### SEWAGE TREATMENT SYSTEM (STS) Design Plan:

When referring to codes in this design plan use HCPH Resolution A-2015: Policies And Standards Pursuant To Ohio Administrative Code Section 3701-29; Sewage Treatment System Rules.

For installation instructions, materials, system devices and components and products listed in this design plan use manufacturer's specs, Hamilton County Installers Manual, and contact designers of Smallwood Septic Solutions for information. These Plans and 3701-29 Shall Dictate Design Specifics. HCPH Installation Manual Shall be Used for Procedures and to Supplement Information Not Otherwise Specified. It is highly recommended to have a copy of the Hamilton County Installation Manual during installation. Where conflicts exist, consult Smallwood Septic Solutions for guidance before proceeding.

#### Definitions:

"3701-29-# #" refers to the Ohio Administrative Code. "HCPH" = Hamilton County Public Health. "IBI" = The Inspection Bureau, Inc. Required for Electrical inspection.

- "LPP" = Lower Pressure Pipe...
- "O&M" = Operations and Maintenance
- "ODH" = Ohio Department of Health.
- "Section" refers to the HCPH Installer's Manual.
- "STS" = Sewage Treatment System.
- "VSD" = Vertical Separation Distance.

# Design Detail and Rationale

This design is for a Existing 2 bedroom home with a Daily Design Peak Flow of 240 GPD. The peak flow should not be reached on a routine basis. Average flows of 144 GPD can be accommodated routinely with typical residential wastewater strength as specified in Ohio Administrative Code (OAC) 3701-29 for households.

The seasonal water table is at 12" and flow restrictive layer is 23" from the ground's surface.

Conditions require an 18" Vertical Separation Distance with 8" In Situ Soil. (see attached calculation sheet) Owner chose an Jet J500-PLT aerobic treatment unit which supplies 1' Soil Depth Credit and an Infiltrator IM1060 Single Compartment Dosing Tank with a time-dosed Control Panel to an OSU Sloping Site Mound with upslope interceptor drain and downslope perimeter drain.

The OSU Sloping Site Mound minimum design length and width are calculated based on the worst soil conditions under the soil absorption system using OSU Bulletins 813 and 829. The loading rates are selected from tables in the Ohio Administrative Code.

The Soil Loading Rate for Silt Loam with Weak Sub-Angular Blocky structure is 0.6 GPD/sq.ft for pretreated effluent. The Linear Loading Rate for Silty Clay Loam with Moderate Sub-Angular Blocky structure with an infiltrative distance of 12" and 3% slope (as determined on-site) is 2.7 GPD/In.ft.

The OSU Sloping Site Mound minimum design length is 240 GPD / 2.7 Gal/In.ft.= 88.8 feet long.

Total mound dimensions including soil cover are 16.73 feet wide by 108.24 feet long. Total sand / basal area is 6.00 feet wide by 102.24 feet long.

# Changes and Use of This Design

It is the responsibility of the contractor to verify that the system can be installed as designed, based on their preliminary lay-out of the job. It is the responsibility of the installer and property owner to inform the designer of any conditions on the site, or otherwise, that may affect the installation, operation or maintenance of the STS, including site disturbances that may affect the performance of a soil absorption component. If design changes are needed, redesign fees may apply. The designer will be available to make adjustments.

#### System Protection

Property owner and installer are responsible to protect the soil absorption areas from disturbance. Keep wheeled traffic off the soil absorption area. It is the owner and installation contractor's responsibility to locate underground utilities. If utilities interfere with the designed system, construction shall not proceed without approval from HCPH and Designer.

# System Cost Information

The property owner has been informed of system options and has been briefed on cost factors. According to 3701-29-10(B)(5), designers of STS systems must include approximate installation costs and operational costs of STS options to assist the homeowner in the selection of the STS options. SCS Engineers estimates costs as follows :

# \$33,000 - \$40,000 Installation cost\*

\$800 annual operational cost\*

\*This is a general estimate of costs for this system. It is not a bid to install or service the STS. Contact a licensed installer and service provider or distributor for actual bids.

- SCS Engineers is available to make adjustments and address concerns, as needed.
- O&M requirements: All system devices and components must be operated and maintained in accordance with the Ohio Department of Health (ODH) product approval, Hamilton County Public Health Operation Permit Terms and Conditions. Telemetry and associated phone service must be active for the life of the STS. System devices and components must be installed per ODH product approval, Hamilton County Installation Manual and this design. Where conflicts exist, consult Designer for guidance before proceeding. See reference section on this sheet for web-site information to obtain O&M Instructions. Means of O&M is accessible via the driveway and is within a reasonable distance for a standard truck.
- Obstructions (if any) will be marked on site plan with the word "obstructions", and will have notes describing the 3) obstructions and the proper way to avoid them.
- This plan is the sole ownership of the designer and the homeowner at time of payment. This design may not be 4) altered, changed, used or manipulated without expressed written approval of Smallwood Septic Solutions. Contact Smallwood Septic Solutions if changes are needed.
- 5) For further information not shown in these plans, refer to reference section on this sheet for web-sites and contact information. Be sure to address any other questions to HCPH during pre-construction meeting.
- No unapproved connections or clear water connections (downspouts, pool/spa water, footer tiles, cisterns, etc) shall be connected to this STS.
- 7) This design is for a non-discharging system.
- STS is sited on lot, with 10' and 50' isolation distances marked on scaled drawing as per 3701-29-06. STS is not in a floodway, wetland or within 100 year flood plain and sanitary sewers are not accessible.
- Soil test provided by Dan Michael, Clear Creek Environmental. 9)
- 10) Soil report describes the limiting condition and is noted.
- 11) STS was designed with adequate depth to limiting layer.
- 12) STS was designed with adequate depth to restrictive layer.
- 13) Soil test indicates soil horizons and depths.
- 14) Soil test indicates soil texture and structure of each horizon.
- 15) Soil test indicates estimated slope. Vertical scale shows actual slope.
- Basal rate and linear loading rate are based off soil report and are appropriate for soils utilized. 16)
- 17) Soil classifications are noted on report.
- 18) If there is highly permeable soil present in report, it will be noted in design. Otherwise N/A.

#### Disclaimer

This plan set is not a site plan to be used for constructing anything other than the Sewage Treatment System. If an accurate legal site plan is required, contact a professional surveyor. This plan offers no guarantees for site stability. If site stability may be an issue, a geotechnical engineer should be consulted. Plan is only as accurate as the information provided by the property owner to the designer. Easements, right-of-ways, hidden objects or information not communicated to the designer invalidates the design. It is the property owner's responsibility to review this plan and information provided to verify all site conditions and design assumptions are correct. If conflicts are found or additional information must be supplied, the owner shall contact the designer and installation shall not proceed until further approval is granted.

#### References for Sewage Treatment System Design, Installation, Materials and O&M:

- Dan Michael, Clear Creek Environmental, 1-800-299-4257.
- Jet Wastewater Treatment Solutions Tristate Jet. 513-896-4538. https://bit.ly/2QDwe8g
- Infiltrator, 1-800-221-4436, www.infiltratorwater.com
- Hamilton County. 513-946-7800. www.hamiltoncountyhealth.org
- Electric Inspections. IBI. 513-381-6080 •
  - Ohio Department of Health. 614-644-7551. www.odh.ohio.gov
  - Orenco. (800) 348-9843. www.orenco.com
  - Polylok www.polylok.com (888) 284-8514 •
  - SIM/TECH Filter. 888-999-3290. www.simtechfilter.com

Designed By:

