ICHD - ENVIRONMENTAL HEALTH DIVISION

Statesville Office (704) 878-5305 Mooresville Office (704) 660-3625

PERMIT # OSWP-2023-29873

SEPTIC: IMPROVEMENT PERMIT / AUTHORIZATION TO CONSTRUCT / OPERATION PERMIT / EXISTING SYSTEM

PIN # 4762-31-9574

BLDR-2023-33014

PPLICANT / OWNER: Eclens Homes APPLICANT ADDRESS:

TE ADDRESS: 225 MOUNTAIN ISLAND DR, STATESVILLE, NC 28677 PHONE: ALT. PHONE:

TE DIRECTIONS: SAP CONTROLLED: YES ☐ NO ☑

UBDIVISION: Northlake SECTION: P3 LOT #: 45 LOT AREA: 0.51 DESIGN FLOW: 360 L.T.A.R.: 0.275

eptic Tank: 1000 (gal)	STB: 760	Date: 9-30-2023	☒ New System ☐ Repair ☐ Expansion	System Type: III	☑ Residence	No. Bedrooms: 3	Water Supply: Municipal Water
ump Tank: 1000 (gal)	PT: 363	Date: 9-31-2023	System Description: Pressure Manifold 25% reduction		☐ Business	No. Persons: 6	
ump Make: Zoeller	Model: BN 157	Serial #:	Repair System Description: Pressure Manifold 50% reduction		☐ Other	No. Employees:	
Nitrification Fields: 1	# Lines: 4	Linear Ft.: 328	Maintenance Agreement Required: ☐ YES ☑ NO		☐ Slab	☑ Crawl Space	
ench Width: 36	Trench Bottom Depth (Low side): 27		Gravel Depth:	☐ GRAVITY ☑ PRESSURE	☐ Basement w/ Plumbing	☐ Basement w/o Plumbing	

omments / Conditions: This Improvement Permit is issued pursuant to G.S. 130A-335 (a2) and (a3) using the signed and sealed LSS/LG evaluation(s) ttached here. This Construction Authorization is issued pursuant to G.S. 130A-335(a2) and (a5) using the signed and sealed plans or evaluations attached here.

INITIAL SITE SKETCH

AS BUILT SKETCH

Tanks 11/14/23 BCW
Lines, manifold, 11/15/23 BCW
Alarm
Floats SW 11/17/23
Pressure

As Built
notes attached

rmit can be suspended or revoked if any false information is supplied toward securing the permit / any unauthorized changes are made to the site / any unauthorized changes are made in the installation of the system. CONTACT A LOCATOR SERVICE PRIOR TO ANY EXCAVATION

] IMPROVEMENT PERMIT with plat valid without expiration. ☑ IMPROVEMENT PERMIT with site plan valid for 60 mos. ☑ AUTHORIZATION TO CONSTRUCT valid for period equal to IMPROVEMENT PERMIT--not to exceed 60 mo.

wner / Applicant Signature: Date:

IPROVEMENT PERMIT by: Date: 7/21/2023

UTHORIZATION TO CONSTRUCT by: Date: 7/21/2023

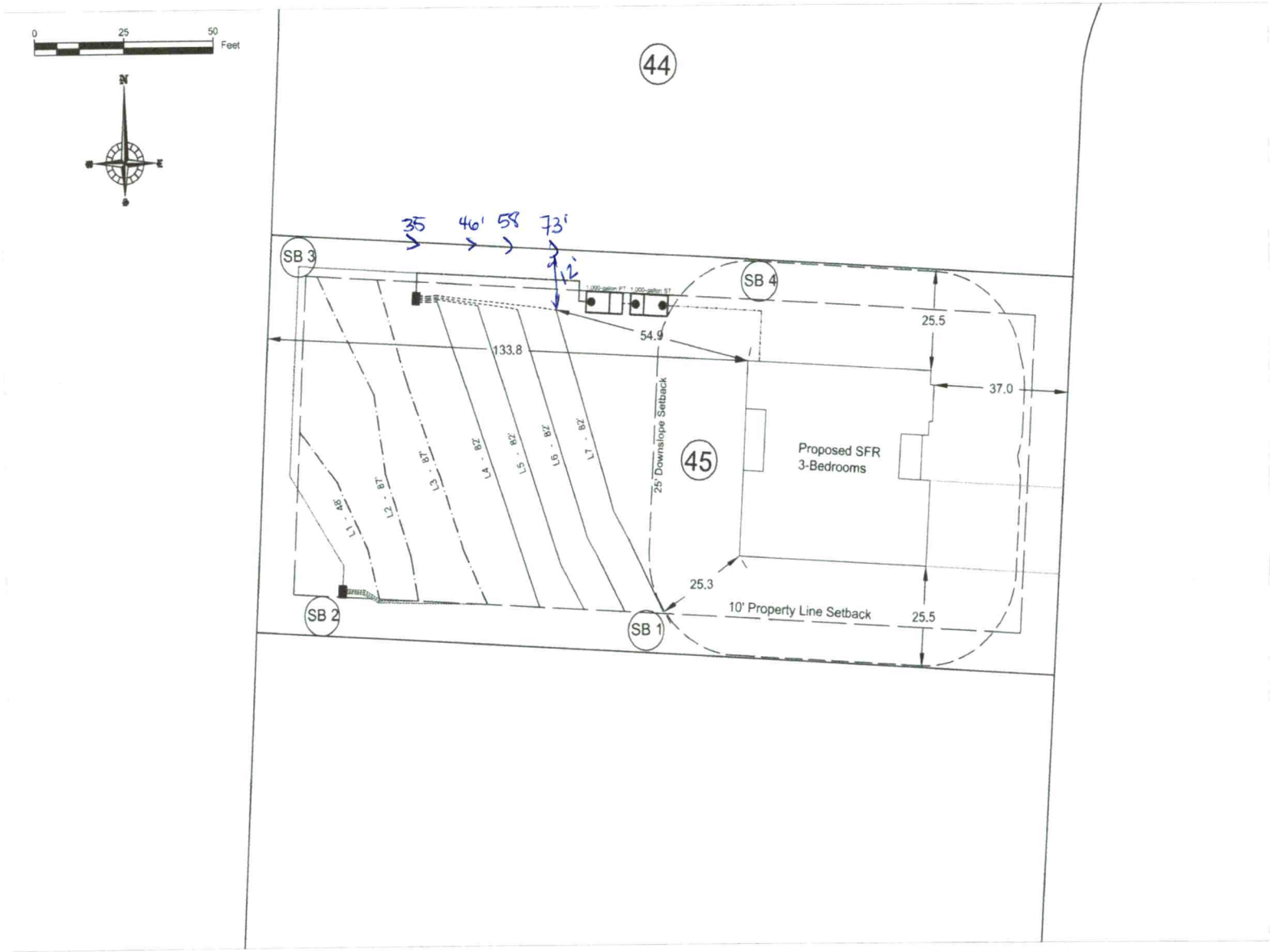
Installed By: PRECISION EXCAVATION

OPERATION PERMIT by: Date: 1/11/24

Existing System Inspected By: Date:

FOR SEPTIC FINAL INSPECTION CALL: 704-664-3703 BETWEEN 8am-9am the day the inspection is needed.

As Built - NTS



PROPERTY LAYOUT
SOURCE: AWT, Inc.

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
101 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0688
www.agriwaste.com

Adam's Homes
Lot 45

Project Location
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner
Adam's Homes
3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Property Layout

DRAWN BY:	CREATED ON:
T. Bostic	06/22/2023
REVISED BY:	REVISED ON:
####	####
RELEASED BY:	RELEASED ON:
####	####

DRAWING NUMBER
WW-2

General Drainfield Notes:

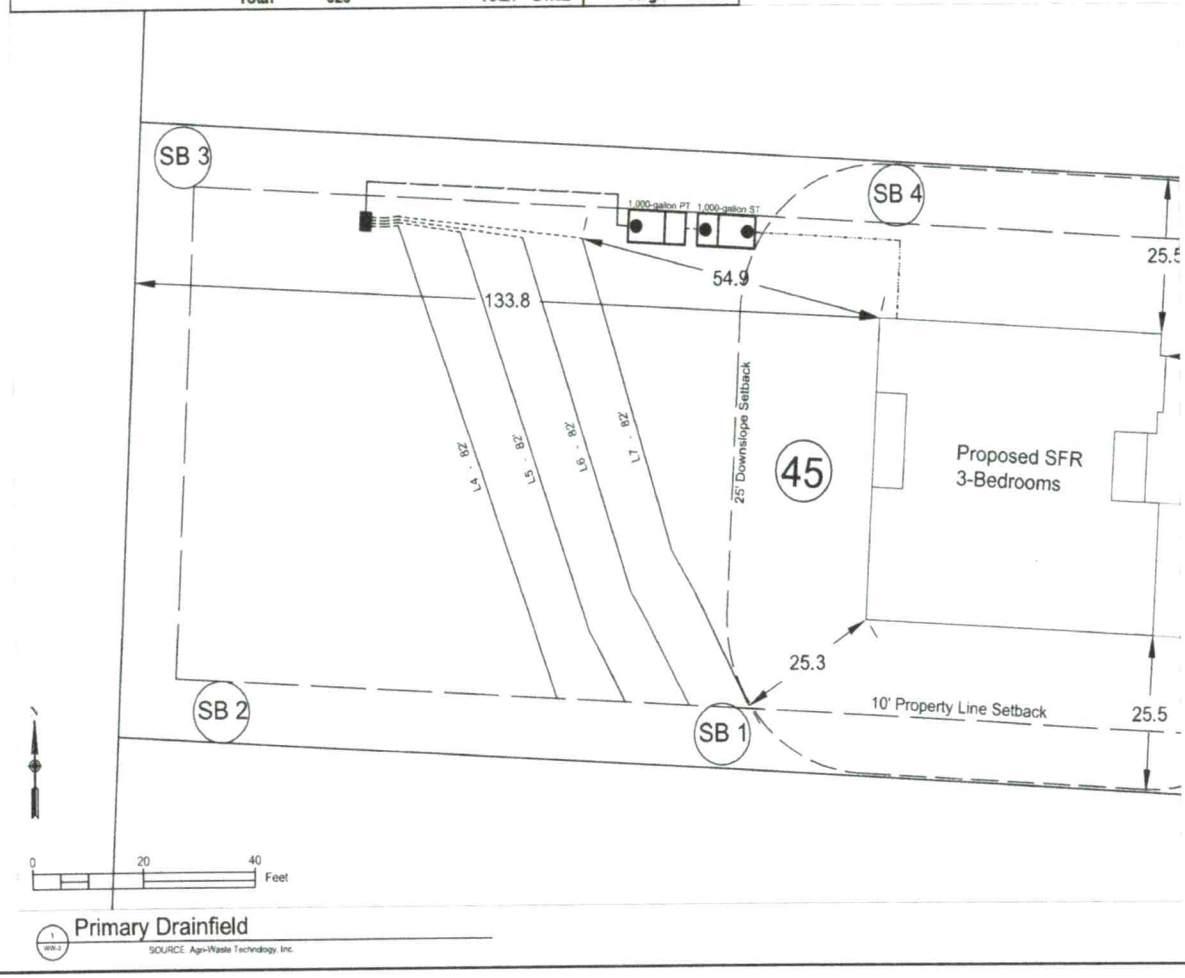
1. Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3. Drainfield area shall be cleared of all leaves, pine straw, debris, 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 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. - **Primary**

Proposed Type of System/Distribution: ***Pump to Pressure Manifold using Chambers***

Line No.	Flag Color	Line Length (ft)	Tap	Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
4	purple	82	1/2in SCH 80	5.48	0.067	0.366
5	blue	82	1/2in SCH 80	5.48	0.067	0.366
6	yellow	82	1/2in SCH 80	5.48	0.067	0.366
7	orange	82	1/2in SCH 80	5.48	0.067	0.366
	Total	**328**	**Total**	**21.92**	**Avg.**	**0.366**

Note:
Primary drainfield is chambers.



Primary Drainfield

SOURCE: Agri-Waste Technology, Inc.

