

GENERAL NOTES

- THE LOT SHOWN HEREON COMPLIES WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
- THIS AREA DESIGNATES A PRIVATE SEWAGE DISPOSAL AREA OF AT LEAST 10,000 S.F. 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 SEWER IS AVAILABLE. THIS EASEMENT SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWER SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A MODIFIED SEWAGE EASEMENT PLAT SHALL NOT BE REQUIRED.
- TOPOGRAPHY SHOWN WITHIN THE LIMIT OF DISTURBANCE IS BASED ON HOWARD COUNTY GIS, 2 FOOT CONTOURS, AND VERIFIED WITH FIELD RUN TOPOGRAPHY BY BENCHMARK ENGINEERING, INC., IN JULY, 2017.
- TO THE BEST OF OUR KNOWLEDGE, ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC HAVE BEEN SHOWN.
- ANY CHANGES TO A PRIVATE SEWAGE EASEMENT SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
- STORMWATER MANAGEMENT FOR THIS LOT COMPLIES WITH THE "MARYLAND DEPARTMENT OF THE ENVIRONMENT STORMWATER MANAGEMENT ACT OF 2007" AND THE "HOWARD COUNTY DESIGN MANUAL VOLUME I, CHAPTER 5". STORMWATER MANAGEMENT IS PROVIDED BY NON-ROOFTOP DISCONNECTION (N-2), TWO (M-6) MICRO BIO-RETENTIONS AND TWO (M-5) DRY WELLS. THEY ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED.
- A DECLARATION OF INTENT FOR SINGLE FAMILY RESIDENTIAL LOT EXEMPTION (CLEARING LESS THAN 20,000 SQUARE FEET OF FOREST) SHALL BE FILED WITH DPZ.
- PROPERTY ACREAGE: (LOT 2) 3.04 AC., ZONED RR-DEO.
- PROPOSED LIMIT OF DISTURBANCE: 3.0 AC.
- FOREST STAND DELINEATION HAS BEEN PERFORMED BY BENCHMARK ENGINEERING, INC. IN FEBRUARY, 2017, AND IS PROVIDED AS PART OF THE SIMPLIFIED ENVIRONMENTAL CONCEPT PLAN SUBMISSION.
- SPECIMEN TREES HAVE BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC. AND ARE DEPICTED ON THIS PLAN.
- THE EXISTING WELL SHOWN (TAG #10-17-0197) SHOWN ON THIS PLAN HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC. DECEMBER, 2017 AND IS ACCURATELY SHOWN.
- EXACT LENGTH OF SEPTIC TRENCHES IS TO BE DETERMINED BY THE HEALTH DEPARTMENT AT THE TIME OF TRENCH LAYOUT AND INSPECTION.
- ANY CHANGES TO THE LOCATION 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 SEPTIC TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.

REQUIRED BAT SITE PLAN 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 SIT PLAN MAY BE REQUIRED.
- THE MAXIMUM DEPTH OF THE BAT SHALL BE PER THE MANUFACTURER'S SPECIFICATION.
- THE BLOWER MAY NOT BE LOCATED FURTHER FROM THE TANK THAN THE MANUFACTURER'S SPECIFICATIONS.
- THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
- THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
- WITHIN ONE MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.
- ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
- AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN LAND RECORDS OF HOWARD COUNTY.
- THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.

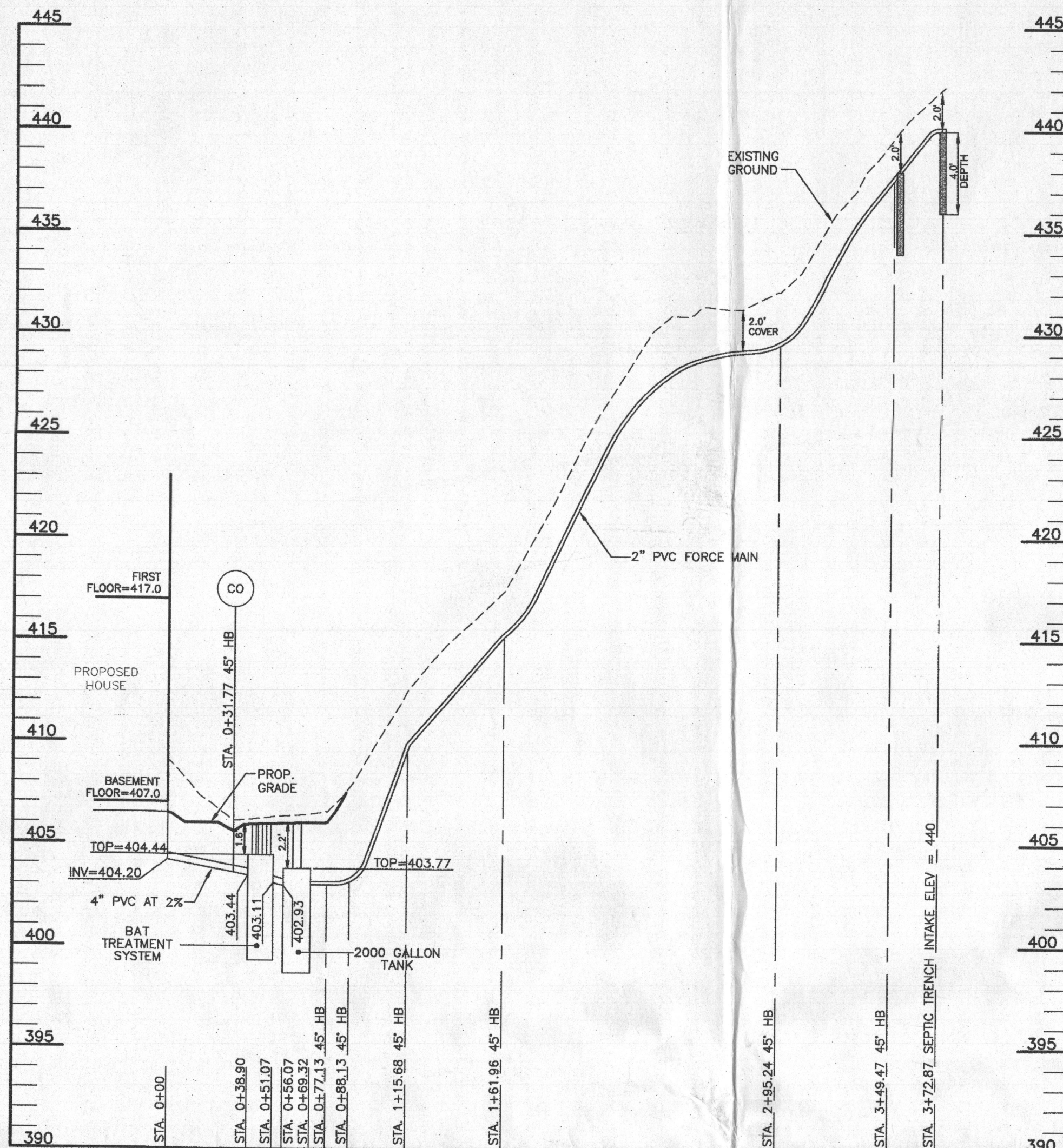
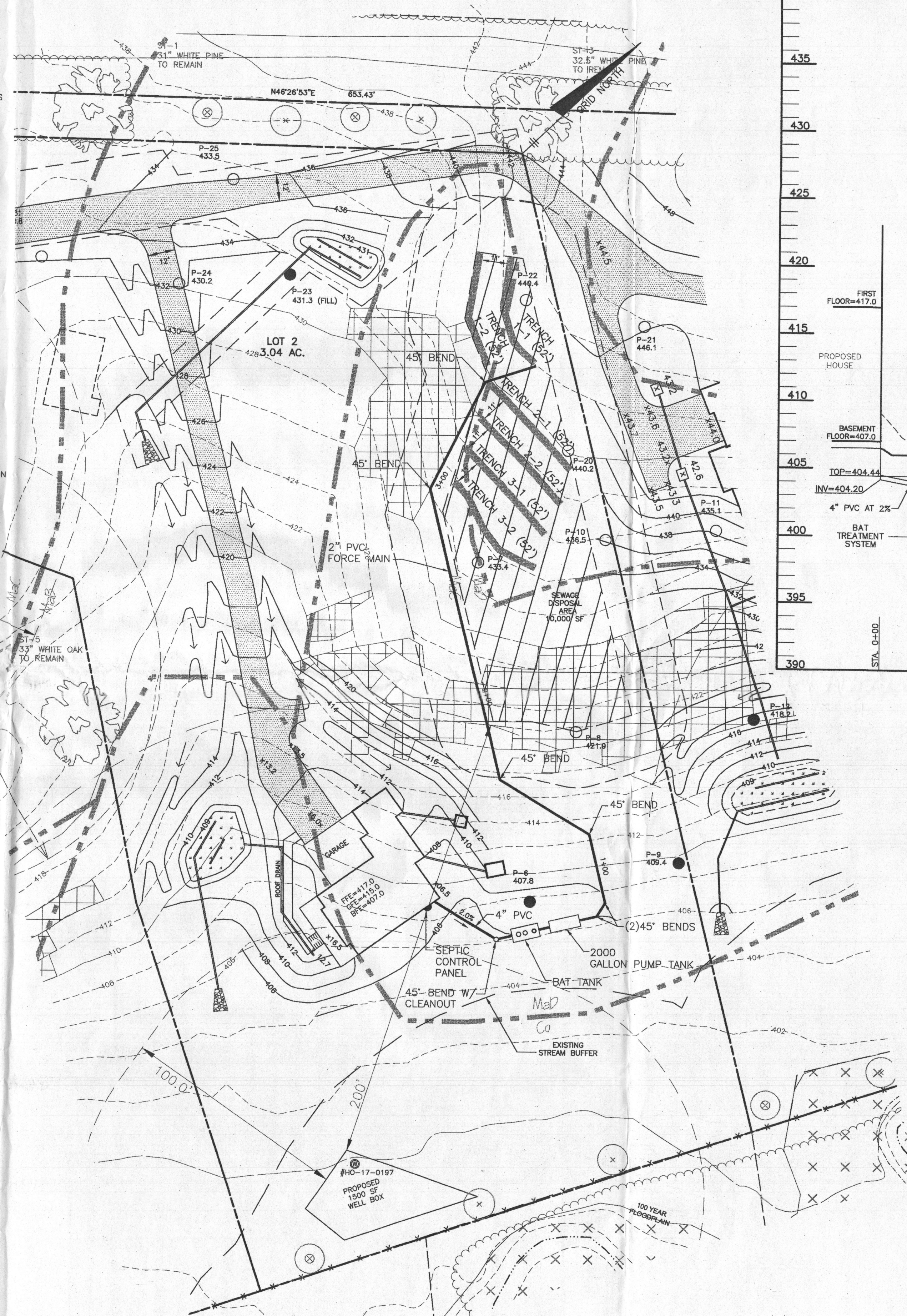
INITIAL SYSTEM			
Number of Bedrooms	6		
Application Rate	1.2	gpd/sf	
Effective Area Beginning Depth	2	ft	
Bottom Max Depth	6	ft	
Design Flow	900	gpd	
Drainage Field square footage	750	sf	
Sidewall reduction credit	0.417		
Trench width	3		
Effective Area Depth	4		
Linear Length of trench Required	104	lf	

1st REPLACEMENT SYSTEM			
Number of Bedrooms	6		
Application Rate	1.2	gpd/sf	
Effective Area Beginning Depth	2	ft	
Bottom Max Depth	6	ft	
Design Flow	900	gpd	
Drainage Field square footage	750	sf	
Sidewall reduction credit	0.417		
Trench width	3		
Effective Area Depth	4		
Linear Length of trench Required	104	lf	

2nd REPLACEMENT SYSTEM			
Number of Bedrooms	6		
Application Rate	1.2	gpd/sf	
Effective Area Beginning Depth	2	ft	
Bottom Max Depth	6	ft	
Design Flow	900	gpd	
Drainage Field square footage	750	sf	
Sidewall reduction credit	0.417		
Trench width	3		
Effective Area Depth	4		
Linear Length of trench Required	104	lf	

SOILS LEGEND			
SYMBOL	TYPE	K _f FACTOR	NAME
Co*	C	.37**	CODORUS AND HATBORO SILT LOAM, 0 TO 3 PERCENT SLOPES
GgC	B	.28	GLENELG LOAM, 3 TO 8 PERCENT SLOPES
MaC	B	.32	MANOR LOAM, 8 TO 15 PERCENT SLOPES
MaD	B	.32**	MANOR LOAM, 15 TO 25 PERCENT SLOPES

