### **GENERAL NOTES**

- . THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE
- STARTING WORK ON THESE DRAWINGS: 1-800-252-1133 BG&E (CONSTRUCTION SERVICES): 410-637-8713 410-685-0123 BG&E (EMERGENCY): 410-795-1390 COLONIAL PIPELINE CO.: 410-313-4900 HOWARD COUNTY BUREAU OF UTILITIES 1-800-257-7777 MISS LITHITY: STATE HIGHWAY ADMINISTRATION 410-531-5533 1-800-743-003

PROJECT BACKGROUND LOCATION:

> DEED REFERENCE DPZ REFERENCES

MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE, TO OBTAIN AN ACCESS TO SHA LAND TO PLANT TREES, A DISTURB OFFICE CD-8 PERMIT IS REQUIRED WITH ADVANCE NOTICE BEFORE WORK BEGINS

. The contractor shall notify the department of public works/bureau of engineering/construction inspection DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK

ENVIRONMENTAL DESIGN (OED) AND THE PROPER TREES PERMITS FROM DEPARTMENT OF NATURAL RESOURCES (DNR)

COUNTY GEODETIC CONTROL STATIONS: 37GA & 31R1. WATER AND SEWER FOR THIS PROJECT WILL BE PUBLIC AND PROVIDED THROUGH EXISTING 8" WATER CONT. #14-1828-D.

AND EXISTING 8" SEWER CONT. #14-3258-D. STORMWATER MANAGEMENT IS PROVIDED FOR THIS DEVELOPMENT. THE STORMWATER MANAGEMENT FACILITY IS

8. Wetlands and Streams shown on—site are based on a field investigation by Eco—science professionals, in

DATED JULY, 2006. FLOODPLAIN CONFIGURATION SHOWN HEREON IS BASED ON ELEVATIONS ESTABLISHED IN CONJUNCTION WITH F-92-03 A

THE EXISTING TOPOGRAPHY PREPARED FOR THIS SITE DEVELOPMENT PLAN.

1. PLACEMENT OF 1.59 AC. (69,260 SF) OF REFORESTATION INTO AN OFF-SITE FOREST CONSERVATION BANK A

BRIGHTON MILL FOREST MITIGATION BANK. APPROVED SITE DEVELOPMENT PLAN NUMBER SDP-11-056. 2. ON-SITE RETENTION OF 0.3947 AC. (17,193 SF)

3. ON-SITE REFORESTATION OF 0.0996 AC. (4,338 SF)

ON-SITE RETENTION: 0.3947 AC. (17.193 SF) = \$0.00ON-SITE REFORESTATION: 0.0996 AC. (4,338 SF  $\times$  0.50) = \$2,169.00

TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING IS ADJACENT TO FORES

2. STREET LIGHTING HAS BEEN PROVIDED FOR THE PUBLIC ROAD IN ACCORDANCE WITH SECTION 16.135 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE DESIGN MANUAL A MINIMUM OF 20' SHALL BE MAINTAINED

BETWEEN ANY STREET LIGHT AND ANY TREE. . Sediment and erosion control has been provided for this site.

5. To the Best of the Owners Knowledge, there are no Burial/Cemetary Locations on Site. 6. A NOISE STUDY IS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2006.

7. OPEN SPACE LOT 36 TO BE PRIVATELY OWNED AND MAINTAINED BY THE HOA. OPEN SPACE LOT 37 IS TO BE DEDICATED TO HOWARD COUNTY RECREATION AND PARKS.

18. REFUSE COLLECTION FOR THIS SITE WILL BE PRIVATE. THERE WILL BE NO COMMUNITY TRASH DUMPSTER FOR THIS PROJECT. 29. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO ENSURE SAFE ACCESS FOR FIRE EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:

A. WIDTH - 12 (16' FOR SERVING MORE THAN ONE RESIDENCE)

SURFACE -6" OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.) GEOMETRY - MAX. 15% GRADE, MAX. 10% GRADE CHANGE, AND MIN. 45' TURNING RADIUS STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)

DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100-YEAR FLOOD EVENTS WITH NO MORE THAN 1 FOOT OF DEPTH OVER DRIVEWAY SURFACE

MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE ALL SIGN POST USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT—OF—WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE - 3' LONG). A GALVANIZED STEEL POLE CAP SHALL BE

MOUNTED ON THE TOP OF EACH POST. . ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

. APFO TRAFFIC STUDY PREPARED BY THE TRAFFIC GROUP AND DATED MAY 4, 2006. 3. REF. WP-07-112 APPROVED 08-10-07 TO WAIVE SECTION 16.121(C)(4)(VI) TO ACCEPT AMENITY OPEN SPACE AND

RECREATIONAL OPEN SPACE TO FULFILL RECREATIONAL OPEN SPACE REQUIREMENTS. . This project is subject to compliance with the decision and order dated 05/06/10 for administrative adjustment CASE NO. AA-10-007 FOR A VARIANCE OF THE 75' STRUCTURE SETBACK REQUIREMENT FROM ADJACENT RESIDENTIAL PROPERTY (ZONED R-SC). THIS ADMINISTRATIVE ADJUSTMENT PERMITS THE HOUSE ON LOT 16 TO BE LOCATED 63' FROM THE

5. REF. WP-12-169 APPROVED 06-20-2012 TO WAIVE SECTION 16.120(C)(4), WHICH REQUIRES A MINIMUM OF 15 FEET OF FRONTAGE ON A PUBLIC ROAD, OR, FOR SINGLE FAMILY ATTACHED LOTS, THAT THEY FRONT ON A COMMONLY OWNED AREA CONTAINING A PARKING AREA OR PRIVATE ROAD NOT EXCEEDING A LENGTH OF 200 FEET MEASURED FROM THE EDGE OF THE PUBLIC RIGHT-OF-WAY ALONG THE CENTERLINE OF THE PRIVATE ROAD. THE PLANNING DIRECTOR ALSO APPROVED THE REQUEST TO WAIVE SECTION 16.144(B), WHICH REQUIRES THE DEVELOPER TO SUBMIT A SKETCH PLAN OR PRELIMINARY EQUIVALENT SKETCH PLAN TO BEGIN THE SUBDIVISION PROCESS.

APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:

A. THE PETITIONER OR DISIGNEE SHALL BE RESPONSIBLE FOR MAINTENANCE OF SAFE VEHICULAR ACCESS TO ALL RESIDENTIAL UNITS. THIS SHALL INCLUDE, BUT IS NOT LIMITED TO, MAINTENANCE OF THE PRIVATE ROAD PROVIDING ACCESS FROM WESLEY LANE TO RESIDENTIAL UNITS. AND SNOW REMOVAL FROM THE PRIVATE ROAD.

B. UPON COMPLETION OF ANY PORTION OF THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PETITIONER OR DESIGNEE SHALL PROVIDE PRIVATE TRASH REMOVAL SERVICES TO THE DEVELOPMENT.

C. ON THE SITE DEVELOPMENT PLAN (SDP-07-007), AND ON ALL FUTURE SUBDIVISION PLANS, YOU MUST PROVIDE A BRIEF DESCRIPTION OF THIS WAIVER PETITION (WP-12-169) AS A GENERAL NOTE TO INCLUDE REQUESTS, SECTIONS OF THE

REGULATIONS, ACTION, AND DATES ASSOCIATED WITH THE WAIVER PETITION D. A HOMEOWNERS ASSOCIATION (HOA) SHALL BE CREATED FOR THE SINGLE FAMILY ATTACHED (SFA) DEVELOPMENT OF THE

SITE IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS, SECTION 16.121(C). E. THE PRIVATE ROADS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE DEVELOPMENT ENGINEERING DIVISION (DED), THE DEPARTMENT OF PUBLIC WORKS (DPW), AND THE DEPARTMENT OF FIRE AND RESCUE SERVICES (DFRS).

F. THE PRIVATE ROADS SHALL BE MAINTAINED BY THE HOA. PRIOR TO THE SIGNATURE OF ANY SITE DEVELOPMENT PLAN, A PRIVATE ROAD MAINTENANCE AGREEMENT MUST BE RECORDED IN THE HOWARD COUNTY LAND RECORDS OFFICE STATING THAT THE COMMON PRIVATE ROADS WILL BE MAINTAINED BY THE HOA.

G. THE HOA SHALL BE RESPONSIBLE FOR STORM WATER MANAGEMENT FACILITIES' CONVEYANCE AND MANAGEMENT AS DETERMINED and approved by Ded and DPW. Also, water and sewer shall be public and maintained for each unit within a

RECORDED PUBLIC EASEMENT AS DETERMINED AND APPROVED BY DED AND DPW.

H. A NOTE MUST BE PROVIDED ON THE PLAT THAT THE HOA WILL OWN AND MAINTAIN OPEN SPACE LOT 36. I. A NEW SUBDIVISION PLAT TO CREATE THE FEE SIMPLE SFA LOTS SHALL BE SUBMITTED TO, AND APPORVED BY, THE DEPARTMENT OF PLANNING AND ZONING, AND RECORDED IN THE HOWARD COUNTY LAND RECORDS OFFICE TO REPLACE VOIDED FINAL PLAT F-07-143. J. WATER AND SEWER PLANS SHALL BE RED-LINED TO REFLECT ANY CHANGES TO THE DESIGN AND/OR ASSOCIATED EASEMENTS PRIOR TO

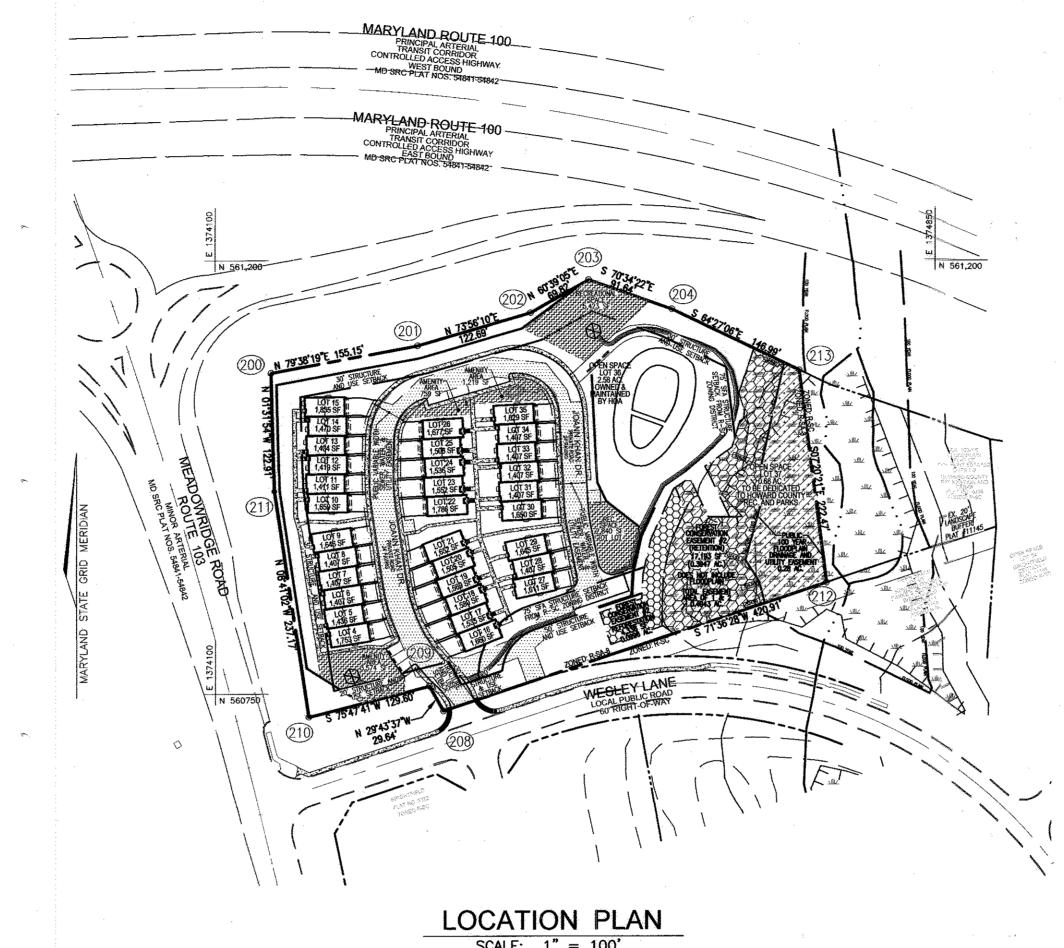
SIGNATURE OF THE PROPOSED PLAT. PLEASE NOTE THAT THE REVISED WATER AND SEWER DRAWINGS MUST ALSO SHOW THE PROPOSED FEE SIMPLE LOT LINES. THE APPLICANT SHALL COORDINATE THE WATER AND SEWER PLAN REVISION WITH DED. K, COMPLIANCE WITH ANY AND ALL CONDITIONS OUTLINED IN THE DECISION AND ORDER DATED 05/06/10 FOR ADMINISTRATIVE ADJUSTMENT CASE NUMBER AA-10-007, FOR A VARIANCE OF THE 75 FOOT STRUCTURE SETBACK REQUIREMENT FROM ADJACENT residential properties (zoned R—SC). The applicant must also provide verification from the division of public service

and zoning administration stating that AA-10-007 is still valid. . HOA DOCUMENTS HAVE BEEN RECORDED IN THE LAND RECORDS OF HOWARD COUNTY AS PLAT NO. 22286-22288, ON FEBRUARY 22, 2013. . Grading of the Wetland and Wetland and Stream Buffers is considered essential disturbance for construction of the Storm Drain.

DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES. PER SECTION 103.A.193 OF THE ZONING REGULATIONS, NOISE WALLS ARE NOT SUBJECT TO SETBACK REQUIREMENTS.

NO AS-BUILT INFORMATION THIS SHEET

SITE DEVELOPMENT PLAN FOX HUNT ESTATES LOTS 4-35 & OPEN SPACE LOTS 36 & 37 HOWARD COUNTY, MARYLAND



LOT COVERAGE CALCULATION

SMALLEST LOT SIZE (LOTS 6, 7, 8, 28, 31, 32, 33, & 34)

PERCENTAGE OF LOT COVERED BY HOUSE FOOTPRINT

GENERAL SITE DATA

COORDINATE TABLE

61083.1012

61111.00629

NORTHING

374157.7371

374310.35699

374428.2563

374489.1151 374575.53764 374337.1657

374322.4690 1374196.8318 374161.0227 374736.57806

561085.30148 | 1374708.15896

PROPOSED USE OF SITE: PROPOSED WATER SYSTEM: PROPOSED SEWER SYSTEM:

**PUBLIC PUBLIC** 

SINGLE FAMILY ATTACHED

AREA TABULATION

TOTAL PROJECT AREA: 191,074 SF (4.39 AC.) NET AREA OF SITE: 4.11 AC. TOTAL AREA OF BUILDABLE LOTS: 49,412 SF (1.13 AC.) AREA OF OPEN SPACE LOT 36: 112,208 SF (2.58 AC.) AREA OF OPEN SPACE LOT 37: 29,455 SF (0.68 AC.) APPROXIMATE LIMIT OF DISTURBANCE: 165,212 SF (3.79 AC.)

