

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

ROY COOPER • Governor

KODY H. KINSLEY • Secretary

MARK BENTON • Chief Deputy Secretary for Health

SUSAN KANSAGRA • Assistant Secretary for Public Health

Division of Public Health

Submittal Includes: ☒ (a2) Improvement Permit ☒ (a2) Construction Authorization ☐ Fee \$ _____

IMPROVEMENT PERMIT FOR G.S. 130A-335(a2)

County: WakePIN/Lot Identifier: 1798265462Issued To: Oaktowne BuildersProperty Location: 8529 Pascolo Way, Zebulon, NC 27597Subdivision (if applicable) Lennox Manors Lot #: 17 Block: _____ Section: _____LSS Report Provided: Yes ☒ No ☐If yes, name and license number of LSS: Heath Clapp, LSS #1354New ☒Expansion ☐System Relocation ☐Change of Use ☐Facility Type: SFR- 4BRNumber of bedrooms: 4 Number of Occupants: 8 Other: _____Design Wastewater Strength: ☒ Domestic☐ High Strength☐ Industrial Process WastewaterProposed Design Daily Flow: 480 GPD Proposed LTAR (Initial): 0.25 Proposed LTAR (Repair): 0.25Proposed Wastewater System Type*: Accepted Gravity (Initial) Pump Required: ☐ Yes ☒ No ☐ May be requiredProposed Wastewater System Type*: Accepted Pressure Manifold (Repair) Pump Required: ☒ Yes ☐ No ☐ May be required

*Please include system classification for proposed wastewater system types in accordance with Rule .1301 Table XXXII

Effluent Standard: ☒ DSE ☐ HSE ☐ NSF/ANSI 40 ☐ TS-I ☐ TS-II ☐ RCWSaprolite System (Initial): ☐ Yes ☒ NoSaprolite System (Repair): ☐ Yes ☒ NoFill System (Initial): ☐ Yes ☒ No If yes, specify: ☐ New ☐ Existing (when adding more than 6 inches of fill to system area provide a fill plan)Fill System (Repair): ☐ Yes ☒ No If yes, specify: ☐ New ☐ Existing (when adding more than 6 inches of fill to system area provide a fill plan)Usable Depth to LC (Initial)*: 26" Usable Depth to LC (Repair)*: 26" * Limiting ConditionMax. Trench Depth (Initial)*: 14" Max. Trench Depth (Repair)*: 14" * Measured on the downhill side of the trenchArtificial Drainage Required: ☐ Yes ☒ No If yes, please specify details: _____Type of Water Supply: ☒ Private well ☐ Public well ☐ Shared well ☐ Municipal Supply ☐ Spring ☐ Other: _____Drainfield location meets requirements of Rule .0508: Yes ☒ No ☐ Drainfield location meets requirements of Rule .0601: Yes ☒ No ☐Permit valid for: ☒ Five years [site plan submitted pursuant to GS 130A-334(13a)] ☐ No expiration [plat submitted pursuant to GS 130A-334(7a)]

Permit conditions:

4+ inches of approved cover required overtop of drainfield area

Licensed Soil Scientist Print Name: Heath ClappLicensed Soil Scientist Signature: Heath ClappDate: 3/9/2026

The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2).

See attached site sketch

This Section for Local Health Department Use Only

Initial submittal received: 3/15/2026 by JLA
Date Initials

G.S. 130A-335(a3) states the following:

When an applicant for an Improvement Permit submits to a local health department an Improvement Permit application, the permit fee charged by the local health department, the common form developed by the Department, and a soil evaluation pursuant to subsection (a2) of this section, the local health department shall, within five business days of receiving the application, conduct a completeness review of the submittal. A determination of completeness means that the Improvement Permit includes all of the required components. If the local health department determines that the Improvement Permit is incomplete, the local health department shall notify the applicant of the components needed to complete the Improvement Permit. The applicant may submit additional information to the local health department to cure the deficiencies in the Improvement Permit. The local health department shall make a final determination as to whether the Improvement Permit is complete within five business days after the local health department receives the additional information from the applicant. If the local health department fails to act within any period set out in this subsection, the applicant may treat the failure to act as a determination of completeness. The Department shall develop a common form for use as the Improvement Permit.

The review for completeness of this Improvement Permit was conducted in accordance with G.S. 130A-335(a3). This Improvement Permit is determined to be:

☐ Incomplete (If box is checked, information in this section is required.)

The following items are missing:

Copies of this were sent to the LSS and the Applicant on _____
Date

State Authorized Agent: _____ Date: _____

☒ Complete

State Authorized Agent:  James Adcock Date: 3/16/2026

This Improvement Permit is issued pursuant to G.S. 130A-335 (a2) and (a3) using the signed and sealed LSS/LG evaluation(s) attached here. The issuance of this permit in no way guarantees the issuance of other permits. The permit holder is responsible for checking with appropriate governing bodies in meeting their requirements. This permit is subject to revocation if the site plan, plat, or the intended use changes. The Improvement Permit shall not be affected by a change in ownership of the site. This permit is subject to compliance with the provisions of 15A NCAC 18E and to the conditions of this permit.

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 evaluations, submittals, or actions from a licensed soil scientist or licensed geologist pursuant to GS 130A-335(a2).

Improvement Permit Expiration Date: 3/15/2031



Public Health Onsite Water Protection

This Improvement Permit is issued pursuant to G.S. 130A-335 (a2) and (a3) using the signed and sealed LSS/LG evaluation(s) attached here. Applicant is responsible for adhering to all State and Local rules, regulations and laws.

Re-submittal of Improvement Permit

LHD USE ONLY: This IP resubmittal received: _____ by _____
Date Initials

The following items are being resubmitted pursuant to G.S. 130A-335(a3) for issuance of the Improvement Permit:

I, _____ hereby attest that the information required to be included with this re-submittal
Licensed Soil Scientist (Print Name)
is accurate and complete to the best of my knowledge and that the proposed Improvement Permit meets all applicable federal,
State, and local laws, regulations, rules, and ordinances.

Signature of Licensed Soil Scientist

Date

The section below is for Local Health Department use after submittal of items noted as missing above.

LHD Follow-up Completeness Review of Improvement Permit

The review for completeness of this Improvement Permit re-submittal was conducted in accordance with G.S. 130A-335(a3). This Improvement Permit is determined to be:

☐ Incomplete (If box is checked, information in this section is required.)

The following items are missing:

Copies of this were sent to the LSS and the Applicant on _____
Date

State Authorized Agent: _____

Date: _____

☐ Complete

State Authorized Agent: _____

Date: _____

**CONSTRUCTION AUTHORIZATION FOR G.S. 130A-335(a2)**County: WakePre-Construction Conference Required: Yes ☒ No ☐PIN/Lot Identifier: 1798265462Issued To: Oaktowne BuildersProperty Location: 8529 Pascolo Way, Zebulon, NC 27597AOWE/PE Plans/Evaluations Provided: Yes ☒ No ☐ If yes, name and license number of AOWE/PE: AOWE #10057EFacility Type: SFR - 4BRNumber of bedrooms: 4 Number of Occupants: 8 Other: _____☒ New ☐ Expansion ☐ Repair ☐ System Relocation ☐ Change of UseBasement? ☐ Yes ☒ No Basement Fixtures? ☐ Yes ☒ NoCrawl Space? ☒ Yes ☐ No Slab Foundation? ☐ Yes ☐ NoType of Wastewater System* Accepted Gravity (Initial) Accepted Pressure Manifold (Repair)**Please include system classification for proposed wastewater system types in accordance with Rule .1301 Table XXXII*Design Daily Flow: 480 GPD Wastewater Strength: ☒ Domestic ☐ High Strength ☐ Industrial Process WWSession Law 2014-120 Section 53, Engineering Design Utilizing Low-flow Fixtures and Low-flow Technologies? ☐ Yes ☐ No
(if yes, please provide engineering documentation)Effluent Standard: ☒ DSE ☐ HSE ☐ NSF/ANSI 40 ☐ TS-I ☐ TS-II ☐ RCWType of Water Supply: ☒ Private well ☐ Public well ☐ Shared well ☐ Municipal Supply ☐ Spring ☐ Other: _____**Installation Requirements/Conditions**Septic Tank Size: 1,250 gallons Total Trench/Bed Length: 480 feet Trench/Bed Spacing: 9 feet on centerTrench/Bed Width: 36 inches LTAR: 0.25 gpd/ft² Usable Depth to LC (Initial)*: 26" **Limiting condition*Soil Cover: 4+ inches Slope Corrected Maximum Trench/Bed Depth*: 14" inches **Measured on the downhill side of the trench*Pump Tank Size (if applicable): N/A gallons Requires more than 1 pump? ☐ Yes ☒ NoPump Requirements: N/A ft. TDH vs. N/A GPM Grease Trap Size (if applicable): N/A gallonsDistribution 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 [.0204(g)]: ☐ Yes ☒ No Declaration of Restrictive Covenants: ☐ Yes ☒ NoEasement, Right-of-Way, or Encroachment Agreement Required [.0301(b)]: ☐ Yes ☒ NoManagement Entity Required: ☐ Yes ☒ No Minimum O&M Requirements: _____**Permit conditions:**

Pre-construction meeting required. 4+ inches of approved cover soil required overtop of drainfield.

The requirements of 15A NCAC 18E are incorporated by reference into this permit and shall be met. Systems shall be installed in accordance with the attached site sketch. ***This Construction Authorization is subject to revocation if the site plan, plat, or the intended use changes.*** 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 15A NCAC 18E, or 15A NCAC 18A .1900, as applicable, and to the conditions of this permit.

AOWE/PE Print Name: Heath ClappAOWE/PE Signature: Heath Clapp Date: 3/9/2026

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 Only

Initial submittal received: 3/15/2026 by JLA
Date Initials

G.S. 130A-335(a5) states the following:

When an applicant for a Construction Authorization, or an Improvement Permit and Construction Authorization together, submits a Construction Authorization, or an Improvement Permit and Construction Authorization application together, the permit fee charged by the local health department, the common form developed by the Department, and any necessary signed and sealed plans or evaluations conducted by 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, the local health department shall, within five business days of receiving the application, conduct a completeness review of the submittal. A determination of completeness means that the Construction Authorization or Improvement Permit and Construction Authorization includes all of the required components. If the local health department determines that the Construction Authorization or Improvement Permit and Construction Authorization is incomplete, the local health department shall notify the applicant of the components needed to complete the Construction Authorization or Improvement Permit and Construction Authorization. The applicant may submit additional information to the local health department to cure the deficiencies in the Construction Authorization or Improvement Permit and Construction Authorization. The local health department shall make a final determination as to whether the Construction Authorization or Improvement Permit and Construction Authorization is complete within five business days after the local health department receives the additional information from the applicant. If the local health department fails to act within any period set out in this subsection, the applicant may treat the failure to act as a determination of completeness. The applicant may apply for the building permit for the project upon the decision of completeness of the Construction Authorization or Improvement Permit and Construction Authorization by the local health department or if the local health department fails to act within five business days. The Authorized On-Site Wastewater Evaluator or licensed engineer submitting the evaluation pursuant to this subsection may request that the local health department revoke or suspend the Construction Authorization or Improvement Permit and Construction Authorization for cause. Upon written request of the Authorized On-Site Wastewater Evaluator or licensed engineer, the local health department shall suspend or revoke the Construction Authorization or Improvement Permit and Construction Authorization pursuant to G.S. 130A-23. The Department shall develop a common form for use as the Construction Authorization.

