Howard County Health Department

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

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

RECEIPT DATE: _____ **ONSITE SEWAGE DISPOSAL SYSTEM** P _____

APPROVAL DATE: 11/23/23 (SP) **PERMIT: CONSTRUCTION** A _____

PROPERTY ADDRESS: **11225 WHITHORN WAY, ELLICOTT CITY, MD 21042**

SUBDIVISION: **RIVERWOOD, PHASE 2** LOT: **74** TAX ID: **03-351637**

CONTRACTOR: Valley Road Enterprises LLC EMAIL: Chris Eby

CONTRACTOR ADDRESS: 5443 Valley Rd, Catonsville, MD 21228 PHONE: 443-927-6063

PROPERTY OWNER: **WASIM and SHEHLA KHAN** EMAIL: _____

OWNER ADDRESS: **10223 RUTLAND ROUND ROAD, COLUMBIA, MD 21044** PHONE: _____

SEPTIC TANK SIZE (GALLONS): **2000** TANK MANUFACTURER: **MAYER BROS, INC.**

PUMP MODEL: **Zoeller M57 or M59** PUMP SIZE **0.3** PUMP TANK CAPACITY: **2000**

DISTRIBUTION SYSTEM: ☒ GRAVITY ☐ PRESSURE DOSED BEDROOMS: **6** APPLICATION RATE: **1.2**

TRENCHES:	LINEAR FEET REQUIRED: 104	INLET DEPTH: **3.0**
	TRENCH WIDTH: 3	MAXIMUM BOTTOM DEPTH: **7.0**
	MINIMUM SPACE BETWEEN TRENCHES: 11	EFFECTIVE AREA BEGINNING DEPTH: **3.0**
LOCATION:	**PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND TANK LOCATIONS MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.**	
NOTES:	**INSTALL AT LEAST TWO CLEANOUTS IN SHC.** **SYSTEM MUST PASS PUMP AND ALARM TEST PRIOR TO HEALTH DEPARTMENT FINAL APPROVAL OF THIS PERMIT AND RELEASE FOR 'USE AND OCCUPANCY'.**	

ISSUED BY: **R BRICKER** ISSUE DATE: _____ EXPIRATION DATE: _____

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 22002703

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

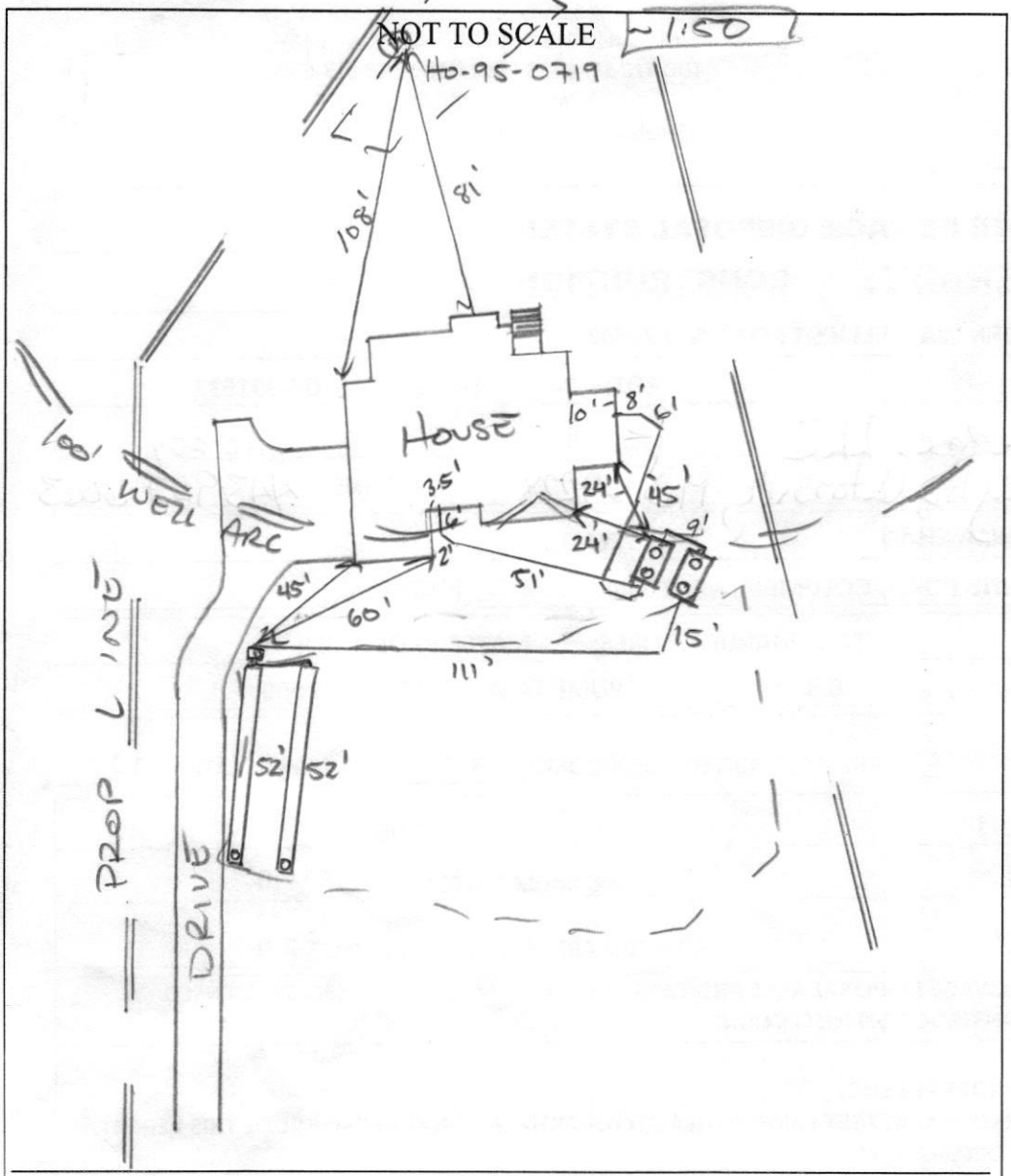
NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.

PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.

CALL 410-313-1771 TO SCHEDULE INSPECTIONS.

NOT TO SCALE ~1:50?

HO-95-0719



ROAD NAME
WHITHORN WAY

TRENCH/DRAINFIELD DATA

WIDTH	INLET	BOTTOM
3'	3'	7'

NUMBER OF TRENCHES 2
TOTAL LENGTH 104 F
ABSORPTION AREA 312 SF + 4' SIDE WALL
DISTRIBUTION BOX LEVEL PUMP
DISTRIBUTION BOX BAFFLE 45 TURN
DISTRIBUTION BOX PORT YES

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL YES
MANUFACTURER BACKHOE
CAPACITY 2000 GAL
SEAM LOC TOP
TANK LID DEPTH 3'
BAFFLES —
BAFFLE FILTER —
MANHOLE LOC FRONT/BACK
6" PORT LOC —
WATERTIGHT TEST —
SLOTTED YES
DATE ON LID —

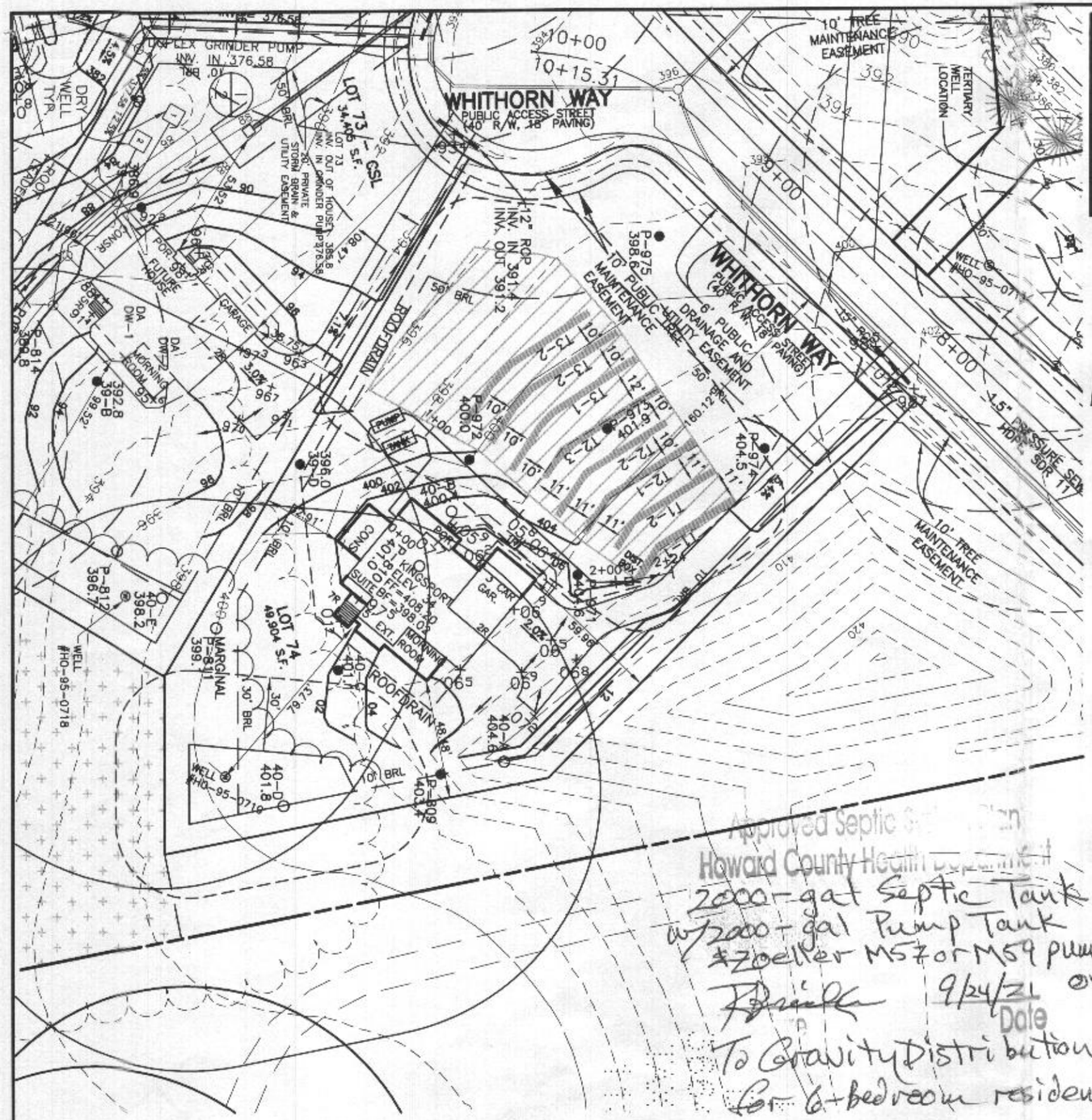
PUMP/SEPTIC TANK LEVEL YES
MANUFACTURER BACKHOE
CAPACITY 2000 GAL
SEAM LOC TOP
TANK LID DEPTH 3'-3.5'
BAFFLES —
BAFFLE FILTER —
MANHOLE LOC FRONT/BACK
6" PORT LOC —
WATERTIGHT TEST —
SLOTTED —
DATE ON LID —

