



Agri-Waste Technology, Inc.
501 N Salem Street, Suite 203, Apex, NC 27502
agriwaste.com | 919.859.0669

IP/CA Acknowledgement Form

Acknowledgement of subsurface wastewater evaluation and design by **Agri-Waste Technology, Inc.** for **6917 Fiddleman Way, Raleigh, NC 27613** for issuance of an IP and CA.

For Improvement Permit (IP) issuance:

“The LSS/LG evaluation(s) attached to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3).”

For Construction Authorization (CA) issuance:

“The plans or evaluations attached to this application are to be used to issue a Construction Authorization in accordance with G.S. 130A-335(a2), (a5), and (a6).”

The LSS evaluation attached to this application was used to produce and design a subsurface wastewater septic system for permitting to obtain an IP and CA in accordance with **G.S. 130A-335(a2), (a3), (a5), and (a6).**

Owner: _____

Owner's Representative: _____

Date: _____

CONSTRUCTION AUTHORIZATION FOR G.S. 130A-335(a2)/SL2022-11

PIN/Lot Identifier: 0880697238Issued To: Jonathan ChunProperty Location: 6917 Fiddleman Way, Raleigh, NC 27613AOWE/PE Plans/Evaluations Provided: Yes ☒ No ☐ If yes, name and license number of AOWE/PE: Jeff Vaughan, 10003EFacility Type: Single Family Residence☒ New ☐ Expansion ☐ Repair System Relocation ☐Basement? ☐ Yes ☒ No Basement Fixtures? ☐ Yes ☒ NoType of Wastewater System** Gravity-Accepted (Initial) Pressure Manifold-H-PPBPS (Repair)Design Daily Flow: 480 GPD Wastewater Strength: ☒ domestic ☐ high strength ☐ industrial processSession Law 2014-120 Section 53, Engineering Design Utilizing Low-flow Fixtures and Low-flow Technologies? ☐ Yes ☐ No**Installation Requirements/Conditions**Septic Tank Size: 1,200 gallons Total Trench/Bed Length: 400 feet Trench/Bed Spacing: 9 feet on centerDrainfield square footage: 1,200 Trench/Bed Width: 36 inches LTAR: 0.3 gpd/ft²Soil Cover: 6+ inches Slope Adjusted Maximum Trench/Bed Depth: 14 inchesAggregate Depth: _____ inches above pipe _____ inches below pipe 12 inches totalPump Tank Size (if applicable): _____ gallons Requires more than 1 pump? ☐ Yes ☒ No

Pump Requirements: _____ ft. TDH vs. _____ GPM Grease Trap Size (if applicable): _____ gallons

Distribution Method: ☐ Serial ☒ D-Box or Parallel ☐ Pressure Manifold(s) ☐ LPP ☐ Other: _____Artificial Drainage Required: Yes ☐ No ☒ If yes, please specify details: _____**Legal Agreements** (If the answer is "Yes" to any type of legal agreements, please attach a copy of the agreement.)Multi-party Agreement Required [.1937(h)]: Yes ☐ No ☒Easement, Right-of-Way, or Encroachment Agreement Required [.1938(j)]: ☐ Yes ☒ NoDeclaration of Restrictive Covenants: ☐ Yes ☒ No****If applicable:***I understand the system type specified is different from the type specified on the application. I accept the specifications of this permit.*

Owner/Legal Representative Print Name: _____

Owner/Legal Representative Signature: _____ Date: _____

Pre-Construction Conference Required: Yes ☐ No ☒

Conditions: _____

The construction and installation requirements of Rules .1950, .1952, .1954, .1955, .1956, .1957, .1958, and .1959 are incorporated by reference into this permit and shall be met. Systems shall be installed in accordance with the attached system layout.

AOWE/PE Print Name: Jeff VaughanAOWE/PE Signature: Date: 05/16/2023

This AOWE/PE submittal is pursuant to and meets the requirements of G.S. 130A-335(a2) and (a5).

See attached site sketch



This Section for Local Health Department Use OnlyInitial submittal received: _____ by _____
Date Initials

Permit Number: _____

G.S. 130A-335(a6) states the following: 'If a local health department fails to act on an application for a construction authorization submitted pursuant to subsection (a5) of the section within 10 business days of receipt of a complete application, the local health department shall issue the construction authorization.'

In accordance with G.S. 130A-335(a5) the construction authorization application is:

☐ Incomplete (If box is checked, information in this section is required.)The following items are missing: _____
_____Copies of this were sent to the AOWE/PE and the Owner on _____
Date

State Authorized Agent: _____ Date: _____

☐ Denied (See attached report.)Copies of this were sent to the AOWE/PE and the Owner on _____
Date

State Authorized Agent: _____ Date: _____

☐ Complete

State Authorized Agent: _____ Date of Issuance: _____

This Construction Authorization is issued pursuant to G.S. 130A-335(a2), (a5), and (a6) using the signed and sealed plans or evaluations attached here. This Construction Authorization is subject to revocation if the site plan, plat, or the intended use changes, or if information submitted in the application was falsified, inaccurate or misleading. The Construction Authorization shall not be affected by a change in ownership of the site. This Construction Authorization is subject to compliance with the provisions of the Laws and Rules for Sewage Treatment and Disposal and to the conditions of this permit. The location and identification of all property lines, easements, water lines, and other appropriate utilities shall be the responsibility of the owner. Final landscaping shall be constructed to divert water and establish vegetative cover.

The Department, the Department's authorized agents, and the local health departments shall be discharged and released from any liabilities, duties, and responsibilities imposed by statute or in common law from any claim arising out of or attributed to plans, evaluations, preconstruction conference findings, submittals, or actions from a person licensed pursuant to Chapter 89C of the General Statutes as a licensed engineer or a person certified pursuant to Article 5 of Chapter 90A of the General Statutes as an Authorized On-Site Wastewater Evaluator in GS 130A-335(a2), (a5), and (a7). The Department, the Department's authorized agents, and the local health departments shall be responsible and bear liability for their actions and evaluations and other obligations under State law or rule, including the issuance of the operations permit pursuant to GS 130A-337.

Construction Authorization Expiration Date: _____

See attached site sketch

CHUN - LSS PERMIT

Project Location	6917 Fiddleman Way
	Raleigh, NC 27613
	Wake County
	PIN: 0880697238
Project Owner	John Chun
	6917 Fiddleman Way
	Raleigh, NC 276113
	919-624-8593
	sugichun@gmail.com
Project Consultant	Jeff Vaughan, L.S.S
	(919) 367-6313
	Trent Bostic
	(919) 367-6322
	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
	Four (4) Bedroom, 480 gpd
	Accepted Gravity Primary
	PM Repair w/ T&J Panel



VICINITY MAP

Sheet Index

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



AWT
Engineers and Soil Scientists
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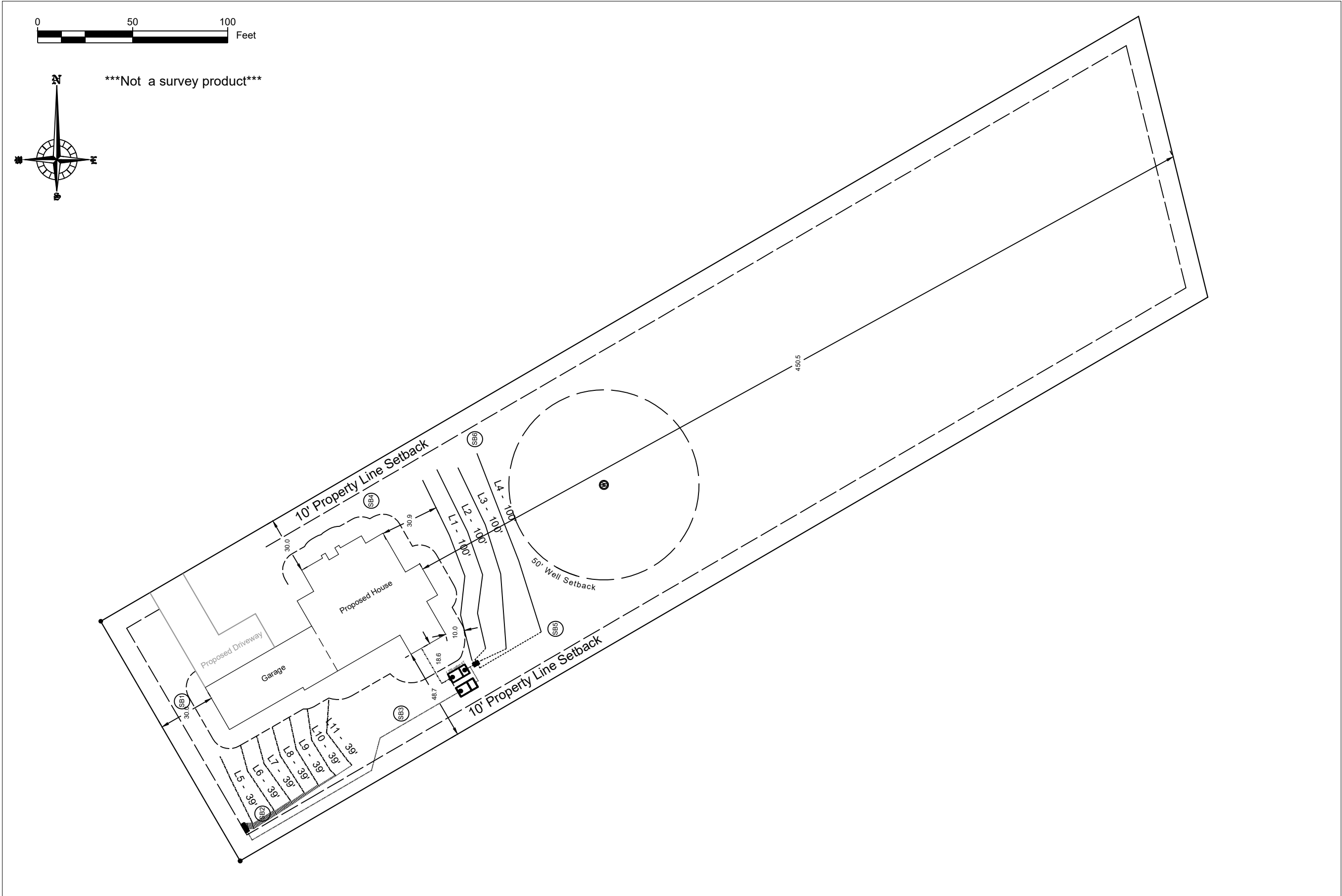
John Chun
Chun - LSS Permit

Project Location:
6917 Fiddleman Way
Raleigh, NC 27613
Wake County
PIN: 0880697238

Project Owner:
John Chun
6917 Fiddleman Way
Raleigh, NC 276113
919-624-8593
sugichun@gmail.com

For
Review
Only

REV.	ISSUED DATE	DESCRIPTION
SHEET TITLE Cover Sheet		
DRAWN BY: T. Bostic	CREATED ON: 05/16/2023	
REVISED BY: ####	REVISED ON: ####	
RELEASED BY: ####	RELEASED ON: ####	
DRAWING NUMBER WW-1		



For
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Only

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE

Property Layout

DRAWN BY: T. Bostic	CREATED ON: 05/16/2023
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER

WW-2

General Drainfield Notes:

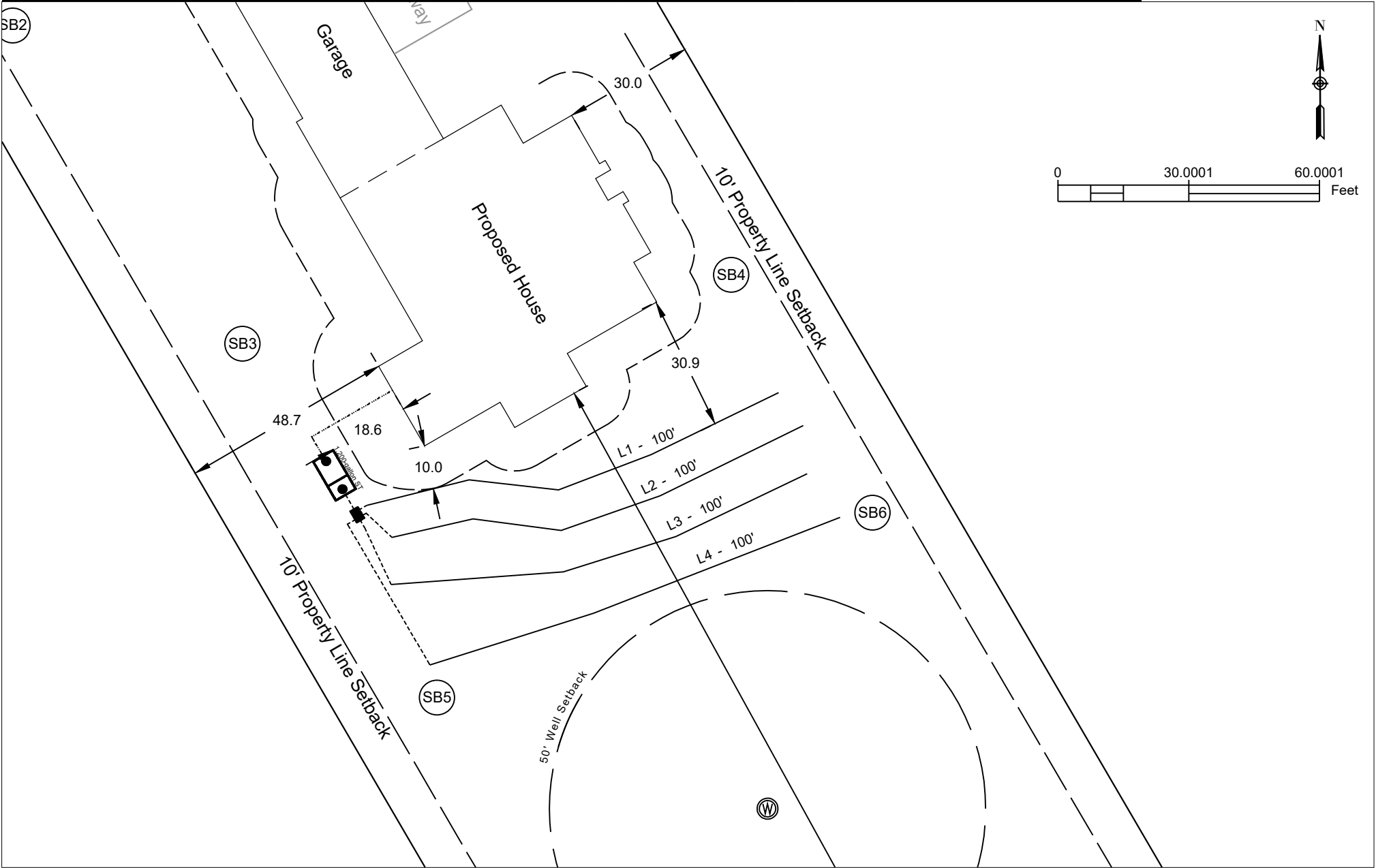
- 1. Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
- 2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
- 3. Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
- 4. In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
- 5. Supply lines shall be installed with a minimum of 18" cover.
- 6. The trenches shall be backfilled appropriately so that no low areas are present.
- 7. Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate
- 8. 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.

Installation Notes:

- Contractor to adjust tank placements as necessary to maintain:
- 1. 25' downslope/15' sideslope/10' upslope setback from foundation drain
 - 2. Min. 12" cover over Septic Tank (Not to exceed 36")
 - 3. Min. 18" cover over pipes
 - 4. Min. 2% grade on gravity pipe from house to Septic Tank

Note:
Primary distribution is parallel w/ D-box.

1	Layout Line	yellow	409.0	100	100.0
2	Layout Line	pink	408.0	100	100.0
3	Layout Line	purple	407.0	100	100.0
4	Layout Line	blue	405.0	100	100.0



1 System Layout
SOURCE: Agri-Waste Technology, Inc.

For
Review
Only

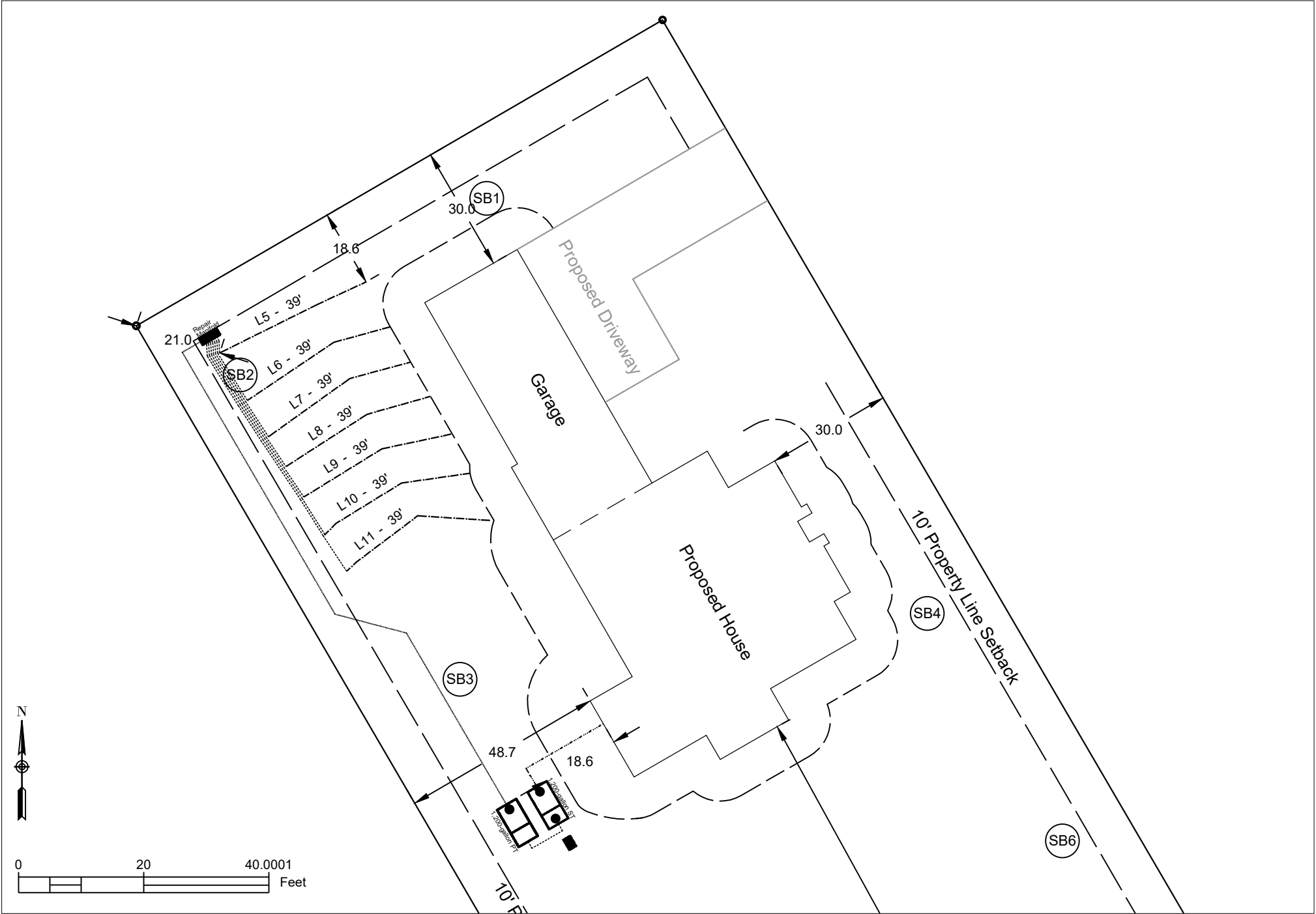
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SHEET TITLE		
Primary Layout		
DRAWN BY:		CREATED ON:
T. Bostic		05/16/2023
REVISED BY:		REVISED ON:
####		####
RELEASED BY:		RELEASED ON:
####		####
DRAWING NUMBER		
WW-3		

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 manufacturer's instructions.
5. Supply lines shall be installed with a minimum of 18" cover.
6. The trenches shall be backfilled appropriately so that no low areas are present.
7. 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.

DRAINFIELD INFO. - Repair						
Proposed Type of System/Distribution:			Pump to Pressure Manifold using PPBPS, Horizontal			
Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
5	blue	39	1/2in SCH 80	5.48	0.141	0.586
6	orange	39	1/2in SCH 80	5.48	0.141	0.586
7	yellow	39	1/2in SCH 80	5.48	0.141	0.586
8	pink	39	1/2in SCH 80	5.48	0.141	0.586
9	purple	39	1/2in SCH 80	5.48	0.141	0.586
10	blue	39	1/2in SCH 80	5.48	0.141	0.586
11	orange	39	1/2in SCH 80	5.48	0.141	0.586
Total		273	Total	38.36	Avg.	0.59

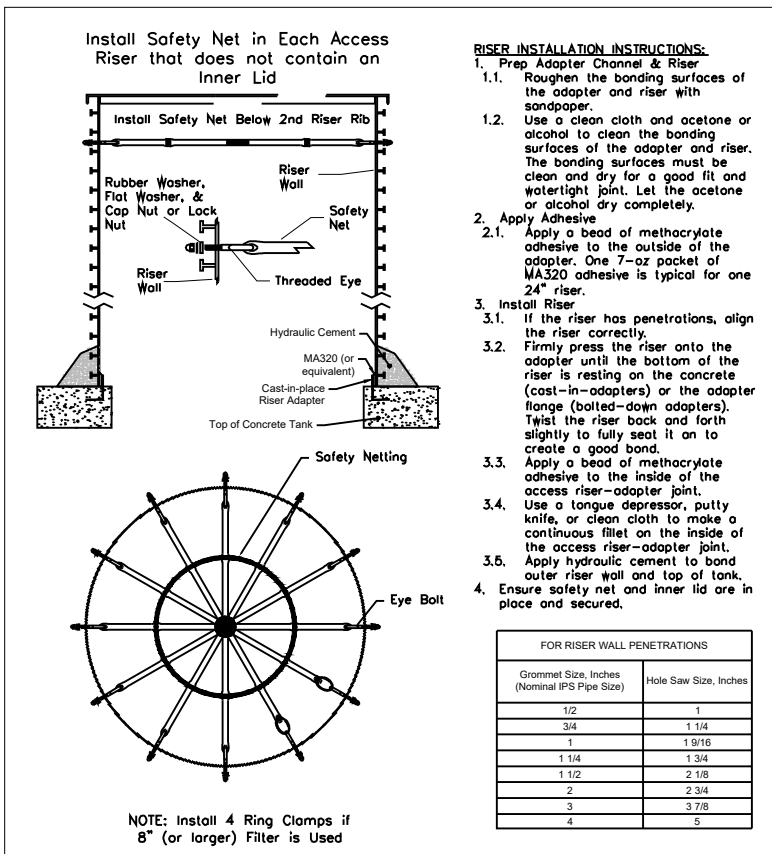
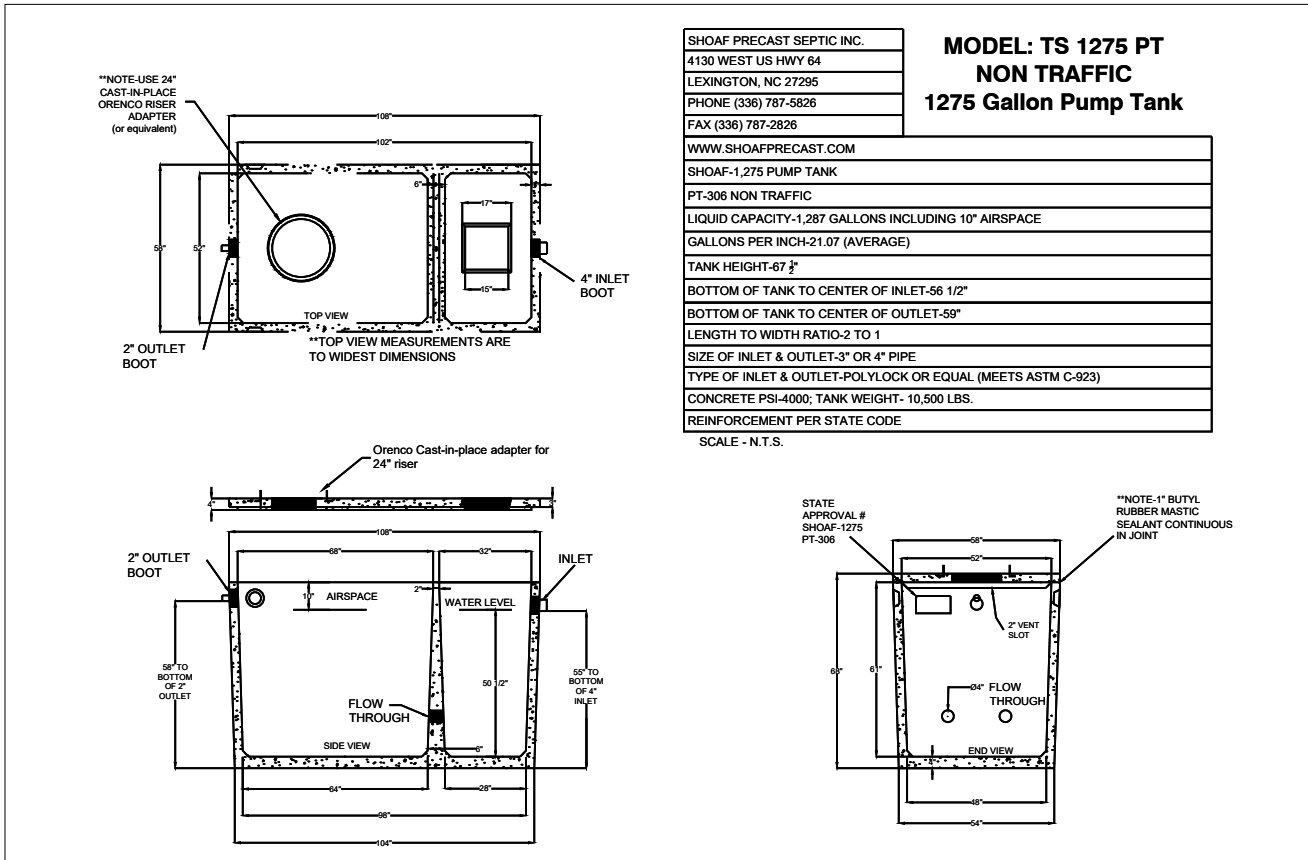
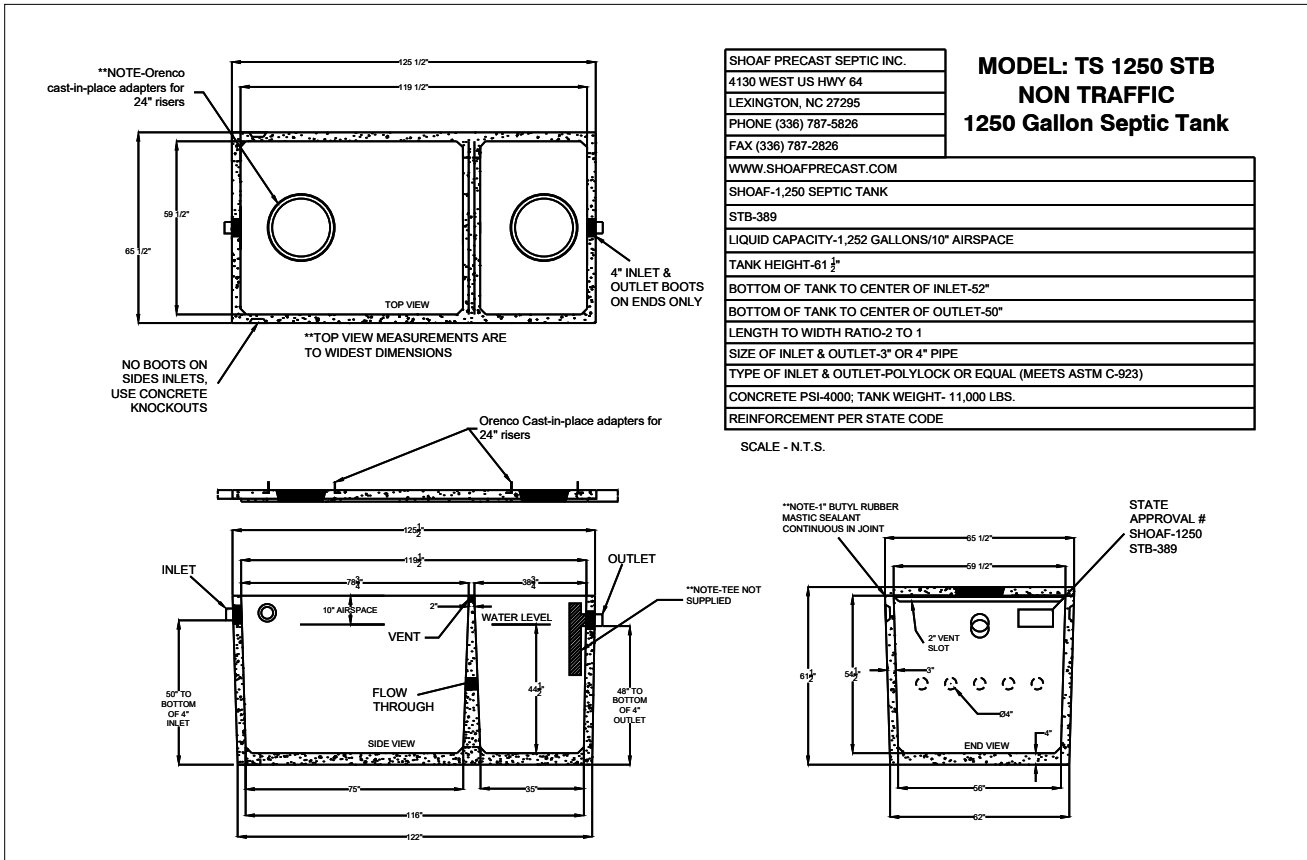
Note:
Repair distribution is a pressure manifold utilizing Horizontal T&J Panel.



1 Repair Drainfield
SOURCE: Agri-Waste Technology, Inc.

For
Review
Only

REV.	ISSUED DATE	DESCRIPTION
SHEET TITLE		
Repair Drainfield		
DRAWN BY:	CREATED ON:	
T. Bostic	05/16/2023	
REVISED BY:	REVISED ON:	
####	####	
RELEASED BY:	RELEASED ON:	
####	####	
DRAWING NUMBER		
WW-4		



NOTES

- Installation to follow all NC DHHS and Wake County applicable rules and regulations.
- Wake County to perform construction inspections and final system certification.
- Septic Tank to have approved effluent filter.
- Contractor to abide by all safety regulations during system installation.
- Contractor shall backfill around all access areas such that storm water is shed away from potential entry points.
- Invert elevations of all components to be verified in field by contractor to insure proper operation.
- All system piping to be SCH40 PVC (except where noted).
- All gravity elbows to be long radius or long sweeping type elbows.
- Actual installation and placement of treatment system to be overseen by Contractor.
- Tanks to be set on 6" minimum gravel base. Use #5 or #57 stone for base.

- Contractor to seed and/or mulch disturbed areas to coincide with existing landscape. Area shall not be left with uncovered soil.
- Mount Control Panel a minimum of 24" above grade.
- Power to panel to be installed by licensed electrician per code. One 15-amp circuit and one 20-amp circuit with individual neutrals to be run from house to control panel.
- 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.
- 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.
- All penetrations to be sealed.
- Spigot to be located on outside of building within 50' of tanks.
- All pressure lines to maintain 18" min. cover.
- Contractor to adjust tank placement to meet site constraints.

John Chun
Chun - LSS Permit

Project Location:
6917 Fiddleman Way
Raleigh, NC 27613
Wake County
PIN: 0880697238

Project Owner:
John Chun
6917 Fiddleman Way
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919-624-8593
sugichun@gmail.com

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Only

REV. ISSUED DATE DESCRIPTION

SHEET TITLE

Detail Sheet 1

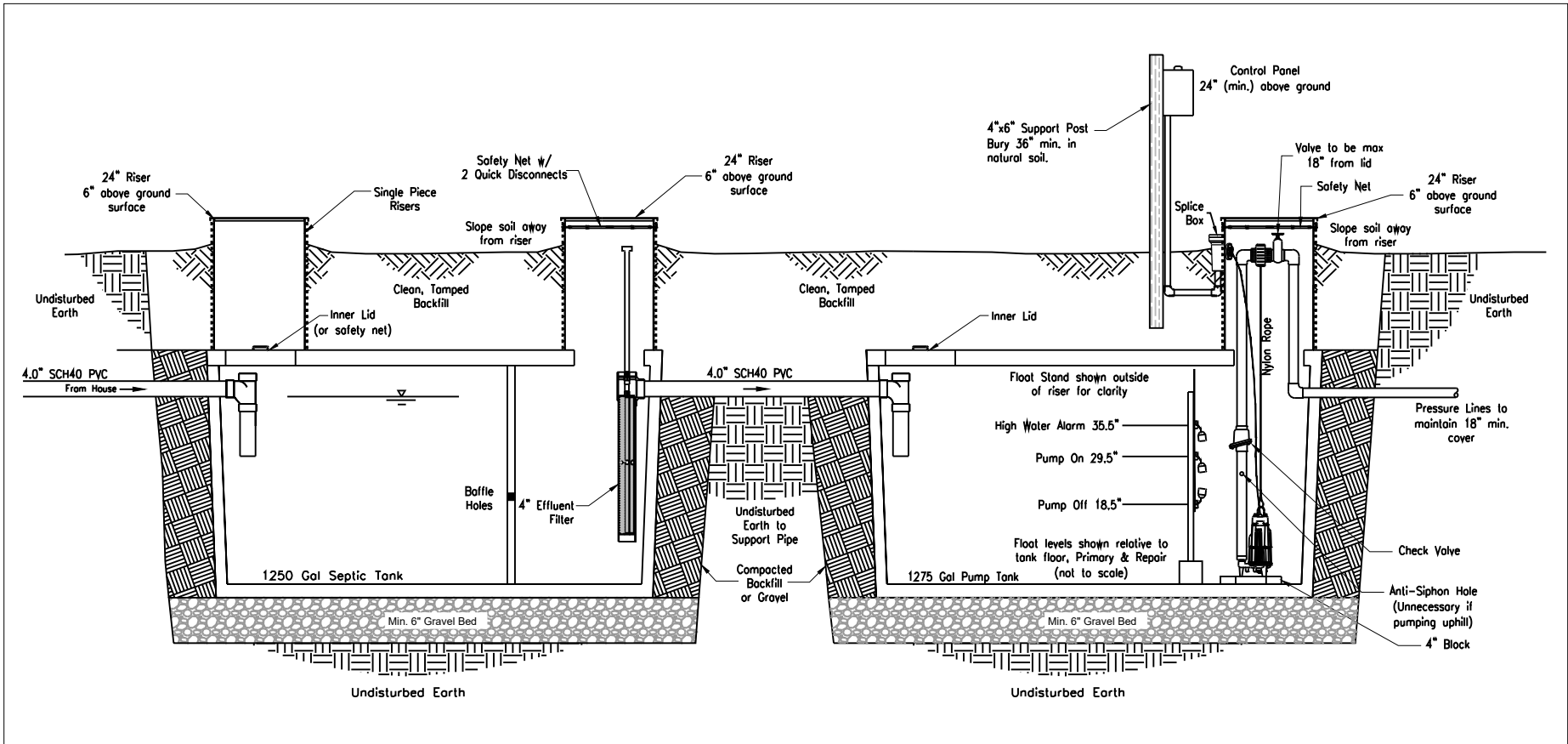
DRAWN BY: T. Bostic
CREATED ON: 05/16/2023

REVISED BY: #####
REVISED ON: #####

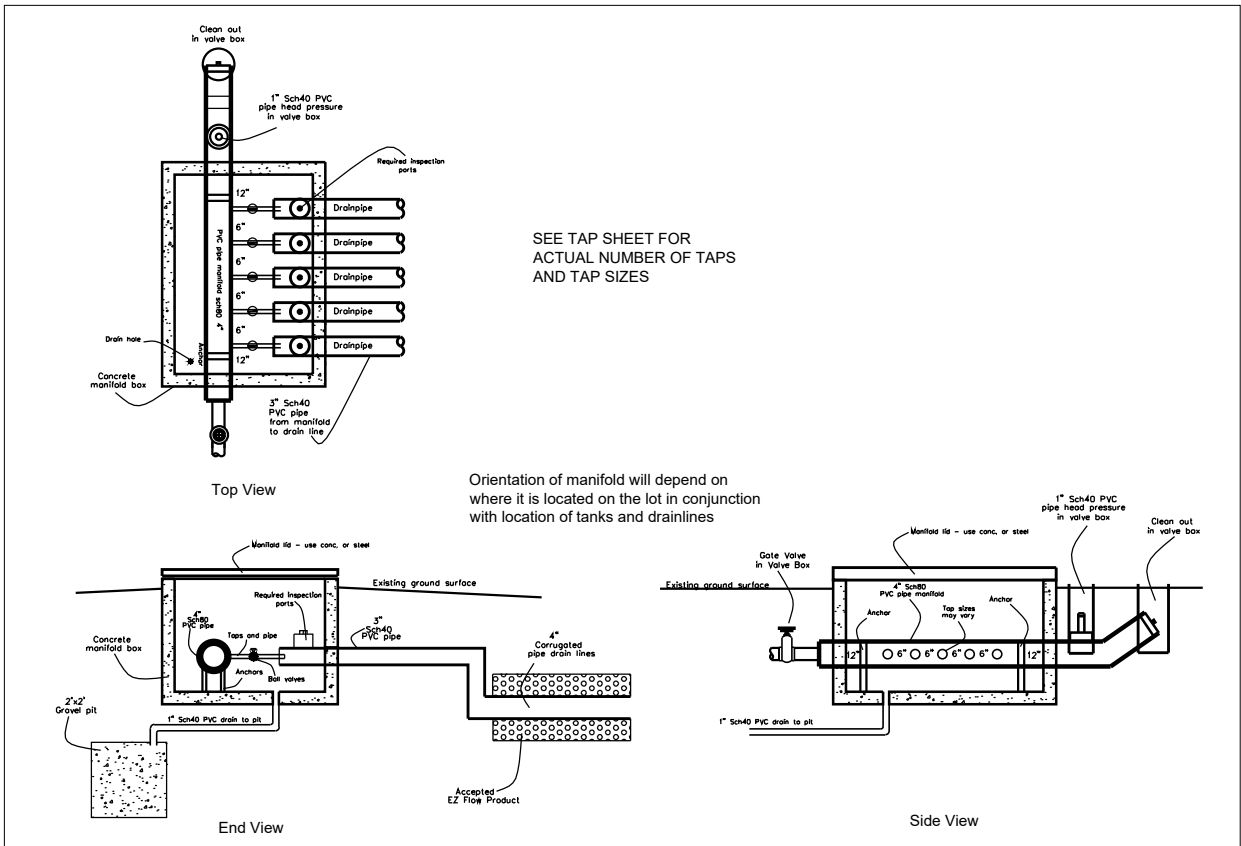
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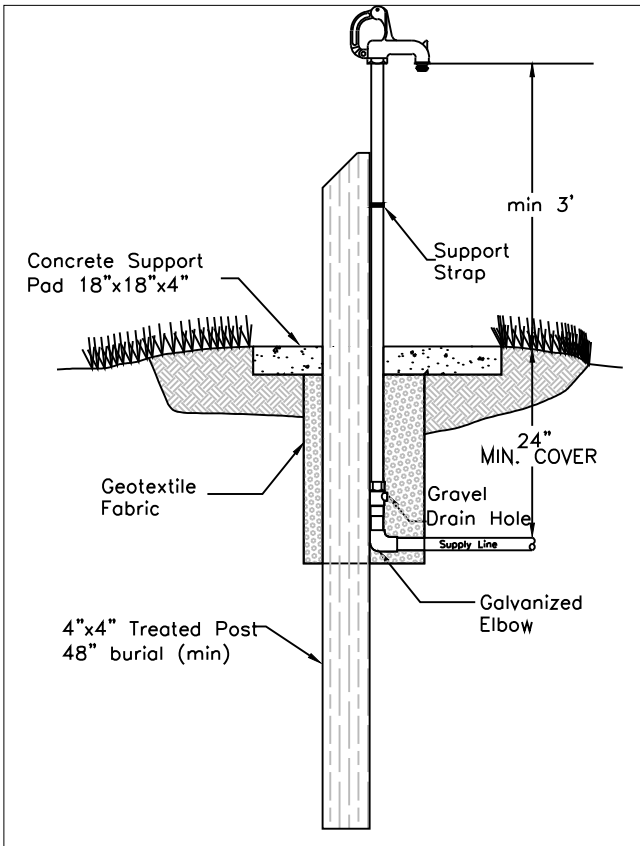
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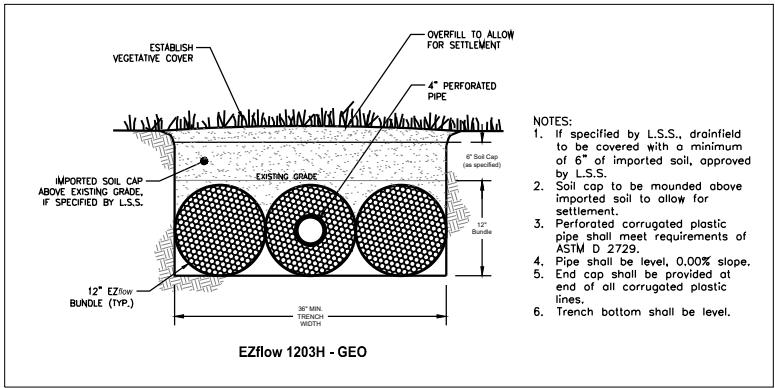
1 SYSTEM PROFILE VIEW
 WW-6 N.T.S.



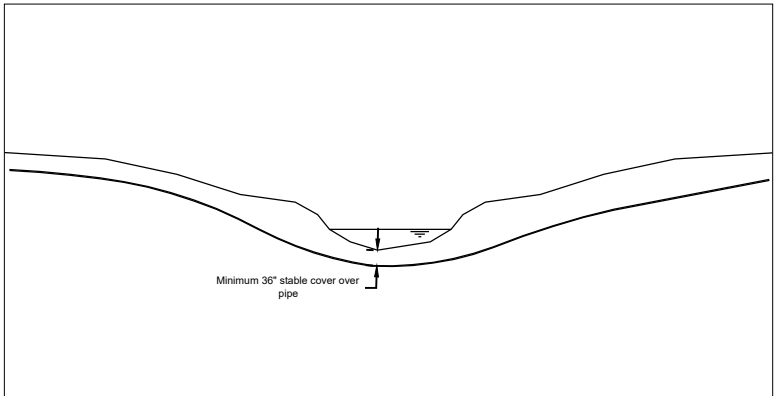
4 PRESSURE MANIFOLD INSTALLATION (Typical) - For Illustration Only
 WW-6 N.T.S. SOURCE: AWT



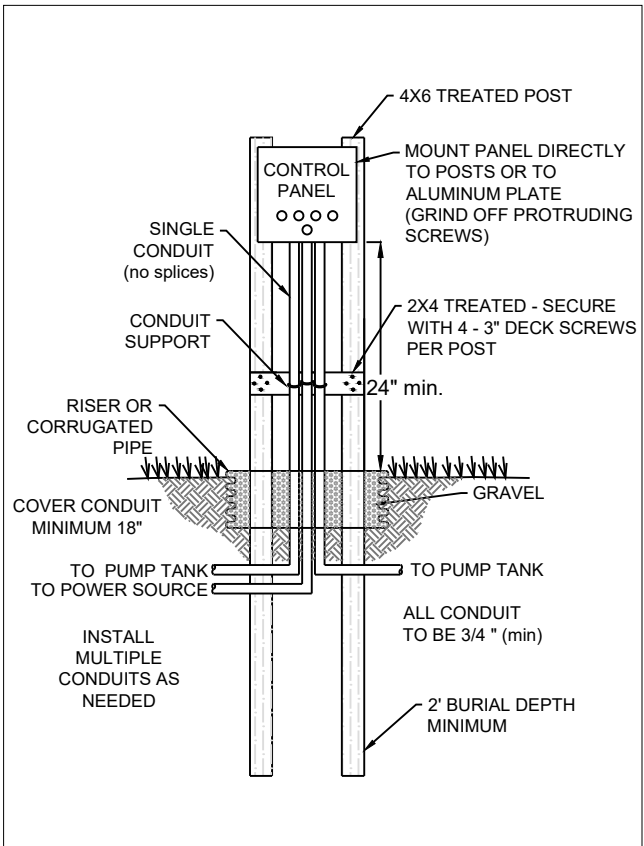
5 YARD HYDRANT (if required)
 WW-6 N.T.S. SOURCE: AWT



2 TRENCH X-SECTION (Typical)
 WW-6 N.T.S. Source: AWT



3 STREAM CROSSING MIN. DEPTH
 WW-6 N.T.S. Source: AWT



6 CONTROL PANEL SUPPORT
 WW-6 N.T.S. SOURCE: AWT

REV.	ISSUED DATE	DESCRIPTION
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SHEET TITLE
 Detail Sheet 2

DRAWN BY: T. Bostic	CREATED ON: 05/16/2023
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER
WW-6

Trenching and Excavation Safety

The employer must comply with the trenching and excavation requirements of 29 CFR 1926.651 and 1926.652 or comparable OSHA-approved state plan requirements.

Inspection of Excavations
OSHA standards require that a competent person inspect trenches daily and as conditions change before worker entry to ensure elimination of excavation hazards. A competent person is an individual who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to workers, soil types and protective systems required, and who is authorized to take prompt corrective measures to eliminate these hazards and conditions.

Access and Egress
OSHA standards require safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper. These devices must be located within 25 feet (7.6 meters) of all workers.

Recommendations
Heavy equipment and trucks should stay as far as possible from the edge of any trench. Always use pads under stabilizers to minimize ground pressures that could lead to failures.

(b) Definitions

"Cemented soil" means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.
"Cohesive soil" means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.
"Dry soil" means soil that does not exhibit visible signs of moisture content.
"Fissured" means a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.
"Granular soil" means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.
"Layered system" means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.
"Moist soil" means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.
"Plastic" means a property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.
"Saturated soil" means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

"Soil classification system" means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the characteristics of the deposits and the environmental conditions of exposure.
"Stable rock" means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
"Submerged soil" means soil which is underwater or is free seeping.
"Type A" means cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:
(i) The soil is fissured; or
(ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or
(iii) The soil has been previously disturbed; or
(iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or
(v) The material is subject to other factors that would require it to be classified as a less stable material.

