

STORMWATER MANAGEMENT PRACTICES				
LOT #	ADDRESS	DRY-WELL M-5 (NUMBER)	NON-ROOFTOP DISCONNECT N-2 (Y/N)	MICRO-BIO M-6 (NUMBER)
8	OAKLAND MILLS ROAD	0	N	1
9	OAKLAND MILLS ROAD	4	Y	1

DESIGNED UNDER SDP-15-079

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GHB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	0.28

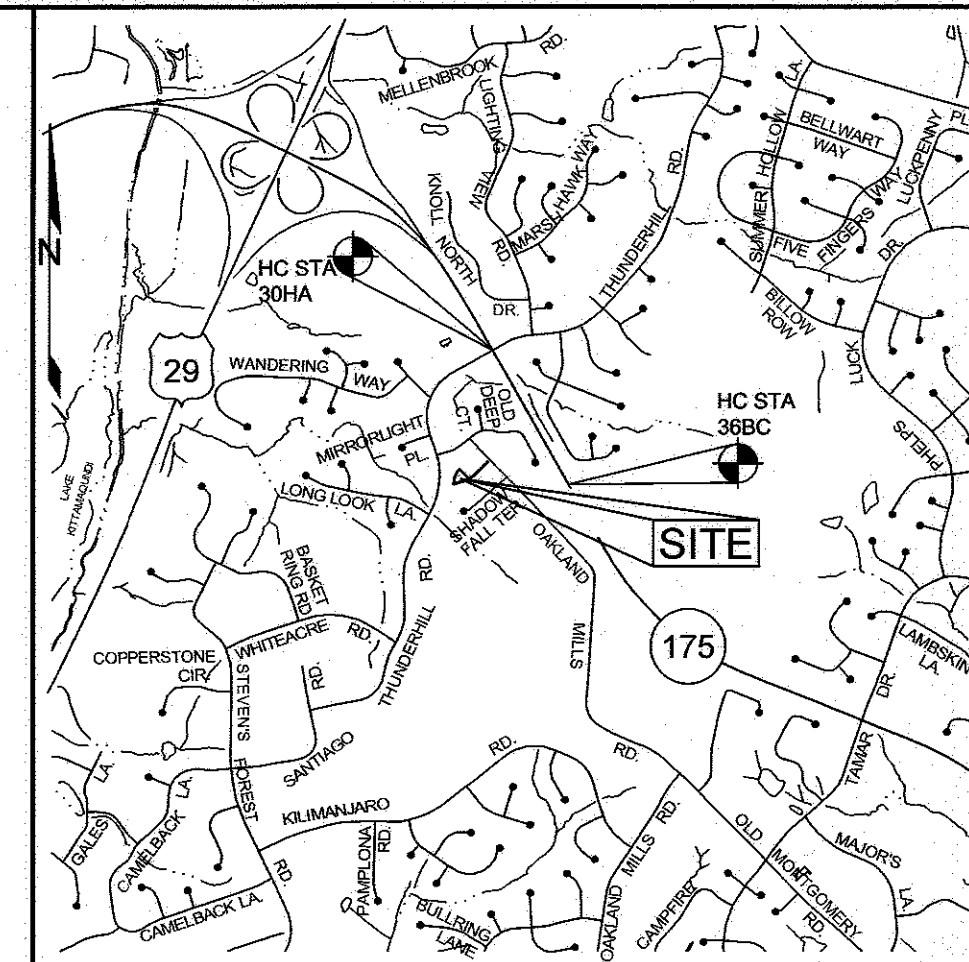
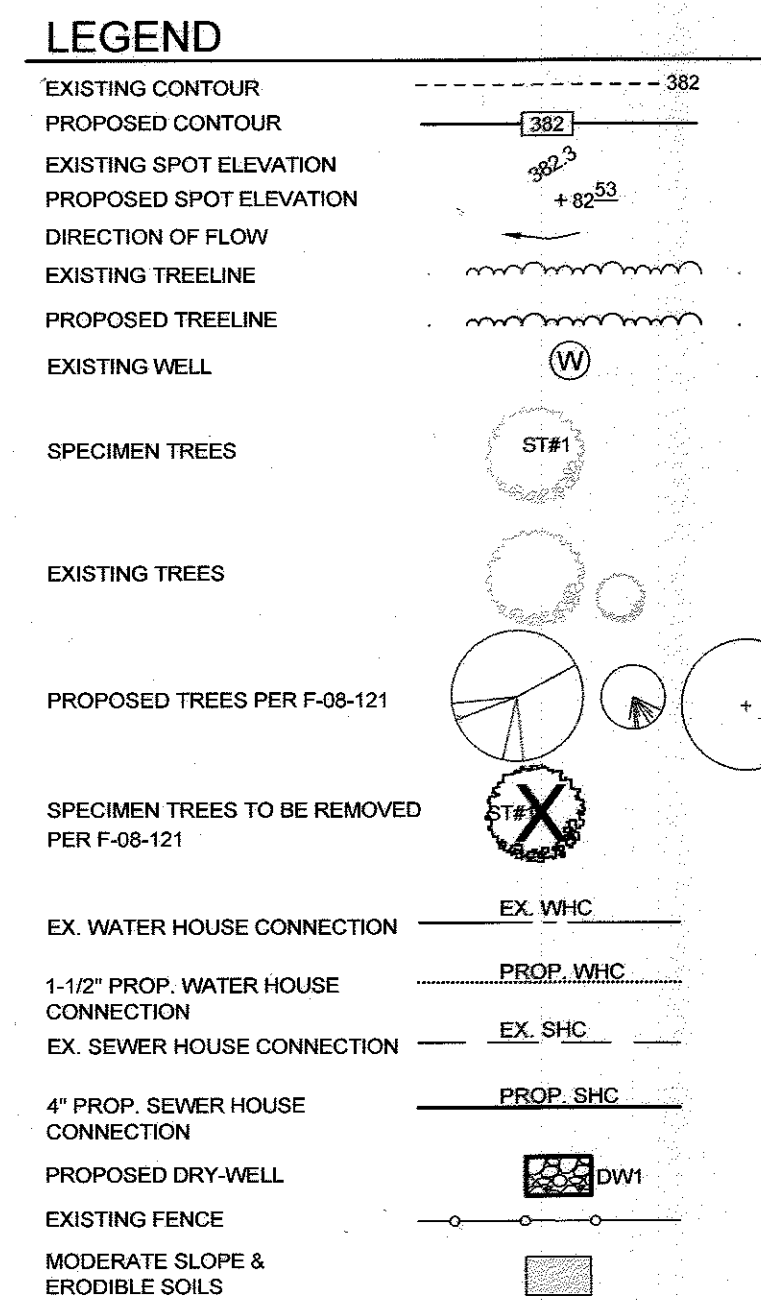
NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, WEB SOIL SURVEY, SOILS MAP - GRID 14, SUBGRIDS 75 AND 98.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

BENCHMARKS				
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
30HA	566,030.633	1,397,989.542	387.040	ON THE MEDIAN, AT THE INTERSECTION OF RT. 175 AND WEST OF THUNDER HILL RD.
36BC	563,264.1031	1,399,585.7446	410.028	APPROX. 150' EAST OF THUNDER HILL RD.

### STORMWATER MANAGEMENT NOTES & DESIGN NARRATIVE

BELOW IS A LIST TO DESCRIBE THE STORMWATER MANAGEMENT REQUIREMENTS AND ACHIEVEMENTS FOR THE SITE PER THE 2001 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II, AS AMENDED BY THE STORMWATER MANAGEMENT ACT OF 2007.

- ENVIRONMENTALLY SENSITIVE AREAS (STREAMS AND STEEP SLOPES) DO NOT EXIST ON-SITE IN THE AREA OF DEVELOPMENT. THE LOT IS NOT BEING MASS GRADED AND THE ONLY TREES BEING REMOVED ARE THE ONES NECESSARY FOR THE GRADING SHOWN.
- WE HAVE MAINTAINED TO THE GREATEST EXTENT PRACTICABLE THE NATURAL FLOW PATTERNS OF THE SITE BY DIRECTING STORMWATER RUNOFF TO THE STORMWATER MANAGEMENT FACILITY WITHIN THE NATURAL DRAINAGE DIVIDES.
- WE HAVE REDUCED IMPERVIOUS AREAS BY UTILIZING THE SMALLEST DRIVEWAY WIDTH ALLOWED AND BY UTILIZING PERVIOUS AREAS FOR TREATMENT.
- EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN SHOWN AND HAVE BEEN INTEGRATED INTO THE DESIGN.
- DRYWELLS (M-5), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2), AND MICRO-BIORETENTION FACILITIES HAVE BEEN UTILIZED FOR STORMWATER MANAGEMENT PRACTICES, AND HAVE PROVIDED ENVIRONMENTAL SITE DESIGN TO MAXIMUM EXTENT PRACTICABLE.
- A DESIGN MANUAL WAIVER TO VOLUME III, SECTION 2.6.A TO ALLOW 7 USERS ON A USE-IN-COMMON DRIVEWAY WAS APPROVED ON OCTOBER 27, 2016.
- AN ALTERNATIVE COMPLIANCE PETITION WAS SUBMITTED TO HOWARD COUNTY ON JANUARY 23, 2017 REQUESTING TO REMOVE SPECIMEN TREE #3.
- THE STORMWATER MANAGEMENT DESIGN HAS BEEN INCREASED TO MANAGE THE 10 YEAR STORM. THIS INCREASE ABOVE THE P.E. REQUIREMENT OF 1.6" WAS MADE TO REDUCE ANY STORMWATER IMPACT ON ADJACENT LOTS 202, 203, & 204, VILLAGE OF OAKLAND MILLS.



HOWARD COUNTY, MARYLAND ADC# MAP 27C8  
**VICINITY MAP**  
 SCALE: 1"=2000'

### GENERAL NOTES

- SUBJECT PROPERTY IS ZONED R-12 PER THE 10/08/2013 COMPREHENSIVE ZONING PLAN.
- TOTAL AREA OF PROPERTY 0.7286 AC ±.
- REFERENCE: LIBER 16594, FOLIO 438.
- PREVIOUS HOWARD COUNTY FILE NUMBERS: F-08-121, F-86-25, F-90-133, SDP 94-74, CONTRACT-24-1293-D, SDP-15-079.
- ALL TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 30 HA AND 36 BC WERE USED FOR THIS PROJECT.
- PUBLIC WATER AND PUBLIC SEWER WILL BE USED WITHIN THIS SITE. PUBLIC WATER AND SEWER WILL BE PROVIDED BY CONTRACT NO. 24-4562-D.
- STORMWATER MANAGEMENT FOR PROPOSED LOT 8 IS PER F-08-121. ADDITIONAL STORMWATER REQUIREMENT WILL BE PROVIDED BY DRYWELLS AND MICRO-BIORETENTION FACILITIES ON LOT 9.
- EXISTING UTILITIES ARE LOCATED BY THE USE OF ANY OR ALL OF THE FOLLOWING: ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER PLANS AND OTHER AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF THE EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- SOIL COMPACTION SPECIFICATIONS, REQUIREMENTS, METHODS AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER. PAVING TO BE HOWARD COUNTY STANDARD P-1 OR PAVING SECTION (SEE DETAILS ON SHEET 1). GEOTECHNICAL ENGINEER TO CONFIRM ACCEPTABILITY OF PROPOSED PAVING SECTION, BASED ON SOIL TEST, PRIOR TO CONSTRUCTION.
- THE SOIL SHOWN HAVE BEEN TAKEN FROM THE US DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, WEB SOIL SURVEY WEBSITE AND THE HOWARD COUNTY SOILS MAP - GRID 14, SUBGRIDS 75 AND 98.
- THE BOUNDARY SHOWN HEREON IS BASED ON A FIELD RUN BOUNDARY SURVEY PREPARED BY SHANBERGER & LANE ON FEBRUARY-MAY 2007. THE TOPOGRAPHY SHOWN ON THE SITE AND IMMEDIATELY AROUND PART OF THE SITE HAS BEEN FIELD RUN BY SHANBERGER & LANE ON JUNE 2008 AND UPDATED IN DECEMBER 2014 AND JUNE 2016. THE EXISTING TOPOGRAPHY SHOWN OUTSIDE THAT AREA IS BASED ON HOWARD COUNTY AERIAL TOPOGRAPHY FLOWN IN 2004.
- THERE IS NO FLOODPLAIN ON THIS SITE.
- THERE ARE NO WETLANDS OR STREAMS ON THIS SITE BASED ON SITE INSPECTION BY EXPLORATION RESEARCH, INC. DATED 12-19-2014.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- A WAIVER TO DESIGN MANUAL VOLUME III, SECTION 2.6.A TO ALLOW A SEVENTH LOT TO BE ADDED TO THE USE-IN-COMMON DRIVEWAY FOR THE MILL HAVEN SUBDIVISION WAS GRANTED ON OCTOBER 27, 2016.
- THERE ARE NO KNOWN CEMETERIES, BURIAL GROUNDS OR HISTORIC SITES AND STRUCTURES ON THIS SITE.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OF TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAMS, OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
- THE STORMWATER MANAGEMENT SYSTEM SHOWN ON THESE PLANS IS AN APPROXIMATION OF THE SIZE, SHAPE, AND LOCATION. IT IS UNDERSTOOD THAT THIS SYSTEM HAS NOT BEEN DESIGNED AND THE ACTUAL DESIGN MAY CHANGE, ALTERING THE NUMBER OF UNITS ADDED FOR THIS DEVELOPMENT.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT AND ASSOCIATED SUBDIVISION PLANS, SITE DEVELOPMENT PLANS OR RED-LINE REVISIONS. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION OR SITE DEVELOPMENT PLAN STAGES OR RED-LINE REVISION PROCESS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
- A COMMUNITY MEETING HAS BEEN HELD ON JANUARY 23, 2017.
- THIS PROJECT'S FOREST CONSERVATION OBLIGATIONS HAVE BEEN PROVIDED FOR UNDER F-08-121.

### SITE ANALYSIS DATA SHEET

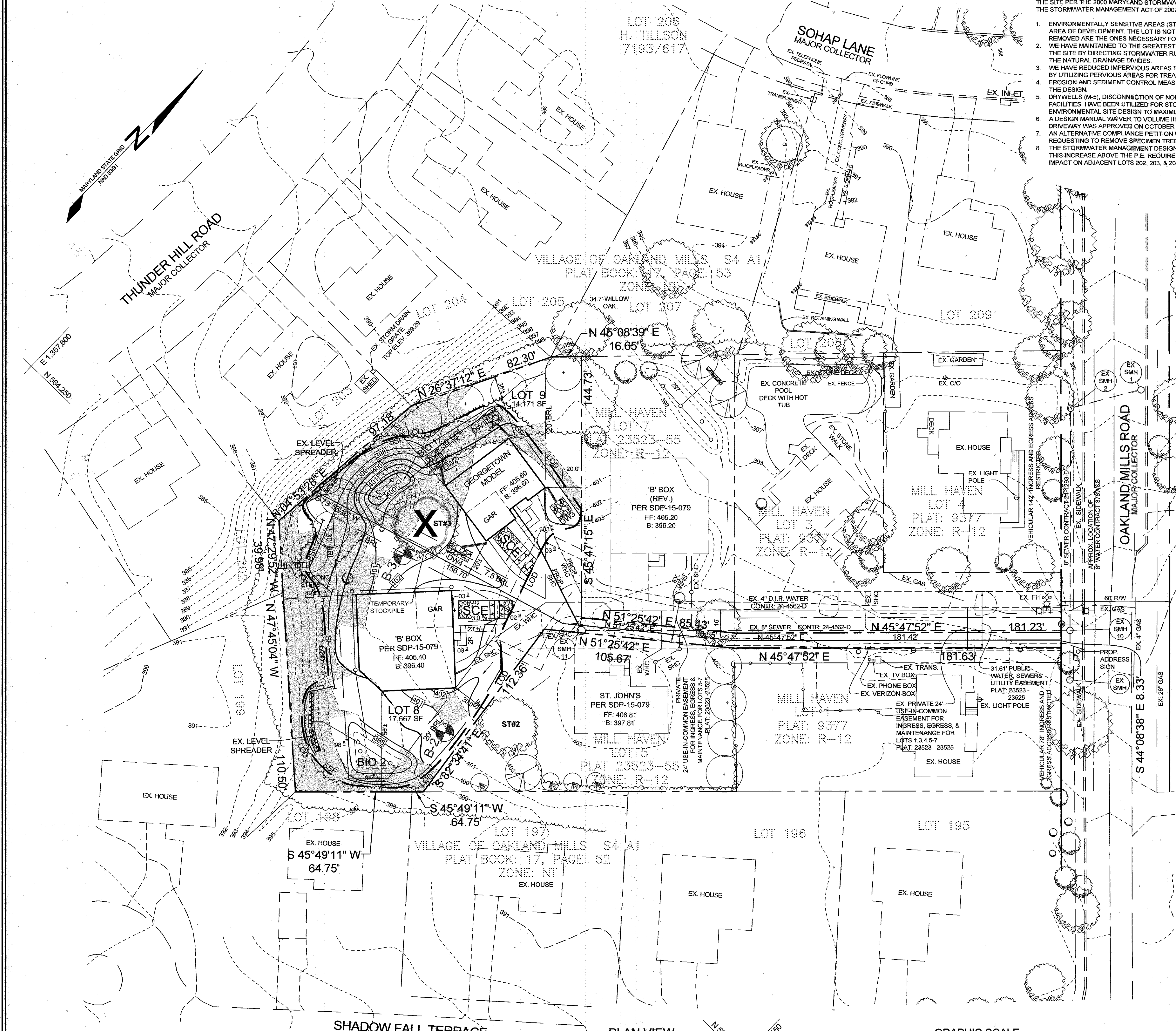
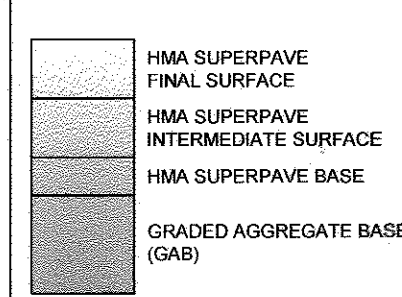
ENVIRONMENTAL AREA	SIZE OR USE
TOTAL PROJECT AREA	0.7286 ACRES ±
LIMIT OF DISTURBANCE	0.4451 ACRES ±
GREEN OPEN AREA (LAWN)	0.5648 ACRES ±
IMPERVIOUS AREA	0.1840 ACRES ±
PROPOSED SITE USES	RESIDENTIAL
WETLANDS (1)	0 SQ FT ±
WETLAND BUFFERS	0 SQ FT ±
FLOODPLAINS	0 SQ FT ±
FLOODPLAIN BUFFERS	0 SQ FT ±
EXISTING FOREST	8966 SQ FT ±
SLOPES GREATER THAN 15% (3)	11750 SQ FT ±
HIGHLY ERODIBLE SOILS	11750 ACRES ±

- NOTES:
- NONE WITHIN THE MAIN LOT AREA. THE PIPESTEM MAY HAVE WETLAND AREAS AND HAS NOT BEEN EVALUATED SINCE IT IS OUTSIDE THE AREA OF DEVELOPMENT.
  - SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, WEB SOIL SURVEY.
  - HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

### PAVING SECTIONS

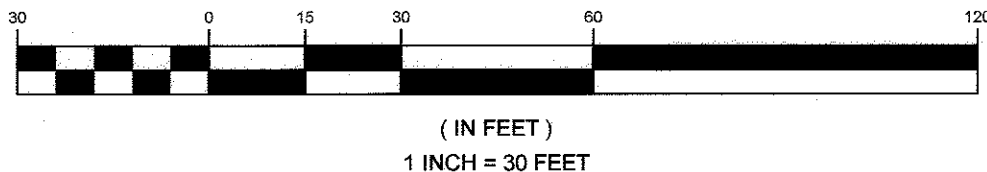
SEC. NO.	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR) 5 TO <55 TO <7 27 3 TO <55 TO <7 27					
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB	HMA WITH CONSTANT GAB	HMA WITH CONSTANT GAB	HMA WITH CONSTANT GAB	HMA WITH CONSTANT GAB
P-1	PARKING BAYS: RESIDENTIAL AND NON-RESIDENTIAL PARKING DRIVE ASLES: 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 (ESAL)	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE (NA)	NA	NA	NA	NA	NA
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	3.0
		GRADED AGGREGATE BASE (GAB)	8.5	7.0	5.0	4.0	4.0

- NOTES:
- HEAVY TRUCKS ARE DEFINED AS THOSE WITH SIX (6) WHEELS OR MORE INCLUDING GARBAGE TRUCKS.
  - HMA SUPERPAVE LAYERS SHALL BE PLACED IN APPROPRIATE COMPACTED LIFT THICKNESS: 19.0 MM BASE (2.0" MIN TO 4.0" MAX), 12.5 MM SURFACE (1.5" MIN TO 3.0" MAX), AND 9.5 MM SURFACE (1.0" MIN TO 2.0" MAX).
  - GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 4" MAX COMPACTED THICKNESS LAYERS. THE INTERMEDIATE SURFACE COURSE LAYER MUST BE PLACED WITHIN 2 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO SUBSTANTIAL COMPLETION INSPECTION AND BOND REDUCTION.
  - IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LAYER FOR COMMERCIAL / INDUSTRIAL ENTRANCE AREAS WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER CAN BE ADDED TO THE REQUIRED THICKNESS OF THE BASE ASPHALT LAYER.
  - THE CONSTRUCTION DRAWINGS SHALL SHOW THE PAVING SECTION, ROAD CLASSIFICATION AND CBR VALUE FOR EACH ROADWAY.



PLAN VIEW  
 SCALE: 1"=30'

GRAPHIC SCALE



### OWNER/DEVELOPER

C/O MICHAEL BALAKIRSKY  
 SOPHOS GROUP LLC  
 11755 BRAGDON WOOD  
 CLARKSVILLE, MD 21029  
 410.340.7823

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 6.12.17  
 DATE: 6.9.17

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	ENVIRONMENTAL CONCEPT PLAN
2	STORMWATER MANAGEMENT PLAN AND NOTES & DETAILS

**ENVIRONMENTAL CONCEPT PLAN**

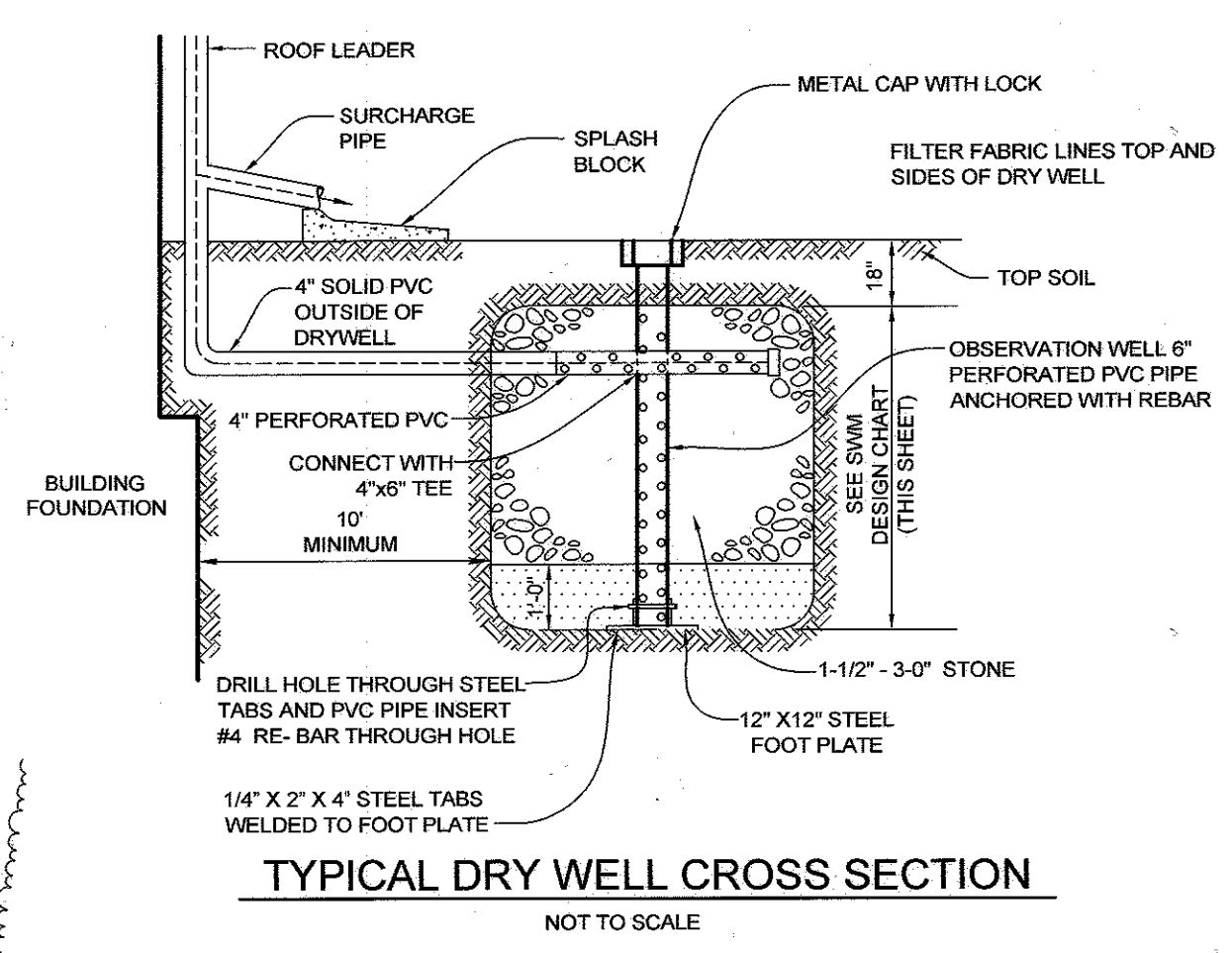
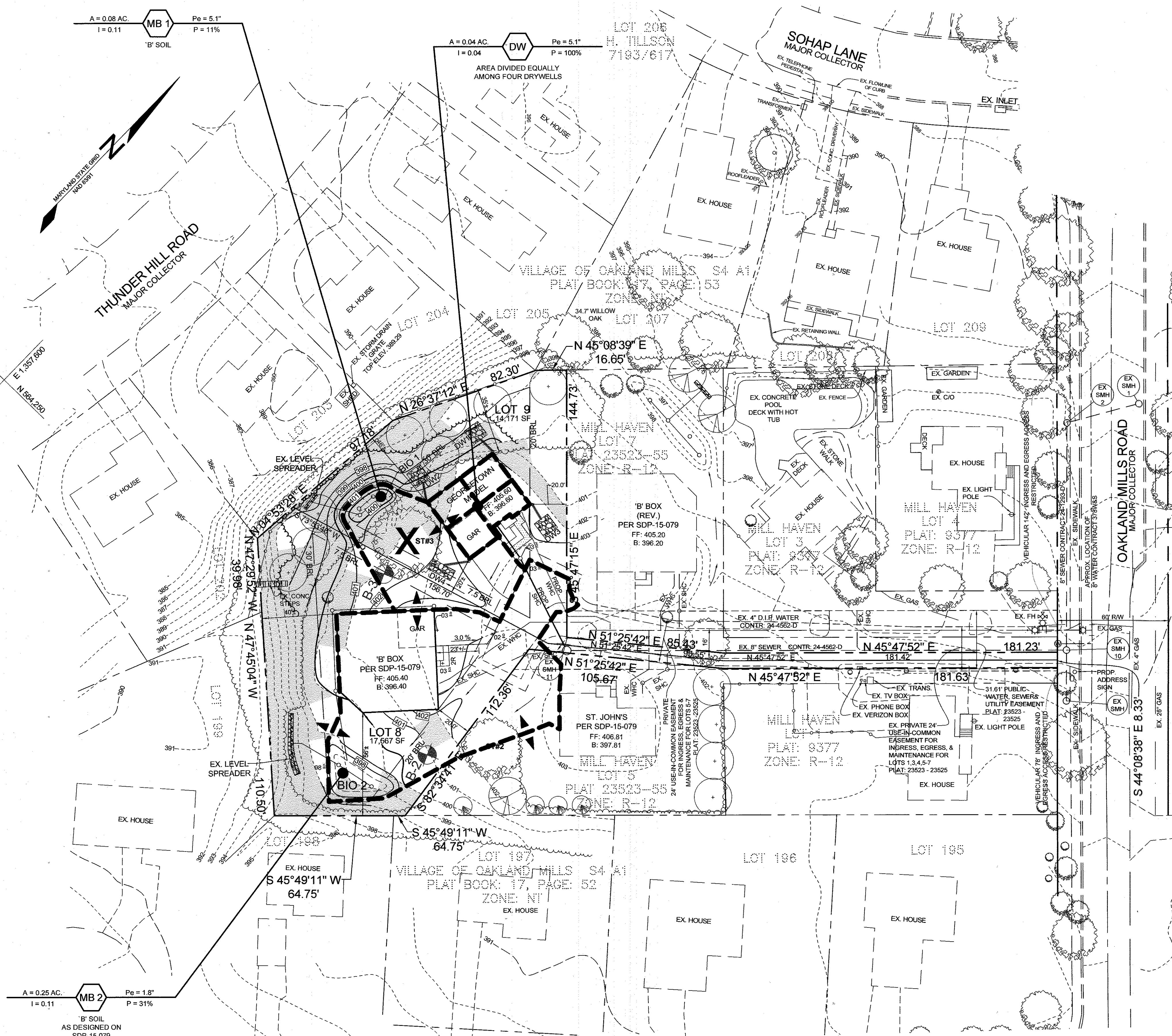
**MILL HAVEN**  
 LOTS 8 & 9  
 A RE-SUBDIVISION OF LOT 6, MILL HAVEN

TAX MAP 36 GRID 4  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 PARCEL 2

**SILL ENGINEERING GROUP, LLC**  
 11130 Doveclote Court, Suite 200  
 Marriottsville, Maryland 21104  
 Phone: 410.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: RA  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: MAY 31, 2017  
 PROJECT #: 16-081  
 SHEET #: 1 of 2





DRY WELL CHART			
NO.	VOLUME REQUIRED	VOLUME PROVIDED	SIZE WELLS
DW 1	156.75 CF	162 CF	9.00' X 9.00' X 5.00' DEEP
DW 2	156.75 CF	162 CF	9.00' X 9.00' X 5.00' DEEP
DW 3	156.75 CF	162 CF	9.00' X 9.00' X 5.00' DEEP
DW 4	156.75 CF	162 CF	13.50' X 6.00' X 5.00' DEEP

