

GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE SUBJECT PROPERTY IS ZONED R-SC IN ACCORDANCE WITH 02/02/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON 7/28/06, AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
- PROPERTY OUTLINE SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED FEBRUARY 2012.
- TOPOGRAPHY SHOWN HEREON IS OBTAINED FROM AERIAL PHOTOGRAMMETRY COMPILED BY POTOMAC AERIAL SURVEYS INC. JANUARY 12, 2012.
- SOIL TYPES SHOWN HEREON ARE IN ACCORDANCE WITH THE WEB SOIL SURVEY - HOWARD COUNTY, MARYLAND.
- 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. 47H2 AND 47C0 WERE USED FOR THIS PROJECT.
- 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. NO DISTURBANCE TO THE NATURAL AREAS, STREAMS, STREAM BUFFER, WETLAND AND/OR WETLAND BUFFER RESOURCES ARE PROPOSED IN THE SOUTH PORTION OF THE PROJECT. MINOR DISTURBANCES ARE PROPOSED IN THE NORTHERN PORTION OF THE PROJECT WHICH WILL REQUIRE A WAIVER.
- WAIVERS FOR ENVIRONMENTAL DISTURBANCES AND SPECIMEN TREES WILL BE SUBMITTED WITH THE FUTURE PRELIMINARY EQUIVALENT SKETCH PLAN. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF FORTHCOMING WAIVERS PETITIONS.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT. WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 1-W. SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 30-S AND CONTRACT NO. 30-3253.
- EXISTING UTILITIES LOCATED FROM TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS. 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.
- NO FLOODPLAINS EXIST ON-SITE.
- STEEP SLOPES ARE LOCATED AND SHOWN HEREON.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A SUBDIVISION PLAN PACKAGE.
- WETLANDS AND STREAMS SHOWN HEREON ARE BASED ON DELINEATION BY MCCARTHY & ASSOCIATES, INC., JANUARY 2012.
- AS REQUIRED, GEOTECHNICAL INVESTIGATIONS SHALL BE COMPLETED AS PART OF THE SUBDIVISION PLAN PACKAGE.
- A FOREST STAND DELINEATION PLAN WAS PREPARED BY MCCARTHY & ASSOCIATES, INC., JANUARY 2012.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH THE SUBDIVISION PLANS.
- OLD SCAGGSVILLE ROAD IS CLASSIFIED AS A MINOR COLLECTOR. THE PROPOSED ACCESS POINTS ARE AS SHOWN HEREON. THE PROPOSED STREETS ARE CLASSIFIED AS PUBLIC ACCESS STREETS.
- DRIVEWAYS(S) SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 - WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
 - SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CLIP COATING.
 - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45-FOOT DEPTH TURNING RADIUS.
 - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
 - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
 - STRUCTURE CLEARANCES - MINIMUM 12 FEET.
 - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- THE PROPOSED SUBDIVISION AND RELATED CONSTRUCTION WILL NOT IMPACT ENVIRONMENTAL FEATURES OR BUFFERS IN THE SOUTH PORTION OF THE PROJECT. MINOR DISTURBANCES ARE PROPOSED IN THE NORTHERN PORTION OF THE PROJECT WHICH WILL REQUIRE A WAIVER.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS PROPERTY.
- THE ARE NO EXISTING HOMES ON THESE PARCELS.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. 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/PLAT AND/OR SITE DEVELOPMENT PLAN AND/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.
- IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS THE OPEN SPACE REQUIREMENTS FOR THIS RSC PROJECT IS 25% OF GROSS AREA (36.0331 AC. GROSS AREA x 25% = 9.01 AC.).
- THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF ALTERNATIVE SURFACES, NON STRUCTURAL PRACTICES & MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION, BIO SWALES, ALTERNATIVE SURFACES INCLUDE PERMEABLE SURFACES WITH STONE STORAGE, THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED. CONCEPTUALLY, ADDITIONAL STORMWATER MANAGEMENT MAY BE PROVIDED IN A REGIONAL FACILITY LOCATED WITHIN THE FIRST RIDGE COMMUNITY.
- THE LIMITS OF DISTURBANCE (LOD) SHOWN ON THE PLAN EXTENDS OFFSITE. LETTERS OF PERMISSION FOR THE REQUIRED OFFSITE GRADING WILL BE PROVIDED AS PART OF THE FINAL PLAN SUBMISSION WHEN FINAL GRADING WILL BE APPROVED.
- ONSITE STREAM CLASSIFICATION IS BEING DETERMINED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT (MDE). FINAL BUFFER DELINEATION WILL BE BASED ON THE MDE DETERMINATION AND SHOWN ON FUTURE PLAN SUBMISSIONS.

ENVIRONMENTAL CONCEPT PLAN

DEER SPRINGS

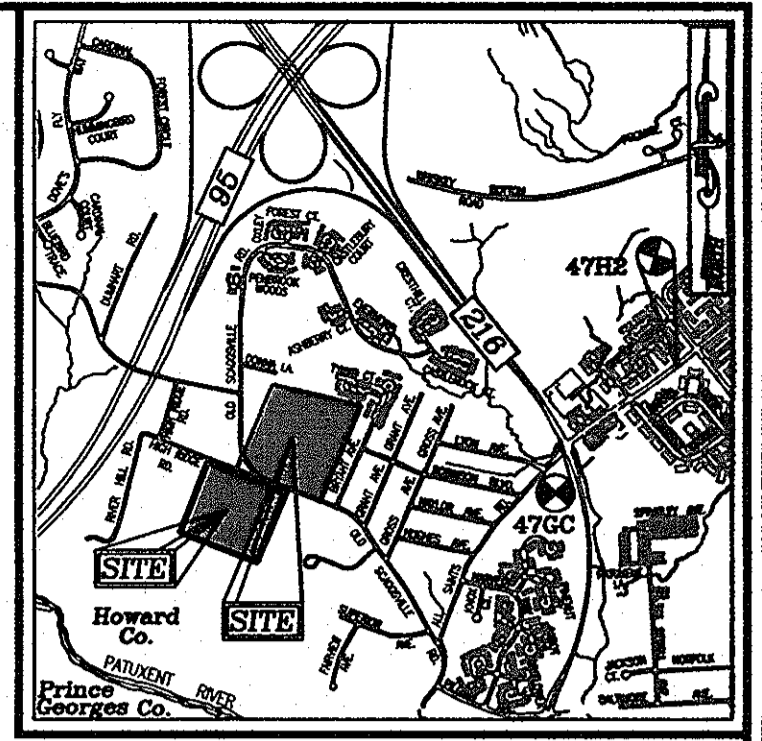
SFD LOTS 1-87, SFA LOTS 88-130, AND OPEN SPACE LOTS 131 - 140

(SFA - SFD RESIDENTIAL)
 OLD SCAGGSVILLE ROAD
 PARCELS 363 & 542
 HOWARD COUNTY, MARYLAND

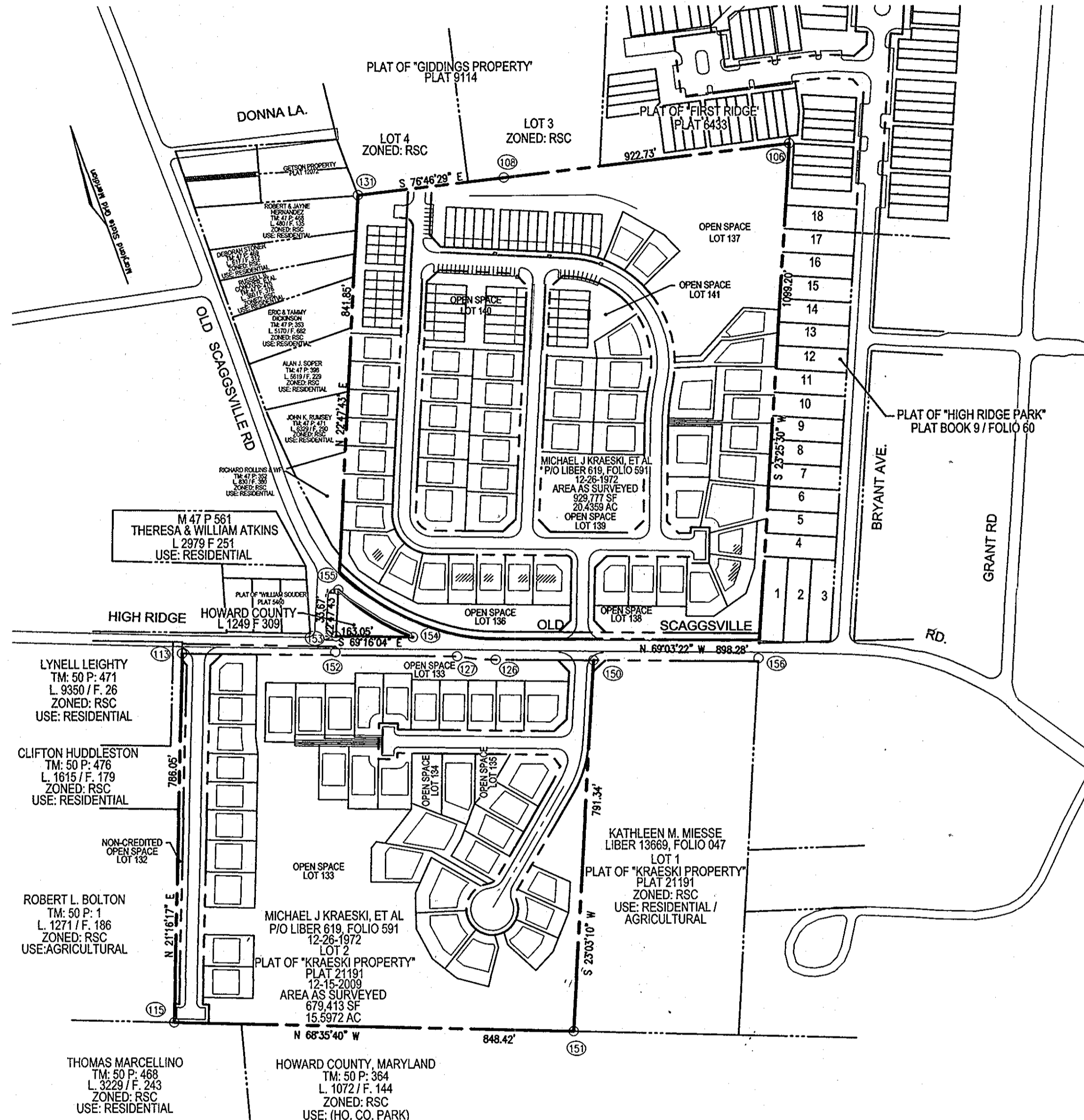
BENCHMARKS

HOWARD COUNTY BENCHMARK 47H2 (CONC. MON.)
 N 529706.4221 E 1355445.3364 ELEV: 256.068
 LOCATION: ALL SAINTS ROAD, 240' +/- SOUTH OF NORTH LAUREL ROAD 2.89 FEET FROM STORM DRAIN INLET; 1' EAST OF CURB, 0.6 BELOW SURFACE

HOWARD COUNTY BENCHMARK 47C0 (CONC. MON.)
 N 528939.7281 E 1354223.5536 ELEV: 226.272
 LOCATION: MEDIAN ISLAND 29 FEET WEST OF ALL SAINTS RD RT 216 INTERSECTION; 1.4 FEET WEST OF SOUTHWEST INLET CORNER



VICINITY MAP
 SCALE: 1"=2,000'
 ADC MAP COORDINATE: 5169 B1 & C1
 ADC MAP COORDINATE: 5169 B2



LOCATION MAP
 1" = 200'

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 10
LAYOUT SHEET	2 OF 10
LAYOUT SHEET	3 OF 10
ESDv - DRAINAGE AREA MAP - SOUTH AREA	4 OF 10
ESDv - DRAINAGE AREA MAP - NORTH AREA 1	5 OF 10
ESDv - DRAINAGE AREA MAP - NORTH AREA 2	6 OF 10
SITE LAYOUT, GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN	7 OF 10
SITE LAYOUT, GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN	8 OF 10
STORMWATER MANAGEMENT NOTES AND DETAILS	9 OF 10
STORMWATER MANAGEMENT DETAILS AND COMPUTATIONS	10 OF 10

ENVIRONMENTAL SITE DESIGN NARRATIVE:

- IN ACCORDANCE WITH CHECKLIST ITEM 11.K.
- 11.K.
- THE NATURAL AREAS ON THIS PROJECT ARE LOCATED IN THE NORTHEASTERN AND SOUTHERN MOST PORTIONS OF THE PROJECT SITE. NO DISTURBANCE TO THE NATURAL AREAS, STREAMS, STREAM BUFFER, WETLAND AND/OR WETLAND BUFFER RESOURCES IS PROPOSED IN THE SOUTH PORTION OF THE PROJECT. MINOR DISTURBANCE IS PROPOSED IN THE NORTHERN PORTION OF THE PROJECT WHICH WILL REQUIRE WAIVER APPROVAL.
 - NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED, PLEASE REFER TO THE PROPOSED GRADING. THE NORTHERN PORTION OF THE PROJECT REMAINS SPLIT WITH AREAS DRAINING TO THE NORTH AND AREAS DRAINING TOWARD OLD SCAGGSVILLE ROAD. THE SOUTHERN PORTION DRAINS TO THE SOUTH / AWAY FROM OLD SCAGGSVILLE ROAD.
 - THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT. THE ESD CONCEPT PROPOSES THE USE OF NON-STRUCTURAL PRACTICES, DISCONNECTION OF ROOFTOP RUNOFF, ALTERNATIVE SURFACES - PERMEABLE SURFACES AND MICRO SCALE PRACTICES - DRYWELLS, BIO SWALES, RAINGARDENS AND MICRO BIORETENTION FACILITIES. ESD PRACTICES SHALL BE PRIVATELY OWNED AND MAINTAINED.
 - SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE PERIMETER CONTROLS (SILT & SUPER SILT FENCE) AND SEDIMENT TRAPS/BASINS AT NATURAL LOW POINTS IN THE DRAINAGE AREAS. CONTROLS WILL BE BASED ON A LOT BY LOT BASIS DURING SITE DEVELOPMENT PLAN / HOME CONSTRUCTION STAGE OF THE PROJECT. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.
- THE LIMITS OF DISTURBANCE (LOD) SHOWN ON THE PLAN EXTENDS OFFSITE. LETTERS OF PERMISSION FOR THE REQUIRED OFFSITE GRADING WILL BE PROVIDED AS PART OF THE FINAL PLAN SUBMISSION WHEN FINAL GRADING WILL BE APPROVED.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF NON-STRUCTURAL PRACTICES, DISCONNECTION OF ROOFTOP RUNOFF, ALTERNATIVE SURFACES - PERMEABLE SURFACE AND MICRO SCALE PRACTICES - DRYWELLS, BIO SWALES, RAINGARDENS AND MICRO BIORETENTION FACILITIES.
 - IN THE NORTH (AREA 1) PORTION OF THE SITE, THE REQUIRED PE = 1" HAS BEEN PROVIDED WITHIN THE INDIVIDUAL SUB DRAINAGE AREAS. DUE TO A REGIONAL QUANTITY STORMWATER ISSUE WITHIN THE ADJOINING "FIRST RIDGE" & "HIGH RIDGE PARK" COMMUNITIES; THE REMAINING PE = 0.58" AS WELL AS QUANTITY MANAGEMENT CONCEPTUALLY SHALL BE PROVIDED IN A REGIONAL FACILITY.
 - IN THE NORTH (AREA 2) PORTION OF THE SITE, THE REQUIRED PE = 1.58" HAS BEEN PROVIDED WITHIN THE INDIVIDUAL SUBAREAS
 - IN THE SOUTH PORTION OF THE SITE, THE REQUIRED PE = 1.58" HAS BEEN PROVIDED WITHIN THE INDIVIDUAL SUBAREAS
- THE END RESULT OF THIS CONCEPTUAL ENVIRONMENTAL SITE DESIGN; THIS PROJECT SHALL REFLECT "WOODS IN GOOD CONDITION".
 REQUIRED PE VALUE FOR THIS PROJECT IS 1.58"
- AT THIS CONCEPT STAGE OF DEVELOPMENT, WAIVERS WILL BE REQUIRED FOR REMOVAL OF A SINGLE SPECIMEN TREE FOR THE CONSTRUCTION OF ROAD C AND MINOR GRADING WITHIN A 25' WETLAND BUFFER AND A 50' STREAM BUFFER NEAR LOTS 15-18 OF THE ADJOINING "HIGH RIDGE PARK" COMMUNITY. WAIVERS FOR ENVIRONMENTAL DISTURBANCES AND SPECIMEN TREES WILL BE SUBMITTED WITH THE FUTURE PRELIMINARY EQUIVALENT SKETCH PLAN. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF FORTHCOMING WAIVERS PETITIONS.