PARKING TABULATION

TOTAL NUMBER OF UNITS ALLOWED AND PROPOSED REQUIRED AT 2.0 SPACES PER DU. PARKING SPACES REQUIRED: 2 SPACES PER UNIT = 64 SPACES

TOTAL PARKING SPACES REQUIRED: 74 SPACES

PARKING SPACES PROVIDED: 2 GARAGE/2 DRIVEWAY = 4 SP (128 SP) 7 SPACES\* OFF-STREET PARKING PROVIDED: =

0.3 SPACES PER UNIT FOR GUEST/OVERFLOW PARKING = 10 SPACES

TOTAL PARKING SPACES PROVIDED: =135 SPACES \*DPZ HAS APPROVED DRIVEWAY PARKING FOR 3 REQUIRED OVERFLOW SPACES

40. REF. WP-13-006 APPROVED 07-25-2012 TO WAIVE WAIVE SECTION 16.156(k), (I) AND (m), WHICH REQUIRES THE EXECUTION OF THE DEVELOPERS AGREEMENT, PAYMENT OF FEES, POSTING OF FINANCIAL OBLIGATIONS AND SUBMISSION OF THE SITE DEVELOPMENT PLAN ORIGINALS WITHIN 180 DAYS OF APPROVAL FOR SDP-07-007/FOX HUNT ESTATES. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:

A. A FINAL PLAT MUST BE RECORDED TO SHOW FEE SIMPLE LOTS AND WILL REPLACE THE FINAL PLAT, F-07-143, WHICH HAS BEEN VOIDED. THE NEW PLAT MUST BE RECORDED PRIOR TO SUBMISSION OF THE SITE DEVELOPMENT PLAN ORIGINALS. B. A 180 DAY EXTENSION OF TIME IS APPROVED FROM AUGUST 4, 2012, DEADLINE DATE BY WHICH TO EXECUTE THE DEVELOPERS AGREEMENT, MAKE PAYMENT OF FEES, POST FINANCIAL OBLIGATIONS AND SUBMIT THE SITE DEVELOPMENT PLAN ORIGINALS FOR SDP-07-007. THE NEW DEADLINE DATE IS ON OR BEFORE JANUARY 31, 2013.

SUBMISSION OF APPLICABLE PLAN ORIGINALS. 41. MIHU DOCUMENTS HAVE BEEN RECORDED IN THE LAND RECORDS OFFICE OF HOWARD COUNTY, MD SIMULTANEOUSLY WITH THE FINAL PLAT, F-13-016, (PLAT #'S 22286-22288) ON FEBRUARY 22, 2013.

C. THE APPLICANT IS ADVISED THAT A NEW FEE SCHEDULE HAS BEEN ADOPTED ON JULY 1, 2012. INCREASE OF ANY

PROCESSING FEES PREVIOUSLY INDICATED IN THE APPROVAL LETTER FOR SDP-07-007 MUST BE PAID AT THE TIME OF

A. SUPPLEMENTARY BULK REGULATIONS

THE FOLLOWING SUPPLEMENTARY REGULATIONS SHALL APPLY IN ADDITION TO THE REQUIREMENTS OF THE APPLICABLE ZONING DISTRICT.

a. In all districts except the NT district, cornices, eaves and cantilevered building features may project not more than three feet into any required setback area.

b. In all districts except the NT district, the following building features, if not more than 16 FEET IN WIDTH, MAY PROJECT NOT MORE THAN FOUR FEET INTO ANY REQUIRED SETBACK AREA OR REQUIRED DISTANCE BETWEEN BUILDINGS: BAY WINDOWS AND WINDOW WELLS; ORIELS; VESTIBULES BALCONIES: CHIMNEYS: HEATING OR AIR CONDITIONING UNITS; AND EXTERIOR STAIRWAYS OR RAMPS, WHETHER ABOVE OR BELOW GROUND LEVEL.

c. IN ALL RESIDENTIAL DISTRICTS (BUT NOT IN THE NT DISTRICT), OPEN OR ENCLOSED PORCHES AND DECKS MAY PROJECT. not more than 10 feet into any required front or rear setback area or into a required SETBACK FROM A PROJECT BOUNDARY OR DIFFERENT ZONING DISTRICT. EXTERIOR STAIRWAYS OR RAMPS, ABOVE OR BELOW GROUND LEVEL, MAY EXTEND NOT MORE THAN 10 FEET INTO A FRONT SETBACK AREA OR A SETBACK FROM A PROJECT BOUNDARY OR DIFFERENT ZONING DISTRICT, AND NOT MORE THAN 16 FEET INTO A REAR SETBACK AREA.

2. EXCEPTIONS TO LOT COVERAGE REQUIREMENTS IN RESIDENTIAL DISTRICTS AND RESIDENTIAL LAND USE AREAS OF THE PGCC AND MXD DISTRICTS, BUT NOT IN THE NT DISTRICT, OPEN DECKS (DECKS WITHOUT ROOF OR WALLS) SHALL NOT BE CONSIDERED structures for lot coverage purposes when constructed into a single-family attached dwelling.

AREA 5.05 AC.	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	9661 CF	NATURAL AREA CONSERVATION CREDIT GRASS CHANNEL	2985 CF	MICRO POOL, POCKET POND
2	RECHARGE VOLUME REV	23514 SF 1948 CF	GRASS CHANNEL	292 CF	GRAVEL TRENCH
3	CHANNEL PROTECTION VOLUME CPV	0.23 AC.FT.	N/A	<u> </u>	POCKET POND
4	OVERBANK FLOOD PROTECTION, QP	N/A	N/A	N/A	
5	EXTREME FLOOD VOLUME, QF	N/A	N/A	N/A	
	NOTE: SWM PROVIDED BY. GRASS CHANNEL CREDIT NATURAL CONSERVATION CF POCKET POND, P-5	REDIT			

	PROPERTY LINE RIGHT-OF-WAY LINE ADJACENT PROPERTY LINE EXISTING CURB AND GUTTER
• • • .	CENTERLINE OF EXISTING STREAM
27 1 Card	PROPOSED SIDEWALK
	PROPOSED CURB
	VARIABLE WIDTH PUBLIC SEWER, WATER, AND UTILITY EASEMENT
	PUBLIC SWM CREDIT EASEMENT
	FOREST CONSERVATION EASEMENT (RETENTION)
	FOREST CONSERVATION EASEMENT (REFORESTATION)
+ + + + + + + + + + + + + + + + + + +	PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE, AND UTILITY EASEMENT
	RECREATIONAL OPEN SPACE AND AMENITY AREA
	EXISTING WETLANDS

	PROPERTY LINE RIGHT-OF-WAY LINE ADJACENT PROPERTY LINE EXISTING CURB AND GUTTER
	CENTERLINE OF EXISTING STREAM
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	PROPOSED CURB
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	FOREST CONSERVATION EASEMENT (REFORESTATION)
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	EXISTING WETLANDS
<u> </u>	25' WETLAND BUFFER

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	FOREST CONSERVATION EASEMENT (REFORESTATION)
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	EXISTING WETLANDS
	25' WETLAND BUFFER

## LEGEND

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	FOREST CONSERVATION EASEMENT (REFORESTATION)
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	EXISTING WETLANDS
	25' WETLAND BUFFER
	STREAM BUFFER

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	PROPOSED CURB
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	CREDIT EASEMENT
	FOREST CONSERVATION EASEMENT (RETENTION)
	FOREST CONSERVATION EASEMENT (REFORESTATION)
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	RECREATIONAL OPEN SPACE AND AMENITY AREA
	EXISTING WETLANDS
	25' WETLAND BUFFER
	STREAM BUFFER

	PROPERTY LINE
	RICHT-OF-WAY LINE
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	EXISTING CURB AND GUTTER
	CENTERLINE OF EXISTING STREAM
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	EXISTING WETLANDS
	25' WETLAND BUFFER
	STREAM BUFFER

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	PUBLIC SWM CREDIT EASEMENT
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	EXISTING WETLANDS

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	RECREATIONAL OPEN SPACE AND AMENITY AREA
	EXISTING WETLANDS
	25' WETI AND PHEECD

	PROPERTY LINE RIGHT-OF-WAY LINE ADJACENT PROPERTY LINE EXISTING CURB AND GUTTER
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	PROPOSED CURB
	VARIABLE WIDTH PUBLIC SEWER, WATER, AND UTILITY EASEMENT
	PUBLIC SWM CREDIT EASEMENT
	FOREST CONSERVATION EASEMENT (RETENTION)
	FOREST CONSERVATION EASEMENT (REFORESTATION)
+ + + + + + + + + + + + + + + + + +	PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE, AND UTILITY EASEMENT
	RECREATIONAL OPEN SPACE AND AMENITY AREA
	EXISTING WETLANDS

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+ + + + + + + + + + + * * * + + +	PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE, AND UTILITY EASEMENT
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	VARIABLE WIDTH PUBLIC SEWER, WATER, AND UTILITY EASEMENT
	PUBLIC SWM CREDIT EASEMENT
$\overline{\Box}$	FOREST CONSERVATION EASEMENT (RETENTION)
$\boxtimes$	FOREST CONSERVATION EASEMENT (REFORESTATION)
+ +	PUBLIC 100 YEAR FLOODPLAIN,

## DENSITY TABULATION

SPACE PROVIDED:

\*TOTAL RECREATION+AMENITY

SITE ANALYSIS:

4.39 AC. (191,074 SF) GROSS AREA: 0.28 AC. (12,261 SF) 100-YEAR FLOODPLAIN: 0.00 AC. (0.00 SF) STEEP SLOPES OUTSIDE: 4.11 AC. 8.0 DWELLING UNITS/NET AREA TOTAL NUMBER OF UNITS ALLOWED AND PROPOSED: 32 25% OF GROSS PROPERTY AREA OPEN SPACE CALCULATION: OPEN SPACE REQUIRED: 1.10 AC (47,916 SF) CREDITED OPEN SPACE PROVIDED ON LOT 36: 2.02 AC. (87,923 SF) NON-CREDITED OPEN SPACE PROVIDED ON LOT 36: 0.56 AC. (24,284 SF) TOTAL OPEN SPACE PROVIDED ON LOT 36: 2.58 AC. (112,207 SF)

OWNED AND MAINTAINED BY HOA OPEN SPACE PROVIDED ON LOT 37: 0.68 AC. (29,455 SF) OWNED AND MAINTAINED BY HOWARD COUNTY RECREATION & PARK 3.26 AC. (141,663 SF) TOTAL OPEN SPACE PROVIDED:

400 SF PER UNIT X 32 RECREATION OPEN 0.29 AC. (12,800 SF) SPACE REQUIRED: RECREATIONAL OPEN 0.19 AC. (8,263 SF) SPACE PROVIDED: \*AMENITY OPEN

0.32 AC. (13,905 SF) OPEN SPACE PROVIDED:

\*SEE GENERAL NOTE NUMBER 33. 10% MODERATE INCOME 4 UNITS

HOUSING REQUIRED: 10% MODERATE INCOME 4 UNITS (7, 13 & 28, 33) HOUSING PROVIDED:

> MEADOWRIDGE PROPERTIES INC 1710 WILLOW SPRINGS DRIVE SYKESVILLE, MD 21784-5600

> > ATTN: MR. AHSAN S. KHAN

(410) 442-1685

DEVELOPER 100% LAND, INC. 5300 DORSEY HALL DR STE 102 ELLICOTT CITY MD 21042-7819 ATTN: MR. DONALD R. REUWER

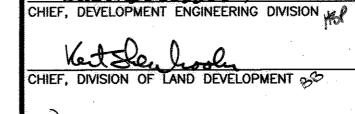
(443) 367-0422

# PERMIT INFORMATION CHART

0.13 AC. (5,642 SF)

PROJECT NAME	SECTION/AREA		CEL
FOX HUNT ESTATES	N/A		35
DEED REF. BL PLAT #22286-	OCK NO ZONE	TAX MAP ELECT DIST	CENSUS TR
22288 (F-13-016)	3 R-SA-8	37 1ST	6011.01
WATER CODE:	D-06	SEWER CODE: 261	0400

APPROVED: DEPARTMENT OF PLANNING AND ZONING



#### **VICINITY MAP** SCALE 1"=2000' SHEET INDEX **DESCRIPTION** SHEET NO 1 OF 14 COVER SHEET 2 OF 14 SITE AND UTILITY PLAN ROAD PROFILES AND DETAILS 3 OF 14 4 OF 14 STORM DRAIN PROFILES 5 OF 14 GRADING AND SEDIMENT CONTROL PLAN 6 OF 14 SEDIMENT AND EROSION CONTROL DETAILS 7 OF 14 SWM FACILITY DETAILS SWM FACILITY DETAILS 8 OF 14 FOREST STAND DELINEATION PLAN 9 OF 14 10 OF 14

11 OF 14

12 OF 14

13 OF 14

14 OF 14

# ADDRESS CHART

STORM DRAIN DRAINAGE AREA MAP

RETAINING WALL ELEVATION

7018 JOANN KHAN DR.

7020 JOANN KHAN DR.

RETAINING WALL CONSTRUCTION DETAILS

LANDSCAPE & FOREST CONSERVATION PLAN

LANDSCAPE & FOREST CONSERVATION DETAILS

BENCHMARK INFORMATION

BENCHMARK NO. 1: COUNTY CONTROL #37EA

BENCHMARK NO. 2: COUNTY CONTROL #31R1

N 559,149.111 E 1,376,916.213

N 565,303,465 E 1,372,517.678

ELEV. = 291.757

ELEV. = 401.748'

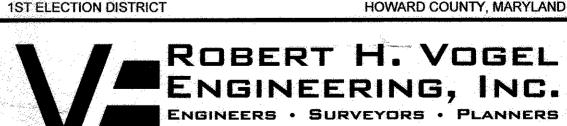
	The state of the s		
LOT NO	STREET ADDRESS	LOT NO	STREET ADDRESS
4	7011 JOANN KHAN DR	. 22	7024 JOANN KHAN DR.
5	7013 JOANN KHAN DR	23	7026 JOANN KHAN DR.
6	7015 JOANN KHAN DR	24	7028 JOANN KHAN DR.
7	7017 JOANN KHAN DR	25	7030 JOANN KHAN DR.
8	7019 JOANN KHAN DR	26	7032 JOANN KHAN DR.
9	7021 JOANN KHAN DR	27	7058 JOANN KHAN DR.
10	7025 JOANN KHAN DR	28	7056 JOANN KHAN DR.
11	7027 JOANN KHAN DR	29	7054 JOANN KHAN DR.
12	7029 JOANN KHAN DR	30	7050 JOANN KHAN DR.
13	7031 JOANN KHAN DR	31	7048 JOANN KHAN DR.
14	7033 JOANN KHAN DR	. 32	7046 JOANN KHAN DR.
15	7035 JOANN KHAN DR	33	7044 JOANN KHAN DR.
16	7010 JOANN KHAN DR	. 34	7042 JOANN KHAN DR.
17	7012 JOANN KHAN DR	. 35	7040 JOANN KHAN DR.
18	7014 JOANN KHAN DR	36	OPEN SPACE
19	7016 JOANN KHAN DR	. 37	OPEN SPACE

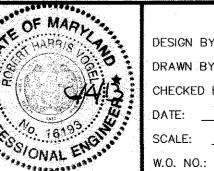
# 04/05/13 1 (RHV) REVISE PROPOSED TOWNHOUSE LAYOUTS

## REVISED SITE DEVELOPMENT PLAN **COVER SHEET**

# FOX HUNT ESTATES

LOTS 4-35 & OPEN SPACE LOTS 36 & 37





TAX MAP 37 GRID 3

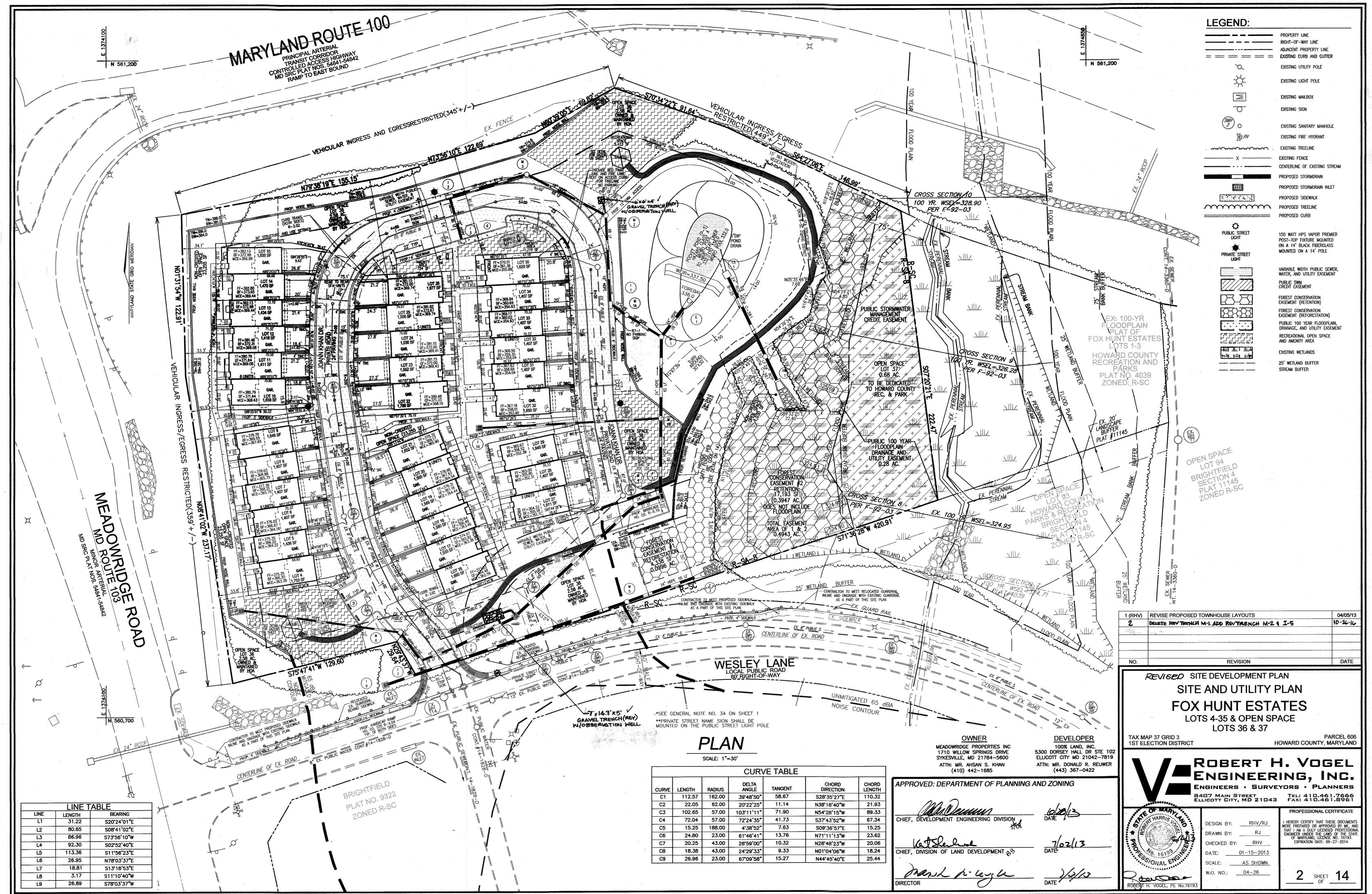
DESIGN BY: WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 CHECKED BY:

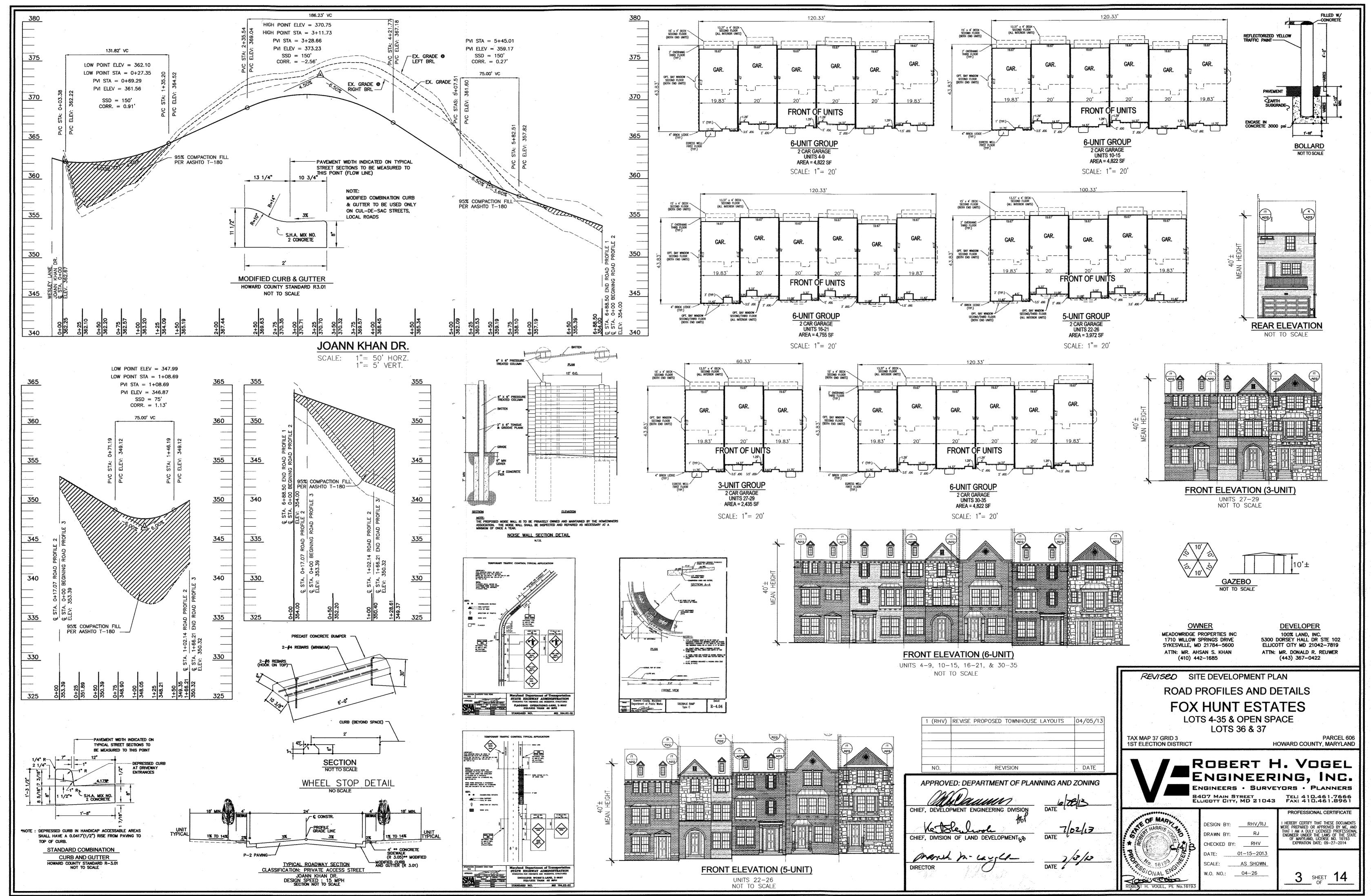
EXPIRATION DATE: 09-27-2014 SHEET 14

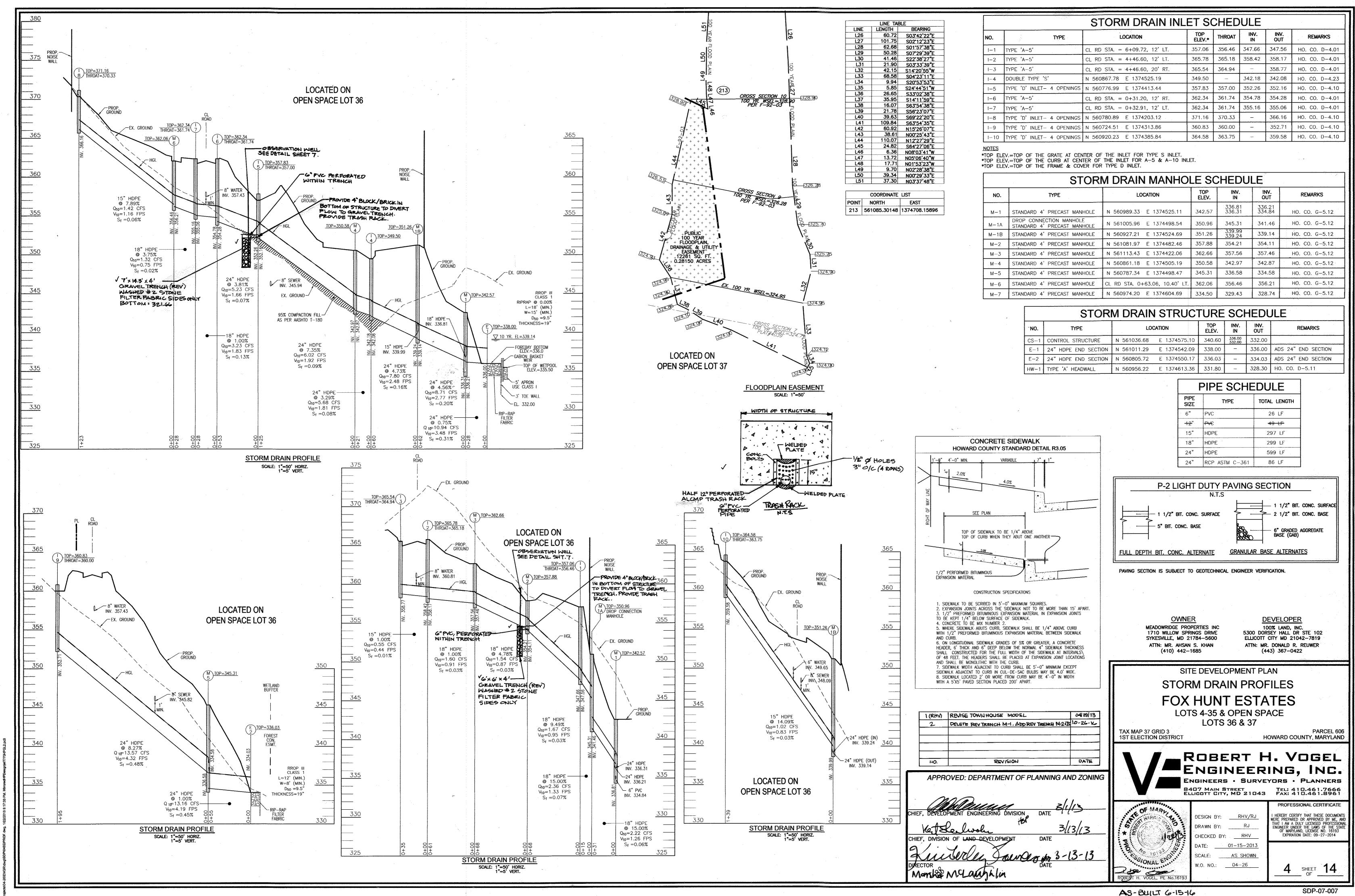
8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

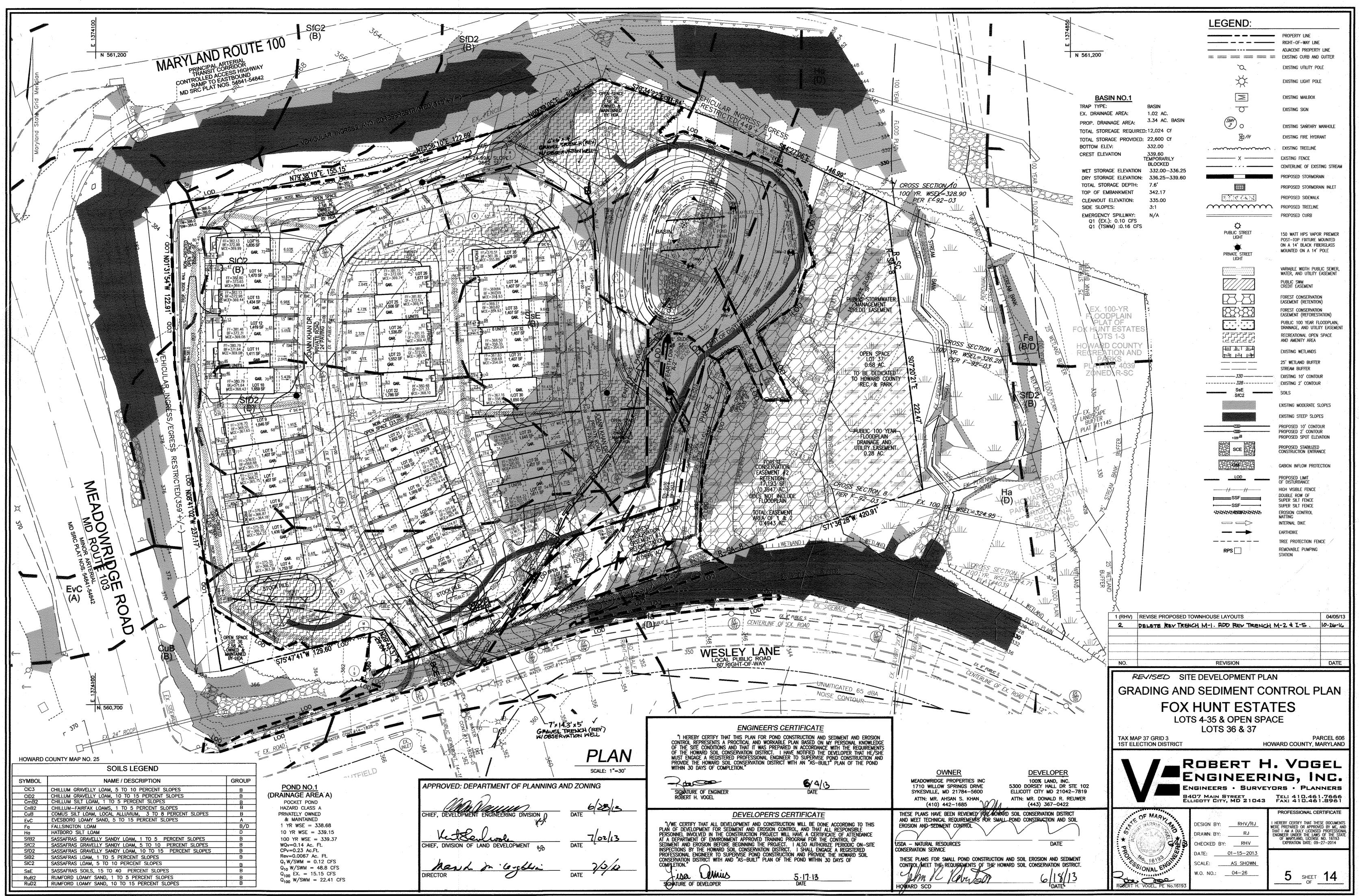
AS-BUILT 6/15/16

## SDP-07-007









- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL",
- IND REVISIONS THERETO FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES. DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1. B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL STORM DRAINAG
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL FROSION AND SEDIMENT CONTROL (SECTION G) FOR PERMANENT SEEDING SOD TEMPORARY SEEDING, AND MULCHING. TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER ERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

	•	
SITE ANALYSIS:		
	TOTAL AREA OF SITE	4.39 A
	AREA DISTURBED	3.79 A
	AREA TO BE ROOFED OR PAVED	1.78(a) A
	AREA TO BE VEGETATIVELY STABILIZED	2.01(b) A
	TOTAL CUT	9,500
	TOTAL FILL	9,500
	OFFSITE WASTE/BORROW AREA LOCATION	**

- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER
- EXISTING ROOFTOP, PAVEMENT OR GRAVEL SURFACE CONSIDERED IMPERVIOUS PROPSED GRAVEL AREAS PARKING ISLANDS LANDSCAPED PERIMETERS & "GREEN"
- SWM FACILITIES ESTIMATE ONLY; CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION. TO BE DETERMINED BY CONTACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, WITH AN APPROVED AND ACTIVE GRADING PERMIT

#### B-4-4 STANDARDS AND SPECIFICATIONS TEMPORARY STABILIZATION

#### DEFINITION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS. CONDITIONS WHERE PRACTICE APPLIES

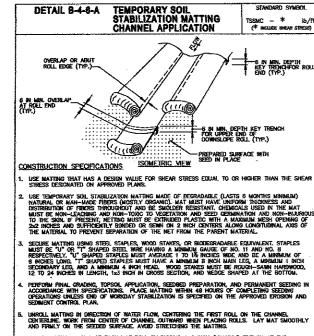
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED. <u>CRITERIA</u>

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE 8.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3). AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEFDING DATES AND SEFDING DEPTHS, IF THIS SUMMARY IS NOT PUT ON THE PLAN and completed, then table 8.1 plus fertilizer and lime rates must be pu ON THE PLAN. 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY

3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

	HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b SEED MIXTURE (FROM TABLE B.1):				FELIZER RATE	LIME RATE	
	NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	(10-20-20)	
	1	COOL SEASON ANNUAL RYEGRASS OR EQUAL	40 LB / AC	MAR 1 TO MAY 15 AUG 1 TO OCT 15	1/2 IN.	436 LB/AC (10 LB PER 1000 SF )	2 TONS/AC (90 LB PER 1000 SF )
***************************************	2	WARM SEASON FOXTAIL MILLET OR EQUAL	30 LB / AC	MAY 16 TO JUL 31	1/2 IN.		



