

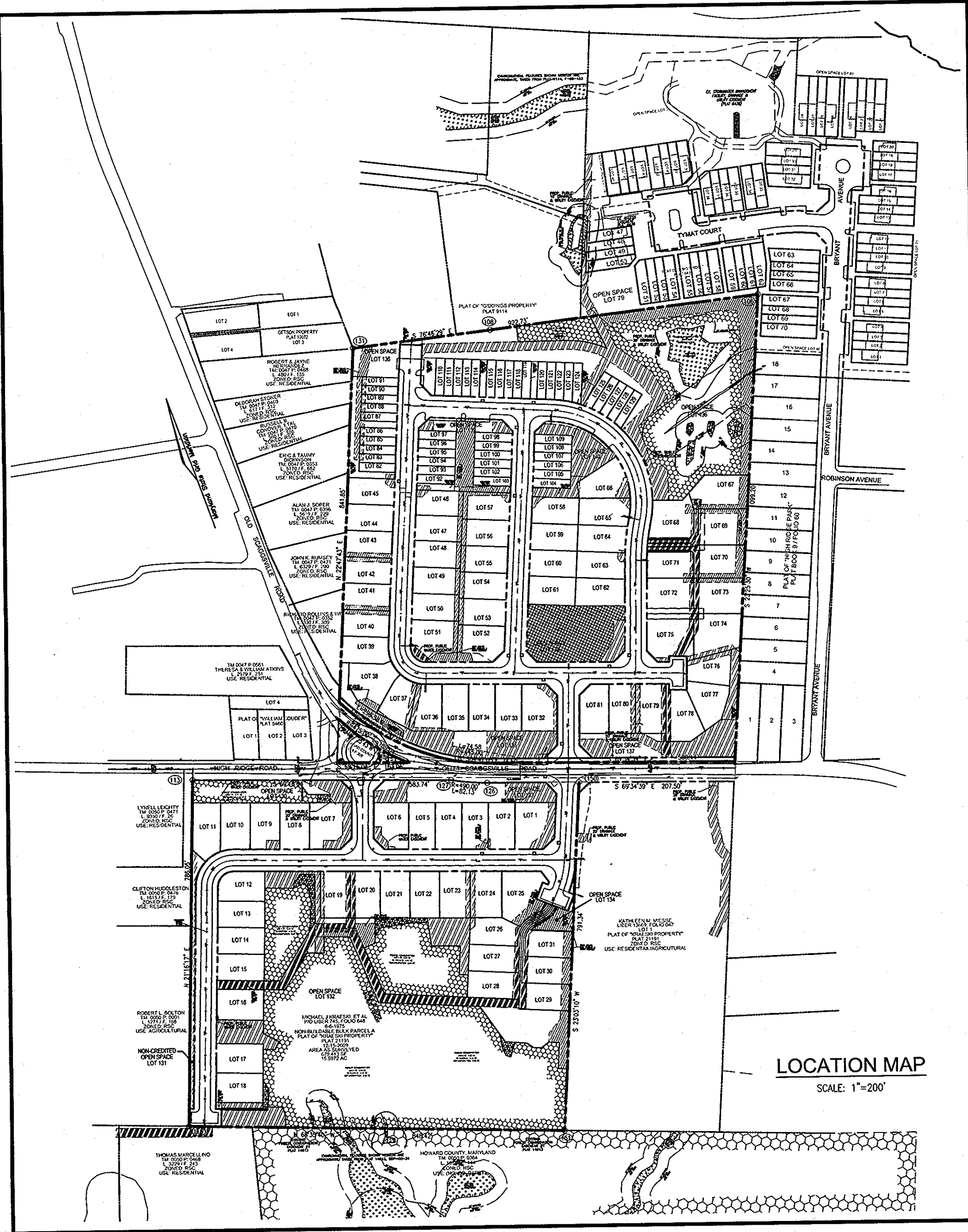
GENERAL NOTES

- 1. PROJECT BACKGROUND: - SUBDIVISION NAME: DEER SPRINGS - TAX MAP 50 GRID 1 - SECTION/AREA: N/A - LOT/FACEL: P. 363 & 542 - ZONING: R-SC - ZB/BA REFERENCE: N/A - ELECTION DISTRICT: 6TH - TOTAL TRACT AREA: 36.94 ACRES - SECTION/AREA: N/A - NUMBER OF PROPOSED LOTS: 129 (81SFD, 48SFA) - NET AREA OF PROPOSED SFD: 14.48 ACRES - AREA OF PROPOSED SFD: 1.87 ACRES - AREA OF PROPOSED SFA: 1.12 ACRES (OLD SCAGGSVILLE RD) - AREA OF PROPOSED ROAD R/W: 6.00 ACRES - OPEN SPACE PROVIDED: 9.24 ACRES (SEE NOTE 23) - PUBLIC WATER & SEWER: F10-065, WP10-087, ECP12-047, CONTRACT NO. 1-W, CONTRACT NO. 30-5 CONTRACT NO. 30-3253, WP-13-080

PRELIMINARY EQUIVALENT SKETCH PLAN DEER SPRINGS

SFD LOTS 1-81, SFA LOTS 82-129, AND OPEN SPACE LOTS 130 - 140 (SFA - SFD RESIDENTIAL) OLD SCAGGSVILLE ROAD PARCELS 363 & 542 HOWARD COUNTY, MARYLAND

DEER SPRING - DENSITY TABULATION table with columns: TOTAL SUBDIVISION AREA (GROSS AREA), FLOODPLAIN, STEEP SLOPES, NET AREA, UNITS PERMITTED BY NET, UNITS PROPOSED



COORDINATE TABLE with columns: NO., NORTH, EAST

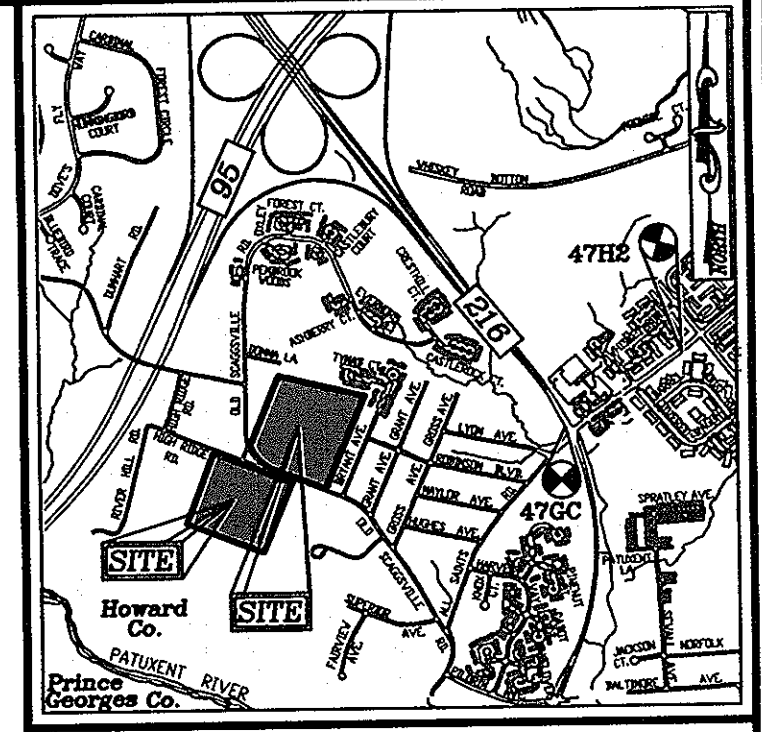
CURVE TABLE with columns: ROAD, CURVE, LENGTH, RADIUS, DELTA ANGLE, TANGENT, CHORD DIRECTION, CHORD LENGTH

PARKING TABULATION: TOTAL NUMBER OF DWELLING UNITS PROPOSED: 129 OFF-STREET PARKING SPACES REQUIRED: 2 SPACES PER UNIT = 258 SPACES

OPEN SPACE TABULATION: 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

SITE ANALYSIS DATA table with columns: A. TOTAL PROJECT AREA (GROSS), B. AREA OF PLAN SUBMISSION, C. AREA OF WETLANDS AND BUFFERS, etc.

SHEET INDEX table with columns: DESCRIPTION, SHEET NO.



VICINITY MAP SCALE: 1"=2,000' ADC MAP COORDINATE: 5169 B1/5169 B2 5169 C1/5169 C2

MINIMUM LOT SIZE CHART table with columns: LOT, GROSS AREA, PIPESTEM AREA, NET AREA, MIN. LOT SIZE

SOILS LEGEND table with columns: SYMBOL, NAME / DESCRIPTION, Kw RANGE, GROUP

OWNER: MARTIN JR & MICHAEL J. KRAESKI ET AL DEVELOPER: LAND DESIGN & DEVELOPMENT, INC.

OPEN SPACE TABULATION: 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

TOTAL RECREATION OPEN SPACE REQUIRED FOR DEER SPRINGS = 43,500 SF SINGLE FAMILY HOMES SFD = 300 SF/UNIT X 81 UNITS = 24,300 SF

RECREATION OPEN SPACE PROVIDED FOR DEER SPRINGS 43,500 SF* RECREATION OPEN SPACE P/O OPEN SPACE LOT 138 = 24,815 SF

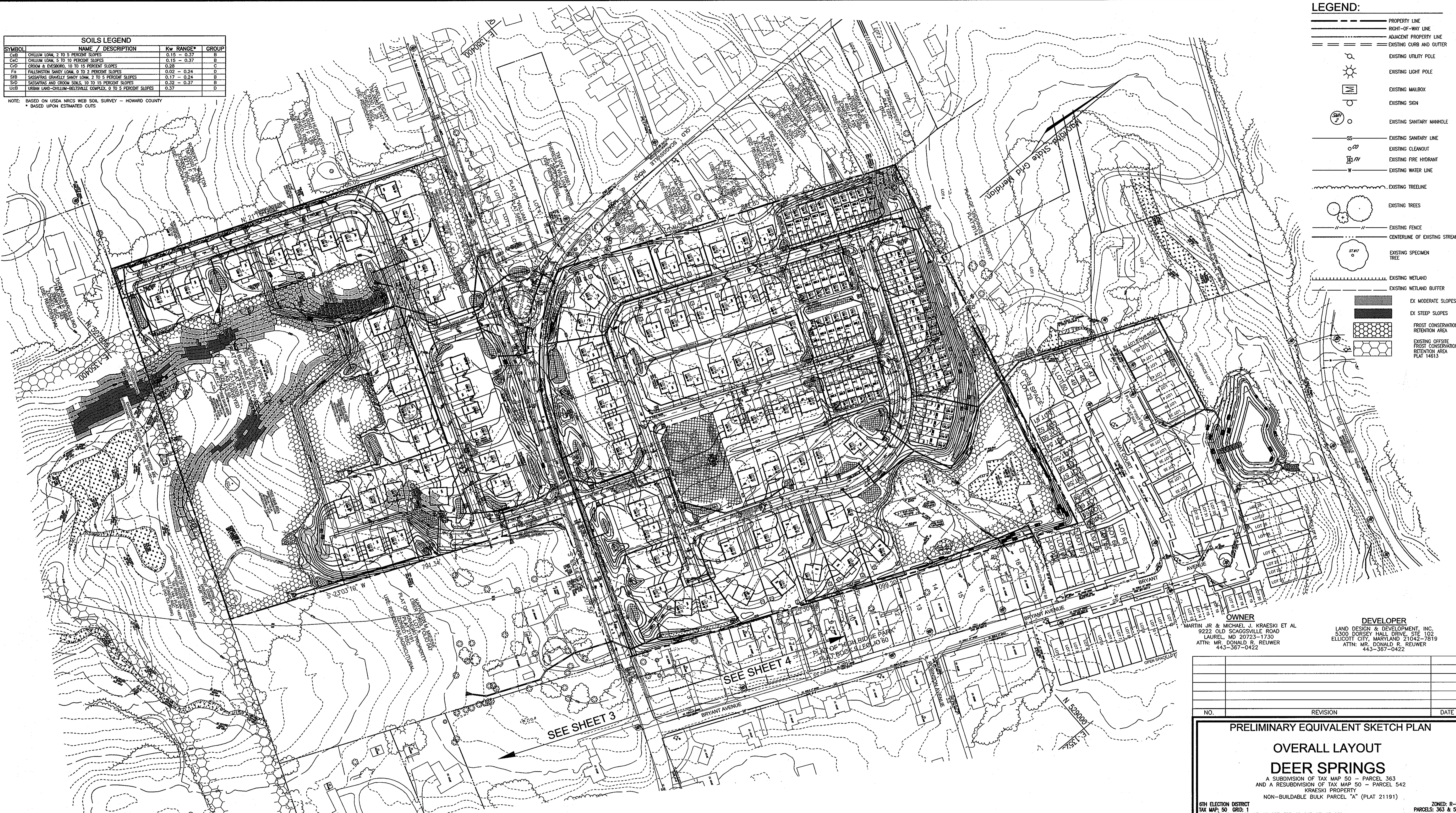
PRELIMINARY EQUIVALENT SKETCH PLAN COVER SHEET DEER SPRINGS. Includes project details, owner/developer information, and the Robert H. Vogel Engineering, Inc. logo and contact information.

TENTATIVELY APPROVED DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY. Includes signature of Mark A. Vogel and date 7/2/13.

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
ChB	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
CpD	CRONK & ENGLEWOOD, 10 TO 15 PERCENT SLOPES	0.28	C
Fg	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
SfB	SASSAPARAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SfD	SASSAPARAS AND CRONK SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
UcB	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

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 TREE LINE
	EXISTING TREES
	EXISTING FENCE
	CENTERLINE OF EXISTING STREAM
	EXISTING SPECIMEN TREE
	EXISTING WETLAND
	EXISTING WETLAND BUFFER
	EX MODERATE SLOPES
	EX STEEP SLOPES
	FROST CONSERVATION RETENTION AREA
	EXISTING OFFSITE FROST CONSERVATION RETENTION AREA PLAT 14613



OVERALL - LAYOUT PLAN
SCALE: 1"=100'

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 ROSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN

OVERALL LAYOUT
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
DCZ REG'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080

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: 09-27-2014

DESIGN BY: RHY / EDS
DRAWN BY: RVE/EJS
CHECKED BY: RHY
DATE: JUNE 2013
SCALE: AS SHOWN
W.O. NO.: 11-28

2 SHEET OF 19

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Donald R. Reuwer
PLANNING DIRECTOR
DATE: 7/2/12

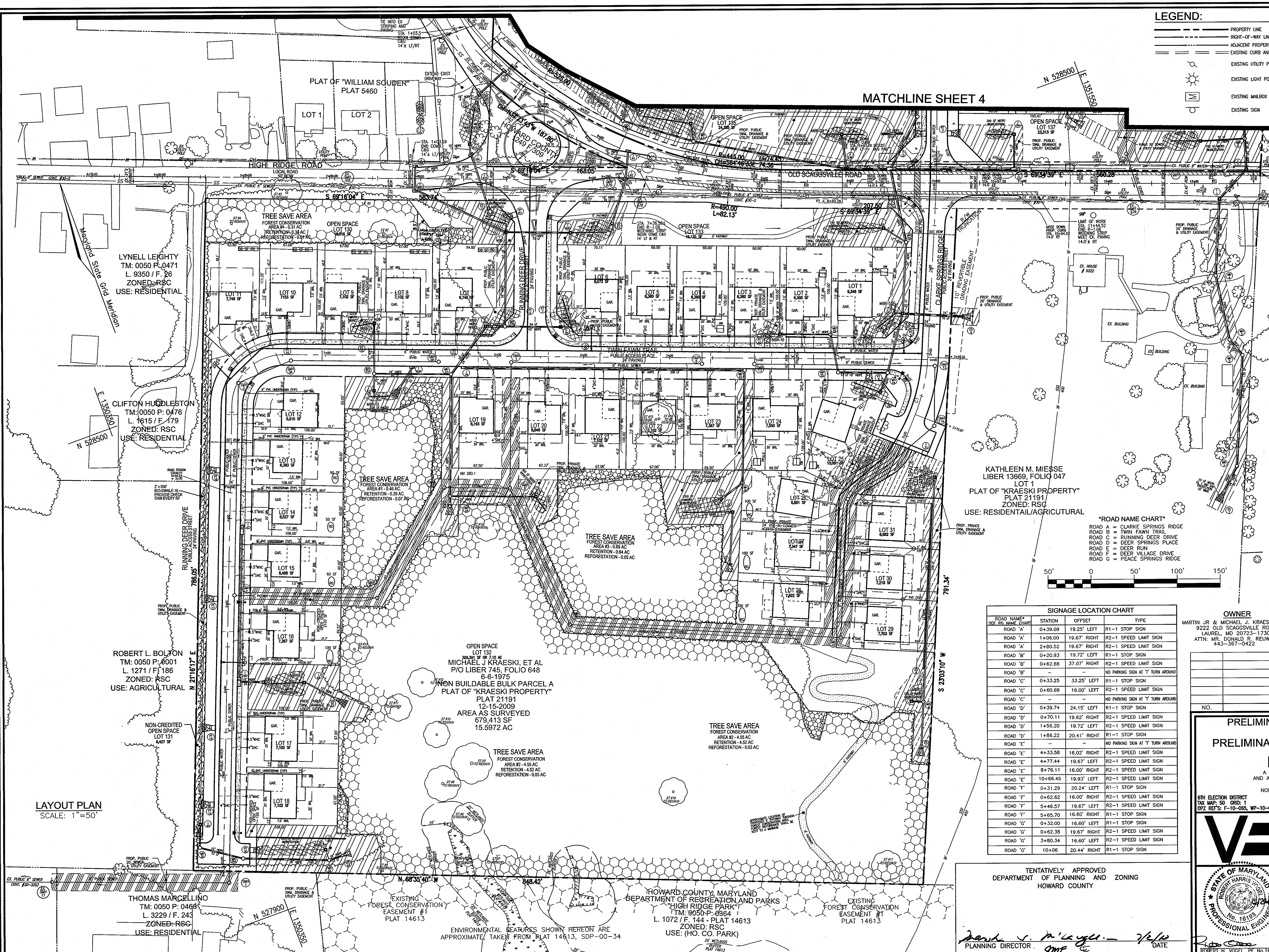


K:\PROJECTS\11-28\ENGR SKETCH_3RD SUBMISSION_02-OVERALL LAYOUT.DWG

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 TREELINE
- EXISTING TREES
- EXISTING FENCE
- CENTERLINE OF EXISTING STREAM
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED TREELINE
- PROPOSED CURB
- PROPOSED STREET LIGHT
- MICRO BIO RETENTION FACILITY
- BIO SWALE
- EXISTING SPECIMEN TREE
- EXISTING SPECIMEN TREE TO BE REMOVED
- WATER ZONE DIVIDE
- PRIVATE 24' USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
- PROP. PUBLIC FOREST CONSERVATION EASEMENT
- PROP. PUBLIC FOREST RESTORATION EASEMENT
- PRIVATE SWM DRAINAGE & UTILITY EASEMENT

MATCHLINE SHEET 4



LIGHT LOCATIONS

ROAD NAME* SEE RD NAME CHART	STATION	OFFSET	FIXTURE/POLE TYPE
ROAD 'A'	0+27.54	27.93" RIGHT	100 WATT HPS VAPOR PREMIX POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
ROAD 'A'	2+30.47	21.60" RIGHT	
ROAD 'A'	2+36.16	04. DE SAC	
ROAD 'B'	4+05.96	26.90" RIGHT	
ROAD 'C'	0+25.90	16.40" LEFT	
ROAD 'C'	4+97.48	11.71" RIGHT	
ROAD 'C'	7+67.61	11.71" RIGHT	
ROAD 'E'	2+97.24	11.80" LEFT	
ROAD 'E'	6+94.21	8.98" RIGHT	
ROAD 'E'	11+69.91	8.98" RIGHT	
ROAD 'F'	2+42.32	12.00" LEFT	
ROAD 'F'	5+63.08	11.82" LEFT	
ROAD 'G'	0+64.22	9.10" LEFT	
ROAD 'G'	5+15.37	8.75" LEFT	

OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1750
ATTN: MR. DONALD R. REUWER
443-367-0422

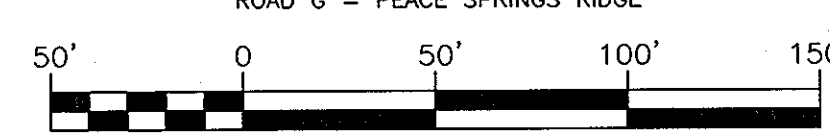
DEVELOPER
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5300 DORSEY HALL DRIVE, STE 102
ELLCOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

SIGNAGE LOCATION CHART

ROAD NAME* SEE RD NAME CHART	STATION	OFFSET	TYPE
ROAD 'A'	0+39.09	19.25' LEFT	R1-1 STOP SIGN
ROAD 'A'	1+06.00	19.67' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'A'	2+80.52	19.67' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'B'	0+20.93	19.72' LEFT	R1-1 STOP SIGN
ROAD 'B'	0+62.68	37.07' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'B'			NO PARKING SIGN AT 'T' TURN AROUND
ROAD 'C'	0+33.25	33.25' LEFT	R1-1 STOP SIGN
ROAD 'C'	0+60.69	16.00' LEFT	R2-1 SPEED LIMIT SIGN
ROAD 'C'			NO PARKING SIGN AT 'T' TURN AROUND
ROAD 'D'	0+39.74	24.15' LEFT	R1-1 STOP SIGN
ROAD 'D'	0+70.11	19.62' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'D'	1+56.20	19.72' LEFT	R2-1 SPEED LIMIT SIGN
ROAD 'D'	1+86.22	20.41' RIGHT	R1-1 STOP SIGN
ROAD 'E'			NO PARKING SIGN AT 'T' TURN AROUND
ROAD 'E'	4+33.58	16.02' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'E'	4+77.44	19.67' LEFT	R2-1 SPEED LIMIT SIGN
ROAD 'E'	8+76.11	16.00' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'E'	10+66.45	19.93' LEFT	R2-1 SPEED LIMIT SIGN
ROAD 'F'	0+31.29	20.24' LEFT	R1-1 STOP SIGN
ROAD 'F'	0+62.62	16.00' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'F'	5+46.57	19.67' LEFT	R2-1 SPEED LIMIT SIGN
ROAD 'F'	5+65.70	16.60' RIGHT	R1-1 STOP SIGN
ROAD 'F'	0+32.00	16.60' RIGHT	R1-1 STOP SIGN
ROAD 'G'	0+62.38	19.67' RIGHT	R2-1 SPEED LIMIT SIGN
ROAD 'G'	3+80.34	16.60' LEFT	R2-1 SPEED LIMIT SIGN
ROAD 'G'	10+06	20.44' RIGHT	R1-1 STOP SIGN

"ROAD NAME CHART"

ROAD A = CLARKE SPRINGS RIDGE
ROAD B = TWIN FAWN TRAIL
ROAD C = RUNNING DEER DRIVE
ROAD D = DEER SPRINGS PLACE
ROAD E = DEER RUN
ROAD F = DEER VILLAGE DRIVE
ROAD G = PEACE SPRINGS RIDGE



LAYOUT PLAN
SCALE: 1"=50'

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Robert H. Vogel
PLANNING DIRECTOR
DATE: 7/6/12

PRELIMINARY EQUIVALENT SKETCH PLAN
PRELIMINARY 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: F-10-085, WP-10-087, ECP-12-047, WP-13-080
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: RHY / EDS.
DRAWN BY: RVE/EDS.
CHECKED BY: RHY.
DATE: JUNE 2013.
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: 09-27-2014.

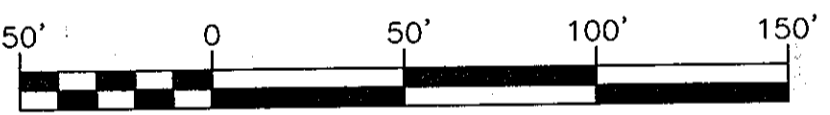
3 SHEET OF 19

NOTE
 THE SPECIFIC LOCATION OF THE STORM DRAIN ALIGNMENT TOWARD THE PROPOSED RECONSTRUCTED FIRST RIDGE (104-103) FACILITY IS SUBJECT TO CHANGE. WP13-080 REQUESTS THE ENVIRONMENTAL DISTURBANCES ASSOCIATED WITH THE STORM DRAIN ALIGNMENT BE DEEMED ESSENTIAL. AN ORIGINAL STORM DRAIN ALIGNMENT ON THE "GIDDINGS PROPERTY" IS BEING CONSIDERED.

NOTE
 PROPOSED CONNECTION TO FIRST RIDGE F-84-103 STORM DRAIN SYSTEM. STORM DRAINAGE TO BE CONNECTED TO RECONSTRUCTED FIRST RIDGE (F84-103) FACILITY. SEE SHEET 9.