NOTES:  
 • PRACTICE M-5: DRYWELLS

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1) DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)**

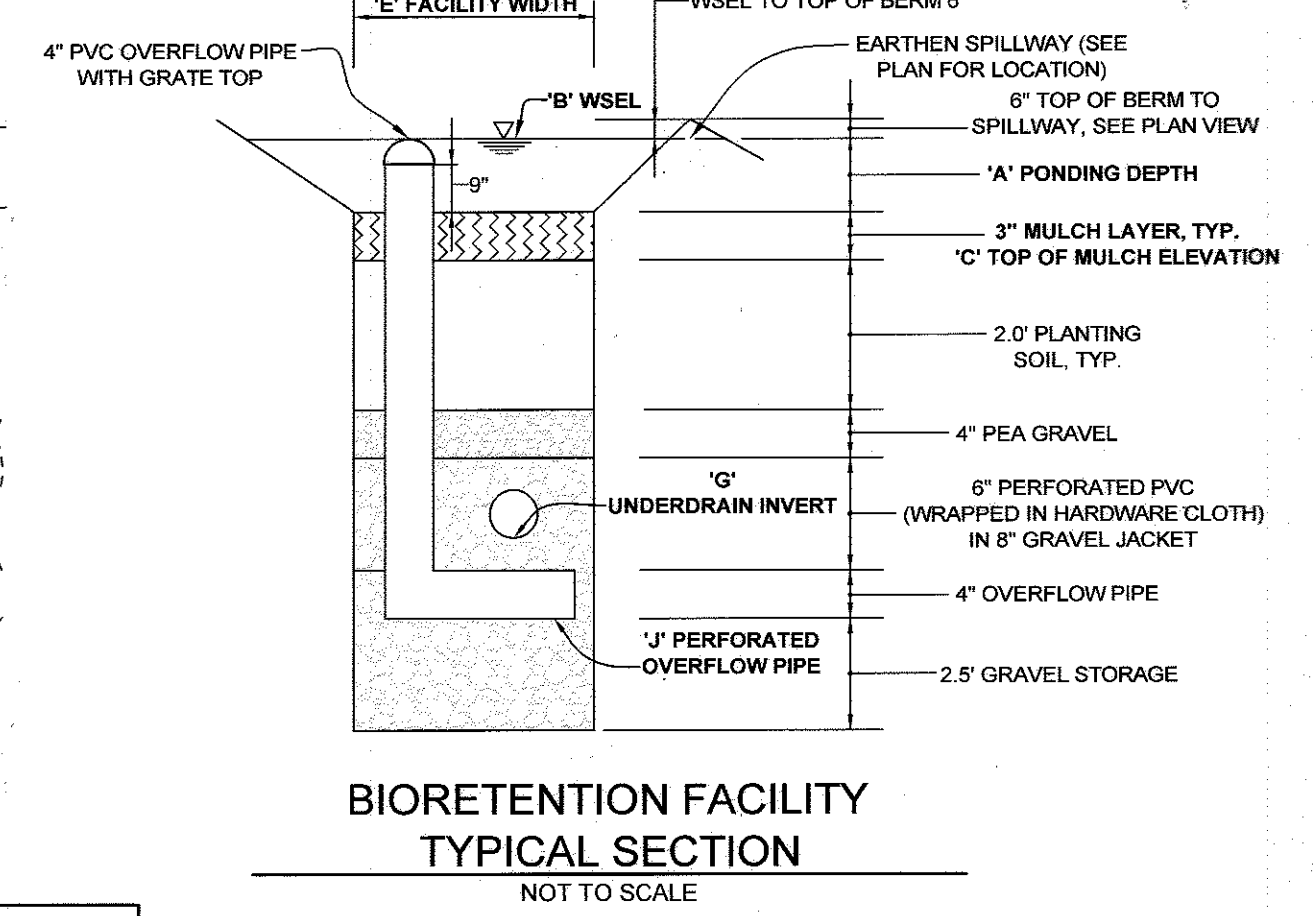
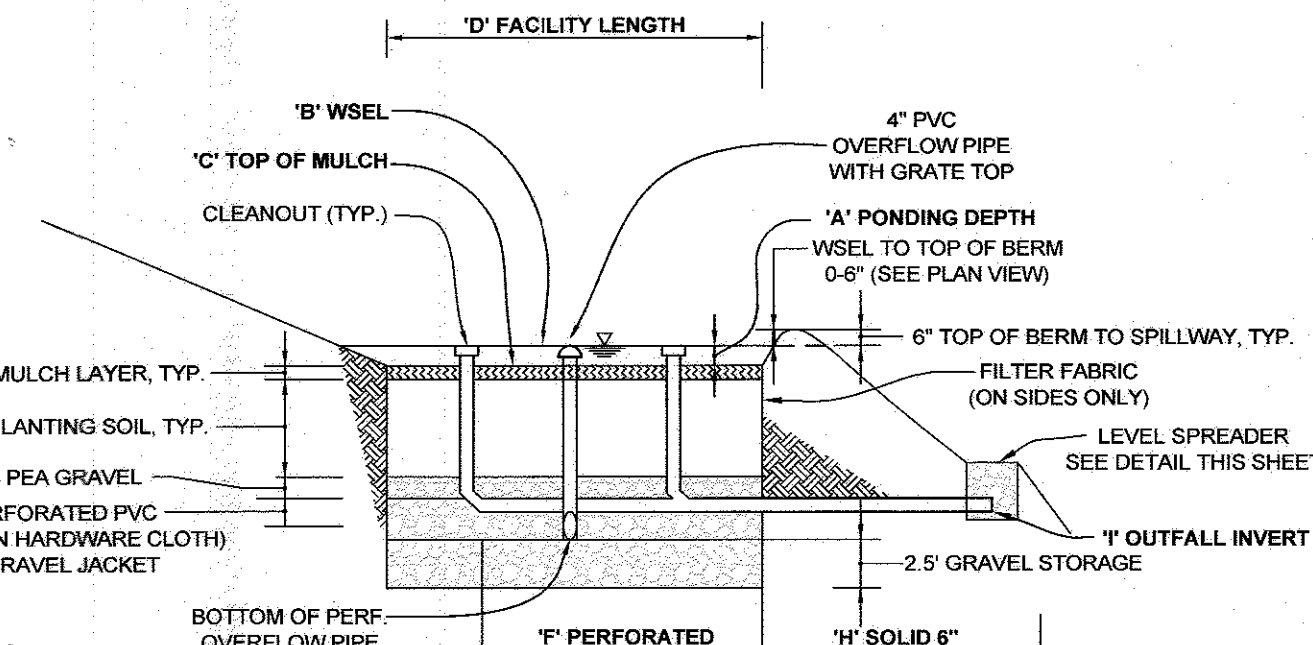
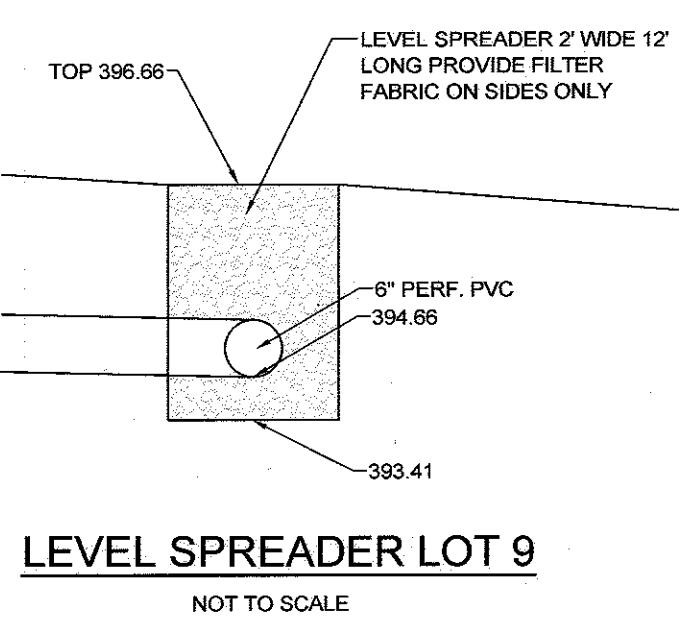
1. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE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

