

Bureau of Environmental Health
 8930 Stanford Boulevard, Columbia, MD 21045
 Main: 410-313-2640 | Fax: 410-313-2648
 TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
 Facebook: www.facebook.com/hocohealth

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 11/30/16 **ONSITE SEWAGE DISPOSAL SYSTEM**

P 559852

APPROVAL DATE: 2/22/17 **PERMIT: CONSTRUCTION**

A _____

PROPERTY ADDRESS: 12325 Point Ridge Drive

SUBDIVISION: Regan Property LOT: 11 TAX ID: 05-597444

CONTRACTOR: J. Maurice Carlisle EMAIL: _____

CONTRACTOR ADDRESS: 19700 Barnesville Road, Dickerson, MD 20842 PHONE: 301-428-8599

CONTRACTOR CERTIFIED FOR BAT INSTALLATION: MDE MANUFACTURER:

PROPERTY OWNER: MB Highland Reserve EMAIL: _____

OWNER ADDRESS: 1686 E. Gude Drive, Rockville, MD 20850 PHONE: _____

BAT UNIT MODEL: Norweco TNTLP-750 PUMP SIZE: 152 PUMP TANK CAPACITY: 2000

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: 9/19/16 DATE RECORDED: 9/19/16

DISTRIBUTION SYSTEM: GRAVITY PRESSURE DOSED BEDROOMS: 6 APPLICATION RATE: 1.2

TRENCHES:	LINEAR FEET REQUIRED: <u>125</u>	INLET DEPTH: <u>3</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>8</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>10</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>5</u>
LOCATION:	PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.	
NOTES:		

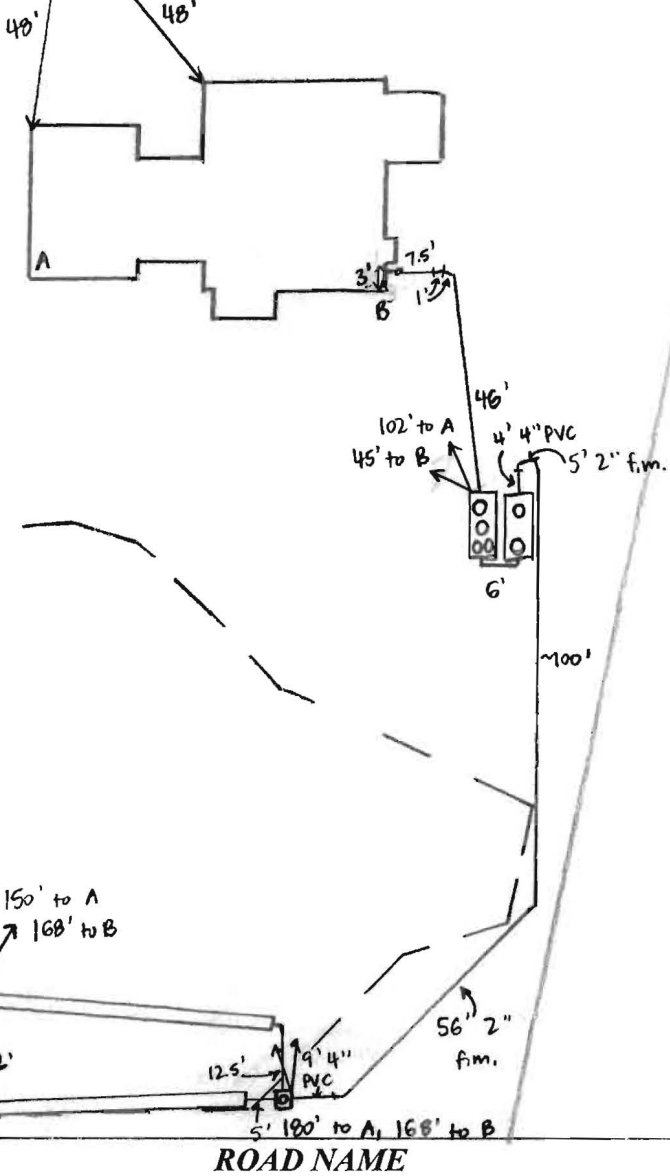
ISSUED BY: Hank Oswald ISSUE DATE: 11/30/16 EXPIRATION DATE: 11/30/17

- NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION
- NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING
- NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.
- NOTE: WATERTIGHT SEPTIC TANKS REQUIRED
- NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL
- NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS
- NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM
 ELECTRICAL PERMIT ISSUED E 160066540
- NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.
- NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

**NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.
 PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.
 CALL 410-313-1771 TO SCHEDULE INSPECTIONS.**

H0-14-0003

NOT TO SCALE



TRENCH/DRAINFIELD DATA		
WIDTH	INLET	BOTTOM
3'	3'	8'
NUMBER OF TRENCHES		2
TOTAL LENGTH		127'
ABSORPTION AREA		381' + SIDEWALL
DISTRIBUTION BOX LEVEL		YES
DISTRIBUTION BOX BAFFLE		YES
DISTRIBUTION BOX PORT		YES

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	BACK RIVER / NORWECO
CAPACITY	1600 GAL
SEAM LOC	TOP
TANK LID DEPTH	1-2'
BAFFLES	NO
BAFFLE FILTER	NO
MANHOLE LOC	FRONT, MED. + 2 REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	12-9-16 (STAMP)
PUMP/SEPTIC TANK LEVEL YES	
MANUFACTURER	BABYLON
CAPACITY	2000 GAL
SEAM LOC	TOP
TANK LID DEPTH	1-2'
BAFFLES	INLET
BAFFLE FILTER	NO
MANHOLE LOC	FRONT + REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	7-24-16
Pump: 1/2 hp Liberty	

PRE-CONSTRUCTION:

12/21/16 Met J.M. Carlisle on site for layout. All SDA + tank stakes present. Shot contours and laid out 2 trenches, upper ~60' and lower ~65'. Met with builder and confirmed site of swale in backyard - moved tanks away from house 15' to get away from swale. (SC)

INSTALLATION:

12/22/16 T1 finished + left open at ends. 3' wide, 2-2.5' to stone at end. J.M. Carlisle digging T2, 8' bottom at start, 3.5-4' to stone at end. Using laser transit to check depths. (SC) 12/23/16 D-box installed, 2" force main run from future tank location to D-box. (SC) 12/27/16 J.M. Carlisle digging tank holes. Lots of rock in area of pump tank - OK to set pump tank downhill of BAT tank. (SC) 12/28/16 Tanks set. Pressure line run from pump tank to D-box. Carlisle finishing sewer line connection during site visit. (SC) 12/29/16 BAT and pump tank connected. Need BAT startup certification and pump + alarm. (SC) 2/8/17 BAT startup certification received. (SC) 2/22/17 On site for BAT startup and pump + alarm. Norweco alarm sounds + aerator runs. Pump pumps effluent to D-box, alarm sounds. (SC)

FINAL INSPECTOR Sarah Collins DATE OF APPROVAL 2/22/17

Back River Pre-Cast, LLC

PO BOX 329
Glyndon, MD 21071
Phone # 410-833-3394
Fax # 410-833-4116

Letter of Certification

This is to certify that the Norweco Singlair TNT 750 GPD Septic Tank installed at 12325 Point Ridge Dr., Highland, MD 20777 December 28, 2016 was installed according to the manufacture's specifications.

Installer: Ralph Beall

Property Owner: Philip Quade

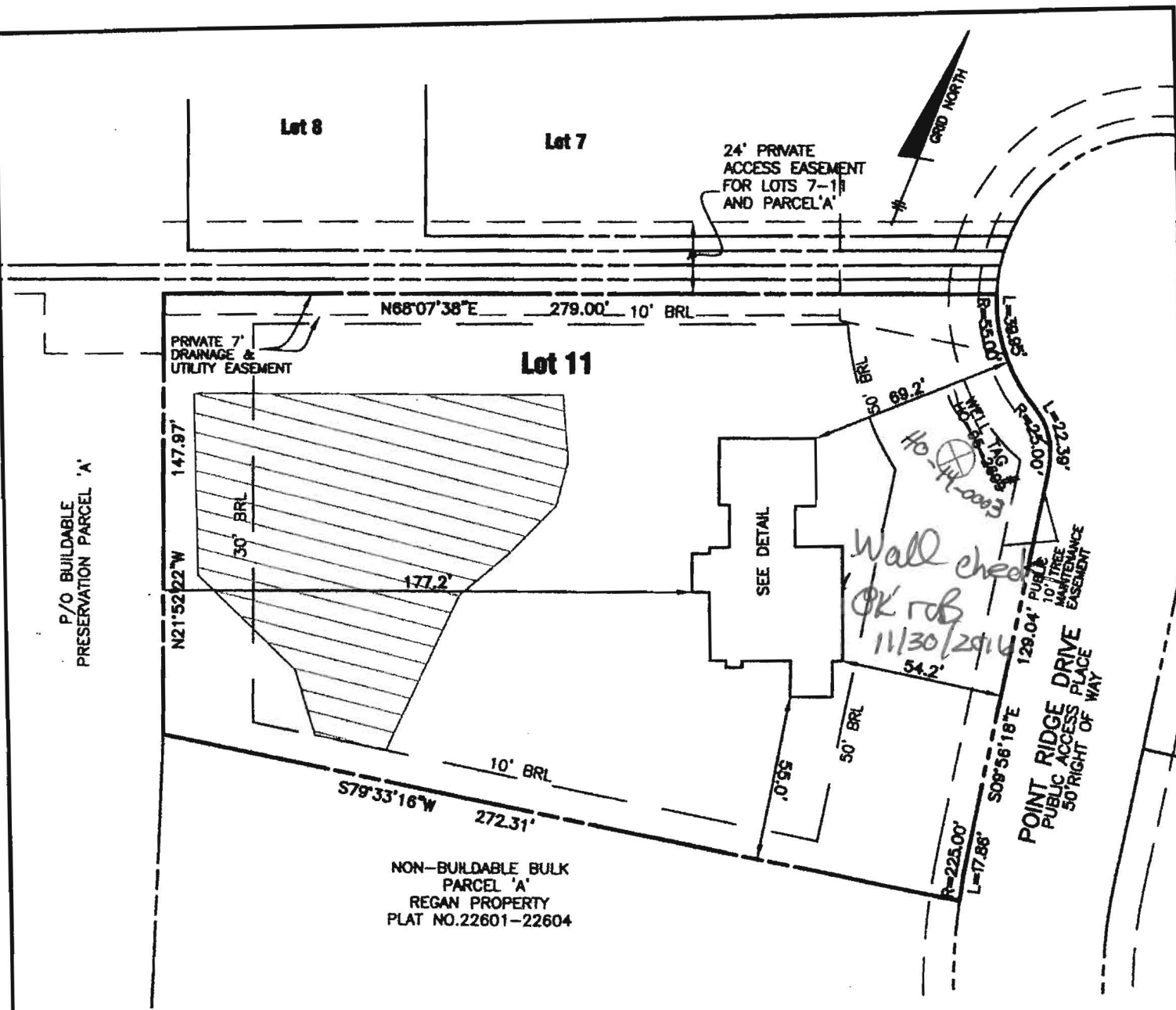
Permit #

THIS CERTIFICATION IS FOR INSTALLATION ONLY. THE 5-YEAR OPERATIONS & MAINTENANCE AGREEMENT FROM DATE OF INSTALLATION WILL ONLY GO INTO EFFECT AFTER BACK RIVER PRE-CAST, LLC RECEIVES FINAL AND FULL PAYMENT FOR THE SYSTEM.



MATTHEW GECKLE

Vice-President



P/O BUILDABLE PRESERVATION PARCEL 'A'

PRIVATE 7' DRAINAGE & UTILITY EASEMENT

24' PRIVATE ACCESS EASEMENT FOR LOTS 7-11 AND PARCEL 'A'

Lot 11

NON-BUILDABLE BULK PARCEL 'A' REGAN PROPERTY PLAT NO. 22601-22604

POINT RIDGE DRIVE PUBLIC ACCESS PLACE 50' RIGHT OF WAY

TOP OF FOUNDATION WALL = 412.7'
 OFFSET DIMENSIONS TO PROPERTY LINES ARE ± 0.1'

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 1-7-2017 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 10/17/2016.

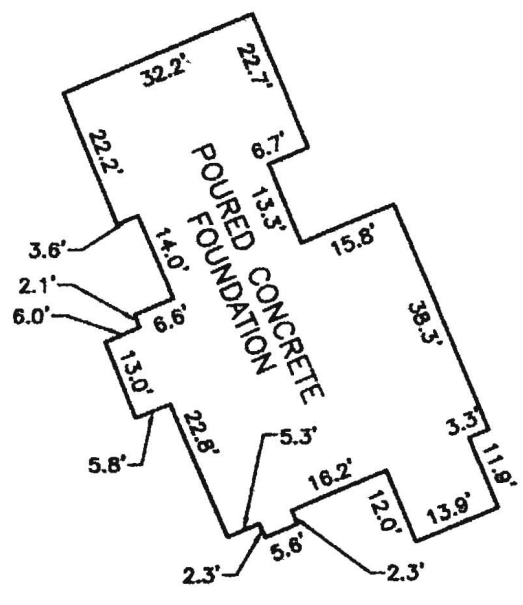
Donald A. Mason
 DONALD A. MASON
 PROFESSIONAL LAND SURVEYOR
 MARYLAND REG. No. 21320

FEMA FIRM No. 24027C01400
 ZONE: X
 DATED: 11/06/2013

BENCHMARK

ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.

6480 BALTIMORE NATIONAL PIKE SUITE 315
 ELLICOTT CITY, MARYLAND 21043
 (P) 410-485-6105 A (F) 410-485-6844



FOUNDATION DETAIL
 SCALE: 1" = 30'

WALL CHECK

REGAN PROPERTY
LOTS 2 THRU 23
PLAT No. 23070
LOT No. 11

12325 POINT RIDGE DRIVE

5TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

FIELD OBS. BY AS
 COMP. BY EWF
 DRAWN BY EWF
 SCALE: 1" = 50' DATE: 10/17/2016

EXHIBIT "L" / PART -

HR-11

LR - Agreement
 Recording Fee 20.00
 Grantor/Grantee Name:
 sullivan
 Reference/Control #:
 187
 LR - Agreement
 Surcharge 40.00
 =====
 SubTotal: 60.00
 =====
 Total: 60.00
 09/19/2016 02:36
 CC13-MH
 #6946881 CC0503 -
 Howard Co
 Columbia/CC05.03.05 -
 Register 05



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 Facebook: www.facebook.com/hocohealth
 Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

**OPERATION AND MAINTENANCE AGREEMENT
 FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM
 HAVING AN ADVANCED PRE-TREATMENT SYSTEM**

THIS AGREEMENT is made this 19th day of SEPTEMBER, 2016, among MB Highland Reserve LLC, hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 12325 Point Ridge Drive, in the 5th Election District of Howard County, Maryland, and the deed and subdivision plat of the property is recorded among the Land Records of Howard County, Maryland, Tax Map # 34, Block # -, Parcel # 200, Deed Reference # Liber 15918 - Folio 00156 and Tax Account # 05-597444 ("the Property").

WHEREAS, The Property is suitable for the installation of a conventional on-site sewage disposal system with an advanced pre-treatment system, utilizing best available technology to perform nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective January 1, 2013. The pre-treatment device being installed is Norweco Model TNTLP-600GPD.

NOW, THEREFORE, the parties hereto agree as follows:

- A. Owner hereby grants to the County the right to enter upon the Property at any reasonable time with prior notice for access to the system to make periodic inspections and the Owner agrees to provide any information and data in Owner's possession reasonably requested and needed by the County.
- B. Owner acknowledges and agrees that neither the County nor any of its agents or employees, either officially or individually, underwrites the operation of any system approved by them.
- C. The Owner will devote reasonable care and effort to the operation and maintenance of the system in perpetuity or until a public sewer connection is made so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.
- D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County with a private entity to operate and maintain on a regularly scheduled basis an approved advanced pre-treatment system. The owner shall supply a copy of the contract to the County

E. This agreement shall run with the land and upon Owner's taking title to the Property shall bind the Owner, their heirs, successors, and assigns to the provisions of the agreement as long as the property is in existence and after installation of the system. Owner further agrees that they shall inform in writing any subsequent purchaser or lessee of the Property that the system shall require maintenance or other attention. Upon taking title to the Property, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

G. This agreement may be voided at any time at the discretion of the County.

H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

Bob Ryan 9/19/2012
Howard County Health Department
MB Highland Reserve LLC
Dolan 7/25/16
Owner #1 Signature Date

Owner #2 Signature Date

KRISTINE SULLIVAN
Owner #1 Print Name

Owner #2 Print Name

X Philip D. Quade 6/26/16
Buyer #1 Signature Date

X Yvonne M. Quade 6/26/16
Buyer #2 Signature Date

Philip D. Quade

Yvonne M. Quade

BENCHMARK



ENGINEERING, INC.

8480 Baltimore National Pike • Suite 315 • Ellicott City, Maryland 21043
410-465-6105 410-465-6644 (Fax)

LETTER OF TRANSMITTAL

DATE	9/12/16	PROJECT No.	# 2171
ATTENTION	Hank Osuald		
RE:	12325 Point Ridge Rd Koran Property BAT Revised Plan		

TO: Health Dept

- WE ARE SENDING YOU Attached Under separate cover via _____ the following items
- | | | | |
|-----------------------------------------|--------------------------------------------|---------------------------------------|--------------------------------------|
| <input type="checkbox"/> Photocopies | <input checked="" type="checkbox"/> Prints | <input type="checkbox"/> Originals | <input type="checkbox"/> Samples |
| <input type="checkbox"/> Specifications | <input type="checkbox"/> Invoices | <input type="checkbox"/> Change Order | <input type="checkbox"/> Other _____ |

COPIES of	No. of SHEETS	DESCRIPTION
3	3	Revised, BAT Plan Profile, Details & Pump Comp

- THESE ARE TRANSMITTED as checked below
- | | | |
|--------------------------------------|---------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> For Comment | <input type="checkbox"/> For your use | <input checked="" type="checkbox"/> For Approval |
| <input type="checkbox"/> For Review | <input type="checkbox"/> As requested | <input type="checkbox"/> Other _____ |

REMARKS: Force Main is 2.0" Profile has been corrected. BAT Tank has been revised to be LP960-750 which is good for 6 bedrooms. The building elevation was revised per the purchaser's request. 1st replacement has trench depth revised to 8".

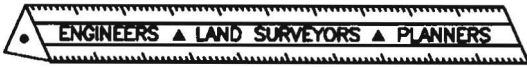
COPY TO: _____

RECEIVED BY: [Signature]

SIGNED: [Signature]

If enclosures are not as noted, kindly notify us at once.

BENCHMARK



ENGINEERING, INC.

8480 Baltimore National Pike • Suite 315 • Ellicott City, Maryland 21043
 410-465-6105 410-465-6644 (Fax)

LETTER OF TRANSMITTAL

DATE: 8.4.16	PROJECT No. 2171
ATTENTION: Robert	
RE: BAT Plan with Pump	
12325 Point Ridge Dr	

TO: Hea MH

WE ARE SENDING YOU Attached Under separate cover via _____ the following items

Photocopies Prints Originals Samples
 Specifications Invoices Change Order Other _____

COPIES of	No. of SHEETS	DESCRIPTION
3	3	BAT Plan/Profile/Pump
1	0	Architecturals

THESE ARE TRANSMITTED as checked below

For Comment For your use For Approval
 For Review As requested Other _____

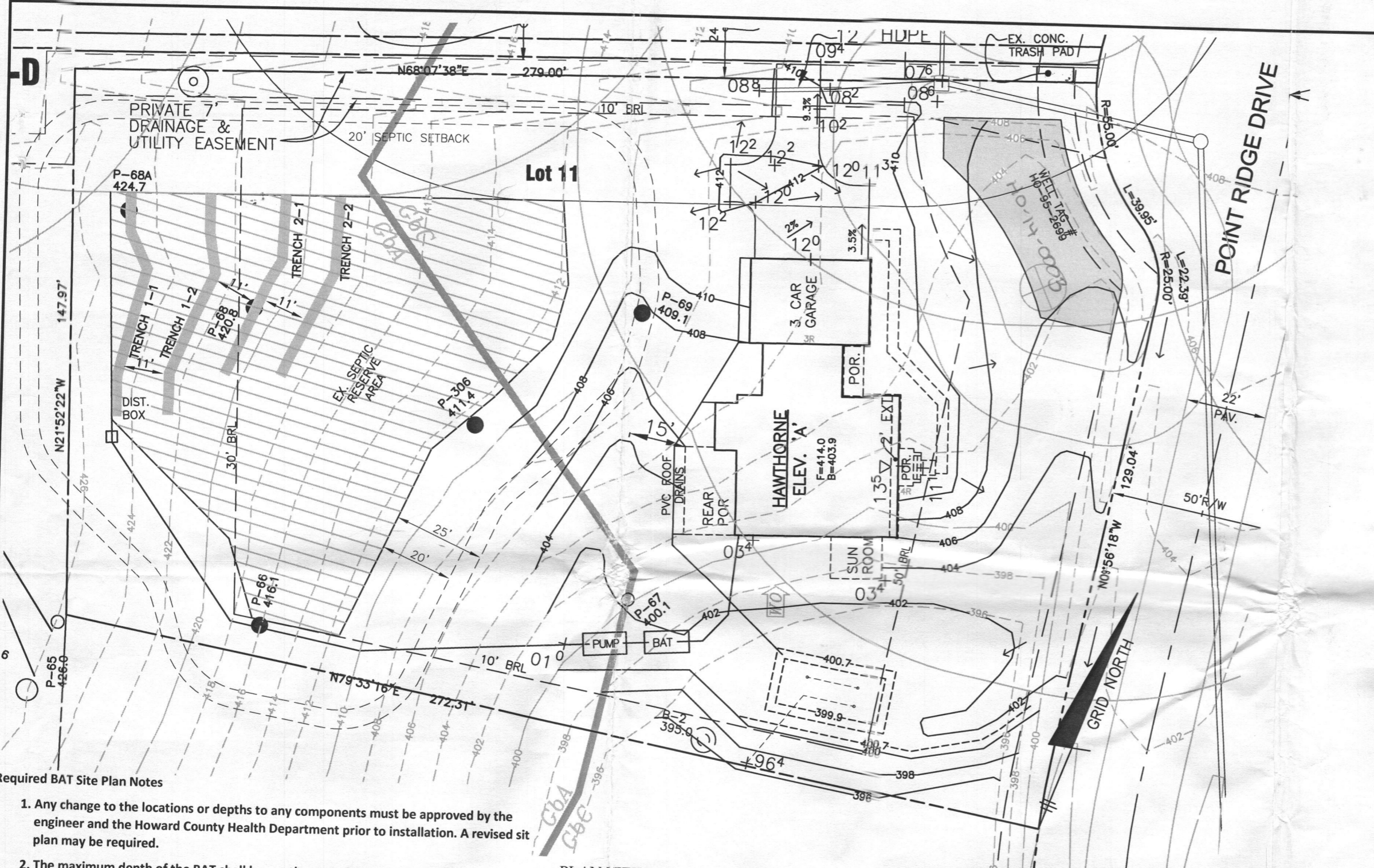
REMARKS:

COPY TO: _____

RECEIVED BY: [Signature]

SIGNED: [Signature]

If enclosures are not as noted, kindly notify us at once.



LEGEND

SOILS CLASSIFICATION *ChB2*

SOILS DELINEATION

EXISTING CONTOURS 480
478

PROPOSED CONTOURS 999

LIMIT OF WETLANDS

25' WETLANDS BUFFER

CENTERLINE OF STREAM

STREAM BUFFER

PROPOSED STRUCTURE

SEPTIC RESERVE AREA

PRIVATE WELL BOX

Approved Septic System Plan
 Howard County Health Department
 Hank Oswald 9/16/16
 Signature Date

BENCHMARK
 ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 ▲ FAX: 410-465-6644
 BEI@BEI-CIVILENGINEERING.COM

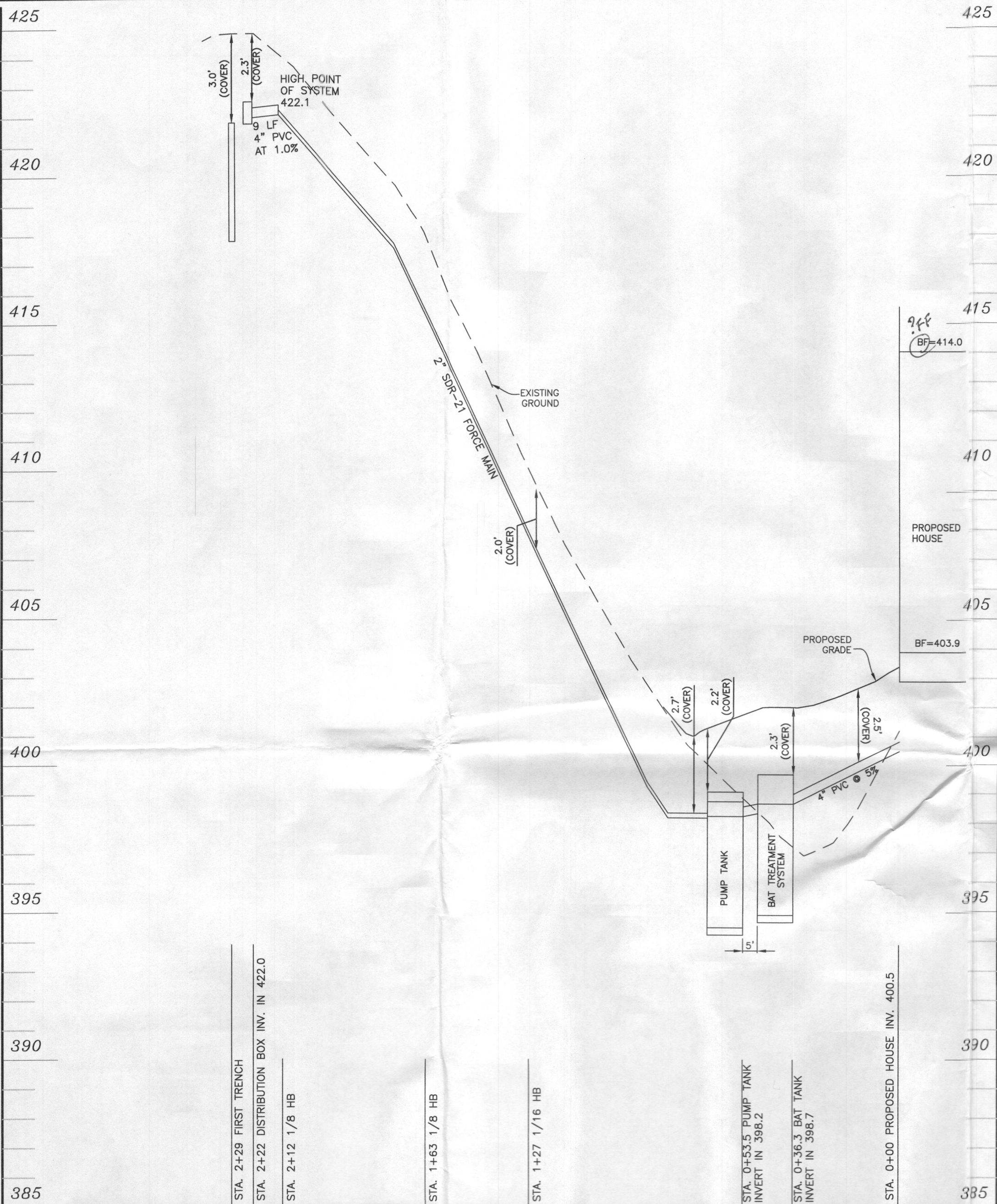
- Required BAT Site Plan Notes
1. Any change to the locations or depths to any components must be approved by the engineer and the Howard County Health Department prior to installation. A revised sit plan may be required.
 2. The maximum depth of the BAT shall be per the manufacturer's specification, 3.0'.
 3. The blower may not be located further from the tank than the manufacturer's specifications, 75'.
 4. The BAT system shall be maintained and operated for the life of the system.
 5. The BAT shall be operated by and maintained by a certified service provider.
 6. 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.
 7. Electrical work for the BAT installation must be performed by a licensed electrician.
 8. An agreement and Easement must be completed and signed by all applicable parties, and recorded in Land Records of Howard County.
 9. The Health Department requires documentation for the start-up certification from the manufacturer prior to final approval of the installation.

PLAN VIEW
 1" = 30'

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	SOIL TYPE
GbC	B	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES
MaD	B	MANOR LOAM, 15 TO 25 PERCENT SLOPES
FROM NRCS	WEB SOIL	SURVEY 2.0, PAGE 16, CLARKSVILLE NW

OWNER/BUILDER: MB HIGHLAND RESERVE, LLC 1686 EAST GUDE DRIVE ROCKVILLE, MD 20850 301-762-9511	PROJECT: REGAN PROPERTY LOT 11
LOCATION: 12325 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT TAX ID NUMBER: 05 597444	TITLE: BAT SITE PLAN
HOUSE TYPE: HAWTHORNE - ELEVATION 'A'	DATE: AUGUST, 2016 SEPTEMBER, 2016
DESIGN: JMC DRAFT: JMC/NAF	PROJECT NO. 2171
SCALE: 1" = 30'	DRAWING 1 OF 3



SEE MANUFACTURER SPECIFICATIONS DETAILS. WWW.NORWECO.COM

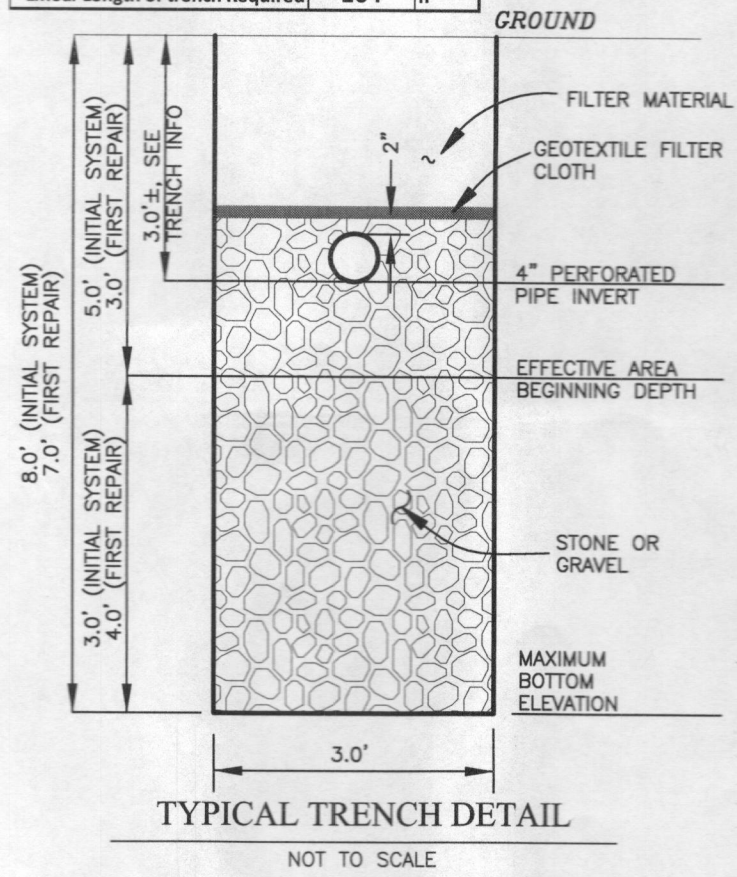
INITIAL SYSTEM	
Number of Bedrooms	6
Application Rate	1.2 gpd/sf
Effective Area Beginning Depth	5 ft
Bottom Max Depth	8 ft
Design Flow	900 gpd
Drainage Field square footage	750 sf
Sidewall reduction credit	0.50
Trench width	3
Effective Area Depth	3
Linear Length of trench Required	125 lf

1st REPLACEMENT SYSTEM	
Number of Bedrooms	6
Application Rate	1.2 gpd/sf
Effective Area Beginning Depth	3 ft
Bottom Max Depth	7 ft
Design Flow	900 gpd
Drainage Field square footage	750 sf
Sidewall reduction credit	0.42
Trench width	3
Effective Area Depth	4
Linear Length of trench Required	104 lf

CRITICAL DIMENSIONS	
A	1'-0"
B	3'-0"
C	3'-4"
D	4'-5"
E	3'-7"
F	12'-2"
G	1'-0"
H	5'-0"
I	0'-3"
J	0'-3"
K	1'-0"
L	0'-2"
M	4'-6"
N	0'-3"
O	0'-6"
P	0'-3"
Q	1'-4"
R	4'-8"
S	6'-0"
T	2'-0"
U	6'-0"
V	
W	
X	
Y	
Z	

- GENERAL NOTES:**
- SINGULAIR® AERATOR, AS TESTED AND ACCEPTED BY NSF.
 - FALL THROUGH SINGULAIR® PLANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TWELVE INCHES BELOW TANK TOP.
 - ON BEEPER INSTALLATIONS, PRE-CAST RISERS MUST BE USED TO EXTEND AERATOR MOUNTING CASTING AND BIO-KINETIC® SYSTEM MOUNTING CASTING TO GRADE. INSPECTION COVER ON PRE-TREATMENT CHAMBER MUST BE DEVELOPED TO WITHIN TWELVE INCHES OF GRADE.

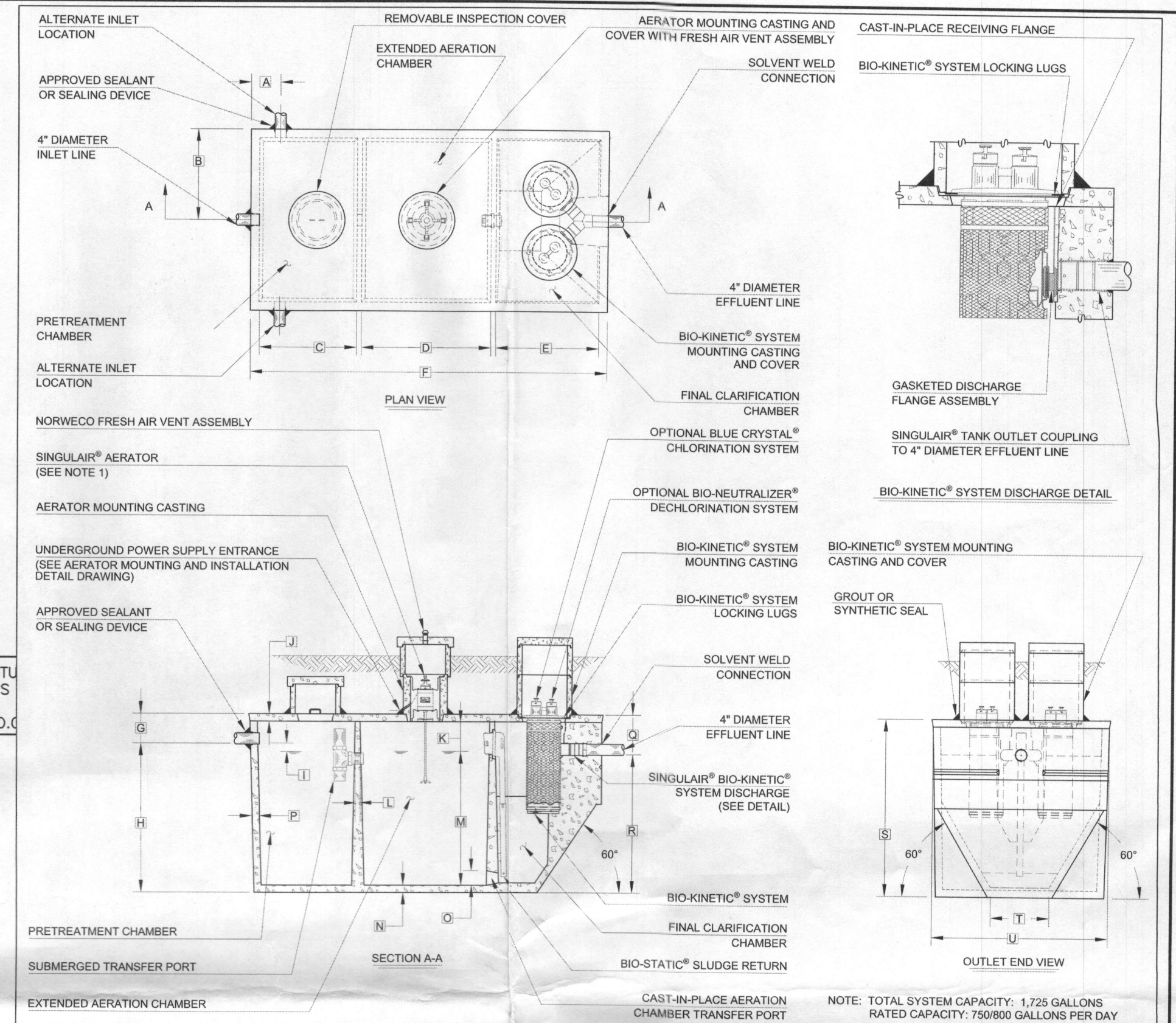
- TANK REINFORCED PER ACI STD. 318.
- REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY-FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
- CONTACT THE LOCAL LICENSED SINGULAIR® DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.



TRENCH INFORMATION

TRENCH	TRENCH LENGTH	GROUND ELEVATION	INVERT ELEVATION	MAX. BOTTOM ELEV.
TRENCH 1-1	62.5 LF	424.6	421.6	417.6
TRENCH 1-2	62.5 LF	422.8	419.8	415.8
TRENCH 2-1	52 LF	420.7	417.7	413.7
TRENCH 2-2	52 LF	418.8	415.8	411.8

SEWER PROFILE - LOT 11
SCALE: VERTICAL 1"=3', HORIZONTAL 1"=30'



BENCHMARK ENGINEERS, INC.

ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS

8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315
ELLIOTT CITY, MARYLAND 21043
PHONE: 410-465-8105 ▲ FAX: 410-465-6644
BEI@BB-CIVILENGINEERING.COM

SIGNATURE AND SEAL ARE FOR PROFILE ONLY:

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.

9/10/16

OWNER/BUILDER:	PROJECT: REGAN PROPERTY LOT 11	
MB HIGHLAND RESERVE, LLC 1686 EAST GUDE DRIVE ROCKVILLE, MD 20850 301-761-9511	LOCATION: 12325 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT TAX ID NUMBER: 05 597444	
TITLE: BAT PROFILE & DETAILS		
HOUSE TYPE: ASHBROOKE-ELEVATION 'J'		
DATE: AUGUST, 2016 SEPTEMBER, 2016	PROJECT NO. 2171	DRAWING 2 OF 3
DESIGN: JMC	DRAFT: NAF	SCALE: AS SHOWN

Your Peace of Mind is Our Top Priority



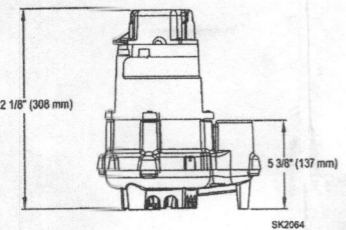
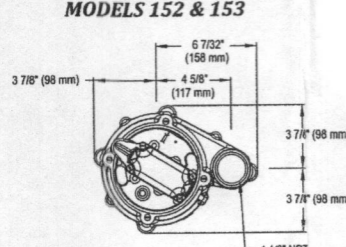
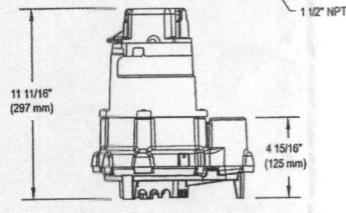
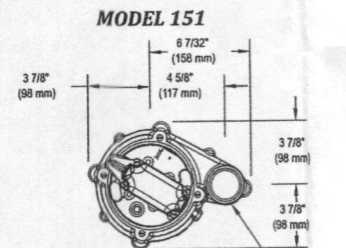
PUMP COMPANY

