Howard County Health Department

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

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

RECEIPT DATE: 2-18-26

ONSITE SEWAGE DISPOSAL SYSTEM

P 590349

APPROVAL DATE: 6/9/26

PERMIT: NEW CONSTRUCTION

A

PROPERTY ADDRESS: 11915 Simpson Road

SUBDIVISION: LOT: TAX ID:

CONTRACTOR: Hatfields Equipment EMAIL:

CONTRACTOR ADDRESS: P.O. Box 519 Annapolis MD 20701 PHONE:

PROPERTY OWNER: Williamsburg Homes EMAIL:

OWNER ADDRESS: 5485 Harpers Farm Road, Columbia, MD 21044 PHONE: 410-997-8800

SEPTIC TANK SIZE: 2000 PUMP SIZE: EPH30 PUMP TANK CAPACITY: 2000

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

TRENCHES:	LINEAR FEET REQUIRED:	104.2	INLET DEPTH:	2.5
	TRENCH WIDTH:	3	MAXIMUM BOTTOM DEPTH:	8
	MINIMUM SPACE BETWEEN TRENCHES:	11	EFFECTIVE AREA BEGINNING DEPTH:	4
LOCATION:	SYSTEM TO BE STAKED BY DESIGNER AND VERIFIED BY APPROVING AUTHORITY DURING PRE-CONSTRUCTION INSPECTION.			
NOTES:				

ISSUED BY: Hank Oswald ISSUE DATE: 2/18/26 EXPIRATION DATE: 7/18/27

NOTE: **CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION**

NOTE: CONTRACTOR REGERSTERED WITH THE STATE OF MD ON-SITE WASTEWATER PROFESSIONALS BOARD: CONFIRMED ☐

NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING

NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.

NOTE: WATERTIGHT SEPTIC TANKS REQUIRED

NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL

NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS

NOTE: **AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM**

☒ *ELECTRICAL PERMIT ISSUED* E 26000862

NOTE: **THE HCHD DOES NOT WARRANTY ANY SYSTEM AND CANNOT GUARANTEE THE PERFORMANCE OF THIS SYSTEM AS DESIGNED. BY ACCEPTING THIS PERMIT, THE OWNER AND/OR APPLICANT ACKOWLEDGE THAT THE SPECIFICATIONS DETAILED IN THIS DESIGN ARE ONE POSSIBLE OPTION AND THAT THE HCHD WILL REVIEW OTHER PROPOSALS. YOU HAVE THE OPTION TO SEEK THE ADVICE OF A QUALIFIED DESIGN CONSULTANT OR PROFESSIONAL ENGINEER FOR FURTHER GUIADNCE.**

NOTE: **AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.**

NOTE: **MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA**

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

PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.

CALL 410-313-1771 TO SCHEDULE INSPECTIONS.

NOT TO SCALE

4/6/2026-Installer onsite for F/U. All work still uncovered. c/o near foundation. SCH 40 4" PVC used. Adequate fill to ST. Both ST & PT open & checked w/ 4' level, < 3' cover on both. 4' of sleeve coming out of PT protecting 2", rest of 2" connected to d-box. ok to backfill (SP)

ROAD NAME

TRENCH/DRAINFIELD DATA

WIDTH	INLET	BOTTOM
3'	2.5'	8'

NUMBER OF TRENCHES 3

TOTAL LENGTH 105'

ABSORPTION AREA 315 ft³ & SW

DISTRIBUTION BOX LEVEL N/A

DISTRIBUTION BOX BAFFLE yes & 90' turndown

DISTRIBUTION BOX PORT yes

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL yes

MANUFACTURER Babylon

CAPACITY 2000 GAL

SEAM LOC Top

TANK LID DEPTH 1.5'

BAFFLES 6" front & 4" back

BAFFLE FILTER N/A

MANHOLE LOC Front & Back

6" PORT LOC N/A

WATERTIGHT TEST N/A

SLOTTED yes

DATE ON LID 1/26/2026

PUMP/SEPTIC TANK LEVEL yes

MANUFACTURER Babylon

CAPACITY 2000 GAL

SEAM LOC Top

TANK LID DEPTH 1.5' 2'

BAFFLES N/A

BAFFLE FILTER N/A

MANHOLE LOC Front & Back

6" PORT LOC N/A

WATERTIGHT TEST N/A

SLOTTED N/A

DATE ON LID 1/6/2026

SEPTIC CONTRACTOR ONSITE INSTALLING SYTEM: Todd Tracey

SEPTIC CONTRACTOR ONSITE LICENSED WITH THE STATE OF MD: YES/NO

CONTROL PANEL DATA

CONTROL PANEL HEIGHT _____ (MIN 30")

INSPECTION DATE _____

INSPECTION: PASS/FAIL (CIRCLE ONE)

PRE-CONSTRUCTION NOTES:

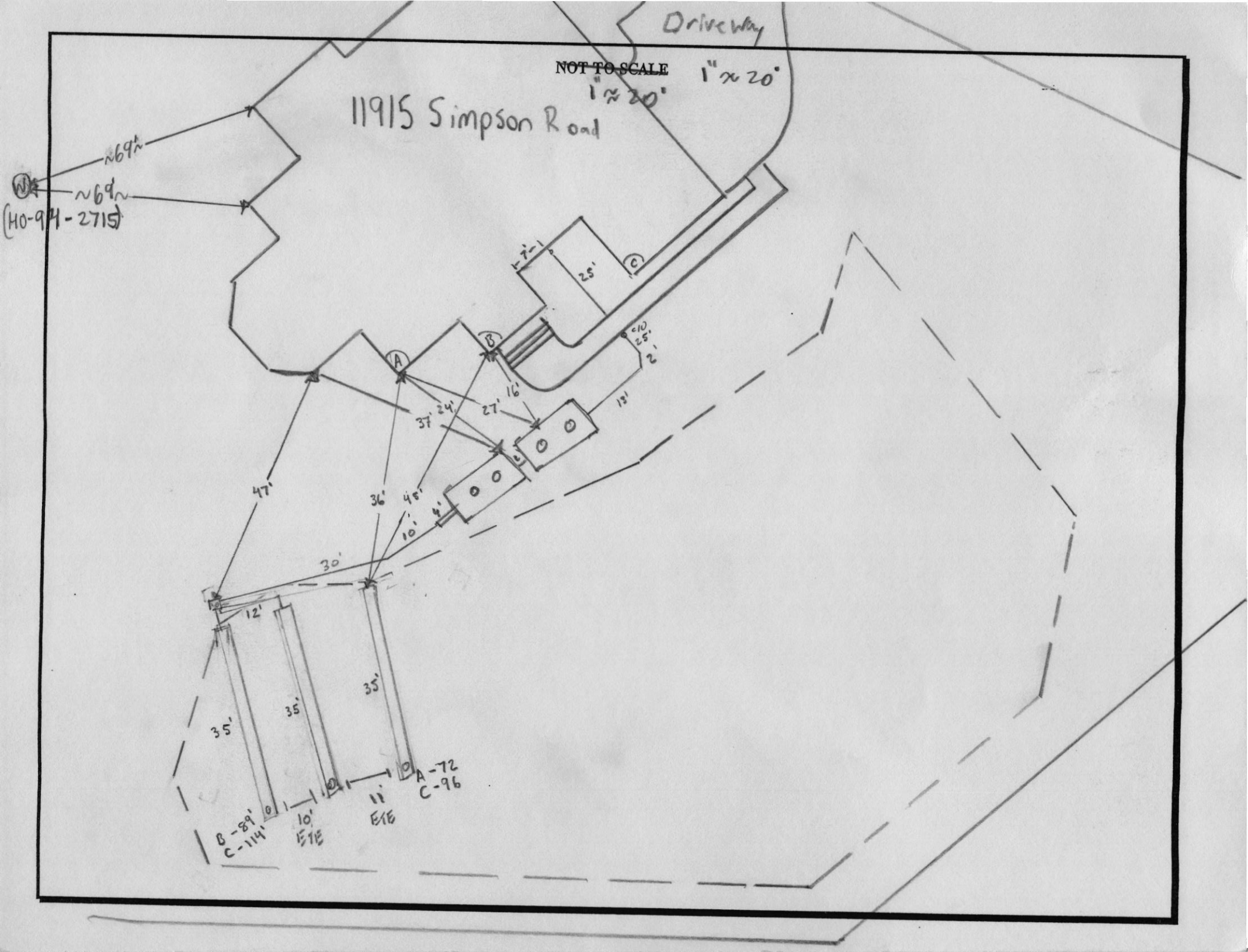
3/24/2026 - Installer onsite for pre-con. Fill on portion of SDA, installer dug down to original grade. Shift contour, moved trenches up ±6' closer together. Trenches 35' long, on contour, 13' apart, & within SDA per plan. Tank offsets stated per plan. Well > 100' from SDA, ok to start work (SP)

INSTALLATION NOTES:

4/2/26 Contractor completed upper trench and is currently digging middle trench. Upper trench has 8' bottom and 2.5' inlet. Stone is from Barrick - #2 double-washed, and marginal with fines attached. Size of stone ok. D-box has been set. Contractor to set septic tanks tomorrow. Told contractor since it's raining & off tomorrow that septic tank/pump tank cannot be covered. Contractor to backfill around tank to prevent tank from floating (MB) PM inspection done. Contractor onsite. Stone ok. Middle trench finished, inlet @ 2.5'. onsite while lower trench installed, bottom @ 8' & inlet @ 2.5'. Stone & fabric ok. 90° turn down installed @ d-box. 30' of 280 PSI 2" FM installed. (SP)

6/9/26 - pump & alarm ok. (SP)

FINAL INSPECTOR R. Rappaport DATE OF APPROVAL 6/9/26


Driveway
NOT TO SCALE
1" ≈ 20'
1" x 20'
11915 Simpson Road
~69'
~69'
(410-944-2715)
7'-1
25'
C
10
25'
2'
13'
A
B
16'
27'
24'
37'
47'
36'
45'
10'
4'
30'
12'
35'
35'
35'
A-72
C-96
11'
E/E
10'
E/E
B-89'
C-114'

S.W. BARRICK - BARRICK QUARRY
PH: (301) 845-6341
11609 Legore Bridge Road * Woodsboro, MD 21798

Scale:1 **TKT: 2078425**

Cust#: KENHAT **4/2/2026**
HATFIELDS EQUIP & DEDICATION SVSC, I **7:35:03AM**
Job#: SIMROA SIMPSON ROAD
11915 SIMPSON RD, HIGHLAND
NATHEN 443-398-4526

TRK#: 761D - DELAP TRANSPORT SERV. LI

			* P. T.
Zone#:	**M-12 - BARRICK DELIVERY ZONE**	Gross:	69000
P.O.#:		* Tare:	28300
Proj#:		Net:	40700
Mat'l#:	**22W-DBL WSHED AASHTO #2 STONE**	**TONS:**	**20.35**

	Loads	Tons
Job/Daily:	1	20.35
Job/Total:	1	20.35

WEIGHMASTER: Samantha Sullivan

We exercise No Control Over Delivery of Our Products & We Won't be Held Liable for Any Damage to Person or Property.

Material Safety Data Information Available Upon Request.

Have A Great Day. Please Drive Safely!

S.W. BARRICK - BARRICK QUARRY
PH: (301) 845-6341
11609 Legore Bridge Road * Woodsboro, MD 21798

Scale:1 **TKT: 2078433**

Cust#: KENHAT 4/2/2026
HATFIELDS EQUIP & DEDICATION SVSC, I 7:46:06AM
Job#: SIMROA SIMPSON ROAD
11915 SIMPSON RD, HIGHLAND
NATHEN 443-398-4526

TRK#: 186C - BMR TRUCKING

			* P. T.
Zone#:	**M-12 - BARRICK DELIVERY ZONE**	Gross:	68780
P.O.#:	*	Tare:	23860
Proj#:		Net:	44920
Mat'l#:	**22W-DBL WSHED AASHTO #2 STONE**	**TONS:**	**22.46**

	Loads	Tons
Job/Daily:	2	42.81
Job/Total:	2	42.81

WEIGHMASTER: Samantha Sullivan

We exercise No Control Over Delivery of Our Products & We Won't be Held Liable for Any Damage to Person or Property.

Material Safety Data Information Available Upon Request.

Have A Great Day. Please Drive Safely!

S.W. BARRICK - BARRICK QUARRY
PH: (301) 845-6341
11609 Legore Bridge Road * Woodsboro, MD 21798

Scale:2 **TKT: 2078459**

Cust#: KENHAT **4/2/2026**
HATFIELDS EQUIP & DEDICATION SVSC,] **8:28:29AM**
Job#: SIMROA SIMPSON ROAD
11915 SIMPSON RD, HIGHLAND
NATHEN 443-398-4526

TRK#: 478A - THOMPSON TRUCKING

			* P. T.
Zone#:	**M-12 - BARRICK DELIVERY ZONE**	Gross:	69520
P.O.#:		* Tare:	26260
Proj#:		Net:	43260
Mat'l#:	**22W-DBL WSHED AASHTO #2 STONE**	**TONS:**	**21.63**

	Loads	**Tons**
Job/Daily:	3	64.44
Job/Total:	3	64.44

WEIGHMASTER: Samantha Sullivan

We exercise No Control Over Delivery of Our Products & We Won't be Held Liable for Any Damage to Person or Property.

Material Safety Data Information Available Upon Request.

S.W. BARRICK - BARRICK QUARRY
PH: (301) 845-6341
11609 Legore Bridge Road * Woodsboro, MD 21798

Scale:1 **TKT: 2078469**

Cust#: KENHAT 4/2/2026
HATFIELDS EQUIP & DEDICATION SVSC, I 8:36:03AM
Job#: SIMROA SIMPSON ROAD
11915 SIMPSON RD, HIGHLAND
NATHEN 443-398-4526

TRK#: 107B - LEVEL UP TRUCKING

			* P. T.
Zone#:	**M-12 - BARRICK DELIVERY ZONE**	Gross:	69800
P.O.#:	*	Tare:	23780
Proj#:		Net:	46020
Mat'l#:	**22W-DBL WSHED AASHTO #2 STONE**	**TONS:**	**23.01**

	Loads	Tons
Job/Daily:	5	109.31
Job/Total:	5	109.31

WEIGHMASTER: Samantha Sullivan

We exercise No Control Over Delivery of Our Products & We Won't be Held Liable for Any Damage to Person or Property.

Material Safety Data Information Available Upon Request.

S.W. BARRICK - BARRICK QUARRY
PH: (301) 845-6341
11609 Legore Bridge Road * Woodsboro, MD 21798

Scale:1 **TKT: 2078462**

Cust#: KENHAT **4/2/2026**
HATFIELDS EQUIP & DEDICATION SVSC, I **8:29:59AM**
Job#: SIMROA SIMPSON ROAD
11915 SIMPSON RD, HIGHLAND
NATHEN 443-398-4526

TRK#: 761C - DELAP TRANSPORT, LLC

			* P. T.
Zone#:	**M-12 - BARRICK DELIVERY ZONE**	Gross:	69800
P.O.#:	*	Tare:	26080
Proj#:		Net:	43720
Mat'l#:	**22W-DBL WSHED AASHTO #2 STONE**	**TONS:**	**21.86**

	Loads	Tons
Job/Daily:	4	86.30
Job/Total:	4	86.30

WEIGHMASTER: Samantha Sullivan

We exercise No Control Over Delivery of Our Products & We Won't be Held Liable for Any Damage to Person or Property.

Material Safety Data Information Available Upon Request.

Have A Great Day. Please Drive Safely!

Surveyor's Certificate

"The information shown hereon has been based upon the results of a field survey after the foundation walls were poured. I hereby certify that this wall check survey was prepared or approved by me, and I am a duly licensed professional surveyor under the laws of the state of MD, license number 21931, expiration December 18, 2026.

Jim Witmer

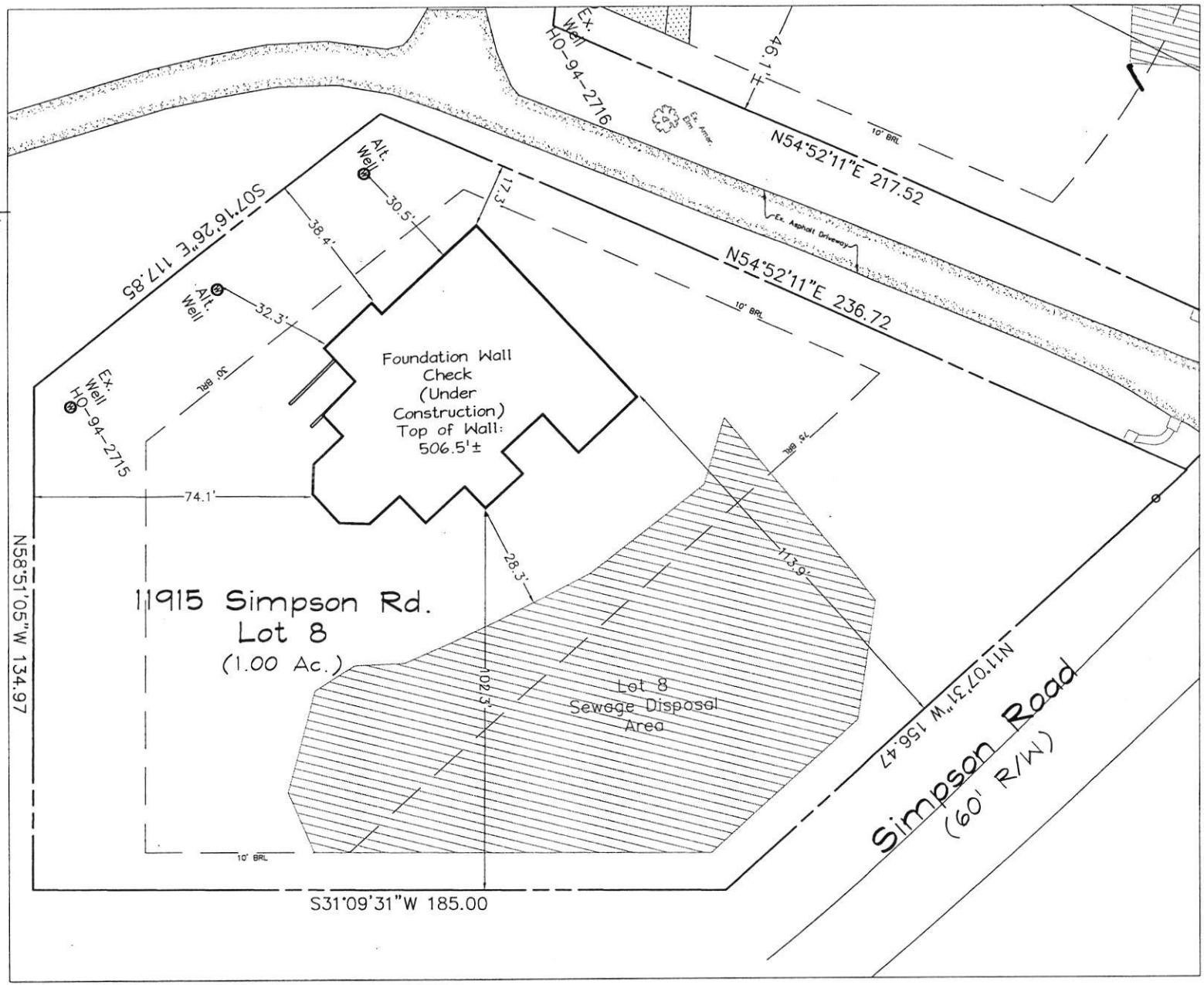
James W. Witmer, Professional Land Surveyor
Maryland reg. No. 21931

STATE OF MARYLAND ★ JAMES W. WITMER ★ No. 21931 REGISTERED PROFESSIONAL LAND SURVEYOR

40 20 0 20 40

Graphic Scale
1 Inch = 40 Feet

Wall Check
Okay 2/18/26
-H.O.



NORTH

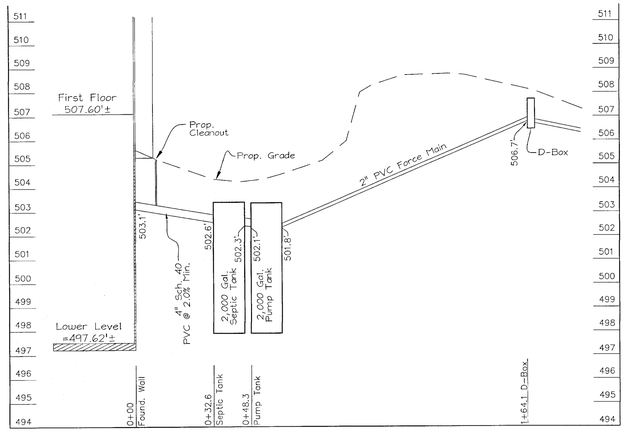
JNM ENGINEERING, LLC

CIVIL ENGINEERING, SURVEYING, LAND PLANNING, ENVIRONMENTAL, ARBORICULTURE, LEED PROFESSIONALS
1105 LEAFY HOLLOW CIRCLE, MOUNT AIRY, MD 21771
(301) 514-2808 JNMENGINEERINGLLC.COM

WALL CHECK FOR: 11915 SW SIMPSON ROAD

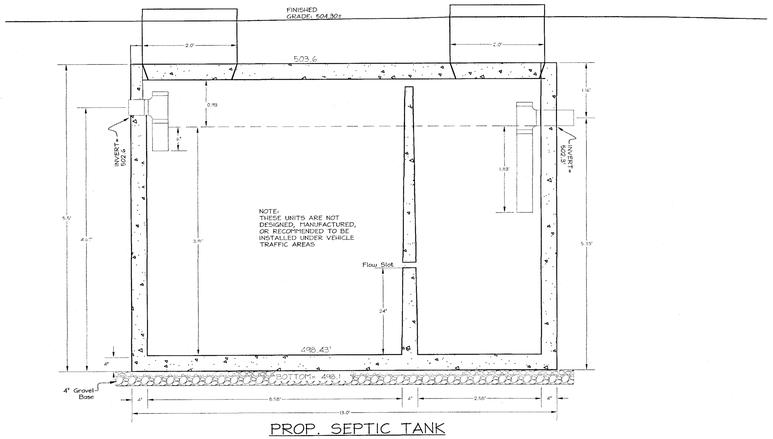
Plat 14485, Lot 8, Map 41
Acct#05-434408, Grid 7

Scale:	1" = 40'
Date:	12/21/25
Field By:	JWW
Drawn By:	JWW
File No.:	NA



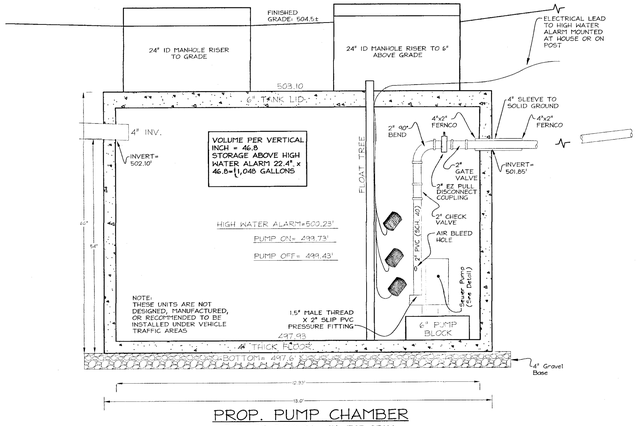
Septic System Profile

HOR.: 1"=30'
VERTICAL: 1"=3'



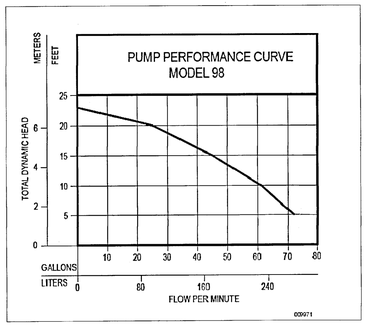
PROP. SEPTIC TANK

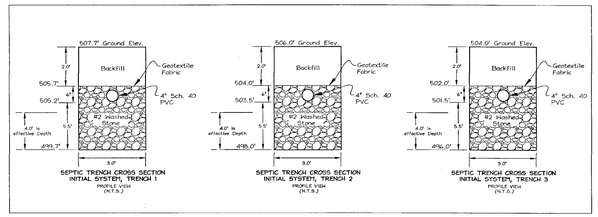
BABYLON 2,000 GALLON, TOP SEAM, TWO-COMPARTMENT SEPTIC TANK OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)

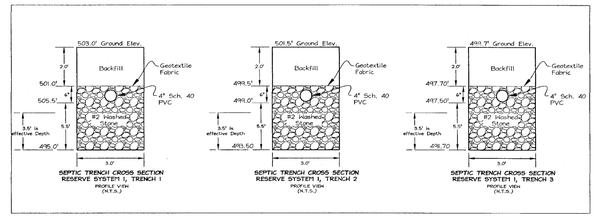


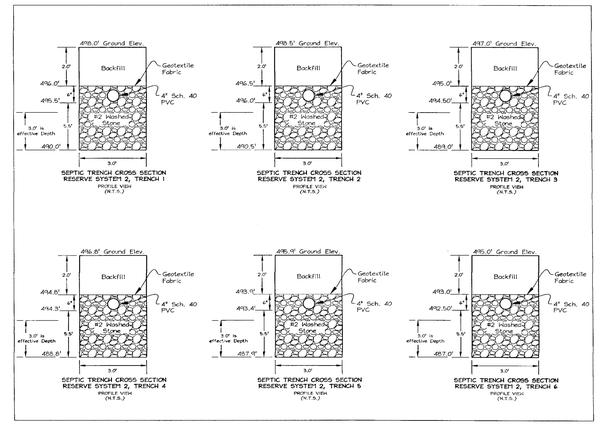
PROP. PUMP CHAMBER

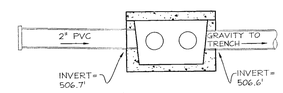
BABYLON, 2,000 GALLON, TOP SEAM, SINGLE-COMPARTMENT PUMP CHAMBER OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)











DISTRIBUTION BOX

C.R. SEMLER INC. SMALL DISTRIBUTION BOX OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)

SEPTIC SIZING

System Requirements (1 Initial and 2 replacements).
Proposed Number of Bedrooms: 6
Design Load: 900 Gal/Day
Initial System:

Initial System
Effective Start Depth: 4.0'
Maximum Bottom Trench Depth: 8'
Inlet Depth: 2.5'
Absorption Area Required: 900/1.2=750
750/3= 250#
(5/12)*250= 104.2'
Total Trench Length Required: 104.2-feet (Three at 35.1')

Replacement System 1
Effective Start Depth: 4.5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.6= 1,125
1125/3= 375
375/45 (5.5' Sidewall)= 170.45 LF Required
(Install 3– 57' long trenches)

Replacement System 2
Effective Start Depth: 5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.6= 1750
1750/3= 583.3
583.3/3.50 (3.0' Sidewall)= 250 LF Required
(Install 6– 42' long trenches)

Pump Chamber Storage Calculations with gravity flow into trenches

PUMP CHAMBER SPECIFICATIONS

	Pump chamber volume (available for storage) =	2000	gallons	
	Pump chamber type [Enter "R" for rectangular or "C" for circular]:	R		
L -	Interior tank length =	148.0	inches	
W -	Interior tank width =	73.0	inches	
A -	Cross-sectional area: For rectangular chamber, L X W =	10804	sq. inches	46.8 gal./in. of ht.
H -	Interior tank height (height to inlet unless otherwise approved) =	50.0	inches	
pR -	Pump riser height =	6	inches	

SITE INFORMATION/VOLUME CALCULATIONS

Q -	System design flow =	900	gpd
	Number of doses/day =	6	doses/day
Vd -	Dose volume = Q / number of doses per day =	150	gallons
	Elevation of inside bottom (floor) of pump chamber =	497.93	feet
	Pump height =	12.01	inches
Lf -	Length of force main =	116	feet
Dp -	Inside diameter of force main which will drain back to the pump chamber =	2.03	inches
	** *Siphon breaker hole required unless otherwise approved*		
	Volume of effluent per 100 linear feet of pipe draining back =	17.40	gallons
	Length of pipe which will drain back to the pump chamber =	116	feet
Vp -	Volume of effluent which will drain back to the pump chamber =	20.18	gallons
Vc -	Volume required per pump cycle = Vd + Vp =	170.18	gallons
Ez -	Elevation of invert at distribution box or crest of force main =	506.70	feet

FLOAT SETTINGS

	Pump off float setting (set so that pump remains submerged) =	18.0	inches	
Eo -	Pump off float setting equates to an elevation of	499.43	feet	
	Distance req'd. b/n on and off floats = (Vc X 231 cubic inches per gallon) / A =	3.6	inches	170.2 gallons
	Pump on float setting = off float setting + distance b/n on and off floats =	21.6	inches	
	Pump on float setting equates to an elevation of	499.73	feet	
Ah -	High water alarm setting = pump on float setting + 6 inches	27.6	inches	
	High water alarm setting equates to an elevation of	500.23	feet	

DESIGN FLOW

Design flow= 300 gal/day (2 bedroom Barn)

TOTAL DESIGN HEAD AND PUMP SPECIFICATIONS

DETERMINE TOTAL DESIGN HEAD:

Static Head= 7.27 *(relative elevation of pump off float to invert out of distribution box)*

PVC Pipe Fittings	No. of Fittings	Eqiv. Pipe Length	Total Length
2" PVC Pipe	n/a	116	116
Check Valve	1	14	14
90 deg. Bend (2")	1	7 ft	7ft
Gate Valve	1	1.3 ft	1.3 ft
22.5-45 deg. Bend (2")	4	4.0 ft	16
			154.3

Specify Flow (Per Pump)= 115.3
Friction Loss per 100ft (2" PVC) (table 4.4) = 3.98
Friction Head = 6.14 *(pipe length from above and apply friction loss factor from table 4.4)*
Total Design Head = 13.41 *(static head + friction head)*

DETERMINE THE PUMP REQUIREMENTS:

Effluent must be capable of providing 42 gal/min 13.41 of head
Use the following pump model: Model EPH30, 1/2 HP, Ashland Pump

CHECK CYCLE TIME

Height from "pump off" to "pump on": 3.6" **with 2000 gallon pump chamber**
Pump Cycle Time: 4.01 min **OK**

CHECK PUMP CHAMBER SIZE

DETERMINE THE PUMP DOSE:

Pump Dose= 52 gal.

DETERMINE THE REQUIRED PUMP CHAMBER SIZE:

One day storage capacity + one dose= 352 gal. **OK**
900 150 1050

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21931, EXPIRATION 12/18/2026.

JAMES W. WITMER, P.S.
1/21/2025
DATE

STATE OF MARYLAND · JAMES W. WITMER · No. 21931 · REGISTERED PROFESSIONAL ENGINEER

OWNER/DEVELOPER:
WILLIAMSBURG HOMES
ATTN: BRUCE HARVEY
5485 HARPERS FARM ROAD
COLUMBIA, MD 21044
410-997-8800

11915 SW SIMPSON ROAD
CLARKSVILLE, MD 21029
LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
ONSITE SEWAGE DISPOSAL
SYSTEM DESIGN PLAN

DATE	BY	REVISION

PROJECT	DATE
22-0812	03/23
ILLUSTRATION	ENGINEERING
JWW	NA
SCALE	APPROVAL
1"=20'	JWW

11915 SW SIMPSON ROAD
TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
ELECT. DIST.: 5, HOWARD COUNTY, MARYLAND
ONSITE SEWAGE DISPOSAL DESIGN PLAN

JNM ENGINEERING, LLC
CIVIL ENGINEERING, SURVEYING, LAND PLANNING, ENVIRONMENTAL, ARBORICULTURE, LEED PROFESSIONALS
1105 LEAFY HOLLOW CIRCLE, MOUNT AIRY, MD 21771
(301) 514-2808, JNM@ENGINEERINGLLC.COM

GENERAL NOTES

1) THIS PROPERTY IS ZONED RR-DEO.
2) THE PROPERTY BOUNDARY SHOWN IS BASED ON CURRENT PLAT AND A SURVEY CONDUCTED BY JNM ENGINEERING, LLC DATE APRIL, 2024.
3) DEED REFERENCE: LIBER 4770 FOLIO 303.
4) THE EXISTING TOPOGRAPHY ONSITE IS BASED ON A FIELD RUN SURVEY CONDUCTED BY JNM ENGINEERING IN APRIL, 2024. OFFSITE TOPOGRAPHY IS BASED ON HOWARD COUNTY GIS.
5) ADJUSTMENTS TO THE SEPTIC AREA IS NOT PERMITTED WITHOUT ADDITIONAL TESTING.
6) SOIL TYPES SHOWN ON THIS PLAN ARE FROM THE USDA WEB SOIL SURVEY.
7) THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
8) ALL EXISTING WELLS AND SEWERAGE DISPOSAL AREAS AND COMPONENTS WITHIN 100-FEET OF THE PROPERTY BOUNDARIES AND ALL EXISTING/PROPOSED WELLS 200' DOWN GRADIENT FROM EXISTING OR PROPOSED SEPTIC SYSTEMS HAVE BEEN SHOWN FROM THE BEST AVAILABLE INFORMATION.
9) THIS LOT WAS CREATED BY PLAT (14485) DATED OCTOBER 26, 2000.
10) AN APPROVED OSDS PLAN WILL BE REQUIRED PRIOR TO BUILDING PERMIT ISSUANCE.
11) SEPTIC TANK AND PUMP CHAMBERS COVER DEPTHS SHALL NOT EXCEED 3-FEET UNLESS DESIGNED AND APPROVED NOTING A TRAFFIC BEARING LID.
12) ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.
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- EX. PROP. LINE
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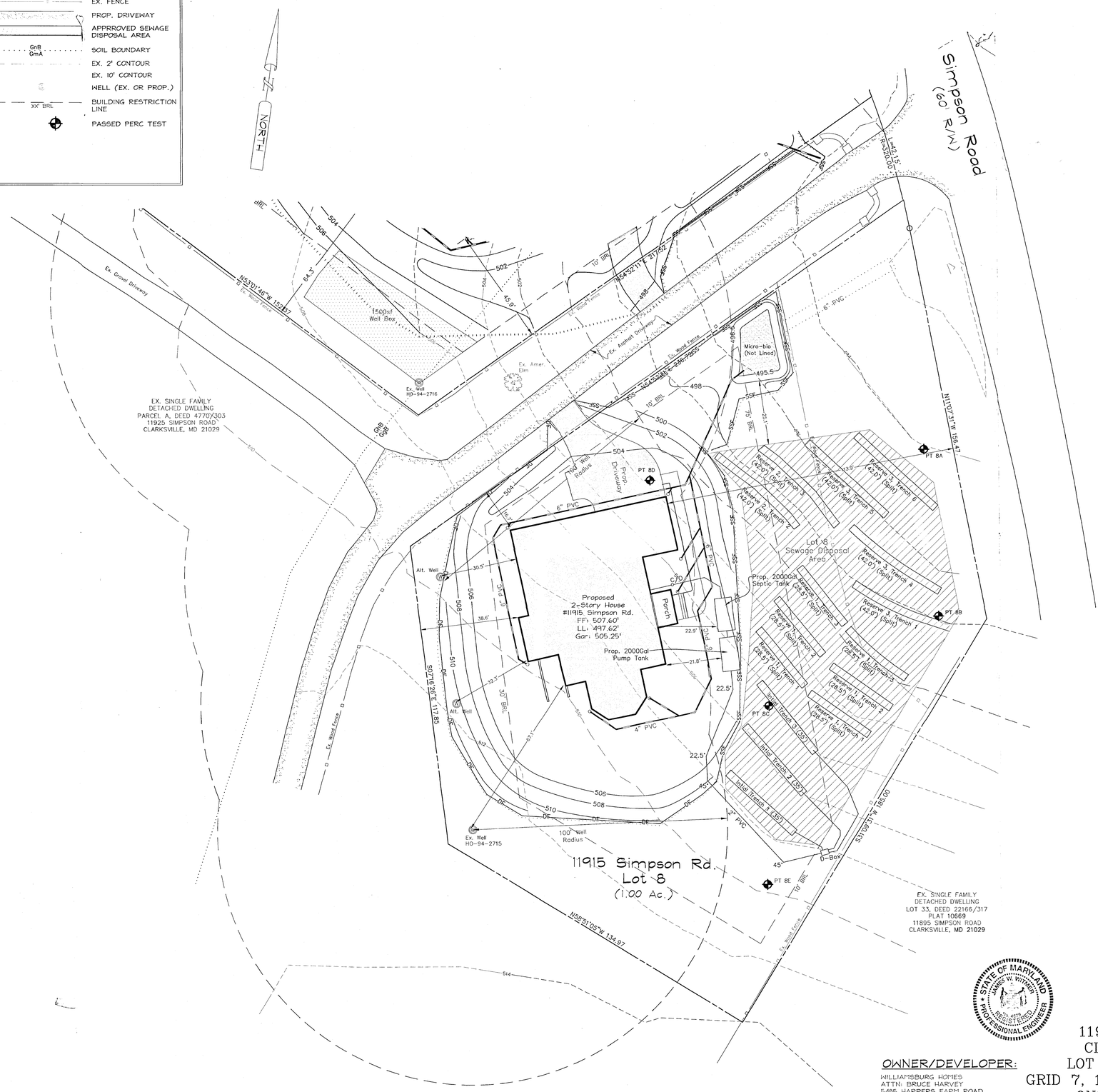

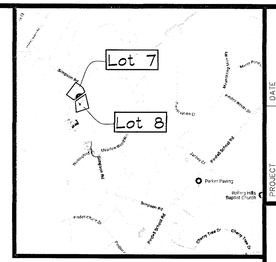

VICINITY MAP

Approved Septic System Plan
Howard County Health Department
Hank Oswald — Signature
1/30/26 — Date

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JAMES W. WITMER, P.S.
1/21/2025
DATE

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LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
ONSITE SEWAGE DISPOSAL
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PROJECT	DATE
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1"=20'	JWW

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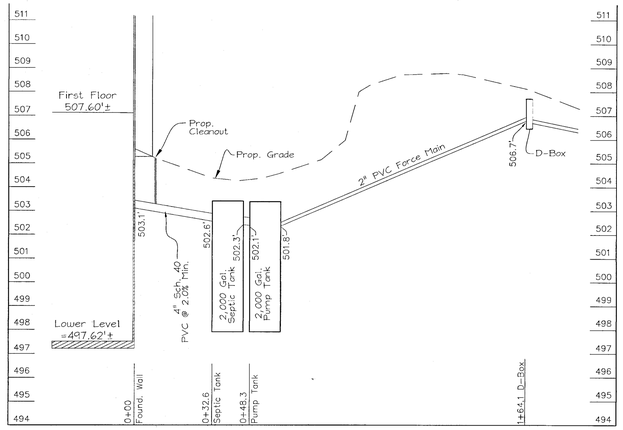

Septic System Profile
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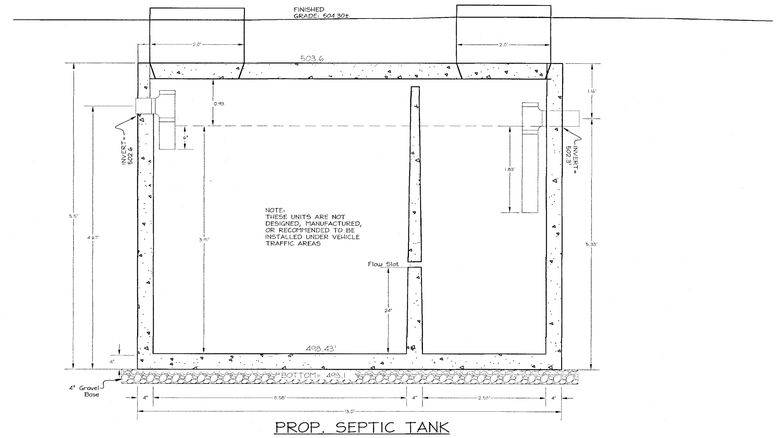
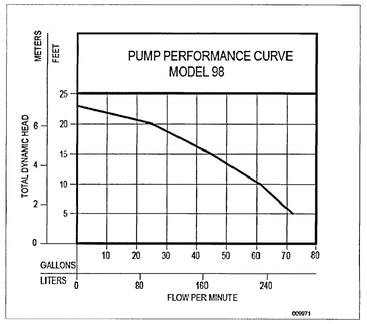
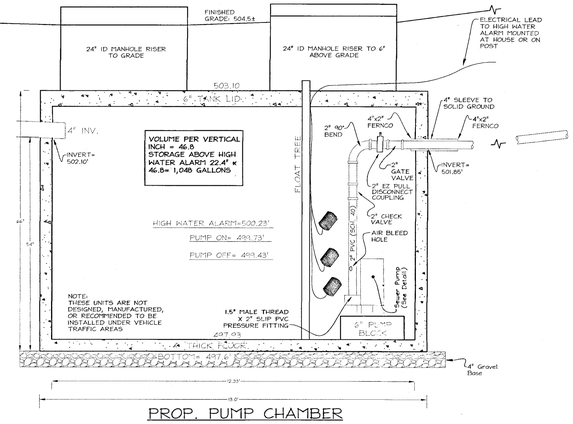
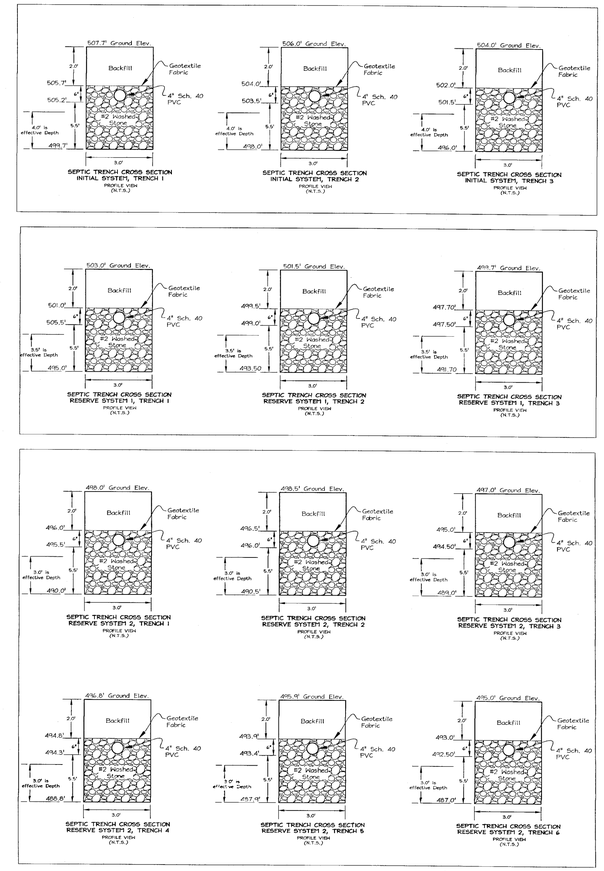


PROP. SEPTIC TANK
BABYLON 2,000 GALLON, TOP SEAM, TWO-COMPARTMENT SEPTIC TANK OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)





PROP. PUMP CHAMBER
BABYLON, 2,000 GALLON, TOP SEAM, SINGLE-COMPARTMENT PUMP CHAMBER OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)



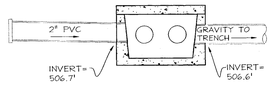
SEPTIC SIZING

System Requirements (1 Initial and 2 replacements).
Proposed Number of Bedrooms: 6
Design Load: 900 Gal/Day
Initial System:

Initial System
Effective Start Depth: 4.0'
Maximum Bottom Trench Depth: 8'
Inlet Depth: 2.5'
Absorption Area Required: 900/1.2=750
750/3= 250'
(5/12)*250= 104.2'
Total Trench Length Required: 104.2-feet (Three at 35.1')

Replacement System 1
Effective Start Depth: 4.5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.8= 1,125
1125/3= 375
375x0.45 (3.5' Sidewall)= 170.45 LF Required
(Install 3- 57' long trenches)

Replacement System 2
Effective Start Depth: 5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.6= 1750
1750/3= 583.3
583.3x0.50 (3.0' Sidewall)= 250 LF Required
(Install 6- 42' long trenches)



DISTRIBUTION BOX
C.R. SEMLER INC. SMALL DISTRIBUTION BOX OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)

Pump Chamber Storage Calculations with gravity flow into trenches

	PUMP CHAMBER SPECIFICATIONS			
	Pump chamber volume (available for storage) =	2000	gallons	
	Pump chamber type [Enter "R" for rectangular or "C" for circular]:	R		
L -	Interior tank length =	148.0	inches	
W -	Interior tank width =	73.0	inches	
A -	Cross-sectional area: For rectangular chamber, L X W =	10804	sq. inches	46.8 gal./in. of ht.
H -	Interior tank height (height to inlet unless otherwise approved) =	50.0	inches	
pR -	Pump riser height =	6	inches	
	SITE INFORMATION/VOLUME CALCULATIONS			
Q -	System design flow =	900	gpd	
	Number of doses/day =	6	doses/day	
Vd -	Dose volume = Q / number of doses per day =	150	gallons	
	Elevation of inside bottom (floor) of pump chamber =	497.93	feet	
	Pump height =	12.01	inches	
Lf -	Length of force main =	116	feet	
Dp -	Inside diameter of force main which will drain back to the pump chamber =	2.03	inches	
	** *Siphon breaker hole required unless otherwise approved*			
	Volume of effluent per 100 linear feet of pipe draining back =	17.40	gallons	
	Length of pipe which will drain back to the pump chamber =	116	feet	
Vp -	Volume of effluent which will drain back to the pump chamber =	20.18	gallons	
Vc -	Volume required per pump cycle = Vd + Vp =	170.18	gallons	
Ez -	Elevation of invert at distribution box or crest of force main =	506.70	feet	
	FLOAT SETTINGS			
	Pump off float setting (set so that pump remains submerged) =	18.0	inches	
Eo -	Pump off float setting equates to an elevation of	499.43	feet	
	Distance req'd. b/n on and off floats = (Vc X 231 cubic inches per gallon) / A =	3.6	inches	170.2 gallons
	Pump on float setting = off float setting + distance b/n on and off floats =	21.6	inches	
	Pump on float setting equates to an elevation of	499.73	feet	
Ah -	High water alarm setting = pump on float setting + 6 inches	27.6	inches	
	High water alarm setting equates to an elevation of	500.23	feet	

DESIGN FLOW

Design flow= 300 gal/day (2 bedroom Barn)

TOTAL DESIGN HEAD AND PUMP SPECIFICATIONS

DETERMINE TOTAL DESIGN HEAD:

Static Head= 7.27 *(relative elevation of pump off float to invert out of distribution box)*

PVC Pipe Fittings	No. of Fittings	Eqiv. Pipe Length	Total Length
2" PVC Pipe	n/a	116	116
Check Valve	1	14	14
90 deg. Bend (2")	1	7 ft	7ft
Gate Valve	1	1.3 ft	1.3 ft
22.5-45 deg. Bend (2")	4	4.0 ft	16
			154.3

Specify Flow (Per Pump)= 115.3
Friction Loss per 100ft (2" PVC) (table 4.4) = 3.98
Friction Head = 6.14 *(pipe length from above and apply friction loss factor from table 4.4)*
Total Design Head = 13.41 *(static head + friction head)*

DETERMINE THE PUMP REQUIREMENTS:

Effluent must be capable of providing 42 gal/min 13.41 of head
Use the following pump model: Model EPH30, 1/2 HP, Ashland Pump

CHECK CYCLE TIME

Height from "pump off" to "pump on": 3.6" **with 2000 gallon pump chamber**
Pump Cycle Time: 4.01 min **OK**

CHECK PUMP CHAMBER SIZE

DETERMINE THE PUMP DOSE:

Pump Dose= 52 gal.

DETERMINE THE REQUIRED PUMP CHAMBER SIZE:

One day storage capacity + one dose= 352 gal. **OK**
900 150 1250

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1/21/2025
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ILLUSTRATION: JWW	ENGINEERING: NA
SCALE: 1"=20'	APPROVAL: JWW

11915 SW SIMPSON ROAD
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(301) 514-2808, JNMENGINEERINGLLC.COM

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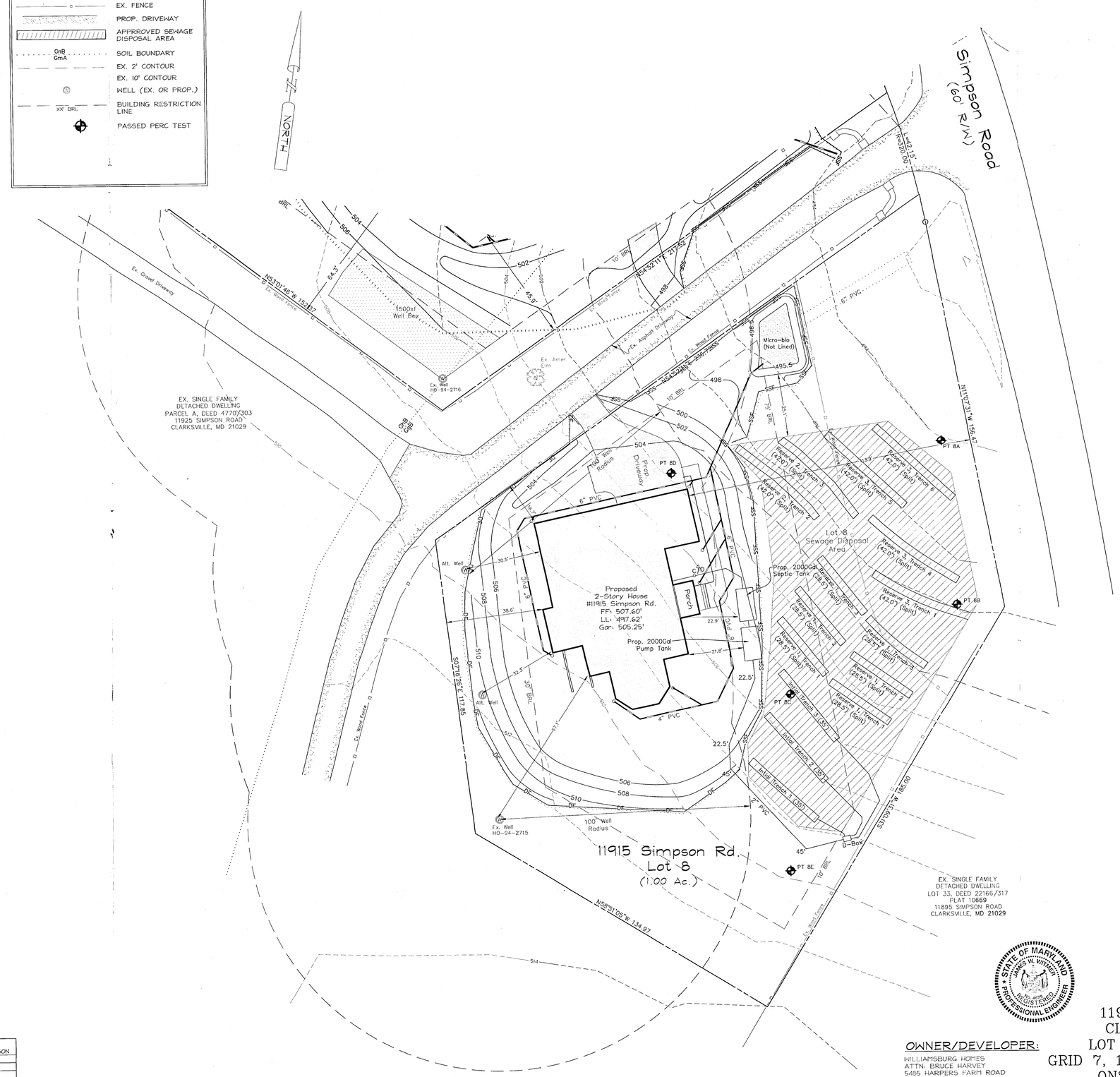

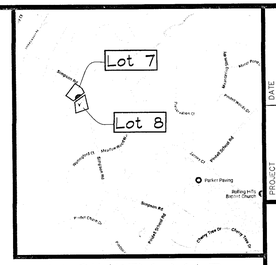

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Howard County Health Department

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STATE OF MARYLAND
JAMES W. WITZKE
No. 4676
REGISTERED
PROFESSIONAL ENGINEER

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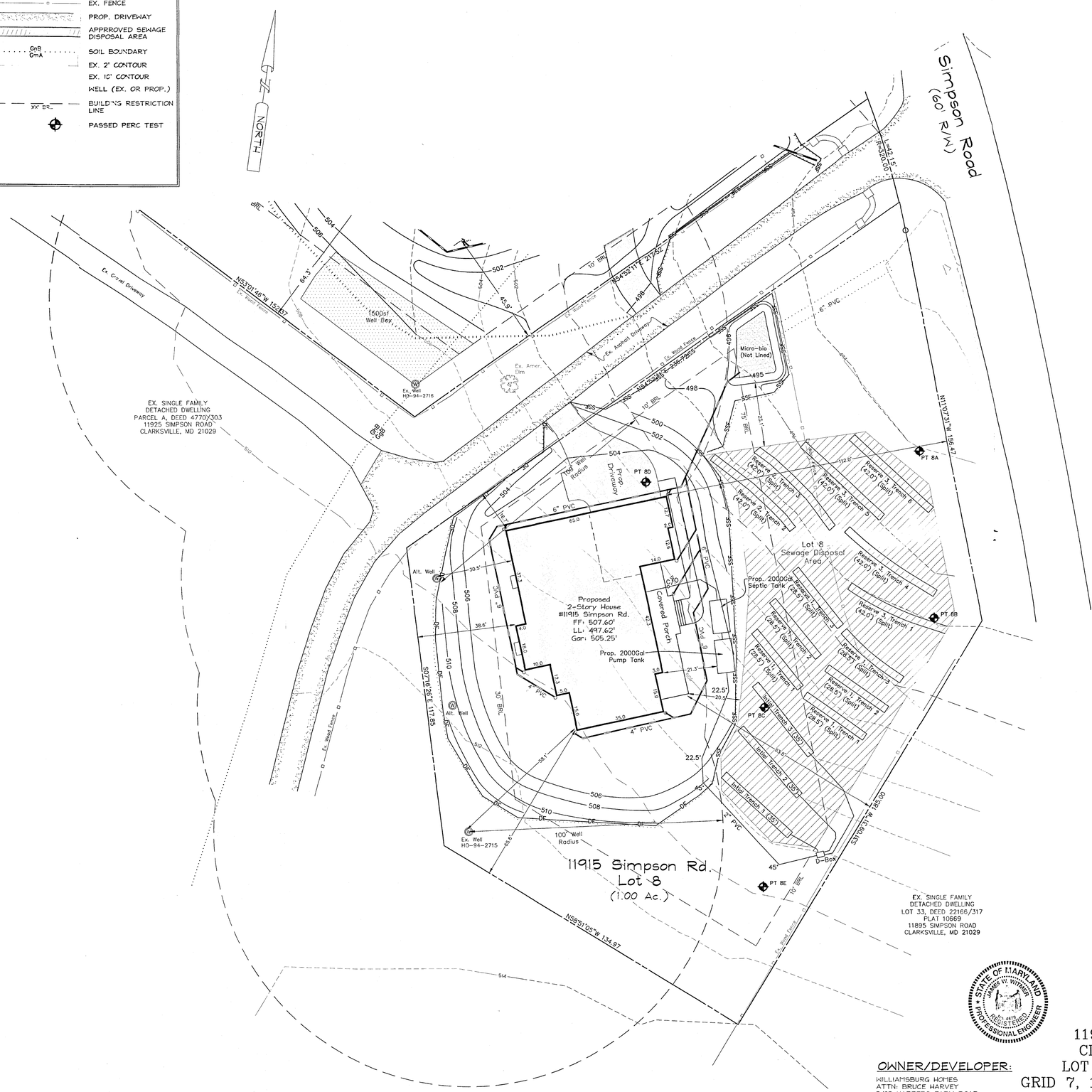

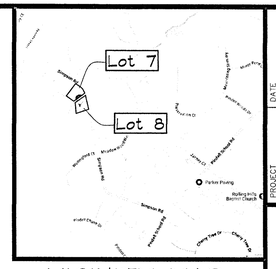

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Hart Oswald 9/24/25
Signature Date

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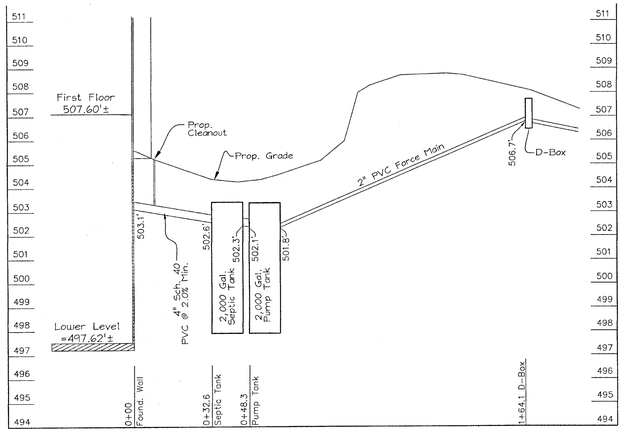

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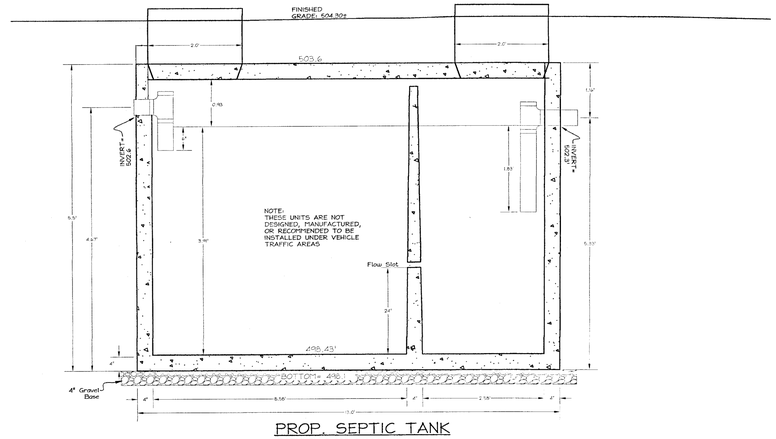
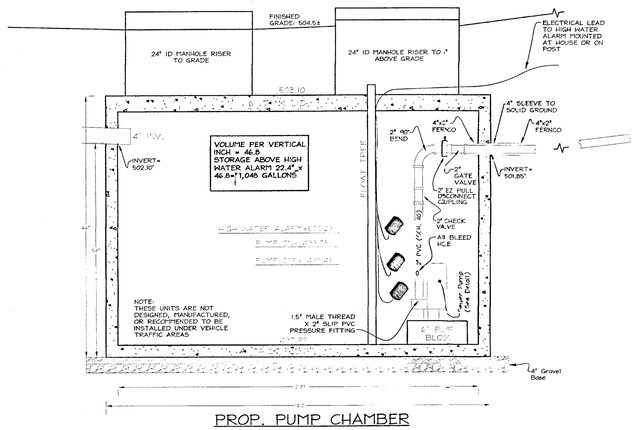


PROP. SEPTIC TANK

BABYLON 2,000 GALLON, TOP SEAM, TWO-COMPARTMENT SEPTIC TANK OR APPROVED EQUIVALENT

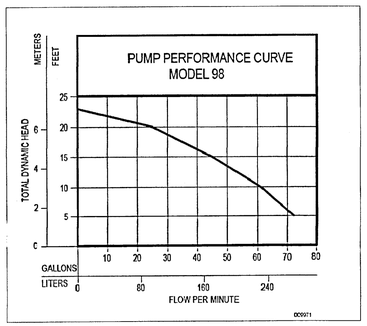
PROFILE VIEW (N.T.S.)

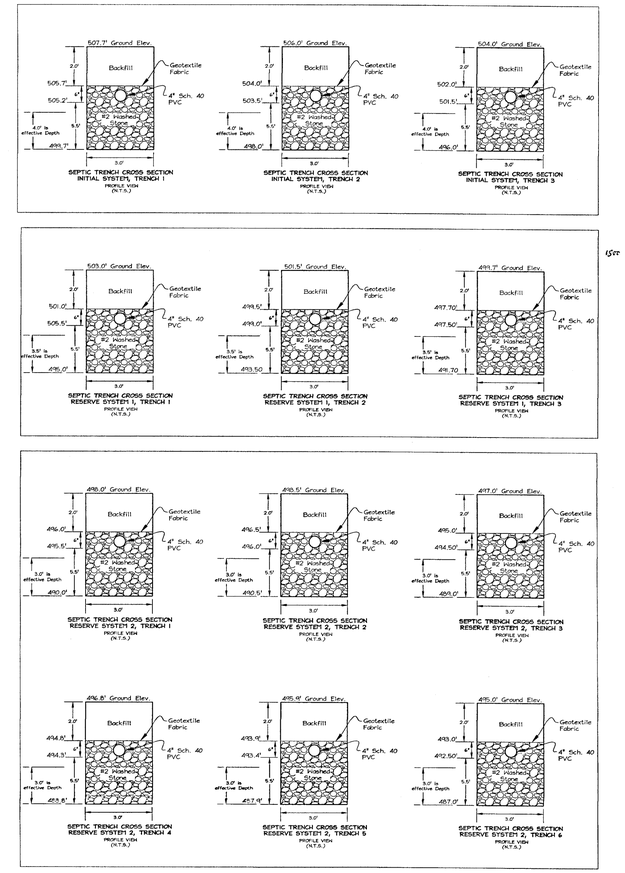


PROP. PUMP CHAMBER

BABYLON 2,000 GALLON, TOP SEAM, SINGLE-COMPARTMENT PUMP CHAMBER OR APPROVED EQUIVALENT

PROFILE VIEW (N.T.S.)





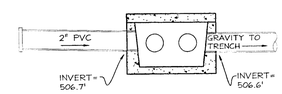
SEPTIC SIZING

System Requirements (1 Initial and 2 replacements).
Proposed Number of Bedrooms: 6
Design Load: 900 Gal/Day
Initial System:

Initial System
Effective Start Depth: 4.0'
Maximum Bottom Trench Depth: 8'
Inlet Depth: 2.5'
Absorption Area Required: 900/1.2=750
750/3= 250lf
(5/12)*250= 104.2'
Total Trench Length Required: 104.2=feet (Three at 35.1')

Replacement System 1
Effective Start Depth: 4.5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.8= 1,125
1125/3= 375
375/45.43 (3.5' Sidewall)= 170.45 LF Required
(Install 3– 57' long trenches) (Install 6-28.5 long trenches)

Replacement System 2
Effective Start Depth: 5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.6= 1750 1500
1750/3= 583.3 500
583.3x0.50 (3.0' Sidewall)= 250 LF Required
(Install 6– 42' long trenches)



DISTRIBUTION BOX

C.R. SEMLER INC. SMALL DISTRIBUTION BOX OR APPROVED EQUIVALENT

PROFILE VIEW (N.T.S.)

Pump Chamber Storage Calculations with gravity flow into trenches

	PUMP CHAMBER SPECIFICATIONS			
	Pump chamber volume (available for storage) =	2000	gallons	
	Pump chamber type [Enter "R" for rectangular or "C" for circular]:	R		
L -	Interior tank length =	148.0	inches	
W -	Interior tank width =	73.0	inches	
A -	Cross-sectional area: For rectangular chamber, L X W =	10804	sq. inches	46.8 gal./in. of ht.
H -	Interior tank height (height to inlet unless otherwise approved) =	50.0	inches	
pR -	Pump riser height =	6	inches	
	SITE INFORMATION/VOLUME CALCULATIONS			
Q -	System design flow =	900	gpd	
	Number of doses/day =	6	doses/day	
Vd -	Dose volume = Q / number of doses per day =	150	gallons	
	Elevation of inside bottom (floor) of pump chamber =	497.93	feet	
	Pump height =	12.01	inches	
Lf -	Length of force main =	116	feet	
Dp -	Inside diameter of force main which will drain back to the pump chamber =	2.03	inches	
	** *Siphon breaker hole required unless otherwise approved*			
	Volume of effluent per 100 linear feet of pipe draining back =	17.40	gallons	
	Length of pipe which will drain back to the pump chamber =	116	feet	
Vp -	Volume of effluent which will drain back to the pump chamber =	20.18	gallons	
Vc -	Volume required per pump cycle = Vd + Vp =	170.18	gallons	
Ez -	Elevation of invert at distribution box or crest of force main =	506.70	feet	
	FLOAT SETTINGS			
	Pump off float setting (set so that pump remains submerged) =	18.0	inches	
Eo -	Pump off float setting equates to an elevation of	499.43	feet	
	Distance req'd. b/n on and off floats = (Vc X 231 cubic inches per gallon) / A =	3.6	inches	170.2 gallons
	Pump on float setting = off float setting + distance b/n on and off floats =	21.6	inches	
	Pump on float setting equates to an elevation of	499.73	feet	
Ah -	High water alarm setting = pump on float setting + 6 inches	27.6	inches	
	High water alarm setting equates to an elevation of	500.23	feet	

DESIGN FLOW

Design flow= 300 gal/day (2 bedroom Barn)

TOTAL DESIGN HEAD AND PUMP SPECIFICATIONS

DETERMINE TOTAL DESIGN HEAD:

Static Head= 7.27 *(relative elevation of pump off float to invert out of distribution box)*

PVC Pipe Fittings	No. of Fittings	Eqiv. Pipe Length	Total Length
2" PVC Pipe	n/a	116	116
Check Valve	1	14	14
90 deg. Bend (2")	1	7 ft	7ft
Gate Valve	1	1.3 ft	1.3 ft
22.5-45 deg. Bend (2")	4	4.0 ft	16
			154.3

Specify Flow (Per Pump)= 115.3
Friction Loss per 100ft (2" PVC) (table 4.4) = 3.98
Friction Head = 6.14 *(pipe length from above and apply friction loss factor from table 4.4)*
Total Design Head = 13.41 *(static head + friction head)*

DETERMINE THE PUMP REQUIREMENTS:

Effluent must be capable of providing 42 gal/min 13.41 of head
Use the following pump model: Model EPH30, 1/2 HP, Ashland Pump

CHECK CYCLE TIME

Height from "pump off" to "pump on": 3.6" with 2000 gallon pump chamber
Pump Cycle Time: 4.01 min OK

CHECK PUMP CHAMBER SIZE

DETERMINE THE PUMP DOSE:

Pump Dose= 52 gal.

DETERMINE THE REQUIRED PUMP CHAMBER SIZE:

One day storage capacity + one dose= 352 gal. OK
900 + 150 1050 gal

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JAMES W. WITMER, P.E. 12/2/2025
DATE

STATE OF MARYLAND · JAMES W. WITMER · No. 21931 · REGISTERED PROFESSIONAL ENGINEER

OWNER/DEVELOPER:
WILLIAMSBURG HOMES
ATTN: BRUCE HARVEY
5485 HARPERS FARM ROAD
COLUMBIA, MD 21044
410-997-8800

11915 SW SIMPSON ROAD
CLARKSVILLE, MD 21029
LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
ONSITE SEWAGE DISPOSAL
SYSTEM DESIGN PLAN

PROJECT	DATE
22-0812	03/23
ILLUSTRATION: JWW	ENGINEERING: NA
SCALE: 1"=20'	APPROVAL: JWW

DATE	BY	REVISION

11915 SW SIMPSON ROAD
TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
ELECT. DIST. 5, HOWARD COUNTY, MARYLAND
ONSITE SEWAGE DISPOSAL DESIGN PLAN

JNM ENGINEERING, LLC
CIVIL ENGINEERING, SURVEYING, LAND PLANNING, ENVIRONMENTAL, ARBORICULTURE, LEED PROFESSIONALS
1105 LEAFY HOLLOW CIRCLE, MOUNT AIRY, MD 21771
(301) 514-2808, JNMENGINEERINGLLC.COM

GENERAL NOTES

1) THIS PROPERTY IS ZONED RR-DEO.
2) THE PROPERTY BOUNDARY SHOWN IS BASED ON CURRENT PLAT AND A SURVEY CONDUCTED BY JNM ENGINEERING, LLC DATE APRIL, 2024.
3) DEED REFERENCE: LIBER 4770 FOLIO 303.
4) THE EXISTING TOPOGRAPHY ONSITE IS BASED ON A FIELD RUN SURVEY CONDUCTED BY JNM ENGINEERING IN APRIL, 2024. OFFSITE TOPOGRAPHY IS BASED ON HOWARD COUNTY GIS.
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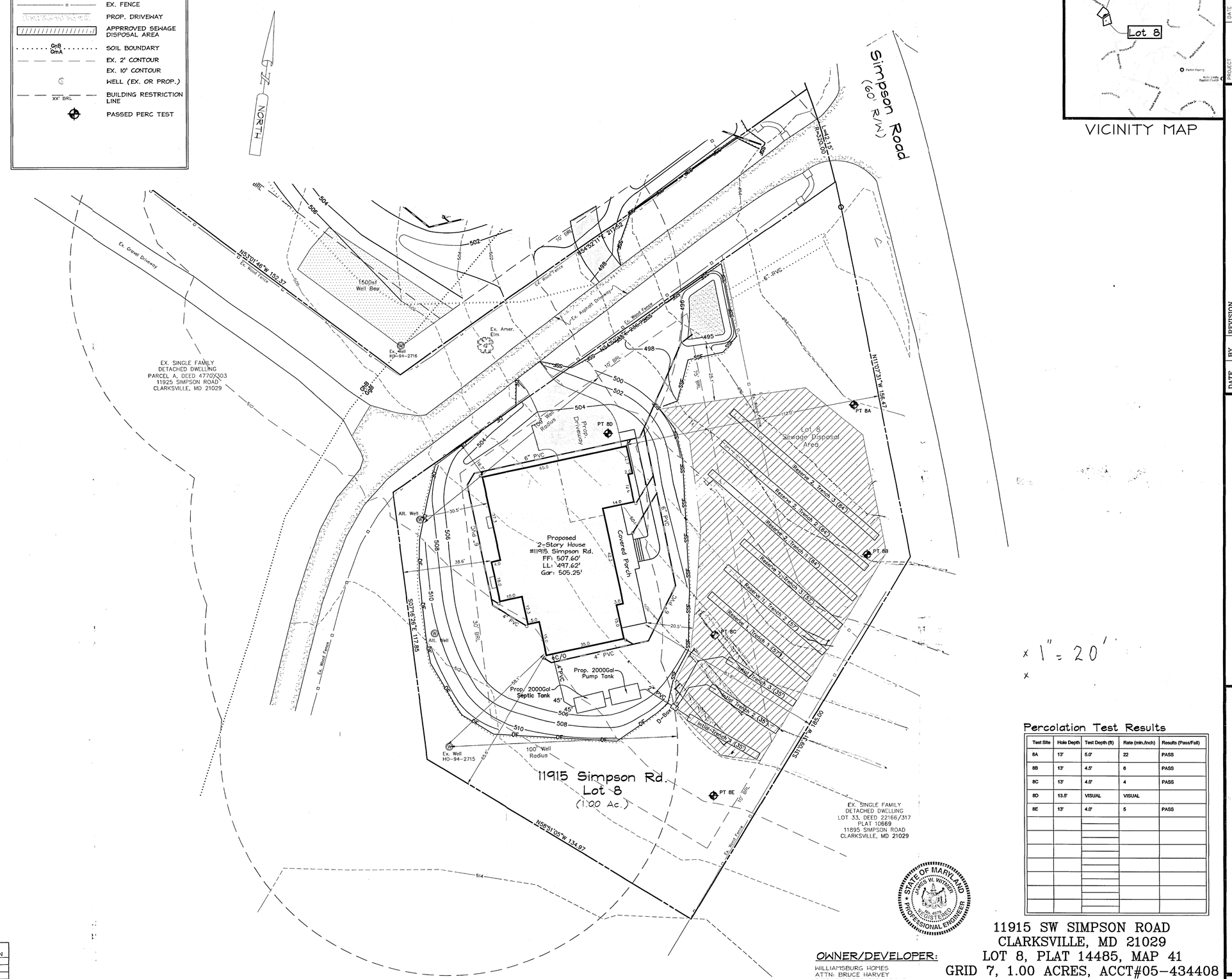
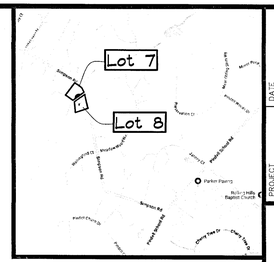
LEGEND

- EX. PROP. LINE
- EX. FENCE
- PROP. DRIVEWAY
- APPRROVED SEWAGE DISPOSAL AREA
- GnB GmA — SOIL BOUNDARY
- EX. 2' CONTOUR
- EX. 10' CONTOUR
- WELL (EX. OR PROP.)
- XX' BRL — BUILDING RESTRICTION LINE
- PASSED PERC TEST





VICINITY MAP

Percolation Test Results

Test Site	Hole Depth	Test Depth (ft)	Rate (min./inch)	Results (Pass/Fail)
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JAMES WITMER, P.S.
1/21/2025
DATE

STATE OF MARYLAND — JAMES W. WITMER — No. 21931 — REGISTERED PROFESSIONAL ENGINEER

SOILS DATA TABLE

SYMBOL	SOIL	HYDRIC	K-FACTOR	ERODIBLE	WET SEASON
GgB	Glenelg Loam, 3%-8% Slopes	NO	0.24	NO	NO

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NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15% OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR "K" GREATER THAN 0.35 WITH A SLOPE GREATER THAN 5 PERCENT.

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CLARKSVILLE, MD 21029
LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
ONSITE SEWAGE DISPOSAL
SYSTEM DESIGN PLAN

DATE	BY	REVISION

PROJECT	22-0812
DATE	03/23
ILLUSTRATION	JWW
ENGINEERING	NA
SCALE	1"=30'
APPROVAL	JWW

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TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
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Oswald Jr, Woodin

From: Oswald Jr, Woodin
Sent: Wednesday, July 9, 2025 8:04 AM
To: Jim Witmer
Subject: OSDS Plan_11915 Simpson Road
Attachments: proposed trench layout_250709_075617.pdf

Hi Jim,

Good morning. Thanks for making the requested revisions to the plan, however the trenches need to be a little more on contour. I suggest sliding the initial system down a bit, and bringing the d-box over to the other side (see suggested layouts). You might be able to fit everything in once you have it to scale. For the 2nd replacement system, its okay if the last split trench isn't side by side. It's going to be close. Let me know what you think.

Thanks,

Hank

Hank Oswald
Licensed Environmental Health Specialist
Bureau of Environmental Health
Howard County Health Department
8930 Stanford Blvd. Columbia, MD 21045
(410) 313 - 1786
www.hchealth.org

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* min base is no less than one sixth the design flow or or vol of force main.

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14) THE WELL (TAG HO-94-2715) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

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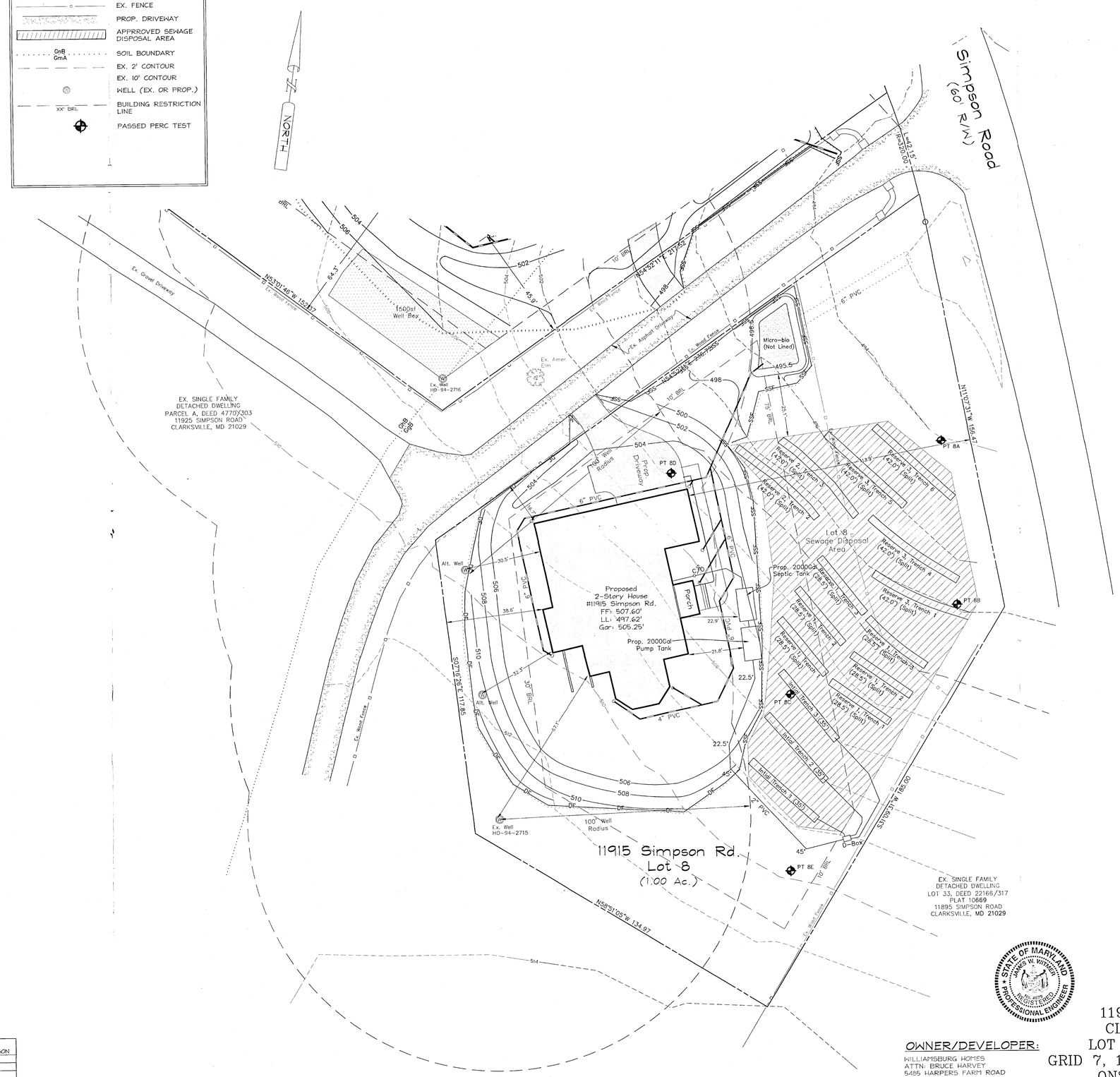

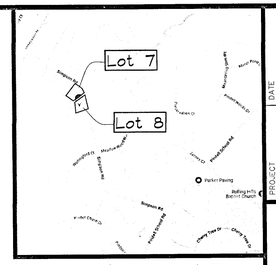

VICINITY MAP

Approved Septic System Plan
Howard County Health Department

Signature — Date

Percolation Test Results

Test Site	Hole Depth	Test Depth (ft)	Rate (min./inch)	Results (Pass/Fail)
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8D	13.5'	VISUAL	VISUAL	
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JAMES W. WITZKE, P.S.
1/21/2025
DATE

STATE OF MARYLAND
JAMES W. WITZKE
No. 4676
REGISTERED
PROFESSIONAL ENGINEER

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LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
ONSITE SEWAGE DISPOSAL
SYSTEM DESIGN PLAN

PROJECT	DATE
22-0812	03/23
ILLUSTRATION	ENGINEERING
JWW	NA
SCALE	APPROVAL
1"=20'	JWW

DATE	BY	REVISION

11915 SW SIMPSON ROAD
TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
ELECT. DIST. 5, HOWARD COUNTY, MARYLAND
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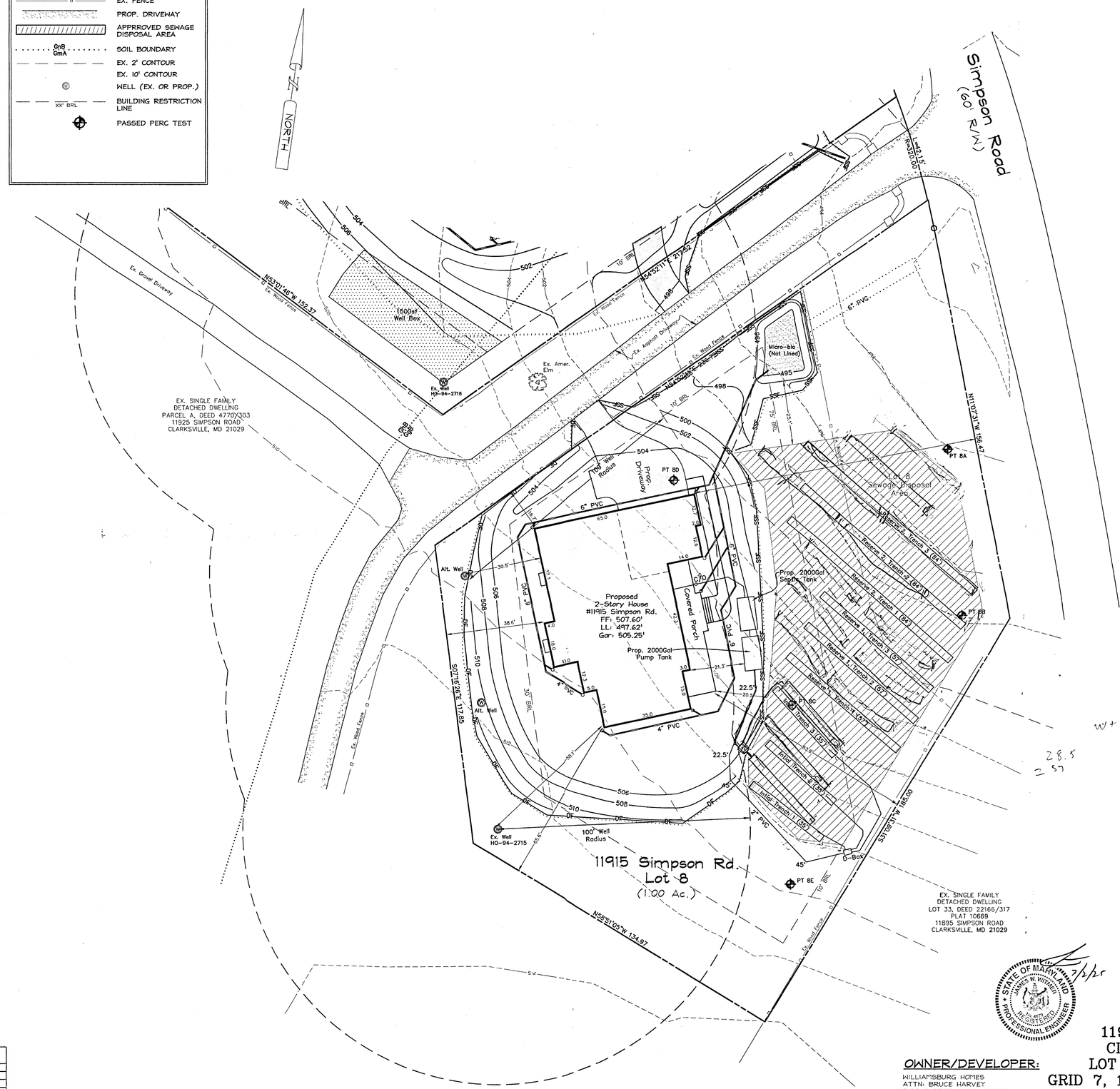

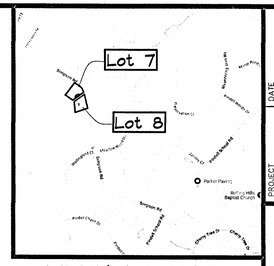

VICINITY MAP

PROJECT	DATE
22-0812	03/23
ILLUSTRATION	ENGINEERING
JWW	NA
SCALE	APPROVAL
1"=20'	JWW

DATE	BY	REVISION

11915 SW SIMPSON ROAD

TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
ELECT. DIST. 5, HOWARD COUNTY, MARYLAND

ONSITE SEWAGE DISPOSAL DESIGN PLAN

JNM ENGINEERING, LLC
CIVIL ENGINEERING, SURVEYING, LAND PLANNING, ENVIRONMENTAL, ARBORICULTURE, LEED PROFESSIONALS
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JAMES W. WITMER, P.S.
1/21/2025
DATE

STATE OF MARYLAND — JAMES W. WITMER — No. 21931 — REGISTERED PROFESSIONAL ENGINEER — 1/21/25

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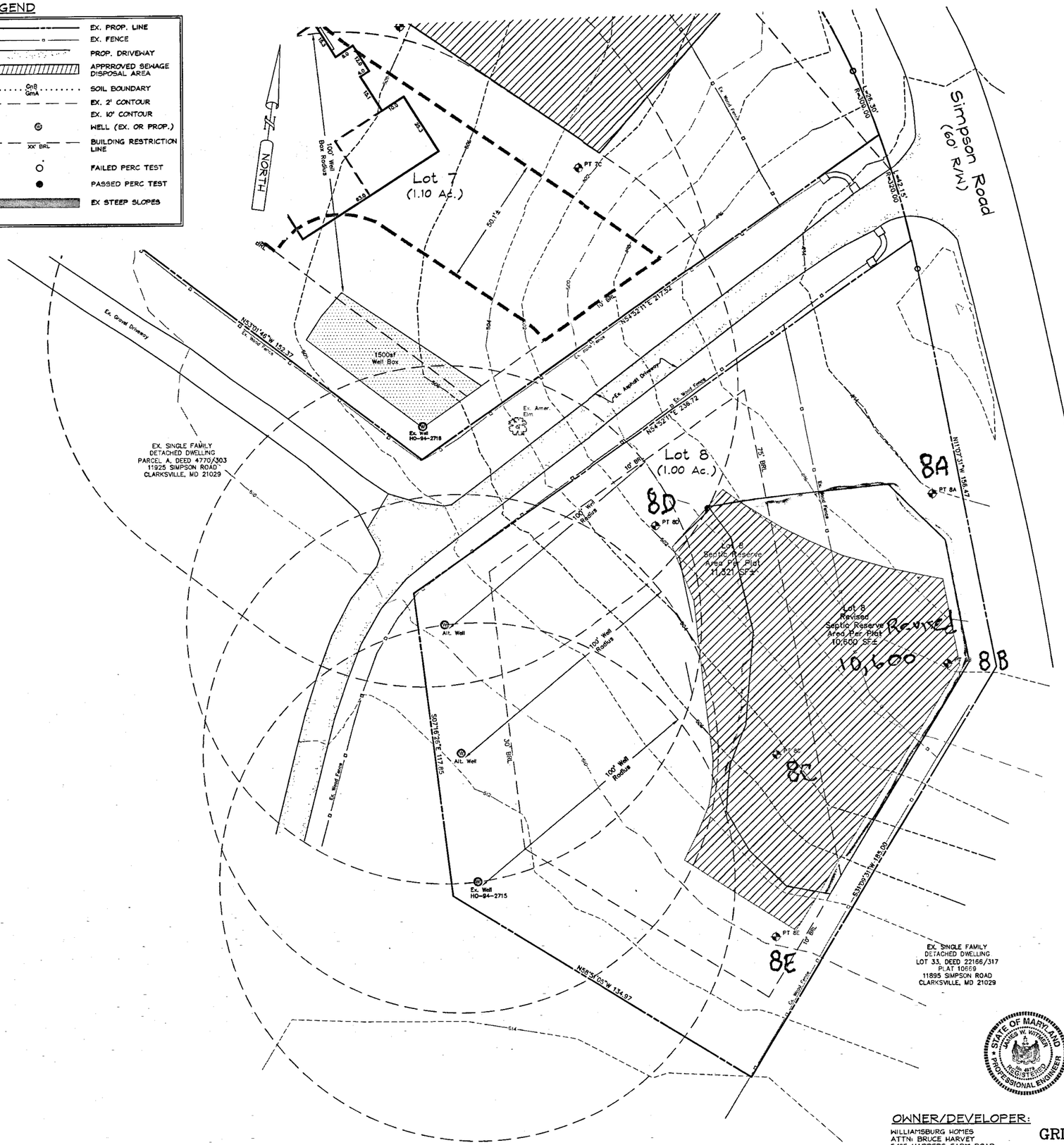
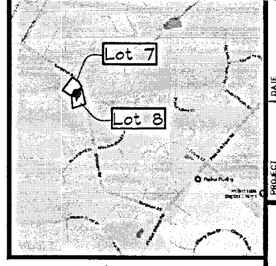
ERAL NOTES

S PROPERTY IS ZONED RR-DEO.
PROPERTY BOUNDARY SHOWN IS BASED ON CURRENT PLAT AND A SURVEY
DUCTED BY JNM ENGINEERING, LLC DATE APRIL, 2024.
D REFERENCE: LIBER 4770 FOLIO 303.
EXISTING TOPOGRAPHY ONSITE IS BASED ON A FIELD RUN SURVEY CONDUCTED
JNM ENGINEERING IN APRIL, 2024. OFFSITE TOPOGRAPHY IS BASED ON
WARD COUNTY GIS.
USTMENTS TO THE SEPTIC AREA IS NOT PERMITTED WITHOUT ADDITIONAL
TING.
TYPES SHOWN ON THIS PLAN ARE FROM THE USDA WEB SOIL SURVEY.
LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT
A AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
EXISTING WELLS AND SEWERAGE DISPOSAL AREAS AND COMPONENTS WITHIN
-FEET OF THE PROPERTY BOUNDARIES AND ALL EXISTING/PROPOSED WELLS
DOWN GRADIENT FROM EXISTING OR PROPOSED SEPTIC SYSTEMS HAVE BEEN
WN FROM THE BEST AVAILABLE INFORMATION.
S LOT WAS CREATED BY PLAT (14485) DATED OCTOBER 26, 2000.
APPROVED OSDS PLAN WILL BE REQUIRED PRIOR TO BUILDING PERMIT
IANCE.
TIC TANK AND PUMP CHAMBERS COVER DEPTHS SHALL NOT EXCEED 3-FEET
ESS DESIGNED AND APPROVED NOTING A TRAFFIC BEARING LID.
CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE
ROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT
OR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.

LEGEND

- EX. PROP. LINE
- EX. FENCE
- PROP. DRIVEWAY
- APPRROVED SEWAGE DISPOSAL AREA
- GnB / GmA — SOIL BOUNDARY
- EX. 2' CONTOUR
- EX. 10' CONTOUR
- WELL (EX. OR PROP.)
- xx' BRL — BUILDING RESTRICTION LINE
- FAILED PERC TEST
- PASSED PERC TEST
- EX STEEP SLOPES





VICINITY MAP

Percolation Test Results

Test Site	Hole Depth	Test Depth (ft)	Rate (min./inch)	Results (Pass/Fail)
8A	13'	5.0'	2	PASS
8B	13'	4.5'	20	PASS
8C	13'	4.0'	2	PASS
8D	13.5'	VISUAL	VISUAL	
8E	13'	4.0'	5	PASS

STATE OF MARYLAND
JAMES W. WITMER
No. 4813
REGISTERED
PROFESSIONAL ENGINEER

OWNER/DEVELOPER:
WILLIAMSBURG HOMES
ATTN: BRUCE HARVEY
5485 HARPERS FARM ROAD
COLUMBIA, MD 21044
410-997-8800

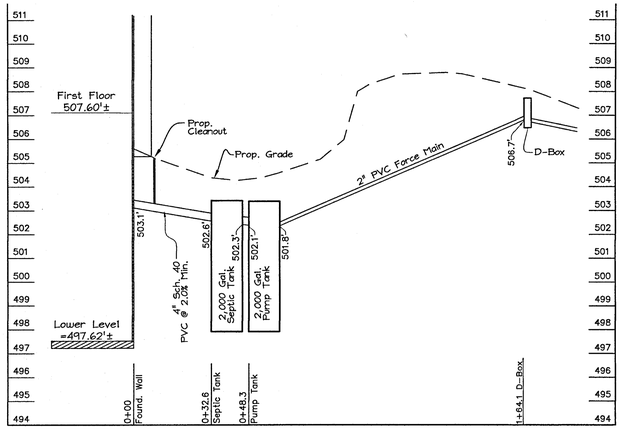
11915 SW SIMPSON ROAD
CLARKSVILLE, MD 21029
LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
ONSITE SEWAGE DISPOSAL
SYSTEM DESIGN PLAN

DATE	BY	REVISION

PROJECT	22-0812
DATE	03/23
ILLUSTRATION	JWW
ENGINEERING	NA
SCALE	1"=30'
APPROVAL	JWW

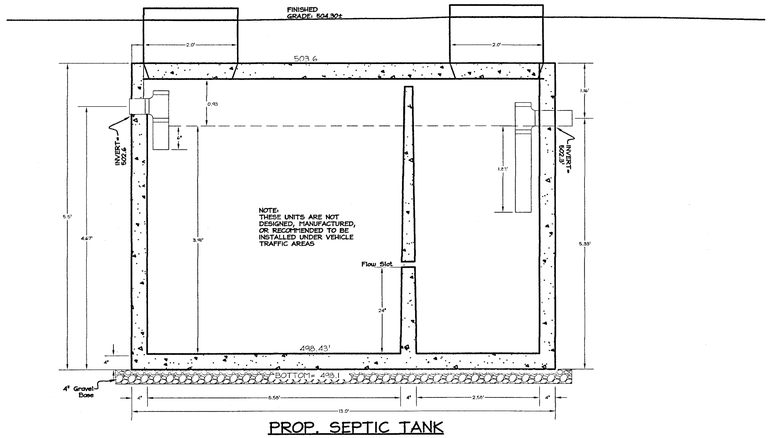
11915 SW SIMPSON ROAD
TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
ELECT. DIST. 5, HOWARD COUNTY, MARYLAND
ONSITE SEWAGE DISPOSAL DESIGN PLAN

JNM ENGINEERING, LLC
CIVIL ENGINEERING, SURVEYING, LAND PLANNING,
ENVIRONMENTAL, ARBORICULTURE, LEED PROFESSIONALS
1105 LEAFY HOLLOW CIRCLE, MOUNT AIRY, MD 21771
(301) 514-2808, JNMENGINEERINGLLC.COM



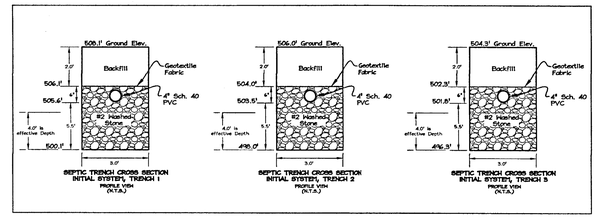
Septic System Profile

HOR.: 1"=30'
VERTICAL: 1"=3'

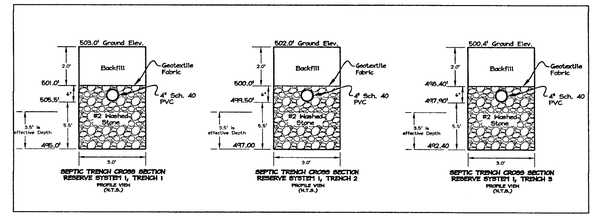


PROP. SEPTIC TANK

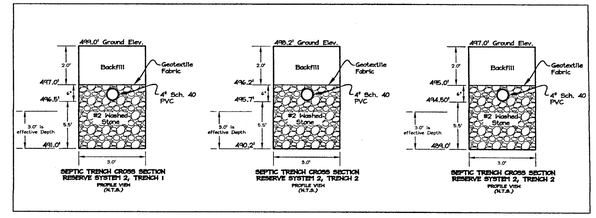
BABYLON 2,000 GALLON, TOP SEAM, TWO-COMPARTMENT SEPTIC TANK OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)



SEPTIC TRENCH CROSS SECTION INITIAL SYSTEM, TRENCH 1 PROFILE VIEW (N.T.S.)
SEPTIC TRENCH CROSS SECTION INITIAL SYSTEM, TRENCH 2 PROFILE VIEW (N.T.S.)
SEPTIC TRENCH CROSS SECTION INITIAL SYSTEM, TRENCH 3 PROFILE VIEW (N.T.S.)



SEPTIC TRENCH CROSS SECTION RESERVE SYSTEM 1, TRENCH 1 PROFILE VIEW (N.T.S.)
SEPTIC TRENCH CROSS SECTION RESERVE SYSTEM 1, TRENCH 2 PROFILE VIEW (N.T.S.)
SEPTIC TRENCH CROSS SECTION RESERVE SYSTEM 1, TRENCH 3 PROFILE VIEW (N.T.S.)



SEPTIC TRENCH CROSS SECTION RESERVE SYSTEM 2, TRENCH 1 PROFILE VIEW (N.T.S.)
SEPTIC TRENCH CROSS SECTION RESERVE SYSTEM 2, TRENCH 2 PROFILE VIEW (N.T.S.)
SEPTIC TRENCH CROSS SECTION RESERVE SYSTEM 2, TRENCH 2 PROFILE VIEW (N.T.S.)

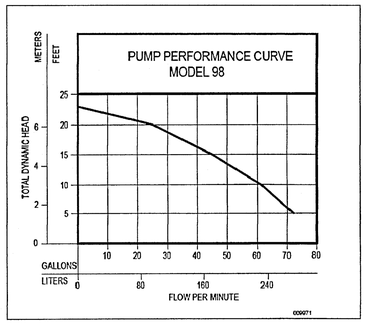
SEPTIC SIZING

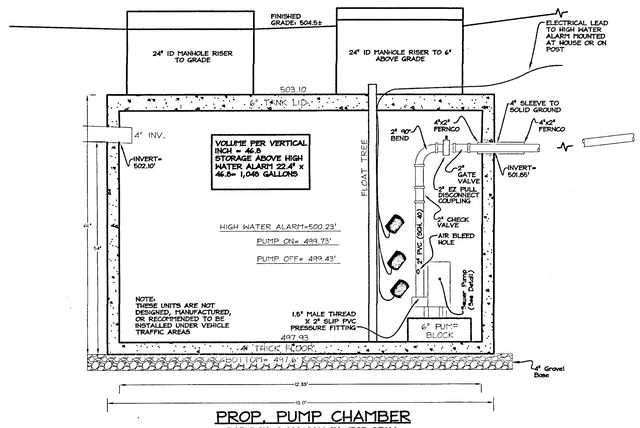
System Requirements (1 initial and 2 replacements).
Proposed Number of Bedrooms: 6
Design Load: 900 Gal/Day
Initial System:

Initial System
Effective Start Depth: 4.0'
Maximum Bottom Trench Depth: 8'
Inlet Depth: 2.5'
Absorption Area Required: 900/1.2=750
750/3= 250'
(5/12)*250= 104.2'
Total Trench Length Required: 104.2-feet (Three at 35.1')

Replacement System 1
Effective Start Depth: 4.5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.8= 1,125
1125/3= 375
375x0.45 (3.5' Sidewall)= 170.45 LF Required
(Install 3– 57' long trenches)

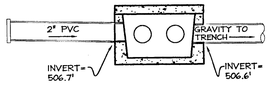
Replacement System 2
Effective Start Depth: 5'
Max. Bottom Trench Depth: 8'
Inlet Depth: 2.5'
900 GPD
900/0.6= 1750
1750/3= 583.3
583.3x0.50 (3.0' Sidewall)= 250 LF Required
(Install 3– 84' long trenches)





PROP. PUMP CHAMBER

BABYLON. 2,000 GALLON, TOP SEAM, SINGLE-COMPARTMENT PUMP CHAMBER OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)



DISTRIBUTION BOX

C.R. SEMLER INC. SMALL DISTRIBUTION BOX OR APPROVED EQUIVALENT
PROFILE VIEW
(N.T.S.)

Pump Chamber Storage Calculations with gravity flow into trenches

PUMP CHAMBER SPECIFICATIONS

	Pump chamber volume (available for storage) =	2000	gallons	
	Pump chamber type [Enter "R" for rectangular or "C" for circular]:	R		
L -	Interior tank length =	148.0	inches	
W -	Interior tank width =	73.0	inches	
A -	Cross-sectional area: For rectangular chamber, L X W =	10804	sq. inches	46.8 gal./in. of ht.
H -	Interior tank height (height to inlet unless otherwise approved) =	50.0	inches	
pR -	Pump riser height =	6	inches	

SITE INFORMATION/VOLUME CALCULATIONS

Q -	System design flow =	900	gpd	
	Number of doses/day =	6	doses/day	
Vd -	Dose volume = Q / number of doses per day =	150	gallons	
	Elevation of inside bottom (floor) of pump chamber =	497.93	feet	
	Pump height =	12.01	inches	
Lf -	Length of force main =	116	feet	
Dp -	Inside diameter of force main which will drain back to the pump chamber =	2.03	inches	
	** *Siphon breaker hole required unless otherwise approved*			
	Volume of effluent per 100 linear feet of pipe draining back =	17.40	gallons	
	Length of pipe which will drain back to the pump chamber =	116	feet	
Vp -	Volume of effluent which will drain back to the pump chamber =	20.18	gallons	
Vc -	Volume required per pump cycle = Vd + Vp =	170.18	gallons	
Ez -	Elevation of invert at distribution box or crest of force main =	506.70	feet	

FLOAT SETTINGS

	Pump off float setting (set so that pump remains submerged) =	18.0	inches	
Eo -	Pump off float setting equates to an elevation of	499.43	feet	
	Distance req'd. b/n on and off floats = (Vc X 231 cubic inches per gallon) / A =	3.6	inches	170.2 gallons
	Pump on float setting = off float setting + distance b/n on and off floats =	21.6	inches	
	Pump on float setting equates to an elevation of	499.73	feet	
Ah -	High water alarm setting = pump on float setting + 6 inches	27.6	inches	
	High water alarm setting equates to an elevation of	500.23	feet	

DESIGN FLOW

Design flow= 300 gal/day (2 bedroom Barn)

TOTAL DESIGN HEAD AND PUMP SPECIFICATIONS

DETERMINE TOTAL DESIGN HEAD:

Static Head= 7.27 *(relative elevation of pump off float to invert out of distribution box)*

PVC Pipe Fittings	No. of Fittings	Eqiv. Pipe Length	Total Length
2" PVC Pipe	n/a	116	116
Check Valve	1	14	14
90 deg. Bend (2")	1	7 ft	7ft
Gate Valve	1	1.3 ft	1.3 ft
22.5-45 deg. Bend (2")	4	4.0 ft	16
			154.3

Specify Flow (Per Pump)= 115.3
Friction Loss per 100ft (2" PVC) (table 4.4) = 3.98
Friction Head = 6.14 *(pipe length from above and apply friction loss factor from table 4.4)*
Total Design Head = 13.41 *(static head + friction head)*

DETERMINE THE PUMP REQUIREMENTS:

Effluent must be capable of providing 42 gal/min 13.41 of head
Use the following pump model: Model EPH30, 1/2 HP, Ashland Pump

CHECK CYCLE TIME

Height from "pump off" to "pump on": 3.6" with 2000 gallon pump chamber
Pump Cycle Time: 4.01 min OK

CHECK PUMP CHAMBER SIZE

DETERMINE THE PUMP DOSE:

Pump Dose= 52 gal.

DETERMINE THE REQUIRED PUMP CHAMBER SIZE:

One day storage capacity + one dose= 352 gal. OK

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21931, EXPIRATION 12/18/2026.

JAMES W. WITMER, P.S.
1/21/2025
DATE

STATE OF MARYLAND · JAMES W. WITMER · No. 21931 · REGISTERED PROFESSIONAL ENGINEER

OWNER/DEVELOPER:
WILLIAMSBURG HOMES
ATTN: BRUCE HARVEY
5485 HARPERS FARM ROAD
COLUMBIA, MD 21044
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11915 SW SIMPSON ROAD
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LOT 8, PLAT 14485, MAP 41
GRID 7, 1.00 ACRES, ACCT#05-434408
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SYSTEM DESIGN PLAN

DATE	BY	REVISION

PROJECT	DATE
22-0812	03/23
ILLUSTRATION	ENGINEERING
JWW	NA
SCALE	APPROVAL
1"=20'	JWW

11915 SW SIMPSON ROAD
TAX MAP 41, LOT 8 PLAT 14485, 1.10 ACRES
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