PRE-CONSTRUCTION:
10/11/2022 HO. WANTS 2ND REP SYSTEM TO PLANT TREES AND PARK CARS OVER THE INITIAL SYSTEM AREA.

10/26/2022 LAID OUT UPPER TRS. ✓

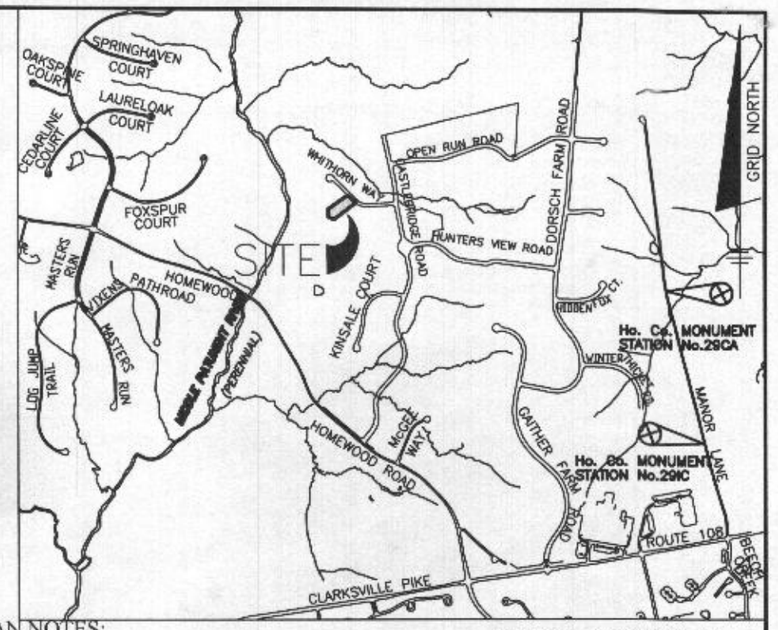
INSTALLATION: 10/18/2022 TANKS SET ✓ 10/26/2022 SL INSTALLED ✓ SHE RELOCATED. CONT COULD NOT DISCOVER AT FOUNDATION. ✓
10/28/2022 FM TRENCHES INSTALLED & PARTIALLY BACKFILLED - 4" PVC. CONFIRM W/ ENGINEER. EXPLAINED D BOX INSTALL. ✓ 11/01/2022 D BOX UNAPPROVABLE. ✓ 11/09/2022 NEW SL INSTALLED. D BOX REMOVED. ✓
12/30/2022 D box installed ✓ 1/18/23 (Joseph C.)
1/20/23 - Spoke w/ contractor about previous inspection done (had no notes). P/A test failed due to alarm float setting off pump & pump float setting off Alarm. Outlet pipe clamp undone. Repairs w/ 2 2" 90° SCH 40. 1/23/23 - Added 3rd float. Outlet pipe fixed. P & A Success

FINAL INSPECTOR Shepherd Page. DATE OF APPROVAL 1/23/2023.



LEGEND

- EXISTING CONTOURS ESTABLISHED UNDER F-04-082
- FIELD SURVEYED WELL LOCATION
- PASSED PERCOLATION TEST
- FAILED PERCOLATION TEST
- EXISTING APPROVED SEWAGE DISPOSAL AREA



ADC MAP 4934 GRID E1

VICINITY MAP

SCALE: 1" = 2000'

ONSITE SEWAGE DISPOSAL PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR RIVERWOOD, PHASE 2, PLAT Nos. 19720-19726. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS, THE STANDARD PLAN USAGE, WERE APPROVED BY HOWARD SOIL CONSERVATION.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND INCLUDES HOWARD COUNTY GIS, FIELD RUN TOPOGRAPHY BY J.A. RICE, INC., AND DESIGN GRADING FROM THE ROAD CONSTRUCTION PLANS.
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-95-0719, 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 DRY WELL FACILITY AND THE EXISTING MICROPOOL ED FACILITY.
10. THE NEW SEPTIC TANK WILL HAVE A 2,000 GALLON TWO COMPARTMENT TANK, THE PUMP TANK WILL BE A 2,000 GALLON ONE COMPARTMENT TANK.
11. ANY CHANGES TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
12. ANY ELECTRICAL WORK FOR THE INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

Approved Septic System
Howard County Health Department
2000-gal Septic Tank
w/2000-gal Pump Tank
#Zoeller M57 or M59 pump or equiv.
9/24/21
Date
To Gravity Distribution
for 6+bedroom residence

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.

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

9/21/21

PLAN VIEW

1" = 50'

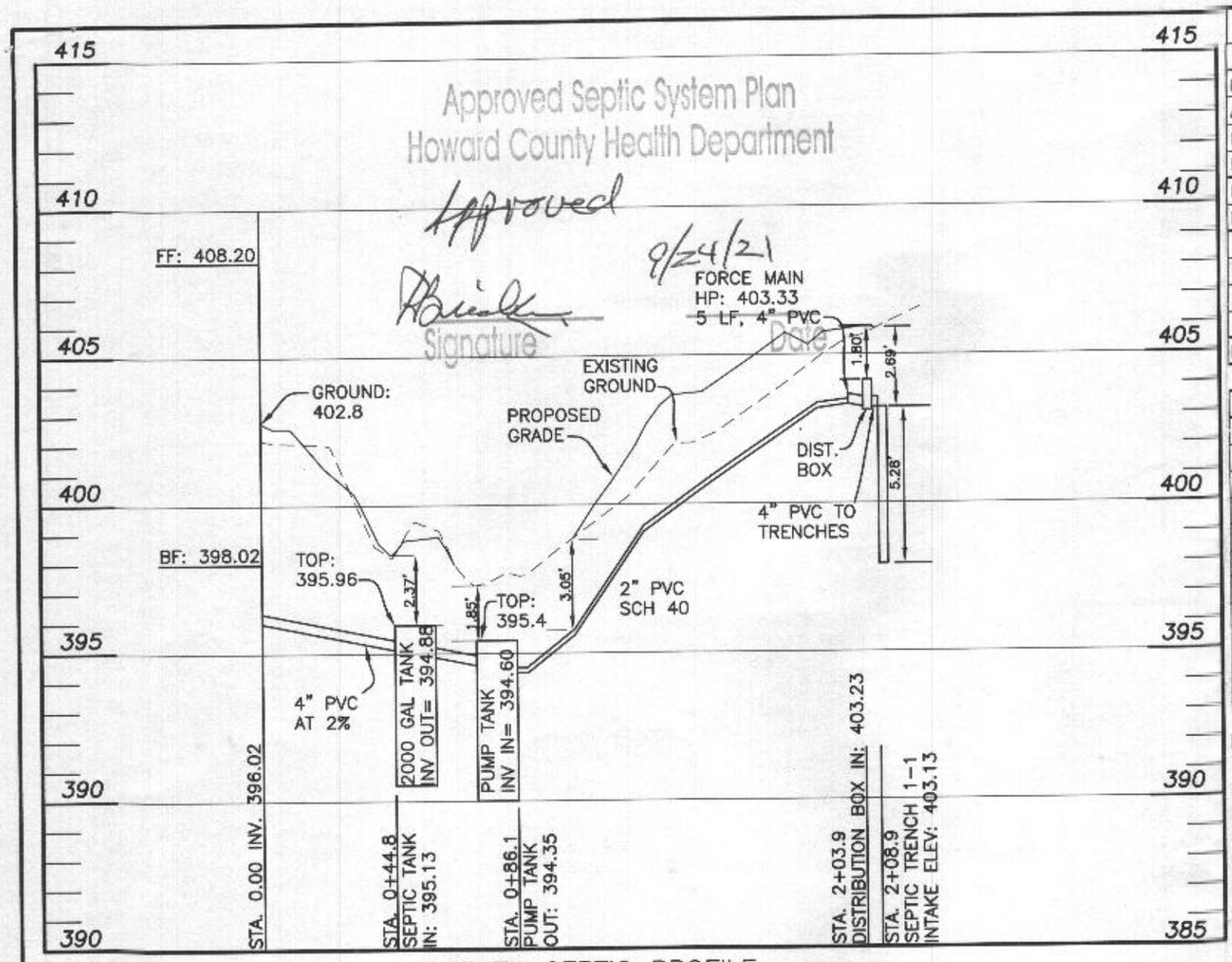
50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

