



Engineers and Soil Scientists

Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0669
www.agriwaste.com

April 29, 2020

Mr. Shad Leonard
Franklin County Health Department
107 Industrial Drive, Suite C
Louisburg, NC 27549

SUBJECT: Septic System Layout & Design – Patterson Woods Lot 2, Phase 1
262 Youngsville Blvd, Youngsville, NC 27596
PIN: 1852-05-4094

Dear Mr. Leonard:

Enclosed please find a layout and design package for a Panel Block septic system for the proposed residence located at 262 Youngsville Blvd, Youngsville, NC. The system is designed for a three (3) bedroom single-family residence. The design flow is 360 gallons/day.

The new system will utilize the following components:

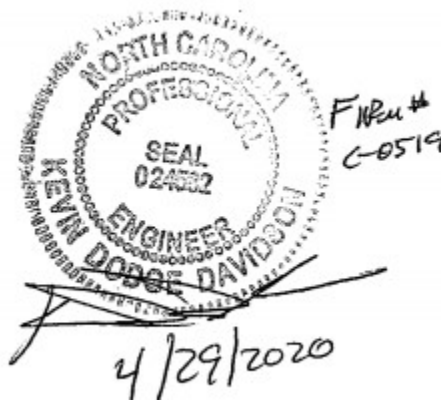
- 1,000-gallon septic tank with effluent filter
- 1,000-gallon pump tank
- Discharge pump with pressure filter
- Control panel
- Prefabricated Permeable Block Panel Drainfield Product with low-pressure distribution

I appreciate your time and efforts in reviewing this application. If you have any questions or comments, please feel free to contact me at 919-859-0669.

Best Regards,

A handwritten signature in blue ink, appearing to read 'K. Davidson'.

Kevin Davidson, P.E.
V.P. of Engineering





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**FINAL DESIGN
NOT RELEASED FOR
CONSTRUCTION**

**Patterson Woods Lot 2, Phase 1
262 Youngsville Blvd.
Youngsville, NC 27596
Franklin County
PIN: 1852-05-4094**

Plans and Specifications for Wastewater Treatment System

Date: April 29, 2020

Consultants: Kevin D. Davidson, P.E.
V.P. of Engineering
kdavidson@agriwaste.com
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Plans and Specifications for Wastewater Treatment System

- Narrative Description of System
- Design Spreadsheets
- Drawings of Proposed System
- Tank Specification Sheets
- Access Riser Adapters, Risers, Lids, Splice Box, and Safety Net
- Effluent Filter Specification
- Pump Specification
- Specification for Control Panel
- Pressure Filter
- T&J Panels

Narrative Description of Wastewater Treatment System

The Wastewater Treatment System that has been designed considers the following components:

- Septic Tank
- Pump Tank
- Discharge Pump and Filter
- Control Panel and Floats
- Drainfield

Due to the pump in this system, it is recommended that a Certified Operator be contracted to maintain this system.

Septic Tank

A new 1,000-gallon septic tank will be installed for this system. A 4" effluent filter will be installed in the outlet end of the septic tank. Access risers (24") will be installed on both the inlet and outlet ends of the septic tank. To facilitate the installation of the access risers, the tank will have riser adapters cast into the top of the tank during tank construction. Inner lids or safety nets will be included with the risers. Rubber boots (4") shall be cast into the inlet and outlet end of the tank. Waste that exits the septic tank will flow via gravity into the pump tank. It is recommended that Orenco Systems riser-adapting risers, lids, and effluent filter be utilized. Sectional risers are not recommended.

Pump Tank

A new 1,000-gallon pump tank will be installed for this system. A 24" access riser will be installed on the outlet end of the pump tank. To facilitate the installation of the access riser, the tank will have a riser adapter cast into the top of the tank during tank construction. Rubber boots (4" inlet, 2" outlet) shall be cast into the inlet and outlet end of the tank. The pump tank will house the discharge pump. It is recommended that Orenco Systems riser-adapting risers and lids be utilized. Sectional risers are not recommended.

Discharge Pump and Filter

The system will pump to a low-pressure distribution system in the horizontal panel block drainfield. The discharge pump will be a submersible pump and will be outfitted with a check valve, pressure filter, union, and gate valve on the discharge pipe. The pressure filter will reduce the potential of solids entering the drainfield.

Control Panel and Floats

One control panel will be installed with this wastewater system. This panel will control operation of the discharge pump. Four floats will be installed; "Redundant Off", "Pump Off", "Pump On", and "High Water Alarm". The purpose of the Redundant Off float is to act as a secondary Off or

protection float for the pumps. In the event the control panel does not properly stop the pump when the water level drops, the Redundant Off float will drop, thereby ceasing pumping and protecting the pumps from running dry. The Pump Off and Pump On floats are set based on the intended field dose volume. When the dose volume is reached in the tank (as the water level rises), the Pump On float will engage (the Pump Off float will also be “up”) and pump the tank contents to the drainfield. As the liquid level drops, the Pump On float will drop and then once the Pump Off float drops, the pump will cease pumping. In the event of a power outage, pump failure or extremely high inflow to the system, the effluent level may rise above the Pump On float. If the effluent level rises sufficiently, the high-water alarm will activate. The High Water Alarm float is approximately 4.5” above the Pump On float and allows for a minimum of one-day storage in the pump tank. An additional 0.6-day storage is available in the septic tank.

Drainfield

The drainfield will utilize prefabricated permeable block panel drainfield product for the primary and repair systems. Low-pressure distribution systems will be utilized for both the primary and repair systems. Trench depth for both systems will be 20” and trench width will be 36”.

If there are questions, comments, or concerns regarding the operation of the system, please contact AWT at 919-859-0669.

Low-Pressure Distribution Panel Block System - Design Summary

**Project Manager:**

Jeff Vaughan

(919) 859-0669

jvaughan@agriwaste.com

Engineer:

Project: Lot 2 Phase 1 Patterson Wood

Property: 262 Youngsville Blvd
Youngsville, NC 27596

Subdiv.: Patterson Woods

Lot #: Lot 2 Phase 1

Owner: Three Six Builders

Address: PO Box 1250
Knightdate, NC 27545

Phone: 919-923-8196

Email: leslie@threesixbuilders.com

Date: 4/29/2020

County:

Franklin

Permit #:

Type of System:

IV a

New Construction

P.I.N. #:

1852-05-4094

EHS:

Soil Parameters

Soil Evaluation By:

Jeff Vaughan, LSS

Special Conditions/Notes:

Horizontal T&J Panel. 20" trench bottom.

Septic Tank Specifications

Min. Tank Capacity: 900 gal

Actual Tank Volume: 1,000 gal

Tank Manufacturer: Shoaf

Tank Model: TS 1000 STB-347

	Exterior	Interior	
Length:	9.00	8.50	ft
Width:	4.83	4.33	ft
Depth:	5.63		ft

Primary Drainfield Specifications

Type of Distribution: LPP

Trench Media: Panel Block

Trench Width: 3 ft

Trench Depth: 20 in

(or as specified on permit)

Trench Bottom Area: 600 ft²

Minimum Drain Line: 200 ft

Actual Drain Line: 204 ft

Number of Lines: 4

Minimum Line Spacing: 9 ft O.C.

Wastewater Treatment System Design Calculations

Project: Lot 2 Phase 1 Patterson Woods
Location: 262 Youngsville Blvd
Youngsville, NC 27596

Date: 4/29/2020
County: Franklin

Septic Tank Sizing

Daily Flow Estimate:

Unit	# of Units	Flow/Unit	Flow/Day
Bedroom	3	120	360
Q=			360 gpd

Septic Tank Minimum Capacity: Per NCAC T15A:18A .1952(b)(1):

For individual residences with 3 or fewer bedrooms,

$$V = 900$$

Minimum Liquid Capacity (V)= 900 gal

Septic Tank Specs:

Manufacturer: Shoaf

Model: TS 1000 STB-347

Volume: 1,000 gal

Weight: 10,500 lbs

Exterior
Length: 9.00 ft
Width: 4.83 ft
Depth: 5.63 ft

Interior
8.50 ft
4.33 ft

Shape of Risers: Circular

Diameter: 2.00 ft

Drainfield Design

Project: Lot 2 Phase 1 Patterson Woods
Location: 262 Youngsville Blvd
 Youngsville, NC 27596

Date: 4/29/2020
County: Franklin

Drainfield Sizing - Primary

Conventional Trench	
LTAR:	0.30 gpd/ft ²
Daily Design Flow:	360 gpd
Drainfield Area:	1,200 ft ²
Trench Width:	3 ft
Required Drainline:	400 ft

Panel Block Trench	
Required Drainline	
After 50% Reduction:	200 ft
Utilized Drainline:	204 ft
Minimum Line Spacing:	9 ft (O.C.)
Trench Width (MIN.):	3 ft
Effective Loading Rate:	0.59 gpd/ft ²

See Drawings

Drainfield Sizing - Repair

Conventional Trench	
LTAR:	0.30 gpd/ft ²
Daily Design Flow:	360 gpd
Drainfield Area:	1,200 ft ²
Trench Width:	3 ft
Required Drainline:	400 ft

Panel Block Trench	
Required Drainline	
After 50% Reduction:	200
Utilized Drainline:	204 ft
Minimum Line Spacing:	9 ft (O.C.)
Trench Width:	3 ft
Effective Loading Rate:	0.59 gpd/ft ²

Elevation Reference: Iron pipe approx. midway in NE lot line

Elevation: 354.73 ft

Line	Use	Flag Color	Elevation (ft)	Layout Length (ft)	Utilized Primary Length (ft)	Utilized Repair Length (ft)
1	Layout Line	Blue	346.28	54		
2	Layout Line	White	346.84	34		26
3	Layout Line	Pink	347.11	104		95
4	Layout Line	Orange	349.53	81		82
5	Layout Line	Blue	350.36	57	61	
6	Layout Line	White	351.56	70	65	
7	Layout Line	Pink	352.99	53	56	
8	Layout Line	Orange	354.35	70	22	
Total:					204	204
Count:					4	3

Lengths are shown to the nearest foot.

Drainfield Summary

PROJECT: Lot 2 Phase 1 Patterson Woods

Location: 262 Youngsville Blvd
Youngsville, NC 27596

County: Franklin

Primary System

DRAINFIELD INFO.								
Type of System/Distribution:			Porous Block Panel System w/ Low-Pressure Distribution					
Line No.	Line Elev (ft)	Flag Color	Line Length (ft)	Pressure Head (min) (ft)	Number of Panels	Orifice Size (in.)	Lateral Discharge (gpm)	Lateral Diameter (in.)
5	350.4	Blue	61	3.38	14	5/32	7.56	1
6	351.6	White	65	2.00	15	3/16	9.06	1
7	353.0	Pink	56	3.00	13	11/64	7.95	1
8	354.4	Orange	22	2.00	5	13/64	3.45	1
TOTAL			204		47		28.01	

Determination of Dose Volume - Primary System

Volume per Panel 3.6 gal
Number of Panels 47

Dose Volume (min) 169 gal
Runtime (min) 6.04 min

***Actual Dose and Runtime determined by Float Settings*

Note: Lines 5 & 6 are on Manifold 1
Lines 7 & 8 are on Manifold 2

Repair System

DRAINFIELD INFO.								
Type of System/Distribution:			Porous Block Panel System w/ Low-Pressure Distribution					
Line No.	Line Elev (ft)	Flag Color	Line Length (ft)	Pressure Head (min) (ft)	Number of Panels	Orifice Size (in.)	Lateral Discharge (gpm)	Lateral Diameter (in.)
2	346.8	White	26	5.45	6	9/64	3.27	1
3	347.1	Pink	95	4.52	22	5/32	13.59	1 1/4
4	349.5	Orange	82	2.00	19	13/64	13.31	1 1/4
TOTAL			204		47		30.18	

Determination of Dose Volume - Repair System

Volume per Panel 3.6 gal
Number of Panels 47

Dose Volume (min) 169 gal
Runtime (min) 5.61 min

Summary

Manifold Design *Calc. Laterals* are numbered from the supply end of the manifold to the distal lateral.

