



**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: 10/2/18 **ONSITE SEWAGE DISPOSAL SYSTEM**

P 564016-A

APPROVAL DATE: 12/18/18 SEC **PERMIT: CONSTRUCTION**

A \_\_\_\_\_

PROPERTY ADDRESS: 13602 Curtis Vista Way

SUBDIVISION: Brighton Mill II LOT: 12 TAX ID: 05-600593

CONTRACTOR: South Carroll Backhoe EMAIL: schackhoe@comcast.com

CONTRACTOR ADDRESS: 4410 Salem Bottom Rd, Westminster, MD 21157 PHONE: 410-596-3618

PROPERTY OWNER: Highland Development Corporation EMAIL: \_\_\_\_\_

OWNER ADDRESS: P.O. Box 228, Clarksville, MD 21029 PHONE: \_\_\_\_\_

SEPTIC TANK SIZE (GALLONS): 2000 TANK MANUFACTURER: Mayer Bros Babylon

PUMP MODEL: Gould's PUMP SIZE: 1/3 hp PUMP TANK CAPACITY: 2000

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

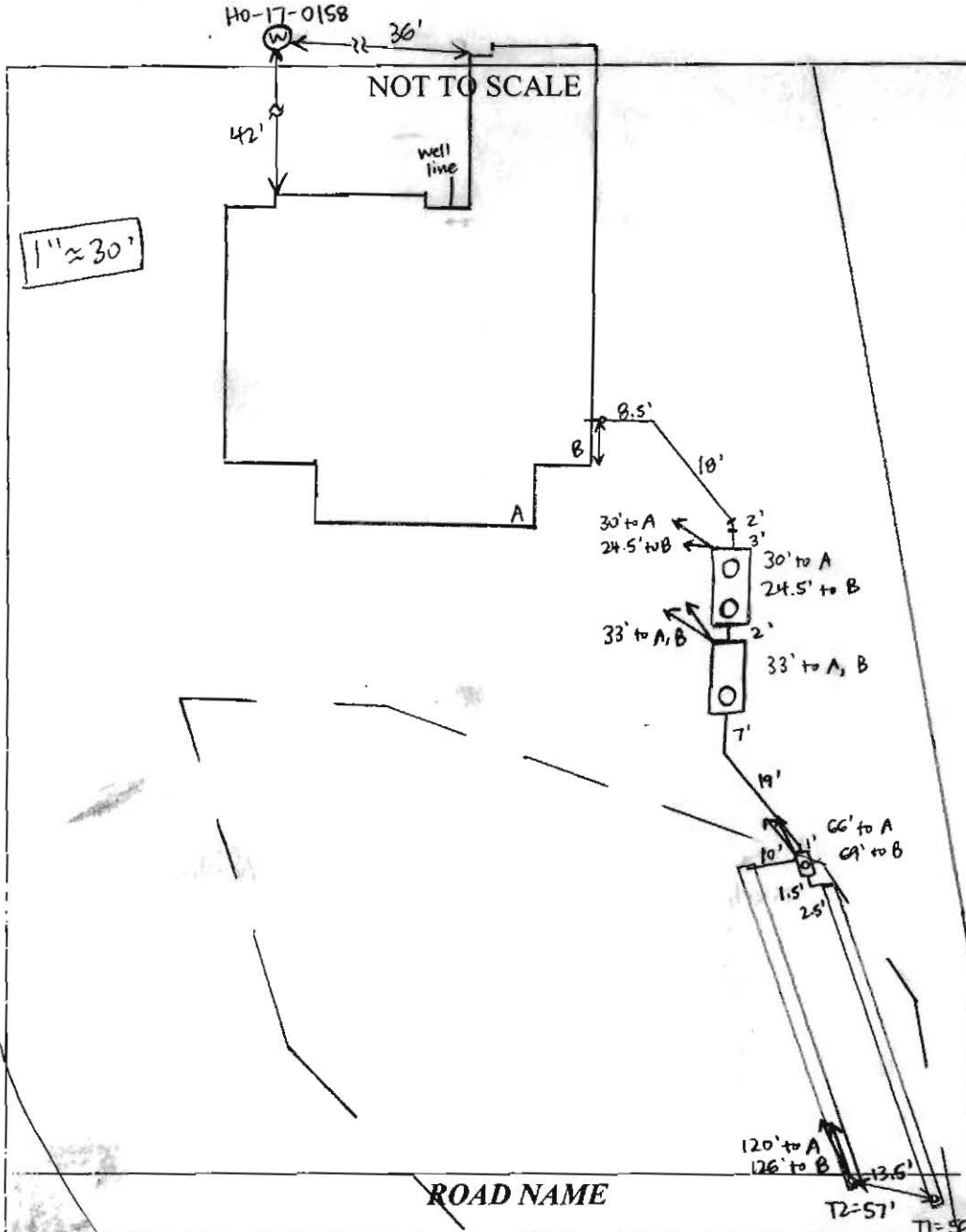
TRENCHES:	LINEAR FEET REQUIRED: <u>114</u>	INLET DEPTH: <u>2.5'</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>6</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>10</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>2.5</u>
LOCATION:	PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND TANK LOCATIONS MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.	
NOTES:		

ISSUED BY: Dana Bernard ISSUE DATE: 10/2/18 EXPIRATION DATE: 10/2/19

- 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 18004363
- 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
3'	2.5'	6'
NUMBER OF TRENCHES		2
TOTAL LENGTH		113'
ABSORPTION AREA		339' + SIDEWALL
DISTRIBUTION BOX LEVEL		YES
DISTRIBUTION BOX BAFFLE		ELBOW
DISTRIBUTION BOX PORT		YES

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	BABYLON
CAPACITY	2000 GAL
SEAM LOC	TOP
TANK LID DEPTH	1.5-2'
BAFFLES	YES
BAFFLE FILTER	NO
MANHOLE LOC	FRONT + REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	YES
DATE ON LID	10-8-18
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	9-21-18
Pump: Gould's WE0311m (1/3 hp)	

PRE-CONSTRUCTION: 10/30/18 Met S. Carroll on site for layout. SDA corners + tanks staked. ~4' fill at start of T1 less at T2 start. Shot contour + laid out 2x57' trenches. Set tanks just off slopes near SDA. (SC)

INSTALLATION: 11/13/18 Trenches complete. T1 left open at ends for inspection + T2 left open 3' wide, 2' to stone. (SC) 11/14/18 Tanks set. Pipe laid between. line from house and to D-box not yet installed. Pump installed in pump tank, need 900 gal above high water alarm float for 1-day storage. S. Carroll adjusted alarm float to meet storage requirement. [Corrective action + completed.] (SC) 11/16/18 Pipe laid from house to tank, house connection not yet made. D-box set + connected to tank and trenches. Need house connection and pump + alarm test. (SC) 12/10/18 House connection made. (SC) 12/18/18 Met S. Carroll on site for pump + alarm test. Alarm sounds, pump pumps effluent to D-box. Need alarm float moved down 2' to get 1-day storage - fixed while on site. [Corrective action + completed.]

FINAL INSPECTOR Sarah Collins DATE OF APPROVAL 12/18/18

**CURTIS VISTA WAY**  
PUBLIC ACCESS PLACE  
50' R/W

EXISTING PRIVATE 50' WIDE  
PIPE LINE EASEMENT  
DEED 266/248  
ATLANTIC SEABOARD COMPANY

L=18.55'  
R=50.00'

N33°33'22"E

171.51'

EXISTING PRIVATE 30' WIDE  
FIBER OPTIC CABLE  
RIGHT-OF-WAY DEED  
4905/465

EX. WELL TAG#HO-17-0158

30' BRL. FROM TRANSMISSION R-O-W

**BROCCOLINO WAY**  
PUBLIC ACCESS STREET  
40' R/W PLAT No. 19461

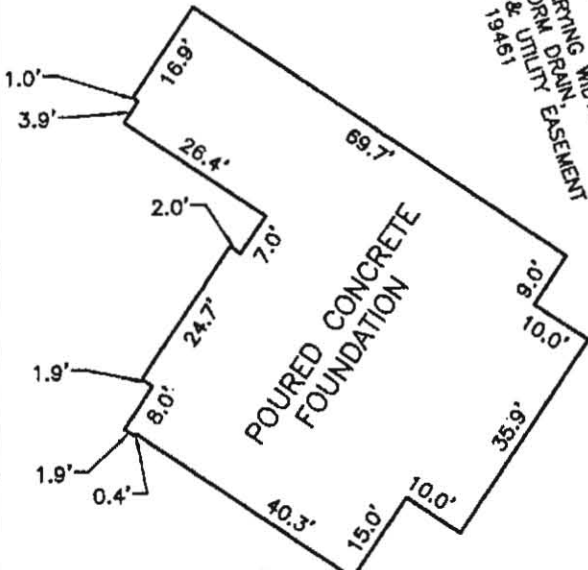
SEE DETAIL

LOT 11

EXISTING VARYING WIDTH  
PUBLIC STORM DRAIN  
& UTILITY EASEMENT  
PLAT No. 19461

VEHICULAR INGRESS AND  
EGRESS IS RESTRICTED

LOT 12



EXISTING 10' PUBLIC TREE  
MAINTENANCE EASEMENT  
LIBER 11029 FOLIO 483

**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 09/17/2018.

TOP OF FOUNDATION WALL = 520.0'  
OFFSET DIMENSIONS TO PROPERTY LINES ARE ± 0.1'

*10/2/18 - wall check  
OK - H.O.*

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

**WALL CHECK**

FEMA FIRM No. 24027C0130D  
ZONE: X  
DATED: 11/6/2013

**BRIGHTON MILL II**  
LOTS 1 THROUGH 12  
PLAT No. 24470  
LOT No. 12

**BENCHMARK**



13602 CURTIS VISTA WAY

**ENGINEERING, INC.**

8480 BALTIMORE NATIONAL PIKE SUITE 315  
ELLCOTT CITY, MARYLAND 21043  
(P) 410-485-8105 (F) 410-485-8844

5TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

WWW.BEI-CVLENGINEERING.COM

FIELD OBS. BY AS  
COMP. BY EWF  
DRAWN BY EWF SCALE: 1" = 50' DATE: 09/17/2018

## Bernard, Dana

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**From:** Bernard, Dana  
**Sent:** Thursday, August 02, 2018 2:18 PM  
**To:** John Carney  
**Subject:** 13602 Curtis Vista Way

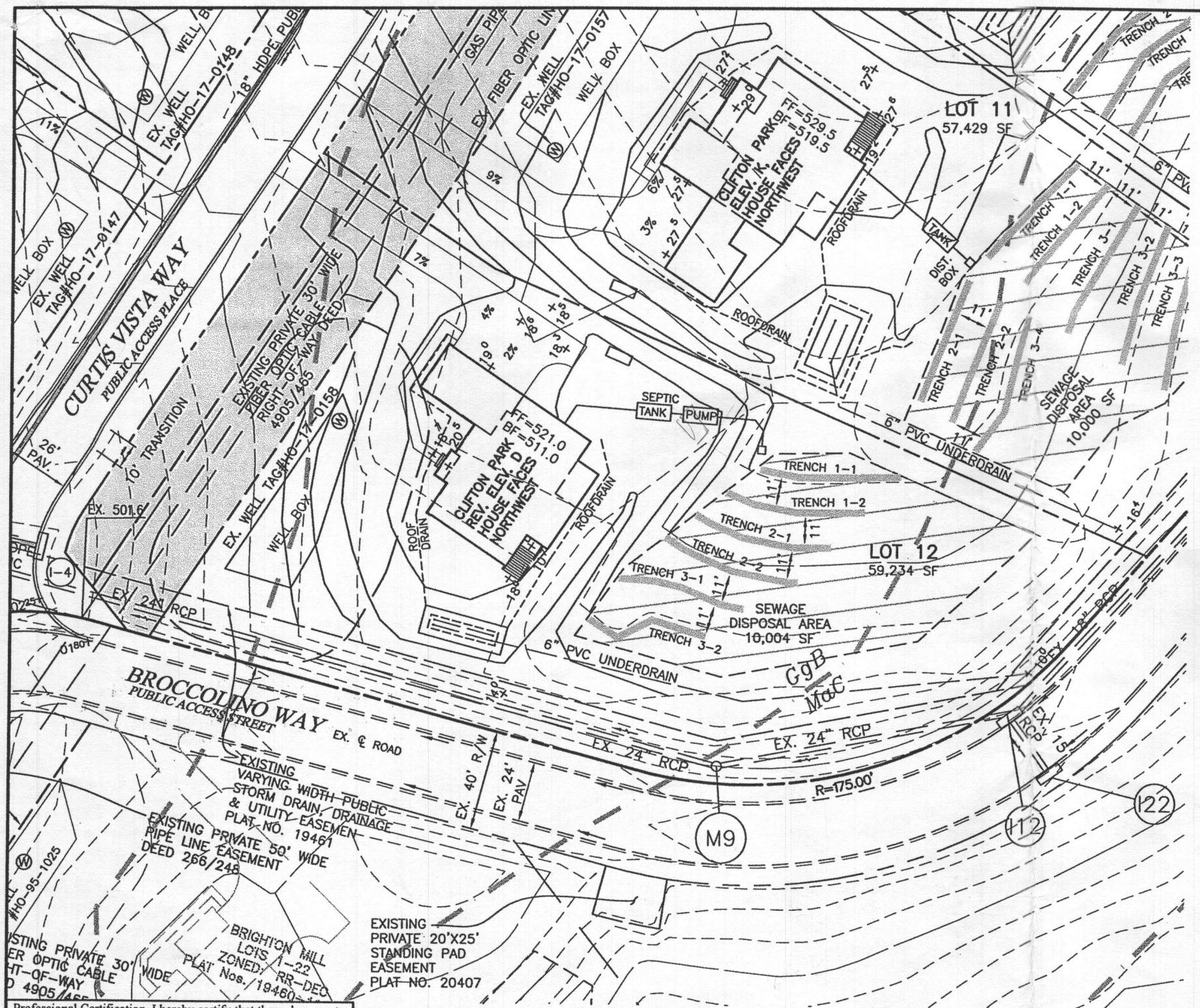
Lot #12 in the Regan Subdivision, 13602 Curtis Vista Way was submitted with calculations on the OSDS plan for a 4 bedroom house. And floor plans submitted were for a six bedroom house. One of two items must occur.

1. Increase the number of bedrooms in the calculations on your OSDS plan or
2. Decrease the number of bedrooms in the house.

If you have any questions don't hesitate to give me a call.

Thank you & Have a\*<sup>smiley</sup>)  
,,.,.,,\*<sup>smiley</sup>),.,,\*<sup>smiley</sup>)  
(.,. (.,. \* Wonderful Day !

Dana Bernard, R.E.H.S/L.E.H.S.  
Environmental Specialist II  
Bureau of Environmental Health  
Well and Septic Program  
Phone (410) 313-2775  
E-mail: [DBernard@howardcountymd.gov](mailto:DBernard@howardcountymd.gov)



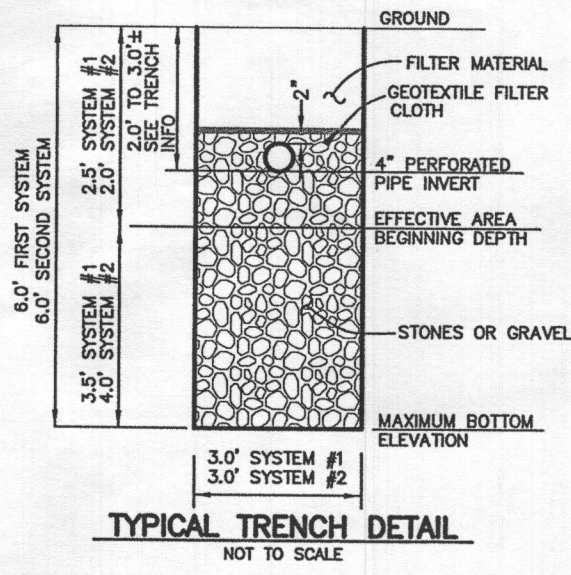
**PLAN VIEW**  
1" = 50'

LEGEND	
SOILS CLASSIFICATION	GgC
SOILS DELINEATION	—
PROPOSED CONTOURS	480 478
EXISTING CONTOURS	480 478
LIMIT OF WETLANDS	—
EXISTING WOODS LINE	—
PROPOSED WOODS LINE	—
EXISTING STRUCTURE	—
EXISTING WELL	⊙
EXISTING WELL BOX	□
EXISTING SEWAGE DISPOSAL AREA	—

**ONSITE SEWAGE DISPOSAL PLAN NOTES:**

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR BRIGHTON MILL II, PLAT Nos. 24469-24474. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY F-17-054, ON OR ABOUT MAY, 2017.
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-17-0158, 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 TWO NON-ROOFTOP DISCONNECTIONS AND ONE MICRO-BIORETENTION FACILITY. MICRO-BIORETENTION SHALL HAVE EITHER A 4" OR 6" ROOF LEADER DEPENDING ON ROOF-TOP AREA.
10. THE SEPTIC TANK WILL HAVE A 2000 GALLON 2 COMPARTMENT TANK.
11. FOR DEVELOPMENT LANDSCAPING SEE ROAD CONSTRUCTION PLAN F-17-054.

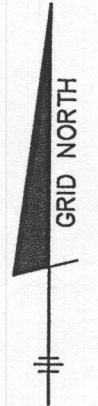
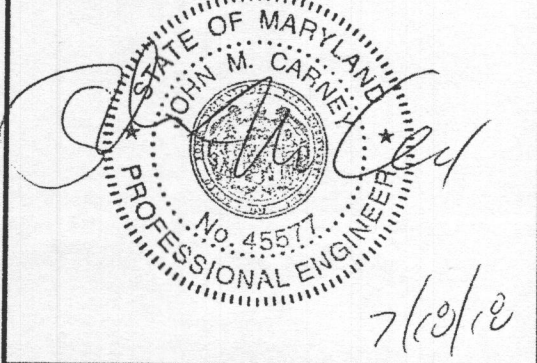
**LOT 12**



**TYPICAL TRENCH DETAIL**  
NOT TO SCALE

Approved Septic System Plan  
Howard County Health Department  
*D. Bernard* 8-23-18  
Signature Date  
B1800 257

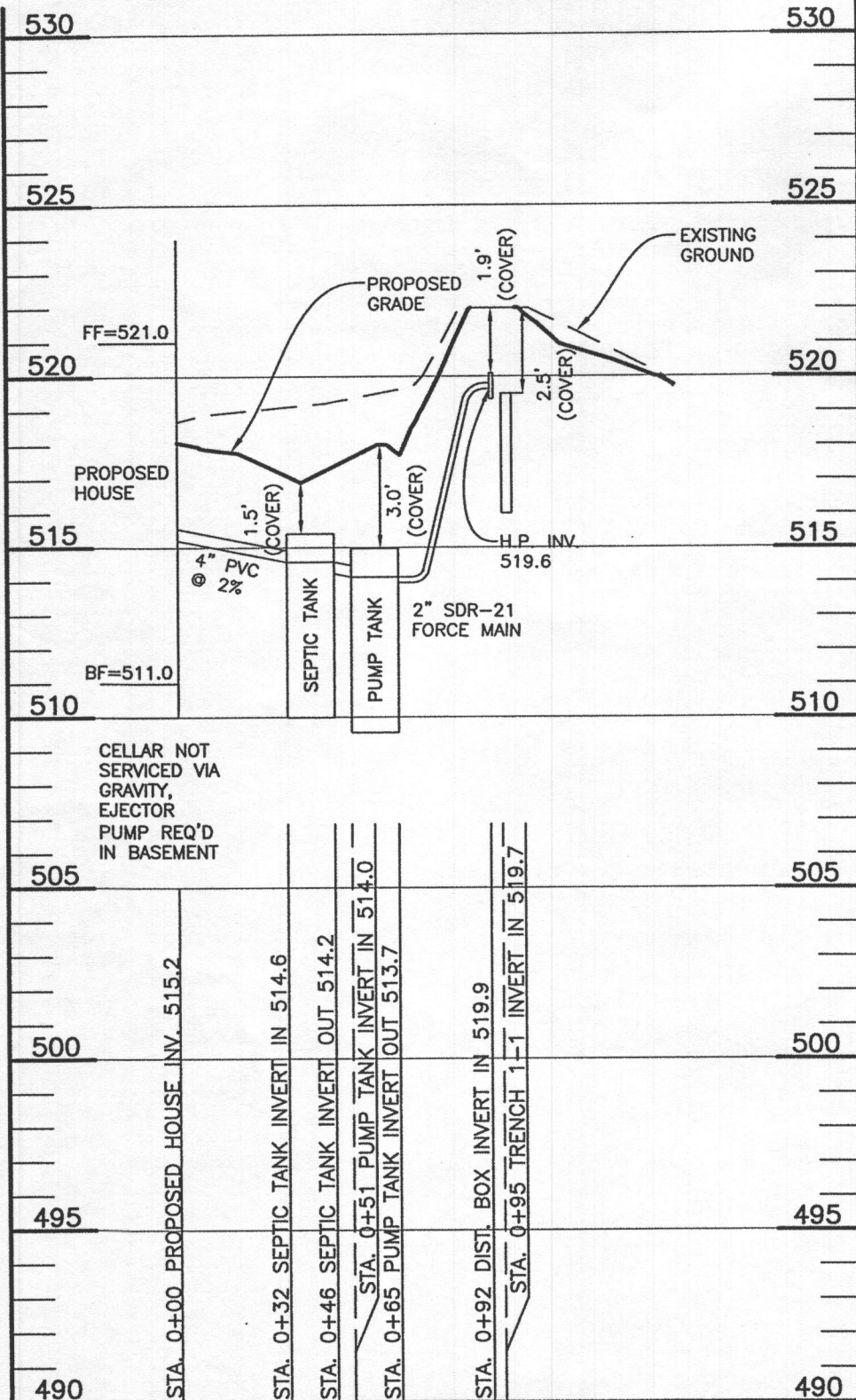
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-08-2020.



<b>BUILDER:</b> NV HOMES, INC. 9720 PATUXENT WOODS DRIVE SUITE 100 COLUMBIA, MD 21046 410-379-5956	<b>OWNER:</b> HIGHLAND DEVELOPMENT CORP P.O. BOX 228 CLARKSVILLE, MARYLAND 21029 410-365-0414	<b>BENCHMARK</b> ENGINEERS LAND SURVEYORS PLANNERS <b>ENGINEERING, INC.</b> 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLCOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM	<b>PROJECT:</b> BRIGHTON MILL II LOT 12
<b>LOCATION:</b> TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13602 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600593			<b>TITLE:</b> ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN
<b>HOUSE TYPE:</b> CLIFTON PARK - ELEVATION D			<b>DATE:</b> JULY, 2018
<b>SCALE:</b> AS SHOWN			<b>PROJECT NO.:</b> 2627
			<b>DRAWING:</b> 1 OF 3

HEALTH DEPARTMENT SPEC SHEET INFORMATION - LOT 12			
System	Application Rate	Effective Depth	Bottom Depth
Initial	1.2	2.5	6.0
1st Replacement	1.2	2.0	6.0
2nd Replacement	1.2	2.0	6.0

Note: A pump to distribution system likely required



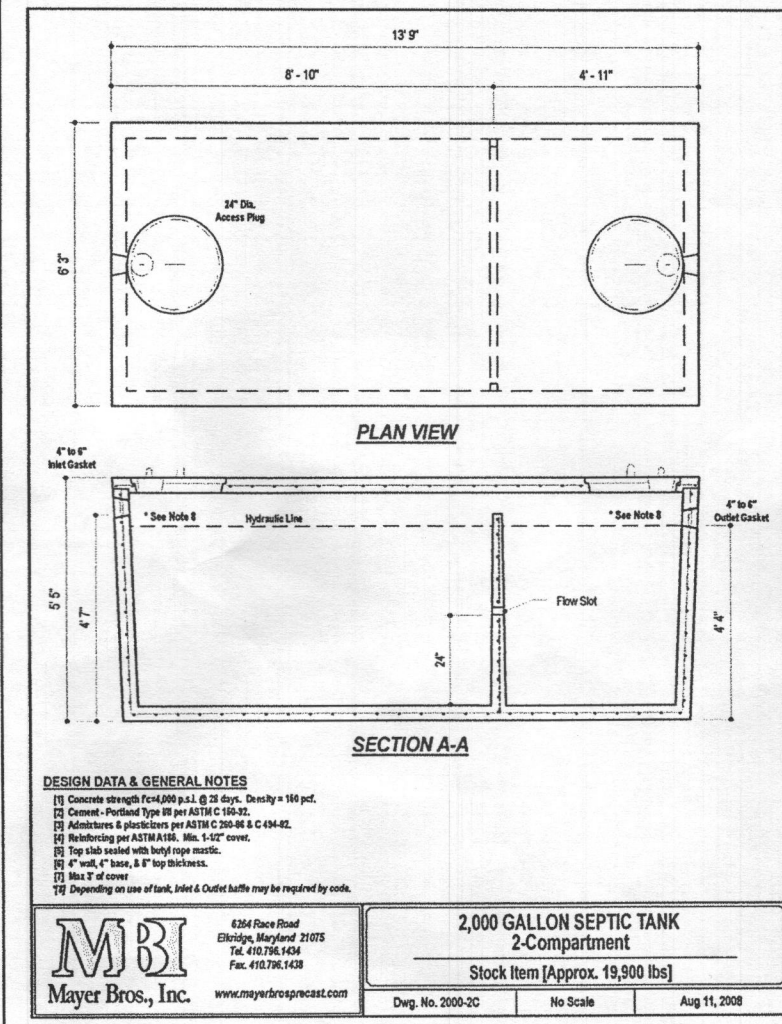
LOT 12 SEPTIC PROFILE  
SCALE: 1"=50' HORIZ., 1"=5' VERT.

INITIAL SYSTEM - Lot 12		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	2.5	ft
Bottom Max Depth	6.0	ft
Design Flow	900	gpd
Drainage Field square footage	750	sf
Sidewall Reduction Credit	0.45	
Trench width	3	ft
Effective Area Depth	3.5	ft
Trench Spacing	10	ft
Linear Length of trench Required	114	lf

1st REPLACEMENT SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	2.0	ft
Bottom Max Depth	6.0	ft
Design Flow	900	gpd
Drainage Field square footage	750	sf
Sidewall Reduction Credit	0.42	
Trench width	3	ft
Effective Area Depth	4	ft
Trench Spacing	11	ft
Linear Length of trench Required	104	lf

2nd REPLACEMENT SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	2.0	ft
Bottom Max Depth	6.0	ft
Design Flow	900	gpd
Drainage Field square footage	750	sf
Sidewall Reduction Credit	0.42	
Trench width	3	ft
Effective Area Depth	4	ft
Trench Spacing	11	ft
Linear Length of trench Required	104	lf

TRENCH DATA - LOT 12					
INITIAL SYSTEM		FIRST REPLACEMENT		SECOND REPLACEMENT	
TRENCH 1-1	LENGTH 56.9 ft	TRENCH 2-1	LENGTH 52.1 ft	TRENCH 3-1	LENGTH 52.1 ft
	GROUND ELEVATION 522.2		GROUND ELEVATION 520.6		GROUND ELEVATION 518.7
	INVERT ELEVATION 519.7		INVERT ELEVATION 518.6		INVERT ELEVATION 516.7
	MAX BOTTOM ELEVATION 516.2		MAX BOTTOM ELEVATION 514.6		MAX BOTTOM ELEVATION 512.7
TRENCH 1-2	LENGTH 56.9 ft	TRENCH 2-2	LENGTH 52.1 ft	TRENCH 3-2	LENGTH 52.1 ft
	GROUND ELEVATION 521.3		GROUND ELEVATION 519.8		GROUND ELEVATION 517.8
	INVERT ELEVATION 518.8		INVERT ELEVATION 517.8		INVERT ELEVATION 515.8
	MAX BOTTOM ELEVATION 515.3		MAX BOTTOM ELEVATION 513.8		MAX BOTTOM ELEVATION 511.8



- DESIGN DATA & GENERAL NOTES
- [1] Concrete strength Fc=4,000 p.s.i. @ 28 days. Density = 140 pcf.
  - [2] Cement - Portland Type III per ASTM C 150-92.
  - [3] Admixtures & plasticizers per ASTM C 260-96 & C 494-02.
  - [4] Reinforcing per ASTM A 618, Min. 5/16" cover.
  - [5] Top slab sealed with butyl rope mastic.
  - [6] 4" wall, 4" base, 8" top thickness.
  - [7] Max 2" of cover.
  - [8] Depending on use of tank, Inlet & Outlet baffle may be required by code.

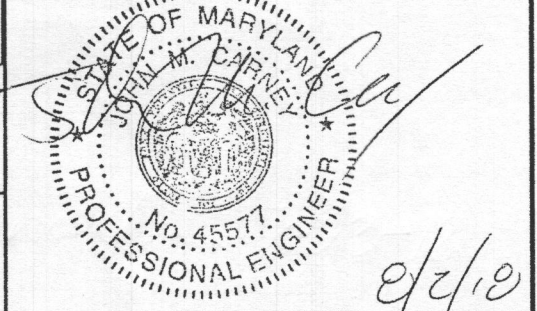
**MBI**  
Mayer Bros., Inc.  
6364 Race Road  
Elkridge, Maryland 21075  
Tel. 410.796.1434  
Fax. 410.796.1438  
www.mayerbrosprecast.com

**2,000 GALLON SEPTIC TANK**  
2-Compartment  
Stock Item [Approx. 19,900 lbs]  
Dwg. No. 2000-2C No Scale Aug 11, 2008

SEPTIC INVERT CHART - LOT 12	
INV @ HOUSE	515.2
GROUND @ HOUSE	518.0
INV IN SEPTIC TANK	514.6
INV OUT SEPTIC TANK	514.2
TOP OF SEPTIC TANK	515.4
GROUND OVER SEPTIC TANK	516.9
INV IN PUMP TANK	514.0
INV OUT PUMP TANK	513.7
TOP OF PUMP TANK	514.8
GROUND OVER PUMP TANK	517.8
INV IN DIST BOX	519.7
INV OUT DIST BOX	519.6
GROUND AT DIST BOX	522.0

THIS PLAN IS FOR SEPTIC DESIGN 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: 06-08-2020.



**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-CVLENGINEERING.COM

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:

PROJECT:	BRIGHTON MILL II LOT 12	
LOCATION:	TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13602 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600593	
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN	
HOUSE TYPE:	CLIFTON PARK - ELEVATION D	
DATE:	JULY, 2018	PROJECT NO. 2627
SCALE:	AS SHOWN	DRAWING 2 OF 3

**BUILDER:**  
NV HOMES, INC.  
9720 PATUXENT WOODS DR.  
SUITE 100  
COLUMBIA, MD 21046  
410-379-5956

**OWNER:**  
HIGHLAND DEVELOPMENT CORP  
P.O. BOX 228  
CLARKSVILLE, MARYLAND 21029  
410-365-0414

**Pumping Station**

Diameter of Force Main and Manifold = 2 of SDR 21 pipe  
 Length of Force Main = 47 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 8.9 gallons ID = 2.149  
 length = 100 gallon/sq ft 7.480519

Total Volume = 8.9 gallons volume = 18.84222 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 9 gallons

Use minimum dose of 125 gallons not okay Doses per Day = 7.2

**Size Pump Chamber**

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

One day Capacity = 900 gallons  
 Dose = 125 gallons  
 Totals = 1025 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 Top: 4.67 feet Bottom to Inlet: 0.42 feet  
 Area: 73.05 sf  
 Volume: 341.14 cf

**Sizing the Pump**

Flow: runtime = 7 minutes  
 rate = 17.86 gallons/minute

**Design Head:** Design Head = Static Head + Friction Head  
 Static Head = highest elevation of main - pump off elevation  
 Highest component of system = 519.60 Main HP  
 Pump off elevation = 511.20  
 Static Head = 8.40 feet

Friction Head = Head loss due to pipe friction  
 2.0" pipe = 27 feet  
 45° bends 2 loss for bend 8 feet per table 4.3  
 Gate Valve 0 loss for tee 0 feet per table 4.3

Friction loss per table 4.4 = 0.61 (ft/100 ft)  
 Equivalent Length = 35 Friction loss 0.21 feet  
 Total Friction Head = 0.21

Design Head = 8.61 feet

**Pump Requirements:**

Performance = 17.86 gpm  
 Head of Water = 8.61 feet of head

**Pump Selection:** Zoeller Pump Company Mighty-mate Series, Model 57/59  
 1/3 horse power

**Pump Flow Rate = 37.00 gallons/minute** per rating curve  
 TDH analysis 3.38 Minutes  
 Between design and curve? Yes 9.20 ft

**Design Pump Chamber**

Ground over Tank = 517.80 Cover 3.0 ft  
 Top of Tank = 514.80  
 Invert of Tank = 509.71  
 6" Riser = 0.50 feet  
 Pump Height = 1.10 feet

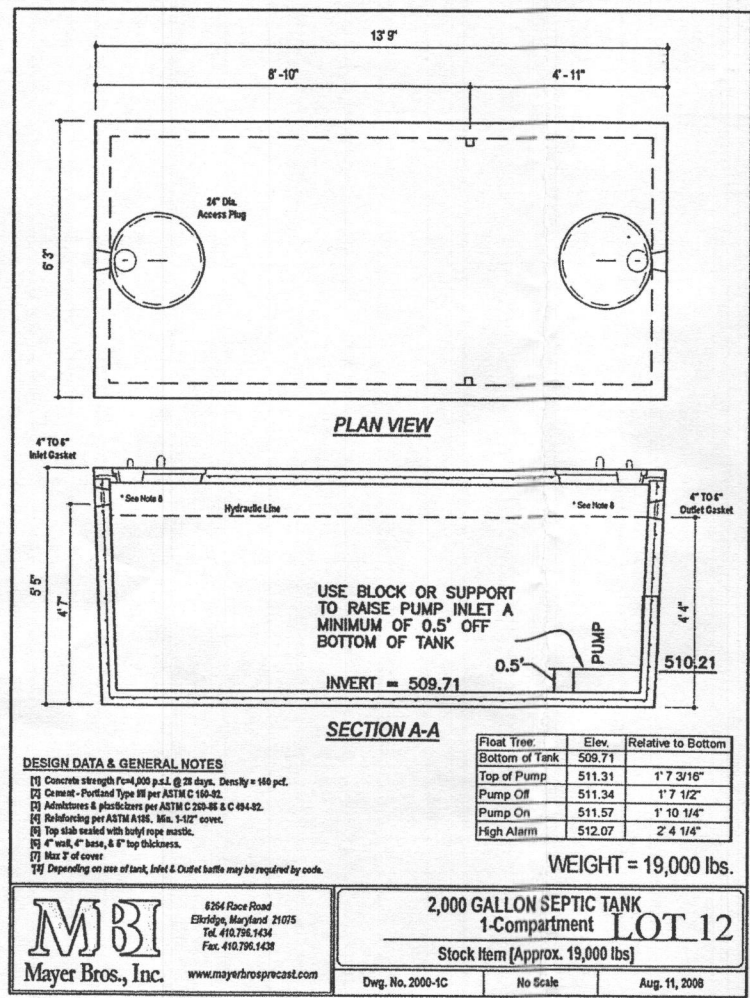
Min. Pump off = 511.31  
 Selected Pump off = 511.34

Dose = 16.7 cf  
 Area of Pit = 73.05 sf

Pump on dist. = 0.23  
 Pump on Elev. = 511.57

Distance between Pump on and Highwater Alarm = 0.5 feet  
 Highwater Alarm Elevation = 512.07

Dist. for a dose above alarm = 1.65  
 Minimum Inlet Elev. = 513.72  
 Tank Inlet = 513.96 Okay  
 Dist. Alarm to Inlet = 1.89 Okay



Your Peace of Mind is Our Top Priority

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

**TECHNICAL DATA SHEET**  
**MIGHTY-MATE SERIES**  
 Cast Iron Models 53, 57 and Bronze Models 55, 59  
 Submersible Effluent / Dewatering Pumps

**PRODUCT SPECIFICATIONS**

<b>MOTOR</b>	Horse Power	3/10
	Voltage	115 or 230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	1550
	Type	Shaded pole
	Insulation	Class B
	Amps	4.8 - 9.7
<b>PUMP</b>	Operation	Automatic or nonautomatic
	Auto On/Off Points	7-1/4" (18.4 cm) / 3" (7.6 cm)
	Discharge Size	1-1/2" NPT
	Solids Handling	1/2" (12 mm) spherical solids
	Cord Length	9' (3 m) automatic, 15' (5 m) nonautomatic
	Cord Type	UL listed, 3 wire, grounded plug
	Max. Head	19.25' (5.9 m)
	Max. Flow Rate	43 GPM (163 LPM)
	Max. Operating Temp.	130° F (54° C)
	Cooling	Oil filled
	Motor Protection	Auto reset thermal overload
<b>MATERIALS</b>	Cap	Cast iron or bronze
	Motor Housing	Cast iron or bronze
	Pump Housing	Cast iron or bronze
	Base	Cast iron, bronze or engineered thermoplastic
	Upper Bearing	Sleeve bearing
	Lower Bearing	Sleeve bearing
	Mechanical Seals	Carbon and ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Plastic, cast iron or bronze
	Hardware	Stainless steel
	Motor Shaft	AISI 1215 cold rolled steel
	Gasket	Neoprene

NOTE: See model comparison chart for specific details.

**TOTAL DYNAMIC HEAD FLOW PER MINUTE**

MODEL	53/55/57/59			
Feet	Meters	Gal.	Liters	
5	1.5	43	163	
10	3.0	34	129	
15	4.6	19	72	
Shut-off Head:	19.25 ft (5.9m)			

**USE N57 OR N59. CONTRACTOR MAY USE EQUIVALENT PUMP**

**MODEL COMPARISON**

Model	Seal	Mode	Volts	Ph	Amps	HP	H <sub>z</sub>	Lbs	Kg	Simplex	Duplex
M53/M55	Single	Auto	115	1	9.7	3/10	60	23	10	1	---
N53/N55	Single	Non	115	1	9.7	3/10	60	23	10	2	3 & 4
* BE53	Single	Auto	115	1	4.8	3/10	60	25	11	*	---
* BE53/BE57	Single	Auto	230	1	4.8	3/10	60	24/30	11/13	*	---
D53	Single	Auto	230	1	4.8	3/10	60	23	10	1	---
ES3/ES5	Single	Non	230	1	4.8	3/10	60	22	10	2	3 & 4
M57/M59	Single	Auto	115	1	9.7	3/10	60	29/33	13/15	1	---
N57/N59	Single	Non	115	1	9.7	3/10	60	28/29	12/13	2	3 & 4
* BE57	Single	Auto	115	1	4.8	3/10	60	30	13	*	---
D57/D59	Single	Auto	230	1	4.8	3/10	60	30/33	13/15	1	---
ES7/ES9	Single	Non	230	1	4.8	3/10	60	28/29	12/13	2	3 & 4
ES9	Single	Non	230	1	4.8	3/10	60	29	13	2	3 & 4

\* Single piggyback switch included.

**SPECIAL MODEL FEATURES**

Additional cord lengths are available in 15' (5 m), 25' (8 m) and 35' (11 m). 50' (15 m) cord lengths available for 230 V units only.  
 BE and BN models include a piggyback variable level pump switch.  
 Model 53: cast iron switch case, motor and pump housing, a plastic impeller and base. Model 57: all cast iron construction with a cast iron impeller.  
 Model 55: bronze switch case, motor and pump housing, a plastic impeller and base. Model 59: bronze construction with a bronze impeller.  
 Optional pump stand (P/N 10-2421).

**SELECTION GUIDE**

- Integral float-operated mechanical switch, no external control required.
- Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
- See FM0712 for correct model of Electrical Alternator.
- Variable level control switch 10-0743 used as a control activator with electrical alternator (3) or (4) float system.

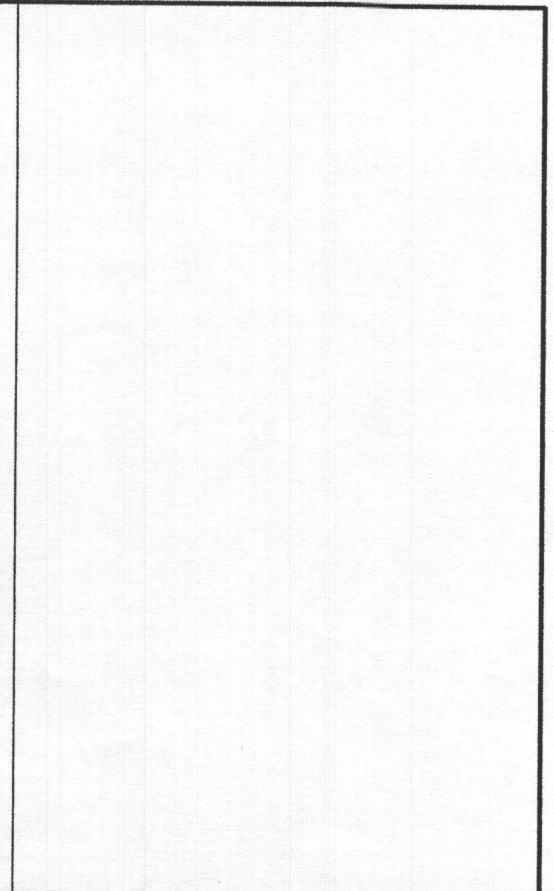
**OPTIONAL PUMP STAND P/N 10-2421**

- 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 surge, dewatering and effluent applications

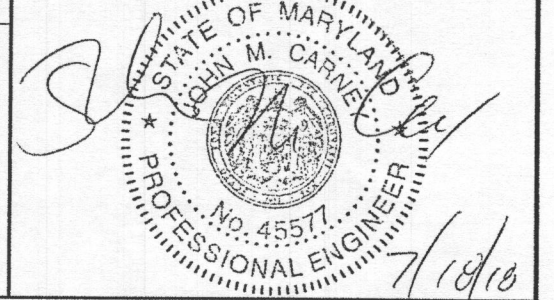
NOTE: Make sure float is free from obstruction.

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

**BUILDER:**  
 NV HOMES, INC.  
 9720 PATUXENT WOODS DR.  
 SUITE 100  
 COLUMBIA, MD 21046  
 410-379-5956

**OWNER:**  
 HIGHLAND DEVELOPMENT CORP  
 P.O. BOX 228  
 CLARKSVILLE, MARYLAND 21029  
 410-365-0414

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

**PROJECT:** BRIGHTON MILL II LOT 12

**LOCATION:** TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13602 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600593

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

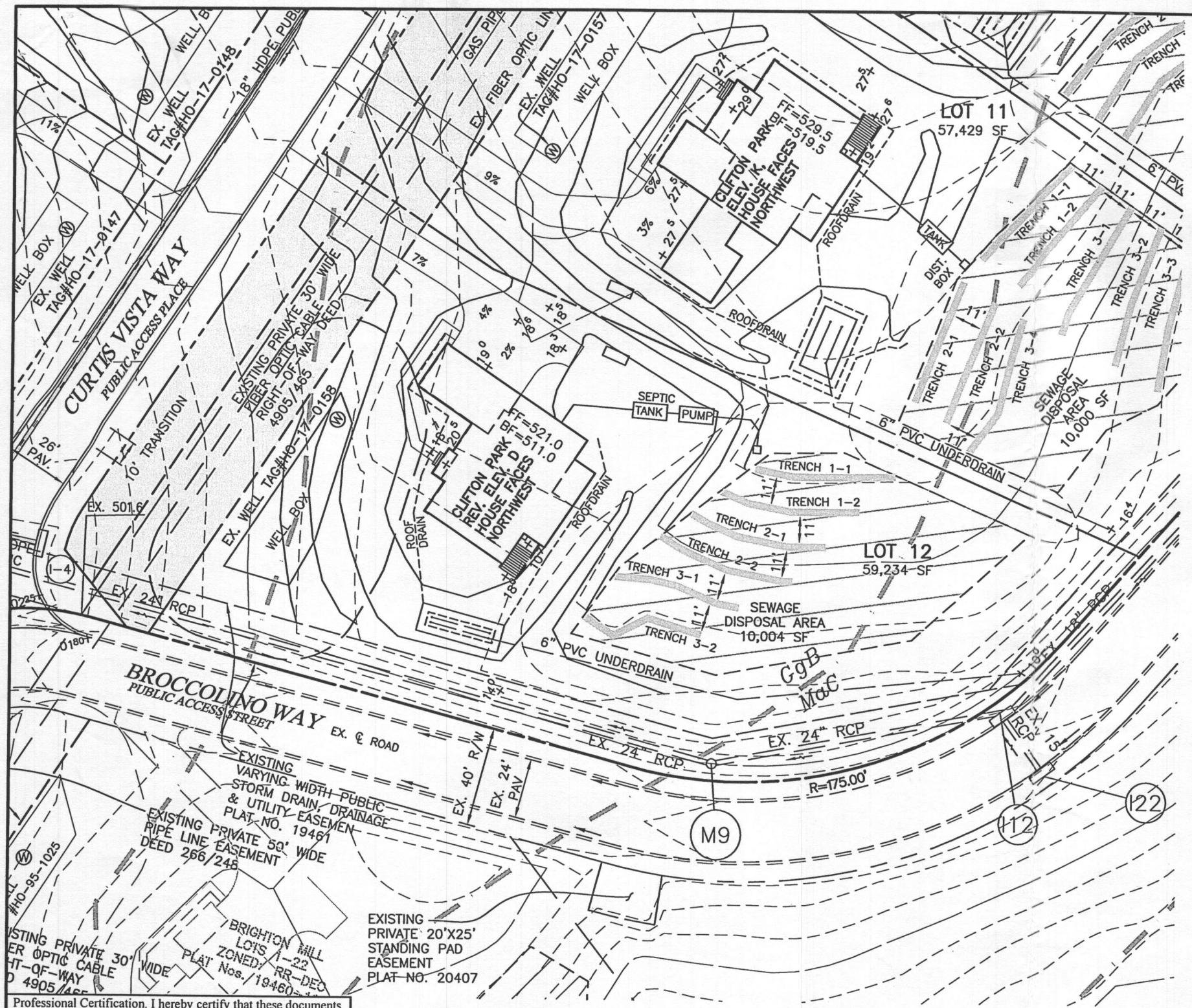
**HOUSE TYPE:** CLIFTON PARK - ELEVATION D

**DATE:** JULY, 2018 **PROJECT NO.:** 2627

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

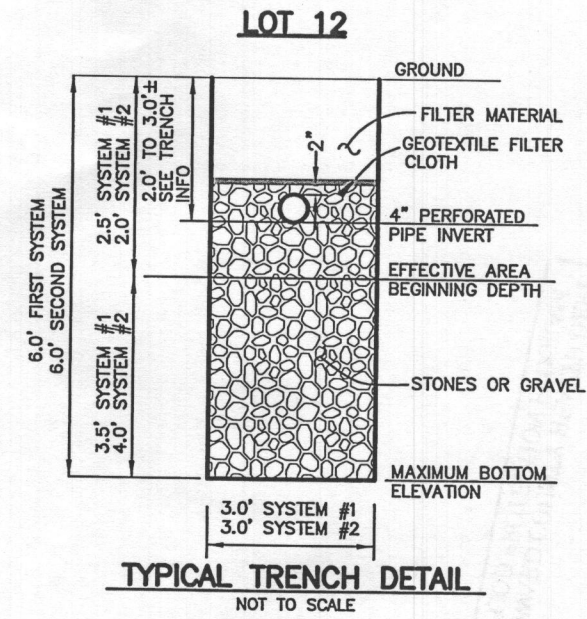
**BENCHMARK ENGINEERS, LAND SURVEYORS, PLANNERS**

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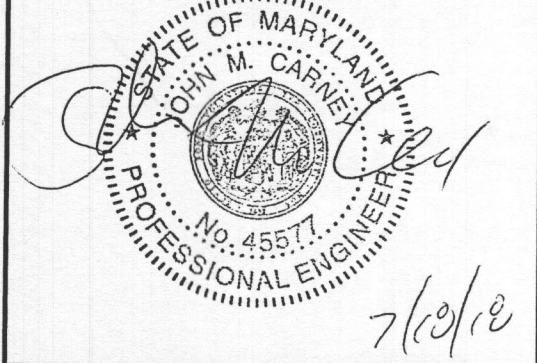


LEGEND	
SOILS CLASSIFICATION	GgC
SOILS DELINEATION	—
PROPOSED CONTOURS	480 478
EXISTING CONTOURS	480 478
LIMIT OF WETLANDS	—
EXISTING WOODS LINE	—
PROPOSED WOODS LINE	—
EXISTING STRUCTURE	—
EXISTING WELL	⊙
EXISTING WELL BOX	□
EXISTING SEWAGE DISPOSAL AREA	—

- ONSITE SEWAGE DISPOSAL PLAN NOTES:**
1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR BRIGHTON MILL II, PLAT Nos. 24469-24474. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
  2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION
  3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY F-17-054, ON OR ABOUT MAY, 2017.
  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-17-0158, 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 TWO NON-ROOFTOP DISCONNECTIONS AND ONE MICRO-BIORETENTION FACILITY. MICRO-BIORETENTION SHALL HAVE EITHER A 4" OR 6" ROOF LEADER DEPENDING ON ROOF-TOP AREA.
  10. THE SEPTIC TANK WILL HAVE A 2000 GALLON 2 COMPARTMENT TANK.
  11. FOR DEVELOPMENT LANDSCAPING SEE ROAD CONSTRUCTION PLAN F-17-054.



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.

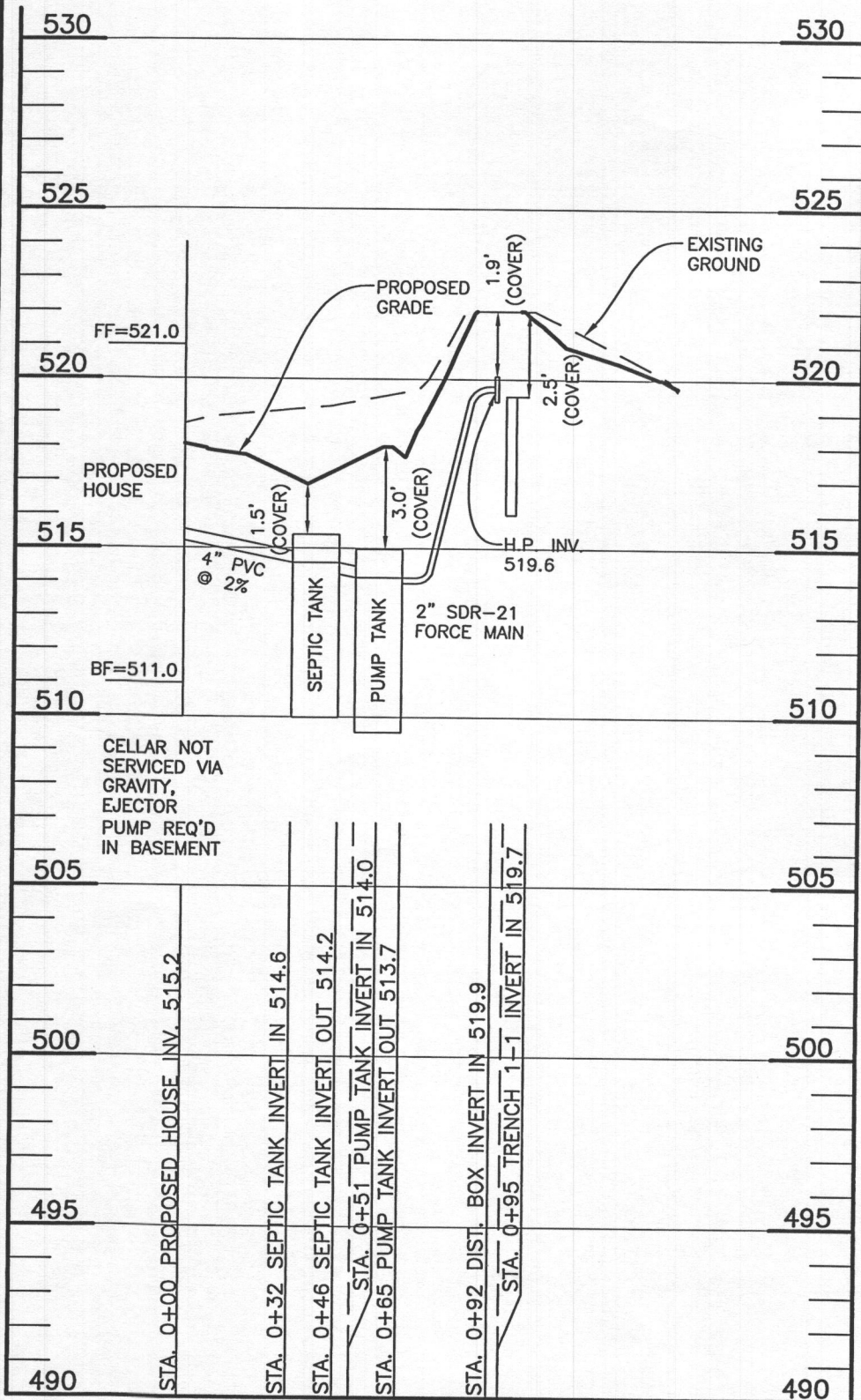


**PLAN VIEW**  
1" = 50'

<b>BUILDER:</b> NV HOMES, INC. 9720 PATUXENT WOODS DRIVE SUITE 100 COLUMBIA, MD 21046 410-379-5956	<b>OWNER:</b> HIGHLAND DEVELOPMENT CORP P.O. BOX 228 CLARKSVILLE, MARYLAND 21029 410-365-0414	<b>BENCHMARK</b> ENGINEERS LAND SURVEYORS PLANNERS <b>ENGINEERING, INC.</b> 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLCOTT CITY, MARYLAND 21043 (P) 410-465-6105 ▲ (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM	<b>PROJECT:</b> BRIGHTON MILL II LOT 12
<b>LOCATION:</b> TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13602 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600593			
<b>TITLE:</b> ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN			
<b>HOUSE TYPE:</b> CLIFTON PARK - ELEVATION D			
<b>DATE:</b> JULY, 2018	<b>PROJECT NO.</b> 2627		
<b>SCALE:</b> AS SHOWN	<b>DRAWING</b> 1 OF 3		

HEALTH DEPARTMENT SPEC SHEET INFORMATION - LOT 12			
System	Application Rate	Effective Depth	Bottom Depth
Initial	1.2	2.5	6.0
1st Replacement	1.2	2.0	6.0
2nd Replacement	1.2	2.0	6.0

Note: A pump to distribution system likely required

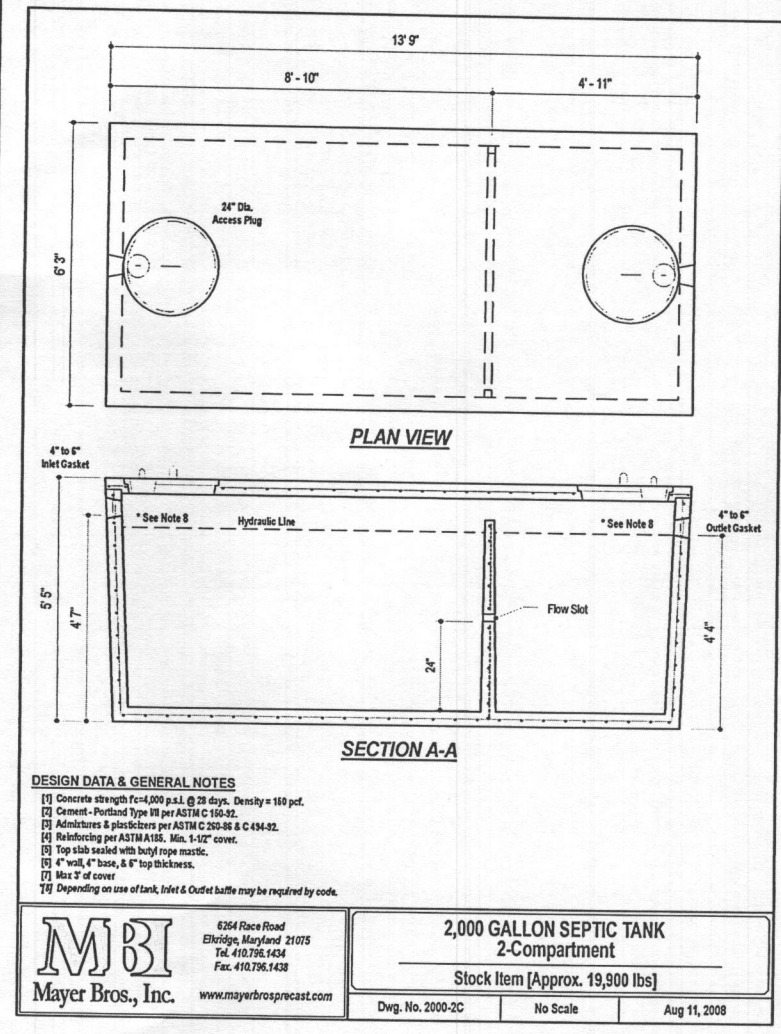


LOT 12 SEPTIC PROFILE  
SCALE: 1"=30' HORIZ., 1"=3' VERT.

INITIAL SYSTEM - LOT 3		
Number of Bedrooms	4	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	3.0	ft
Bottom Max Depth	8.0	ft
Design Flow	600	gpd
Drainage Field square footage	500	sf
Sidewall Reduction Credit	0.36	
Trench width	3	ft
Effective Area Depth	5	ft
Trench Spacing	13	ft
Linear Length of trench Required	60	lf

1st REPLACEMENT SYSTEM		
Number of Bedrooms	4	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	3.0	ft
Bottom Max Depth	8.0	ft
Design Flow	600	gpd
Drainage Field square footage	500	sf
Sidewall Reduction Credit	0.36	
Trench width	3	ft
Effective Area Depth	5	ft
Trench Spacing	13	ft
Linear Length of trench Required	60	lf

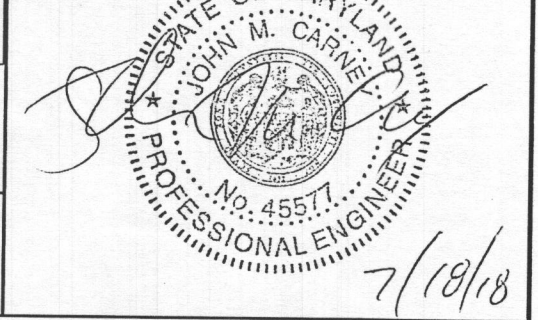
2nd REPLACEMENT SYSTEM		
Number of Bedrooms	4	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	3.0	ft
Bottom Max Depth	8.0	ft
Design Flow	600	gpd
Drainage Field square footage	500	sf
Sidewall Reduction Credit	0.36	
Trench width	3	ft
Effective Area Depth	5	ft
Trench Spacing	13	ft
Linear Length of trench Required	60	lf



SEPTIC INVERT CHART - LOT 12	
INV @ HOUSE	515.2
GROUND @ HOUSE	518.0
INV IN SEPTIC TANK	514.6
INV OUT SEPTIC TANK	514.2
TOP OF SEPTIC TANK	515.4
GROUND OVER SEPTIC TANK	516.9
INV IN PUMP TANK	514.0
INV OUT PUMP TANK	513.7
TOP OF PUMP TANK	514.8
GROUND OVER PUMP TANK	517.8
INV IN DIST BOX	519.7
INV OUT DIST BOX	519.6
GROUND AT DIST BOX	522.0

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TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN	
HOUSE TYPE:	CLIFTON PARK - ELEVATION D	
DATE:	JULY, 2018	PROJECT NO. 2627
SCALE:	AS SHOWN	DRAWING 2 OF 3

**Pumping Station**

Diameter of Force Main and Manifold = 2 of SDR 21 pipe  
 Length of Force Main = 47 feet SDR 21 gallons/100 feet = 18.8 Table 4.2  
 Volume of Main = 8.9 gallons ID = 2.149 length = 100 gallon/sq ft 7.480519  
 Total Volume = 8.9 gallons volume = 18.84222 gal/100 lf  
 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 9 gallons  
 Use minimum dose of 125 gallons not okay Doses per Day = 7.2

**Size Pump Chamber**

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

One day Capacity = 900 gallons  
 Dose = 125 gallons  
 Totals = 1025 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	Bottom:	5.58 feet	Bottom:	0.33 feet
Height:	5.42 feet	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 = 7 minutes  
 rate = 17.86 gallons/minute

**Design Head:**

Design Head = Static Head + Friction Head  
 Static Head = highest elevation of main - pump off elevation  
 Highest component of system = 519.60 Main HP  
 Pump off elevation = 511.20  
 Static Head = 8.40 feet  
 Friction Head = Head loss due to pipe friction  
 2.0" pipe = 27 feet  
 45° bends = 2 loss for bend 8 feet per table 4.3  
 Gate Valve = 0 loss for tee 0 feet per table 4.3  
 Friction loss per table 4.4 = 0.61 (ft/100 ft)  
 Equivalent Length = 35 Friction loss 0.21 feet  
 Total Friction Head = 0.21  
 Design Head = 8.61 feet

**Pump Requirements:**

Performance = 17.86 gpm  
 Head of Water = 8.61 feet of head

Pump Selection: Zoeller Pump Company Mighty-mate Series, Model 57/59  
 1/3 horse power

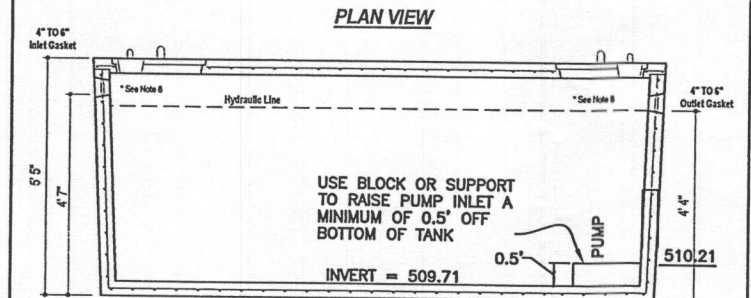
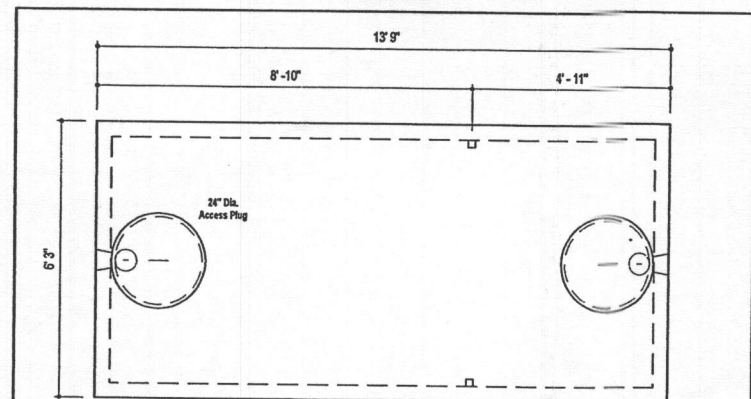
Pump Flow Rate = 37.00 gallons/minute per rating curve 3.38 Minutes  
 TDH analysis 9.20 ft  
 Between design and curve? Yes

**Design Pump Chamber**

Ground over Tank = 517.80 Cover 3.0 ft  
 Top of Tank = 514.80  
 Invert of Tank = 509.71  
 6" Riser = 0.50 feet  
 Pump Height = 1.10 feet  
 Min. Pump off = 511.31  
 Selected Pump off = 511.34  
 Dose = 16.7 cf  
 Area of Pit = 73.05 sf  
 Pump on dist. = 0.23  
 Pump on Elev. = 511.57

Distance between Pump on and Highwater Alarm = 0.5 feet  
 Highwater Alarm Elevation = 512.07

Dist. for a dose above alarm = 1.65  
 Minimum Inlet Elev. = 513.72  
 Tank Inlet = 513.96 Okay  
 Dist. Alarm to Inlet = 1.89 Okay



**DESIGN DATA & GENERAL NOTES**

- Concrete strength Fc=4,000 p.s.i. @ 28 days. Density = 150 pcf.
- Concrete - Portland Type III per ASTM C 150-92.
- Reinforcement per ASTM A108. Min. 1/2" cover.
- Top slab sealed with butyl rope mastic.
- 4" wall, 4" base, & 8" top thickness.
- Max 3" of cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.

Float Tree:	Elev.	Relative to Bottom
Bottom of Tank	509.71	
Top of Pump	511.31	1' 7 3/16"
Pump Off	511.34	1' 7 1/2"
Pump On	511.57	1' 10 1/4"
High Alarm	512.07	2' 4 1/4"

**MAYER BROS., INC.**  
 6254 Race Road  
 Elkridge, Maryland 21075  
 Tel. 410.796.1434  
 Fax. 410.796.1438  
 www.mayerbrosprecast.com

**2,000 GALLON SEPTIC TANK**  
 1-Compartment **LOT 12**  
 Stock Item [Approx. 19,000 lbs]

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

Your Peace of Mind is Our Top Priority

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

**TECHNICAL DATA SHEET**  
**MIGHTY-MATE SERIES**  
 Cast Iron Models 53, 57 and Bronze Models 55, 59  
 Submersible Effluent / Dewatering Pumps

SECTION: 2.15.020  
 FM2778  
 0515  
 Supersedes  
 0315

**PRODUCT SPECIFICATIONS**

<b>MOTOR</b>	Horse Power: 3/10
	Voltage: 115 or 230
	Phase: 1 Ph
	Hertz: 60 Hz
	RPM: 1550
	Type: Shaded pole
	Insulation: Class B
	Amps: 4.8 - 9.7
<b>PUMP</b>	Operation: Automatic or nonautomatic
	Auto On/Off Points: 2.14" (54.4 cm) / 3" (7.6 cm)
	Discharge Size: 1.12" NPT
	Solids Handling: 1/2" (12 mm) spherical solids
	Cord Length: 9' (3 m) automatic, 15' (5 m) nonautomatic
	Cord Type: UL listed, 3 wire, grounded plug
	Max. Head: 19.25' (5.9 m)
	Max. Flow Rate: 43 GPM (163 LPM)
	Max. Operating Temp.: 130° F (54° C)
	Cooling: Oil filled
	Motor Protection: Auto reset thermal overload
<b>MATERIALS</b>	Cap: Cast iron or bronze
	Motor Housing: Cast iron or bronze
	Pump Housing: Cast iron or bronze
	Base: Cast iron, bronze or engineered thermoplastic
	Upper Bearing: Sleeve bearing
	Lower Bearing: Sleeve bearing
	Mechanical Seals: Carbon and ceramic
	Impeller Type: Non-clogging vortex
	Impeller: Plastic, cast iron or bronze
	Hardware: Stainless steel
	Motor Shaft: AISI 1215 cold rolled steel
	Gasket: Neoprene

NOTE: See model comparison chart for specific details.

**TOTAL DYNAMIC HEAD FLOW PER MINUTE**

MODEL	53/55/57/59		
Feet	Meters	Gal.	Liters
5	1.5	43	163
10	3.0	34	129
15	4.6	19	72
Shut-off Head:	19.25 ft. (5.9m)		

USE N57 OR N59. CONTRACTOR MAY USE EQUIVALENT PUMP

**PUMP PERFORMANCE CURVE**  
 MODELS 53/55/57/59

**MODEL COMPARISON**

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* BNS7	Single	Auto	115	1	9.7	3/10	60	30	13	—	—
D57/D59	Single	Auto	230	1	4.8	3/10	60	30/33	13/15	1	—
ES7/ES9	Single	Non	230	1	4.8	3/10	60	28/29	12/13	2	3 & 4
E59	Single	Non	230	1	4.8	3/10	60	29	13	2	3 & 4

\* Single piggyback switch included.

**SPECIAL MODEL FEATURES**

Additional cord lengths are available in 15' (5 m), 25' (8 m) and 35' (11 m). 50' (15 m) cord lengths available for 230 V units only.  
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 Optional pump stand (P/N 10-2421).

**SELECTION GUIDE**

- Integral float-operated mechanical switch, no external control required.
- Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
- See FM0712 for correct model of Electrical Alternator.
- Variable level control switch 10-0743 used as a control activator with electrical alternator (3) or (4) float system.

**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.

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

**HOUSE TYPE:** CLIFTON PARK - ELEVATION D

**DATE:** JULY, 2018 **PROJECT NO.** 2627

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