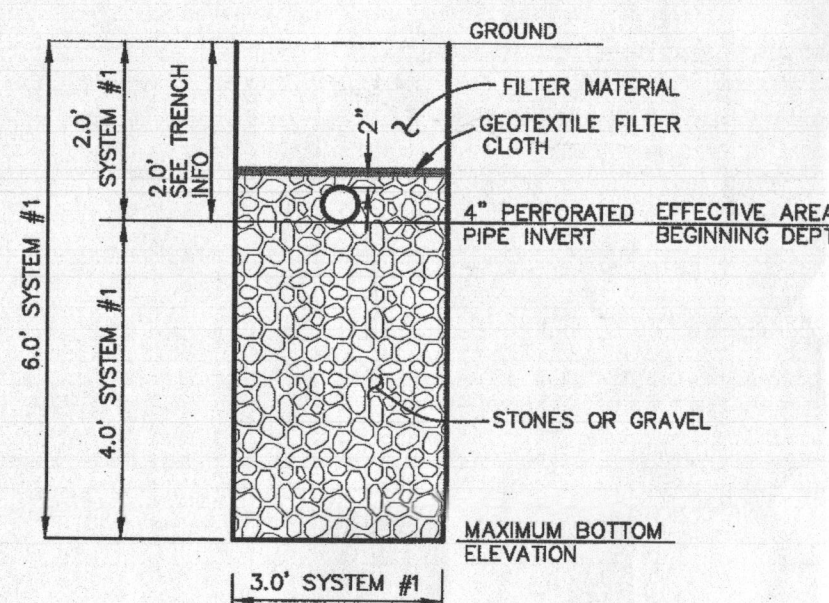
* INDICATES HYDRIC SOILS
** HIGHLY ERODIBLE, K>0.35, AND/OR 15% OR GREATER SLOPES
TAKEN FROM THE NRCS WEB SOIL SURVEY, APRIL 2016. PAGE 15



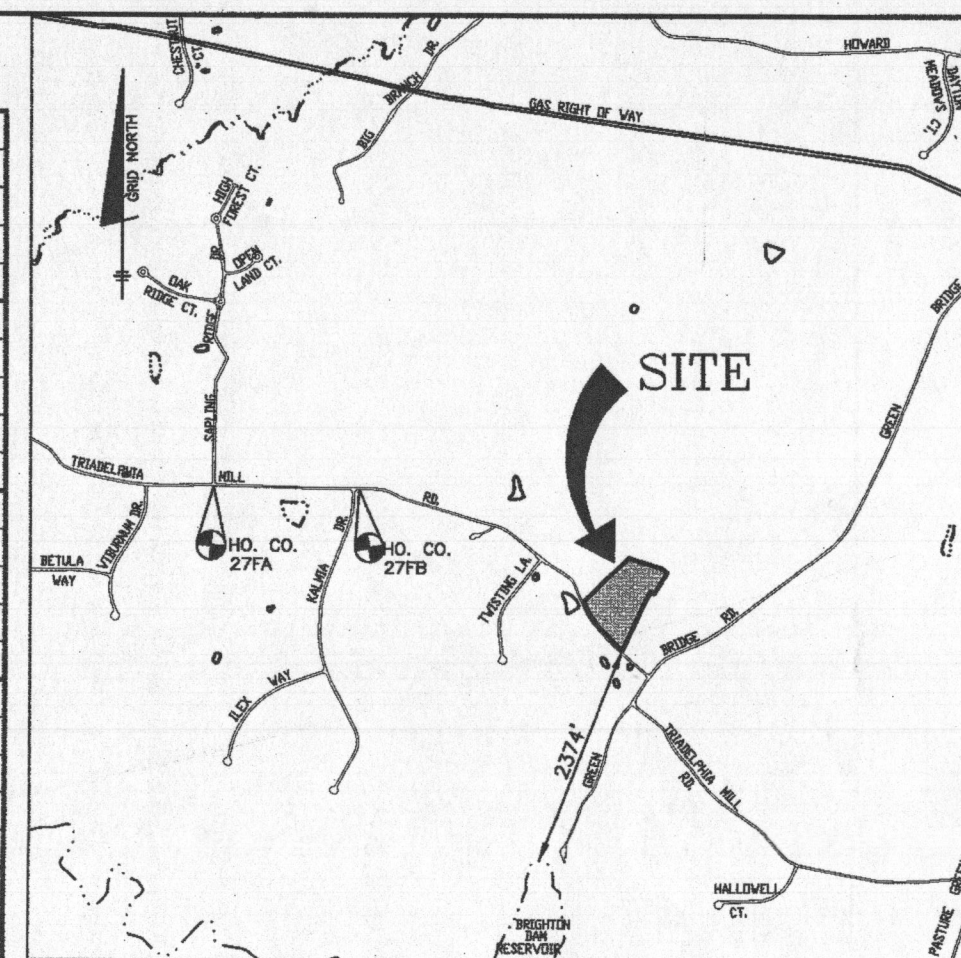
LOT 2 SEPTIC PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.

TRENCH INFORMATION

TRENCH 1-1 TRENCH LENGTH 52 LF GROUND ELEVATION 442.0 INVERT ELEVATION 440.0 MAX. BOTTOM ELEV. 436.0	TRENCH 2-1 TRENCH LENGTH 52 LF GROUND ELEVATION 439.5 INVERT ELEVATION 437.5 MAX. BOTTOM ELEV. 433.5	TRENCH 3-1 TRENCH LENGTH 52 LF GROUND ELEVATION 436.9 INVERT ELEVATION 434.9 MAX. BOTTOM ELEV. 430.5
TRENCH 1-2 TRENCH LENGTH 52 LF GROUND ELEVATION 440.0 INVERT ELEVATION 438.0 MAX. BOTTOM ELEV. 434.0	TRENCH 2-2 TRENCH LENGTH 52 LF GROUND ELEVATION 438.0 INVERT ELEVATION 436.0 MAX. BOTTOM ELEV. 432.0	TRENCH 3-2 TRENCH LENGTH 52 LF GROUND ELEVATION 434.0 INVERT ELEVATION 432.0 MAX. BOTTOM ELEV. 428.0



TYPICAL TRENCH DETAIL
NOT TO SCALE



VICINITY MAP

SCALE: 1"=200'

BENCHMARKS (NAD83)			
HO. CO. No. 27FA	ELEV. 498.35		
18.2' SOUTH OF THE CENTERLINE OF TRIADELPHIA MILL RD AT THE INTERSECTION OF SARLING RIDGE DR.			
N 569002.176	E 1306892.586		
HO. CO. No. 27FB	ELEV. 512.22		
3.2' SOUTH OF THE EDGE OF PAVING OF TRIADELPHIA MILL RD 61' EAST OF THE CENTERLINE OF KALMIA DR.			
N 568975.151	E 1308421.369		