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
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- EXISTING WATER LINE
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- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED TREELINE
- PROPOSED CURB
- PROPOSED STREET LIGHT
- ⊙ MICRO BIO RETENTION FACILITY
- BIO SWALE
- ⊙ EXISTING SPECIMEN TREE
- W 550
400 WATER ZONE DIVIDE
- PRIVATE 24" USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
- PRIVATE 30" DRAINAGE & UTILITY EASEMENT
- RECREATION OPEN SPACE
- FOREST CONSERVATION EASEMENT



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

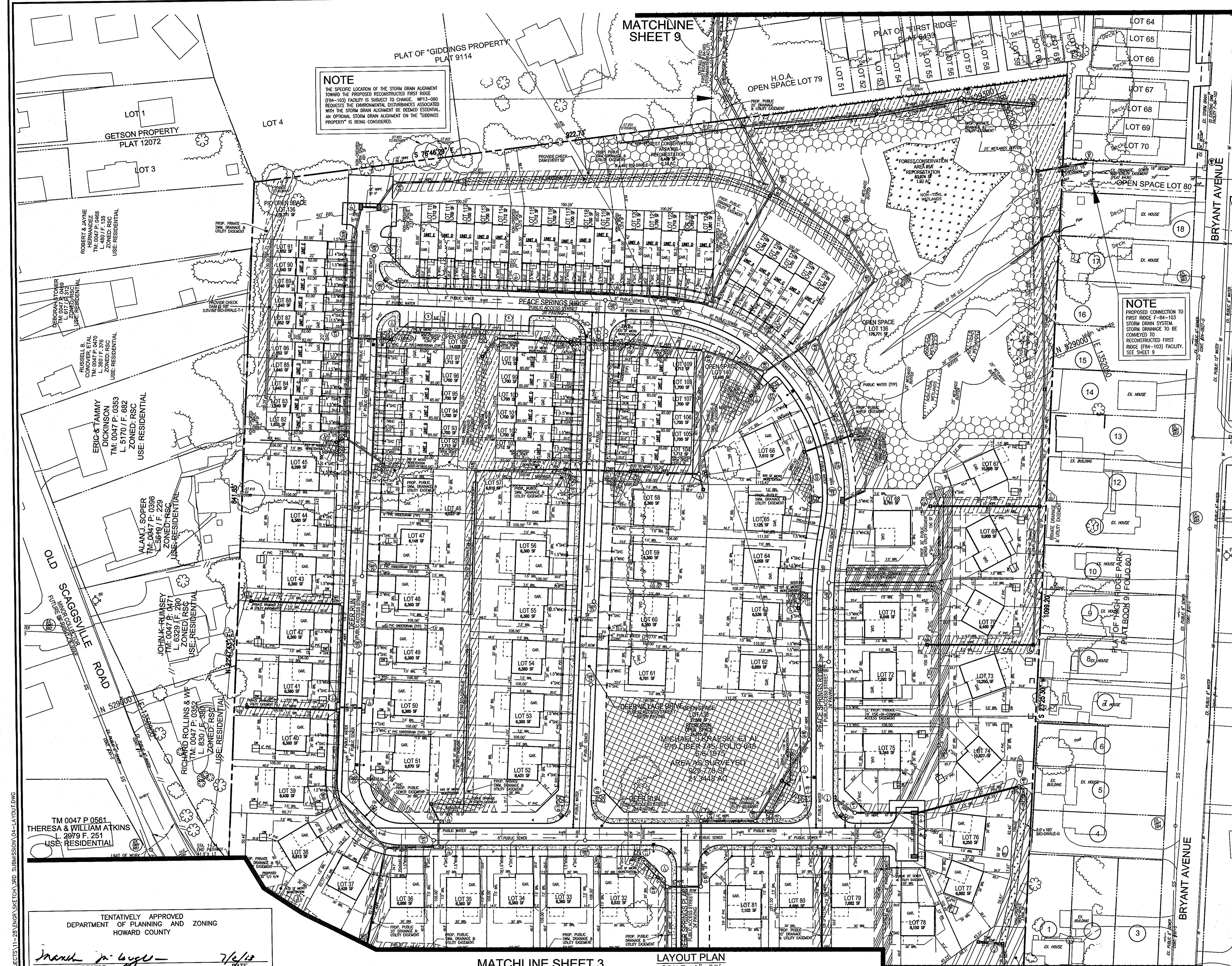
PRELIMINARY EQUIVALENT SKETCH PLAN
PRELIMINARY LAYOUT PLAN- NORTH AREA
DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 - PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRAESKI PROPERTY,
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP 50 - GRD: 1
 DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080

ROBERT H. VOGEL ENGINEERING, INC.
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 8407 MAIN STREET
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 EXPIRATION DATE: 09-27-2014

DESIGN BY: RHV / EDS.
 DRAWN BY: RVE / EDS.
 CHECKED BY: RHV.
 DATE: JUNE 2013.
 SCALE: AS SHOWN.
 W.O. NO.: 11-28.



LAYOUT PLAN
 SCALE: 1"=50'

MATCHLINE SHEET 3

MATCHLINE SHEET 9

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Frank A. Vogel
 PLANNING DIRECTOR
 7/2/13
 DATE

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

ALANKI SOPER
 TM 0047 P 0306
 L. 5849 F. 220
 USE: RESIDENTIAL

JOHN K. RUMSEY
 TM 0029 P 0471
 L. 6200 F. 040
 USE: RESIDENTIAL

RICHARD ROLLINS & WIFE
 TM 0047 P 0307
 L. 8301 F. 030
 USE: RESIDENTIAL

ERIC & TAMMY
 DICKINSON
 TM 0047 P 0353
 L. 5170 F. 682
 USE: RESIDENTIAL

RUSSELL B.
 CONOVER ET AL
 TM 0047 P 0470
 L. 3307 F. 035
 USE: RESIDENTIAL

ROBERT & JANIE
 HERMANDEZ
 TM 0047 P 0468
 L. 1715 F. 035
 USE: RESIDENTIAL

DEBORAH STONER
 TM 0047 P 0469
 L. 1715 F. 035
 USE: RESIDENTIAL

DEER SPRINGS RIDGE
 PUBLIC ACCESS DRIVE

PEACE SPRINGS RIDGE
 PUBLIC ACCESS DRIVE

OPEN SPACE LOT 79
 H.O.A.

OPEN SPACE LOT 80

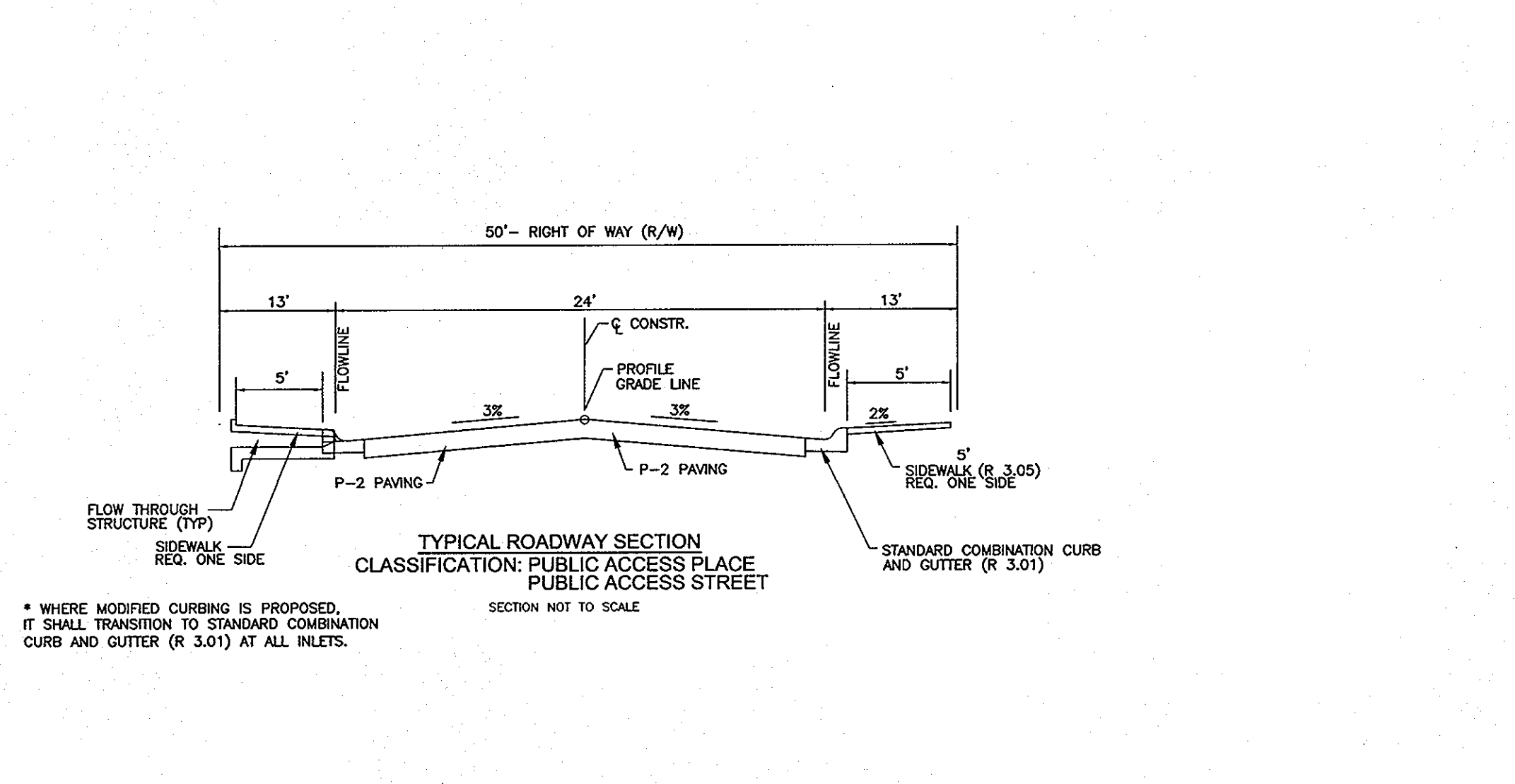
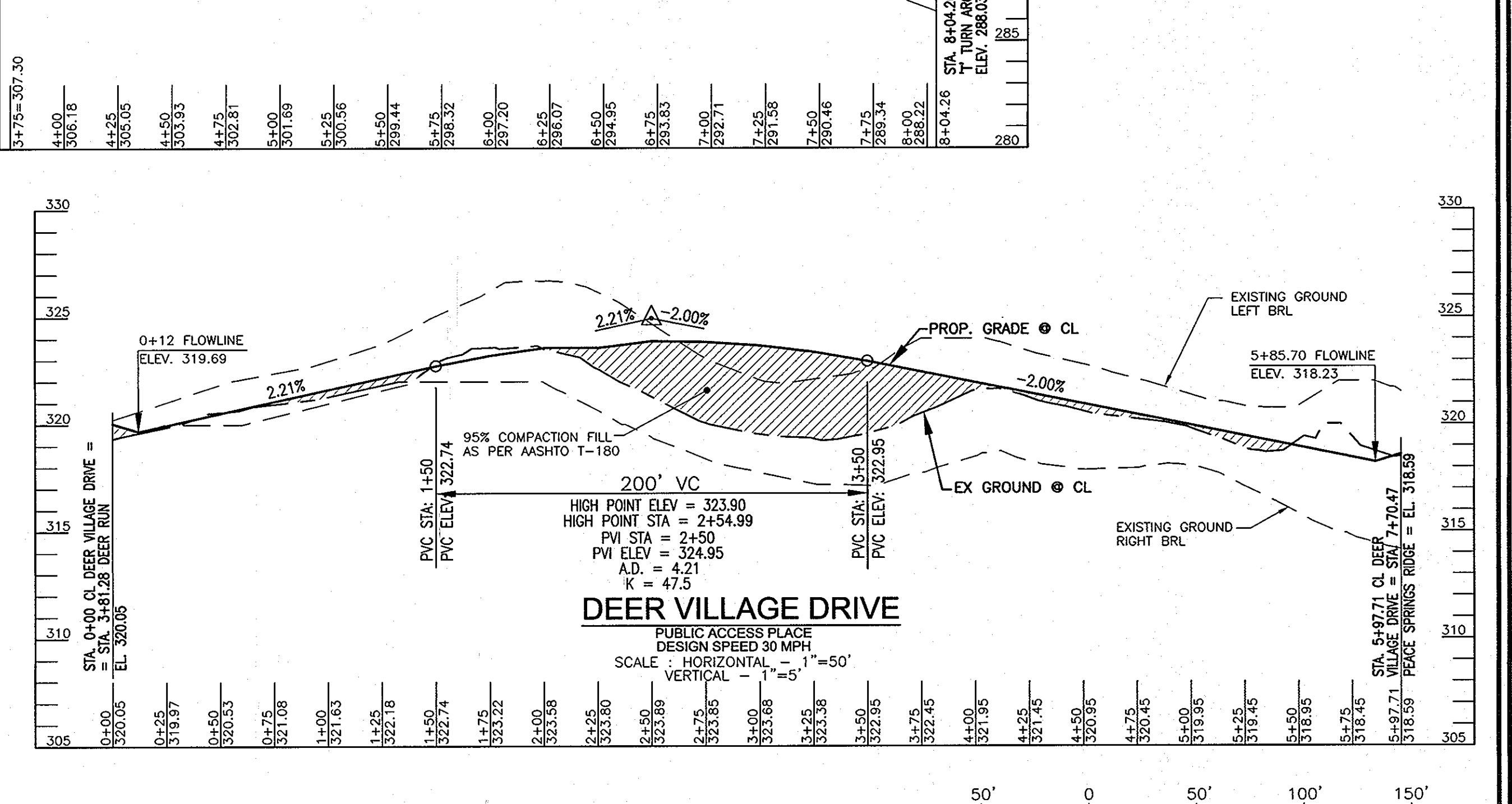
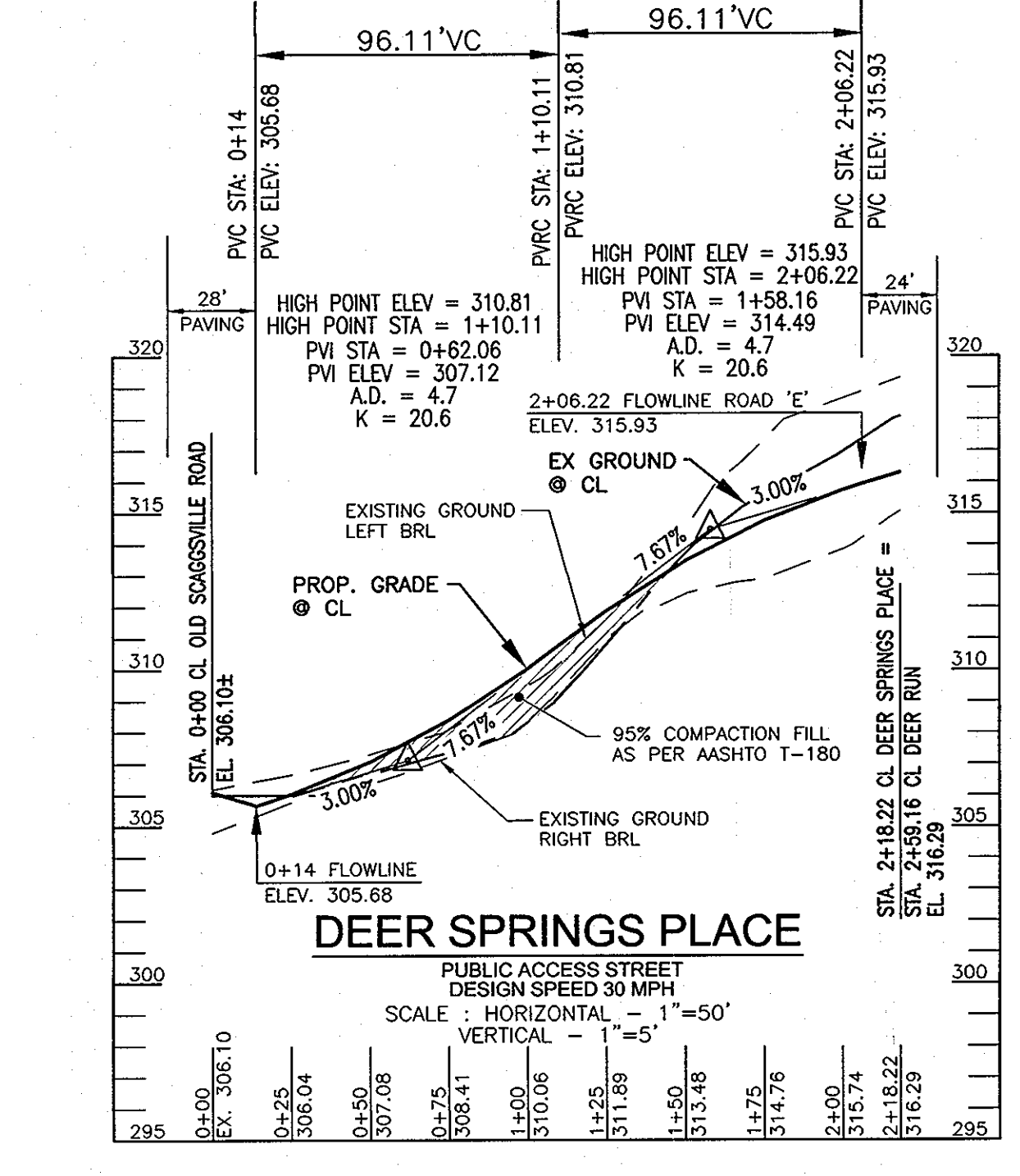
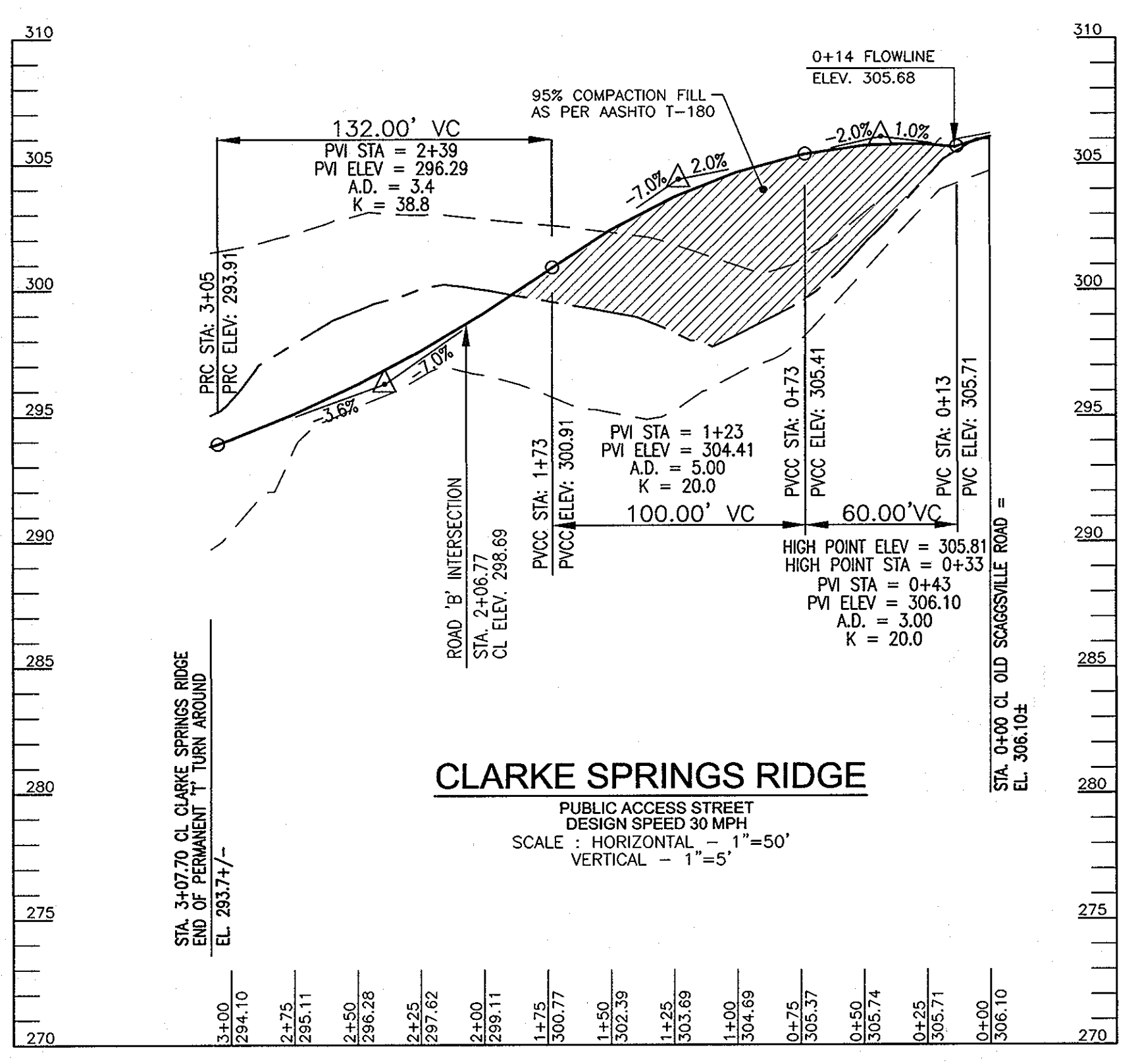
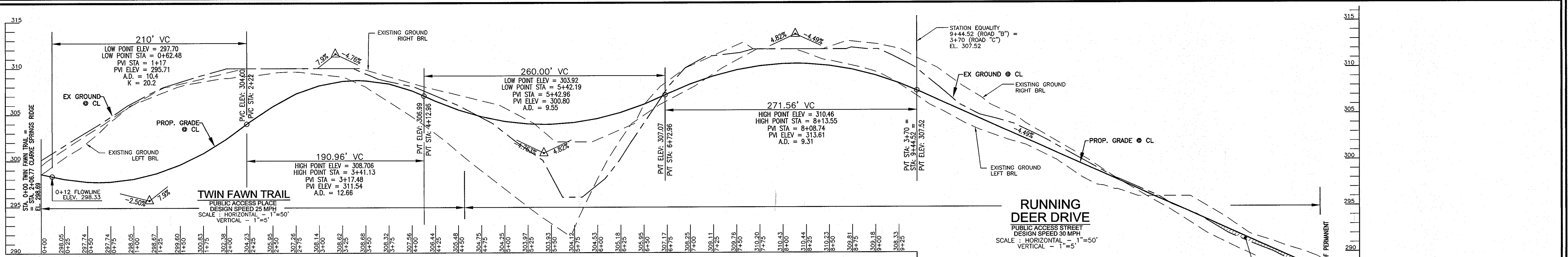
LOT 1-100

LOT 1-100

LOT 1-100

LOT 1-100

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TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

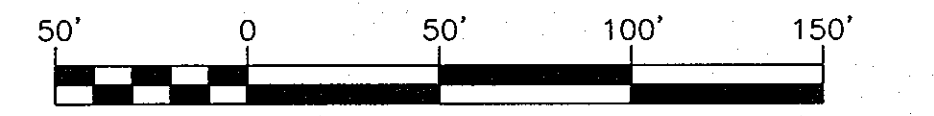
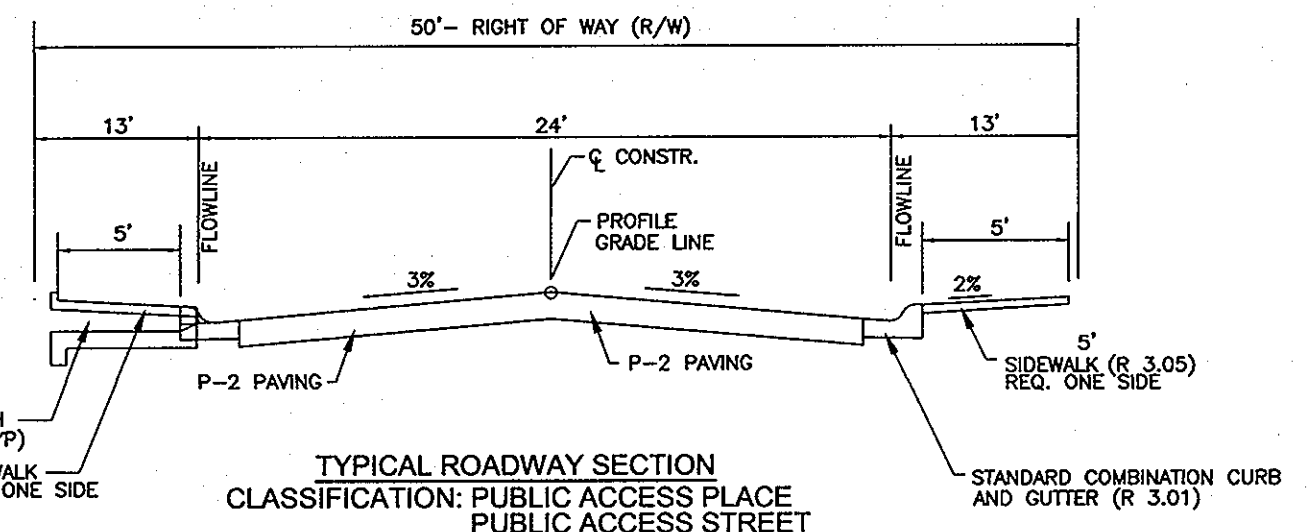
Mark A. Angle
PLANNING DIRECTOR

7/2/13
DATE

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* WHERE MODIFIED CURBING IS PROPOSED,
IT SHALL TRANSITION TO STANDARD COMBINATION
CURB AND GUTTER (R 3.01) AT ALL INLETS.

SECTION NOT TO SCALE



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

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443-367-0422

NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
PRELIMINARY ROAD PROFILES
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)

5TH ELECTORAL DISTRICT
TAX MAP 50 - GRD 1
DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080

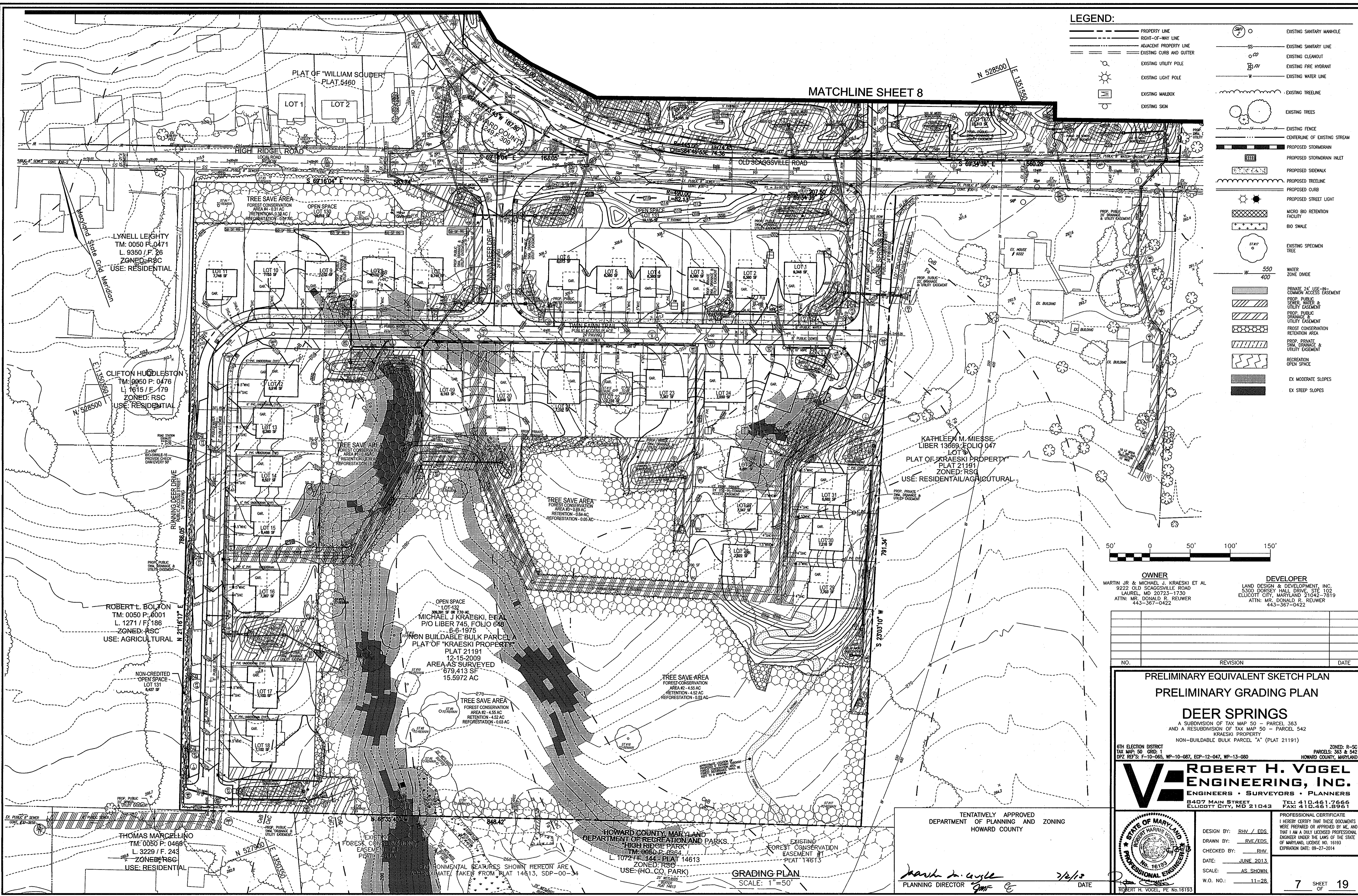
ZONED: R-3C
PARCELS 363 & 542
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
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W.O. NO.: 11-28.

5 SHEET OF 19



- 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
 - ⊙ EXISTING CLEANOUT
 - ⊞ EXISTING FIRE HYDRANT
 - EXISTING WATER LINE
 - EXISTING TREELINE
 - EXISTING TREES
 - EXISTING FENCE
 - CENTERLINE OF EXISTING STREAM
 - PROPOSED STORMDRAIN
 - PROPOSED STORMDRAIN INLET
 - PROPOSED SIDEWALK
 - PROPOSED TREELINE
 - PROPOSED CURB
 - ⊙ PROPOSED STREET LIGHT
 - ⊞ MICRO BIO RETENTION FACILITY
 - ⊞ BIO SWALE
 - EXISTING SPECIMEN TREE
 - WATER DIVIDE
 - FRONT 2' OF USE-TO-COMMON ACCESS EASEMENT
 - PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
 - PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
 - FROST PROTECTION RETENTION AREA
 - FROST PROTECTION SWM DRAINAGE & UTILITY EASEMENT
 - RECREATION OPEN SPACE
 - EX MODERATE SLOPES
 - EX STEEP SLOPES



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 EQUIVALENT SKETCH PLAN
PRELIMINARY GRADING 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: F-10-065, WP-10-087, ECP-12-047, WP-13-080

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: RHV / EDS.
 DRAWN BY: RVE/EJS.
 CHECKED BY: RHV.
 DATE: JUNE 2013.
 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 DAILY LICENSED PROFESSIONAL
 ENGINEER UNDER THE LAWS OF THE STATE
 OF MARYLAND, LICENSE NO. 18193
 EXPIRATION DATE: 09-27-2014

7 SHEET OF 19

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark A. Wolfe
 PLANNING DIRECTOR

7/2/13
 DATE

HOWARD COUNTY, MARYLAND
 DEPARTMENT OF RECREATION AND PARKS
 HIGH RIDGE PARK
 TM: 0050 P: 0364
 L: 1072 / F: 144 PLAT 14613
 ZONED: RSC
 USE: (HO. CO. PARK)

EXISTING FOREST CONSERVATION EASEMENT #1
 PLAT 14613

GRADING PLAN
 SCALE: 1"=50'

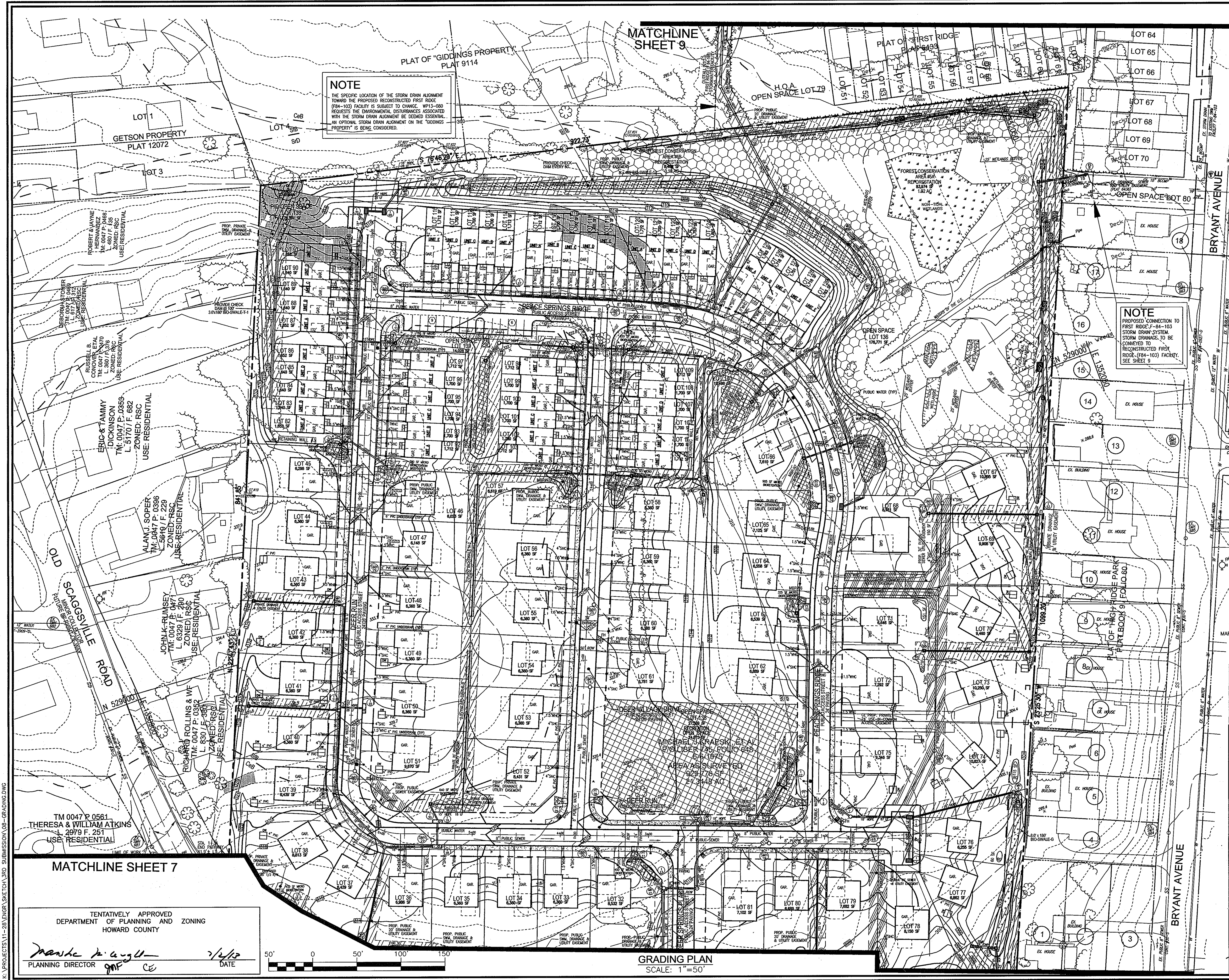
THOMAS MARCELLINO
 TM: 0050 P: 0468
 L: 3229 / F: 243
 ZONED: RSC
 USE: RESIDENTIAL

ROBERT L. BOLTON
 TM: 0050 P: 6001
 L: 1271 / F: 186
 ZONED: RSC
 USE: AGRICULTURAL

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

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

K:\PROJECTS\11-28\ENGR\SKETCH\3RD SUBMISSION\07-GRADING.DWG



NOTE
 THE SPECIFIC LOCATION OF THE STORM DRAIN ALIGNMENT TOWARD THE PROPOSED RECONSTRUCTED FIRST RIDGE (P84-103) FACILITY IS SUBJECT TO CHANGE. WPI-1000 REQUESTS THE ENVIRONMENTAL DISTURBANCES ASSOCIATED WITH THE STORM DRAIN ALIGNMENT BE DEEMED ESSENTIAL. AN OPTIONAL STORM DRAIN ALIGNMENT ON THE "GIDDINGS PROPERTY" IS BEING CONSIDERED.

NOTE
 PROPOSED CONNECTION TO FIRST RIDGE (P84-103) STORM DRAIN SYSTEM. STORM DRAINAGE TO BE CONVEYED TO RECONSTRUCTED FIRST RIDGE (P84-103) FACILITY. SEE SHEET 9.

- 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
 - MICRO BIO RETENTION FACILITY
 - BIO SWALE
 - EXISTING SPECIMEN TREE
 - WATER ZONE DIVIDE
 - PRIVATE 24" USE-IN-COMMON 2023.5 EASEMENT
 - PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
 - PROP. PUBLIC STORM DRAIN UTILITY EASEMENT
 - PRIVATE SWM UTILITY EASEMENT
 - RECREATION OPEN SPACE
 - FOREST CONSERVATION EASEMENT
 - EX. MODERATE SLOPES
 - EX. STEEP SLOPES

OWNER
 MARTIN JR & MICHAEL J. KRAESKI ET AL
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 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
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DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 - PARCEL 363
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 KRAESKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP: 50 - 085 - 1
 DPZ REF'S: F-10-065, WP-10-087, ECF-12-047, WP-13-080

PARCELS: 363 & 542
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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 8407 MAIN STREET
 ELLICOTT CITY, MD 21043
 TEL: 410-461-7666
 FAX: 410-461-1896

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: RHY / EDS.
 DRAWN BY: RVE/EJS.
 CHECKED BY: RHY.
 DATE: JUNE 2013.
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8 SHEET OF 19

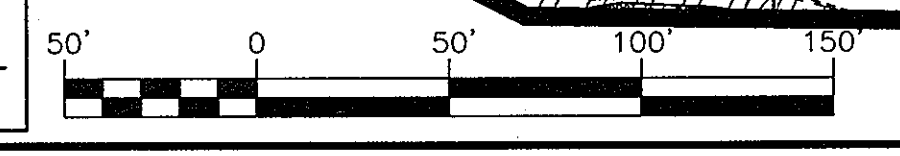
TM 0047 P 0561
 THERESA & WILLIAM ATKINS
 2979 F. 251
 USE: RESIDENTIAL

MATCHLINE SHEET 7

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark A. Gault
 PLANNING DIRECTOR

7/2/13
 DATE



GRADING PLAN
 SCALE: 1"=50'

K:\PROJECTS\11-28-ENGR\SHEET\3RD SUBMISSION\08-GRADING.DWG

SP 13-007



TYMAT SWM RETROFIT

TYPE: NON-MD 378
 EX. DRAINAGE AREA: 19.3 AC.
 PROP. DRAINAGE AREA: 19.3 AC.
 BOTTOM ELEV.: 251.00
 LOW RISE INVERT: 254.00
 WET POOL STORAGE DEPTH: 3.0'
 TOTAL STORAGE DEPTH: 3.5'
 TOP OF EMBANKMENT: 257.50
 EMERGENCY SPILLWAY: 257.00

Q1 (EX.): 7 CFS
 Q10 (EX.): 41 CFS

Q1 (SWM): 1 CFS
 1 YR SWM WSEL= 254.75
 10 YR SWM WSEL= 256.40

Q1 (SAFETY): 6 CFS
 Q10 (SAFETY): 53 CFS
 1 YR SWM WSEL= 255.51
 10 YR SWM WSEL= 257.00

HILLIS-CARNES ENGINEERING ASSOCIATES, INC. 9/12

RETROFIT/RECONSTRUCTION OF EXISTING POND

THERE IS AN EXISTING POND ADJACENT TO THE SITE THAT IS TO BE RETROFITTED OR RECONSTRUCTED. WE UNDERSTAND THAT THE PROPOSED FACILITY IS TO BE CLASSIFIED AS A NON-MD378 POND. BASED ON THE PLAN PROVIDED, THE BOTTOM OF THE POND IS TO BE LOCATED AT EL 251 AND THE POND IS TO HAVE A WET POOL LOCATED AT EL 254. EXISTING GRASSES IN THE VICINITY OF THE POND RANGE FROM EL 256.4 TO EL 268.4. AS SUCH IT APPEARS THAT THE MAJORITY OF THE POND WILL BE A CUT POND.

GENERAL SITE PREPARATION

ALL TREES, TOPSOIL, ORGANIC MATERIALS, FROZEN, WET, SOFT OR LOOSE SOILS AND OTHER DELETERIOUS MATERIALS SHOULD BE REMOVED FROM THE AREAS OF PROPOSED NEW EMBANKMENT AND WASTED POND TO THE PLACEMENT OF FILL. THESE STRIPPING OPERATIONS SHOULD BE PERFORMED IN A MANNER CONSISTENT WITH GOOD EROSION AND SEDIMENT CONTROL PRACTICES AND IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES.

AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFCULLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE USING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY THE DYNAMIC CONE PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

GROUNDWATER

GROUNDWATER LEVELS WERE MONITORED IN THE BORINGS DURING OUR FIELD EXPLORATION. GROUNDWATER WAS GENERALLY ENCOUNTERED AT THE FOLLOWING ELEVATIONS IN THE FACILITY BORING LOCATIONS AT THE TIME OF OUR FIELD EXPLORATION (PLEASE NOTE THAT THE WATER LEVELS MAY BE IMPACTED BY WATER ASSOCIATED WITH THE EXISTING POND):

DURING DRILLING: EL 248.54 TO EL 251.2
 AFTER 24 HOURS: EL 248.54 TO EL 256.4

AN ACCURATE DETERMINATION OF THE HYDROSTATIC WATER TABLE WOULD REQUIRE THE INSTALLATION OF PERFORATED PIPES OR METERS WHICH COULD BE MONITORED OVER AN EXTENDED PERIOD OF TIME. THE ACTUAL LEVEL OF THE HYDROSTATIC WATER TABLE AND THE AMOUNT AND LEVEL OF PERCHED WATER SHOULD BE ANTICIPATED TO FLUCTUATE THROUGHOUT THE YEAR, DEPENDING ON THE AMOUNT OF WATER IN THE EXISTING POND, VARIATIONS IN PRECIPITATION, SURFACE RUN-OFF, INFILTRATION, SITE TOPOGRAPHY, AND DRAINAGE. SITE GRADING OPERATIONS AT OTHER PARTS OF THE SITE CAN ALSO INFLUENCE THE LEVEL OF THE GROUNDWATER AT THE STORMWATER MANAGEMENT AREA SIGNIFICANTLY. HCEA CANNOT BE RESPONSIBLE FOR CHANGES IN GROUNDWATER CONDITIONS AT THE SITE DUE TO SEASONAL VARIATION AND CHANGES CAUSED BY OTHER FACTORS SUCH AS GRADING OPERATIONS AT THE SITE.

ANY WATER INFILTRATION RESULTING FROM A SHALLOW INTERCEPTION OF THE GROUNDWATER WHILE SURFACE RUN-OFF OR PERCHED WATER, IF NOT TOO EXTENSIVE, SHOULD BE ABLE TO BE CONTROLLED BY MEANS OF SUMP PIT AND PUMP, OR BY GRADY DITCHING PROCEDURES PROVIDED THAT THE GROUNDWATER LEVEL MUST ONLY BE LOWERED BY A DEPTH OF 11 TO 24 FT. IF THE GROUNDWATER MUST BE LOWERED BY MORE THAN 14 FT TO 24 FT, OR IF A LESSER AMOUNT OF WATER CANNOT BE SUITABLY LOWERED BY PUMPING, THEN THE USE OF A MORE EXTENSIVE ENGINEERING SYSTEM WILL BE REQUIRED.

FILL SELECTION, PLACEMENT AND COMPACTION

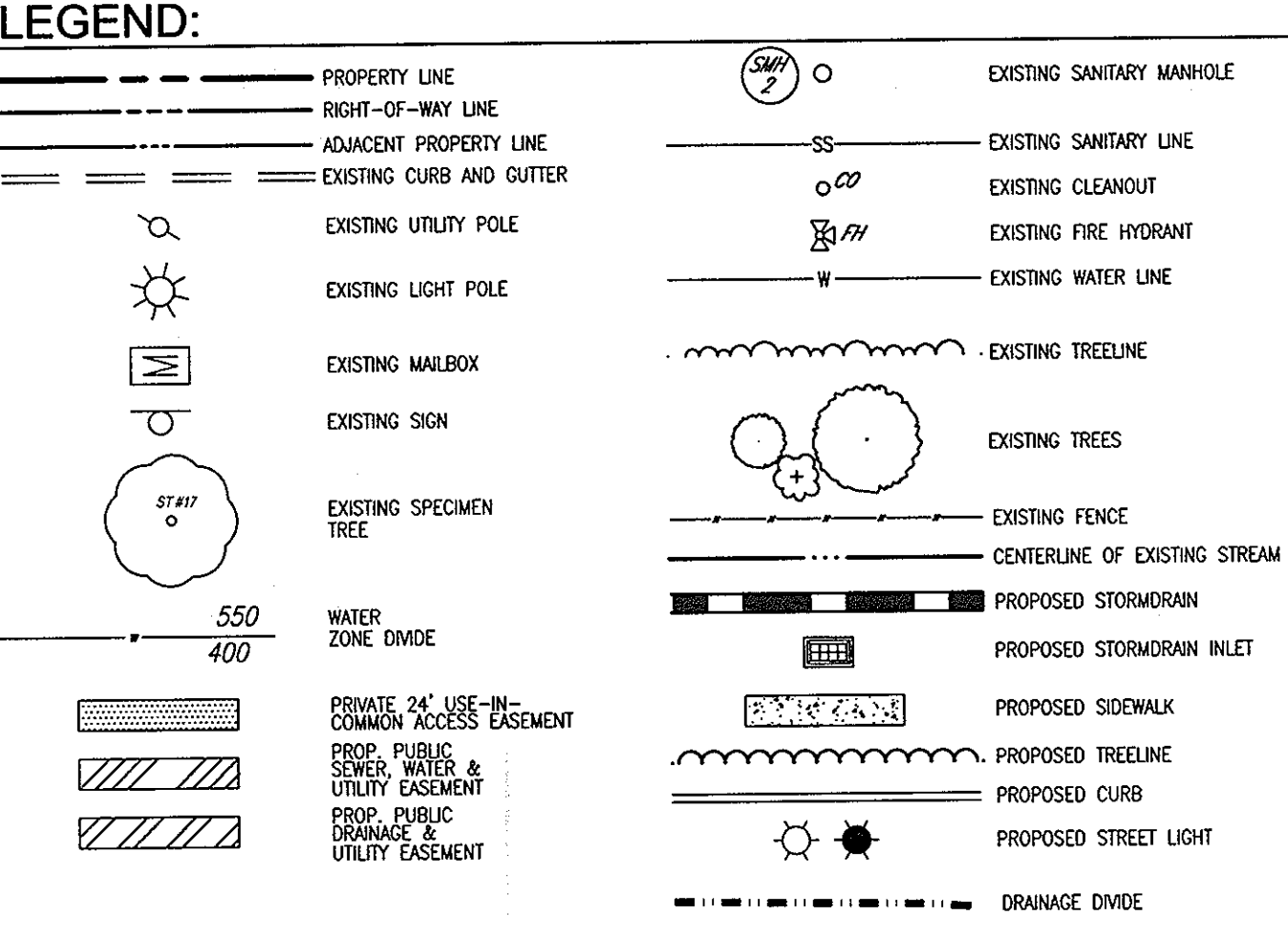
ALL MATERIALS TO BE USED AS FILL SHOULD BE INSPECTED, TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER. BASED ON THE EVALUATION OF THE SOILS ENCOUNTERED BORING CONDUCTED ON THE SITE, IT APPEARS THAT THE ON-SITE SOILS THAT ARE FREE FROM ORGANICS AND OTHER DELETERIOUS MATERIALS CAN BE USED FOR CONSTRUCTION. IMPORTED FILL MATERIALS SHOULD BE OF EQUAL OR GREATER QUALITY THAN THE ON-SITE MATERIALS AND SHOULD BE APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.

MOISTURE CONDITIONING (WETTING OR DRYING) OF THE MATERIALS MAY BE REQUIRED IN ORDER TO ACHIEVE PROPER COMPACTION DEPENDING ON THE SEASON OF THE YEAR. THE MOISTURE CONTENTS OF THE SOILS SHOULD BE PROPERLY CONTROLLED TO AVOID EXTENSIVE CONSIDERABLE DELAYS. ADDITIONAL LABORATORY TESTS SHOULD BE PERFORMED ON BORROW MATERIALS PRIOR TO THEIR USE IN THE COMPACTED FILL.

CARE SHOULD BE EXERCISED DURING THE GRADING OPERATIONS AT THE SITE. DUE TO THE NATURE OF SOME OF THE SOILS ENCOUNTERED IN THE BORINGS, THE TRAFFIC OF HEAVY EQUIPMENT, INCLUDING HEAVY CONSTRUCTION EQUIPMENT, COULD CREATE PUMPING AND A GENERAL DETERIORATION THESE SOILS IF CONDUCTED IN THE PRESENCE OF WATER. AGAIN, THE GRADING SHOULD THEREFORE, IF AT ALL POSSIBLE, BE CARRIED OUT DURING A DRY SEASON. THIS SHOULD MINIMIZE THESE POTENTIAL PROBLEMS, ALTHOUGH THEY MAY NOT BE ELIMINATED. IF SUCH PROBLEMS ARISE, THE GEOTECHNICAL ENGINEER SHOULD BE CONSULTED FOR AN EVALUATION OF THE CONDITIONS.