KEY-IN UPSTREAM ERD OF EACH MAT ROLL BY DIGGING A 6 INCH (MEMBUM) TRENCH AT THE UPSTREAM END OF THE MATTER, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE REPLACING THE EXCAVATED MATERIAL AND TAMPING TO SECURE THE MATERIAL FOR OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS, OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JORTS, AND ROLL ENDS. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABLISHMENT. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTRO U.S. DETWIRMENT OF AGRICULTURE 2011 MARTILAND DEPARTMENT OF ENVIRONMENT ADMINISTRATION WATER MANAGEMENT ADMINISTRATION

APPROVED: DEPARTMENT OF PLANNING AND ZONING

ENGINEERING DIVISION

#### B-4-5 STANDARDS AND SPECIFICATIONS PERMANENT STABILIZATION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

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

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

#### A SEED MIXTURES I. GENERAL USE

A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 8.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE 8.2. FINTER SELECTED MIXTURE(S) APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY, TH SUMMARY IS TO BE PLACED ON THE PLAN. B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING. . FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES

RECOMMENDED BY THE SOIL TESTING AGENCY D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3-1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT 2. TURFGRASS MIXTURES

A. AREAS WHERE TUREGRASS MAY BE DESIRED INCLUDE LAWNS. PARKS. PLAYGROUNDS. AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANC B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE, ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND seeding dates in the permanent seeding summary. The summary is to be placed

> 1. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT IRRIGATION REGISTED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET, CHOOSE A MINIMU OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT. II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN

AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT, CERTIFIED PERENNIAL RYEGRASS CULTIVARS/ CERTIFIED KENTUCKY BLUFGRASS SEFDING RATE: 2 POUNDS MIXTURE PER 1000 SOUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT. III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE, RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BULIFGRASS CULTIVARS O TO PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR NORE

CULTIVARS MAY BE BLENDED IV. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUFGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT.

SEEDING RATE: 11/2 TO 3 POUNDS PER 1000 SQUARE FEFT. SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND" CHOOSE CERTIFIED MATERIAL CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE. TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC

#### C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

WESTEM MD: MARCH 15 TO JUNE 1, AUGUST ITO OCTOBER 1 (HARDINESS ZONES: SB, 6A) CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B) SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDED, REMOVE STONES AND DEBRIS OVER 1% INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN such condition that future mowing of grasses will pose no difficulty. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) LINTH THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS. OR ON ADVERSE SITES.

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

1. GENERAL SPECIFICATIONS A. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR. B. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH. PLUS OF MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE OP GROWTH AND THATCH. BROKEN PADS AND TOM OR UNEVEN ENDS WILL NOT BE C. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section. D. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT

(EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION. 2. SOD INSTALLATION A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

B. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST FACH OTHER, STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH ENSURE THAT SOD IS NOT STRETCHED OR OFFICE AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS VEICH WOULD CAUSE AIR DRYING OF THE ROOTS . WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE. . WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF HE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE

THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES, WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING. B. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN

C. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b SEED MIXTURE (FROM TABLE B.3): 9				*	FELIZER RATE (10-20-20)		LIME RATE
SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N .	P <sub>2</sub> O <sub>5</sub>	к <sub>2</sub> 0	
COOL SEASON TALL FESCUE & KENTUCKY BLUEGRASS OR EQUAL	T.F. 60 LB / AC K.B. 40 LB / AC	MAR 1 TO MAY 15 AUG 15 TO OCT 15	1/4-1/2 IN.	(1 LB PER	(2 LB PER		

PERMANENT SEEDING SUMMARY

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

## DEFINITION

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION,

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES

## WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED

#### A. SOIL PREPARATION

1. TEMPORARY STABILIZATION A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOLINTED ON CONSTRUCTION FOUIPMENT AFTER THE SOIL IS LOOSENED IT MILET NOT BE ROLLED OR DRACGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION, SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS . Incorporate lime and Fertilizer into the top 3 to 5 inches of soil by disking

OR OTHER SUITABLE MEANS. PERMANENT STABILIZATION A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

1. SOIL PH BETWEEN 6.0 AND 7.0. II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM). III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE, AN EXCEPTION: IF LOVEGRASS WILL BE

PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD RE ACCEPTABLE IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT. V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENFTRATION B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET

C. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON

HE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS, RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION, LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER FOLIPMENT TO ROUGHEN

PREPARATION, TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING TH

SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR

HE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED

OF THE SLOPE LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE

#### SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

I TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCEM HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH. MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION. 2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-

3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE: A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH. B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT

C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH. D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND, OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY

VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 11/2 INCHES IN DIAMETER. B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA rass, quack grass, Johnson Grass, nut sedge, poison IVY, thistle, or others TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALLETED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

5. TOPSOIL APPLICATION A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING B. UNFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL OIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM OPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR

MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT

MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) I. Soil Tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES. 2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT, MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.

3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE. 4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. 5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

DETAIL G-2-4 BAFFLE BOARDS

4 FT CENTER TO CENTER —

BAFFLE DETAIL

U.S. DEPARTMENT OF ARRICULTURE
ARRAM, RESOLARIOS CONSERNATION SERVICE 2011 INDEX MARKASHER ARAMSESTROOM

## B-4-3 STANDARDS AND SPECIFICATIONS SEEDING AND MULCHING

#### DEFINITION

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

## TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE CRITERIA

#### A. SEEDING

CONDITIONS WHERE PRACTICE APPLIES

A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY, ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT, REFER TO TABLE 8.4 REGARDING THE QUALITY OF SEED, SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE. B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND

C. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INDICULANTS AS DIRECTED ON THE PACKAGE LISE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSFFDING, NOTF: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL used, temperatures above 75 to 80 degrees fahrenheit can weaken bacteria and make D. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS

OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO

PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS. APPLICATION A. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS. I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE 8.1. PERMANENT SEEDING TABLE 8.3. OR SITE-SPECIFIC SEEDING SUMMARIES. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD

SEED TO SOIL CONTACT. B. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND

1. IF FÉRTILIZER IS BEING APPLIED AT THE TIME OF SEEDING. THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS) 200 POUNDS PER ACRE: K20 (POTASSIUM), 200 POUNDS PER ACRE II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

#### I. MULCH MATERIALS (IN ORDER OF PREFERENCE)

A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, LYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY NOTE-USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED. R WOOD CELLULOSE FIRER MUICH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE. , WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN

III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS II. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLENE WITH SEED. FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS. IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 VILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

2 APPLICATION A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES, APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE. C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD: I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50

POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER. III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES. WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET

DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLIED WITH: A. 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES,

B. 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

DIKES, SWALES, DITCH PERIMETER SLOPES SLOPES AND ALL SLOPES GREATER

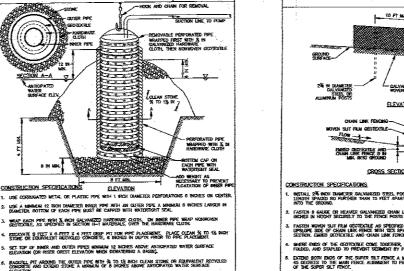
## DETAIL F-1 REMOVABLE PUMPING STATION Zæs -HOOK AND CHAIN FOR REMOVAL LOLEAN STONE ME CORRAGATED METAL OR PLASTIC PIPE WITH 1 SYCH DIAMETER PERFORATIONS 6 SHORES ON CENTER USE A MARAGUE 12 INCH DAMERER RHIER PRE MITH AN OUTER PARE A MARAGUE 6 INCHES LARGER IN TRANSPER ROTTOM OF EACH PARE MUST BE CAPPED WITH MATERITISM SEAL. , WARP CACH PIPE WITH X, SICH CALVANZED HARDWARE CLOTH, ON MINER PIPE WARP HONROVEN DESTRUTE, AS SPECIFED IN SECTION HIT MATERIALS, OVER THE HARDWARE CLOTH. DECEMBE S FEET X 6 FEET X 4 FEET GEEP PIT FOR PIPE PLACEMENT, PLACE CLEAN \$ 10 1% INCH STORE OR ECONOMIENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.

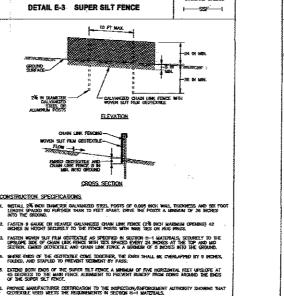
e. A REMOVABLE PRAPPIC STATION REQUIRES FROMENT MAINTENANCE, IF SYSTEM CLOOS, PLAL OUT BACK PPE-AND REPLACE CENTERTIE. KEEP POINT OF DISCHARGE FREE OF BROSION.

WARRAND STANDARDS AND SPECIFICATIONS FOR SOIL BROSSON AND SEDERAR CONTROL

U.S. SEPARTMENT OF ARROLATIVES 2011 MARKING, DEPARTMENT OF EMISSIONALIST MARKING, DESARRATION SERVICE, 2011 MARKING, DEPARTMENT OF EMISSIONALIST MARKING, DEPAR

DISCHARGE TO A STABLE AREA AT A MONEROSINE RATE

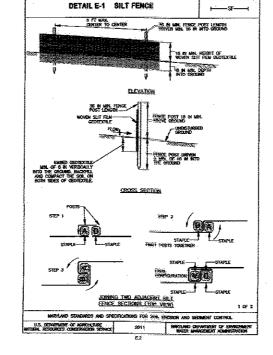


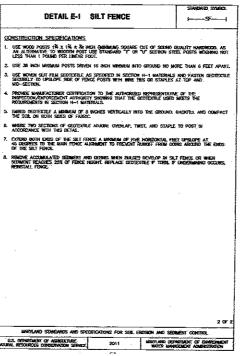


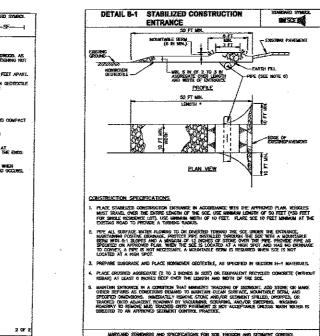
REMOVE ACCUMULATED SEDMENT AND OURSES WHEN BULGES DEVELOP IN FENCE OF MARN SEDMENT REMOVES 125 OF FENCE HEIGHT, REPLACE CONTENTAL IF 1989, IF UNDERSHAPES OCCURS, REPORTALL OWAR LOW FERMINE AND CONTENTAL

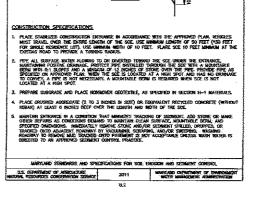
WARMAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDMENT CONTROL

U.S. DEPARTMENT OF ASSOLUTIVE 2011 MAYLANG DEPARTMENT OF DIVISIONALITY SERVICE 2011 MAYLANG DEPARTMENT OF DIVISIONALITY SERVICE 2011 MAYER MANAGEMENT ADMINISTRATION





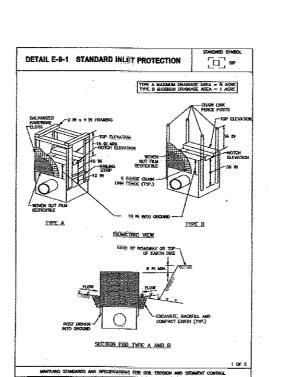




(410) 442-1685 100% LAND, INC.

#### 1. OBTAIN GRADING PERMIT. 2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK. 3. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AND INSTALL SILT FENCE, SUPER SILT FENCE AND CLEAN WATER DIKES FOR PHASE 1 AND INSTALL BYPASS STORM DRAIN SYSTEM FROM 1-9 TO E-2..... . 2 WEEK 4 WITH ALL POND PRINCIPAL SPILLWAY MATERIAL ON SITE AND PERMISSION FROM INSPECTOR TO PROCEEDED, INSTALL SILT FENCE, AND SUPER SILT FENCE FOR PHASE 2. CONSTRUCT STORMWATER MANAGEMENT FACILITIES (SEDIMENT BASIN) AND CONSTRUCT SEDIMENT CONTROL DEWATERING \_2 WEEKS 5. ONCE SEDIMENT BASIN CONSTRUCTED, INSTALL EARTHDIKES FOR PHASE 2. .2 DAYS 6. WITH INSPECTOR'S APPROVALS CLEAR AND GRUB SITE AND .....1 WEEK BEGIN MASS GRADING. -7. INSTALL RETAINING WALL AND BACKFILL UP TO ELEVATION 342 BEFORE STARTING MASS GRADING. \_\_\_\_\_1 WEEK 8. WITH GRADING IS IN PROCESS MAINTAIN FLOW TO BASINS AND BEGIN 9. GRADE REMAINING ROADS TO SUB-BASE AS SITE IS GRADED. INSTALL STORM DRAIN SYSTEMS, WATER AND SEWER AS ROADS ARE \_3 WEEK GRADED TO SUB-BASE. 10. PAVE ROADS AFTER SUBBASE AND CURB & GUTTER, BEGIN PAVING ROADS AND - 2 WEEKS INSTALL SIDEWALKS. . . 11. WITH ROADS GRADED TO SUB-BASE AND INLETS ARE IN PLACE BEGIN INSTALLATION OF CURB AND GUTTER. ..3 WEEKS 12. CONSTRUCT BUILDING UNITS 4 TO 35.... 16 WEFK 13. STABILIZED ALL DISTURBED AREAS IMMEDIATELY AND WITH PERMISSION OF THE INSPECTOR, FLUSH STORM DRAIN SYSTEM AND REMOVE ALL SEDIMENT CONTROLS FROM THE SITE AND REMOVE ALL JUNK TRASH AND DEBRIS (OLD AND NEW) FROM BUFFERS, FLOODPLAIN AND FOREST CONSERVATION AREAS. . . . . . . . . . . . 1 WEEK 14. AS STORMWATER MANAGEMENT POND IS STABILIZED, INSTALL POND LANDSCAPING AS SHOWN IN SCHEDULE 'D', PERIMETER LANDSCAPING STREET TREES, AND AS SHOWN IN SCHEDULE 'A'. SEE SHEET 10 OF 15. .1 WEEK FOR SCHEDULE TABLES. 15. WITH INSPECTOR'S APPROVAL AND ROAD PAVING, SIDEWALKS, ALL SEA UNITS COMPLETE AND CONTRIBUTING DRAINAGE AREAS STABILIZED, CONVERT SEDIMENT BASINS TO FINAL STORMWATER MANAGEMENT BY REMOVING DEWATERING DEVICE FROM POND 1 AND INSTALL 8" POND DRAIN. CONVERT DEWATFRING 2 WEEKS DEVICE IN POND 1 TO A PERMANENT POCKET POND PER DETAILS. .2 WEEKS 16. CONSTRUCT NOISE WALL.