"Type B" means:
(i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or
(ii) Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.
(iii) Previously disturbed soils except those which would otherwise be classed as Type C soil.
(iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or
(v) Dry rock that is not stable; or
(vi) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

"Type C" means:
(i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or
(ii) Granular soils including gravel, sand, and loamy sand; or
(iii) Submerged soil or soil from which water is freely seeping; or
(iv) Submerged rock that is not stable, or
(v) Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper.

"Unconfined compressive strength" means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.
"Wet soil" means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

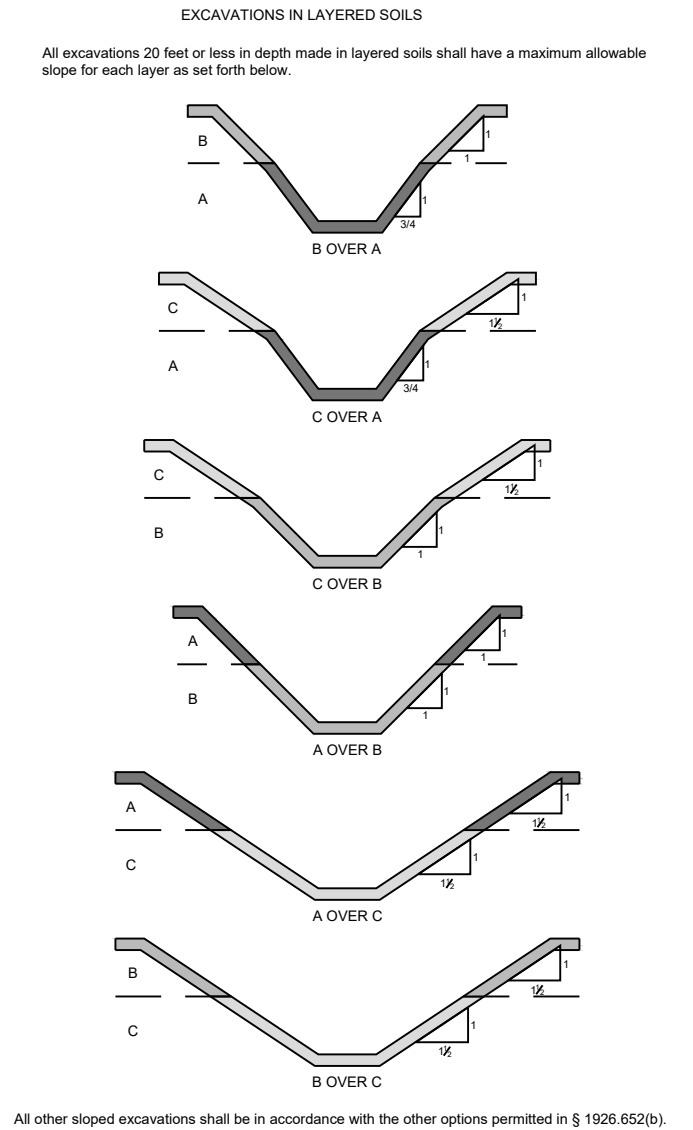
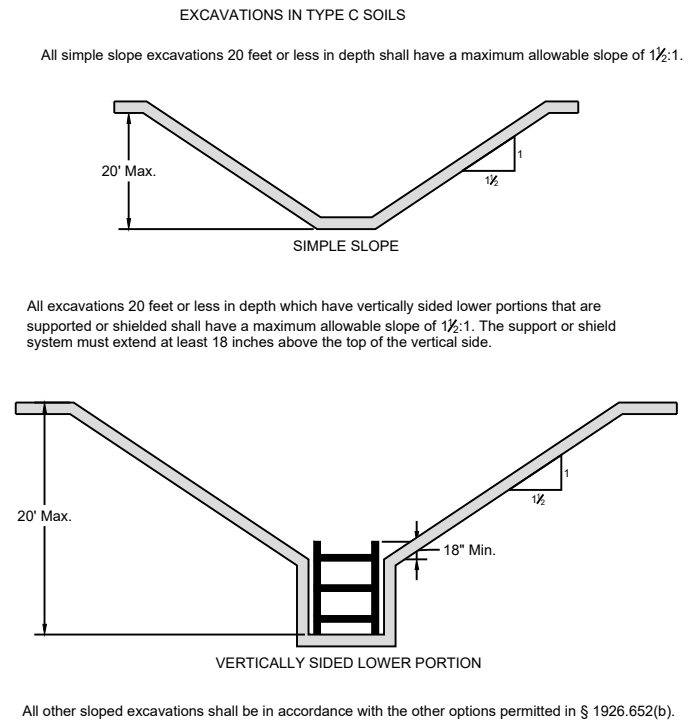
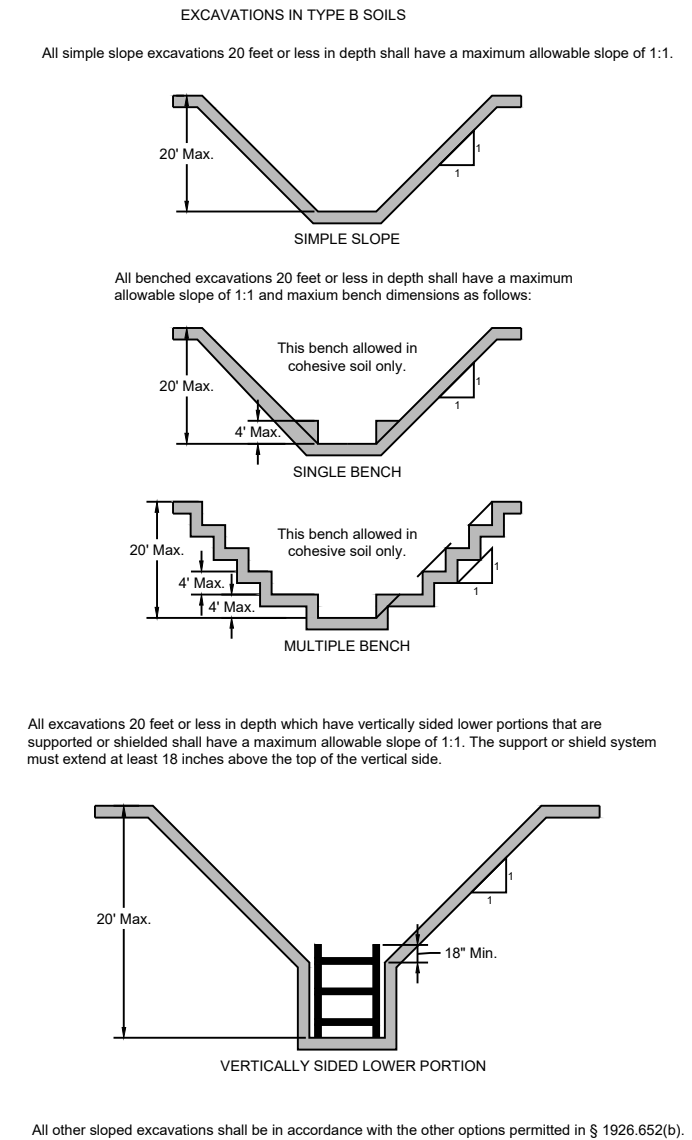
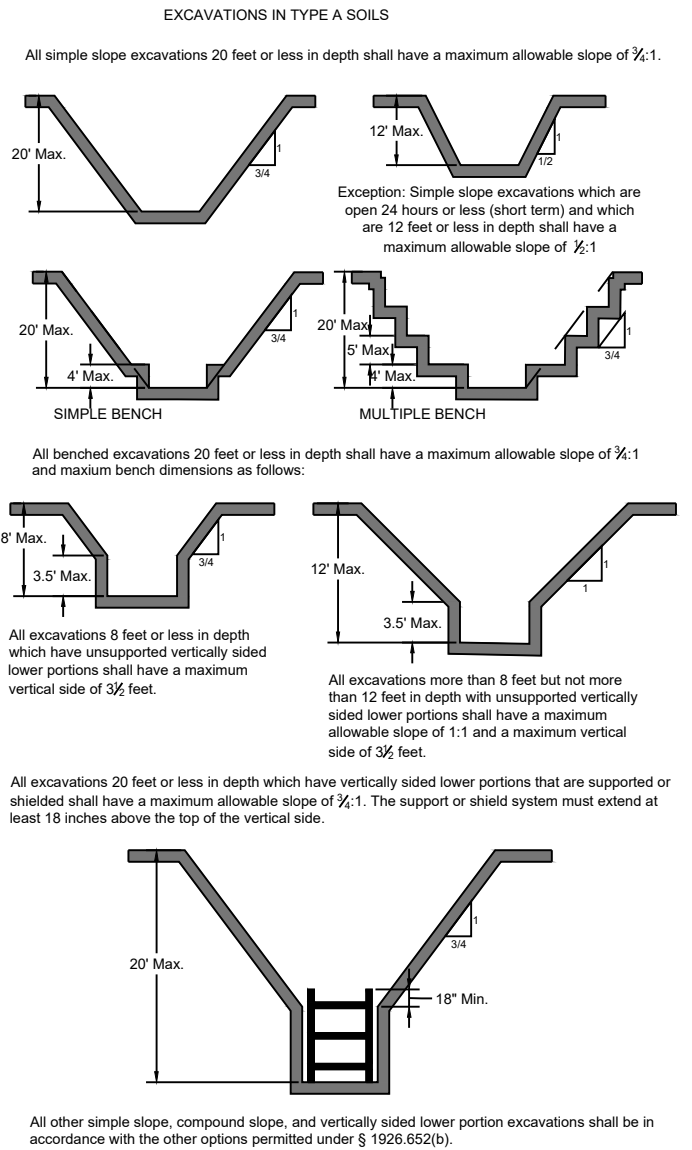
(c) Requirements

- (1) Classification of soil and rock deposits. Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix.
- (2) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.
- (3) Visual and manual analyses. The visual and manual analyses, such as those noted as being acceptable in paragraph (d) of this appendix, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.
- (4) Layered systems. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.
- (5) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumstances.

(d) Acceptable visual and manual tests

- (1) Visual tests. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.
 - (i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.
 - (ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.
 - (iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.
 - (iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.
 - (v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.
 - (vi) Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.
 - (vii) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

- (2) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.
 - (i) Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of 1/8-inch thread can be held on one end without tearing, the soil is cohesive.
 - (ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.
 - (iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488 - "Standard Recommended Practice for Description of Soils (Visual - Manual Procedure).") Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb, however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences.If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.
 - (iv) Other strength tests. Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated shearvane.
 - (v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.54 cm) and six inches (15.24 cm) in diameter until it is thoroughly dry:
 - (A) If the sample develops cracks as it dries, significant fissures are indicated.
 - (B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength should be determined.
 - (C) If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures.If they pulverize easily into very small fragments, the material is granular.



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

John Chun
Chun - LSS Permit

Project Location:
6917 Fiddleman Way
Raleigh, NC 27613
Wake County
PIN: 0880697238

Project Owner:
John Chun
6917 Fiddleman Way
Raleigh, NC 276113
919-624-8593
sugichun@gmail.com

For Review Only

REV.	ISSUED DATE	DESCRIPTION
SHEET TITLE		
Excavation Safety		
DRAWN BY:	T. Bostic	CREATED ON:
REVISED BY:	####	05/16/2023
RELEASED BY:	####	REVISED ON:
		####
		RELEASED ON:
		####
DRAWING NUMBER		
WW-7		

Septic System Design - Summary Page



Agri-Waste Technology, Inc.
501 N Salem Street, Suite 203, Apex, NC 27502
agriwaste.com | 919.859.0669

Project Manager:

Jeff Vaughan, PhD, LSS
jvaughan@agriwaste.com
919-859-0669

Engineer:

Trent Bostic
tbostic@agriwaste.com

Project: Chun - LSS Permit
Property: 6917 Fiddleman Way
Raleigh, NC 27613

Date: 5/16/2023

County: Wake

Subdiv.:

Lot #:

Permit #:

Owner: John Chun

Address: 4109 Cardinal Grove Blvd
Raleigh, NC 27616

Type of System: III g

Phone: 919-624-8593

Email: sugichun@gmail.com

PIN: 0880697238

EHS:

Soil Parameters

Soil Evaluation By:

Special Conditions/Notes:

LTAR: 0.30 gpd/ft²

Design Parameters

Type of Establishment: Residence, 5 or fewer bedrooms

Unit: Bedroom

of Units: 4

Septic Tank Specifications

Min. Tank Capacity: 1,200 gal

Actual Tank Volume: 1,250 gal

Tank Manufacturer: Shoaf

Tank Model: TS 1250 STB

	Exterior	Interior
Length:	125.5	119.5 in.
Width:	65.5	59.5 in.
Depth:	61.5	54.5 in.

Primary Drainfield Specifications

Type of Distribution: Parallel Distribution Box

Trench Media: EZflow

Trench Width: 3 ft

Trench Depth: 14 in.

(or as specified on permit)

Trench Bottom Area: 1600 ft²

Minimum Drain Line: 400 ft

Actual Drain Line: 400 ft

Number of Lines: 4

Minimum Line Spacing: 9 ft O.C.

Wastewater Treatment System Design Calculations

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
Raleigh, NC 27613
County: Wake

Septic Tank Sizing

Daily Flow Estimate:

Unit	# of Units	Flow/Unit	Flow/Day
Bedroom	4	120	480
			0
			0

Q= 480 gpd

Septic Tank Minimum Capacity:

Per County Rules:

For Wake or Orange County residences with 4 bedrooms,

Minimum Liquid Capacity (V)= 1,200 gal

Septic Tank Specs:

Manufacturer: Shoaf
Model: TS 1250 STB
Volume: 1,250 gal
Weight: 11,000 lbs

	Exterior	Interior	
Length:	125.5	119.5	in.
Width:	65.5	59.5	in.
Depth:	61.5	54.5	in.

Shape of Risers: Circular

Diameter: 2.00 ft

Pump Tank Storage & Float Settings

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
Raleigh, NC 27613
County: Wake

Tank Manufacturer Shoaf
Tank Model TS 1275 PT

Interior Height (in.)	60.5 in.
Avg. Storage	21.07 gal/in.

Repair System

Elevations, measured from bottom towards top (0 = Interior Bottom of Tank):

Top of pump (including 4" block)	16.4 in.	(Pump height = 12 13/32")
Pump Off	18.5 in.	
Pump On	29.5 in.	(set for dose volume)
Alarm On	35.5 in.	(6 in. above On Float)

Emergency Storage Available

Pump Tank	527 gal
-----------	---------

Days of Storage	1.10 days
-----------------	-----------

(determined from "interior top of tank" - "High Water Alarm")

ELEVATIONS

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
 Raleigh, NC 27613
County: Wake

Benchmark NE Property Corner
BM Elev 432.07 ft

Septic Tank	1,250 gal	
Ground Surface		411.00 ft
Depth of Soil Cover	12 in.	1.00 ft
Overall Ht of Tank	61.5 in.	5.13 ft
Elev, Base of Tank		404.88 ft
Ht to 4" Inlet Invert	50 in.	4.17 ft
Elev, 4" Inlet Invert		409.04 ft
Ht to 4" Outlet Invert	48 in.	4.00 ft
Elev, 4" Outlet Invert		408.88 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		404.38 ft

Pump Tank	1287 gal	
Ground Surface		411.00 ft
Depth of Soil Cover	16 in.	1.33 ft
Overall Ht of Tank	67.5 in.	5.63 ft
Elev, Base of Tank		404.04 ft
Ht to 4" Inlet Invert	57 in.	4.75 ft
Elev, 4" Inlet Invert		408.79 ft
Ht to 2" Outlet Invert	58 in.	4.83 ft
Elev, 2" Outlet Invert		408.88 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		403.54 ft

ST Inlet Pipe		
Grade @ Stub-out		412 ft
Depth of Stub-out, top		1.5 ft
Elev, Stub-out Invert		410.15 ft
Elev @ ST Inlet Invert		409.04 ft
Length		20 ft
Slope		5.5 %

Pipe, ST to PT		
ID	4 in.	0.33 ft
OD	4.5 in.	0.38 ft
Elev, ST Outlet Invert		408.88 ft
Elev, PT Inlet Invert		408.79 ft
Length		4 ft
Slope		2.1 %
Cover over inlet pipe		1.60 ft

Pump Reqmt.		
Floor Thickness	4 in.	0.33 ft
Elev, Pump Tank Floor		404.38 ft
Pump Block Ht.	4 in.	0.33 ft
Elev, Pump Intake		404.71 ft

Grade @ Repair Manifold		426.00 ft
Min. Cover	18 in.	1.50 ft
Max Elev, Repair		424.50 ft
Elev Diff, Repair		19.79 ft

Drainfield Design

Project Chun - LSS Permit
Location 6917 Fiddleman Way
 Raleigh, NC 27613
County Wake

Drainfield Sizing

Primary

LTAR	0.3 gpd/ft ²	Type of Drainfield Media	EZflow
Daily Design Flow	480 gpd	Required Drainline	
Req. Drainfield Area	1,600 ft ²	After 25% Reduction	400 ft
Trench Width, Eff.	3 ft	Minimum Line Spacing	9 ft (O.C.)
Required Drainline	533 ft		

Repair

LTAR	0.3 gpd/ft ²	Type of Drainfield Media	PPBPS, Horizontal
Daily Design Flow	480 gpd	Required Drainline	
Req. Drainfield Area	1,600 ft ²	After 50% Reduction	267 ft
Trench Width, Eff.	3 ft	Minimum Line Spacing	8 ft (O.C.)
Required Drainline	533 ft		

Drainfield Layout

Line	Use	Flag Color	Elevation (ft)	Line Length (ft)	Used as Primary (ft)	Used as Repair (ft)
1	Layout Line	yellow	409.0	100	100.0	
2	Layout Line	pink	408.0	100	100.0	
3	Layout Line	purple	407.0	100	100.0	
4	Layout Line	blue	405.0	100	100.0	
5	Layout Line	blue	426.0	50		39.0
6	Layout Line	orange	425.0	50		39.0
7	Layout Line	yellow	424.0	50		39.0
8	Layout Line	pink	423.0	50		39.0
9	Layout Line	purple	422.0	50		39.0
10	Layout Line	blue	421.0	50		39.0
11	Layout Line	orange	420.0	50		39.0
Total				750	400	273
Count				11	4	7

Note: Line length totals are shown to the nearest foot.

PRESSURE MANIFOLD SYSTEM DESIGN (Repair)

Site Information

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
 Raleigh, NC 27613
County: Wake

Design Information

Estimated Daily Flow	480 gal/day
L.T.A.R. (from Wake Co.)	0.3 gal/day/ft ²
L.T.A.R. + 5%	0.315 gal/day/ft ²
Trench Width	3 ft.
Line Length Required	533 ft.
Length after 50% Reduction	267 ft
L.T.A.R. Reduced	0.600 gal/day/ft ²
L.T.A.R. Reduced + 5%	0.630 gal/day/ft ²

DRAINFIELD INFO. - Repair						
Proposed Type of System/Distribution: Pump to Pressure Manifold using PPBPS, Horizontal						
Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
5	blue	39	1/2in SCH 80	5.48	0.141	0.586
6	orange	39	1/2in SCH 80	5.48	0.141	0.586
7	yellow	39	1/2in SCH 80	5.48	0.141	0.586
8	pink	39	1/2in SCH 80	5.48	0.141	0.586
9	purple	39	1/2in SCH 80	5.48	0.141	0.586
10	blue	39	1/2in SCH 80	5.48	0.141	0.586
11	orange	39	1/2in SCH 80	5.48	0.141	0.586
Total		273	Total	38.36	Avg.	0.59
Note: Line lengths are calculated in 4'4" increments to reflect use of PPBPS product.						

Total Run Time	12.51 min.
Drainfield Capacity	331.2 gal
% of Drainfield Cap	70.0% (Max. 102.4% to not exceed 7.2 gal/panel)
Dose Volume	231.8 gal/dose
Run Time/Dose	6.0 minutes Time to deliver max. 3.6 gal/panel
Volume/depth	21.07 gal/in. (Per tank manufacturer's specifications)
Estimated Drawdown	11.00 in.

Manifold Box			
Number of Taps	7	with	0 Split(s)
Manifold Length	5.0	ft.	(approximate)

PUMP DESIGN

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

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
Raleigh, NC 27613
County: Wake

Friction Losses

Suction Head	0 ft	(submersible 0)
Elev. Difference (highest point from pump)	19.79 ft	
Design Pressure At Outlet	2 ft	
Supply Line - 2.0" Schedule 40 PVC		
Pipe Diameter, Nominal	2 in.	
Pipe Diameter (ID)	2.047 in.	
Pipe Length	160 ft	
Pipe Length for Fittings	16 ft	
Equivalent Length	176 ft	
Estimated Friction Loss in Supply Line	4.53 ft	
Flow	38.36 gpm	
Velocity	3.74 ft/s	
Meets requirement that 2 ft/s < v < 5 ft/s.		
Friction Loss - Taps/Special Fittings	3.5 ft	
TOTAL 29.82 ft.		

Flow for Anti-Siphon Hole

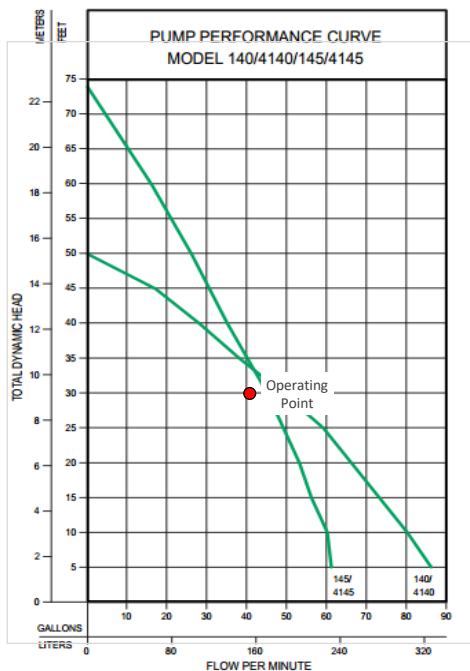
Hole Diameter 3/16 in.
Hole Flowrate 2.26 gpm

Pump Efficiency 0.7 (assumed, typical)
Motor Efficiency 0.9 (assumed for electric pumps)
Flow 40.62 gpm

Required Horsepower 0.49 hp
TDH 29.82 ft.

Pump Selection

Manufacturer:	Zoeller
Model:	N140
Horsepower:	1



Septic Tank Buoyancy Calculation

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
 Raleigh, NC 27613
County: Wake

Tank Size (nominal) 1250 gal

Properties/Assumptions:

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

Min. depth to water table	30.0 in.	from ground surface
Effluent Density	62.4 lb/ft ³	(Specific Weight of Water)
Concrete Density	142.6 lb/ft ³	
Soil App. Sp. Grav.	1.3	(typical value)
Soil Cover Over Tank	12 in.	(minimum)
Additional Cover	0 in.	for pipe grade
Unsubmerged wt of soil	81.1 lb/ft ³	
Submerged wt of soil	49.9 lb/ft ³	50% Porosity Assumed

Tank Dimensions (from supplier):

		<u>Exterior</u>		<u>Interior</u>	
		Top	Bottom	Top	Bottom
Tank	Length	125.5	122.0	119.5	116.0 in.
	Width	65.5	62.0	59.5	56.0 in.
	Height	58.5	(w/o lid)	54.5	in.
Lid	Length	125.5 in.			
	Width	65.5 in.			
	Height	3.0 in.			
Area of Riser Openings		6.28 ft ²			
Permanent Liquid Depth in Tank		0.0 in.			0.00 ft
Tank Weight		11,000 lb		(per manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume

Displaced Volume	196.5 ft ³ *
Buoyancy Force	12,261 lb.

Weight Calculation:

Tank Weight	11000 lb		
Water Weight in Tank	0 lb	Volume	0.0 ft ³ *
Soil Weight Over Tank	4121 lb		
Soil Friction Force	4037 lb		
Total Weight	19,158 lb		

Factor of Safety = 1.56

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

* Volume calculated by the prismoidal formula.

Pump Tank Buoyancy Calculation

Project: Chun - LSS Permit
Location: 6917 Fiddleman Way
 Raleigh, NC 27613
County: Wake

Tank Size (nominal) 1287 gal

Properties/Assumptions:

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

Min. depth to water table	30 in.	from ground surface
Effluent Density	62.4 lb/ft ³	(Specific Weight of Water)
Concrete Density	142.6 lb/ft ³	
Soil App. Sp. Grav.	1.3	(typical value)
Soil Cover Over Tank	12 in.	(minimum)
Additional Cover	4 in.	for pipe grade
Unsubmerged wt of soil	81.1 lb/ft ³	
Submerged wt of soil	49.9 lb/ft ³	50% porosity assumed

Tank Dimensions (from supplier):

		<u>Exterior</u>		<u>Interior</u>	
		Top	Bottom	Top	Bottom
Tank	Length	108.0	104.0	102.0	98.0 in.
	Width	58.0	54.0	52.0	48.0 in.
	Height	64.5	(w/o lid)	60.5	
Lid	Length	108.0 in.			
	Width	58.0 in.			
	Height	3.0 in.			
Area of Riser Openings		3.14 ft ²			
Permanent Liquid Depth in Tank		0.0 in.		0.00 ft	
Tank Weight		10500 lb		(per manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume

Displaced Volume	182.1 ft ³ *
Buoyancy Force	11,363 lb

Weight Calculation:

Tank Weight	10500 lb		
Water Weight in Tank	0 lb	Volume	0.0 ft ³ *
Soil Weight Over Tank	4365 lb		
Soil Friction Force	4227 lb		
Total Weight	19,092 lb		

Factor of Safety = 1.68

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

* Volume calculated by the prismatic formula.



AGRITEC-01

GKROHL

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

1/23/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Hartsfield & Nash Agency, Inc. 10405 Ligon Mill Rd., Ste H Wake Forest, NC 27587	CONTACT NAME: Connie Garkalns	
	PHONE (A/C, No, Ext): (919) 556-3698 FAX (A/C, No): (919) 556-8758	
	E-MAIL ADDRESS: Connie@hartsfield-nash.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Selective Insurance Company of the Southeast	39926
INSURED Agri-Waste Technology Inc 501 N. Salem St Ste 203 Apex, NC 27502	INSURER B : ACCIDENT FUND INSURANCE COMPANY OF AMERICA	10166
	INSURER C : Evanston Insurance Company	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PROJECT ☐ LOC OTHER:			S 2253659	1/18/2023	1/18/2024	EACH OCCURRENCE \$ 2,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000
							MED EXP (Any one person) \$ 10,000
							PERSONAL & ADV INJURY \$ 2,000,000
							GENERAL AGGREGATE \$ 4,000,000
							PRODUCTS - COMP/OP AGG \$ 4,000,000
							\$
A	☒ AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY			S 2253659	1/18/2023	1/18/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000
							BODILY INJURY (Per person) \$
							BODILY INJURY (Per accident) \$
							PROPERTY DAMAGE (Per accident) \$
							\$
							\$
A	☒ UMBRELLA LIAB ☒ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$			S 2253659	1/18/2023	1/18/2024	EACH OCCURRENCE \$ 2,000,000
							AGGREGATE \$ 2,000,000
							\$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N ☒ N	N / A	100003072	1/18/2023	1/18/2024	☒ PER STATUTE ☐ OTH-ER
							E.L. EACH ACCIDENT \$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE \$ 1,000,000
							E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Prof & Pollution			MKL3ENV103400	8/22/2022	8/22/2023	Each Claim 5,000,000
A	Leased / Rented			S 2253659	1/18/2023	1/18/2024	Equipment 25,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

CANCELLATION

***This is ONLY For Informational Purposes
Contact Agency for Specific Holder info to be added

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE