

**GENERAL NOTES**

- PROJECT BACKGROUND:
  - LOCATION: TAX MAP 41 GRD 5
  - PARCELS: 273
  - ZONING: R-20
  - SUBDIVISION: HOLIDAY HILLS
  - TOTAL LOT AREA: 1.00 AC.
  - DISTURBED AREA: 0.883 AC.
  - AREA OF PLAN SUBMISSION: 1.00 AC.
  - MINIMUM LOT SIZE: 20,000 SF
  - PROPOSED USE FOR SITE: RESIDENTIAL
  - TOTAL NUMBER OF UNITS: 2
  - TYPE OF PROPOSED UNIT: STD
  - DEED REFERENCES: L14161 F.236
  - DPZ REFERENCES: F-13-083, ECP-13-017, WP 13-186, PLAT BOOK 8, FOLIO 79
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON AERIAL TOPOGRAPHY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. IN AUGUST, 2012.
- THE PROJECT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. IN AUGUST, 2012.
- 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. 41C AND 00057 WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "R-20" IN ACCORDANCE WITH THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- STORMWATER MANAGEMENT REQUIREMENTS HAVE BEEN SATISFIED UNDER APPROVED F-13-083, ECP-13-017 USING THE 2007 MARYLAND STORMWATER DESIGN MANUAL (CHAPTER 5), THRU THE USE OF MICRO-SCALE PRACTICES INCLUDING DRYWELL, MICRO BIORETENTION FACILITIES, AND OPEN CHANNEL FLOW (WHEN IMPERVIOUS AREAS CAN NOT BE DIRECTED TO ONE OF THE MICRO BIORETENTION FACILITIES).
- EXISTING UTILITIES ARE BASED ON HOWARD COUNTY RECORDS, FIELD SURVEY, ROAD CONSTRUCTION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF 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 TO THE COUNTY'S RIGHTS-OF-WAY, PAVING, OR EXISTING UTILITIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- ALL DRIVEWAY ENTRANCES SHALL UTILIZE HOWARD COUNTY STANDARD DETAIL NO. R-6.06 UNLESS OTHERWISE NOTED.
- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING:
  - AIR & VERIZON 1-800-252-1133
  - BGE (CONSTRUCTION SERVICES) 410-637-8713
  - BGE (EMERGENCY) 410-685-0123
  - BUREAU OF UTILITIES 410-313-4900
  - COLONIAL PIPELINE CO 410-795-1390
  - MISS UTILITY 1-800-257-7777
  - STATE HIGHWAY ADMINISTRATION 410-531-5533
- IN ACCORDANCE WITH SECTION 128 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 SETBACKS. PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
- PER F-13-083, NO WETLANDS, STREAMS, 25% STEEP SLOPES OR FLOODPLAINS EXIST ON SITE.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER AND SEWER SERVICE FOR THIS PROJECT WILL BE PUBLIC. WATER WILL BE PROVIDED UNDER CONTRACT 34-1810-D AND SEWER WILL BE PROVIDED THROUGH CONTRACT NO. 30-3123-D.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ON SITE.
- FOREST CONSERVATION OBLIGATIONS IN ACCORDANCE WITH SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT FOR THIS SUBDIVISION HAVE BEEN FULFILLED UNDER APPROVED F-13-083.
- THE LANDSCAPE PLAN, IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY LANDSCAPE MANUAL WAS APPROVED UNDER F-13-083. FINANCIAL SURETY IN THE AMOUNT OF \$3,600.00 FOR THE REQUIRED 10 SHADE TREES AND 4 EVERGREEN TREES SHALL BE POSTED WITH THE BUILDERS GRADING PERMIT.
- ESTIMATES OF EARTHWORK QUANTITIES ARE PROVIDED SOLELY FOR THE PURPOSE OF CALCULATING FEES AND ARE BASED UPON EXISTING AND PROPOSED CONTOURS.
- ALL SINGLE FAMILY DWELLINGS WILL HAVE A MINIMUM OF A 1-1/2" WHC WITH A 1" OUTSIDE METER SETTING.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
  - A) WIDTH - 12 FEET (16 FEET IF SERVING MORE THAN ONE RESIDENCE)
  - B) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.)
  - C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45-FOOT TURNING RADIUS
  - D) STRUCTURES - (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)
  - E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1-FOOT DEPTH OVER DRIVEWAY SURFACE
  - F) STRUCTURE CLEARANCES - MINIMUM 12 FEET
  - G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES ON SITE PRIOR TO COMMENCING CONSTRUCTION.
- A DECLARATION OF MAINTENANCE OBLIGATIONS FOR THE USE-IN-COMMON ACCESS AREA WAS APPROVED UNDER F-13-083 (PLATS 22094) AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MD IN LIBER 14161 FOLIO 236.
- FOREST STAND DELINEATION WAS COMPLETED BY ECO-SCIENCE PROFESSIONALS, INC., AUGUST 2012 UNDER F13-083.
- THERE WILL BE FOUR (4) STREET TREES PLANTED FOR THIS PROJECT. THE SURETY AMOUNT WILL BE \$1200.00 AND WILL BE POSTED WITH THE BUILDERS GRADING PERMIT.
- THE EXISTING WELL AND SEPTIC HAVE BEEN ABANDONED.

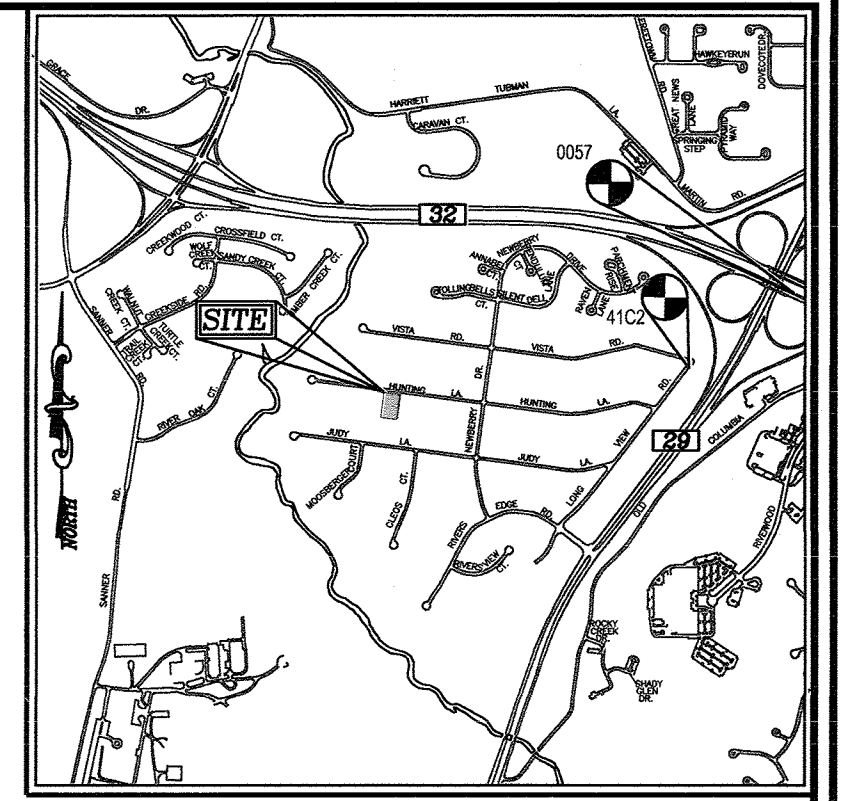
# SITE DEVELOPMENT PLAN

## HOLIDAY HILLS

### LOTS 113 & 114

#### A RESUBDIVISION LOT 54 SECOND ADDITION TO HOLIDAY HILLS SUBDIVISION PLAT BOOK 8, FOLIO 79

**BENCHMARKS**  
 HOWARD COUNTY BENCHMARK 41C2  
 N 551,616.4187 E 1,348,104.2341  
 HOWARD COUNTY BENCHMARK 0057  
 N 550,835.2139 E 1,347,017.6897



**VICINITY MAP**  
 SCALE: 1"=2000'  
 ADC MAP COORDINATES: 5052/H2

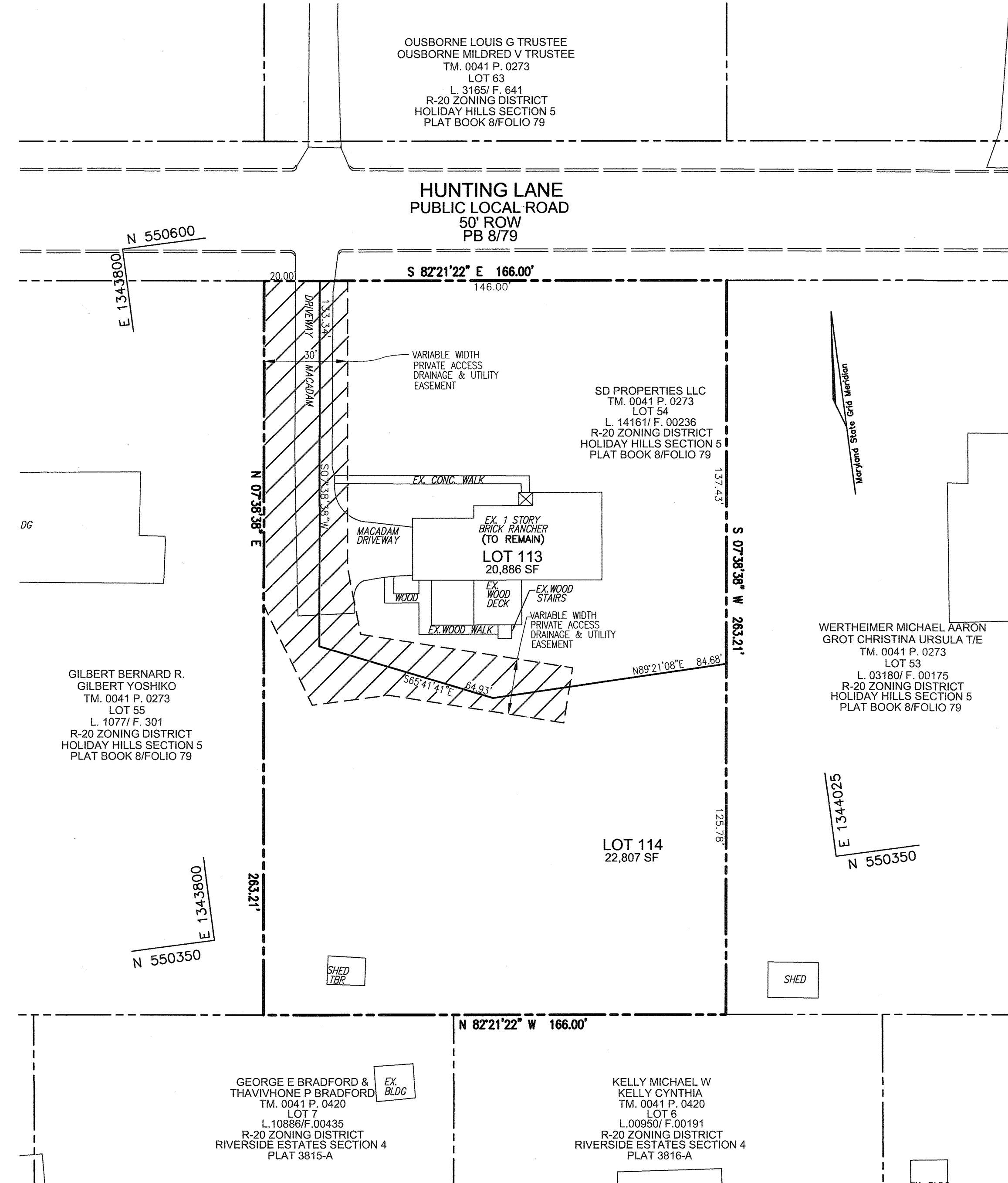
SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 5
SITE LAYOUT AND LANDSCAPE PLAN	2 OF 5
GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN	3 OF 5
GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN - NOTES AND DETAILS	4 OF 5
STORMWATER MANAGEMENT PLAN & DETAILS	5 OF 5