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

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOURS TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. 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.

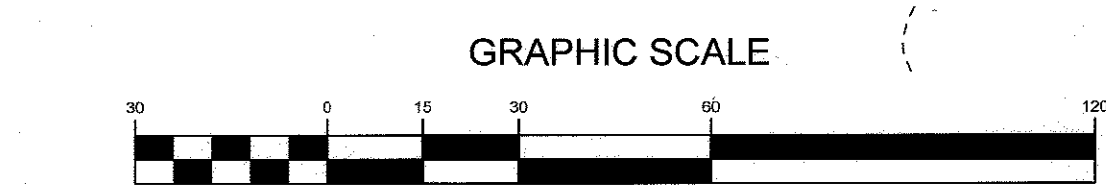
**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED BIORETENTION FACILITIES (M-6)**

1. 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 I, TABLE A.4.1 AND 2.
2. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD OR 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.
3. 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.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.



BIORETENTION ELEVATIONS AND DIMENSIONS	
DESCRIPTION	MB 1
A' PONDING DEPTH	1.00'
B' WSEL	401.00'
C' TOP OF MULCH	400.00'
D' FACILITY LENGTH	26'
E' FACILITY WIDTH	9'
F' PERF. UNDERDRAIN DIMENSION	20.00'
G' UNDERDRAIN INVERT	396.83'
H' SOLID UNDERDRAIN DIMENSION	21.6'
I' OUTFALL INVERT	394.66'
J' OVERFLOW PIPE	396.42'

NOTE: FOR MB 2 SEE SDP-15-079



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 6-12-17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 6-8-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT

**STORMWATER MANAGEMENT PLAN AND NOTES & DETAILS MILL HAVEN**  
 LOTS 8 & 9  
 A RE-SUBDIVISION OF LOT 6, MILL HAVEN  
 TAX MAP 36 GRID 4 PARCEL 2  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**SILL ENGINEERING GROUP, LLC**  
 11130 Dovedale Court, Suite 200  
 Marriottsville, Maryland 21104  
 Phone: 410.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: RA  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: MAY 31, 2017  
 PROJECT #: 16-081  
 SHEET #: 2 of 2

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. 32025, EXPIRATION DATE: JUNE 20, 2019