMPERVIOUS AREA = 1.90 Ac. ±

. AREA OF ERODIBLE SOILS = 1.36 Ac. ±

## GENERAL NOTES

1. THE SUBJECT PROPERTY IS ZONED R-ED (PER 10/06/13 COMPREHENSIVE ZONING PLAN). 2. BOUNDARY IS BASED ON A FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER ON

OR ABOUT FEBRUARY, 2018. 3. CONTOURS ARE BASED ON A TOPOGRAPHIC FIELD RUN SURVEY PERFORMED BY FISHER, COLLIN AND CARTER, ON OR ABOUT FEBRUARY, 2018.

4. COORDINATES BASED ON NAD'83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 38BA AND NO. 38BB

HOWARD COUNTY MONUMENT NO. 388A N 562,553.31 E 1,390,967.96 ELEV. 166.74 HOWARD COUNTY MONUMENT NO. 38BB N 564,007.65

E 1,393,649,93 ELEV. 63.65 5. STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL,

VOLUMES I & II, REVISED 2009. SEE SWM NARRATIVE THIS SHEET. 6. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT. PUBLIC WATER AND SEWER WILL BE UTILIZED FOR THIS PROJECT.

7. ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S 6. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL

BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.

9. LANDSCAPING WILL BE PROVIDED AT THE FINAL PLAN STAGE OF THIS PROJECT 10. FOREST CONSERVATION WILL BE ADDRESSED AT THE FINAL PLAN STAGE OF THIS PROJECT.

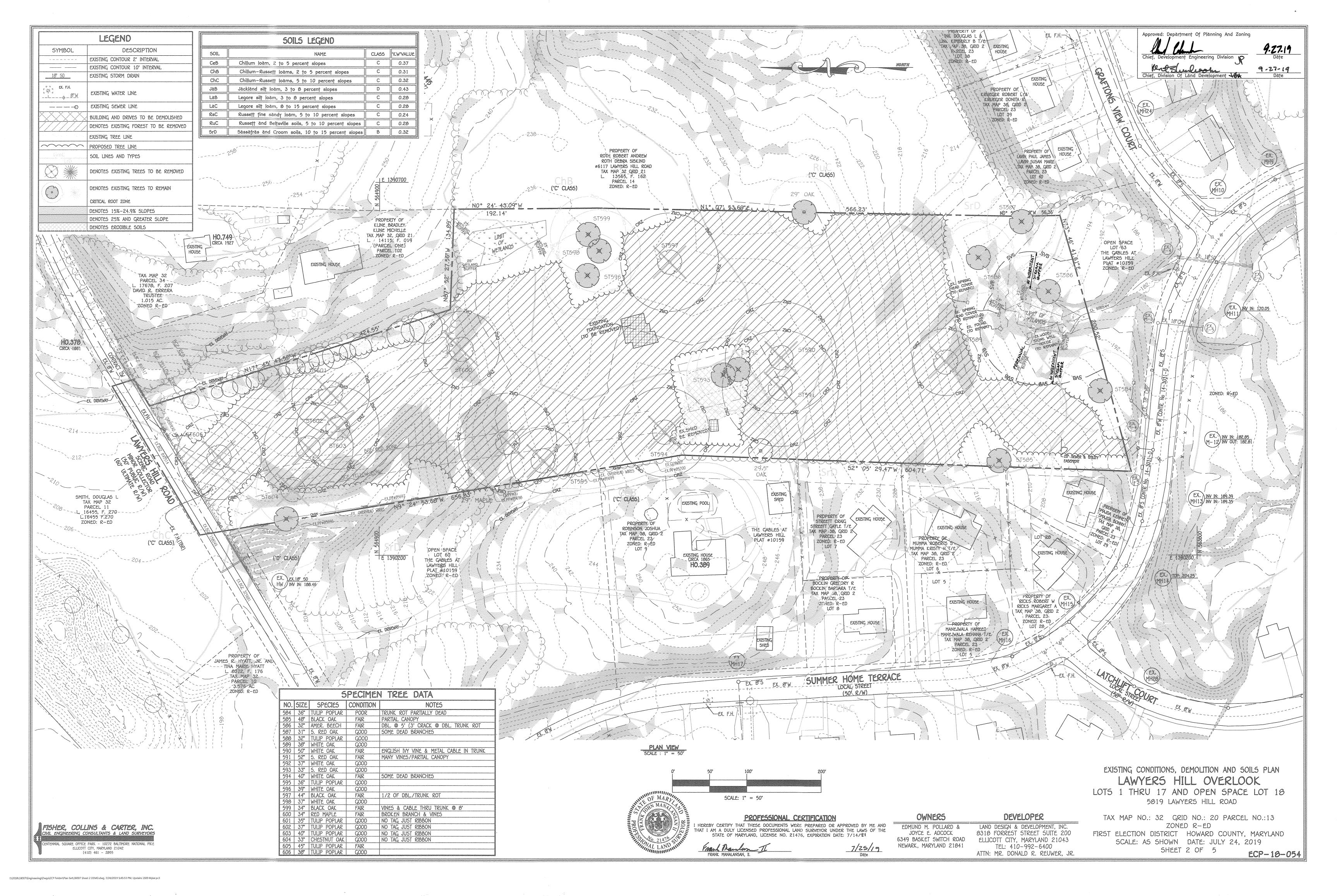
11. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE PRELIMINARY EQUIVALENT SKETCH PLAN AND FINAL PLAN STAGE. THEREFORE, THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS (INCLUDING THOSE THAT MAY ALTER OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES.