**SITE ANALYSIS DATA**

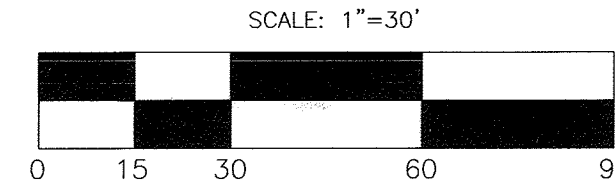
- A. TOTAL PROJECT AREA: 1.00 AC
- B. AREA OF PLAN SUBMISSION: 1.00 AC (LOTS 1 & 2)
- C. LIMIT OF DISTURBANCE: 0.883 AC
- D. PRESENT ZONING DESIGNATION: R-20
- E. PROPOSED USES FOR SITE AND STRUCTURES: SINGLE FAMILY DETACHED
- F. FLOOR SPACE ON EACH LEVEL OF BUILDING PER USE: N/A
- G. TOTAL NUMBER OF UNITS ALLOWED FOR PROJECT AS SHOWN ON FINAL PLAT: 2 BUILDABLE LOTS TOTAL
- H. TOTAL NUMBER OF UNITS PROPOSED ON SUBMISSION: 2
- I. MAXIMUM NUMBER OF EMPLOYEES, TENANTS ON SITE PER USE: N/A
- J. NUMBER OF PARKING SPACES REQUIRED BY HOLO. ZONING REGULATIONS: 2 PER SFD HOUSE
- K. NUMBER OF PARKING SPACES PROVIDED ON SITE: 2 PER SFD HOUSE
- L. OPEN SPACE ON SITE: PER FEE IN LEUV F-13-039
- M. AREA OF RECREATION OPEN SPACE REQUIRED BY SUBDIVISION & LAND DEVELOPMENT REGULATIONS: N/A
- N. BUILDING COVERAGE OF SITE: N/A
- O. APPLICABLE DPZ FILE REFERENCES: SEE NOTE 1
- P. ANY OTHER INFORMATION WHICH MAY BE RELEVANT: TAX MAP 41, GRID 5, PARCELS 273 5TH ELECTION DISTRICT
- Q. FLOOR AREA RATIO: N/A

**LEGEND**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- PROPOSED LOT LINE
- VARIABLE WIDTH PRIVATE ACCESS DRAINAGE & UTILITY EASEMENT
- EXISTING CURB AND GUTTER



**LOCATION MAP**



**AS-BUILT CERTIFICATION FOR PSWM**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

7/29/20  
 P.E. NAME: [Signature] P.E. # 16193 DATE: 7/29/20

NO AS-BUILT INFORMATION ON THIS SHEET

**STORMWATER MANAGEMENT PRACTICES CHART**

LOT #	IMP. AREA	ESD PRACTICE
LOT 114	HOUSE DRIVEWAY	MICRO-BIORETENTION (M-6) DRY WELL (M-5)

ADDRESS CHART	
LOT NO	STREET ADDRESS
113	1083 HUNTING LANE
114	1083 HUNTING LANE

**OWNER/DEVELOPER**

SD PROPERTIES, LLC  
 3138 ROGERS AVENUE  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) 203-2460

PERMIT INFORMATION CHART					
SUBDIVISION NAME	SECTION/AREA	LOTS			
HOLIDAY HILLS	-	113 & 114			
PLAT REF.	BLOCK NO	ZONE	TAX MAP	ELECT. DIST.	CENSUS TR.
22094 PB8/79	6	R-20	41	5TH	6051.02

NO.	REVISION	DATE

**SITE DEVELOPMENT PLAN**

**COVER SHEET**  
**HOLIDAY HILLS**  
**LOTS 113 & 114**

HOLIDAY HILLS SUBDIVISION SECTION 5 LOTS 113 & 114  
 A RESUBDIVISION OF LOT 54, PLAT BOOK 8, FOLIO 79

5TH ELECTION DISTRICT ZONED: R-20  
 TAX MAP 41, GRID 6 PARCEL 273  
 DPZ REF. FILES: (SEE GENERAL NOTES) HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

**PROFESSIONAL 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. 16193 EXPIRATION DATE: 09-27-2014

DESIGN BY: EDS.  
 DRAWN BY: GAH.  
 CHECKED BY: RHW.  
 DATE: MAY, 2014.  
 SCALE: AS SHOWN.  
 W.O. NO.: 12-40.

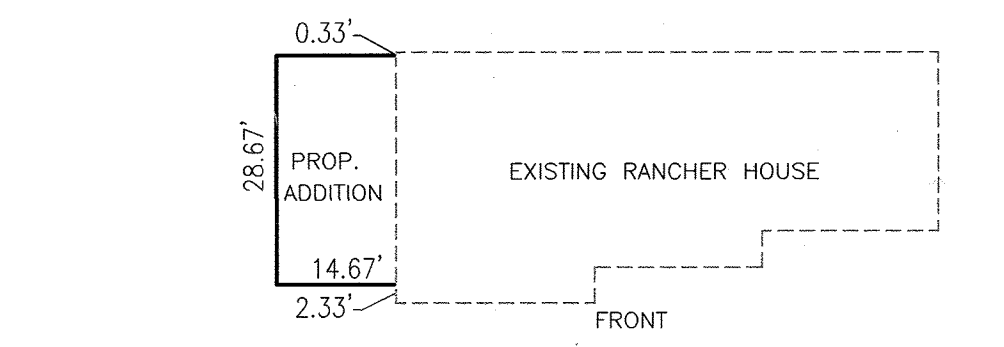
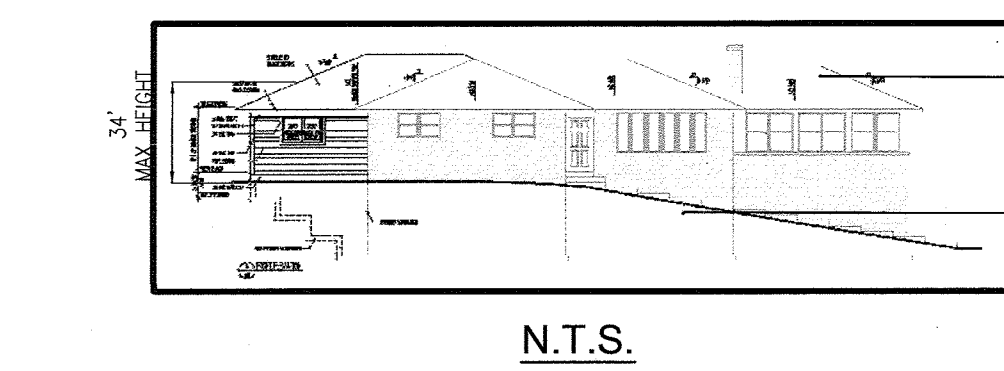
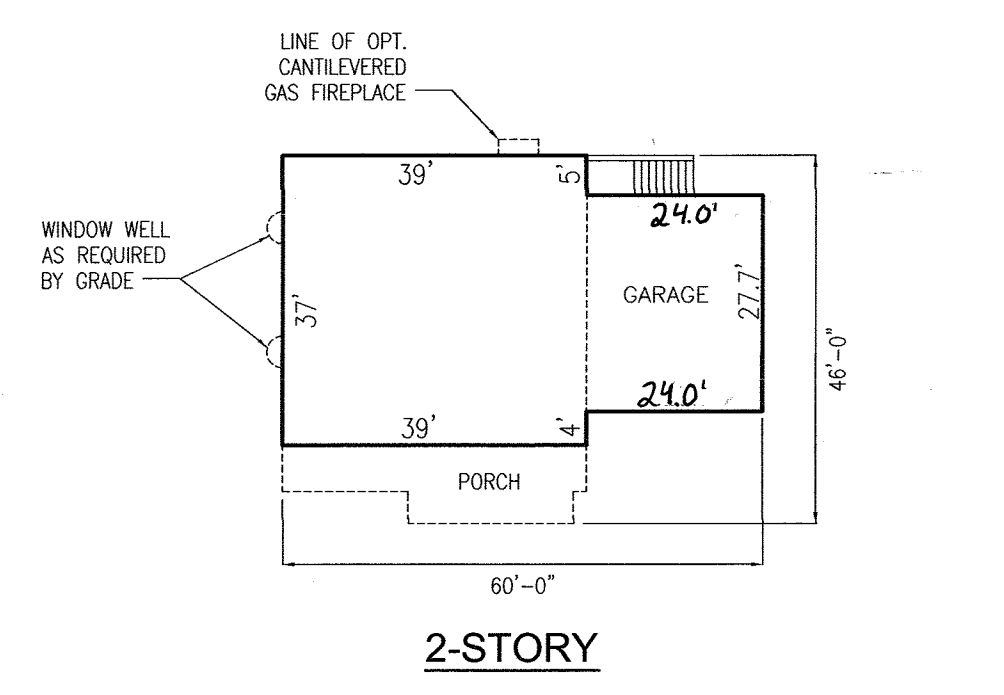
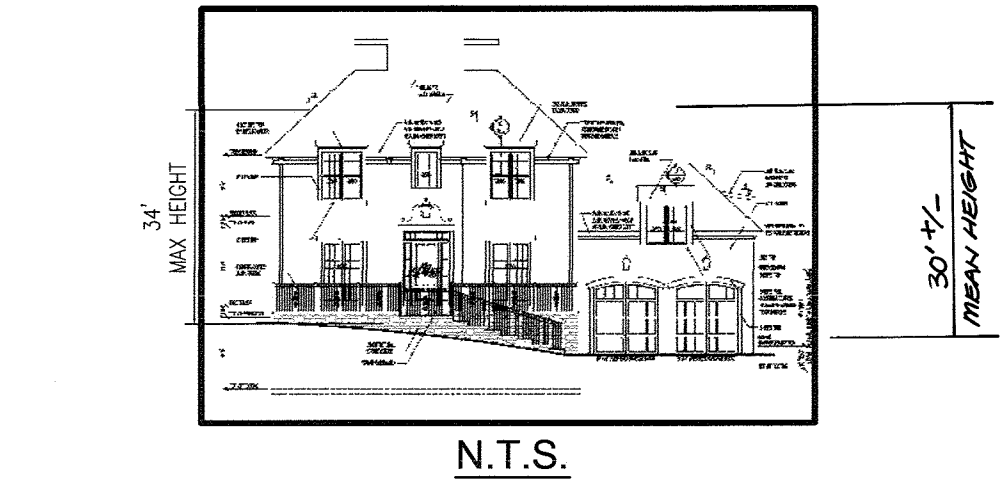
1 SHEET OF 5

