

SITE PLAN

SCALE 1"=50'
SCALE 1"=50'

OWNER

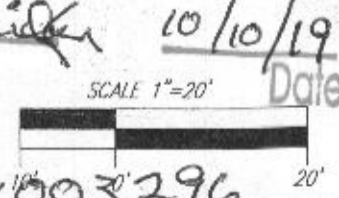
ESTATES AT RIVER HILL, LLC
MICHAEL PFAU, MEMBER
3675 PARK AVENUE, SUITE 301
ELlicOTT CITY, MD 21043
(410) 480-0023

DEVELOPER

TRINITY HOMES MARY LAND, LLC
3675 PARK AVENUE, SUITE 301
ELlicOTT CITY, MD 21043
(410) 480-0023

Approved Septic System Plan
Howard County Health Department

5-Bed room SFD approved
Lot 13 has a 5-bedroom limitation
Bridger 10/10/19
Signature Date



ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110
ELlicOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

PLOT PLAN

THE ESTATES AT RIVER HILL - LOT 13

13604 OLIVIA WAY
HIGHLAND, MD 20777

SCALE	AS SHOWN
DRAWN BY	JMR
CHECKED BY	RHV
DATE	JUNE 03, 2019
W. O. #	15-39
SHEET#	1 OF 3

5TH ELECTION DISTRICT
TAX MAP: 34 PARCEL: 389
DPZ REF'S: ECP:16-064, WP-17-034,
WP-17-128, SP-17-007, F-18-064

BLOCK: 23
ZONED: RR-DEO
HOWARD COUNTY, MARYLAND

B19003296

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

OPERATION AND MAINTENANCE SCHEDULE FOR (M-6) MICROBIORETENTION AREAS

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOL. 1, TABLE A.4.1 AND 2.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

MICROBIORETENTION NOTES:

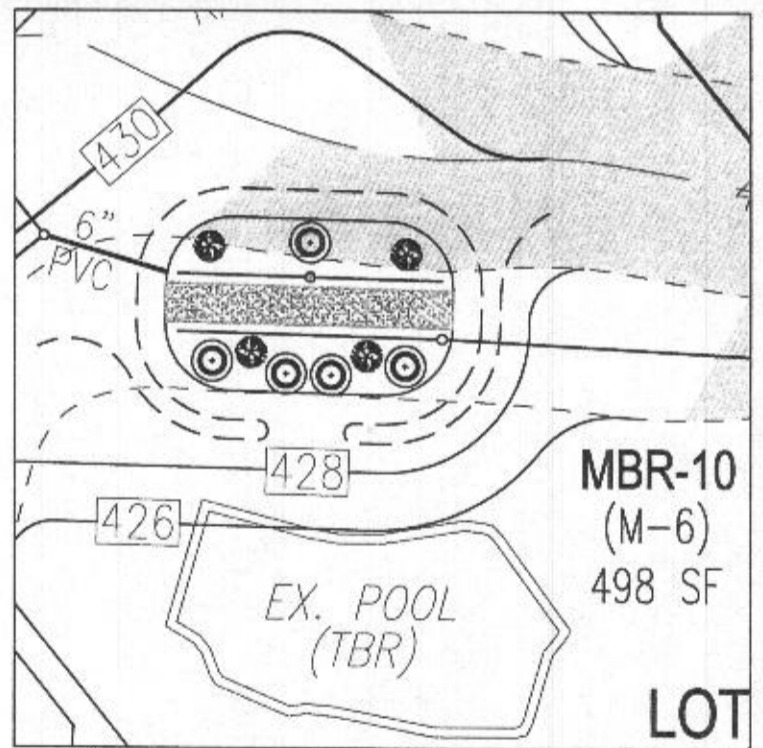
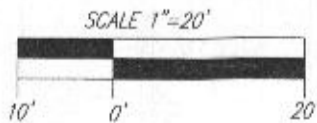
1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

"MICRO-BIORETENTION" PLANTING SCHEDULE NOTES:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDv SUMMARY.
6. FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH

KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	5	LINDERA BENZOIN SPICEBUSH	3 GALLON	CONT
	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
	100 SF	LOBELIA CARDINALIS CARDINAL FLOWER	2" POT	1" O.C.

1. SF x 0.0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
2. PLANTINGS REQUIRED: 7
3. (50 SF) CARDINAL FLOWER = 1 PLANTING UNIT



MBR-10 PLANTING DETAIL (498 SF)
SCALE: 1"=20'

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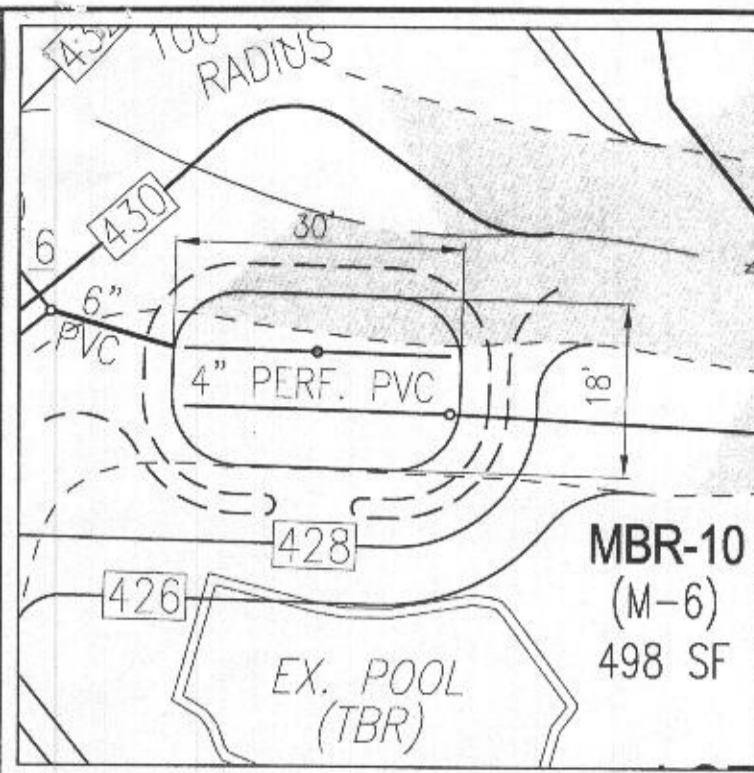
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SCALE AS SHOWN
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SHEET# 2 OF 3

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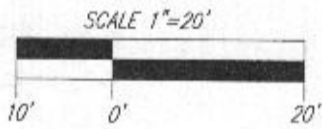
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SPILL WAY ELEVATION = 429.00

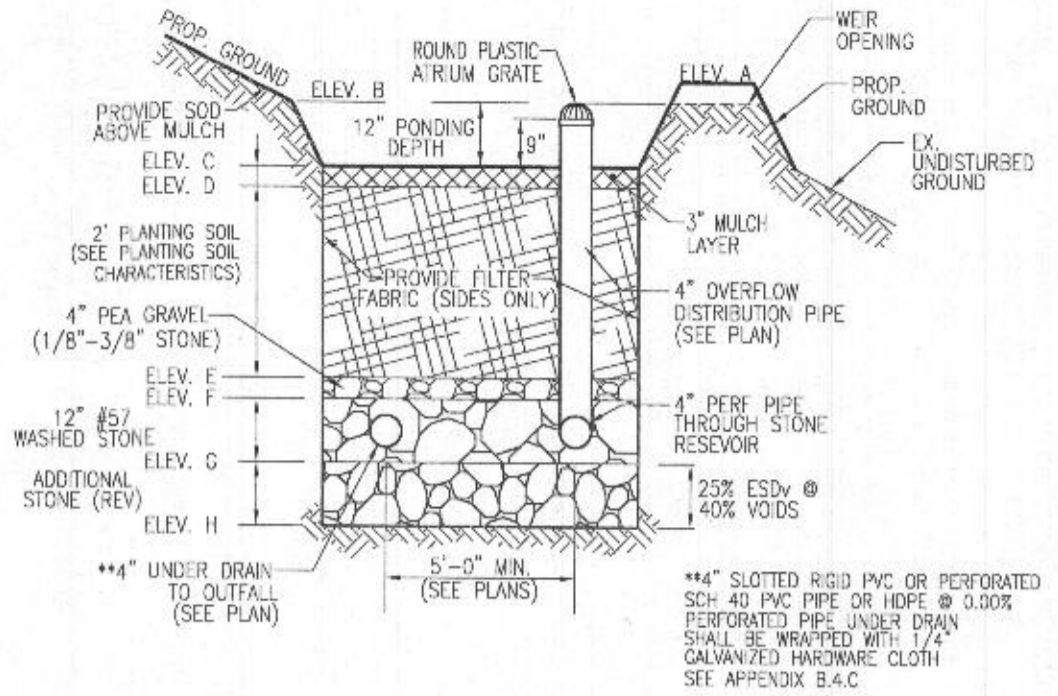
MBR-10 DESIGN DETAIL (498 SF)

SCALE: 1"=20'