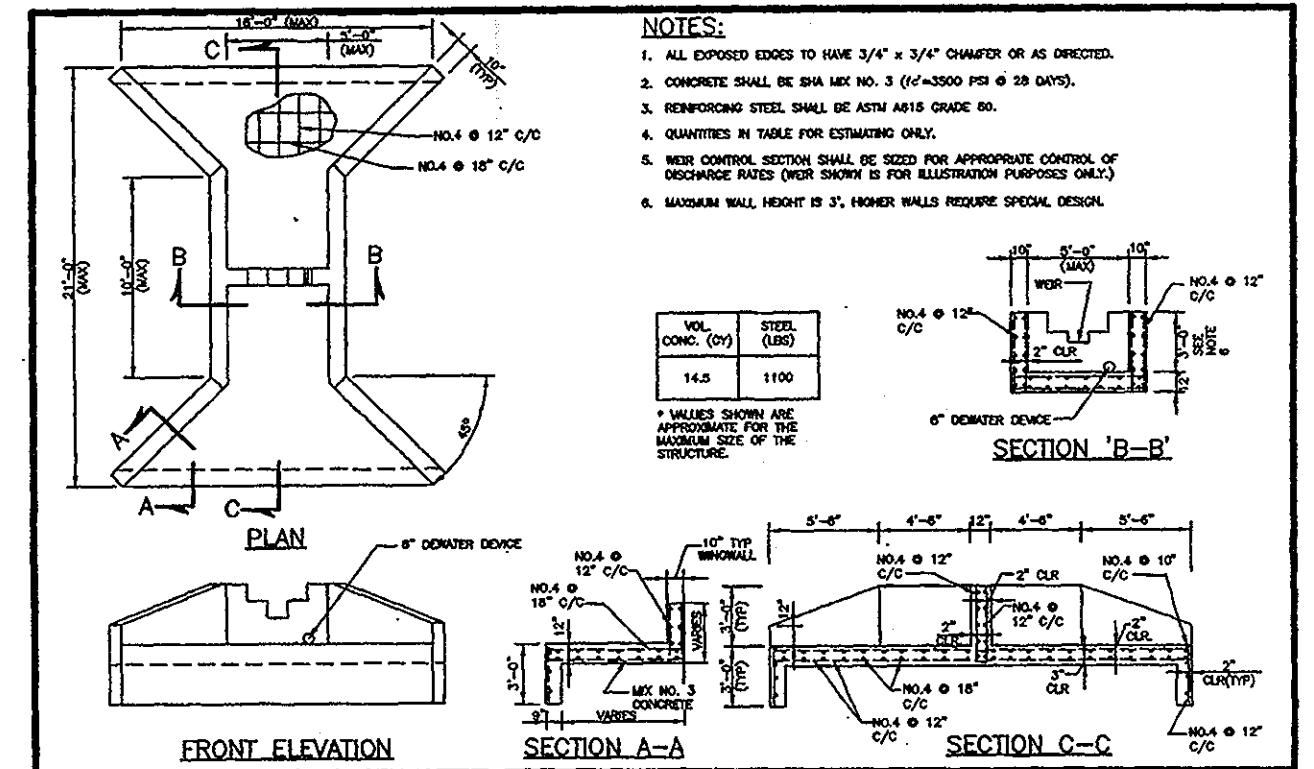
ALL FILL MATERIALS SHOULD BE PLACED IN RELATIVELY HORIZONTAL LAYER OF 8-INCH MAXIMUM THICKNESS AND SHOULD BE COMPACTED TO DRY DENSITIES OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-998). MOISTURE CONTENTS SHOULD BE MAINTAINED WITHIN ±2 PERCENT OF OPTIMUM MOISTURE CONTENT, AND PREFERABLY BETWEEN OPTIMUM MOISTURE CONTENT AND +2 PERCENT OF OPTIMUM MOISTURE CONTENT. NEW FILLS SHOULD BE PROPERLY BENCHED INTO EXISTING SLOPES.

A SUFFICIENT NUMBER OF IN-SITU DENSITY TESTS SHOULD BE PERFORMED BY AN EXPERIENCED ENGINEERING TECHNICIAN ON A FULL-TIME BASIS TO VERIFY THAT THE PROPER DEGREE OF COMPACTION IS BEING OBTAINED. IF ANY COMPACTION PROBLEMS ARE ENCOUNTERED DURING CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHOULD BE CONTACTED FOR ADVICE AS TO MODIFICATIONS TO THE COMPACTION PROCEDURES MAY BE APPROPRIATE.



NOTE

THE SPECIFIC LOCATION OF THE STORM DRAIN ALIGNMENT SHOWN FOR THE PROPOSED RECONSTRUCTED FIRST RISE (F84-103) FACILITY IS SUBJECT TO CHANGE. WP13-089 REQUESTS THE ENVIRONMENTAL DISTURBANCES ASSOCIATED WITH THE STORM DRAIN ALIGNMENT ON THE "WOODS" PROPERTY IS BEING CONSIDERED.



GRADING PLAN
SCALE: 1"=50'

SOIL BORINGS

Records of soil exploration for four borings (A, B, C, D) showing depth, soil type, and test results.

Deer Springs HCEA Project No. 12324A

Table 1. Auger Probe Summary

Boring	Surface Elevation	Boring Depth		At Completion	
		Proposed	Drilled	Water (ft)	Cave-in (ft)
SWM-1	304	14	14	Dry	8.0
SWM-1A	309	15	15	Dry	8.0
SWM-2	304	16	16	Dry	8.5
SWM-3	302	17	17	Dry	8.4
SWM-4	304	19	19	Dry	8.8
SWM-5	298	11	11	Dry	5.3
SWM-6	282	5	5	Dry	2.8
SWM-7	276	11.5	11.5	Dry	7.0
SWM-8	272	11.5	11.5	Dry	7.0
SWM-9	273	13	14	Dry	8.0
SWM-10	277	11	11	Dry	7.2
SWM-11	282	13	13	Dry	7.0
SWM-12	308.5	23.5	24.5	Dry	13.3
SWM-13	310	21	21	Dry	12.6
SWM-14	298	18	18	Dry	11.3
SWM-15	298	13	13	Dry	9.0
SWM-16	292	16	16	Dry	12.0
SWM-17	302	9	9	Dry	4.4
SWM-18	303	15	15	Dry	10.0
SWM-19	304	9	9	Dry	4.8
SWM-20	312	13	13	Dry	8.8
SWM-21	318	13	13	Dry	7.8
SWM-22	306	12.5	12.5	Dry	10.0
SWM-23	301	14	14	Dry	10.0
SWM-24	293.5	11	11	Dry	6.8
SWM-25	290.5	16.5	16.5	Dry	11.0
SWM-26	296.5	16.5	16.5	Dry	12.5
SWM-27	297	12	12	Dry	7.0
SWM-28	307	14	14	Dry	9.0
SWM-29	308	13	13	Dry	6.0
SWM-30	312	13	13	Dry	12.5
SWM-31	314	12	12	Dry	8.7
SWM-32	317.5	12.5	12	Dry	8.3
SWM-33	323	17.5	17.5	Dry	13.0
SWM-34	309	16	16	Dry	11.0
SWM-35	321	15	15	Dry	11.3
SWM-36	330	18	18	Dry	12.0

Deer Springs HCEA Project No. 12324A

Table 1. Auger Probe Summary

Boring	Surface Elevation	Boring Depth		At Completion	
		Proposed	Drilled	Water (ft)	Cave-in (ft)
SWM-37	332	18	18	Dry	17.2
SWM-38	330.5	18.5	18.5	Dry	17.3
SWM-39	333	16	16	Dry	15.0
SWM-40	337	13.5	13.5	Dry	12.0
SWM-41	330	15	15	Dry	9.5
SWM-42	324	16	16	Dry	8.0
SWM-43	330	17	17	Dry	11.0
SWM-44	324	15	15	Dry	10.0
SWM-45	308	11	11	Dry	8.0
SWM-46	306	14	14	Dry	6.0
SWM-47	296	18	18	Dry	18.0
SWM-48	294	16	16	Dry	10.0
SWM-49	294	16	16	Dry	10.0
SWM-50	324	18	18	Dry	13.0
SWM-51	318	12	13	Dry	8.2
SWM-52	306	13	13	Dry	9.0
SWM-53	322	14	14	Dry	10.3
SWM-54	301	14	14	Dry	8.0
SWM-55	320	14	14	Dry	11.0
SWM-56	314	14	14	Dry	7.0
SWM-57	301.5	11.5	11.5	Dry	7.0
SWM-57A	295.5	9.5	9.5	Dry	6.0
SWM-57B	303.4	12.9	12.9	Dry	8.3
SWM-58	308	12	12	Dry	8.6
SWM-59	308	12	12	Dry	8.5
SWM-60	297	14	14	Dry	11.6
SWM-61	297	14	14	Dry	10.8
SWM-62	300	6	6	Dry	3.3
SWM-63	298	10	10	Dry	8.3
SWM-64	298.5	14.5	14.5	Dry	10.5
SWM-65	291	13	13	Dry	8.8
SWM-66	—	20	20	Dry	11.3

- Probe refused at 5.5 ft. Offset 5 ft and augered to proposed depth.
 // Auger Refusal encountered at depth shallower than proposed

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark H. Vogel
 PLANNING DIRECTOR

7/3/12
 DATE

OWNER
 Howard County, Maryland
 Department of Public Works
 9222 OLD SCAGGSVILLE ROAD
 ELICOTT CITY, MARYLAND 21117-1120
 ATTN: MR. DONALD R. REUWER
 443-367-0422

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, STE 102
 ELICOTT CITY, MARYLAND 21117-7819
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NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
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 A SUBDIVISION OF TAX MAP 50 - PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 NON-BUILDABLE 'BULK' PARCEL 'A' (PLAT 21191)
 KRAESKI PROPERTY

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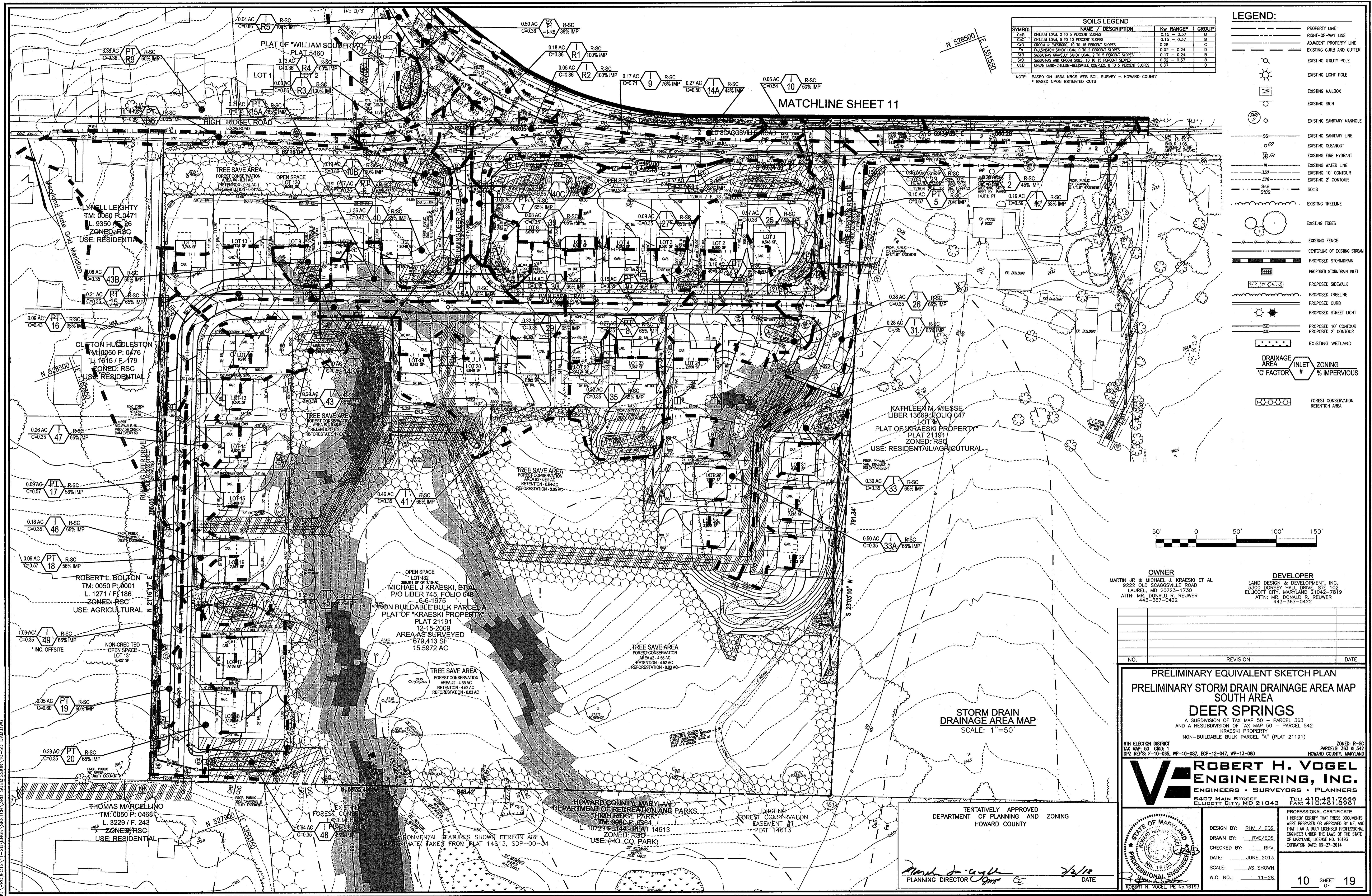
ZONED: R-SC
 PARCELS: 363 & 542
 HOWARD COUNTY, MARYLAND

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DESIGN BY: RHW / EDS
 DRAWN BY: RVE/EDS
 CHECKED BY: RHW
 DATE: JUNE 2013
 SCALE: AS SHOWN
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 EXPIRATION DATE: 09-27-2014

9 SHEET OF 19



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
GaB	GRILLIUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
GaC	GRILLIUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CpD	CROWN & EMBURY, 10 TO 15 PERCENT SLOPES	0.28	C
Fg	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
SbB	SASSAWHOG GRASSY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SbD	SASSAWHOG GRASSY SANDY LOAM, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
UcB	URBAN LAND-GRILLIUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

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

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
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- PROPOSED CURB
- PROPOSED STREET LIGHT
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING WETLAND
- DRAINAGE AREA
- INLET #
- ZONING
- % IMPERVIOUS
- FOREST CONSERVATION RETENTION AREA



OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD E. REUWER
443-387-0422

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD E. REUWER
443-387-0422

NO.	REVISION	DATE

STORM DRAIN DRAINAGE AREA MAP
SCALE: 1"=50'

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Mark H. Vogel
PLANNING DIRECTOR

7/2/15
DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
PRELIMINARY STORM DRAIN DRAINAGE AREA MAP
SOUTH AREA
DEER SPRINGS
A SUBDIVISION OF TAX MAP 50 - PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
TAX MAP 50 GRID: 1
DPZ REF'S: F-10-065, WP-10-087, EOP-12-047, WP-13-080

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 09-27-2014

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: JUNE 2013
SCALE: AS SHOWN
W.O. NO.: 11-28

10 OF 19

K:\PROJECTS\11-28\ENGR\SKETCH PLAN SUBMISSION\10-SD_DIA.MXD

NOTE
 THE SPECIFIC LOCATION OF THE STORM DRAIN ALIGNMENT TOWARD THE PROPOSED RECONSTRUCTED FIRST RIDGE (784-103) FACILITY IS SUBJECT TO CHANGE. WP13-080 REQUESTS THE ENVIRONMENTAL DISTURBANCES ASSOCIATED WITH THE STORM DRAIN ALIGNMENT BE REMOVED. ESSENTIAL AN OPTIMAL STORM DRAIN ALIGNMENT ON THE "GIDDINGS PROPERTY" IS BEING CONSIDERED.

MATCHLINE SHEET 9

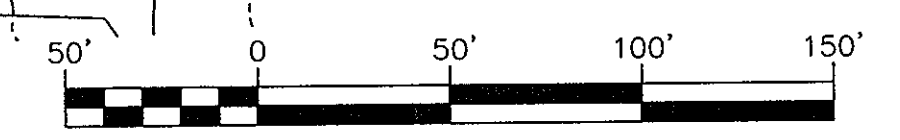
LEGEND:

- 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 CLEANDOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- EXISTING TREELINE
- EXISTING TREES
- DA-3 DRAINAGE DIVIDE
- DRAINAGE AREA DESIGNATION
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- EXISTING WETLAND
- PRIVATE 24" USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE EASEMENT
- PROP. PUBLIC UTILITY EASEMENT

DRAINAGE AREA INLET ZONING
 C FACTOR # % IMPERVIOUS

- PRIVATE SWM DRAINAGE & UTILITY EASEMENT
- RECREATION OPEN SPACE
- FOREST CONSERVATION EASEMENT

NOTE
 PROPOSED CONNECTION TO FIRST RIDGE (784-103) STORM DRAIN SYSTEM. STORM DRAINAGE TO BE CONVEYED TO RECONSTRUCTED FIRST RIDGE (784-103) FACILITY. SEE SHEET 9.



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
CHILLUM LOAM, 2 TO 5 PERCENT SLOPES		0.15 - 0.37	B
CHILLUM LOAM, 5 TO 10 PERCENT SLOPES		0.15 - 0.37	B
CHILLUM LOAM, 10 TO 15 PERCENT SLOPES		0.28	C
CHILLUM LOAM, 15 TO 20 PERCENT SLOPES		0.02 - 0.24	D
CHILLUM LOAM, 20 TO 25 PERCENT SLOPES		0.17 - 0.24	B
CHILLUM LOAM, 25 TO 30 PERCENT SLOPES		0.32 - 0.37	D
CHILLUM LOAM, 30 TO 35 PERCENT SLOPES		0.37	D

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

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PRELIMINARY EQUIVALENT SKETCH PLAN
PRELIMINARY STORM DRAIN DRAINAGE AREA MAP
NORTH AREA
DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 - PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRASKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-1856

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DESIGN BY: RHV / EDS.
 DRAWN BY: RVE/EDS.
 CHECKED BY: RHV.
 DATE: FEBRUARY 2013.
 SCALE: AS SHOWN.
 W.O. NO.: 11-28.

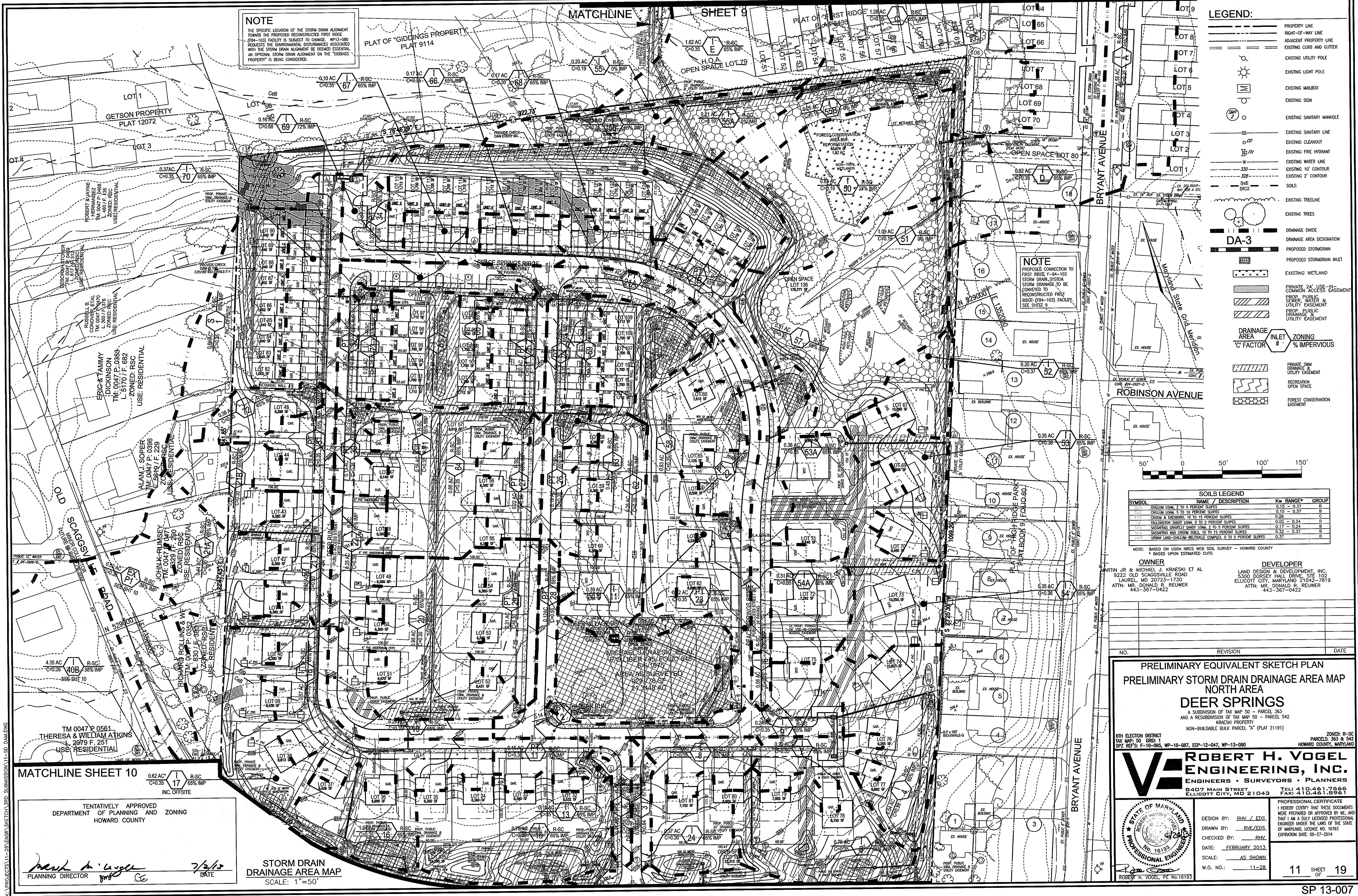
11 SHEET OF 19

MATCHLINE SHEET 10

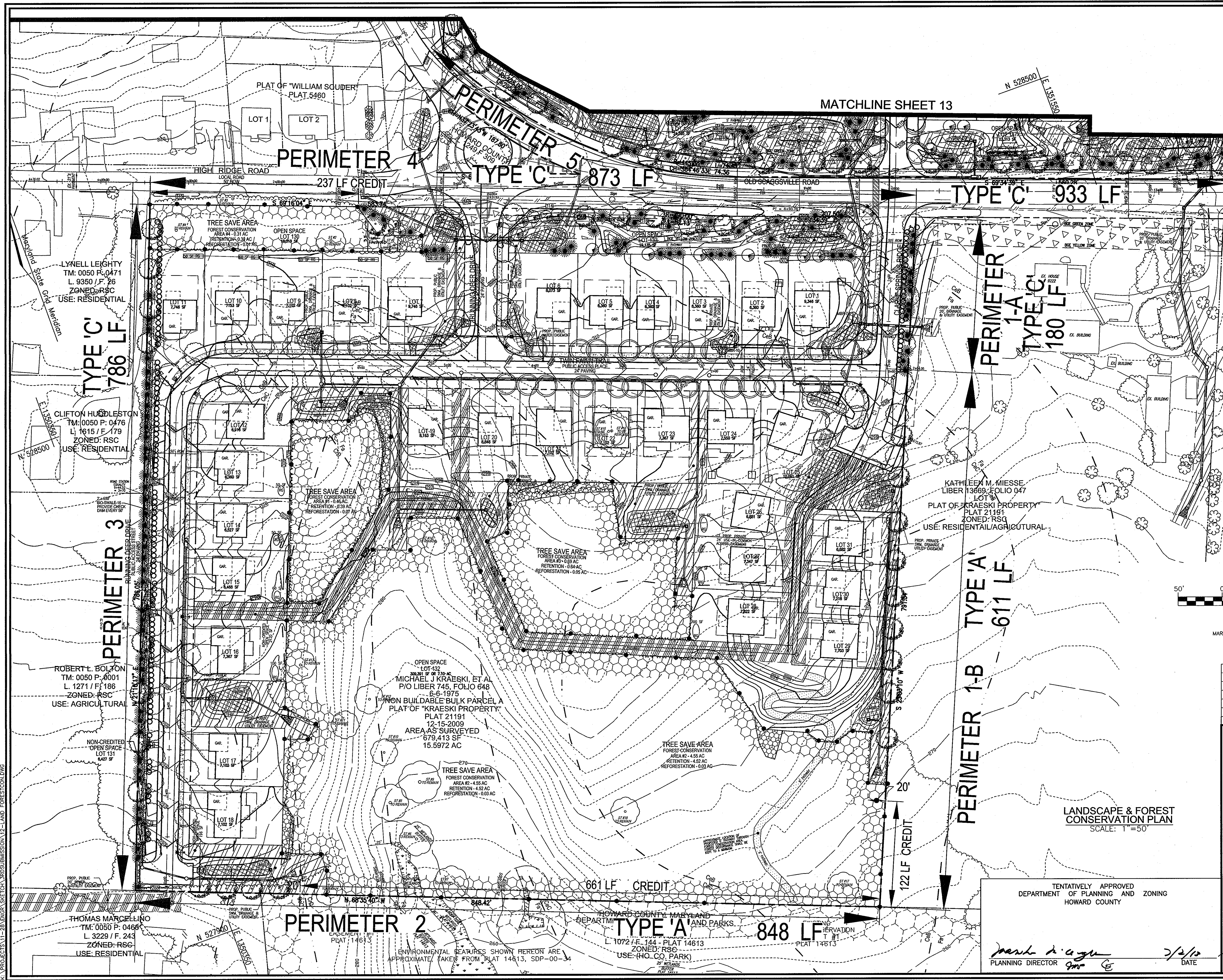
TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