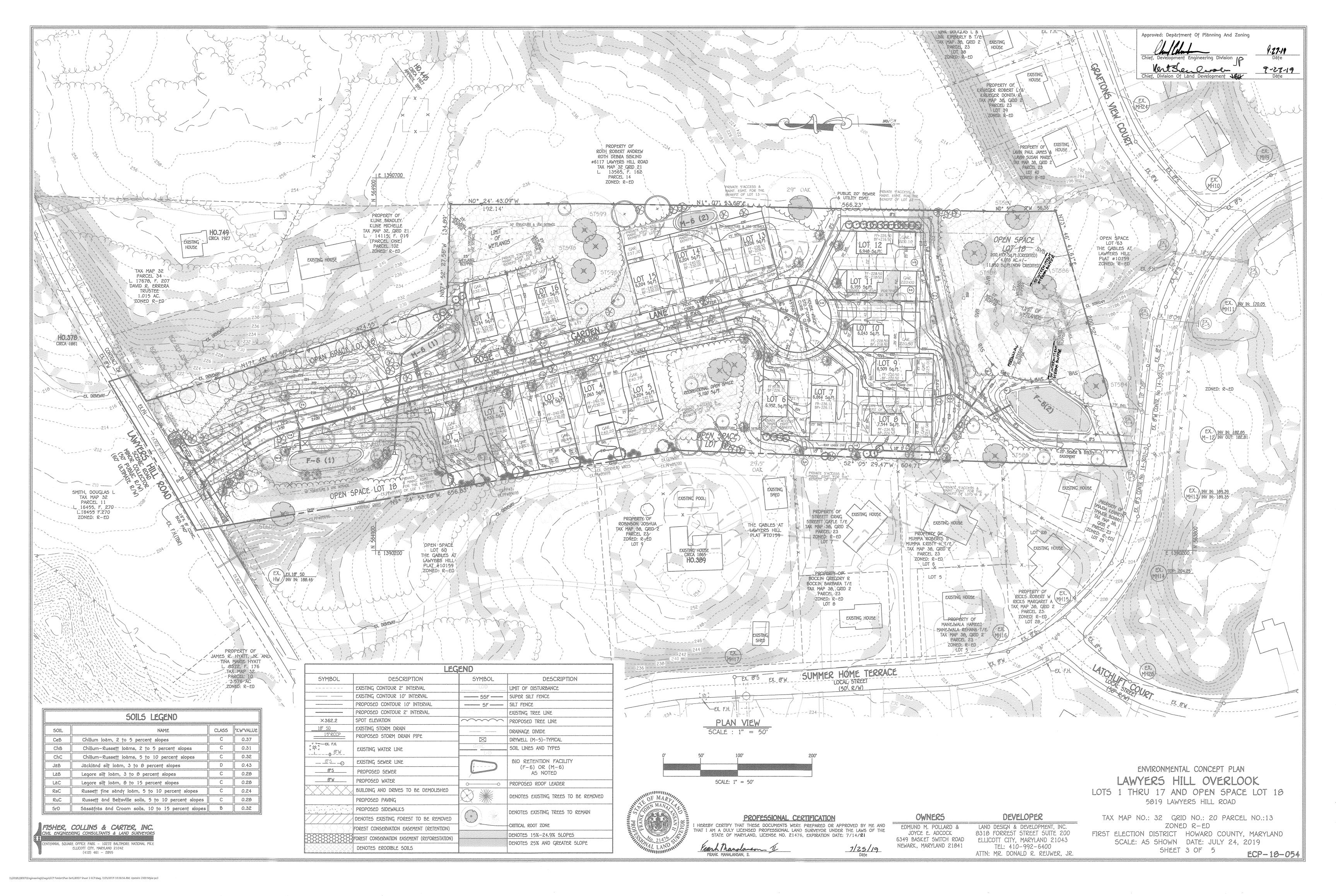
12. SOIL BORING INFORMATION WILL BE PROVIDED AT THE FINAL PLAN STAGE OF THIS PROJECT. 13. APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT OR ASSOCIATED SUBDIVISION OR SITE DEVELOPMENT PLANS OR RED-LINE REVISIONS. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN, SITE DEVELOPMENT PLAN, OR RED-LINE REVISION PROCESSES. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THE PROJECT PROGRESSES THROUGH THE PLAN

