

ADC MAP 4933 GRID D5  
**VICINITY MAP**  
SCALE: 1" = 2000'

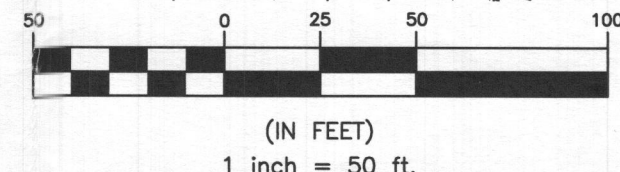
**PLAN VIEW**  
1" = 50'

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: 06-08-2022.



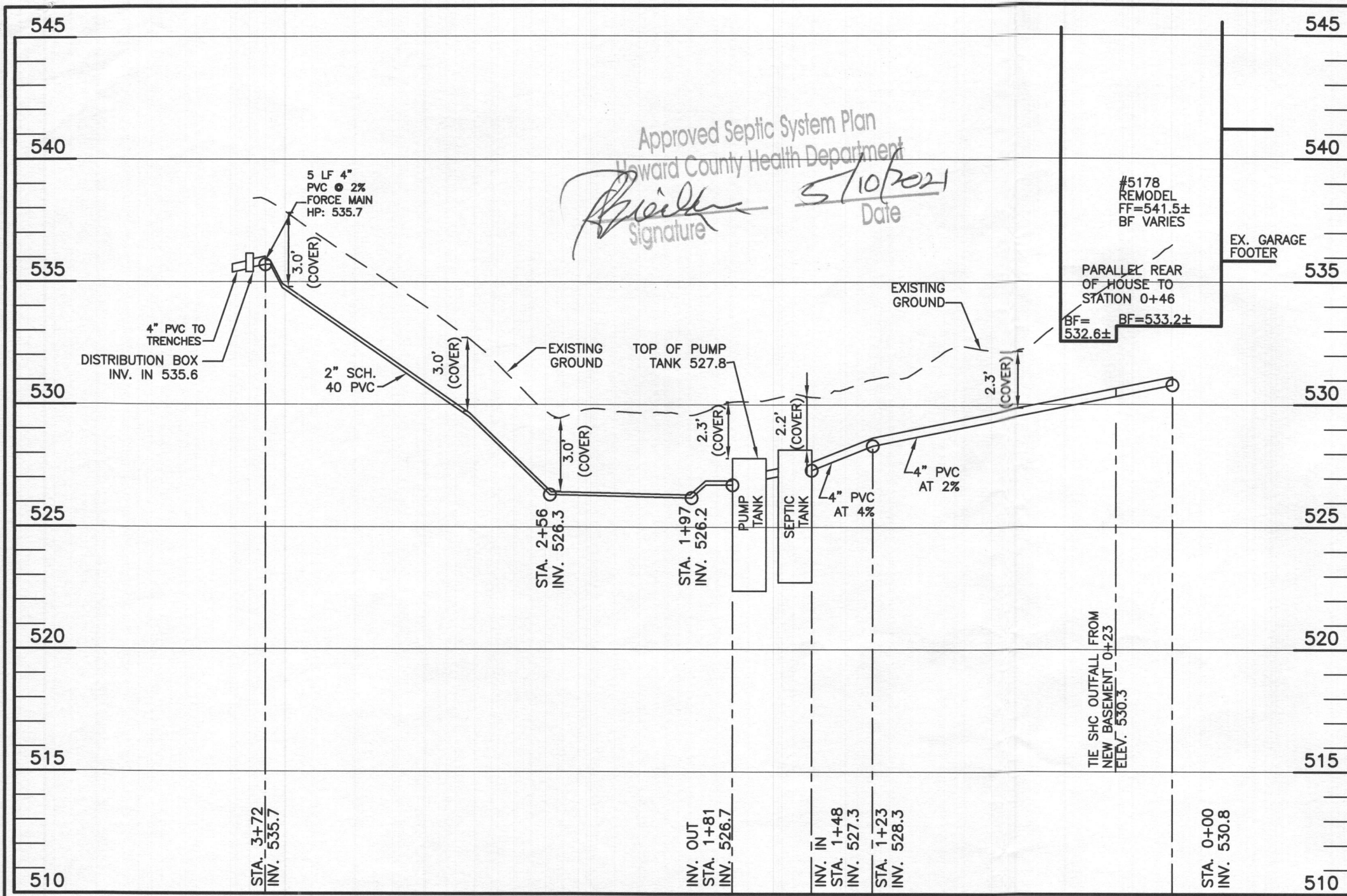
OWNER:  
  
PARK BROTHERS LLC  
5200 TEN OAKS ROAD  
CLARKSVILLE, MD 21029  
443-829-9222

PROJECT:	LINDEN CHAPEL WOODS LOT 3		
LOCATION:	TAX MAP: 28, GRID: 14, PARCEL: 127 5178 TEN OAKS ROAD, TAX ID 05-368316 ELECTION DISTRICT NO. 4, HOWARD COUNTY, MARYLAND		
TITLE:	ONSITE SEWAGE DISPOSAL PLAN		
HOUSE TYPE:	CUSTOM REMODEL		
DATE:	APRIL, 2021	PROJECT NO.	2763
SCALE:	AS SHOWN	DRAWING	1 OF 4



**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  
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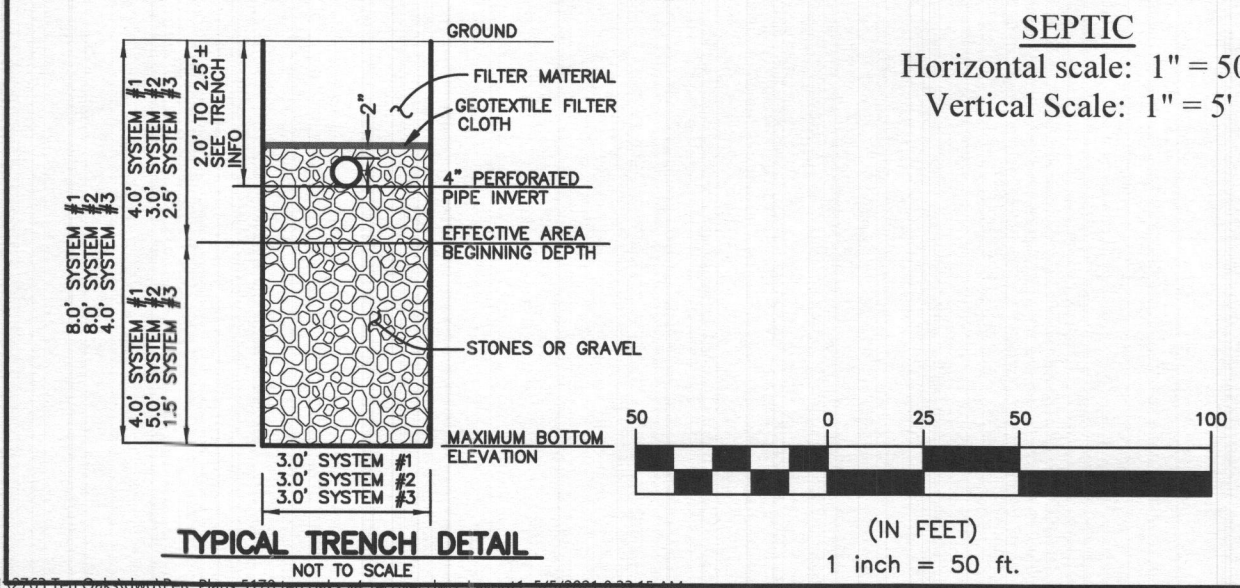
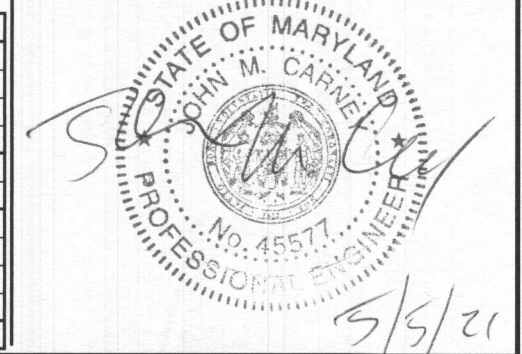
TRENCH DATA - Lot 3					
INITIAL SYSTEM		FIRST REPLACEMENT		SECOND REPLACEMENT	
TRENCH 1-1		TRENCH 2-1		TRENCH 3-1	
LENGTH	43.5 ft	LENGTH	37.3 ft	LENGTH	49.7 ft
GROUND ELEVATION	538.0	GROUND ELEVATION	536.0	GROUND ELEVATION	534.5
INVERT ELEVATION	535.4	INVERT ELEVATION	534.0	INVERT ELEVATION	532.5
MAX BOTTOM ELEVATION	530.0	MAX BOTTOM ELEVATION	528.0	MAX BOTTOM ELEVATION	530.5
TRENCH 1-2		TRENCH 2-2		TRENCH 3-2	
LENGTH	43.5 ft	LENGTH	37.3 ft	LENGTH	49.7 ft
GROUND ELEVATION	537.0	GROUND ELEVATION	535.9	GROUND ELEVATION	534.4
INVERT ELEVATION	535.0	INVERT ELEVATION	533.9	INVERT ELEVATION	532.4
MAX BOTTOM ELEVATION	529.0	MAX BOTTOM ELEVATION	527.9	MAX BOTTOM ELEVATION	530.4
TRENCH 1-3					
LENGTH	49.7 ft			LENGTH	49.7 ft
GROUND ELEVATION	533.5			GROUND ELEVATION	533.5
INVERT ELEVATION	531.5			INVERT ELEVATION	531.5
MAX BOTTOM ELEVATION	529.5			MAX BOTTOM ELEVATION	529.5

INITIAL SYSTEM - 5178 - perc 10, 11, 12		
Number of Bedrooms	5	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	4.0	ft
Bottom Max Depth	8.0	ft
Design Flow	750	gpd
Drainage Field square footage	625	sf
Sidewall Reduction Credit	0.42	
Trench width	3	ft
Effective Area Depth	4	ft
Trench Spacing	11	ft
Linear Length of trench Required	87	lf

1st REPLACEMENT SYSTEM perc 12, 15, 16		
Number of Bedrooms	5	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	3.0	ft
Bottom Max Depth	8.0	ft
Design Flow	750	gpd
Drainage Field square footage	625	sf
Sidewall Reduction Credit	0.36	
Trench width	3	ft
Effective Area Depth	5	ft
Trench Spacing	13	ft
Linear Length of trench Required	74	lf

2nd REPLACEMENT SYSTEM perc 12, 15, 16, 17		
Number of Bedrooms	5	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	2.5	ft
Bottom Max Depth	4.0	ft
Design Flow	750	gpd
Drainage Field square footage	625	sf
Sidewall Reduction Credit	0.71	
Trench width	3	ft
Effective Area Depth	1.5	ft
Trench Spacing	10	ft
Linear Length of trench Required	149	lf

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: 06-08-2022.



HEALTH DEPARTMENT SPEC SHEET INFORMATION - 5178			
System	Application Rate	Effective Depth	Bottom Depth
Initial	1.2	4.0	8.0
1st Replacement	1.2	3.0	8.0
2nd Replacement	1.2	2.5	4.0

OWNER:

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5200 TEN OAKS ROAD  
CLARKSVILLE, MD 21029  
443-829-9222

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PROJECT: LINDEN CHAPEL WOODS LOT 3

LOCATION: TAX MAP: 28, GRID: 14, PARCEL: 127  
5178 TEN OAKS ROAD, TAX ID 05-368316  
ELECTION DISTRICT NO. 4, HOWARD COUNTY, MARYLAND

TITLE: ONSITE SEWAGE DISPOSAL PLAN

HOUSE TYPE: CUSTOM REMODEL

DATE: APRIL, 2021 PROJECT NO. 2763

SCALE: AS SHOWN DRAWING 2 OF 4



Pumping Station

Diameter of Force Main and Manifold = 2 " PVC SCH. 40  
Length of Force Main = 191 feet SCH.40 gallons/100 feet = 17.4 Table 4.2

Volume of Main = 33.2 gallons

Total Volume = 33.2 gallons

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 33 gallons

Use minimum dose of 140 gallons okay Doses per Day = 5.357143

Size Pump Chamber

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

One day Capacity = 750 gallons  
Dose = 140 gallons  
Totals = 890 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	Bottom to	
		Volume:	340.89 cf	Inlet:	4.58 feet

Sizing the Pump

Flow: runtime = 7 minutes  
rate = 20.00 gallons/minute

Design Head: Design Head = Static Head + Friction Head  
Static Head = highest elevation of main - pump off elevation  
Highest component of system = 535.7 Main HP  
Pump off elevation = 524.40  
Static Head = 11.30 feet  
Friction Head = Head loss due to pipe friction  
2.0" pipe = 191 feet  
45° bends 8 loss for bend 32 feet per table 4.3  
Gate Valve 0 loss for tee 0 feet per table 4.3  
Friction loss per table 4.4 = 0.74 (ft/100 ft)  
Equivalent Length = 223 Friction loss 1.65 feet  
Total Friction Head = 1.65  
Design Head = 12.95 feet

Pump Requirements:  
Performance = 20.00 gpm  
Head of Water = 12.95 feet of head

Pump Selection: Liberty Pump Company, Model 251-2  
1/3 horse power

Pump Flow Rate = 31.00 gallons/minute  
per rating curve. Run time: 4.52 Minutes  
TDH analysis 14.96 ft  
Between design and curve? Yes

Design Pump Chamber

Ground over Tank = 530.10  
Top of Tank = 527.80  
Invert of Tank = 522.71  
6" Riser = 0.50 feet  
Pump Height = 1.01 feet  
Cover 2.30 ft

Min. Pump off = 524.22  
Selected Pump off = 524.40

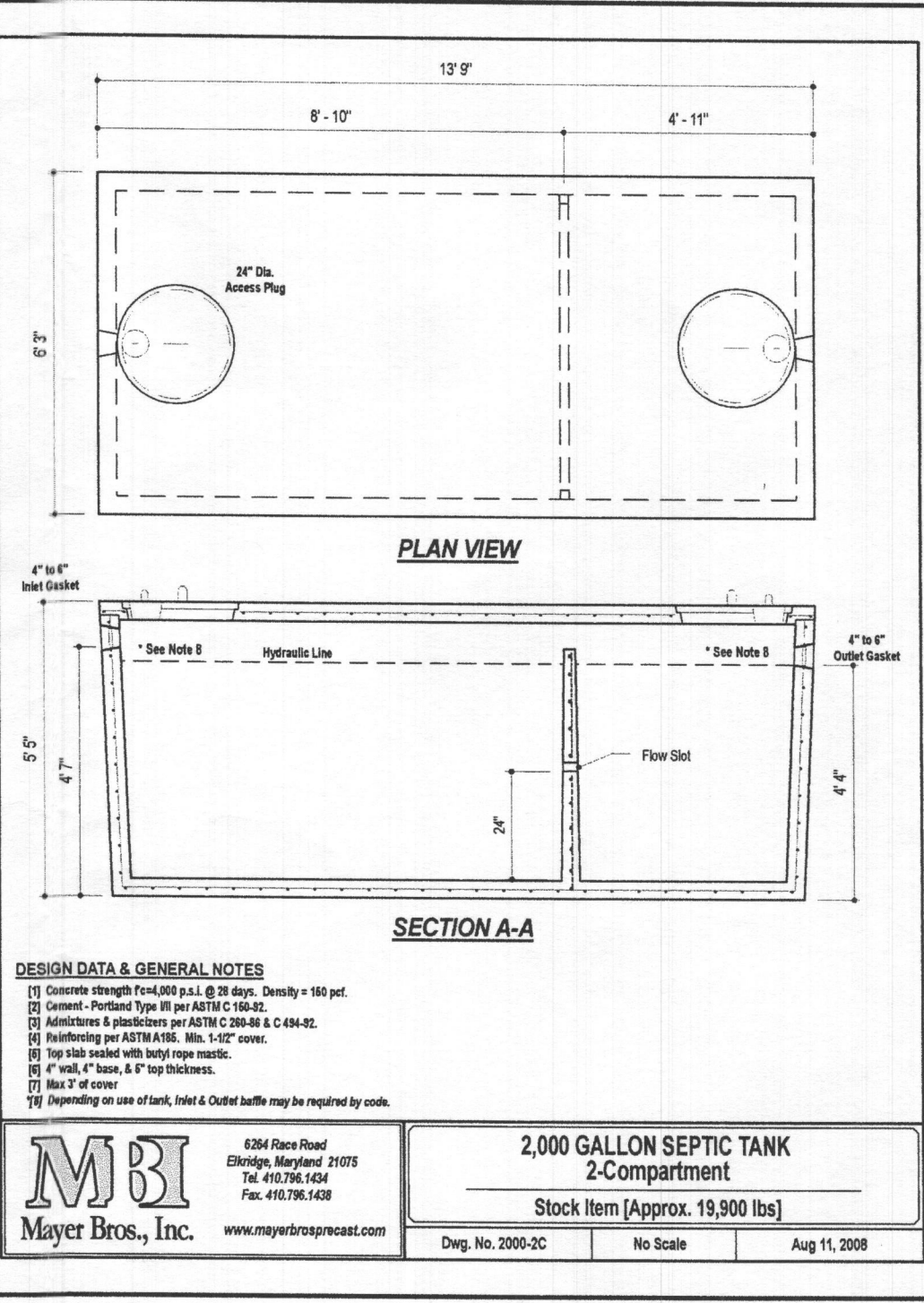
Dose = 18.7 cf  
Area of Pit = 73.05 sf

Pump on dist. = 0.26  
Pump on Elev. = 524.66

Distance between Pump on and Highwater Alarm = 0.5 feet  
Highwater Alarm Elevation = 525.16

Dist. for day stored above alarm 1.37  
Minimum Inlet Elev. = 526.53  
Tank Inlet = 526.96 Okay  
Dist. Alarm to Inlet = 1.80 Okay

Approved Septic System Plan  
Howard County Health Department  
Signature  
Date 5/10/2021



- DESIGN DATA & GENERAL NOTES
- [1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
  - [2] Cement - Portland Type III per ASTM C 150-92.
  - [3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
  - [4] Reinforcing per ASTM A185, Min. 1-1/2" cover.
  - [5] Top slab sealed with butyl rope mastic.
  - [6] 4" wall, 4" base, & 6" top thickness.
  - [7] Max 3" of cover
  - [8] Depending on use of tank, Inlet & Outlet baffle may be required by code.

Mayer Bros., Inc.

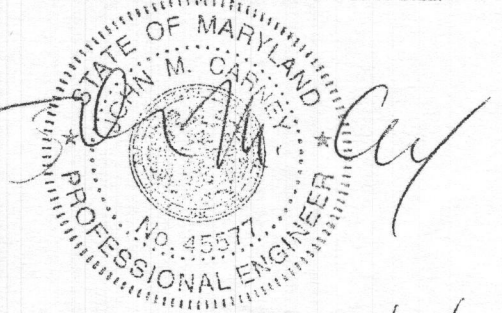
6264 Race Road  
Elkridge, Maryland 21075  
Tel. 410.796.1434  
Fax. 410.796.1438  
www.mayerbrosprecast.com

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

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

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: 06-08-2022.



4/16/21

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

OWNER:  PARK BROTHERS LLC 5200 TEN OAKS ROAD CLARKSVILLE, MD 21029 443-829-9222	<div><div>BENCHMARK</div><div>ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS</div><div>ENGINEERING, INC.</div><div>8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ELLCOTT CITY, MARYLAND 21043 (P) 410-465-6105 ▲ (F) 410-465-6644</div><div>WWW.BE-CMLEENGINEERING.COM</div></div>	TITLE: ONSITE SEWAGE DISPOSAL PLAN			
		HOUSE TYPE: CUSTOM REMODEL			
		DATE:	APRIL, 2021	PROJECT NO.	2763
		SCALE: AS SHOWN		DRAWING	3 OF 4