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

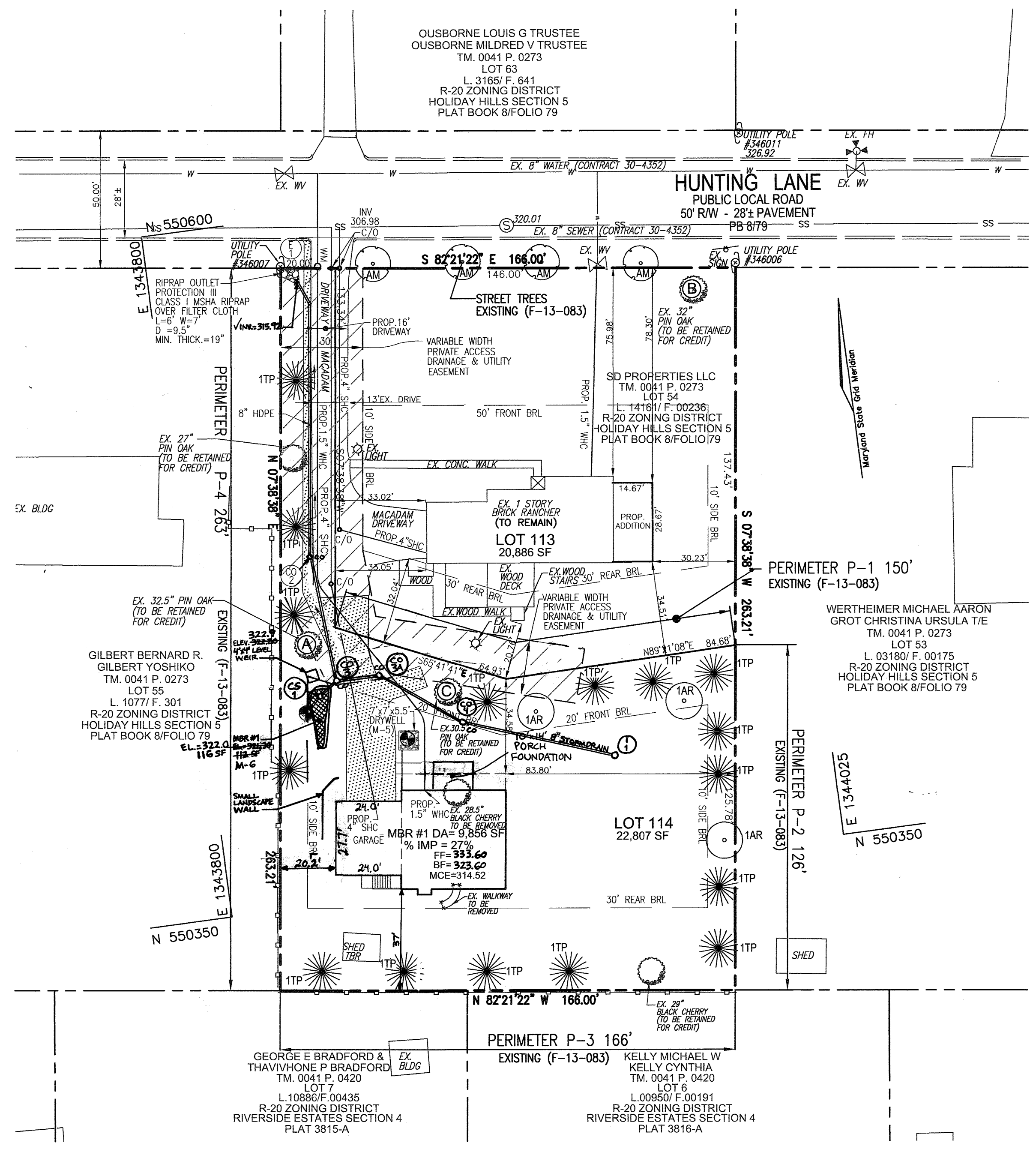
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 8/7/14  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 9-09-14  
 DIRECTOR DATE: 9/9/14

AS-BUILT JUNE 2020 SDP-14-052

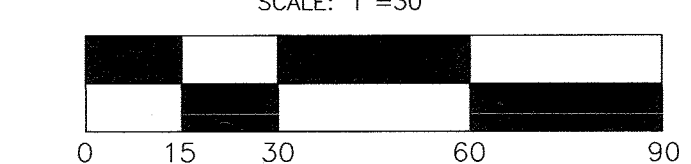




RANCHER ADDITION



LAYOUT AND LANDSCAPE PLAN



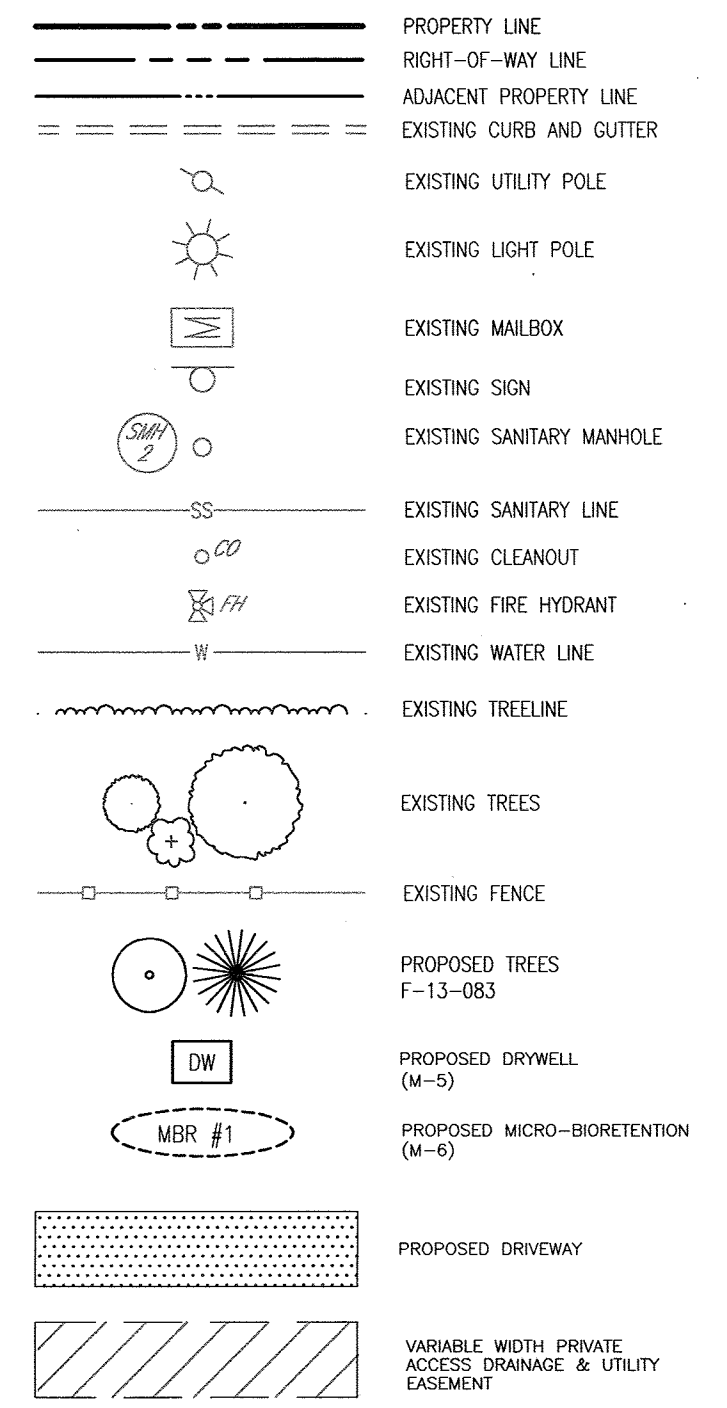
NOTE:

1. ALL WATER CONNECTIONS SHALL BE 1-1/2" WITH 1" OUTSIDE METER SETTINGS, UNLESS OTHERWISE NOTED. REFER TO HOWARD COUNTY DETAILS W-3.28 OUTSIDE METER SETTINGS.

