

GEOPHYTA

Onsite Septic System Site Evaluation And Replacement System Design

APPROVED

By SCGHD at 6:14 am, Feb 26, 2024

For:

Timothy Neller (WPCLF)

1140 N. T.R. 47
Fostoria, OH 44830

Property Location:

1140 N. T.R. 47
Fostoria, OH 44830

Loudon Township, Seneca County

SYSTEM TYPE:

Engineered Sand Mound w/ 2-Foot-Wide Diffusers & Perimeter Drain

BY:

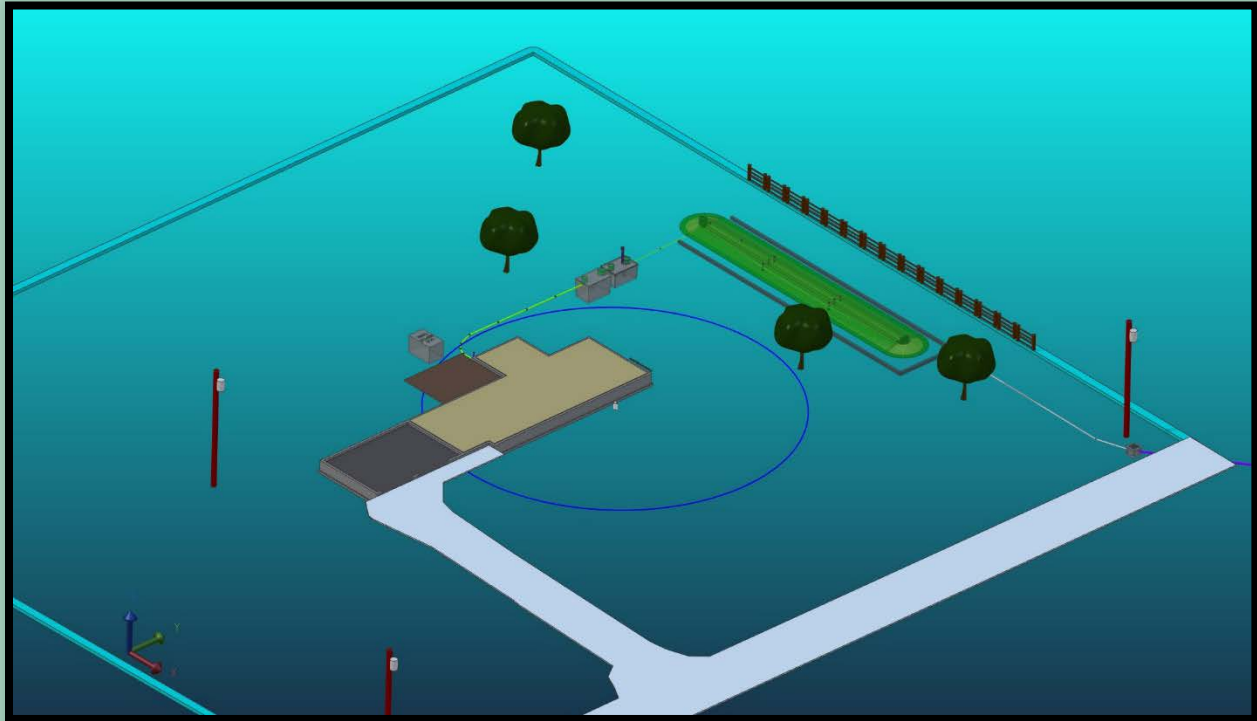
Nathan Wright (Soil Scientist)
Seth V. Layne (Designer)

Geophyta, Inc.
2685 C.R. 254
Vickery, OH 43464

419-547-8538

February 20th, 2024

◇ The Neller Residence ◇



1. Disclaimer

2. Layout Map

3. Soil Report (2X Total)

4. Calculation Sheets (3X Total)

5. 3D CAD Layout

6. Top CAD Layout

7. Mound Detail Prints (3X Total)

8. Elevation CAD Layout

9. Component Detail Prints (17X Total)

10. Bill of Materials (2X Total)

11. Operation & Maintenance (5X Total)

APPROVED

By SCGHD at 6:15 am, Feb 26, 2024

To The Homeowner:

A septic system is designed based on all the information you provide and Geophyta Inc collects at the site. It must be accurate. This information includes local soil limits and topography, plus existing and future locations of your home, number of bedrooms, out buildings, driveways, drinking water wells, ponds, septic systems, and property lines. Geophyta Inc. relies on this information to construct detailed design drawings that must meet local health department regulations before installation.

Any design changes required by the local health department to meet existing regulations are the responsibility of Geophyta Inc.

Any information changes made by you after the initial site inspection are your responsibility and will result in additional charges to you above the original quote for services. These charges may include additional site inspection work, system redesign, and resubmitted drawings.

To The Installer:

The registered installer of this septic system design is responsible for preparing an “as-built” record, as stated in the Ohio Administrative Code Chapter 3701-29-09, Par. F (p.32) of the “Sewage Treatment System Rules,” Ohio Department of Health, January 1, 2015. Additionally, the installer is responsible for measuring and recording distal pressure head and float switch settings as baseline measures for future operation and maintenance of any pressure distribution system (3701-29-15, Appendix B, Par. V(p.93) of above referenced rules.

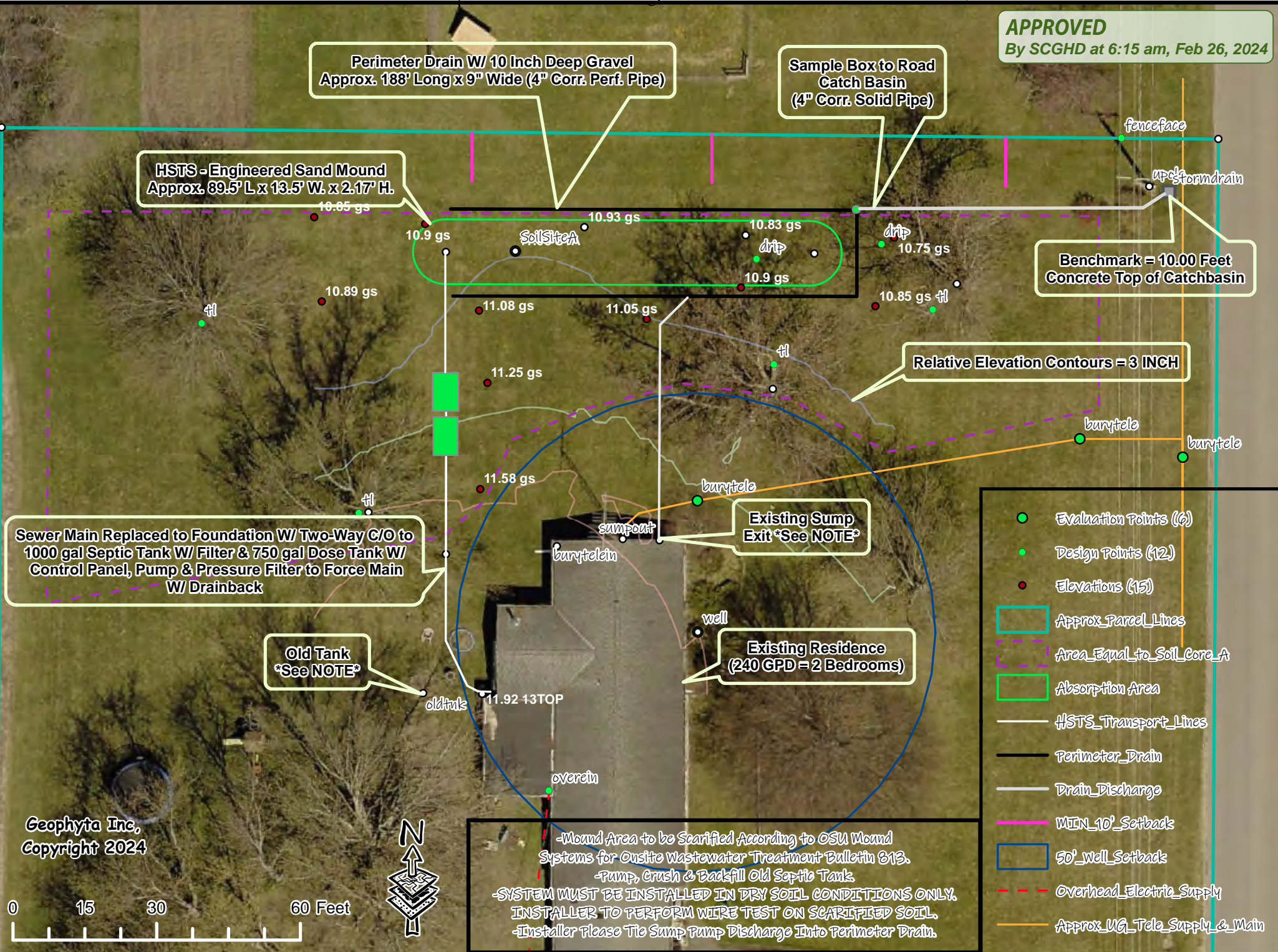
If the installer requests “as-built” record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

Geophyta Inc. must assume that any registered installer has the knowledge, equipment, ability, and experience to properly layout, install, and create as-built drawings for any septic system design approved by a local board of health. This includes the ability to read detailed design prints with an associated bill of materials. For this reason, any Geophyta Inc project supervision prior to or during installation will be billed to the installer.

Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.

HSTS Replacement Layout - 1140 N. T.R. 47

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HSTS - Engineered Sand Mound
Approx. 89.5' L x 13.5' W. x 2.17' H.

Perimeter Drain W/ 10 Inch Deep Gravel
Approx. 188' Long x 9" Wide (4" Corr. Perf. Pipe)

Sample Box to Road
Catch Basin
(4" Corr. Solid Pipe)

Benchmark = 10.00 Feet
Concrete Top of Catchbasin

Relative Elevation Contours = 3 INCH

Sewer Main Replaced to Foundation W/ Two-Way C/O to
1000 gal Septic Tank W/ Filter & 750 gal Dose Tank W/
Control Panel, Pump & Pressure Filter to Force Main
W/ Drainback

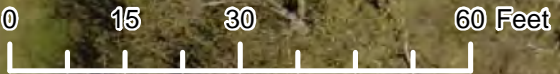
Old Tank
See NOTE

Existing Sump
Exit *See NOTE*

Existing Residence
(240 GPD = 2 Bedrooms)

- Evaluation Points (6)
- Design Points (12)
- Elevations (15)
- Approx Parcel Lines
- Area Equal to Soil Core A
- Absorption Area
- HSTS Transport Lines
- Perimeter Drain
- Drain Discharge
- MIN 10' Setback
- 50' Well Setback
- Overhead Electric Supply
- Approx UG Tele Supply & Main

Geophyta Inc.
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-Mound Area to be Scarified According to OSU Mound
Systems for Onsite Wastewater Treatment Bulletin B13.
-Pump, Crush & Backfill Old Septic Tank
-SYSTEM MUST BE INSTALLED IN DRY SOIL CONDITIONS ONLY.
-INSTALLER TO PERFORM WIRE TEST ON SCARIFIED SOIL.
-Installer please Tie Sump Pump Discharge Into Perimeter Drain.

Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Seneca
 Township / Sec.: Loudon
 Property Address: 1140 N TR 47
 OR Location: Fostoria, OH 44830
 Applicant Name: Timothy Neller
 Address: 1140 N TR 47
Fostoria, OH 44830
 Phone #: 419-619-7349
 Lot #: _____
 Test Hole #: A
 Latitude/Longitude: 83°22'5.119"W 41°8'25.797"N
 Method: _____ Pit _____ Auger X Probe; 1 1/4" dia.

Land Use / Vegetation: Residential Turf
 Landform: Glacial Till Plain
 Position on Landform: Flat
 Percent Slope: 0-1
 Shape of Slope: Linear-Linear
 Approximate Soil Type: Nappanee SiL
 Date: 6-Feb-24
 Evaluator: Nathan Wright
Geophyta, Inc.
2685 C.R. 254
Vickery, OH 43464
 Phone#: 419-547-8538

Control #: 24- SEN - 6A - 27



Certification #: 19395

Signature: *Nathan Wright*

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Other Soil Features
		Munsell Color (hue, value, chroma)			Texture			Structure				
Horizon	Depth (inches)	Matrix Color	Redoximorphic Features		Class	Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)	Consistence	
			Concentrations	Depletions								
A	0.0-8.0	10YR 3/2	none	none	SiL	25	0	2-mod	coarse	gr	friable	
Bt	8.0-21.0	10YR 4/4	none	25%10YR 5/2	CL	30	5	2-mod	med	sbk	firm	
C	21.0-48.0	10YR 4/6	none	35%10YR 5/2	CL	35	10	1-weak	coarse	sbk	firm	

Limiting Conditions	Depth to (in.)	Descriptive Notes	Remarks / Risk Factors: Values For Sand Mound
Perched Seasonal Water Table	8.0	Restricted in: Bt & C	Tyler Table: A horizon (0.0 - 8.0) ILR: SiL , HLLR: SiL
Apparent Water Table	>48		ILR(>30mg/L) = 0.6 gal/day/ft ² , ILR(<30mg/L) = 0.8 gal/day/ft ²
Highly Permeable Material	>48		HLLR = 2.7 gal/day/ft
Bedrock	>60	By Tile Probe	2 bedroom min. required absorption area = 400 sq.ft.
Other Restrictive Layer	>48		5xW Soil Absorption Box: 23'W x 89'L

Note : The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08.

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Landforms
Upland*
Terrace
Flood Plain
Lake Pain
Beach Ridge
*Includes glacial till plain and end moraine

Position on Landform
Depression
Flat
Knoll
Crest
Hillslope
Footslope

Shape of Slope
Convex
Concave
Linear
Complex

Horizon Nomenclature			
Master Horizons		Horizon Suffixes	Horizon Modifiers
O	Predominantly organic matter (litter & humus)	a	Numerical Prefixes: Used to denote lithologic discontinuities. Numerical Suffixes: Used to denote subdivisions within a master horizon.
A	Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b	
E	Mineral, loss of Si, Fe, Al, clay, organic matter	d	
B	Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of CaCO ₃ ; subsurface soil structure	e	
C	Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g	
R	Hard bedrock	i	
		p	
		r	
		t	
		w	
		x	

Soil Texture			
Texture Class Abbreviations		Textural Class Modifiers	
Course Sand	cos	Gravelly	GR
Sand	s	Fine Gravelly	FGR
Fine Sand	fs	Medium Gravelly	MGR
Very Fine Sand	vfs	Coarse Gravelly	CGR
Loamy Coarse Sand	lcos	Very Gravelly	VGR
Loamy Sand	ls	Extremely Gravelly	XGR
Loamy Fine Sand	lfs	Cobbly	CB
Loamy Very Fine Sand	lvfs	Very Cobbly	VCB
Coarse Sandy Loam	cosl	Extremely Cobbly	XCB
Sandy Loam	sl	Stony	ST
Fine Sandy Loam	fsl	Very Stony	VST
Very Fine Sandy Loam	vfsl	Extremely Stony	XST
Loam	l	Bouldery	BY
Silt Loam	sil	Very Bouldery	VBY
Silt	si	Extremely Bouldery	XBY
Sandy Clay Loam	scl	Channery	CN
Clay Loam	cl	Very Channery	VCN
Silty Clay Loam	sicl	Extremely Channery	XCN
Sandy Clay	sc	Flaggy	FL
Silty Clay	sic	Very Flaggy	VFL
Clay	c	Extremely Flaggy	XFL

*Estimate approximate clay percentage within 5 percent

Soil Structure					
Grade	Size	Type (Shape)			
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr. Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy	CDY
		Very Thick*	vk		

* The sizes Very Thin, Thin, Thick, and Very Thick, are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Moist Consistence	
Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils" Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

Mound Calculations: Gravelless Chambers

Owner: Neller: Site A	Design		
Residence W/ 2 BEDROOMS	Min. Design	Actual Design	Comment
Water Use (gal/day)(DFR)	240		
Limiting Condition	PSWT		
Depth To Limiting Condition (inches)	8.0		
Total Infiltration Depth (Soil+Sand) (in.)	14.0		MIN 12" VSD Separation
Sand Depth To Add (in.)	6.0		MIN. SAND SPEC.
Most Limiting Soil Texture	SiL		
Site Slope % (Perpendicular To Contour)	0.0		
Tyler Table Values			
Soil Infiltration Loading Rate (gal/day/sq. ft)(BLR)	0.6		Grade 2 SiL @ > 30 mg/L
Soil Hydraulic Linear Loading Rate (gal/day/ft)(HLLR)	2.7		Using (8"-12") Infiltration of Grade 2 SiL
Sand Loading Rate (gal/day/sq. ft)(SLLR)	1.0		
Required Soil Absorption Area (sq. ft.) DFR/BLR	400.0		
Mound Design Requirements			
Sand Absorption Area Width (ft)(A)	2.7	3.67	Using (2) 22" Wide Infiltrator Chambers
Sand Absorption Area Length (ft)(B)	88.9	76.0	14.5% Length Reduction *See Below*
Sand Distribution Area for Laterals(sq. ft.)	240.0	278.7	
Min. Mound Basal Soil Width (ft)(I+A+J)(HLLR/BLR)	4.5	10.67	Needed For 3:1 Sand Edge Slope
Upslope Sand Depth (in)(D)	6.0		
Downslope Sand Depth (in)(E)	6.0		
Aggregate Depth (in)(F)	8.0		LP Chamber Dome Height
Edge Topsoil Cover (in)(G)	6.0		
Peak Topsoil Cover (in)(H)	12.0		
Mound Downslope Width at 3:1 (in)(I)	78.0		
Mound Upslope Width at 3:1 (in)(J)	78.0		
Mound Endslope Width at 3:1 (in)(K)	78.0		
Mound Overall Length (ft)	101.9	89.5	Utilizing 14.5% Length Reduction to Fit Mound Between Tree's
Mound Overall Width (ft)	13.0	13.5	
Mound Overall Height (ft)	2.2	2.17	