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-303-9191
www.agriwaste.com

Adam's Homes
Lot 45

Project Location
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4782319574.000

Project Owner
Adam's Homes
3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Primary Drainfield

DRAWN BY:	CREATED ON:
T. Bostic	06/22/2023
REVISED BY:	REVISED ON:
####	####
RELEASED BY:	RELEASED ON:
####	####

DRAWING NUMBER
WW-3

PRESSURE MANIFOLD DESIGN (Primary)

Site Information

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Design Information

Estimated Daily Flow	360	gal/day
L.T.A.R. (from Iredell Co.)	0.275	gal/day/ft^2
L.T.A.R. + 5%	0.289	gal/day/ft^2
Trench Width	3	ft.
Line Length Required	436	ft.
Length after 25% Reduction	327	ft
L.T.A.R. Reduced	0.367	gal/day/ft^2
L.T.A.R. Reduced + 5%	0.385	gal/day/ft^2

DRAINFIELD INFO. - **Primary**

Proposed Type of System/Distribution: ***Pump to Pressure Manifold using Chambers***

Line No.	Flag Color	Line Length (ft)	Tap	Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
4	purple	82	1/2in SCH 80	5.48	0.067	0.366
5	blue	82	1/2in SCH 80	5.48	0.067	0.366
6	yellow	82	1/2in SCH 80	5.48	0.067	0.366
7	orange	82	1/2in SCH 80	5.48	0.067	0.366
	Total	**328**	**Total**	**21.92**	**Avg.**	**0.366**

Note: Line lengths are calculated in 4'4" increments to reflect use of PPBPS product.

Total Run Time	16.42	min.	
Drainfield Capacity	214.2	gal	
% of Drainfield Cap	68.9%		(Req. Range 66-75%)
Dose Volume	147.6	gal/dose	
Run Time/Dose	**6.7**	**minutes**	Range 5-7 minutes unless uphill, checked
Volume/depth	21.07	gal/in.	(Per tank manufacturer's specifications)
Estimated Drawdown	7.00	in.	

Manifold Box

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

ICHD - ENVIRONMENTAL HEALTH DIVISION

Statesville Office (704) 878-5305 Mooresville Office (704) 660-3625

PERMIT # OSWP-2023-29873

SEPTIC: IMPROVEMENT PERMIT / AUTHORIZATION TO CONSTRUCT / OPERATION PERMIT / EXISTING SYSTEM

PIN # 4762-31-9574

BLDR-2023-33014

PPLICANT / OWNER: Adams Homes APPLICANT ADDRESS:

ITE ADDRESS: 225 MOUNTAIN ISLAND DR, STATESVILLE, NC 28677 PHONE: ALT. PHONE:

ITE DIRECTIONS: SAP CONTROLLED: YES ☐ NO ☑

UBDIVISION: Northlake SECTION: P3 LOT #: 45 LOT AREA: 0.51 DESIGN FLOW: 360 L.T.A.R.: 0.275

eptic Tank: 1000 (gal)	STB: 760	Date: 9-30-2023	☐ New System ☐ Repair ☐ Expansion	System Type: III	☑ Residence	No. Bedrooms: 3	Water Supply: Municipal Water
ump Tank: 1000 (gal)	PT: 363	Date: 9-31-2023	System Description: Pressure Manifold 25% reduction		☐ Business	No. Persons: 6	
ump Make:	Model:	Serial #:	Repair System Description: Pressure Manifold 50% reduction		☐ Other	No. Employees:	
Nitrification Fields: 1	# Lines: 4	Linear Ft.: 328	Maintenance Agreement Required: ☐ YES ☑ NO		☐ Slab	☑ Crawl Space	
rench Width: 36	Trench Bottom Depth (Low side): 27		Gravel Depth:	☐ GRAVITY ☑ PRESSURE	☐ Basement w/ Plumbing	☐ Basement w/o Plumbing	

omments / Conditions: This Improvement Permit is issued pursuant to G.S. 130A-335 (a2) and (a3) using the signed and sealed LSS/LG evaluation(s) ttached here. This Construction Authorization is issued pursuant to G.S. 130A-335(a2) and (a5) using the signed and sealed plans or evaluations attached here.

INITIAL SITE SKETCH

AS BUILT SKETCH

rmit can be suspended or revoked if any false information is supplied toward securing the permit / any unauthorized changes are made to the site / any unauthorized changes are made in the installation of the system. CONTACT A LOCATOR SERVICE PRIOR TO ANY EXCAVATION

] IMPROVEMENT PERMIT with plat valid without expiration. ☑ IMPROVEMENT PERMIT with site plan valid for 60 mos. ☑ AUTHORIZATION TO CONSTRUCT valid for period equal to IMPROVEMENT PERMIT--not to exceed 60 mo.

wner / Applicant Signature: Date:

IPROVEMENT PERMIT by: Date: 7/21/2023

UTHORIZATION TO CONSTRUCT by: Date: 7/21/2023

Installed By: PRECISION EXCAVATION

OPERATION PERMIT by: Date:

Existing System Inspected By: Date:

FOR SEPTIC FINAL INSPECTION CALL: 704-664-3703 BETWEEN 8am-9am the day the inspection is needed.

DocuSign Envelope ID: B96CA5BB-9DF0-45BF-B899-70F8D9C1A55C

Engineers and Soil Scientists

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

July 18, 2023

To: Applicant
185, 191, 217, 221, 225, 229 & 233 Mountain Island Drive
Statesville, NC 28677
Iredell County
Parcel/PIN: 4762309621.000, 4762309722.000, 4762319254.000, 4762319464.000,4762319574.000, 4762319674.000, , 4762410704.000

Re: Site/Soil Investigation for Iredell County
Parcel/PIN: 4762309621.000, 4762309722.000, 4762319254.000, 4762319464.000, 4762319574.000, 4762319674.000, , 4762410704.000

I, Adam Homes(as agent Bob Cashion) - Change Order (*applicant name, print*), acknowledge that "the LSS Evaluation attached to this application is to be used to produce design and construction features for permitting in accordance with SL 2022-11/S372."

Applicant Signature: DocuSigned by: Adam Homes(as agent Bob Cashion) - Change Order

Date: 7/18/2023

Sincerley,

Chris McGee, LSS
Soil Scientist
Agri-Waste Technology, Inc.

NCDHHS

Permit #: OSWP-2023-29873

This Section for Local Health Department Use Only

Initial submittal received: 7/17/21 *Date* by BB *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: Benjamin A Botkins Date: 7/21/2023

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

Improvement Permit Expiration Date: 7/21/2028

See attached site sketch

NCDHHS

Permit #: OSWP-2023-29873

This Section for Local Health Department Use Only

Initial submittal received: 7/17/2023 *Date* by BB *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: Benjamin A Botkins Date of Issuance: 7/21/2023

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: 7/23/2028

See attached site sketch

County: Iredell

IMPROVEMENT PERMIT FOR G.S. 130A-335(a2)/SL2022-11

PIN/Lot Identifier: 4762-31-9574

Issued To: Adams Homes

Property Location: 225 Mountain Island Drive, Statesville, NC 28677

Subdivision: NorthLake Lot #: 45 Block: _____ Section: _____

LSS Report Provided: Yes ☒ No ☐

If yes, name and license number of LSS: Jeff Vaughan, 1227

New ☒ Repair ☐ Expansion ☐ System Relocation ☐

Proposed Structure: Single family residence

Proposed Wastewater System Type: Pressure Manifold 25% Reduction (Initial) Pressure Manifold 50 % Reduction (Repair)

Fill System: ☐ Yes ☒ No If yes, specify: ☐ New ☐ Existing (when adding more than 6 inches of fill to system area please provide a fill plan)

Proposed Design Daily Flow: 360 GPD Proposed LTAR (Initial): 0.275GPD/ft2 Proposed LTAR (Repair): 0.275 GPD/ft2

Design Wastewater Strength: ☒ domestic ☐ high strength ☐ industrial process

Number of bedrooms: 3 Number of Occupants: 6 Other: _____

Pump Required: ☒ Yes ☐ No ☐ May be required based upon final location and elevations of facilities

Artificial Drainage Required: ☐ Yes ☒ No If yes, please specify details: _____

Type of Water Supply: ☐ Private well ☐ Public well ☒ Municipal Supply ☐ Spring ☐ Other: _____

Drainfield location meets requirements of Rule .1945: Yes ☒ No ☐

Drainfield location meets requirements of Rule .1950: 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:

Licensed Soil Scientist Print Name: Jeff Vaughan

Licensed Soil Scientist Signature: _____ Date: 6/30/2023

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

See attached site sketch

County: Iredell

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

PIN/Lot Identifier: 4762-31-9574

Issued To: Adams Homes

Property Location: 225 Mountain Island Drive, Statesville, NC 28677

AOWE/PE Plans/Evaluations Provided: Yes ☒ No ☐ If yes, name and license number of AOWE/PE: Jeff Vaughan, 10003E

Facility Type: Single Family Residence

☒ New ☐ Expansion ☐ Repair System Relocation ☐

Basement? ☐ Yes ☒ No Basement Fixtures? ☐ Yes ☒ No

Type of Wastewater System** Pressure Manifold 25% Reduction (Initial) Pressure Manifold 50% Reduction (Repair)

Design Daily Flow: 360 GPD Wastewater Strength: ☒ domestic ☐ high strength ☐ industrial process

Session Law 2014-120 Section 53, Engineering Design Utilizing Low-flow Fixtures and Low-flow Technologies? ☐ Yes ☒ No

Installation Requirements/Conditions

Septic Tank Size: 1000 gallons Total Trench/Bed Length: 328 feet Trench/Bed Spacing: 9 feet on center

Drainfield square footage: 984 Trench/Bed Width: 36 inches LTAR: 0.275 gpd/ft²

Soil Cover: 6+ inches Slope Adjusted Maximum Trench/Bed Depth: 27 inches

Aggregate Depth: _____inches above pipe _____inches below pipe _____inches total

Pump Tank Size (if applicable): 1000 gallons Requires more than 1 pump? ☐ Yes ☒ No

Pump Requirements: 18.10 ft. TDH vs. 23.68 GPM Grease Trap Size (if applicable): NA 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 ☒ No

Declaration 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 Vaughan

AOWE/PE Signature: _____ Date: 6/30/2023

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

See attached site sketch

AGRITEC-01 GKROHL

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/14/2023

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
INSURER B : ACCIDENT FUND INSURANCE COMPANY OF AMERICA	10166
INSURER C : Evanston Insurance Company	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Agri-Waste Technology Inc
501 N. Salem St Ste 203
Apex, NC 27502

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	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 2,000,000
	CLAIMS-MADE X OCCUR			S 2253659	1/18/2023	1/18/2024	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 4,000,000
	POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 4,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO			S 2253659	1/18/2023	1/18/2024	BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
A	X UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$ 2,000,000
	EXCESS LIAB CLAIMS-MADE			S 2253659	1/18/2023	1/18/2024	AGGREGATE	$ 2,000,000
	DED RETENTION $							$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						X PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N (Mandatory in NH)	N / A		100003072	1/18/2023	1/18/2024	E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
C	Prof & Pollution			MKLV3ENV103400	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

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

CANCELLATION

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
Gina Krohl

© 1988-2015 ACORD CORPORATION. All rights reserved.
The ACORD name and logo are registered marks of ACORD



Engineers and Soil Scientists

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



Soil Suitability for Domestic Sewage Treatment and Disposal Systems
225 Mountain Island Drive, Statesville, NC. 28677
Iredell County PIN: 4762-31-9574

PREPARED FOR: Adams Homes, Client

PREPARED BY: Jeff Vaughan, Licensed Soil Scientist
Trevor Hackney, Environmental Scientist

DATE: June 30, 2023

Soil suitability for domestic sewage treatment and disposal systems was evaluated on May 19. 2023, for the property located at 225 Mountain Island Drive, Statesville, NC. Trevor Hackney and Nathan Estevez of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. This evaluation was done to facilitate permitting for a three-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 0.51 acres. The property is entirely open field. The home is proposed near the front of the property. The proposed system is behind the home and will be a pressure manifold 25% reduction primary system with a pressure manifold 50% reduction repair system.

Soil Suitability for Domestic Sewage Treatment and Disposal Systems
The drawing in Attachment 1 details the property boundaries (as surveyed by David B. Jordan & Associates, PLLC), soil boring locations, and layout of drain field trenches (Completed by AWT). Soil borings were examined to determine soil suitability for on-site sewage disposal systems in accordance with 15A 18A .1900 Rules for Sewage Treatment and Disposal Systems. These borings were advanced with a hand auger.

A septic layout was performed to demonstrate available space (.1945). The layout in Attachment 1 indicates there is available space for a three-bedroom primary and repair system.