PLANNING DIRECTOR *Robert H. Vogel* 7/2/13 DATE

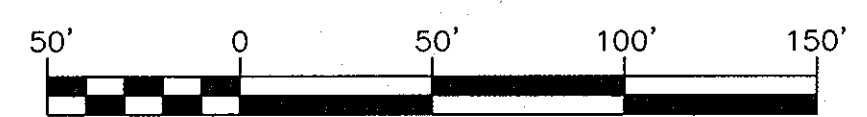
STORM DRAIN DRAINAGE AREA MAP
 SCALE: 1"=50'



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



- LEGEND:**
- EXISTING CONTOUR
 - PROPOSED CONTOUR
 - EXISTING CURB AND GUTTER
 - PROPOSED 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 FENCE
 - PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - SOILS BOUNDARY
 - PROPOSED STORM DRAIN
 - PROPOSED STORM DRAIN INLET
 - PROPOSED SIDEWALK
 - PROPOSED LIGHT POLE
 - PROPOSED SHADE TREE
 - PROPOSED EVERGREEN TREE
 - PROPOSED SHRUBS
 - LANDSCAPE PERIMETER
 - MICRO BIO RETENTION FACILITY
 - BIO SWALE
 - EXISTING SPECIMEN TREE
 - EXISTING SPECIMEN TREE TO BE REMOVED
 - WATER ZONE DIVIDE
 - PRIVATE 24' USE-IN-COMMON ACCESS EASEMENT
 - PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
 - PROP. PUBLIC DRIVEWAY & UTILITY EASEMENT
 - SGC ZONE
 - FOREST CONSERVATION EASEMENT
 - TYP. FOREST CONSERVATION EASEMENT SIGN
 - PRIVATE SWIM EASEMENT
 - UTILITY EASEMENT
 - RECREATION OPEN SPACE



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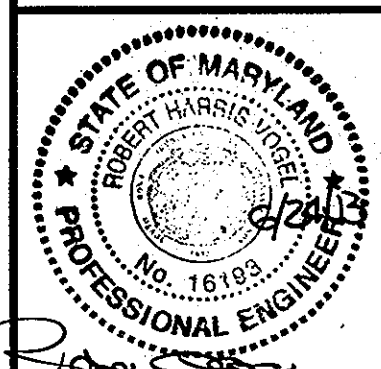
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PRELIMINARY EQUIVALENT SKETCH PLAN
PRELIMINARY LANDSCAPE AND FOREST CONSERVATION PLAN
DEER SPRINGS
 A SUBDIVISION OF TAX MAP 50 - PARCEL 363
 AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
 KRAESKI PROPERTY
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
 TAX MAP 50 GRID: 1
 DEP. REFS: F-10-065, WP-10-087, EOP-12-047, WP-13-080

PARCELS: 363 & 542
 HOWARD COUNTY, MARYLAND

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DESIGN BY: RHV / EDS
 DRAWN BY: RVE / EDS
 CHECKED BY: RHV
 DATE: JUNE 2013
 SCALE: AS SHOWN
 W.O. NO.: 11-28

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TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark A. Agn
 PLANNING DIRECTOR

7/2/13
 DATE

K:\PROJECTS\11-28\ENGR\SKETCH PLAN SUBMISSION\12-LAND FORESTCON.DWG

NOTE
 THE SPECIFIC LOCATION OF THE STORM DRAIN ALIGNMENT TOWARD THE PROPOSED RECONSTRUCTED FIRST FLOOR (FBI-103) FACILITY IS SUBJECT TO CHANGE. WP13-080 REQUESTS THE ENVIRONMENTAL DISTURBANCES ASSOCIATED WITH THE STORM DRAIN ALIGNMENT BE DEEMED ESSENTIAL. AN OPTIONAL STORM DRAIN ALIGNMENT ON THE "GIDDINGS PROPERTY" IS BEING CONSIDERED.

PLAT OF "GIDDINGS PROPERTY" PLAT 9114

PERIMETER 7B TYPE 'A' 413 LF

PERIMETER 7A TYPE 'C' 510 LF

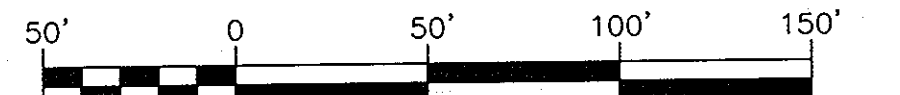
PERIMETER 6B TYPE 'C' 294 LF

PERIMETER 6A TYPE 'A' 548 LF

PERIMETER 8 TYPE 'A' 1,099 LF

- LEGEND:**
- EXISTING CONTOUR
 - PROPOSED CONTOUR
 - EXISTING CURB AND GUTTER
 - PROPOSED CURB AND GUTTER
 - EXISTING UTILITY POLE
 - EXISTING LIGHT POLE
 - EXISTING MAILBOX
 - EXISTING SIGN
 - EXISTING SANITARY MANHOLE
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 - EXISTING SPECIMEN TREE
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 - WATER ZONE DIVIDE
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 - PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
 - PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
 - BOE ZONE
 - TYP. FOREST CONSERVATION EASEMENT SIGN
 - FOREST CONSERVATION EASEMENT
 - PRIVATE SWIM DRAINAGE & UTILITY EASEMENT
 - RECREATION OPEN SPACE

NOTE
 ADDITIONAL SCREENING SHALL BE PROVIDED AT THE REAR OF LOTS 68, 71, 72 AND 75 TO PROVIDE SCREENING OF THE REAR YARD FROM THE FRONT YARDS OF LOTS 69, 70, 73 AND 74 RESPECTIVELY. PLANTINGS SHALL BE PART OF THE BUILDERS SITE DEVELOPMENT PLAN.



OWNER: MARTIN JR & MICHAEL J. KRAESKI ET AL
 9222 OLD SCAGGSVILLE ROAD
 LAUREL, MD 20723-1730
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 KRAESKI PROPERTY
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6TH ELECTION DISTRICT
 TAX MAP 50
 GRID: DP2, REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080

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TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark A. Vogel
 PLANNING DIRECTOR

7/2/12
 DATE

LANDSCAPE & FOREST CONSERVATION PLAN
 SCALE: 1"=50'

MATCHLINE SHEET 12

K:\PROJECTS\11-28\ENGR SKETCH\3RD SUBMISSION\13-LAND-FORESTCON.DWG

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING TREELINE
- EXISTING TREES
- PROPOSED SIDEWALK
- PROPOSED TREELINE
- MICRO BIO RETENTION FACILITY
- EXISTING SPECIMEN TREE
- EXISTING SPECIMEN TREE TO BE REMOVED
- FOREST CONSERVATION EASEMENT
- TYP. FOREST CONSERVATION EASEMENT SIGN

Specimen Tree List for the 9222 Old Seagoville Road

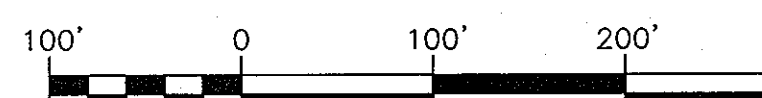
Number	Common Name	Species Name	DBH (inches)	Condition
1	white oak	Quercus alba	31	Fair
2	white oak	Quercus alba	38	Fair
3	white oak	Quercus alba	38	Fair
4	white oak	Quercus alba	38	Good
5	black oak	Quercus velutina	31	Good
6	yellow-poplar	Liriodendron tulipifera	31	Good
7	yellow-poplar	Liriodendron tulipifera	39	Good
8	yellow-poplar	Liriodendron tulipifera	41	Good
9	yellow-poplar	Liriodendron tulipifera	47	Fair
10	yellow-poplar	Liriodendron tulipifera	30	Fair
11	southern red oak	Quercus falcata	31	Fair
12	yellow-poplar	Liriodendron tulipifera	33	Fair
13	white oak	Quercus alba	35	Fair
14	yellow-poplar	Liriodendron tulipifera	30	Good
15	southern red oak	Quercus falcata	35	Fair
16	southern red oak	Quercus falcata	37	Fair
17	yellow-poplar	Liriodendron tulipifera	35	Good
18	yellow-poplar	Liriodendron tulipifera	32	Good
19	silver maple	Acer saccharinum	32	Good
20	chestnut oak	Quercus montana	33	Fair
21	yellow-poplar	Liriodendron tulipifera	34	Fair
22	chestnut oak	Quercus montana	32	Fair
23	white oak	Quercus alba	31	Good
24	black oak	Quercus velutina	35	Good
25	black oak	Quercus velutina	30	Poor/Fair
26	white oak	Quercus alba	31	Good

* SPECIMEN TREE #15 / 16 REMOVAL FOR PROPOSED LOT

* SPECIMEN TREE #19 REMOVAL BASED UPON REQUIRED PROPOSED GRADES / CUT SLOPE

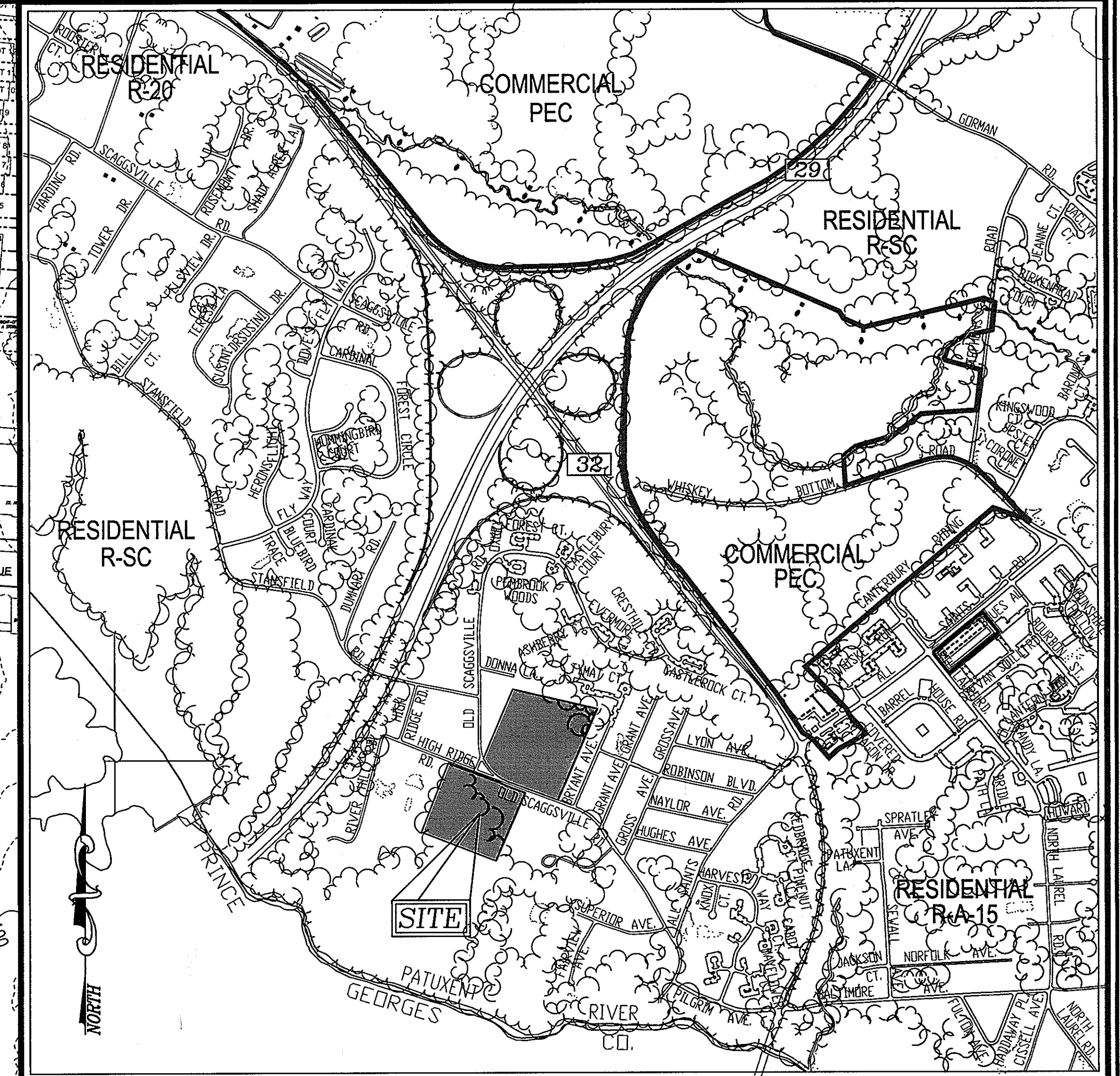
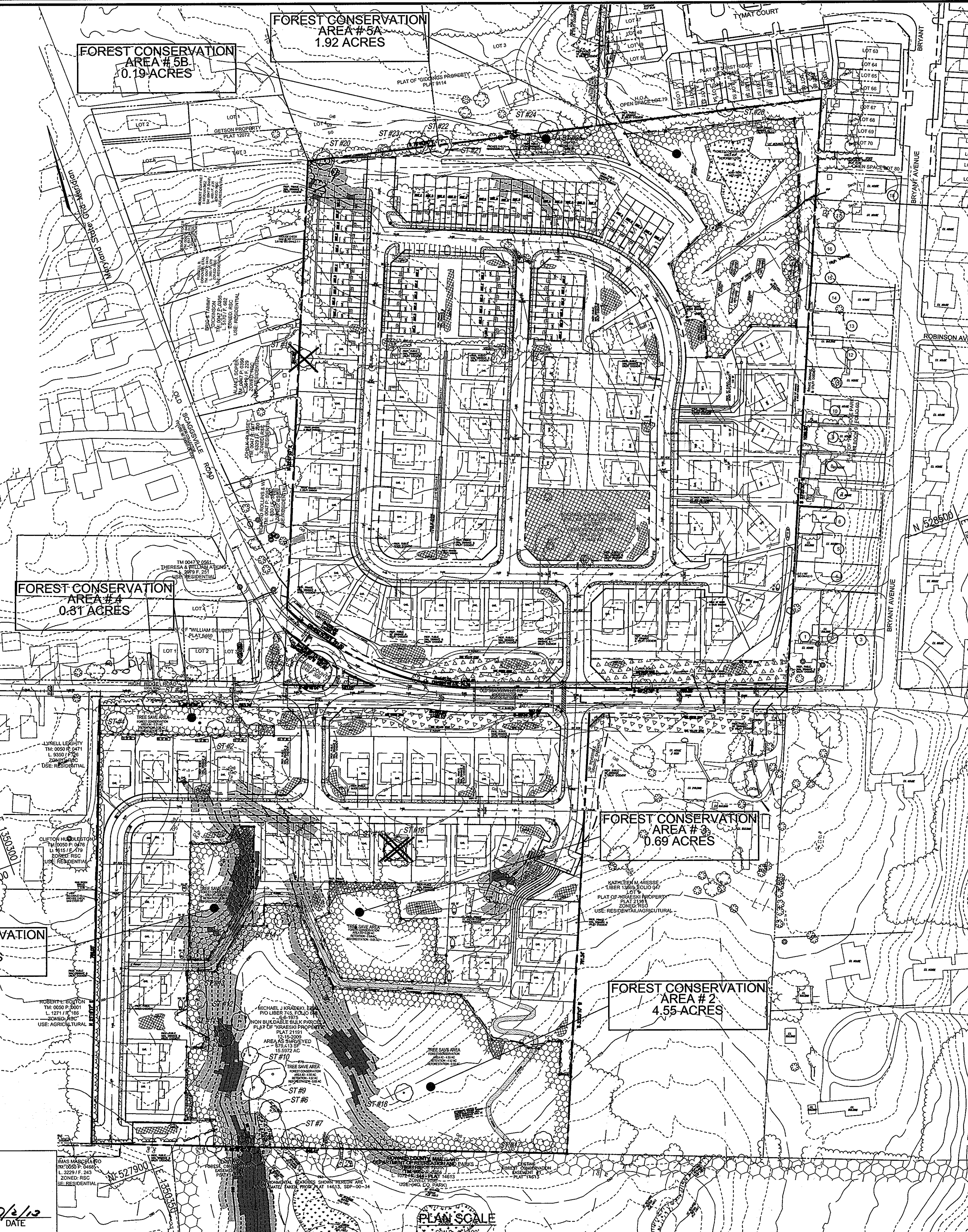
Klebesko Environmental, LLC
8373 Piney Orchard Parkway, Suite 207
Odenton, Maryland 21113
Phone: (410) 672-5990
FAX: (410) 672-5993

Plan prepared by:
Keneth R. Wallis 6-24-13
Keneth R. Wallis
Qualified Professional
CoMar 08.19.06.01



TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Mark J. Laught 7/2/13
PLANNING DIRECTOR DATE



GENERAL NOTES

WATERSHED NAME: PATUXENT RIVER UPPER
WATERSHED NUMBER: 2131104

A. GROSS SITE AREA: 36.94 AC.
B. NET SITE AREA: 36.60 AC.
C. AREA OF 100-YEAR FLOODPLAIN: 0.00 AC.
D. AREA OF WETLANDS AND BUFFERS(ONSITE): 1.12 AC.*
E. AREA OF STREAM AND BUFFERS(ONSITE): 0.68 AC.*
F. AREA OF > 25% STEEP SLOPES: 0.34 AC.
G. EXISTING FOREST: 10.74 AC.
H. ZONED: R-SC
I. EXISTING USE: FARMLAND
J. PROPOSED USE: RESIDENTIAL

* WETLAND & STREAM BUFFERS OVERLAP, TOTAL ONSITE ENVIRONMENTAL AREAS= 1.61 AC.

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
CcC	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
CcC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CpD	CROWM & EVERSHED, 10 TO 15 PERCENT SLOPES	0.28 - 0.24	B
Fs	FALLSTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
SfB	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SfD	SASSAFRAS AND CROWM SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
U3B	URBAN LAND-CHILLUM-VELUTINA COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

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

GENERAL NOTES

1. STEEP SLOPES ARE AS SHOWN HEREON

2. IN ACCORDANCE WITH THE WILDLIFE & HERITAGE SERVICE, THERE ARE NO STATE OR FEDERAL RECORDS FOR RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE BOUNDARIES OF THE PROJECT SITE AS DELINEATED.

VICINITY MAP
SCALE: 1"=1,000'
ADC MAP COORDINATE: 5169 B1/5169 B2
5169 C1/5169 C2

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 47C6 (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

OWNER
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5TH ELECTION DISTRICT
SIX MAPS: 50 GRID: 1 PARCELS: 363 & 542
UPZ REF'S: F-10-CBS, WP-10-087, ECP-12-047, WP-13-080 HOWARD COUNTY, MARYLAND

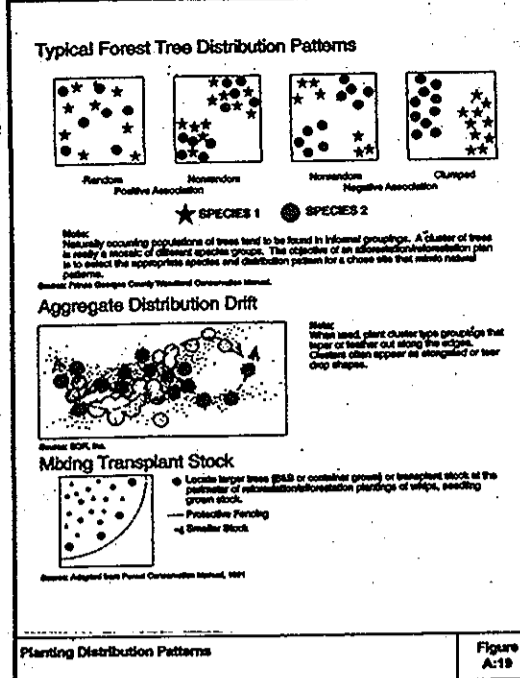
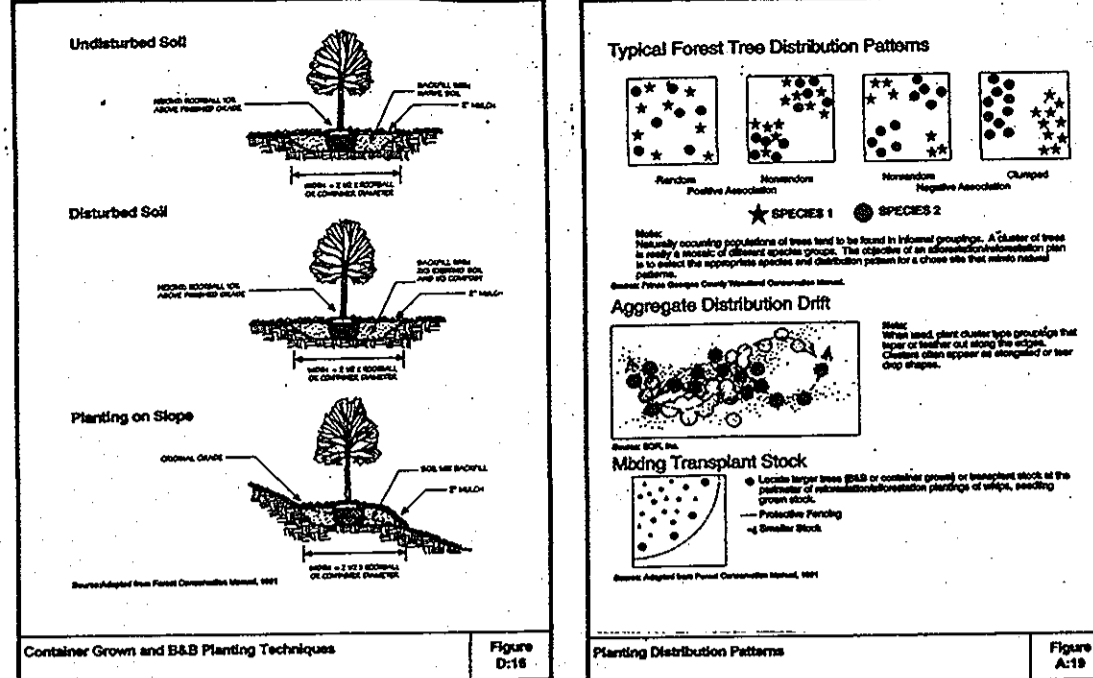
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14 SHEET OF 19

K:\PROJECTS\11-28\ENGR\SWTCH\JOB SUBMISSION\14-FORCON.DWG



HOWARD COUNTY FOREST CONSERVATION WORKSHEET

ZONED R-SC
NET TRACT AREA:
A. TOTAL TRACT AREA 36.94 AC.
B. AREA WITHIN 100 YEAR FLOODPLAIN 0.00 AC.
C. AREA IN PRESERVATION PARCEL 0.00 AC.
D. NET TRACT AREA 36.94 AC

LAND USE CATEGORY
INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-SC

ARA	MDR	IDA	HDR	MFD	CIA
0	0	0	1	0	0

E. AFFORESTATION THRESHOLD 15% X 36.94 = 5.54 AC
F. CONSERVATION THRESHOLD 20% X 36.94 = 7.39 AC

EXISTING FOREST COVER:
G. EXISTING FOREST COVER = 10.74 AC (FSD REPORT)
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD = 5.20 AC
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD = 3.35 AC

BREAK EVEN POINT:
(.2 X I) + F = BREAK EVEN POINT (0 AC)
J. FOREST RETENTION WITH NO MITIGATION = 8.06 AC
K. CLEARING PERMITTED WITHOUT MITIGATION = 2.68 AC

PROPOSED FOREST CLEARING:
L. TOTAL AREA OF FOREST TO BE CLEARED = 4.89 AC
M. TOTAL AREA OF FOREST TO BE RETAINED = 5.85 AC (IN FCE)

PLANTING REQUIREMENTS:
N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD (L X 2) = 0.84 AC
O. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD = 3.08 AC
P. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD (M-F) = 0.00 AC
R. TOTAL REFORESTATION REQUIRED (N+P-Q) = 3.91 AC
S. TOTAL AFFORESTATION REQUIRED = 0.00 AC
T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED = 3.91 AC

FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL A PORTION OF THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL.

NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

TOTAL FOREST CONSERVATION OBLIGATION OF THIS PROJECT TO BE FULFILLED BY ONSITE RETENTION OF 5.85 AC, REFORESTATION OF 2.27 AC, AND PURCHASE OF 1.64 ACRES OR EQUAL OF OFFSITE FOREST CONSERVATION EASEMENT.

FINANCIAL SURETY SHALL BE POSTED WITH THE FOREST CONSERVATION MAINTENANCE AGREEMENT.