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	A	B	C	D
1	Mound Dosing Calculations: Gravelless Chambers			
2				
3	Owner: Neller: Site A	Design		
4		Target	Formula	Actual
5	Sand Absorption Area Width (ft)(A)	3.67		
6	Sand Absorption Area Length (ft)(B)	76.0		
7	Sand Distribution Area for Laterals(sq. ft.)	278.7	B5*B6	
8				
9	Area Per Orifice (sq. ft.)	6.00		
10	Orifice Quantity (Dist. Area/Std)	46.4	B7/B9, Rnd to Even; Divide by 2	40.0
11	Total Laterals Length (ft)	152.0		
12	Number of Laterals C	2		
13	Each Lateral Length (ft.)(B/C)	76.0	B11/B12	
14	Orifice Separation (length/# orifices)(ft.)	3.8	B11/B10	3' 10" SPACING
15	Orifice Separation Less Than Or Equal To 4 ft.?	yes		
16	Orifice Size (in)(Otis, 1982)	0.125	1/8"	
17	Lateral Diameter (in) (Otis, 1982)	1.00	SCH40 PVC	
18	Target Head at Lateral End (ft)	5.0		
19	Flow Rate per Orifice (gpm)(Otis et al, 1978)	0.41		
20				
21	Lateral Design:			
22	Diameter (in)	1.00	SCH40 PVC	
23	Flow Rate per Lateral (gpm)	9.5	B10/B12*B19	
24	Flow Rate Total (gpm)	16.4	D10*B19	
25	Gal. per Foot of Pipe (Clemons, 1991)	0.045	SCH40 PVC	
26	Total Lateral Volume (gal)	6.8	B11*B25	
27				
28	Manifold Design:	None - Main Direct To Laterals By Tee		
29	Diameter (in)	0.0		
30	Length (ft)	0.0		
31	Gal. per Foot of Pipe (Clemons, 1991)	0.0		
32	Total Manifold Volume (gal)	0.0	B30*B31	
33	# Std 90deg Elbows			
34	Std 90deg Elbow Pipe Length Equivalent (ft)			
35	# Std 45deg Elbows			
36	Std 45deg Elbow Pipe Length Equivalent (ft)			
37	# Std Tees			
38	Std Tee Pipe Length Equivalent (ft)			
39	# Quick Disconnects			
40	Quick Disconnect Pipe Length Equivalent (ft)			
41	# Check Valves			
42	Check Valves Pipe Length Equivalent (ft)			
43				
44	Total Length Equivalent (pipe&fittings) (ft)	0.0		
45	Head Loss per 100 ft.(ft.)(Otis et al, 1978)	0.0		
46	Total Manifold Head Loss (ft)	0.00		
47				
48	Force Main Design:			
49	Diameter (in)	1.50	SCH40 PVC	
50	Length (ft)	25	Includes All Drainback Piping	
51	Gal. per Foot of Pipe (Clemons, 1991)	0.106		
52	Total Main Volume (gal)	2.65	B50*B51	
53	# Std 90deg Elbows	5		
54	Std 90deg Elbow Pipe Length Equivalent (ft)	9.0		
55	# Std 45deg Elbows	0		

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	A	B	C	D
1	Mound Dosing Calculations: Gravelless Chambers			
2				
3	Owner: Neller: Site A		Design	
4		Target	Formula	Actual
56	Std 45deg Elbow Pipe Length Equivalent (ft)	4.0		
57	# Std Tees	1		
58	Std Tee Pipe Length Equivalent (ft)	11.0		
59	# Quick Disconnects	1		
60	Quick Disconnect Pipe Length Equivalent (ft)	2.0		
61	# Full Flow Ball Valves	2	1.00" Dia.Valves	
62	Ball Valves Pipe Length Equivalent (ft)	0.9		
63				
64	Total Length Equivalent (pipe&fittings) (ft)	84.8	B50+(B53-62)	
65	Head Loss per 100 ft.(ft.)(Otis et al, 1978)(Zoeller)	1.72	Using Linear Interpolation Formula	
66	Total Main Head Loss (ft)	1.46	(B64/100)*B65	
67				
68	Dose Volume:			
69	Total Lateral Volume (gal)	6.84	B26	
70	Total Manifold Volume (gal)	0.00	B32	
71	Total Main Volume (gal)	2.65	B52	
72				
73	Drainback Volume: Main+Manifold+Lateral (gal)	9.5	B69+B70+B71	
74	Lateral Vol x 5.847953 (gal)	40.0	B69*5X LATERAL VOID MINIMUM	
75	TOTAL dose (gal)	49.5		
76				
77	Daily Design Flow (DFR)(120gal/day/bedroom)	240.0		
78	Is Lateral Dose <1/4 of Daily Design Flow?	yes	REQUIRED	
79	Is Lateral Dose <1/8 of Daily Design Flow?	no		
80				
81	Total Dynamic Head:			
82	Static Lift - Lateral Ht. Above Surface (ft)	0.50	6.0 inch Sand	
83	Static Lift - Depth to Pump Off Below Surface (ft)	3.71	4.54 - .83	
84	Static Lift - Topo Difference (ft.)	-0.25	-	
85	Total Pipe & Fittings Headloss (ft)	1.5	B46+B66	
86	Network Loss (5ft head x 1.3) (ft)(includes laterals)	6.5	-	
87	Total Head Loss (ft)	11.9	sum(B81:B85)	
88				
89	Dose Tank Parameters			
90	Volume (gal)	750	34.0	inches effluent
91	Gallons Per Inch in Tank	22.30		
92				
93	Timed Dose Settings:			
94	Total Gallons Per Pump Cycle W/drainback	49.5	2.22	inches drawdown
95	Total Pump Cycles Per 24 Hrs.	6.0		
96	Total Pump On Time - seconds	181		
97	Total Pump Off Time - hours	3.9		
98	Redundant Off Effluent Ht. from bottom (in)	10.0	(to prevent tank flotation)	
99	Timer Enable (low level cutout) Ht. From tank bottom (in)	12.2	*Provides 1.5X DDF (359gal) reserve after alarm or 2.2X DDF (535gal) Combined Surge & Reserve*	
100	High Level Alarm Ht. from bottom (in.)	17.9		

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- NOTES**
- ▶ Mound Area to be Scarified According to OSU Mound Systems for Onsite Wastewater Treatment Bulletin B13.
 - ▶ Pump, Crush & Backfill Old Septic Tank.
 - ▶ SYSTEM MUST BE INSTALLED IN DRY SOIL CONDITIONS ONLY. INSTALLER TO PERFORM WIRE TEST ON SCARIFIED SOIL.
 - ▶ Installer Please Tie Sump Pump Discharge Into Perimeter Drain.

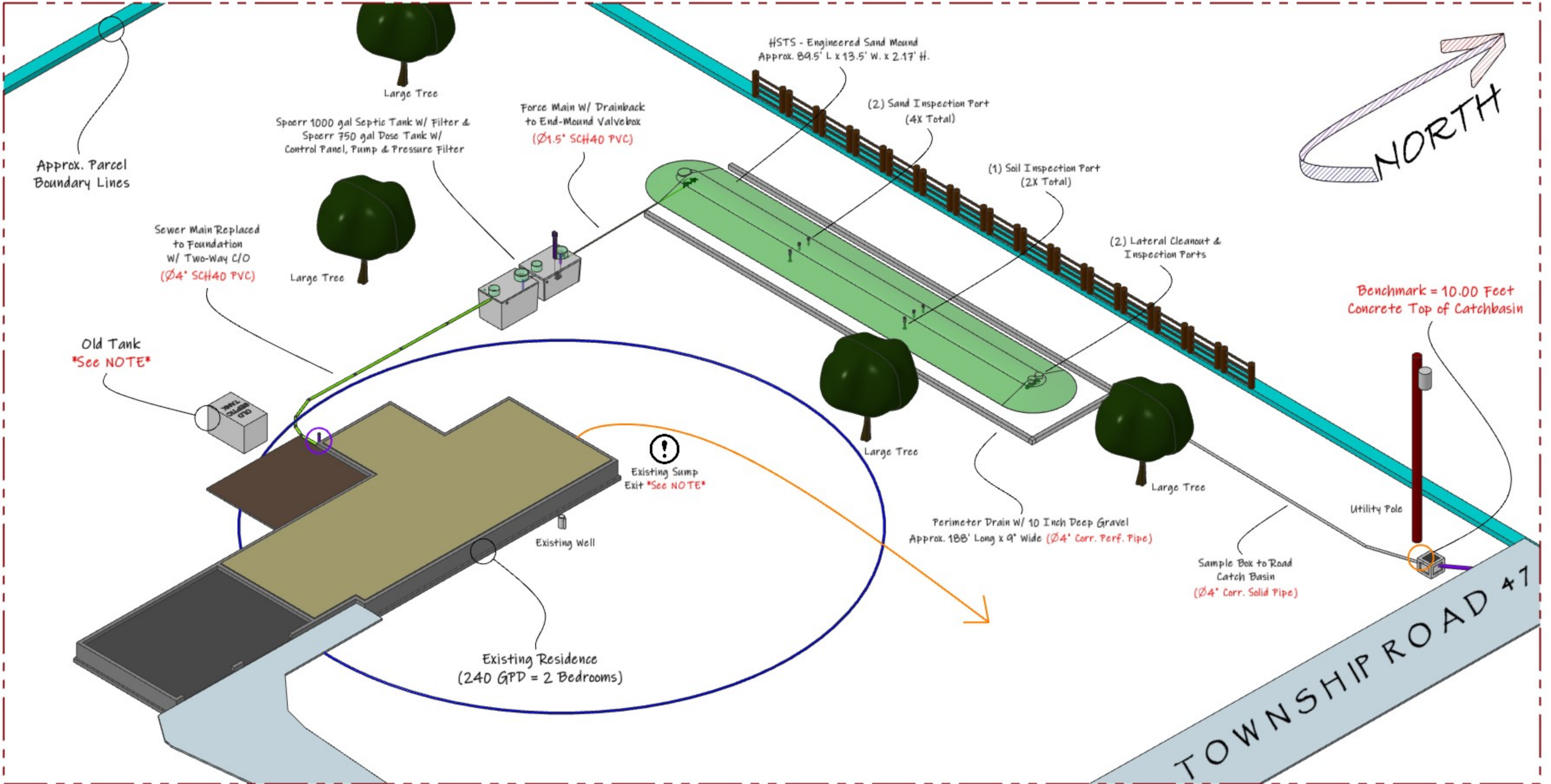
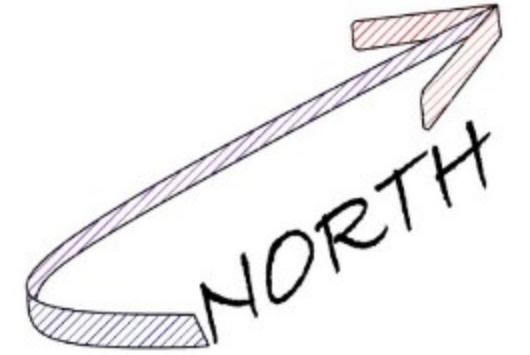
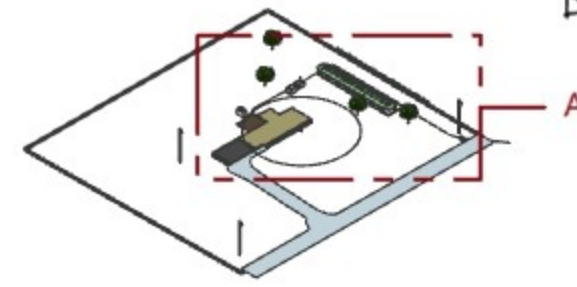
Sewer Main Exit	
Benchmark, UG Tele. Supply	
50' Well Setback	

LEGEND

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

20.FEB.24

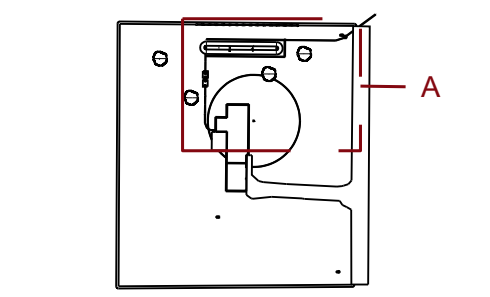
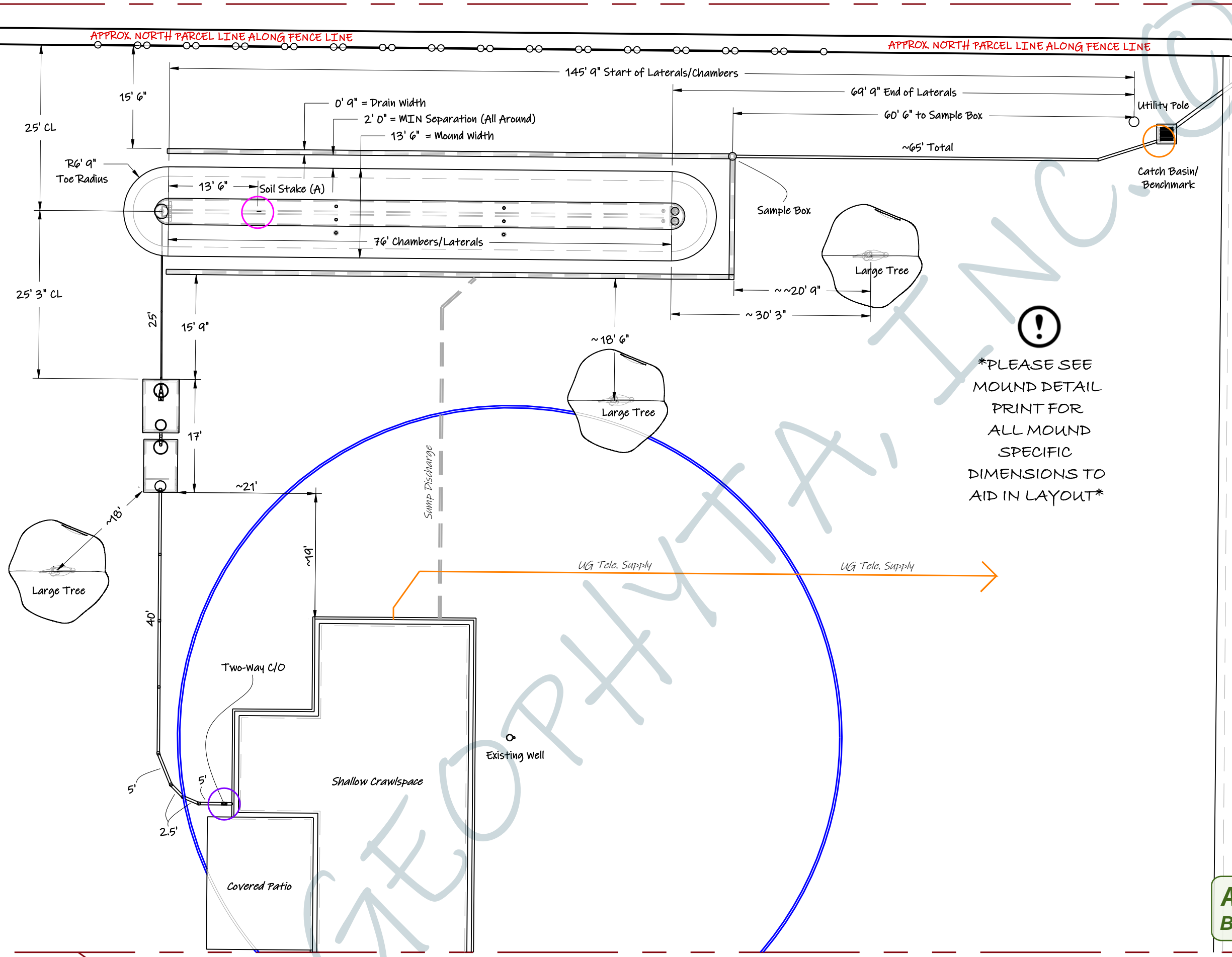
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Detail A

SCALE 1:180

NELLER - HSTS_3D_LAYOUT



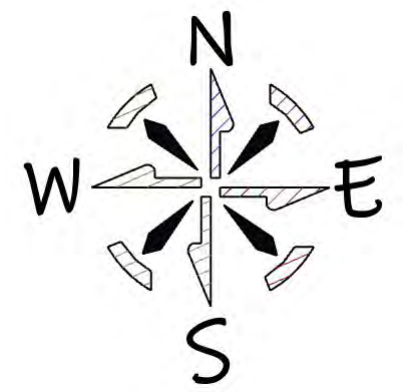
Mound Layout by: Existing Fence Line Along
Approx. North Parcel Line & Utility Pole.