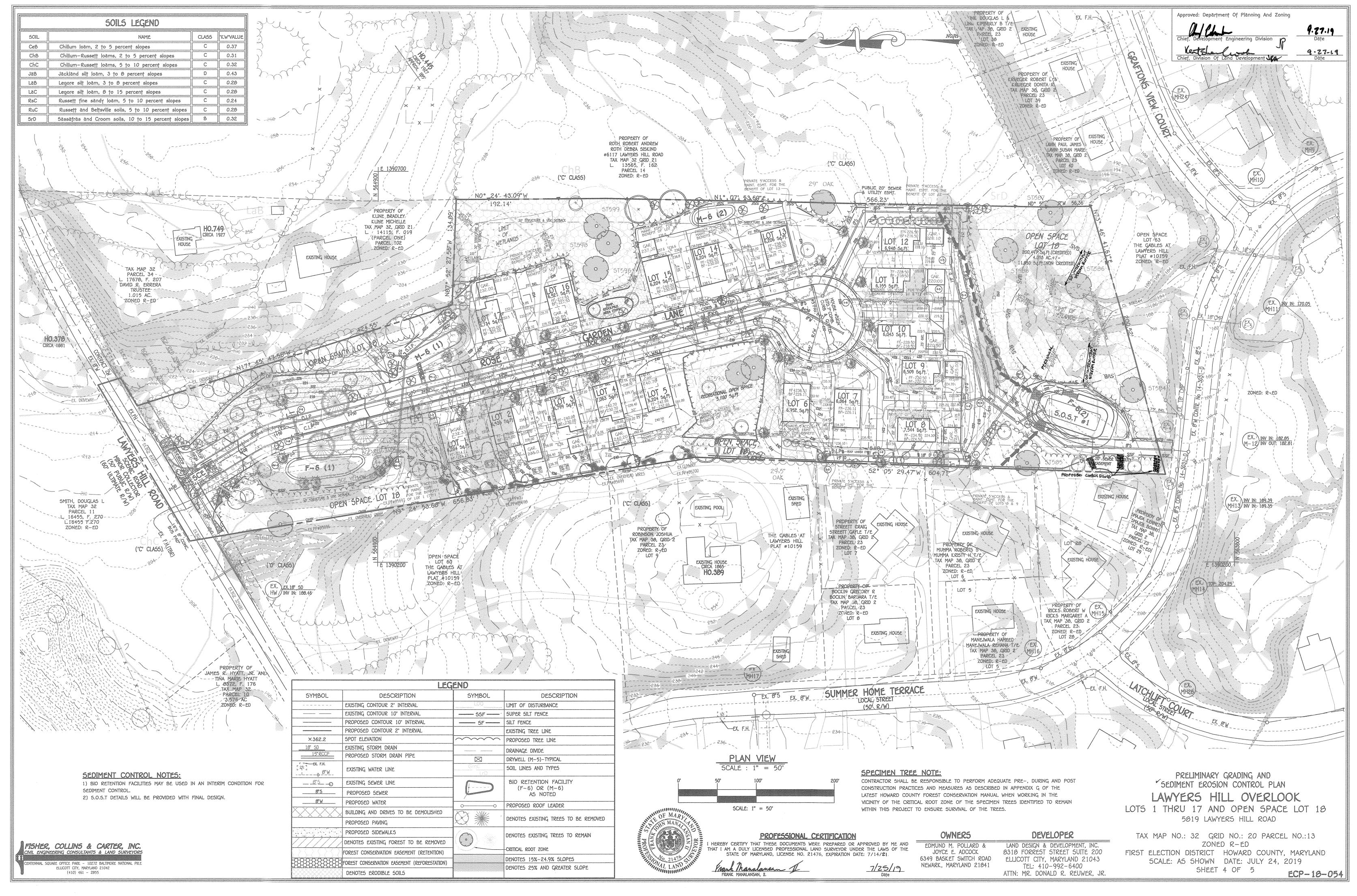
> TITLE SHEET LAWYERS HILL OVERLOOK LOTS 1 THRU 17 AND OPEN SPACE LOT 18 5819 LAWYERS HILL ROAD

TAX MAP NO.: 32 GRID NO.: 20 PARCEL NO.:13 ZONED R-ED

FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: AS SHOWN DATE: JULY 24, 2019 SHEET 1 OF 5 ECP-18-054







#### 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 FOR WC), AND RE V. 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 PHOSPHOROUS AND METALS. VEGETATION PLANTED IN THE FACILITY WILL AID IN NUTRIENT UPTAKE 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 50 THAT ACCESS IS POSSIBLE FOR STRUCTURE MAINTENANCE.

> STABILIZE HEAVY FLOW AREAS WITH EROSION CONTROL MATS OR SOD. > TEMPORARILY DIVERT FLOWS FROM SEEDED AREAS UNTIL VEGETATION IS ESTABLISHED. > SEE TABLE A.5 FOR ADDITIONAL DESIGN CONSIDERATIONS.

#### BIO-RETENTION SOIL BED 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 BIOHABITATS, INC. (ETAB), 1993]. SOILS SHOULD FALL WITHIN THE SM, ML, SC CLASSIFICATIONS OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (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, MUGWORT, NUTSEDGE, 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 TRAVERSED BY DOZER TRACKS). THE SPECIFIC CHARACTERISTICS ARE PRESENTED IN TABLE A.3.

#### TABLE A.3 PLANTING SOIL CHARACTERISTICS

KSDARSKK	PARAMETER	VALUE
monstra	FARAFILIER	VALUL
promotes	PH RANGE	5.2 TO 7.00
decoderate	ORGANIC MATTER	1.5 TO 4.0% (BY WEIGHT)
encomplete contractions	MAGNESIUM	35 LB5. PER ACRE, MINIMUM
RESTRICTORS	PHOSPHORUS (PHOSPHATE - P2O5)	75 LB5. PER ACRE, MINIMUM
OCCUPATION AND DESCRIPTION	POTASSIUM (POTASH -1(K20)	85 LBS. PER ACRE, MINIMUM
programme programme	SOLUBLE SALTS	500 PPM
<b>MATHEMATINE</b>	CLAY	10 TO 25 %
NO CONTRACTOR N	5ILT	30 TO 55 %
CHATTORIOGOUGO	5AND	35 TO 60%
á		And the state of t

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 SHREDDED 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 STRESSES 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 DRYER 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 PRINCIPALS 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 ETAB, 1993 OR CLAYTOR AND 5CHUELER, 1997.

# DOME GRATE SAND-CUSHION AGGREGATE PROVIDE 6" PVC SCHEDULE 40 24" PLANTING LAMPHOLE FRAME & COVER MATERIAL SHALL BE GRAY IRON CASTING. CASTINGS MUST BE MACHINED ON BEARING SURFACES. MIX #1 CONCRETE CLEANOUT/ WATER QUALITY SAMPLING PORT DETAIL NOT TO SCALE PIPE SIZE: 6" HOLE SIZE: 3/6" CENTER TO CENTER: 3" TYPICAL CLEAN-OUT DETAIL ROWS OF HOLES: 2 @ 90° 2 @ 160° (+/-3°) NO TO SCALE WIDTH VARIES 5CH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL 4" DIA. DOME GRATE— FOR HORIZONTAL DRAIN PIPE 4" DIA. SOLID CAR NO TO SCALE STORMWATER MANAGEMENT NOTES 1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH

MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010. NOTE: THE BOTTOM OF EACH BIO-RETENTION FACILITY (M-6' SHALL BE ROTOTILLED PRIOR TO STONE INSTALLATION. 2. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT

SHALL BE 500 SQ. FT. OR LESS. 3. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH 4. FINAL GRADING IS SHOWN ON THIS SITE DEVELOPMENT PLAN.

WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007

## OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRY WELLS (M-5)

TYPICAL SECTION

BIO-RETENTION FACILITY (F-6)

- A. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND
- AFTER EVERY HEAVY STORM EVENT. B. 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.
- C. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS. D. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO
- (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN. E. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE
- COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA. F. 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.

					LEADER
Table B.4. Materials	5 Specifications for M	icro-Bioretention, 1	Rain Gardens & Landscape Infiltration	LEAF 5CREEN-	SURCHARGE PIPE
Material	Specification	Size	Notes		5PI
Plantings	see Appendix A; Table A.4	n/a	plantings are site-specific		DL DL
Planting soil [2' to 4' deep]	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <5%		F
Organic Content	Min. 10% by dry weight (ASTM D 2974)				1 180
	shredded hardwood		aged 6 months, minimum		
Pea gravel diaphragm	pea gravel: ASTM-D-448	No. 0 or No. 9 (1/0 †o 3/0)			12"
Curțăin drăin	ornāmentāl stone: wāshed cobbles	stone: 2" to 5"			
Geotextile		n/a	PE Type 1 nonwoven		
Grāvel (underdrāins and infiltration berms)	AASHTO M-43	No. 57 or No. Aggregate (3/8" to 3/4")		Building Foundation—	5TONE D-448
Underdrain piping	F 750, Type P5 20 or AASHTO M-270	4" to 6" rigid schedule 40 PVC or 5DR35	Slotted or perforated pipe; 3/8" pert. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth		FABRIC 10' MINIMUM
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 20 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n.ā	on-site testing of poured-in-place concrete required: 20 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland — design to include meeting ACI Code 350.R/09; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking		
5and	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be		GROUND WATER

used for sand.