SITE ANALYSIS DATA

A. TOTAL PROJECT AREA:	36.0331 AC.
B. AREA OF PLAN SUBMISSION:	26.04 AC.
C. AREA OF WETLANDS AND BUFFERS:	1.61 AC.
D. AREA OF FLOODPLAIN:	N/A
E. AREA OF FOREST:	10.98 AC.
F. AREA OF STEEP SLOPES:	0.34 AC.
G. ERODIBLE SOILS:	N/A
H. LIMIT OF DISTURBED AREA:	31.50 AC.
I. PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL SINGLE FAMILY ATTACHED & DETACHED HOMES
J. GREEN OPEN AREA:	26.24 AC.
K. PROPOSED IMPERVIOUS AREA:	10.70 AC.
L. PRESENT ZONING DESIGNATION:	R-SC - (RESIDENTIAL: SINGLE CLUSTER) DISTRICT
M. OPEN SPACE REQUIRED:	36.03 AC. GROSS AREA x 25% = 9.01 AC
N. TOTAL NUMBER OF UNITS ALLOWED:	142 (35.69 AC. * 4 = 142.8)
O. TOTAL NUMBER OF UNITS PROPOSED:	130
	87 SFD
	43 SFA
P. DPZ FILE REFERENCES:	WP-10-087, F-10-065

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
C-8B	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
C-8C	CHILLUM LOAM, 6 TO 10 PERCENT SLOPES	0.15 - 0.37	B
C-8D	CROWN & EVERBROD, 10 TO 15 PERCENT SLOPES	0.28	C
F-8	FALLSTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
S-8B	SASSAPARA GENESELY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
S-8D	SASSAPARA AND CROWN SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
U-8B	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY
 * BASED UPON ESTIMATED CUTS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/6/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 9/28/12
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

PERMIT INFORMATION CHART					
SUBDIVISION NAME	SECTION / AREA	LOT / PARCEL			
DEER SPRINGS	-	PARCELS 363 & 542			
PLAT REF.	BLOCK NO.	ZONE	TAX MAP	ELECT. DIST.	CENSUS TR.
L-619 / F-551 21191	1	R-SC	50	6TH	6069.03

OWNER
 MARTIN JR & MICHAEL J. KRAESKI ET AL
 9222 OLD SCAGGSVILLE ROAD
 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
 443-367-0422

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SITE 102
 ELLICOTT CITY, MARYLAND 21042-7819
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

PRELIMINARY LAYOUT COVER SHEET

DEER SPRINGS

A SUBDIVISION OF TAX MAP 50 - PARCELS 363 AND A SUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRAESKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP: 50
 ORD: 1
 DPZ REF'S: F10-065, WP 10-087

HOWARD COUNTY, MARYLAND
 ZONED: R-SC
 PARCELS: 363 & 542

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET
 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8961

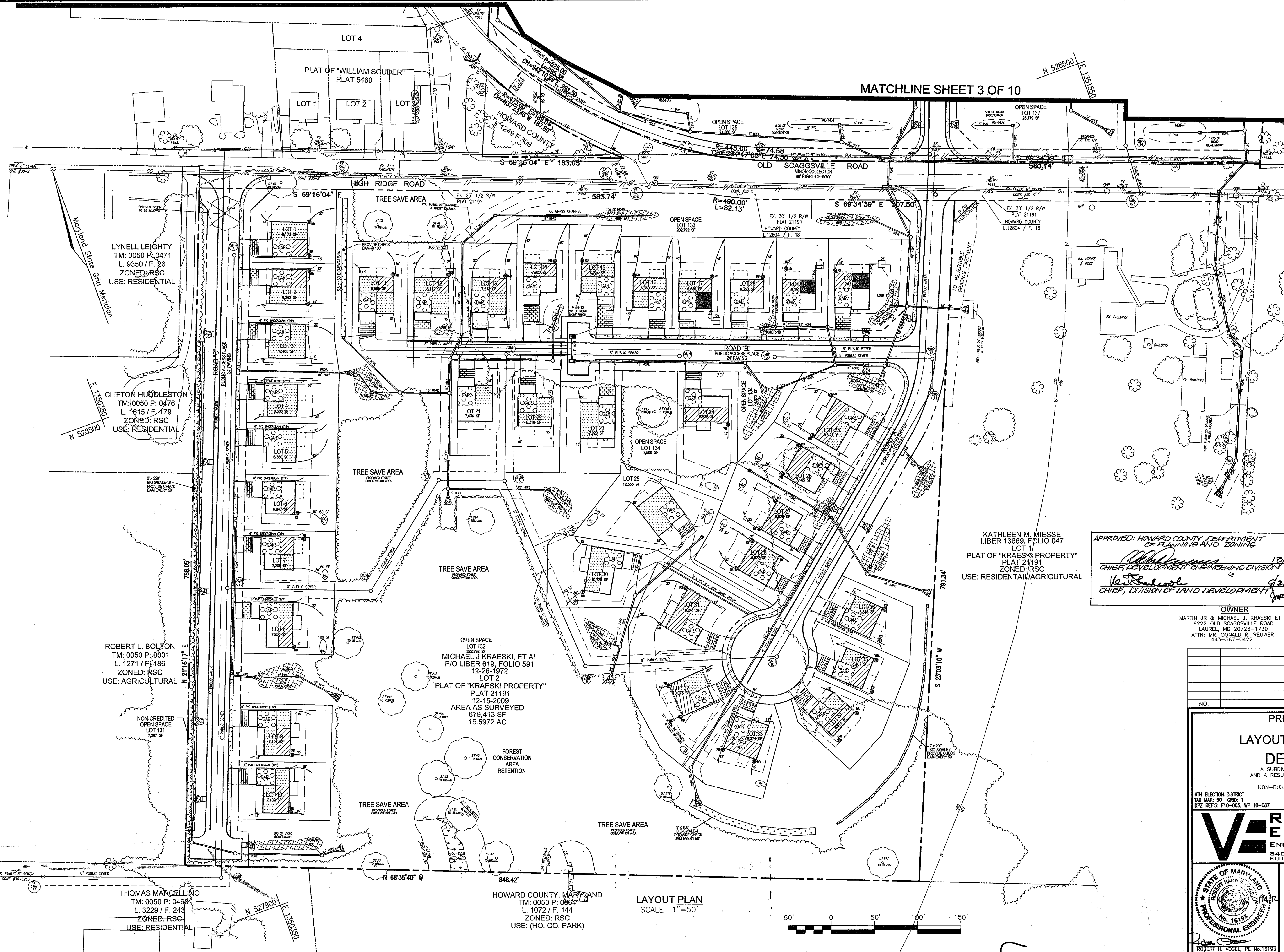
DESIGN BY: RHV / EDS
 DRAWN BY: EDS
 CHECKED BY: RHV
 DATE: SEPTEMBER 2012
 SCALE: AS SHOWN
 W.O. NO.: 11-28

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: 09-27-2013

1 SHEET OF 10

- LEGEND:**
- PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - ADJACENT PROPERTY LINE
 - EXISTING CURB AND GUTTER
 - EXISTING UTILITY POLE
 - ☀ EXISTING LIGHT POLE
 - ☐ EXISTING MAILBOX
 - ☐ EXISTING SIGN
 - EXISTING SANITARY MANHOLE
 - SS — EXISTING SANITARY LINE
 - EX — EXISTING CLEANOUT
 - F — EXISTING FIRE HYDRANT
 - W — EXISTING WATER LINE
 - EX — EXISTING TREE LINE (FIELD LOCATED)
 - EX — EXISTING TREES (FIELD LOCATED)
 - EX — EXISTING FENCE
 - EX — CENTERLINE OF EXISTING STREAM
 - PROPOSED STORMDRAIN
 - PROPOSED STORMDRAIN INLET
 - PROPOSED SIDEWALK
 - PROPOSED TREE LINE
 - PROPOSED CURB
 - PROPOSED STREET LIGHT
 - ROOFTOP DISCONNECTS TO DRYWELL
 - ROOFTOP DISCONNECTS FLOW PATH
 - ROOFTOP DISCONNECTS RAIN BARREL
 - ROOFTOP DISCONNECTS IN TO PERMEABLE SURFACE SUB BASE
 - PERMEABLE SURFACE DRIVEWAY
 - MICRO BIO RETENTION FACILITY
 - BIO SWALE
 - EXISTING SPECIMEN TREE
 - EXISTING SPECIMEN TREE TO BE REMOVED
 - MICRO-SCALE PRACTICE BIO-SWALE
 - MICRO-SCALE PRACTICE MICRO BIORETENTION / BIORETENTION
 - NON-STRUCTURAL PROP. PERMEABLE SURFACE ROAD / DRIVEWAY ROOFTOP TO PERMEABLE SURFACE SUBBASE
 - NON-STRUCTURAL ROOFTOP DISCONNECTS
 - 15' — WATER ZONE DIVIDE
 - 550 —
 - 400 —

MATCHLINE SHEET 3 OF 10



LYNELL LEIGHTY
TM: 0050 P: 0471
L: 9350 / F: 26
ZONED: RSC
USE: RESIDENTIAL

CLIFTON HUBLESTON
TM: 0050 P: 0476
L: 1615 / F: 179
ZONED: RSC
USE: RESIDENTIAL

ROBERT L. BOLTON
TM: 0050 P: 0001
L: 1271 / F: 186
ZONED: RSC
USE: AGRICULTURAL

THOMAS MARCELLINO
TM: 0050 P: 0468
L: 3229 / F: 243
ZONED: RSC
USE: RESIDENTIAL

OPEN SPACE
LOT 122
282,792 SF
MICHAEL J. KRAESKI, ET AL
P/O LIBER 619, FOLIO 591
12-26-1972
LOT 2
PLAT OF "KRAESKI PROPERTY"
PLAT 21191
12-15-2009
AREA AS SURVEYED
679,413 SF
15.5972 AC

HOWARD COUNTY, MARYLAND
TM: 0050 P: 0664
L: 1072 / F: 144
ZONED: RSC
USE: (HO. CO. PARK)

KATHLEEN M. MIESSE
LIBER 13669, FOLIO 047
LOT 1
PLAT OF "KRAESKI PROPERTY"
PLAT 21191
ZONED: RSC
USE: RESIDENTIAL/AGRICULTURAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
10/2/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION
10/2/12
CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLCOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE

PRELIMINARY LAYOUT
LAYOUT PLAN- SOUTH AREA
DEER SPRINGS
A SUBDIVISION OF TAX MAP 50 - PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
KRAESKI PROPERTY
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)
6TH ELECTION DISTRICT
TAX MAP: 50 - GRID: 1
DPZ REF'S: F10-065, WP 10-087
ZONED: R-SC
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

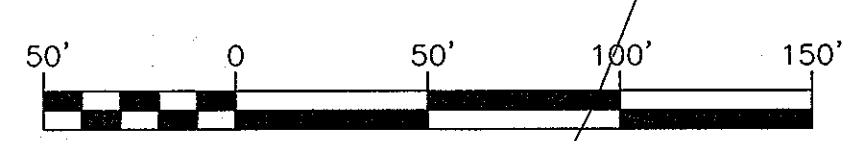
ROBERT H. VOGEL
ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961



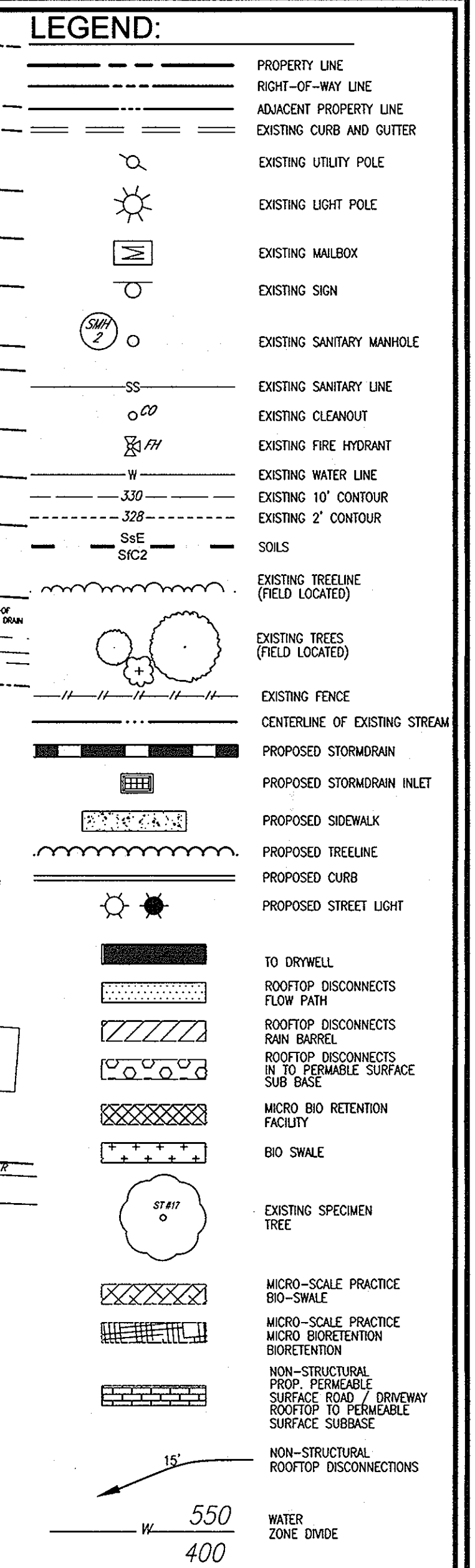
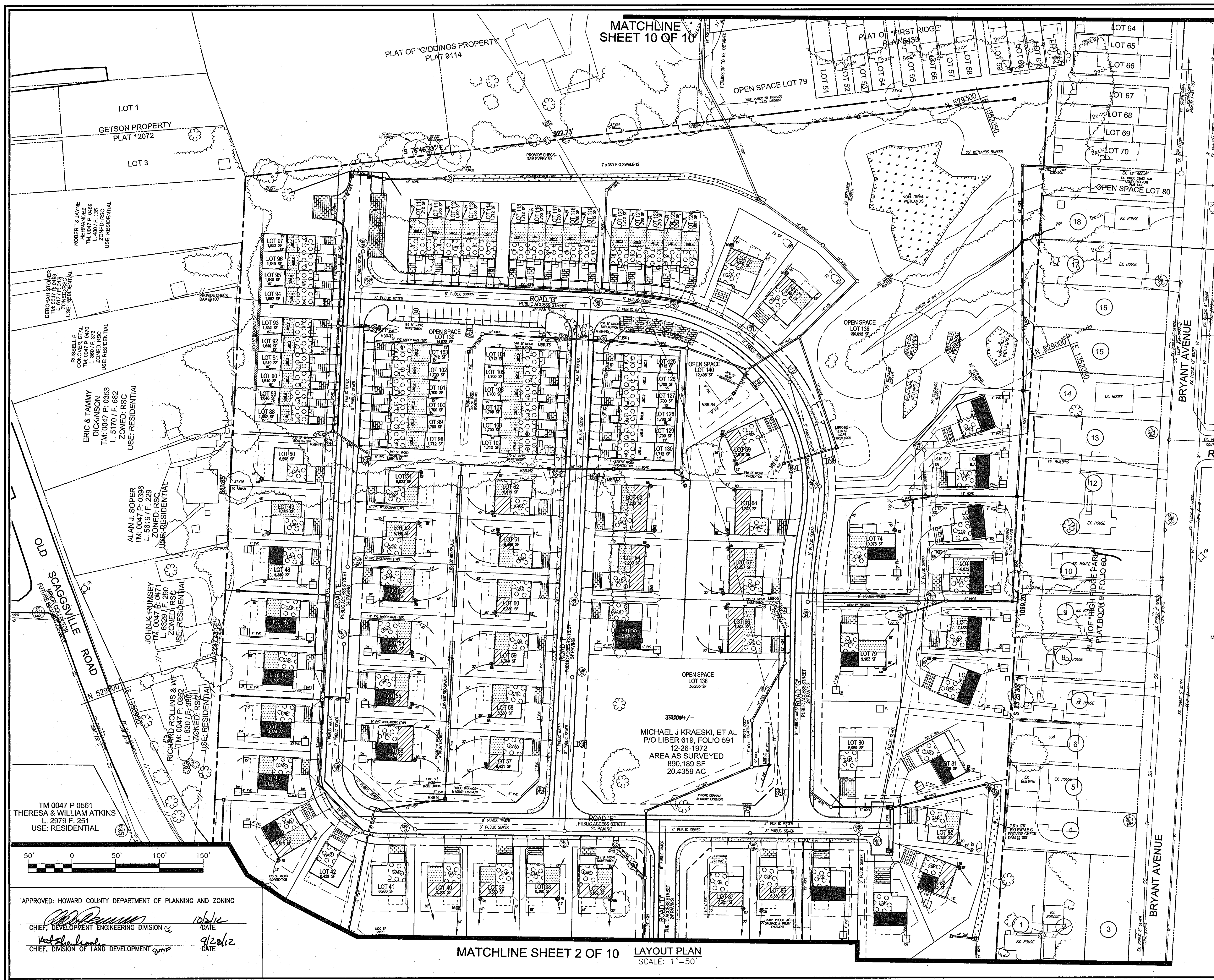
DESIGN BY: RHV / EDS.
DRAWN BY: EDS.
CHECKED BY: REV.
DATE: SEPTEMBER 2012
SCALE: AS SHOWN
W.O. NO.: 11-28

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: 09-27-2013.

2 SHEET OF 10



LAYOUT PLAN
SCALE: 1"=50'



OWNER
 MARTIN JR & MICHAEL J. KRAESKI ET AL
 9222 OLD SCAGGSVILLE ROAD
 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
 443-367-0422

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, STE 102
 ELLICOTT CITY, MARYLAND 21042-7819
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

PRELIMINARY LAYOUT
LAYOUT PLAN- NORTH AREA
DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRAESKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

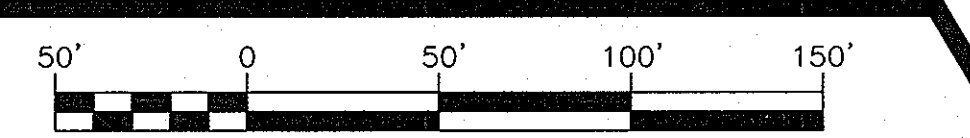
ROBERT H. VOGEL
ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

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: 09-27-2013

DESIGN BY: RHW / EDS.
 DRAWN BY: EDS.
 CHECKED BY: RHW.
 DATE: SEPTEMBER 2012
 SCALE: AS SHOWN
 W.O. NO.: 11-28.

3 SHEET OF 10

TM 0047 P 0561
 THERESA & WILLIAM ATKINS
 L. 2979 F. 251
 USE: RESIDENTIAL



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 9/28/12

[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9/28/12

MATCHLINE SHEET 2 OF 10 LAYOUT PLAN
 SCALE: 1"=50'

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
CbB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
CbC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CbD	CHILLUM & EUSBOBO, 10 TO 15 PERCENT SLOPES	0.28	C
Fo	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
SbB	SASSAFRAS GRANULET SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SbD	SASSAFRAS AND CROON SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
UcB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY
* BASED UPON ESTIMATED CUTS

MATCHLINE SHEET 6 OF 10

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY 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 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	EXISTING TREE LINE (FIELD LOCATED)
	EXISTING TREES (FIELD LOCATED)
	EXISTING FENCE
	CENTER OF EXISTING STREAM
	PROPOSED STORMDRAIN
	PROPOSED STORMDRAIN INLET
	PROPOSED SIDEWALK
	PROPOSED TREE LINE
	PROPOSED CURB
	PROPOSED STREET LIGHT
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EXISTING MODERATE SLOPES
	EXISTING STEEP SLOPES
	NON-STRUCTURAL ROOFTOP DISCONNECTIONS
	MICRO-SCALE PRACTICE BIO-SWALE
	MICRO-SCALE PRACTICE BIO-SWALE
	MICRO-SCALE PRACTICE MICRO BIO-RETENTION / BIO-RETENTION
	NON-STRUCTURAL SURFACE ROAD DRIVEWAY ROOFTOP TO PERMEABLE SURFACE SUBBASE
	550 WATER ZONE DIVIDE
	400 200 GAL RAIN BARREL
	15' ROOF LEADER DISCONNECT
	EXISTING WETLAND



LYNELL LEIGHTY
TM: 0050 P: 0471
L: 9350 / F: 26
ZONED: RSC
USE: RESIDENTIAL

CLIFTON HUBLESTON
TM: 0050 P: 0476
L: 1615 / F: 179
ZONED: RSC
USE: RESIDENTIAL

DA-S 16
0.50 AC

DA-S 17
0.55 AC

ROBERT L. BOLTON
TM: 0050 P: 0001
L: 1271 / F: 186
ZONED: RSC
USE: AGRICULTURAL

DA-S 18
0.64 AC

DA-S 6
0.33 AC
MICHAEL J. KRAESKI, ET AL
P/O LIBER 619, FOLIO 591
12-26-1972
LOT-2
PLAT OF "KRAESKI PROPERTY"
PLAT 21191
12-15-2009
AREA AS SURVEYED
679,413 SF
15,5972 AC

HOWARD COUNTY, MARYLAND
TM: 0050 P: 0664
L: 1072 / F: 144
ZONED: RSC
USE: (HO. CO. PARK)

KATHLEEN M. MIESSE
LIBER 13669, FOLIO 047
LOT-1
PLAT OF "KRAESKI PROPERTY"
PLAT 21191
ZONED: RSC
USE: RESIDENTIAL/AGRICULTURAL

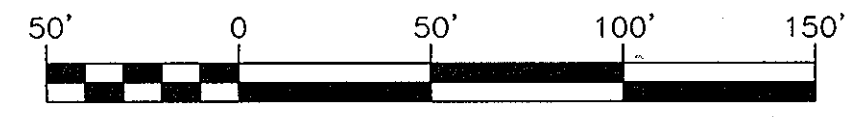
OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT

NOTE:
ESDV EQUAL TO PE = 1.55" IS PROVIDED WITHIN EACH
SUB DRAINAGE AREA
REFER TO SUMMARY ON SHEET 10

DRAINAGE AREA MAP
SCALE: 1"=50'



NO.	REVISION	DATE

PRELIMINARY LAYOUT
ESDV - DRAINAGE AREA MAP - SOUTH AREA

DEER SPRINGS
A SUBDIVISION OF TAX MAP 50 PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
KRAESKI PROPERTY
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
TAX MAP: 50 GRID: 1
DPZ REF'S: F10-065, WP 10-087

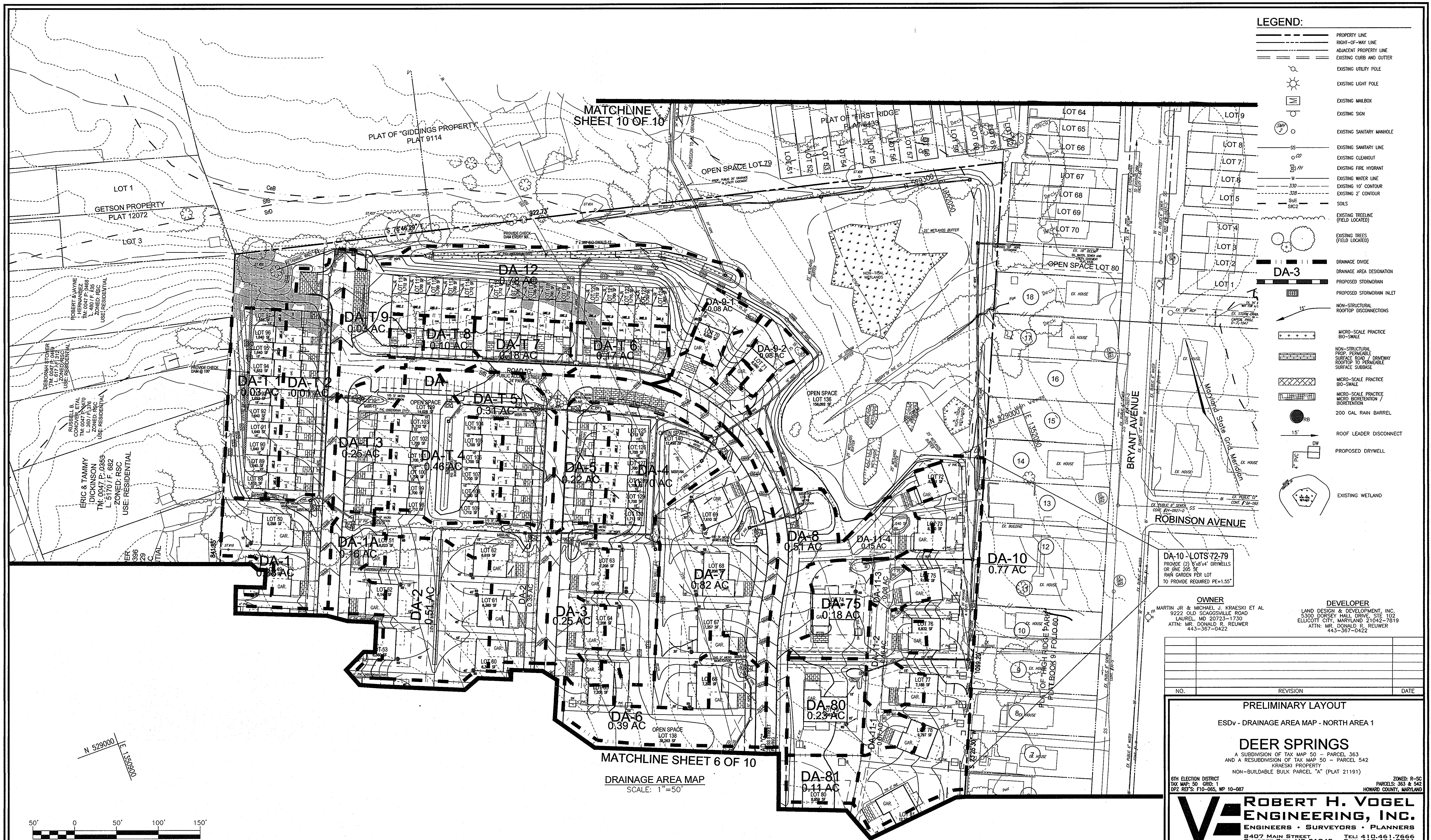
PARCELS: 363 & 542
ZONED: R-SC
HOWARD COUNTY, MARYLAND

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: 09-27-2013

DESIGN BY: RHW / EDS
DRAWN BY: EDS
CHECKED BY: RHW
DATE: SEPTEMBER 2012
SCALE: AS SHOWN
W.O. NO.: 11-28

4 SHEET OF 10



- LEGEND:**
- PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - ADJACENT PROPERTY 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 10' CONTOUR
 - EXISTING 2' CONTOUR
 - SOILS
 - EXISTING TREELINE (FIELD LOCATED)
 - EXISTING TREES (FIELD LOCATED)
 - DRAINAGE DIVIDE
 - DRAINAGE AREA DESIGNATION
 - PROPOSED STORMDRAIN
 - PROPOSED STORMDRAIN INLET
 - NON-STRUCTURAL ROOFTOP DISCONNECTIONS
 - MICRO-SCALE PRACTICE BIO-SWALE
 - NON-STRUCTURAL PERMEABLE SURFACE ROAD / DRIVEWAY ROOFTOP TO PERMEABLE SURFACE SURBASE
 - MICRO-SCALE PRACTICE BIO-SWALE
 - MICRO-SCALE PRACTICE MICRO BIORETENTION / BIORETENTION
 - 200 GAL RAIN BARREL
 - ROOF LEADER DISCONNECT
 - PROPOSED DRYWELL
 - EXISTING WETLAND

DA-10 - LOTS 72-79
 PROVIDE (2) 18"x14" DRILLWELLS OR ONE 205 SF RAIN GARDEN PER LOT TO PROVIDE REQUIRED PE=1.55"

OWNER
 MARTIN JR & MICHAEL J. KRAESKI ET AL
 9222 OLD SCAGOSVILLE ROAD
 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
 443-367-0422

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, STE 102
 ELLICOTT CITY, MARYLAND 21042-7819
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

PRELIMINARY LAYOUT
 ESDv - DRAINAGE AREA MAP - NORTH AREA 1

DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRAESKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP: 50 GRID: 1
 DPZ REF'S: F10-065, WP 10-087

ZONED: R-SC
 PARCELS: 363 & 542
 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: 09-27-2013.

DESIGN BY: RHV / EDS
 DRAWN BY: EDS
 CHECKED BY: RHV
 DATE: SEPTEMBER 2012
 SCALE: AS SHOWN
 W.O. NO.: 11-28

5 SHEET OF 10



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
C-1S	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
C-1C	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
C-1D	CROWM & EVERSBORO, 10 TO 15 PERCENT SLOPES	0.28	C
F-1	FALLINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
S-1B	SASSAPARA GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
S-1D	SASSAPARA AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
U-1B	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY
 * BASED UPON ESTIMATED CUTS

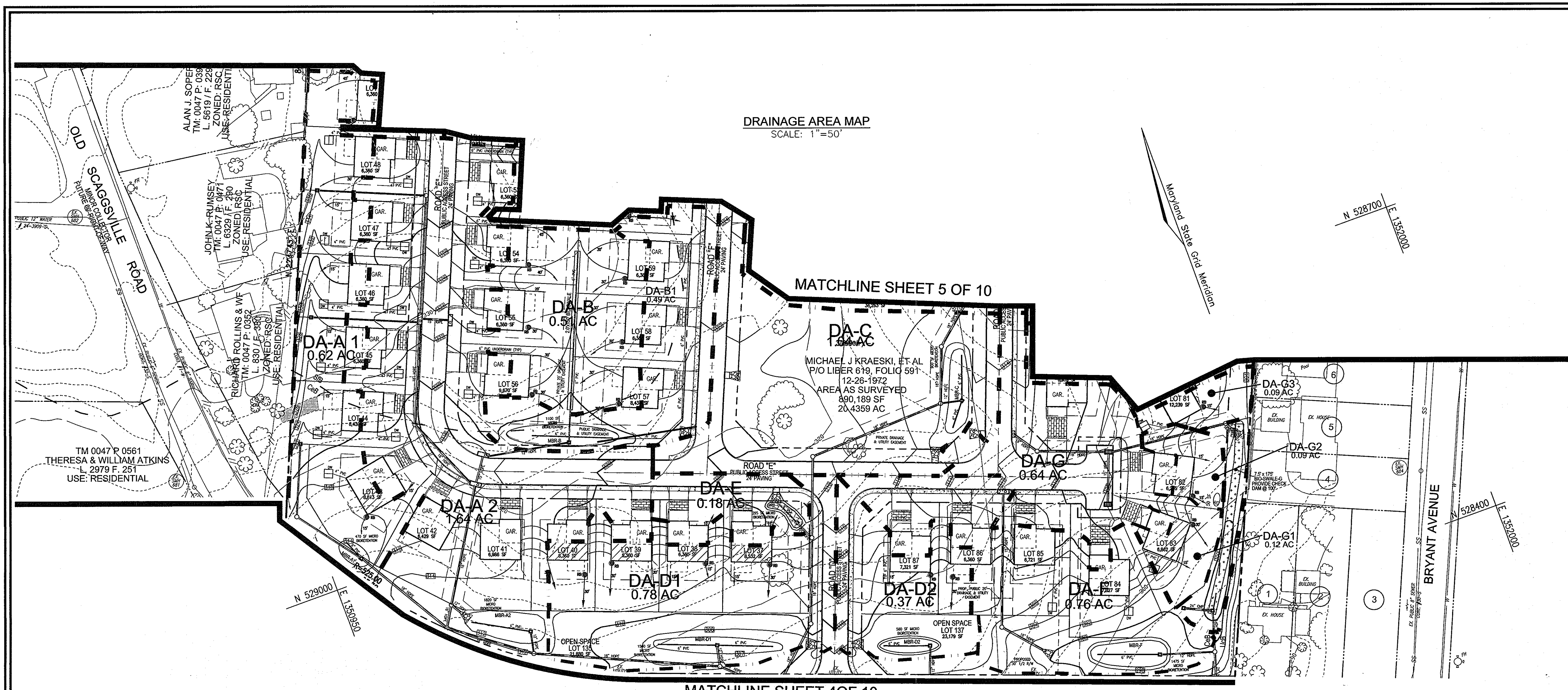
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/2/12

CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9/20/12

MATCHLINE SHEET 6 OF 10
 DRAINAGE AREA MAP
 SCALE: 1"=50'

MATCHLINE SHEET 10 OF 10



DRAINAGE AREA MAP
SCALE: 1"=50'

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY 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 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- EXISTING TRENCH (FIELD LOCATED)
- EXISTING TREES (FIELD LOCATED)
- DA-3 DRAINAGE DIVIDE
- DRAINAGE AREA DESIGNATION
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- NON-STRUCTURAL ROOFTOP DISCONNECTIONS
- MICRO-SCALE PRACTICE BIO-SWALE
- MICRO-SCALE PRACTICE BIO-SWALE
- MICRO-SCALE PRACTICE MICRO BIORETENTION / BIOTENTION
- NON-STRUCTURAL PROP. PERMEABLE SURFACE ROAD / DRIVEWAY ROOFTOP TO PERMEABLE SURFACE SUBBASE
- WATER ZONE DUNE
- 200 GAL RAIN BARREL
- ROOF LEADER DISCONNECT
- EXISTING WETLAND

TM 0047 P 0561
THERESA & WILLIAM ATKINS
L. 2979 F. 251
USE: RESIDENTIAL

ALAN J. SOPEK
TM: 0047 P. 0388
L. 8619 F. 228
ZONED: RSC
USE: RESIDENTIAL

JOHN K. RUMSEY
TM: 0047 P. 0471
L. 8329 F. 200
ZONED: RSC
USE: RESIDENTIAL

RICHARD ROLLINS & WIFE
TM: 0047 P. 0362
L. 8301 F. 380
ZONED: RSC
USE: RESIDENTIAL

MATCHLINE SHEET 5 OF 10

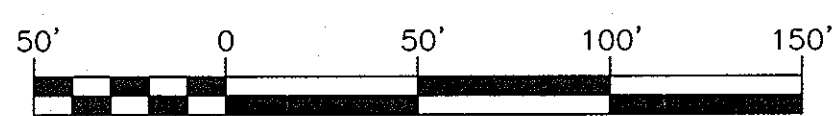
DA-C
1.04 AC
MICHAEL J. KRAESKI, ET AL
P/O LIBER 619, FOLIC 591
12-28-1972
AREA AS SURVEYED
890,189 SF
20,4359 AC

MATCHLINE SHEET 4 OF 10

OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/2/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 9/28/12
CHIEF, DIVISION OF LAND DEVELOPMENT

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
CcB	CHILLUM LOAM, 2 TO 3 PERCENT SLOPES	0.15 - 0.37	B
CcC	CHILLUM LOAM, 3 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CcD	CROOM & EYEBROOK, 10 TO 15 PERCENT SLOPES	0.28	C
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
SfB	SASSAPARAS GRAYLETT SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SfD	SASSAPARAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
UcB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: * BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY
* BASED UPON ESTIMATED CUTS

NOTE:
ESDv EQUAL TO PE = 1.55" IS PROVIDED WITHIN EACH SUB DRAINAGE AREA REFER TO SUMMARY ON SHEET 10

PRELIMINARY LAYOUT
ESDv - DRAINAGE AREA MAP - NORTH AREA 2

DEER SPRINGS
A SUBDIVISION OF TAX MAP 50 - PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
KRAESKI PROPERTY
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
TAX MAP: 50, GRID: 1
DPZ REF'S: F10-055, WP 10-087

ZONED: R-SC
PARCELS: 363 & 542
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

DESIGN BY: RHY / EDS.
DRAWN BY: EDS.
CHECKED BY: RHY.
DATE: SEPTEMBER 2012.
SCALE: AS SHOWN.
W.O. NO.: 11-28.

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: 09-27-2013.

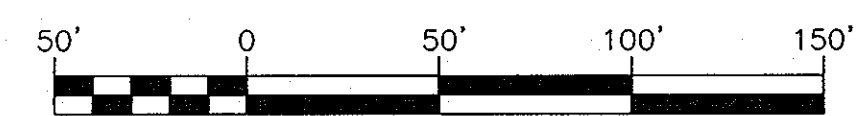
6 SHEET OF 10

GRADING PLAN
SCALE: 1"=50'

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
CdB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
CdC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CdD	CHILLUM LOAM, 10 TO 15 PERCENT SLOPES	0.28	C
Fo	FULLERTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
S1B	SASSAPARA GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
S1D	SASSAPARA AND CHILLUM SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
UcB	UPPER LOAM-CHILLUM-REDFIELD COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY
* BASED UPON ESTIMATED CUTS

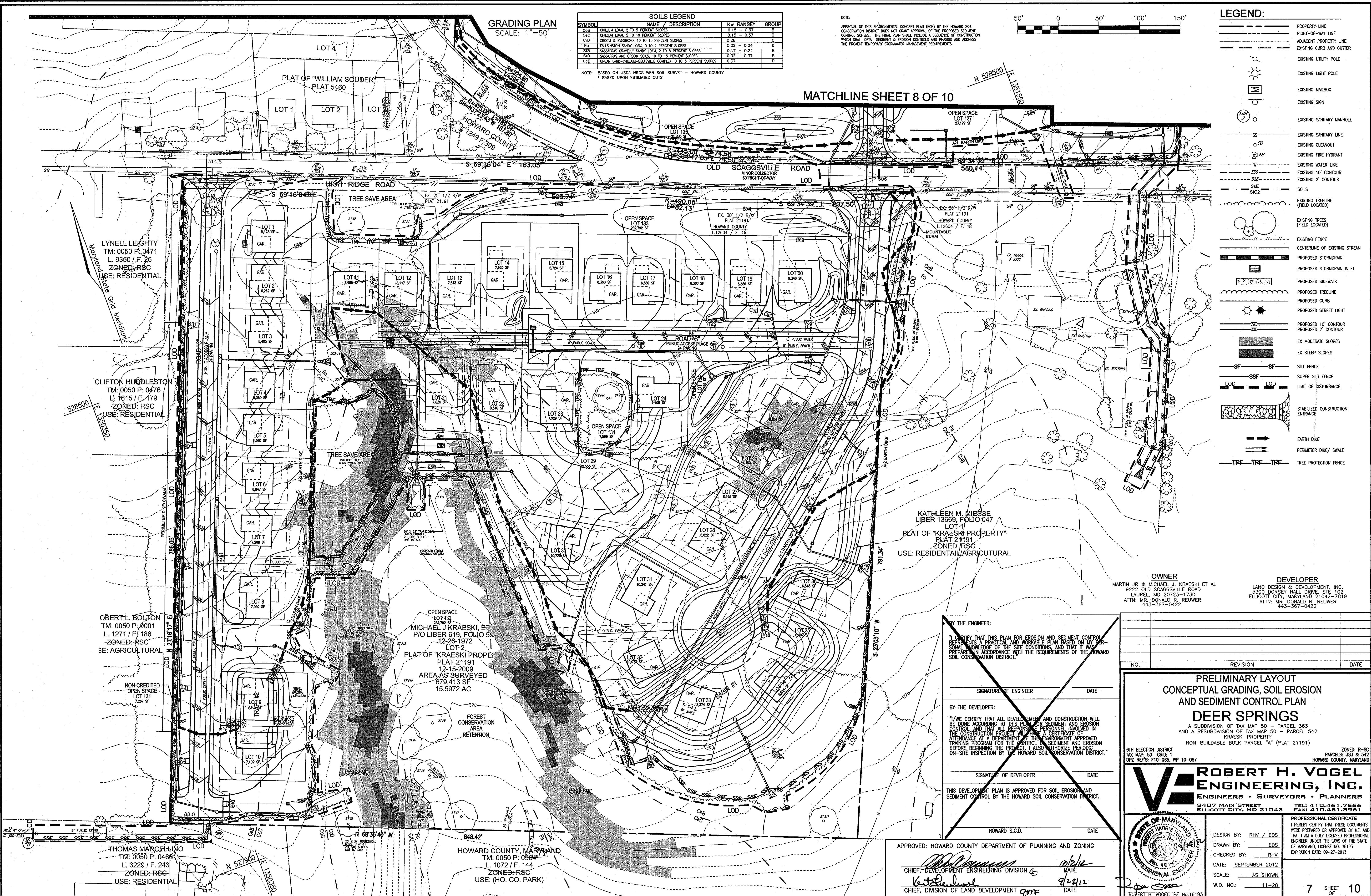
APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEDULE. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND ADDRESS THE PROJECT'S TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.



LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY 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 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	EXISTING TREE LINE (FIELD LOCATED)
	EXISTING TREES (FIELD LOCATED)
	EXISTING FENCE
	CENTERLINE OF EXISTING STREAM
	PROPOSED STORMDRAIN
	PROPOSED STORMDRAIN INLET
	PROPOSED SIDEWALK
	PROPOSED TREE LINE
	PROPOSED CURB
	PROPOSED STREET LIGHT
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EX MODERATE SLOPES
	EX STEEP SLOPES
	SILT FENCE
	SUPER SILT FENCE
	LIMIT OF DISTURBANCE
	STABILIZED CONSTRUCTION ENTRANCE
	EARTH DIKE
	PERIMETER DIKE/SHALE
	TREE PROTECTION FENCE

MATCHLINE SHEET 8 OF 10



LYNELL LEIGHTY
TM: 0050 P: 0471
L: 9350 / F: 26
ZONED: RSC
USE: RESIDENTIAL

CLIFTON HUBBLESTON
TM: 0050 P: 0476
L: 1615 / F: 179
ZONED: RSC
USE: RESIDENTIAL

OBERT L. BOLTON
TM: 0050 P: 0001
L: 1271 / F: 186
ZONED: RSC
USE: AGRICULTURAL

NON-CREDITED
OPEN SPACE
LOT 131
7,287 SF

THOMAS MARCELLINO
TM: 0050 P: 0466
L: 3229 / F: 243
ZONED: RSC
USE: RESIDENTIAL

MICHAEL J. KRAESKI, E.
P/O LIBER 819, FOLIO 58
LOT 12
PLAT OF "KRAESKI PROPERTY"
PLAT 21191
12-15-2009
AREA AS SURVEYED
679,413 SF
15,597.2 AC

HOWARD COUNTY, MARYLAND
TM: 0050 P: 0864
L: 1072 / F: 144
ZONED: RSC
USE: (HO. CO. PARK)

KATHLEEN M. MIESSE
LIBER 13869, FOLIO 047
LOT 7
PLAT OF "KRAESKI PROPERTY"
PLAT 21191
ZONED: RSC
USE: RESIDENTIAL/AGRICULTURAL

OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

BY THE ENGINEER:
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

SIGNATURE OF ENGINEER

DATE

BY THE DEVELOPER:
I/WE 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

DATE

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

HOWARD S.C.D.

DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, DIVISION OF LAND DEVELOPMENT

10/2/12
DATE

9/28/12
DATE

NO.	REVISION	DATE

**PRELIMINARY LAYOUT
CONCEPTUAL GRADING, SOIL EROSION
AND SEDIMENT CONTROL PLAN
DEER SPRINGS**

A SUBDIVISION OF TAX MAP 50 - PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
KRAESKI PROPERTY
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
TAX MAP: 50 GRID: 1
DPZ REF'S: F10-065, WP 10-087

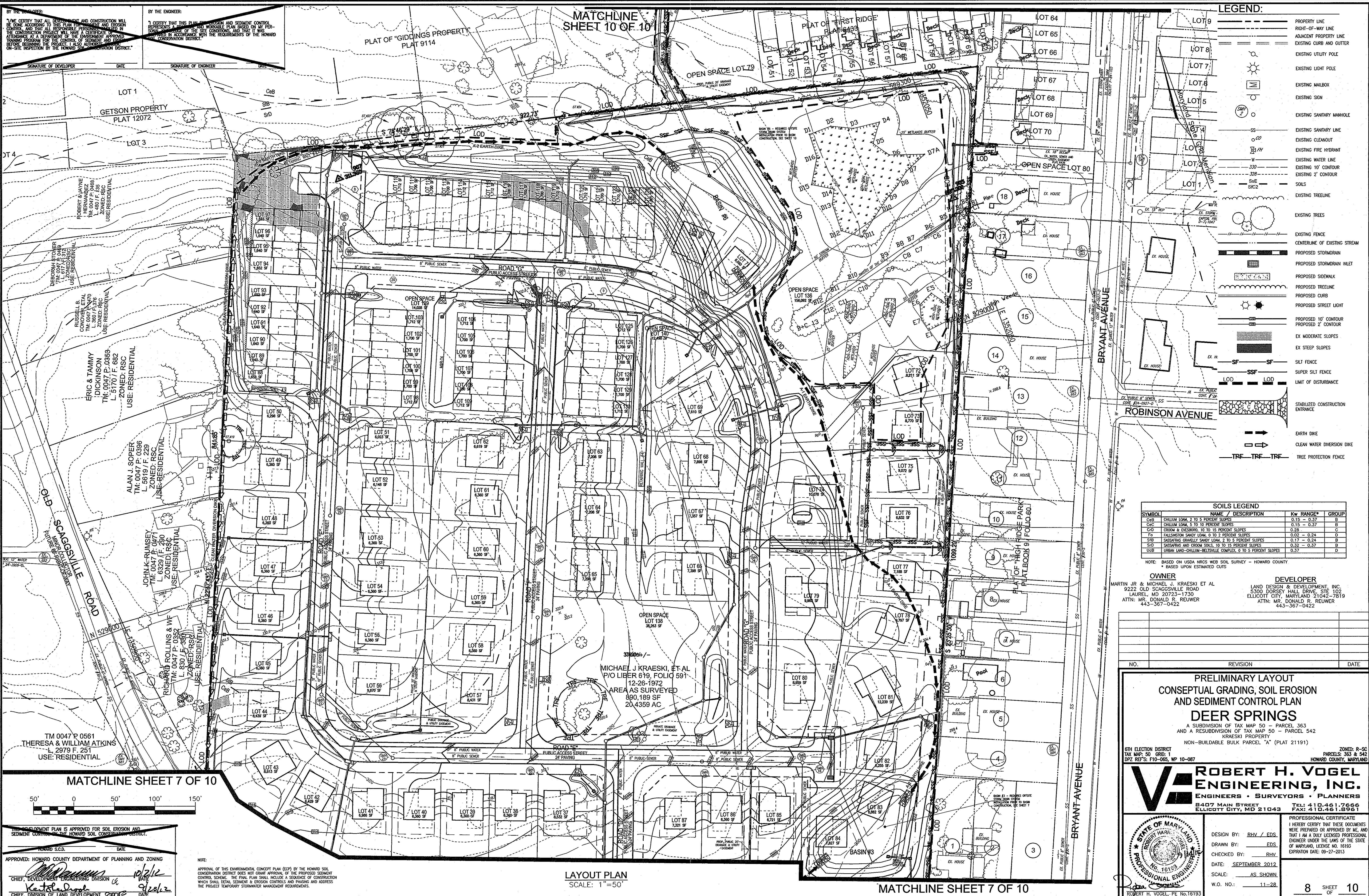
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

**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. 18195
EXPIRATION DATE: 09-27-2013

DESIGN BY: RHV / EDS
DRAWN BY: EDS
CHECKED BY: RHV
DATE: SEPTEMBER 2012
SCALE: AS SHOWN
W.O. NO.: 11-28

7 SHEET OF 10



MATCHLINE SHEET 10 OF 10

- LEGEND:**
- PROPERTY LINE
 - - - RIGHT-OF-WAY LINE
 - - - ADJACENT PROPERTY 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 10' CONTOUR
 - EXISTING 2' CONTOUR
 - SOILS
 - EXISTING TREELINE
 - ⊙ EXISTING TREES
 - EXISTING FENCE
 - CENTERLINE OF EXISTING STREAM
 - PROPOSED STORMDRAIN
 - PROPOSED STORMDRAIN INLET
 - PROPOSED SIDEWALK
 - PROPOSED TREELINE
 - PROPOSED CURB
 - PROPOSED STREET LIGHT
 - PROPOSED 10' CONTOUR
 - PROPOSED 2' CONTOUR
 - EX MODERATE SLOPES
 - EX STEEP SLOPES
 - SILT FENCE
 - SUPER SILT FENCE
 - LIMIT OF DISTURBANCE
 - STABILIZED CONSTRUCTION ENTRANCE
 - EARTH DIKE
 - CLEAN WATER DIVERSION DIKE
 - TREE PROTECTION FENCE

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE %	GROUP
C8B	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
C8C	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
C8D	CHILLUM LOAM, 10 TO 15 PERCENT SLOPES	0.28	C
F8	FALLSTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.09 - 0.24	D
S1B	SASSAPARA GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
S1D	SASSAPARA AND CROM SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
U8B	URBAN LAND-CHILLUM-BELLEVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY
* BASED UPON ESTIMATED CUTS

OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE

**PRELIMINARY LAYOUT
CONCEPTUAL GRADING, SOIL EROSION
AND SEDIMENT CONTROL PLAN
DEER SPRINGS**

A SUBDIVISION OF TAX MAP 50 - PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
KRAESKI PROPERTY
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
TAX MAP: 50 - GRID: 1
DPZ REF'S: F10-065, WP 10-087

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: 09-27-2013

**ROBERT H. VOGEL
ENGINEERING, INC.**

ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8951

DESIGN BY: RHV / EDS
DRAWN BY: EDS
CHECKED BY: RHV
DATE: SEPTEMBER 2012
SCALE: AS SHOWN
W.O. NO.: 11-28

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: 09-27-2013

8 SHEET OF 10

BY THE DEVELOPER:
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE IN ACCORDANCE WITH THE PERMITS AND CONDITIONS AND THAT I WILL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF THE CONSTRUCTION SITE AND THE SITE CONDITIONS AND THAT I WILL ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED MEETING TO REVIEW THE PROPOSED CONCEPTUAL GRADING AND SEDIMENT CONTROL PLAN AND TO ADDRESS ANY COMMENTS AND CONCERNS BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING TO CONDUCT AN ON-SITE INSPECTION BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER: _____ DATE: _____

BY THE ENGINEER:
I CERTIFY THAT THIS PLAN AND THE CONCEPTUAL GRADING AND SEDIMENT CONTROL PLAN REPRESENTS A TRUE AND ACCURATE REPRESENTATION OF THE PROPOSED CONSTRUCTION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2013.

SIGNATURE OF ENGINEER: _____ DATE: _____

LOT 1
GETSON PROPERTY
PLAT 12072

LOT 2

LOT 3

LOT 4

ROBERT & JAYNE
HERNANDEZ
TM: 0047 P. 0468
L: 5170 / F: 682
ZONED: RSC
USE: RESIDENTIAL

DEBORAH TOYNER
TM: 0047 P. 0468
L: 5170 / F: 682
ZONED: RSC
USE: RESIDENTIAL

RUSSELL B.
CONOVER ET AL
TM: 0047 P. 0468
L: 5170 / F: 682
ZONED: RSC
USE: RESIDENTIAL

ERIC & TAMMY
DICKINSON
TM: 0047 P. 0359
L: 5170 / F: 682
ZONED: RSC
USE: RESIDENTIAL

ALAN J. SOPER
TM: 0047 P. 0396
L: 5619 / F: 229
ZONED: RSC
USE: RESIDENTIAL

JOHN K. RUMSEY
TM: 0047 P. 0477
L: 6329 / F: 280
ZONED: RSC
USE: RESIDENTIAL

RICHARD ROLLINS & WIFE
TM: 0047 P. 0352
L: 830 / F: 300
ZONED: RSC
USE: RESIDENTIAL

TM 0047 P 0561
THERESA & WILLIAM ATKINS
L: 2979 F: 251
USE: RESIDENTIAL

LOT 5
LOT 6
LOT 7
LOT 8
LOT 9

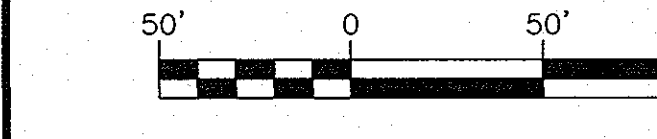
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
LOT 15
LOT 16
LOT 17
LOT 18
LOT 19
LOT 20
LOT 21
LOT 22
LOT 23
LOT 24
LOT 25
LOT 26
LOT 27
LOT 28
LOT 29
LOT 30
LOT 31
LOT 32
LOT 33
LOT 34
LOT 35
LOT 36
LOT 37
LOT 38
LOT 39
LOT 40
LOT 41
LOT 42
LOT 43
LOT 44
LOT 45
LOT 46
LOT 47
LOT 48
LOT 49
LOT 50
LOT 51
LOT 52
LOT 53
LOT 54
LOT 55
LOT 56
LOT 57
LOT 58
LOT 59
LOT 60
LOT 61
LOT 62
LOT 63
LOT 64
LOT 65
LOT 66
LOT 67
LOT 68
LOT 69
LOT 70
LOT 71
LOT 72
LOT 73
LOT 74
LOT 75
LOT 76
LOT 77
LOT 78
LOT 79
LOT 80
LOT 81



LAYOUT PLAN
SCALE: 1"=50'

MATCHLINE SHEET 7 OF 10

MATCHLINE SHEET 7 OF 10



APPROVAL OF THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

APPROVED: _____ DATE: _____

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, DIVISION OF LAND DEVELOPMENT

NOTE:
APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DOES NOT CONSTITUTE AN APPROVAL OF THE PROPOSED CONSTRUCTION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2013.

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 USED OR PLACED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERNAUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
 * SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (FORM SOIL TEXTURAL 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 (30% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
 * CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
 * 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 TEXTURAL 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 BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL, WHEN POSSIBLE. USE EXCAVATION RIGS TO REMOVE ORIGINAL SOIL, IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE 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 AVOIDED 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 REFRACATURE 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 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDING 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 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BIORETENTION FACILITY TO SUPPLY SAND AND HEAVY GRADE. BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH 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.

ROOTS 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 PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, DEBRIS, OR AT A MINIMUM, IMPROVES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA 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 F758, TYPE PS 28, OR ASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED. 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 44) 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 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
- * A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN THE 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 1000 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 MICROBIORETENTION 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. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME 4, TABLE A.4.1 AND 2.
- 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 DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEPENDENT STAKES AND WIRES.
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
- SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

1. PERVIOUS CONCRETE SPECIFICATIONS

DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPROVALS MAY BE OBTAINED USING OTHER STANDARD PAVEMENT PROCEDURES (E.G., MASTNA, ACI 308.9R, ACI 308.9) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.

MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADMIXTURES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TENSILE STRENGTH) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, PERMEABILITY) CAN BE DETERMINED.

AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4" IN. TO NO. 4), NO. 8 (3/8" IN. TO NO. 20) AND NO. 10 (NO. 20 TO NO. 40). SINGLE-SIZED AGGREGATE (UP TO 1" INCH) MAY ALSO BE USED. WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET AQA 304 AS A GENERAL RULE. POTABLE WATER SHOULD BE USED ALONG RECYCLED CONCRECTION PRODUCTION WATER MEETING ASTM C 94 OR ASHTO M 157 MAY ALSO BE USED.

ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (FOR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.

BASE COURSE - THE BASE COURSE SHALL BE ASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).

2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)

PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3" IN. OR 4" IN. THICK, AND MEET ASTM C 938 OR CSA 2623.2 REQUIREMENTS. APPLICATIONS SHOULD ALLOW 20% OR MORE (VOID PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND UNDERDRAINS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.

INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.

3. REINFORCED TURF

REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.

N-1. DISCONNECTION OF ROOFTOP RUNOFF

CONSTRUCTION CRITERIA:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:

- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF.
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARPING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

INSPECTION:

A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

APPENDIX B.4. Construction Specifications for Environmental Site Design Practices

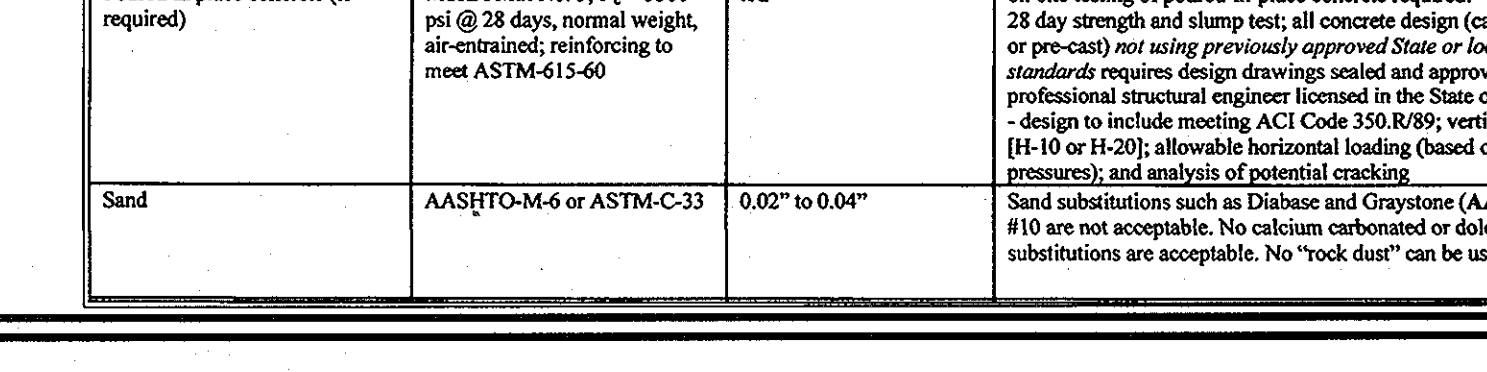
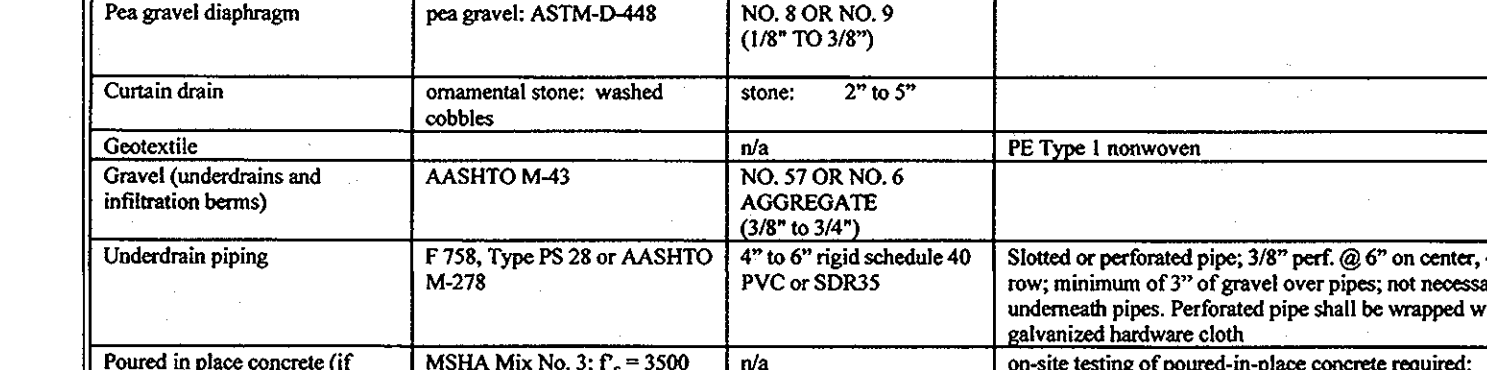
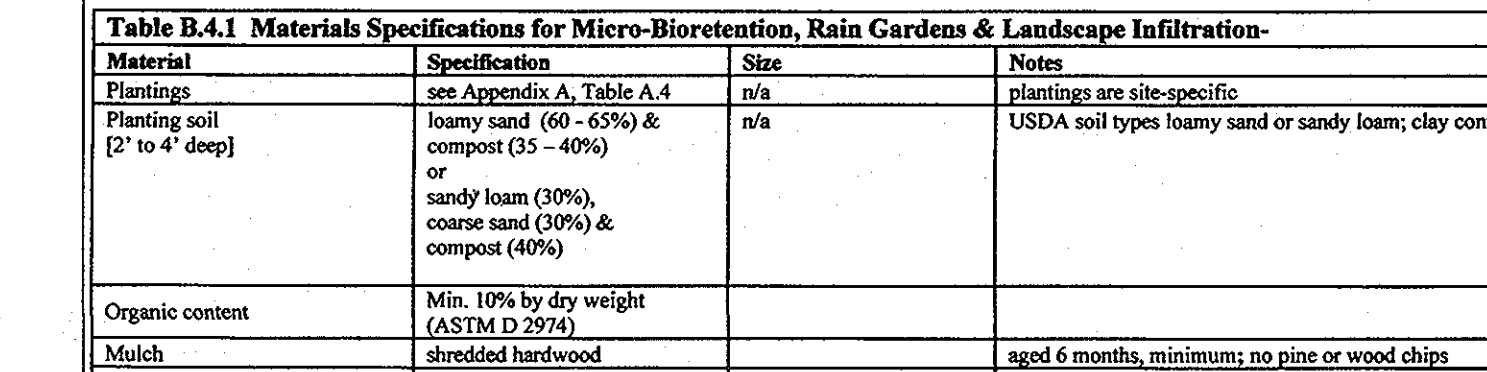
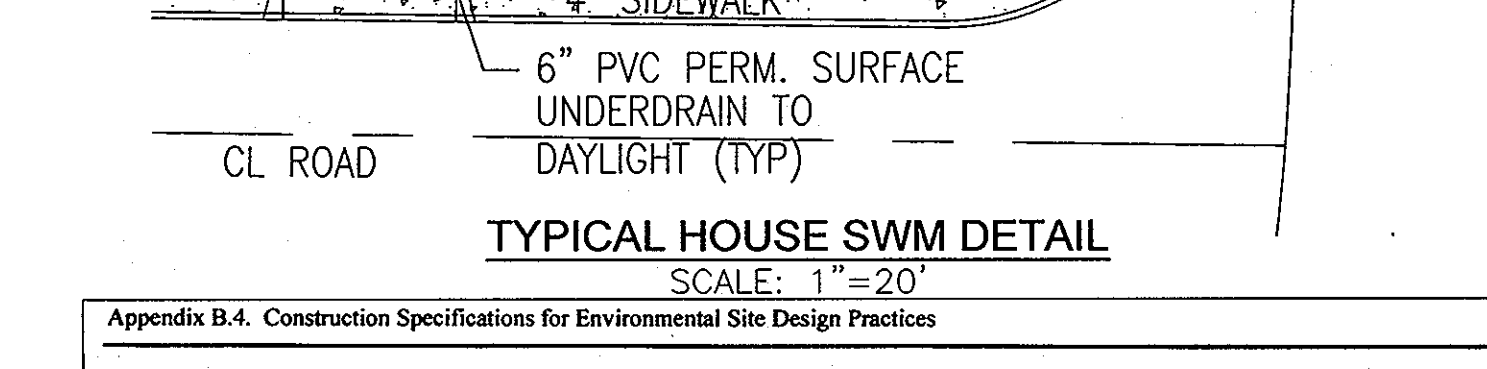
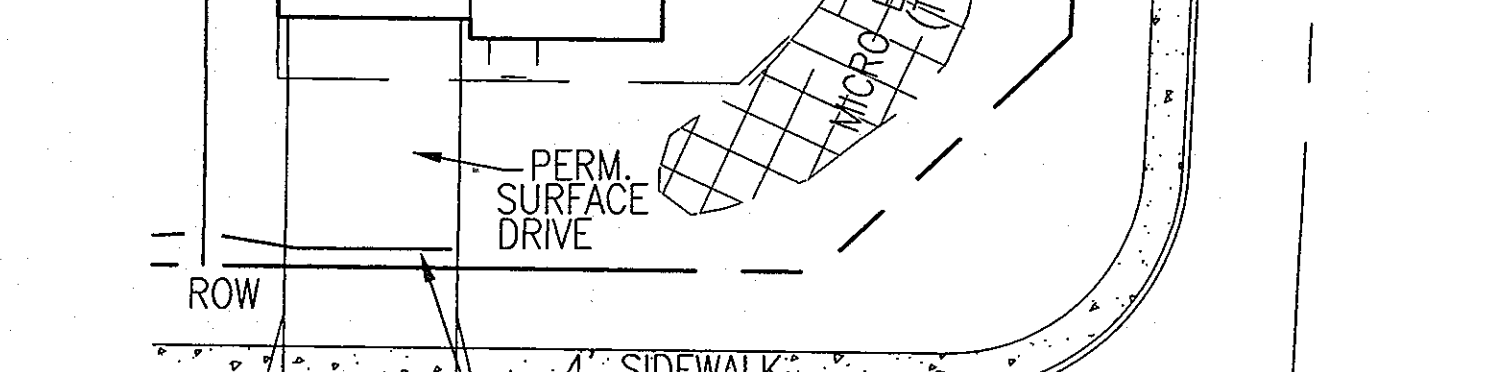
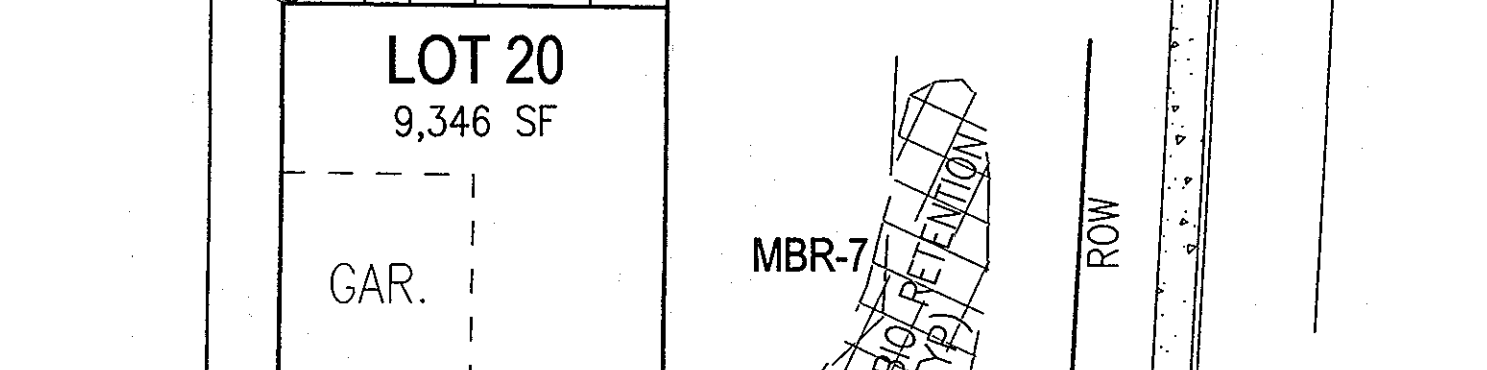
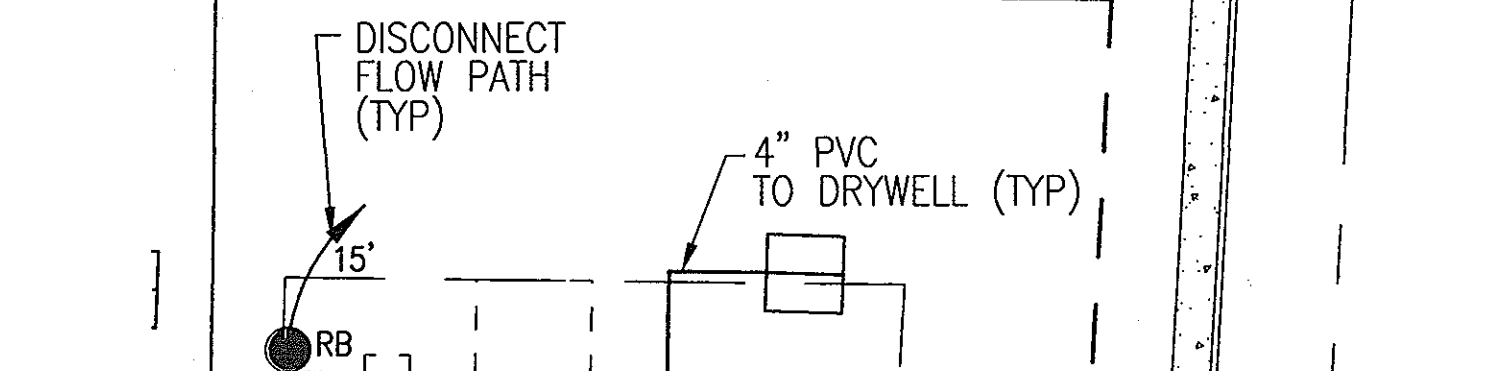
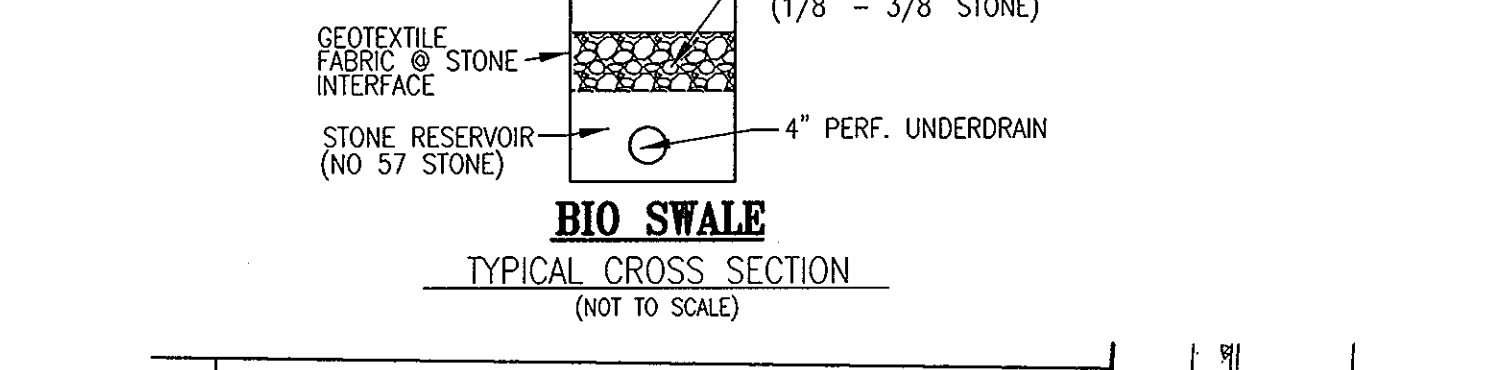
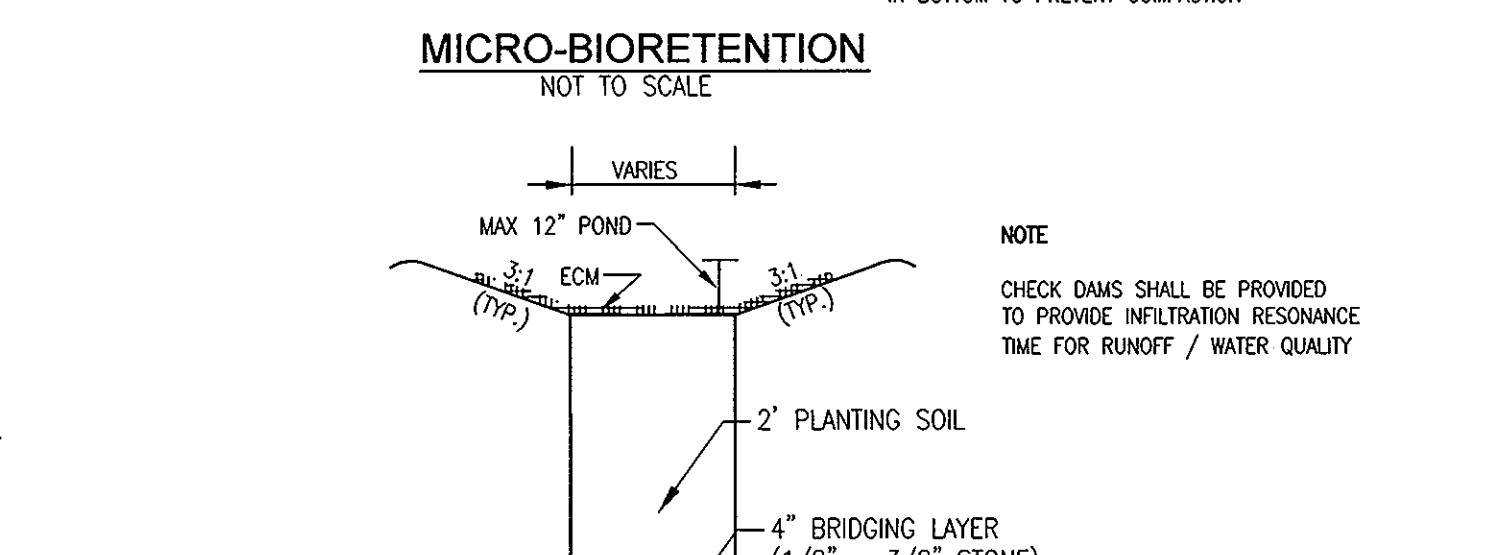
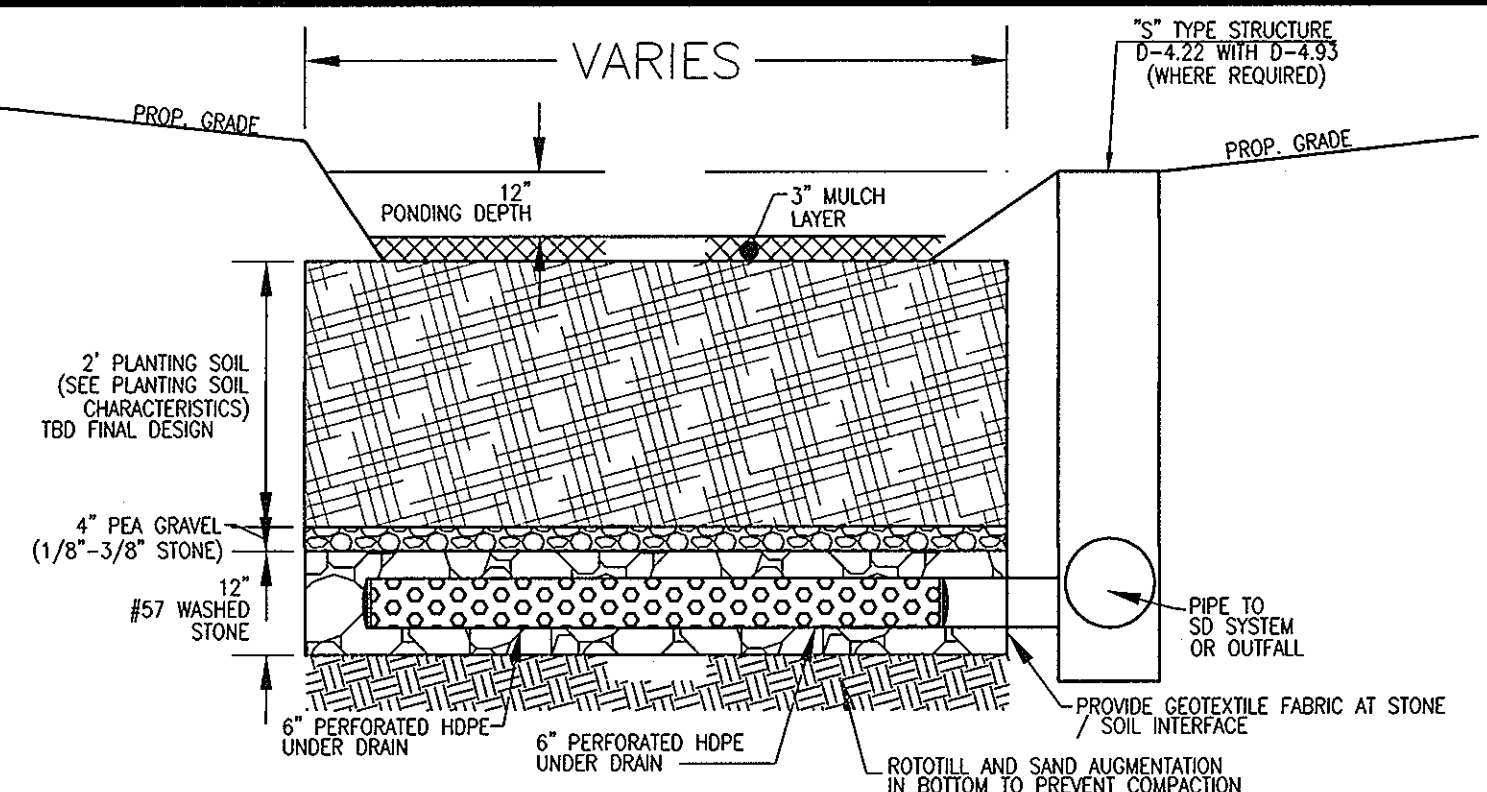
Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration-

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (2" to 4" deep)	loamy sand (60-65%) & compost (35-40%) or sandy loam (30%), coarse sand (50%) & 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 diaphragm	pea gravel: ASTM-D-448	4" NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Castelle	AASHTO M-43	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	F 758, Type PS 28 or AASHTO M-378	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping		4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipes; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 2" 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)	MESH: Min No. 3; F _c = 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 permeability) and analysis of potential cracking
Sand	AASHTO M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Gypsstone (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 *[Signature]* DATE *10/26/12*

CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* DATE *9/28/12*



BUSHMAN

BRT205 Round Tank

NEW 205 Gallon Capacity

The new BRT205 Round Tank from Bushman is designed for above ground installation against a wall, on the ground or on a stand or virtually any other location on your property. This tank has 205 US Gallons (775 liters) capacity and is available in several popular colors with UV stabilizers to avoid color fading. The BRT205 can be ordered as a basic tank or with additional package accessories.

Features & Benefits:

- Water capacity of over 200 gallons each barrel
- High quality reinforced polyethylene construction assures maximum strength
- One-piece construction and horizontal ribs around the tank provide added wall strength
- Tank includes with mosquito screen and cover and 90-degree elbow
- Overflow assembly provided with mosquito screen and 90-degree elbow
- Tank opening are pre-installed for easy installation
- Includes 5 Year Warranty

EASY STEPS TO ORDER:

1. Choose Tank Configuration
2. BRT - Round Tank
3. Capacity (US Gallons)
4. Color
5. Inlet/Outlet
6. Mosquito Screen
7. Mosquito Filter
8. Inlet/Outlet

Package:

- P1 - Basic Tank System, Package 1
- P2 - Premium System, Package 2
- P3 - Deluxe System (includes Mosquito Filter and Tank System Package Inlet/Outlet)

Example: BRT205C2P2 - BRT205 tank, 205 US Gallons capacity, Forest Green, Premium Package.

Use Annual table will vary from the example above.

BUSHMAN

Canadian Bushman, Canada: 2125 Dundas Street East, Unit 7, Mississauga, Ontario L4X 1Y2 Tel: 905.897.8322 Fax: 905.566.8282 www.bushmanproducts.com

American Bushman, USA: 25401 Harbor Blvd., P.O. Box 970261, Newark, CA 94739-0261 Tel: 866.904.6648 Fax: 951.298.6123 www.bushmanusa.com

BUSHMAN BRT205 (205 GALLON) RAIN HARVESTING SYSTEM OR EQUIVALENT RAIN BARREL DETAIL

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAINWATER HARVESTING (M-1)

- THE OWNER SHALL EMPTY BARRELS ON A MONTHLY BASIS AND CLEAN BARREL WITH A HOSE.
- THE OWNER SHALL VERIFY INTEGRITY OF LEAF SCREENS, GUTTERS, DOWNSPOUTS, SPIGOTS, AND MOSQUITO SCREENS, AND CLEAN AND REMOVE ANY DEBRIS.
- THE OWNER SHALL REPLACE DAMAGED COMPONENTS AS NEEDED.
- THE OWNER SHALL ALLOW THE BARREL TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.

A-2. PERMEABLE PAVEMENTS

CONSTRUCTION CRITERIA:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT:

- EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIRECTED AROUND PROPOSED PAVEMENT LOCATIONS.
- SOIL COMPACTION: SUB SOILS SHALL NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACKED EQUIPMENT TO MINIMIZE COMPACTION. EXCAVATED MATERIALS SHOULD BE PLACED IN A CONTAINED AREA.
- DISTRIBUTION SYSTEMS: UNDERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B.4). THE UPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION. ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED FLAT ALONG THE BED BOTTOM.
- SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

INSPECTION:

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

- DURING EXCAVATION TO SUB GRADE
- DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S).
- DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
- DURING PLACEMENT OF THE SURFACE MATERIAL.
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE CRITERIA:

THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:

- PAVEMENTS SHOULD BE USED ONLY WHERE REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENTS SHOULD CLEARLY SPECIFY HOW TO CONDUCT ROUTINE TASKS TO ENSURE LONG-TERM PERFORMANCE.
- PAVEMENT SURFACES SHOULD BE SHEPT AND WAXED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT, WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
- TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOSING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
- DECKERS SHOULD BE USED IN MODERATION. WHEN USED, DECKERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:

- THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT, WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
- THE OWNER SHALL USE DECKERS IN MODERATION. DECKERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

WEIR OUTLET MICRO-BIORETENTION/RAINGARDEN

TYPICAL SPILLWAY PROFILE NOT TO SCALE

TYPICAL SPILLWAY SECTION NOT TO SCALE

PERMEABLE SURFACE TYPICAL SECTION NOT TO SCALE

ALL PERMEABLE CONCRETE THICKNESS, MIX AND SUB-BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER ON SITE.

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
C&B	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
ChC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
C10	CLAY & SILT, 10 TO 15 PERCENT SLOPES	0.28	C
F0	FALLSUNN SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
S10	SASSAPARA GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
S10	SASSAPARA AND CROWN SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
U0	USURN LAND-CELLULAR-HELVETIC CONCRETE, 0 TO 5 PERCENT SLOPES	0.37	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY * BASED UPON ESTIMATED CUTS

PERMEABLE CONCRETE DRIVEWAY - 5% OR LESS

PERMEABLE CONCRETE DRIVEWAY - 5% OR LESS

PERMEABLE CONCRETE DRIVEWAY

PERFORM 2" OVER OVERDRAIN PIPE

OVERDRAIN 2" MIN. PERFORATED OR SLOTTED WITHIN SUBBASE

UNDERDRAIN 3" MIN. SLOPED TO OUTLET PERFORATED OR SLOTTED WITHIN SUBBASE

REQUIRED 12" ASTM C 33 3/4" TO 2" STONE SUBBASE

ADDITIONAL 12" ASTM C 33 3/4" TO 2" STONE

POSSIBLE ROOFTOP DISCONNECT STORAGE STONE RESERVOIR

REQUIRED 12" ASTM C 33 3/4" TO 2" STONE

NOTE: 1. PAVEMENT CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER
 2. UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DRAIN TO THE CURB UP TO A BIO-RETENTION FACILITY OR TO THE REAR OF THE LOT
 3. OVERDRAIN SHALL COMBINE WITH UNDERDRAIN OR DAYLIGHT AS DETAILED FOR UNDERDRAIN, SEE NOTE 2.

OWNER

MARTIN JR & MICHAEL J. KRAESKI ET AL
 9222 OLD SCAGSVILLE ROAD
 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
 443-367-0422

DEVELOPER

LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, STE 102
 ELLICOTT CITY, MARYLAND 21042-7819
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

PRELIMINARY LAYOUT

STORMWATER MANAGEMENT NOTES AND DETAILS

DEER SPRINGS

A SUBDIVISION OF TAX MAP 50 - PARCEL 363 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542

KRAESKI PROPERTY

NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP: 50
 GRID: 1
 DPZ REF'S: F10-065, WP 10-87

ZONED: R-30
 PARCEL: 363
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.

ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DEER SPRINGS - ENVIRONMENTAL CONCEPT PLAN ESDv COMPUTATIONS

Site Computations: $R_v = 0.2004$
 $A = 36.03$ Acres $ESDv = 58871$ cuft
 $P = 1.55$ inches

$R = 0.05 \times 0.0001$
 $V_{min} = 1.0 \times A / 12$
 $V_{max} = 2.6 \times A / 12$

DA #	% IMPERV	Rv	DA (AC)	MINIMUM VOLUME (SF)	MAXIMUM VOLUME (SF)	1.55" VOLUME PROVIDED* (SF)	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
NORTH AREA #1 - Pe = 1.55" Provided										
1	19.67	0.2270	22215	0.35	420	1093	651	403		*Accounts for 75% Pending Volume, See Computations
2A	47.09	0.4778	15285	0.35	603	1569	935	595		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
3	80.79	0.8087	10720	0.35	890	2278	1389	893		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
4	33.82	0.3543	30720	0.35	387	1000	628	403		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
5	48.40	0.4866	9430	0.35	328	830	511	328		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
6	28.08	0.2808	10990	0.35	420	1100	682	420		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
7	33.54	0.3359	30480	0.35	387	1050	658	420		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
8	57.23	0.5651	20200	0.35	308	800	507	328		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
9-1	27.77	0.2799	3565	0.08	89	232	138	89		RAIN GARDENS
9-2	27.77	0.2799	3565	0.08	89	232	138	89		RAIN GARDENS
10	33.39	0.3335	19975	0.46	553	1439	893	570		NON-STR. ALT SURFACE & MICRO-BIO RETENTION
11	66.33	0.6669	3330	0.31	372	977	603	390		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
NORTH AREA #1 - MIN Pe = 1.00" Provided (Underdrain / Outfall Flows Toward Subarea 12)										
1	38.79	0.3991	16660	0.38	454	1141	699	442		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1A	19.67	0.1967	22620	0.35	286	750	477	308		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1B	71.95	0.7156	17700	0.41	1056	2744	1636	1060		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1C	70.41	0.6917	10900	0.25	621	1615	963	621		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1D	73.02	0.7288	4700	0.31	379	984	617	403		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1E	73.36	0.7302	7660	0.18	463	1179	703	473		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1F	78.50	0.7802	4360	0.10	276	718	428	284		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1G	78.53	0.7788	2075	0.05	137	358	199	129		ALT SURFACE, MICROSCALE PRACT & MICRO-BIO RETENTION
1H	32.45	0.3240	34145	0.78	973	2531	1559	1000		NON-STRUCTURAL ALT SURFACE & BIO SWALE
NORTH AREA #1 - REQUIRED Pe = 1.55" Provided (Underdrains / Outfall Flows Freely)										
1	28.94	0.3104	14515	0.33	375	976	582	405		NON-STRUCTURAL & BIO SWALE
LOT 74	42.65	0.4338	7890	0.18	285	742	442	285		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
LOT 75	33.48	0.3513	10920	0.23	294	785	456	305		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
LOT 76	34.67	0.3500	4700	0.11	204	552	309	205		MICROSCALE PRACTICES (DRYWELLS OR RAIN GARDENS)
10	18.36	0.2152	33495	0.37	601	1562	931	601		MICROSCALE PRACTICES (DRYWELLS OR RAIN GARDENS)
11-1	55.63	0.5506	1110	0.07	143	371	221	143		MICROSCALE PRACTICES
11-2	44.29	0.4386	2075	0.05	107	280	168	107		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
11-3	48.64	0.4878	3310	0.08	135	350	209	135		MICROSCALE PRACTICES
11-4	64.59	0.6313	6650	0.15	350	910	542	350		MICROSCALE PRACTICES
NORTH AREA #2 - REQUIRED Pe = 1.55" Provided (Underdrains / Outfall Flows Freely)										
A-1	37.77	0.2099	27100	0.62	474	1233	735	485		REAR YARD DISCONNECTS, DRY WELLS & MICRO BIORETENTION
A-2	50.23	0.3011	7125	1.84	204	759	465	303		DRY WELLS ALT SURFACE & MICRO BIORETENTION
B	21.75	0.2458	22113	0.51	453	1179	703	485		REAR YARD DISCONNECTS & MICRO SCALE PRACTICES
B-1	35.85	0.3726	23445	0.49	663	1723	1027	663		REAR YARD DISCONNECTS, ALT SURFACE, MICRO SCALE PRACTICES
C	23.43	0.2347	4290	1.04	146	399	233	150		ALT SURFACE, MICROSCALE PRACTICES
D-1	15.45	0.2251	33875	0.78	635	1652	955	602		REAR YARD DISCONNECTS & MICRO SCALE PRACTICES
D-2	28.93	0.3104	16250	0.37	420	1093	651	420		REAR YARD DISCONNECTS & MICRO SCALE PRACTICES
E	46.50	0.4667	7900	0.07	143	371	221	143		ALT SURFACE, MICROSCALE PRACTICES
F	26.61	0.2895	13095	0.76	798	2076	1230	808		ALT SURFACE, MICRO SCALE PRACTICES
G	56.20	0.5558	28050	0.64	1301	3388	2017	1278		ALT SURFACE, MICRO SCALE PRACTICES
G-1	11.30	0.1161	4290	0.05	107	280	168	107		ALT SURFACE, MICROSCALE PRACTICES
G-2	10.38	0.1435	3790	0.09	45	117	70	45		ALT SURFACE, MICRO SCALE PRACTICES
G-3	14.03	0.1762	3850	0.09	57	147	88	57		ALT SURFACE, MICRO SCALE PRACTICES
NORTH TOTALS										
% IMPERV	Rv	DA	DA	MINIMUM VOLUME (SF)	MAXIMUM VOLUME (SF)	1.55" VOLUME PROVIDED* (SF)	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
35.1	0.3947	721183	16.56	23723	63881	38771	40546	27846.75	6.34	10.21

DEER SPRINGS - ENVIRONMENTAL CONCEPT PLAN ESDv COMPUTATIONS

Site Computations: $R_v = 0.2004$
 $A = 36.03$ Acres $ESDv = 58871$ cuft
 $P = 1.55$ inches

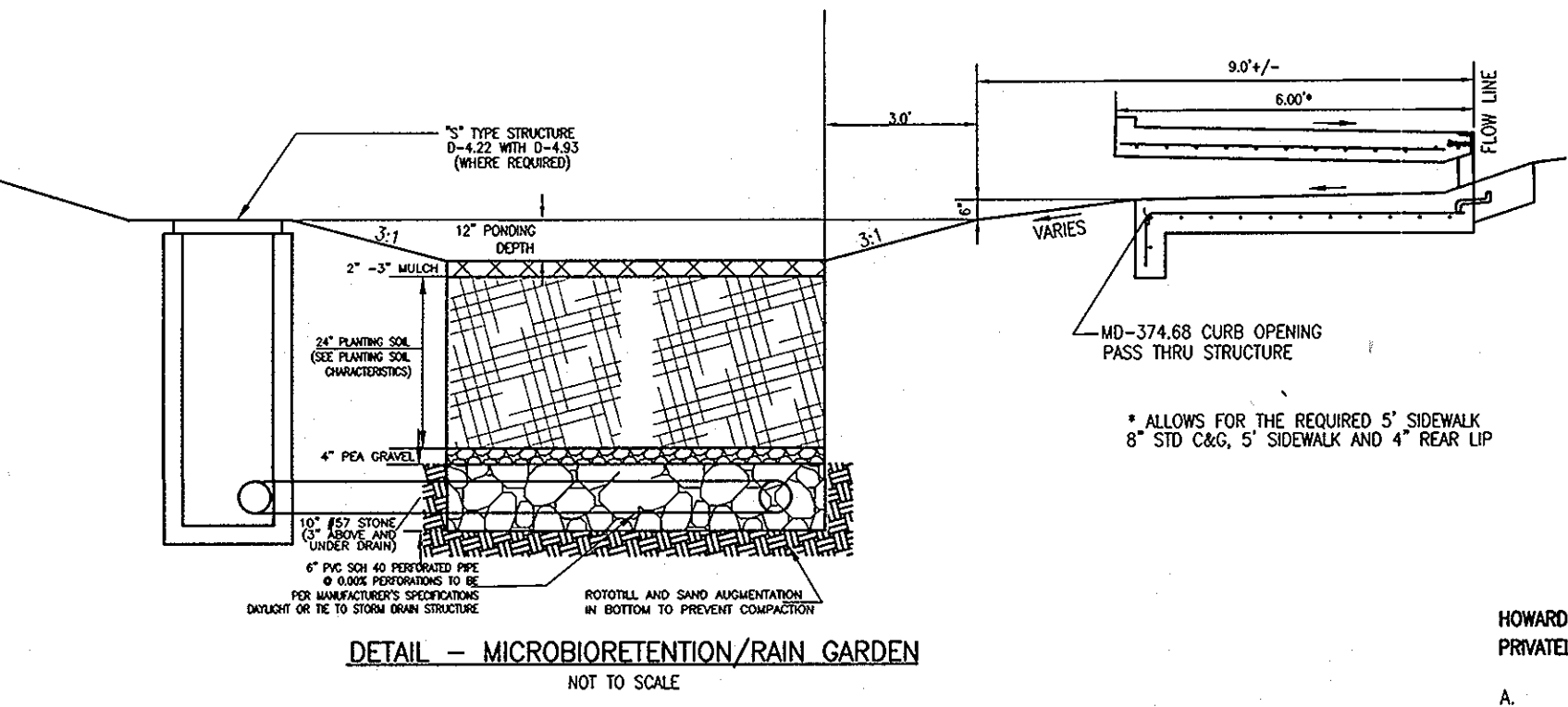
$R = 0.05 \times 0.0001$
 $V_{min} = 1.0 \times A / 12$
 $V_{max} = 2.6 \times A / 12$

DA #	% IMPERV	Rv	DA (AC)	MINIMUM VOLUME (SF)	MAXIMUM VOLUME (SF)	1.55" VOLUME PROVIDED* (SF)	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
SOUTH AREA - REQUIRED Pe = 1.55" Provided (Underdrains / Outfall Flows Freely)										
5-1	38.58	0.4008	11250	0.26	376	977	582	405		MICRO BIORETENTION
5-2	42.43	0.4355	26140	0.60	949	2466	1470	1470		ALT SURFACE & MICRO BIORETENTION
5-3	47.11	0.4740	17400	0.40	607	1592	965	607		ALT SURFACE & MICRO BIORETENTION
5-4	38.41	0.3957	30750	0.66	948	2465	1469	1469		ALT SURFACE, MICROSCALE PRACTICES
5-4A	17.03	0.2032	5227	0.12	89	230	137	89		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-4B	22.70	0.2543	3020	0.09	83	215	129	89		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-4C	55.08	0.5487	10900	0.07	143	371	221	143		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-5	9.69	0.1372	24300	0.56	718	222	431	222		MICRO SCALE PRACTICE - BIOWWALE
5-6	11.39	0.1205	14450	0.33	205	534	318	205		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-6A	25.34	0.2616	2000	0.07	143	371	221	143		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-6B	18.02	0.2122	4356	0.10	77	200	119	77		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-6C	20.43	0.2339	4356	0.10	85	221	137	85		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-6D	23.79	0.2454	4356	0.10	93	240	143	93		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-6E	26.70	0.2883	4356	0.10	112	291	173	112		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-7	41.62	0.4246	24700	0.57	877	2280	1389	1382		ALT SURFACE, MICROSCALE PRACTICES
5-8	15.79	0.2351	4290	0.14	119	308	184	119		MICRO BIORETENTION (WELL)
5-9	41.54	0.4339	27878	0.64	985	2560	1526	1526		ALT SURFACE & MICRO BIORETENTION
5-9A	12.63	0.1536	7840	0.18	107	278	166	107		ALT SURFACE & MICRO BIORETENTION
5-10	48.07	0.4869	10900	0.07	143	371	221	143		ALT SURFACE & MICROSCALE PRACTICES
5-11	15.72	0.2185	23600	0.54	431	1121	669	431		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-11C	8.51	0.1136	10455	0.24	110	287	171	110		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-12	16.23	0.1661	6100	0.14	100	259	154	100		NON-STR. ALT SURFACE, MICROSCALE PRACTICES
5-12	50.66	0.5099	14750	0.36	664	1727	1029	664		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-13	7.90	0.1211	24850	0.57	715	1853	1064	715		NON-STR. ALT SURFACE & MICROSCALE PRACTICES
5-13A	24.23	0.2481	20400	0.66	207	537	315	207		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-13B	35.18	0.3667	11800	0.50	666	1732	1032	666		MICRO SCALE PRACTICE - BIOWWALE
5-17	53.32	0.5399	23960	0.55	1058	2752	1640	1058		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-17A	22.53	0.2527	14450	0.07	143	371	221	143		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-17B	18.62	0.2122	4356	0.10	77	200	119	77		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-17C	15.15	0.1583	6335	0.15	101	264	157	101		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-18	35.40	0.3721	20400	0.62	813	2120	1245	813		NON-STR. ALT SURFACE & MICRO BIORETENTION
5-19	14.67	0.2111	875	0.13	87	226	135	87		NON-STR. ALT SURFACE & MICRO BIORETENTION
SOUTH TOTALS										
% IMPERV	Rv	DA	DA	MINIMUM VOLUME (SF)	MAXIMUM VOLUME (SF)	1.55" VOLUME PROVIDED* (SF)	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
35.1	0.3661	120898	27.75	36889	99111	57278	63462	42468.75	9.75	18.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/2/12

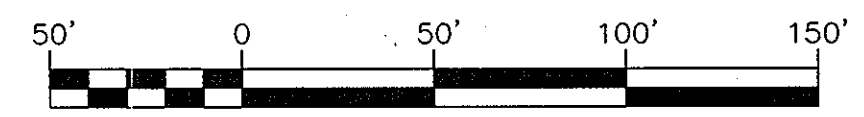
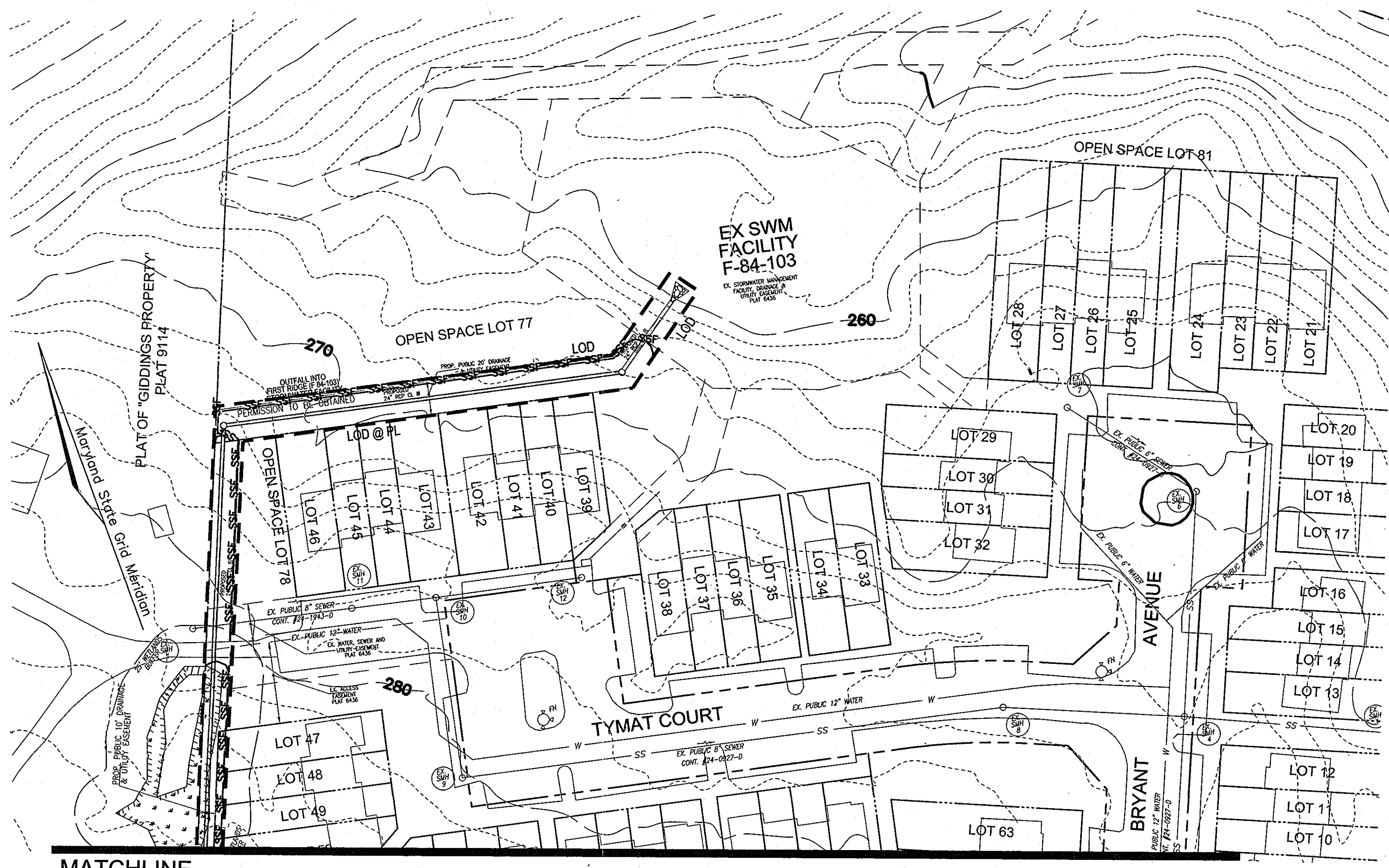
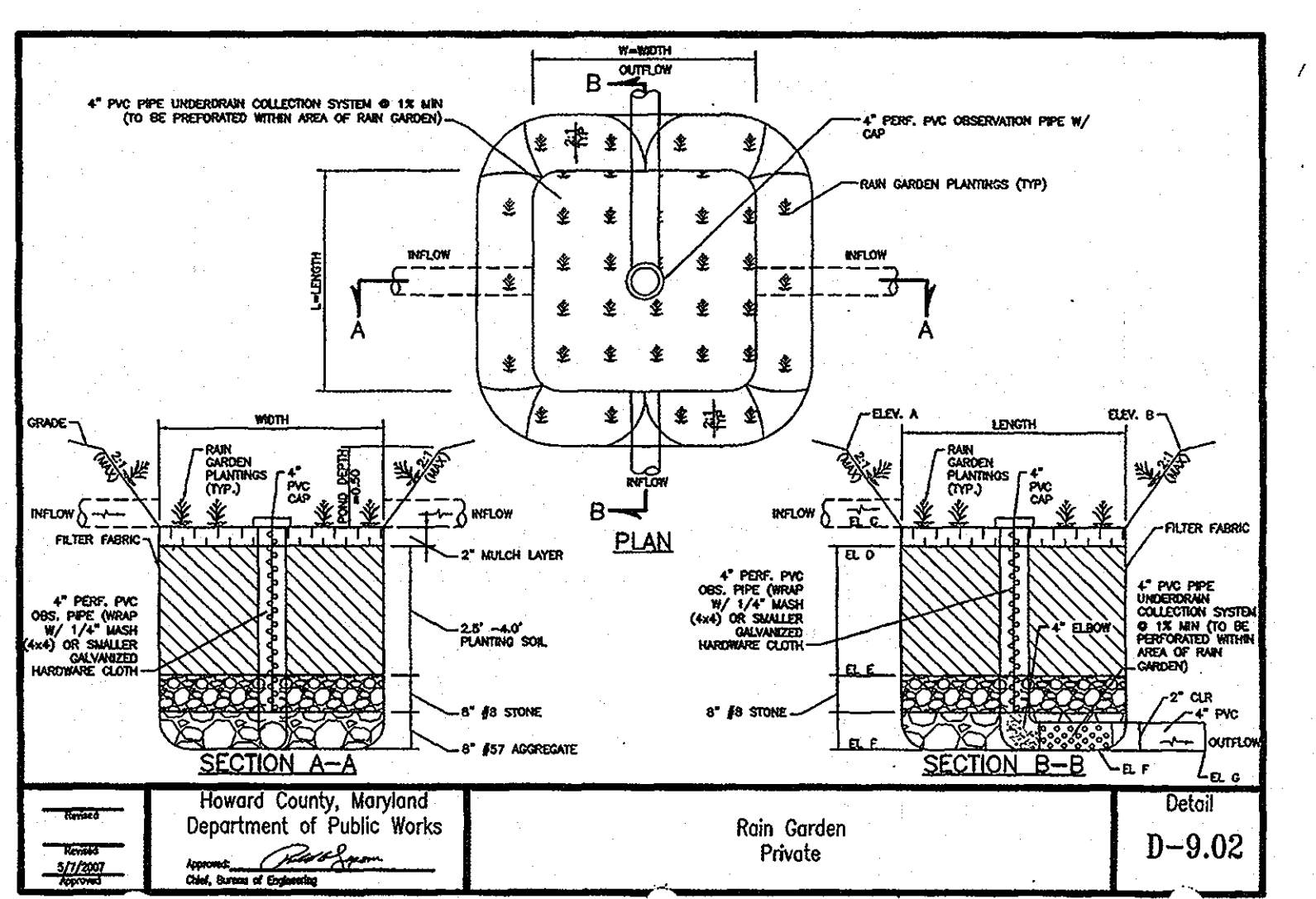
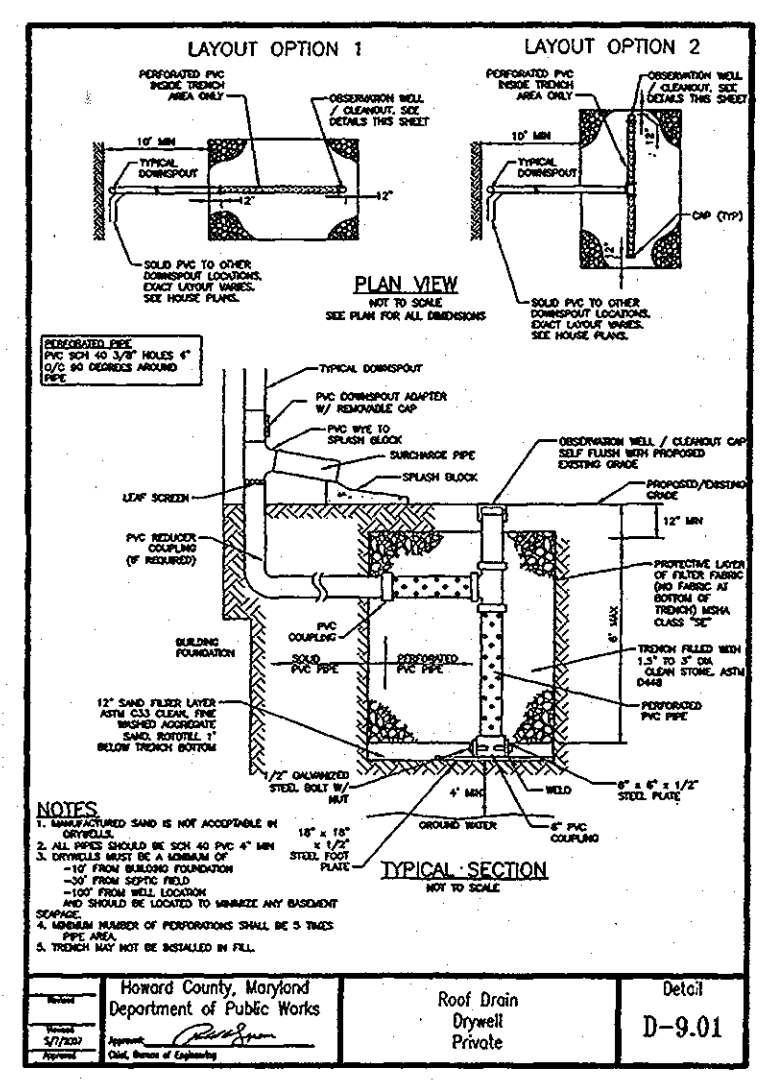
[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9/29/12



HOWARD COUNTY - 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.



OWNER: MARTIN JR & MICHAEL J. KRAESKI ET AL
 9222 OLD SCAGGSVILLE ROAD
 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
 443-367-0422

DEVELOPER: LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, STE 102
 ELLICOTT CITY, MARYLAND 21042-7819
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

PRELIMINARY LAYOUT
 STORMWATER MANAGEMENT DETAILS
 & COMPUTATIONS
DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 - PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRAESKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP: 50 CRD: 1
 DPZ REF: F10-065, WP 10-087

ZONED: R-3C
 PARCELS: 363 & 542
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
 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: 09-27-2013

DESIGN BY: RHV / EDS
 DRAWN BY: EDS
 CHECKED BY: RHV
 DATE: SEPTEMBER 2012
 SCALE: AS SHOWN
 W.O. NO.: 11-28

10