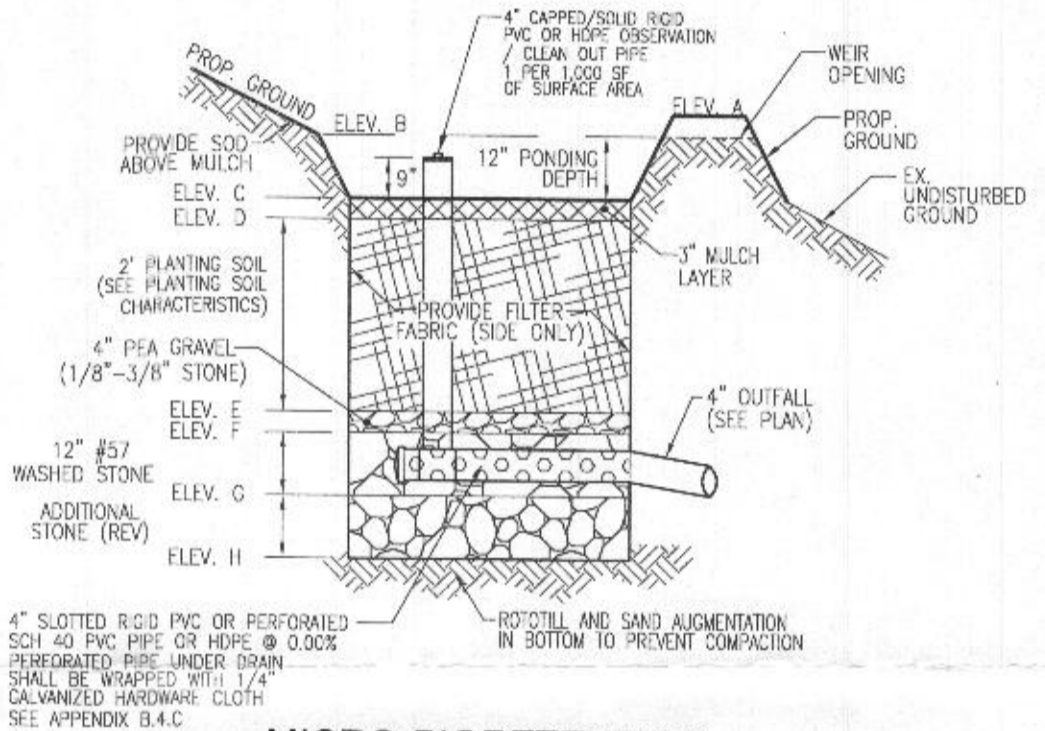


MBR-10

D.A.=10,095 SF IMP=4,526 I=45
 $R_v=0.05+(0.009)(45)=.46$
 $ESD_v=(10,095)(1.58)(0.46)/12=611$ CF
 AREA ABOVE MULCH=(611 CF)(0.75)=458 SF
 PROVIDED 498 SF



**4" SLOTTED RIGID PVC OR PERFORATED SCH 40 PVC PIPE OR HDPE @ 0.00% PERFORATED PIPE UNDER DRAIN SHALL BE WRAPPED WITH 1/4" GALVANIZED HARDWARE CLOTH SEE APPENDIX B.4.C



MICRO-BIORETENTION

W/ WEIR OUTFALL
 NOT TO SCALE

MICRO-BIORETENTION FACILITY ELEVATIONS (M-6)													
LOT #	FACILITY	A	B	C	D	E	F	G	H	WEIR ELEV.	UNDERDRAIN INV. OUT	OUTFALL INV.	FACILITY SIZE
LOT 13	MBR-10	429.30	429.00	428.00	427.75	425.75	425.42	424.42	423.59	429.00	424.75	421.00	498 SF

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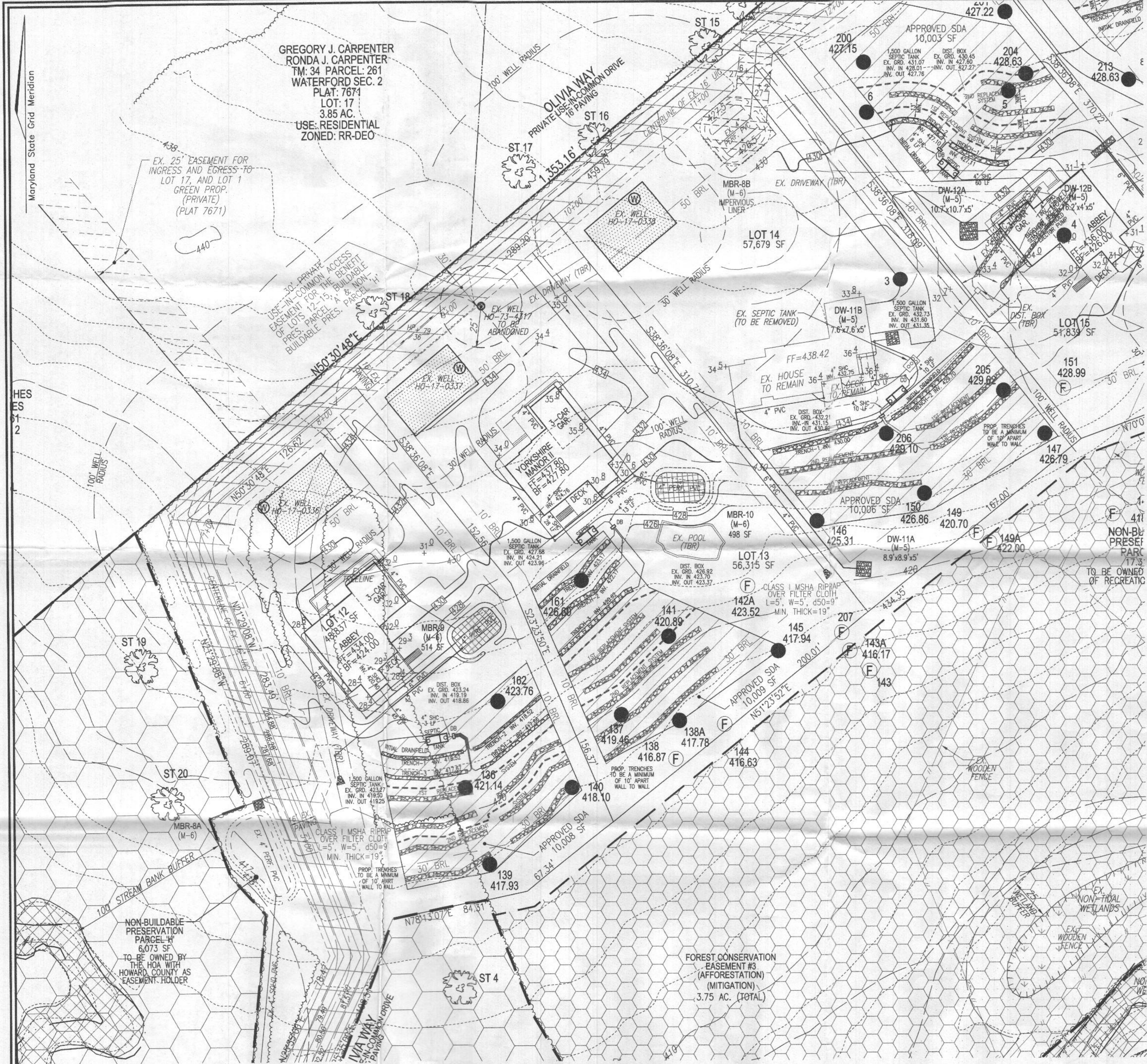
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SCALE AS SHOWN
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5TH ELECTION DISTRICT
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PLOT PLAN
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 HOWARD COUNTY, MARYLAND



GREGORY J. CARPENTER
RONDA J. CARPENTER
TM: 34 PARCEL: 261
WATERFORD SEC. 2
PLAT: 7671
LOT: 17
3.85 AC.
USE: RESIDENTIAL
ZONED: RR-DEO

EX. 25' EASEMENT FOR
INGRESS AND EGRESS TO
LOT 17, AND LOT 1
GREEN PROP.
(PRIVATE)
(PLAT 7671)

30' PRIVATE ACCESS
EASEMENT FOR THE BENNETT
PRES. PARCEL A & NON-
BUILDABLE PRES. PARCEL H

NON-BUILDABLE
PRESERVATION
PARCEL H
6,073 SF
TO BE OWNED BY
THE HOA WITH
HOWARD COUNTY AS
EASEMENT HOLDER

FOREST CONSERVATION
EASEMENT #3
(AFFORESTATION)
(MITIGATION)
3.75 AC. (TOTAL)

PLAN VIEW
SCALE: 1"=30'

WELL LOCATION CERTIFICATION:
THE EXISTING WELL SHOWN FOR LOT 13 (TAG #HO-17-0337)
HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN

THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST
10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE
DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE
DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE
RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE
AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO
A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER
SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE
PRIVATE SEWAGE AREA. RESTORATION OF A MODIFIED SEWAGE
AREA SHALL NOT BE NECESSARY.

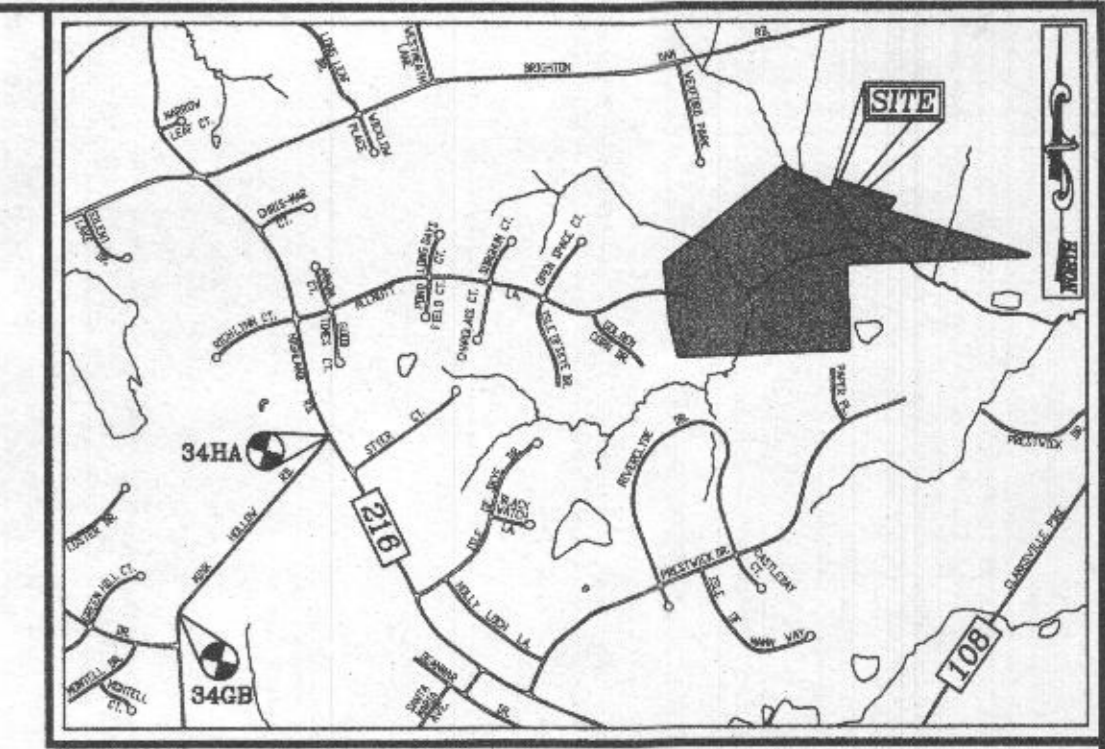
INITIAL SYSTEM TRENCH INFO			
TRENCH	TRENCHING	INITIAL BOTTOM OF EXISTING	GROUND
1	59'	422.17	425.67
2	59'	422.17	425.67
3	59'	420.82	424.12

SYSTEM CALCULATIONS:

INITIAL SYSTEM:
5 BEDROOMS AT 750gpd / 0.8 ABSORPTION RATE = 938 SQ. FT.
938 SQ. FT. / 3 (TRENCH WIDTH) x .56 (SIDEWALL REDUCTION) = 175 LINEAR FEET
177 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE INITIAL SYSTEM.
(3 TRENCHES OF 59 FEET IN LENGTH)

FIRST REPLACEMENT SYSTEM:
5 BEDROOMS AT 750gpd / 1.2 ABSORPTION RATE = 625 SQ. FT.
625 SQ. FT. / 3 (TRENCH WIDTH) x .56 (SIDEWALL REDUCTION) = 117 LINEAR FEET
118 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE FIRST REPLACEMENT SYSTEM.
(2 TRENCHES OF 59 FEET IN LENGTH)

SECOND REPLACEMENT SYSTEM:
5 BEDROOMS AT 750gpd / 0.8 ABSORPTION RATE = 1,250 SQ. FT.
1,250 SQ. FT. / 3 (TRENCH WIDTH) x .56 (SIDEWALL REDUCTION) = 282 LINEAR FEET
284 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE SECOND REPLACEMENT SYSTEM.
(3 TRENCHES OF 88 FEET IN LENGTH)



VICINITY MAP

SCALE: 1"=2000'
ADC MAP: PAGE 31 / GRID: B2, B3, & C2

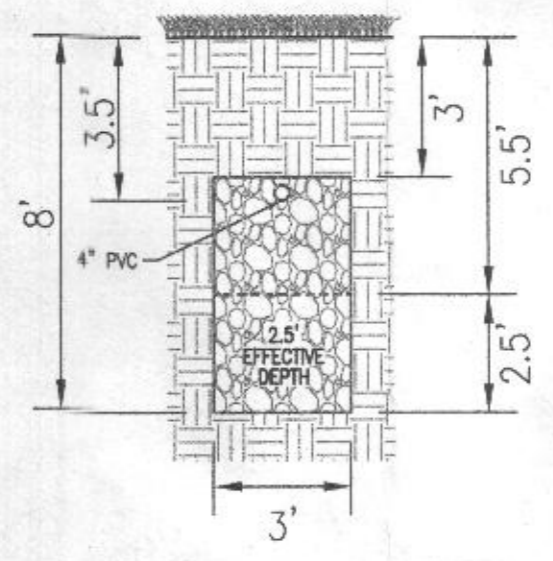
BENCHMARKS

HOWARD COUNTY BENCHMARK 34GB (CONC. MON.)
N 553966.73 E 1317752.53 ELEV. 505.18
LOCATION: MINK HOLLOW RD. 0.45 MI. SW. OF
HIGHLAND RD.

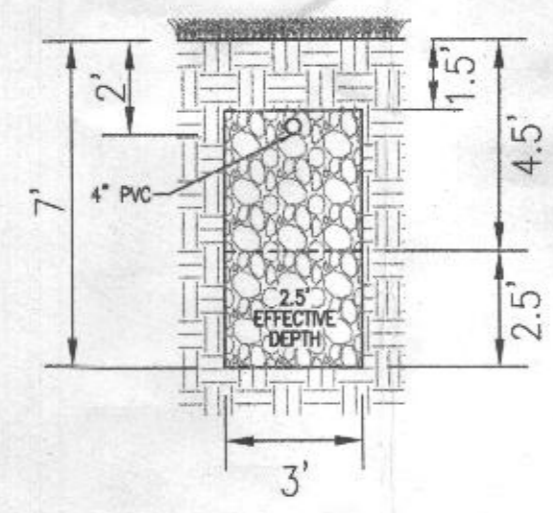
HOWARD COUNTY BENCHMARK 34HA (CONC. MON.)
N 555790.15 E 1319355.57 ELEV. 535.23
LOCATION: CORNER OF HIGHLAND RD. & MINK
HOLLOW RD.

LEGEND:

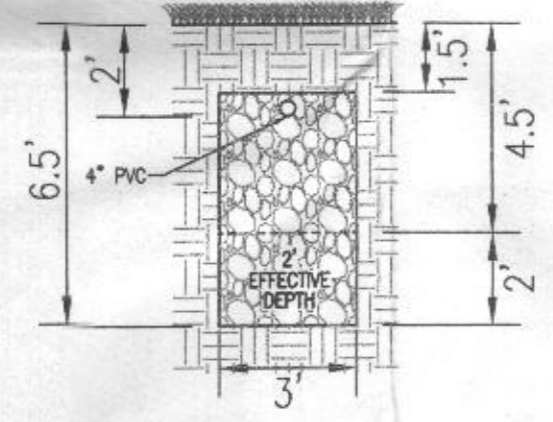
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAIN
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PRIVATE SWIM DRAINAGE & UTILITY EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- APPROVED SEWAGE DISPOSAL AREA (SDA)
- APPROVED WELL AREA
- EXISTING WELL (TO BE ABANDONED)
- EXISTING WELL
- PASSED PERC. TEST
- FAILED PERC. TEST



INITIAL SYSTEM
TRENCH DETAIL
NOT TO SCALE



1ST REPLACEMENT SYSTEM
TRENCH DETAIL
NOT TO SCALE



2ND REPLACEMENT SYSTEM
TRENCH DETAIL
NOT TO SCALE

Approved Septic System Plan
Howard County Health Department
VOID
1500 Gallon Septic Tank
to gravity drainfield
Date

GENERAL NOTES:

- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
- THE MAXIMUM EARTH COVER OVER THE TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN TOPOGRAPHICAL SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
- ANY CHANGES TO A PRIVATE SEWAGE AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
- EXISTING WELLS, SEPTIC SYSTEMS, AND SEWAGE DISPOSAL AREAS WITHIN 100' OF THE PROPERTY AND THOSE WELLS WITHIN 200' DOWNGRADIENT OF EXISTING OR PROPOSED SEPTIC SYSTEMS OR SEWAGE DISPOSAL AREAS HAVE BEEN SHOWN USING ALL REASONABLE EFFORTS.
- THE LOT SHOWN HEREON COMPLIES WITH THE MINIMUM OWNERSHIP, WIDTH, AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
- ABANDON EXISTING SEPTIC TANK, REMOVE EXISTING DISTRIBUTION BOX AND SEAL PIPES LEADING TO TRENCHES THAT ARE TO BE ABANDONED.

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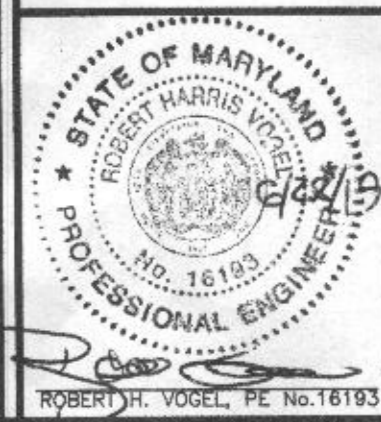
ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

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PARCEL: 389
TAX MAP: 34 GRID: 23
5TH ELECTION DISTRICT

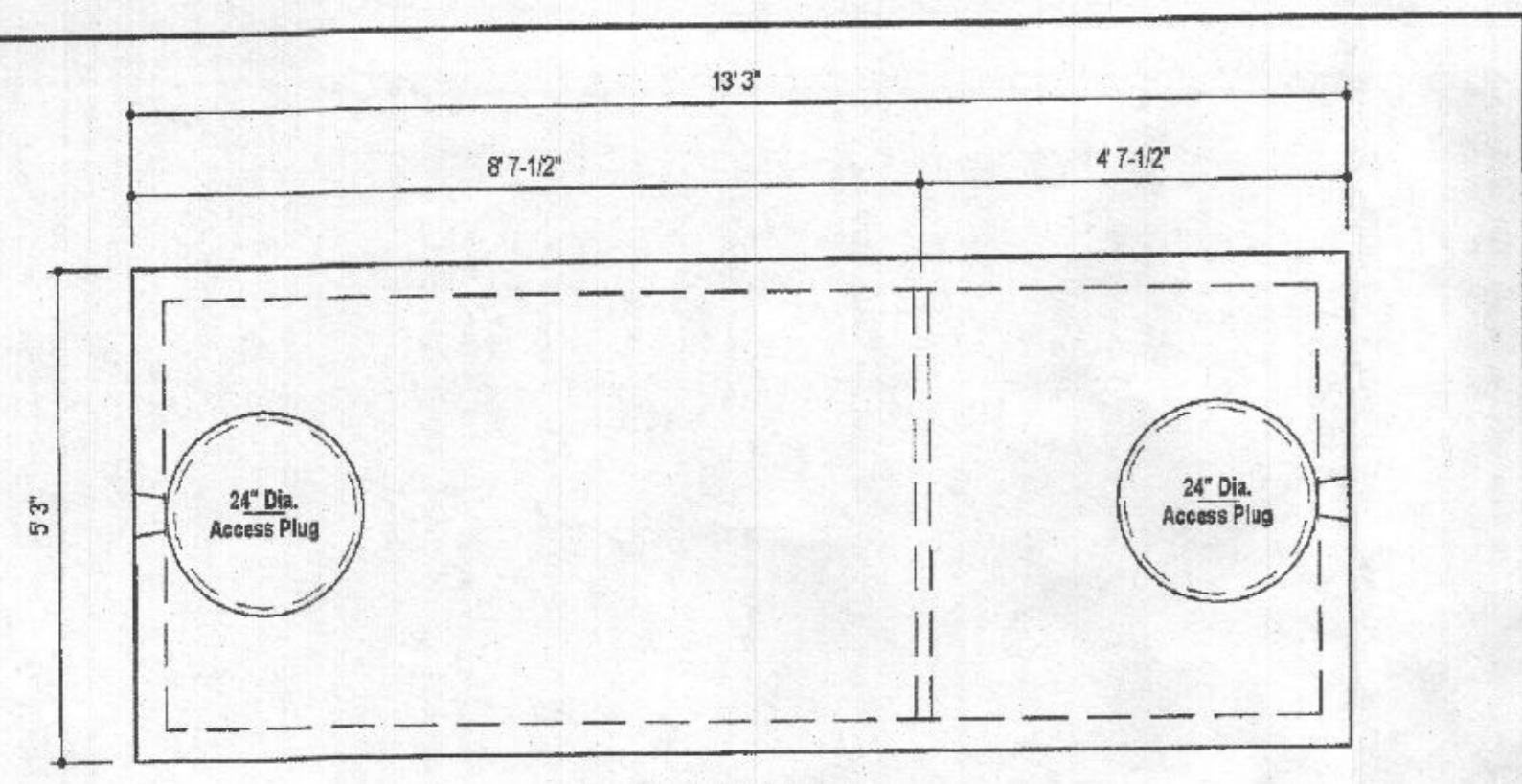
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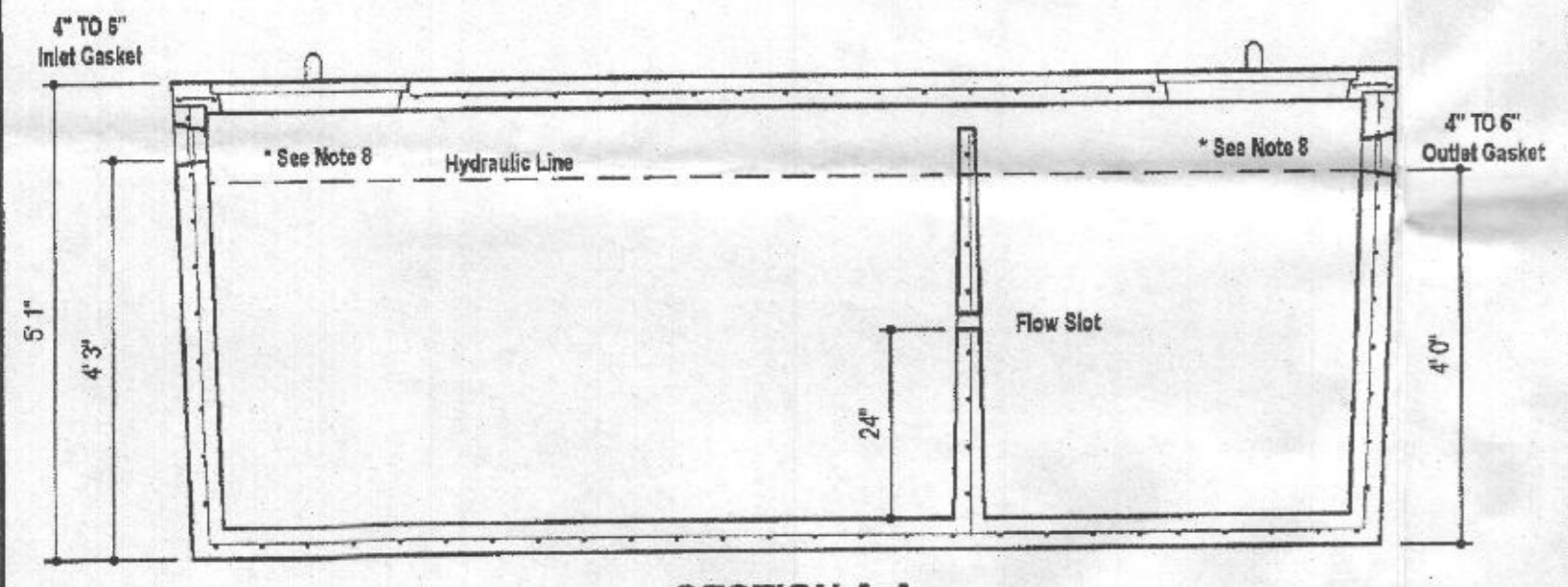


PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME, AND
THAT I AM A duly LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE
OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 08-27-2020

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: JUNE 2019
SCALE: AS SHOWN
W.O. NO.: 15-39



PLAN VIEW



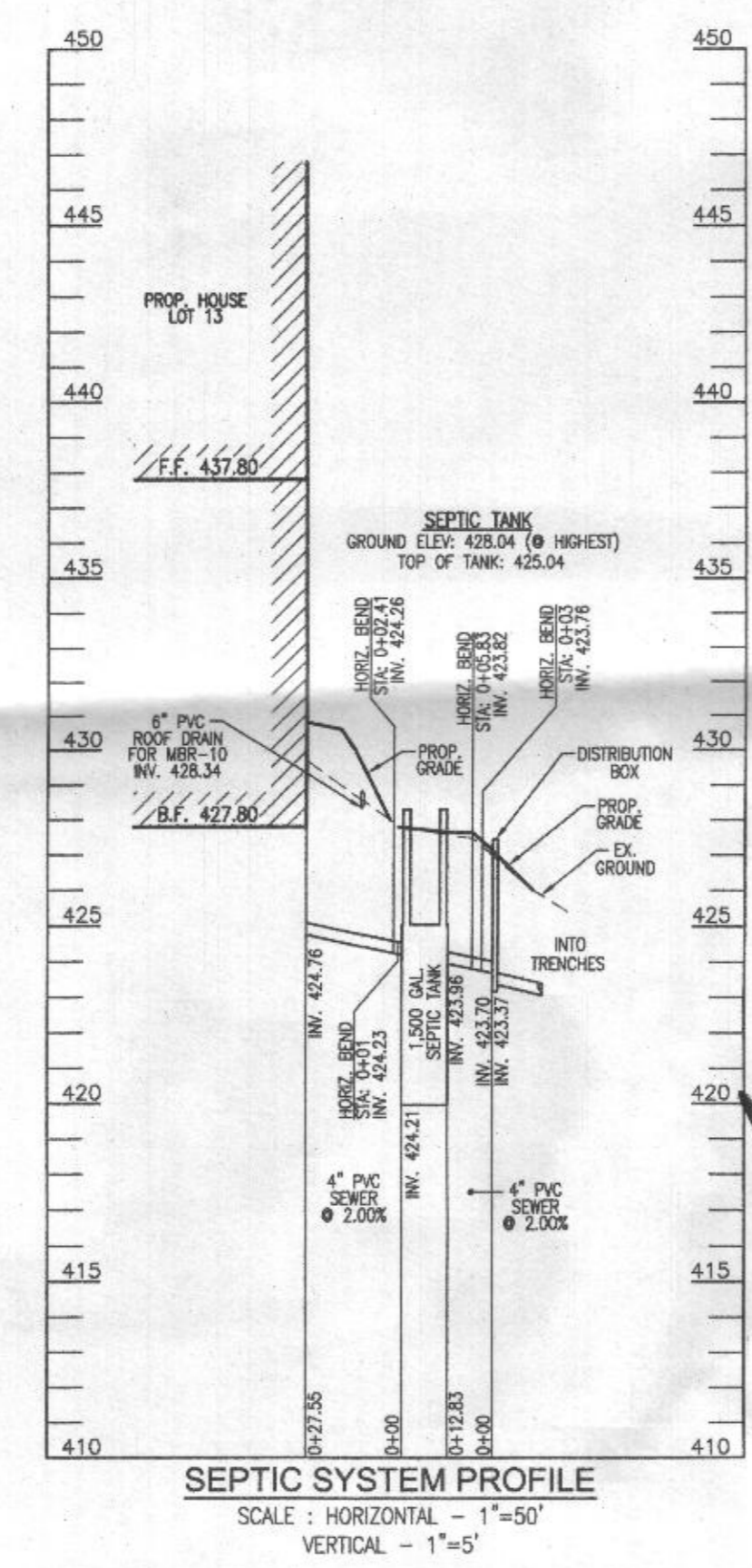
SECTION A-A

DESIGN DATA & GENERAL NOTES

- [1] Concrete strength F_{cm} 4,000 p.s.i. @ 28 days. Density = 150 pcf.
- [2] Cement - Portland Type III per ASTM C 150-82.
- [3] Admixtures & plasticizers per ASTM C 290-86 & C 494-82.
- [4] Reinforcing per ASTM A 618, Min. 1/2" cover.
- [5] Top slab finished with buff rope marble.
- [6] 4" wall, base, & top thickness.
- [7] Max 1-1/2" of cover
- [8] Depending on use of tank, Inlet & Outlet baffles may be required by code.

WEIGHT = 16,750 lbs.

<p>6264 Race Road Elkridge, Maryland 21075 Tel. 410.736.1434 Fax. 410.736.1438 www.mayerbrosprecast.com</p>	<p>1,500 GALLON TANK (Non-Traffic) 2-Compartment</p> <p>Stock Item</p>		
	Dwg. No. 1600-2C	No Scale	Aug. 11, 2008



SEPTIC SYSTEM PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

Approved Septic System Plan
Howard County Health Dept.
1500-gallon septic tank
to gravity drain field
7/2/2008

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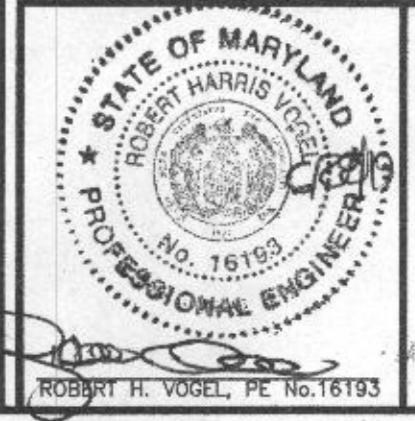
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DRAWN BY: JMR
CHECKED BY: RHV
DATE: JUNE 2019
SCALE: AS SHOWN
W.O. NO.: 15-39

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THAT I AM A DULY LICENSED PROFESSIONAL
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