ROOF ROOF \*THE EXACT NUMBER OF DRYWELLS REQUIRED AND THE LENGTH AND WIDTH WILL BE DETERMINED ONCE DOWNSPOUT DRAINAGE PATTERNS ARE DETERMINED. AREA 5 TIMES OBSERVATION WELL 4-6 INCH PERFORATEL PVC PIPE ON CONCRETE STONE ASTM D-448 SIZE #1 FILTER FABRIC —TOP AND SIDES (NON- WOVEN) M5HA CL. "C" 12" SAND, ROTOTILL 1'-0" BELOW TRENCH CONCRETE NOTE: TRENCH MAY NOT BE INSTALLED IN FILL. DRY WELL DETAIL NOT TO SCALE

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

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF 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. 2. 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. 3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER

ONCE EVERY 2 TO 3 YEARS. 4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS. WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS

PROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE

STATE OF MARYLAND, LICENSE NO. 21476, EXPIRATION DATE: 7/14/21

Cranh Marslanson I

7/25/19

OWNERS EDMUND M. POLLARD & JOYCE E. ADCOCK

8318 FORREST STREET SUITE 200 6349 BASKET SWITCH ROAD NEWARK, MARYLAND 21841 TEL: 410-992-6400 ATTN: MR. DONALD R. REUWER, JR.

DRY WELL CHART VOLUME VOLUME AREA OF AREA OF NO. OF DIMENSIONS AREA OF ROOF LOT NO. REQUIRED | PROVIDED | STORAGE | TREATMENT | DRYWELLS | PER DRYWELL OF DRYWELLS 239 CuFt | 308 CuFt | 100% | 100% 12' X 8' X 4' 1,798 5qFt | 258 CuFt | 308 CuFt | 100% | 100% 12' X 8' X 4' 258 CuFt | 308 CuFt | 100% | 100% 12' X 8' X 4'

STORMWATER MANAGEMENT PRACTICES								
AREA ID	LOCATION	DRAINAGE AREA SF.	% IMPERVIOUS	ESDV REQUIRED CuFt.	ESDV PROVIDED CuFt.	DRY WELLS M-5 (Y/N)	MICRO BIO-RETENTION M-6 (Y/N)	BIO-RETENTION F-6 (Y/N)
Α	0.5. LOT 18	126,920	31.0%	4,732	4,953			Y F-6(2)
В	0.5. LOT 18	11,869	68.0%	885	891		Y M-6(2)	
С	0.5. LOT 18	20,295	40.0%	926	1,182		Y M-6(1)	
D	0.5. LOT 18	47,004	39.0%	2,140	2,314			Y F-6(1)
E	LOT 1	1,666	100%	239	308	Υ		
F	LOT 2	1,798	100%	258	308	Y		
G	LOT 3	1,798	100%	258	308	Υ		

GROSS AREA = 0.76 ACRES LOD = 6.30 ACRESRCN = 61.8TARGET Pe = 1.8"

STORMWATER MANAGEMENT DETAILS & NOTES

Approved: Department Of Planning And Zoning

9.27.19

9-27-19

LAWYERS HILL OVERLOOK

LOTS 1 THRU 17 AND OPEN SPACE LOT 18 5819 LAWYERS HILL ROAD

TAX MAP NO.: 32 GRID NO.: 20 PARCEL NO.:13 ZONED R-ED FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: AS SHOWN DATE: JULY 24, 2019

FISHER, COLLINS & CARTER, INC. IVIL ENGINEERING CONSULTANTS & LAND SURVEYORS NIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE

ELLICOTT CITY, MARYLAND 21042

(410) 461 - 2855

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DEVELOPER LAND DESIGN & DEVELOPMENT, INC.

ELLICOTT CITY, MARYLAND 21043

SHEET 5 OF 5 ECP-18-054