The proposed LTAR (Long Term Acceptance Rate) by AWT is 0.275 GPD/ft^2. The soils on this property are group IV soils within the distribution and treatment zone as used to define the LTAR. Since usable soil depths meet or exceed 39" AWT is recommending the use of innovative style trench to utilize the 25% reduction for the initial system. With an LTAR of 0.275 GPD/ft^2, 328 linear feet of innovative trench are necessary to support a three-bedroom home primary system. The maximum trench bottom should not exceed 27". The attached drawing proves that 328 linear feet of trench can be installed for the primary system. The repair system will be a horizontal panel block style system. The attached drawings prove that 222 linear feet of panel block trench can be installed for the repair system with the proposed home location.

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, Iredell County Environmental Health Department 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).

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. Additional septic layouts have been or will be performed as needed. 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,

Jeff Vaughan

Trevor Hackney

Attachment 1: Site Plan/Drawing

LOT 45

Project Location

225 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner

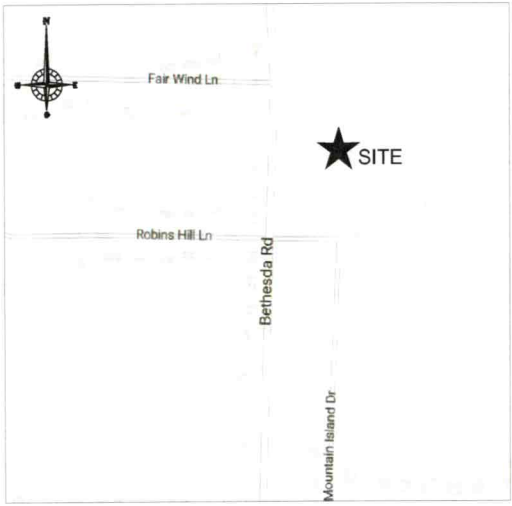
Adam's Homes
3000 Gulf Breeze Parkwasy
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

Project Consultant

Jeff Vaughan, L.S.S
(919) 367-6313
Trevor Hackney
(704) 268-9160
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, NC 27502
(919) 859-0669
(919) 233-1970 Fax

System Overview

Single Family Residence
Three (3) Bedroom, 360 gpd
Pressure Manifold
Accepted/Innovative Trench Product



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

Adam's Homes
Lot 45

Project Location:
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkwasy
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

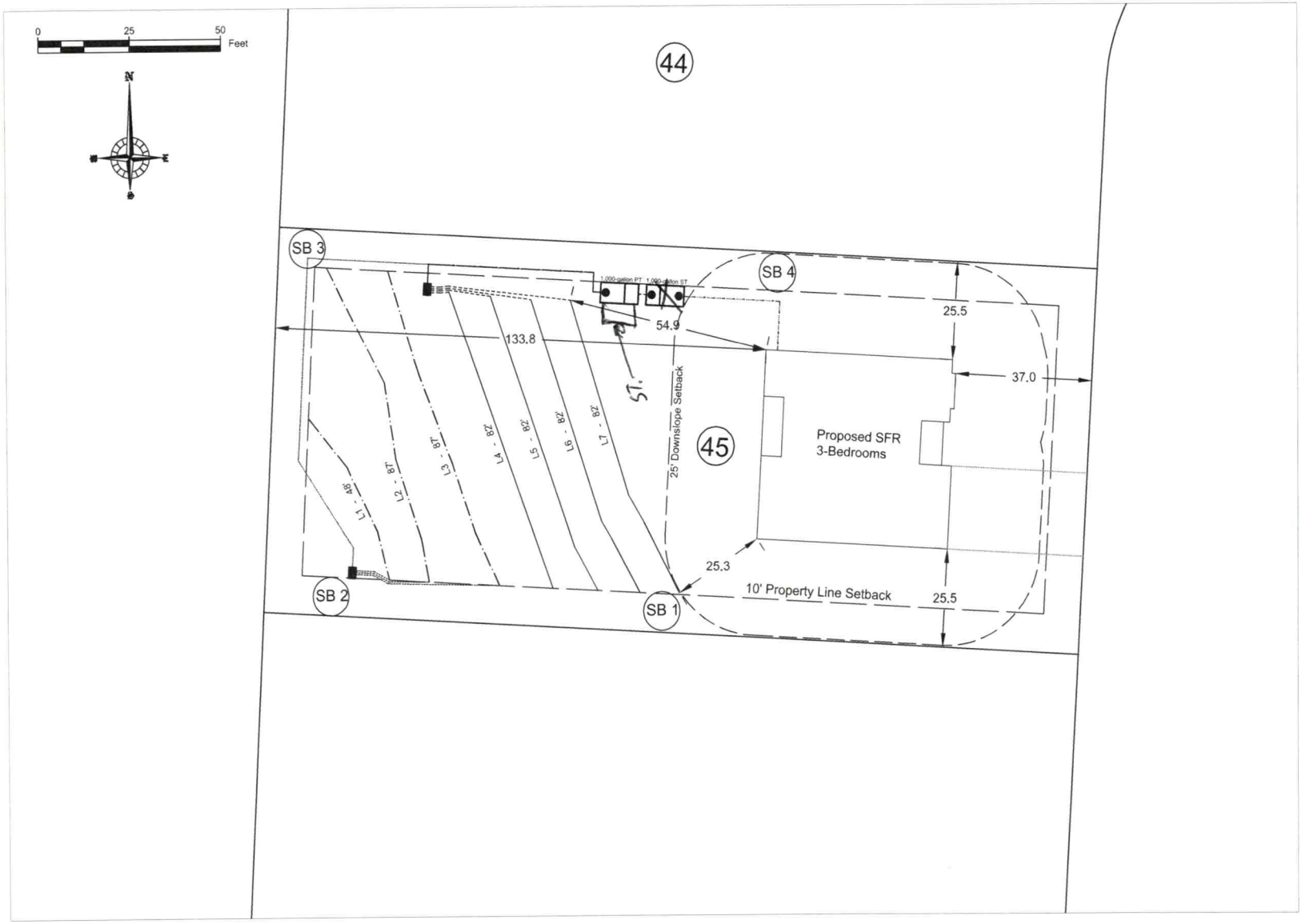
For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Cover Sheet

DRAWN BY:	CREATED ON:
T. Bostic	06/22/2023
REVISED BY:	REVISED ON:
####	####
RELEASED BY:	RELEASED ON:
####	####

DRAWING NUMBER
WW-1



PROPERTY LAYOUT

SOURCE: AWT, Inc.

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0689
www.agriwaste.com

Adam's Homes
Lot 45

Project Location:
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE

Property Layout

DRAWN BY:	CREATED ON:
T. Bostic	06/22/2023
REVISED BY:	REVISED ON:
####	####
RELEASED BY:	RELEASED ON:
####	####

DRAWING NUMBER

WW-2

General Drainfield Notes:

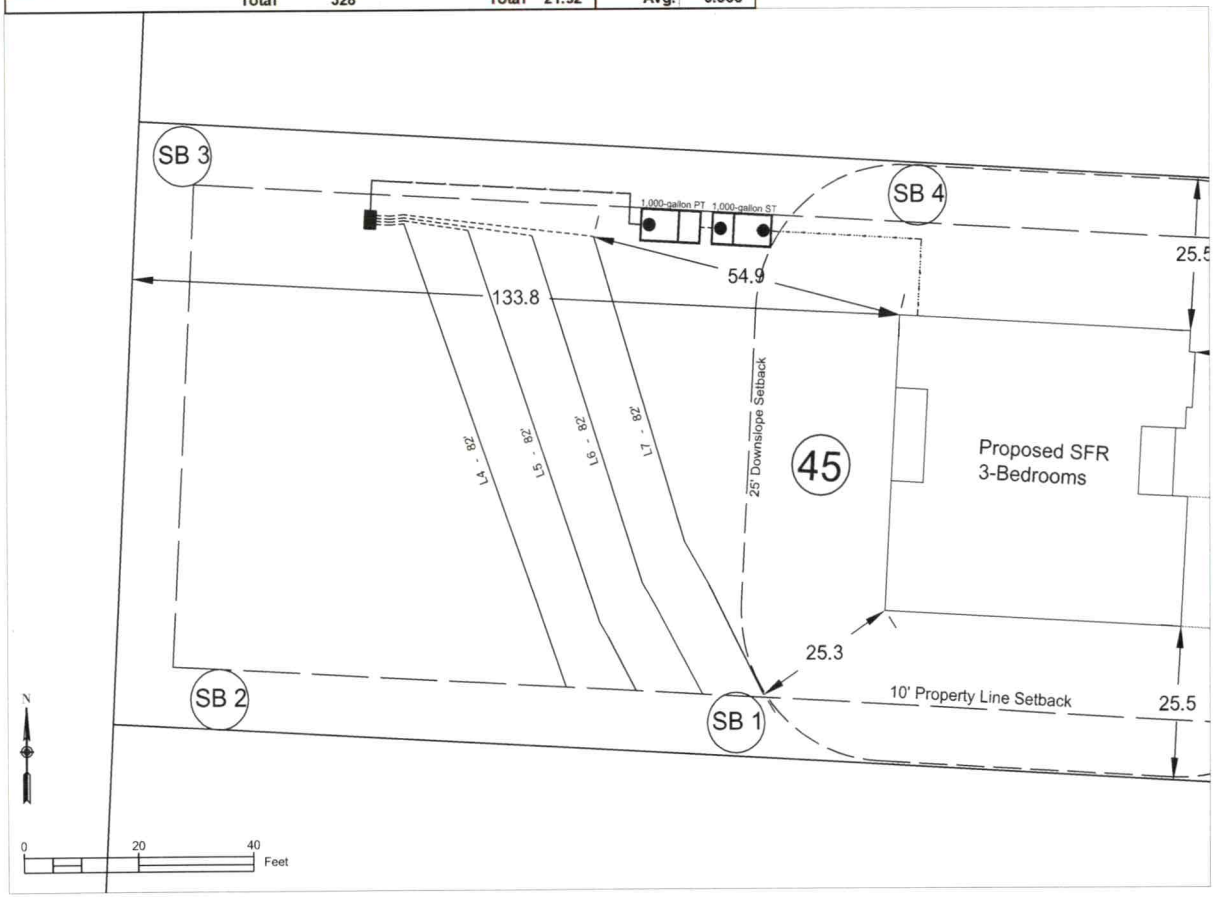
1. Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3. Drainfield area shall be cleared of all leaves, pine straw, debris, 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 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. - **Primary**

Proposed Type of System/Distribution: ***Pump to Pressure Manifold using Chambers***

Line No.	Flag Color	Line Length (ft)	Tap	Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
4	purple	82	1/2in SCH 80	5.48	0.067	0.366
5	blue	82	1/2in SCH 80	5.48	0.067	0.366
6	yellow	82	1/2in SCH 80	5.48	0.067	0.366
7	orange	82	1/2in SCH 80	5.48	0.067	0.366
	Total	**328**	**Total**	**21.92**	**Avg.**	**0.366**

Note:
Primary drainfield is chambers.



1 WW-3 Primary Drainfield

SOURCE: Agri-Waste Technology, Inc.