NOTES

Sewer Main Exit	—
Soil Stake (A)	—
Benchmark	—
UG Tele. Supply	—
50' Well Setback	—

LEGEND

! *PLEASE SEE
MOUND DETAIL
PRINT FOR
ALL MOUND
SPECIFIC
DIMENSIONS TO
AID IN LAYOUT*



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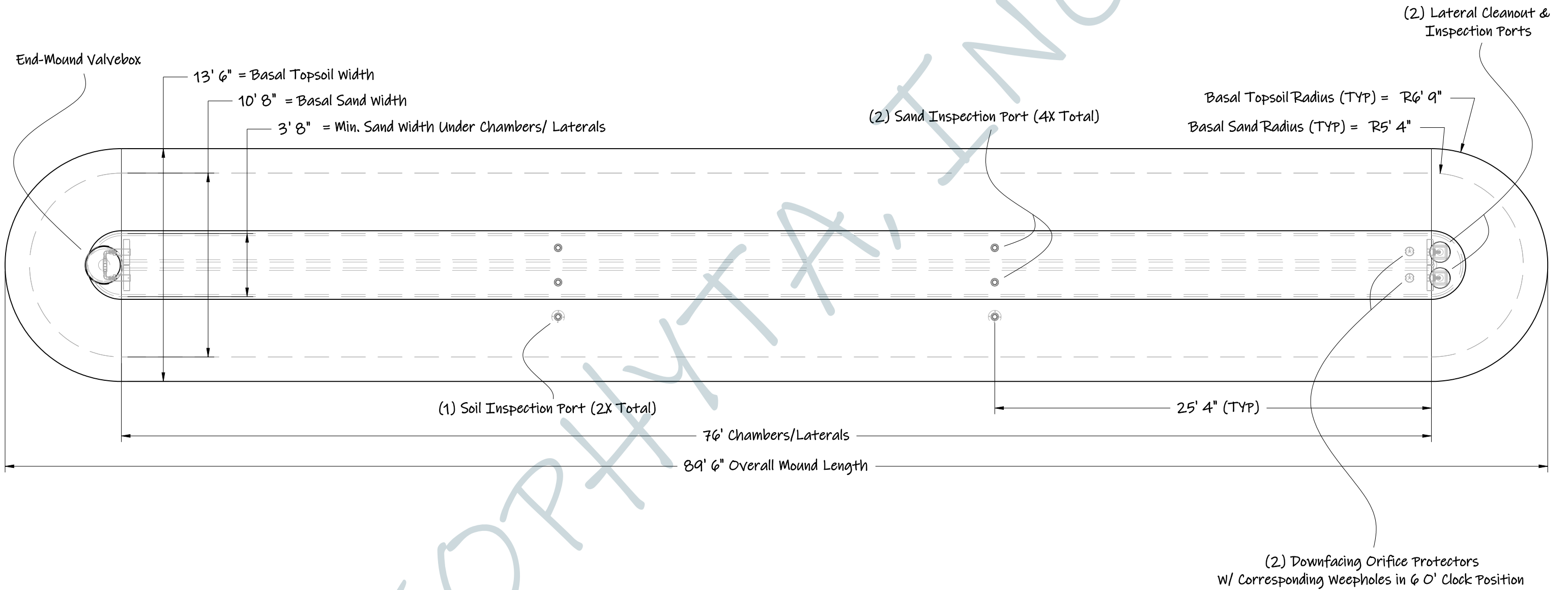
Detail A SCALE 1:175

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DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

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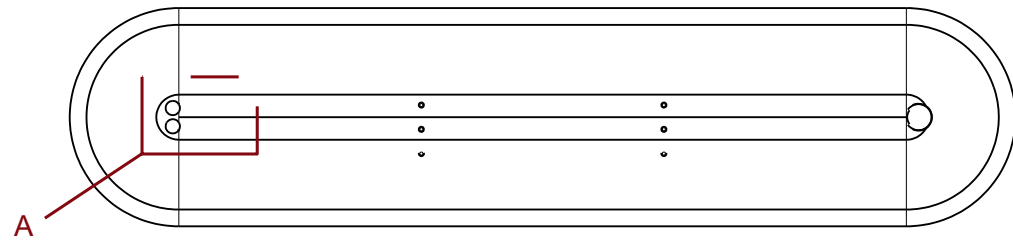


SCALE 1:68

HSTS - MOUND_DETAIL

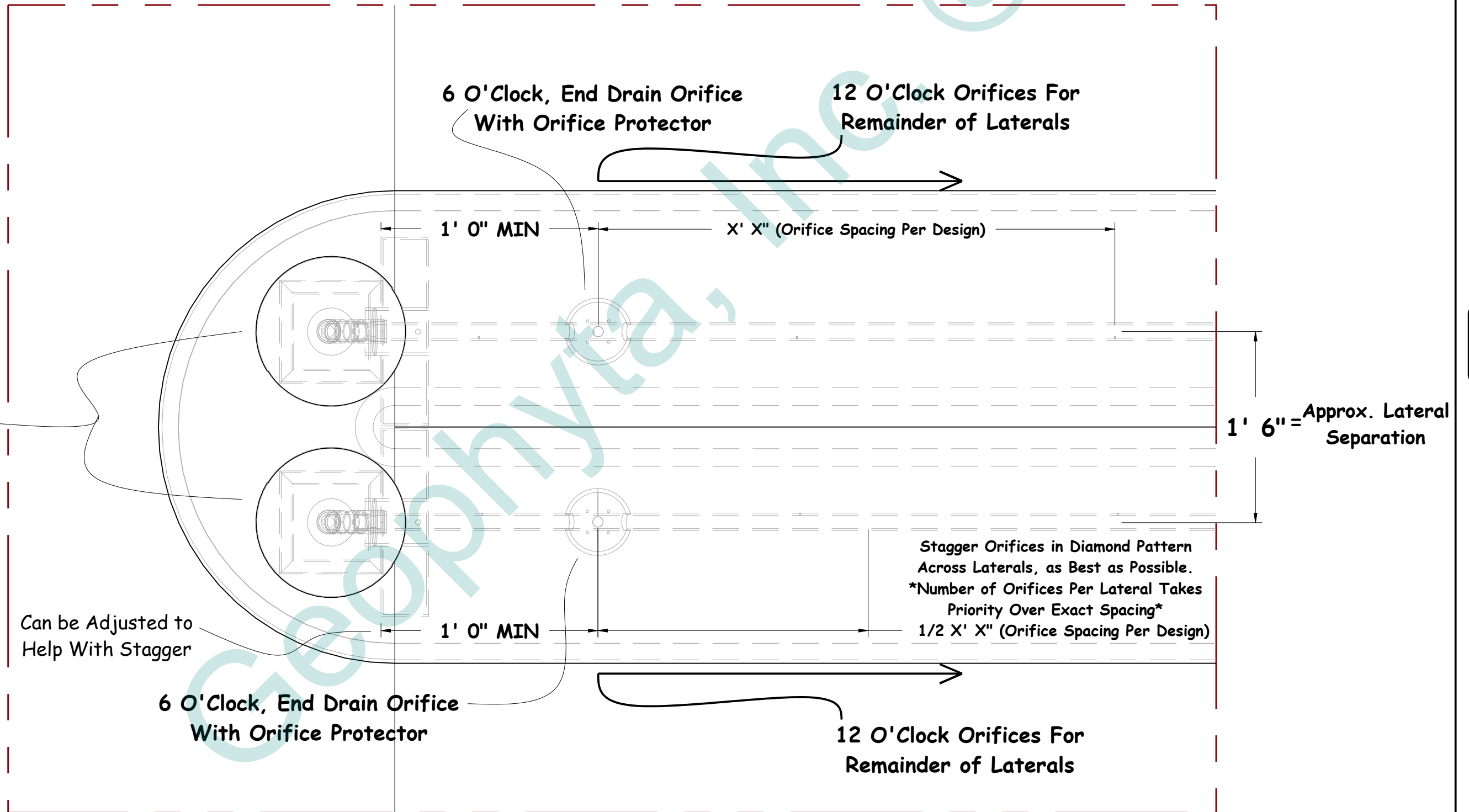
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By SCGHD at 6:16 am, Feb 26, 2024

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 22.DEC.21



⚠️
Lateral Diameters Are Determined From Each Individual Design And Can Be Found In The Calculations Pages As Well As Bill Of Materials.

Lateral Cleanouts & Sand Inspection Ports. Entire Lateral Lengths Are Covered With Gravelless Chambers As Effluent Diffusers.



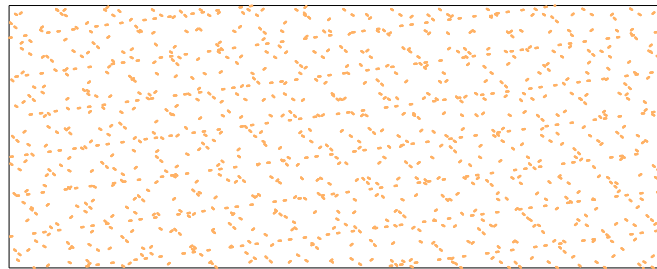
Can be Adjusted to Help With Stagger

Stagger Orifices in Diamond Pattern Across Laterals, as Best as Possible.
Number of Orifices Per Lateral Takes Priority Over Exact Spacing
1/2 X' X" (Orifice Spacing Per Design)

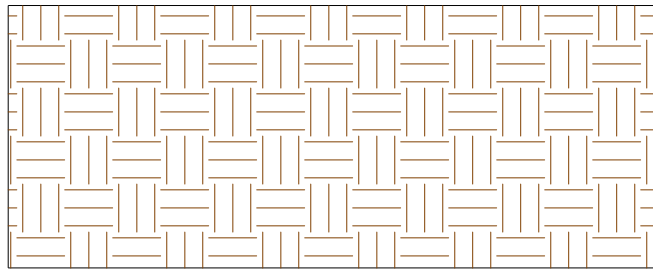
Detail A SCALE 1:10

#STS-Mound_Laterals_Detail

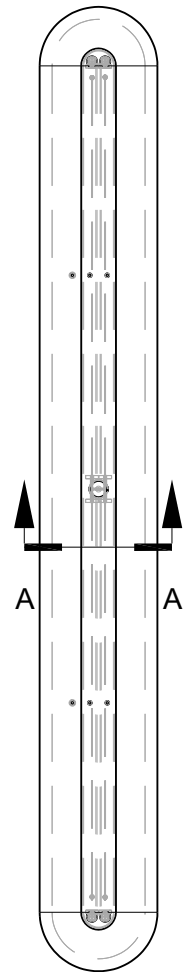
C-33 Natural Sand



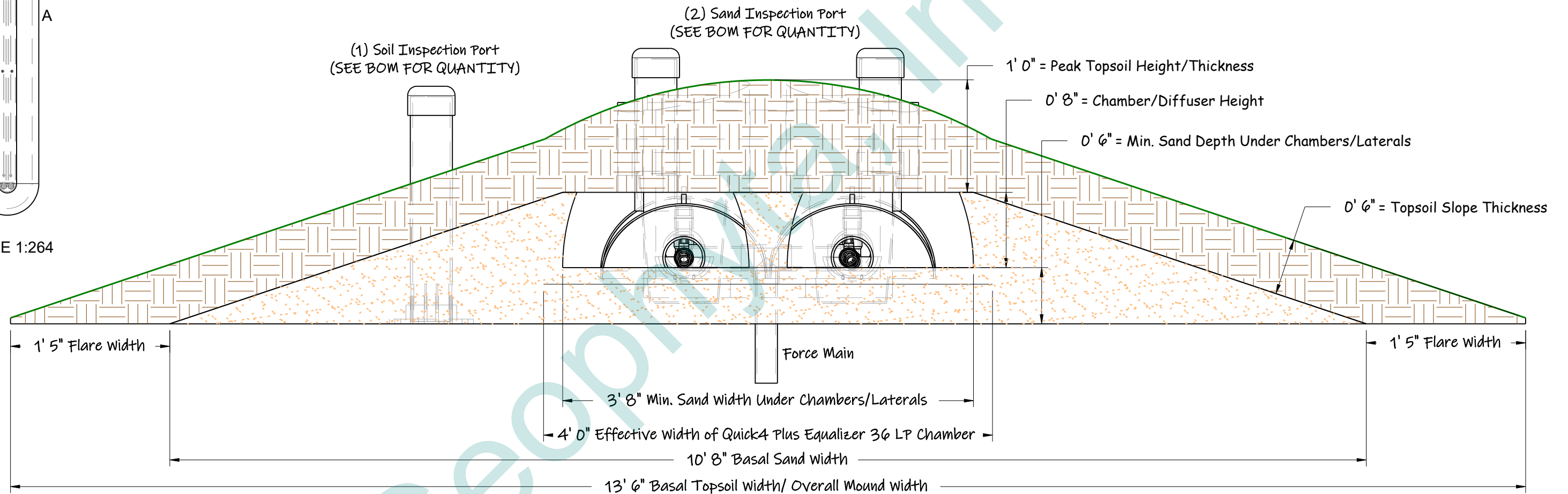
Silt Loam or Better



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SCALE 1:264





Section A-A

SCALE 1:11

HSTS_Mound_Cross-Section

Sand Depths Under Chambers Due To Soil Unevenness:
 Avg. = 7.8" Range = 6.0" - 9.0"
 Force Main Must Have Drainback With Suggested Fall or 1"/100'.

NOTES

Native Soil Surface  LEGEND
 Zero Elevation Reference 

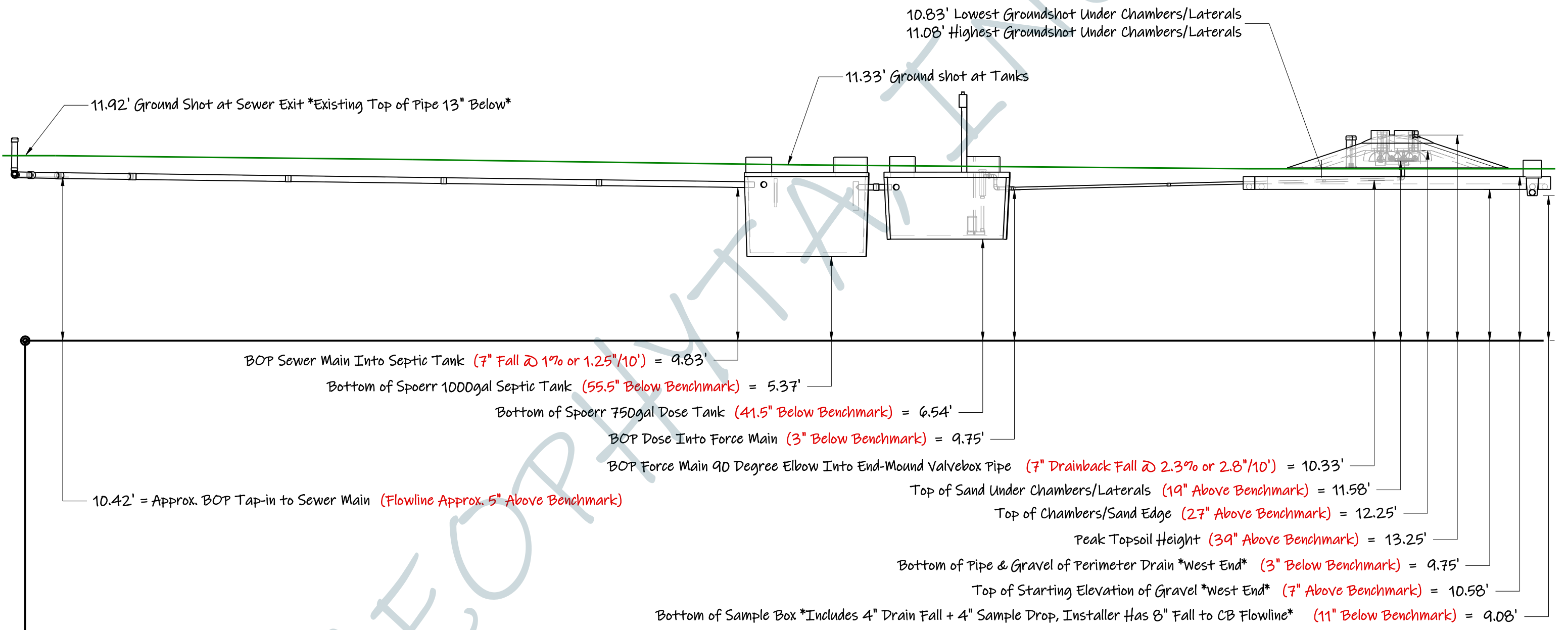
DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

20.FEB.24



****All Elevation Values Pointing to Surface Are of Native Grade****

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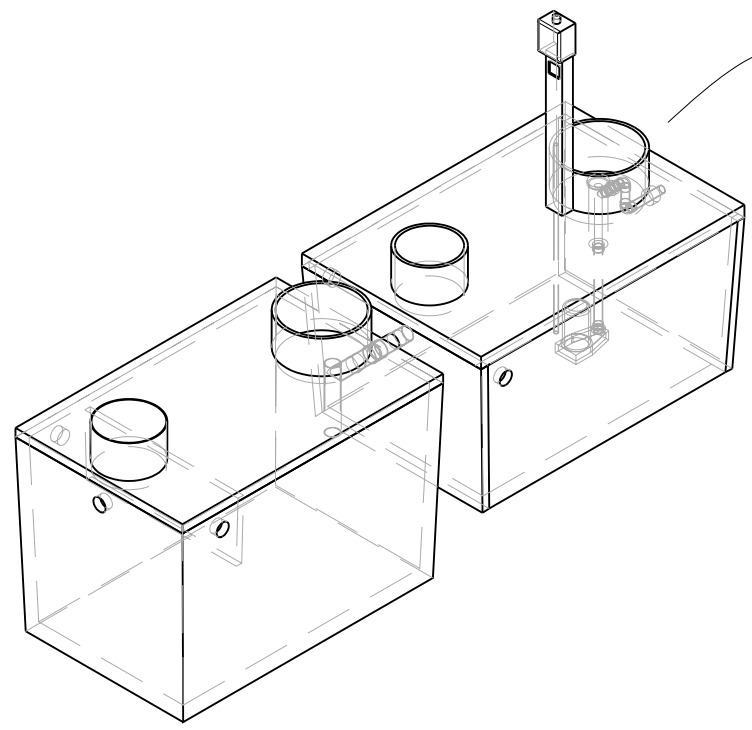


ZERO ELEVATION REFERENCE | BENCHMARK = 10.00 FEET
CONCRETE TOP OF CATCHBASIN | SEE LAYOUT MAP

SCALE 1:75

NELLER - HSTS_ELEVATION

Total Extent of Width = 5' 6"

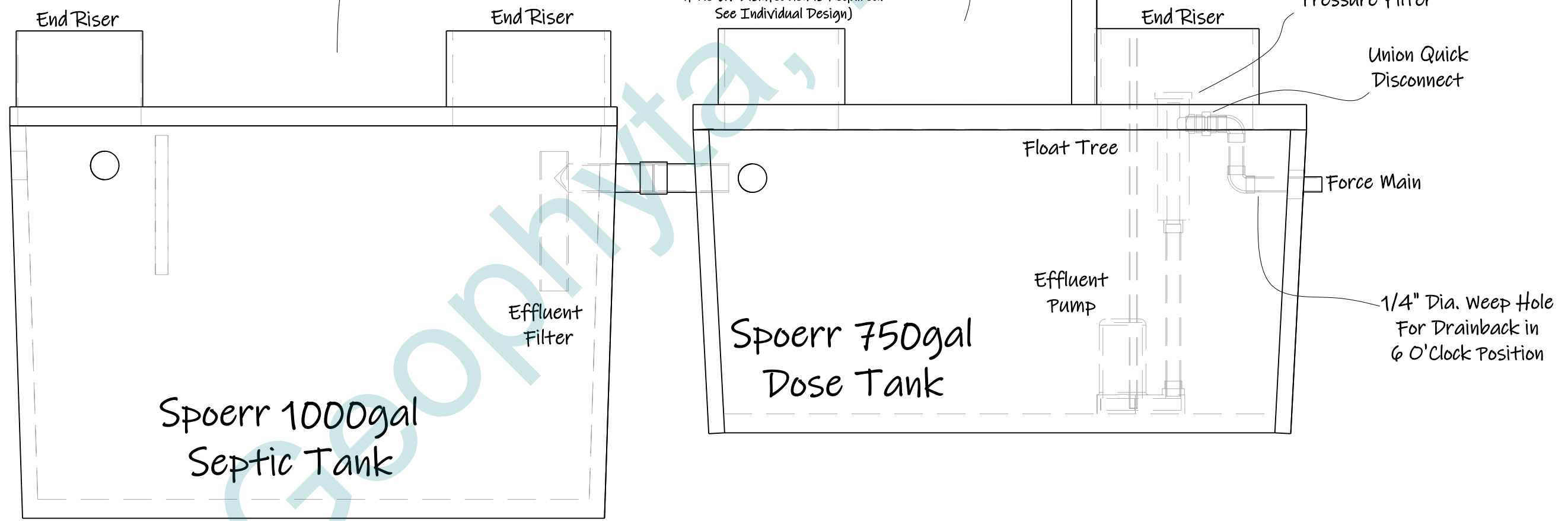


SCALE 1:50

SEE BILL OF MATERIALS FOR COMPONENT DETAILS

All Risers as Grade Requires: 12", 18", 24" or 36"