Zoeller Family of Water Solutions

TECHNICAL DATA SHEET
DOSE-MATE SERIES
Models 151, 152, 153 Effluent Pumps

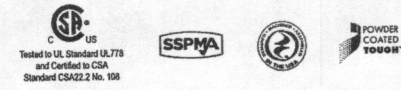
PRODUCT SPECIFICATIONS

MOTOR	MODEL 151
Horse Power	1/3 (151), 4/10 (152), 1/2 (153)
Voltage	115 or 230
Phase	1 Ph
Hertz	60 Hz
RPM	3450
Type	Permanent split capacitor
Insulation	Class B
Amps	3.2 - 10.5
PUMP	MODEL 151
Operation	Automatic or nonautomatic
Discharge Size	1-1/2" NPT
Solids Handling	1/2" (13 mm), 3/4" (19 mm) spherical solids
Cord Length	20' (6 m)
Cord Type	UL listed power cord
Max. Head	44' (13.4 m)
Max. Flow Rate	77 GPM (291 LPM)
Max. Operating Temp.	130° F (54° C)
Cooling	Oil filled
Motor Protection	Auto reset thermal overload
MATERIALS	MODEL 151
Cap	Cast iron
Motor Housing	Cast iron
Pump Housing	Cast iron
Base	Plastic or cast iron
Upper Bearing	Sleeve bearing
Lower Bearing	Ball bearing
Mechanical Seals	Carbon and ceramic
Impeller Type	Non-clogging vortex
Impeller	Engineered thermoplastic
Hardware	Stainless steel
Motor Shaft	AISI 1215 steel
Gasket	Neoprene



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.

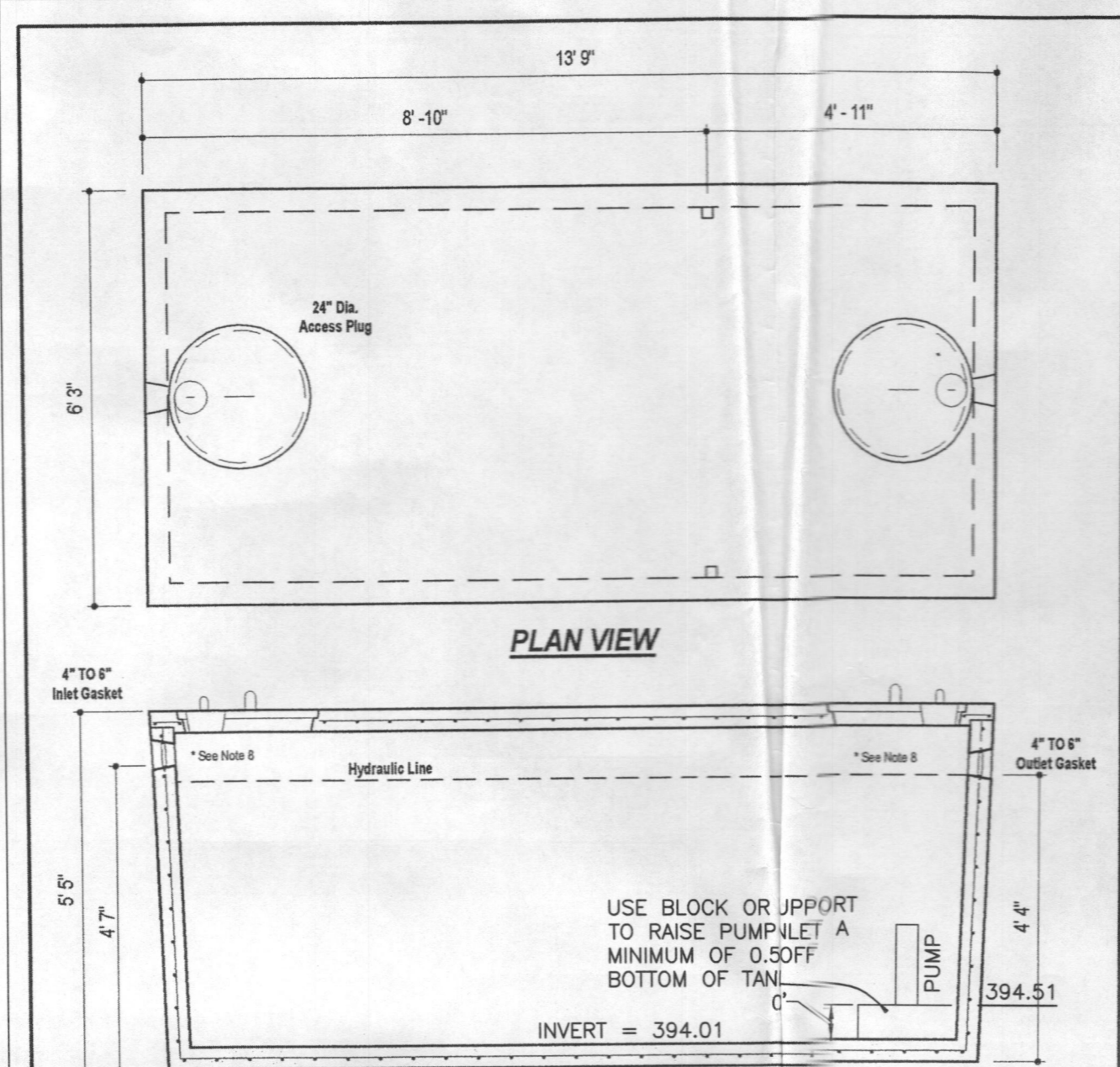
NOTE: See model comparison chart for specific details.



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SECTION: 215.089
FM2794
0315
Supersedes
0114



DESIGN DATA & GENERAL NOTES

- Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 160 pcf.
- Cement - Portland Type III per ASTM C 150-92.
- Admixtures & plasticizers per ASTM C 260-96 & C 494-92.
- Reinforcing per ASTM A108. Min. 1-1/2" cover.
- Top slab sealed with butyl rope mastic.
- 4" wall, 4" base, & 6" top thickness.
- Max 3' of cover.
- Depending on use of tank, Inlet & Outlet baffle may be required by code.

FLOAT TREE:	ELEV.	RATIVE TO BOTTOM
BOTTOM OF TANK	394.01	
TOP OF PUMP	395.61	1 3/4"
PUMP OFF	395.68	1 1/2"
PUMP ON	395.97	1 1/4"
HIGH ALARM	396.47	2 1/2"

WEIGHT = 19,000 lbs.

MB
Mayer Bros., Inc. www.mayerbrosprecast.com

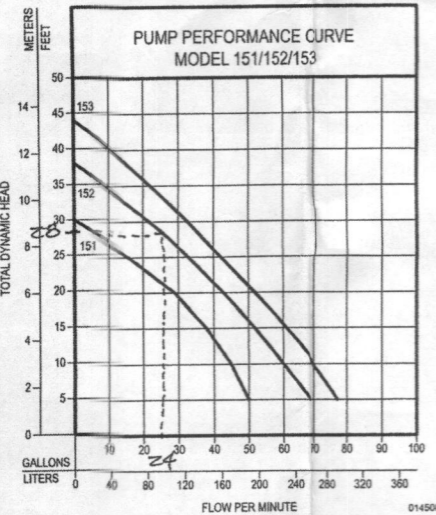
6264 Race Road
Elkridge, Maryland 21075
Tel. 410.796.1434
Fax. 410.796.1438

2,000 GALIN SEPTIC TANK
1-Compartment **LOT 11**
Stock Item approx. 19,000 lbs]

Dwg. No. 2000-1C o Scale Aug. 11, 2008

TOTAL DYNAMIC HEAD
FLOW PER MINUTE

MODEL	151	152	153
Feet			
5	1.5	50	159
10	3.0	45	170
15	4.5	38	144
20	6.1	29	110
25	7.8	16	61
30	9.1	-	-
35	10.7	-	-
40	12.2	-	-
Shut-off Head:	30 ft. (9.1m)	30 ft. (9.1m)	44 ft. (13.4m)



Use pump 152
TDH = 28.1 ft
Flow Rate = 29 GPM

Model	Seal	Mode	Volts	Ph	Amps	HP	Hz	Ltrs	Kg	Simplex	Duplex
N151	Single	Non	115	1	6.0	1/2	60	32	15	1	2 or 3
E151	Single	Non	230	1	3.2	1/3	60	32	15	1	2 or 3
BN151	Single	Auto	115	1	6.0	1/2	60	32	15	*	2 or 3
BE151	Single	Auto	230	1	3.2	1/3	60	32	15	*	2 or 3
N152	Single	Non	115	1	8.5	4/10	60	37	17	1	2 or 3
E152	Single	Non	230	1	4.3	4/10	60	37	17	1	2 or 3
BN152	Single	Auto	115	1	8.5	4/10	60	37	17	*	2 or 3
BE152	Single	Auto	230	1	4.3	4/10	60	37	17	*	2 or 3
N153	Single	Non	115	1	10.5	1/2	60	37	17	*	2 or 3
BN153	Single	Auto	115	1	10.5	1/2	60	37	17	*	2 or 3
E153	Single	Non	230	1	5.3	1/2	60	37	17	1	2 or 3
BE153	Single	Auto	230	1	5.3	1/2	60	37	17	*	2 or 3

*BN and BE models include a 20' (6 m) piggyback variable level pump switch. Additional cord lengths are available in 25' (8 m) and 35' (11 m) 50' (15 m) cords are available for 230V units only.

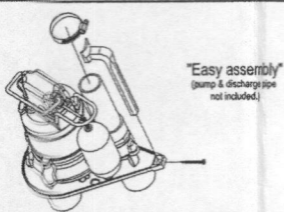
NOTE: Model 151 has a plastic base. Models 152 & 153 have a cast iron base.

SELECTION GUIDE

- For automatic, use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
- See FM1228 for correct model of simplex control panel.
- See FM0712 for correct model of duplex control panel.

OPTIONAL PUMP STAND P/N 10-2421

- Reduces potential clogging by debris
- Replaces rocks or bricks under the pump
- Made of durable, noncorrosive ABS
- Raises pump 2" (5 cm) off bottom of basin
- Provides the ability to raise intake by adding sections of 1W" or 2" (DN40 or DN50) PVC piping
- Attaches securely to pump
- Accommodates sump, dewatering and effluent applications



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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Pumping Station

Diameter of Force Main and Manifold = 2 of SDR 21 pipe
Length of Force Main = 147 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 27.3 gallons ID = 2.135
Total Volume = 27.3 gallons length = 100 gallon/sq ft 7.480519
volume = 18.59751 gal/100 ft

Minimum Dose must be greater than 1/6 of the design flow 150 gallons
Minimum Dose must be greater than the volume of the main 27 gallons

Use minimum dose of 160 gallons okay Doses per Day = 5.625

Size Pump Chamber

Pump chamber must be able to hold one dose and one days design flow

One day Capacity = 900 gallons
Dose = 160 gallons
Totals = 1060 gallons

Use 2,000 gallon pump tank

Tank Dimensions:	Exterior	Interior	Walls:
Length:	13.75 feet	Length: 13.08 feet	0.33 feet
Width:	6.25 feet	Width: 5.58 feet	0.33 feet
Height:	5.42 feet	Height: 4.67 feet	Top: 0.42 feet
Area:		73.05 sf	Bottom to
Volume:	341.14 cf	Inlet: 4.58 feet	

Sizing the Pump

Flow: runtime = 7 minutes
rate = 22.86 gallons/minute

Design Head:

Design Head = Static Head + Friction Head
Static Head = highest elevation of main - pump off elevation
Highest component of system = 422.1 Main HP
Pump off elevation = 395.60
Static Head = 26.50 feet

Friction Head = Head loss due to pipe friction
2.0" pipe = 147 feet
45° bends = 7 loss for bend 21 feet per table 4.3
90° Tee = 0 loss for tee 0 feet per table 4.3

Friction loss per table 4.4 = 0.95 (ft/100 ft)

Equivalent Length = 168 Friction loss 1.60 feet

Total Friction Head = 1.60

Design Head = 28.10 feet

Pump Requirements:

Performance = 22.86 gpm
Head of Water = 28.10 feet of head

Pump Selection: Zoeller Pump Company Effluent Series, Model 152
0.4 horse power

Pump Flow Rate = 24.00 gallons/minute per rating curve

Design Pump Chamber

Ground over Tank = 401.30
Top of Tank = 399.10
Invert of Tank = 394.01
6" Riser = 0.50 feet
Pump Height = 1.10 feet

Min. Pump off = 395.61
Selected Pump off = 395.68

Dose = 21.4 cf
Area of Pfl = 73.05 sf

Pump on dist. = 0.29
Pump on Elev. = 395.97

Distance between Pump on and Highwater Alarm = 0.5 feet
Highwater Alarm Elevation = 396.47

Dist. for a dose above alarm = 1.65
Minimum inlet Elev. = 398.12
Tank Inlet = 398.26 okay
Dist. Alarm to Inlet = 1.79 Okay per Health Dept.

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 ▲ FAX: 410-465-6644
BEI@BEI-CIVILENGINEERING.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.

9/12/16

<p>OWNER/BUILDER:</p> <p style="text-align: center;">MB HIGHLAND RESERVE, LLC 1686 EAST GUDE DRIVE ROCKVILLE, MD 20850 301-762-9511</p>	<p>PROJECT:</p> <p style="text-align: center;">REGAN PROPERTY LOT 11</p>
<p>LOCATION: 12325 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND TAX ID NUMBER: 05-597444</p>	
<p>TITLE: BAT NOTES & DETAILS</p>	
<p>HOUSE TYPE: HAWTHORNE-ELEVATION 'A'</p>	
<p>DATE: AUGUST, 2016 SEPTEMBER, 2016</p>	<p>PROJECT NO. 2171</p>
<p>DESIGN: JMC DRAFT: NAF</p>	<p>SCALE: AS NOTED DRAWING 3 OF 3</p>