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-9989
www.agriwaste.com

Adam's Homes
Lot 45

Project Location:
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Primary Drainfield

DRAWN BY: T. Bostic	CREATED ON: 06/22/2023
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER
WW-3

General Drainfield Notes:

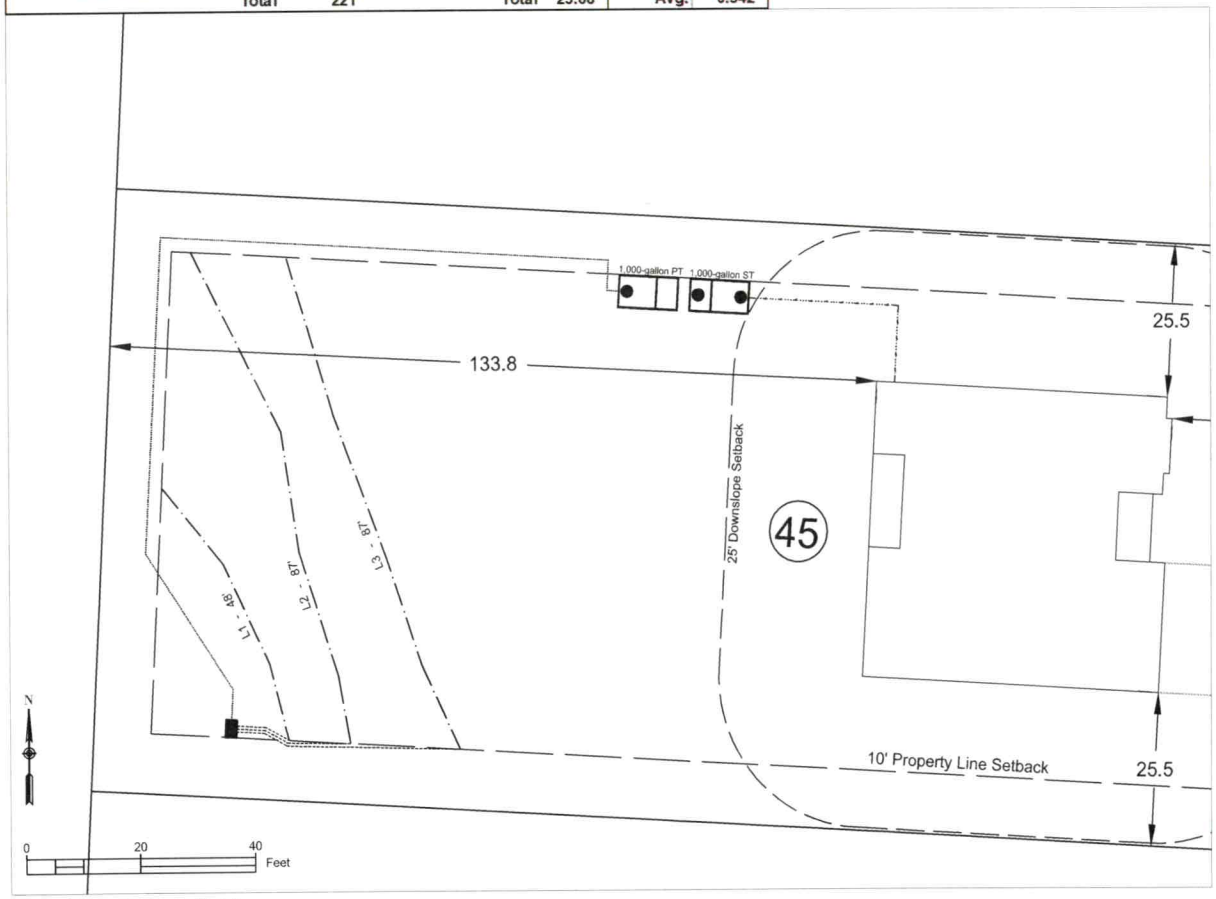
1. Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3. Drainfield area shall be cleared of all leaves, pine straw, debris, 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.
1	yellow	47.7	1/2in SCH 80	5.48	0.115	0.537
2	blue	86.7	3/4in SCH 80	10.10	0.116	0.544
3	red	86.7	3/4in SCH 80	10.10	0.116	0.544
	Total	**221**	**Total**	**25.68**	**Avg.**	**0.542**

Note:
Repair distribution is pressure manifold utilizing horizontal panel block.



1 WW-4 Repair Drainfield

SOURCE: Agri-Waste Technology, Inc.

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0959
www.agriwaste.com

Adam's Homes
Lot 45

Project Location:
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkwasy
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

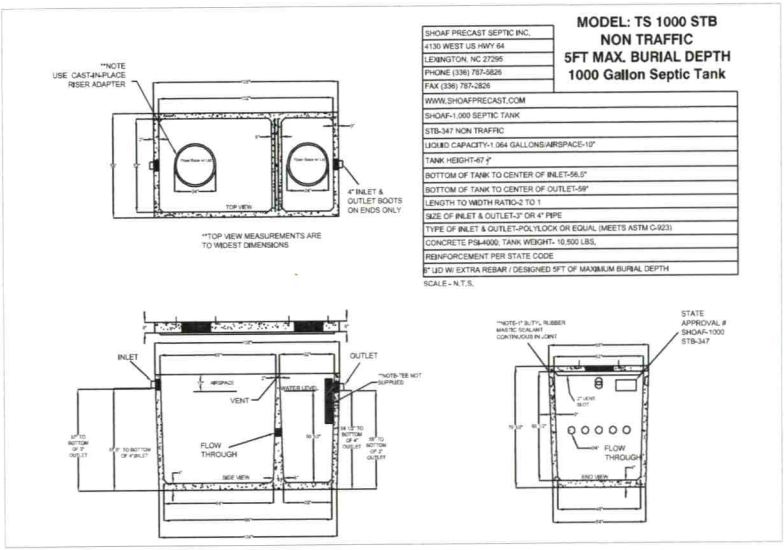
For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Repair Drainfield

DRAWN BY: T. Bostic	CREATED ON: 06/22/2023
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER
WW-4



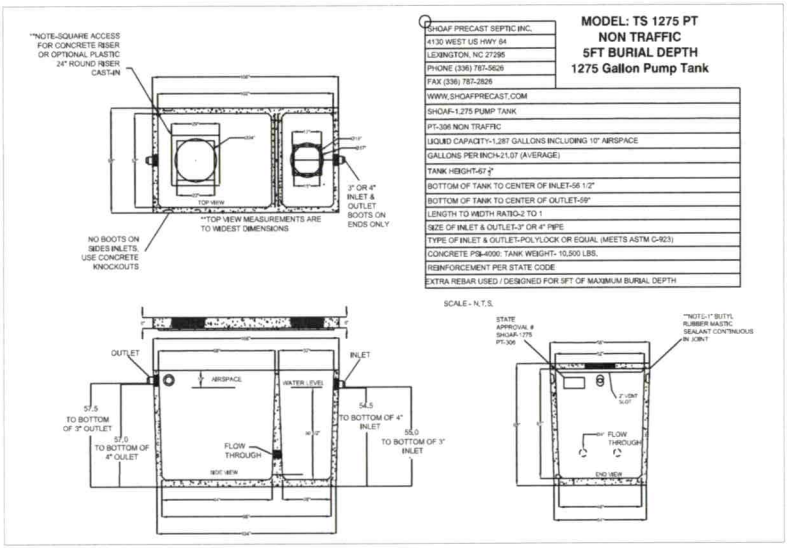
SHOAF PRECAST SEPTIC INC.
4130 WEST US HWY 64
LEXINGTON, NC 27295
PHONE (336) 787-5826
FAX (336) 787-2826
WWW.SHOAFPRECAST.COM
SHOAF-1,000 SEPTIC TANK
STB-347 NON TRAFFIC
LIQUID CAPACITY-1,064 GALLONS/AIRSPACE-10"
TANK HEIGHT-67.2"
BOTTOM OF TANK TO CENTER OF INLET-56.5"
BOTTOM OF TANK TO CENTER OF OUTLET-59"
LENGTH TO WIDTH RATIO-2 TO 1
SIZE OF INLET & OUTLET-3" OR 4" PIPE
TYPE OF INLET & OUTLET-POLYLOCK OR EQUAL (MEETS ASTM C-923)
CONCRETE PSI-4000; TANK WEIGHT- 10,500 LBS.
REINFORCEMENT PER STATE CODE
6" LID W/ EXTRA REBAR / DESIGNED 5FT OF MAXIMUM BURIAL DEPTH

MODEL: TS 1000 STB
NON TRAFFIC
5FT MAX. BURIAL DEPTH
1000 Gallon Septic Tank

SCALE - N.T.S.

1 WW-5 **Septic Tank**

SOURCE: Shoaf Precast Septic, Inc.



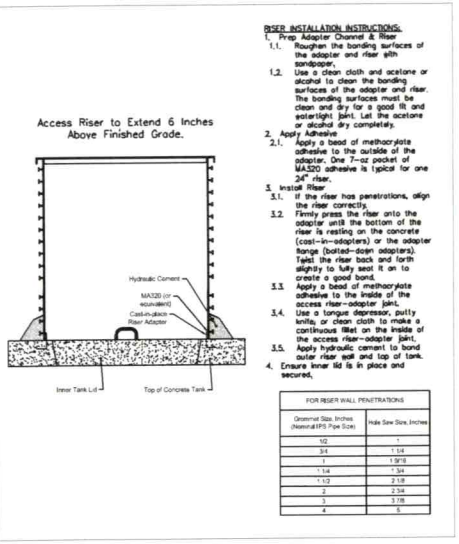
SHOAF PRECAST SEPTIC INC.
4130 WEST US HWY 64
LEXINGTON, NC 27295
PHONE (336) 787-5826
FAX (336) 787-2826
WWW.SHOAFPRECAST.COM
SHOAF-1,275 PUMP TANK
PT-306 NON TRAFFIC
LIQUID CAPACITY-1,287 GALLONS INCLUDING 10" AIRSPACE
GALLONS PER INCH-21.07 (AVERAGE)
TANK HEIGHT-67.2"
BOTTOM OF TANK TO CENTER OF INLET-56 1/2"
BOTTOM OF TANK TO CENTER OF OUTLET-59"
LENGTH TO WIDTH RATIO-2 TO 1
SIZE OF INLET & OUTLET-3" OR 4" PIPE
TYPE OF INLET & OUTLET-POLYLOCK OR EQUAL (MEETS ASTM C-923)
CONCRETE PSI-4000; TANK WEIGHT- 10,500 LBS.
REINFORCEMENT PER STATE CODE
EXTRA REBAR USED / DESIGNED FOR 5FT OF MAXIMUM BURIAL DEPTH

MODEL: TS 1275 PT
NON TRAFFIC
5FT BURIAL DEPTH
1275 Gallon Pump Tank

SCALE - N.T.S.

2 WW-5 **Pump Tank (or equiv. tank with 1-day storage)**

SOURCE: Shoaf Precast Septic, Inc.



FOR RISER WALL PENETRATIONS	
Grommet Size, Inches (Nominal IPS Pipe Size)	Hole Saw Size, Inches
1/2	
3/4	1 1/4
1	1 5/16
1 1/4	1 3/4
1 1/2	2 1/8
2	2 1/4
3	3 7/8
4	5

3 WW-5 **Riser Safety Nets**

SOURCE: SIM-TECH, Inc.

NOTES

1. Installation to follow all NC DHHS and Iredell County applicable rules and regulations.
2. Iredell County 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. Spigot to be located on outside of building within 50' of tanks.
18. All pressure lines to maintain 18" min. cover.
19. Contractor to adjust tank placement to meet site constraints.

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0689
www.agriwaste.com

Adam's Homes
Lot 45

Project Location:
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

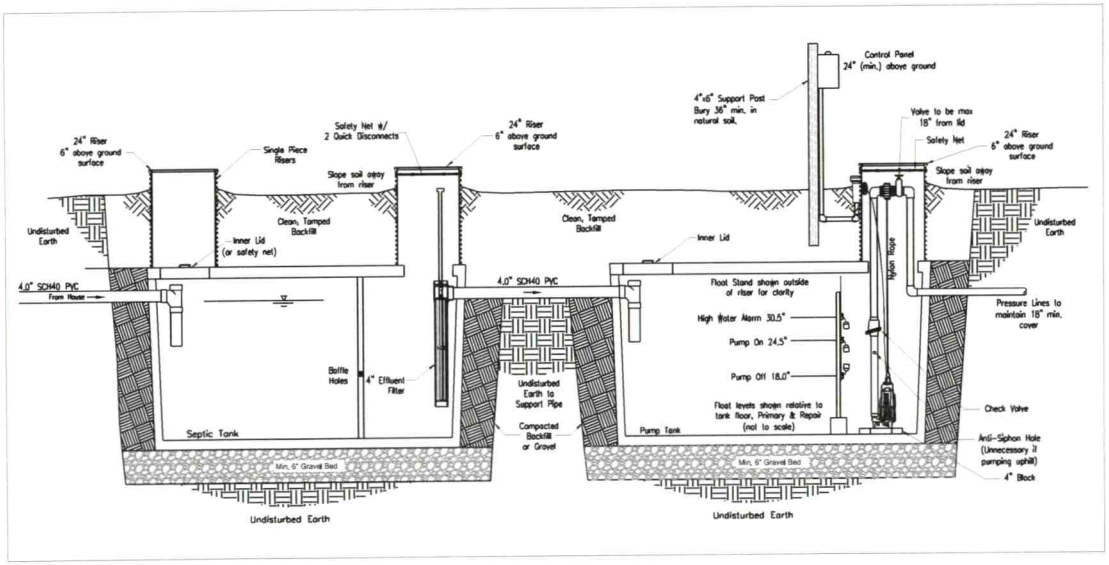
For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

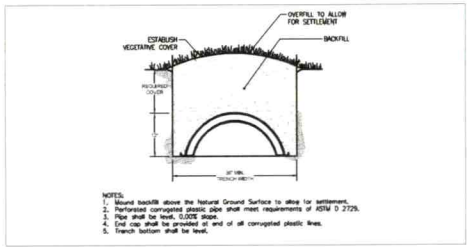
SHEET TITLE
Detail Sheet 1

DRAWN BY: T. Bostic	CREATED ON: 06/22/2023
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

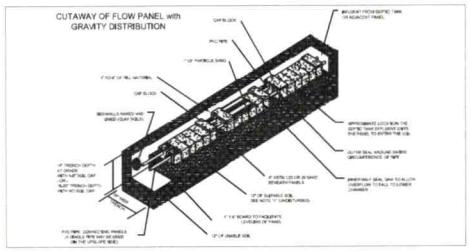
DRAWING NUMBER
WW-5



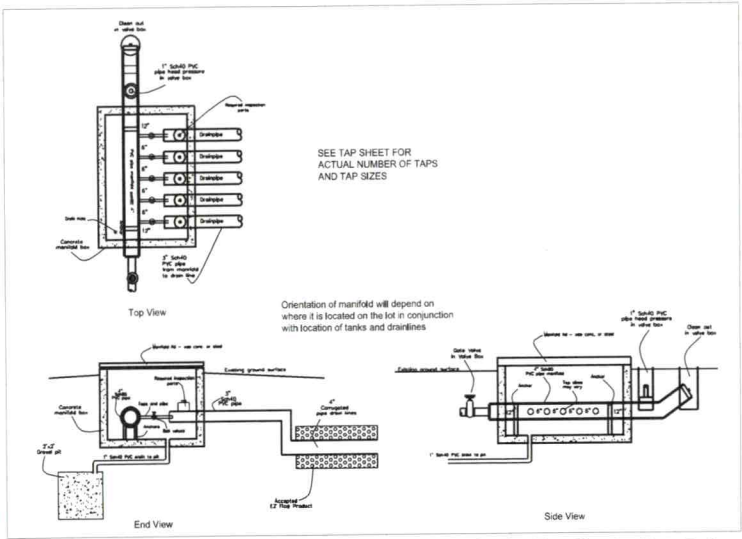
1 WW-6 **SYSTEM PROFILE VIEW**
N.T.S.



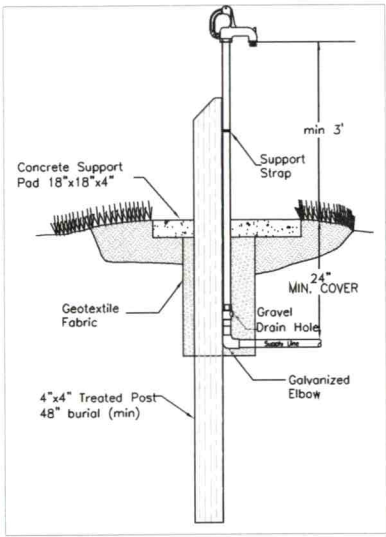
2 WW-6 **TRENCH X-SECTION (Primary)**
N.T.S. Source: AWT



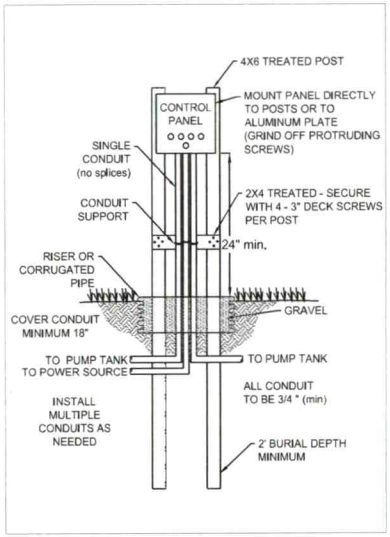
3 WW-6 **TRENCH X-SECTION (Repair)**
N.T.S. Source: AWT



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



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



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

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0689
www.agriwaste.com

Adam's Homes
Lot 45

Project Location:
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Detail Sheet 2

DRAWN BY:	CREATED ON:
T. Bostic	06/22/2023
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 sheer 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 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.

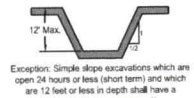
(B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength should be determined.

(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.

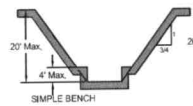
EXCAVATIONS IN TYPE A SOILS

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of ¾:1.

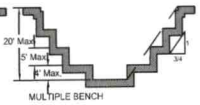




Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of ½:1

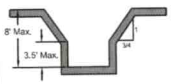


SIMPLE BENCH



MULTIPLE BENCH

All benched excavations 20 feet or less in depth shall have a maximum allowable slope of ¾:1 and maxium bench dimensions as follows:

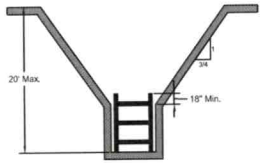


All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3½ feet.



All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3½ feet.

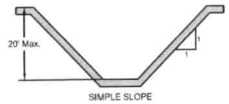
All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of ¾:1. The support or shield system must extend at least 18 inches above the top of the vertical side.



All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

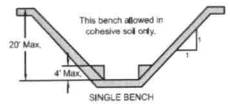
EXCAVATIONS IN TYPE B SOILS

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

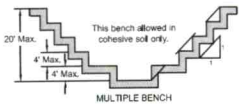


SIMPLE SLOPE

All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maxium bench dimensions as follows:

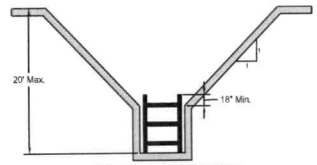


SINGLE BENCH



MULTIPLE BENCH

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 1:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

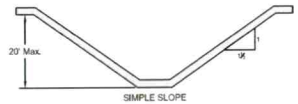


VERTICALLY SIDED LOWER PORTION

All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

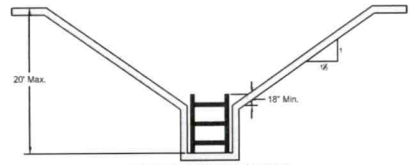
EXCAVATIONS IN TYPE C SOILS

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.



SIMPLE SLOPE

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 1½:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

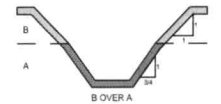


VERTICALLY SIDED LOWER PORTION

All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

EXCAVATIONS IN LAYERED SOILS

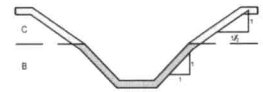
All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below:



B OVER A



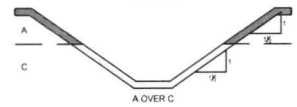
C OVER A



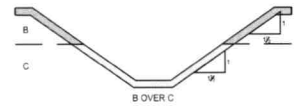
C OVER B



A OVER B



A OVER C



B OVER C

All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

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

Adam's Homes
Lot 45

Project Location
224 Mountain Island Dr
Statesville, NC 28677
Iredell County
PIN: 4762319574.000

Project Owner:
Adam's Homes
3000 Gulf Breeze Parkwasy
Gulf Breeze, FL 32563
704-361-5437
bcashion@adamshomes.com

For Permitting Purposes

REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE

Excavation Safety

DRAWN BY: T. Bostic	CREATED ON: 06/22/2023
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER

WW-7

Septic System Design - Summary Page

Engineers and Soil Scientists

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

Project: LSS Permit
Property: 225 Mountain Island Dr
Statesville, NC 28677
Subdiv.: Northlake
Lot #: 45

Date: 6/22/2023
County: Iredell
Permit #:

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

Engineer:
Trent Bostic
tbostic@agriwaste.com

Owner: Adam's Homes
Address: 3000 Gulf Breeze Parkway
Gulf Breeze, FL 32563
Phone: 704-361-5437
Email: bcashion@adamshomes.com

EHS:

Type of System: III b
PIN: 4762319574

Soil Parameters

Soil Evaluation By:

-

Special Conditions/Notes:

LTAR: 0.275 gpd/ft^2

Design Parameters

Type of Establishment: Residence, 5 or fewer bedrooms
Unit: Bedroom
# of Units: 3

Septic Tank Specifications

Min. Tank Capacity: 900 gal
Actual Tank Volume: 1,064 gal
Tank Manufacturer: Shoaf
Tank Model: TS 1000 STB 5ft Burial Depth

	Exterior	Interior	
Length:	108.0	102.0	in.
Width:	58.0	52.0	in.
Depth:	70.5	60.5	in.

Primary Drainfield Specifications

Type of Distribution: Parallel Pressure Manifold
Trench Media: Chambers
Trench Width: 3 ft
Trench Depth: in.
(or as specified on permit)

Trench Bottom Area: 1309 ft^2
Minimum Drain Line: 327 ft
Actual Drain Line: 328 ft
Number of Lines: 4
Minimum Line Spacing: 9 ft O.C.

Wastewater Treatment System Design Calculations

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Septic Tank Sizing

Daily Flow Estimate:

Unit	# of Units	Flow/Unit	Flow/Day
Bedroom	3	120	360
			0
			0
		Q=	360 gpd

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

For individual residences with 3 or fewer bedrooms,

Minimum Liquid Capacity (V)= 900 gal

Septic Tank Specs:

Manufacturer: Shoaf
Model: 1000 STB 5ft Burial Dep
Volume: 1,064 gal
Weight: 10,500 lbs

	Exterior	Interior	
Length:	108.0	102.0	in.
Width:	58.0	52.0	in.
Depth:	70.5	60.5	in.

Shape of Risers: Circular
Diameter: 2.00 ft

Pump Tank Storage & Float Settings

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Tank Manufacturer	Shoaf
Tank Model	TS 1275 PT 5' Burial

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

Primary 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	25.0 in.	(set for dose volume)
Alarm On	31.0 in.	(6 in. above On Float)

Emergency Storage Available
Pump Tank 622 gal
Days of Storage 1.73 days
(determined from "interior top of tank" - "High Water Alarm")

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 1/8")
Pump Off	18.0 in.	
Pump On	29.0 in.	(set for dose volume)
Alarm On	35.0 in.	(6 in. above On Float)

Emergency Storage Available
Pump Tank 537 gal
Days of Storage 1.49 days
(determined from "interior top of tank" - "High Water Alarm")

ELEVATIONS

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Benchmark	0	
BM Elev	0 ft	
Septic Tank	1,064 gal	
Ground Surface		860.00 ft
Depth of Soil Cover	42 in.	3.50 ft
Overall Ht of Tank	70.5 in.	5.88 ft
Elev, Base of Tank		850.63 ft
Ht to 4" Inlet Invert	57 in.	4.75 ft
Elev, 4" Inlet Invert		855.38 ft
Ht to 4" Outlet Invert	54.5 in.	4.54 ft
Elev, 4" Outlet Invert		855.17 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		850.13 ft
Pump Tank	1287 gal	
Ground Surface		860.00 ft
Depth of Soil Cover	46 in.	3.83 ft
Overall Ht of Tank	70.5 in.	5.88 ft
Elev, Base of Tank		850.29 ft
Ht to 4" Inlet Invert	57 in.	4.75 ft
Elev, 4" Inlet Invert		855.04 ft
Ht to 2" Outlet Invert	58 in.	4.83 ft
Elev, 2" Outlet Invert		855.13 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		849.79 ft
ST Inlet Pipe		
Grade @ Stub-out		858 ft
Depth of Stub-out, top		1.5 ft
Elev, Stub-out Invert		856.15 ft
Elev @ ST Inlet Invert		855.38 ft
Length		25 ft
Slope		3.1 %
Pipe, ST to PT		
ID	4 in.	0.33 ft
OD	4.5 in.	0.38 ft
Elev, ST Outlet Invert		855.17 ft
Elev, PT Inlet Invert		855.04 ft
Length		4 ft
Slope		3.1 %
Cover over inlet pipe		4.27 ft
Pump Reqmt.		
Floor Thickness	4 in.	0.33 ft
Elev, Pump Tank Floor		850.63 ft
Pump Block Ht.	4 in.	0.33 ft
Elev, Pump Intake		850.96 ft
Grade @ Primary Manifold		863.00 ft
Grade @ Repair Manifold		863.00 ft
Min. Cover	18 in.	1.50 ft
Max Elev, Primary		861.50 ft
Max Elev, Repair		861.50 ft
Elev Diff, Primary		10.54 ft
Elev Diff, Repair		10.54 ft

Drainfield Design

Project	LSS Permit
Location	225 Mountain Island Dr
	Statesville, NC 28677
County	Iredell

Drainfield Sizing

Primary

LTAR	0.275 gpd/ft^2		
Daily Design Flow	360 gpd	**Type of Drainfield Media**	Chambers
Req. Drainfield Area	1,309 ft^2	**Required Drainline**	
Trench Width, Eff.	3 ft	**After 25% Reduction**	327 ft
Required Drainline	436 ft	**Minimum Line Spacing**	9 ft (O.C.)

Repair

LTAR	0.275 gpd/ft^2		
Daily Design Flow	360 gpd	**Type of Drainfield Media**	PPBPS, Horizontal
Req. Drainfield Area	1,309 ft^2	**Required Drainline**	
Trench Width, Eff.	3 ft	**After 50% Reduction**	218 ft
Required Drainline	436 ft	**Minimum Line Spacing**	8 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	yellow				47.7
2	Layout Line	blue				86.7
3	Layout Line	red				86.7
4	Layout Line	purple			82.0	
5	Layout Line	blue			82.0	
6	Layout Line	yellow			82.0	
7	Layout Line	orange			82.0	
8	Layout Line					
9	Layout Line					
10	Layout Line					
11	Layout Line					
12	Layout Line					
13	Layout Line					
14	Layout Line					
15	Layout Line					
16	Layout Line					
17	Layout Line					
18	Layout Line					
19	Layout Line					
20	Layout Line					
			Total	0	328	221
			Count	0	4	3

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

For Chambers or Low-profile Chambers:

Effective trench lengths are shown. Add 1' for total installation length.

PRESSURE MANIFOLD DESIGN (Primary)

Site Information

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Design Information

Estimated Daily Flow	360	gal/day
L.T.A.R. (from Iredell Co.)	0.275	gal/day/ft^2
L.T.A.R. + 5%	0.289	gal/day/ft^2
Trench Width	3	ft.
Line Length Required	436	ft.
Length after 25% Reduction	327	ft
L.T.A.R. Reduced	0.367	gal/day/ft^2
L.T.A.R. Reduced + 5%	0.385	gal/day/ft^2

DRAINFIELD INFO. - **Primary**

Proposed Type of System/Distribution: ***Pump to Pressure Manifold using Chambers***

Line No.	Flag Color	Line Length (ft)	Tap	Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
4	purple	82	1/2in SCH 80	5.48	0.067	0.366
5	blue	82	1/2in SCH 80	5.48	0.067	0.366
6	yellow	82	1/2in SCH 80	5.48	0.067	0.366
7	orange	82	1/2in SCH 80	5.48	0.067	0.366
	Total	**328**	**Total**	**21.92**	**Avg.**	**0.366**

Note: Line lengths are calculated in 4'4" increments to reflect use of PPBPS product.

Total Run Time	16.42	min.	
Drainfield Capacity	214.2	gal	
% of Drainfield Cap	68.9%		(Req. Range 66-75%)
Dose Volume	147.6	gal/dose	
Run Time/Dose	**6.7**	**minutes**	Range 5-7 minutes unless uphill, checked
Volume/depth	21.07	gal/in.	(Per tank manufacturer's specifications)
Estimated Drawdown	7.00	in.	

Manifold Box

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

PRESSURE MANIFOLD SYSTEM DESIGN (Repair)

Site Information

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Design Information

Estimated Daily Flow	360	gal/day
L.T.A.R. (from Iredell Co.)	0.275	gal/day/ft^2
L.T.A.R. + 5%	0.289	gal/day/ft^2
Trench Width	3	ft.
Line Length Required	436	ft.
Length after 50% Reduction	218	ft
L.T.A.R. Reduced	0.550	gal/day/ft^2
L.T.A.R. Reduced + 5%	0.578	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.
1	yellow	47.7	1/2in SCH 80	5.48	0.115	0.537
2	blue	86.7	3/4in SCH 80	10.10	0.116	0.544
3	red	86.7	3/4in SCH 80	10.10	0.116	0.544
	Total	**221**	**Total**	**25.68**	**Avg.**	**0.542**

Note: Line lengths are calculated in 4'4" increments to reflect use of PPBPS product.

Total Run Time	14.02	min.	
Drainfield Capacity	367.2	gal	
% of Drainfield Cap	63.1%		(Max. 101.1% to not exceed 7.2 gal/panel)
Dose Volume	231.7	gal/dose	
Run Time/Dose	**9.0**	**minutes**	Time to deliver max. 7.2 gal/panel
Volume/depth	21.07	gal/in.	(Per tank manufacturer's specifications)
Estimated Drawdown	11.00	in.	

Manifold Box

Number of Taps	3	with	0	Split(s)	
Manifold Length	3.0	ft.	(approximate)		

PUMP DESIGN

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

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Friction Losses

Suction Head	0 ft		*(submersible 0)*
Elev. Difference (highest point from pump)	10.54 ft		
Design Pressure At Outlet	2 ft		
Supply Line - 1.5" Schedule 40 PVC			
Pipe Diameter, Nominal	1.5 in.		
Pipe Diameter (ID)	1.59 in.	Flow	21.92 gpm
Pipe Length	60 ft	Velocity	3.54 ft/sec
Pipe Length for Fittings	6 ft		Meets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length	66 ft		
Estimated Friction Loss in Supply Line		2.06 ft	
Friction Loss - Taps/Special Fittings	3.5 ft		
TOTAL		**18.10 ft.**	

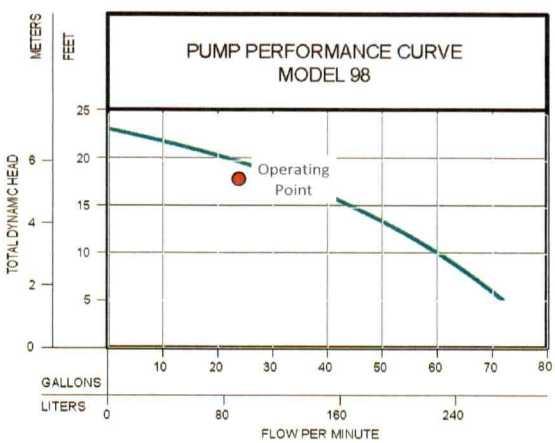
Flow for Anti-Siphon Hole

Hole Diameter	3/16	in.
Hole Flowrate	1.76	gpm

Pump Efficiency	0.7	*(assumed, typical)*
Motor Efficiency	0.9	*(assumed for electric pumps)*
Flow	**23.68**	**gpm**
Required Horsepower	0.17	hp
TDH	**18.10**	**ft**

Pump Selection

Manufacturer:	Zoeller
Model:	N98
Horsepower:	**0.5**



PUMP DESIGN

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

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Friction Losses

Suction Head	0 ft		*(submersible 0)*
Elev. Difference (highest point from pump)	10.54 ft		
Design Pressure At Outlet	2 ft		

Supply Line - *2.0" Schedule 40 PVC*

Pipe Diameter, Nominal	1.5 in.		
Pipe Diameter (ID)	1.59 in.	Flow	25.68 gpm
Pipe Length	170 ft	Velocity	4.15 ft/s
Pipe Length for Fittings	17 ft		Meets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length	187 ft		
Estimated Friction Loss in Supply Line		7.83 ft	
Friction Loss - Taps/Special Fittings		3.5 ft	
TOTAL		**23.87 ft.**	

Flow for Anti-Siphon Hole

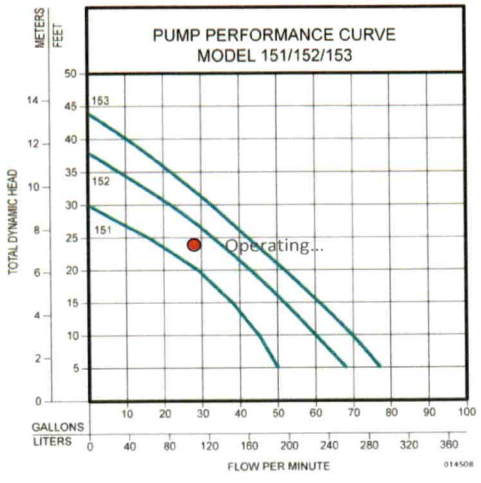
Hole Diameter	3/16	in.
Hole Flowrate	2.03	gpm

Pump Efficiency	0.7	*(assumed, typical)*
Motor Efficiency	0.9	*(assumed for electric pumps)*
Flow	**27.71**	**gpm**

Required Horsepower	0.27	hp
TDH	**23.87**	**ft.**

Pump Selection

Manufacturer:	Zoeller
Model:	N152
Horsepower:	**0.4**



Septic Tank Buoyancy Calculation

Project: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

Tank Size (nominal) 1064 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	30	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):

		Exterior		Interior		
		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		in.
Lid	Length	108.0	in.			
	Width	58.0	in.			
	Height	6.0	in.			

Area of Riser Openings 6.28 ft^2

Permanent Liquid Depth in Tank 0.0 in. 0.00 ft

Tank Weight 10,500 lb (per manufacturer)

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume

Displaced Volume	259.1	ft^3 *
Buoyancy Force	**16,166**	**lb.**

Weight Calculation:

Tank Weight	10500	lb		
Water Weight in Tank	0	lb	Volume	0.0 ft^3 *
Soil Weight Over Tank	7664	lb		
Soil Friction Force	4611	lb		
Total Weight	**22,775**	**lb**		

Factor of Safety = 1.41

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: LSS Permit
Location: 225 Mountain Island Dr
Statesville, NC 28677
County: Iredell

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	34	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):

		Exterior		Interior		
		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		in.
Lid	Length	108.0	in.			
	Width	58.0	in.			
	Height	6.0	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	252.3	ft^3 *
Buoyancy Force	**15,742**	**lb**

Weight Calculation:

Tank Weight	10500	lb		
Water Weight in Tank	0	lb	Volume	0.0 ft^3 *
Soil Weight Over Tank	8982	lb		
Soil Friction Force	4611	lb		
Total Weight	**24,093**	**lb**		

Factor of Safety = 1.53

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.*

Attachment 2: Soil Boring Description Sheets

COUNTY: Iredell Co.__

SOIL/SITE EVALUATION
***for* ON-SITE WASTEWATER SYSTEM**
(Complete all fields in full)

CLIENT: Adams Homes APPLICATION DATE_____
ADDRESS: (Lot 45) 225 Mountain Island Rd. Statesville, NC 28667 DATE EVALUATED: 5/19/23
PROPOSED FACILITY: Single Family Residence PROPOSED DESIGN FLOW (.1949): 360 GPD PROPERTY SIZE: .51 ac
LOCATION OF SITE (Lot 45) 225 Mountain Island Rd. Statesville, NC 28677 PROPERTY RECORDED: _____
WATER SUPPLY: ☐ Private ☒ Public ☐ Well ☐ Spring ☐ Other _____
EVALUATION METHOD: ☒ Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: ☒ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
SB 1	3%	0-24"	C; SBK	SS; SP; FI		42"	-	Saprolite	Provisionally Suitable 0.275
		24-42"	CL; WSBK	SS; SP; FR					
		42+"	SCL; MA	SS; SP; FR					
SB 2	3%	0-6"	SCL; WSBK	SS; SP; FR	-	45"	-	-	Provisionally Suitable 0.275
		6-40"	C; SBK	SS; SP; FI					
		40-45"	CL; WSBK	SS; SP; FR					
SB 3	3%	0-10"	SCL; WSBK	SS; SP; FR	-	40"	-	-	Provisionally Suitable 0.275
		10-40"	C; SBK	SS; SP; FI					
		40+"	SCL; MA	SS; SP; FR					
SB 4	5%	0-8"	SCL; WSBK	SS; SP; FR	-	42"	-	-	Provisionally Suitable 0.275
		8-34"	C; SBK	SS; SP; FI					
		34-42"	CL; WSBK	SS; SP; FR					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	Provisionally Suitable	Provisionally Suitable
System Type(s)	Pressure Manifold 25% Reduction	Pressure Manifold 50% Reduction
Site LTAR	0.275 GPD/Ft^2	0.275 GPD/Ft^2

OTHER FACTORS (.1946): _____
SITE CLASSIFICATION (.1948): _____

EVALUATED BY: Jeff Vaughan
OTHER(S) PRESENT: Trevor Hackney

LEGEND

use the following standard abbreviations

LANDSCAPE POSITION	GROUP	SOIL TEXTURE	CONVENTIONAL .1955 LTAR*	LPP .1957 LTAR*	MINERALOGY/ CONSISTENCE	STRUCTURE
CC (Concave Slope)	I	S (Sand)	1.2 - 0.8	0.6 - 0.4	SEXP (Slightly Expansive)	G (Single Grain)
CV (Convex Slope)		LS (Loamy Sand)			EXP (Expansive)	M (Massive)
D (Drainage Way)						CR (Crumb)
DS (Debris Slump)	II	SL (Sandy Loam)	0.8 - 0.6	0.4 - 0.3		GR (Granular)
FP (Flood Plain)		L (Loam)				SBK (Subangular Blocky)
FS (Foot Slope)						ABK (Angular Blocky)
H (Head Slope)	III	Si (Silt)	0.6 - 0.3	0.3 - 0.15		PL (Platy)
L (Linear Slope)		SiCL (Silty Clay Loam)				PR (Prismatic)
N (Nose Slope)		CL (Clay Loam)				
R (Ridge)		SCL (Sandy Clay Loam)			**MOIST**	**WET**
S (Shoulder Slope)		SiL (Silt Loam)				
T (Terrace)					VFR (Very Friable)	NS (Non-sticky)
	IV	SC (Sandy Clay)	0.4 - 0.1	0.2 - 0.05	FR (Friable)	SS (Slightly Sticky)
		SiC (Silty Clay)			FI (Firm)	S (Sticky)
		C (Clay)			VFI (Very Firm v. Very Sticky)	VS (Very Sticky)
		O (Organic)	None	None	EFI (Extremely Firm)	NP (Non-plastic)
						SP (Slightly Plastic)
						P (Plastic)
						VP (Very Plastic)

*Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

NOTES

HORIZON DEPTH	In inches below natural soil surface
DEPTH OF FILL	In inches from land surface
RESTRICTIVE HORIZON	Thickness and depth from land surface
SAPROLITE	S(suitable) or U(unsuitable)
SOIL WETNESS	Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation
CLASSIFICATION	S (Suitable), PS (Provisionally Suitable), or U (Unsuitable)

Evaluation of saprolite shall be by pits.

Long-term Acceptance Rate (LTAR): gal/day/ft^2

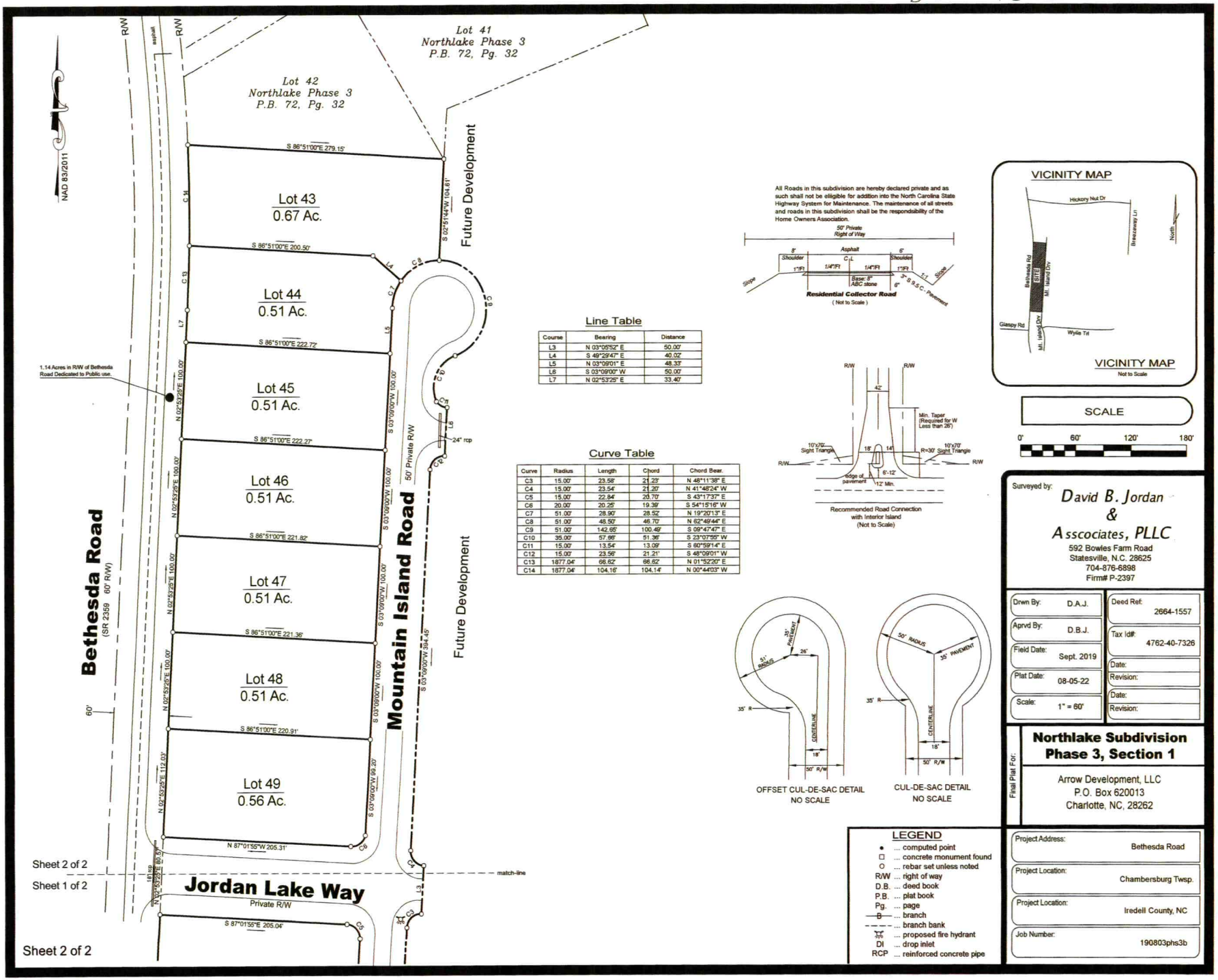
Show profile locations and other site features (dimensions, reference or benchmark, and North).



COMMENTS:

Attachment 3: Additional Documentation

BK PG 127



All Roads in this subdivision are hereby declared private and as such shall not be elligible for addition into the North Carolina State Highway System for Maintenance. The maintenance of all streets and roads in this subdivision shall be the respondsibility of the Home Owners Association.

Line Table

Course	Bearing	Distance
L3	N 03°05'52" E	50.00'
L4	S 49°29'47" E	40.02'
L5	N 03°09'01" E	48.33'
L6	S 03°09'00" W	50.00'
L7	N 02°53'25" E	33.40'

Curve Table

Curve	Radius	Length	Chord	Chord Bear.
C3	15.00'	23.58'	21.23'	N 48°11'38" E
C4	15.00'	23.54'	21.20'	N 41°48'24" W
C5	15.00'	22.84'	20.70'	S 43°17'37" E
C6	20.00'	20.25'	19.39'	S 54°15'16" W
C7	51.00'	28.90'	28.52'	N 19°20'13" E
C8	51.00'	48.50'	46.70'	N 82°49'44" E
C9	51.00'	142.66'	100.49'	S 09°47'47" E
C10	35.00'	57.86'	51.36'	S 23°07'55" W
C11	15.00'	13.54'	13.09'	S 60°59'14" E
C12	15.00'	23.56'	21.21'	S 48°09'01" W
C13	1877.04'	66.62'	66.62'	N 01°52'20" E
C14	1877.04'	104.16'	104.14'	N 00°44'03" W

Recommended Road Connection with Interior Island (Not to Scale)

SCALE

0' 60' 120' 180'

LEGEND

- ● ... computed point
- □ ... concrete monument found
- O ... rebar set unless noted
- R/W ... right of way
- D.B. ... deed book
- P.B. ... plat book
- Pg. ... page
- —B— ... branch
- ---- ... branch bank
- ... proposed fire hydrant
- DI ... drop inlet
- RCP ... reinforced concrete pipe

Surveyed by:
David B. Jordan
&
Asscociates, PLLC
592 Bowles Farm Road
Statesville, N.C. 28625
704-876-6898
Firm# P-2397

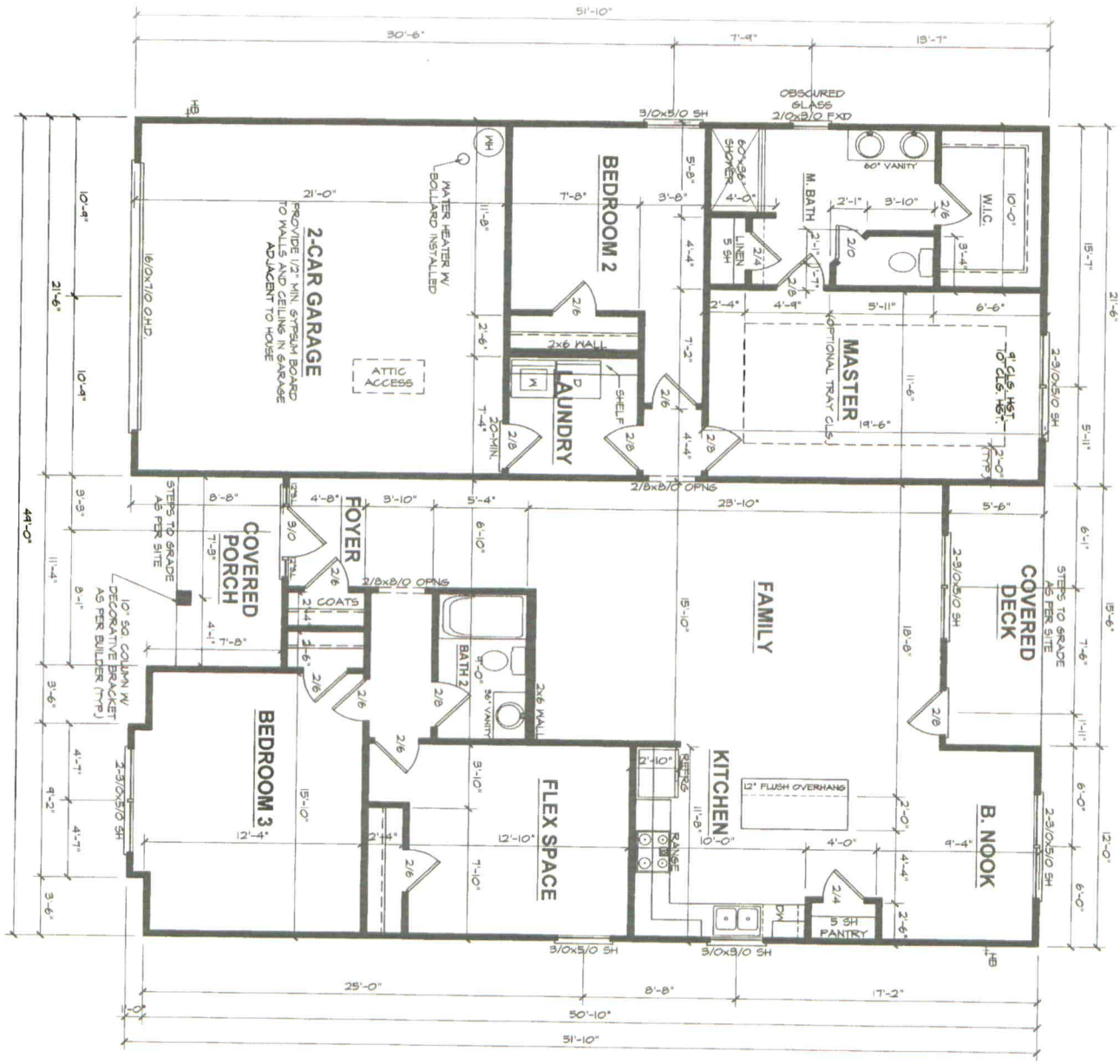
Drwn By: D.A.J.	Deed Ref: 2664-1557
Aprvd By: D.B.J.	Tax Id#: 4762-40-7326
Field Date: Sept. 2019	Date:
Plat Date: 08-05-22	Revision:
Scale: 1" = 60'	Date:
	Revision:

Final Plat For:

Northlake Subdivision
Phase 3, Section 1

Arrow Development, LLC
P.O. Box 620013
Charlotte, NC, 28262

Project Address:	Bethesda Road
Project Location:	Chambersburg Twsp.
Project Location:	Iredell County, NC
Job Number:	190803phs3b



FLOOR PLAN

9'-0" (NOM.) CLG. HST. U.N.O.
SET WINDOWS @ 7'-0" U.N.O.

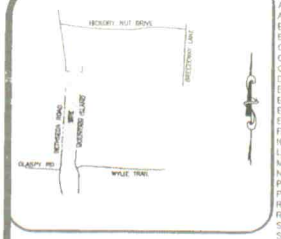
SCALE: 1/4"=1'-0"

SHEET 3

DATE DRAWN 3-18-2014
PROJECT 5970
REVISIONS

1902 "B" FE (L) NR4503

ADAMS HOMES AEC, LLC



VICINITY MAP (NTS)

LEGEND
AC=AIR CONDITIONING UNIT
AG=ABOVE GROUND
BOC=BACK OF CURB
BG=BELOW GROUND
CATV=CABLE TV
CB=CATCH BASIN
CVRD=COVERED
DW=CONC. DRIVEWAY
EB=ELECTRIC BOX
EM=ELECTRIC METER
EOP=EDGE OF PAVEMENT
EP=ELECTRIC PEDESTAL
FH=FIRE HYDRANT
ICV=IRRIGATION CONTROL VALVE
LP=LIGHT POLE
MTR=METER
N/F=NOW OR FORMERLY
PO=PORCH
PP=POWER POLE
RCP=REINFORCED CONC. PIPE
R/W=RIGHT OF WAY
SCO=CLEANOUT
SW=SIDEWALK
TP=TELEPHONE PEDESTAL
TF=TRANSFORMER
WM=WATER METER
WV=WATER VALVE
EIP=EXISTING IRON PIPE
IPS=IRON PIPE SET
EIR=EXISTING IRON ROD

NORTH CAROLINA PROFESSIONAL SEAL L-4817 LAND SURVEYOR NICHOLAS M. FRENCH

THIS EXHIBIT MAP IS OF AN EXISTING PARCEL OR PARCELS OF LAND AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET.

NICHOLAS M. FRENCH, PLS L-4817 DATE

THIS MAP IS ONLY INTENDED FOR THE PARTIES AND PURPOSES SHOWN. THIS MAP IS NOT FOR RECORDATION. NO TITLE REPORT PROVIDED.

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

GENERAL NOTES:

1. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.

2. AREAS SHOWN HEREON WERE COMPUTED USING THE COORDINATE METHOD.

3. LINES NOT SURVEYED ARE SHOWN AS DASHED LINES FROM INFORMATION REFERENCED ON THE FACE OF THIS SURVEY.

4. PROPERTY MAY BE SUBJECT TO ANY/ALL EASEMENTS AND RESTRICTIONS OF RECORD. THIS SURVEY IS A CORRECT REPRESENTATION OF THE LAND PLATTED AND OR DEEDED AND HAS BEEN PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. A NORTH CAROLINA LICENSED ATTORNEY-AT-LAW SHOULD BE CONSULTED REGARDING CORRECT OWNERSHIP, WIDTH AND LOCATION OF EASEMENTS, AND OTHER TITLE QUESTIONS REVEALED BY TITLE EXAMINATION.

5. DRIVEWAY IMPERVIOUS CALCULATION SHOWN HEREON CALCULATED TO THE FRONT PROPERTY LINE/RIGHT-OF-WAY.

6. THIS PARCEL IS NOT LOCATED WITHIN A FLOOD HAZARD ZONE AS INDICATED ON CID NO. 370313 PANEL 4762, SUFFIX J IREDELL COUNTY WITH AN EFFECTIVE DATE OF 03/18/2008.

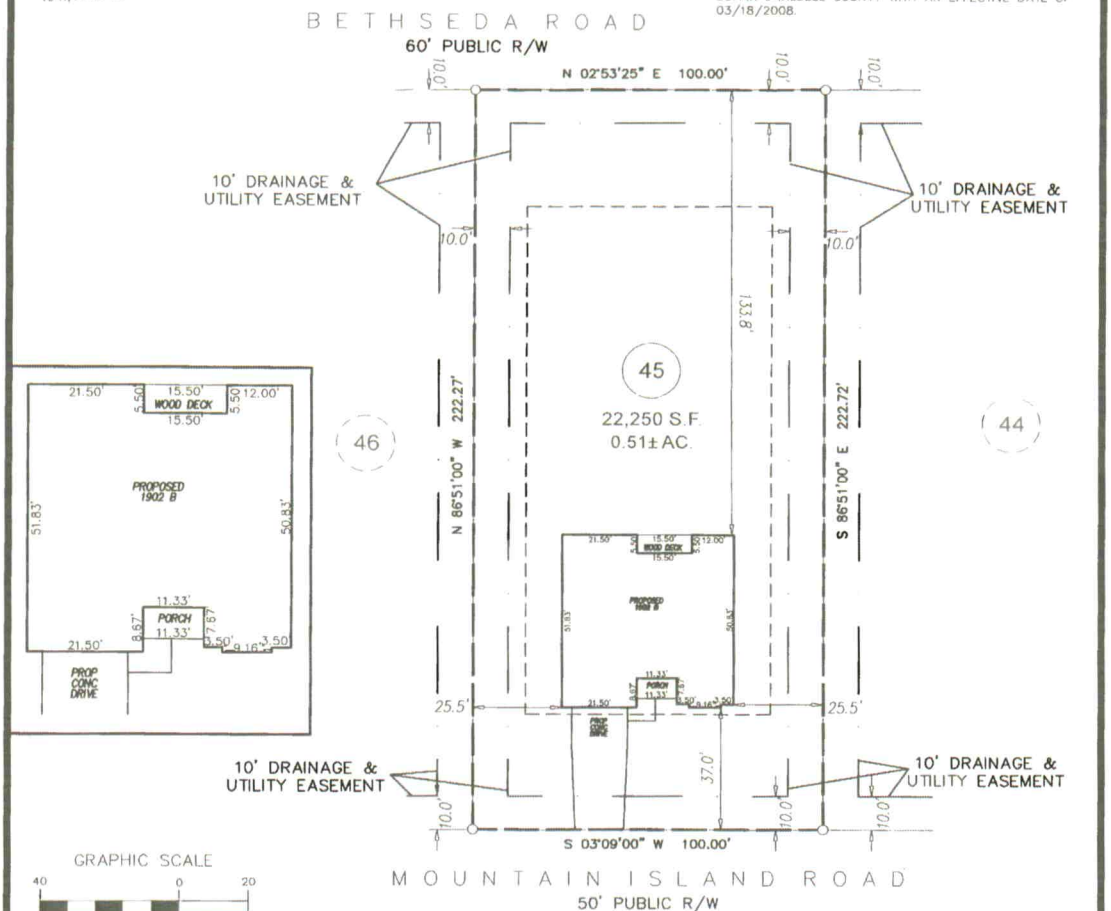
SETBACKS PER PB 77 PG 126-127

FRONT	35'
SIDE	15'
REAR	35'

IMPERVIOUS AREA

HOUSE	2,418 SQ.FT.
DRIVE TO R/W	567 SQ.FT.
WALK	46 SQ.FT.
DECK	85 SQ.FT.
TOTAL	3,116 SQ.FT.

PLAT NORTH
PB 77, PG 126-127



GRAPHIC SCALE
40 0 20
1 inch = 40 ft.

PRELIMINARY PLOT PLAN

PROJECT:	NORTHLAKE PHASE 3
DRAWN BY:	SEER
SURVEYED BY:	N/A
SCALE:	1"=40'
FIELD WORK:	N/A
DWG DATE:	03-06-2023

FOR
ADAMS HOMES
225 MOUNTAIN ISLAND DRIVE
LOT 4503 NORTHLAKE SUBDIVISION PHASE 3
CHAMBERSBURG TWP., IREDELL CO., NC
P.B. 77, PG. 126-127

ECLS GLOBAL, INC
U.S. VETERAN-OWNED
19 N MCKINLEY ST
COATS, NC 27521
910.897.3257 ECLSGLOBALINC.COM
910.897.2329 (FAX) COA#C-4175

DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH, ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

Sheet 1 of 1
PROPERTY ID #:
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
(Complete all fields in full)

Lot 46

OWNER: Arrow Development
ADDRESS:
PROPOSED FACILITY: 4BR 4BO
PROPOSED DESIGN FLOW (.1949): Lot 46
LOCATION OF SITE: 225 Mountain Island Dam.
APPLICATION DATE 2020
DATE EVALUATED: 2020
PROPERTY SIZE: N/A
PROPERTY RECORDED: No.

WATER SUPPLY: ☐ Private ☑ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☐ Auger Boring ☑ Pit ☐ Cut
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

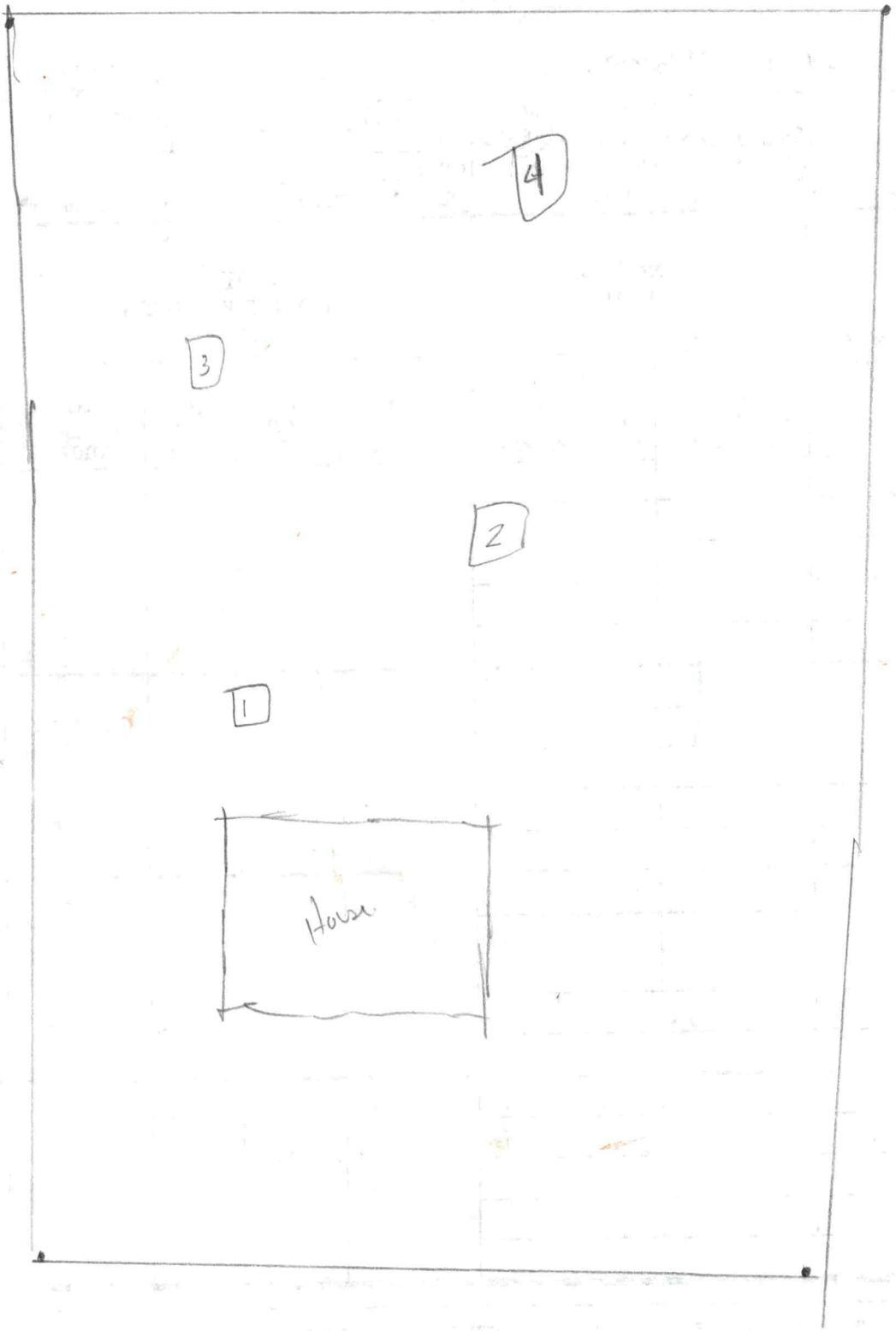
PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	Side 5-10%	0-10	SS SBK	SSSP FR SEXP	2.5YR 4/6	53	/	Mica	PS .30
		10-53	CL WSBK	SSSP FR					
2	Side 5-10%	0-16	C SBK	SSSP FR SEXP	2.5YR 4/6	56	/	L. flo + Mac Core throughout CL beyond	PS .30
		16-56	CL WSBK	SSSP FR					
3	Side 5-10%	0-25	C. SBK	SSSP FR SEXP	2.5YR 4/6	56"	/	Heavy Litho @ 40"	PS .3
		25-56	CL. WSBK	SSSP FR SEXP					
4	Side 5-10%	0-24	C SBK	SSSP-FR SEXP		42"	/	Heavy Litho @ 37"	PS 0.3
		24-63	CL WSBK	SSSP-FR SEXP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	270	270
System Type(s)	III 50%	IV 50%
Site LTAR	.30	.30

OTHER FACTORS (.1946): —
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Bobbie
OTHER(S) PRESENT:

COMMENTS:

Updated February 2014


4
3
2
1
House