Note: The laterals in this system do not drain because there are no downward-facing orifices.

Manifold	Layout Lateral	Calc. Lateral	Head at Junc. (ft)	Dist. To Next Junc. (ft)	Man. Diam. (in.)	Lateral Elev. (ft)	Disch. in	Fric. Loss	Avg q _{orif} (gpm)	Δq _{orif} w/i Lateral	Lateral	Orifice Diam. (in.)	H _{min} in Lateral (ft)	Lateral Diam. (in.)	Lateral Area (in. ²)	Lateral Vol. (gal)	Header Vol. (gal)
							Man. Section to Next Lat. (gpm)	in Sect. to Next Lat. (ft)			q _{orif} diff. from lowest lateral						
1	5	1	4.01	11.8	1 1/4	350.36	9.06	0.18	0.54	4.9%	0.0%	5/32	3.38	1	0.83	5.90	0.17
	6	2	2.63	0.0	1 1/4	351.56	0.00	0.00	0.60	7.8%	11.8%	3/16	2.00	1	0.83	5.26	0.17
	7	3	3.46	12.1	1 1/4	352.99	3.45	0.03	0.61	3.8%	13.2%	11/64	3.00	1	0.83	4.51	0.17
	8	4	3.46	0.0	1 1/4	354.35	0.00	0.00	0.69	0.5%	27.7%	13/64	2.00	1	0.83	1.52	0.17
																17.19	0.69

Manifold 1

Manifold Design Calc. Laterals are numbered from the supply end of the manifold to the distal lateral.

H-W C	150
Equiv Length %	15%

Avg. q_{orif} in the highest lateral should be 10-30% greater than avg. q_{orif} in the lowest lateral.

	Left		Right		Overall	
	H, ft	q _{orif} , gpm	H, ft	q _{orif} , gpm	H, ft	q _{orif} , gpm
Max	3.74	0.56	3.57	0.54	3.74	0.56
Min	3.54	0.54	3.38	0.53	3.38	0.53
Avg	3.60	0.55	3.44	0.53	3.52	0.54
% Drop	5.3%	2.7%	5.4%	2.7%	9.6%	4.9%

	Left		Right		Overall	
	H, ft	q _{orif} gpm	H, ft	q _{orif} gpm	H, ft	q _{orif} gpm
Max	2.36	0.64	2.30	0.63	2.36	0.64
Min	2.00	0.59	2.06	0.60	2.00	0.59
Avg	2.11	0.60	2.14	0.61	2.13	0.60
% Drop	15.0%	7.8%	10.4%	5.3%	15.0%	7.8%

q_{Lat}	9.06 gpm
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Manifold 2

Manifold Design Calc. Laterals are numbered from the supply end of the manifold to the distal lateral.

H-W C	150
Equiv Length %	15%

Avg. q_{orif} in the highest lateral should be 10-30% greater than avg. q_{orif} in the lowest lateral.

1	Left		Right		Overall	
	H, ft	q _{orth} gpm	H, ft	q _{orth} gpm	H, ft	q _{orth} gpm
Max	3.24	0.63	3.20	0.62	3.24	0.63
Min	3.00	0.60	3.05	0.61	3.00	0.60
Avg	3.08	0.61	3.10	0.61	3.09	0.61
% Drop	7.5%	3.8%	4.8%	2.4%	7.5%	3.8%

q _{Lat}	7.95 gpm
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2	Left		Right		Overall	
	H, ft	q _{orth} gpm	H, ft	q _{orth} gpm	H, ft	q _{orth} gpm
Max	2.02	0.69	2.02	0.69	2.02	0.69
Min	2.00	0.69	2.01	0.69	2.00	0.69
Avg	2.01	0.69	2.02	0.69	2.01	0.69
% Drop	1.0%	0.5%	0.2%	0.1%	1.0%	0.5%

q _{Lat}	3.45 gpm
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Distance Increment to Orifice 1 is from the header (or manifold junction if there is no header) to the first orifice. Subsequent *Distance Increment*s are between successive orifices.

Low Pressure Manifold & Laterals Design - Repair

PROJECT: 262 Youngsville Blvd
Location: Youngsville, NC 27596
Patterson Woods
County: Franklin

Manifold Design Calc. Laterals are numbered from the supply end of the supply end of the manifold to the distal lateral.

Qsupply		30.18 gpm	Required flow at manifold inlet		Vsystem	37.87 gal	Volume of manifold, headers, and laterals											
Note: The laterals in this system do not drain because there are no downward-facing orifices.																		
Layout Lateral	Calc. Lateral	Head at Junction (ft)	Dist. To Next Junc. (ft)	Man. Diam. (in.)	Lateral Elev. (ft)	Disch. in Man. Section to Next Lat. (gpm)	Fric. Loss in Sect. to Next Lat. (ft)	Avg qorif (gpm)	Δqorif w/l Lateral	Lateral qorif diff. from lowest lateral	Orifice Diam. (in.)	Hmin in Lateral (ft)	Lateral Diam. (in.)	Lateral Area (in. ²)	Lateral Vol. (gal)	Header Vol. (gal)		
2	1	5.51	18.30	2	#####	26.91	0.281	0.54	0.2%	0.0%	9/64	5.45	1	0.83	1.89	0.17		
3	2	4.96	38.10	2	#####	13.31	0.159	0.62	3.1%	13.5%	5/32	4.52	1 1/4	1.45	13.76	0.30		
4	3	2.38	0.00	2	#####	0.00	0.000	0.70	5.5%	28.7%	13/64	2.00	1 1/4	1.45	11.80	0.30		
							0.440											
Minimum Manifold ID				1.83 in.	Based on 0.7 ΣA _{lateral}													
Design Manifold Diameter				2 in.	Nominal pipe size													
													Min. Manifold Area		2.62	3.74	27.46	0.78

Lateral Design

Lateral 2L	Dist. Incr. (ft)	Nom. Lateral Diam. (in.)	Friction Loss in Pipe (ft)	Head in Pipe (ft)	Flow in Pipe (gpm)	Orifice Diam. (in.)	Orifice Disch. (gpm)	Flow Vel. in Pipe (ft/s)	Lateral 2R	Dist. Incr. (ft)	Nom. Lateral Diam. (in.)	Friction Loss in Pipe (ft)	Head in Pipe (ft)	Flow in Pipe (gpm)	Orifice Diam. (in.)	Orifice Disch. (gpm)	Flow Vel. in Pipe (ft/s)
H _n				5.51		0.000											
Header	4.00	1	0.035	5.48	3.3			1.26									
Orifice 1	2.42	1	0.006	5.47	1.6	9/64	0.55	0.63	Orifice 1	6.75	1	0.016	5.46	1.6	9/64	0.54	0.63
Orifice 2	8.66	1	0.010	5.46	1.1	9/64	0.54	0.42	Orifice 2	8.66	1	0.010	5.45	1.1	9/64	0.54	0.42
Orifice 3	8.66	1	0.003	5.46	0.5	9/64	0.54	0.21	Orifice 3	8.66	1	0.003	5.45	0.5	9/64	0.54	0.21
Orifice 4	0.00	1	0.000	5.46	0.0	9/64	0.00	0.00	Orifice 4	0.00	1	0.000	5.45	0.0	9/64	0.00	0.00
Orifice 5	0.00	1	0.000	5.46	0.0	9/64	0.00	0.00	Orifice 5	0.00	1	0.000	5.45	0.0	9/64	0.00	0.00
19.74				0.019					24.07				0.029				

Notes:

H_n is the head at the manifold junction with the lateral (or header). If there is no header, enter "0" for the "Dist. Incr."

The Header is the section containing valves, etc., between the manifold and the regular lateral.

Distance Increment to Orifice 1 is from the header (or manifold junction if there is no header) to the first orifice. Subsequent Distance Increment's are between successive orifices.

H-W C	150
Equiv Length %	15%

Avg. q_{orif} in the highest lateral should be 10-30% greater than avg. q_{orif} in the lowest lateral.

	Left		Right		Overall	
	H, ft	q _{orif} gpm	H, ft	q _{orif} gpm	H, ft	q _{orif} gpm
Max	5.47	0.55	5.46	0.54	5.47	0.55
Min	5.46	0.54	5.45	0.54	5.45	0.54
Avg	5.46	0.54	5.45	0.54	5.46	0.54
% Drop	0.2%	0.1%	0.2%	0.1%	0.4%	0.2%

q _{lat}	3.27 gpm
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Lateral 3L	Dist. Incr. (ft)	Nom. Lateral Diam. (in.)	Friction Loss in Pipe (ft)	Head in Pipe (ft)	Flow in Pipe (gpm)	Orifice Diam. (in.)	Orifice Disch. (gpm)	Flow Vel. in Pipe (ft/s)
H ₁				4.96				
Header	4.00	1 1/4	0.127	4.84	13.6			3.00
Orifice 1	2.42	1 1/4	0.021	4.81	6.8	5/32	0.63	1.50
Orifice 2	8.66	1 1/4	0.064	4.75	6.2	5/32	0.63	1.36
Orifice 3	8.66	1 1/4	0.052	4.70	5.6	5/32	0.62	1.23
Orifice 4	8.66	1 1/4	0.042	4.66	4.9	5/32	0.62	1.09
Orifice 5	8.66	1 1/4	0.033	4.62	4.3	5/32	0.62	0.95
Orifice 6	8.66	1 1/4	0.025	4.60	3.7	5/32	0.62	0.81
Orifice 7	8.66	1 1/4	0.018	4.58	3.1	5/32	0.62	0.68
Orifice 8	8.66	1 1/4	0.012	4.57	2.5	5/32	0.61	0.54
Orifice 9	8.66	1 1/4	0.007	4.56	1.8	5/32	0.61	0.41
Orifice 10	8.66	1 1/4	0.003	4.56	1.2	5/32	0.61	0.27
Orifice 11	8.66	1 1/4	0.001	4.56	0.6	5/32	0.61	0.14
	89.02		0.277					

Lateral 4L	Dist. Incr. (ft)	Nom. Lateral Diam. (in.)	Friction Loss in Pipe (ft)	Head in Pipe (ft)	Flow in Pipe (gpm)	Orifice Diam. (in.)	Orifice Disch. (gpm)	Flow Vel. in Pipe (ft/s)
H ₁				2.38				
Header	4.00	1 1/4	0.122	2.26	13.3			2.94
Orifice 1	2.42	1 1/4	0.022	2.24	7.0	13/64	0.73	1.54
Orifice 2	8.66	1 1/4	0.066	2.17	6.3	13/64	0.72	1.38
Orifice 3	8.66	1 1/4	0.052	2.12	5.6	13/64	0.71	1.23
Orifice 4	8.66	1 1/4	0.041	2.08	4.8	13/64	0.70	1.07
Orifice 5	8.66	1 1/4	0.030	2.05	4.1	13/64	0.70	0.91
Orifice 6	8.66	1 1/4	0.022	2.03	3.4	13/64	0.69	0.76
Orifice 7	8.66	1 1/4	0.014	2.01	2.8	13/64	0.69	0.61
Orifice 8	8.66	1 1/4	0.008	2.01	2.1	13/64	0.69	0.46
Orifice 9	8.66	1 1/4	0.004	2.00	1.4	13/64	0.69	0.30
Orifice 10	8.66	1 1/4	0.001	2.00	0.7	13/64	0.69	0.15
	80.36		0.261					

Lateral 3R	Dist. Incr. (ft)	Nom. Lateral Diam. (in.)	Friction Loss in Pipe (ft)	Head in Pipe (ft)	Flow in Pipe (gpm)	Orifice Diam. (in.)	Orifice Disch. (gpm)	Flow Vel. in Pipe (ft/s)
Orifice 1	6.75	1 1/4	0.059	4.78	6.8	5/32	0.63	1.50
Orifice 2	8.66	1 1/4	0.063	4.71	6.2	5/32	0.62	1.36
Orifice 3	8.66	1 1/4	0.052	4.66	5.5	5/32	0.62	1.22
Orifice 4	8.66	1 1/4	0.042	4.62	4.9	5/32	0.62	1.08
Orifice 5	8.66	1 1/4	0.032	4.59	4.3	5/32	0.62	0.95
Orifice 6	8.66	1 1/4	0.024	4.56	3.7	5/32	0.61	0.81
Orifice 7	8.66	1 1/4	0.017	4.54	3.1	5/32	0.61	0.68
Orifice 8	8.66	1 1/4	0.011	4.53	2.4	5/32	0.61	0.54
Orifice 9	8.66	1 1/4	0.007	4.53	1.8	5/32	0.61	0.41
Orifice 10	8.66	1 1/4	0.003	4.52	1.2	5/32	0.61	0.27
Orifice 11	8.66	1 1/4	0.001	4.52	0.6	5/32	0.61	0.14
	93.35		0.313					

Lateral 4R	Dist. Incr. (ft)	Nom. Lateral Diam. (in.)	Friction Loss in Pipe (ft)	Head in Pipe (ft)	Flow in Pipe (gpm)	Orifice Diam. (in.)	Orifice Disch. (gpm)	Flow Vel. in Pipe (ft/s)
Orifice 1	6.75	1 1/4	0.052	2.21	6.3	13/64	0.72	1.40
Orifice 2	8.66	1 1/4	0.053	2.16	5.6	13/64	0.71	1.24
Orifice 3	8.66	1 1/4	0.041	2.11	4.9	13/64	0.71	1.08
Orifice 4	8.66	1 1/4	0.031	2.08	4.2	13/64	0.70	0.92
Orifice 5	8.66	1 1/4	0.022	2.06	3.5	13/64	0.70	0.77
Orifice 6	8.66	1 1/4	0.015	2.05	2.8	13/64	0.70	0.61
Orifice 7	8.66	1 1/4	0.009	2.04	2.1	13/64	0.69	0.46
Orifice 8	8.66	1 1/4	0.004	2.03	1.4	13/64	0.69	0.31
Orifice 9	8.66	1 1/4	0.001	2.03	0.7	13/64	0.69	0.15
Orifice 10	0.00	1 1/4	0.000	2.03	0.0	13/64	0.00	0.00
	76.03		0.227					

	Left		Right		Overall	
	H, ft	q _{orif} , gpm	H, ft	q _{orif} , gpm	H, ft	q _{orif} , gpm
Max	4.81	0.63	4.78	0.63	4.81	0.63
Min	4.56	0.61	4.52	0.61	4.52	0.61
Avg	4.63	0.62	4.60	0.62	4.62	0.62
% Drop	5.3%	2.7%	5.3%	2.7%	6.1%	3.1%

q _{Lat}	13.59 gpm
------------------	-----------

	Left		Right		Overall	
	H, ft	q _{orif} , gpm	H, ft	q _{orif} , gpm	H, ft	q _{orif} , gpm
Max	2.24	0.73	2.21	0.72	2.24	0.73
Min	2.00	0.69	2.03	0.69	2.00	0.69
Avg	2.07	0.70	2.09	0.70	2.08	0.70
% Drop	10.6%	5.5%	7.9%	4.1%	10.6%	5.5%

q _{Lat}	13.31 gpm
------------------	-----------

Pump Tank Float Levels & Storage

Project Lot 2 Phase 1 Patterson Woods
Location 262 Youngsville Blvd
 Youngsville, NC 27596

Daily Flow 360 gpd
 Dose Volume 169 gal

Pump Tank Shoaf TS 1000 PT Non-traffic Pump Tank
 Storage Rate 20.16 gal/in. (avg., per manufacturer)
 Interior Height 50 in.

Required Storage

Pump Submergence	16.0 in.	323 gal	
RO to Pump OFF	3.0 in.	60 gal	
Drainfield Dose Storage	8.4 in.	169 gal	
Pump Tank Emer. Storage	18.1 in.	365 gal	1.01 d
Septic Tank Emer. Storage	10.0 in.	218 gal	0.61 d
System Emergency Storage	583 gal	38.9 hr	

Float Heights - Measured from Interior Tank Floor

Redundant OFF / LWA	16.0 in.	<i>allows pump to remain submerged</i>
Pump OFF	19.0 in.	<i>3" above RO Float</i>
Pump ON	27.5 in.	
HWA	32.0 in.	

Elevation Calculations

PROJECT: Lot 2 Phase 1 Patterson Woods
 Location: 262 Youngsville Blvd
 County: Franklin

Elevation Reference Iron pipe approx. midway in NE lot line
 Elevation 354.73 ft

Septic Tank

Ground Surface @ Stub-out (est.)	357.0 ft
Drain Invert @ House	355.13 ft
Ground Surface @ Septic Tank	355.1 ft
Pipe Length to Septic Tank	29.40 ft
Cover over Septic Tank	12.00 in.
Top of Septic Tank (Exterior)	354.10 ft
External Height of Septic Tank	67.50 in.
Tank Bottom to 4" inlet invert	57.00 in.
Tank Bottom to 4" outlet invert	55.00 in.
Inlet invert	353.23 ft
Slope of Pipe to Septic Tank	6.5%
Outlet Invert	353.06 ft
Bottom of Septic Tank (Exterior)	348.48 ft
Gravel Bed Thickness	6.00 in
Bottom of Excavation	347.98 ft

Pump Tank

Ground Surface @ Pump Tank	353.8 ft
Pipe Length to Pump Tank	3.00 ft
External Height of Pump Tank	57.00 in.
Tank Bottom to 4" inlet invert	46.00 in.
Cover over Pump Tank	12.0 in
Top of Pump Tank (Exterior)	352.80 ft
Elevation at Inlet invert	351.88 ft
Slope of Pipe to Pump Tank	39.2%
Bottom of Pump Tank (Exterior)	348.05 ft
Tank Bottom Thickness	4.00 in.
Elevation of Tank Floor	348.38 ft
Gravel Bed Thickness	6.00 in.
Bottom of Excavation	347.55 ft

Riser Heights (approx)

Septic Tank	18 in.
Pump Tank	18 in.

Pump Tank Float Settings

	Elevation (ft)	Ht. Above Tank Floor (in.)
Redundant OFF	349.72	16.0
Pump OFF	349.97	19.0
Pump ON	350.68	27.5
High Water Alarm	351.05	32.0

PUMP DESIGN

System (initial/repair): **Primary**

Project: Lot 2 Phase 1 Patterson Woods
 Site Address: 262 Youngsville Blvd
 Youngsville, NC 27596
 County: Franklin

Suction Head	0 ft	(submersible 0)
Elev of Pump Intake	348.88 ft	
Elev of Highest Lateral	354.35 ft	
Req. Head At Far End of Lateral	2 ft	

Friction Losses

Supply Line - Schedule 40 PVC

Pipe Diam., Nominal	2 in.	H-W C	150
Pipe Diameter (ID)	2.047 in.	Flow	28.01 gpm
Pipe Length	36.3 ft	Velocity	2.73 ft/sec
Pipe Length for Fittings	3.63 ft		
Friction Loss	0.58 ft		

Primary Manifold - Schedule 40 PVC

Friction Loss	0.18 ft	Calculated in Primary worksheets
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Primary Lateral, Distal - Schedule 40 PVC

Friction Loss	0.40 ft	Calculated in Primary worksheets
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TOTAL 1.15 ft.

Flow for Anti-Siphon Hole

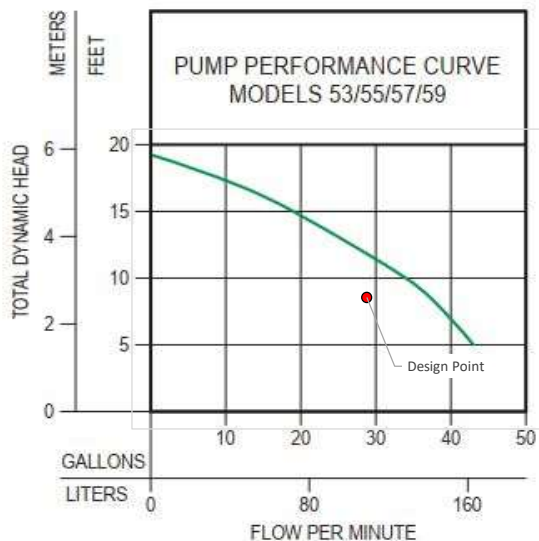
Hole Diameter	1/8 in.
Hole Flowrate	0.54 gpm

Pump Efficiency	0.7 (assumed, typical)
Motor Efficiency	0.9 (assumed for electric pumps)
Flow	28.55 gpm

Required Horsepower	0.10 hp
TDH	8.62 ft.

Pump Selection

Manufacturer:	Zoeller	Note: A gate valve will be used to meter the flow at each manifold.
Model:	N57	
Horsepower:	0.3	



Septic Tank Buoyancy Calculation

Project Lot 2 Phase 1 Patterson Woods
Location 262 Youngsville Blvd
Youngsville, NC 27596
County Franklin

Tank Size (nominal) 1,000 gal

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.

Assume groundwater table is equal to or higher than top of chamber.

(Buoyancy is the same as long as water table is higher than top of tank.)

Effluent Density	62.4 lb/ft ³ (Specific Weight of Water)
Concrete Density	142.56 lb/ft ³
Soil App Sp Grav	1.25 (typical value)
Soil Cover Over Tank	12 in.