End Riser (May Not be Needed if No UV Disinfection is Required. See Individual Design)



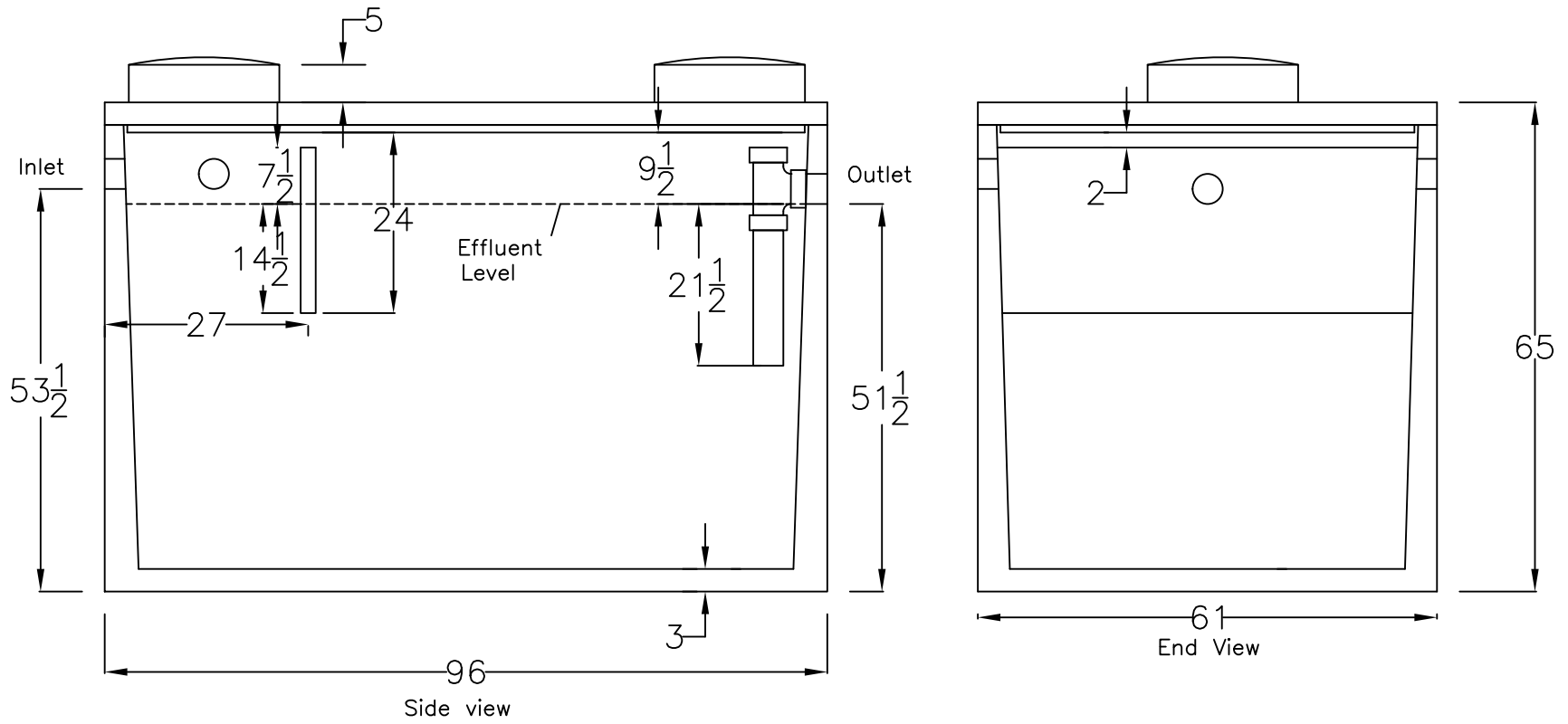
Approx. 17 FEET

APPROVED
By SCGHD at 6:16 am, Feb 26, 2024

SCALE 1:18

Spoerr 1000gal Septic Tank & Spoerr 750gal Dose Tank With Control Panel, Pump & Filters

APPROVED
 By SCGHD at 6:16 am, Feb 26, 2024



Proprietary and Confidential
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 Any reproduction in part or as whole without the written permission of Spoerr Precast Concrete Inc. is prohibited.

Spoerr Precast Concrete Inc.
 2020 Caldwell St
 Sandusky, OH 44870
 800-252-5205

Concrete 5000 PSI @ 28 Days
 All Dimensions in Inches
 Max cover on top of tank 48"
 Minimum cover 6"
 Inlet/Outlet boots for 4" pipe
 Boots: Meet ASTM C923
 Sealant: Meets ASTM C990
 Outlet Filter: Meets ANSI/NSF 46

1000 Gallon Septic Tank
 Excavation 6' x 9'

		11/26/15	

PL-122 Filter

The PL-122 was the original Polylok filter. It was the first filter on the market with an automatic shut-off ball installed with every filter. When the filter is removed for regular servicing, the ball will float up and prevent any solids from leaving the tank. Our patented design cannot be duplicated.

Features:

- Offers 122 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Has a flow control ball that shuts off the flow of effluent when the filter is removed for cleaning.
- Has its own gas deflector ball which deflects solids away.
- Installs easily in new tanks, or retrofits in existing systems.
- Comes complete with its own housing. No gluing of tees or pipe, no extra parts to buy.
- Has a modular design, allowing for increased filtration.

PL-122 Installation:

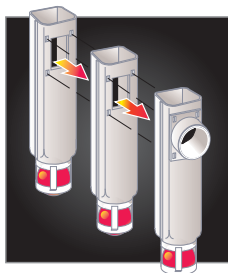
Ideal for residential waste flows up to 1,500 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-122 filter into tee.
5. Replace and secure the septic tank cover.

PL-122 Maintenance:

The PL-122 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-122 cartridge out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.



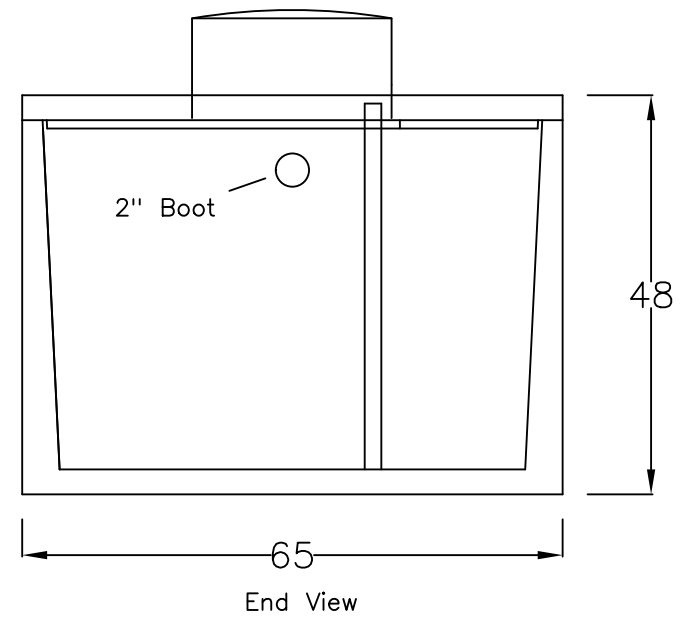
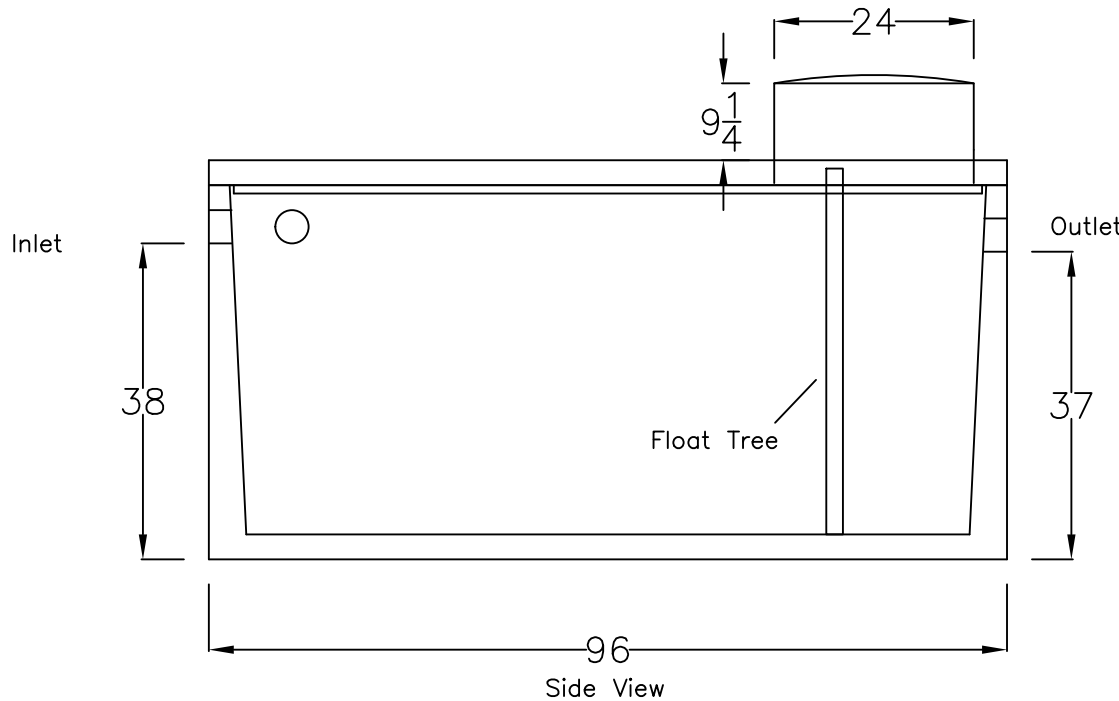
Polylok offers the only filter on the market where you can get more GPD by simply snapping our filters together!

- 1 Filter = 1500 GPD
- 2 Filters = 3000 GPD
- 3 Filters = 4500 GPD

Patent Numbers
 6,015,488 & 5,871,640



APPROVED
 By SCGHD at 6:16 am, Feb 26, 2024



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Spoerr Precast Concrete Inc.
 2020 Caldwell St
 Sandusky, OH 44870
 800-252-5205

Concrete 5000 PSI @ 28 Days
 All Dimensions in Inches
 Max cover on top of tank 48"
 Minimum Cover 6"
 Inlet boot for 4" pipe
 Outlet boot for 2" Pipe
 Boots meet ASTM C923
 Sealant: Meets ASTM C990
 22.3 Gallons/inch

750 Gallon Pump Tank			
Excavation 6' 6" x 9'			
		11/26/15	

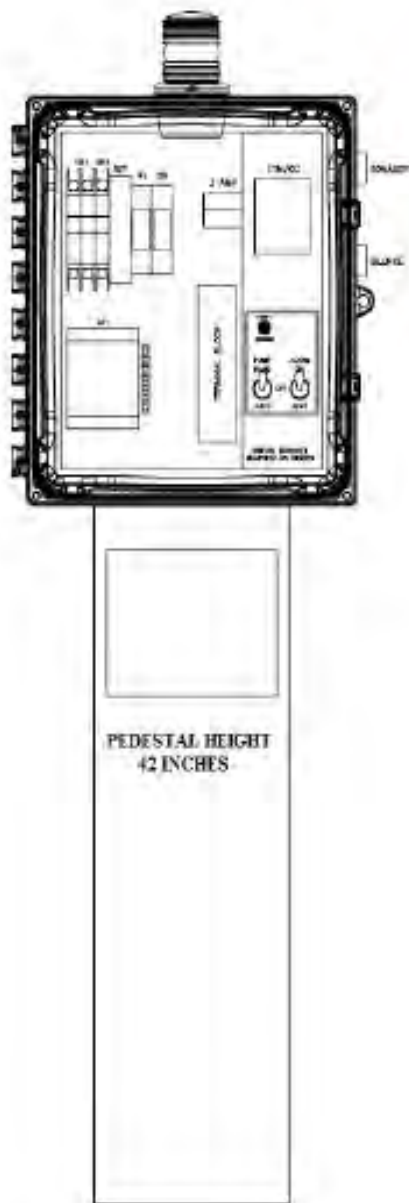


Time Dose Control Panel

For single phase residential and commercial lift stations and holding tanks
Float activated pump controllers for time dose applications

Features

- Circuit breaker for each pump
- Audible alarm with silence
- 360 degree visual alarm
- 3 float operation: Off, Enable, High level
- Externally mounted silence switch
- UL Type 4X enclosure padlockable
- Separate power feed for Pump and Control
- Clearly labeled terminal blocks
- Easy to use timer
- Individually adjustable On and Off Times
- DP Rated contactor
- ETM and Cycle Center
- All components UL Listed



Economy Series Control Panels

Specifications

Voltage Input: 115VAC/230VAC 60Hz, single phase
 Pump ratings: 115VAC/230V – 2HP at 20FLA, single phase
 Enclosure: UL Type 4X rated, polycarbonate
 1 year limited warranty

ECP-TD-11

Every pump tested in water to ensure pump meets performance curve.



FEATURES/BENEFITS

PERFORMANCE

- Heads up to 65' TDH
- Flows up to 86 GPM

MOTOR

- High efficient, 115v or 230v, oil filled, permanent split capacitor motor with upper and lower ball bearings and thermal overload protection
- Constant bearing lubrication
 - Maximum motor cooling
 - Runs cooler and lasts longer
 - Internal overload protection
 - Quiet operation
 - Fasteners and shaft made from rugged, corrosion resistant stainless steel

SEAL DESIGN

- Type 21 inboard seal design with secondary exclusion seal
- Rotating components of seal are in the motor housing, being lubricated by the motor oil preventing foreign matter from wrapping around the seal components
 - Seal will last longer if the pump runs dry
 - Secondary exclusion seal keeps debris from entering the seal cavity

IMPELLER DESIGN

- Non-clog style, cast-iron vortex impeller (CPEH Thermoplastic Vortex)
- Designed to help reduce clogging by foreign material

POWER CORD

- Sealed entry quick disconnect power cords
- Prevents water from entering the motor housing through a cut cord
 - Easy to replace in the field
 - Available in lengths up to 100'

SWITCH

- Piggy-back switch design
- Defective switches can be diagnosed over the phone
 - Pump can be operated manually or supplied with other piggy-back switches
 - Switch can be replaced without having to replace the pump

APPLICATIONS

Dewatering, septic systems, residential and commercial developments, elevator pits and STEP systems

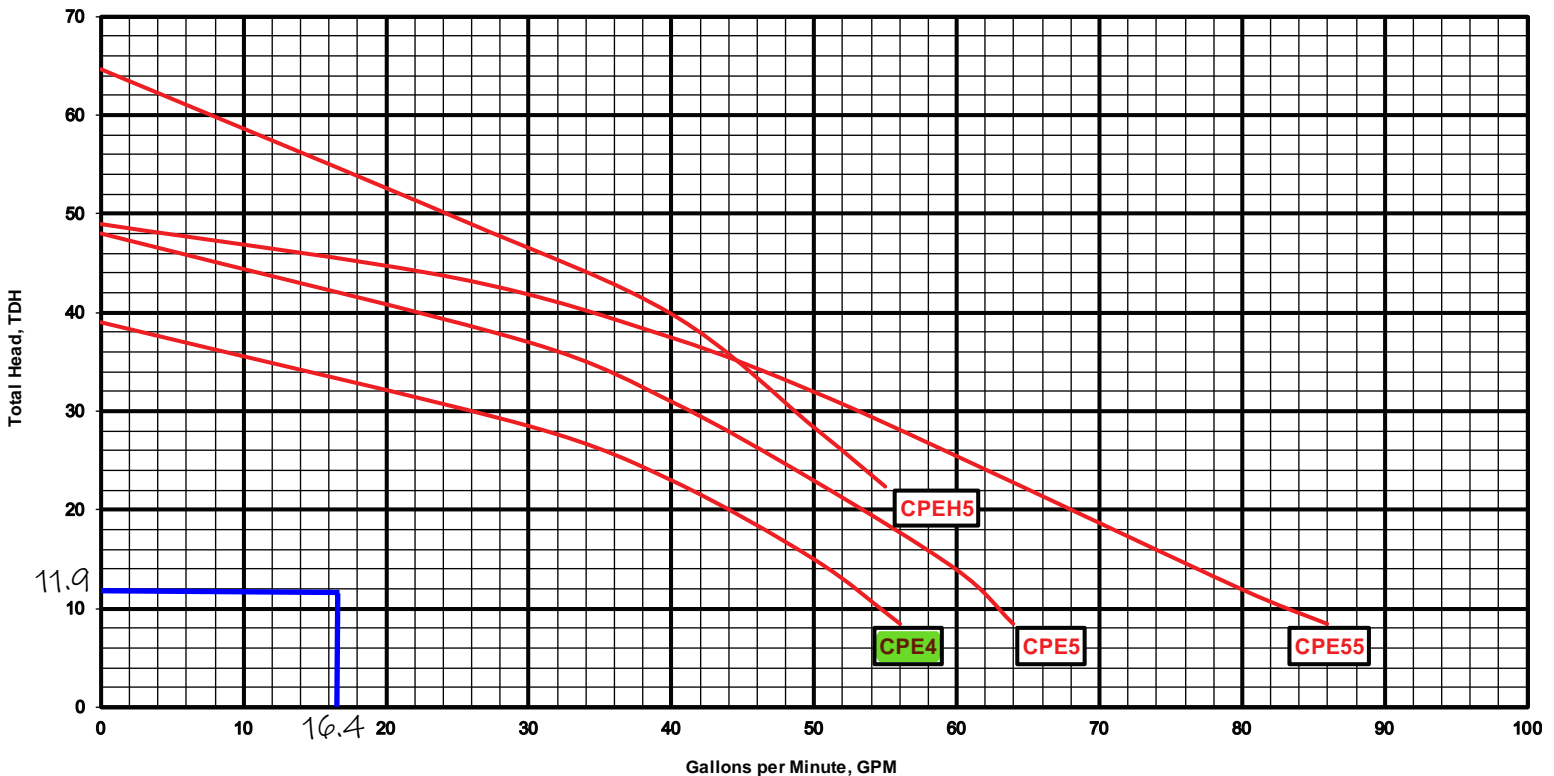


Vertical Float

Wide-Angle Float

4/10-1/2 HP submersible pumps that handle up to 3/4" solids with 2" discharge

PERFORMANCE CURVE

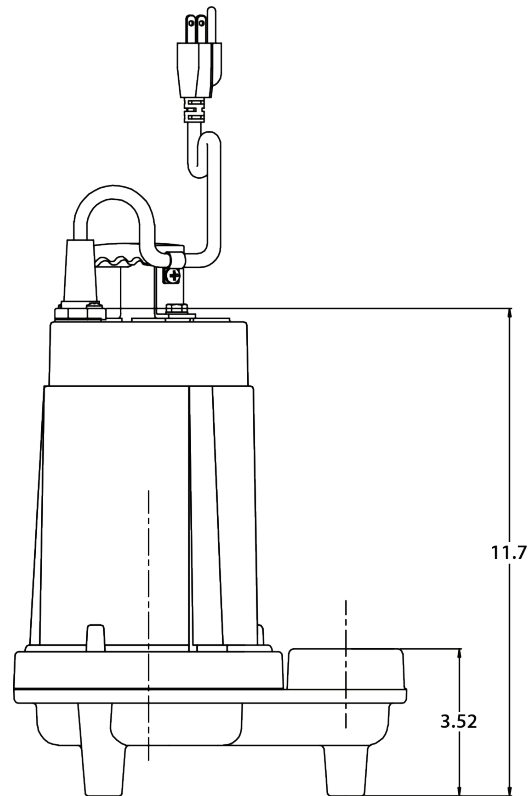
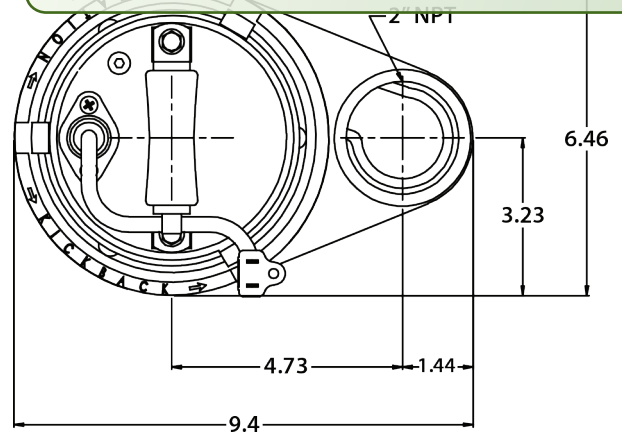