LEGEND

SOILS CLASSIFICATION	GrB
SOILS DELINEATION	---
EXISTING CONTOURS	---
EXISTING WOODS LINE	---
EXISTING WELL	W
PROPOSED WELL	PROPOSED WELL BOX
PASSING PERCOLATION TEST	○
FAILING PERCOLATION TEST	●
EXISTING STRUCTURE	---
PROPOSED STRUCTURE	---
PROPOSED SEWAGE DISPOSAL AREA	---
BETWEEN 20% AND 24.99% SLOPES	---
EX. 100 YEAR FLOODPLAIN	---

Approved Septic System Plan
Howard County Health Department
NORWECO TNT 960LP
w/ Mayer Bros. 2000-gal Pump Tank
& Zoeller D105 (HP) Pump
R. Buckner 1/12/2018
Signature BAT-LED system Date

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 ANY WORK.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

BENCHMARK ENGINEERS, LAND SURVEYORS, PLANNERS 8480 BALTIMORE NATIONAL PIKE A SUITE 315 A ELICOTT CITY, MARYLAND 21043 (P) 410-465-8100 (F) 410-465-8644 WWW.BE-CVLENGINEERING.COM		Professional Certification. 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. 45577, Expiration Date: 06-08-2018.	
OWNER/DEVELOPERS: ELLEN M. VAWTER, MICHAEL A. VAWTER, NANCY J. VAWTER, LAURA J. LEONARD, DREW B. LEONARD 14170 TRIADELPHIA MILL ROAD DAYTON, MARYLAND 21036 301-706-6044		PROJECT: VAWTER PROPERTY LOT 2 LOCATION: 14174 TRIADELPHIA MILL ROAD TAX MAP: 27 - GRID: 24 - PARCEL: 68 ZONED: RR-DEO RURAL RESIDENTIAL ELECTION DISTRICT NO. 5 - HOWARD COUNTY, MARYLAND TITLE: SEPTIC SYSTEM DESIGN PLAN DATE: DECEMBER, 2017 PROJECT NO. 2766 SCALE: AS SHOWN SHEET 1 OF 3	
DESIGN: LDD	DRAFT: LDD	CHECK: AAM	

Your Peace of Mind is Our Top Priority™



PUMP COMPANY
Zoeller Family of Water Solutions™

SECTION: 215.000
FAC/785
3317
Supermodel
0515

TECHNICAL DATA SHEET HIGH HEAD FLOW - MATE SERIES Models 161/4161, 163/4163, 165/4165 Submersible Effluent Pumps

PRODUCT SPECIFICATIONS

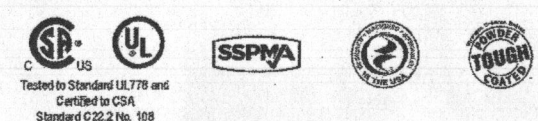
MOTOR	Horse Power		1/2 (161/4161, 163/4163) or 1 (165/4165)
	Voltage		115 - 575
PUMP	Phase		1 or 3 Ph
	Hertz		60 Hz
MATERIALS	RPM		3450
	Type		Permanent split capacitor or 3 Ph
PUMP	Insulation		Class B
	Amps		2.4 - 15.5
MATERIALS	Operation		Automatic or nonautomatic
	Auto On/Off Points		15-34" (400 mm) / 5-14" (133 mm)
PUMP	Discharge Size		1-1/2" NPT (optional 2" or 3" flange)
	Solids Handling		3/4" (19 mm) spherical solids
MATERIALS	Cord Length		20' (6 m) standard
	Cord Type		1 Ph: UL listed 3-wire neoprene cord and plug or 3 Ph: 4-wire with no plug
PUMP	Max. Head		86.5' (26 m)
	Max. Flow Rate		100 GPM (379 LPM)
MATERIALS	Max. Operating Temp.		120°F (54°C)
	Cooling		Oil filled
PUMP	Motor Protection		Auto reset thermal overload (1 Ph)
	Upper Bearing		Ball bearing
MATERIALS	Lower Bearing		Ball bearing
	Mechanical Seals		Carbon and ceramic
PUMP	Impeller Type		Non-clogging vortex
	Impeller		Brass
MATERIALS	Hardware		Stainless steel
	Motor Shaft		SAE 1117 carbon steel or 416 stainless steel*
PUMP	Gasket		Neoprene square ring and gasket

*Single seal models are built with a carbon steel motor shaft, and double seal models are built with a stainless steel motor shaft.

All Class 30 cast iron construction.

NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

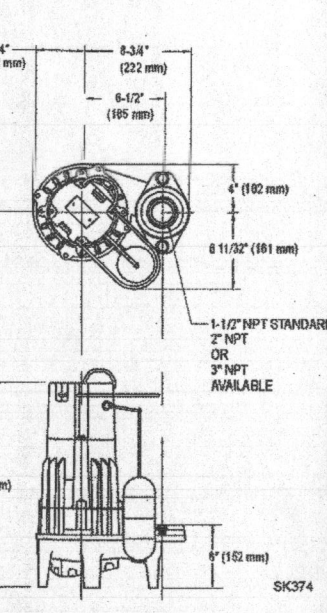
NOTE: See model comparison chart for specific details.