OWNER:	BUILDER:	BENCHMARK ENGINEERING, INC.
WASIM AND SHEHLLA KHAN 10223 RUTLAND ROUND ROAD COLUMBIA, MD 21044	CARUSO HOMES 2120 BALDWIN AVE SUITE 200 CROFTON MD, 21114 301-832-2018	ENGINEERS LAND SURVEYORS PLANNERS 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 ▲ (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM

PROJECT:	RIVERWOOD, PHASE 2 LOT 74
LOCATION:	TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO 11225 WHITHORN WAY ELLICOTT CITY MD 21042 THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN
HOUSE TYPE:	KINGSPORT MODEL
DATE: SEPT., 2021	PROJECT NO. 3073
SCALE: AS SHOWN	DRAWING 1 OF 4

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:49:35 AM



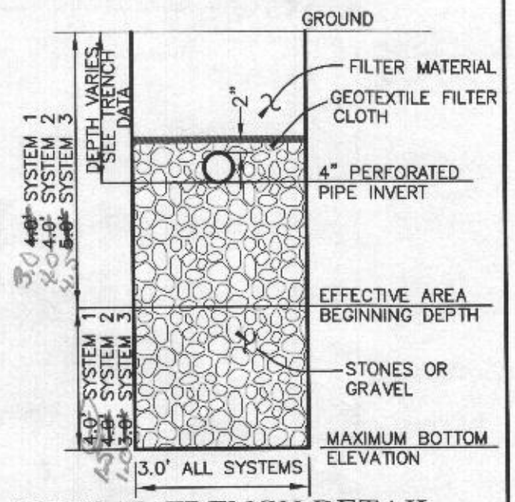
LOT 74 SEPTIC PROFILE

SCALE: 1'"=50' HORIZ., 1"=5' VERT

INITIAL SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	3.0	ft
Bottom Max Depth	7.0	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**

1st REPLACEMENT SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	4.0	ft
Bottom Max Depth	5.5	ft
Design Flow	900	gpd
Drainage Field square footage	750	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	**179**	**lf**

2nd REPLACEMENT SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	4.5	ft
Bottom Max Depth	5.5	ft
Design Flow	900	gpd
Drainage Field square footage	750	sf
Sidewall Reduction Credit	0.83	
Trench width	3	ft
Effective Area Depth	1	ft
Trench Spacing	10	ft
Linear Length of trench Required	**208**	**lf**



TYPICAL TRENCH DETAIL

NOT TO SCALE

SEPTIC INVERT CHART - LOT 74	
INV @ HOUSE	396.2
GROUND @ HOUSE	402.8
INV IN TANK	395.1
INV OUT TANK	394.9
TOP OF TANK	396.0
GROUND OVER TANK	398.3
INV IN PUMP TANK	394.6
INV OUT PUMP TANK	394.4
TOP OF PUMP TANK	395.4
GROUND OVER P. TANK	397.3
INV IN DIST BOX	403.23
INV OUT DIST BOX	403.18
GROUND AT DIST BOX	405.9

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.

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

9/21/21

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-CIVILENGINEERING.COM

TRENCH DATA					
INITIAL SYSTEM		**FIRST REPLACEMENT**		**SECOND REPLACEMENT**	
TRENCH T1-1		**TRENCH T2-1**		**TRENCH T3-1**	
LENGTH	52.1 ft	LENGTH	60 ft	LENGTH	69.5 ft
GROUND ELEVATION	405.9	GROUND ELEVATION	404.0	GROUND ELEVATION	401.9
INVERT ELEVATION	402.9	INVERT ELEVATION	402.0	INVERT ELEVATION	399.9
MAX BOTTOM ELEVATION	398.9	MAX BOTTOM ELEVATION	398.5	MAX BOTTOM ELEVATION	396.4
TRENCH T1-2		**TRENCH T2-2**		**TRENCH T3-2**	
LENGTH	52.1 ft	LENGTH	60 ft	LENGTH	69.5 ft
GROUND ELEVATION	404.9	GROUND ELEVATION	403.0	GROUND ELEVATION	401.0
INVERT ELEVATION	402.9	INVERT ELEVATION	401.0	INVERT ELEVATION	399.0
MAX BOTTOM ELEVATION	397.9	MAX BOTTOM ELEVATION	397.5	MAX BOTTOM ELEVATION	395.5
		TRENCH T2-3		**TRENCH T3-3**	
		LENGTH	60 ft	LENGTH	69.5 ft
		GROUND ELEVATION	403.0	GROUND ELEVATION	401.0
		INVERT ELEVATION	401.0	INVERT ELEVATION	399.0
		MAX BOTTOM ELEVATION	397.5	MAX BOTTOM ELEVATION	395.5

HEALTH DEPARTMENT SPEC INFORMATION - LOT 74			
System	Application Rate	Effective Depth	Bottom Depth
Initial	1.2	3.0	7.0
1st Replacement	1.2	4.0	5.5
2nd Replacement	1.2	4.5	5.5

SEE MANUFACTURES 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:

BUILDER:
CARUSO HOMES
2120 BALDWIN AVE
SUITE 200
CROFTON MD, 21114
301-832-2018

OWNER:
WASIM AND SHEHLLA KHAN
10223 RUTLAND ROUND ROAD
COLUMBIA, MD 21044

PROJECT: RIVERWOOD
LOT 74

LOCATION: TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO
11225 WHITHORN WAY
ELLICOTT CITY MD 21042
THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637

TITLE: ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN

HOUSE TYPE: KINGSPORT MODEL

DATE: SEPT., 2021 | PROJECT NO. 3073

SCALE: AS SHOWN | DRAWING 2 OF 4

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:49:55 AM

Pumping Station

Diameter of Force Main and Manifold = 2 " PVC SCH. 40

Length of Force Main = 113 feet SCH.40 gallons/100 feet = 17.4 Table 4.2

Volume of Main = 19.7 gallons

Total Volume = 19.7 gallons

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 20 gallons

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

Size Pump Chamber

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

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

Use 2,000 gallon pump tank

Tank Dimensions:	Exterior		Interior			
	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 = 7.000 minutes
rate = 22.86 gallons/minute

Design Head: Design Head = Static Head + Friction Head

Static Head = highest elevation of main - pump off elevation

Highest component of system = 403.33 Main HP

Pump off elevation = 392.00

Static Head = 11.33 feet

Friction Head = Head loss due to pipe friction

2.0" pipe =	113 feet		
45° bends	3 loss for bend	12 feet	per table 4.3
90° bends	3 loss for bend	15 feet	per table 4.3
Gate Valve	0 loss for tee	0 feet	per table 4.3

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

Equivalent Length = 140 Friction loss 1.32 feet

Total Friction Head = 1.32

Design Head = 12.65 feet

Pump Requirements:

Performance = 22.86 gpm
Head of Water = 12.65 feet of head

Pump Selection: Zoeller Pump Company, Model 59
0.3 horse power

Pump Flow Rate = 26.00 gallons/minute per rating curve. Run time: 6.15 Minutes
TDH analysis 12.99 ft
Between design and curve? Yes

Design Pump Chamber

Ground over Tank = 397.30 Cover 1.90 ft
Top of Tank = 396.40
Invert of Tank = 390.31
6" Riser = 0.50 feet
Pump Height= 0.86 feet

Min. Pump off = 391.67
Selected Pump off = 392.00

Dose = 21.4 cf
Area of Pit = 73.05 sf

Pump on dist. = 0.29
Pump on Elev. = 392.29

Distance between Pump on and Highwater Alarm = 0.5 feet
Highwater Alarm Elevation = 392.79

Dist. for day stored above alarm 1.65
Minimum Inlet Elev. = 394.44
Tank Inlet = 394.56 Okay
Dist. Alarm to Inlet = 1.77 Okay

Approved Septic System Plan
Howard County Health Department
2000-gal Septic Tank
& 2000-gal Pump Tank
w/ Zoeller M57 or M59 pump (or equal)
Signature 9/24/21 Date
To Gravity Distribution
for 6-Bedroom residence

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:50:10 AM

Trusted. Tested. Tough.®

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or nonstandards.

ZOELLER® PUMP COMPANY

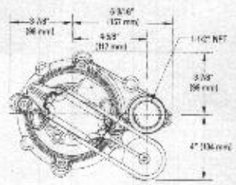
SECTION: 2.10.020
FM2776
1120
Supersedes
0515

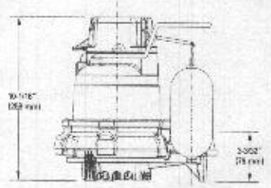
TECHNICAL DATA SHEET
MIGHTY-MATE SERIES
Cast Iron Models 53, 57 and Bronze Models 55, 59
Submersible Effluent / Dewatering Pumps

PRODUCT SPECIFICATIONS

MOTOR	Horse Power	3/10
	Voltage	115 or 230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	1650
	Type	Shaded pole
	Insulation	Class B
	Amps	4.8 - 9.7
PUMP	Operation	Automatic or manual/manual
	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	SJT, Rated, 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
MATERIALS	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.



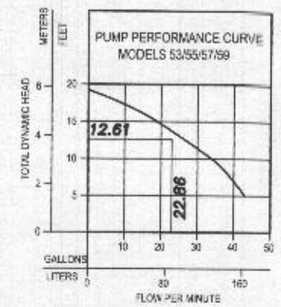


SSPMA

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

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)	



RECOMMENDED PUMP: M59

Model	MODEL COMPARISON										
	Seal	Mode	Volts	Ph	Amps	HP	Hz	Liter	Kg	Simplex	Duplex
M53/M55	Single	Auto	115	1	9.7	3/10	60	23	10	1	—
M53/M55	Single	Non	115	1	9.7	3/10	60	23	10	2	3 & 4
* BM53	Single	Auto	115	1	9.7	3/10	60	25	11	*	—
* BM53/BM57	Single	Auto	230	1	4.8	3/10	60	24 / 32	11 / 13	*	—
D59	Single	Auto	230	1	4.8	3/10	60	23	10	1	—
E53/E55	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	28 / 33	13 / 15	1	—
N57/N59	Single	Non	115	1	9.7	3/10	60	28 / 29	12 / 13	2	3 & 4
* BM57	Single	Auto	115	1	9.7	3/10	60	32	13	*	—
D57/D59	Single	Auto	230	1	4.8	3/10	60	28 / 33	13 / 15	1	—
E57/E59	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 25' (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).

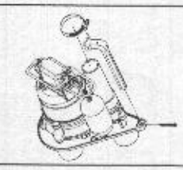
SELECTION GUIDE

1. Integral float-operated mechanical switch, no external control required.
2. Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM0712 for correct model of Electrical Alternator.
4. 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 1½" 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).

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

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 06-08-2022.

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

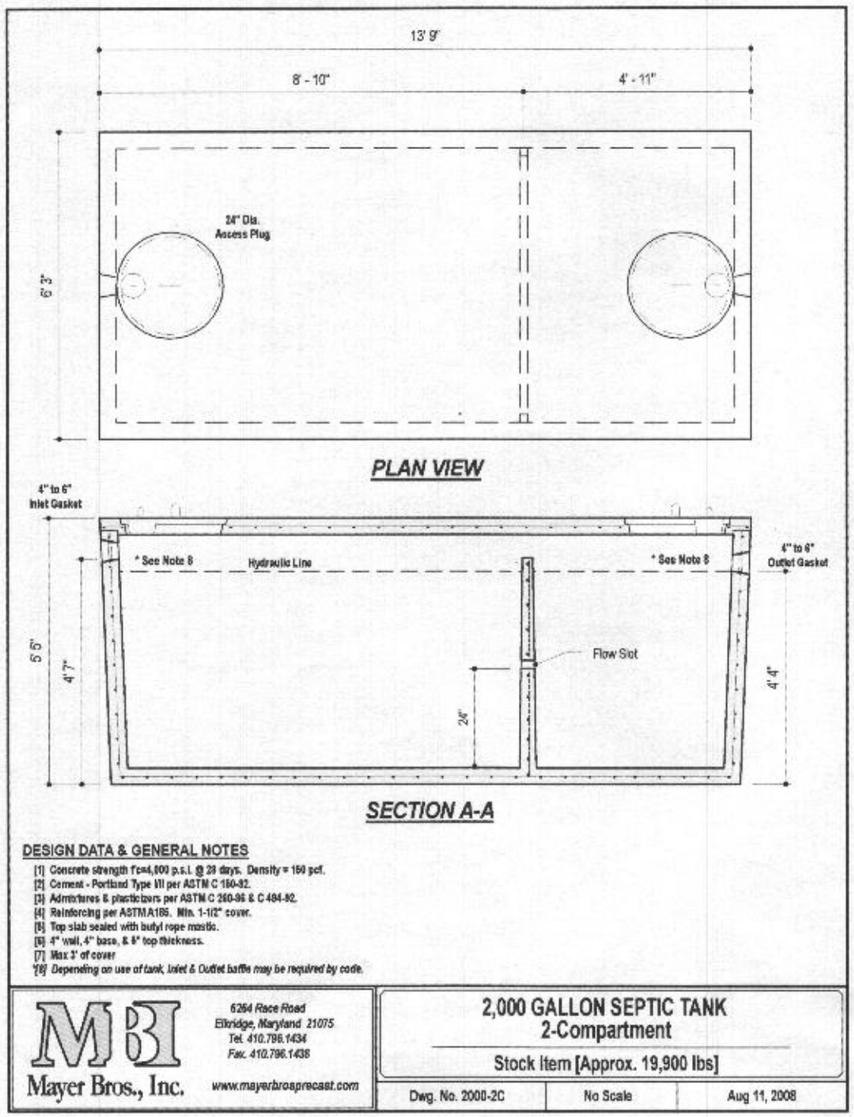
9/21/21

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-CIVILENGINEERING.COM

BUILDER:
CARUSO HOMES
2120 BALDWIN AVE
SUITE 200
CROFTON MD, 21114
301-832-2018

OWNER:
WASIM AND SHEHLLA KHAN
10223 RUTLAND ROUND ROAD
COLUMBIA, MD 21044

PROJECT:	RIVERWOOD LOT 74
LOCATION:	TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO 11225 WHITHORN WAY ELLICOTT CITY MD 21042 THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN
HOUSE TYPE:	KINGSPORT MODEL
DATE:	SEPT., 2021
PROJECT NO.	3073
SCALE:	AS SHOWN
DRAWING	3 OF 4



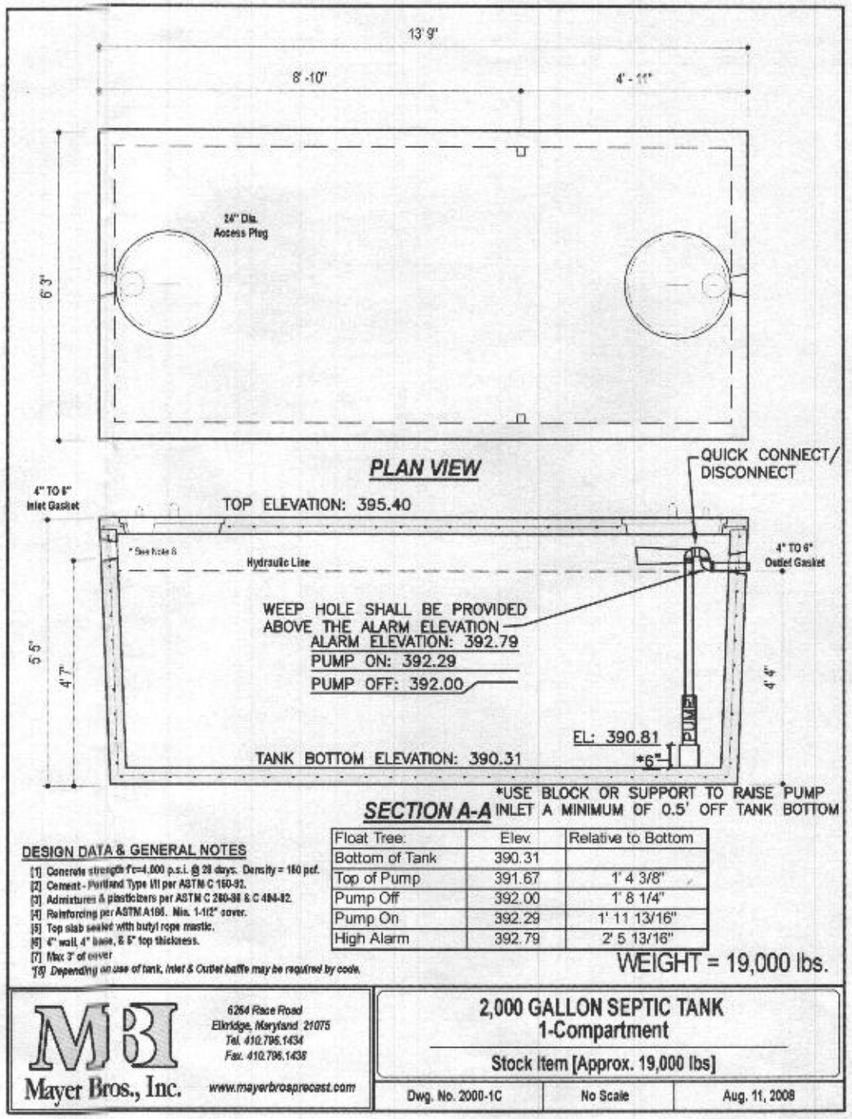
DESIGN DATA & GENERAL NOTES

[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type I/II 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.

MBI 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



DESIGN DATA & GENERAL NOTES

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[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.

Float Tree:	Elev.	Relative to Bottom
Bottom of Tank	390.31	
Top of Pump	391.67	1' 4 3/8"
Pump Off	392.00	1' 8 1/4"
Pump On	392.29	1' 11 13/16"
High Alarm	392.79	2' 5 13/16"

WEIGHT = 19,000 lbs.

MBI 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
1-Compartment
Stock Item [Approx. 19,000 lbs]

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

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9/21/21

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-CIVILENGINEERING.COM

Approved Septic System Plan
Howard County Health Department
Approved

Signature

9/24/2021
Date

BUILDER:
CARUSO HOMES
2120 BALDWIN AVE
SUITE 200
CROFTON MD, 21114
301-832-2018

OWNER:
WASIM AND SHEHLLA KHAN
10223 RUTLAND ROUND ROAD
COLUMBIA, MD 21044

PROJECT: RIVERWOOD
LOT 74

LOCATION: TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO
11225 WHITHORN WAY
ELLICOTT CITY MD 21042
THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637

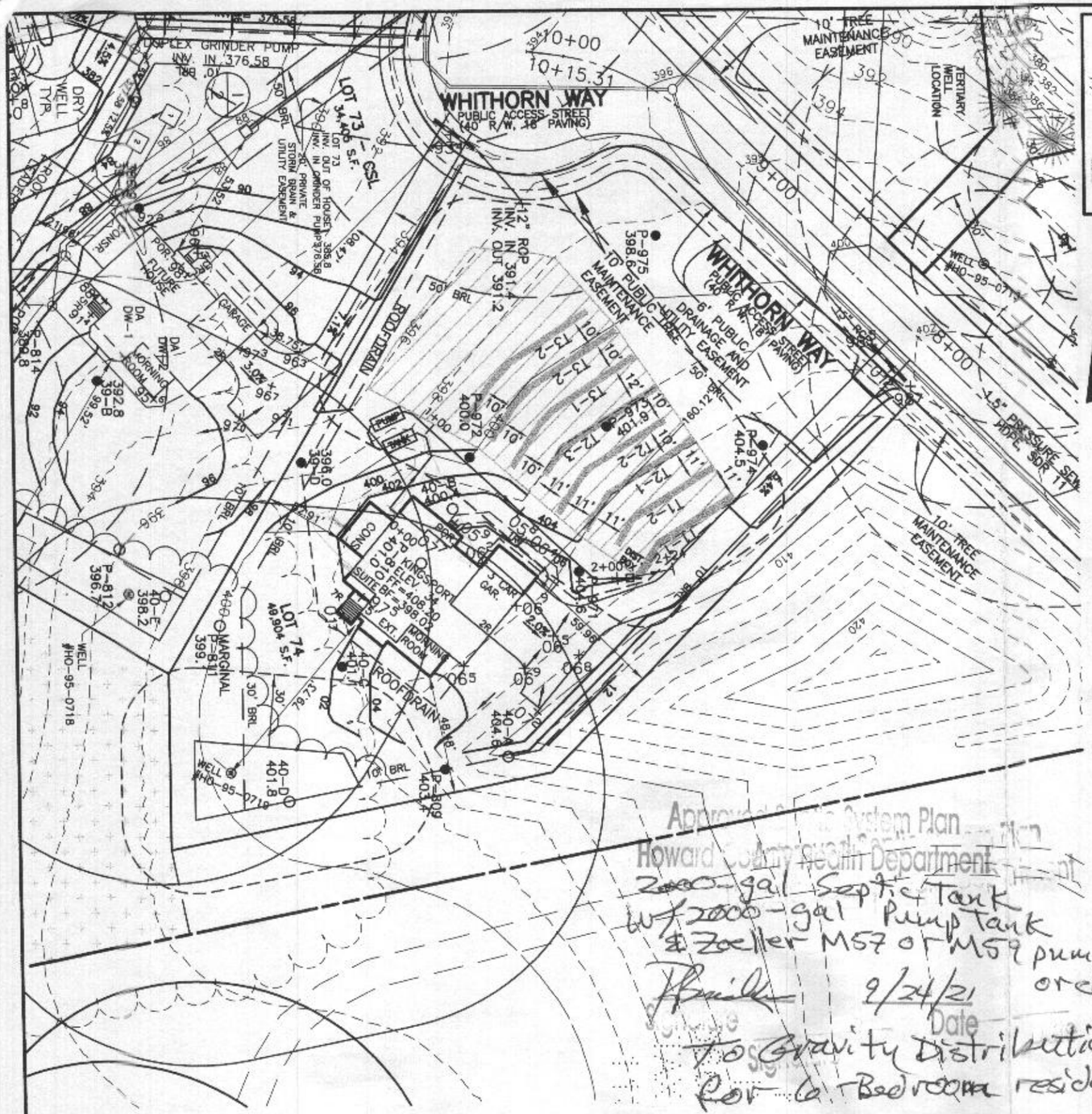
TITLE: ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN

HOUSE TYPE: KINGSPORT MODEL

DATE: SEPT., 2021 | PROJECT NO. 3073

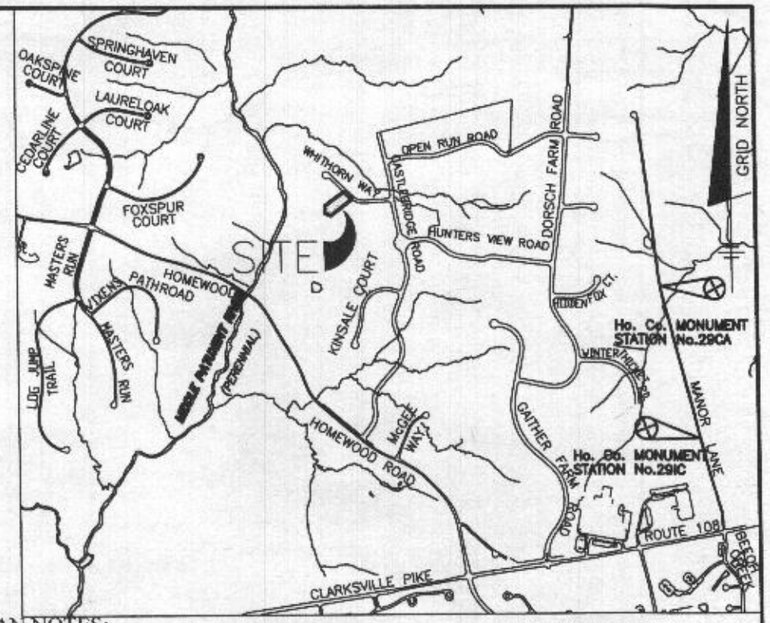
SCALE: AS SHOWN | DRAWING 4 OF 4

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:50:34 AM



LEGEND

- EXISTING CONTOURS ESTABLISHED UNDER F-04-082
- FIELD SURVEYED WELL LOCATION
- PASSED PERCOLATION TEST
- FAILED PERCOLATION TEST
- EXISTING APPROVED SEWAGE DISPOSAL AREA



ADC MAP 4934 GRID E1

VICINITY MAP

SCALE: 1" = 2000'

ONSITE SEWAGE DISPOSAL PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR RIVERWOOD, PHASE 2, PLAT Nos. 19720-19726. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS, THE STANDARD PLAN USAGE, WERE APPROVED BY HOWARD SOIL CONSERVATION.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND INCLUDES HOWARD COUNTY GIS, FIELD RUN TOPOGRAPHY BY J.A. RICE, INC., AND DESIGN GRADING FROM THE ROAD CONSTRUCTION PLANS.
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-95-0719, 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 DRY WELL FACILITY AND THE EXISTING MICROPOOL ED FACILITY.
10. THE NEW SEPTIC TANK WILL HAVE A 2,000 GALLON TWO COMPARTMENT TANK, THE PUMP TANK WILL BE A 2,000 GALLON ONE COMPARTMENT TANK.
11. ANY CHANGES TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
12. ANY ELECTRICAL WORK FOR THE INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

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.

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

9/21/21

Approved Sewage System Plan
Howard County Health Department

2000-gal Septic Tank
w/ 2000-gal Pump Tank
& Zoeller M57 or M59 pump or equiv.

9/24/21
Date

To Gravity Distribution
For a 4 Bedroom residence

PLAN VIEW

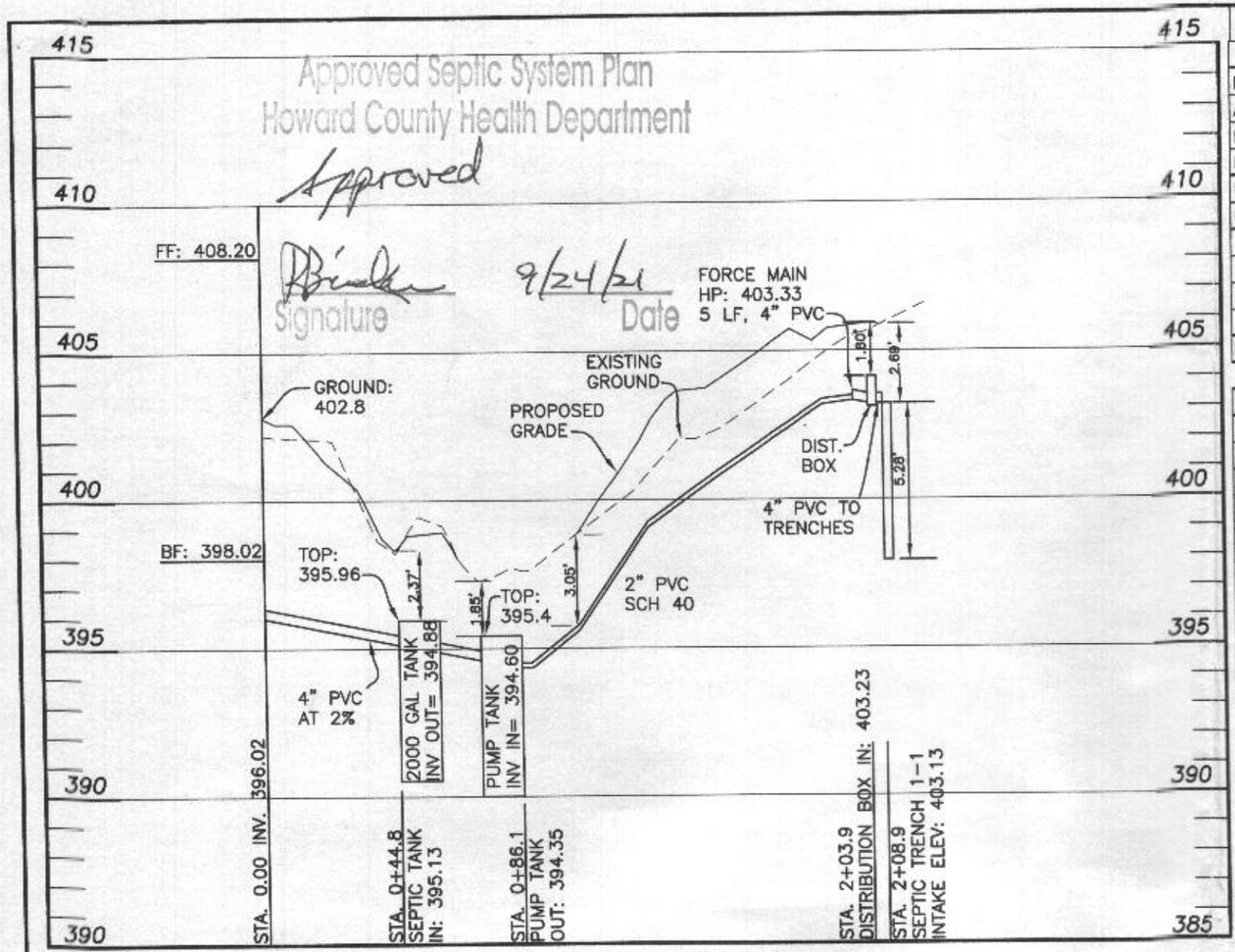
50 0 25 50 1" = 50' 100

(IN FEET)
1 inch = 50 ft.

OWNER:	BUILDER:	BENCHMARK ENGINEERING, INC.
WASIM AND SHEHLLA KHAN 10223 RUTLAND ROUND ROAD COLUMBIA, MD 21044	CARUSO HOMES 2120 BALDWIN AVE SUITE 200 CROFTON MD, 21114 301-832-2018	ENGINEERS LAND SURVEYORS PLANNERS 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 ▲ (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM

PROJECT:	RIVERWOOD, PHASE 2 LOT 74		
LOCATION:	TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO 11225 WHITHORN WAY ELLICOTT CITY MD 21042 THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637		
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN		
HOUSE TYPE:	KINGSPORT MODEL		
DATE:	SEPT., 2021	PROJECT NO.	3073
SCALE:	AS SHOWN	DRAWING	1 OF 4

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:49:35 AM



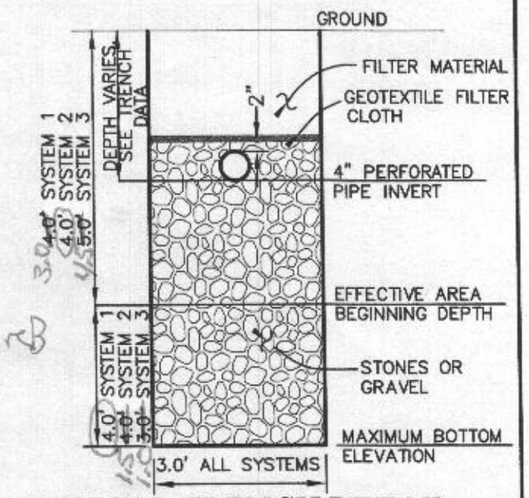
LOT 74 SEPTIC PROFILE

SCALE: 1'"=50' HORIZ., 1"=5' VERT

INITIAL SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	3.0	ft
Bottom Max Depth	7.0	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

1st REPLACEMENT SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	4.0	ft
Bottom Max Depth	5.5	ft
Design Flow	900	gpd
Drainage Field square footage	750	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	**179**	lf

2nd REPLACEMENT SYSTEM		
Number of Bedrooms	6	
Application Rate	1.2	gpd/sf
Effective Area Beginning Depth	4.5	ft
Bottom Max Depth	5.5	ft
Design Flow	900	gpd
Drainage Field square footage	750	sf
Sidewall Reduction Credit	0.83	
Trench width	3	ft
Effective Area Depth	1	ft
Trench Spacing	10	ft
Linear Length of trench Required	**208**	lf



TYPICAL TRENCH DETAIL

NOT TO SCALE

TRENCH DATA					
INITIAL SYSTEM		**FIRST REPLACEMENT**		**SECOND REPLACEMENT**	
TRENCH T1-1		**TRENCH T2-1**		**TRENCH T3-1**	
LENGTH	52.1 ft	LENGTH	60 ft	LENGTH	69.5 ft
GROUND ELEVATION	405.9	GROUND ELEVATION	404.0	GROUND ELEVATION	401.9
INVERT ELEVATION	402.9	INVERT ELEVATION	402.0	INVERT ELEVATION	399.9
MAX BOTTOM ELEVATION	398.9	MAX BOTTOM ELEVATION	398.5	MAX BOTTOM ELEVATION	396.4
TRENCH T1-2		**TRENCH T2-2**		**TRENCH T3-2**	
LENGTH	52.1 ft	LENGTH	60 ft	LENGTH	69.5 ft
GROUND ELEVATION	404.9	GROUND ELEVATION	403.0	GROUND ELEVATION	401.0
INVERT ELEVATION	402.9	INVERT ELEVATION	401.0	INVERT ELEVATION	399.0
MAX BOTTOM ELEVATION	397.9	MAX BOTTOM ELEVATION	397.5	MAX BOTTOM ELEVATION	395.5
		TRENCH T2-3		**TRENCH T3-3**	
		LENGTH	60 ft	LENGTH	69.5 ft
		GROUND ELEVATION	403.0	GROUND ELEVATION	401.0
		INVERT ELEVATION	401.0	INVERT ELEVATION	399.0
		MAX BOTTOM ELEVATION	397.5	MAX BOTTOM ELEVATION	395.5

HEALTH DEPARTMENT SPEC INFORMATION - LOT 74			
System	Application Rate	Effective Depth	Bottom Depth
Initial	1.2	3.0	7.0
1st Replacement	1.2	4.0	5.5
2nd Replacement	1.2	4.5	5.5

SEE MANUFACTURES 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:

SEPTIC INVERT CHART - LOT 74	
INV @ HOUSE	396.2
GROUND @ HOUSE	402.8
INV IN TANK	395.1
INV OUT TANK	394.9
TOP OF TANK	396.0
GROUND OVER TANK	398.3
INV IN PUMP TANK	394.6
INV OUT PUMP TANK	394.4
TOP OF PUMP TANK	395.4
GROUND OVER P. TANK	397.3
INV IN DIST BOX	403.23
INV OUT DIST BOX	403.18
GROUND AT DIST BOX	405.9

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.

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

9/21/21

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ENGINEERING, INC.
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CROFTON MD, 21114
301-832-2018

OWNER:
WASIM AND SHEHLLA KHAN
10223 RUTLAND ROUND ROAD
COLUMBIA, MD 21044

PROJECT: RIVERWOOD
LOT 74

LOCATION: TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO
11225 WHITHORN WAY
ELLICOTT CITY MD 21042
THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637

TITLE: ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN

HOUSE TYPE: KINGSPORT MODEL

DATE: SEPT., 2021 | PROJECT NO. 3073

SCALE: AS SHOWN | DRAWING 2 OF 4

J:\1950 RIVERWOOD HSES\dwg\801 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:49:55 AM

Pumping Station

Diameter of Force Main and Manifold = 2 " PVC SCH. 40
Length of Force Main = 113 feet SCH.40 gallons/100 feet = 17.4 Table 4.2

Volume of Main = 19.7 gallons

Total Volume = 19.7 gallons

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 20 gallons

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

Size Pump Chamber

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

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

Use 2,000 gallon pump tank

Tank Dimensions:	Exterior		Interior			
	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 = 7.000 minutes
rate = 22.86 gallons/minute

Design Head: Design Head = Static Head + Friction Head
Static Head = highest elevation of main - pump off elevation
Highest component of system = 403.33 Main HP
Pump off elevation = 392.00
Static Head = 11.33 feet

Friction Head = Head loss due to pipe friction

2.0" pipe =	113 feet		
45° bends	3 loss for bend	12 feet	per table 4.3
90° bends	3 loss for bend	15 feet	per table 4.3
Gate Valve	0 loss for tee	0 feet	per table 4.3

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

Equivalent Length = 140 Friction loss 1.32 feet

Total Friction Head = 1.32

Design Head = 12.65 feet

Pump Requirements:

Performance = 22.86 gpm
Head of Water = 12.65 feet of head

Pump Selection: Zoeller Pump Company, Model 59
0.3 horse power

Pump Flow Rate = 26.00 gallons/minute per rating curve. Run time: 6.15 Minutes
TDH analysis 12.99 ft
Between design and curve? Yes

Design Pump Chamber

Ground over Tank = 397.30 Cover 1.90 ft
Top of Tank = 395.40
Invert of Tank = 390.31
6" Riser = 0.50 feet
Pump Height= 0.86 feet

Min. Pump off = 391.67
Selected Pump off = 392.00

Dose = 21.4 cf
Area of Pit = 73.05 sf

Pump on dist. = 0.29
Pump on Elev. = 392.29

Distance between Pump on and Highwater Alarm = 0.5 feet
Highwater Alarm Elevation = 392.79

Dist. for day stored above alarm 1.65
Minimum Inlet Elev. = 394.44
Tank Inlet = 394.56 Okay
Dist. Alarm to Inlet = 1.77 Okay

Approved Septic System Plan
Howard County Health Department
2000-gal Septic Tank
w/ 2000-gal Pump Tank
& Zoeller M57 or M59 pump or equiv.
Signature 9/24/21 Date
To Gravity Distribution
for 6-bed room residence

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:50:10 AM

Trusted. Tested. Tough.®

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER. PUMP COMPANY

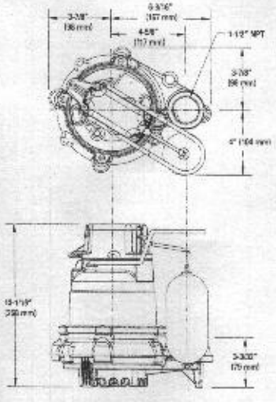
SECTION: 2.15.020
FM2778
1122
Supersedes
0515

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

PRODUCT SPECIFICATIONS

MOTOR	Horse Power	3/10
	Voltage	115 or 230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	1650
	Type	Shaded pole
	Insulation	Class B
	Amps	4.8 - 9.7
PUMP	Operation	Automatic or non-automatic
	Auto On/Off Points	7-1/4" (18.4 cm) / 2" (5.08 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 (168 LPM)
	Max. Operating Temp.	120° F (50° C)
	Cooling	Oil filled
	Motor Protection	Auto reset thermal overload
MATERIALS	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

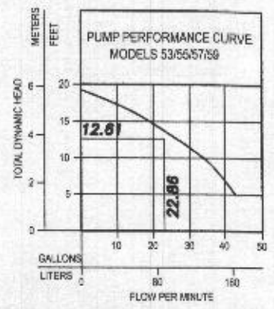
NOTE: See model comparison chart for specific details.



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

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)	



RECOMMENDED PUMP: M59

Model	MODEL COMPARISON										
	Swit.	Mode	Volts	Ph	Amps	HP	Hz	Lbs	Kg	Simplex	Duplex
M53/M55	Single	Auto	115	1	9.7	3/10	60	33	10	1	--
N53/N55	Single	Non	115	1	9.7	3/10	60	33	10	2	3 & 4
* BN53	Single	Auto	115	1	9.7	3/10	60	35	11	*	--
* BE53/BE57	Single	Auto	230	1	4.8	3/10	60	34 / 36	11 / 13	*	--
D53	Single	Auto	230	1	4.8	3/10	60	33	10	1	--
E53/E55	Single	Non	230	1	4.8	3/10	60	33	10	2	3 & 4
M57/M59	Single	Auto	115	1	9.7	3/10	60	28 / 33	13 / 15	1	--
N57/N59	Single	Non	115	1	9.7	3/10	60	28 / 29	13 / 13	2	3 & 4
* BN57	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	--
E57/E59	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.
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).

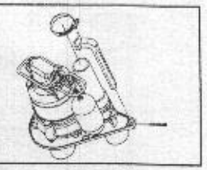
SELECTION GUIDE

1. Integral float-operated mechanical switch, no external control required.
2. Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM0712 for correct model of Electrical Alternator.
4. 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 1½" 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).

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

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-08-2022.

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

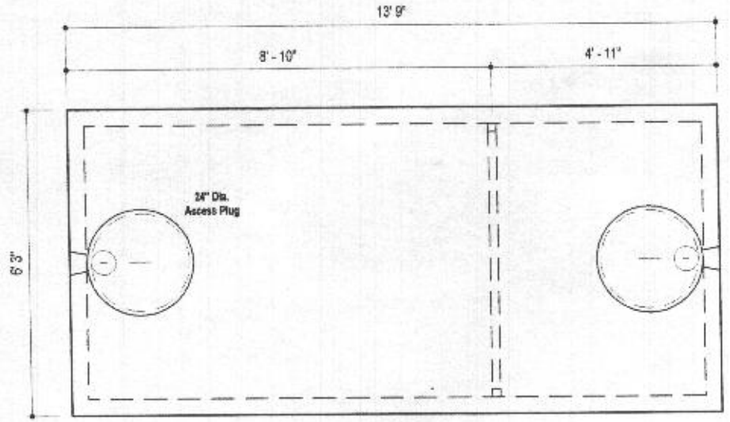
9/21/21

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-CIVILENGINEERING.COM

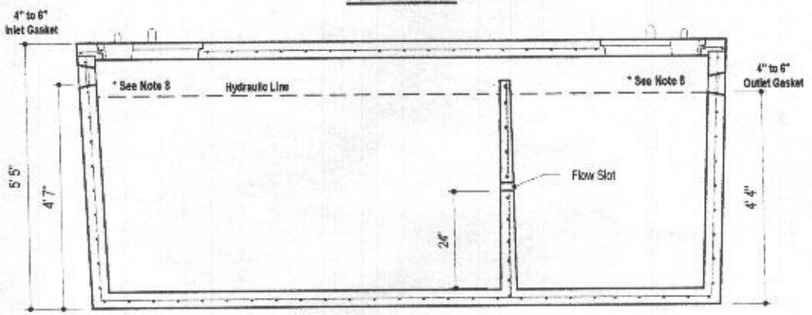
BUILDER:
CARUSO HOMES
2120 BALDWIN AVE
SUITE 200
CROFTON MD, 21114
301-832-2018

OWNER:
WASIM AND SHEHLLA KHAN
10223 RUTLAND ROUND ROAD
COLUMBIA, MD 21044

PROJECT:	RIVERWOOD LOT 74
LOCATION:	TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DED 11225 WHITHORN WAY ELLICOTT CITY MD 21042 THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637
TITLE:	ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN
HOUSE TYPE:	KINGSPORT MODEL
DATE:	SEPT., 2021
PROJECT NO.	3073
SCALE:	AS SHOWN
DRAWING	3 OF 4



PLAN VIEW



SECTION A-A

DESIGN DATA & GENERAL NOTES

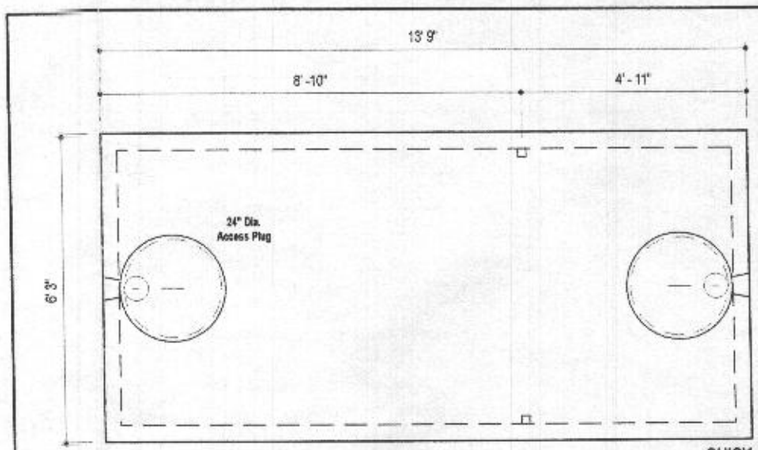
[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type III per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, 4" base, & 6" top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

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

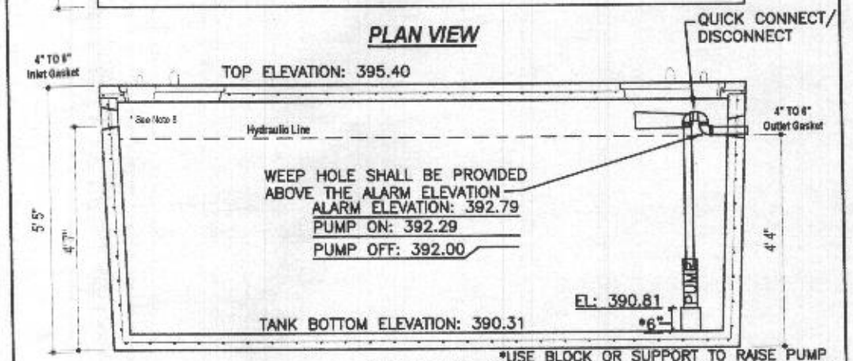
2,000 GALLON SEPTIC TANK
2-Compartment

Stock Item [Approx. 19,900 lbs]

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



PLAN VIEW



*USE BLOCK OR SUPPORT TO RAISE PUMP INLET A MINIMUM OF 0.5' OFF TANK BOTTOM

SECTION A-A

Float Tree:	Elev.	Relative to Bottom
Bottom of Tank	390.31	
Top of Pump	391.67	1' 4 3/8"
Pump Off	392.00	1' 8 1/4"
Pump On	392.29	1' 11 13/16"
High Alarm	392.79	2' 5 13/16"

WEIGHT = 19,000 lbs.

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

2,000 GALLON SEPTIC TANK
1-Compartment

Stock Item [Approx. 19,000 lbs]

Dwg. No. 2000-1C	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: 06-08-2022

STATE OF MARYLAND · JOHN M. CARNEY · 45577 · PROFESSIONAL ENGINEER

9/21/21

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-CIVILENGINEERING.COM

Approved Septic System Plan
Howard County Health Department
Approved
Signature
9/24/21
Date

BUILDER:
CARUSO HOMES
2120 BALDWIN AVE
SUITE 200
CROFTON MD, 21114
301-832-2018

OWNER:
WASIM AND SHEHLLA KHAN
10223 RUTLAND ROUND ROAD
COLUMBIA, MD 21044

PROJECT: RIVERWOOD
LOT 74

LOCATION: TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO
11225 WHITHORN WAY
ELLICOTT CITY MD 21042
THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637

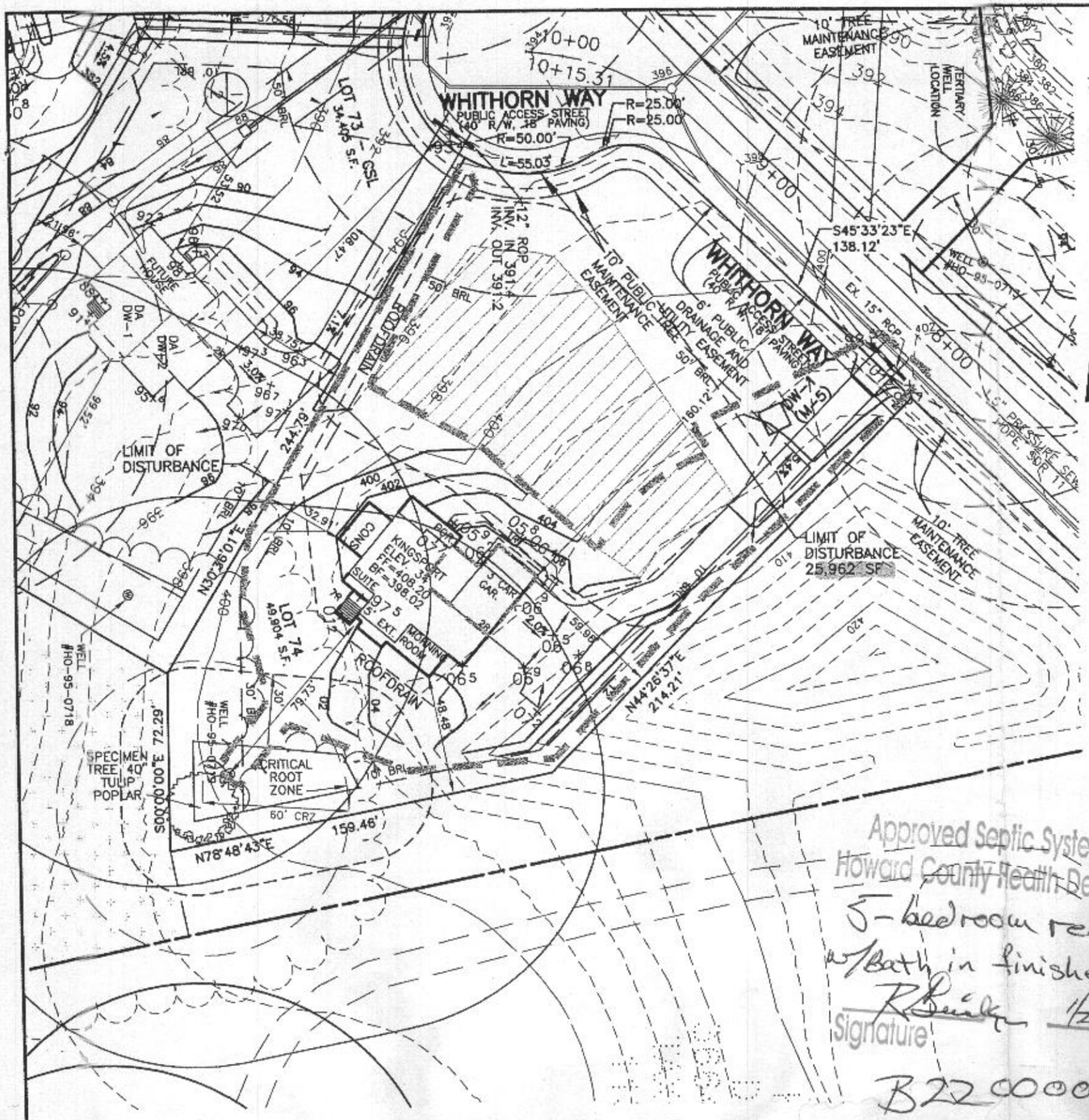
TITLE: ONSITE SEWAGE DISPOSAL SYSTEM (OSDS) DESIGN PLAN

HOUSE TYPE: KINGSPORT MODEL

DATE: SEPT., 2021 | PROJECT NO. 3073

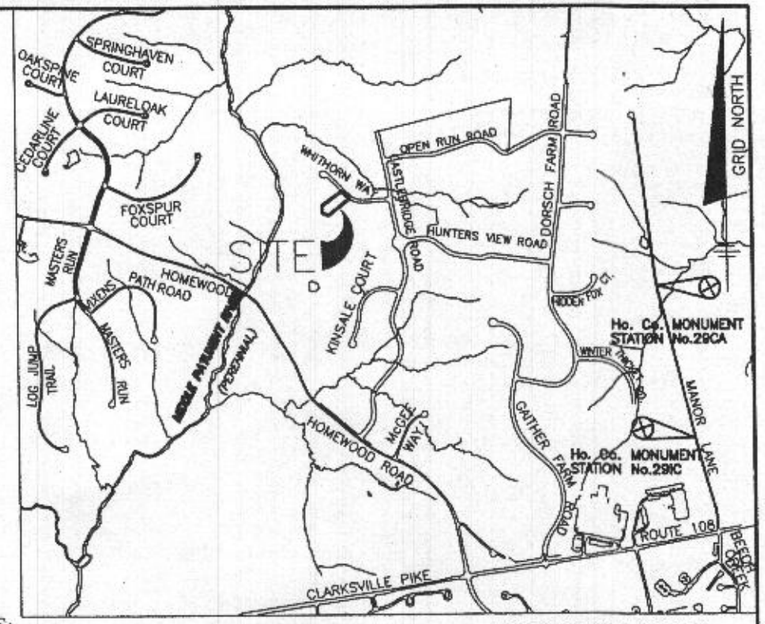
SCALE: AS SHOWN | DRAWING 4 OF 4

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, Lot 74 OSDS, 9/21/2021 9:50:34 AM



LEGEND

- EXISTING CONTOURS ESTABLISHED UNDER F-04-082
- Ⓦ FIELD SURVEYED WELL LOCATION
- EXISTING APPROVED SEWAGE DISPOSAL AREA
- LIMIT OF DISTURBANCE



ADC MAP 4934 GRID E1

VICINITY MAP

SCALE: 1" = 2000'

BUILDING PERMIT PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR RIVERWOOD, PHASE 2, PLAT Nos. 19720-19726. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS, THE STANDARD PLAN USAGE, WERE APPROVED BY HOWARD SOIL CONSERVATION.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND INCLUDES HOWARD COUNTY GIS, FIELD RUN TOPOGRAPHY BY J.A. RICE, INC., AND DESIGN GRADING FROM THE ROAD CONSTRUCTION PLANS.
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-95-0719, 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 DRY WELL FACILITY AND THE EXISTING MICROPOOL ED FACILITY.
10. THE DRIVEWAY CULVERT FOR THIS LOT WAS INSTALLED UNDER THE ROAD CONSTRUCTION PLANS.

Approved Septic System Plan
Howard County Health Department
5-bedroom residence
w/Bath in finished basement area
R Benker 1/24/2022
Signature Date
B22000071

PLAN VIEW

1" = 50'

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

OWNER:	BUILDER:	BENCHMARK ENGINEERING, INC.
WASIM AND SHEHLLA KHAN 10223 RUTLAND ROUND ROAD COLUMBIA, MD 21044	CARUSO HOMES 2120 BALDWIN AVE SUITE 200 CROFTON MD, 21114 301-832-2018	ENGINEERS LAND SURVEYORS PLANNERS 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 ▲ (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM

PROJECT:	RIVERWOOD, PHASE 2 LOT 74		
LOCATION:	TAX MAP: 29, GRID: 4, PARCEL: 20, ZONED: RC-DEO 11225 WHITHORN WAY ELLICOTT CITY MD 21042 THIRD ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #03-351637		
TITLE:	BUILDING PERMIT PLAN		
HOUSE TYPE:	KINGSPORT MODEL		
DATE:	NOV., 2021	PROJECT NO.	3073
SCALE:	AS SHOWN	DRAWING	1 OF 2

J:\1950 RIVERWOOD HSES\dwg\8011 Lot 73 v2.dwg, p74, 12/1/2021 9:53:44 AM