NOTE:

FOR APPROVED LANDSCAPE PERIMETERS DETAILED IN SCHEDULE A BELOW, REFER TO F13-083.

LEGEND:



**SPECIMEN TREE TABLE**

SPECIMEN TREE	SPECIES	SIZE	DISPOSITION
A	PIN OAK	32.5"	TO REMAIN
B	PIN OAK	32.0"	TO REMAIN
C	PIN OAK	30.5"	TO REMAIN

NOTES:

1. PER THE PLAN PROPOSAL SHOWN HEREON, ALL SPECIMEN TREES ARE TO REMAIN.

LANDSCAPE TABLES (F-13-083)

**SCHEDULE 'A'- PERIMETER LANDSCAPE EDGE**

CATEGORY	ADJACENT TO PERIMETER PROPERTIES				TOTAL
	P-1	P-2	P-3	P-4	
PERIMETER NUMBER	B	A	A	A	
LANDSCAPE TYPE					
LF OF ROADWAY FRONTAGE / PERIMETER	150 LF	126 LF	166 LF	283 LF	
NUMBER OF PLANTS REQUIRED					
SHADE TREES	3	3	3	5	14
EVERGREEN TREES	4	-	-	-	4
CREDIT FOR EXISTING VEGETATION YES/NO					
SHADE TREES	YES	YES	YES(1)	YES(2)	4
ORNAMENTAL (2:1 SUB FOR SHADE) EVERGREEN TREES	-	-	1	2	-
NUMBER OF PLANTS PROVIDED					
SHADE TREES	2	3	2	3	10
ORNAMENTAL (2:1 SUB FOR SHADE) EVERGREEN TREES	4	-	-	-	4
NUMBER OF PLANTS PROVIDED					
SHADE TREES	2	1	-	1	4
ORNAMENTAL (2:1 SUB FOR SHADE) EVERGREEN TREES	4	4**	4***	4****	16

\*\*P-2 - SUBSTITUTION: 4 EVERGREENS FOR 2 SHADE TREES  
 \*\*\*P-3 - SUBSTITUTION: 4 EVERGREENS FOR 2 SHADE TREES  
 \*\*\*\*P-4 - SUBSTITUTION: 4 EVERGREENS FOR 2 SHADE TREES  
 (1) CREDIT EXISTING 29' BLACK CHERRY TO REMAIN  
 (2) CREDIT EXISTING 32.5" PIN OAK (SPEC. "A") AND 27" PIN OAK TO REMAIN

**PLANT LIST**

QUAN.	BOTANICAL NAME	SIZE	REM.
4	ACER RUBRUM 'AUTUMN FLAME' / AUTUMN FLAME RED MAPLE	2 1/2"-3" CAL.	B & B
16	THUJA PLICATA GIANT ARBORVITAE 'GREEN GIANT'	5'-6' HT	B & B

PERIMETER LANDSCAPING FOR LOTS 113 & 114 SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE, THE LANDSCAPE MANUAL, AND AS SHOWN ON THE SUPPLEMENTAL LANDSCAPING/FOREST CONSERVATION PLAN SHEETS FOR THE SUBDIVISION, F-13-083. FINANCIAL SURETY IN THE AMOUNT OF \$3,600.00 FOR THE 10 SHADE TREES (\$3,000) AND 4 EVERGREEN TREES (\$600) SHALL BE POSTED WITH THE BUILDERS GRADING PERMIT.

LANDSCAPE SCHEDULE NOTE:

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AIN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRP PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES FROM THE BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

GENERAL NOTES:

- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, FERMS, 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 REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPLACED OR REPLANTED.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS LISTED HERewith 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 RELOCATION 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 UNIT, SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS.
- SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE 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 HOWARD COUNTY LANDSCAPE MANUAL.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE BUILDER TO INSTALL DURING THE CONSTRUCTION OF THE HOME ON LOT 113 & 114.
- THE LANDSCAPE PLANTINGS WERE COMPLETED AS SET FORTH IN THE HOWARD COUNTY LANDSCAPE MANUAL.

OWNER/DEVELOPER

SD PROPERTIES, LLC  
3138 ROGERS AVENUE  
ELICOTT CITY, MD 21043  
PHONE: (410) 203-2460

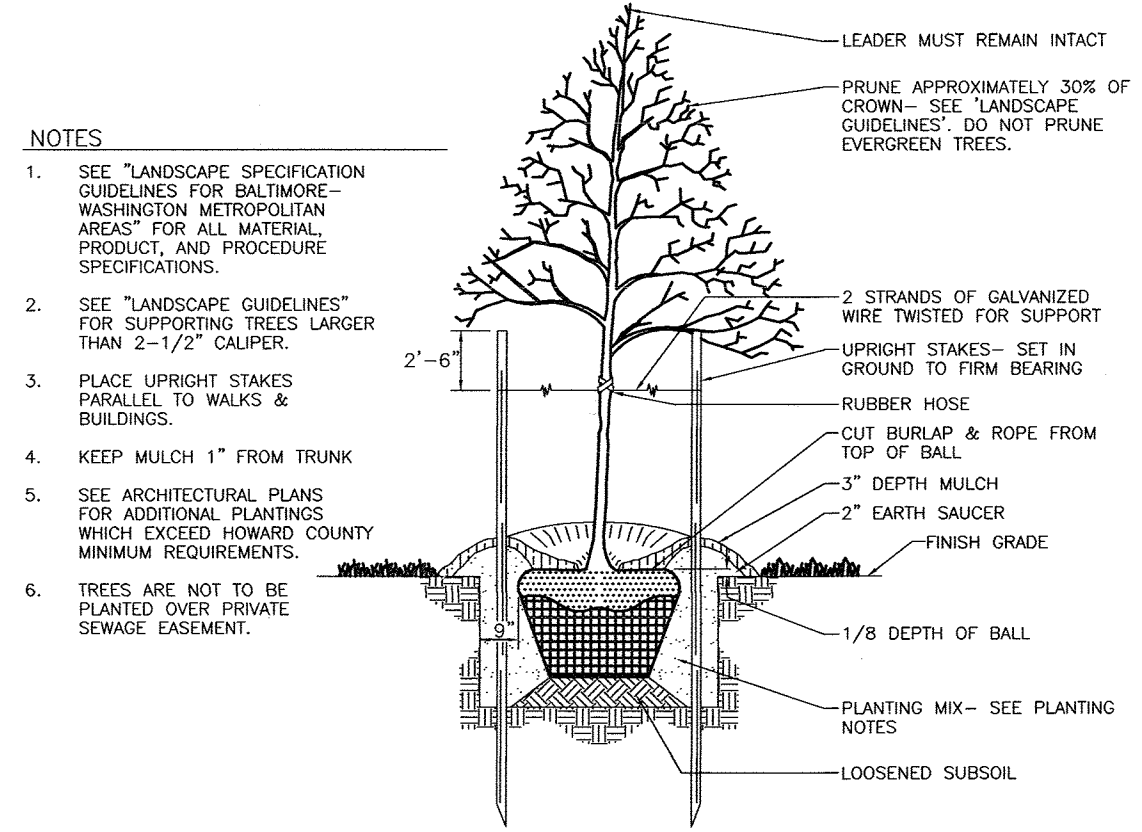
DEVELOPER/BUILDER'S CERTIFICATE

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 CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

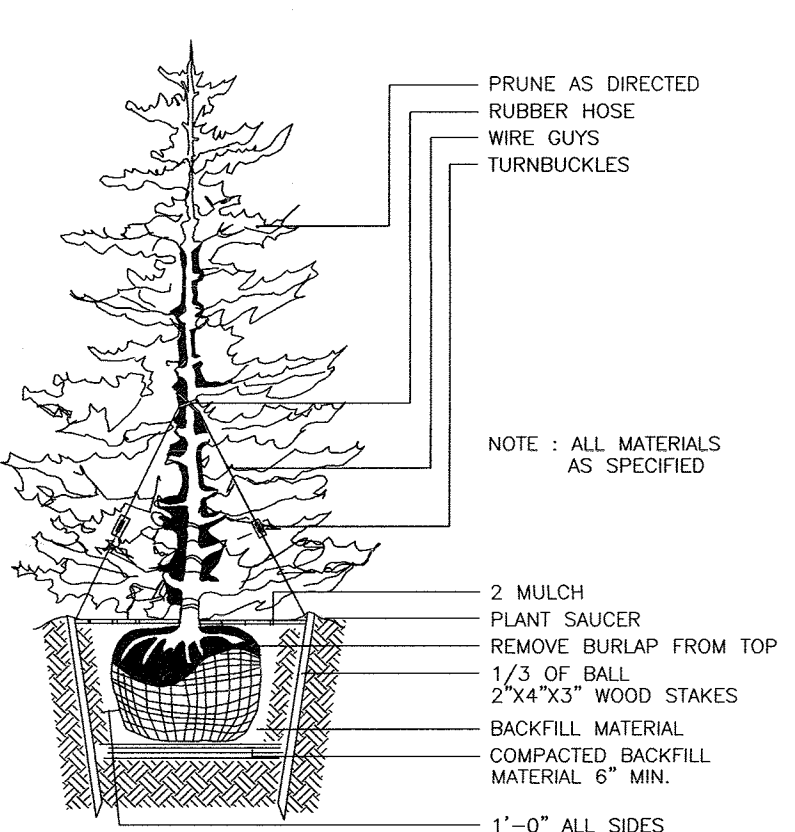
SIGNATURE OF DEVELOPER: *Stephanus Chambelegain* DATE: 5-27-2014

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: 8/1/14  
 CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: 9-09-14  
 DIRECTOR: *[Signature]* DATE: 2/9/14



TREE PLANTING AND STAKING NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL NOT TO SCALE

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS PERMANENTLY STABILIZED TO PREVENT CREEKING OF THIS UNDERGROUND SWM FACILITY.

DATE: 6/19/20  
 P.E. NAME: [Signature]

**STREET TREE CALCULATION**

ROAD NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
HUNTING LANE	166/40	4	4

**STREET TREE SCHEDULE**

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AM	4	AMUR MAPLE / ACER GINNALA	(SHADE TREES - GROWTH HEIGHT=20')	2 1/2"-3" CAL. B & B

PUBLIC STREET TREES WERE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(6)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL UNDER F-13-083.

THERE WILL BE FOUR (4) STREET TREES PLANTED FOR THIS PROJECT. THE SURETY AMOUNT WILL BE \$1200.00 AND WILL BE POSTED WITH THE BUILDERS GRADING PERMIT.

**REVISIONS**

NO.	REVISION	DATE
2	TO REVISE STORAGE DRAIN, GRADING AND BIORETENTION	2-19-20
1	REVISE FRONT PORCH & GARAGE FOR LOT 114 TO REFLECT AS-BUILT CONDITIONS	3-1-18

SITE DEVELOPMENT PLAN  
SITE LAYOUT AND LANDSCAPE PLAN

HOLIDAY HILLS  
LOTS 113 & 114  
HOLIDAY HILLS SUBDIVISION SECTION 5 LOTS 113 & 114  
A RESUBDIVISION OF LOT 54, PLAT BOOK 8, FOLIO 79

5TH ELECTION DISTRICT TAX MAP 41, GRID 6 DPZ REF. FILES: (SEE GENERAL NOTES) HOWARD COUNTY, MARYLAND ZONED: R-20 PARCEL: 273

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: EDS  
 DRAWN BY: GAH  
 CHECKED BY: RHV  
 DATE: MAY, 2014  
 SCALE: AS SHOWN  
 W.O. NO.: 12-40

PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DILIGENTLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014

2 SHEET OF 5

AS-BUILT JUNE 2020 SDP-14-052

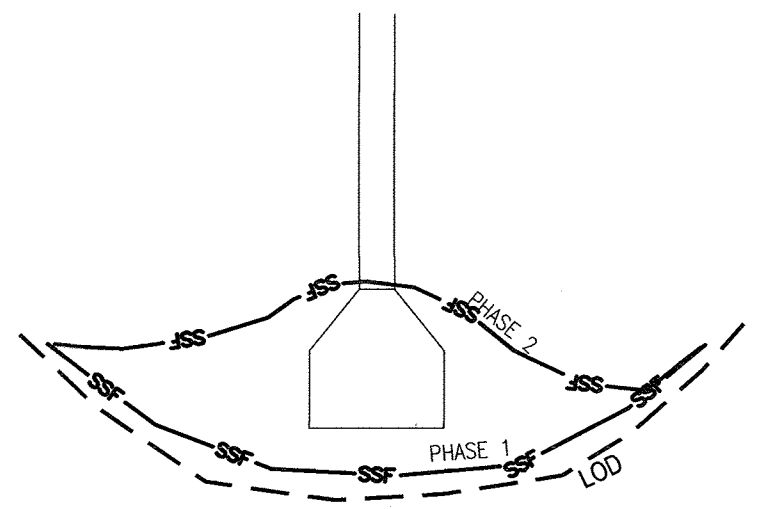


**SEQUENCE OF CONSTRUCTION**

- OBTAIN GRADING PERMIT. (1 DAY)
- DEVELOPER / CONTRACTOR SHALL REQUEST A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE ENFORCEMENT AUTHORITY PRIOR TO BEGINNING CONSTRUCTION. (1 DAY)
- NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS AT (410) 313-1880 AT LEAST 24 HOURS BEFORE STARTING ANY WORK. (1 DAY)
- CLEAR AND GRUB, IF REQUIRED, FOR THE INSTALLATION OF PERIMETER CONTROLS. (1 DAY)
- INSTALL STABILIZED CONSTRUCTION ENTRANCE AND PERIMETER CONTROLS AS SHOWN HEREON AND STABILIZE DISTURBANCES. (2 DAYS)
- INSTALL PRIVATE STORM DRAINS (BYPASS 1-1 TO E-1 AND CS-1 TO CD-3). THESE PORTIONS SHALL BE INSTALLED WITH A CLEAR WEATHER FORECAST. ONLY THAT PORTION OF STORM DRAIN THAT CAN BE INSTALLED AND STABILIZED ON ANY GIVEN DAY SHALL BE DISTURBED. STABILIZE STORM DRAIN DISTURBANCE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. INSTALL INLET PROTECTION AS DIRECTED HEREON.
- AFTER OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED, COMPLETE ANY REMAINING GRADING WITHIN THE INSTALLED PERIMETER CONTROLS. (5 DAYS)
- BEGIN & COMPLETE HOUSE CONSTRUCTION (6 MONTHS)
- INSTALL PRIVATE UTILITY CONNECTIONS AS REQUIRED BY PLAN. (1 WEEK) - UTILITY INSTALLATION ACROSS FRONT YARD OF LOT 113 SHOULD BE IMMEDIATELY STABILIZED WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - EXISTING PAVED DRIVEWAY SHALL BE SAW CUT FOR UTILITY INSTALLATION.
- UPON COMPLETION OF PRIVATE UTILITIES, INSTALL AND WIDEN EXISTING DRIVEWAY AS SHOWN HEREON. COMPLETE ANY FINE GRADING ALONG THE EDGES OF THE NEWLY WIDENED DRIVEWAY AND IMMEDIATELY STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. (1 DAY)
- INSTALL STORMWATER MANAGEMENT FEATURES, MICRO-BIORETENTION AND DRYWELL. (3 DAYS)
- COMPLETE ANY REMAINING FINE GRADING DRIVEWAY INSTALLATIONS WITHIN THE INSTALLED PERIMETER CONTROLS AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. (5 DAYS)
- UPON STABILIZATION OF ALL DISTURBED AREAS AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES AND STABILIZE DISTURBANCES WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH.

NOTE: ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.

**NOTE:**  
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.  
- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART  
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.



**SILT FENCE PHASING DETAIL @ E-1**  
N.T.S.

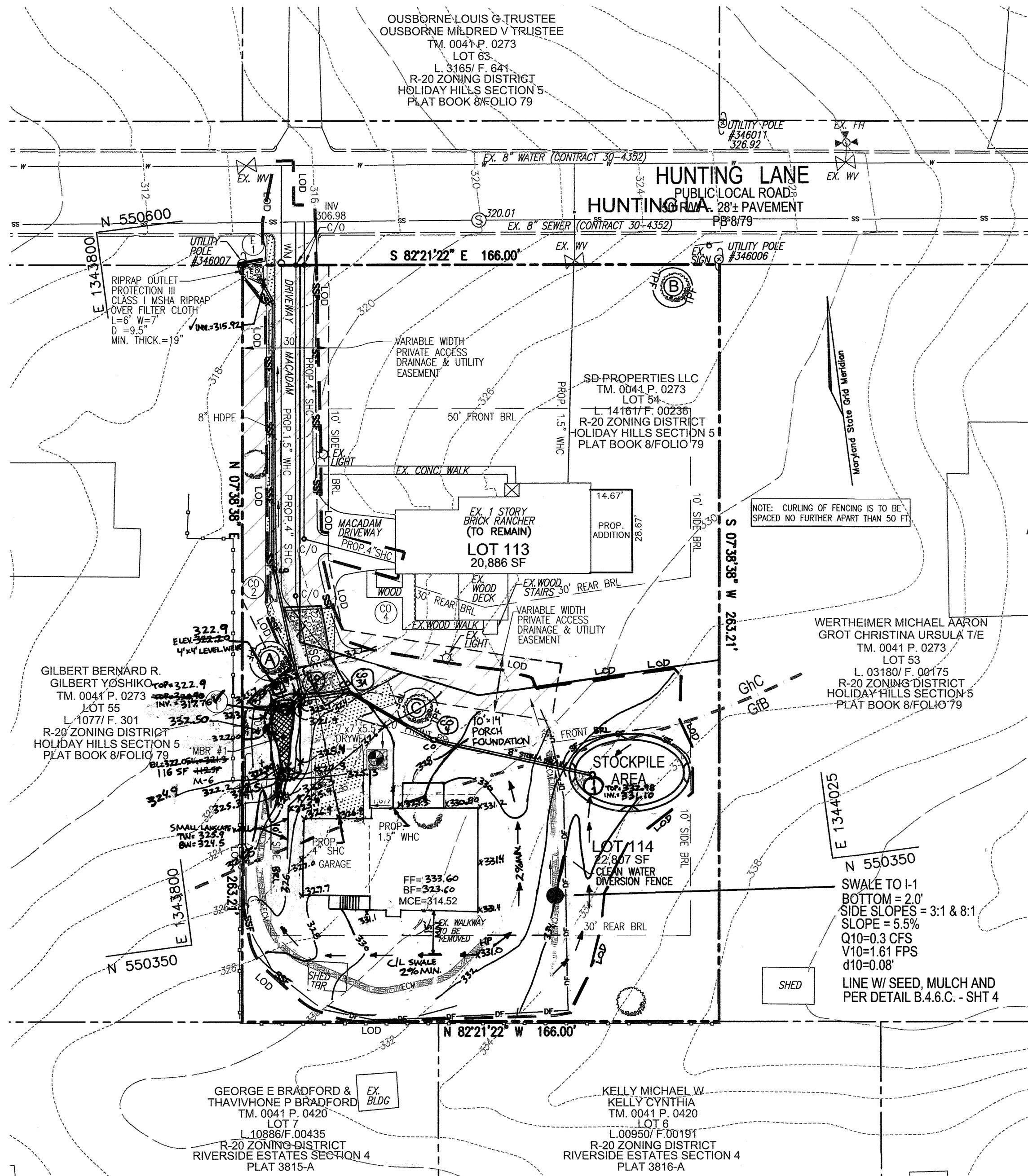
WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR:

PHASE 1 SILT FENCE LOCATION SHALL BE REMOVED AND RELOCATED ABOVE AN OUTFALL (PHASE 2) ONCE OUTFALL INSTALLATION IS COMPLETE.