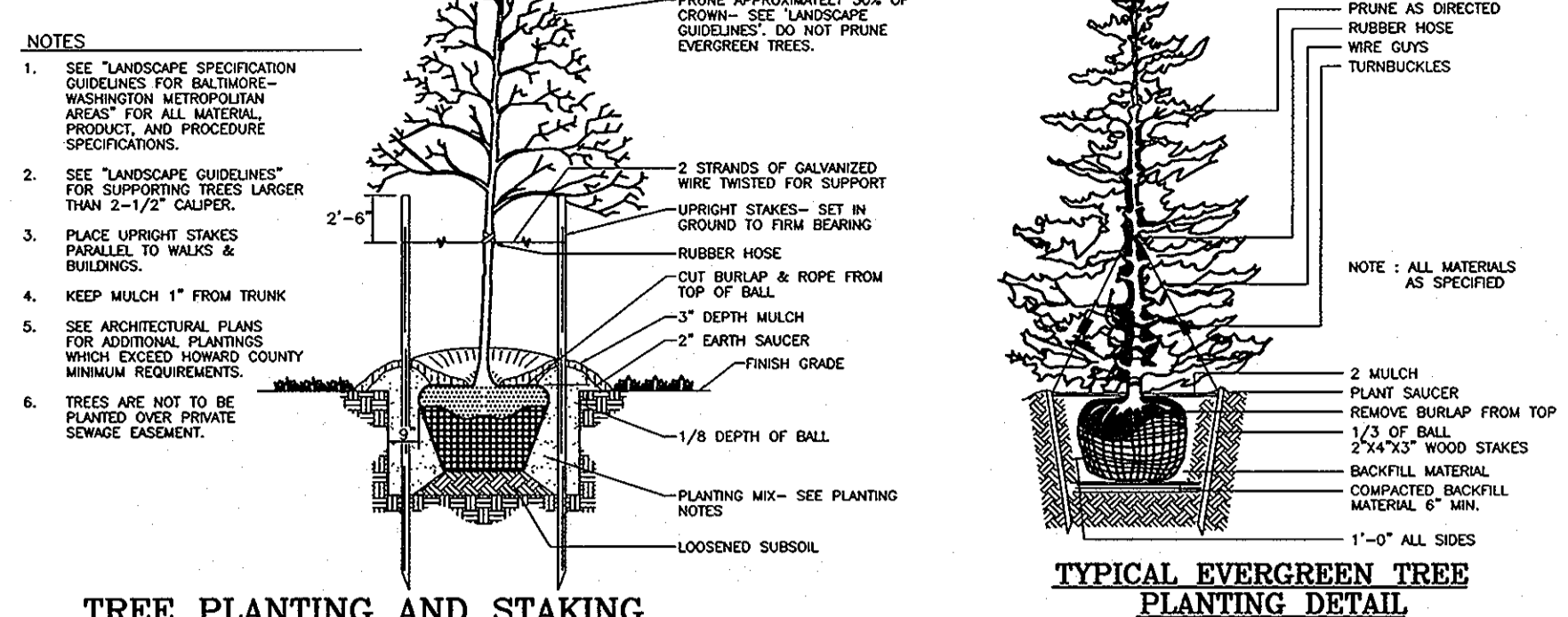
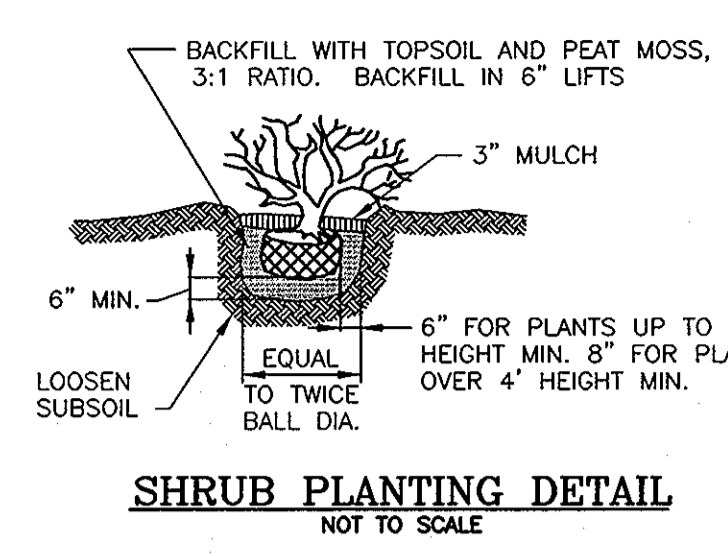
Klebasko Environmental, LLC
8373 Piney Orchard Parkway, Suite 207
Odenton, Maryland 21113
Phone: (410) 672-5990
Fax: (410) 672-5993

Plan prepared by:
[Signature] 6-24-13
Qualified Professional
CoMar 08.19.06.01

FOREST CONSERVATION EASEMENT TABLE

EASEMENT	RETENTION	REFORESTATION	TOTAL
FCE#1	0.39 AC	0.07 AC	0.46 AC
FCE#2	4.52 AC	0.03 AC	4.55 AC
FCE#3	0.64 AC	0.05 AC	0.69 AC
FCE#4	0.30 AC	0.01 AC	0.31 AC
FCE#5A	-	1.92 AC	1.92 AC
FCE#5B	-	0.19 AC	0.19 AC
TOTAL	5.85 AC	2.27 AC	8.12 AC

NOTE: 3.91 AC = 2.27 AC + 1.64 AC OFFSITE
OFFSITE LOCATION TO BE DETERMINED UNDER FINAL PLAN



LANDSCAPE NOTES

- 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 DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.

GENERAL NOTES:

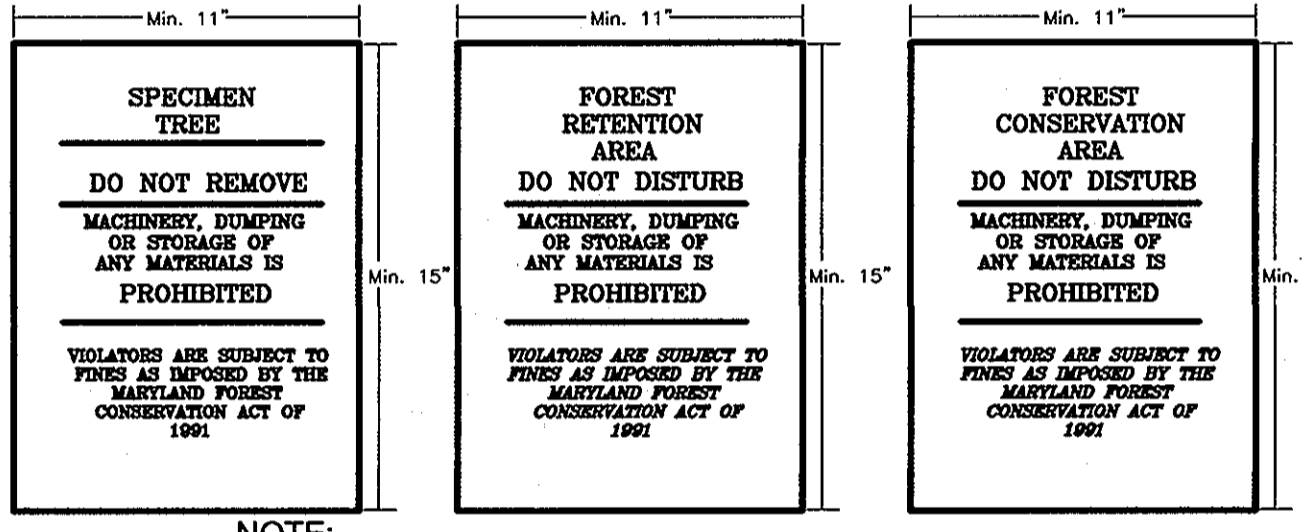
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 65,850) SHALL BE POSTED AS PART OF THE FINAL PLAN DEVELOPER'S AGREEMENT FOR THE REQUIRED 135 (\$40,500) SHADE TREES AND 169 (\$25,350) EVERGREEN TREES.
- PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 76,800) SHALL BE POSTED AS PART OF THE FINAL PLAN DEVELOPER'S AGREEMENT FOR THE REQUIRED 256 STREET TREES.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, BERRMS, 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, REPAIRED OR REPLACED.
- 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 WILL RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
- THERE IS NO 100-YEAR FLOODPLAIN WITHIN THE LIMITS OF THIS PROJECT.
- WETLANDS AND STREAMS SHOWN HEREON ARE BASED ON DELINEATION BY MCCARTHY & ASSOCIATES, INC., DECEMBER 2012.
- 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.
- 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 7/26/06, 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 PHOTOGRAMETRY COMPILY BY POTOMAC AERIAL SURVEYS INC. JANUARY 12, 2012.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO GRAVE SITES, OR CEMETERIES LOCATED ON THE SUBJECT PROPERTY.
- THE REMOVAL OF TREES 30" OR GREAT DHB IS PROHIBITED WITH OUT COUNTY APPROVAL.

LANDSCAPE SCHEDULE NOTE:

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AND SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HED 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 PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

AFFORESTATION AREA MONITORING NOTES

- MONTHLY VISITS DURING THE FIRST GROWING SEASON ARE TO ASSESS THE SUCCESS OF THE PLANTINGS AND TO DETERMINE IF SUPPLEMENTAL WATERING, PEST CONTROL OR OTHER ACTIONS ARE NECESSARY. EARLY SPRING VISITS WILL DOCUMENT WINTER KILL AND AUTUMN VISITS WILL DOCUMENT SUMMER KILL.
- THE MINIMUM SURVIVAL RATE SHALL BE 75% OF THE TOTAL NUMBER OF TREES PLANTED PER ACRE AT THE END OF THE TWO YEAR MAINTENANCE PERIOD. WILD TREE SEEDLINGS FROM NATURAL REGENERATION ON THE PLANTING SITE MAY BE COUNTED UP TO 50% TOWARD THE TOTAL SURVIVAL NUMBER IF THE ARE HEALTHY NATIVE SPECIES AT LEAST 12 INCHES TALL.
- SURVIVAL WILL BE DETERMINED BY A STRATIFIED RANDOM SAMPLING OF THE PLANTINGS. THE SPECIES COMPOSITION OF THE SAMPLE POPULATION SHOULD BE PROPORTIONATE TO THE AMOUNT OF EACH SPECIES IN THE ENTIRE PLANTING TO BE SAMPLED.
- EFFECTIVE MONITORING WILL ASSESS PLANT SURVIVABILITY DURING THE FIRST GROWING SEASON AND MAKE RECOMMENDATIONS FOR REINFORCEMENT PLANTINGS IF REQUIRED AT THAT TIME.



AFFORESTATION PLANTING NOTES

- AFFORESTATION AREAS MAY BE PLANTED AS SOON AS REASONABLE TO DO SO. LATE WINTER-EARLY SPRING PLANTINGS ARE PREFERRED. EARLIEST PLANTING DATES WILL VARY FROM YEAR TO YEAR BUT PLANTING MAY GENERALLY BEGIN AS SOON AS THE GROUND IS NO LONGER FROZEN. ALTERNATE PLANTING DATES MAY BE CONSIDERED AS CONDITION WARRANTS.
- SOIL AMENDMENTS AND FERTILIZATION RECOMMENDATIONS WILL BE MADE BASED UPON THE RESULTS OF SOIL ANALYSIS FOR NITROGEN, PHOSPHORUS, POTASSIUM, ORGANIC MATTER CONTENT AND pH. IF REQUIRED, FERTILIZER WILL BE PROVIDED USING A LOW RATE, SOLUBLE 16-8-16 ANALYSIS DESIGNED TO LAST 5-8 YEARS CONTAINED IN POLYETHYLENE PERFORATED BAGS SUCH AS MANUFACTURED BY ADCO WORKS, P.O. BOX 310 HOLLIS, N.Y. 11423 OR APPROVED EQUAL.
- PLANT MATERIALS WILL BE PLANTED IN ACCORDANCE WITH THE PLANTING DETAILS AND PLANT SCHEDULE.
- PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED PRIOR TO PLANTING. PLANTS NOT CONFORMING TO THE AMERICAN STANDARD FOR NURSERY STOCK SPECIFICATIONS FOR SIZE, FORM, VIGOR, OR ROOTS, OR DUE TO TRUNK WOUNDS, BREAKAGE, DESICCATION, INSECT OR DISEASE MUST BE REPLACED.
- PLANTING STOCK MUST BE PROTECTED FROM DESICCATION AT ALL TIMES PRIOR TO PLANTING. MATERIALS HELD FOR PLANTING SHALL BE MOISTENED AND PLACED IN COOL, SHADED AREAS UNTIL READY FOR PLACEMENT.
- NEWLY PLANTED TREES MAY REQUIRE WATERING AT LEAST ONCE PER WEEK DURING THE FIRST GROWING SEASON DEPENDING ON RAINFALL IN ORDER TO GET ESTABLISHED. THE INITIAL PLANTING OPERATION SHOULD ALLOW FOR WATERING DURING INSTALLATION TO COMPLETELY SOAK BACKFILL MATERIAL.
- MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALCOHOL.
- ALL NURSERY STOCK TO BE SPRAYED WITH DEER REPELLENT CONTAINING BITREX, SUCH AS REPELLEX. ALL NURSERY STOCK TO BE GROWN WITH DEER REPELLENT TABLETS IN GROWING MEDIUM, SUCH AS REPELLEX TABLETS.

NOTE:

- BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
- SIGNS TO BE PLACED APPROXIMATELY 50-100 FEET APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART. WHERE SIGNS ARE TO BE PLACED AT THE REAR OF PROPOSED LOTS, SPACING SHALL BE APPROX. 25-30' ±
- ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
- ALL FOREST CONSERVATION SIGNAGE SHALL BE IN PLACE FOR PERPETUITY.
- SIGN LOCATION SYMBOL = ●

FOREST CONSERVATION AREA SIGNS

SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION

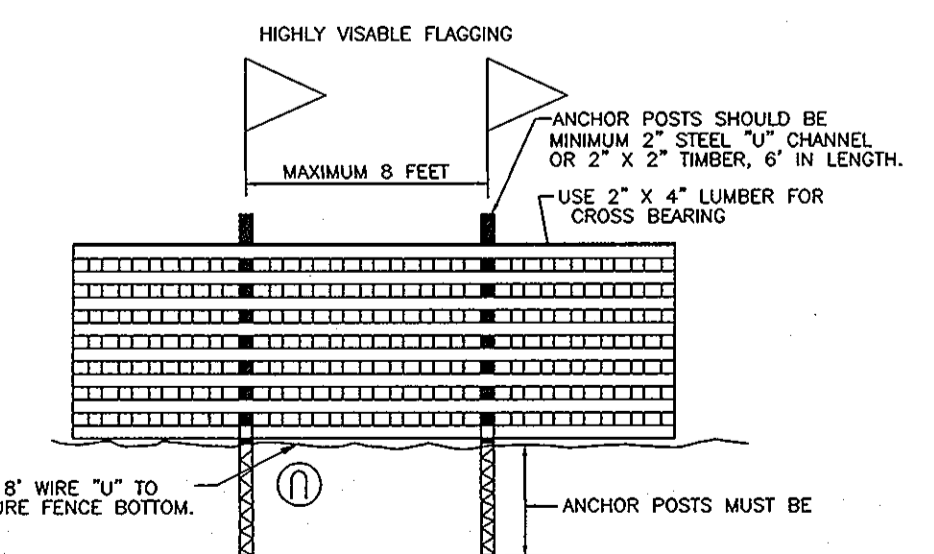
- PRECONSTRUCTION MEETING / SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
- STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
- INSTALL TREE PROTECTION FENCING; FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.
- PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.
- TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

FOREST RETENTION AREAS AND NOTES

- THE WETLANDS AND WETLAND BUFFERS ARE LOCATED ON AN OPEN SPACE LOT.
- NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE.
- FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOTS.
- CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT ADVERSELY AFFECT THE SOILS WITHIN THE FOREST RETENTION AREA. SEDIMENT CONTROL MEASURES WILL REDIRECT CONCENTRATED FLOW RUNOFF TO STORMWATER MANAGEMENT FACILITIES. RETAIN SEDIMENT WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAN WATER AWAY FROM CONSTRUCTION AREAS.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

- PRE-CONSTRUCTION PHASE**
- FOR RETENTION AREAS: INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
 - FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
 - A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNING TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.
- CONSTRUCTION PHASE**
- NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
 - NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CARE DEVICES.
 - IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.
- POST-CONSTRUCTION PHASE**
- AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
 - FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
 - DO NOT REMOVE SIGNS.



- NOTES:**
- FOREST PROTECTION DEVICE ONLY.
 - RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
 - BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
 - ROOF DAMAGE SHOULD BE AVOIDED.

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

[Signature] 7/2/13
PLANNING DIRECTOR DATE

SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES								TOTAL	
	1-A	1-B	2	3	4	6-B	7-A	7-B		
PERIMETERFRONTAGE DESIGNATION	C	A	A	C	C	C	A	C	A	
LANDSCAPE TYPE	180	611	848	786	873*	548	294	510	413	1,099
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER										
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	YES	YES	NO	YES	NO	YES	NO	NO	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED	155	489	107	140	638	1,402	1,408	1,401	1,401	1,801
SHADE TREES	140	5	0	0	140	1,204	1,204	1,204	1,204	1,609
EVERGREEN TREES	15	484	107	140	494	200	204	200	200	192
NUMBER OF PLANTS PROVIDED										
SHRUBS	-	9	4	10	6	9	8	11	7	12
EVERGREEN TREES	-	-	-	40	47	-	15	28	-	8
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	24*	36*	-	-	-	-	-
SHRUBS (2:1 SUBSTITUTION)	30	-	-	100	-	-	-	-	-	30
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED						1 SPEC. TREE		2 SPEC. TREES		

* SHADE TREES ARE TO BE SUBSTITUTED WITH SMALLER TREES AT 2:1 AS REQUIRED BY THE BGE PLANTING ZONES
** TAKE CREDIT FOR EXISTING SPECIMAN TREES

STREET TREE CALCULATIONS

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
CLARKE SPRINGS RIDGE	616/40	16	16
TWIN FAWN TRAIL	912/40	23	23
RUNNING DEER DRIVE 1	1850/40	46	46
RUNNING DEER DRIVE 2	400/40	10	10
DEER SPRINGS PLACE	436/40	11	11
DEER RUN	2722/40	68	68
DEER VILLAGE DRIVE	1196/40	30	30
PEACE SPRINGS RIDGE	2064/40	52	52
TOTAL		256	256

LANDSCAPE SCHEDULE 'C'

NUMBER OF DWELLING UNITS (48 SFA)	48
NUMBER OF TREES REQUIRED	48
NUMBER OF TREES PROVIDED	48*
SHADE TREES	
OTHER TREES (2:1 SUBSTITUTION)	

* OR EQUAL SUBSTITUTION

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

PRELIMINARY EQUIVALENT SKETCH PLAN

PRELIMINARY LANDSCAPE & FOREST CONSERVATION NOTES & DETAILS

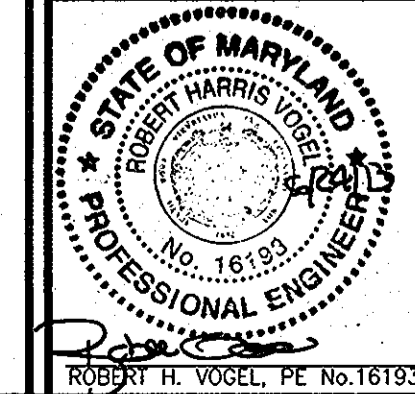
DEER SPRINGS
A SUBDIVISION OF TAX MAP 50 - PARCEL 363
AND A RESUBDIVISION OF TAX MAP 50 - PARCEL 542
KRAESKI PROPERTY
NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

6TH ELECTION DISTRICT
TAX MAP 50 GRID: 1
DPZ REF'S: F-10-065, WP-10-067, EOP-12-047, WP-13-080

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: RHV / EDS.
DRAWN BY: RVE / EDS.
CHECKED BY: RHV
DATE: JUNE 2013
SCALE: AS SHOWN
W.O. NO.: 11-28

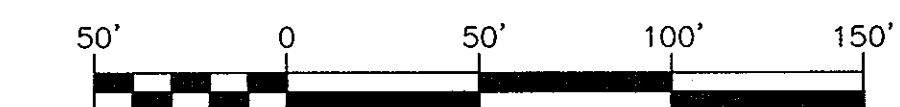


PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 09-27-2014

NOTE:
ESDv EQUAL TO PE = 1.6" IS PROVIDED WITHIN EACH
SUB DRAINAGE AREA

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
CcB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
CcC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CcD	CHILLUM & DEERBROOK, 10 TO 15 PERCENT SLOPES	0.28	C
Fo	FALLSUNTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
SfB	SASSAPARA GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SfD	SASSAPARA AND GROOM SOILS, 10 TO 15 PERCENT SLOPES	0.12 - 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

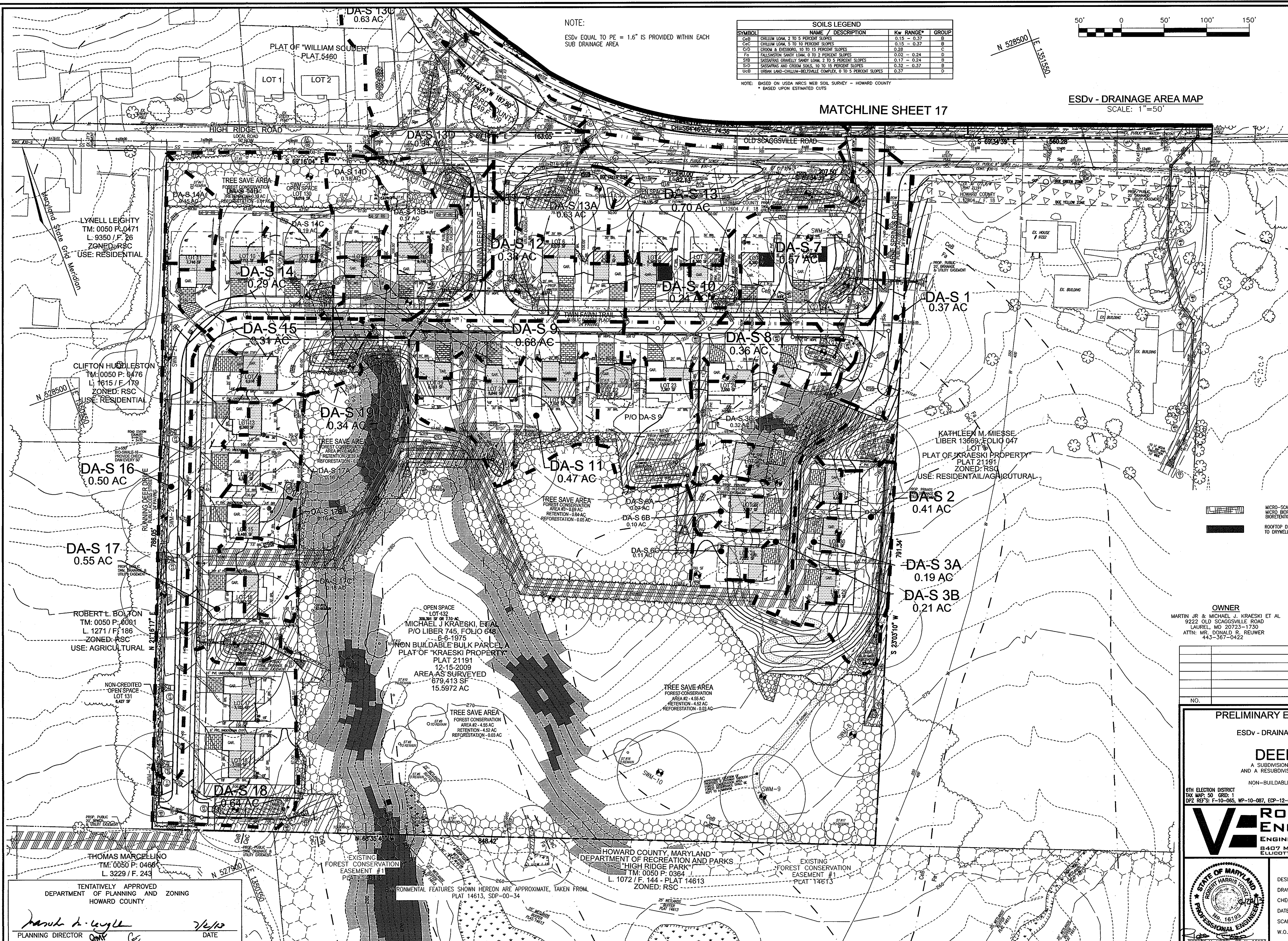


LEGEND:

- 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
- EXISTING MODERATE SLOPES
- EXISTING STEEP SLOPES
- NON-STRUCTURAL ROOFTOP DISCONNECTIONS
- MICRO-SCALE PRACTICE BIO-SWALE
- NON-STRUCTURAL PROP. PERMEABLE SURFACE POND / DRIVEWAY ROOFTOP PERMEABLE SURFACE SUBBASE
- WATER ZONE DIVIDE
- 200 GAL RAIN BARREL
- MICRO-SCALE PRACTICE MICRO BIORETENTION / BIORETENTION
- ROOFTOP DISCONNECTS TO DRYWELL
- ROOFTOP DISCONNECTS FLOW PATH
- ROOFTOP DISCONNECTS RAIN BARREL
- PROPOSED DRYWELL
- EXISTING WETLAND

MATCHLINE SHEET 17

ESDv - DRAINAGE AREA MAP
SCALE: 1"=50'



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ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
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
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PROFESSIONAL CERTIFICATE
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STATE OF MARYLAND
ROBERT H. VOGEL
PROFESSIONAL ENGINEER
No. 16193

16 SHEET OF 19

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Janak A. Leighty
PLANNING DIRECTOR

7/2/13
DATE

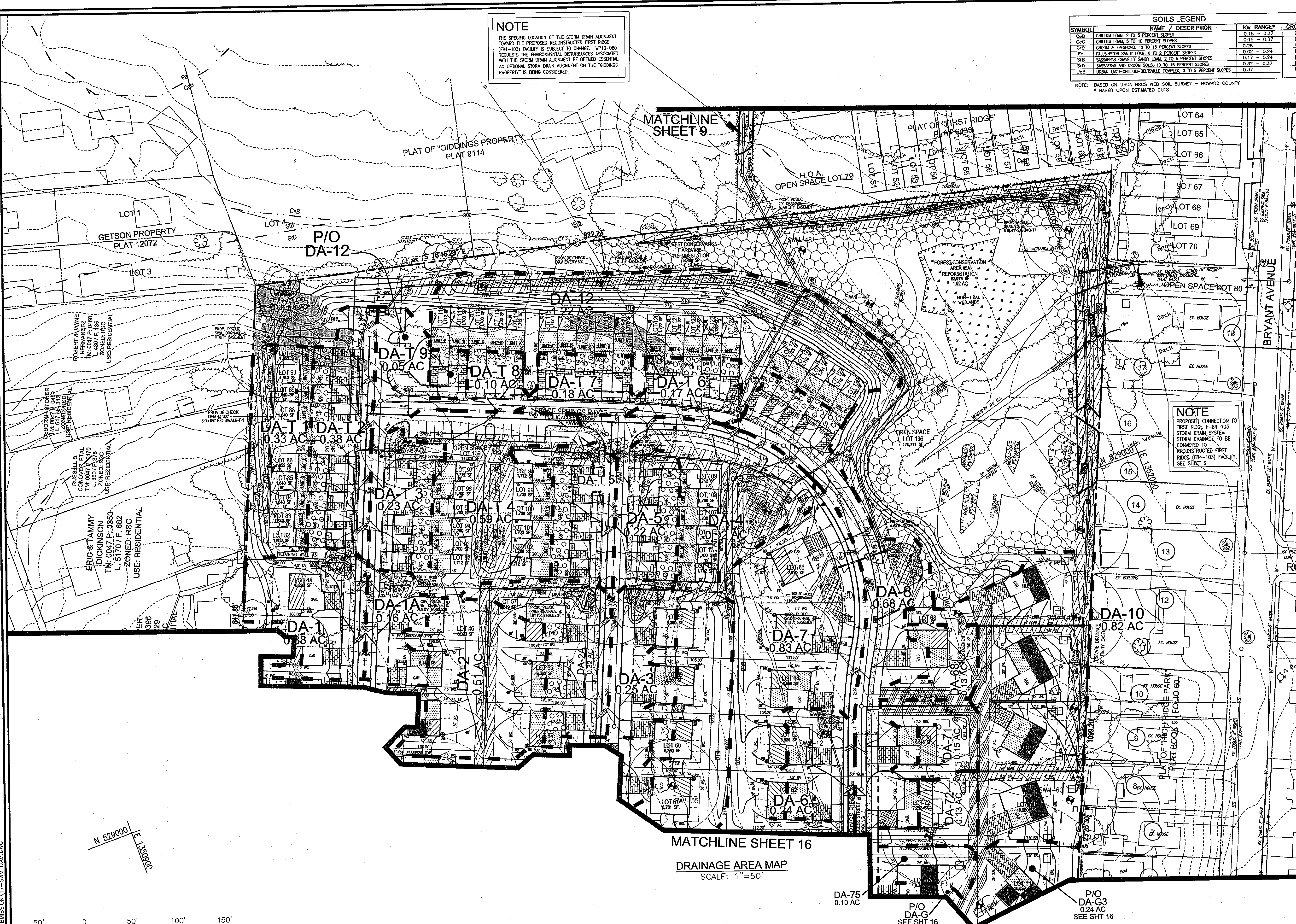
K:\PROJECTS\11-28\ENGR\17-SUBMISSION\16-SWM-DRAWING

NOTE
 THE SPECIFIC LOCATION OF THE STORM DRAIN ALIGNMENT TOWARD THE PROPOSED RECONSTRUCTED FIRST RISE (F84-103) FACILITY IS SUBJECT TO CHANGE. WP13-080 REQUESTS THE ENVIRONMENTAL DISTURBANCES ASSOCIATED WITH THE STORM DRAIN ALIGNMENT BE DEEMED ESSENTIAL. AN OPTIONAL STORM DRAIN ALIGNMENT ON THE "GIDDINGS PROPERTY" IS BEING CONSIDERED.

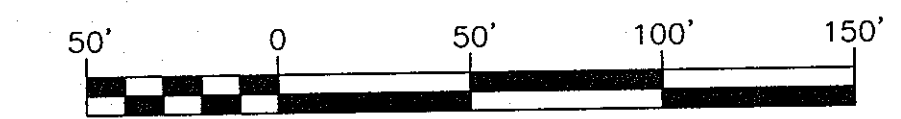
SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	Kw RANGE	GROUP
CcB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
CcC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
CcD	CHILLUM LOAM, 10 TO 15 PERCENT SLOPES	0.28	C
Fs	FALLSOUTH SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	B
SfB	SASSAPARAS GENTLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
SfD	SASSAPARAS AND CHILLUM 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

- 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
 - DRAINAGE DIVIDE
 - DRAINAGE AREA DESIGNATION
 - PROPOSED STORMDRAIN
 - PROPOSED STORMDRAIN INLET
 - NON-STRUCTURAL ROOFTOP DISCONNECTS
 - ROOFTOP DISCONNECTS TO DRYWELL
 - MICRO-SCALE PRACTICE BIO-SWALE
 - NON-STRUCTURAL PROP. PERMEABLE SURFACE ROAD / DRAINWAY ROOFTOP TO PERMEABLE SURFACE SUBBASE
 - MICRO-SCALE PRACTICE MICRO BIOTENTION / BIOTENTION
 - 200 GAL RAIN BARREL
 - PROPOSED DRYWELL
 - EXISTING WETLAND
 - NON-STRUCTURAL PROP. PERMEABLE SURFACE ROAD / DRAINWAY ROOFTOP TO PERMEABLE SURFACE SUBBASE
 - ROOFTOP DISCONNECTS FLOW PATH
 - ROOFTOP DISCONNECTS RAIN BARREL

NOTE
 PROPOSED CONNECTION TO FIRST RISE F-84-103 STORM DRAIN SYSTEM. STORM DRAINAGE TO BE CONNECTED TO RECONSTRUCTED FIRST RIDGES (F84-103) FACILITY. SEE SHEET 9.



N 529000
 E 135000



TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

Mark A. Leight
 PLANNING DIRECTOR

7/2/13
 DATE

OWNER
 MARTIN JR & MICHAEL A. KRASKI ET AL
 8222 OLD SCAGGSVILLE ROAD
 LAUREL, MD 20723-1730
 ATTN: MR. DONALD R. REUWER
 443-357-0422

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 4300 DUNN STREET, SUITE 102
 ELLICOTT CITY, MARYLAND 21042-7819
 ATTN: MR. DONALD R. REUWER
 443-357-0422

NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
 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
 NON-BUILDABLE BULK PARCEL "A" (PLAT 21191)

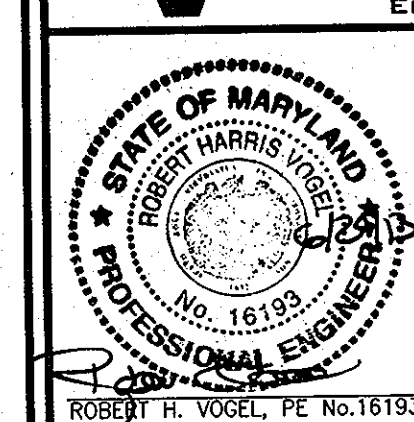
6TH ELECTION DISTRICT
 TAX MAP: 50 GRD: 1
 DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080

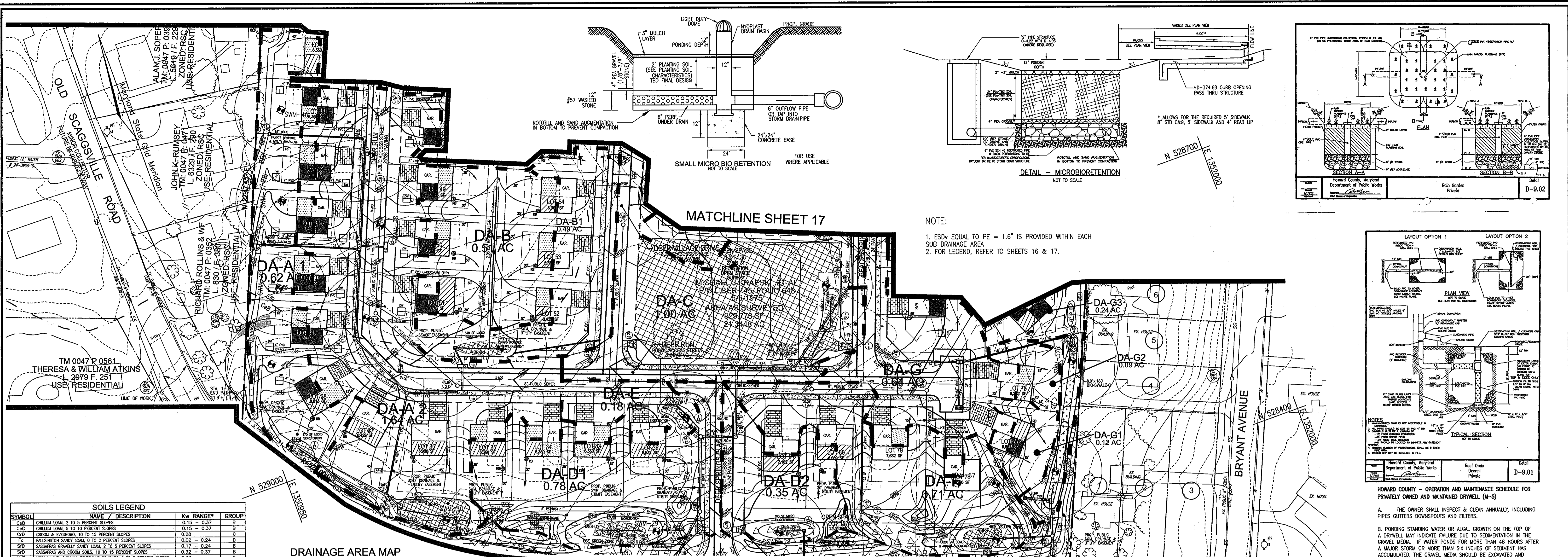
HOWARD COUNTY, MARYLAND

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 FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2014.

DESIGN BY: RHV / EDS
 DRAWN BY: RVE/EOS
 CHECKED BY: RHV
 DATE: JUNE 2013
 SCALE: AS SHOWN
 W.O. NO.: 11-28

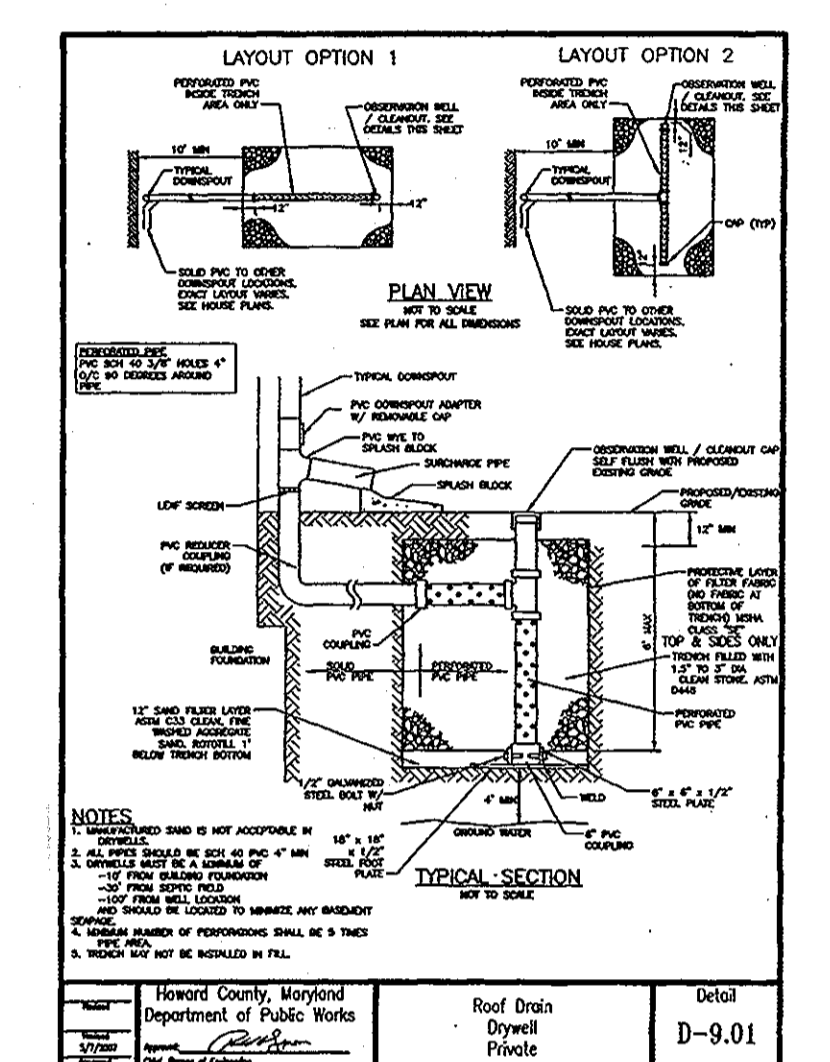
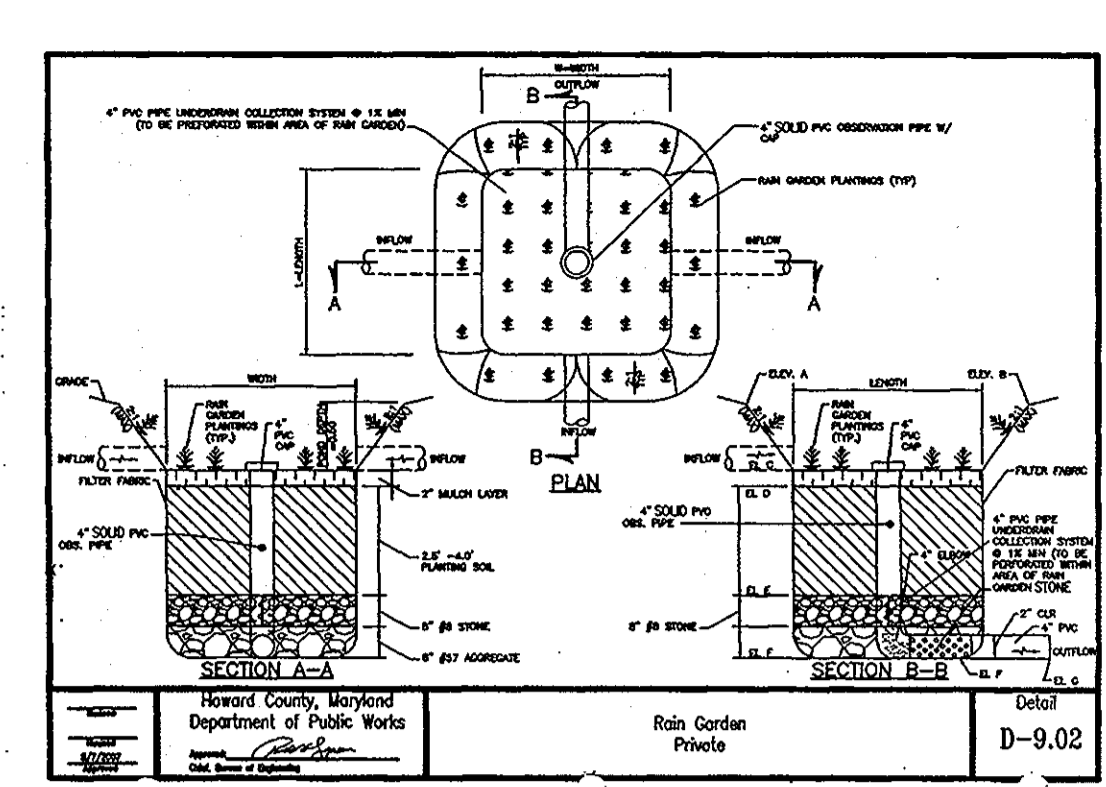




SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	Kw RANGE*	GROUP
C-5	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
C-6	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.28	C
C-7	CHILLUM LOAM, 10 TO 15 PERCENT SLOPES	0.02 - 0.24	D
F-6	FELLSMITH SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.17 - 0.24	B
S-1	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.32 - 0.37	B
S-2	SASSAFRAS AND CROWN SOILS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
US-5	URSHI LOAM-CHILLUM-DELSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

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



DEER SPRINGS - ESDv COMPUTATIONS

Site Computations: Rv = 0.2887, A = 36.91 Acres, ESDv = 61940 cuft, Pe = 1.6 inches.

NORTH AREA #1 - Pe = 1.6" Provided

#	DA	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
1	19.87	0.270	22215	0.51	420	2093	673	673	420	0.30	0.41	NON-STRUCTURAL, MICROSCALE & BIO SWALE
2	47.09	0.478	15395	0.35	603	1560	966	966	787	0.17	0.19	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO RETENTION
3	70.15	0.6814	10293	0.25	621	1613	993	993	767	0.10	0.07	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO RETENTION
4	31.95	0.3378	38970	0.92	1122	2936	1795	1795	12740	0.29	0.62	NON-STRUCTURAL, ALT. SURFACE, MICRO SCALE, & MICRO-BIO
5	67.64	0.6587	4480	0.22	518	1346	829	829	678	0.15	0.07	ALT. SURFACE & MICRO-BIO RETENTION
6	41.58	0.4242	30518	0.24	372	967	595	595	4375	0.10	0.14	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO RETENTION
7	34.42	0.3588	36032	0.83	1080	2809	1728	1728	12402	0.28	0.54	NON-STR. & MICRO-SCALE PRACT. ALT. SURFACE & MICRO-BIO RETENTION
8	56.59	0.5593	29633	0.68	1381	3591	2230	2230	16770	0.38	0.30	NON-STR. ALT. SURFACE & MICRO-BIO RETENTION
T-1	31.39	0.3325	19075	0.48	533	1459	886	886	6170	0.14	0.31	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO RETENTION
T-5	65.78	0.6420	13390	0.31	716	1853	1146	1146	8888	0.20	0.11	ALT. SURFACE & MICRO-BIO RETENTION
42.0	0.4276	202777	4.76	7387	18206	11819	11821	88975	2.00	2.76		

NORTH AREA #1 - MIN Pe = 1.00" Provided

#	DA	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.0" VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
1	28.70	0.3091	15660	0.36	554	1441	887	887	554	0.43	0.13	NON-STRUCTURAL, MICRO SCALE, ALT. SURFACE & MICRO-BIO
2	59.80	0.5882	7082	0.16	346	900	554	554	346	0.22	0.07	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO RETENTION
T-2	73.95	0.7156	17000	0.41	1096	2744	1689	1689	13000	0.30	0.11	ALT. SURFACE
T-3	70.41	0.6837	10900	0.25	621	1613	994	994	7675	0.18	0.07	ALT. SURFACE & MICRO-BIO RETENTION
T-6	72.41	0.7017	7215	0.17	442	1152	709	709	5485	0.13	0.05	ALT. SURFACE
T-7	72.57	0.7031	7660	0.18	449	1157	718	718	5659	0.13	0.05	ALT. SURFACE
T-8	78.07	0.7527	4360	0.10	273	711	438	438	3404	0.08	0.01	ALT. SURFACE
T-9	75.37	0.7294	2075	0.05	126	327	202	202	1584	0.04	0.01	ALT. SURFACE
T-12	24.82	0.2734	53077	1.22	1310	3461	1896	1896	13180	0.30	0.92	PE = 1.5" PROVIDED
47.7	0.4794	127099	2.92	5078	13202	8124	8783	66643	1.39	1.53		

DEER SPRINGS - ESDv COMPUTATIONS

Site Computations: Rv = 0.2887, A = 36.91 Acres, ESDv = 61940 cuft, Pe = 1.6 inches.

NORTH AREA #1 - REQUIRED Pe = 1.6" Provided

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS	
T-1	28.94	0.3104	14515	0.33	575	976	605	605	4200	0.10	0.24	NON-STRUCTURAL & BIO SWALE
LOT 68	29.37	0.3143	5700	0.13	149	388	239	239	1674	0.04	0.09	NON-STR. MICROSCALE PRACTICES
LOT 71	25.75	0.2818	6500	0.15	153	397	244	244	1674	0.04	0.11	NON-STR. MICROSCALE PRACTICES
LOT 72	31.12	0.3300	5700	0.13	157	408	251	251	1774	0.04	0.09	NON-STR. MICROSCALE PRACTICES
LOT 75	19.93	0.2294	4466	0.10	85	222	137	137	890	0.02	0.08	NON-STR. MICROSCALE PRACTICES
T-10	31.30	0.3317	35900	0.82	892	2580	1664	1664	11235	0.26	0.57	NON-STR. ALT. SURFACE, MICROSCALE PRACTICES
29.5	0.3152	22781	1.67	1912	4971	3059	3170	21447	0.49	1.18		

NORTH AREA #2 - REQUIRED Pe = 1.6" Provided

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS	
A-1	22.32	0.2509	27100	0.62	567	1473	907	907	6050	0.14	0.48	NON-STRUCTURAL, MICRO SCALE & MICRO-BIO
A-2	51.56	0.5141	71325	1.64	3055	7944	4889	4889	36776	0.84	0.79	NON-STRUCTURAL, MICRO SCALE, ALT. SURFACE & MICRO-BIO
B	21.76	0.2458	22131	0.51	493	1179	725	725	4815	0.11	0.40	NON-STRUCTURAL, MICRO SCALE
B-1	35.85	0.3728	21345	0.49	663	1733	1061	1061	7652	0.19	0.31	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO
C	24.92	0.2743	43343	1.00	991	2576	1585	1585	10902	0.25	0.75	MICRO-BIO
D-1	23.44	0.2610	33875	0.78	737	1915	1179	1179	7940	0.18	0.60	NON-STRUCTURAL, MICRO SCALE & MICRO-BIO
D-2	14.65	0.1818	16230	0.37	246	640	394	394	2380	0.05	0.32	NON-STRUCTURAL, MICRO SCALE & MICRO-BIO
E	66.18	0.6565	7900	0.28	425	1105	680	680	5238	0.12	0.06	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO
F	23.05	0.2575	33005	0.76	710	1846	1136	1136	7630	0.18	0.58	ALT. SURFACE & MICRO-BIO RETENTION
G	63.08	0.6177	28900	0.64	1446	3760	2314	2314	17719	0.41	0.24	NON-STRUCTURAL, ALT. SURFACE & MICRO SCALE
G-1	15.42	0.1888	5090	0.12	80	208	128	128	785	0.02	0.10	NON-STRUCTURAL & MICRO SCALE
G-2	20.77	0.2269	3780	0.09	75	194	119	119	785	0.02	0.07	NON-STRUCTURAL & MICRO SCALE
G-3	24.62	0.2716	10418	0.24	236	613	377	377	2565	0.06	0.18	NON-STRUCTURAL & MICRO SCALE
34.3	0.3389	32374	7.43	9683	25177	15494	15494	111327	2.55	4.88		

NORTH TOTALS

% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	
38.3	0.3950	730899	16.78	24600	62556	38496	39218	280192	6.43	10.35

DEER SPRINGS - ESDv COMPUTATIONS

Site Computations: Rv = 0.2887, A = 36.91 Acres, ESDv = 61940 cuft, Pe = 1.6 inches.

SOUTH AREA - REQUIRED Pe = 1.6" Provided

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS	
S-1	31.66	0.3349	16000	0.37	447	1161	714	714	5005	0.12	0.25	MICRO BIORETENTION
S-2	15.11	0.1660	17065	0.41	274	732	438	438	1597	0.06	0.34	MICRO BIORETENTION
S-3A	60.40	0.6746	8895	0.19	470	1223	752	752	5805	0.13	0.06	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO
S-3B	60.40	0.6206	9156	0.21	474	1231	758	758	5805	0.13	0.06	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO
S-3C	18.29	0.2146	14000	0.32	250	651	401	401	2540	0.06	0.26	NON-STR. MICROSCALE PRACTICES
S-4A	26.17	0.2885	3000	0.07	71	186	114	114	785	0.02	0.05	NON-STR. MICROSCALE PRACTICES
S-4B	18.34	0.2151	4280	0.10	77	199	123	123	785	0.02	0.08	NON-STR. MICROSCALE PRACTICES
S-4C	16.63	0.1997	4720	0.11	79	204	126	126	785	0.02	0.09	NON-STR. MICROSCALE PRACTICES
S-7	43.86	0.4447	24789	0.57	918	2385	1469	1469	10888	0.25	0.32	NON-STRUCTURAL, MICRO SCALE, ALT. SURFACE & MICRO-BIO
S-8	47.79	0.4801	15772	0.36	631	1641	1010	1010	7537	0.17	0.19	NON-STRUCTURAL, ALT. SURFACE & MICRO BIORETENTION
S-9	47.69	0.4792	29640	0.68	1165	3000	1895	1895	14146	0.32	0.36	NON-STRUCTURAL, ALT. SURFACE & MICRO-BIO
S-10	48.67	0.4628	10450	0.24	403	1048	645	645	4793	0.11	0.13	NON-STRUCTURAL, MICRO SCALE, ALT. SURFACE & MICRO-BIO
S-11	11.07	0.1677	20422	0.47	285	742	467	467	3970	0.06	0.43	NON-STRUCTURAL, MICRO SCALE & MICRO-BIO
S-12	61.08	0.5991	16383	0.38	818	2127	1309	1309	9996	0.23	0.15	NON-STRUCTURAL, ALT. SURFACE & MICRO BIORETENTION
S-13	25.08	0.2757	30520	0.70	701	1823	1122	1122	7653	0.18	0.52	NON-STRUCTURAL, MICRO SCALE & MICRO-BIO
S-13A	37.43	0.3869	27540	0.63	888	2308	1421	1421	10326	0.24	0.40	NON-STRUCTURAL, MICRO SCALE & MICRO-BIO
S-13B	5.88	0.1030	7561	0.17	65	169	104	104	445	0.01	0.16	NON-STR. MICROSCALE PRACTICES
S-14	30.18	0.3267	27900	0.63	751	1951	1202	1202	9481	0.19	0.44	MICRO BIORETENTION
S-13D	52.36	0.5213	14800	0.34	643	1672	1029	1029	7750	0.18	0.16	MICRO BIORETENTION
S-14	56.32	0.5588	12650	0.29	587	1528	939	939	7124	0.16	0.13	NON-STR. ALT. SURFACES & MICRO-BIO
S-15A	6.97	0.1127	6884	0.15	60	156	96	96	445	0.01	0.16	NON-STR. MICROSCALE PRACTICES
S-15B	14.02	0.1212	4556	0.10	77	200	123	123	785	0.02	0.08	NON-STR. MICROSCALE PRACTICES
S-14C	4.48	0.0901	9885	0.23	75	195	120	120	445	0.01	0.22	NON-STR. MICROSCALE PRACTICES
S-14D	5.48	0.0994	8115	0.19	67	175	108	108	445	0.01	0.18	NON-STR. MICROSCALE PRACTICES
S-14E	5.63	0.1006	7910	0.18	66	172	106	106	445	0.01	0.17	NON-STR. MICROSCALE PRACTICES
S-15	23.05	0.2574	12625	0.31	292	760	468	468	3140	0.07		

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 DUMPED WITHIN THE MICRO-BIORETENTION FACILITY THAT MAY BE HARMFUL TO PLANT GROWTH, OR FROM A HARMFUL TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER INJURIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
 - SOL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA 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 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.
 THESE 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 HOES 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 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 PLUG, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGHOUT THE SITE STOCKPILED TOPSOIL. SUBSTITUTIVE 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 ORIGINAL SAND LAYER. PUMP ANY PUMPED WATER BEFORE PREPARING (ROTOTILLED) 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 BASIN TO SUPPLY SOILS AND SAND. 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 AERATED (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 1/8TH 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 DRINK PLANTING PROCESS. THROUGHOUT WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRANDED USING 2" OF 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-GROSS GRASS 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 DEFERS, OR AT A MINIMUM, IMPEDS 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 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" DIA. (3" DIA. PERF.)
 - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIA. LOCATED @ 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PERFORATIONS SHALL BE WELDED TO THE PIPE USING 1/2" DIA. 40# 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 0.2% SLOPE.
 - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
 - A 4" DIA. LAYER OF PEA GRAVEL (1/8"-3/8") 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 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 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 M-6, M-7, 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. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 WETLAND STORMWATER DESIGN MANUAL, VOLUME 8, 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 DEFICIENT STAKES AND WIRES.
 - MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
 - SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.
NOTE: UNDERDRAIN AND CHECK DAMS OF BIOSWALE SHALL BE PUBLICALLY MAINTAINED.

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

- 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. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVED PROCEDURES (E.G., AASHTO, A13, 325.9R, A3, 330R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.
MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MUST BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADJUNCTS MAY ALSO BE USED. PERVIOUS CONCRETE SHALL BE TESTED (E.G., TENSILE STRENGTH, PERMEABILITY) TO CONSTRUCTION TO DETERMINE CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.
AGGREGATE - PERVIOUS CONCRETE CONCRETE IS LIMITED THE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4), NO. 8 (3/8 IN. TO NO.10) AND NO. 89 (3/8 IN. TO NO.50) SIEVES. 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 ADJUNCTS. WATER QUALITY SHOULD MEET MD 20A. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED THROUGH RECYCLED CONSTRUCTION WATER MEETING ASTM C 94 OR AASHTO M 151 MAY ALSO BE USED.
ADJUNCTS - CHEMICAL ADJUNCTS (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADJUNCTS SHOULD MEET ASTM C 494 (CHEMICAL ADJUNCTS) AND ASTM C 260 (AIR ENTRAINING ADJUNCTS) 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% (w=30%).
- PERVIOUS INTERLOCKING CONCRETE PAVEMENTS (PICP)**
PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3/8 IN. OR 4 IN. THICK AND MEET ASTM C 636 OR CSA 262.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (W/OUT PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT WIDTH AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.
INFILL MATERIALS AND LEVING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVING COURSE OF ASTM C-33 SAND.
BASE COURSE - THE BASE COURSE SHALL BE ASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (w=30%).
- 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:

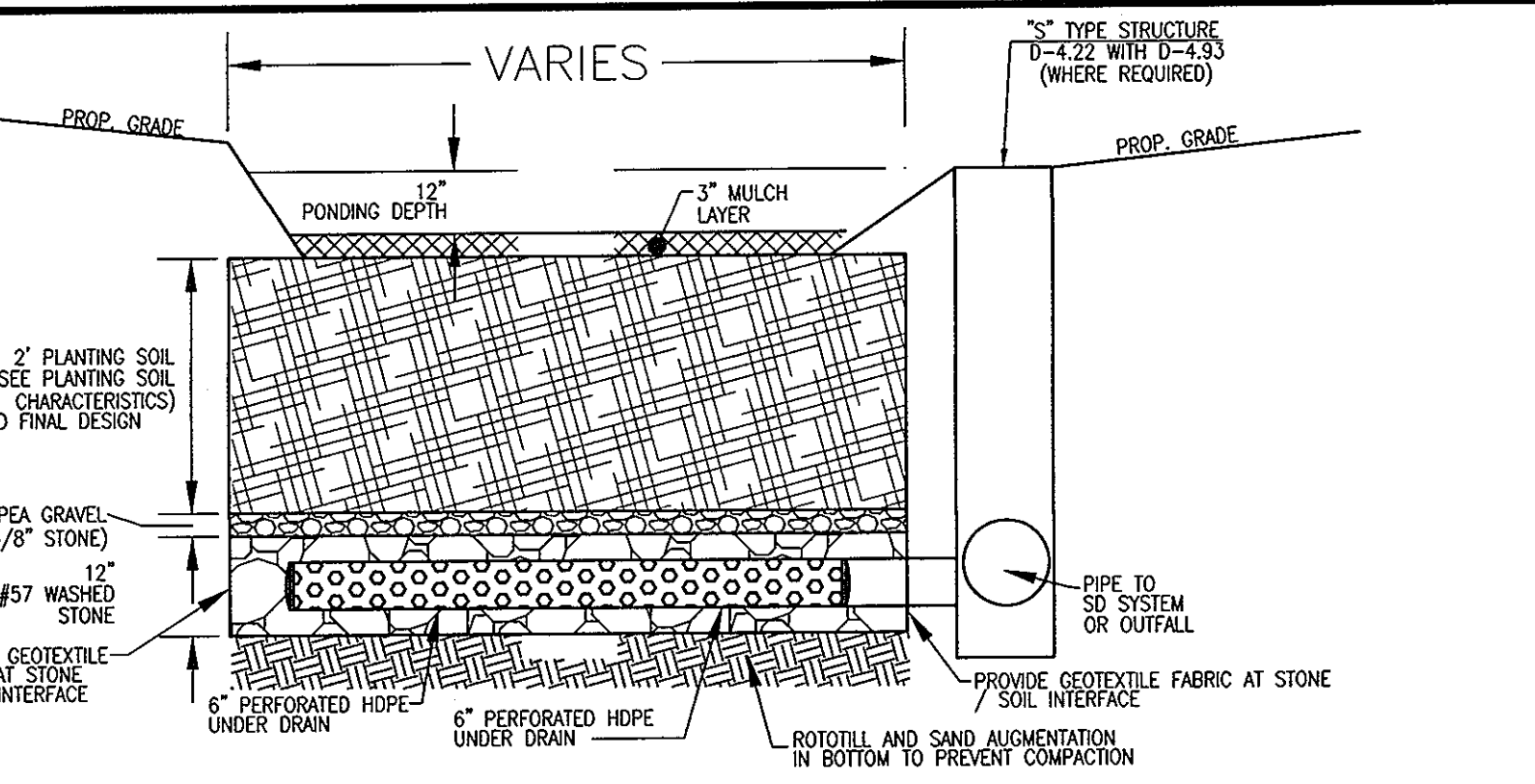
A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:

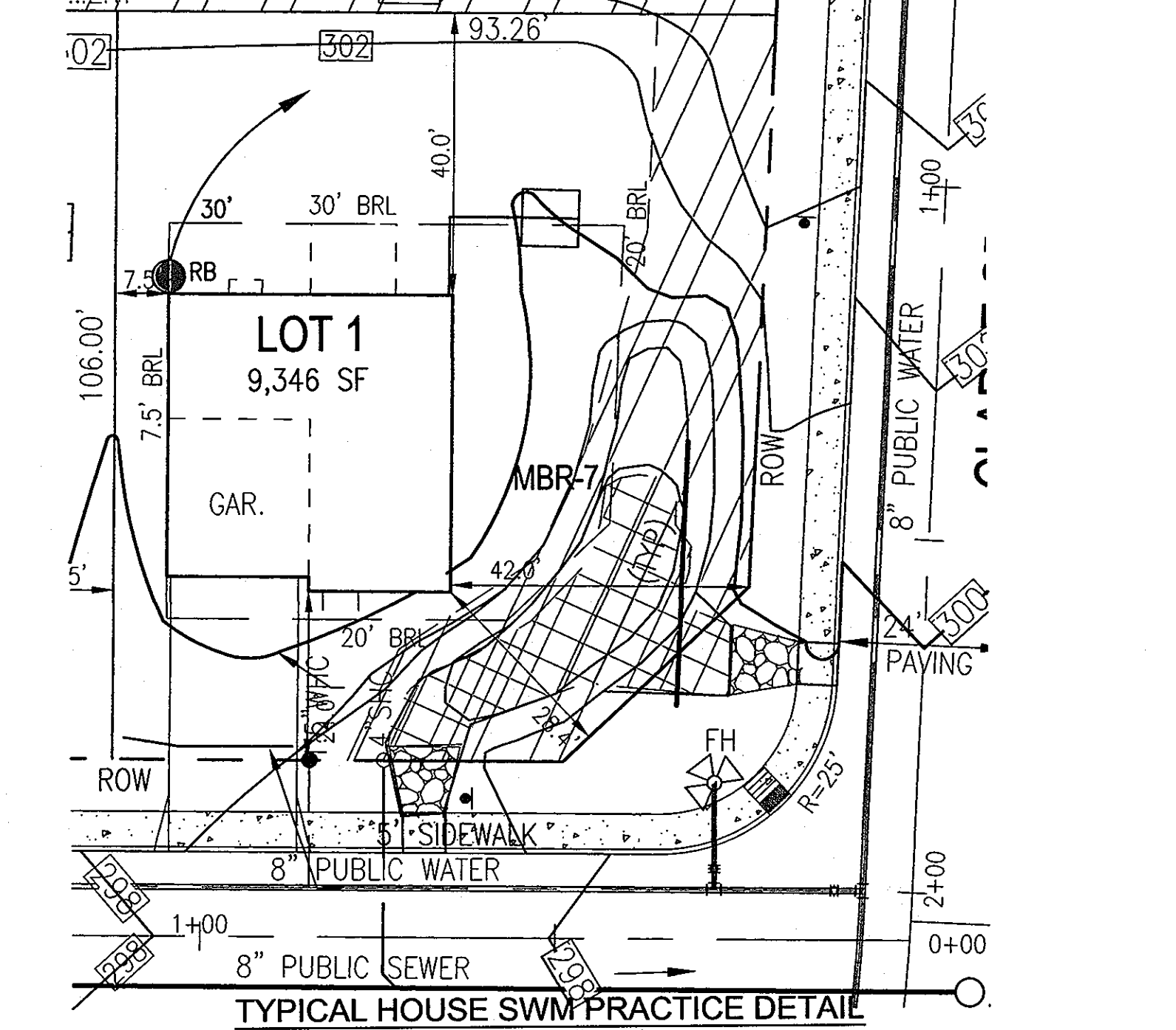
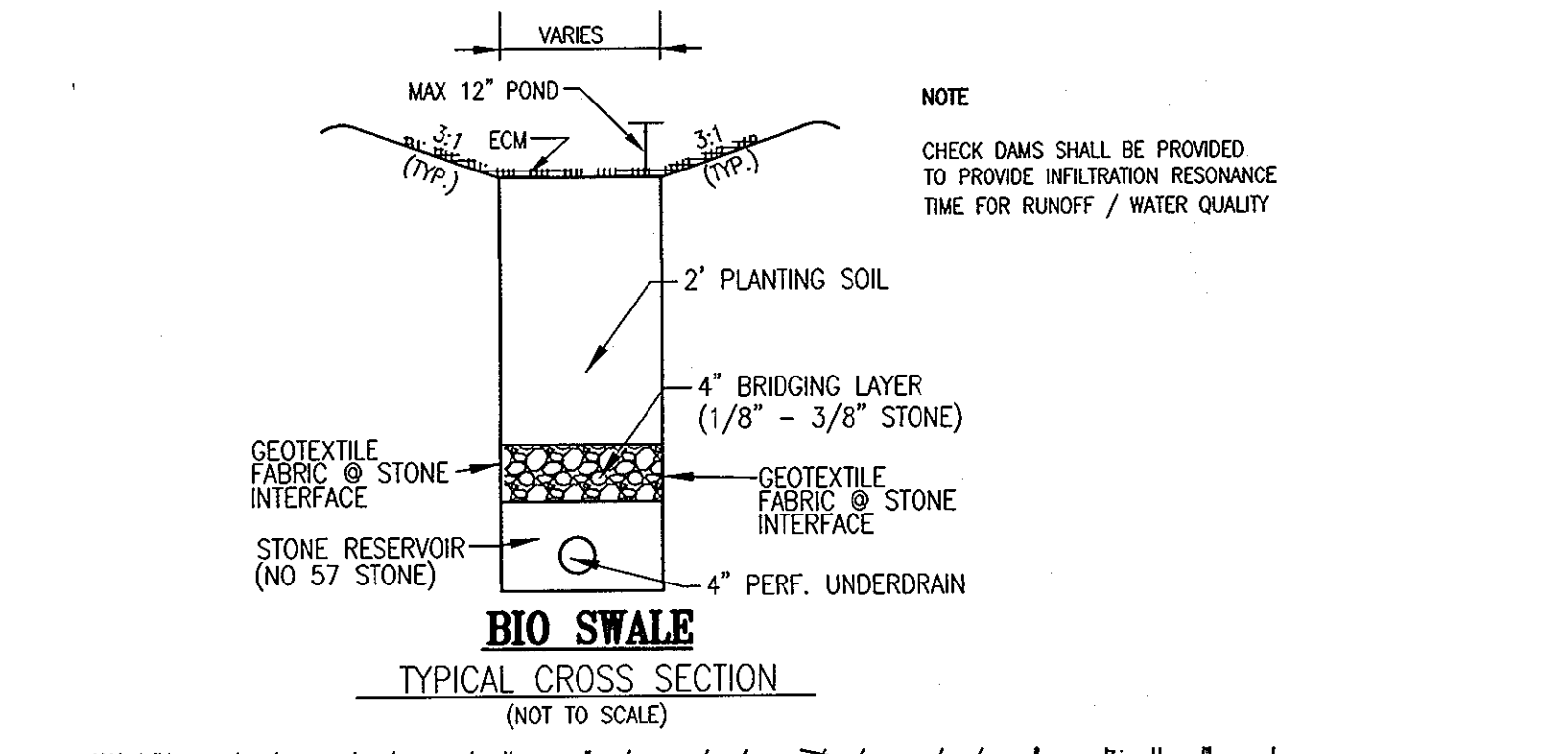
MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER), IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE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

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

PLANNING DIRECTOR *[Signature]* 7/3/12
DATE



MICRO-BIORETENTION 1
NOT TO SCALE



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

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 (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)	n/a	aged 6 months, minimum no pine or wood chips
Mulch	shredded hardwood	n/a	
Pea gravel diaphragm	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	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 pipes; not necessary to include meeting ACT Code 350 R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressure); and analysis of potential cracking.
Poured in place concrete (if required)	MSHA Mix No. 3; f _c ' = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	28-day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requiring design drawings sealed and approved by a professional structural engineer (located in the State of Maryland - design to include meeting ACT 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 Graytons (AASHTO) #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

BUSHMAN BRT205 Round Tank

NEW! 205 Gallon Capacity!

Features & Benefits:

- 205 Gallon Capacity
- High quality rotational molded polyethylene construction ensures maximum strength
- One-piece construction and horizontal ribs around the tank provide added wall strength
- Inter-engage with interlocking screens and cover
- Overflow assembly provided with mosquito screen and 90 degree elbow
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- Bushman 5 Year Warranty!

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TYPICAL SPILLWAY PROFILE
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TYPICAL SPILLWAY SECTION
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BUSHMAN BRT205 (205 GALLON) RAIN HARVESTING SYSTEM OR EQUIVALENT RAIN BARREL DETAIL
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- 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.

TYPICAL RAIN BARREL DESIGN

205 GAL = 27.41 CUFT
7.48 GAL/CUFT

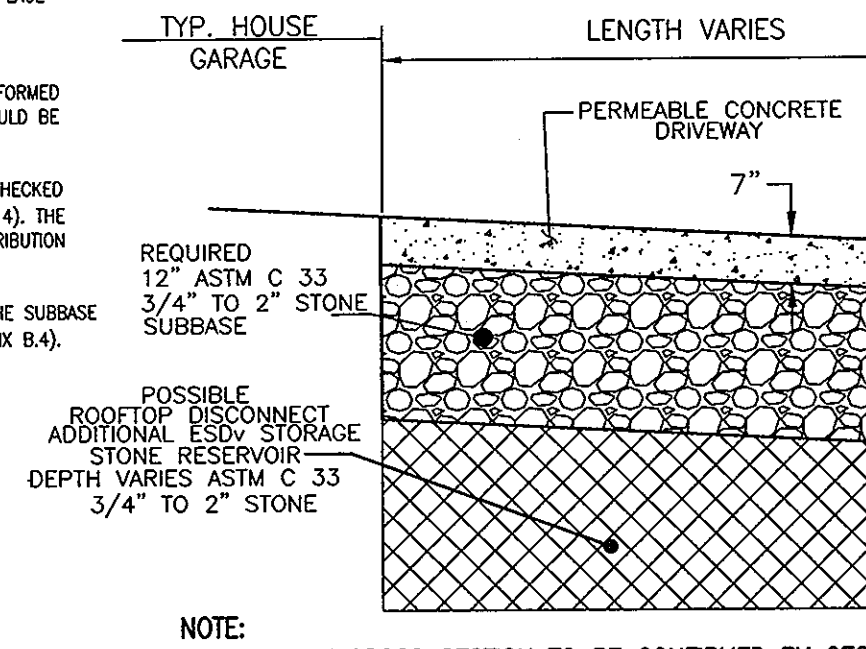
500 SF X (X) = 27.41 CUFT
12

12 (27.41 CUFT) = 0.66"
500 SF

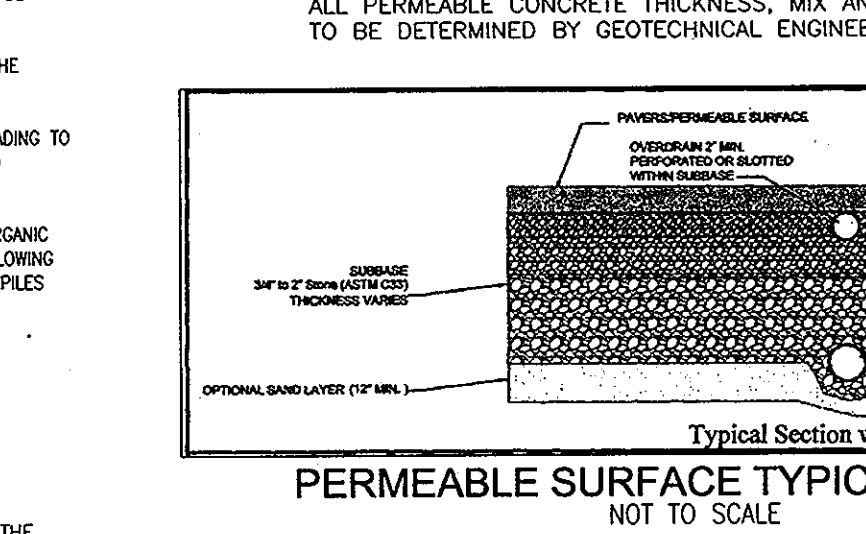
THEREFORE A 205 GALLON BARREL CAPTURES P_e OF 0.66" FROM A 500 SF SECTION OF PROPOSED ROOFTOP THE REMAINING PORTION OF THE 500 SF SECTION OF ROOFTOP IS P_e = 0.34". THIS CAN BE ACHIEVED BY A 40' DISCONNECTION OF ROOFTOP RUNOFF LENGTH.

A-2. PERMEABLE PAVEMENTS

- CONSTRUCTION CRITERIA:**
- THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING 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 DIVERTED 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: OVERDRAIN, 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 SYSTEMS.
 - DURING PLACEMENT OF THE CURED STONE SUBBASE 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 SWEEP AND VACUUMED 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 CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
 - DECIDERS SHOULD BE USED IN WINTER. WHEN USED, DECERS 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.



- NOTE:**
- PAVEMENT CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER
 - UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DAYLIGHT TO THE CURB INTO A BIO-RETENTION FACILITY OR TO THE REAR OF THE LOT
 - OVERDRAIN SHALL COMBINE WITH UNDERDRAIN OR DAYLIGHT AS DETAILED FOR UNDERDRAIN, SEE NOTE 2.
- DETAIL - PERMEABLE CONCRETE DRIVEWAY - 5% OR LESS**
NOT TO SCALE
- ALL PERMEABLE CONCRETE THICKNESS, MIX AND SUB-BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER ON-SITE.



SOILS LEGEND

SMBL	NAME / DESCRIPTION	Kw RANGE*	GROUP
C-0B	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.15 - 0.37	B
C-0C	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	0.15 - 0.37	B
C-0D	CHILLUM A, EXPOSED, 10 TO 15 PERCENT SLOPES	0.28	C
F-0	FALGUNSIN SANDY LOAM, 0 TO 2 PERCENT SLOPES	0.02 - 0.24	D
S-0B	SASSAPARA GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.17 - 0.24	B
S-0C	SASSAPARA AND CHROM SANDS, 10 TO 15 PERCENT SLOPES	0.32 - 0.37	B
S-0D	URBAN LOAM-CHILLUM-REDSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	0.37	D

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

WEIR OUTLET MICRO-BIORETENTION/RAINGARDEN

TYPICAL SPILLWAY PROFILE
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TYPICAL SPILLWAY SECTION
NOT TO SCALE

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

- 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 decers in moderation. Decers 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 snowmelt should not be directed to permeable pavement.

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 disconnect the barrel prior to winter, or allow the barrel to drain by bottom spigot during the winter season.

NO.	REVISION	DATE

PRELIMINARY EQUIVALENT SKETCH PLAN
STORMWATER MANAGEMENT NOTES AND DETAILS

DEER SPRINGS

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

ZONED: R-5C
PARCELS: 363 & 542
FAC # 11-0-4611-1-1

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CHECKED BY: RHV
DATE: JUNE 2013
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 DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 09-27-2014

19 SHEET OF 19