TECHNICAL DATA

DISCHARGE	2" NPT. vertical standard
LIQUID TEMPERATURE	140 Degrees F. (Intermittent)
MOTOR HOUSING	Cast Iron
VOLUTE	Cast Iron
SEAL PLATE	Cast Iron
IMPELLER	Cast Iron / Vortex (CPEH thermoplastic vortex)
SOLIDS HANDLING	3/4"
SHAFT	Stainless Steel
SHAFT SEAL (SINGLE SEAL)	Inboard mechanical with secondary exclusion V-Seal, carbon rotating face, ceramic stationary face, Buna-N elastomer, 300 series stainless steel hardware
BEARINGS (UPPER & LOWER)	Single row, ball, oil lubricated
HARDWARE	300 Series stainless steel
O-RINGS	Buna-N
CORD	20' Length standard. Up to 100' available. (UL/CUL) Listed 16 AWG, Type SJTW
MOTOR (SINGLE PHASE)	4/10-1/2 HP 3450 RPM, 60 Hz, NEMA L Includes Overload Protection in the motor, oil filled, class B permanent split capacitor
WEIGHT	37 lbs. (Manual)

APPROVED

By SCGHD at 6:16 am, Feb 26, 2024



MODEL(S) INFORMATION


MODEL	HP	VOLTS	PHASE	AMPS	CORD LENGTH	SWITCH
CPE4-12 / CPE5-12 / CPE55-12 / CPEH5-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Manual
CPE4-13 / CPE5-13 / CPE55-13 / CPEH5-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Manual
CPE4-15 / CPE5-15 / CPE55-15 / CPEH5-15	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	50'	Manual
CPE4A-12 / CPE5A-12 / CPE55A-12 / CPEH5A-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Wide-Angle Float
CPE4A-13 / CPE5A-13 / CPE55A-13 / CPEH5A-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Wide-Angle Float
CPE4V-12 / CPE5V-12 / CPE55V-12 / CPEH5V-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Vertical Float
CPE4V-13 / CPE5V-13 / CPE55V-13 / CPEH5V-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Vertical Float
CPE4-22 / CPE5-22 / CPE55-22 / CPEH5-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Manual
CPE4A-22 / CPE5A-22 / CPE55A-22 / CPEH5A-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Wide-Angle Float
CPE4V-22 / CPE5V-22 / CPE55V-22 / CPEH5V-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Vertical Float

Essential Components for Pressurized Systems

APPROVED
By SCGHD at 6:16 am, Feb 26, 2024

SIM/TECH offers many performance products engineered to protect effluent treatment systems and prevent costly repairs. From our pressurized filter, to the best orifice shield in the industry, we keep your systems performing at 100% efficiency.

Sometimes the simplest ideas are the best, so depend on a time proven leader... protecting effluent treatment systems is our business - SIM/TECH Filter.



STF-103
Lid/screen removal wrench.
(Holds lid after removal)

STF-107
Alert w/latching light

STF-101 Pressure
switch

STF-100
Pressure filter

pump chamber
(dosing tank)

septic tank

STF-100 Sim/Tech Filter

Pressure system filter - molded in tough PVC plastic, with installed stainless steel screen.

Installs easily onto effluent pump in holding tank. The vortex scrubbing action helps keep the filter clean.

The last line of defense before the laterals.

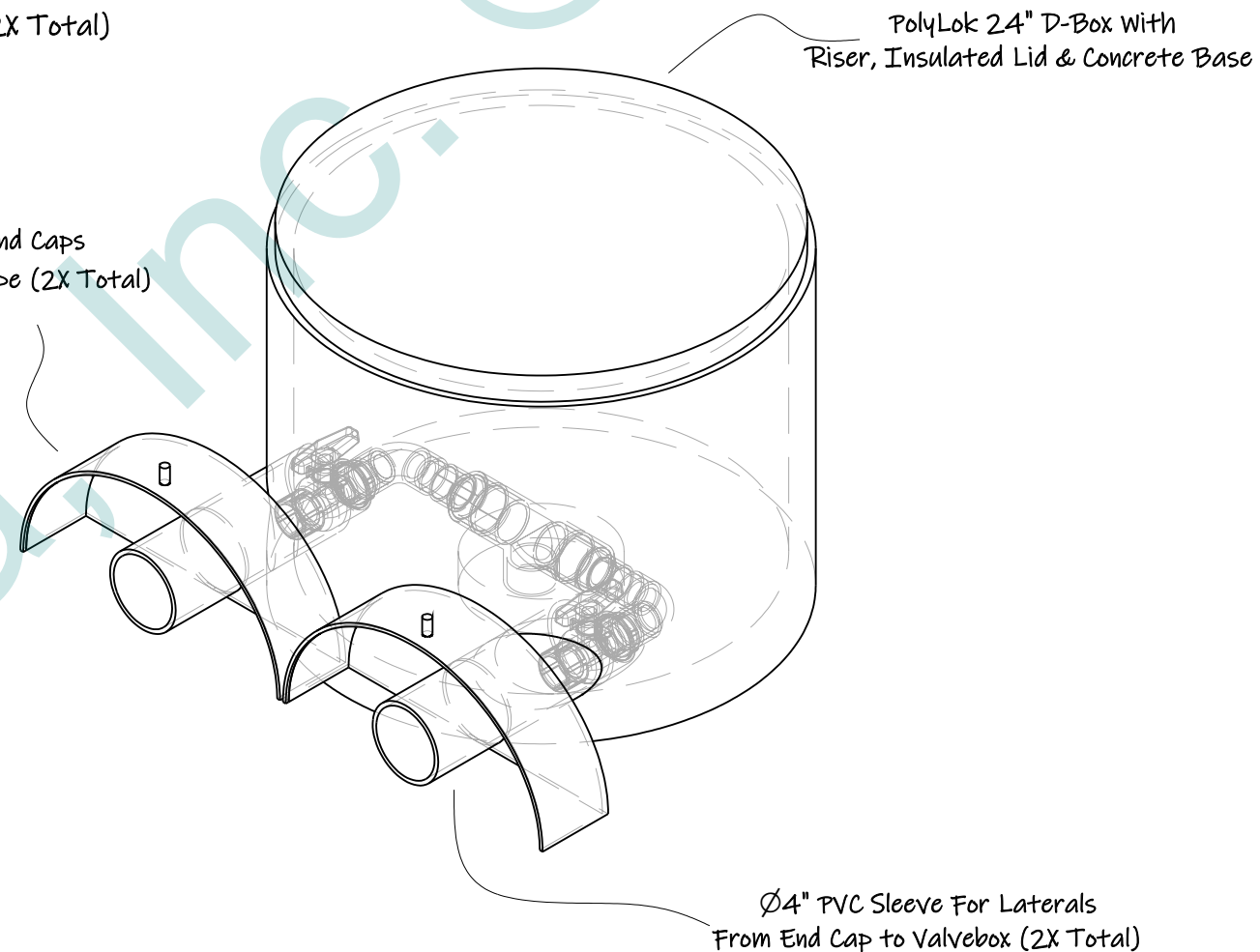
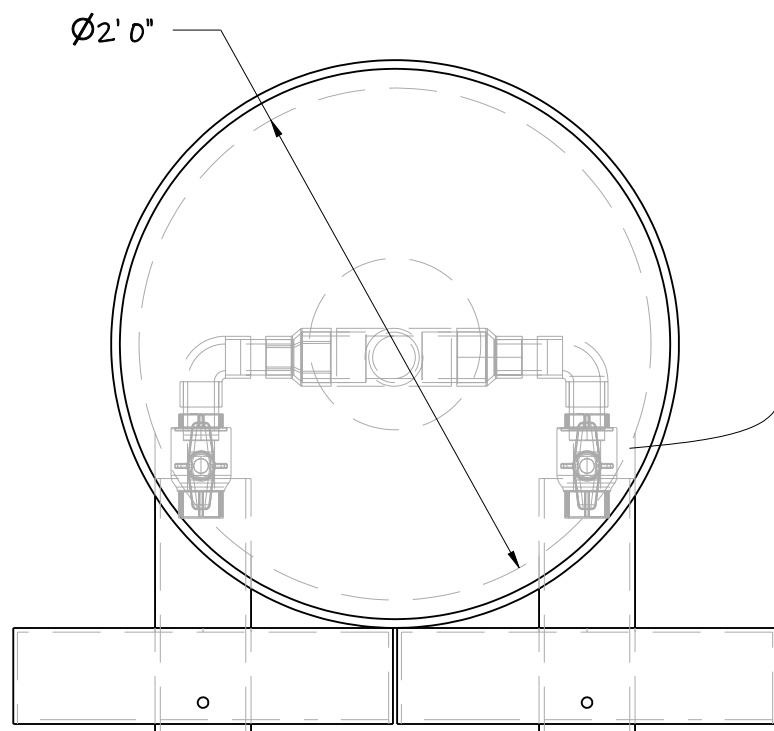
STF-102 Filter Screen STF-104 Filter Sock

Optional filter socks can lower the acceptable TSS size from .023 inches to .0039 inches, depending on the application.

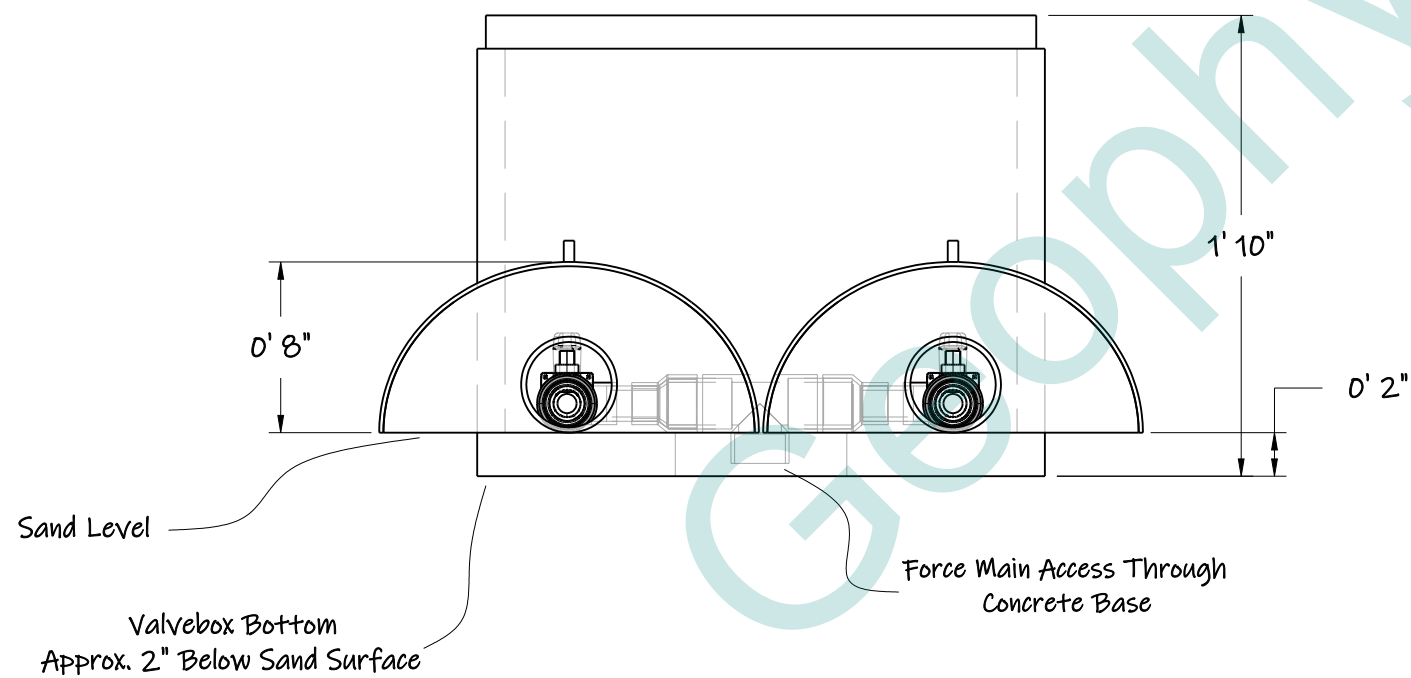
Our standard stainless steel screen will filter .062" in diameter. (1/16 of an inch)

Socks easily install inside stainless steel screen.

APPROVED
By SCGHD at 6:16 am, Feb 26, 2024



SCALE 1:9



SCALE 1:9

SEE BILL OF MATERIALS FOR
ALL PIPE FITTINGS SIZING



INFILTRATOR
water technologies

APPROVED
By SCGHD at 6:16 am, Feb 26, 2024

Quick4^{PLUS}

The QUICK4^{PLUS} Equalizer 36 Low Profile (LP) Chamber

Quick4 Plus™ Series

The Quick4 Plus Equalizer 36 Low Profile (LP) offers maximum strength through its two center structural columns. This chamber can be installed in a 24-inch-wide trench. It is 4 inches shorter in height than other Equalizer 36 model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™, which permits turns up to 15°, right or left. The Quick4 Plus All-in-One 8 and Quick4 Plus Endcaps provide increased flexibility in system design and configurations.



Maximum Strength

Quick4 Plus Equalizer 36 LP Chamber Specifications

Size
22"W x 53"L x 8"H
(559 mm x 1346 mm x 203 mm)

Effective Length
48" (1219 mm)

Louver Height
6.3" (160 mm)

Storage Capacity
20 gal (76 L)

Invert Height
3.3" (84 mm), 9.6" (244 mm)



Quick4 Plus Equalizer 36 Low Profile (LP) Chamber Benefits:

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Two center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12" of cover

Quick4 Plus All-in-One Periscope Benefits:

- Allows for raised invert installations
- 180° directional inletting
- 12" raised invert is ideal for serial applications



Quick4 Plus All-in-One 8 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe



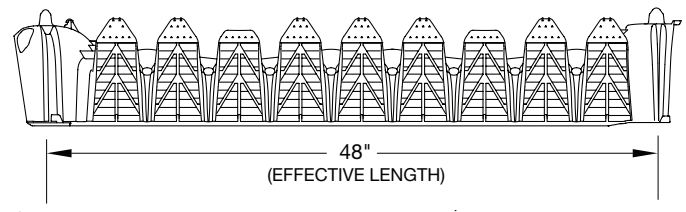
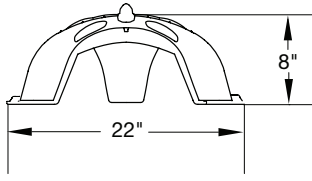
Quick4 Plus Endcap Benefits:

- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe

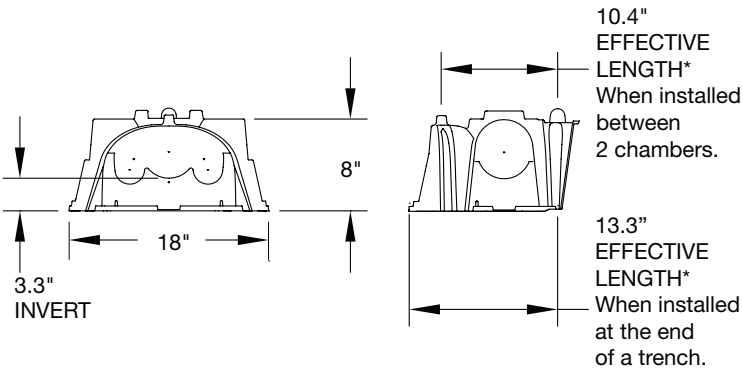


Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)

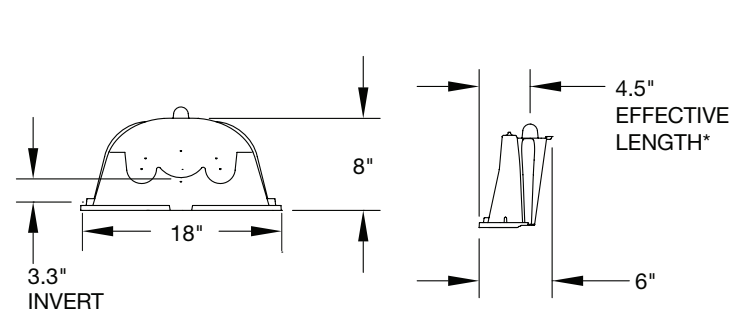




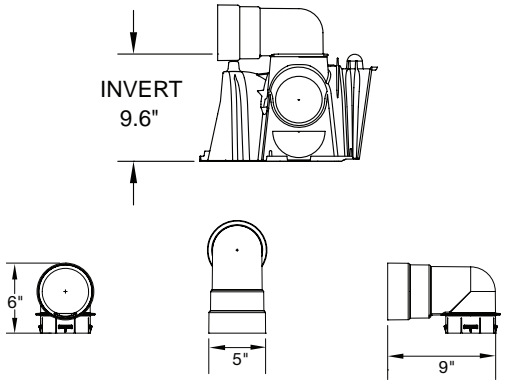
Quick4 Plus All-in-One 8 Endcap



Quick4 Plus Endcap



Quick4 Plus All-in-One Periscope



INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY

(a) The structural integrity of each chamber, endcap and other accessory manufactured by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



4 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com
info@infiltratorwater.com

U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,116; 5,401,459; 5,511,903; 5,716,163; 5,588,778; 5,839,844 Canadian Patents: 1,329,959; 2,004,564 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickCut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, Inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.