Tank Dimensions (from supplier):

	<u>Exterior</u>	<u>Interior</u>
Length	9.00 ft	8.50 ft
Width	4.83 ft	4.33 ft
Total Tank Depth	5.63 ft	5.04 ft
Permanent Liquid Depth in Tank	0 in.	
Area of Riser Openings	6.28 ft ²	
Tank Weight (est.)	9500 lb. (based on manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force = Specific Weight of Water x Displaced Volume

Buoyancy Force 15,269 lb

Weight Calculation:

Tank Weight	9,500 lb
Water Weight in Tank	0 lb
Soil Weight Over Tank	2,903 lb
Soil Tension Force	4,227 lb
Total Weight	16,630 lb

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

Pump Tank Buoyancy Calculation

Project Lot 2 Phase 1 Patterson Woods
Location 262 Youngsville Blvd
Youngsville, NC 27596
County Franklin

Tank Size (nominal) 1,000 gallons

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.

Assume water table is at top of tank.

Effluent Density	62.4 lb/ft ³ (Specific Weight of Water)
Concrete Density	142.56 lb/ft ³
Soil App Sp Grav	1.25 (typical value)
Soil Cover Over Tank	12 in.

Tank Dimensions (from supplier):

	<u>Exterior</u>	<u>Interior</u>
Length	8.00 ft	7.50 ft
Width	5.17 ft	4.67 ft
Total Tank Depth	4.75 ft	4.17 ft
Permanent Liquid Depth in Tank	0 in.	
Area of Riser Openings	3.14 ft ²	
Tank Weight (est.)	8,000 lb (based on manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force = Specific Weight of Water x Displaced Volume	
Tank Displacement	196.3 ft ³
Buoyancy Force	12,251 lb.

Weight Calculation:

Tank Weight	8,000 lb
Water Weight in Tank	0 lb
Soil Weight Over Tank	2,979 lb
Soil Tension Force	2,869 lb
Total Weight	13,848 lb

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

PUMP DESIGN

System (initial/repair): **Repair**

Project: Lot 2 Phase 1 Patterson Woods
 Site Address: 262 Youngsville Blvd
 Youngsville, NC 27596
 County: Franklin

Suction Head	0 ft	(submersible 0)
Elev of Pump Intake	348.88 ft	
Elev of Highest Lateral	349.53 ft	
Req. Head At Far End of Lateral	2.00 ft	to provide required head in laterals

Friction Losses

Supply Line - Schedule 40 PVC

Pipe Diam., Nominal	2 in.	H-W C	150
Pipe Diameter (ID)	2.047 in.	Flow	30.18 gpm
Pipe Length	103.5 ft	Velocity	2.94 ft/sec
Pipe Length for Fittings	10.35 ft		
Friction Loss	1.88 ft		

Repair Manifold - Schedule 40 PVC

Pipe Diam., Nominal	2 in.	Pipe Length	58.0 ft
Friction Loss	1.06 ft	Flow	30.18 gpm

Repair Lateral, Distal - Schedule 40 PVC

Friction Loss	0.31 ft	Calculated in LPP Repair worksheet
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TOTAL 3.25 ft

Flow for Anti-Siphon Hole

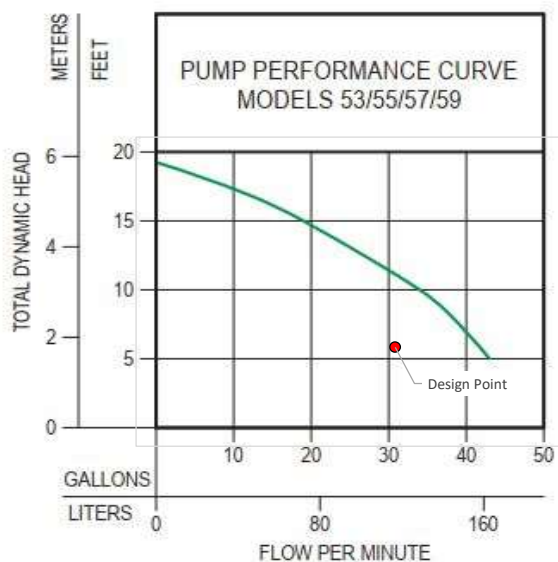
Hole Diameter	1/8 in.
Hole Flowrate	0.45 gpm

Pump Efficiency	0.7 (assumed, typical)
Motor Efficiency	0.9 (assumed for electric pumps)
Flow	30.62 gpm

Required Horsepower	0.07 hp
TDH	5.90 ft.

Pump Selection

Manufacturer:	Zoeller	Note: A gate valve will be used to meter the flow at the drainfield.
Model:	N57	
Horsepower:	0.3	



Septic Tank Buoyancy Calculation

Project Lot 2 Phase 1 Patterson Woods
Location 262 Youngsville Blvd
Youngsville, NC 27596
County Franklin

Tank Size (nominal) 1,000 gal

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.

Assume groundwater table is equal to or higher than top of chamber.

(Buoyancy is the same as long as water table is higher than top of tank.)

Effluent Density	62.4 lb/ft ³ (Specific Weight of Water)
Concrete Density	142.56 lb/ft ³
Soil App Sp Grav	1.25 (typical value)
Soil Cover Over Tank	12 in.

Tank Dimensions (from supplier):

	<u>Exterior</u>	<u>Interior</u>
Length	9.00 ft	8.50 ft
Width	4.83 ft	4.33 ft
Total Tank Depth	5.63 ft	5.04 ft
Permanent Liquid Depth in Tank	0 in.	
Area of Riser Openings	6.28 ft ²	
Tank Weight (est.)	9500 lb. (based on manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force = Specific Weight of Water x Displaced Volume

Buoyancy Force 15,269 lb

Weight Calculation:

Tank Weight	9,500 lb
Water Weight in Tank	0 lb
Soil Weight Over Tank	2,903 lb
Soil Tension Force	4,227 lb
Total Weight	16,630 lb

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

Pump Tank Buoyancy Calculation

Project Lot 2 Phase 1 Patterson Woods
Location 262 Youngsville Blvd
Youngsville, NC 27596
County Franklin

Tank Size (nominal) 1,000 gallons

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.

Assume water table is at top of tank.

Effluent Density	62.4 lb/ft ³ (Specific Weight of Water)
Concrete Density	142.56 lb/ft ³
Soil App Sp Grav	1.25 (typical value)
Soil Cover Over Tank	12 in.

Tank Dimensions (from supplier):

	<u>Exterior</u>	<u>Interior</u>
Length	8.00 ft	7.50 ft
Width	5.17 ft	4.67 ft
Total Tank Depth	4.75 ft	4.17 ft
Permanent Liquid Depth in Tank	0 in.	
Area of Riser Openings	3.14 ft ²	
Tank Weight (est.)	8,000 lb (based on manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force = Specific Weight of Water x Displaced Volume	
Tank Displacement	196.3 ft ³
Buoyancy Force	12,251 lb.

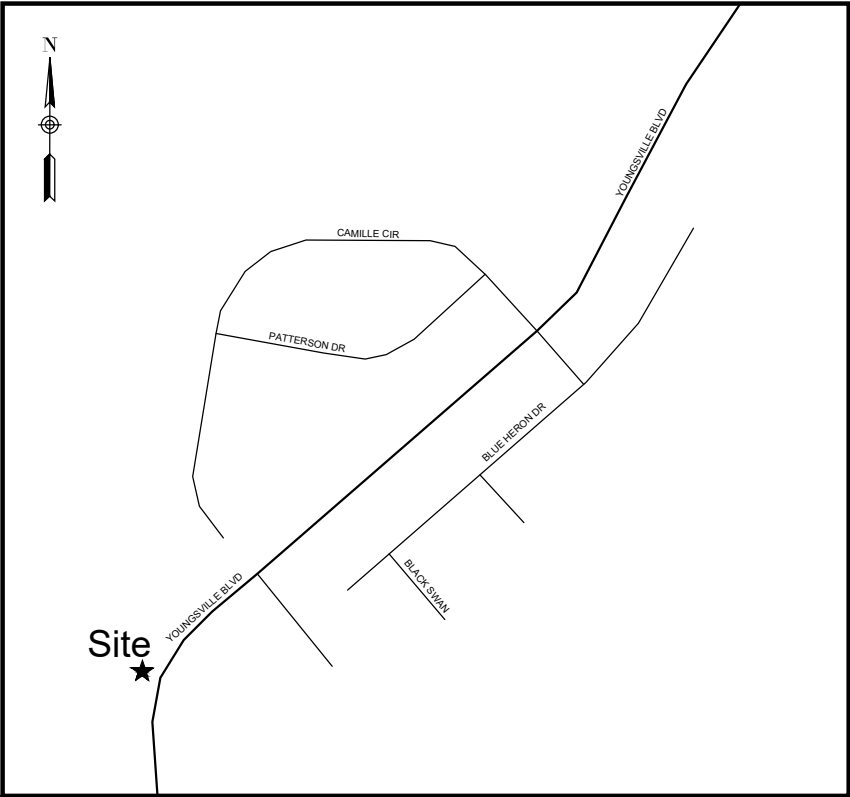
Weight Calculation:

Tank Weight	8,000 lb
Water Weight in Tank	0 lb
Soil Weight Over Tank	2,979 lb
Soil Tension Force	2,869 lb
Total Weight	13,848 lb

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

Patterson Woods Lot 2, Phase 1 WWTS

Project Location	262 Youngsville Blvd. Youngsville, NC 27596 Franklin County PIN: 1852-05-4094 Patterson Woods Lot 2 Phase 1
Project Owner	Three Six Builders Corporation PO Box 1250 Knightdale, NC 27545 919-440-9145 leslie@threesixbuilders.com
Project Consultant	Kevin Davidson, P.E. (919) 367-6310 Jeff Vaughan, L.S.S (919) 367-6313 Agri-Waste Technology, Inc. 501 N. Salem Street, Suite 203 Apex, NC 27502 (919) 859-0669 (919) 233-1970 Fax
System Overview	Single Family Residence Three (3) Bedroom, 360 gpd Horizontal Porous Block Panel Dispersal System with Low Pressure Distribution



VICINITY MAP

Sheet Index

Sheet 1	Cover Sheet
Sheet 2	Property Layout
Sheet 3	Component Layout
Sheet 4	Primary Drainfield
Sheet 5	Repair Drainfield
Sheet 6	Detail Sheet 1
Sheet 7	Detail Sheet 2
Sheet 8	Detail Sheet 3
Sheet 9	Excavation Safety



AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0669
www.agriwaste.com

**Patterson Woods
Lot 2, Phase 1 WWTS**

Project Location:
262 Youngsville Blvd.
Youngsville, NC 27596
Franklin County
PIN: 1852-05-4094
PID: 039335
Patterson Woods Lot 2 Phase 1

Project Owner:
Three Six Builders Corporation
c/o Leslie Privette
PO Box 1250
Zebulon, NC 27545
(919) 440-9145

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Davidson, NC PE
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REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Cover Sheet

DRAWN BY: R. Huffman	CREATED ON: 04/27/2020
REVISED BY: ----	REVISED ON: ----
RELEASED BY: ----	RELEASED ON: ----

DRAWING NUMBER
WW-1



Patterson Woods
Lot 2, Phase 1 WWTS

Project Owner:
Three Six Builders Corporation
c/o Leslie Privette
PO Box 1250
Zebulon, NC 27545
(919) 440-9145

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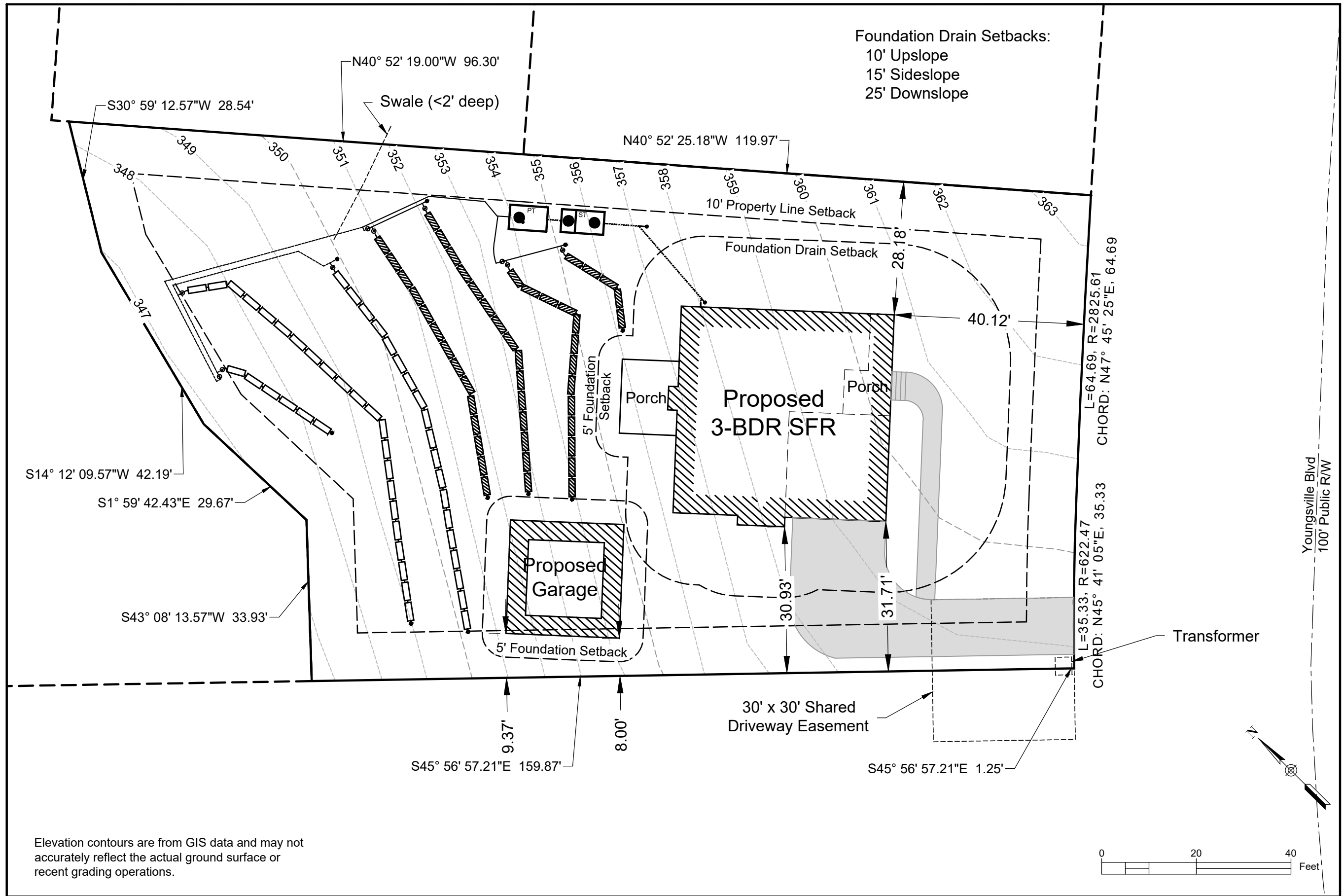
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SHEET TITLE

Property Layout

DRAWING NUMBER

WW-2

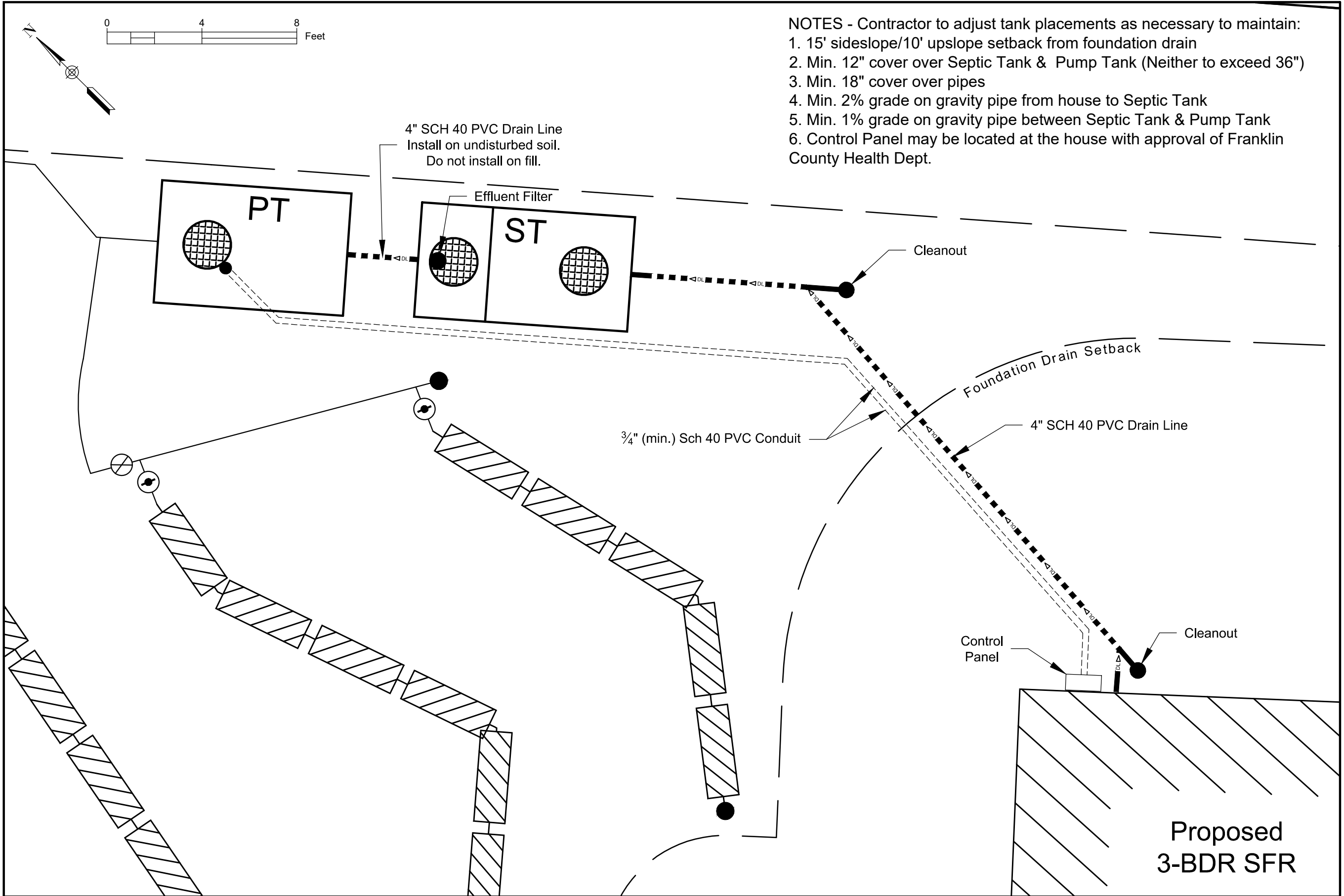


1
WW-2

PROPERTY LAYOUT

N.T.S. SOURCE: AWT, Inc.

1
WW-2 N.T.S. SOURCE: AWT, Inc.



- NOTES - Contractor to adjust tank placements as necessary to maintain:
1. 15' sideslope/10' upslope setback from foundation drain
 2. Min. 12" cover over Septic Tank & Pump Tank (Neither to exceed 36")
 3. Min. 18" cover over pipes
 4. Min. 2% grade on gravity pipe from house to Septic Tank
 5. Min. 1% grade on gravity pipe between Septic Tank & Pump Tank
 6. Control Panel may be located at the house with approval of Franklin County Health Dept.



Engineers and Soil Scientists

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Patterson Woods
Lot 2, Phase 1 WWTS

Project Location:
262 Youngsville Blvd.
Youngsville, NC 27596
Franklin County
PIN: 1852-05-4094
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Patterson Woods Lot 2 Phase

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SHEET TITLE

Component Layout

DRAWN BY: R. Huffman	CREATED ON: 04/27/2020
REVISED BY: ----	REVISED ON: ----
RELEASED BY: ----	RELEASED ON: ----

DRAWING NUMBER

WW-3

General Drainfield Notes:

1.

Clear all trees less than 8” in diameter (measured at a height 3’ from soil surface) from the drainfield.
2.

Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3.

Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
4.

In clayey soils, sides of trenches shall be raked and limed per panel manufacturer’s instructions.
5.

Orifices of the specified sizes shall be drilled in the distribution pipes, one per panel, midway between the ends of the panel. Orifices alternate between the 10 o’clock and 2 o’clock positions on the pipe in each panel, while also alternating between left and right chambers within the panel.
6.

Manifold supply lines shall be installed with a minimum of 18” cover.
7.

The trenches shall be backfilled appropriately so that no low areas are present.
8.

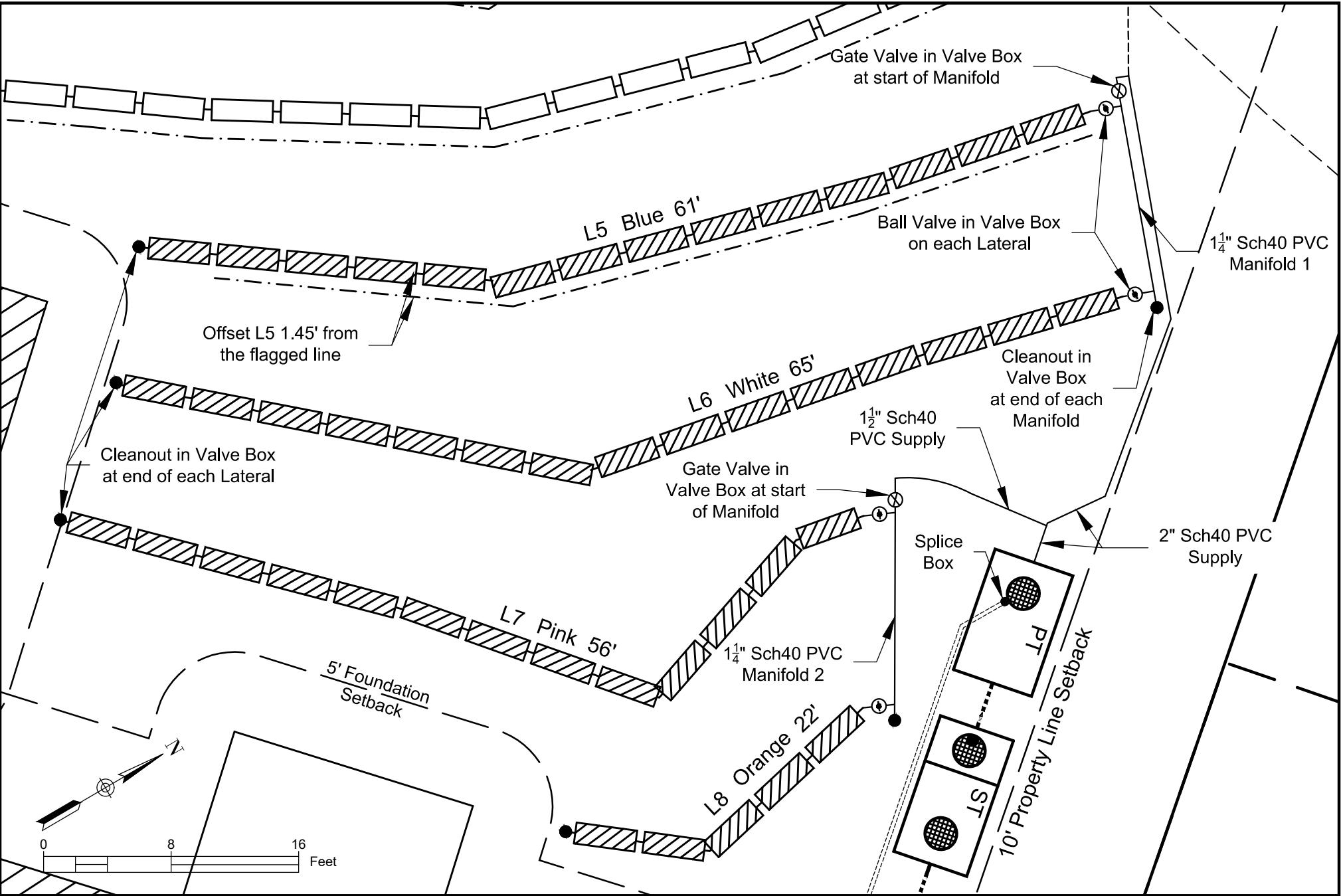
Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate recommended by the seed manufacturer. Hand rake the seed into the soil surface. Straw the seeded area at the rate of 1.5–2 bales per 1000 sq. ft.

LINE SUMMARY - PRIMARY

DRAINFIELD INFO.								
Type of System/Distribution:			Porous Block Panel System w/ Low-Pressure Distribution					
Line No.	Line Elev (ft)	Flag Color	Line Length (ft)	Pressure Head (min) (ft)	Number of Panels	Orifice Size (in.)	Lateral Discharge (gpm)	Lateral Diameter (in.)
5	350.4	Blue	61	3.38	14	5/32	7.56	1
6	351.6	White	65	2.00	15	3/16	9.06	1
7	353.0	Pink	56	3.00	13	11/64	7.95	1
8	354.4	Orange	22	2.00	5	13/64	3.45	1
TOTAL			204		47		28.01	

Note the offset of L5 from the flagged line.

Note:
Manifold 1 serves Lines 5 & 6
Manifold 2 serves Lines 7 & 8



Primary Drainfield

SOURCE: Agri-Waste Technology, Inc.



Engineers and Soil Scientists

Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0669
www.agriwaste.com

Patterson Woods
Lot 2, Phase 1 WWTS

Project Location:
262 Youngsville Blvd.
Youngsville, NC 27596
Franklin County
PIN: 1852-05-4094
PID: 039335
Patterson Woods Lot 2 Phase

Project Owner:
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c/o Leslie Privette
PO Box 1250
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SHEET TITLE

Primary Drainfield

DRAWN BY:
R. Huffman

CREATED ON:
04/27/2020

REVISED BY:

REVISED ON:

RELEASED BY:

RELEASED ON:

DRAWING NUMBER

WW-4

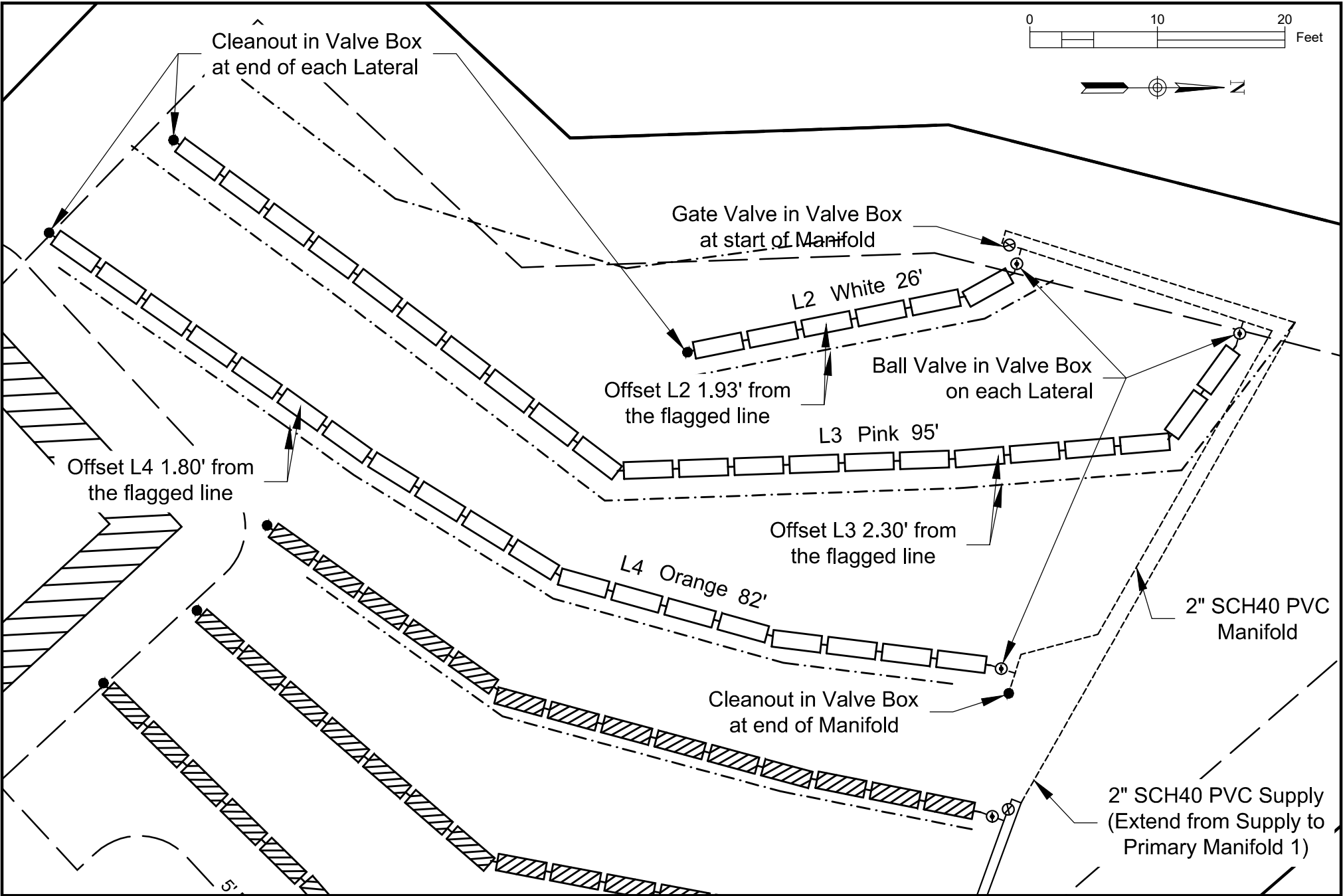
General Drainfield Notes:

1. Clear all trees less than 8” in diameter (measured at a height 3’ from soil surface) from the drainfield.
2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3. Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
4. In clayey soils, sides of trenches shall be raked and limed per panel manufacturer’s instructions.
5. Orifices of the specified sizes shall be drilled in the distribution pipes, one per panel, midway between the ends of the panel. Orifices alternate between the 10 o’clock and 2 o’clock positions on the pipe in each panel, while also alternating between left and right chambers within the panel.
6. Manifold supply lines shall be installed with a minimum of 18” cover.
7. The trenches shall be backfilled appropriately so that no low areas are present.
8. Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate recommended by the seed manufacturer. Hand rake the seed into the soil surface. Straw the seeded area at the rate of 1.5–2 bales per 1000 sq. ft.

LINE SUMMARY - REPAIR

DRAINFIELD INFO.								
Type of System/Distribution: Porous Block Panel System w/ Low-Pressure Distribution								
Line No.	Line Elev (ft)	Flag Color	Line Length (ft)	Pressure Head (min) (ft)	Number of Panels	Orifice Size (in.)	Lateral Discharge (gpm)	Lateral Diameter (in.)
2	346.8	White	26	5.45	6	9/64	3.27	1
3	347.1	Pink	95	4.52	22	5/32	13.59	1 1/4
4	349.5	Orange	82	2.00	19	13/64	13.31	1 1/4
TOTAL			204		47		30.18	

Note the offsets of L2, L3, & L4 from the flagged lines.



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Patterson Woods
Lot 2, Phase 1 WWTS

Project Location:
262 Youngsville Blvd.
Youngsville, NC 27596
Franklin County
PIN: 1852-05-4094
PID: 039335
Patterson Woods Lot 2 Phase

Project Owner:
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SHEET TITLE

Repair Drainfield

DRAWN BY:

R. Huffman

CREATED ON:

04/27/2020

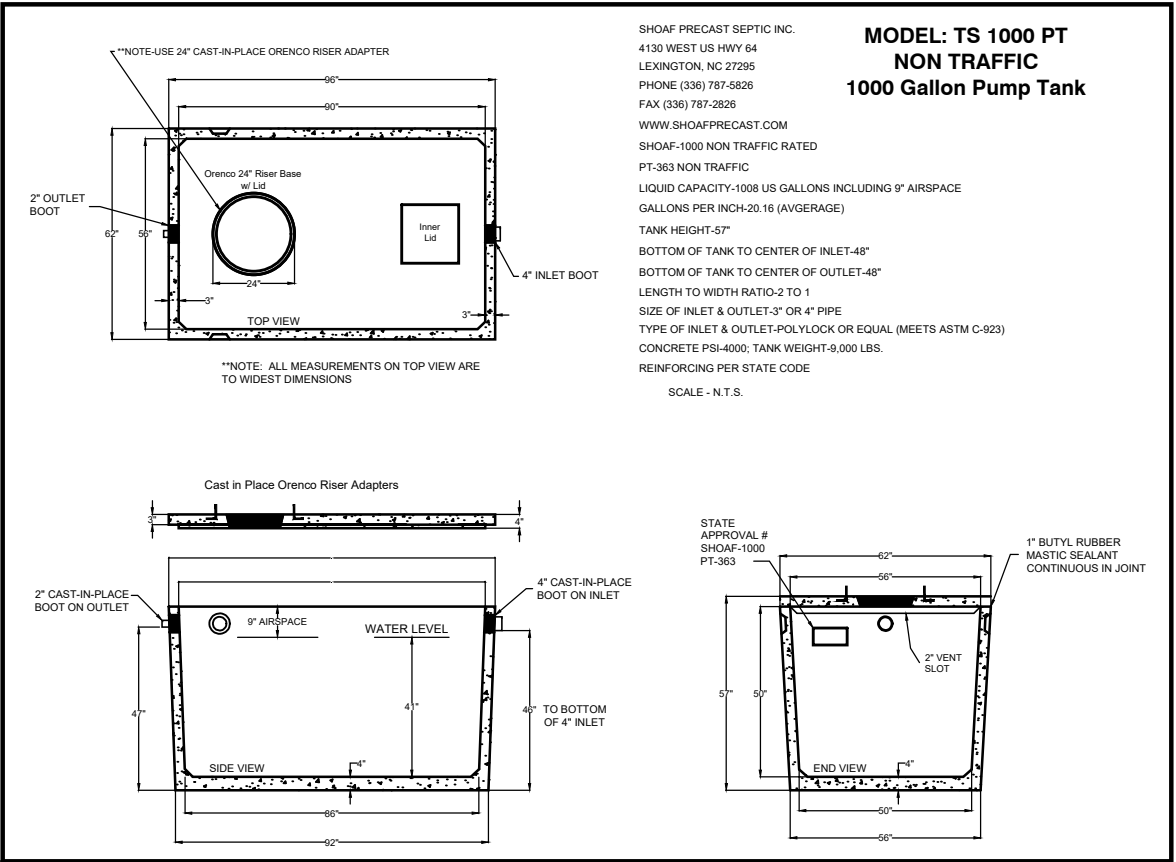
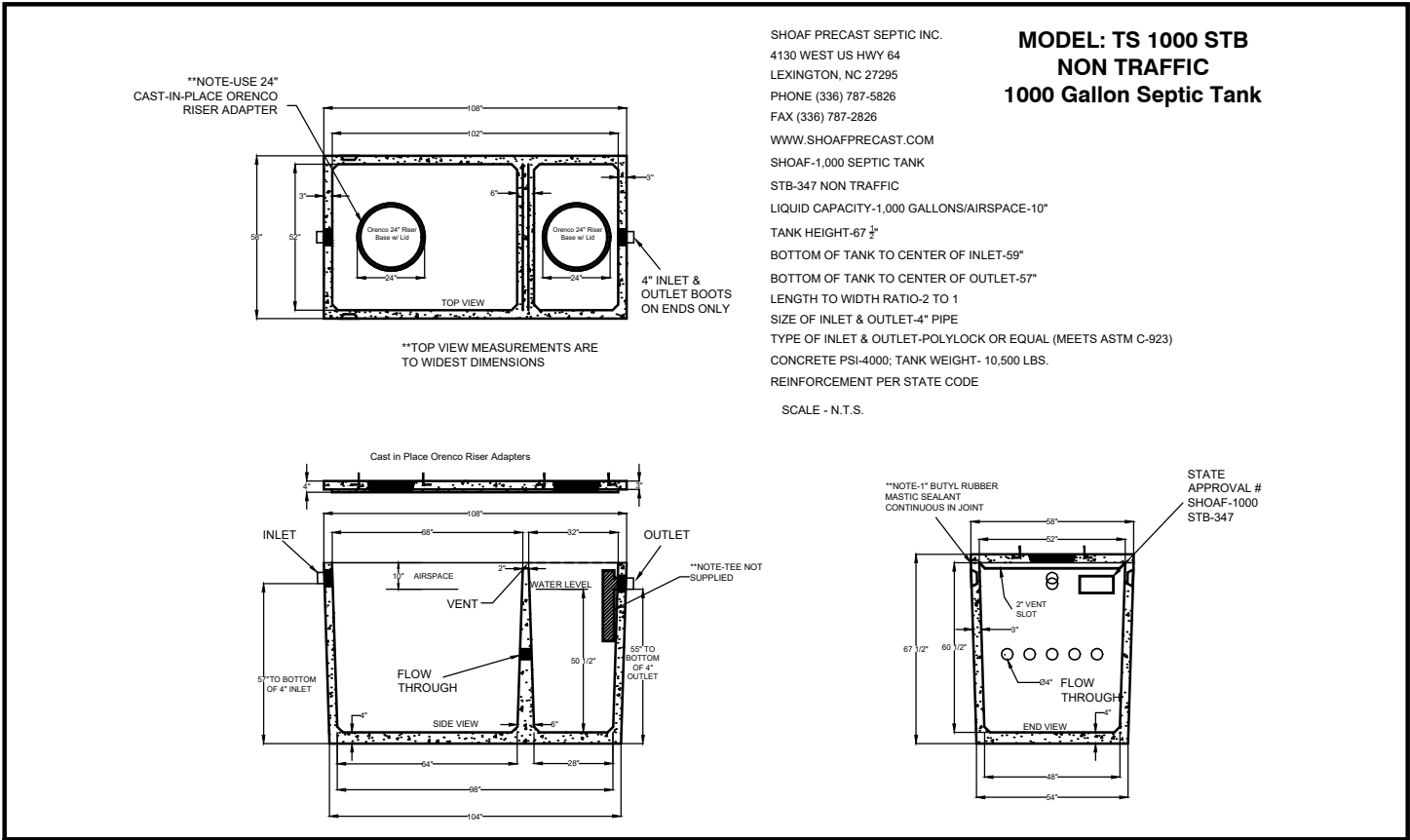
REVISED BY:

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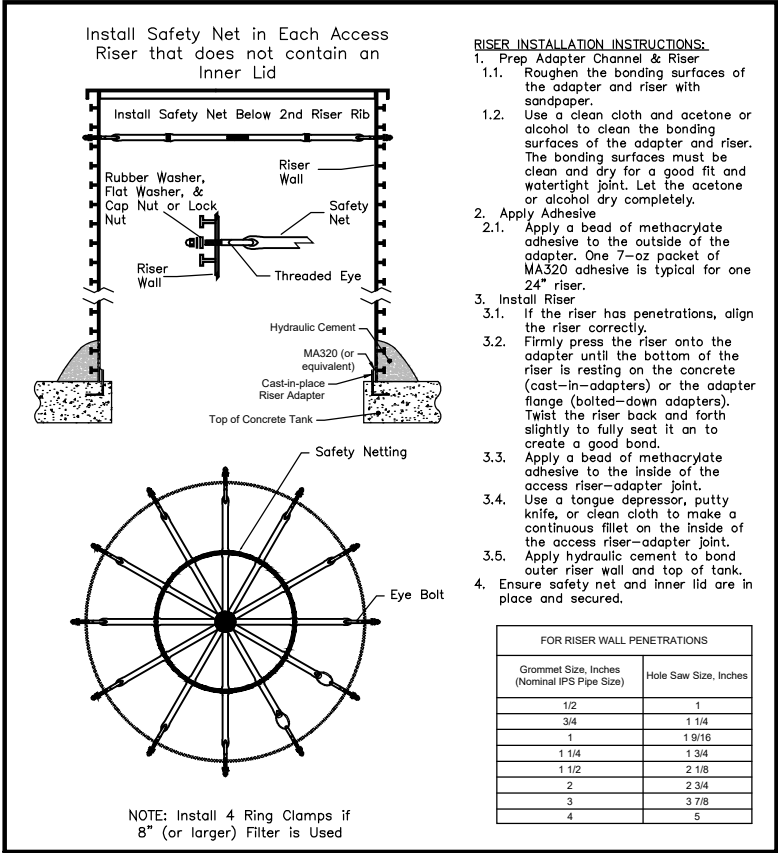
DRAWING NUMBER

WW-5



1
WW-6
Septic Tank (or equivalent 1,000-gal tank)
SOURCE: Shoaf Precast Septic, Inc.

2
WW-6
Pump Tank (or equiv. tank with 1-day storage)
SOURCE: Shoaf Precast Septic, Inc.



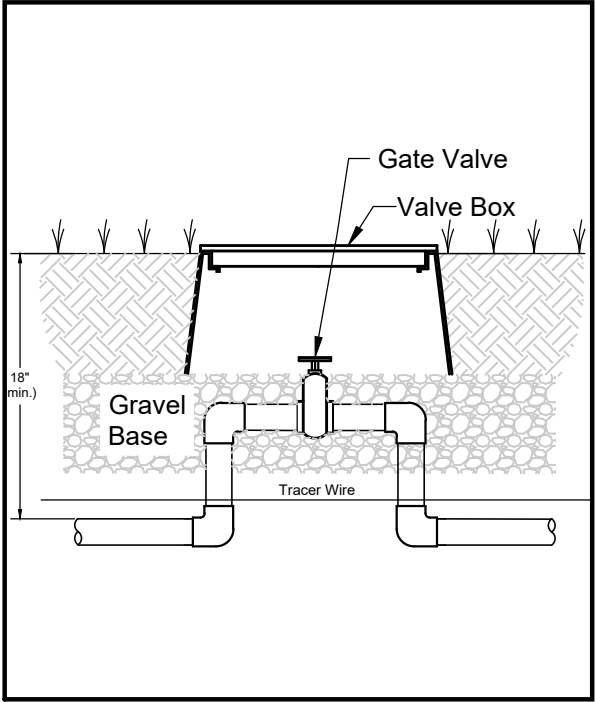
3
WW-6
Riser Safety Nets
SOURCE: SIM-TECH, Inc.

NOTES

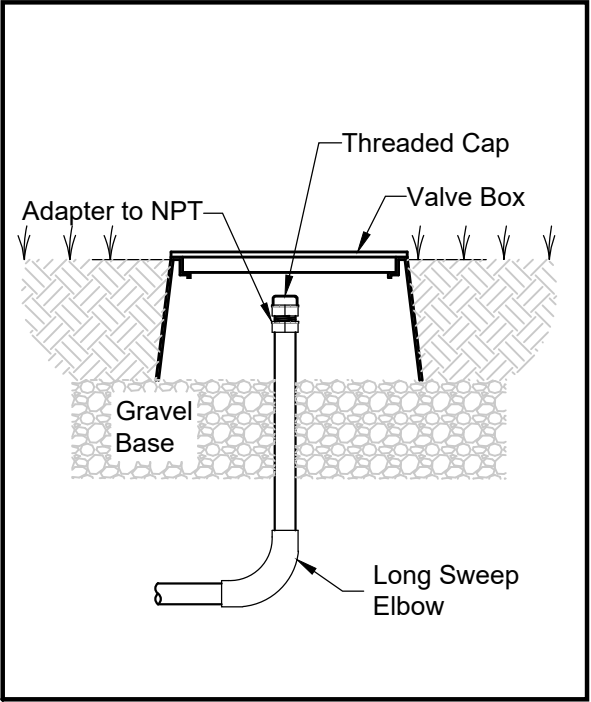
1. Boundary information survey by Williams – Pearce, and Assoc., Professional Land Surveyors, P.A., 1000 N Arendell Ave, PO Box 892, Zebulun, NC 27597.
2. Installation to follow all NC DHHS and Franklin County applicable rules and regulations.
3. Franklin County to perform construction inspections and final system certification.
4. Septic Tank to have approved effluent filter.
5. Contractor to abide by all safety regulations during system installation.
6. Contractor shall backfill around all access areas such that storm water is shed away from potential entry points.
7. Invert elevations of all components to be verified in field by contractor to insure proper operation.
8. All system piping to be SCH40 PVC (except where noted).
9. All gravity elbows to be long radius or long sweeping type elbows.
10. Actual installation and placement of treatment system to be overseen by Contractor.

11. Tanks to be set on 6" minimum gravel base. Use #5 or #57 stone for base.
12. Contractor to seed and/or mulch disturbed areas to coincide with existing landscape. Area shall not be left with uncovered soil.
13. Mount Control Panel a minimum of 24" above grade.
14. Power to panel to be installed by licensed electrician per code. Two 20-amp circuits with individual neutrals to be run from house to control panel.
15. All risers to have cast-in-place tank adapters and be single-piece riser. Risers to extend 6" above soil surface and be designed to prevent surface water inflow.
16. Backfill around tank(s) shall be gravel or tank hole shall be over-excavated a minimum of 2' in all directions to allow for mechanical tamping of backfill.
17. All penetrations to be sealed.
18. Spigot to be located on outside of building within 50' of tanks.
19. All pressure lines to maintain 18" min. cover.
20. Contractor to adjust tank placement to meet site constraints.

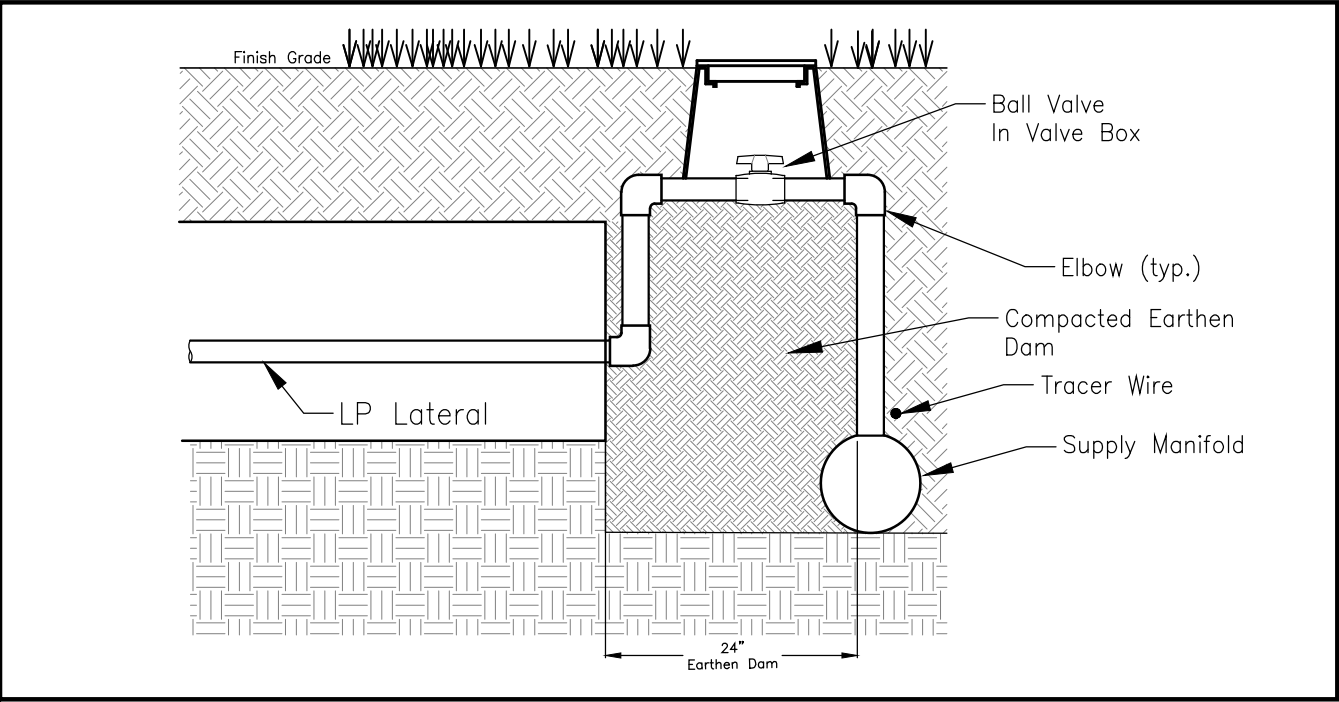
This document
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by Kevin D.
Davidson, NC PE
#024582 on
April 29, 2020.
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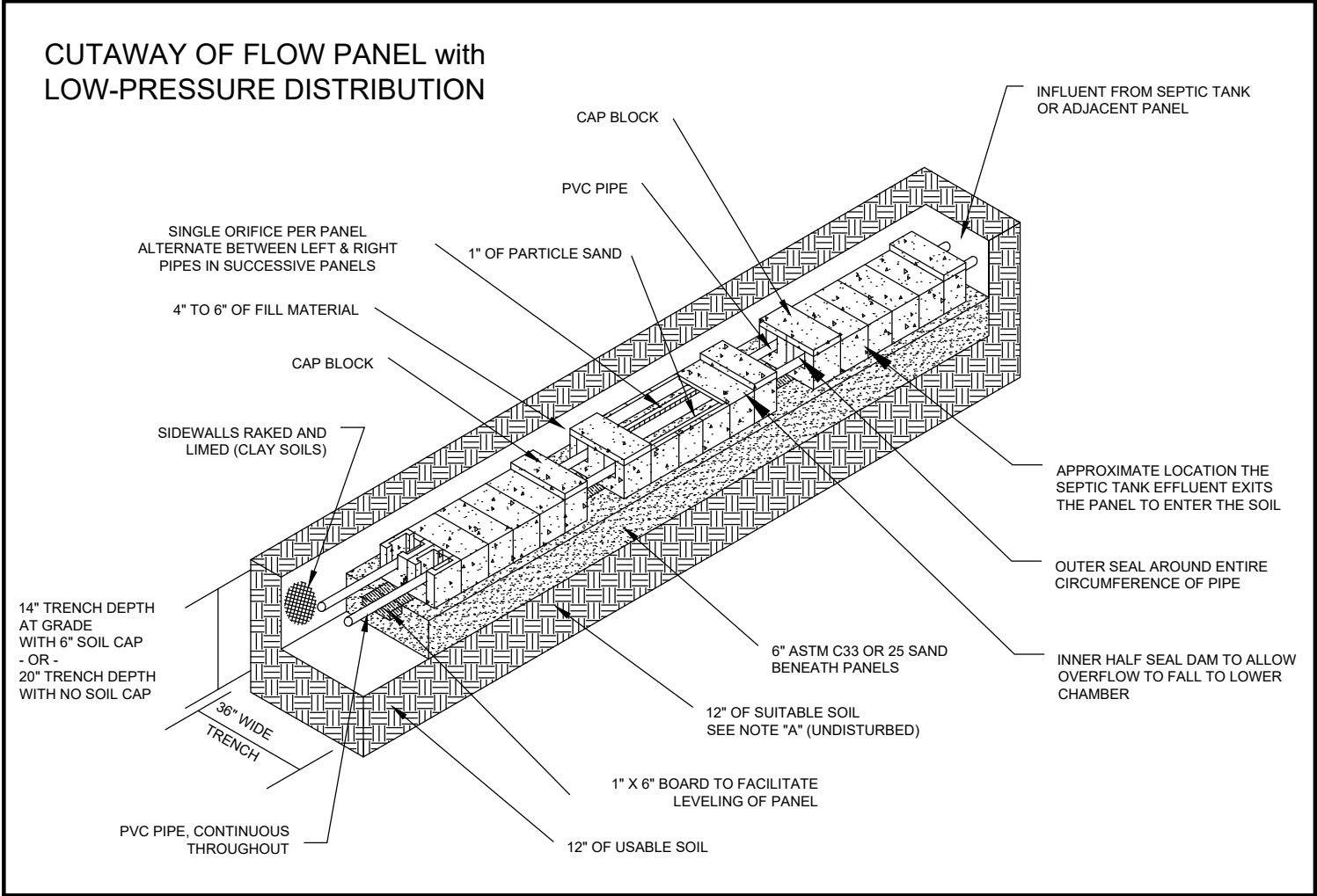
1 **GATE VALVE IN VALVE BOX**
WW-7 N.T.S. (or equivalent)



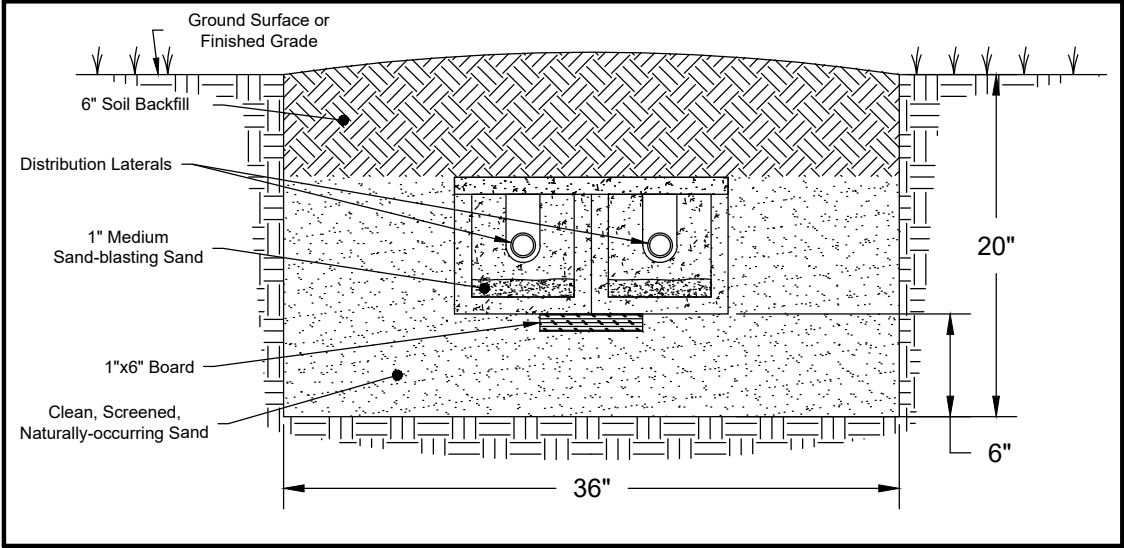
2 **TURN-UP/CLEANOUT**
WW-7 N.T.S.



3 **LP LATERAL - MANIFOLD CONNECTION**
WW-7 N.T.S. (or equivalent)



4 **HORIZONTAL PANEL INSTALLATION (Typical) - For Illustration Only**
WW-7 N.T.S. SOURCE: T & J Panel Systems



5 **HORIZONTAL PANEL PLACEMENT (Typical)**
WW-7 N.T.S. Source: AWT

- NOTES:**
1. Installation uses Low Pressure distribution system. See Line Summary for lateral diameters and orifice diameters.
 2. Drill one orifice per panel at the middle of the panel (23" from either end).
 3. Alternate orifice location between left & right pipes in successive panels.
 4. Drill orifices at alternating 10 & 2 o'clock positions. NO downward-facing orifices are to be used.
 5. Distribute sand into both sides of the panel interiors.
 6. Follow manufacturer's instructions for digging trench, raking and liming trench walls, sand base, leveling boards, panel placement, sealing ports, and backfill.

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REV.	ISSUED DATE	DESCRIPTION

DRAWN BY: R. Huffman	CREATED ON: 04/27/2020
REVISED BY: ----	REVISED ON: ----
RELEASED BY: ----	RELEASED ON: ----