

**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](http://www.hchealth.org)  
 Facebook: [www.facebook.com/hocohealth](http://www.facebook.com/hocohealth)

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

RECEIPT DATE: 7/10/18 **ONSITE SEWAGE DISPOSAL SYSTEM** P 563953  
 APPROVAL DATE: 7/11/18 **PERMIT: CONSTRUCTION** A \_\_\_\_\_  
 PROPERTY ADDRESS: 12218 Pleasant Springs Court  
 SUBDIVISION: Regan Property LOT: 16 TAX ID: \_\_\_\_\_  
 CONTRACTOR: Fogle's Septic Clean Inc. EMAIL: kim@foglesinc.com  
 CONTRACTOR ADDRESS: 580 Obrecht Road, Sykesville, MD 21784 PHONE: 410-795-5670  
 PROPERTY OWNER: MB Highland Reserve EMAIL: \_\_\_\_\_  
 OWNER ADDRESS: 1686 E. Gude Drive, Rockville, MD 20850 PHONE: 410-301-762-9511

SEPTIC TANK SIZE (GALLONS): 2000 TANK MANUFACTURER: Mayer Bros or equivalent  
 PUMP MODEL: Zoeller GOULDS PUMP SIZE: 1HP (Sewage) PUMP TANK CAPACITY: 2000

DISTRIBUTION SYSTEM:  GRAVITY  WEO311L PRESSURE DOSED BEDROOMS: 5 APPLICATION RATE: NA

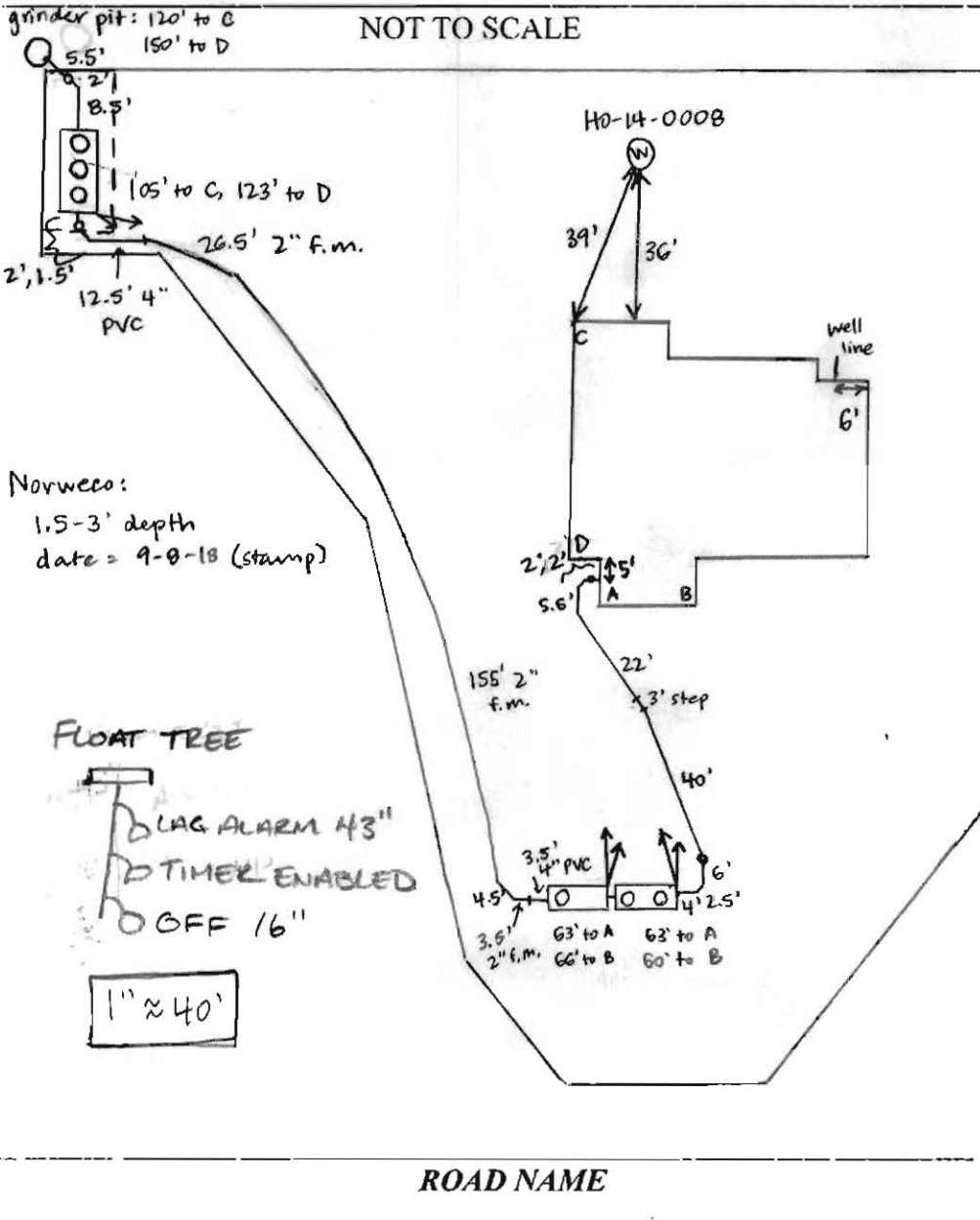
TRENCHES:	LINEAR FEET REQUIRED: <u>NA</u>	INLET DEPTH: <u>NA</u>
	TRENCH WIDTH: <u>NA</u>	MAXIMUM BOTTOM DEPTH: <u>NA</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>NA</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>NA</u>
LOCATION:	<b>PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND TANK LOCATIONS MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.</b>	
NOTES:	Set 2000 gallon septic tank 2 compartment and 2000 gallon pump tank per plan. Zoeller "sewage" pump spec'd out on plan. For BAT installation see approved OSDS plan dated 9/7/18	

ISSUED BY: Kevin Wolf ISSUE DATE: 9/7/18 EXPIRATION DATE: 9/7/19

- 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 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 \_\_\_\_\_
- 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.**



TRENCH/DRAINFIELD DATA		
WIDTH	INLET	BOTTOM
_____	_____	_____
NUMBER OF TRENCHES	_____	_____
TOTAL LENGTH	_____	_____
ABSORPTION AREA	_____	_____
DISTRIBUTION BOX LEVEL	_____	_____
DISTRIBUTION BOX BAFFLE	_____	_____
DISTRIBUTION BOX PORT	_____	_____

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	BABYLON
CAPACITY	2000 GAL
SEAM LOC	TOP
TANK LID DEPTH	1-1.5'
BAFFLES	YES
BAFFLE FILTER	NO
MANHOLE LOC	FRONT + REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	YES
DATE ON LID	8-6-18
PUMP/SEPTIC TANK LEVEL	YES
MANUFACTURER	BABYLON
CAPACITY	2000 GAL
SEAM LOC	TOP
TANK LID DEPTH	1.5-2'
BAFFLES	NO
BAFFLE FILTER	NO
MANHOLE LOC	REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	4-10-18

Pump: WEO3 11M (GOLDS 1/3H)

**PRE-CONSTRUCTION:**

9/10/18 Met Fogle's on site for tank layout. BAT easement not staked. Tanks behind house not staked - pulled 20' off 5' offset stakes for MBR. OK to set tanks behind house - must stake BAT easement - schedule layout inspection. (S) 9/12/18 BAT easement staked. OK to set Norweco - change 2" f.m. to 4" PVC for 10' before tank. (S)

**INSTALLATION:** 9/12/18 House connection made. Septic tank set on site while pump tank was set. Groundwater at bottom of tank hole, Fogle's bedded w/ #57 stone. No obvious cracks on bottom or sides of tank. (S) 9/13/18 2" force main run from pump tank to outside BAT easement. (S) 9/20/18 Norweco tank set, connected to f.m. + grinder pit. 4" PVC installed prior to Norweco to slow down flow before tank. Need pump + alarm test and approval from Bureau of Utilities for grinder pump startup. Also need BAT startup certification. (S) 10/23/2018 ALARM IS ON HOUSE GET SEPTIC PUMP IS ON RIGHT PANEL, CIRCUIT 23. HOUSE GET LEFT PANEL, CIRCUIT 24. C.O. ELECTRICAL OUT OF PUMP TANK. C.O. CONTRACTOR CONFIRM DEMAND DOSE IS OK. SYSTEM DESIGNED FOR TIME DOSE. (S)

**FINAL INSPECTOR:** [Signature] DATE OF APPROVAL 11/01/2018  
 10/29/2018 NO CHANGE (S) 11/01/2018 CORR. ACT. COMPLETED. TIME DOSE SET TO SPEC.  
 ALARM IS NOW OUTSIDE. SEPTIC CTRL PANEL ON RIGHT BREAKER CIRCUIT 26. (S)

## Wolf, Kevin

---

**From:** Bozzell, Duane  
**Sent:** Monday, November 05, 2018 6:44 AM  
**To:** Miscbilling  
**Cc:** Hart, Amy; Rocco, Anthony; Martin, Sharhonda; Williams, Jeffrey; Bozzell, Duane; Bernard, Dana; Wolf, Kevin; Collins, Sarah; jpavlik@CraftmarkHomes.com; msmith@mitchellbest.com; john@foglesinc.com  
**Subject:** U&O Release 12218 Pleasant Springs lot16

On the morning of 10-26-2018 observed the start-up of a Sewage Grinder Pump at the Regan Property Shared Septic System:  
Contract#

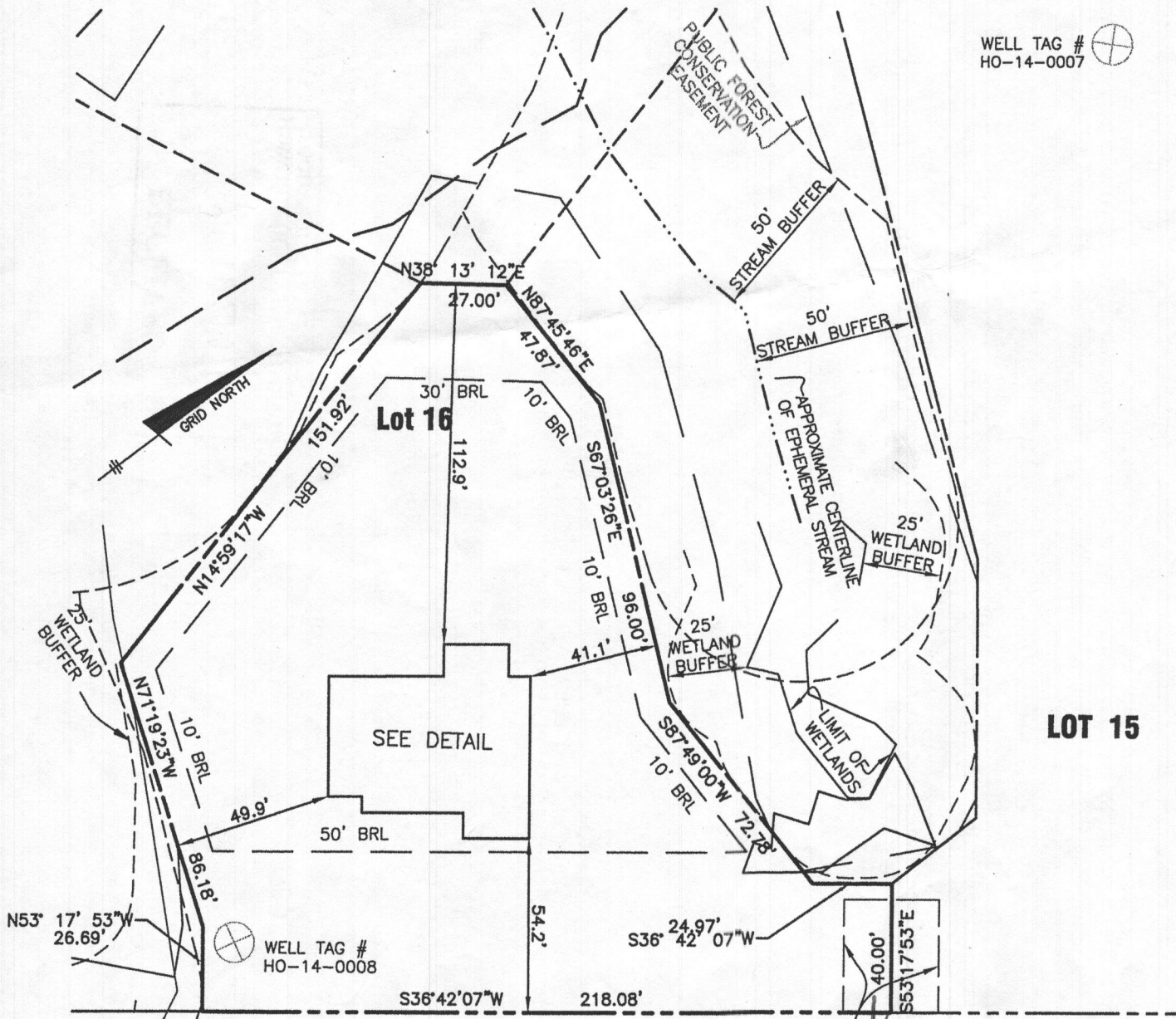
Lot #16  
12218 Pleasant Springs ct.  
HIGHLAND MD. 20777

The Sewage Grinder Pump test was successful; the Bureau of Utilities releases its hold on this property for U&O.

*Thank You.*

*Duane Bozzell*  
*J.N.C.COM*  
*DPW-Bureau of utilities*  
*Phone: (410)313-4900*  
*Fax: (410)313-4989*

WELL TAG #  
HO-14-0007



*Wall Check  
OK  
DB*

TOP OF FOUNDATION WALL = 422.5'  
 OFFSET DIMENSIONS TO PROPERTY LINES ARE ± 0.1'

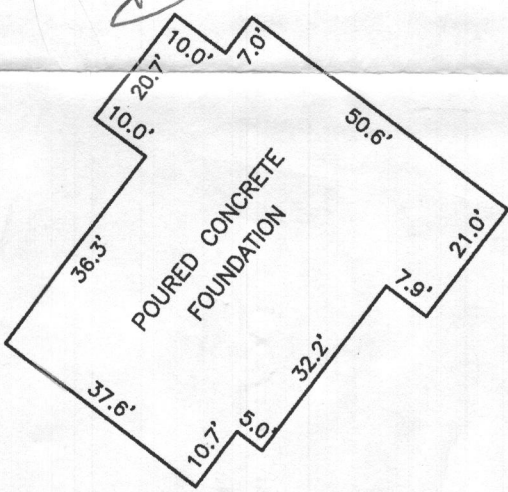
**SURVEYOR'S CERTIFICATE**  
 I HEREBY CERTIFY THAT THESE DOCUMENTS, WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21320, EXPIRATION DATE 1-7-2019 AND TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, 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 05/10/2018.



*Donald A. Mason*  
 DONALD A. MASON  
 PROFESSIONAL LAND SURVEYOR  
 MARYLAND REG. No. 21320  
 14/18

FEMA FIRM No. 24027C0140D  
 ZONE: X  
 DATED: 11/06/2013

**BENCHMARK**  
 ENGINEERS LAND SURVEYORS PLANNERS  
**ENGINEERING, INC.**  
 8480 BALTIMORE NATIONAL PIKE SUITE 315  
 ELLICOTT CITY, MARYLAND 21043  
 (P) 410-485-8105 (F) 410-485-8644



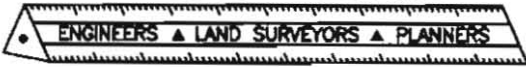
**FOUNDATION DETAIL**  
 SCALE: 1" = 30'

**WALL CHECK**  
**REGAN PROPERTY**  
**LOTS 2 THRU 23**  
**PLAT No. 23065**  
**LOT No. 16**

12218 PLEASANT SPRING COURT

FIELD OBS. BY DH  
 COMP. BY EWF  
 DRAWN BY EWF  
 FIFTH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 SCALE: 1" = 50' DATE: 05/10/2018

# BENCHMARK



## ENGINEERING, INC.

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

### LETTER OF TRANSMITTAL

DATE	9/6/18	PROJECT No.	2171
ATTENTION	Kevin Wolf		
RE:	Regan Property Lot 16		
	12218 Pleasant Springs Ct		

TO: Health Dept

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 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	Revised OSDS Plan

- THESE ARE TRANSMITTED as checked below
- For Comment
  - For your use
  - For Approval
  - For Review
  - As requested
  - Other \_\_\_\_\_

REMARKS: We added a second tank for the septic outfall. The price of this option was acceptable to M&B. Did not reach out to Norweco or Zoeller.

COPY TO: \_\_\_\_\_

RECEIVED BY: [Signature]

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

SIGNED: [Signature]

**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



**PLAN VIEW**

1" = 50'



**BUILDING PERMIT PLAN NOTES:**

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR REGAN PROPERTY, PLAT Nos. 23063-23074. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION DISTRICT UNDER A GRADING PLAN AND MODIFIED FOR THIS SPECIFIC HOUSE.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT JANUARY, 2012.
4. ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
5. ALL DRAINAGE AND STORMWATER MANAGEMENT FEATURES USED ON THIS SITE MUST COMPLY WITH THE APPROVED ROAD CONSTRUCTION PLANS EXCEPT AS WAIVED.
6. THE EXISTING WELL SHOWN ON THIS PLAN, HO-14-0008, HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC., AND IS ACCURATELY SHOWN.
7. THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THIS PROJECT'S BOUNDARY EXCEPT AS NOTED.
8. ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED AND PROVIDED BY ONE MICRO-BIORETENTION FACILITY (MDE M-6), DRY WELL FACILITY (MDE M-5) AND ONE NON-ROOFTOP DISCONNECTION (MDE N-2).
10. MICRO-BIORETENTION SHALL HAVE EITHER A 4" OR 6" ROOF LEADER DEPENDING ON ROOF-TOP AREA.
11. THE HOUSE IS LIMITED TO 5 BEDROOMS.

Approved Septic System Plan  
Howard County Health Department

*[Signature]* 9/7/18  
Signature Date

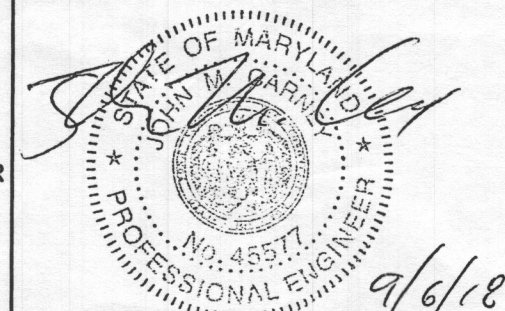
Approved as SBR  
w/ 2009 S.T Pump tank.  
w/ 1 HP Zocher  
"sewer" Pump  
speed

**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS.  
WWW.MAYERPRECAST.COM  
EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:

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: 06-08-2020.



OWNER/BUILDER:

MB HIGHLAND RESERVE, LLC  
1686 EAST GUDE DRIVE  
ROCKVILLE, MD 20850  
301-762-9511

**BENCHMARK**

ENGINEERS LAND SURVEYORS PLANNERS  
**ENGINEERING, INC.**  
8480 BALTIMORE NATIONAL PIKE SUITE 315  
ELLCOTT CITY, MARYLAND 21043  
(P) 410-465-6105 (F) 410-465-6644  
WWW.BEI-CMLENGINEERING.COM

PROJECT: **REGAN PROPERTY LOT 16**

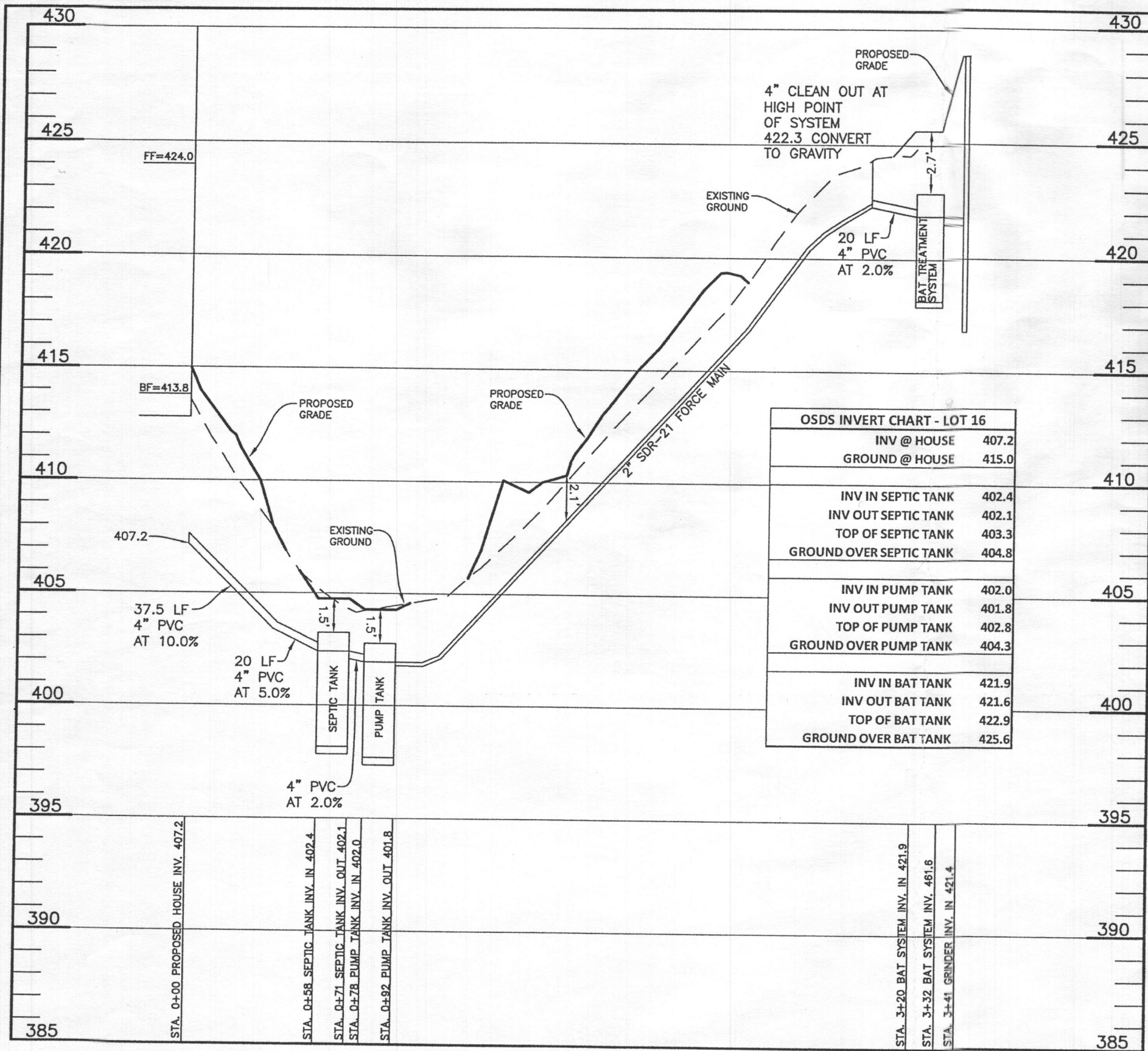
LOCATION: 12218 PLEASANT SPRINGS COURT  
HIGHLAND, MD 20777  
TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200  
5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449

TITLE: **ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN**

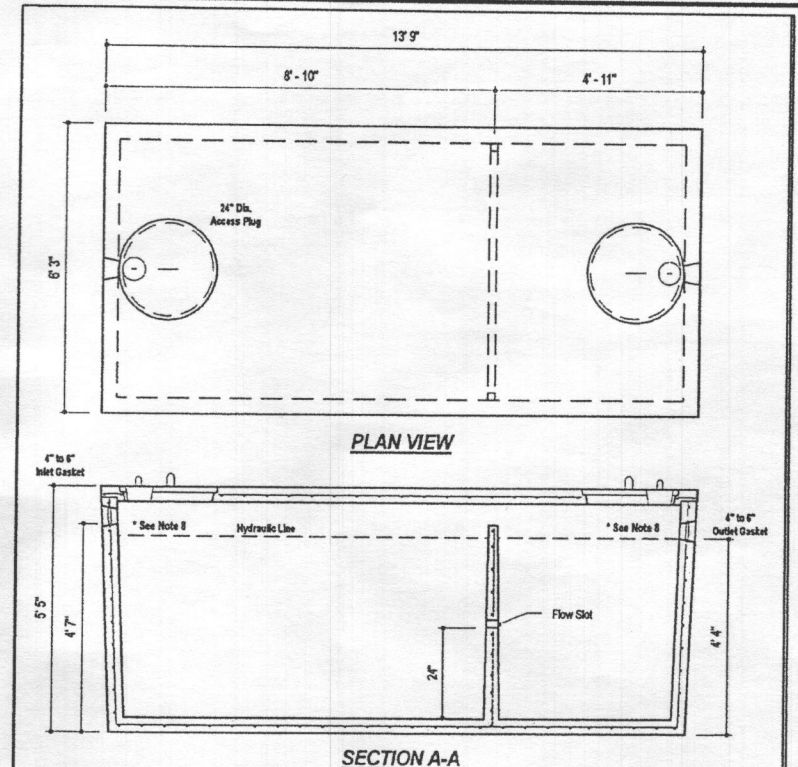
HOUSE TYPE: **BERKELY - ELEVATION B**

DATE: SEPTEMBER, 2018 PROJECT NO. 2171

SCALE: AS SHOWN DRAWING 1 OF 3



OSDS INVERT CHART - LOT 16	
INV @ HOUSE	407.2
GROUND @ HOUSE	415.0
INV IN SEPTIC TANK	402.4
INV OUT SEPTIC TANK	402.1
TOP OF SEPTIC TANK	403.3
GROUND OVER SEPTIC TANK	404.8
INV IN PUMP TANK	402.0
INV OUT PUMP TANK	401.8
TOP OF PUMP TANK	402.8
GROUND OVER PUMP TANK	404.3
INV IN BAT TANK	421.9
INV OUT BAT TANK	421.6
TOP OF BAT TANK	422.9
GROUND OVER BAT TANK	425.6



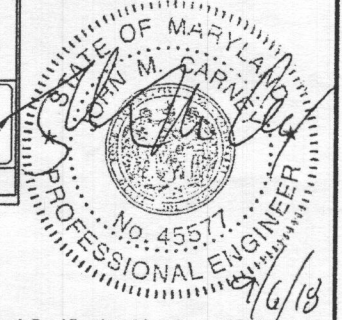
**DESIGN DATA & GENERAL NOTES**

- Concrete strength F<sub>cm</sub> 4,000 p.s.i. @ 28 days. Density = 150 pcf.
- Cement - Portland Type III per ASTM C 150-92.
- Admixtures & plasticizers per ASTM C 260-96 & C 494-92.
- Reinforcing per ASTM A 618, Min. 1/2" cover.
- Top slab sealed with butyl rope sealant.
- 4" wall, 4" base, 6" top thickness.
- Max 2" of cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.

**Mayer Bros., Inc.**  
6264 Race Road  
Elkridge, Maryland 21075  
Tel. 410.796.1434  
Fax. 410.796.1438  
www.mayerbrosprecast.com

**2,000 GALLON SEPTIC TANK**  
**2-Compartment**  
Stock Item (Approx. 19,900 lbs)

Dwg. No. 2000-2C No Scale Aug 11, 2008



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: 06-08-2020.

OWNER/BUILDER:	<b>BENCHMARK ENGINEERING, INC.</b> ENGINEERS LAND SURVEYORS PLANNERS 8480 BALTIMORE NATIONAL PIKE & SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CMLENGINEERING.COM	
PROJECT:	REGAN PROPERTY LOT 16	
LOCATION:	12218 PLEASANT SPRINGS COURT HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449	
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN	
HOUSE TYPE:	BERKELY - ELEVATION B	
DATE:	SEPTEMBER, 2018	PROJECT NO. 2171
SCALE:	AS SHOWN	DRAWING 2 OF 3

**Lot 16 Septic**  
**SCALE: 1"=50' HORIZ., 1"=5' VERT.**

SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK, PUMP, AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:

**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

SEE MANUFACTURES SPECIFICATIONS FOR DETAILS. EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

**Design Data**

Diameter of Force Main and Manifold = 2 of SDR 21 pipe  
 Length of Force Main = 209.4 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 39.5 gallons ID = 2.149  
 length = 100 gallon/sq ft 7.480519  
 Total Volume = 39.5 gallons volume = 18.84222 gal/100 ft

Minimum Dose must be greater than 1/6 of the design flow 125 gallons  
 Minimum Dose must be greater than the volume of the main 39 gallons  
 Use minimum dose of 25 gallons Doses per Day = 30

**Size Pump Chamber**

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

One day Capacity = 750 gallons  
 Dose = 25 gallons  
 Totals = 775 gallons

Use 2,000 gallon pump tank

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

**Sizing the Pump**

Flow: runtime = 1 minutes  
 rate = 25.00 gallons/minute

**Design Head:** Design Head = Static Head + Friction Head  
 Static Head = highest elevation of main - pump off elevation  
 Highest component of system = 422.3 Main HP  
 Pump off elevation = 399.40  
 Static Head = 22.90 feet

Friction Head = Head loss due to pipe friction  
 2.0" pipe = 209.4 feet  
 45° bends 6 loss for bend 24 feet per table 4.3  
 Gate Valve 0 loss for tee 0 feet per table 4.3

Friction loss per table 4.4 = 1.1 (ft/100 ft)  
 Equivalent Length = 233.4 Friction loss 2.57 feet  
 Total Friction Head = 2.57

Design Head = 25.47 feet

**Pump Requirements:**  
 Performance = 25.00 gpm  
 Head of Water = 25.47 feet of head

**Pump Selection:** Zoeller Pump Company Dose-Mate Series, Model 270  
 1.0 horse power

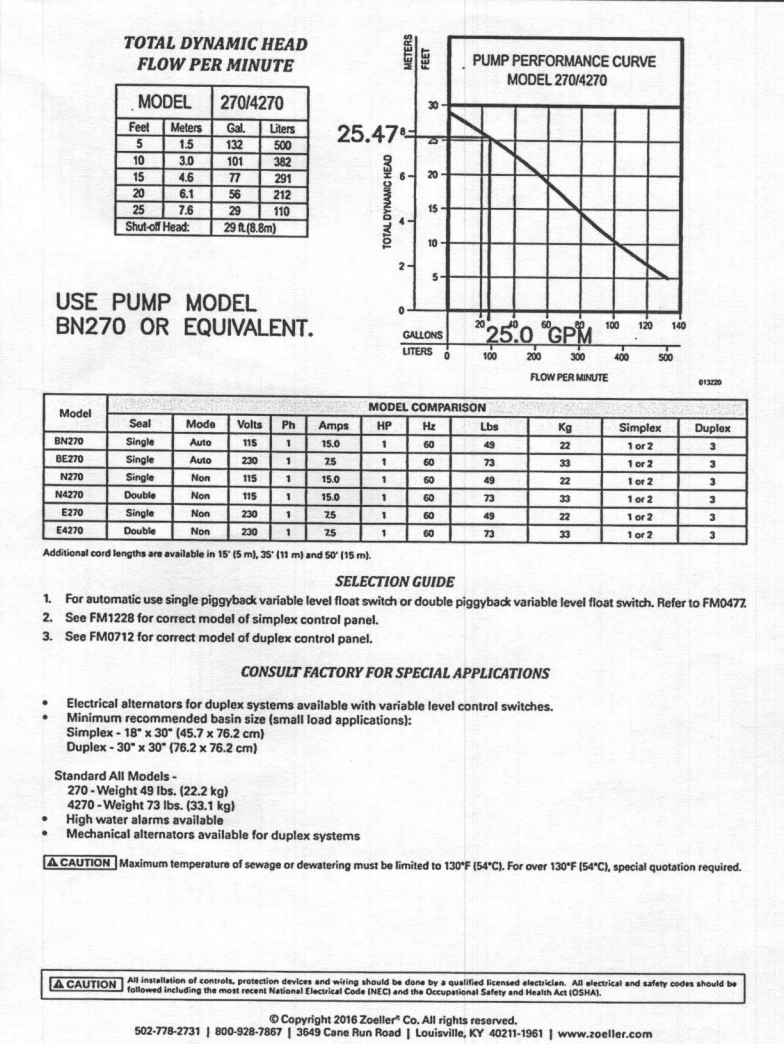
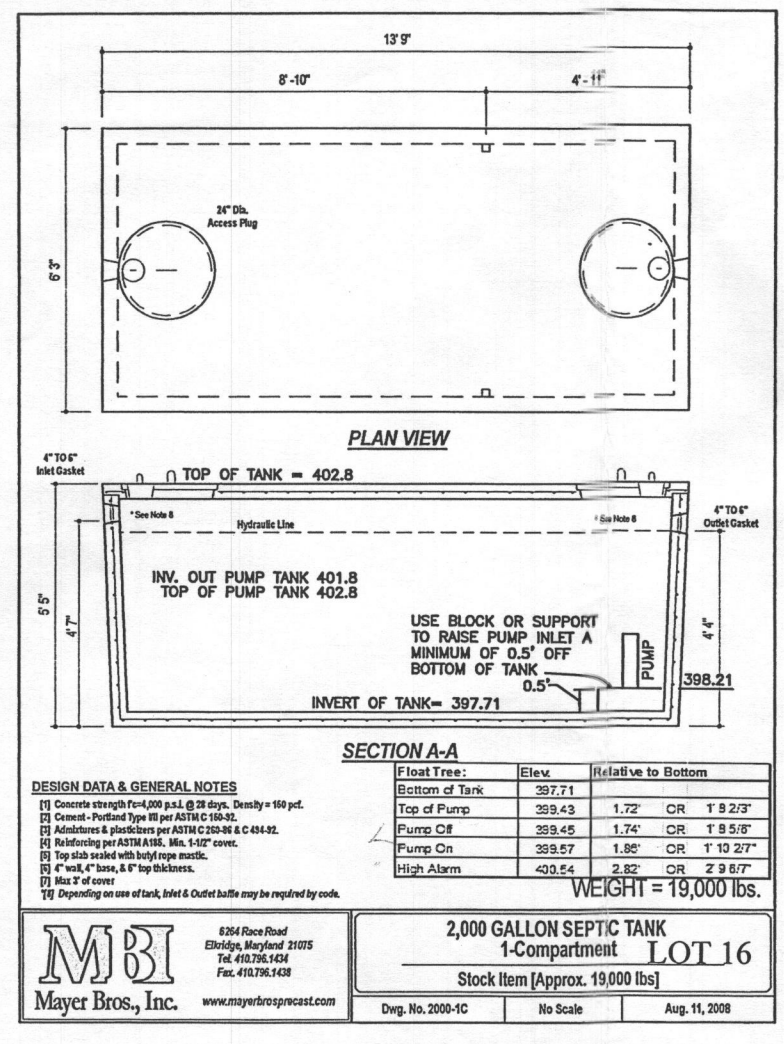
**Pump Flow Rate = 24.40 gallons/minute per rating curve**  
 TDH analysis 25.37 ft  
 Between design and curve? Yes

**Time Dose**

Run time =	2.70 minutes
Pump Flow Rate =	24.40 GPM per curve
Pump Flow Volume =	65.88 Gallons
Force Main Volume =	39.5 Gallons
Net Flow to Treatment per Dose =	26.4 Gallons
Pump on Interval =	0.85 Hours or 50.73 Minutes

**Design Pump Chamber**

Ground over Tank =	404.30	Cover	1.5 ft
Top of Tank =	402.80		
Invert of Tank =	397.71		
6" Riser =	0.50 feet		
Pump Height =	1.22 feet		
Min. Pump off =	399.43		
Selected Pump off =	399.45		
Dose =	8.81 cf		
Area of Pit =	73.05 sf		
Pump on dist. =	0.12		
Elev. Of One Dose =	399.57		
Dist. between one Dose Elev. and Highwater Alarm =	0.96 feet		
Highwater Alarm Elevation =	400.54		
Dist. For One Day Capacity above alarm =	1.37 ft		
Minimum Inlet Elev. =	401.91		
Tank Inlet =	401.96 Okay		
Dist. Alarm to Inlet =	1.42 Okay		



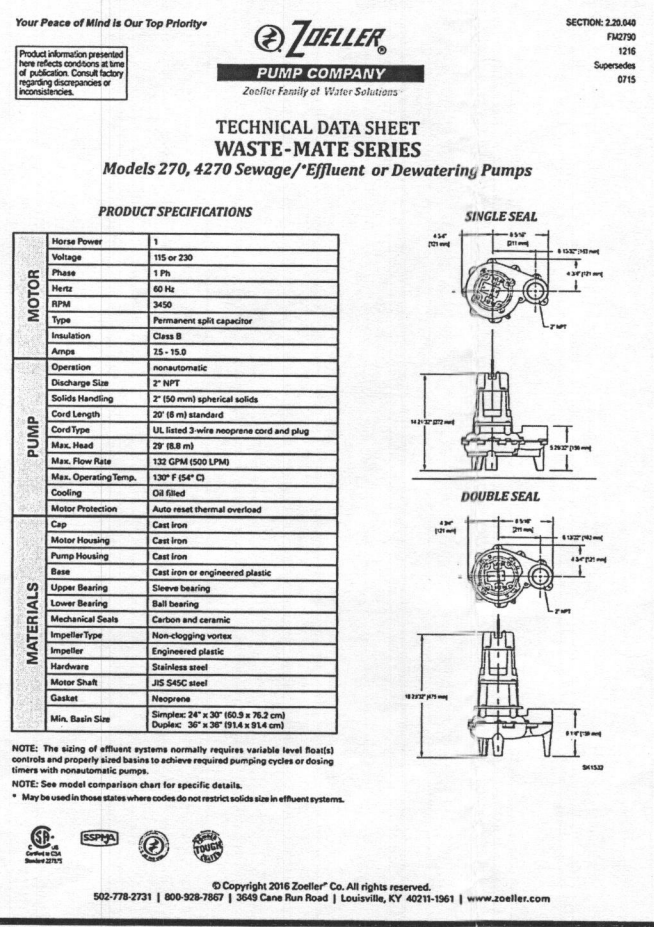
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-08-2020.

*[Signature]*  
 PROFESSIONAL ENGINEER  
 No. 45577  
 9/6/18



**OWNER/BUILDER:**  
 MB HIGHLAND RESERVE, LLC  
 1686 EAST GUDE DRIVE  
 ROCKVILLE, MD 20850  
 301-762-9511

**PROJECT:** REGAN PROPERTY  
 LOT 16

**LOCATION:** 12218 PLEASANT SPRINGS COURT  
 HIGHLAND, MD 20777  
 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200  
 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449

**TITLE:** ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

**HOUSE TYPE:** BERKELY - ELEVATION B

**DATE:** SEPTEMBER, 2018 **PROJECT NO.** 2171

**SCALE:** AS SHOWN **DRAWING** 3 OF 3

*Handwritten notes:* 43" alarm, Drain TIMER ENABLE, Super off

**BENCHMARK ENGINEERS LAND SURVEYORS PLANNERS**

**ENGINEERING, INC.**  
 8480 BALTIMORE NATIONAL PIKE SUITE 315  
 ELLICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CMLENGINEERING.COM



BACK RIVER PRE-CAST, LLC  
 PO BOX 329  
 GLYNDON, MD 21071  
 PH# 410-833-3394

**NORWECO CERTIFICATION**

PROPERTY OWNER: HOWARD CO. DPW	INSTALLATION COMPANY: FOGLE'S SEPTIC
ADDRESS: 12218 PLEASANT SPRINGS CT.	CERTIFIED INSTALLER: JAKE SIZEMORE
CITY, ZIPCODE & COUNTY: HIGHLAND. 20777, HOWARD	PERMIT#
SIZE OF SYSTEM INSTALLED:	DATE INSTALLED: 9-17-18
600 CONCRETE	START-UP DATE: 10-5-18
NUMBER OF BEDROOMS:	DATE OF FINAL INSPECTION:
TYPE OF INSTALLATION: NEW	DATE OF ELECTRICAL INSPECTION:
ELECTRICAL WIRING PER ELECTRICAL INSTRUCTIONS: YES	TANK LEVEL: YES
HT. OF CONTROL PANEL ABOVE FINAL GRADE: 52"	BURIAL DEPTH OF TANK: 18"
SYSTEM WIRED ON A 15-AMP DEDICATED CIRCUIT WITH STD. BREAKER: YES	RISERS 4" - 6" ABOVE GRADE: YES
LENGTH(S) OF UF WIRE PAST LAST AERATION RISER(S): 59"	VENTED LID(S) ON AERATION CHAMBER(S): YES
FEMALE PLUG(S) WIRED TO UF WIRE: YES	ANY GROUND SETTLING AROUND TANK:
CONDUIT(S) ENTERING AERATION RISER MADE WITH A WATERTIGHT CONNECTION: YES	NO
IS THE INSIDE OF THE CONDUIT ENTERING THE CONTROL PANEL(S) AND AERATION RISER(S) SEALED WITH DUCT SEAL: YES	

ON 2<sup>ND</sup> PAGE MAKE A ROUGH SKETCH OF THE HOUSE ,WHERE THE SYSTEM IS LOCATED, WHERE THE CONTROL PANEL IS LOCATED , WHERE THE FRONT OF THE IS AND DIRECTIONS TO THE PROPERTY.

DIRECTIONS CAN START A FEW STREETS AWAY

EXAMPLE: RT. X LEFT ONTO XX STREET RIGHT ONTO PRIVATE DRIVEWAY 5<sup>TH</sup> HOUSE OF THE LEFT.

I certify that the Norweco Singulair TNT Wastewater Treatment System was installed according to the manufacture's specifications.

Matthew Geckle

Oct 5, 2018

Signature of BRP Representative

Vice-President

Date

## Wolf, Kevin

---

**From:** Wolf, Kevin  
**Sent:** Monday, August 27, 2018 11:13 AM  
**To:** 'John Carney'  
**Cc:** 'mlancaster@mitchellbest.com'  
**Subject:** RE: 12218 Point Ridge Drive

John - I have spoken with Zoeller about having the sewage pump in the single compartment serving as the main tank from the house. They said this shouldn't be a problem but I attested this setup and still would push for the standard 2comp septic tank / pump tank design. There is a good possibility of solids including paper products, wipes, etc that may not get thru this pump.

From here, we will need something in writing from both Zoeller and Norweco (not Matt) stating that this design would be acceptable. If you cannot produce this, you will need to resort to a standard 2-comp septic tank with single comp pump tank w/ effluent pump meeting the 750gpd design load.

Mike – in either case here, the homeowners must be aware that there will be some kind of maintenance on the system (i.e. pumping and hauling)

Kevin

---

**From:** John Carney [mailto:jcarney@bei-civilengineering.com]  
**Sent:** Friday, August 24, 2018 2:35 PM  
**To:** Wolf, Kevin  
**Subject:** RE: 12218 Point Ridge Drive

Kevin, I need to get this wrapped up on Monday so please let me know when you speak with Jeff. Thanks, John

**From:** Wolf, Kevin <KWolf@howardcountymd.gov>  
**Sent:** Friday, August 24, 2018 2:33 PM  
**To:** Steven Krieg -MDE- <steven.krieg@maryland.gov>; John Carney <jcarney@bei-civilengineering.com>  
**Cc:** Matt Geckle <124hratm@comcast.net>; mlancaster@mitchellbest.com; Hart, Amy <AHart@howardcountymd.gov>  
**Subject:** Re: 12218 Point Ridge Drive

John,  
We have done this before but in slightly different circumstances. For instance, in this case if we use a 2000g 2-compartment tank, the septic tank (or first compartment) would be the 1500g and the second compartment would only be 500g. This is does not provide adequate storage of 24hrs (750g 5 bedroom design) above the high water alarm. I am not sure this is something we want to approve for this situation for the homeowner. I can dicuss this further with Jeff and get back to you.

Kevin

----- Original message -----

From: Steven Krieg -MDE- <steven.krieg@maryland.gov>  
Date: 8/24/18 2:19 PM (GMT-05:00)

To: John Carney <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)>  
Cc: Matt Geckle <[124hratm@comcast.net](mailto:124hratm@comcast.net)>, "Wolf, Kevin" <[KWolf@howardcountymd.gov](mailto:KWolf@howardcountymd.gov)>, [mlancaster@mitchellbest.com](mailto:mlancaster@mitchellbest.com), "Hart, Amy" <[AHart@howardcountymd.gov](mailto:AHart@howardcountymd.gov)>  
Subject: Re: 12218 Point Ridge Drive

It's up to the Health Dept but I would say yes.

On Fri, Aug 24, 2018, 2:13 PM John Carney <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)> wrote:

Steve, Can we pump from the two compartment tank and not have a separate tank? John

**From:** Steven Krieg -MDE- <[steven.krieg@maryland.gov](mailto:steven.krieg@maryland.gov)>  
**Sent:** Friday, August 24, 2018 8:39 AM  
**To:** MATT GECKLE <[124hratm@comcast.net](mailto:124hratm@comcast.net)>  
**Cc:** Wolf, Kevin <[KWolf@howardcountymd.gov](mailto:KWolf@howardcountymd.gov)>; John Carney <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)>; [mlancaster@mitchellbest.com](mailto:mlancaster@mitchellbest.com); [ahart@howardcountymd.gov](mailto:ahart@howardcountymd.gov)  
**Subject:** Re: 12218 Point Ridge Drive

Matt

A 2 compartmented 2000 or a 2000 single chamber? You and I discussed a 2 compartmented 2000.

"and the homeowner treats their system properly you will get a long lifespan out of the pump. "

How confident are we that this would happen with no regulatory requirement for operation and maintenance for this tank?

I think having a 2 compartment tank present in some fashion would be safer.

On Fri, Aug 24, 2018 at 8:31 AM, MATT GECKLE <[124hratm@comcast.net](mailto:124hratm@comcast.net)> wrote:

Kevin,

This plan would also require the Norweco be time dosed at 25 GPM.

I do not know what the concern is about having a 2000 gal. pump chamber with a sewage pump that can handle 2" solids that is timed dosed. I know what the concern is about pumping raw sewage to a treatment tank is. You need to size the treatment tank to handle demand dose or you need to size the dose and time to the treatment tank. Actually BAT's work the best when time dosed with raw sewage. This is what they do when they do NSF testing. I have a assisted living facility in Carroll Co. that is set up this way and for 2-1/2 years we have not had a problem with the pump. I suspect there is a concern about the lifespan of the pump, but if a good quality pump is used, it is wired correctly, and the homeowner treats their system properly you will get a long lifespan out of the pump. This goes for the set up you proposed, because if any of those 3 conditions are not met the lifespan of the pump will be short.

I, also suspect the other concern about pumping to the treatment tank is, because another county is having problems with a design they approved for 8 homes that is not working well. Those systems are not working well for the following reasons:

- 1) Pump chamber too small only 500 gals.
- 2) Poor quality pump.
- 3) Demand dose
- 4) Electrical installation poor quality
- 5) Homeowners improperly treating their systems.
- 6) Treatment tank undersized to handle demand dose.

Yes everything was done wrong and that is why they are having problems.

MATT GECKLE  
BACK RIVER PRE-CAST,LLC

COURAGE IS BEING SCARED TO DEATH-  
BUT SADDLING UP ANYWAY

On August 23, 2018 at 4:44 PM "Wolf, Kevin" <[KWolf@howardcountymd.gov](mailto:KWolf@howardcountymd.gov)> wrote:

John,

After an extensive review on this, I think it would be best if we revise the plans to reflect a 1500 gallon 2 compartment septic tank into a single compartment 1500gallon pump tank with a standard effluent pump. There will be some nitrogen reduction prior to it pumping up to the BAT but this is ultimately the best sequence to this type of design. As well as meeting regulations.

Note also that the homeowner will need to maintain the septic tank and pump tank (i.e. regular pumping, etc.). Let me know if you have any questions/comments on this.

Kevin

---

**From:** John Carney [mailto:[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)]  
**Sent:** Thursday, August 23, 2018 9:52 AM  
**To:** Wolf, Kevin  
**Subject:** RE: 12218 Point Ridge Drive

Kevin, the revised permit plan was submitted to Health yesterday afternoon. The builder is saying this issue is pushing the settlement date. Could you look at the plan and issue any comments/approvals? Thanks, John

**From:** Wolf, Kevin <[KWolf@howardcountymd.gov](mailto:KWolf@howardcountymd.gov)>  
**Sent:** Tuesday, August 21, 2018 9:26 AM  
**To:** John Carney <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)>; 'MATT GECKLE' <[124hratm@comcast.net](mailto:124hratm@comcast.net)>  
**Subject:** RE: 12218 Point Ridge Drive

John,

This would be fine but we would need to review the spec's for the pump you select that would handle the solids. The current design you show just the single compartment pump tank. You would either need to show a conventional 2 compartment septic tank followed by a single compartment pump tank w/ standard effluent pump or a single compartment pump tank with an acceptable pump capable of handling 2" solids.

---

**From:** John Carney [mailto:[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)]  
**Sent:** Monday, August 20, 2018 3:00 PM  
**To:** 'MATT GECKLE'; Wolf, Kevin  
**Subject:** RE: 12218 Point Ridge Drive

Kevin, would this be acceptable? Our current design is 25 gallons per dose. John

**From:** MATT GECKLE <[124hratm@comcast.net](mailto:124hratm@comcast.net)>  
**Sent:** Monday, August 20, 2018 12:52 PM  
**To:** Wolf, Kevin <[KWolf@howardcountymd.gov](mailto:KWolf@howardcountymd.gov)>; John Carney <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)>  
**Subject:** RE: 12218 Point Ridge Drive

Time dosing will work and not require a septic tank for the suspended solids to settle.

I would use a pump that can handle 2" solids and set the dose to 25 gals an hour.

MATT GECKLE  
BACK RIVER PRE-CAST, LLC

COURAGE IS BEING SCARED TO DEATH-  
BUT SADDLING UP ANYWAY

On August 20, 2018 at 12:26 PM John Carney <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)> wrote:

Kevin, Matt and I had spoken about this before we submitted. He suggested a timed does and that is what we proposed. We kept the volume of the does small so it was more like the volume of a washing machine discharging.

What size solid passing do you recommend? John

**From:** Wolf, Kevin <[KWolf@howardcountymd.gov](mailto:KWolf@howardcountymd.gov)>  
**Sent:** Monday, August 20, 2018 12:06 PM  
**To:** John Carney ([jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)) <[jcarney@bei-civilengineering.com](mailto:jcarney@bei-civilengineering.com)>  
**Cc:** Matt Geckle <[124hratm@comcast.net](mailto:124hratm@comcast.net)>  
**Subject:** 12218 Point Ridge Drive

Hey John,

This lot was brought to my attention when the septic contractor came in to get this permit. The issue here is how the design is set up. You show the sewage line leaving the house going to a single compartment pump tank, and pumping up from there to the BAT unit. This is not how normal septage treatment is performed. We would want the sewage leaving the house going to a septic tank or BAT unit then to a pump

tank moving the sewage to its destination. In this case, we have a grinder pump pumping the waste water to the shared septic fields.

I have confirmed with the BAT rep (Matt Geckle) that we cannot pump up to the BAT. In lieu of this, he recommended adding a 1000g single compartment septic tank in front of the BAT unit (but outside the utility easement) to accept the effluent from the pump tank. This tank will help settle out the solids prior to going in the BAT via gravity. Now the pump tank near the house should utilize a pump capable of handling all domestic waste from the house. You proposed a zoeller effluent pump which can only handle ½" solids which has been shown to "choke up" with solids greater than ½".

Please revise the current OSDS plan to reflect these changes. The septic permit is on hold until we receive the proposed changes. If you have questions or comments, please contact me. I have also cc'd Matt Geckle if you need to reach out as well.

Thanks,

Kevin

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--  
Steven R. Krieg, LEHS, REHS/RS

Regional Consultant for Mid & Western Maryland

On-site Systems Division  
Wastewater Permits Program  
Water and Science Administration  
Maryland Department of the Environment

1800 Washington Boulevard, Suite 455

Baltimore, MD 21230-1708

(410) 537-3680 (Office)

(410) 537-3163 (FAX)

**On-site Systems Division Webpage**

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# BENCHMARK



## ENGINEERING, INC.

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

### LETTER OF TRANSMITTAL

TO: Health

DATE	<u>9/22/18</u>	PROJECT No.	<u>2171</u>
ATTENTION	<u>Kevin Wolf</u>		
RE:	<u>Rogan Property Lot 16</u>		
	<u>12218 Point Ridge Dr</u>		

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
<u>3</u>	<u>3</u>	<u>Revised OSDS Permit Plan</u>

THESE ARE TRANSMITTED as checked below

For Comment  For your use  For Approval  
 For Review  As requested  Other \_\_\_\_\_

REMARKS: Matt Geckle thought the plan  
looked good. Pump passes 2.0" solids.

COPY TO: \_\_\_\_\_  
RECEIVED BY: [Signature]  
If enclosures are not as noted, kindly notify us at once.

SIGNED: [Signature]

**Pumping Station**

Diameter of Force Main and Manifold = 2 of SDR 21 pipe  
 Length of Force Main = 214.4 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 40.4 gallons ID = 2.149  
 Total Volume = 40.4 gallons length = 100 gallon/sq ft 7.480519  
 volume = 18.84222 gal/100 ft

Minimum Dose must be greater than 1/6 of the design flow 125 gallons  
 Minimum Dose must be greater than the volume of the main 40 gallons  
 Use minimum dose of 25 gallons Doses per Day = 30

**Size Pump Chamber**

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

One day Capacity = 750 gallons  
 Dose = 25 gallons  
 Totals = 775 gallons

Use 2,000 gallon pump tank

Tank Dimensions: Exterior Interior Walls: Bottom: Top: Bottom to Inlet:

Length:	13.75 feet	13.08 feet	0.33 feet
Width:	6.25 feet	5.58 feet	0.33 feet
Height:	5.42 feet	4.67 feet	0.42 feet
Area:		73.05 sf	
Volume:		341.14 cf	4.58 feet

**Sizing the Pump**

Flow: runtime = 1.5 minutes  
 rate = 16.67 gallons/minute

**Design Head:**

Design Head = Static Head + Friction Head  
 Static Head = highest elevation of main - pump off elevation

Highest component of system =	422.3 Main HP
Pump off elevation =	398.91
Static Head =	23.39 feet

Friction Head = Head loss due to pipe friction

2.0" pipe =	214.4 feet	
45° bends	6 loss for bend	24 feet per table 4.3
Gate Valve	0 loss for tee	0 feet per table 4.3

Friction loss per table 4.4 = 0.54 (ft/100 ft)

Equivalent Length = 238.4 Friction loss 1.29 feet

Total Friction Head = 1.29

Design Head = 24.68 feet

**Pump Requirements:**

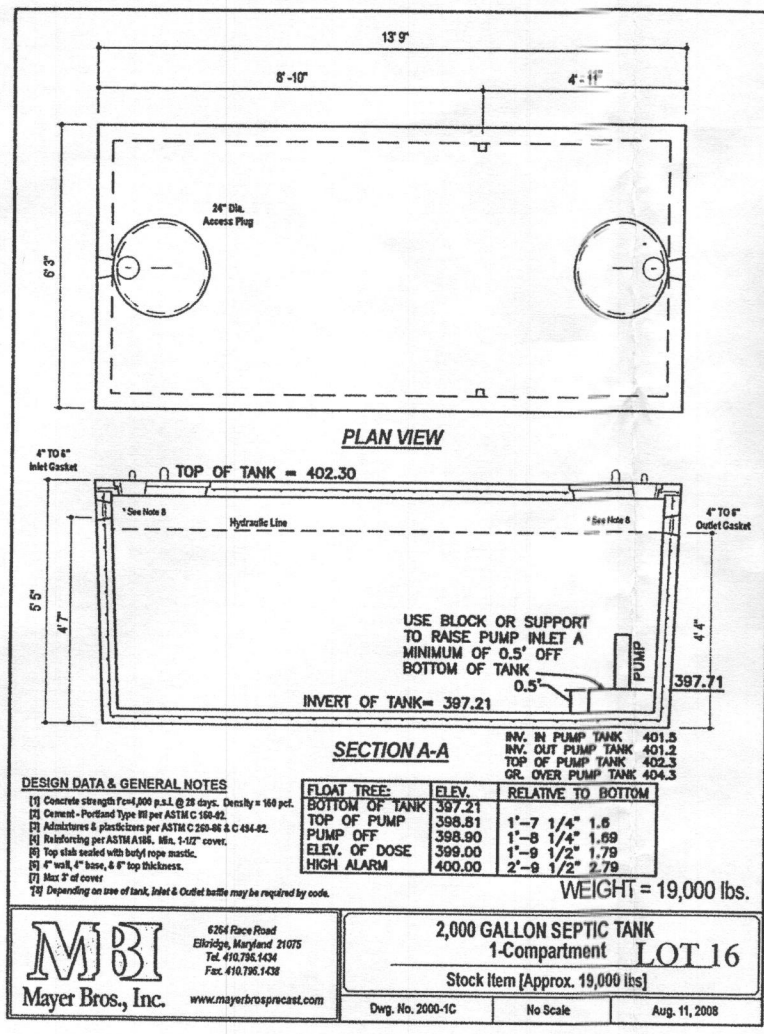
Performance = 16.67 gpm  
 Head of Water = 24.68 feet of head

**Pump Selection:** Zoeller Pump Company Dose-Mate Series, Model 152  
 0.4 horse power

Pump Flow Rate = 30.00 gallons/minute per rating curve  
 TDH analysis 27.06 ft  
 Between design and curve? Yes

**Time Dose**

Run time =	2.20 minutes
Pump Flow Rate =	30.00 GPM per curve
Pump Flow Volume =	66 Gallons
Force Main Volume =	40.4 Gallons
Net Flow to Treatment per Dose =	25.6 Gallons
Pump on Interval =	0.82 Hours or 49.16 Minutes



Trusted. Tested. Tough.™

**ZOELLER PUMP COMPANY**

SECTION: 2.15.080  
 FM2784  
 1017  
 Supersedes  
 0315

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

**PRODUCT SPECIFICATIONS**

Category	Model 151
MOTOR	Horse Power: 1/3 (151), 4/10 (152), 1/2 (153)
	Voltage: 115 or 230
	Phase: 1 Ph
	Hertz: 60 Hz
	RPM: 3450
PUMP	Operation: Automatic or nonautomatic
	Discharge Size: 1-1/2" NPT
	Solids Handling: 1/2" (12 mm), 3/4" (19 mm) spherical solids
	Cord Length: 20' (6 m)
	Cord Type: UL listed power cord
MATERIALS	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
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	

**MODEL 151**

**MODELS 152 & 153**

**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.

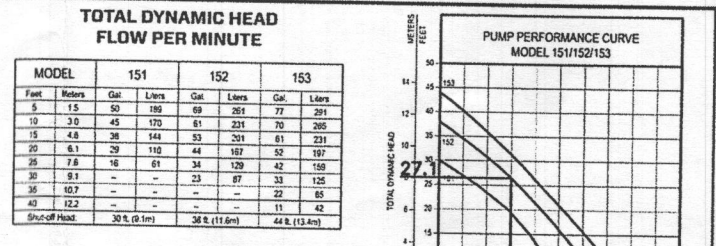
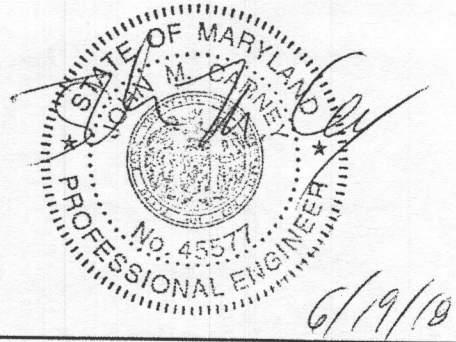
**NOTE:** See model comparison chart for specific details.

**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

**SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.**

**SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK, PUMP AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:**

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: 06-08-2020.



**USE PUMP MODEL BN152 OR EQUIVALENT.**

**MODEL COMPARISON**

Model	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs	Kg	Simplex	Duplex
N151	Single	Non	115	1	6.0	1/3	60	32	15	1	2 or 3
E151	Single	Non	230	1	3.0	1/3	60	32	15	1	2 or 3
BN151	Single	Auto	115	1	6.0	1/3	60	33	15	*	2 or 3
BE151	Single	Auto	230	1	3.0	1/3	60	33	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	4.2	4/10	60	37	17	1	2 or 3
BN152	Single	Auto	115	1	8.5	4/10	60	38	18	*	2 or 3
BE152	Single	Auto	230	1	4.2	4/10	60	38	18	*	2 or 3
N153	Single	Non	115	1	10.5	1/2	60	37	17	1	2 or 3
BN153	Single	Auto	115	1	10.5	1/2	60	37	18	*	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	38	18	*	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 FM0472.
- 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 1 1/2" or 2" (DN40 or DN50) PVC piping
- Attaches securely to pump
- Accommodates sump, dewatering and effluent applications

**NOTE:** Make sure float is free from obstruction.

**OWNER/BUILDER:**

MB HIGHLAND RESERVE, LLC  
 1686 EAST GUDE DRIVE  
 ROCKVILLE, MD 20850  
 301-762-9511

**BENCHMARK ENGINEERING, INC.**  
 ENGINEERS LAND SURVEYORS PLANNERS  
 8480 BALTIMORE NATIONAL PIKE & SUITE 315  
 ELICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CVILENGINEERING.COM

**PROJECT:** REGAN PROPERTY  
 LOT 16

**LOCATION:** 12218 POINT RIDGE DRIVE  
 HIGHLAND, MD 20777  
 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200  
 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449

**TITLE:** ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

**HOUSE TYPE:** BERKELY - ELEVATION B

**DATE:** JUNE, 2018 **PROJECT NO.** 2171

**SCALE:** AS SHOWN **DRAWING** 3 **OF** 3

**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



**PLAN VIEW**  
1" = 50'

**BUILDING PERMIT PLAN NOTES:**

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR REGAN PROPERTY, PLAT Nos. 23063-23074. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION DISTRICT UNDER A GRADING PLAN AND MODIFIED FOR THIS SPECIFIC HOUSE.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT JANUARY, 2012.
4. ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
5. ALL DRAINAGE AND STORMWATER MANAGEMENT FEATURES USED ON THIS SITE MUST COMPLY WITH THE APPROVED ROAD CONSTRUCTION PLANS EXCEPT AS WAIVED.
6. THE EXISTING WELL SHOWN ON THIS PLAN, HO-14-0008, HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC., AND IS ACCURATELY SHOWN.
7. THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THIS PROJECT'S BOUNDARY EXCEPT AS NOTED.
8. ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED AND PROVIDED BY ONE MICRO-BIORETENTION FACILITY (MDE M-6), DRY WELL FACILITY (MDE M-5) AND ONE NON-ROOFTOP DISCONNECTION (MDE N-2).
10. MICRO-BIORETENTION SHALL HAVE EITHER A 4" OR 6" ROOF LEADER DEPENDING ON ROOF-TOP AREA.
11. THE HOUSE IS LIMITED TO 5 BEDROOMS.



**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. WWW.MAYERPRECAST.COM EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

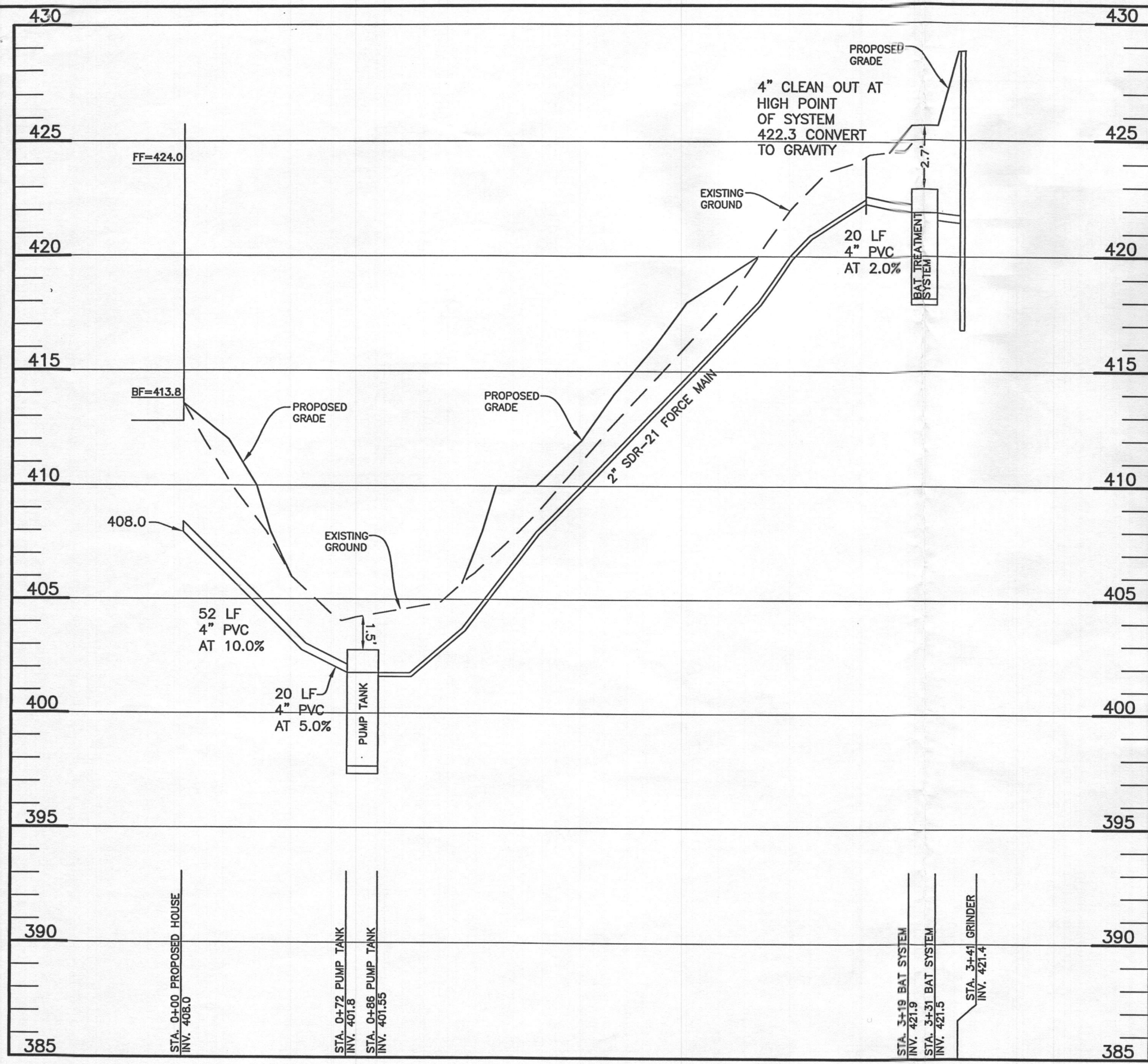
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-08-2020.



*Call Alamos on the design if ok. call zoller.*

OWNER/BUILDER:		BENCHMARK ENGINEERS LAND SURVEYORS PLANNERS	
MB HIGHLAND RESERVE, LLC 1686 EAST GUDE DRIVE ROCKVILLE, MD 20850 301-762-9511		ENGINEERING INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CMILENGINEERING.COM	
PROJECT:	REGAN PROPERTY LOT 16		
LOCATION:	12218 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449		
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN		
HOUSE TYPE:	BERKELY - ELEVATION B		
DATE:	AUGUST, 2018	PROJECT NO.	2171
SCALE:	AS SHOWN	DRAWING	1 OF 3



**Design Pump Chamber**

Ground over Tank =	404.30	Cover	1.5 ft
Top of Tank =	402.80		
Invert of Tank =	397.71		
6" Riser =	0.50 feet		
Pump Height =	1.10 feet		
Min. Pump off =	399.31		
Selected Pump off =	399.40		
Dose =	8.81 cf		
Area of Pit =	73.05 sf		
Pump on dist. =	0.12		
Elev. Of One Dose =	399.52		
Dist. between one Dose Elev. and Highwater Alarm =	1.00 feet		
Highwater Alarm Elevation =	400.52		
Dist. For One Day Capacity above alarm =	1.37 ft.		
Minimum Inlet Elev. =	401.89		
Tank Inlet =	401.96 Okay		
Dist. Alarm to Inlet =	1.44 Okay		

**OSDS INVERT CHART - LOT 16**

INV @ HOUSE	408.0
GROUND @ HOUSE	413.6
INV IN PUMP TANK	401.8
INV OUT PUMP TANK	401.6
TOP OF PUMP TANK	402.6
GROUND OVER PUMP TANK	404.1
INV IN BAT TANK	401.9
INV OUT BAT TANK	421.5
TOP OF BAT TANK	422.9
GROUND OVER BAT TANK	425.6

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: 06-08-2020.

*John M. Carnely*  
 JOHN M. CARNELY  
 No. 45577  
 PROFESSIONAL ENGINEER  
 8/24/18

OWNER/BUILDER:	<b>BENCHMARK</b> ENGINEERS LAND SURVEYORS PLANNERS <b>ENGINEERING, INC.</b> 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CMLEENGINEERING.COM	
PROJECT:	<b>REGAN PROPERTY</b> <b>LOT 16</b>	
LOCATION:	12218 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449	
TITLE:	<b>ONSITE SEWAGE DISPOSAL</b> <b>SYSTEM DESIGN PLAN</b>	
HOUSE TYPE:	<b>BERKELY - ELEVATION B</b>	
DATE:	AUGUST, 2018	PROJECT NO. 2171
SCALE:	AS SHOWN	DRAWING 2 OF 3

SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK, PUMP, AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:

**Lot 16 Septic**  
**SCALE: 1"=50' HORIZ., 1"=5' VERT.**

SEE MANUFACTURES SPECIFICATIONS FOR DETAILS. EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

**Pumping Station**

Diameter of Force Main and Manifold = 2 of SDR 21 pipe  
 Length of Force Main = 214.4 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 40.4 gallons ID = 2.149  
 Total Volume = 40.4 gallons length = 100 gallon/sq ft 7.480519  
 volume = 18.84222 gal/100 lf

Minimum Dose must be greater than 1/6 of the design flow 125 gallons  
 Minimum Dose must be greater than the volume of the main 40 gallons

Use minimum dose of 25 gallons Doses per Day = 30

**Size Pump Chamber**

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

One day Capacity = 750 gallons  
 Dose = 25 gallons  
 Totals = 775 gallons

Use 2,000 gallon pump tank

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

**Sizing the Pump**

Flow: runtime = 1 minutes  
 rate = 25.00 gallons/minute

**Design Head:** Design Head = Static Head + Friction Head  
 Static Head = highest elevation of main - pump off elevation  
 Highest component of system = 422.3 Main HP  
 Pump off elevation = 399.40  
 Static Head = 22.90 feet

Friction Head = Head loss due to pipe friction  
 2.0" pipe = 214.4 feet  
 45° bends 6 loss for bend 24 feet per table 4.3  
 Gate Valve 0 loss for tee 0 feet per table 4.3

Friction loss per table 4.4 = 1.1 (ft/100 ft)  
 Equivalent Length = 238.4 Friction loss 2.62 feet  
 Total Friction Head = 2.62

Design Head = 25.52 feet

**Pump Requirements:**

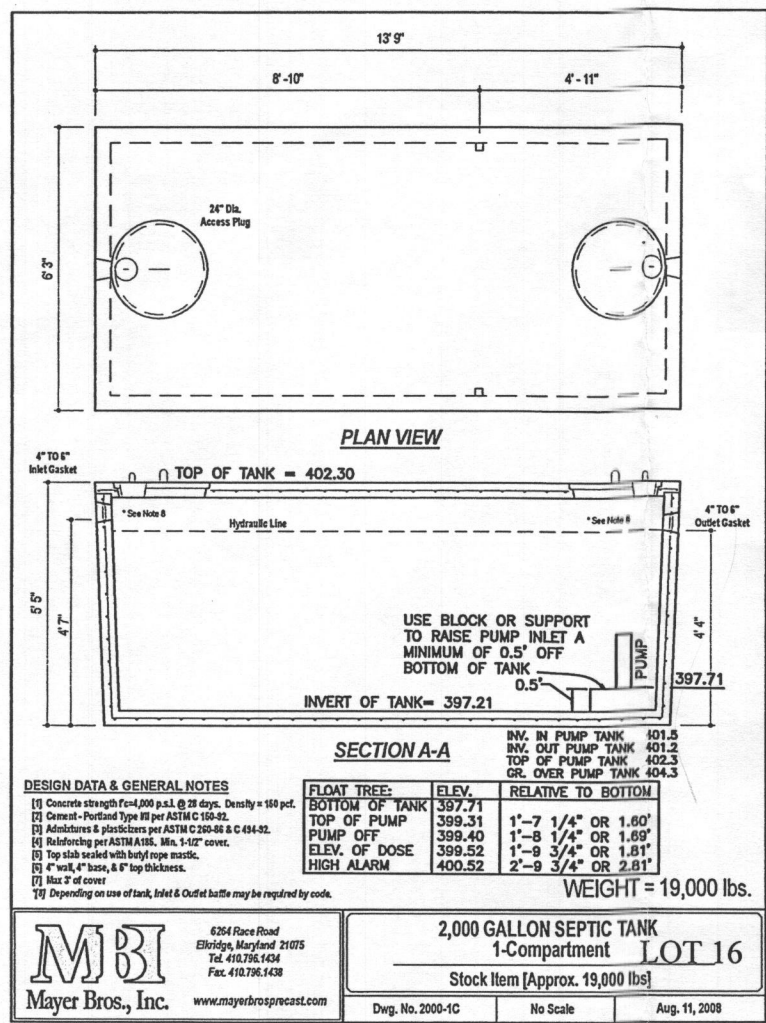
Performance = 25.00 gpm  
 Head of Water = 25.52 feet of head

**Pump Selection:** Zoeller Pump Company Dose-Mate Series, Model 270  
 1.0 horse power

**Pump Flow Rate = 24.40 gallons/minute per rating curve**  
 TDH analysis 25.42 ft  
 Between design and curve? Yes

**Time Dose**

Run time = 2.70 minutes  
 Pump Flow Rate = 24.40 GPM per curve  
 Pump Flow Volume = 65.88 Gallons  
 Force Main Volume = 40.4 Gallons  
 Net Flow to Treatment per Dose = 25.5 Gallons  
 Pump on Interval = 0.82 Hours or 48.93 Minutes



**MBI** Mayer Bros., Inc. 6254 Race Road, Ellicott City, Maryland 21075. Tel: 410.756.1434 Fax: 410.756.1438 www.mayerbrosprecast.com

**2,000 GALLON SEPTIC TANK 1-Compartment LOT 16**  
 Stock Item [Approx. 19,000 lbs]  
 Dwg. No. 2000-1C No Scale Aug. 11, 2008

**ZOELLER PUMP COMPANY** Zoeller Family of Water Solutions

**TECHNICAL DATA SHEET WASTE-MATE SERIES**  
 Models 270, 4270 Sewage/Effluent or Dewatering Pumps

PRODUCT SPECIFICATIONS	
<b>MOTOR</b>	Horse Power: 1
	Voltage: 115 or 230
	Phase: 1 Ph
	Hz: 60 Hz
	RPM: 3450
	Type: Permanent split capacitor
	Insulation: Class B
	Amps: 7.5 - 15.0
	Operation: nonautomatic
	Discharge Size: 2" NPT
	Solids Handling: 2" (50 mm) spherical solids
	Cord Length: 20' (6 m) standard
	Cord Type: UL listed 3-wire neoprene cord and plug
	Max. Head: 29' (8.8 m)
	Max. Flow Rate: 132 GPM (500 LPM)
	Max. Operating Temp.: 130° F (54° C)
	Cooling: Oil filled
	Motor Protection: Auto reset thermal overload
	Cap: Cast iron
	Motor Housing: Cast iron
	Pump Housing: Cast iron
	Base: Cast iron or engineered plastic
	Upper Bearing: Sleeve bearing
	Lower Bearing: Ball bearing
	Mechanical Seals: Carbon and ceramic
	Impeller Type: Non-clogging vortex
	Impeller: Engineered plastic
	Hardware: Stainless steel
	Motor Shaft: JIS S45C steel
	Gasket: Neoprene
	Min. Basin Size: Simplex: 24" x 30" (60.9 x 76.2 cm) Duplex: 30" x 30" (76.2 x 76.2 cm)

NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing times with nonautomatic pumps.  
 NOTE: See model comparison chart for specific details.  
 \* May be used in those states where codes do not restrict solids size in effluent systems.

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**TOTAL DYNAMIC HEAD FLOW PER MINUTE**

MODEL	270/4270		
Feet	Meters	Gal.	Liters
5	1.5	132	500
10	3.0	101	382
15	4.6	77	291
20	6.1	56	212
25	7.6	29	110
Shut-off Head:		29 ft (8.8m)	

USE PUMP MODEL BN270 OR EQUIVALENT.

**PUMP PERFORMANCE CURVE MODEL 270/4270**

25.52' TOTAL DYNAMIC HEAD

24.4 GPM FLOW PER MINUTE

MODEL COMPARISON											
Model	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs	Kg	Simplex	Duplex
BN270	Single	Auto	115	1	15.0	1	60	49	22	1 or 2	3
BE270	Single	Auto	230	1	7.5	1	60	73	33	1 or 2	3
N270	Single	Non	115	1	15.0	1	60	49	22	1 or 2	3
N4270	Double	Non	115	1	15.0	1	60	73	33	1 or 2	3
E270	Single	Non	230	1	7.5	1	60	49	22	1 or 2	3
E4270	Double	Non	230	1	7.5	1	60	73	33	1 or 2	3

Additional cord lengths are available in 15' (5 m), 25' (11 m) and 50' (15 m).

**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.

**CONSULT FACTORY FOR SPECIAL APPLICATIONS**

- Electrical alternators for duplex systems available with variable level control switches.
- Minimum recommended basin size (small load applications):  
 Simplex - 18" x 30" (45.7 x 76.2 cm)  
 Duplex - 30" x 30" (76.2 x 76.2 cm)

Standard All Models -  
 270 - Weight 49 lbs. (22.2 kg)  
 4270 - Weight 73 lbs. (33.1 kg)

- High water alarms available
- Mechanical alternators available for duplex systems

**CAUTION** Maximum temperature of sewage or dewatering must be limited to 130°F (54°C). For over 130°F (54°C), special quotation required.

**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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**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

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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: 06-08-2020.

*[Signature]*  
 8/27/18

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 No. 45577

**OWNER/BUILDER:** MB HIGHLAND RESERVE, LLC  
 1686 EAST GUDE DRIVE  
 ROCKVILLE, MD 20850  
 301-762-9511

**BENCHMARK ENGINEERS LAND SURVEYORS PLANNERS**  
**ENGINEERING, INC.**  
 8480 BALTIMORE NATIONAL PIKE SUITE 315  
 ELLICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CVLENGINEERING.COM

**PROJECT:** REGAN PROPERTY LOT 16

**LOCATION:** 12218 POINT RIDGE DRIVE  
 HIGHLAND, MD 20777  
 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200  
 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449

**TITLE:** ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

**HOUSE TYPE:** BERKELY - ELEVATION B

**DATE:** AUGUST, 2018 **PROJECT NO.** 2171

**SCALE:** AS SHOWN **DRAWING** 3 **OF** 3

**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



**PLAN VIEW**  
1" = 50'

*Call Notes on the Design of ok. call zoller.*

**BUILDING PERMIT PLAN NOTES:**

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR REGAN PROPERTY, PLAT Nos. 23063-23074. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION DISTRICT UNDER A GRADING PLAN AND MODIFIED FOR THIS SPECIFIC HOUSE.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT JANUARY, 2012.
4. ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
5. ALL DRAINAGE AND STORMWATER MANAGEMENT FEATURES USED ON THIS SITE MUST COMPLY WITH THE APPROVED ROAD CONSTRUCTION PLANS EXCEPT AS WAIVED.
6. THE EXISTING WELL SHOWN ON THIS PLAN, HO-14-0008, HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC., AND IS ACCURATELY SHOWN.
7. THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THIS PROJECT'S BOUNDARY EXCEPT AS NOTED.
8. ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED AND PROVIDED BY ONE MICRO-BIORETENTION FACILITY (MDE M-6), DRY WELL FACILITY (MDE M-5) AND ONE NON-ROOFTOP DISCONNECTION (MDE N-2).
10. MICRO-BIORETENTION SHALL HAVE EITHER A 4" OR 6" ROOF LEADER DEPENDING ON ROOF-TOP AREA.
11. THE HOUSE IS LIMITED TO 5 BEDROOMS.

**THIS PLAN IS FOR SEPTIC DESIGN ONLY**

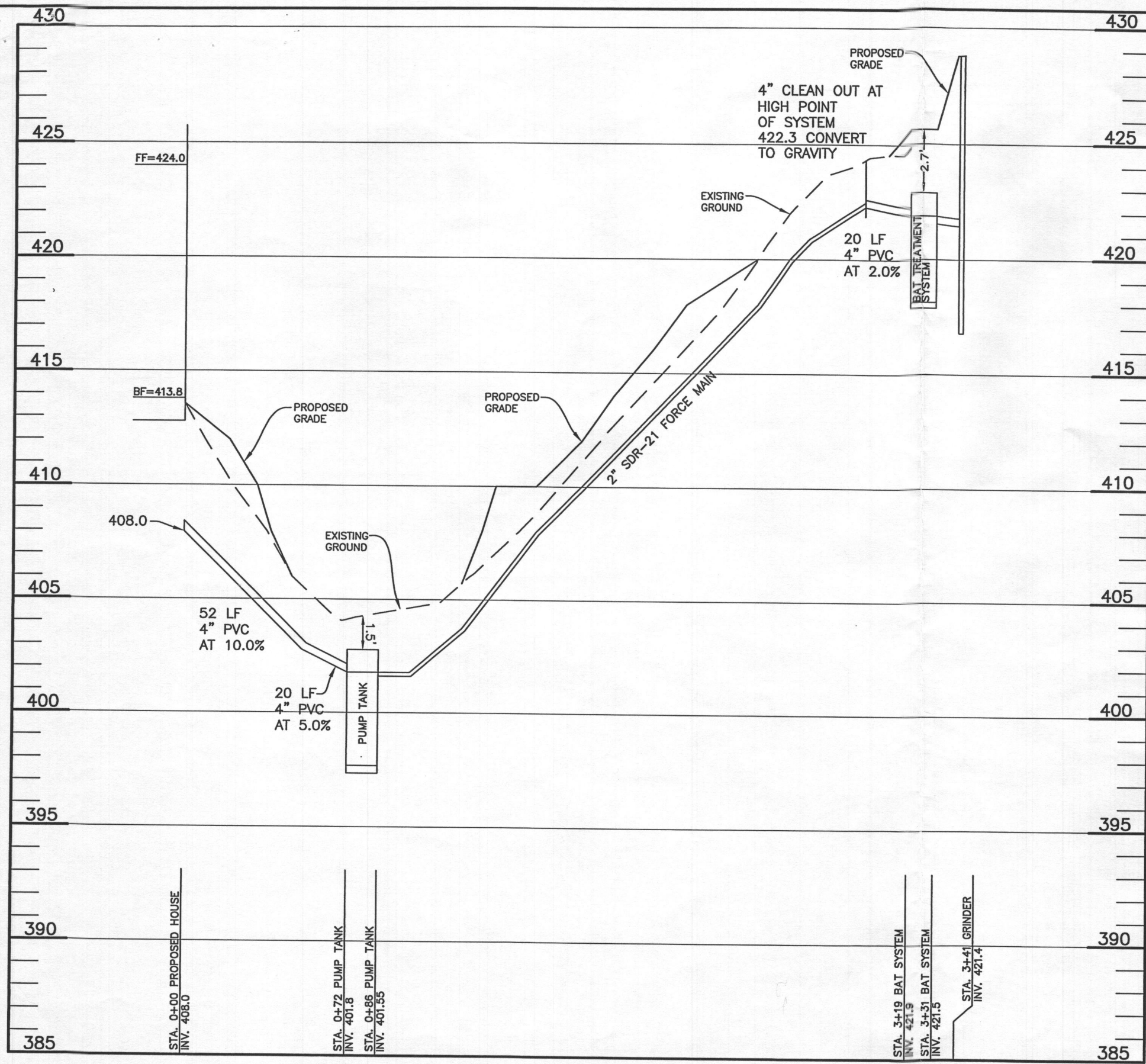
SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. [WWW.MAYERPRECAST.COM](http://WWW.MAYERPRECAST.COM) EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

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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: 06-08-2020.



OWNER/BUILDER:		BENCHMARK	
MB HIGHLAND RESERVE, LLC 1686 EAST GUDE DRIVE ROCKVILLE, MD 20850 301-762-9511		ENGINEERS LAND SURVEYORS PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLCOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM	
PROJECT:		REGAN PROPERTY LOT 16	
LOCATION:		12218 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449	
TITLE:		ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN	
HOUSE TYPE:		BERKELY - ELEVATION B	
DATE:	AUGUST, 2018	PROJECT NO.	2171
SCALE:	AS SHOWN	DRAWING	1 OF 3

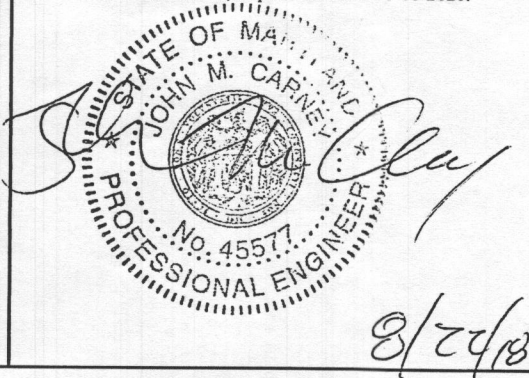


**Design Pump Chamber**

Ground over Tank =	404.30	Cover	1.5 ft
Top of Tank =	402.80		
Invert of Tank =	397.71		
6" Riser =	0.50 feet		
Pump Height =	1.10 feet		
Min. Pump off =	399.31		
Selected Pump off =	399.40		
Dose =	8.81 cf		
Area of Pit =	73.05 sf		
Pump on dist. =	0.12		
Elev. Of One Dose =	399.52		
Dist. between one Dose Elev. and Highwater Alarm =	1.00 feet		
Highwater Alarm Elevation =	400.52		
Dist. For One Day Capacity above alarm =	1.37 ft.		
Minimum Inlet Elev. =	401.89		
Tank Inlet =	401.96 Okay		
Dist. Alarm to Inlet =	1.44 Okay		

OSDS INVERT CHART - LOT 16	
INV @ HOUSE	408.0
GROUND @ HOUSE	413.6
INV IN PUMP TANK	401.8
INV OUT PUMP TANK	401.6
TOP OF PUMP TANK	402.6
GROUND OVER PUMP TANK	404.1
INV IN BAT TANK	401.9
INV OUT BAT TANK	421.5
TOP OF BAT TANK	422.9
GROUND OVER BAT TANK	425.6

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MB HIGHLAND RESERVE, LLC 1686 EAST GUDE DRIVE ROCKVILLE, MD 20850 301-762-9511	ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 ELLCOTT CITY, MARYLAND 21043 (P) 410-465-6105 ▲ (F) 410-465-6644 WWW.BEI-CIVLENGINEERING.COM	
PROJECT:	REGAN PROPERTY LOT 16	
LOCATION:	12218 POINT RIDGE DRIVE HIGHLAND, MD 20777 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449	
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN	
HOUSE TYPE:	BERKELY - ELEVATION B	
DATE:	AUGUST, 2018	PROJECT NO. 2171
SCALE:	AS SHOWN	DRAWING 2 OF 3

**Lot 16 Septic**  
SCALE: 1"=50' HORIZ., 1"=5' VERT.

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**Pumping Station**

Diameter of Force Main and Manifold = 2 of SDR 21 pipe  
 Length of Force Main = 214.4 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 40.4 gallons ID = 2.149  
 Total Volume = 40.4 gallons length = 100 gallon/sq ft 7.480519  
 volume = 18.84222 gal/100 lf

Minimum Dose must be greater than 1/6 of the design flow 125 gallons  
 Minimum Dose must be greater than the volume of the main 40 gallons  
 Use minimum dose of 25 gallons Doses per Day = 30

**Size Pump Chamber**

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

One day Capacity = 750 gallons  
 Dose = 25 gallons  
 Totals = 775 gallons

Use 2,000 gallon pump tank

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

**Sizing the Pump**

Flow: runtime = 1 minutes  
 rate = 25.00 gallons/minute

Design Head: Design Head = Static Head + Friction Head  
 Static Head = highest elevation of main - pump off elevation  
 Highest component of system = 422.3 Main HP  
 Pump off elevation = 399.40  
 Static Head = 22.90 feet

Friction Head = Head loss due to pipe friction  
 2.0" pipe = 214.4 feet  
 45° bends 6 loss for bend 24 feet per table 4.3  
 Gate Valve 0 loss for tee 0 feet per table 4.3

Friction loss per table 4.4 = 1.1 (R/100 R)  
 Equivalent Length = 238.4 Friction loss 2.62 feet  
 Total Friction Head = 2.62

Design Head = 25.52 feet

**Pump Requirements:**

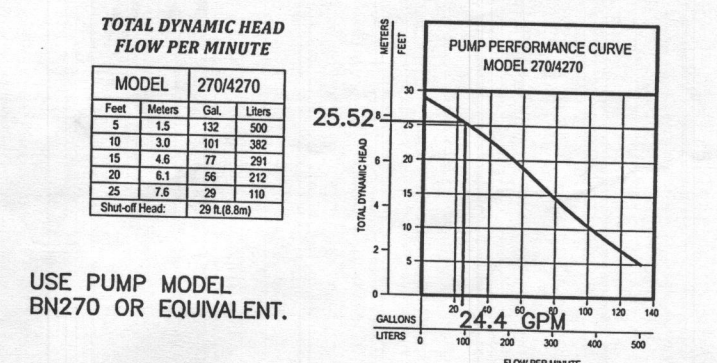
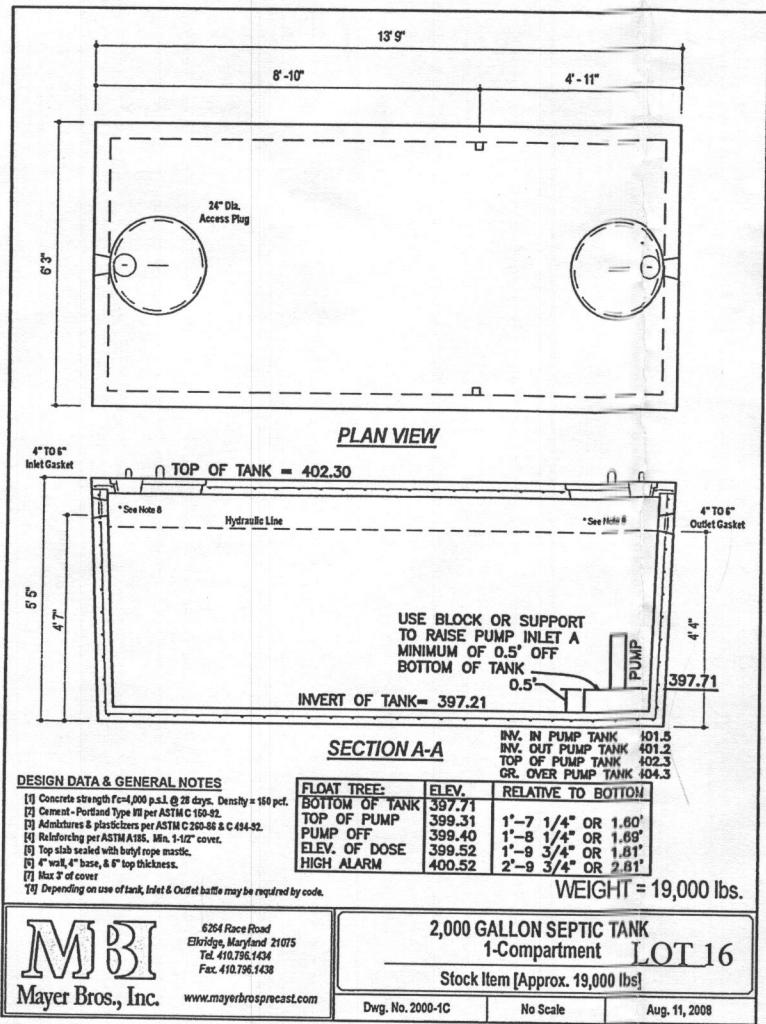
Performance = 25.00 gpm  
 Head of Water = 25.52 feet of head

**Pump Selection:** Zoeller Pump Company Dose-Mate Series, Model 270  
 1.0 horse power

Pump Flow Rate = 24.4 GPM gallons/minute per rating curve  
 TDH analysis 25.42 ft  
 Between design and curve? Yes

**Time Dose**

Run time = 2.70 minutes  
 Pump Flow Rate = 24.40 GPM per curve  
 Pump Flow Volume = 65.88 Gallons  
 Force Main Volume = 40.4 Gallons  
 Net Flow to Treatment per Dose = 25.5 Gallons  
 Pump on Interval = 0.82 Hours or 48.93 Minutes



**MODEL COMPARISON**

Model	Seal	Mode	Volts	Ph	Amps	HP	Hr	Lbs	Kg	Simplex	Duplex
BN270	Single	Auto	115	1	15.0	1	60	49	22	1 or 2	3
BE270	Single	Auto	230	1	7.5	1	60	73	33	1 or 2	3
N270	Single	Non	115	1	15.0	1	60	49	22	1 or 2	3
NA270	Double	Non	115	1	15.0	1	60	73	33	1 or 2	3
E270	Single	Non	230	1	7.5	1	60	49	22	1 or 2	3
EA270	Double	Non	230	1	7.5	1	60	73	33	1 or 2	3

Additional cord lengths are available in 15' (5 m), 25' (7.6 m) and 50' (15 m).

**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.

**CONSULT FACTORY FOR SPECIAL APPLICATIONS**

- Electrical alternators for duplex systems available with variable level control switches.
- Minimum recommended basin size (small load applications): Simplex - 18" x 30" (45.7 x 76.2 cm) Duplex - 30" x 30" (76.2 x 76.2 cm)
- Standard All Models - 270 - Weight 49 lbs. (22.2 kg) 4270 - Weight 73 lbs. (33.1 kg)
- High water alarms available
- Mechanical alternators available for duplex systems

**CAUTION** Maximum temperature of sewage or dewatering must be limited to 130°F (54°C). For over 130°F (54°C), special quotation required.

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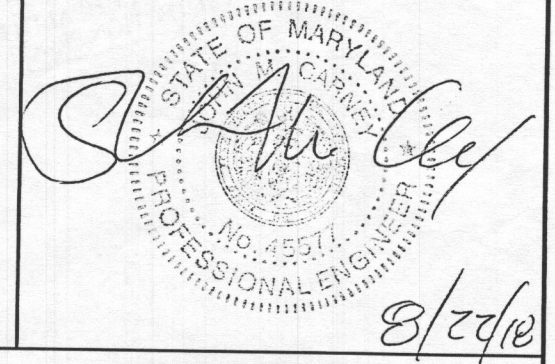
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Your Peace of Mind is Our Top Priority®

**ZOELLER PUMP COMPANY**  
 Zoeller Family of Water Solutions

SECTION: 220.040  
 F102790  
 1216  
 Supersedes  
 0715

**TECHNICAL DATA SHEET WASTE-MATE SERIES**  
 Models 270, 4270 Sewage/Effluent or Dewatering Pumps

**PRODUCT SPECIFICATIONS**

MOTOR	PUMP	MATERIALS
Horse Power: 1	Discharge Size: 2" NPT	Cap: Cast Iron
Voltage: 115 or 230	Solids Handling: 2" (50 mm) spherical solids	Motor Housing: Cast Iron
Phase: 1 Ph	Cord Length: 30' (9 m) standard	Pump Housing: Cast Iron
Hertz: 60 Hz	Cord Type: UL listed 3-wire neoprene cord and plug	Base: Cast Iron or engineered plastic
RPM: 3450	Max. Head: 25' (7.6 m)	Upper Bearing: Sleeve bearing
Type: Permanent split capacitor	Max. Flow Rate: 120 GPM (500 LPM)	Lower Bearing: Ball bearing
Insulation: Class B	Max. Operating Temp.: 130°F (54°C)	Mechanical Seals: Carbon and ceramic
Amps: 7.5 - 15.0	Cooling: Oil filled	Impeller Type: Non-clogging vortex
Operation: nonautomatic	Motor Protection: Auto reset thermal overload	Impeller: Engineered plastic
Discharge Size: 2" NPT	Cap: Cast Iron	Housing: Stainless steel
Solids Handling: 2" (50 mm) spherical solids	Motor Housing: Cast Iron	Motor Shaft: 3/8 S45C steel
Cord Length: 30' (9 m) standard	Base: Cast Iron or engineered plastic	Gasket: Neoprene
Cord Type: UL listed 3-wire neoprene cord and plug	Upper Bearing: Sleeve bearing	Min. Basin Size: Simplex: 24" x 30" (60.8 x 76.2 cm) Duplex: 30" x 30" (76.2 x 76.2 cm)
Max. Head: 25' (7.6 m)	Lower Bearing: Ball bearing	
Max. Flow Rate: 120 GPM (500 LPM)	Mechanical Seals: Carbon and ceramic	
Max. Operating Temp.: 130°F (54°C)	Impeller Type: Non-clogging vortex	
Cooling: Oil filled	Impeller: Engineered plastic	
Motor Protection: Auto reset thermal overload	Housing: Stainless steel	
Cap: Cast Iron	Motor Shaft: 3/8 S45C steel	
Motor Housing: Cast Iron	Gasket: Neoprene	
Pump Housing: Cast Iron	Min. Basin Size: Simplex: 24" x 30" (60.8 x 76.2 cm) Duplex: 30" x 30" (76.2 x 76.2 cm)	
Base: Cast Iron or engineered plastic		
Upper Bearing: Sleeve bearing		
Lower Bearing: Ball bearing		
Mechanical Seals: Carbon and ceramic		
Impeller Type: Non-clogging vortex		
Impeller: Engineered plastic		
Housing: Stainless steel		
Motor Shaft: 3/8 S45C steel		
Gasket: Neoprene		
Min. Basin Size: Simplex: 24" x 30" (60.8 x 76.2 cm) Duplex: 30" x 30" (76.2 x 76.2 cm)		

NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing times with nonautomatic pumps.  
 NOTE: See model comparison chart for specific details.  
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 1686 EAST GUDE DRIVE  
 ROCKVILLE, MD 20850  
 301-762-9511

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 8480 BALTIMORE NATIONAL PIKE SUITE 315  
 ELLICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CIVILENGINEERING.COM

**PROJECT:** REGAN PROPERTY  
 LOT 16

**LOCATION:** 12218 POINT RIDGE DRIVE  
 HIGHLAND, MD 20777  
 TAX MAP No. 34 - BLOCK No. 24 - PARCEL No. 200  
 5TH ELECTION DISTRICT, TAX ID NUMBER: 05 597449

**TITLE:** ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

**HOUSE TYPE:** BERKELY - ELEVATION B

**DATE:** AUGUST, 2018 **PROJECT NO.:** 2171

**SCALE:** AS SHOWN **DRAWING:** 3 OF 3

## Wolf, Kevin

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**From:** Wolf, Kevin  
**Sent:** Monday, August 20, 2018 12:06 PM  
**To:** John Carney (jcarney@bei-civilengineering.com)  
**Cc:** Matt Geckle  
**Subject:** 12218 Point Ridge Drive  
**Attachments:** 20180817102553320.pdf

Hey John,

This lot was brought to my attention when the septic contractor came in to get this permit. The issue here is how the design is set up. You show the sewage line leaving the house going to a single compartment pump tank, and pumping up from there to the BAT unit. This is not how normal septage treatment is performed. We would want the sewage leaving the house going to a septic tank or BAT unit then to a pump tank moving the sewage to its destination. In this case, we have a grinder pump pumping the waste water to the shared septic fields.

I have confirmed with the BAT rep (Matt Geckle) that we cannot pump up to the BAT. In lieu of this, he recommended adding a 1000g single compartment septic tank in front of the BAT unit (but outside the utility easement) to accept the effluent from the pump tank. This tank will help settle out the solids prior to going in the BAT via gravity. Now the pump tank near the house should utilize a pump capable of handling all domestic waste from the house. You proposed a zoeller effluent pump which can only handle ½" solids which has been shown to "choke up" with solids greater than ½".

Please revise the current O5DS plan to reflect these changes. The septic permit is on hold until we receive the proposed changes. If you have questions or comments, please contact me. I have also cc'd Matt Geckle if you need to reach out as well.

Thanks,  
Kevin

### CONFIDENTIALITY NOTICE

This message and the accompanying documents are intended only for the use of the individual or entity to which they are addressed and may contain information that is privileged, confidential, or exempt from disclosure under applicable law. If the reader of this email is not the intended recipient, you are hereby notified that you are strictly prohibited from reading, disseminating, distributing, or copying this communication. If you have received this email in error, please notify the sender immediately and destroy the original transmission.

Lot 16

BOOK: 16520 PAGE: 446



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2923 | Toll Free 1-866-313-8800

www.hchealth.org

Facebook: www.facebook.com/hocohelth

Twitter: HowardCoHealthDep

Agreement	
Recording Fee	20.00
Grantor/Grantee Name:	Howard County
Reference/Control #:	88
LR - Agreement	
Surcharge	40.00
<b>SubTotal:</b>	<b>60.00</b>

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

OPERATION AND MAINTENANCE AGREEMENT  
FOR A SEWAGE DISPOSAL SYSTEM  
HAVING AN ADVANCED PRE-TREATMENT SYSTEM

Total:	396.00
10/30/2015 12:03	
CC13-NW	
#5085927 CC0503 -	
Howard Co	
Columbia/CC05.03.02 -	

THIS AGREEMENT is made this 8<sup>th</sup> day of October 2015 among MB Highland Reserve LLC, hereinafter collectively referred to as "Owner", MB Highland Reserve LLC, hereinafter collectively referred to as "Operator", and the Howard County Health Department hereinafter referred to as the "County".

wp  
to

WHEREAS, Owner is the owner of a parcel of land located at 12218 Pleasant Springs Ct. in the 5<sup>th</sup> Election District of Howard County, Maryland, and the deed to same is recorded or shall be recorded among the Land Records of Howard County, Maryland in Liber 15533 Folio 484.

wp  
see  
ic

WHEREAS, Operator is the owner and operator of a shared sewage disposal system serving lots 12-17 of the Regan Property subdivision and the Operator is responsible for operating and maintaining the system until such time that the subdivision is substantially developed and Howard County Department of Public Works accepts ownership and responsibility for the operation and maintenance of the system as described in the developer's agreement for the subdivision. The shared sewage disposal system drainfield is located on a parcel of land owned by Howard County Department of Public Works located at 12351 Point Ridge Drive, in the 5th Election District of Howard County, Maryland, and the deed to same is recorded or shall be recorded among the Land Records of Howard County, Maryland in Liber 15918 Folio 00156.

WHEREAS, The system is equipped with advanced pre-treatment tanks, 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 tanks are located within a utility easement on the respective individual lots served by the system.

WHEREAS, The pre-treatment device being installed on Lot 16 located at 12218 Pleasant Springs Ct. is Norweco Model #TNTLP-600 GPD

NOW, THEREFORE, the parties hereto agree as follows:

- A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time with prior notice for access to the system to make periodic inspections and the Operator agrees to provide any information and data in Operator's possession reasonably requested and needed by the County.
- B. Owner and Operator acknowledge and agree 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 Operator will devote reasonable care and effort to the operation and maintenance of the system until ownership and operation is transferred to Howard County Department of Public Works as stated in

000088

the developer's agreement for the subdivision so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.

D. The Operator agrees to enter into a contract with a private entity to operate and maintain the system on a regularly scheduled basis according to the requirements set forth in the Code of Maryland Regulations 26.04.02.07. The Operator shall supply a copy of the contract to the County when it is renewed or altered.

E. This agreement shall run with the land and upon Owner's taking title to the Lot 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 Lot that the system shall require maintenance or other attention. Upon taking title to the Lot, 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 contains the entire agreement and understanding between the County, the Owner, and the Operator. 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.

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

I. 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.

Bert Nixon 10/8/2015

Bert Nixon  
Director, Bureau of Environmental Health  
Howard County Health Department  
MB Highland Reserve LLC

MB Highland Reserve LLC

Martin J. Mitchell 10/5/15  
Owner Signature Date

Martin J. Mitchell  
Owner Print Name

Martin J. Mitchell 10/5/15  
Operator Signature Date

Martin J. Mitchell  
Operator Print Name



Baltimore City County: Howard

Information provided is for the use of the Clerk's Office, State Department of Assessments and Taxation, and County Finance Office Only (Type or Print in Black Ink Only - All Copies Must Be Legible)

1	Type(s) of Instruments	<input type="checkbox"/> Deed of Trust	<input type="checkbox"/> Mortgage Lease	<input checked="" type="checkbox"/> Maintenance Agreement	<input checked="" type="checkbox"/> Maintenance Agreement
2	Conveyance Type Check Box	<input type="checkbox"/> Improved Sale	<input type="checkbox"/> Unimproved Sale	<input type="checkbox"/> Mult. Accounts	<input type="checkbox"/> Not an Arms-Length [1]
		Arms-Length [2]	Arms-Length [2]	Arms-Length [3]	Length Sale [9]

3	Tax Exemptions (If Applicable) Cite or Explain Authority	Recordation State Transfer County Transfer
---	--	--

Space Reserved for Circuit Court Clerk Recording Violation

4	Consideration and Tax Calculations	Consideration Amount	Finance Office Use Only
		Purchase Price/Consideration	Transfer and Recordation Tax Consideration
		Any New Mortgage	Transfer Tax Consideration \$
		Balance of Existing Mortgage	X ( ) % = \$
		Other Assessed Value	Less Exemption Amount \$
		Other	Total Transfer Tax = \$
		Recordation Tax Consideration \$	
		X ( ) % = \$	
		TOTAL DUE \$	

5	Fees	Amount of Fees	Doc. 1	Doc. 2	Agent
		Recording Charge	20.00	20.00	
		Surcharge	40.00	40.00	Tax Bill:
		State Recordation Tax			
		State Transfer Tax			C.B. Credit:
		County Transfer Tax (If Applicable)			
		Other -			Ag. Tax/Other:
Other					

6	Description of Property	District	Property Tax ID No. (1)	Grantor Liber/Folio	Map	Parcel No.	Var. LOG 10	
		Subdivision Name	Lot (3a)	Block (3b)	Sec./A/R. (3c)	Plat Ref.	Sq. Ft./Acreage (4)	
		Location/Address of Property Being Conveyed (2)						

SDAT requires submission of all applicable information. A Maximum of 40 characters will be indexed in accordance with the priority cited in Real Property Article Section 3-104(a)(3)(i).

Other Property Identifiers (if applicable)		Water Meter Account No.
<input checked="" type="checkbox"/> Residential or <input type="checkbox"/> Non Residential	Fee Simple <input type="checkbox"/> or Ground Rent Amount:	
Partial Conveyance? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Description/Amt. Of Sq. Ft./Acreage	
If Partial Conveyance, List Improvements Conveyed:		

7	Transferred From	Doc. 1 - Grantor(s) Name(s)	Doc. 2 - Grantor(s) Name(s)
		MB Highland Reserve LLC	MB Highland Reserve LLC
		Doc. 1 - Owner(s) of Records, if Different from Grantor(s)	Doc. 2 - Owner(s) of Record, if Different from Grantor(s)

8	Transferred To	Doc. 1 - Grantee(s) Name(s)	Doc. 2 - Grantee(s) Name(s)
		Howard County Health Department	Howard County Health Department
		New Owner's (Grantee) Mailing Address:	

9	Other Names to be Indexed	Doc. 1 - Additional Names to be Indexed (Optional)	Doc. 2 - Additional Names to be Indexed (Optional)
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10	Contact/Mail Information	Instrument Submitted By or Contact Person Name:	<input checked="" type="checkbox"/> Return to Contact Person
		Firm:	<input type="checkbox"/> Hold for Pickup
		Address:	<input type="checkbox"/> Return Address Provided
		Phone:	

Space Reserved for County Validation	<b>IMPORTANT! BOTH THE ORIGINAL DEED AND A PHOTOCOPY MUST ACCOMPANY EACH TRANSFER</b>			
	Assessment Information	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Will the property being conveyed be the grantee's principal residence?
		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Does transfer include personal property? If yes, identify:
		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Was property surveyed? If yes, attach copy of survey (if recorded, no copy required).
	Assessment Use Only... Do Not Write Below This Line			
	<input type="checkbox"/> Terminal Verification <input type="checkbox"/> Agricultural Verification <input type="checkbox"/> Whole <input type="checkbox"/> Part <input type="checkbox"/> Trans. Process			
	Transfer Number: _____ Date Received: _____ Deed Reference: _____ Assigned Property No: _____			
	Year: 2017 Lot: _____ Geo. Loc. _____ Map: _____ Subd. _____ Block: _____			
	Land: _____ Zoning: _____ Grid: _____ Plat: _____ Lot: _____			
	Buildings: _____ Use: _____ Parcel: _____ Section: _____ Occ. Cd: _____			
Total: _____ Town Cd: _____ Ext. St: _____ Ext. Cd: _____				

REMARKS:

Distribution Clerk's Office SDAT Office of Finance Prepares



**Circuit Court for Howard County**  
**Land Records/License Department**  
**Thomas B. Dorsey Bldg.**  
**9250 Bendix Road**  
**Columbia, MD 21045**  
**410.313.5850**  
[www.mdcourts.gov/clerks/howard/index.html](http://www.mdcourts.gov/clerks/howard/index.html)



**Wayne A. Robey, Clerk**

**STATE OF MARYLAND, HOWARD COUNTY, TO WIT:**

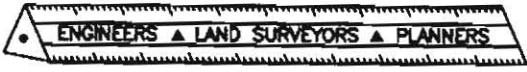
**I HEREBY CERTIFY that the foregoing is a true copy of the original OPERATION AND MAINTENANCE AGREEMENT in Liber WAR 16520 Folio 446 recorded among the Land Records of Howard County, Maryland.**

IN TESTIMONY WHEREOF, I hereto set my hand and affix the seal of the Circuit Court for Howard County this 2nd day of NOVEMBER, 2015.

*Wayne A. Robey*

\_\_\_\_\_  
Clerk of the Circuit Court of Howard County, Maryland

# BENCHMARK



## ENGINEERING, INC.

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

### LETTER OF TRANSMITTAL

DATE	6/19/2018	PROJECT No.	Z171
ATTENTION	Dana Bernard		
RE:	Regan Property Lot 16		
	Onsite Sewage Disposal		
	System Design Plan		

TO: Howard County  
Health Department

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	OSDS Lot 16

THESE ARE TRANSMITTED as checked below

For Comment     For your use     For Approval  
 For Review     As requested     Other \_\_\_\_\_

REMARKS:

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COPY TO: \_\_\_\_\_

RECEIVED BY: [Signature]

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

SIGNED: [Signature]