SCS Engineers 2060 Reading Road #200 Cincinnati, OH 45202

Draft Plot Date: February 16, 2022 Site Visited: January 31, 2017

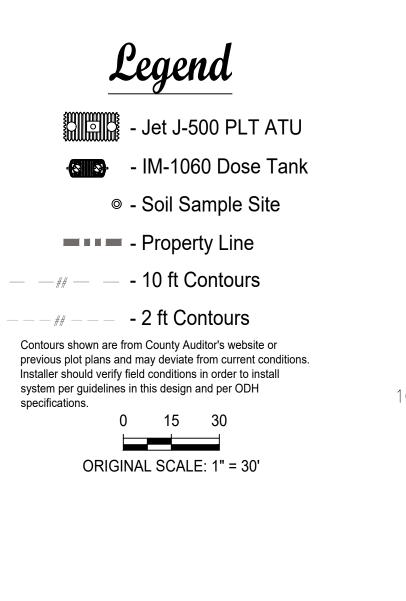


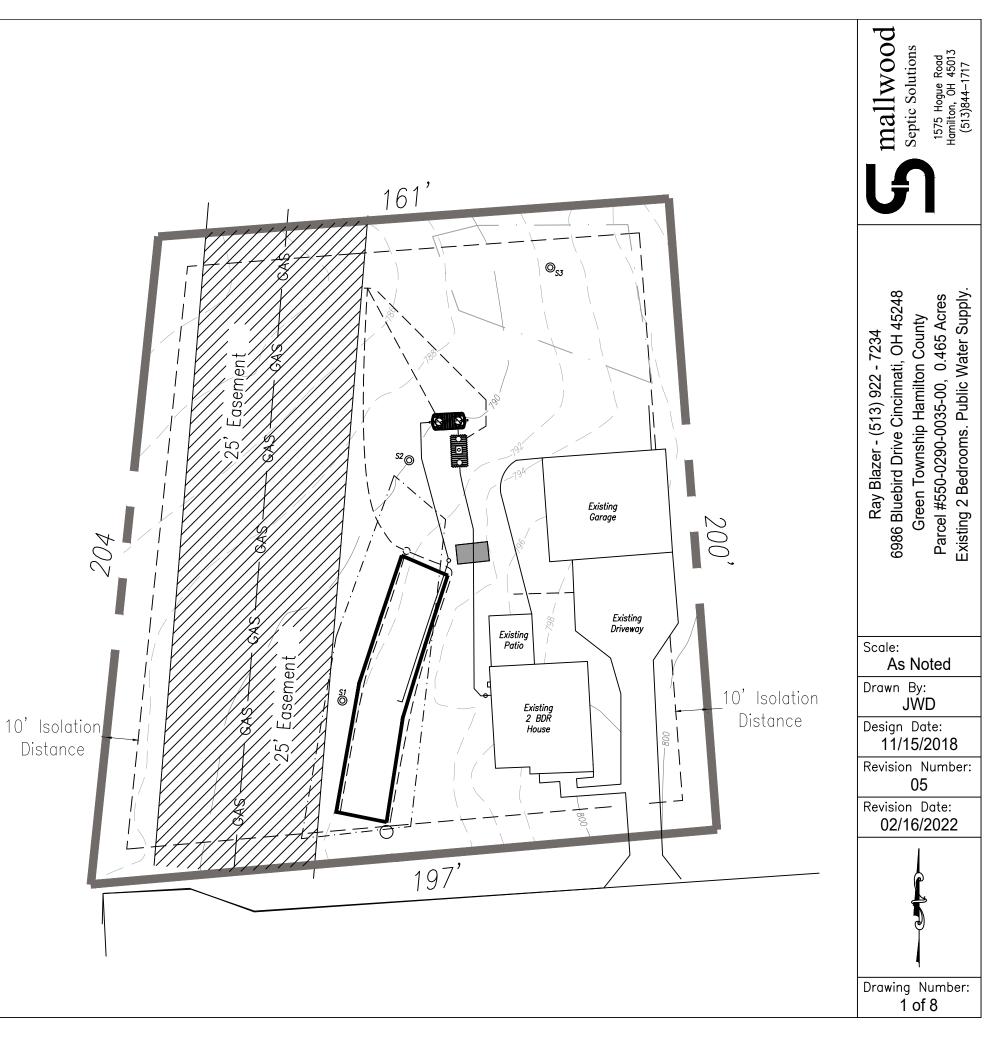
Septic Solutions 1575 Hogue Road Hamilton, OH 45013 (513)844-1717			
Ray Blazer - (513) 922 - 7234 6986 Bluebird Drive Cincinnati, OH 45248 Green Township Hamilton County Parcel #550-0290-0035-00, 0.465 Acres Existing 2 Bedrooms. Public Water Supply.			
Scale: As Noted Drawn By: JWD Design Date: 11/15/2018			
Revision Number: 05 Revision Date: 02/16/2022 Drawing Number:			

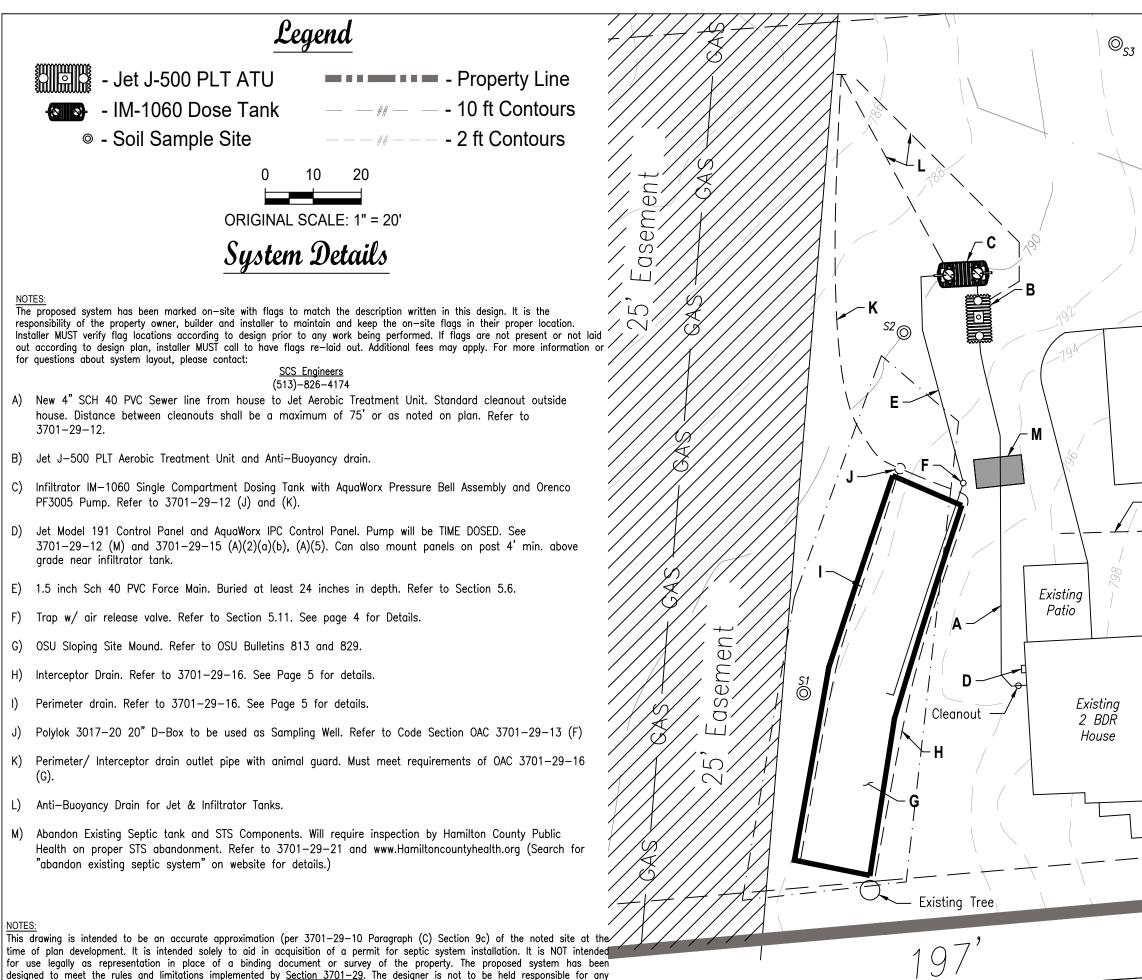
*Troperty View* 

#### NOTE:

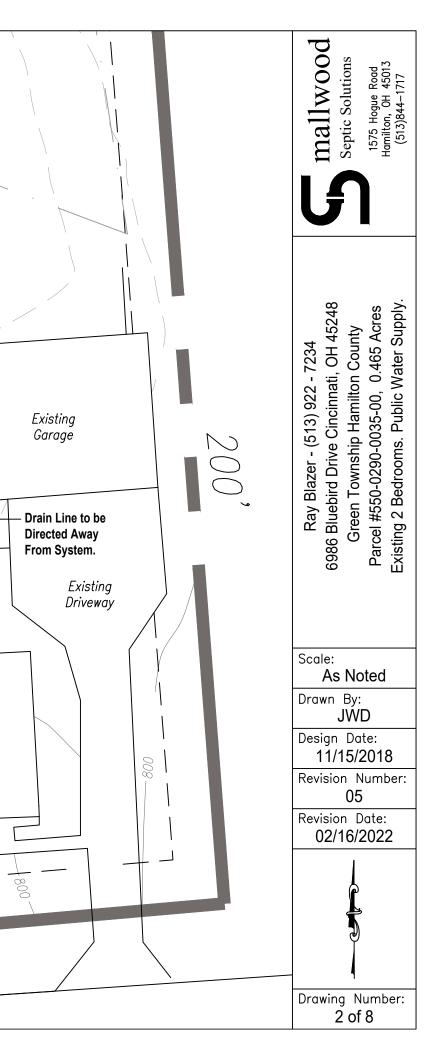
This drawing is intended to be an accurate approximation (per 3701-29-10 Paragraph (C) Section 9c) of the noted site at the time of plan development. It is intended solely to aid in acquisition of a permit for septic system installation. It is NOT intended for use legally as representation in place of a binding document or survey of the property. The proposed system has been designed to meet the rules and limitations implemented by <u>Section 3701-29</u>. The designer is not to be held responsible for any reason due to system expectations not being met. The information presented in this design is the property of SCS Engineers and will not be used without expressed written consent stating as such.

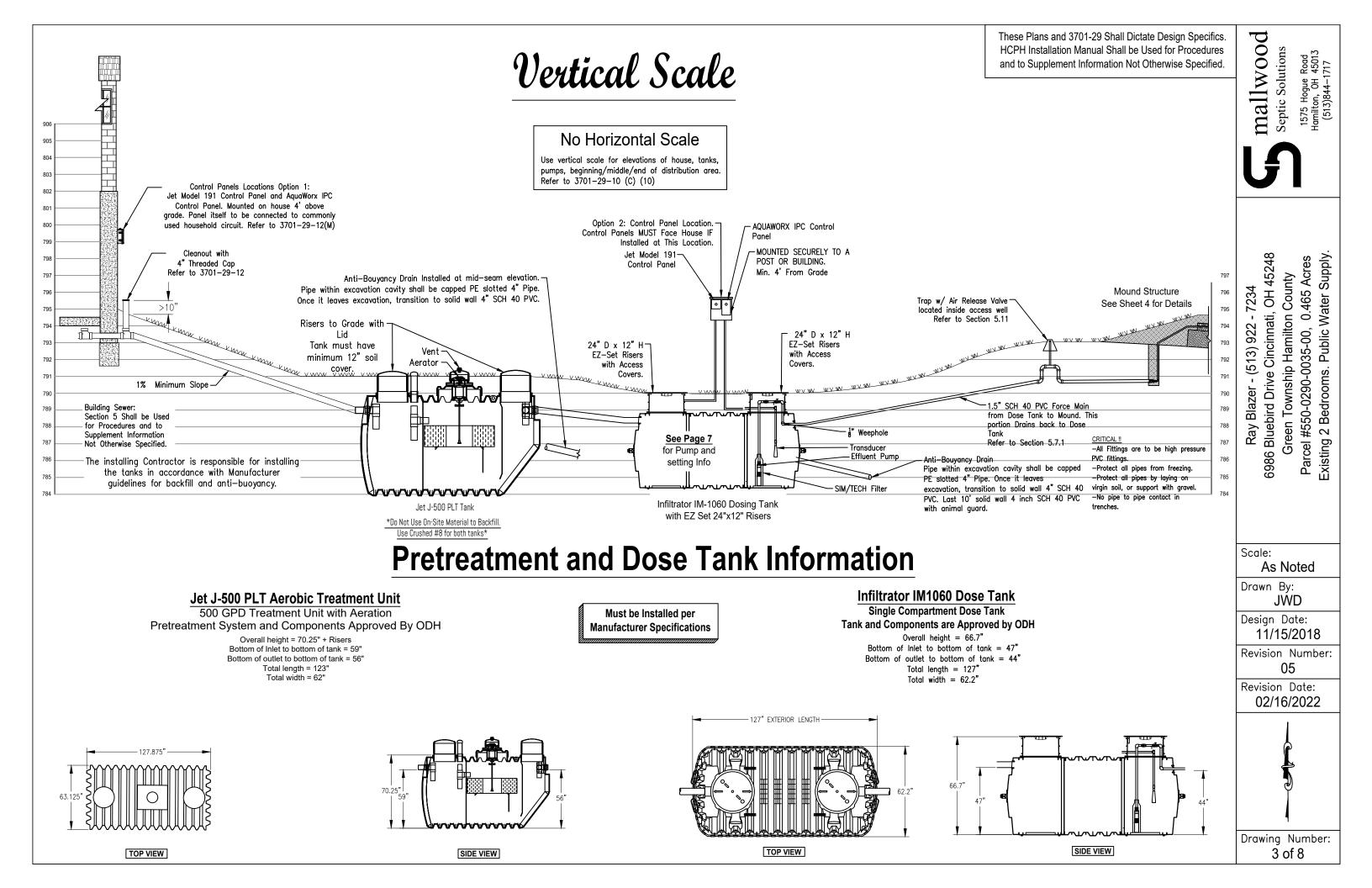


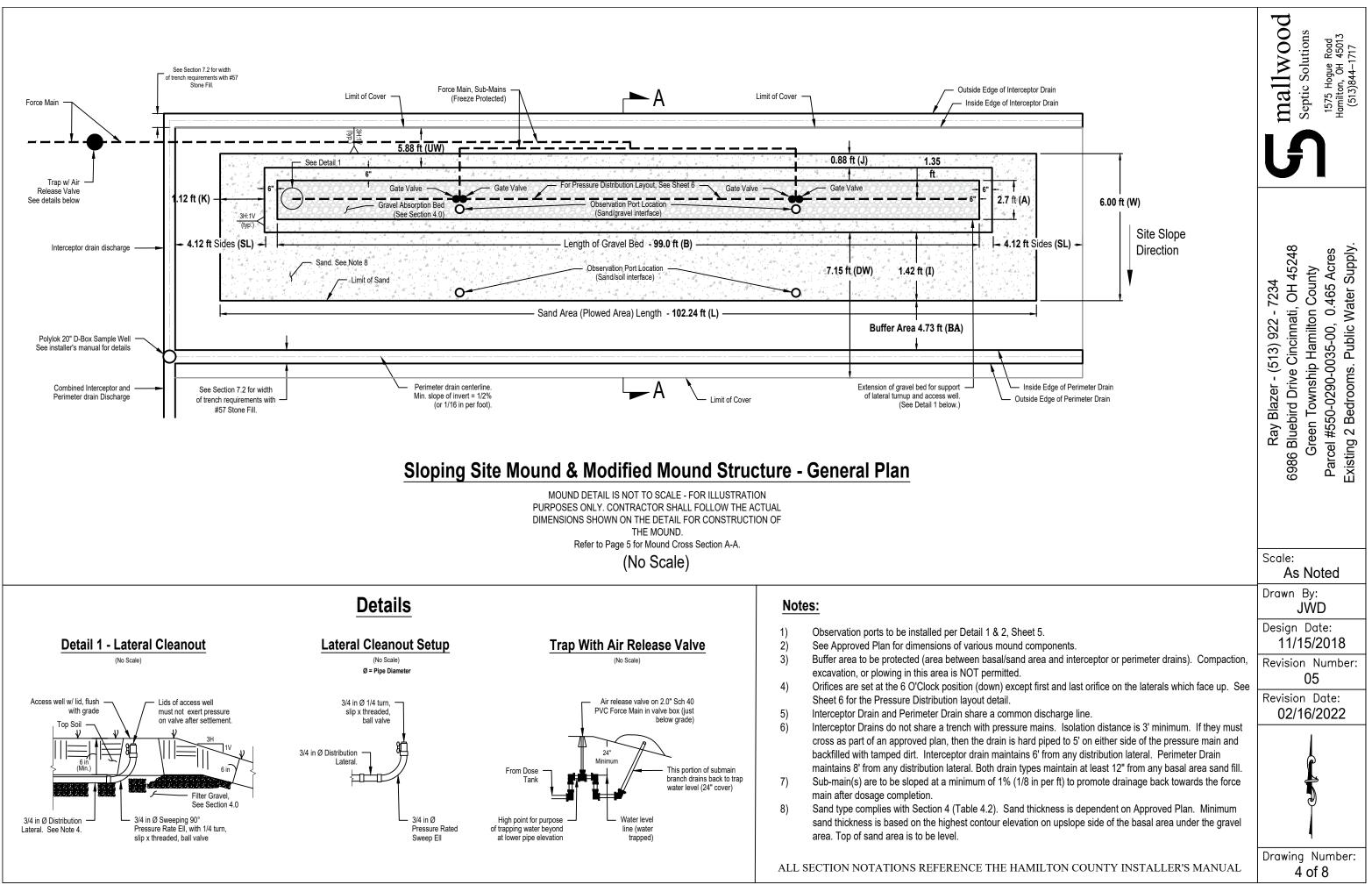


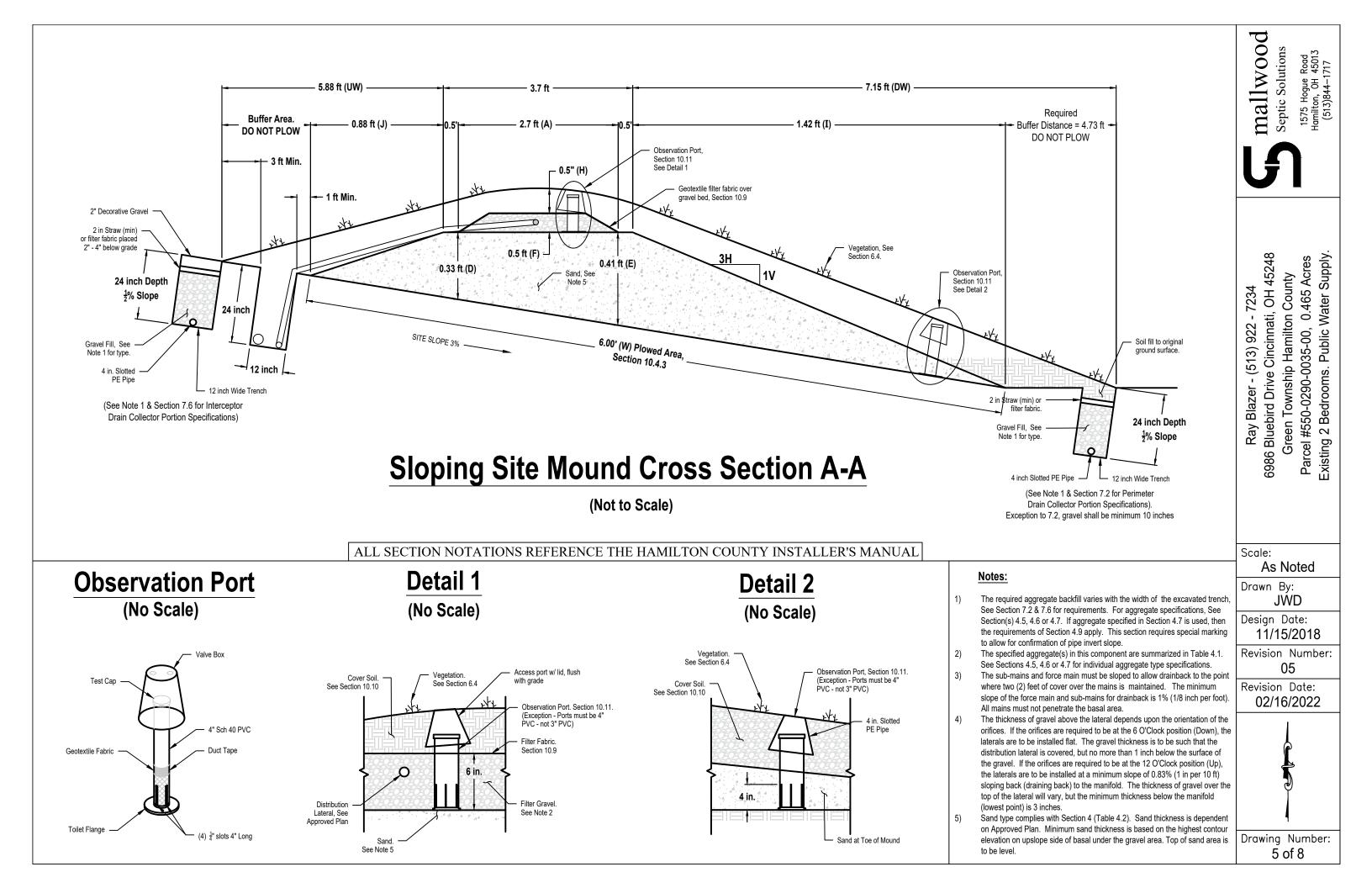


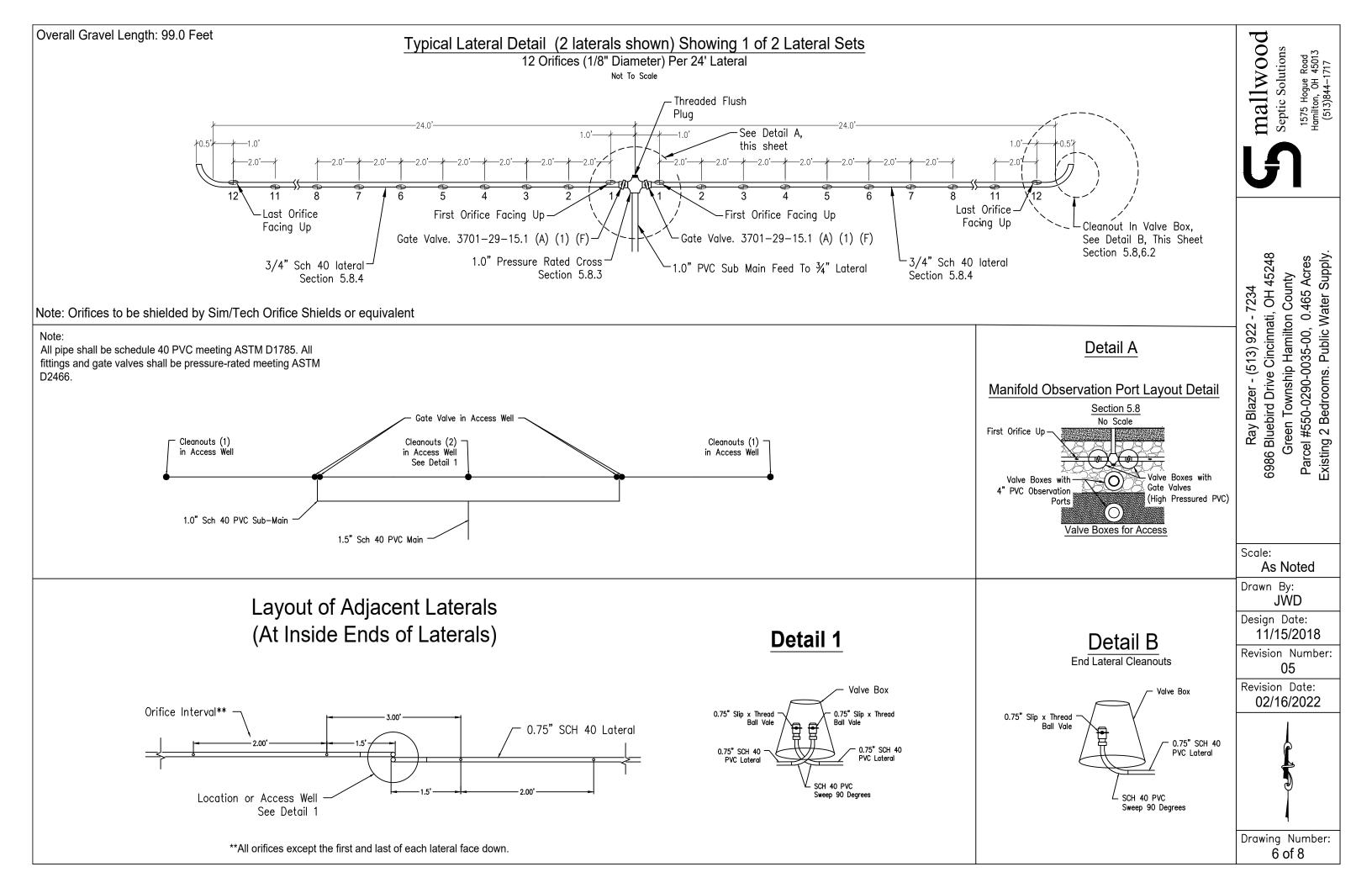
reason due to system expectations not being met. The information presented in this design is the property of SCS Engineers andwill not be used without expressed written consent stating as such.







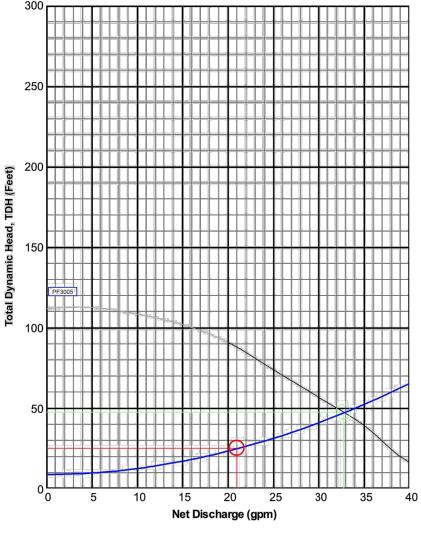




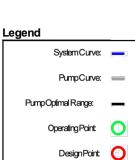
#### - Single Family Residence Project

#### Parameters

	Discharge Assembly Size	1.50	inches	
	TransportLength	90	fæt	
	TransportPipeClass	40		
	TransportLineSize	1.50	inches	
	Distributing ValveModel	None		
	Max Elevation Lift	9	feet	
	Manifold Length	30	feet	
	Manifold Pipe Class	40	1001	
	Manifold Pipe Size	1.00	inches	
	Number of Laterals per Cell	4		
	Lateral Length	24	feet	
	Lateral Pipe Class	40	ioot	
	Lateral Pipe Size	0.75	inches	
	Orifice Size	1/8	inches	
	Orifice Spacing	2.0001	feet	
	Residual Head	5	fæt	
	FlowMeter	None	inches	
	Fitting Friction Losses	5	feet	
	Thung Theorem	5	66	
	Colordations			
	Calculations			
	Minimum Flow Rate per Onlice	0.43	gpm	
	Number of Orifices per Zone	48		
	Total FlowRateperZone	20.9	gpm	
	Number of Laterals per Zone	4		
	% Flow Differential 1st/Last Orifice	3.9	%	
	Transport Velocity	3.3	fps	
	Frictional Head Losses			
	Loss through Discharge	1.3	feet	
	Loss in Transport	24	feet	
	Lossthrough Valve	0.0	fæt	
	Loss in Manifold	1.8	feet	
	Loss in Laterals	0.5	feet	
	Loss through Flowmeter	0.0	feet	
	FittingFrictionLosses	5.0	feet	
	Pipe Volumes			
	VolofTransportLine	9.5	gals	
	VolofManifold	1.3	gals	
	Vol of Laterals per Zone	27	gals	
	Total Volume	13.5	gals	
			5	
Minimum Pump Requirements				
	Design Flow Rate	20.9	gpm	
	Total Dynamic Head	25.1	feet	

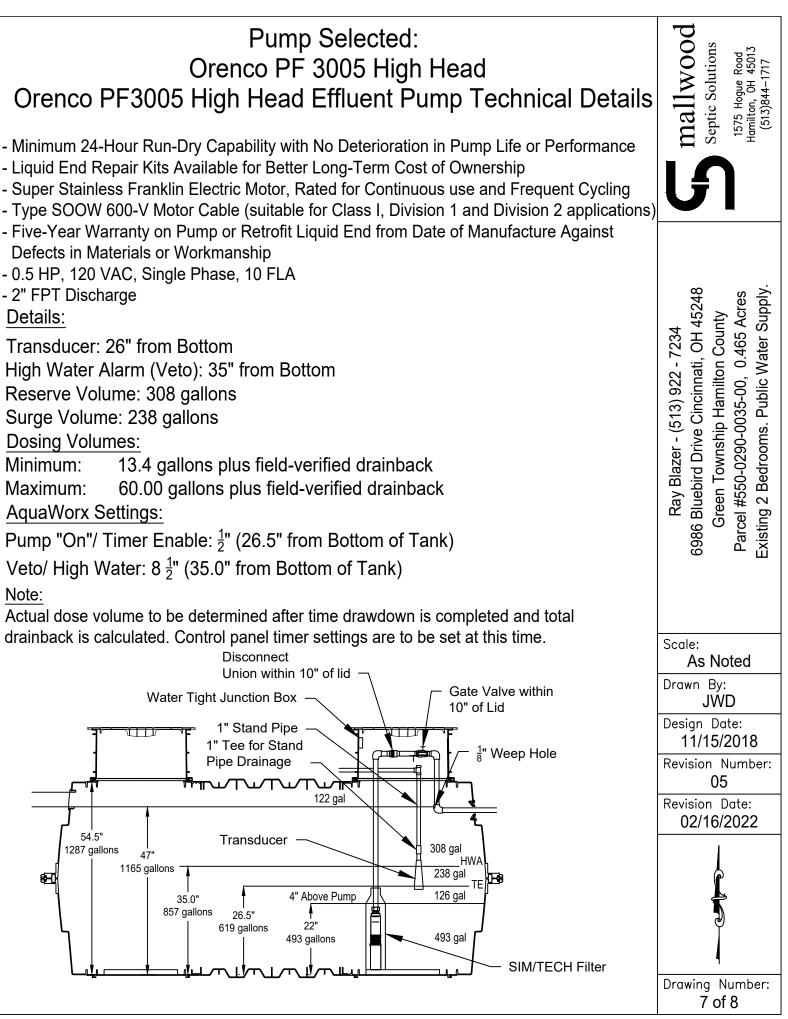






Defects in Materials or Workmanship 0.5 HP, 120 VAC, Single Phase, 10 FLA 2" FPT Discharge Details: Transducer: 26" from Bottom High Water Alarm (Veto): 35" from Bottom Reserve Volume: 308 gallons Surge Volume: 238 gallons **Dosing Volumes:** Minimum: Maximum: AquaWorx Settings:

Veto/ High Water:  $8\frac{1}{2}$ " (35.0" from Bottom of Tank) Note:





#### Protecting Your Septic System

Learn about your household sewage system. Obtain and keep a sketch of the system with a detailed record of repairs, pumping, inspections, and other maintenance activities.

- Have your household sewage system inspected and maintained regularly.
- Keep your septic tank cover accessible for inspection and cleaning. Install risers if necessary.
  Call a registered sewage system contractor or your local health department if you
- Always obtain required permits when making or allowing repairs to your system.
- Divert sources of water, like roof drains, footer drains, and sump pumps away from the system.
- Excess water saturates the soil leading to system failure.
  Keep a good vegetative cover over the system in order to help remove excess water and
- prevent erosion.
- Do Not allow anyone to drive or park anything over any part of the septic system.
- Never dig or build anything over your system. This includes hard surfaces such as concrete or asphalt.
- Conserve water to avoid overloading the system. Promptly repair leaky faucets or toilets, and install water saving devices.
- Don't use septic tank additives. These products usually do not help and can be harmful to the operation of your system.
- Eliminate or reduce the use of a garbage disposal. The additional waste produced by a garbage disposal will lead to extra maintenance requirements.
- Don't use you toilet or disposal as a trash can. Coffee grounds, dental floss, disposable diapers, kitty litter, sanitary napkins, tampons, cigarette butts, condoms, fat, grease, oil, automotive fluids and paper towels should never be disposed of in the system.
- Never pour chemicals or cleaners such as paints, varnishes, thinners and pesticides down the drain/toilet. Harsh chemicals can kill beneficial bacteria that treat wastewater.
- Never climb down into a septic tank. The natural treatment process in septic tanks produces toxic gases that can kill.