The review for completeness of this Construction Authorization was conducted in accordance with G.S. 130A-335(a5). This

Construction Authorization is determined to be:

☐ 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 Applicant on _____
Date

State Authorized Agent: _____ Date: _____

☒ Complete

State Authorized Agent: James Adcock Date of Issuance: 3/16/2026

This Construction Authorization is issued pursuant to G.S. 130A-335(a2) and (a5) 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. 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 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: 3/15/2031

 WAKE COUNTY NORTH CAROLINA	Public Health Onsite Water Protection
	This Construction Authorization is issued pursuant to G.S. 130A-335(a2) and (a5) using the signed and sealed AOWE/PE plans attached here. Applicant is responsible for adhering to all State and Local rules, regulations and laws. <u>James Adcock</u> <u>03/16/2026</u>

*See att

Re-submittal of Construction Authorization

LHD USE ONLY: This CA resubmittal received: _____ by _____
Date Initials

The following items are being resubmitted pursuant to G.S. 130A-335(a5) for issuance of the Construction Authorization:

I, _____ hereby attest that the information required to be included with this re-submittal
Authorized Onsite Wastewater Evaluator (Print Name)
is accurate and complete to the best of my knowledge and that the proposed Construction Authorization meets all applicable federal, State, and local laws, regulations, rules, and ordinances.

Signature of Authorized On-Site Wastewater Evaluator

Date

The section below is for Local Health Department use after submittal of items noted as missing above.

LHD Follow-up Completeness Review of Construction Authorization

The review for completeness of this Construction Authorization re-submittal was conducted in accordance with G.S. 130A-335(a5). This Construction Authorization is determined to be:

☐ 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 Applicant on _____
Date

State Authorized Agent: _____

Date: _____

☐ Complete

State Authorized Agent: _____

Date: _____





Agri-Waste Technology, Inc.
1225 Crescent Green, Suite 250, Cary NC 27518
agriwaste.com | 919.859.0669



Soil Suitability for Domestic Sewage Treatment and Disposal Systems
8529 Pascolo Way,
Zebulon, NC 27597
Wake County

PREPARED FOR: Oaktowne Builders

PREPARED BY: Heath Clapp, Licensed Soil Scientist, AOWE

DATE: March 9, 2026

Soil suitability for domestic sewage treatment and disposal systems was evaluated on March 2nd, 2026, for the property located at 8529 Pascolo Way in Zebulon, NC. Heath Clapp of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. This evaluation was done to facilitate permitting for a septic system to serve a four-bedroom home. This report and attached documents were prepared *to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3). The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2).*

A drawing of the site plan, septic layout, and boring locations is included in Attachment 1. Profile descriptions for each boring are included in Attachment 2. Additional documentation about the property is included in Attachment 3.

The total property area is approximately 3.77 acres. The property was mostly cleared at the time of the evaluation. The proposed system is a conventional gravity accepted status (25% reduction) trench product primary system and a conventional pressure manifold accepted status (25% reduction) trench product repair system (see drawings in Attachment 1).

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The drawing in Attachment 1 details the property boundaries (as surveyed by CMP Professional Land Surveyors), soil boring locations, and layout of drain field trenches (Completed by AWT). Eight soil borings were assessed on the property. The site has been evaluated and meets the soil and site evaluations criteria set forth in 15A NCAC Subchapter 18E – Wastewater Treatment and Dispersal Systems. These borings were advanced with a hand auger. Soil Borings 1, 2, 3, 4, 5, 6, 7, and 8 surround both the primary and repair areas.

A septic layout was performed to demonstrate available space (.0508). The layout in Attachment 1 indicates there is available space for a four-bedroom primary and repair system. The proposed trenches represent the upslope edge of the proposed trench.

The proposed LTAR (Long Term Acceptance Rate) by AWT is 0.25 GPD/ft² for the primary septic system, and 0.25 GPD/ft² for the repair septic system. The soils on this property are group IV soils within the distribution and treatment zone as used to define the LTAR. Since usable slope corrected soil depths are 26" for the primary system, AWT is recommending that an accepted (25% reduction) trench product be used for the primary system. The maximum trench bottom should not exceed 14" for the primary system. With an LTAR of 0.25 GPD/ft², 480 linear feet of accepted status (25% reduction) trench is necessary to support a four-bedroom home primary system. The attached drawing proves that 480 linear feet of accepted status (25% reduction) trench can be installed for the primary system. Since usable slope corrected soil depths are 26" for the repair system, AWT is recommending that an accepted status (25% reduction) trench product be used for the repair system. The maximum trench bottom should not exceed 14" for the repair system. With an LTAR of 0.25 GPD/ft², 480 linear feet of accepted status trench is necessary to support a four-bedroom home repair system. The attached drawing proves that 480 linear feet of accepted status (25% reduction) trench can be installed for the repair system. 4+ inches of approved cover soil will be required overtop of the drainfield area.

Any disturbances or grading done in the usable area will change the potential of using the area designated for a drain field. Prior to moving forward with building on the property, Wake County Department of Environmental Services should be contacted to complete the necessary review of this documentation to issue an IP (Improvement Permit) for the property and the CA (Construction Authorization). A Preconstruction meeting is required before installation of the system takes place. 4+ inches of approved cover soil will be required overtop of the drainfield area.

Conclusions

An IP (Improvement Permit) and CA (Construction Authorization) for this property can be issued with the site plan that is in Attachment 1. A CA permit will be required in order to secure a building permit for the property. The county issues an Operation Permit after the system has been installed to meet the specifications of the Authorization to Construct. It will be critical to not disturb any of the proposed septic area or there is a risk that the IP and CA will be revoked. The LSS/AOWE Evaluation and attached documents were prepared *to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3). The LSS/AOWE evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2)*

We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.

Sincerely,

A handwritten signature in black ink that reads "Heath Clapp". The signature is written in a cursive, slightly slanted style.

Heath Clapp



Agri-Waste Technology, Inc.
1225 Crescent Green, Suite 250, Cary NC 27518
agriwaste.com | 919.859.0669

SOIL & SITE EVALUATION for ON-SITE WASTEWATER SYSTEMS

Evaluation Date	3/2/2026	Site Location	8529 Pascolo Way, Zebulon, NC 27597	County	Wake
PIN/Parcel	1798265462	Property Size	3.77 acres	Property Recorded	Yes
Proposed Facility	SFR	Bedrooms	4	Wastewater Strength	Domestic
Water Supply	Municipal	Design Flow (.0400)	480	Evaluation Method	Auger

Profile #	.0502 Landscape Position Slope %	Horizon Depth (in)	Soil Morphology		.0504 Soil Wetness Color	.0505 Soil Depth (in)	Other Factors		.0509 Profile Class LTAR	.0502(d) Slope Correction
			.0503 Structure Texture	.0503 Consistence Mineralogy			.0506 Saprolite	.0507 Restrictive Horizon		
1	5%	A 0-8"	SL	NS, NP, VFr	7.5YR 4/3	28	S	S	0.25	2
		Bt1 8-16"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 16-28"	C	S; P; Fi	5YR 4/4					
		Bt3 28"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
2	7%	A 0-6"	SL	NS, NP, VFr	7.5YR 4/3	32	S	S	0.25	2.8
		Bt1 6-14"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 14-32"	C	S; P; Fi	5YR 4/4					
		Bt3 32"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
3	6%	A 0-10"	SL	NS, NP, VFr	7.5YR 4/3	40	S	S	0.3	2.4
		Bt1 10-16"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 16-40"	C	S; P; Fi	5YR 4/4					
		Bt3 40"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
4	13%	A 0-6"	SL	NS, NP, VFr	7.5YR 4/3	34	S	S	0.3	5.2
		Bt1 6-20"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 20-34"	C	S; P; Fi	5YR 4/4					
		Bt3 34"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
5	3%	A 0-12"	SL	NS, NP, VFr	7.5YR 4/3	40	S	S	0.25	1.2
		Bt1 12-18"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 18-40"	C	S; P; Fi	5YR 4/4					
		Bt3 40"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
6	10%	A 0-4"	SL	NS, NP, VFr	7.5YR 4/3	30	S	S	0.25	4
		Bt1 4-14"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 14-30"	C	S; P; Fi	5YR 4/4					
		Bt3 30"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
7	11%	A 0-8"	SL	NS, NP, VFr	7.5YR 4/3	37	S	S	0.25	4.4
		Bt1 8-16"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 16-37"	C	S; P; Fi	5YR 4/4					
		Bt3 37"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		
8	9%	A 0-10"	SL	NS, NP, VFr	7.5YR 4/3	30	S	S	0.25	3.6
		Bt1 10-16"	SCL	SS; SP; Fr	7.5YR 4/4					
		Bt2 16-30"	C	S; P; Fi	5YR 4/4					
		Bt3 30"+	C	S; P; Fi	5YR 4/4 2.5Y 7/1	System Type		Conventional		

Evaluated By:
Heath Clapp, LSS

Site Classification	Suitable	Site Classification	Suitable
Primary LTAR	0.25	Repair LTAR	0.25
Primary Trench Depth	14"	Repair Trench Depth	14"



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SOIL & SITE EVALUATION for ON-SITE WASTEWATER SYSTEMS

LEGEND

Soil Group	Soil Texture	Conventional LTAR	Anaerobic Dip LTAR	Aerobic Drip LTAR (TS-II)	Mineralogy &		Structure
					Moist	Wet	
I	S (Sand)	0.8-1.2	0.4-0.6	0.8-1.5			G (Single grain)
	LS (Loamy Sand)				Lo (Loose)	NS (Non Sticky)	M (Massive)
II	SL (Sandy Loam)	0.6-0.8	0.3-0.4	0.6-0.8	VFR (Very Friable)	SS (Slightly Sticky)	GR (Granular)
	L (Loam)				FR (Friable)	S (Sticky)	SBK (Subangular Blocky)
	SiL (Silt Loam)				FI (Firm)	VS (Very Sticky)	ABK (Angular)
	SCL (Sandy Clay Loam)				VFI (Very Firm)	NP (Non Plastic)	
III	CL (Clay Loam)	0.3-0.6	0.15-0.3	0.2-0.6			PR (Prismatic)
	SiCL (Silty Clay Loam)				EFI (Extremely Firm)	SP (Slightly Plastic)	
	SC (Sandy Clay)					P (Plastic)	PL (Platy)
IV	SiC (Silty Clay)	0.1-0.4	0.05-1.5	0.05-0.2		VP (Very Plastic)	
	C (Clay)				SEXP (Slighty Expansive)		
					EXP (Expansive)		



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

1/20/2026

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): 984-235-4273 E-MAIL ADDRESS: connie@hn-ins.com	FAX (A/C, No): 919-556-8758
License#: 1000009111 AGRITEC-01		
INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A : Accident Fund		10166
INSURER B : Evanston Insurance Company		35378
INSURER C : SELECTIVE INSURANCE COMPANY		39926
INSURER D :		
INSURER E :		
INSURER F :		

COVERAGES**CERTIFICATE NUMBER:** 1861440469**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
C	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC OTHER:			S 2253659	1/18/2026	1/18/2027	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 \$
C	☒ AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY			S 2253659	1/18/2026	1/18/2027	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
C	☒ UMBRELLA LIAB ☒ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE DED RETENTION \$			S 2253659	1/18/2026	1/18/2027	EACH OCCURRENCE \$ 2,000,000 AGGREGATE \$ 2,000,000 \$
A	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	AFWCP10000307205	1/18/2026	1/18/2027	☒ 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
B	Prof & Pollution Liability			MKL77ENV106760	8/22/2025	8/22/2026	Each Claim \$ 5,000,000
C	Leased & Rented			S 2253659	1/18/2026	1/18/2027	Equipment \$ 25,000

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

CERTIFICATE HOLDER**CANCELLATION**

For Information Only
***Contact Agency
for Specific Holder
Wording***

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

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PRELIMINARY PLOT PLAN FOR

OAKTOWNE BUILDERS

LOT 17, LENNOX MANORS SUBDIVISION

8529 PASCOLO WAY

REF: B.M. 2025, PG. 2296

LITTLE RIVER TOWNSHIP

WAKE COUNTY, NORTH CAROLINA

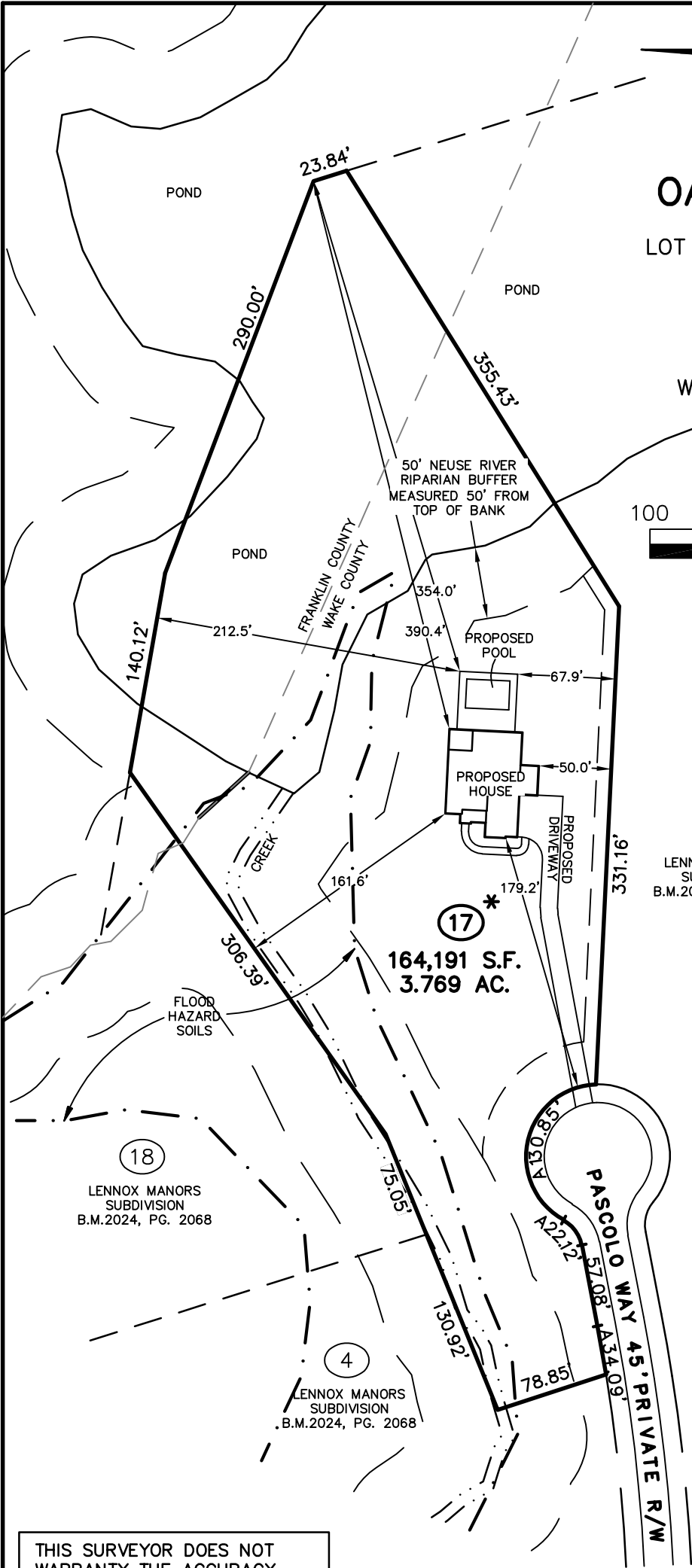
FEBRUARY 18, 2026

REVISED FEBRUARY 19, 2026

ZONED R-30



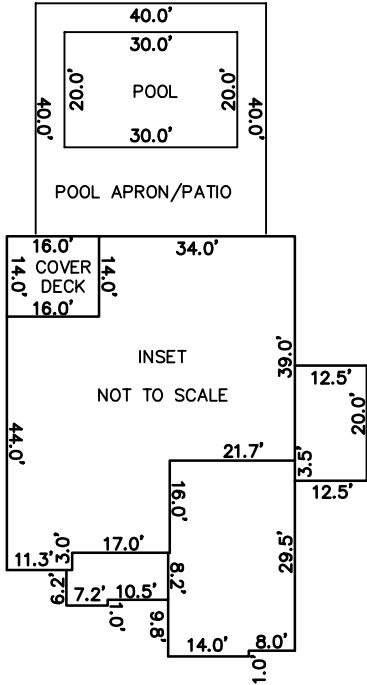
SCALE 1"=100'



16
LENNOX MANORS
SUBDIVISION
B.M.2024, PG. 2068

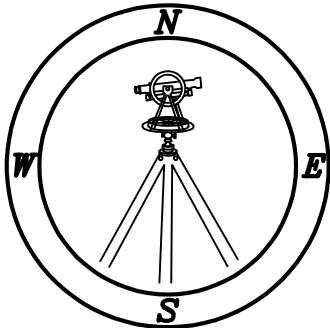
18
LENNOX MANORS
SUBDIVISION
B.M.2024, PG. 2068

4
LENNOX MANORS
SUBDIVISION
B.M.2024, PG. 2068



IMPERVIOUS SURFACE TABLE	
HOUSE	3,431 S.F.
COVER DECK	237 S.F.
POOL APRON/ PATIO	1,000 S.F.
DRIVEWAY/SIDEWALKS	3,341 S.F.
MISC/UTILITIES	36 S.F.
TOTAL IMPERVIOUS AREA	8,045 S.F.
MAX IMPERVIOUS ALLOWED	12,698 S.F.

THIS SURVEYOR DOES NOT
WARRANTY THE ACCURACY
OF ARCHITECTURAL DIMENSIONS.
THEY ARE TO BE VERIFIED BY
THE CONTRACTOR.



CMP

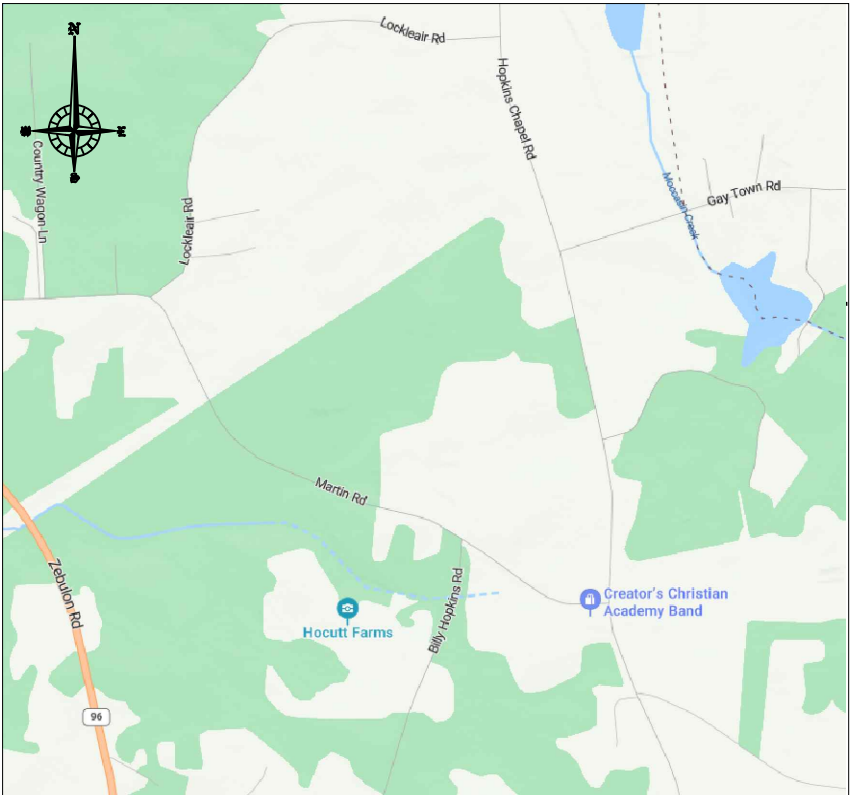
Professional Land Surveyors
C-1525

333 S. White Street
Post Office Box 1253
Wake Forest, N.C. 27588
(919)556-3148

NOTES:
-THIS PLAN DOES NOT REFLECT AN
ACTUAL SURVEY. IT IS A PRELIMINARY
PLAN AND SHOULD BE USED FOR ITS
INTENDED PURPOSE ONLY.
-NOT FOR RECORDATION, CONVEYANCES,
OR SALES.

OAKTOWNE BUILDERS - LENNOX MANORS
17

Project Location	8529 Pascolo Way, Zebulon, NC 27597 Wake County PIN: 1798265462
Project Owner	Oaktowne Builders 881 Falcate Drive, Wake Forest, NC 27587 919-744-9949 jason@otbnc.com
Project Consultant	Heath Clapp, AOWE (919) 629-6404 Trent Bostic, LSS (919) 367-6322 Agri-Waste Technology, Inc. 1225 Crescent Green, Suite 250 Cary, NC 27518 (919) 859-0669 (919) 233-1970 Fax
System Overview	Single Family Residence Four (4) Bedroom, 480 gpd Conventional Gravity Accepted/Innovative Trench Product



VICINITY MAP

Sheet Index

Sheet 1	Cover Sheet
Sheet 2	Property Layout
Sheet 3g	Primary Drainfield
Sheet 4g	Gravity Detail Sheet
Sheet 5p	Repair Drainfield
Sheet 6p	Pump Detail Sheet 1
Sheet 7p	Pump Detail Sheet 2



AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
1225 Crescent Green, Suite 250
Cary, North Carolina 27518
919-859-0669
www.agriwaste.com

Oaktowne Builders
ktowne Builders - Lennox Ma
17
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8529 Pascolo Way,
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881 Falcate Drive,
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NC ONSITE WASTEWATER
EVALUATOR SEAL



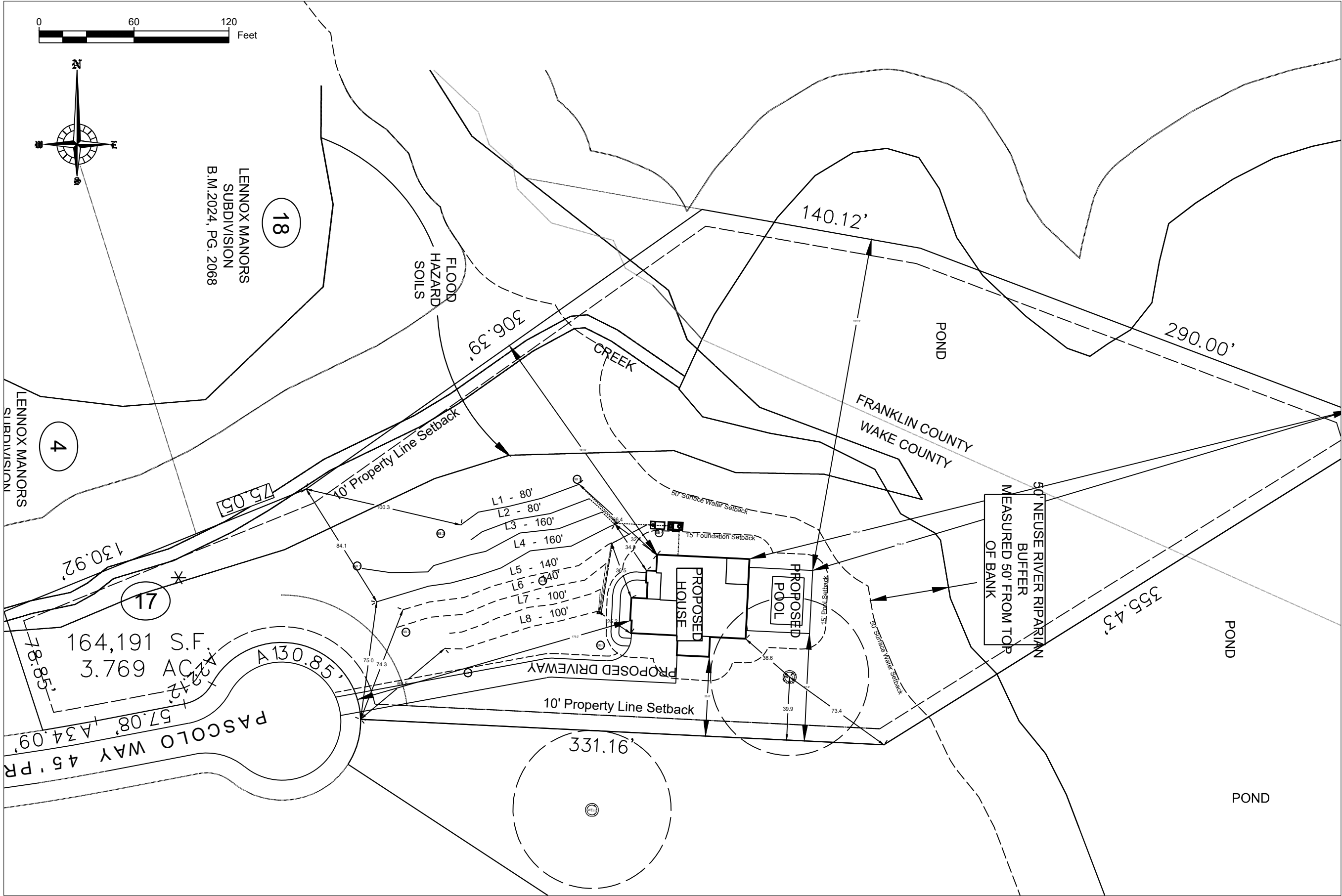
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SHEET TITLE
Cover Sheet

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REVISED BY: ####	REVISED ON: ####
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WW-1



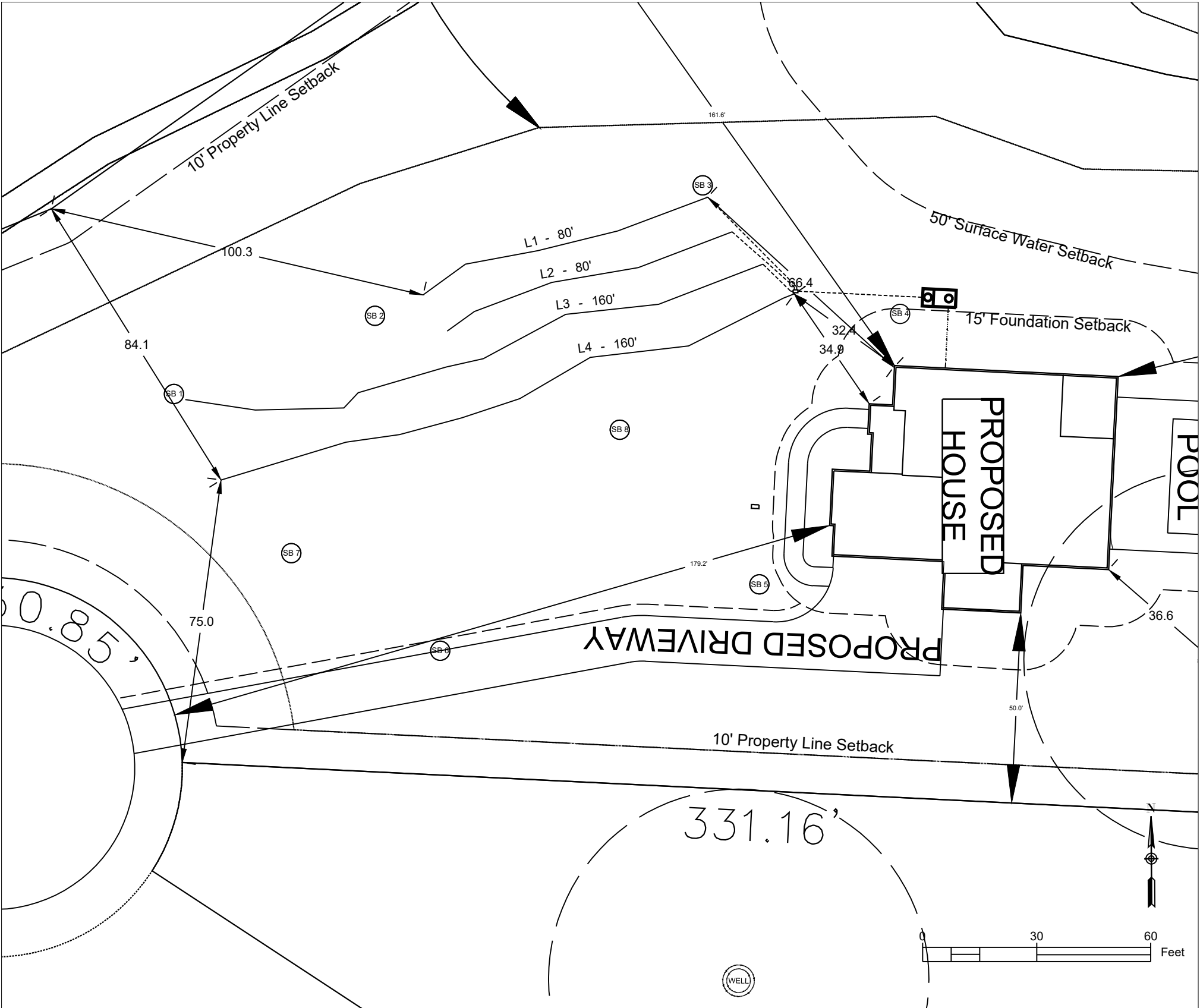
General Drainfield Notes:

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. 15' downslope if 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. Primary is Infiltrator EZ Flow.



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

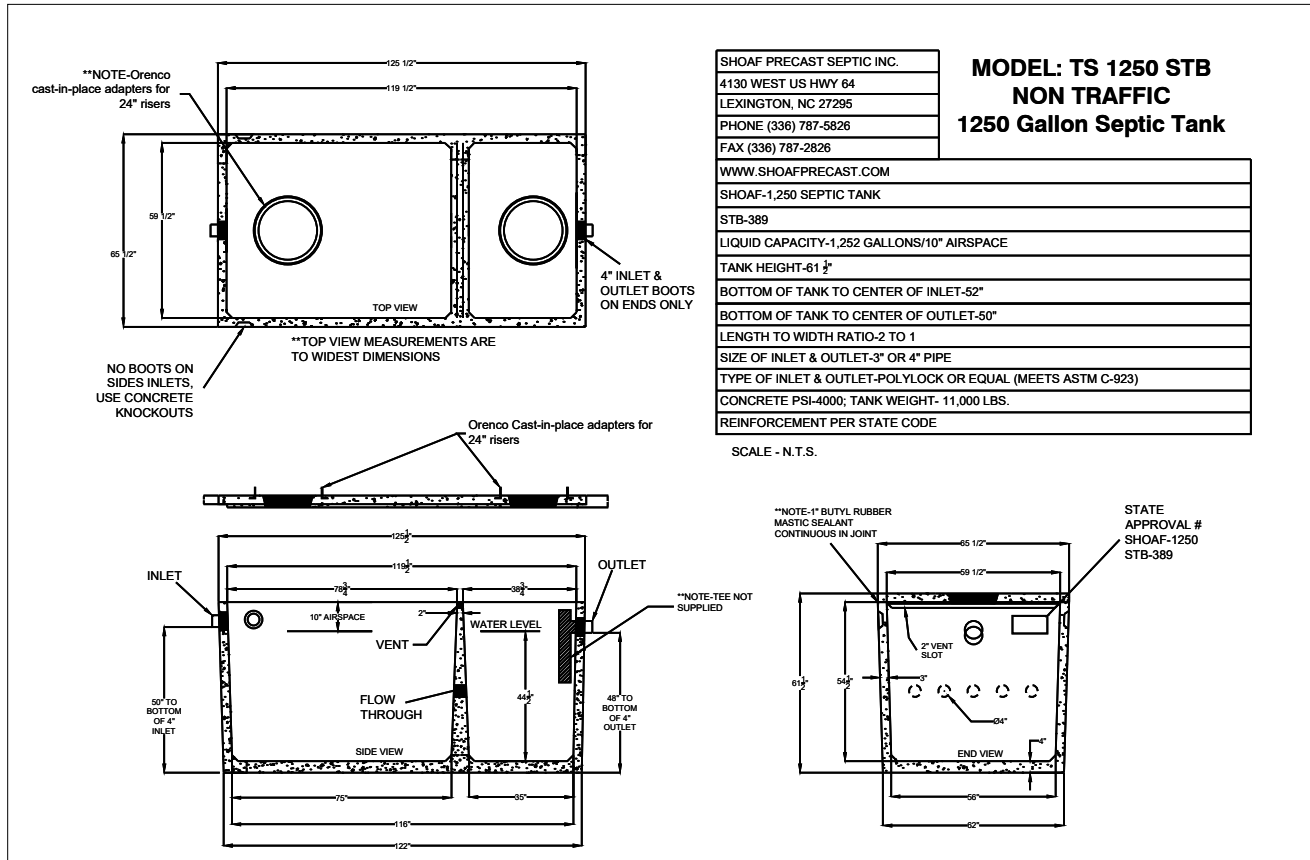


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SHEET TITLE
Primary Layout

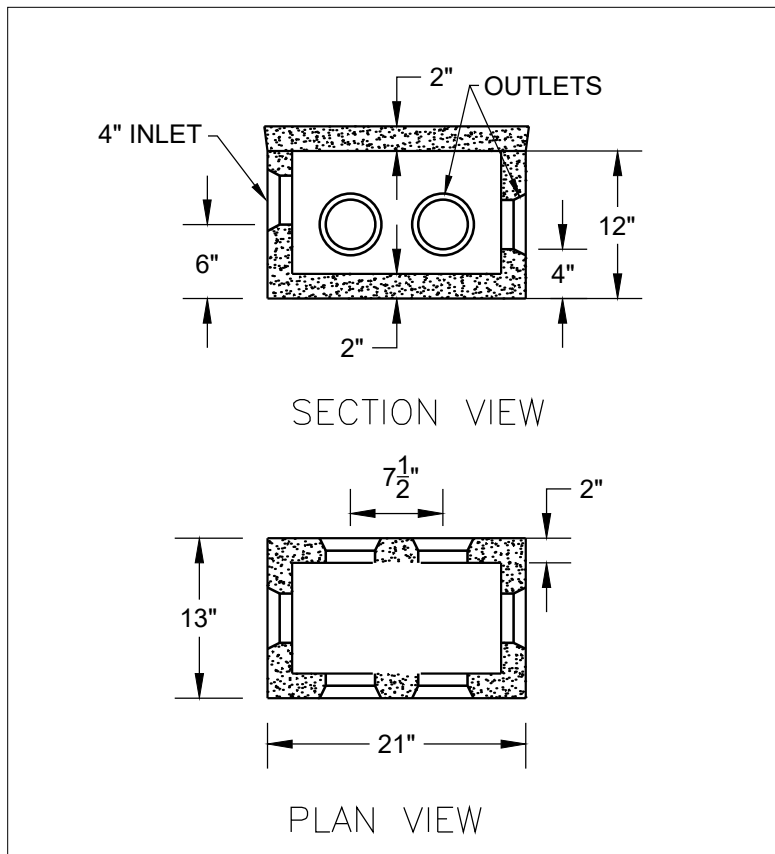
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WW-3G