DISTURBED AREAS SHALL BE IMMEDIATELY STABILIZED

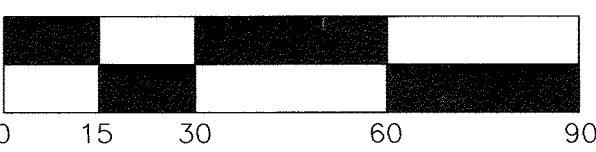
**NOTE: STOCKPILING WILL BE PERMITTED ON EACH LOT ONLY.**

**NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.**



**SEDIMENT CONTROL PLAN**

SCALE: 1"=30'



SOILS LEGEND		
SYMBOL	NAME/DESCRIPTION	TYPE
GhC	GLENELG-URBAN LAND COMPLEX 8 TO 15 PERCENT SLOPES	B
GfB	CLADSTONE-URBAN LAND COMPLEX 0 TO 8 PERCENT SLOPES	B

**NOTE:**  
STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.

**NOTE:**  
DIVERSION FENCE SHALL BE INSTALLED AS SHOWN HEREON OR AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR

**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING LOT LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREE LINE
- EXISTING TREES
- EXISTING FENCE
- PROPOSED DRIVEWAY
- VARIABLE WIDTH PRIVATE ACCESS DRAINAGE & UTILITY EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED SPOT ELEVATION
- PROPOSED SILT FENCE
- PROPOSED SUPER SILT FENCE
- PROPOSED DIVERSION FENCE
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED 2' CONTOUR GP 13-060
- SPECIMEN TREE WITH TREE PROTECTION FENCE (TO REMAIN FOR CREDIT)
- EROSION CONTROL MATING

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

16193 7/29/20  
P.E. NAME P.E.# DATE

Table B.1. Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate*		Recommended Seeding Dates by Plant Hardiness Zone**	
	lb/1000 ft <sup>2</sup>	lb/acre	Zone 4a	Zone 5b
Annual Ryegrass (Lolium perenne)	40	1.0	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30
Perennial Ryegrass (Lolium perenne)	50	1.25	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30
White Clover (Trifolium repens)	12	0.3	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30
Wetland Ryegrass (Lolium perenne)	130	3.25	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30
Perennial Ryegrass (Lolium perenne)	115	2.875	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30
Perennial Ryegrass (Lolium perenne)	30	0.75	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30
Perennial Ryegrass (Lolium perenne)	20	0.5	After 15 to May 31, Aug. 1 to Sep 30	After 15 to May 31, Aug. 1 to Sep 30

\* Seeding rates are based on the mean seed weight of the species listed in the table. Actual seed weight should be adjusted to reflect percent seed germination and purity as needed. Seeding rates are based on the mean seed weight of the species listed in the table. Actual seed weight should be adjusted to reflect percent seed germination and purity as needed.

**NOTE:**  
EITHER PERMANENT OR TEMPORARY SEEDING AND/OR STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES REQUIRED BY THE 2011 STANDARDS AND SPECIFICATIONS WHICHEVER IS MORE RESTRICTIVE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 8/7/14

CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 9-09-14

DIRECTOR  
DATE: 9/9/14

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

BY THE DEVELOPER:  
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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.

Signature of Developer: [Signature]  
DATE: 5-23-14

BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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.

Signature of Engineer: [Signature]  
DATE: 5/21/14

OWNER/DEVELOPER

SD PROPERTIES, LLC  
3138 ROGERS AVENUE  
ELLCOTT CITY, MD 21043  
PHONE: (410) 203-2460

NO.	REVISION	DATE
2	TO REVISE STORM DRAIN, GRADING AND BIORETENTION	2-19-20
	REVISE FRONT PORCH & GARAGE FOR LOT 114 TO REFLECT AS-BUILT CONDITIONS	3-1-18

**SITE DEVELOPMENT PLAN**  
**GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN**  
**HOLIDAY HILLS**  
LOTS 113 & 114  
HOLIDAY HILLS SUBDIVISION SECTION 5 LOTS 113 & 114  
A RESUBDIVISION OF LOT 54, PLAT BOOK 8, FOLIO 79

5TH ELECTION DISTRICT  
TAX MAP 41, GRID 6  
DPZ REF. FILES: (SEE GENERAL NOTES)

ZONED: R-20  
PARCEL: 273  
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELLCOTT CITY, MD 21043  
TEL: 410.461.7666  
FAX: 410.461.8961

DESIGN BY: EDS.  
DRAWN BY: GAH.  
CHECKED BY: RHV.  
DATE: MAY, 2014.  
SCALE: AS SHOWN.  
W.O. NO.: 12-40.

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193  
EXPIRATION DATE: 09-27-2014

3 SHEET OF 5

AS-BUILT JUNE 2020 SDP-14-052



HOWARD SOIL CONSERVATION DISTRICT  
STANDARD SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION. (315-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND TO BE IN CONFORMANCE WITH THE MOST CURRENT "NATIONAL STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL," AND REVISIONS THERETO.
- STABILIZING INITIAL SOIL DISTURBANCE OR REDISTRIBUTION, PERMANENT OR TEMPORARY SEEDING SHALL BE COMPLETED WITHIN A 3 CALENDAR DAYS FOR ALL PERMITS. SEDIMENT CONTROL STRUCTURES, DICES, TERRACE SLOPES AND ALL SLOPES GREATER THAN 3:1, BY 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH CAN ONLY BE DONE WHEN RECOMMENDED SEEDING TIMES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:**  
TOTAL AREA OF SITE: 1.00 ACRES  
AREA DISTURBED: 0.719 ACRES  
AREA TO BE ROOFED OR PAVED: 0.281 ACRES  
AREA TO BE VEGETATIVELY STABILIZED: 0.281 ACRES  
TOTAL CUT: 300 CU. YDS.  
TOTAL FILL: 300 CU. YDS.  
OFFSITE WASTE/BORROW AREA LOCATION: \*\*
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES OR REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERMITS AND SEDIMENT CONTROL STRUCTURES, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITH ONE WORKING DAY, WHICHEVER IS SHORTER.
- A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 ACRES 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 ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CONTIGUOUSLY MAY BE DISTURBED AT ONE TIME.
- ESTIMATE QUANT. CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION. TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, WITH AN APPROVED AND ACTIVE GRADING PERMIT.

B-4-5 STANDARDS AND SPECIFICATIONS  
FOR  
PERMANENT STABILIZATION

**DEFINITION**  
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

**PURPOSE**  
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

**CONDITIONS WHERE PRACTICE APPLIES**  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

**CRITERIA**  
A. SOIL MIXTURES  
1. GENERAL USE  
a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 8.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE 8.4. ENTER SELECTED MIXTURE(S), 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 USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.  
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 FORM 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. TURFGRASSES MIXTURES  
a. AREAS WHERE TURFGRASS 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 MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.  
i. CENTURY 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 PERENNIAL 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 RYE: FULL SUN MIXTURE; FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE AN INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS MIXTURES/ 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 DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED CERTIFIED TALL FESCUE CULTIVARS: 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 5 TO 5 PERCENT. SEEDING RATE: 5 TO 6 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE USED.  
iv. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE; FOR USE IN AREAS WITH SHADE OR ESTABLISHMENT IN HIGH MOISTURE CONTENT. LOW MAINTENANCE, INTENSIVELY MANAGED TURF. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1/2 TO 1 POUNDS PER 1000 SQUARE FEET.  
NOTES:  
SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRICULTURAL CATALOG 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 CONTROL, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.  
c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES  
WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 10 TO OCTOBER 1 (HARDNESS ZONES: SR, 6A)  
CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: 6B)  
SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 7A, 7B)  
d. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 4 TO 6 INCHES. LEVEL AND PAKE 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 PROCEED WITHOUT 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 ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ANOMALY DRY OR HOT SEASONS, OR ON ADVERSE SITES.  
B. SOO: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

R-4-2 STANDARDS AND SPECIFICATIONS  
FOR  
SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS

**DEFINITION**  
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**PURPOSE**  
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

**CONDITIONS WHERE PRACTICE APPLIES**  
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

**CRITERIA**  
A. SOIL PREPARATION  
1. TEMPORARY STABILIZATION  
a. SEEDBED 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, FLOW, OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSEND, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT TO REMAIN IN A DISORDERED CONDITION. A MOISTURE RETENTION ROLL SHOULD BE TRACKED WITH ROLLS RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.  
b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.  
c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.  
2. PERMANENT STABILIZATION  
a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OVER 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 50 PPM PER MILLION (PPM)  
iii. SOIL CONTENTS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 10 PERCENT SILET PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS LOESSVASS WHICH WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.  
iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.  
v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.  
b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.  
c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSEND TO A DEPTH OF 3 TO 5 INCHES.  
d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.  
e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. PARE LAWN AREAS TO SMOOTH THE SURFACE. REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEND SOIL BY DRAGGING WITH HEAVY CHAIN OR OTHER EQUIPMENT TO LOOSEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK 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 FRAGILE. SEEDING LOOSENESS MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.  
B. TOPSOILING  
1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATION GROWTH. SOILS OF CONCRETE, 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 AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF THE TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.  
3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:  
a. THE TEXTURE OF THE SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.  
b. THE SOIL MATERIAL IS SO VEGGATED THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FLURISH CONTINUAL SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.  
c. THE ORIGINAL SOIL IS TO BE REPLACED WITH A MORE PRODUCTIVE SOIL.  
d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.  
e. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.  
4. SOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:  
a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED.  
b. THE ORIGINAL SOIL TO BE REPLACED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.  
c. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.  
d. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.  
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a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED.  
b. THE ORIGINAL SOIL TO BE REPLACED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.  
c. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.  
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**MBR #1**  
**112SF**  
**116SF**