SEQUENCE OF CONSTRUCTION



U.S. DÉPARTMENT OF ACROLLEURE: 2611 MARTANO DEPARTMENT OF ENVIRONMENT UNITE MARTANO DEPARTMENT OF ENVIRONMENT UNITE MARTANO DEPARTMENT ADMINISTRATION

**DEWATERING STRATEGY** 

SEDIMENT POLITION ASSOCIATED WITH DEWATERING.

CONSENT OF THE APPROVAL AUTHORITY.

DEWATERING OF EXCAVATED AREAS

SECTION

DEWATERING REFERS TO THE ACT OF REMOVING AND DISCHARGING WATER FROM EXCAVATED

AREAS ON CONSTRUCTION SITES OR FROM SEDIMENT TRAPS OR BASINS ON CONSTRUCTION

EXCAVATED AREA OR SEDIMENT TRAP OR BASIN AT ANY CONSTRUCTION SITE. GIVEN THE

PRACTICES MAY APPLY. REGARDLESS OF THE APPLICABILITY OF THE PRACTICES LISTED

HEREIN, OPERATORS ARE REQUIRED TO USE ACCEPTABLE PROCEDURES FOR MAINTENANCE

DESIGNERS SHALL SPECIFY THE PREFERRED PROCEDURES FOR DEWATERING ON PLANS. IN

TRAPS AND BASINS PRIOR TO ELIMINATION OF THE LAST SEDIMENT CONTROL FACILITY ON

MANAGEMENT FACILITIES. RECOMMENDED PROCEDURES SHALL BE CONSISTENT WITH THESE

STANDARDS. ATYPICAL SITE CONDITIONS MAY REQUIRE INNOVATIVE DEWATERING DESIGNS.

DEWATERING MEASURES NOT REFERENCED IN THIS STANDARD MAY BE USED WITH THE

A. DESIGNERS SHALL SPECIFY ON PLANS, AND IN SEQUENCES OF CONSTRUCTION

REVIEWERS SHALL CHECK TO SEE THAT PROCEDURES FOR DEWATERING ARE

INCLUDED ON PLANS, PRACTICES FOR DEWATERING OF EXCAVATED AREAS. PLAN

INCLUDED ON PLANS. IN ALL CASES, WATER REMOVED FROM EXCAVATED AREAS

DEVICE PRIOR TO ENTERING RECEIVING WATERS. SEDIMENT CONTROL DEVICES

B. INCLUDE SEDIMENT TRAPS AND BASINS, IN ADDITION TO THE PRACTICES IN THIS

1. PUMPING OF WATER TO AN EXISTING SEDIMENT BASIN OR TRAP IN WHICH THE

2. CONTAINED WITHOUT DISCHARGE TO RECEIVING WATERS. PUMPING OF WATER TO

AN EXISTING SEDIMENT BASIN OR TRAP SUCH THAT THE ENTIRE VOLUME OF

EXCEEDING THE DESIGN OUTFLOW FROM THE SEDIMENT CONTROL STRUCTURE

4. REMOVABLE PUMPING STATION STANDARDS AND SPECIFICATIONS FOR REMOVABLE

5. PUMPING STATION ARE ON DETAIL 20A. USE OF A SUMP PIT STANDARDS AND

DESIGNERS SHALL SPECIFY ON PLANS, AND IN SEQUENCES OF CONSTRUCTION INCLUDED

ENTIRE VOLUME OF WATER FROM THE AREA TO BE DEWATERED CAN BE

WATER FROM THE AREA TO BE DEWATERED CAN BE MANAGED WITHOUT

SPECIFICATIONS FOR A SUMP PIT ARE ON DETAIL 20B, SEDIMENT TANK

STANDARDS AND SPECIFICATIONS FOR A SUMP PIT ARE ON DETAIL 21.

REVIEWERS SHALL CHECK TO SEE THAT PROCEDURES FOR DEWATERING TO BE USED

ARE INCLUDED ON PLANS. IN ALL CASES, WATER REMOVED FROM TRAPS AND BASINS

SHALL BE DISCHARGED SO THAT IT PASSES THROUGH A SEDIMENT CONTROL DEVICE

1. REMOVABLE PUMPING STATION. USE OF A SUMP PIT. USE OF A FLOATING

EVENTUALLY ENCOUNTER SEDIMENT LADEN WATER. WHEN THIS HAPPENS THE

5. THE CLEANER WATER IS PUMPED THE SUCTION HOSE WILL LOWER AND

- SUCTION HOSE TO PUMP THE CLEANER WATER FROM THE TOP OF THE POND. AS

PUMPING OPERATION WILL CEASE. PROVISIONS SHALL BE MADE TO FILTER WATER

ON PLANS, THE PRACTICES FOR DEWATERING OF TRAPS AND BASINS. PLAN

APPROVED PRACTICES FOR DEWATERING OF EXCAVATED AREAS

APPROVED PRACTICES FOR DEWATERING OF TRAPS AND BASINS

DEWATERING OF SEDIMENT TRAPS AND BASINS

PRIOR TO ENTERING RECEIVING WATERS.

SHALL BE DISCHARGED SUCH THAT IT SHALL PASS THROUGH A SEDIMENT CONTROL

THE SITE OR PRIOR TO CONVERSION OF SEDIMENT CONTROL FACILITIES TO STORMWATER

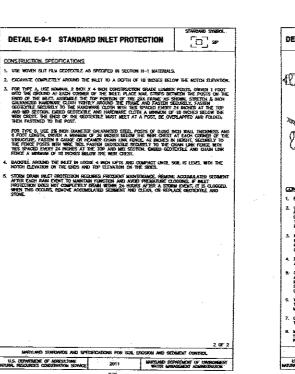
SITES. STANDARDS AND SPECIFICATIONS FOR DEWATERING PRACTICES FOLLOW:

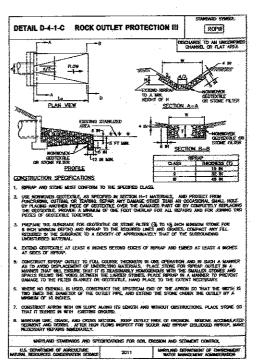
THESE STANDARDS APPLY TO REMOVAL AND DISCHARGE OF WATER FROM ANY

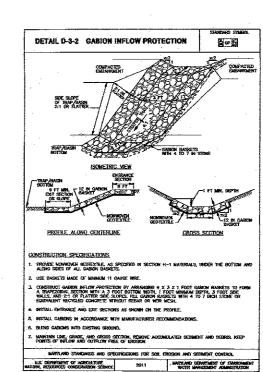
UNIQUE CONDITIONS AT ANY PARTICULAR CONSTRUCTION SITE, ANY OR ALL OF THE

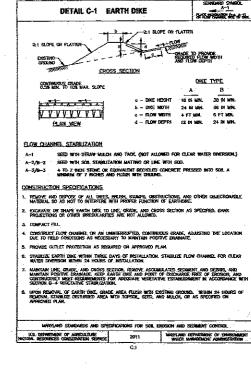
PARTICULAR, DESIGNERS SHOULD IDENTIFY PROCEDURES FOR DEWATERING SEDIMENT

AND DEWATERING. IN ALL CASES, EVERY EFFORT SHALL BE MADE TO ELIMINATE

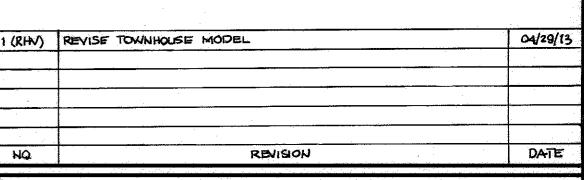








DURATION

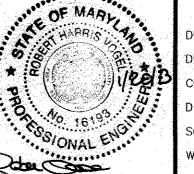


## SITE DEVELOPMENT PLAN SEDIMENT AND EROSION CONTROL DETAILS

FOX HUNT ESTATES LOTS 4-35 & OPEN SPACE

LOTS 36 & 37 **1ST ELECTION DISTRICT** HOWARD COUNTY, MARYLAND

> ROBERT H. VOGEL Engineering, Inc. ENGINEERS • SURVEYORS • PLANNERS 8407 Main Street Tel: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961



ROBERT H. VOGEL, PE No.1619.

DESIGN BY: DRAWN BY: CHECKED BY: SCALE: W.O. NO.:

PROFESSIONAL CERTIFICATE ERE PREPARED OR APPROVED BY ME, ANI EXPIRATION DATE: 09-27-2014 AS SHOWN 04-26 SHEET 14 0

**ENGINEER'S CERTIFICATE** 

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

Row 1/20/13 SIGNATURE OF ENGINEER ROBERT H. VOGEL

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AND "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF YWKUS

DEVELOPER'S CERTIFICATE

EROSION AND SEDIMENT CONTROL USDA - NATURAL RESOURCES CONSERVATION SERVICE THESE PLANS FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT

AND MEET TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION

DEVELOPER 5300 DORSEY HALL DR STE 102 ELLICOTT CITY MD 21042-7819 ATTN: MR. DONALD R. REUWER (443) 367-0422

**OWNER** 

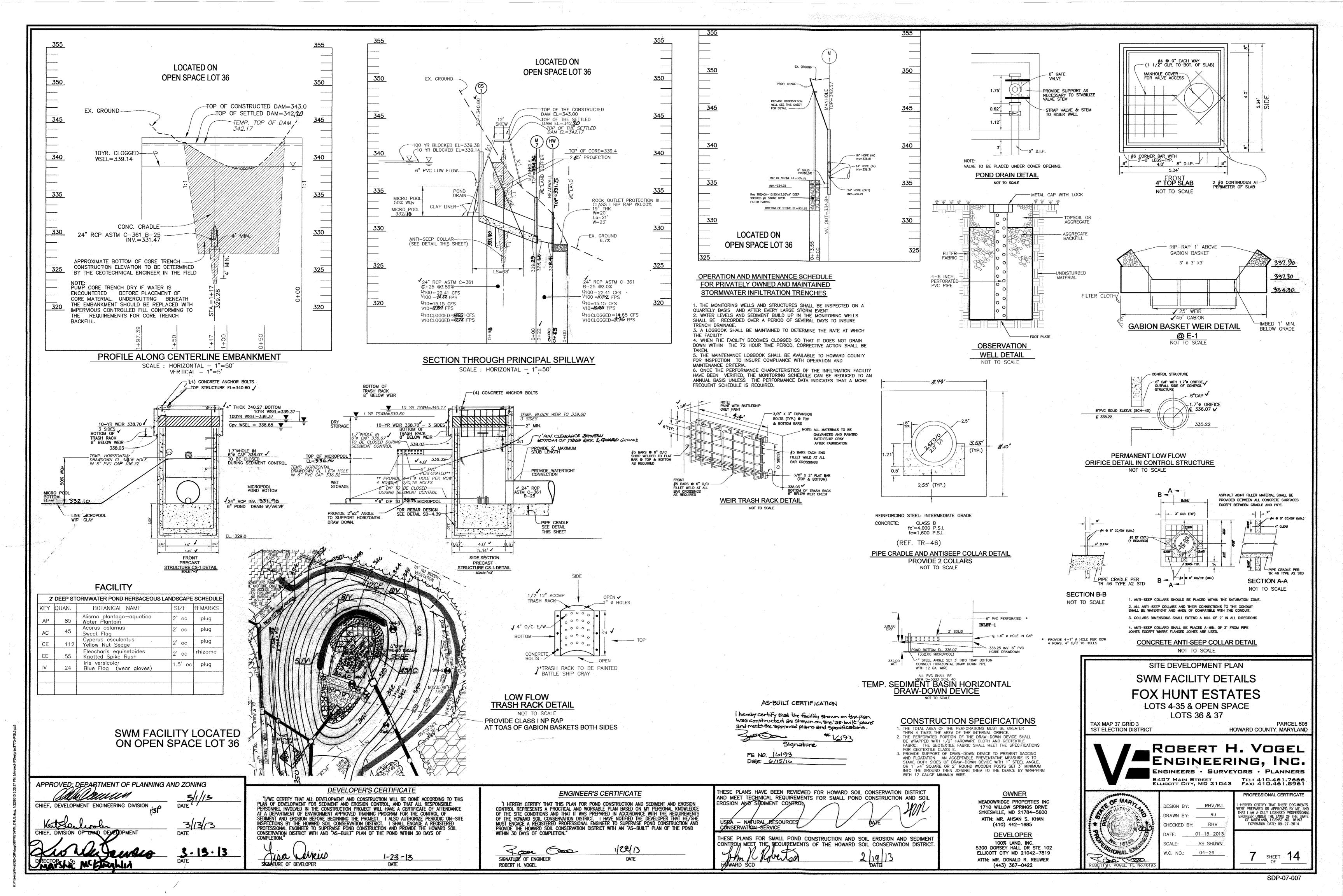
MEADOWRIDGE PROPERTIES INC

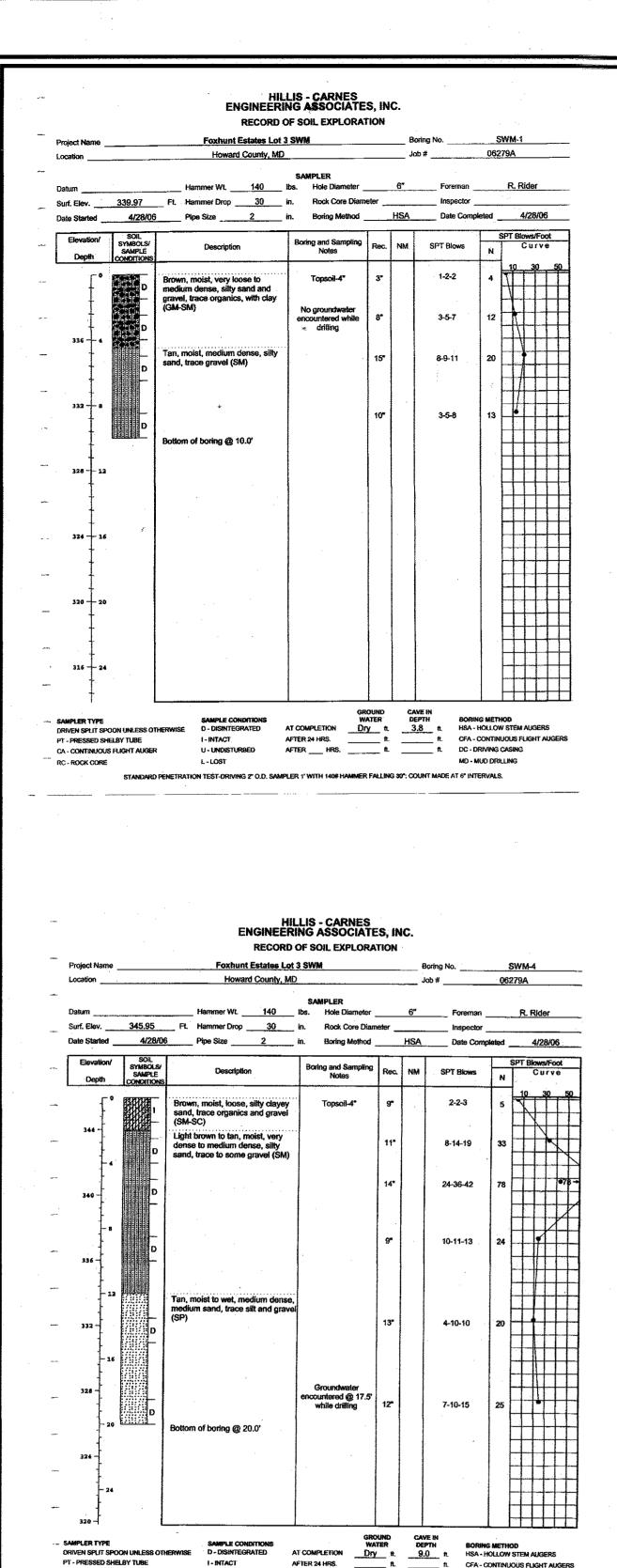
1710 WILLOW SPRINGS DRIVE

Sykesville, MD 21784-5600

ATTN: MR. AHSAN S. KHAN

PARCEL 606





RC - ROCK CORE

DC - DRIVING CASING

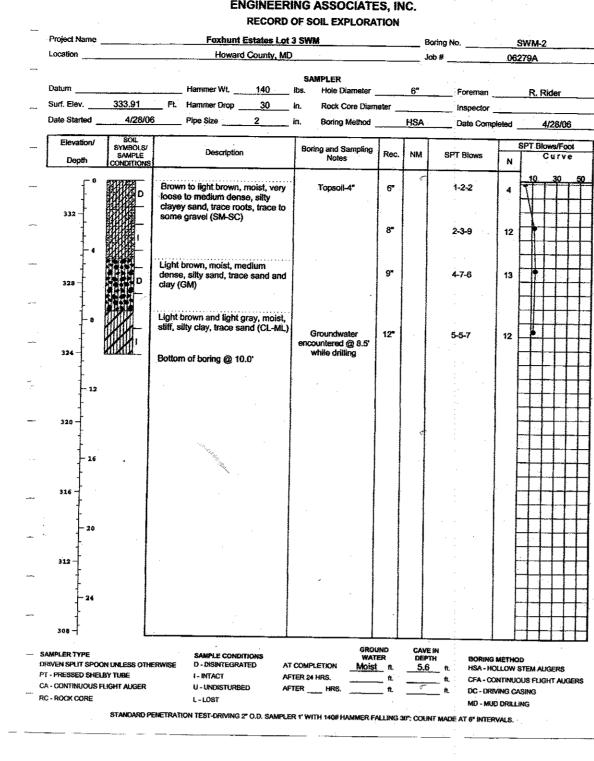
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1" WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

MMMM

HIEF. DEVELOPMENT ENGINEERING DIVISION



#### RECORD OF SOIL EXPLORATION Foxhunt Estates Lot 3 SWM \_\_\_\_\_ Job# \_\_\_\_\_\_ 06279A Hammer Wt. \_\_\_\_\_140 \_\_\_ lbs. Hole Diameter \_ Surf. Elev. 343.92 Ft. Hammer Drop 30 in. Rock Core Diameter inspector 4/28/06 Pipe Size 2 2-2-3 sand, some gravel, trace roots Light brown, moist, medium ense, silty sand and gravel, trace 4-8-12 10-16-10 Tan, moist, loose to medium dense, medium sand, trace sil 5-5-5 and gravel (SP) 5-11-13 Bottom of boring @ 15.0' GROUND WATER BORING METHOD HSA - HOLLOW STEM AUGERS DRIVEN SPLIT SPOON UNLESS OTHERWISE AT COMPLETION \_\_\_Dry\_\_\_ft. 1-INTACT AFTER 24 HRS. CFA - CONTINUOUS FLIGHT AUGER \_\_\_\_\_ ft. CA - CONTINUOUS FLIGHT AUGER DC - DRIVING CASING RC - ROCK CORE MD - MUD DRILLING STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1" WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

DEVELOPER'S CERTIFICATE

1-23-13

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS

PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE

AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AND "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF

100

## Howard County, MD Hammer Wt. 140 ibs. Hole Diameter 6" Foreman R. Rider Surf. Elev. 342.99 Ft. Hammer Drop 30 in. Rock Core Diameter Inspector Date Started 4/28/06 Pipe Size 2 in. Boring Method HSA Date Completed 4/28/06 SPT Blows sand, trace roots and fine grave Tan, moist, stiff, clayey silt, some No groundwate 9-8-9 3-5-6 edium to coarse sand, trace si 8-13-11 Bottom of boring @ 16.0

AT COMPLETION

AFTER 24 HRS.

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1" WITH 1408 HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

DRIVEN SPLIT SPOON UNLESS OTHERWISE

PT - PRESSED SHELBY TUBE

RC - ROCK CORE

CA'- CONTINUOUS FLIGHT AUGER

D - DISINTEGRATED

RECORD OF SOIL EXPLORATION

Foxhunt Estates Lot 3 SWM

**EVALUATIONS** BASED ON THE STATE OF MARYLAND'S "2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II

INFILTRATION BASINS AND TRENCHES ARE NOT ACCEPTABLE PRACTICES WHEN INFILTRATION RATES OF LESS THAN 0.52 INCHES PER HOUR ARE OBTAINED. ALSO, THE BOTTOMS OF THE FACILITIES SHOULD BE LOCATED A MINIMUM OF 4 FT. ABOVE THE SEASONALLY HIGH WATER TABLE AND/OR BEDROCK. BASED ON THE GROUNDWATER CONDITIONS ENCOUNTERED, THE PRESENCE OF DENSE AND DECOMPOSED ROCK MATERIALS, THE ABOVE-OUTLINED CRITERIA, AND EXPERIENCE WITH INFILTRATION STRUCTURES IN THE PROJECT AREA, IT IS OUT OPINION THAT INFILTRATION METHODS OF STORMWATER MANAGEMENT WILL NOT BE FEASIBLE AT THE PROPOSED SWM POND LOCATIONS.

GROUND CAVE IN WATER DEPTH BORING METHOD
DITY R. 6.3 R. HSA-HOLLOW STEM AUGERS

CFA - CONTINUOUS FLIGHT AUGERS

EMBANKMENT AND CUT-OFF CONSTRUCTION THE AREAS OF THE PROPOSED SWM PONDS SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREA IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK. THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OF HIS REPRESENTATIVE UTILIZING A DYNAMIC COME PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH THE MARYLAND SOIL CONSERVATION SPECIFICATIONS 378 SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE—GRAINED SOIL INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. EXPLORATION WITH TEST PITS AND LABORATORY TESTING CAN BE CONDUCTED PRIOR TO CONSTRUCTION TO IDENTIFY AND QUANTIFY POTENTIAL BORROW AREAS FOR CORE TRENCH MATERIAL. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MD SCS 378 SPECIFICATIONS.

BASED ON THE REFUSAL DEPTHS ENCOUNTERED IN POND 2, IT IS RECOMMENDED THAT TEST PITS BE PERFORMED WITH AN EXCAVATOR PRIOR TO CONSTRUCTION TO DETERMINE IF ROCK WITHIN THE BASIN AREA AS WELL AS ALONG THE PRINCIPAL SPILLWAY WILL REQUIRE BLASTING. SHOULD IT BE DETERMINED THAT THE ROCK WITHIN THE BASIN AREAS WILL REQUIRE BLASTING, IT IS RECOMMENDED THAT THESE OPERATIONS WITHIN 75 FT. OF THE RISER AND PRINCIPAL SPILLWAY STRUCTURE BE PERFORMED PRIOR TO CONSTRUCTION OF THE PRINCIPAL SPILLWAY AND RISER STRUCTURE.

THE EVALUATIONS CONTAINED IN THIS REPORT ARE BASED ON OUR UNDERSTANDING OF THE PROPOSED CONSTRUCTION. DATA OBTAINED FROM OUR FIELD EXPLORATIONS, AND OUR EXPERIENCE WITH THE SOILS AND SUBSURFACE CONDITIONS IN THIS AREA. IF THERE ARE ANY CHANGES TO THE PROJECT CHARACTERISTICS, THIS OFFICE SHOULD BE ADVISED SO THAT THE EVALUATIONS MADE IN THIS REPORT MAY BE RE-EVALUATED.

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THE READER IS REFERRED TO THE RECORDS OF SOIL EXPLORATION IN THE APPENDIX FOR DETAILS RELATED TO THE SUBSURFACE CONDITIONS ENCOUNTERED IN THE SOIL BORINGS. IT SHOULD BE NOTED THAT STRATIFICATION LINES SHOWN ON THE RECORDS OF SOIL EXPLORATION REPRESENT APPROXIMATE TRANSITIONS BETWEEN MATERIAL TYPES N-SITU, STRATA CHANGES COULD OCCUR GRADUALLY OR AT SLIGHTLY DIFFERENT LEVELS. ALSO, IT SHOULD BE NOTED THAT THE SOIL BORINGS DEPICT CONDITIONS AT THE PARTICULAR LOCATIONS AND AT THE PARTICULAR TIMES INDICATED. SOME CONDITIONS, PARTICULARLY GROUNDWATER CONDITIONS, COULD CHANGE WITH TIME

IT IS CONSIDERED ESSENTIAL THAT AN HCEA REPRESENTATIVE BE ON-SITE TO MONITOR, INSPECT, AND TEST ALL FACETS OF CONSTRUCTION OF THE SWM FACILITY IN ORDER TO VERIFY THAT OPERATIONS ARE PERFORMED CONSISTENT TO THE PROPOSED PLANS PROVIDED BY THE CIVIL ENGINEER AND RECOMMENDATIONS MADE BY HCEA.

ENGINEER'S CERTIFICATE

I Hereby Certify that this plan for pond construction and sediment and erosion

CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE

MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL references to astm and aashto specifications apply to the most recent version.

kreas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the tow of 1

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH

THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A

SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS. MATERIAL — THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE embankment. And cut off trench shall conform to unified soil classification GC, SC, CH, or CL and must have a

least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment 11 designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment. PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BÉ PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT TI INTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL EXCEED ASTM C-361. BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SOUFEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +\-2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

CUT OFF TRENCH THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF HE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade of AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION FOLIPMENT ROLLERS OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY

MBANKMENT CORE— THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION FOUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY, IN ADDITION, THE CORE SHALL BE PLACED CURRENTLY WITH THE OUTER SHELL OF THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the PIPE. At no time during the backfilling operation shall driven equipment be allowed to operated closer than four feet, measured horizontally, to any part of a structure. Under no circumstances sha EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE mixture shall have a 100–200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM—CM. MATERIAL SHALL BE PLACED SUCH THAT MINIMUM OF 6" (MEASUREI perpendicular to the outside of the PIPE) of Flowable fill shall be under (bedding), over and, on the sides of the PIPE. t only needs to extend up to the spring line for rigid conduits, average slump of the fill shall be 7" to assure Flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. `any adjoining soil fill shall be placed in horizontal ayers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MÉASURED HORIZONTALLY, any part of the structure. Under no circumstances shall equipment be driven over any part of a structure or pipe UNIFSS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL (FLOWABLE FILL)/ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE- ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (POLYMER COATED STEEL PIPE) - STEEL PIPES WITH POLYMERIC COATING SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

MATERIALS — (ALUMINUM COATED STEEL PIPE) — THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF ASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. POND BOTTOM SOIL CONDITIONS

IF BROKEN ROCK FRAGMENTS ARE ENCOUNTERED AT FINISHED POND BOTTOM, UNDER CUT A MINIMUM OF 12" BELOW BASIN GRADE AND TO A HORIZONTAL DISTANCE OF AT LEAST 18" BEYOND EACH EDGE OF THE BROKEN ROCK AND BACKFILL WITH FINE—GRAINED ML OR CL SOILS COMPACTED TO A FIRM CONDITION. THIS PROCEDURE SHOULD BE PERFORMED UNDER THE SUPERVISION OF THE PROJECT GEOTECHNICAL ENGINEER.

#### POND SUMMARY

	1 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	5.98 CFS	15.86 CFS	24.30 CFS
FLOW OUT OF POND	0.12 CFS	15.15 CFS	22.41 CFS
W.S. ELEVATION	338.68	339.15	339.37
STORAGE VOLUME	0.26 AC-FT	0.31 AC-FT	0.34 AC-FT

OPERATION, MAINTENANCE AND INSPECTION INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY STORMWATER MANAGEMENT FACILITY

SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

ROUTINE MAINTENANCE BY HOA FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IS FUNCTIONING PROPERLY. 2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS 3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE

REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.

4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED. NON-ROUTINE MAINTENANCE BY HOA

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE . SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY

REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2, COUPLING, BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEASE

CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

all connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH THICK closed cell circular neoprene gasket: and a 12-inch wide hugger type band with 0-ring. Gaskets having a minimum DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4(FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8'INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE,

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR

4. BEDDING — THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT

BACKFILLING SHALL CONFORM TO STRUCTURE BACKFILL OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

, MATERIALS — REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS. AND SHALL EQUAL OF

BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING/CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THERUCTURE BACKFILLSECTION OF THIS STANDARD. GRAVEL

LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from th

original line and grade of the PIPE. The first joint must be located within 4 feet from the Riser. BACKFILLING SHALL CONFORM TO STRUCTURE BACKFILL

OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE SHOWN ON THE DRAWINGS.

PLASTIC PIPE- THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" -10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONCY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT

4. BACKFILLING SHALL CONFORMRUOTŪRE BACKFĪLL

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

IAGE DIAPHRAGMS — WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION MATERIALS, SECTION 311.

GEOTEXILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND

MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THI EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT I A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL

AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS. EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLITITION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLITITION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS

> MEADOWRIDGE PROPERTIES INC 1710 WILLOW SPRINGS DRIVE SYKESVILLE, MD 21784-5600 ATTN: MR. AHSAN S. KHAN

> > (410) 442-1685

MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

DEVELOPER 100% LAND, INC. 5300 DORSEY HALL DR STE 102 ELLICOTT CITY MD 21042-7819 ATTN: MR. DONALD R. REUWER (443) 367-0422

SITE DEVELOPMENT PLAN

**SWM FACILITY DETAILS** 

## **FOX HUNT ESTATES** LOTS 4-35 & OPEN SPACE

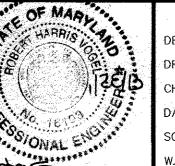
LOTS 36 & 37

TAX MAP 37 GRID 3 **1ST ELECTION DISTRICT** 

PARCEL 606 HOWARD COUNTY, MARYLAND



ROBERT H. VOGEL Engineering, Inc. ENGINEERS · SURVEYORS · PLANNERS 8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961 3407 MAIN STREET



ROBERT H. VOGEL, PE No.1619

DESIGN BY: DRAWN BY: CHECKED BY: DATE: SCALE: W.O. NO.: 04-26

THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014 8 SHEET 14

PROFESSIONAL CERTIFICATE

HEREBY CERTIFY THAT THESE DOCUMENTS FERE PREPARED OR APPROVED BY ME, AN

NO AS-BUILT INFORMATION THIS SHEET

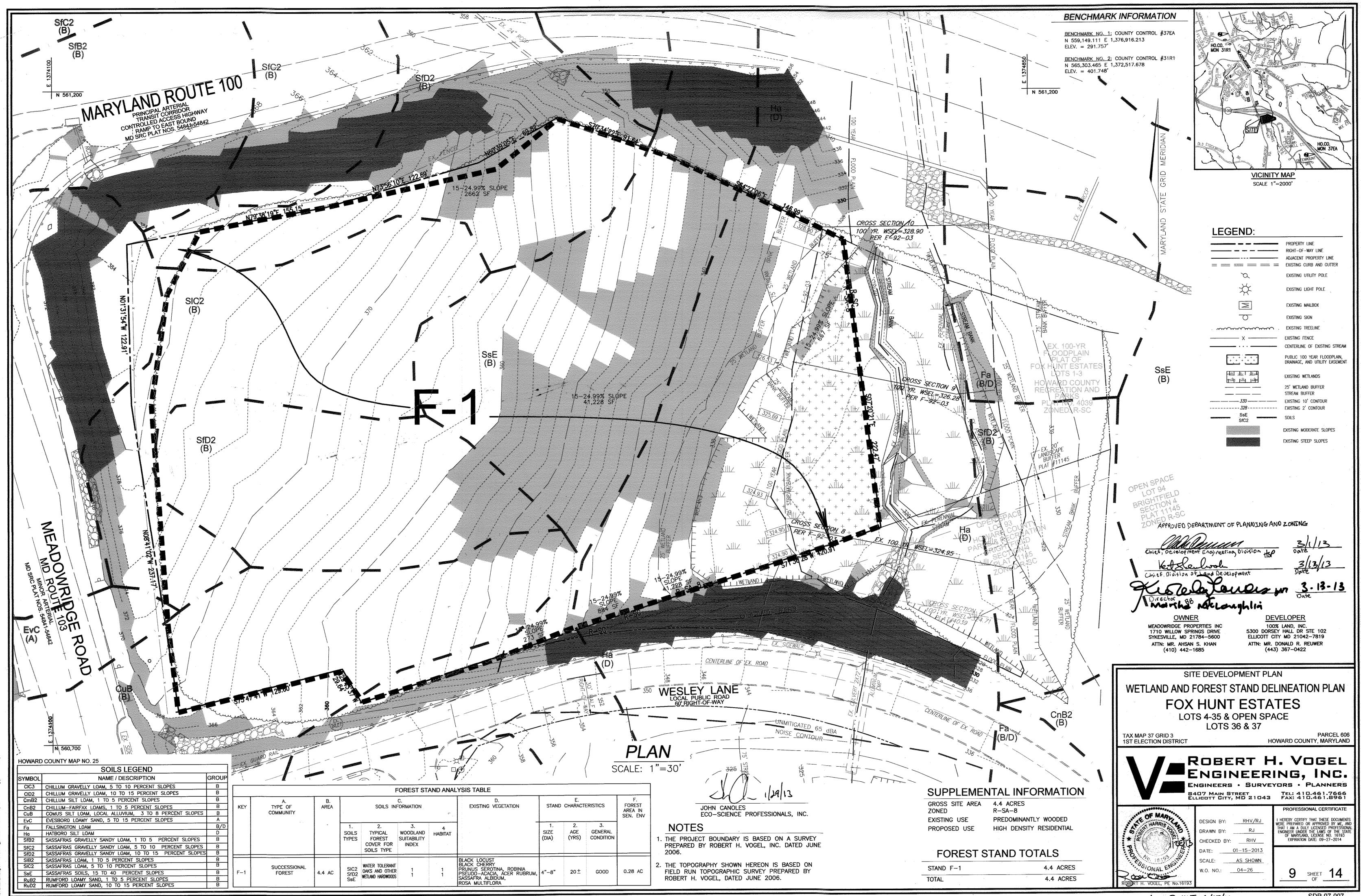
1 par Coop

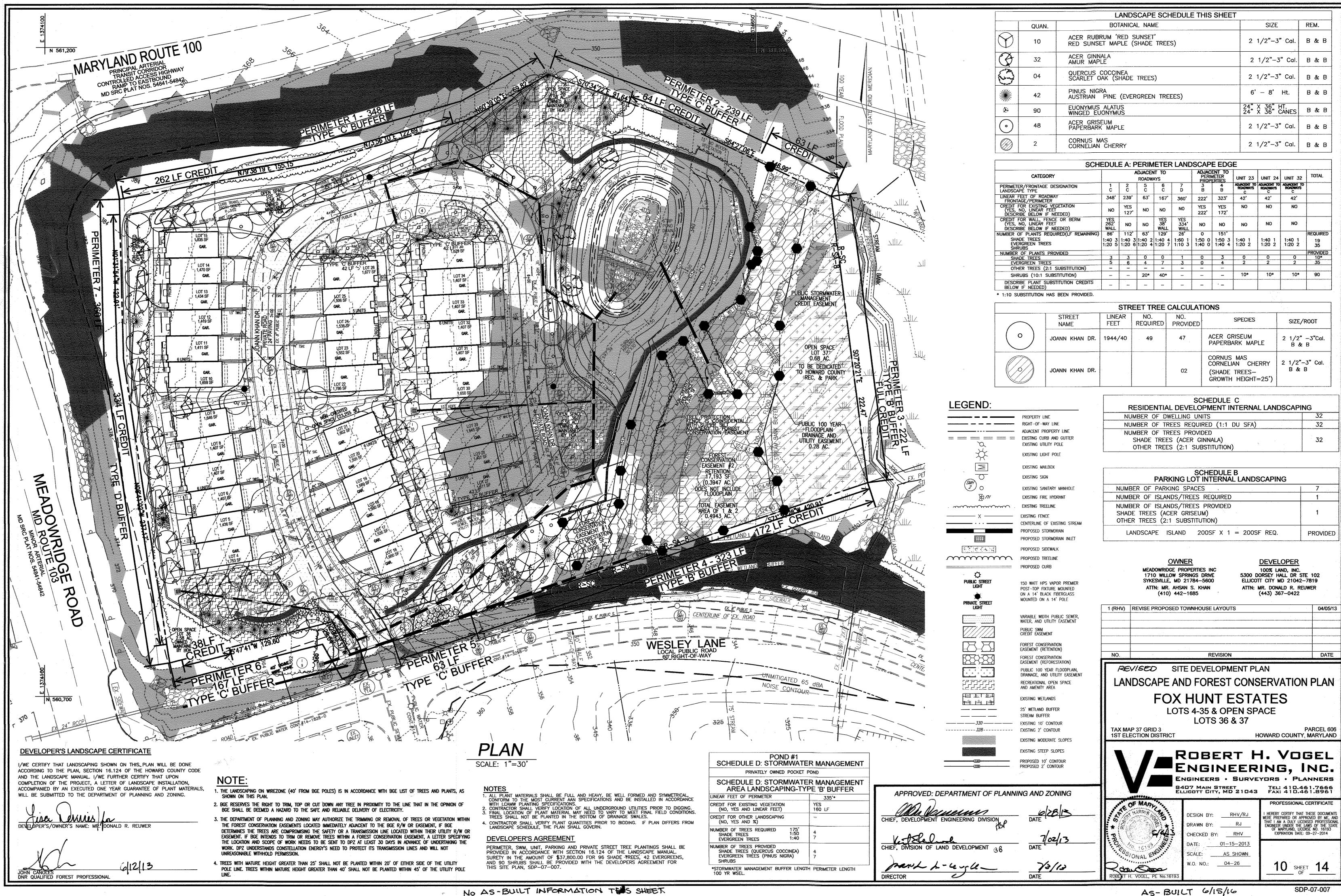
SIGNATURE OF ENGINEER

ROBERT H. VOGEL

AS-BUILT 6-15-16

SDP-07-007





0.00 AC

4.12 AC

3.30 AC

C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION

D. NET TRACT AREA LAND USE CATEGORY

> INPUT THE NUMBER "1" UNDER THE APPROPIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-SA-8.

MDR IDA HDR MPD CIA 0 0 1 0 0

E. AFFOREST THRESHOLD  $15\% \times D = 0.62 \text{ AC}$ F. CONSERVATION THRESHOLD 20% X D = 0.82 AC

**EXISTING FOREST COVER:** 4.12 AC G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) = H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD = 3.50 AC

**BREAK EVEN POINT:** 

 $(0.2 \times 1) + F = BREAK EVEN POINT (1.39 AC)$ 

I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD =

J. FOREST RETENTION WITH NO MITIGATION : K. CLEARING PERMITTED WITHOUT MITIGATION = 2.64 AC PROPOSED FOREST CLEARING: L TOTAL AREA OF FOREST TO BE CLEARED = 3.73 AC M. TOTAL AREA OF FOREST TO BE RETAINED = 0.39 AC N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD = P. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD =

Q. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD = 0.00 AC R. TOTAL REFORESTATION REQUIRED (N+P-Q) =1.69 AC 0.00 AC S. TOTAL AFFORESTATION REQUIRED = T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED = 1.69 AC

FOREST CONSERVATION MANUAL FOR THIS PROJECT SHALL BE FULFILLED BY:

1. PLACEMENT OF 1.59 AC. (69,260 SF) OF REFORESTATION INTO AN OFF-SITE FOREST CONSERVATION BANK. BRIGHTON MILL FOREST MITIGATION BANK. APPROVED SITE

FOREST CONSERVATION REQUIREMENTS IN ACCORDANCE WITH SECTION 16.1202 OF THE

2. ON-SITE RETENTION OF 0.3947 AC. (17,193 SF) 3. ON-SITE REFORESTATION OF 0.0996 AC. (4,338 SF)

DEVELOPMENT PLAN NUMBER 11-056.

REFORESTATION INTO AN OFF-SITE FOREST CONSERVATION BANK:

1.59 AC. (69,260 SF) = \$0.00ON-SITE RETENTION: 0.3947 AC. (17,193 SF) = \$0.00

ON-SITE REFORESTATION: 0.0996 AC.  $(4,338 \text{ SF } \times 0.50) = $2,169.00$ 

TOTAL FOREST CONSERVATION SURETY: \$2,178.00. PROVIDED WITH THE DEVELOPERS AGREEMENT FOR THIS PLAN, SDP-07-007.

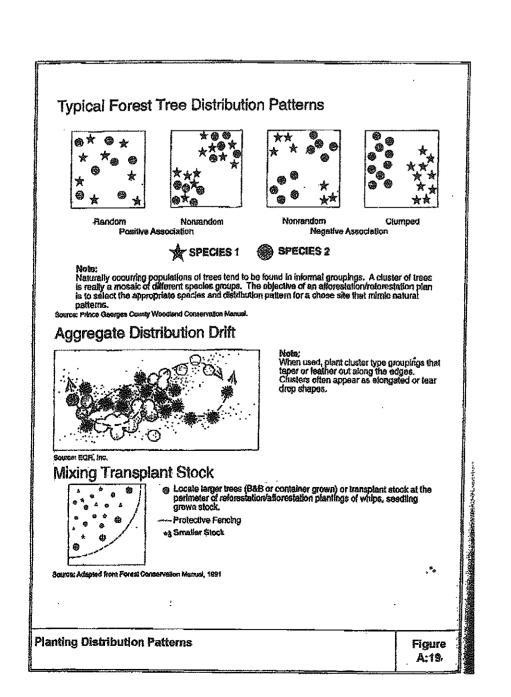
PLANT SCHEDULE			
QUANTITIES FOR REFORESTATION AREAS			
BOTANICAL NAME	FCE1	SIZE	SPACING (FT)
Acer rubrum Red Maple	7	1" Cal.	15 X 15
Liquidambar straciflua American Sweetgum	6	1" Cal.	15 X 15
Platanus occidentalis Sycamore	7	1" Cal.	15 X 15

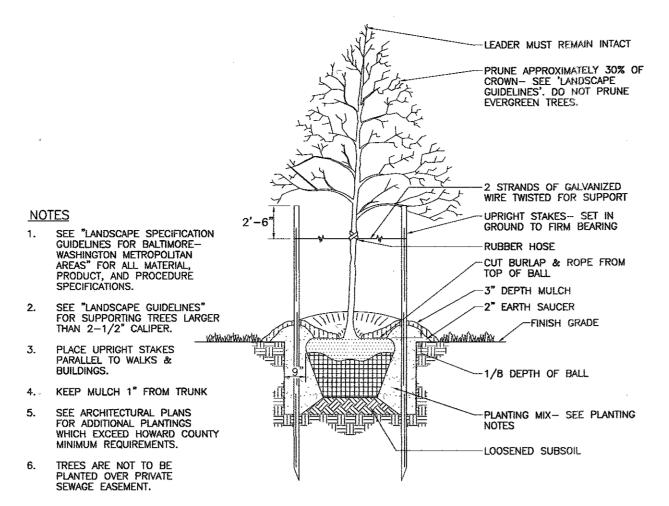
#### **REFORESTATION PROVIDED - FCE-1**

0.10 ACRES OR 4356 SF

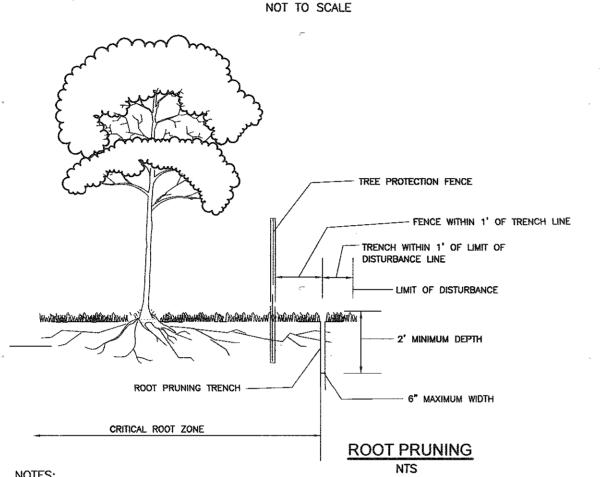
1" CALIPER TREES

20 TREES @ 200 TREES PER ACRE



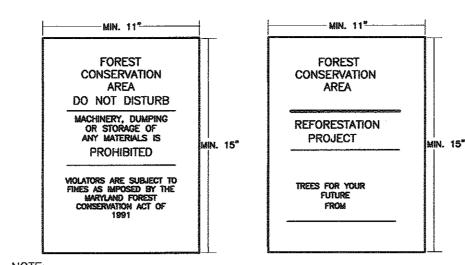


TREE PLANTING AND STAKING DECIDUOUS TREES UP TO 2-1/2" CALIPER



. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS. 2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TRENCHING. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.

4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL. 5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.



1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE. 2. SIGNS TO BE PLACED AT A MAXIMUM SPACING OF 50-100 FEET.

CONDITIONS ON-SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS

CLOSER OR FARTHER APART. 3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

HIGHLY VISABLE FLAGGING -USE 2" X 4" LUMBER FOR ANCHOR POSTS SHOULD BE CROSS BEARING MAXIMUM 8 FEET MINIMUM 2" STEEL "U" CHANNEL OR 2" X 2" TIMBER, 6' IN LENGTH. USE 8' WIRE "U" TO - ANCHOR POSTS MUST BE SECURE FENCE BOTTOM.

> 1. FOREST PROTECTION DEVICE ONLY. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS. 3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE. 4. ROOF DAMAGE SHOULD BE AVOIDED.

BLAZE ORANGE PLASTIC MESH TYPICAL TREE PROTECTION FENCE DETAIL

#### REFORESTATION PLANTING NOTES

- 1. REFORESTATION 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
- 2. 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 SLOW RELEASE 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 HOLLINS, N.Y. 11423 OR APPROVED EQUAL. 3. PLANT MATERIALS WILL BE PLANTED IN ACCORDANCE WITH THE PLANTING DETAILS AND PLANT SCHEDULE.
- 4. 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.
- 5. 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
- 6. NEWLY PLANTED TREES MAY REQUIRE WATERING AS 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. 7. MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALCOHOL.
- 8. 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.

#### REFORESTATION AREA MONITORING NOTES

- 1. 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.
- 2. 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.
- 3. 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.
- 4. EFFECTIVE MONITORING WILL ASSESS PLANT SURVIVABILITY DURING THE FIRST GROWING SEASON AND MAKE RECOMMENDATIONS FOR REINFORCEMENT PLANTINGS IF REQUIRED AT THAT TIME.

#### FOREST RETENTION AREAS AND NOTES

- 1. FORESTED STREAM AND WETLAND BUFFERS ARE RETAINED IN OPEN SPACE LOTS.
- 2. NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE. 3. FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY
- RETAINED IN OPEN SPACE LOTS. 4. THERE ARE NO ISOLATED FOREST STANDS ON THIS SITE.
- 5. 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.
- 6. 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.

#### FOREST PROTECTION NOTES

PRE-CONSTRUCTION ACTIVITES

- 1. FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
- 2. FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
- 3. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNE TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

#### **CONSTRUCTION PHASE**

- 1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE
- RETENTION AREA. 2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE
- RETENTION AREA INCLUDING TREE CANOPIES.
- 3. IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.

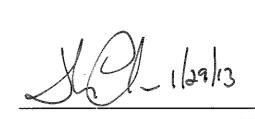
#### POST-CONSTRUCTION ACTIVITIES

- 1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
- 2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
- DO NOT REMOVE SIGNS.

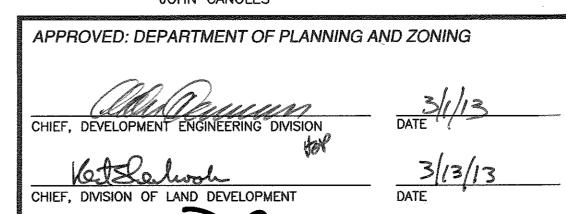
#### SEQUENCE OF CONTRUCTION-FOREST CONSERVATION

1 (RIN) REVISETOWNHOUSE MODEL

- 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.
- 2. STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
- 3. INSTALL TREE PROTECTION FENCING: FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.
- 4. PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.
- 5. TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.



DNR QUALIFIED FOREST PROFESSIONAL JOHN CANOLES

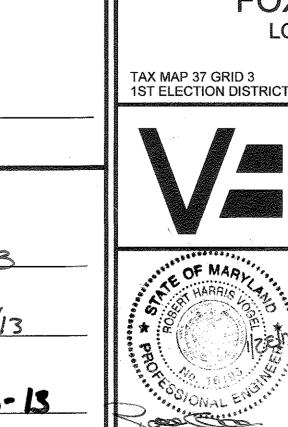


100% LAND, INC. 5300 DORSEY HALL DR STE 102 ELLICOTT CITY MD 21042-7819 ATTN: MR. DONALD R. REUWER (443) 367-0422

MEADOWRIDGE PROPERTIES INC 1710 WILLOW SPRINGS DRIVE SYKESVILLE, MD 21784-5600

ATTN: MR. AHSAN S. KHAN

(410) 442-1685



Engineering, Inc. Engineers • Surveyors • Planners 8407 Main Street Tel: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961 CHECKED BY: RHV W.O. NO.: 04-26 ROBERT H. VOGEL, PE No.16193

SITE DEVELOPMENT PLAN

LANDSCAPE AND FOREST CONSERVATION DETAILS

FOX HUNT ESTATES

LOTS 4-35 & OPEN SPACE LOTS 36 & 37

ROBERT H. VOGEL

11 SHEET 14 SDP-07-007

04/29/13

DATE

PARCEL 606

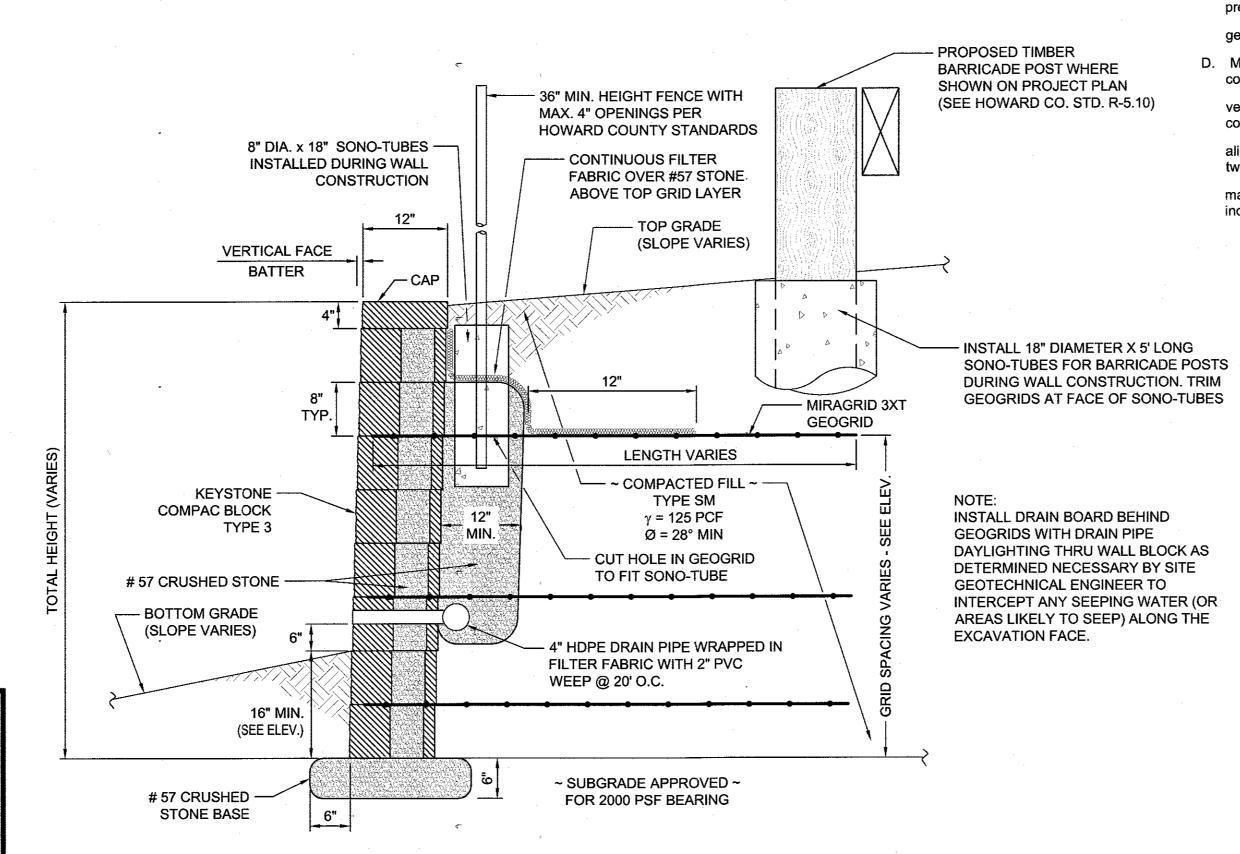
HOWARD COUNTY, MARYLAND



# JOANN KHAN DRIVE PRIVATE ROAD STA. 0+00 9 RETAINING WALL STA. 1+31 STA. 1+00 WALL LOCATION PLAN 1" = 10'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION



TYPICAL WALL SECTION

N.T.S.

## **SPECIFICATIONS**

#### MODULAR CONCRETE BLOCK RETAINING WALL

#### **PART 1: GENERAL**

#### 1.01 Description

- A. Work shall consist of furnishing and construction of a Modular Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
- B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
- C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

#### 1.02 Delivery, Storage and Handling

- A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been
- B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work,

#### **PART 2: PRODUCTS**

Retaining Wall Units.

two per unit minimum;

#### 2.01 Modular Concrete Retaining Wall Units

A. Modular concrete units shall conform to the following architectural requirements:

face color - concrete gray - standard manufacturers' color may be specified by the Owner.

face finish - sculptured rock face in angular tri-planer or flat configuration. Other face finishes will not be allowed without written approval of Owner,

bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved

exposed surfaces of units shall be free of chips, cracks or

other imperfections when viewed from a distance of 10 feet

under diffused lighting. B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental

C. Modular concrete units shall conform to the following structural and geometric requirements measured in

accordance with appropriate references:

compressive strength = 3000 psi minimum; absorption = 8% maximum (6% in northern states) for standard weight aggregates;

dimensional tolerances ≈ ±1/8" from nominal unit dimensions not including rough split face, ±1/16"

unit height - top and bottom planes; unit size - 8" (H) x 18" (W) x 12 (D) minimum;

#### unit weight - 75 lbs/unit minimum for standard weight aggregates;

inter-unit shear strength - 1000 plf minimum at 2 psi normal pressure; at 2 psi normal force.

geogrid/unit peak connection strength - 1000 plf minimum

#### D. Modular concrete units shall conform to the following constructability requirements: (if applicable)

course per the design; alignment and grid positioning mechanism - fiberglass pins,

vertical setback = 1/8"± per course (near vertical) or 1"+ per

maximum horizontal gap between erected units shall be - 1/2

## 2.02 Shear Connectors (if applicable)

A. Shear connectors shall be 1/2 inch diameter thermoset isopthalic polyester resin-protruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F. B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

#### 2.03 Base Leveling Pad Material

A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

#### 2.04 Unit Drainage Fill

A. Unit drainage fill shall consist of #57crushed stone

#### 2.05 Reinforced Backfill

A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-40

Plasticity Index (PI) <10 and Liquid Limit <40 per ASTM

B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

#### 2.06 Geogrid Soil Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.

#### 2.07 Drainage Pipe

A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

#### **PART 3 EXECUTION**

#### 3.01 Excavation

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

#### 3.02 Base Leveling Pad

- A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.
- B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

## 3.03 Modular Unit Installation

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
- B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- C. Install shear/connecting devices per manufacturer's

#### recommendations.

- D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.
- E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

#### 3.04 Structural Geogrid Installation

- A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
- B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
- C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.
- D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

#### 3.05 Reinforced Backfill Placement

- A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.
- B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
- C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.
- D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.
- E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

#### 3.06 Cap Installation

A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

#### 3.07 Field Quality Control

- A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.
- B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

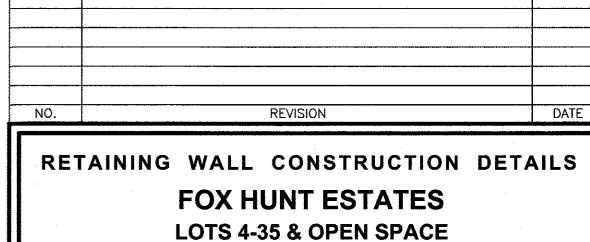
#### **GENERAL NOTES:**

- 1. No trees shall be planted within 10 feet of the top of the retaining wall.
- 2. Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.
- 3. The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.
- 4. The suitability of fill material shall be confirmed by the on-site soils technician. Each 8" lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.
- Walls shall not be constructed on uncertified fill materials.
- Walls shall not be constructed within a Howard Co. right-of-way or easement.

#### OWNER:

MEADOWRIDGE PROPERTIES. INC. 1710 WILLOW SPRINGS DRIVE SYKESVILLE, MD 21784-5600 ATTN: MR. AHSAN S. KHAN PHONE: (410) 442-1685

**DEVELOPER:** 100% LAND ING. 5300 DORSEY HALL DRIVE, SUITE ELLICOTT CITY, MD 21042 ATTN: MR. DONALD R. REUWER PHONE: (443) 367-0422



**LOTS 36 & 37** 

TAX MAP 37 GRID 3 **1ST ELECTION DISTRICT** 

HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS

PARCEL 606





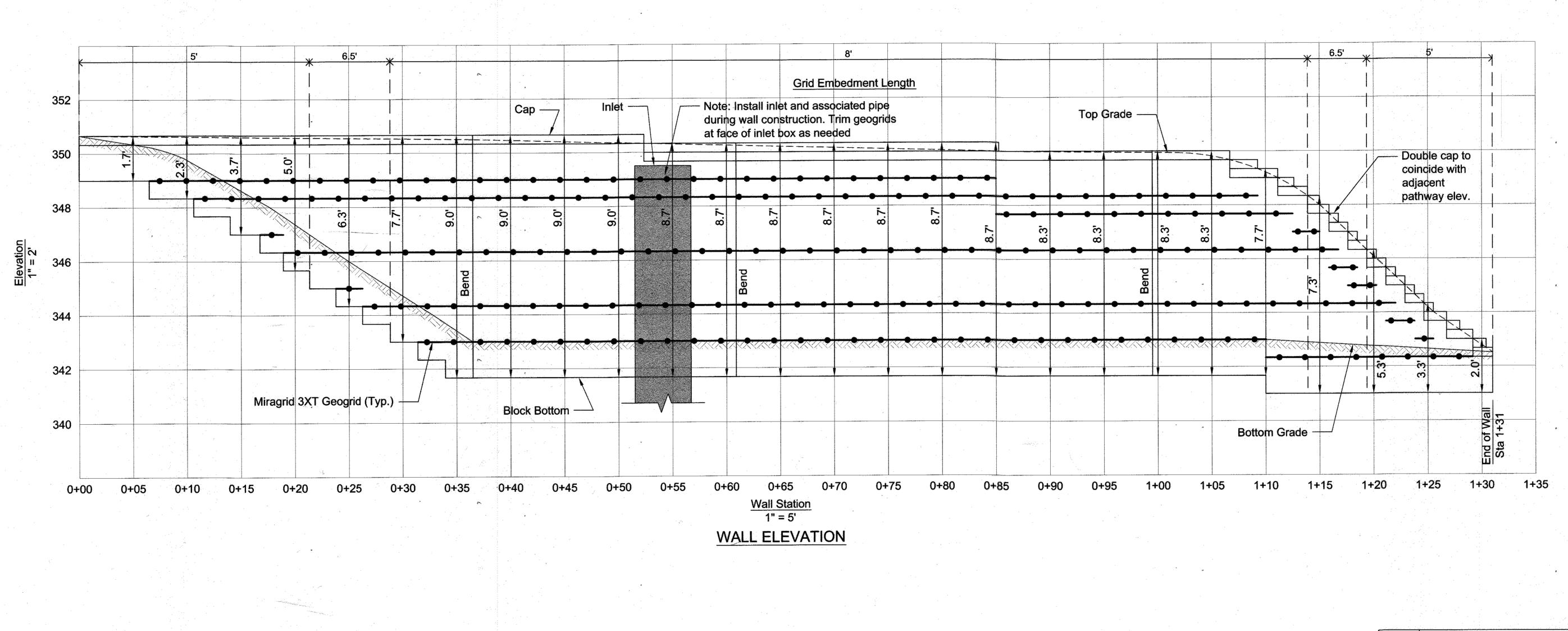
RICHARD W. STURTEVANT, PE No.14434

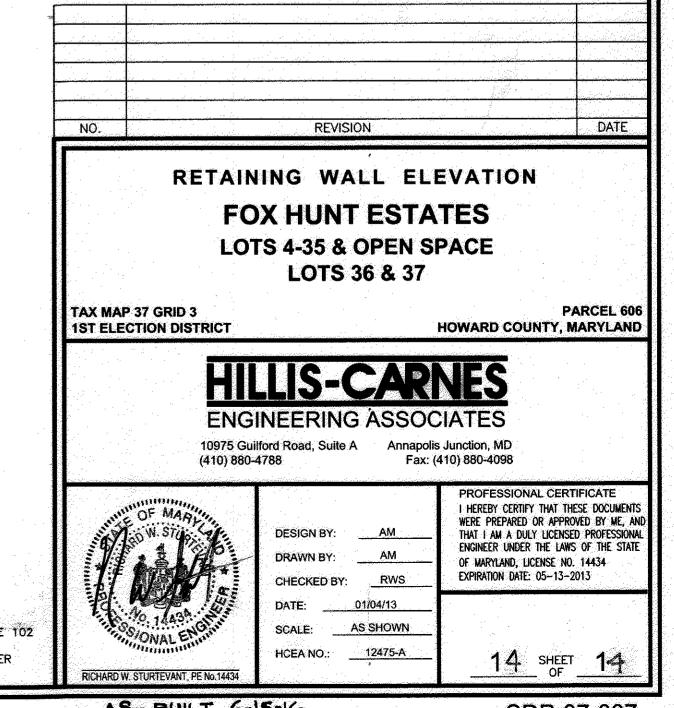
CHECKED BY: 01/04/13 AS SHOWN

HCEA NO.: 12475-A

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. 14434 EXPIRATION DATE: 05-13-2013

13 SHEET 14





OWNER:

MEADOWRIDGE PROPERTIES. INC.

1710 WILLOW SPRINGS DRIVE
SYKESVILLE, MD 21784-5600
ATTN: MR. AHSAN S. KHAN
PHONE: (410) 442-1685

DEVELOPER:

100 % LAND INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLICOTT CITY, MD 21042
ATTN: MR. DONALD R. REUWER
PHONE: (443) 367-0422