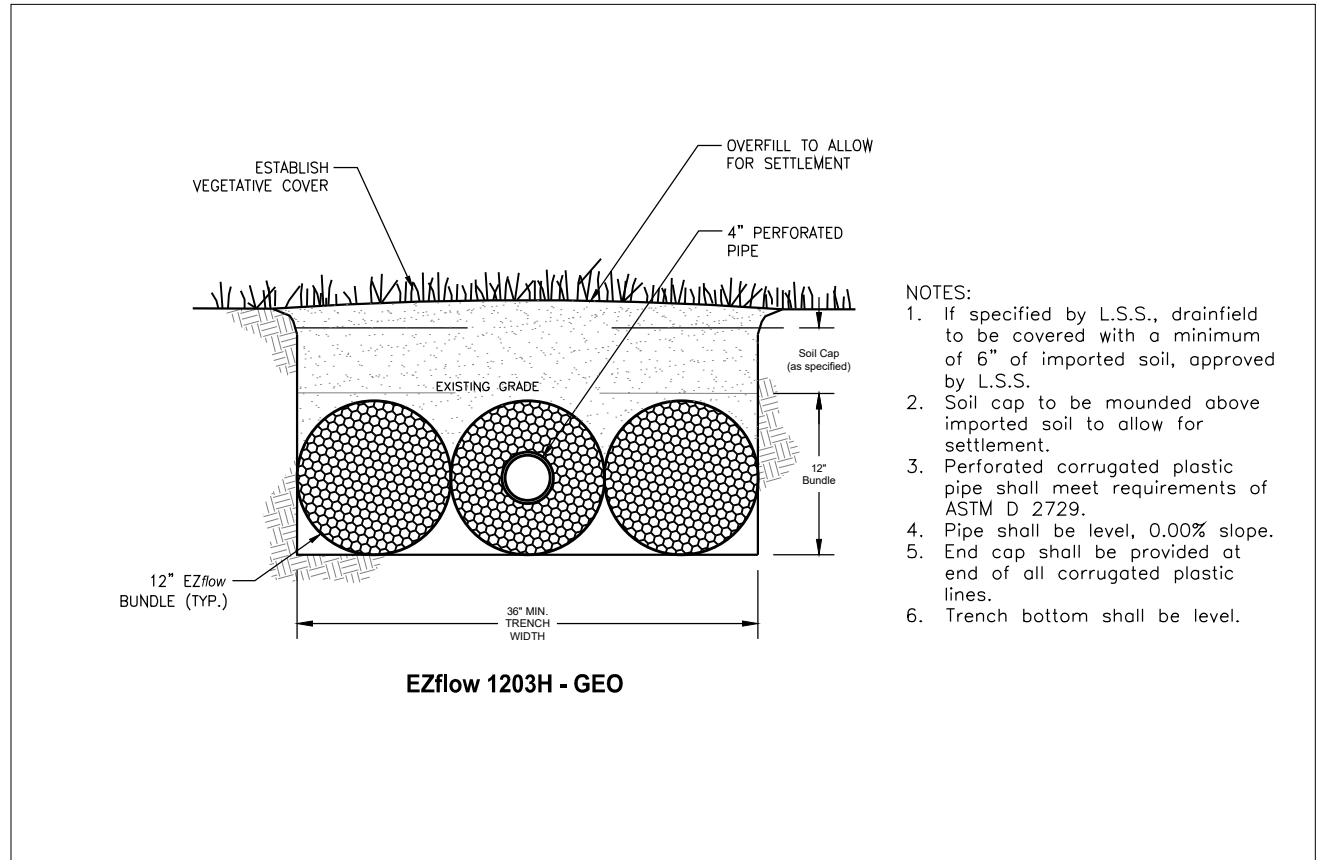


1 Septic Tank

SOURCE: Shoaf Precast Septic, Inc.



3 Distribution Box



2 Chambers - Trench Cross-Section (Typical)

INFILTRATOR Water Technologies, LLC

NOTES

1. Installation to follow all NC DHHS and Wake County applicable rules and regulations.
2. Wake County Department of Environmental Services to perform construction inspections and final system certification.
3. Septic Tank to have approved effluent filter.
4. Contractor to abide by all safety regulations during system installation.
5. Contractor shall backfill around all access areas such that storm water is shed away from potential entry points.
6. Invert elevations of all components to be verified in field by contractor to insure proper operation.
7. All system piping to be SCH40 PVC (except where noted).
8. All gravity elbows to be long radius or long sweeping type elbows.
9. Actual installation and placement of treatment system to be overseen by Contractor.
10. Tanks to be set on 6" minimum gravel base. Use #5 or #57 stone for base.
11. Contractor to seed and/or mulch disturbed areas to coincide with existing landscape. Area shall not be left with uncovered soil.
12. 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.
13. 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.
14. All penetrations to be sealed.
15. Contractor to adjust tank placement to meet site constraints.

AWT

Engineers and Soil Scientists

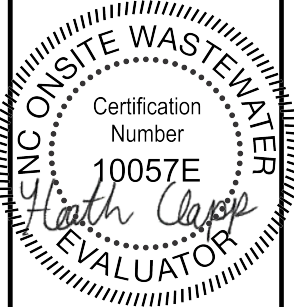
Agri-Waste Technology, Inc.
1225 Crescent Green, Suite 250
Cary, North Carolina 27518
919-859-0669
www.agriwaste.com

Oaktowne Builders
Oaktowne Builders - Lennox Manor
17

Project Location:
8529 Pascolo Way,
Zebulon, NC 27597
Wake County
PIN: 1798265462

Project Owner:
Oaktowne Builders
881 Falcate Drive,
Wake Forest, NC 27587
919-744-9949
jason@otbnc.com

NC ONSITE WASTEWATER
EVALUATOR SEAL



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Detail Sheet

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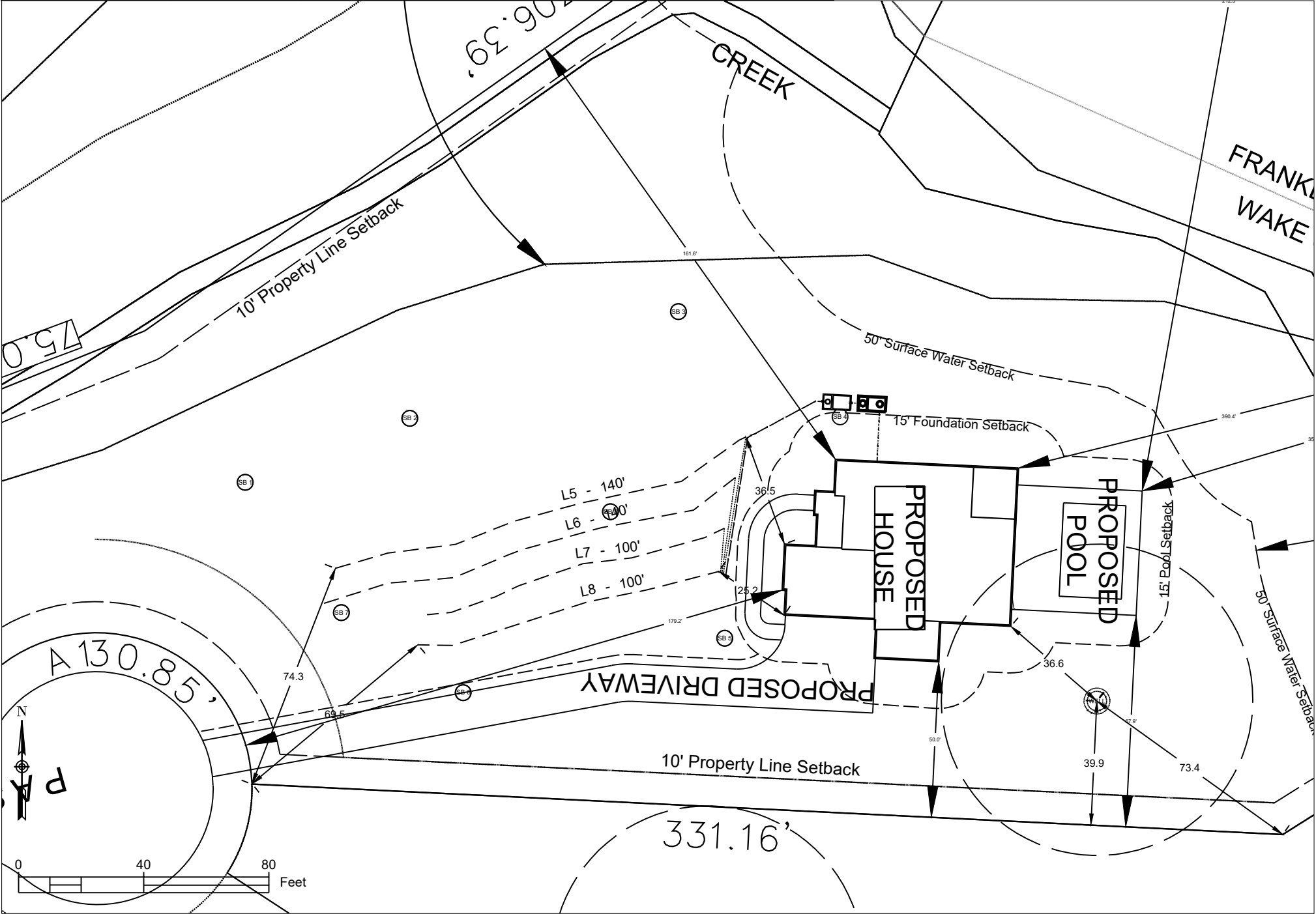
WW-4G

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 EZflow						
Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
5	0	140	3/4in SCH 80	10.10	0.072	0.335
6	0	140	3/4in SCH 80	10.10	0.072	0.335
7	0	100	1/2in SCH 40	7.11	0.071	0.331
8	0	100	1/2in SCH 40	7.11	0.071	0.331
Total		480	Total		34.42	Avg. 0.33

Note:
Repair distribution is pressure manifold utilizing accepted trench product.



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

Oaktowne Builders
Oaktowne Builders - Lennox Manor
17
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EVALUATOR SEAL

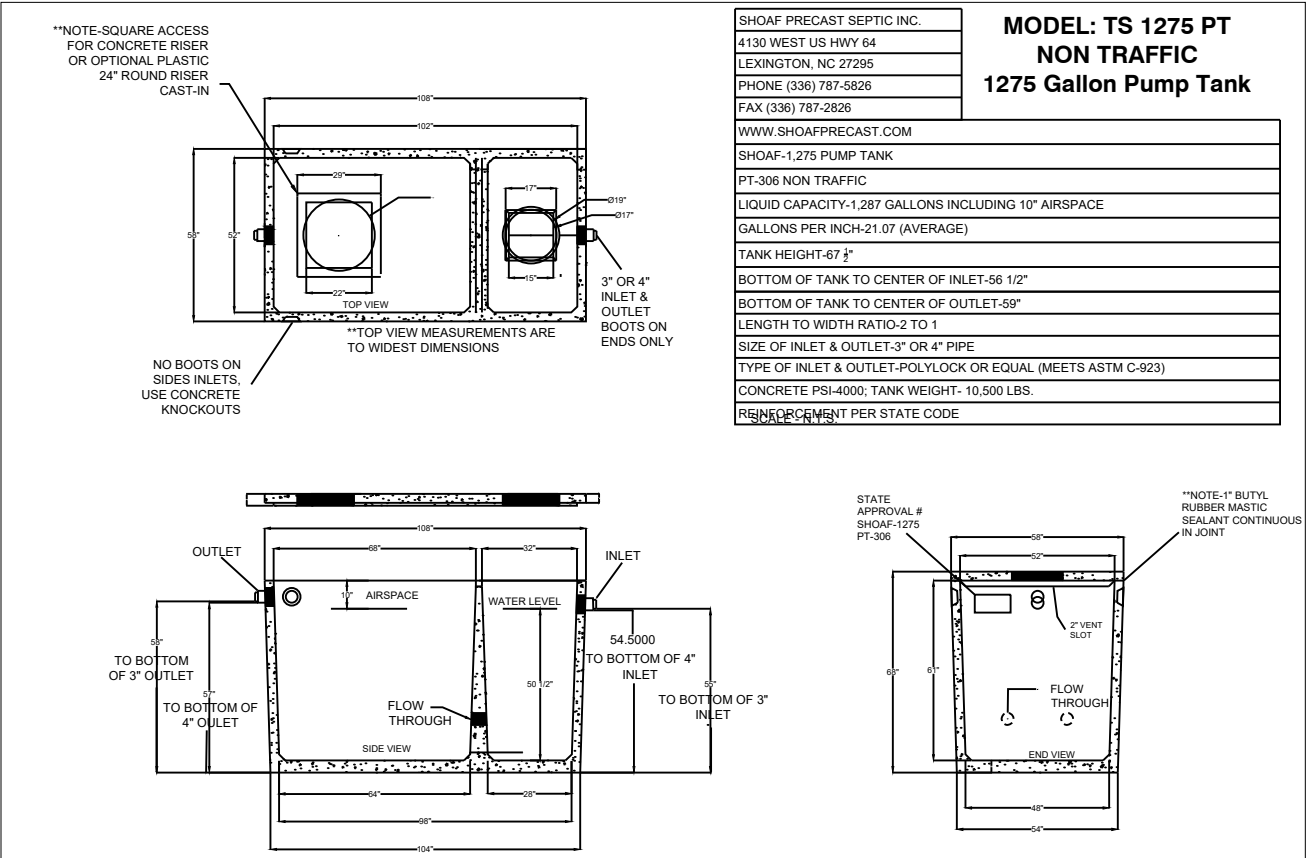
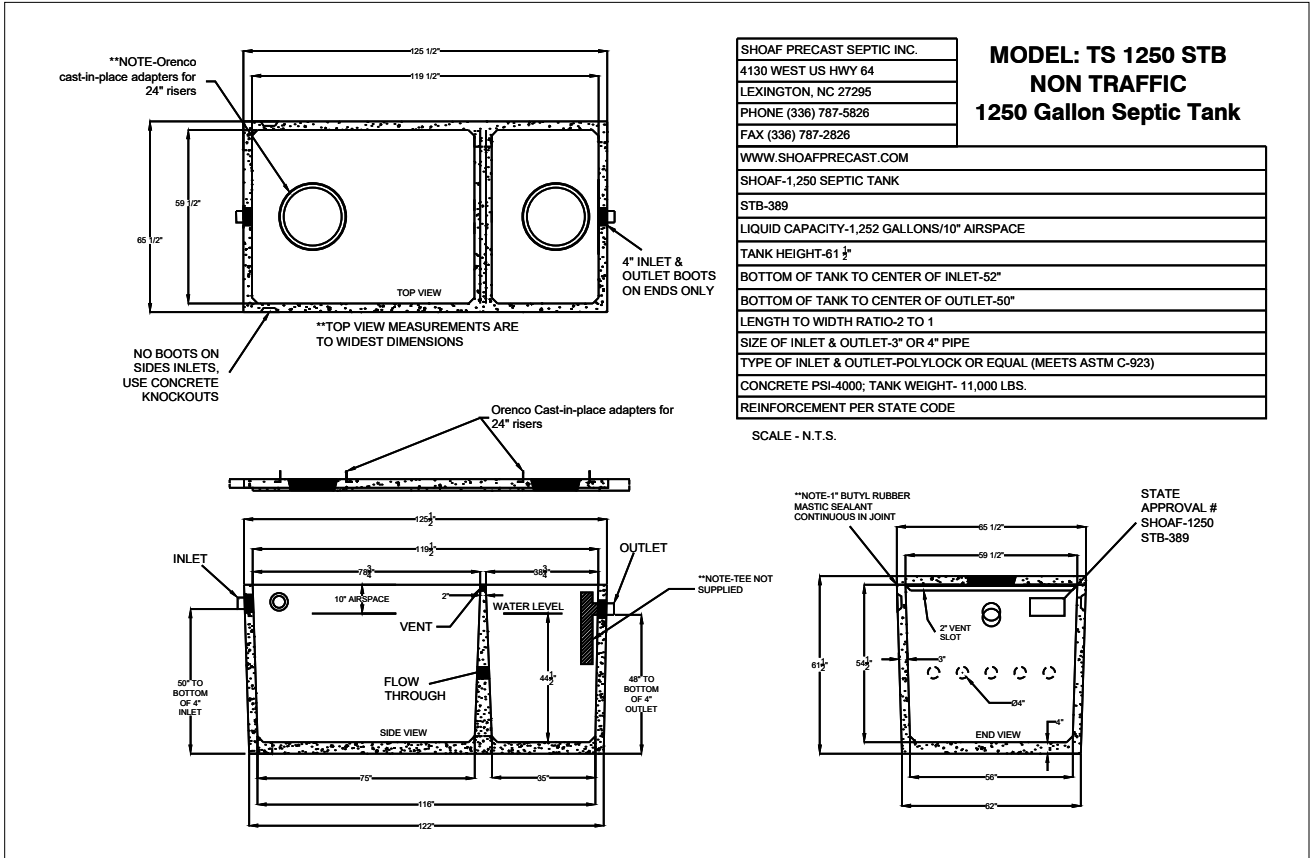


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SHEET TITLE
Repair Drainfield

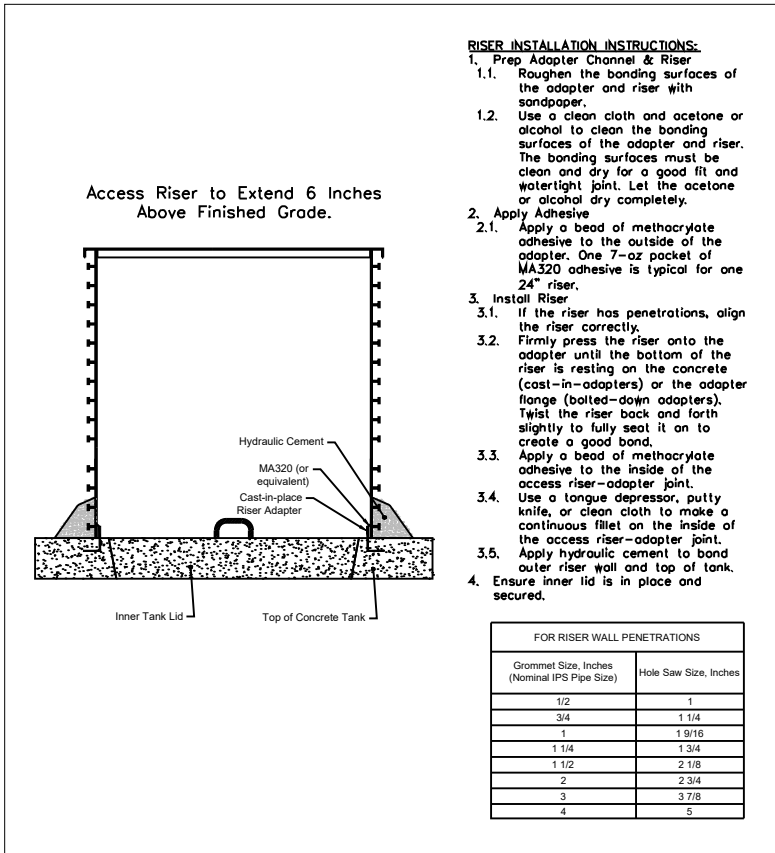
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DRAWING NUMBER
WW-5P



1
WW-6P
Septic Tank
SOURCE: Shoaf Precast Septic, Inc.

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



3
WW-6P
Riser Installation

NOTES

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

11. Contractor to seed and/or mulch disturbed areas to coincide with existing landscape. Area shall not be left with uncovered soil.
12. Mount Control Panel a minimum of 24" above grade.
13. 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.
14. 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.
15. 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.
16. All penetrations to be sealed.
17. All pressure lines to maintain 18" min. cover.
18. Contractor to adjust tank placement to meet site constraints.



Engineers and Soil Scientists

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Project Owner:
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919-744-9949
jason@otbnc.com

NC ONSITE WASTEWATER
EVALUATOR SEAL

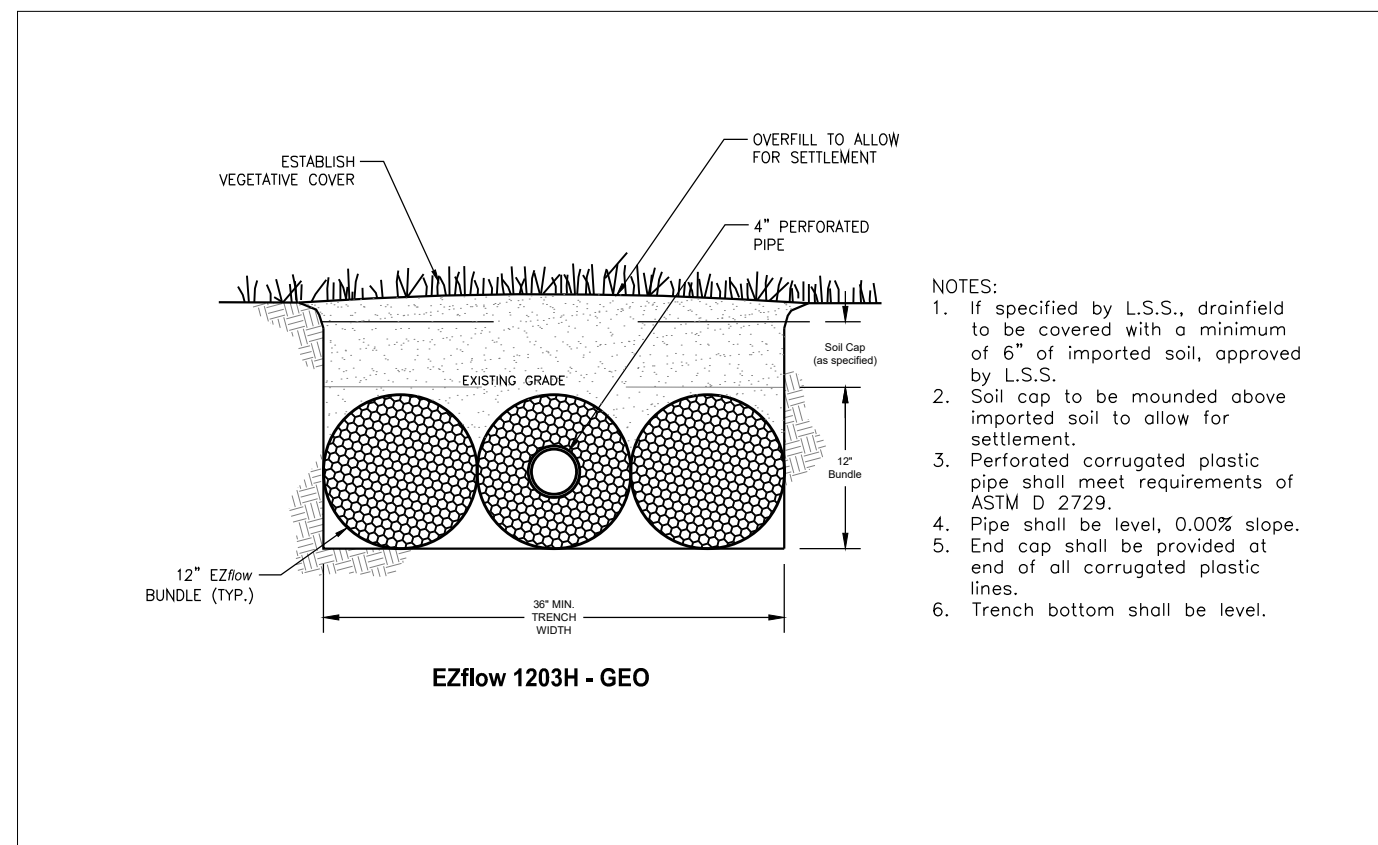
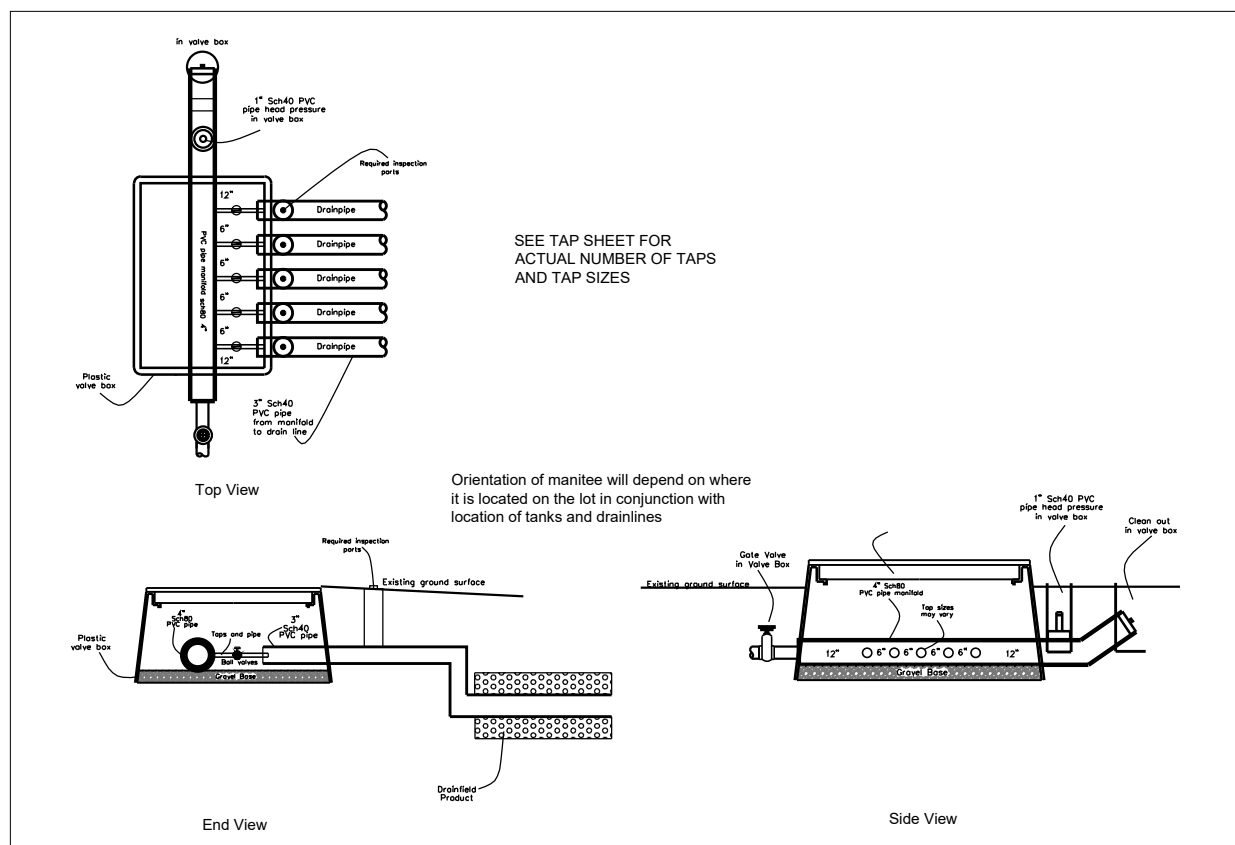
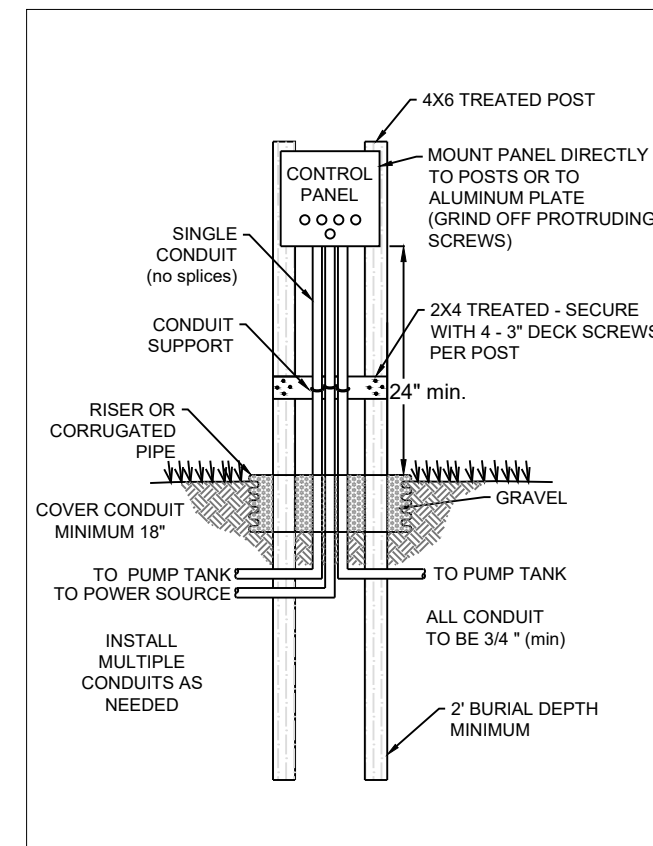
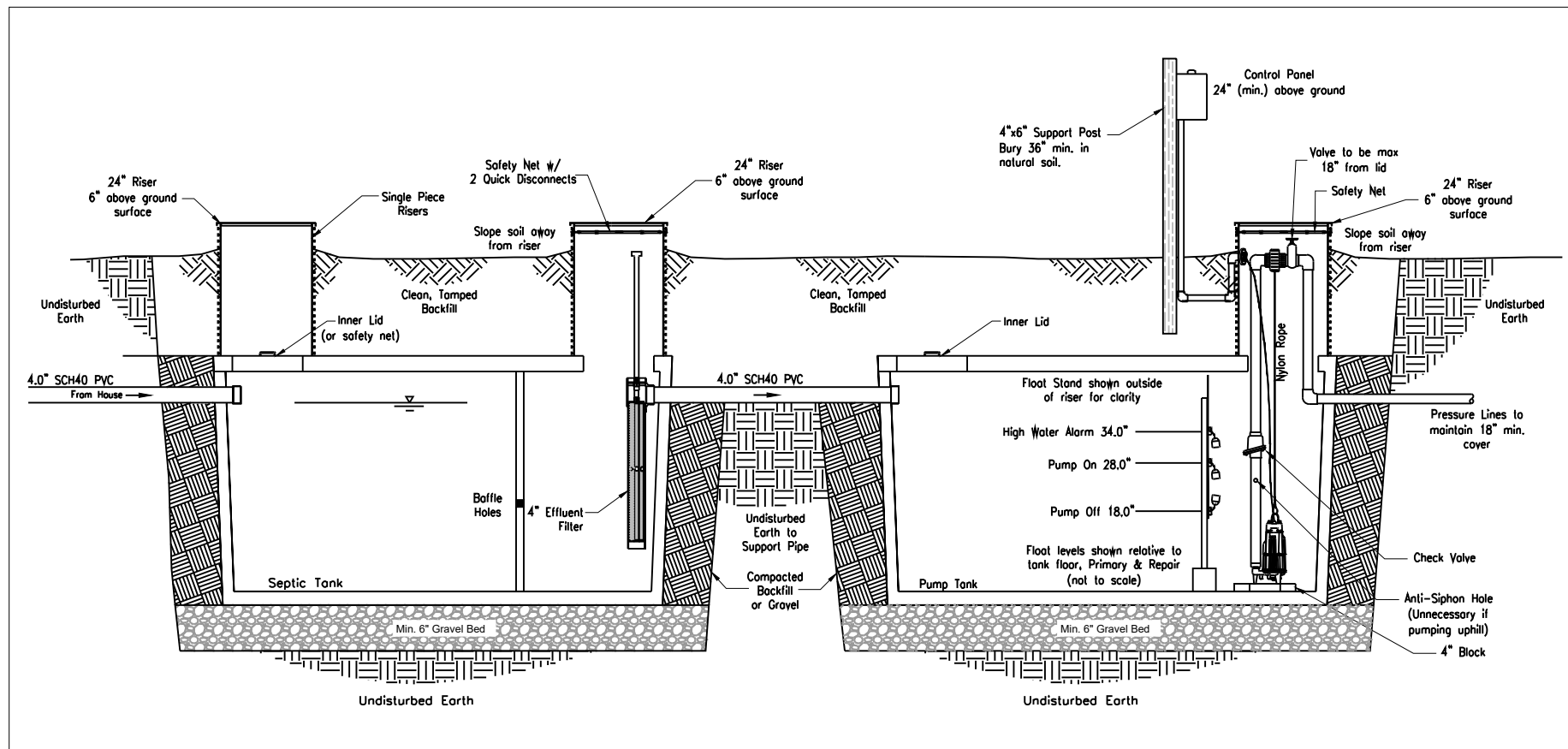


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DRAWING NUMBER
WW-6P



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RELEASED BY: #####		RELEASED ON: #####
DRAWING NUMBER		

Septic System Design - Summary Page



Agri-Waste Technology, Inc.
1225 Crescent Green, Suite 250, Cary NC 27518
agriwaste.com | 919.859.0669

Project Manager:

Heath Clapp, LSS
hclapp@agriwaste.com
919-629-6404

Designer:

Heath Clapp, LSS
hclapp@agriwaste.com

Project: Oaktowne Builders- Lennox Manor
Property: 8529 Pascolo Way,
Zebulon, NC 27597

Date: 3/9/2026

County: Wake

Subdiv.: Lennox Manors

Lot #: 17

Permit #:

Owner: Oaktowne Builders

Address: 881 Falcate Drive,
Wake Forest, NC 27587

Type of System: II b

Phone: 919-744-9949

Email: jason@otbnc.com

PIN: 1798265462

EHS:

Soil Parameters

Soil Evaluation By:

Special Conditions/Notes:

LTAR: 0.25 gpd/ft²

Design Parameters

Type of Establishment: Dwelling Units, no more than 2 persons per bedroom

Unit: Bedroom

of Units: 4

Septic Tank Specifications

Min. Tank Capacity:	960	gal		Exterior	Interior
Actual Tank Volume:	1,250	gal	Length:	125.5	119.5 in.
Tank Manufacturer:	Shoaf		Width:	65.5	59.5 in.
Tank Model:	TS 1250 STB		Depth:	61.5	54.5 in.

Primary Drainfield Specifications

Type of Distribution:	Parallel	Distribution Box	Trench Bottom Area:	1920	ft ²
Trench Media:	EZflow		Minimum Drain Line:	480	ft
Trench Width:	3	ft	Actual Drain Line:	480	ft
Trench Depth:	14	in.	Number of Lines:	4	
(or as specified on permit)			Minimum Line Spacing:	9	ft O.C.

Wastewater Treatment System Design Calculations

Project: Oaktowne Builders- Lennox Manors 17

Location: 8529 Pascolo Way,
Zebulon, NC 27597

County: Wake

Septic Tank Sizing

Daily Flow Estimate:

Unit	# of Units	Flow/Unit	Flow/Day
Bedroom	4	120	480
Q=			480

gpd

Septic Tank Minimum Capacity:

Per NCAC T15A:18A .1952(b)(2)(A):

For large residences, multiple dwelling units, or places of business or public assembly with $Q \leq 600$,

Minimum Liquid Capacity (V)= 960 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: Oaktowne Builders- Lennox Manors 17

Location: 8529 Pascolo Way,
Zebulon, NC 27597

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)	16.1 in.	(Pump height = 12 1/16")
Pump Off	18.0 in.	
Pump On	28.0 in.	(set for dose volume)
Alarm On	34.0 in.	(6 in. above On Float)

Emergency Storage Available

Pump Tank 558 gal

Days of Storage 1.16 days

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

ELEVATIONS

Project: Oaktowne Builders- Lennox Manors 17

Location: 8529 Pascolo Way,
Zebulon, NC 27597

County: Wake

Benchmark 0
BM Elev 0 ft

Septic Tank 1,250 gal

Ground Surface		339.50 ft
Depth of Soil Cover	12 in.	1.00 ft
Overall Ht of Tank	61.5 in.	5.13 ft
Elev, Base of Tank		333.38 ft
Ht to 4" Inlet Invert	50 in.	4.17 ft
Elev, 4" Inlet Invert		337.54 ft
Ht to 4" Outlet Invert	48 in.	4.00 ft
Elev, 4" Outlet Invert		337.38 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		332.88 ft

Pump Tank 1287 gal

Ground Surface		339.00 ft
Depth of Soil Cover	12 in.	1.00 ft
Overall Ht of Tank	67.5 in.	5.63 ft
Elev, Base of Tank		332.38 ft
Ht to 4" Inlet Invert	57 in.	4.75 ft
Elev, 4" Inlet Invert		337.13 ft
Ht to 2" Outlet Invert	54.5 in.	4.54 ft
Elev, 2" Outlet Invert		336.92 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		331.88 ft

ST Inlet Pipe

Grade @ Stub-out		341.5 ft
Depth of Stub-out, top		1.5 ft
Elev, Stub-out Invert		339.65 ft
Elev @ ST Inlet Invert		337.54 ft
Length		16 ft
Slope		13.2 %

Pipe, ST to PT

ID	4 in.	0.33 ft
OD	4.5 in.	0.38 ft
Elev, ST Outlet Invert		337.38 ft
Elev, PT Inlet Invert		337.13 ft
Length		3 ft
Slope		8.3 %
Cover over inlet pipe		1.60 ft

Pump Reqmt.

Floor Thickness	4 in.	0.33 ft
Elev, Pump Tank Floor		332.71 ft
Pump Block Ht.	4 in.	0.33 ft
Elev, Pump Intake		333.04 ft

Grade @ Repair Manifold		342.20 ft
Min. Cover	18 in.	1.50 ft
Max Elev, Primary		334.10 ft
Max Elev, Repair		340.70 ft
Elev Diff, Repair		7.66 ft

Drainfield Design

Project

Location

County

Oaktowne Builders- Lennox Manors 17
8529 Pascolo Way,
Zebulon, NC 27597
Wake

Drainfield Sizing

Primary					
	LTAR	0.25 gpd/ft ²			
	Daily Design Flow	480 gpd	Type of Drainfield Media	EZflow	
	Req. Drainfield Area	1,920 ft ²	Required Drainline		
	Trench Width, Eff.	3 ft	After 25% Reduction	480 ft	
	Required Drainline	640 ft	Minimum Line Spacing	9 ft (O.C.)	
Repair					
	LTAR	0.25 gpd/ft ²			
	Daily Design Flow	480 gpd	Type of Drainfield Media	EZflow	
	Req. Drainfield Area	1,920 ft ²	Required Drainline		
	Trench Width, Eff.	3 ft	After 25% Reduction	480 ft	
	Required Drainline	640 ft	Minimum Line Spacing	9 ft (O.C.)	

Drainfield Layout

Line	Use	Flag Color	Elevation (ft)	Line Length (ft)	Used as Primary (ft)	Used as Repair (ft)
1	Layout Line			80	80.0	
2	Layout Line			80	80.0	
3	Layout Line			160	160.0	
4	Layout Line			160	160.0	
5	Layout Line			175		140.0
6	Layout Line			167		140.0
7	Layout Line			140		100.0
8	Layout Line			130		100.0
Total				1092	480	480
Count				8	4	4

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

PRESSURE MANIFOLD SYSTEM DESIGN (Repair)

Site Information

Project: Oaktowne Builders- Lennox Manors 17
Location: 8529 Pascolo Way,
 Zebulon, NC 27597
County: Wake

Design Information

Estimated Daily Flow	480 gal/day
L.T.A.R. (from Wake Co.)	0.25 gal/day/ft ²
L.T.A.R. + 5%	0.263 gal/day/ft ²
Trench Width	3 ft.
Line Length Required	640 ft.
Length after 25% Reduction	480 ft
L.T.A.R. Reduced	0.333 gal/day/ft ²
L.T.A.R. Reduced + 5%	0.350 gal/day/ft ²

DRAINFIELD INFO. - Repair						
Proposed Type of System/Distribution: Pump to Pressure Manifold using EZflow						
Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
5	0	140	3/4in SCH 80	10.10	0.072	0.335
6	0	140	3/4in SCH 80	10.10	0.072	0.335
7	0	100	1/2in SCH 40	7.11	0.071	0.331
8	0	100	1/2in SCH 40	7.11	0.071	0.331
Total		480	Total	34.42	Avg.	0.33
<i>Note: Line lengths are calculated in 5' increments to reflect use of EZflow product.</i>						

Total Run Time	13.95 min.
Drainfield Capacity	313.4 gal
% of Drainfield Cap	67.2% (Req. Range 66-75%)
Dose Volume	210.6 gal/dose
Run Time/Dose	6.1 minutes Range 5-7 minutes unless uphill, checked
Volume/depth	21.07 gal/in. (Per tank manufacturer's specifications)
Estimated Drawdown	10.00 in.

Manifold Box			
Number of Taps	4	with	0 Split(s)
Manifold Length	3.5	ft.	(approximate)

PUMP DESIGN

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

Project: Oaktowne Builders- Lennox Manors 17
Location: 8529 Pascolo Way,
Zebulon, NC 27597
County: Wake

Friction Losses

Suction Head	0	ft	(submersible 0)
Elev. Difference (highest point from pump)	7.66	ft	
Design Pressure At Outlet	2	ft	
Supply Line - 2.5" Schedule 40 PVC			
Pipe Diameter, Nominal	2.5	in.	
Pipe Diameter (ID)	2.445	in.	Flow 34.42 gpm
Pipe Length	72	ft	Velocity 2.35 ft/s
Pipe Length for Fittings	7.2	ft	Meets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length	79.2	ft	
Estimated Friction Loss in Supply Line	0.70	ft	
Friction Loss - Taps/Special Fittings		3.5	ft
TOTAL		13.86	ft.

Flow for Anti-Siphon Hole

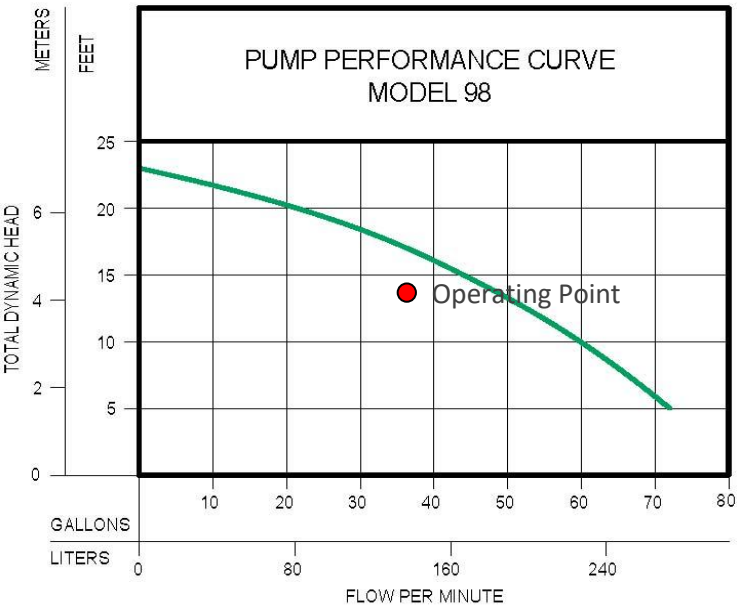
Hole Diameter 3/16 in.
Hole Flowrate 1.54 gpm

Pump Efficiency 0.7 (assumed, typical)
Motor Efficiency 0.9 (assumed for electric pumps)
Flow 35.96 gpm

Required Horsepower 0.20 hp
TDH 13.86 ft.

Pump Selection

Manufacturer:	Zoeller
Model:	N98
Horsepower:	0.5



Septic Tank Buoyancy Calculation

Project: Oaktowne Builders- Lennox Manors 17
Location: 8529 Pascolo Way,
Zebulon, NC 27597
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	12.0 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	281.4 ft ³ *
Buoyancy Force	17,558 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 = 1.09

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.

Pump Tank Buoyancy Calculation

Project: Oaktowne Builders- Lennox Manors 17
Location: 8529 Pascolo Way,
 Zebulon, NC 27597
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	12 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	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	232.5 ft ³ *
Buoyancy Force	14,508 lb

Weight Calculation:

Tank Weight	10500 lb		
Water Weight in Tank	0 lb	Volume	0.0 ft ³ *
Soil Weight Over Tank	3274 lb		
Soil Friction Force	4227 lb		
Total Weight	18,001 lb		

Factor of Safety = 1.24

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.*