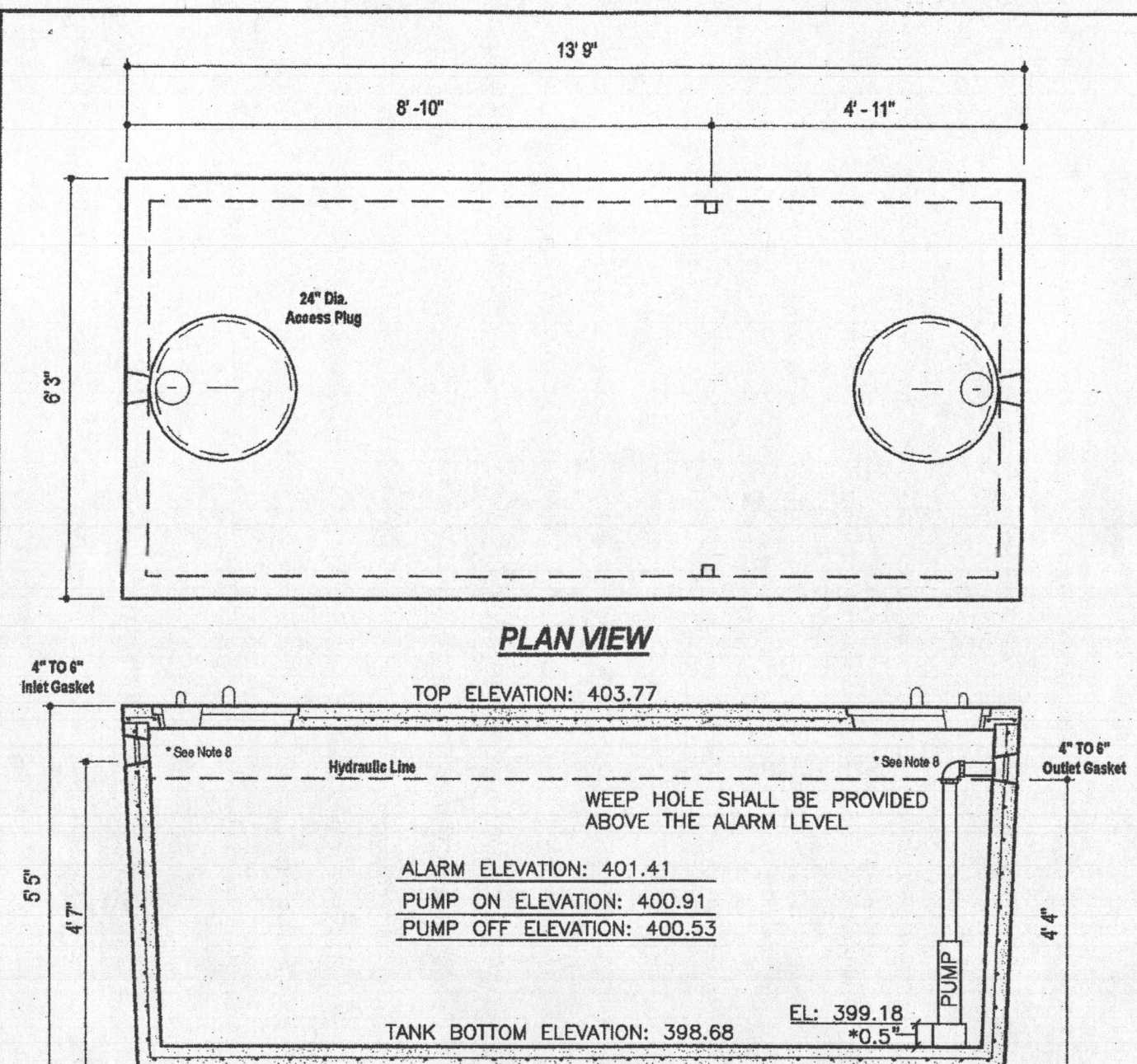
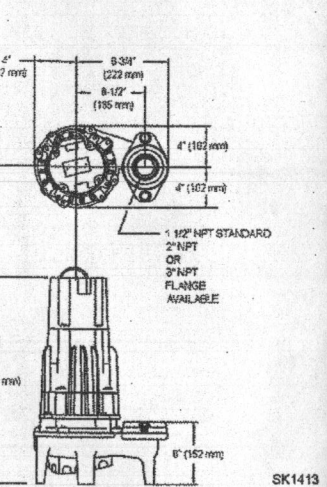
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502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

SINGLE SEAL



DOUBLE SEAL



DESIGN DATA & GENERAL NOTES

- Concrete strength for 4,000 p.s.i. @ 28 days. Density = 150 pcf.
- Concrete - Portland Type III per ASTM C 150-42.
- Reinforcing steel per ASTM A 618, Min. 1/4" cover.
- Top slab sealed with butyl rope install.
- 4" wall, 4" base, 4" top thickness.
- Max 3' of cover.
- Depending on use of tank, inlet & outlet baffles may be required by code.

ITEM	DESCRIPTION	ELEV.	RELATIVE TO BOTTOM
1	Concrete strength for 4,000 p.s.i. @ 28 days. Density = 150 pcf.	398.68	1'-10 1/16"
2	Concrete - Portland Type III per ASTM C 150-42.	400.52	1'-10 1/16"
3	Reinforcing steel per ASTM A 618, Min. 1/4" cover.	400.53	2'-1 3/16"
4	Top slab sealed with butyl rope install.	400.91	2'-8 3/16"
5	4" wall, 4" base, 4" top thickness.	401.41	

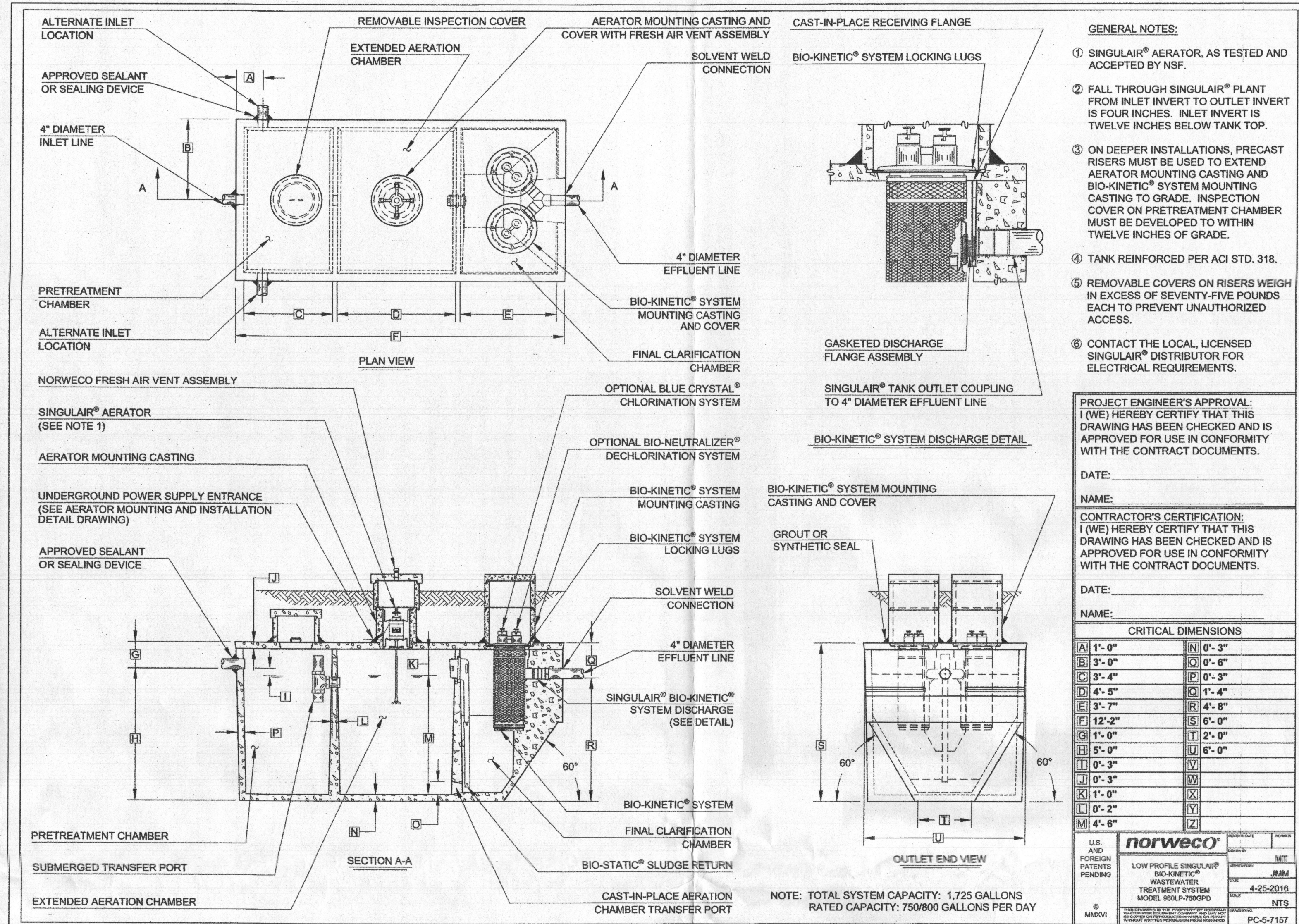
WEIGHT = 19,000 lbs.



6354 Ross Road
Elkridge, Maryland 21075
Tel. 410.786.1434
Fax. 410.786.1438

www.mayerbrospump.com

2,000 GALLON SEPTIC TANK 1-Compartment		
Stock Item [Approx. 19,000 lbs]		
Dwg. No. 2000-1C	No Scale	Aug. 11, 2008



BAT TREATMENT SYSTEM TANK AND PUMP TANK (LOT 2)

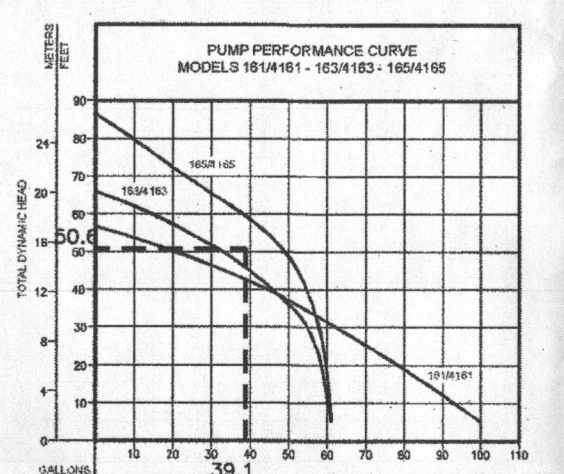
N.T.S.

NOTE: RATED CAPACITY: 750 GALLONS PER DAY PER MANUFACTURER.

SEE MANUFACTURER SPECIFICATIONS FOR DETAILS. WWW.NORWECO.COM

TOTAL DYNAMIC HEAD FLOW PER MINUTE

MODELS	161/4161	163/4163	165/4165
Feet	Meters	Gal.	Liters
5	1.5	100	379
10	3.0	93	352
15	4.6	86	326
20	6.1	79	299
25	7.6	71	267
30	9.1	62	236
40	12.2	45	170
50	15.2	20	76
60	18.3	--	--
70	21.3	--	--
80	24.4	--	--
Shut-off Head:	56 ft. (17.1 m)	66 ft. (20.1 m)	86.5 ft. (26.4 m)



*USE D165 OR EQUIVALENT

MODEL COMPARISON

CERTIFICATIONS												
Model	Seal	Motor	Ph	Amps	HP	Rz	Lbs	Kg	Simplex	Duplex	CERTIFICATIONS	
M161	Single	Auto	115	1	15.0	1/2	80	36	1	---	UL and cCSAus (1)	
N161	Single	Non	115	1	15.0	1/2	80	36	2 or 3 & 5	4 & 5	CSA (1)	
M161	Double	Non	115	1	15.5	1/2	80	37	3 & 5	4 & 5	UL and cCSAus (1)	
BN161	Single	Auto	115	1	15.0	1/2	80	36	---	---	CSA	
D161	Single	Auto	230	1	7.5	1/2	80	36	---	---	UL and cCSAus	
E161 / E4161	Single / Double	Non	230	1	7.5	1/2	80 / 87	36 / 39	2 or 3 & 5	4 & 5	UL and cCSAus	
* H161	Single	Auto	200	1	8.8	1/2	80	36	1	---	cCSAus	
* H161 / M161	Single / Double	Non	200	1	8.8	1/2	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus	
* J161 / J4161	Single / Double	Non	200	3	6.4	1/2	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* H161 / F4161	Single / Double	Non	230	3	5.2	1/2	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* G161 / G4161	Single / Double	Non	460	3	2.9	1/2	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* BA161/BA4161	Single / Double	Non	575	3	2.4	1/2	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus	
BE161	Single	Auto	230	1	7.5	1/2	80	36	---	---	UL and cCSAus	
M163	Single	Auto	115	1	15.0	1/2	80	36	1	---	UL and cCSAus (1)	
N163 / M4163	Single / Double	Non	115	1	15.0	1/2	80 / 87	36 / 39	2 or 3 & 5	4 & 5	CSA (1)	
BN163	Single	Auto	115	1	15.0	1/2	80	36	---	---	CSA	
D163	Single	Auto	230	1	7.5	1/2	80	36	1	---	UL and cCSAus	
E163 / E4163	Single / Double	Non	230	1	7.5	1/2	80	90 / 87	36 / 39	2 or 3 & 5	4 & 5	UL and cCSAus
* H163	Single	Auto	200	1	8.5	1/2	80	36	1	---	cCSAus	
* H163 / M163	Single / Double	Non	200	1	8.5	1/2	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus	
* H163 / J4163	Single / Double	Non	200	3	6.0	1/2	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* F163 / F4163	Single / Double	Non	230	3	4.8	1/2	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* G163 / G4163	Single / Double	Non	460	3	2.9	1/2	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* BA163/BA4163	Single / Double	Non	575	3	2.4	1/2	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus	
BE163	Single	Auto	230	1	7.5	1/2	80	36	---	---	UL and cCSAus	
* H165	Single	Auto	230	1	10.2	1	80	36	1	---	UL and cCSAus	
E165 / E4165	Single / Double	Non	230	1	10.2	1	80 / 87	36 / 39	2 or 3 & 5	4 & 5	UL and cCSAus	
* H165	Single	Auto	200	1	12.6	1	80	36	1	---	cCSAus	
* H165 / M165	Single / Double	Non	200	1	12.6	1	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus	
* J165 / J4165	Single / Double	Non	200	3	7.5	1	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* F165 / F4165	Single / Double	Non	230	3	7.4	1	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* G165 / G4165	Single / Double	Non	460	3	3.7	1	80 / 87	36 / 39	3 & 5	4 & 5	UL and cCSAus	
* BA165/BA4165	Single / Double	Non	575	3	3.0	1	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus	
BE165	Single	Auto	230	1	10.2	1	80	36	---	---	UL and cCSAus	

* no molded plug (1) UL listed unit available with 20 Amp plug. (2) 20 Amp duplex receptacle, P/N 10-0060 available. Additional cord lengths are available in 25' (8 m), 35' (11 m), and 50' (15 m).

SELECTION GUIDE

- Integral float operated mechanical switch, no external control required.
- For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0472.
- See FM1228 for correct model of simplex control panel.
- See FM212 for correct model of duplex control panel.
- Variable level control switch 10-0743 used as a control activator, specify simplex (3) float or duplex (4) float system. Refer to FM0626.

CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

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Approved Septic System Plan
Howard County Health Department
NORWECO TWT 960 LP
w/ Mayer Bros. 200 gal Pump Tank
& Zoeller D165 (1/2 hp) Pump
Signature: [Signature]
BAT-LPD 5/15/2018

THE DETAILS SHOWN HEREON ARE BASED ON TYPICAL MANUFACTURER DRAWINGS PROVIDED BY NORWECO, ACTUAL MANUFACTURER MAY DIFFER. CONTRACTOR TO VERIFY THAT ALL DIMENSION ARE IN COMPLIANCE WITH THE HEALTH DEPARTMENT REQUIREMENTS.

BENCHMARK
ENGINEERS AND SURVEYORS PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELICOTT CITY, MARYLAND 21043
(P) 410-465-6102 (F) 410-465-6644
WWW.BE-CVLENGINEERING.COM

Professional Certification: 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. 45577, Expiration Date: 06-06-2018.

[Signature]
JOHN M. CARP
PROFESSIONAL ENGINEER

OWNER/DEVELOPERS:
ELLEN M. VAWTER,
MICHAEL A. VAWTER,
NANCY J. VAWTER,
LAURA J. LEONARD,
DREW B. LEONARD
14170 TRIADPHIA MILL ROAD
DAYTON, MARYLAND 21038
301-706-6044

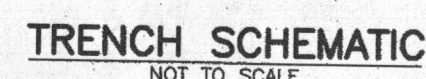
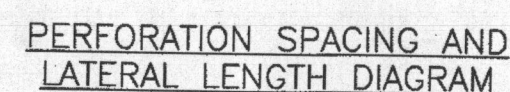
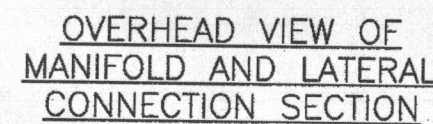
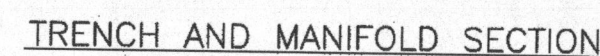
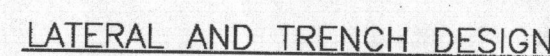
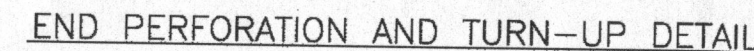
PROJECT:
VAWTER PROPERTY
LOT 2

LOCATION:
14174 TRIADPHIA MILL ROAD
TAX MAP: 27 - GRID: 24 - PARCEL: 68
ZONED: RR-DCO RURAL RESIDENTIAL
ELECTION DISTRICT NO. 5 - HOWARD COUNTY, MARYLAND

TITLE:
SEPTIC SYSTEM DESIGN DETAILS

DATE: DECEMBER, 2017 PROJECT NO. 2766

SCALE: NONE SHEET 2 OF 3



Perforation Diameter =	5/16 inches	Target Flow =	19.54 gpm	Cell	Flow Rate
Depth To Effective Perforation	1000 ft			1	40.24

Lateral Pressure Calculations																		
Cell	Trench	Pipe Elev.	Beginning Manifold Loss	Gate Valve	Manifold Bends 45D	Manifold Length	Manifold velocity	Manifold Thru Tees	Delta Loss Manifold	Total Manifold Loss	Lateral 90 degree side tee loss	Sudden Reduction Loss	Lateral Bends 45 deg. Loss	Lateral Length to first perf. Loss	Lateral Loss Summation	Total Loss to First Perf.	Total Design Head (ft)	Flow per Lateral (gpm)
1	2	438.0	0.00	0	6	284	39.1	0	7.20	7.20	0.06	0.01	0.00	0.21	0.28	7.48	46.95	20.70
1	1	440.0	7.20			20	19.5	1	0.12	7.32	0.06	0.01	0.00	0.06	0.15	7.47	48.94	19.54
Perforation Diameter =			5/16 inches		Distal Head		2 feet											

Tank and Float Design:

Ground over Tank =	406.00 ft	Inside Tank Dimensions	
Top of Tank =	403.77 ft	Height =	4.67 ft
Invert of Tank =	398.68 ft	Width =	5.58 ft
Pump Block=	0.50 ft	Length =	13.08 ft
Water End and Motor =	1.34 ft	Number of Tanks =	1
per Mayer Brothers Precast			

minimum Pump off =	400.52 ft
Pump Off Float =	400.53 ft

Dose =	27.89 cf
Area of Pit	72.99 sf

Use one 2,000 gallon pump tank

Pump on dist. =	0.38 ft
Pump on Elev. =	400.91 ft

Distance between Pump on and Highwater Alarm =	0.5 ft
Highwater Alarm Elevation =	401.41 ft

High Water Alarm to inlet =	1.52	
Volume Above Alarm Float to inlet =	110.78 cf or	
One Day Flow =	900.00 gallons	not okay
90% One Day Flow =	810.00 gallons	ok
		828.66 gallons

can
 160 LP
 160 gal Pump Tank
 160 (6hp) Pump
 1/12/2018
 Date
 PD system

Pump Requirements:			
Performance =	39.08	gpm	
Head of Water =	50.56	feet of head	
Pump Selection:			
Zoeller Pump D165			
1 horse power	230	Volts	Single Phase

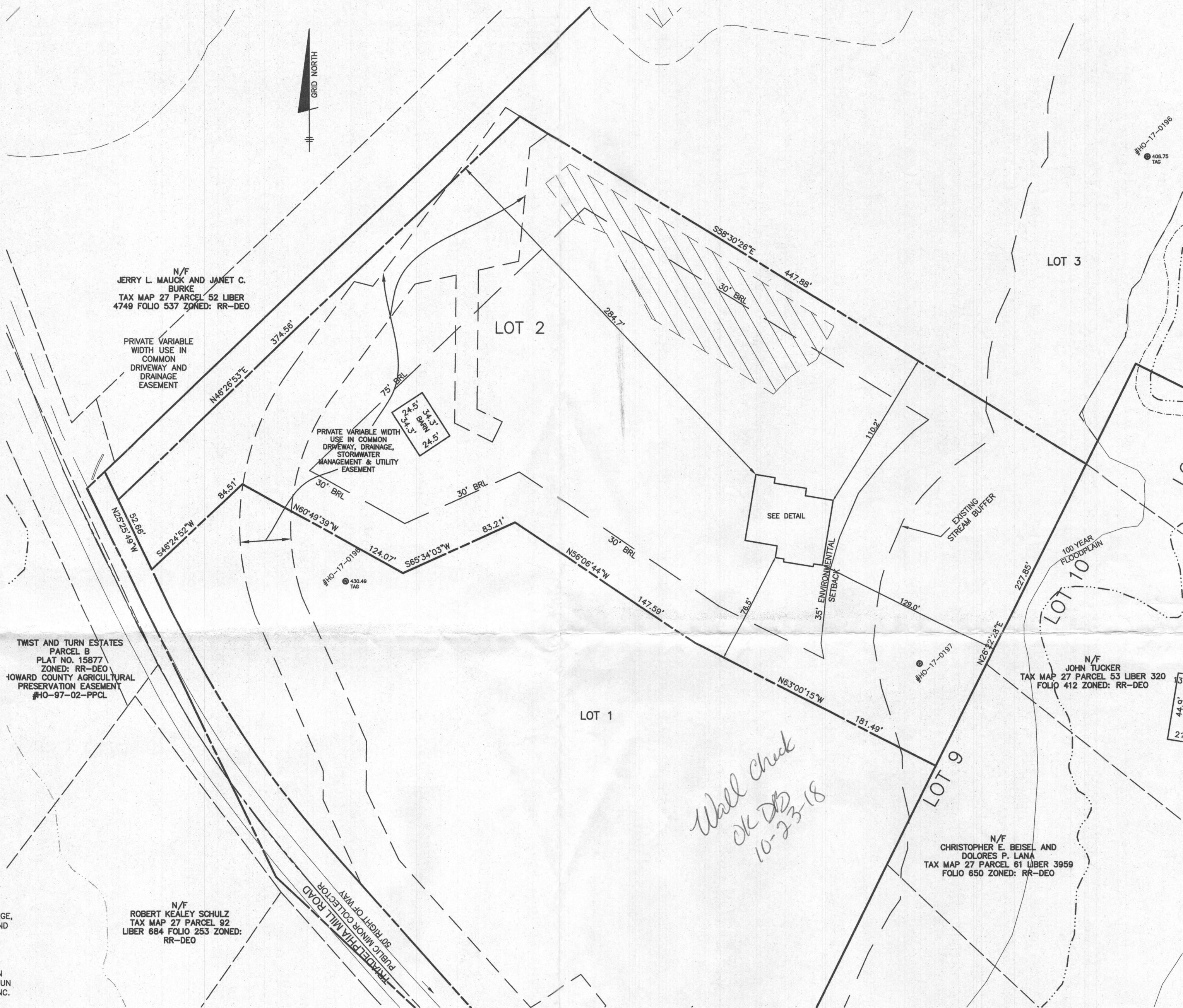
Approved Septic System Plan
Howard County Health Department
NORWECO INT 260 LP
w/4000 Bros 2000 gal Pump Tank
1 * Zoeller D166 (1HP) Pump
Signature 1/12/2018
Date
BATELD system

Friction Head = Head loss due to pipe friction
2" pipe = 304 feet

Lateral	48.00 feet		
45° bends	6 loss for manifold bend	24.0 feet	per table 4.3
Str. Coupling	1 loss for straight tee	2.0 feet	per table 4.3
90 deg. Side tee	1 loss for tee bend	10.0 feet	per table 4.3 for smaller pipe
Sudden reduction	1 loss for reduction	1.0 feet	per Crane Co. technical paper
45° bends	1 loss for lateral bend	3.0 feet	per table 4.3
Gate Valve	0 loss for valve	0.0 feet	per table 4.3

Equivalent Manifold Length = 330.0 Friction loss = 7.72 feet

1.5" lateral	62.00 feet
Total Friction Head =	9.00



Wall Check
OK DAB
10-23-18

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS, WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21320, EXPIRATION DATE 1-7-2019 AND TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF, THAT THE DIMENSIONS OF THE BUILDING WALLS SHOWN HEREON ARE CORRECT; THAT THEY ARE BASED ON A FIELD RUN SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. ON 08/10/2018.

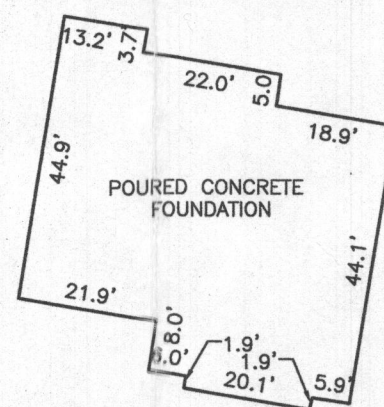

DONALD A. MASON
PROFESSIONAL LAND SURVEYOR
MARYLAND REG. No. 21320

FEMA FIRM No. 24027C0416
ZONE: X
DATED: 11/6/2013

BENCHMARK

ENGINEERS LAND SURVEYORS PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315
ELLICOTT CITY, MARYLAND 21043
(P) 410-465-8105 A (F) 410-465-6644
WWW.BEI-CVLENGINEERING.COM

TOP OF FOUNDATION WALL = 416.0'
OFFSET DIMENSIONS TO PROPERTY LINES ARE ± 0.1'



FOUNDATION DETAIL
SCALE: 1" = 30'

FIELD OBS. BY AS
COMP. BY EWF
DRAWN BY EWF

WALL CHECK

VAWTER PROPERTY
LOTS 1-3
PLAT No. 24567
LOT No. 2

14174 TRIADELPHIA MILL ROAD
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: 1" = 50' DATE: 08/10/2018