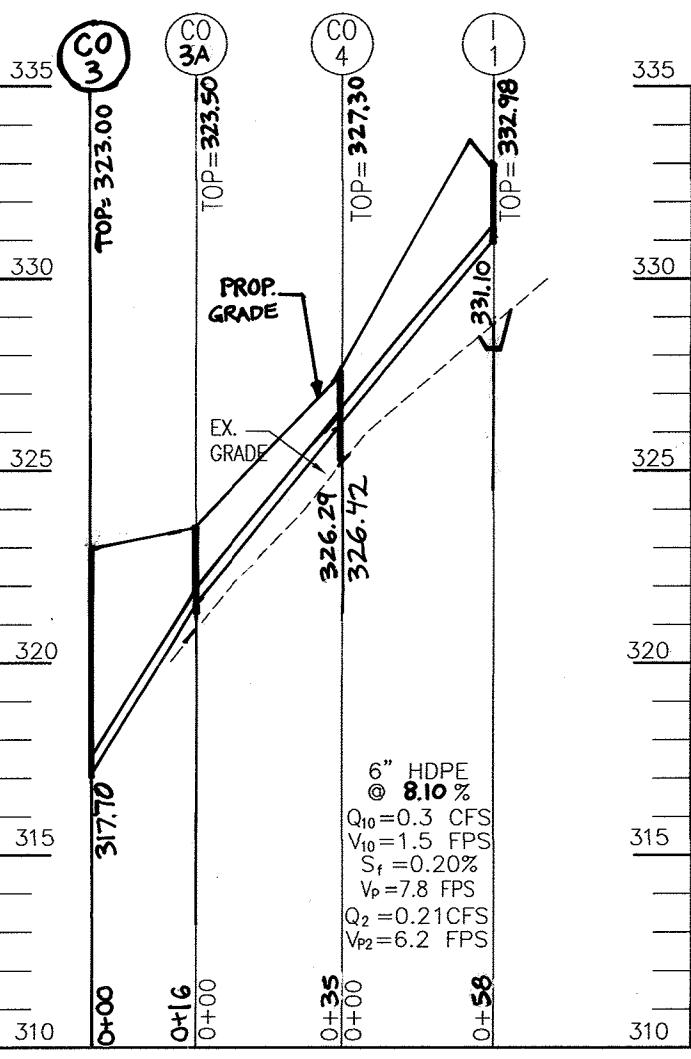
**BIORETENTION PLANTING LAYOUT**  
N.T.S.

TYPICAL BIORETENTION PLANTING SCHEDULE PER 250 SF AREA					PER FACILITY
KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS	MBR #1
1	2	ILEX GLABRA INKBERRY	3 GALLON	CONT	2
4	4	VACCINIUM CORYMBOSUM HIGHBUSH BLUEBERRY	3 GALLON	CONT	4
7	7	LOBELIA SIBIRITICA GREAT BLUE LOBELIA	3 GALLON	CONT	7

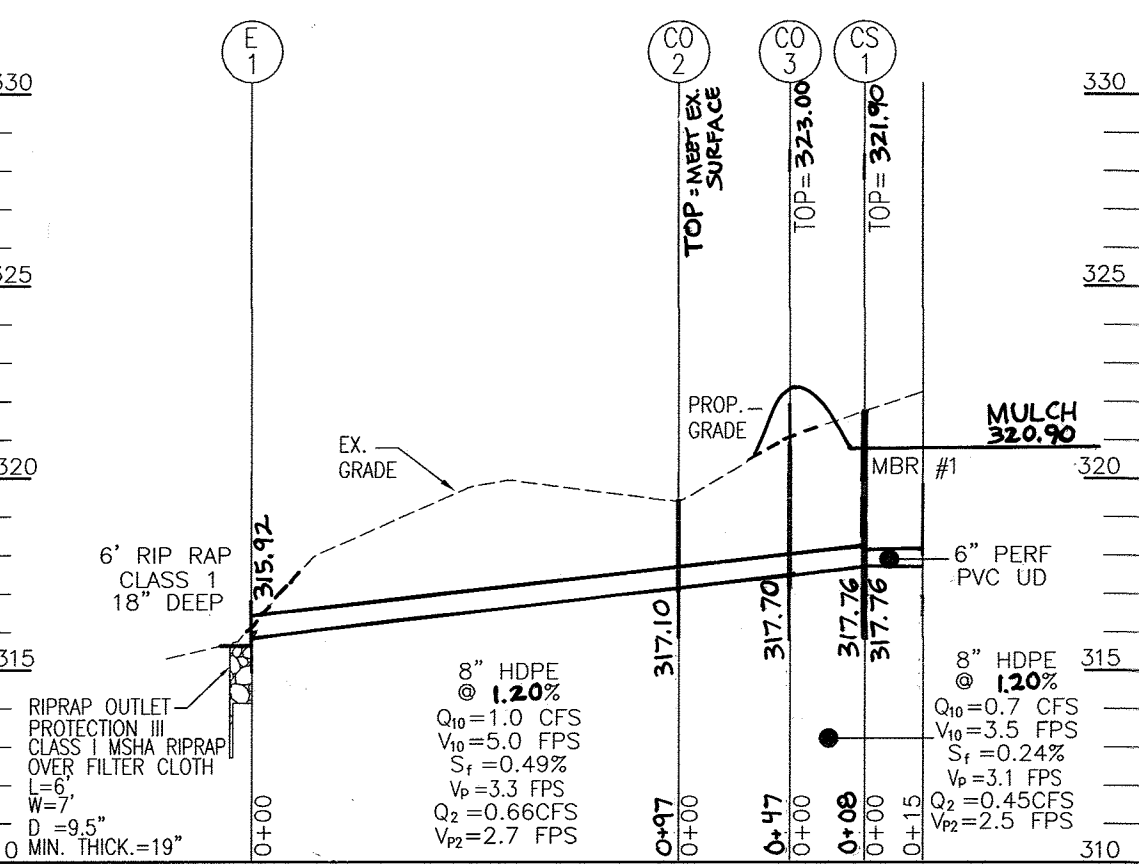
A MINIMUM DENSITY OF 1000 STEMS PER PLANTED BIORETENTION AREAS ARE TO BE PLANTED BASED ON ACRE (10229 STEMS PER SQUARE FOOT), ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY. ROUND UP FOR QUANTITY.

**BIORETENTION PLANTING SCHEDULE NOTES:**

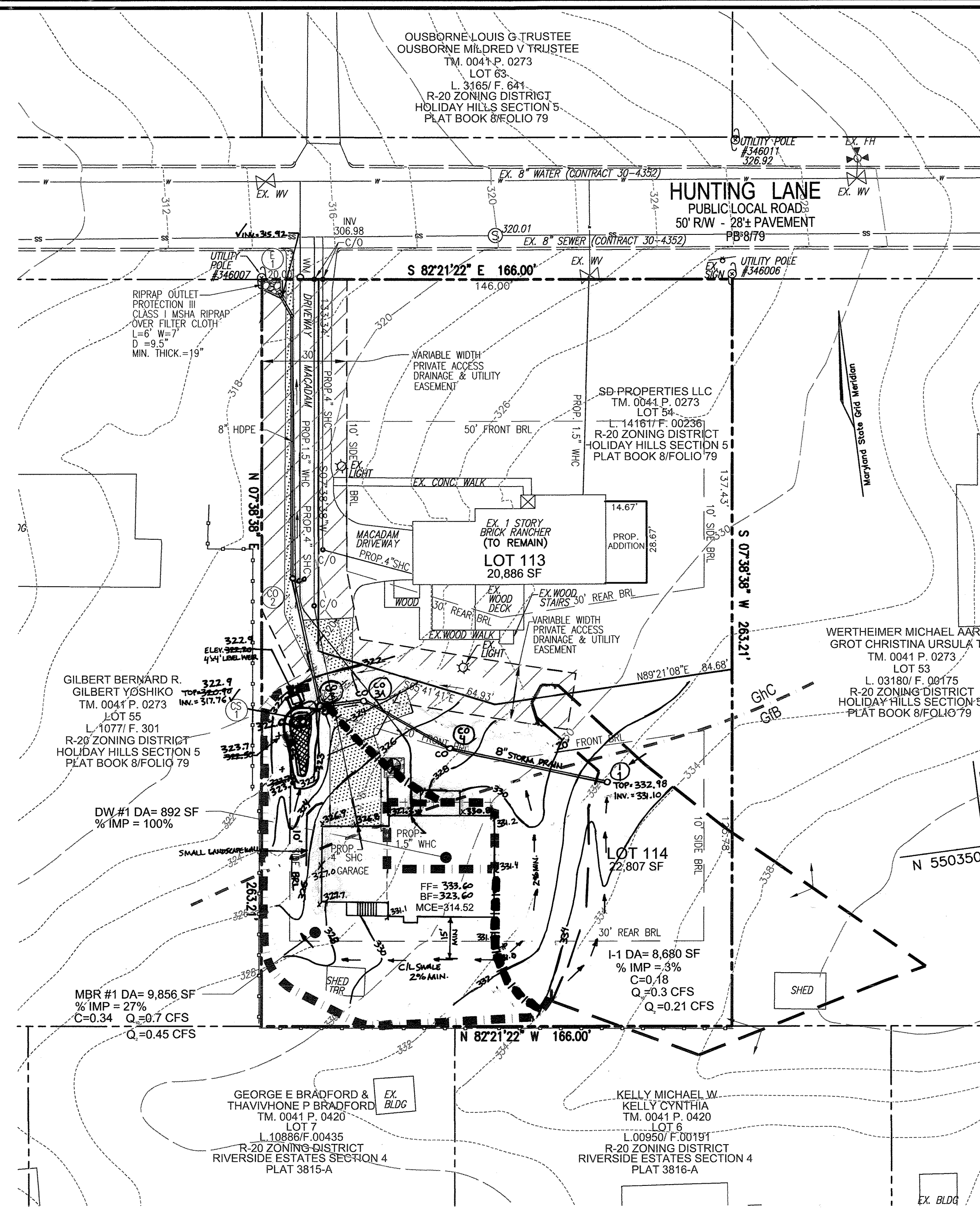
- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAS SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT ANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- SEE THIS SHEET FOR TYPICAL PLANTING DETAILS.



**STORM DRAIN PROFILE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



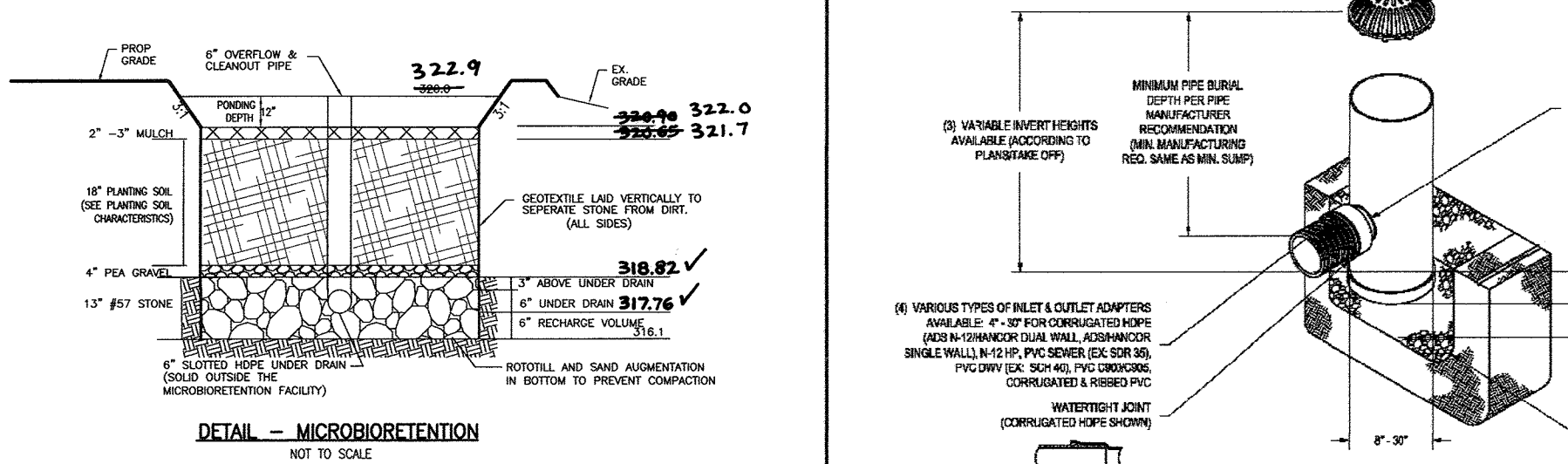
**STORM DRAIN PROFILE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



**SWM DRAINAGE AREA MAP**  
SCALE: 1"=30'

STORMWATER MANAGEMENT CALCULATIONS					
FACILITY	METHOD	VOL. REQUIRED	VOL. PROVIDED	REV. REQUIRED	REV. PROVIDED
MBR #1	M-6	243 CF	299 CF	62 CF	62 CF
DW #1 (7'x7'x5.5')	M-5	84 CF	88 CF	18.4 CF	19.6 CF

M-5 IS A DRYWELL. SEE DETAIL THIS SHEET.  
M-6 IS A MICROBIOTENTION FACILITY. SEE DETAIL THIS SHEET.



**OPERATION AND MAINTENANCE SCHEDULE FOR M-6, M-7 AND M-8 AREAS**

- 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 CONSIDERED BEYOND TREATMENT, TREATMENT 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 WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.
- FILTER MATERIAL MUST BE REPLACED WHEN WATER REMAINS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 24 HOURS FOLLOWING A 1- OR 2-YEAR STORM EVENT OR MORE THAN 48 HOURS FOLLOWING A 10-YEAR STORM EVENT.

STRUCTURE SCHEDULE					
STRUCTURE #	TYPE	DIA	TOP EL.	INV IN	INV OUT
CS-1	NYLOPLAST DRAIN BASIN	8"	322.9	317.76	317.76
I-1	NYLOPLAST DRAIN BASIN	8"	332.98		333.10

NOTE: SEE NYLOPLAST BASIN AND DOME CAP DETAILS THIS SHEET.

**APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS**

**1. MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

**2. FILTERING MEDIA OR PLANTING SOIL**  
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DAMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OF THE PLANTING SOIL. THE PLANTING SOIL SHALL BE FREE OF BROMELIAD GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.  
THE PLANTING SOIL SHALL MEET THE FOLLOWING CRITERIA:  
• SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURE CLASSIFICATION)  
• ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).  
• CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 2%.  
• PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.  
THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER AND SOLUBLE SALTS. A TEXTURE ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

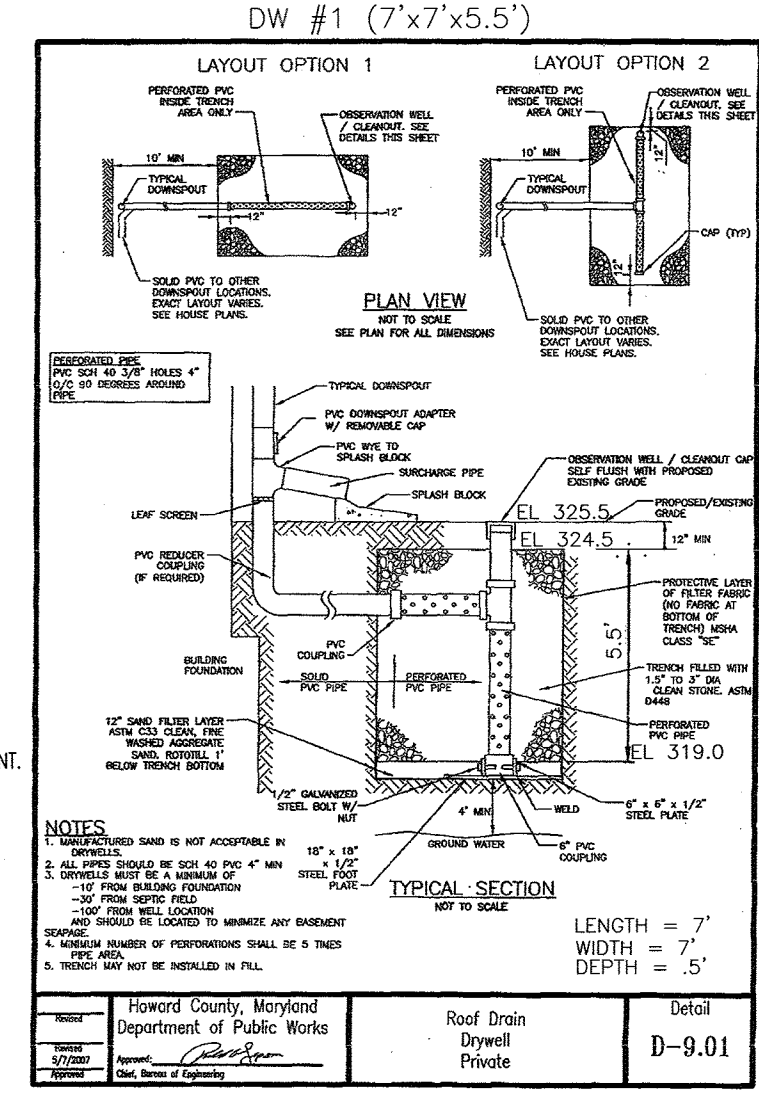
**3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR WASH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TUFF-TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.  
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTORE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT. ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP AND PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.  
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.  
WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 16". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SAND AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH WASH TRACKS.

**4. PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

**5. PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.  
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/3RD OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLOWS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.  
THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ACQUISITELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, SEEDS, OR AT A MINIMUM IMPROVES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL LIME FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

**6. UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:  
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER.  
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4A) GALVANIZED HARDWARE CLOTH.  
• GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.  
• THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.  
• A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAR VIEW OF PIPES IN THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".  
THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1,000 SQUARE FEET OF SURFACE AREA).

**7. MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



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

A. THE OWNER SHALL INSPECT & CLEAN ANNUALLY, INCLUDING PIPES, GUTTERS, DOWNSPOUTS AND FILTERS.

B. PONDING STANDING WATER OR ALGAL GROWTH ON THE TOP OF A DRYWELL MAY INDICATE FAILURE DUE TO SEDIMENTATION IN THE GRAVEL MEDIA. IF WATER PONDING FOR MORE THAN 48 HOURS AFTER A MAJOR STORM OR MORE THAN SIX INCHES OF SEDIMENT HAS ACCUMULATED, THE GRAVEL MEDIA SHOULD BE EXCAVATED AND REPLACED.

**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING LOT LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING TREES
- EXISTING FENCE
- PROPOSED DRIVEWAY
- VARIABLE WIDTH PRIVATE ACCESS DRAINAGE & UTILITY EASEMENT
- PROPOSED DRAINAGE DIVIDE FOR STORMWATER MANAGEMENT
- PROPOSED DRAINAGE DIVIDE FOR STORMWATER MANAGEMENT

**STATE OF MARYLAND**  
ROBERT H. VOGEL  
REGISTERED PROFESSIONAL ENGINEER  
NO. 18183  
EXPIRES 12/31/2024

DATE: 7/29/20  
P.E. NAME: R.H.V.  
P.E. NO.: 16193

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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 8/7/14  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 9-09-14  
DIRECTOR  
DATE: 9/9/14

2 TO REVISE STORM DRAIN, GRADING AND BIORETENTION 2-19-20  
NO. REVISION DATE

**SITE DEVELOPMENT PLAN**  
**STORM DRAIN / STORMWATER MANAGEMENT**  
**PLAN, PROFILES AND DETAILS**

**HOLIDAY HILLS**  
LOTS 113 & 114  
HOLIDAY HILLS SUBDIVISION SECTION 5 LOTS 113 & 114  
A RESUBDIVISION OF LOT 54, PLAT BOOK 8, FOLIO 79

5TH ELECTION DISTRICT  
TAX MAP 41, GRID B  
DPZ REF. FILES: (SEE GENERAL NOTES)

ZONED: R-20  
PARCEL 273  
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL**  
ENGINEERS - SURVEYORS - PLANNERS  
8407 MAIN STREET  
ELLICOTT CITY, MD 21043  
TEL: 410.461.7666  
FAX: 410.461.8961

DESIGN BY: EDS.  
DRAWN BY: GAH.  
CHECKED BY: REV.  
DATE: MAY, 2014.  
SCALE: AS SHOWN.  
W.O. NO.: 12-40.

PROFESSIONAL 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. 16193  
EXPIRATION DATE: 09-27-2014

5 SHEET OF 5

AS-BUILT JUNE 2020 SDP-14-052