Orifice Shields



Why Use Orifice Shields?

Sim/Tech Filter orifice shields are designed to protect the discharge holes in pressurized systems from the outside. Most of these systems are designed with specific flow-rates, pressure heads, etc. to obtain “even distribution” in the drain field and thus allow for proper treatment. Much like our pressure filter prevents debris from obstructing the discharge holes from the inside, our orifice shields prevent blockage on the outside. As shown in the top picture to the left, drain media can block the small discharge holes, throwing the whole design and operation of a system out of whack. The bottom picture to the left shows our standard orifice shield installed on the lateral piping of a system. The orifice shield creates a protective void between the drain media and the discharge hole. The design allows the discharge hole to spray effluent into the shield where the much larger open area of the shield keeps the hole discharging at its designed flow rate.

Why Use Sim/Tech Filter Orifice Shields?

They have a large open area, 9 inches of gripping surface and a simple, but very effective design. The large open area of the interior of the shield prevents it from becoming easily blocked if you are not using a Sim/Tech pressure filter on your system. There is also a large open area for allowing effluent to drain from the shield. There are various slots depending upon the configuration you desire and both ends of the shield also have open area for drainage.

Styles and Sizes Available

Sim/Tech Filter currently offers two orifice shield designs. **The STF-106D** is designed for systems that have discharge holes that point down. The STF-106TDS is designed for systems that have discharge holes that point up. Both versions of the Sim/Tech Filter orifice shield are available in four different sizes to fit the pipe sizes 3/4”, 1”, 1-1/4” & 1-1/2” and 2”. A 3” size is also available as a special custom order.

US Patent 6,167,914



STF-106D



STF-106TDS

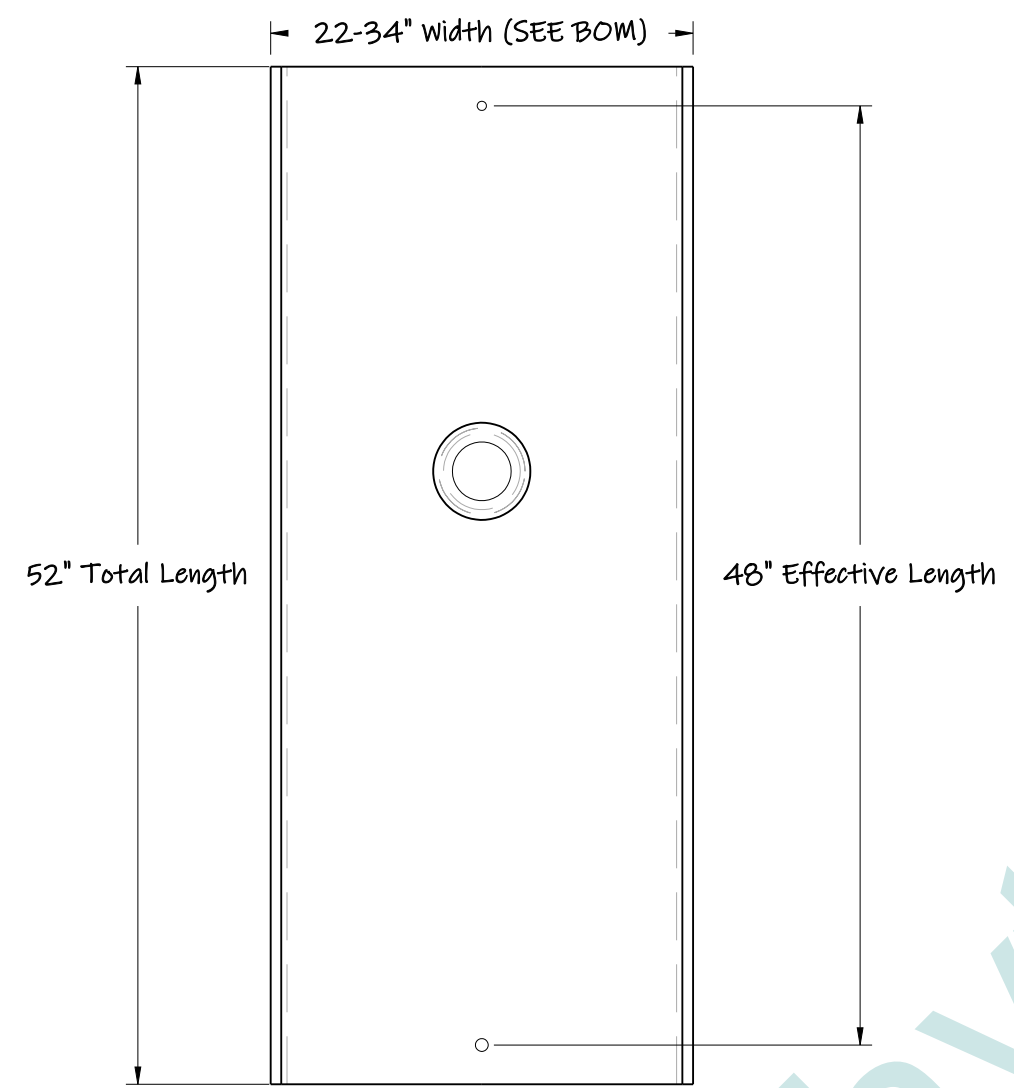
Solutions

We offer free CAD detail drawings in DXF format to cover our complete product line.

For the protection and performance of wastewater systems by

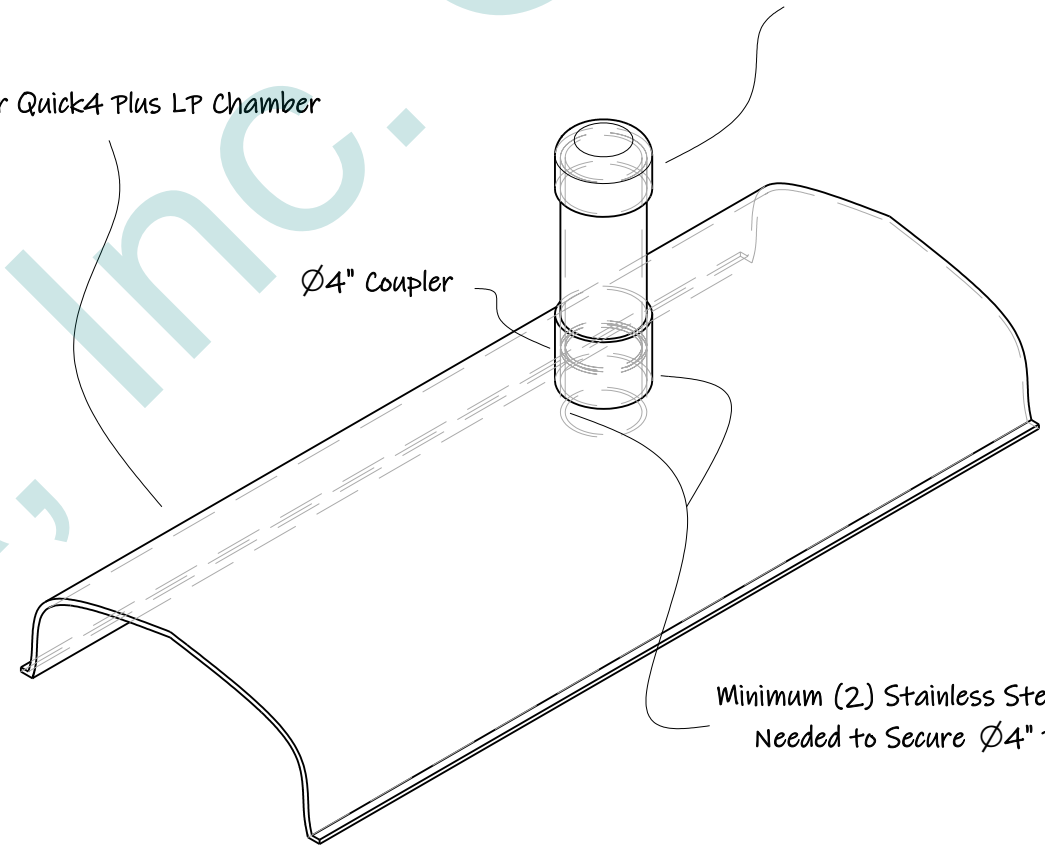
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By SCGHD at 6:16 am, Feb 26, 2024

Ø4" Socket Cap Or
Optional Threaded Cap



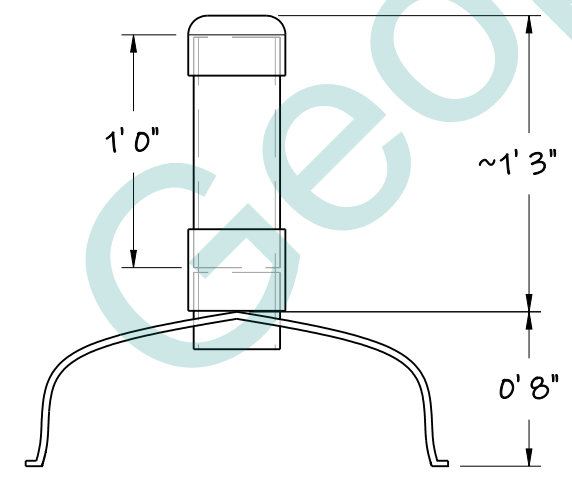
Infiltrator Quick4 Plus LP Chamber

Ø4" Coupler



Minimum (2) Stainless Steel Wood Screws
Needed to Secure Ø4" PVC to Dome

SCALE 1:10

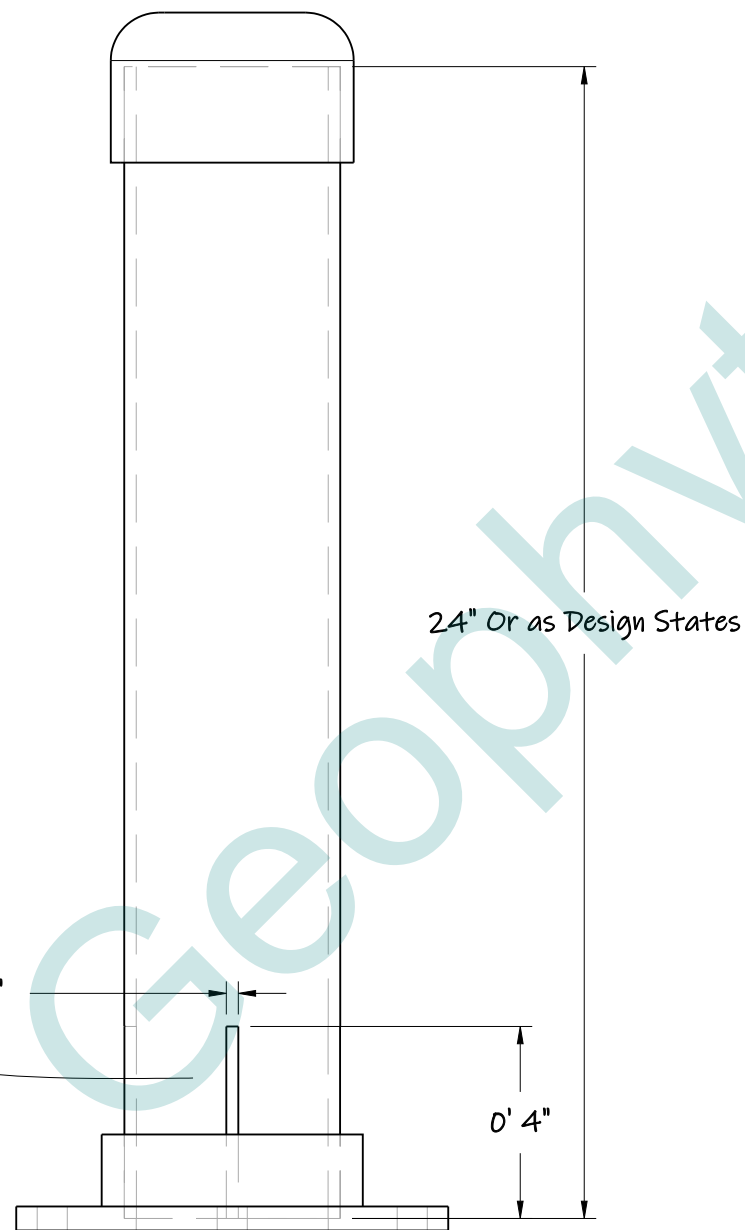
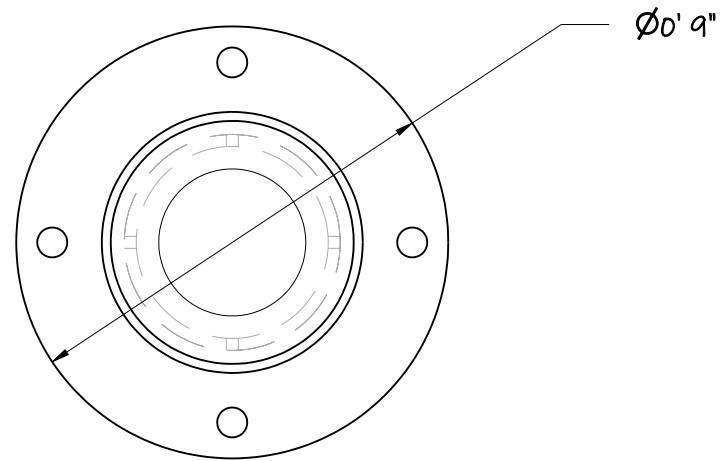


SCALE 1:10

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

17.MAY.22

APPROVED
By SCGHD at 6:17 am, Feb 26, 2024



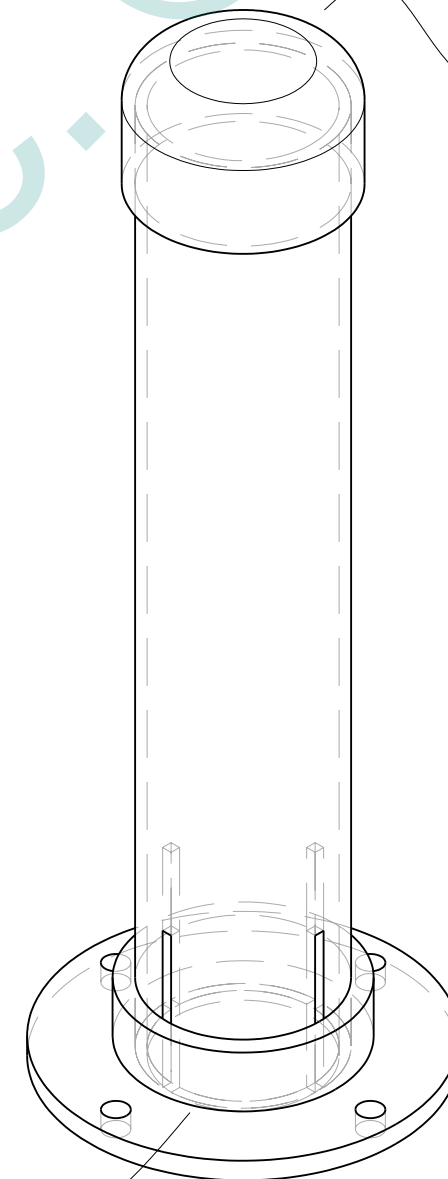
4-Less Than or Equal to 1/4" Slots; Can be Made with "Sawzall"

0.25"

24" Or as Design States

0' 4"

SCALE 1:4



Standard Ø4" PVC Cap
Above Soil Surface, Friction
Fit ONLY. No Glue.
Alternate is Threaded
Cleanout Fitting Glued to Pipe.

Open Bottom For
Sand/Soil Inspection.

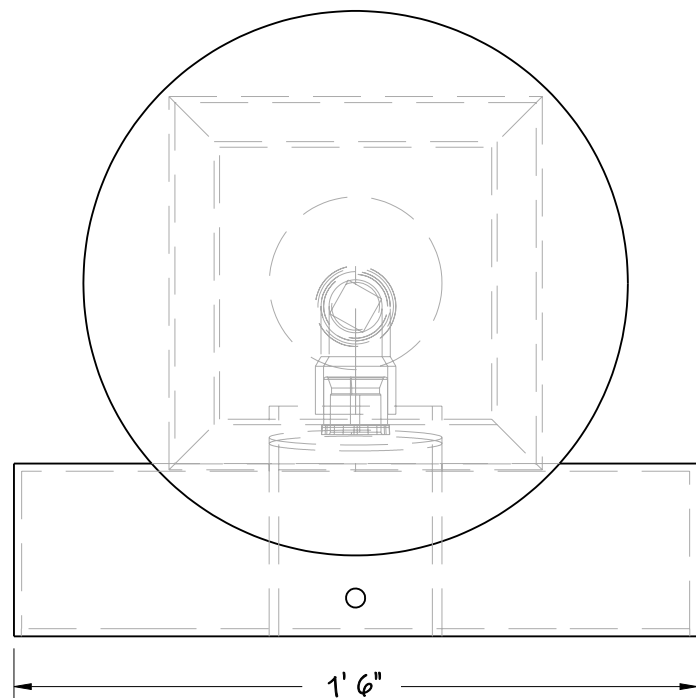
SCALE 1:4

Standard Toilet Flange,
Glued to Pipe

Sand/Soil Inspection Port

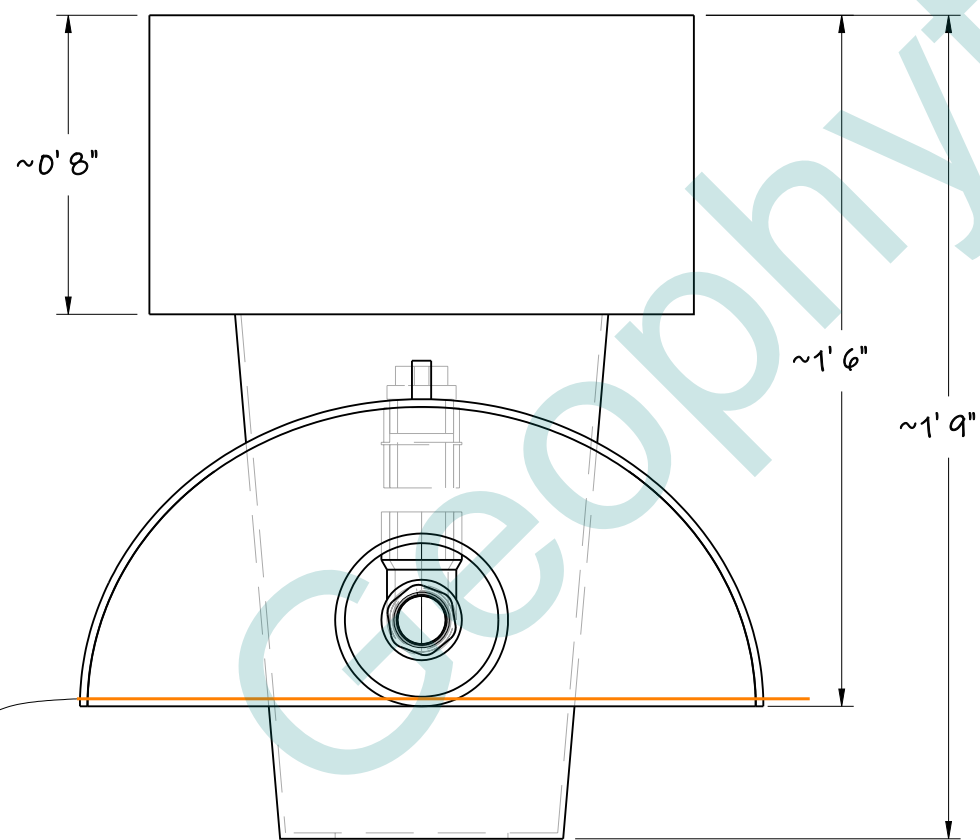
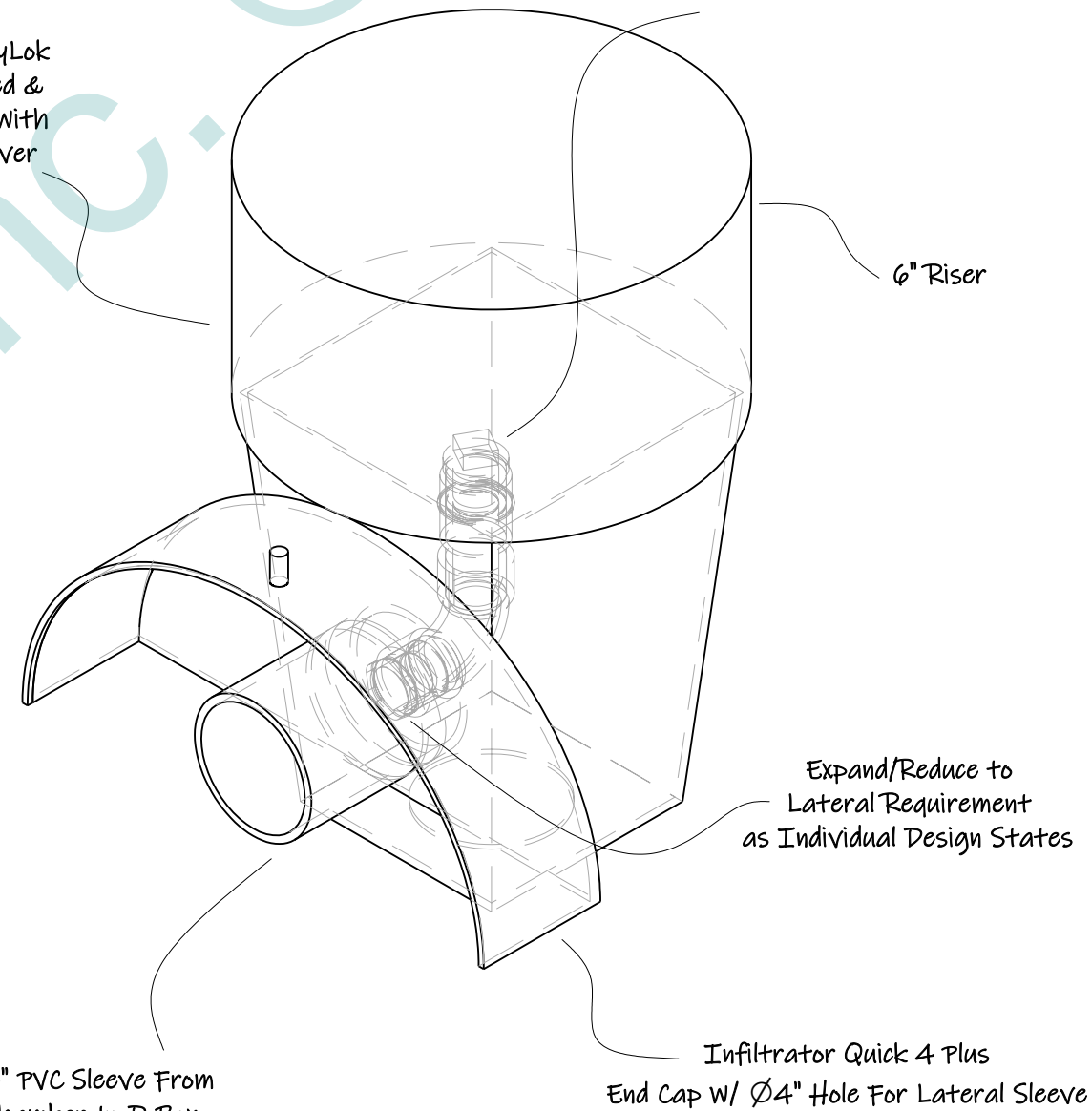
APPROVED
By SCGHD at 6:17 am, Feb 26, 2024

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 17.MAY.22



Removable PolyLok
Lid - Insulated &
Approx. Level With
Mound Soil Cover

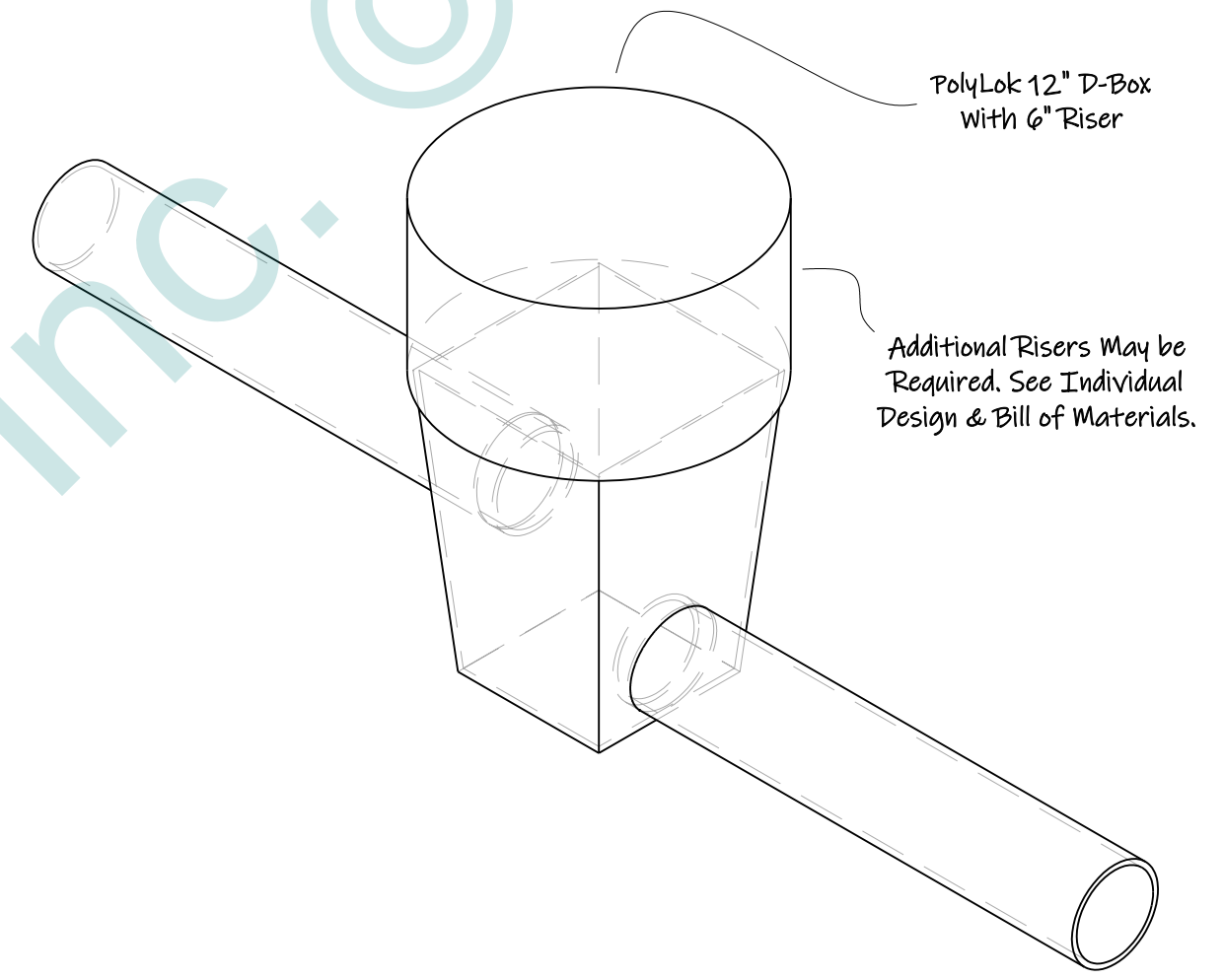
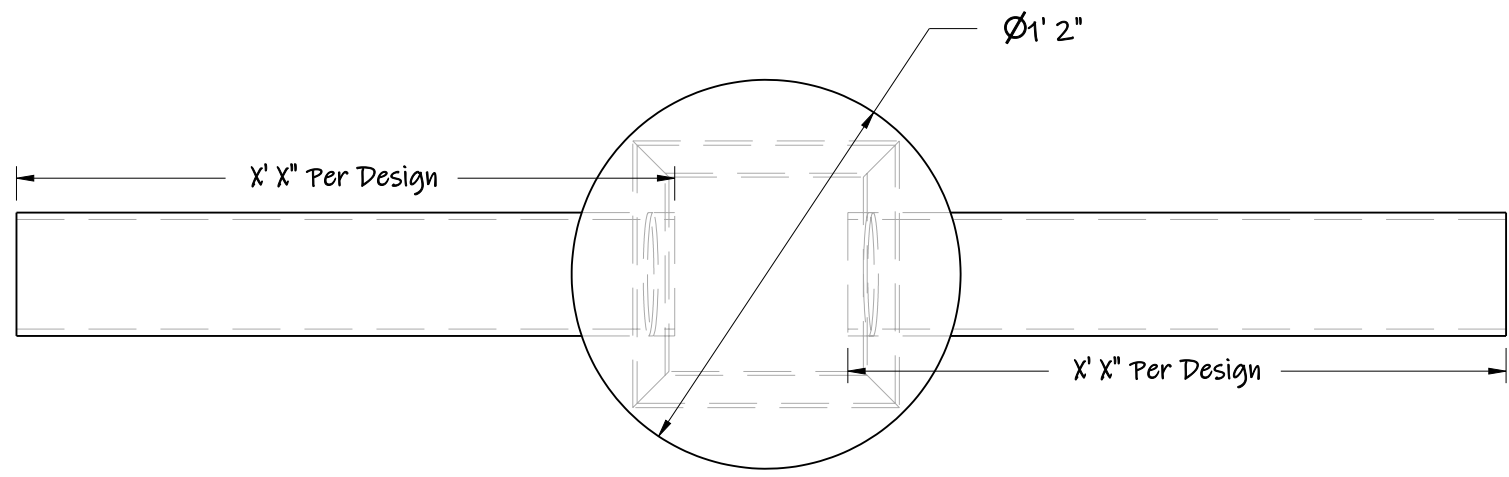
Ø1.25" SCH40 PVC Cleanout
Also Used to Test Head Pressure



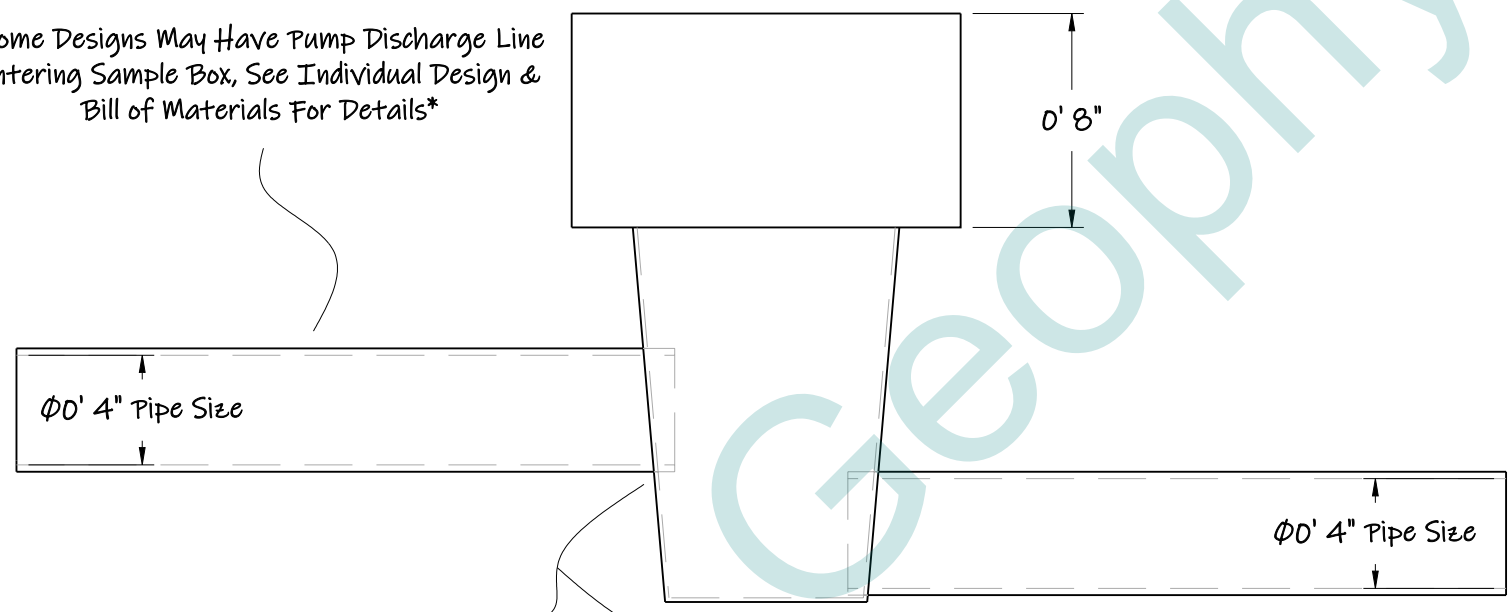
Lateral Cleanout & Inspection Port For
Engineered Sand Mounds

APPROVED
By SCGHD at 6:17 am, Feb 26, 2024

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 18.MAY.22



Some Designs May Have Pump Discharge Line Entering Sample Box, See Individual Design & Bill of Materials For Details



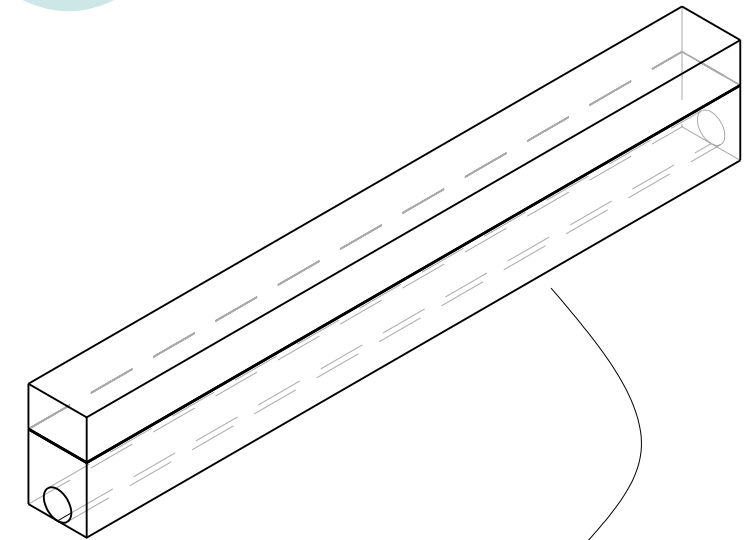
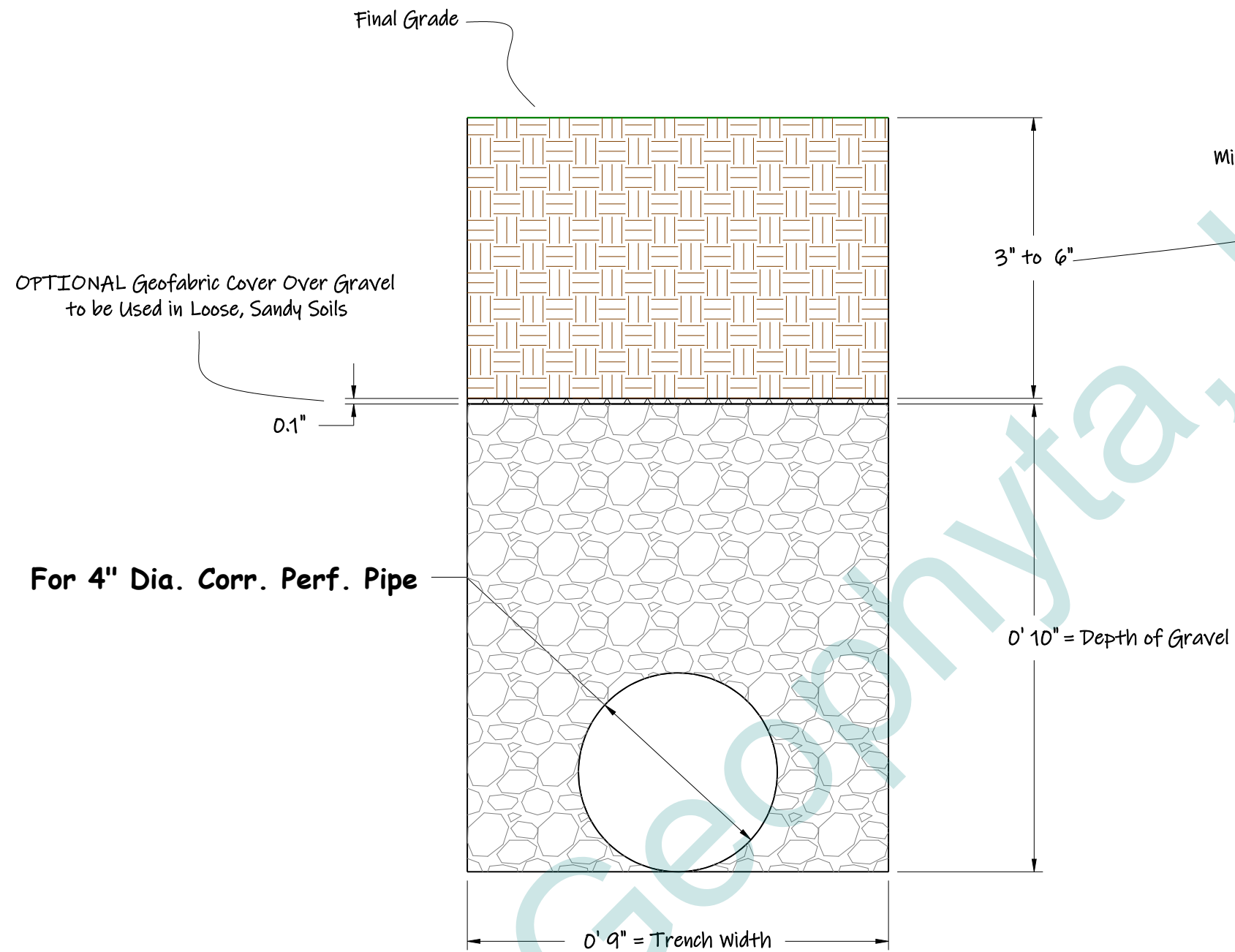
Min. 4" Drop
Invert-Invert
For Sample Collection

Free-Falling Sample Port/Box

APPROVED
By SCGHD at 6:17 am, Feb 26, 2024

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

23.MAY.22



Trench Bottom Minimum Slope =
1.2" Per 100' or 0.1%

SCALE 1:3

****INSTALLER MUST RECORD ACTUAL TRENCH DIMENSIONS & COMPONENTS
ON AS-BUILT DRAWINGS SUBMITTED TO HEALTH DEPARTMENT****

Trencher Dug Interceptor, Perimeter &
Engineered Drain With 10 Inch Deep Gravel

Bill of Materials - 1140 N. T.R. 42, HSTS Replacement - Engineered Sand Mound W/ 2' Wide Diffusers & Perimeter Drain

Quantity	Part Name	Section	Comment
1	SCH40 PVC Ø4 inch Two-Way Cleanout Tee	Sewer Main Replaced to Foundation Total Length of Pipe = ~55' MUST BE SCH40 PVC	Two-Way Cleanout (Tee)
1	SCH40 PVC Ø4 inch pipe 2 ft. Long		Two-Way Cleanout (Tee to Cap)
1	SCH40 PVC Ø4 inch Cap		Two-Way Cleanout (Cap)
3	SCH40 PVC Ø4 inch Coupler		See Design
4	SCH40 PVC Ø4 inch 22.5 Degree Elbow		
2	SCH40 PVC Ø4 inch pipe 2.5 ft. Long		
2	SCH40 PVC Ø4 inch pipe 5 ft. Long		
4	SCH40 PVC Ø4 inch pipe 10 ft. Long		
1	Septic Tank	Septic Tank	Spoerr 1000 gal Septic Tank or Equiv. W/ 12" Risers
1	Septic Tank Filter		Polylok PL-122 or Equiv. (See Detail Print)
1	SCH40 PVC Ø4 inch pipe 3 ft. Long	Septic To Dose	Length May Vary
1	SCH40 PVC Ø4 inch Coupler		
1	Dose Tank	Dose Tank	Spoerr 750 gal Dose Tank W/ 12" Riser
1	Control Panel For Pump Float Control, Timer & Alarms	Control Panel	Ohio Electric ECP-TD-11 (See Detail Print)
~75 ft.	2 conductor w/ground, 14 gauge UG wire	Dose Pump Assembly	Pump Circuit; Standalone Breaker
~75 ft.	2 conductor w/ground, 14 gauge UG wire		Alarm Circuit, Added To House Lighting Breaker
~75 ft.	Plastic conduit, to contain 6-14ga		Pump & Alarm Circuit
1	Effluent Pump 2inch NPT 0.4 HP		Champion CPE4-12 or Equiv.
1	Pressure Filter		Polylok or Simtech Filter (See Detail Print)
1	SCH40 PVC Ø2 inch pipe 1ft. Long With Ø1/4" Weephole in 6 O'clock Position		Ø1/4 inch Drainback Hole Required
2	SCH40 PVC Ø2 inch 90 Degree Elbow		See Tank Assembly Print
1	SCH40 PVC Ø2 inch pipe 26 inch Long		
1	SCH40 PVC Ø1 inch pipe 5.0 ft. Long as Float Tree		
1	SCH40 PVC Ø2 inch Adapter MNPT to Socket		
1	SCH40 PVC Ø2 inch Union SxS		
2	SCH40 PVC Ø2 inch pipe 3 inch Long	Force Main W/ Drainback Total Length of Pipe = ~25' MUST BE SCH40 PVC	See Design
1	SCH40 PVC Ø2 inch pipe 6.5 inch Long		
1	SCH40 PVC Ø2 inch to Ø1.5 inch Reducer		
2	SCH40 PVC Ø1.5 inch Coupler		
1	SCH40 PVC Ø1.5 inch 90 Degree Elbow		
1	SCH40 PVC Ø1.5 inch pipe 5 ft. Long	Force Main to End-Fed Mound Valvebox	See Valvebox Print
2	SCH40 PVC Ø1.5 inch pipe 10 ft. Long		
1	SCH40 PVC Ø1.5 inch pipe 1 ft. Long		
2	SCH40 PVC Ø1.0 inch Full-Flow Ball Valve		
1	SCH40 PVC Ø1.5 inch Tee		
2	SCH40 PVC Ø1.5 inch to Ø1.0 inch 90 Degree Elbow Reducer		
2	SCH40 PVC Ø4 inch pipe 6 inch Long *Used as Sleeve*		
2	Infiltrator Quick 4 Plus End Cap Modified For Mound Valvebox		
1	PolyLok Ø20" D-Box W/ 6" Riser W/ Insulated Lid As Two Valve Box		
2	SCH40 PVC Ø1.5 inch pipe 7 inch Long		
2	SCH40 PVC Ø1.0 inch pipe 2.25 inch Long	End-Fed Mound Valvebox	

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-	Sand Section 3.67 ft. W. x 76 ft. L. x 6.0 inch H. Basal 10.67 ft. W.	Engineered Sand Mound	~24.0 yd. ³ @ 42.0 Tons (ASTM C-33 Natural Sand)
-	Topsoil Cap 89.5 ft. L. x 13.5 ft. W. x 2.17 ft. H.		~24.0 yd. ³ @ 42.0 Tons (Silt Loam Or Better)
38	Infiltrator 4 ft. L 2 ft. W 8 inch H LP Chambers		Infiltrator Quick4 Plus Equalizer 36 Low Profile Chambers
2	Orifice Protectors	Laterals	STF -106D (See Detail Print)
2	SCH40 PVC Ø1.0 inch Pipe 76' L. Ø1/8" Orifices 3' 10" Spacing W/ Cleanout End Drain		See Mound Laterals Details Print
4	SCH40 PVC Ø4 inch Cap	Sand Inspection Port	See Sand Inspection Port Print
4	SCH40 PVC Ø4 inch Coupler		
4	SCH40 PVC Ø4 inch pipe 1 ft. Long		
4	SCH40 PVC Ø4 inch pipe Ø4 inch Long		
2	SCH40 PVC Ø4 inch Cap	Soil Inspection Port	See Soil Inspection Port Print
2	SCH40 PVC Ø4 inch Toilet Flange Socket		
2	SCH40 PVC Ø4 inch Sand Observation Tube 2 ft. Long With Slots		
2	SCH40 PVC Ø4 inch pipe 6 inch Long		
4	SCH40 PVC Ø1.25 inch pipe 3.75 inch Long		
2	Infiltrator Quick4 Plus End Cap Modified For Mound Cleanout		
2	SCH40 PVC Ø1.25 inch to Ø1.0 Reducer	Lateral Cleanout & Inspection Ports	See Detailed Print
2	SCH40 PVC Ø1.25 inch FIPT Coupler		
4	SCH40 PVC Ø1.25 inch 45 Degree Elbow		
2	PolyLok Ø12" D-Box With 12" Riser With Insulated Lid Adapted For Mound Cleanout		
2	SCH40 PVC Ø1.25 inch MIPT Plug		
-	Corrugated Perforated 4" Dia. Pipe 188 ft. L.		
-	Trench Drain 188' L. x 9" W. x 10" Deep Gravel	~3.7 yd. ³ @ 4.9 Tons #57 Washed Stone	
-	Corrugated Solid 4" Dia. Pipe 65 ft. L.	Perimeter Drain Discharge	Sealed Tap Into Existing Rd. Catch Basin
1	PolyLok Ø12" D-Box With (1) Riser With Insulated Lid Adapted For Sample Box		

Additional Notes

Mound Area to be Scarified According to OSU Mound Systems for Onsite Wastewater Treatment Bulletin 813.

Pump, Crush & Backfill Old Septic Tank.

WIRE TEST MUST BE PERFORMED BY INSTALLER. DO NOT INSTALL IF SOIL SMEARS DURING SCARIFICATION.

SYSTEM MUST BE INSTALLED IN DRY SOIL CONDITIONS ONLY. INSTALLER TO PERFORM WIRE TEST ON SCARIFIED SOIL.

Installer Please Tie Sump Pump Discharge Into Perimeter Drain.

-	Grass Seed	2 lbs./1000 ft. ² K. Bluegrass	~1250 ft. ² @ 2.5 lbs.
-	Straw Mulch For Grass Establishment	Homeowner's Choice	~1250 ft. ²
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft. ²	~1250 ft. ² @ 12.5 lbs.

Call OUPS before you dig.

Installer substitution of materials not specified in this Bill Of Materials may void Health Dept. approval of this design and will result in a re-design fee and is the sole responsibility of the installer.

Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.

APPROVED
By SCGHD at 6:17 am, Feb 26, 2024

Operation and Maintenance Procedures

Home Septic Treatment Systems With Effluent Distribution Through A Sand Mound

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems utilize processing, storage, and pumping tanks. A sand/soil absorption component, the mound, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

Improper operation and/or maintenance of your home septic treatment system will result in its failure.

Geophyta, Inc. strongly recommends that a homeowner hire a professional service provider to inspect and maintain your system. Your county health department has a list of registered service providers. Make sure that your service provider has “mound system” experience.

1) Homeowner Responsibility:

- a) The system owner is responsible for the continuous operation and maintenance of this home septic treatment system
- b) Your county health department may require third-party inspection and maintenance of your home septic treatment system.
- c) Home Interior Design & Appliance Selection:
 - i) Install water conserving fixtures such as low flow shower heads, low flow toilets, and front loading washers.
 - ii) Space out water use throughout the day and week. Avoid doing all laundry in one day.
 - iii) Repair all water leaking fixtures.
 - iv) Eliminate garbage disposals, or limit their use. Collect food scraps with sink strainers for disposal as trash or for composting; this includes coffee grounds.
 - v) DO NOT pipe sump pump output into your sewer line.
- d) Home Landscaping Limitations:
 - i) Do not pipe roof downspouts or any other rainwater drainage into the septic or dose tanks.
 - ii) Divert all downspouts or other rainwater drainage away from your entire septic system.
 - iii) Divert all downspouts or other rainwater drainage away from the sand/soil mound area.
 - iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and sand/soil mounds.

- v) Do not add additional soil fill on or near the sand/soil mound. This will limit air movement into the mound for effluent treatment and may cause system failure.
 - vi) Limit lawnmower traffic on the mound when soil is excessively wet.
 - vii) Do not plant any deep rooted plants on top of or near your mound sand/soil absorption area.
- e) Home Resident Responsibilities:
- i) Only flush or drain bio-degradable human waste, toilet paper, laundry and dish and personal care soaps, and water into your home septic treatment system.
 - ii) Severely limit disposal of food fats, oils, and greases. These will clog your system.
 - iii) Do not flush or drain undiluted bleach, cleansers, or drain cleaners.
 - iv) Do not flush any non-biodegradable items. For example, plastic items.
 - v) Do not flush or drain motor oils, greases, anti-freezes, cleaners, etc.
 - vi) Do not flush cat litter.
 - vii) Do not flush paper towels, facial tissue, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms.
 - viii) Do not flush prescription or over-the-counter drugs. Antibiotics and cancer treatment drugs are very harmful to your home septic treatment system.
 - ix) Do not dump solvents like dry cleaning fluid, pesticides, photographic chemicals, paint thinner down the drain.
 - x) Don't use septic tank additives.
 - xi) Don't drain a hot tub or large amounts of water into your septic system.
- f) Home Improvement/Expansion:
- i) Contact your county sanitarian before adding new driveways, decks, patios, pools, and outbuildings not identified on your original layout plan to make sure all setback distances from your septic system tanks and mound are met.
 - ii) Contact your county sanitarian before adding bedrooms and/or increasing your home occupancy. This may overload your septic system. Septic system expansion may be required to prevent failure.
- g) Homeowner Cautions:
- i) **DO NOT ENTER TANKS WITHOUT PROPER SAFETY EQUIPMENT.** Septic and dose tanks contain noxious and deadly gases.
 - ii) Pump or dose tanks and control boxes contain electrical components. **ELECTRICAL SHOCK HAZARD CAN EXIST WITH IMPROPERLY WIRED OR FAILING COMPONENTS.**
 - iii) Always keep tank fall guards in place, except for the time needed to replace components when safety equipment is present.
 - iv) Always replace and secure septic and dose tank lids after completing any inspection.
 - v) Any disconnection or removal of filters, screens, floats, alarms, and/or control panels will result in system failure.
 - vi) Contact your county sanitarian for allowed homeowner maintenance and repair of your septic system.

2) Inspection & Maintenance Requirements:

- a) Perform inspection & maintenance every six months.
- b) Review Baseline Operation and Maintenance Data:
 - i) The installer of your system set and recorded all float/liquid level heights, pump down times, cycles per day, and distal head pressures required in the design specifications.
 - ii) Review all previous six month inspection data.
- c) Identify any house additions, patios, pools, ponds, driveways, outbuildings, etc. added since the last inspection that may impact the home septic treatment system. Draw a sketch of these differences.
- d) Inspect bottom of house sewer main two-way cleanout tee
 - i) Check for clogging.
 - ii) Check for continuous clear water flows from the home.
- e) Evaluate Septic Tank & Pump Tank:
 - i) Measure sludge and scum depths; pump tank when cumulative thickness is 1/3 of the tank depth.
 - ii) Look for signs of clogging and tank damage.
 - iii) Look for signs of tank and riser leakage.
 - iv) Clean & inspect septic tank outlet filter.
 - v) Make sure lids are securely attached to risers.
- f) Evaluate Pump/Dose Tank & Pumping Equipment:
 - i) Measure sludge and scum depths; pump tank when septic tank is pumped.
 - ii) Look for signs of clogging and tank damage.
 - iii) Look for signs of tank and riser leakage.
 - iv) Inspect and assure proper functioning of floats or other liquid level controls.
 - v) Clean and inspect dose pump outlet filter. May not be present in some designs.
 - vi) Inspect and assure proper condition and functioning of the effluent pump.
 - vii) Make sure lids are securely attached to risers.
- g) Evaluate Drain Fields:
 - i) Inspect all soil and sand inspection tubes plus maintenance ports for surface condition, surface color, and depth of ponded effluent, if present.
 - ii) Look for surfacing effluent.
 - iii) Look for excessively moist soil at mound sides and toe slopes.
 - iv) Identify appropriate vegetative cover.
 - v) Look for surface disturbances, compaction, abnormal settling, and erosion.
 - vi) Identify any deep rooted vegetation recently planted near the mound area.
- h) Evaluate Laterals:
 - i) Flush all distribution laterals, one at a time. Monitor flush output.
 - ii) Record new distal head pressures for all laterals.
 - iii) Perform additional lateral and orifice cleaning if lateral distal head pressures are not equal.
 - iv) Adjust lateral distal head pressures if needed after additional cleaning.
- i) Measure Pump Run Time and/or Drawdown:
 - i) For demand dosed systems, verify original design effluent drawdown depth.

- ii) For time dosed systems, verify original design pump run time.
- iii) For systems with a cycle counter or run time meter, record the current values.
- j) Test Alarms:
 - i) Evaluate proper function of low liquid level alarm.
 - ii) Evaluate proper function of high liquid level alarm and warning light.

3) Findings & Repairs:

- a) All findings during inspection and maintenance must be recorded. See attached "Mound System Inspection and Maintenance Record".
- b) Any system adjustments must be recorded.
- c) Any system deficiencies, worn out components, and/or damage must be repaired to return your septic system to a properly functioning state.
- d) All repairs must be recorded.

Mound System Inspection and Maintenance

System Owner: _____
 System Address: _____
 System Address: _____

Inspection Date: _____
 Inspector Name: _____
 Inspector Phone Number: _____

Septic Tank Condition:	Scum depth: Sludge depth: Filter cleaned?
Dose Tank Condition:	Sludge present?
Dose Pump Condition:	
Controls Condition:	Level controls functional? Alarm functional? Control box functional?

Mound Area Evaluation:

Landscape Changed?		Signs of Surface Ponding?		Mound Damaged?		New Construction Area?	
yes	no	yes	no	yes	no	yes	no

Soil Inspection Tubes:

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

Sand Inspection Tubes:

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

Cleanout Ports:

	Port 1		Port 2		Port 3		Port 4	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

	Port 5		Port 6		Port 7		Port 8	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

Comments/Sketches: