IREDELL COUNTY HEALTH DEPARTMENT

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

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

PERMIT # 212983

PIN # 4614945822

APPLICANT/OWNER: Brian McManis

APPLICANT ADDRESS: PO Box 4268 Mooresville, NC 28117

SITE ADDRESS: 317 Tuskarora Trl, Mooresville, NC 28117

SITE DIRECTIONS: West on Brawley School Rd approx 6 miles, right on Tuskarora Trail .8 miles, Destination on left.

PHONE: 704-746-5046

ALT. PHONE 704-746-4709

SUBDIVISION: CL&T

SECTION: 6 LOT # 1725 LOT AREA: 1.1 ac

SAP CONTROLLED: ☐ YES ■ NO

DESIGN FLOW: 480 L.T.A.R.: 0.25

Septic Tank 1000 (gal) STB 794. Date 5/24/18

Pump Tank See plan (gal) PT Date

Pump Make Model Serial #

Nitrification Fields 1 # Lines 7 Linear Ft 412

Trench Width Per plan Trench Bottom Depth(Low side) Per plan Gravel Depth N/A

■ New System ☐ Repair ☐ Expansion System Type: I II III IV (V) VI

System Description: TS II LPPBPPS

Repair System Description: TS II Drip

Maintenance Agreement Required: ■ YES ☐ NO

☐ GRAVITY ■ PRESSURE

■ Residence ☐ Business ☐ Other ☐ Slab ■ Basement w/plumbing

No. Bedrooms 4 No. Persons 8 No. Employees

☐ Crawl Space ☐ Basement w/o plumbing

Water Supply: ■ Private ☐ Public ☐ Community

Comments / Conditions: Per plan By Piedmont Design Associates, P.A.

INITIAL SITE SKETCH

See plan by: Piedmont Design Associates, P.A.

AS BUILT SKETCH

Lines 5+6 checked 6-28-18 KW
Lines 1+2 checked 6-27-18 KW
* bottom right 2 lines checked (orange & yellow) 6/26 CC

	Date	Initials
Drain Lines Checked	6-28-18	KW
Tanks Checked	7-16-18	BB.
Pressure Manifold or Valve Box Checked	8/1	BB
Pressure Head Set	8/1	
Electrical Checked	8/1	
Floats Set	8/1	
Alarm Checked	8/1	
Maintenance Contract (Y) N	8/8	BB

* Orenco - communi-Lo
* Orenco BF 1/2 h.p.
* Need Certification from Engineer ✓
* Maintenance contract ✓

Permit 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.*

Owner / Applicant Signature: [signature] Date: 5/2/18

IMPROVEMENT PERMIT by: [signature] Date: 05/01/18

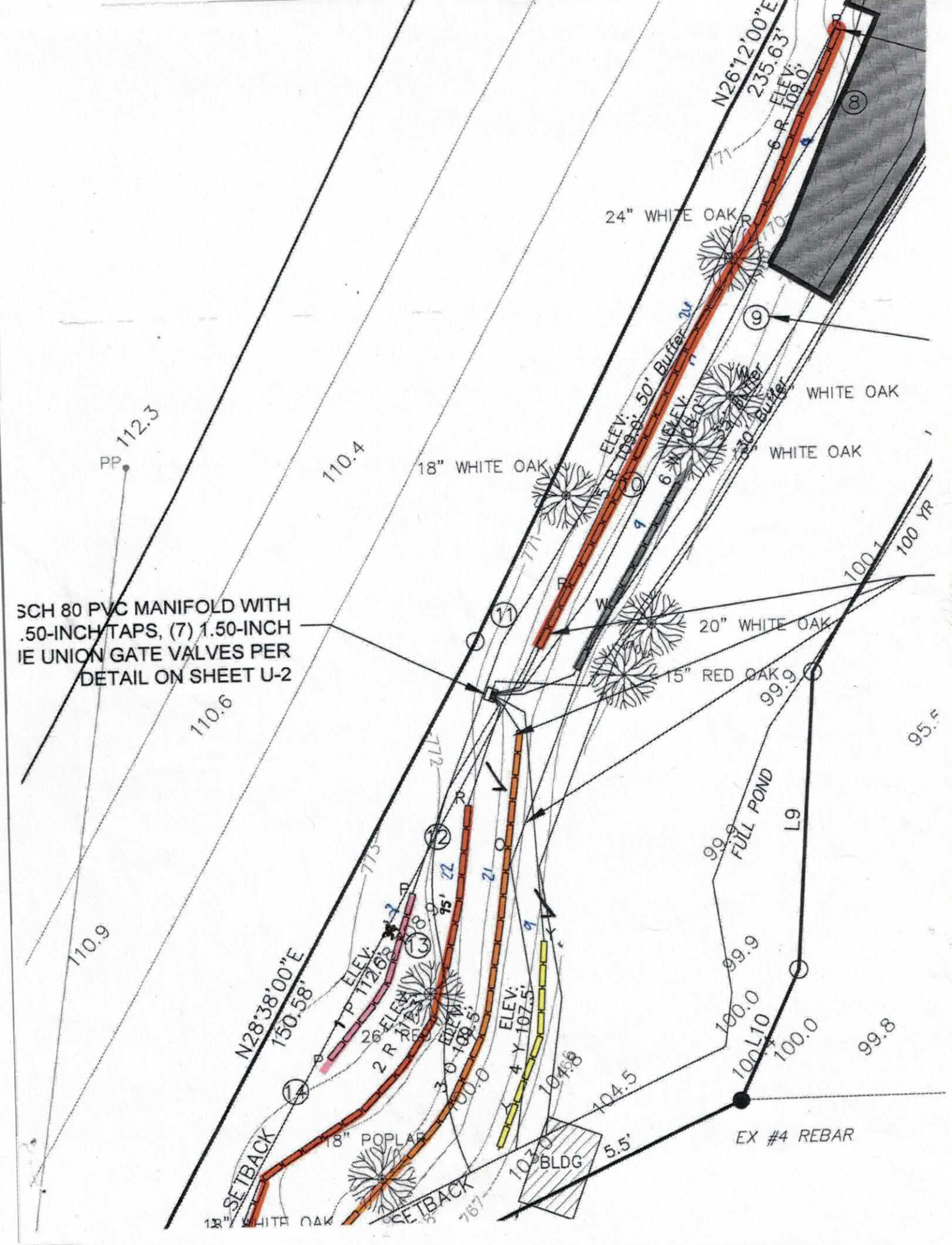
AUTHORIZATION TO CONSTRUCT by: [signature] Date: 05/01/18

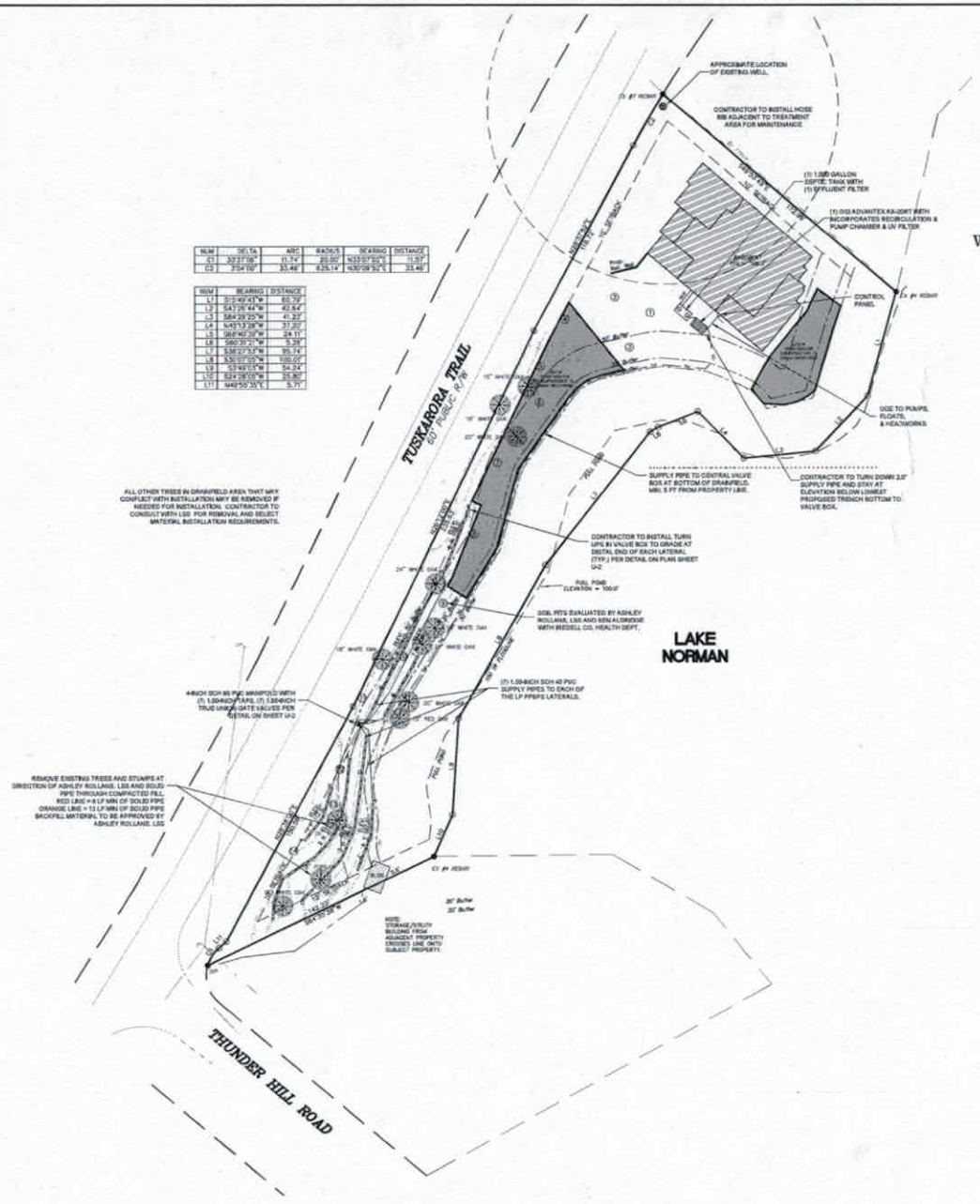
Installed by: Richard Abernathy

OPERATION PERMIT by: Benjamin A. Bell Date: 8/7/18

Existing System Inspected by: Date:

FOR SEPTIC FINAL INSPECTION: CALL 704-664-3703 between 8am-9am the day the inspection is needed. Be sure to speak with an inpsector to confirm your inspection time.


SCH 80 PVC MANIFOLD WITH
.50-INCH TAPS, (7) 1.50-INCH
IE UNION GATE VALVES PER
DETAIL ON SHEET U-2
N26°12'00"E
235.63'
N28°38'00"E
150.58'
24" WHITE OAK
18" WHITE OAK
20" WHITE OAK
15" RED OAK
18" POPLAR
EX #4 REBAR
BLDG
SETBACK
SETBACK
FULL POND
100 YR
ELEV: 109.0'
ELEV: 108.0'
ELEV: 107.5'
ELEV: 112.6'
50' Buffer
35' Buffer
PP
112.3
110.4
110.6
110.9
99.9
100.0
100.1
104.5
104.8
103.0
5.5'
L9
L10



MUM	DELTA	ARC	RADIUS	BEARING	DISTANCE
C1	33°27'08"	11.74'	20.00'	N33°01'50"E	11.57'
C2	3°04'09"	33.48'	625.14'	N30°08'50"E	33.46'

MUM	BEARING	DISTANCE
L1	S13°49'43"W	60.79'
L2	S43°26'44"W	42.84'
L3	S84°29'07"W	41.22'
L4	N45°13'28"W	37.20'
L5	S68°40'39"W	24.11'
L6	S60°31'21"W	5.39'
L7	S38°27'53"W	95.74'
L8	S30°07'05"W	100.07'
L9	S7°49'01"W	54.24'
L10	S24°28'05"W	35.80'
L11	N49°50'35"E	5.71'



VICINITY MAP
NO SCALE

Soil Scientist:
Rollans Soil & Environmental Consulting
P.O. Box 832
Mooresville, N.C. 28115
Phone: (704) 746-5046

Land Surveyor:
Williams Land Surveying
274 Baymount Drive
Statesville, NC 28625
(704) 876-3996

DESIGN NOTES:	
DESIGN FLOW:	480 G/D
LTAR:	0.25 G/D/SF
REPAIR LTAR:	0.10 G/D/SF
SEPTIC TANK SIZE:	1,000 GALLON (BAFFLED)
EFFLUENT FILTER:	OSI MODEL FTPS0436-28-NC
ADVANCED TREATMENT:	ORENCO ADVANTEX AX-20RTUV
RECIRCULATION PUMP:	ORENCO MODEL PF300512
TREATMENT STANDARD:	TS-I
FIELD DOSING PUMP:	ORENCO MODEL PF300512
SUBSURFACE DISTRIBUTION:	LP PPBPS
FORCEMAIN SIZE:	1.5-INCH SCH 40 PVC
NO. OF LATERALS:	6 (VARIOUS LENGTHS)
TRENCH BOTTOM:	36" PER ASHLEY ROLLANS, LSS
4 DOSES TO SYSTEM PER DAY	
TIME PER DOSE:	2.51 MINUTES
PUMP FLOW:	47.5 G/M
TOTAL DOSE VOLUME:	119 GAL./DOSE
VOL. PER PANEL PER DOSE:	1.25 GALLONS OR 34.7% OF PANEL VOLUME

NOTES:
- SOILS WORK PROVIDED BY ASHLEY ROLLANS, LSS
- REFER TO SHEET U-2 FOR SYSTEM DETAILS & ELEVATIONS.
- PRIOR TO ANY CONSTRUCTION, BARRICADE ALL DISPOSAL AREAS FROM CONSTRUCTION TRAFFIC
- CLEAR DRAIN FIELD OF ALL DEBRIS, LIMBS, ETC. LIGHTLY HAND SMOOTH ANY IRREGULAR SURFACES. REDO PRIOR TO INSTALLATION OF LATERALS. ENSURE THAT DISPOSAL AREAS ARE CAPABLE OF SHEDDING RAINWATER AND FREE OF ANY LOW AREAS.
- SEED ALL DISPOSAL AREAS.
- MAINTAIN 9" MINIMUM SEPARATION ON ALL LATERALS
- OBSERVE ALL SETBACKS.
- AREA IS AVAILABLE FOR REPAIR AND SHALL REMAIN UNDISTURBED

NOTE:
WATER TO THE RESIDENCE WILL BE SUPPLIED BY A WELL LOCATED MORE THAN 100 FEET FROM THE SYSTEM COMPONENTS.

- REFER TO SPECIFICATION PACKAGE FOR MATERIALS SELECTION AND INSTALLATION REQUIREMENTS
- REFER TO SHEET U-2 FOR TREATMENT PLAN/PROFILE, INSTALLATION DETAILS & ELEVATIONS

811
Know what's below.
Call before you dig.

GRAPHIC SCALE
0 15 30 60
1 Inch = 30 feet

PIEDMONT DESIGN
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
Associates, P.A.
Suite 101 Westfield Center, 1251 East Main Drive
Monroe, North Carolina 28110
Phone (704) 664-7886 Fax (704) 664-4736 www.pdpa.com
NC BELS & SELS License # C-1997

PREPARED FOR:
SPIVEY CONSTRUCTION CO., INC.
PO BOX 4268
MOORESVILLE, NC 28117
704-746-4709

LP PPBPS SEPTIC SYSTEM SITE PLAN
4 BEDROOM RESIDENCE
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NORTH CAROLINA

REVISIONS	BY
REV. REPAIR AREA PER S. ROLLANS COMMENTS (5/5/18)	DMD
REV. DRAINFIELD PER COMMENTS BY AHJ (7/5/18)	DMD

Date: 1/2/18
Scale: 1"=30 FT
Drawn: DMD
Checked: DLM
Project: 2017-12-03-EC
Job#: 2017-12-03-EC
Sheet: U-1
Rev: B 4/16/18
Sheets

PUBLICATION OR REUSE OF THESE DRAWINGS OR ANY DETAILS WITHIN MUST BE WITH THE WRITTEN CONSENT OF PIEDMONT DESIGN ASSOCIATES, P.A.

Location: Owner: Approved: Date of Issue:

I:\Engineering\1-Projects\2017\2017 - Misc Septic\2017\2017-Tuskarora Tr PPBPS\Rollings\PDAPA_Site_030218.dwg, 4/16/2018 2:14:36 PM, dsteinson

DESIGN SPECIFICATIONS
4 BEDROOM RESIDENCE
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NORTH CAROLINA

Design Flow:	480 G/D
LTAR:	0.25 G/D/SF (Primary) & 0.10 G/D/SF (Repair)

SYSTEM TREATMENT

Septic Tank:	(1) 1,000 Gallon Precast Concrete with Baffled Wall (Top seam)
Septic Tank Effluent Filter:	(1) Orenco Model FTP0436-28
Advanced Treatment Technology:	(1) OSI Advantex AX-20RT Textile Filter (TS-II)
Control Panel:	(1) Orenco VCOM-AX20B2/PTHTUVSA
UV Disinfection:	(1) Orenco UV-125/31-P

NITRIFICATION FIELD

Trench Type:	LP PPBPS (Low Pressure Panels)
Supply Force Main Length:	+/-400 LF 2" SCH 40 PVC
Total Linear Feet of New Laterals:	(7) Laterals at Various LF Each (48-Inch Trench Bottom) (1) 8 Panels (34.36 LF) (2) 22 Panels (95.33 LF) (3) 21 Panels (90.99 LF) (4) 9 Panels (39.00 LF) (5) 17 Panels (73.66 LF) (6) 9 Panels (39.00 LF) (7) 9 Panels (39.00 LF)
Number of Panels:	95 Panels
Flow per Panel:	0.50 G/M with 5/32" Dia. Orifices (1 per Panel)
Total Network Flow:	47.5 G/M
Pressure Head:	3.0 Ft.
Static Head:	8.00 Ft.
Friction Head:	25.04 Ft.
Total Dynamic Head:	36.04 Ft.
Pump Required:	Use Orenco Model PF300512 or Approved Equal
Total Dose Volume:	119.00 Gallons (34.8% Panel Volume/Dose)
Pump Run Time:	2.51 Minutes
Check Valves:	(1) 2-Inch Swing Check Valve
Anti-Siphon:	Yes (Orenco Assembly)

3 Bedroom LP Panel Block System
317 Tuskarora Trail
Mooresville, Iredell County, North Carolina

Original Date: January 2,2018
Revised Date: April 16, 2018

Design Flow

Bedrooms	4	Bedrooms
Flow per Day per Bedroom	120	Gal./Day/Bedroom
Daily Design Flow (DDF)	480	Gal./Day

Use PPBPS Laterals for 50% Reduction in Drainfield Size

LTAR	0.25	G/D/SF	Per Ashley Rollans, LSS
Sq. Ft. Trench Bottom	1,920	Sq. Ft.	DDF x LTAR
	3		
Field Sizing	640	LF Conventional Lines	(SF Trench Bottom/3)
PPBPS Sizing	320	LF 50% Reduction System	(LF Conv. Line x 0.5)

Since Lot was Platted after 1982, 100% repair area is required
Since a portion of the drainfield will lie between the 50 ft buffer and the 30 ft buffer, either a 25 % or no reduction can be taken on this portion

	LF out of 50' Buffer	LF in 50'-35' Buffer	Line in 35'-30' Buffer	Total LF	No of Panels	Daily Flow per Lateral	
Line 1 (Pink)	34.36	0.00	0.00	34.36	8.00	51.54	G/D (Primary)
Line 2 (Red)	65.00	30.33	0.00	95.33	22.00	127.83	G/D (Primary)
Line 3 (Orange)	17.33	73.66	0.00	90.99	21.00	99.66	G/D (Primary)
Line 4 (Yellow)	0.00	8.67	30.33	39.00	9.00	31.41	G/D (Primary)
Line 5 (Red)	0.00	73.66	0.00	73.66	17.00	73.66	G/D (Primary)
Line 6 (Red)	39.00	0.00	0.00	39.00	9.00	58.50	G/D (Primary)
Line 7 (White)	0.00	34.66	4.33	38.99	9.00	37.91	G/D (Primary)
	155.69	220.98	34.66	**411.33**	**LF Total**	480.51	G/D Total

Dose Volume

No. of Panels	95	Panels	(Per Panel Design Manual)
Panel Volume (Max)	3.60	Gal./Panel	(Per Panel Design Manual)
Flow Rate	119.00	Gal./Dose	4 Doses per Day
Panel Volume/Dose	1.25	Gal./Panel	(Less Volume to Fill Supply Line)
	34.8%	Vol. of Panel filled at Dose	
Pump Run Time	2.51	Minutes	Actual Volume to Panel/Dose
Operation Head	3.00	Feet	(Orifice Flow Rate x # of Panels)
Use 5/32" Diameter Hole			(Per Panel Design Manual)
Flow Rate per Panel	0.50	G/M	(Per Panel Design Manual)
Field Flow Rate	47.50	G/M	(No. of Panels x Orifice Flow Rate)
Force Main Static Head	8.00	Feet	

Calculations for 2.0" Force Main and 1.50" Supply Laterals				
	Friction Loss	Pipe Length	Q	Pipe I.D.
Pipe Run	(Feet)	(Feet)	(GPM)	(Inches)
Line 1 (Pink)	0.13	72.36	4.00	1.610
Line 2 (Red)	1.40	124.33	11.00	1.610
Line 3 (Orange)	1.16	111.99	10.50	1.610
Line 4 (Yellow)	0.19	87.00	4.50	1.610
Line 5 (Red)	0.60	85.66	8.50	1.610
Line 6 (Red)	0.30	139.00	4.50	1.610
Line 7 (White)	0.12	53.99	4.50	1.610
2.0" Supply Force Main	16.98	340.00	47.50	2.067
Total Friction & Minor Loss	25.04	Feet		

Total Dynamic Head	36.04	Feet	(Static HD + Friction HD + Oper. HD)	
Pump Required	**47.50**	G/M at	**36.04**	TDH

Use Orenco PF300512

Contractor to Verify Power Requirements before Ordering Pump

PIPING: All piping and fittings shall be Schedule 40 PVC except LPP piping in the panels shall be PR160 PVC. Glue for all PVC pipe joints shall be as recommended by the pipe manufacturer. Supply pipe shall be 1.5-inch PVC to reduce the amount that drains between doses and decrease the amount of time it takes to pressurize the forcemain. The forcemain shall be installed where in drops down 12 feet below the outlet pipe from the discharge side of the Orenco AX 20RTUV. The depth of the supply line to the central valve box shall be installed at a depth where it is 12 to 18 inches below the inlet elevation of the panel block laterals. The purpose of this installation method is to allow for the supply main to maintain as much volume as possible without discharging into the laterals after the pump stops. The discharge from the Orenco AX 20RTUV is 2-inch. Contractor shall install an Orenco anti-siphon assembly.

PUMP: The submerged pump shall be Orenco PF Series Model PF300512 3/4HP/1PH/230V manufactured by Orenco capable of pumping 47.5 G/M at 36.04' total dynamic head. Contractor to verify electrical prior to ordering pump.

FITTINGS AND VALVES: All fittings and valves within this piping system shall be PVC ball valves capable of sustaining the working pressure and imposed loads. The fittings and valves shall be compatible with the pipe used. Valves shall be PVC Ball Valves with seats of self-lubricating Teflon and seals of Viton "O" rings with bell and spigot connections or as approved by the engineer.

The Contractor shall be required to provide as many tests and/or certifications as the Engineer may deem necessary for materials, such as concrete, piping, valves, steel reinforcement, all fasteners and anchorage systems, etc.

NITRIFICATION FIELD: Lay out the nitrification field and valve network area with stakes and flagging. As soon as the absorption area and repair areas are designated, they should be identified, barricaded and protected from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area. Maintain 10 feet from any property lines, 30 feet from lake and 15 feet from top of cut slopes greater than 2 feet and all other setbacks.

NITRIFICATION TRENCH: Furnish and install all items required for a complete system in accordance with plans and specifications.

CONSTRUCTION SEQUENCE:

(1) Lay out T & J, 16" high, panel system network area with stakes and flagging to ten feet (minimum) beyond the limits of the network. As soon as the absorption area is designated, it shall be flagged, roped off and isolated from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area. See site plan for lateral locations.

(2) Prior to actually beginning construction of the system, carefully locate, lay out and identify disposal site, manifolds and the lateral panel piping networks, using a tripod mounted engineer's leveling instrument to accurately establish each lateral along a level contour. Note: Lateral panel runs which conflict with cut-off-in-place stumps or trees shall "snake" by with a 12" minimum trench clearance and then continue along its projection run. (The 8' minimum trench separation must be maintained.)

(3) Excavate for and construct curtain drain (if shown on the plan.)

(4) Excavate lateral network trenches 24" W and 36" Deep (see detail). Remove loose soil from bottom of trench.

(5) Install sand in bottom of the lateral trench to the proper depth.

(6) Follow the manufacturer's guidelines for installing the T & J Panel System.

(7) All joints in lateral and the manifold piping shall be watertight connections to insure that the only source of the water seepage from the system is through the orifices as designed. See layout and details. Carefully install manifold and lateral network according to the attached designed layout. A larger diameter protective sleeve with cap or approved box with lid shall be placed over the turned up lateral and positioned level with the ground surface (so as not to be damaged by mowing machine.)

01-3462

Sheet 1 of 3

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

PROPERTY ID #:
COUNTY: Iredell

OWNER: Spivey Construction
ADDRESS:
PROPOSED FACILITY: House — APPLICATION DATE
LOCATION OF SITE: Tuscarora — PROPOSED DESIGN FLOW (.1949): 480 — DATE EVALUATED: 9/22/17
WATER SUPPLY: ☒ Private ☐ Public ☒ Well ☐ Spring ☐ Other — PROPERTY SIZE:
EVALUATION METHOD: ☐ Auger Boring ☑ Pit ☐ Cut — TYPE OF WASTEWATER: ☐ Sewage ☐ Industrial Process ☐ Mixed — PROPERTY RECORDED:

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
P 1		24-38 / 24-37	fill / usable						0-27 FILL 27-73" RB SCL WFS
P 2		40/ 32	fill / USable						0-47 FILL 47-62 BR CL MRA 62-74 BR C SMABK
P 3		0-3	fill						PS-57 .3
		3-20	BRCl wfsbk	frsPPS					
		20-32	BRSCl wfsbk	frsPPS					
		32-37	RBCl wfsbk	frsPPSe					
		37-44	BRCK wfsbk/dbk	frsPPSe	44-57 RCl wmsBK	fsPPSex	frS		
P 4	L/15% upper side	0-27	fill						PS .03
		27-38	BRC wfsBK/dbk	frsPPS					
		37-52	RCl wmsBK	frsPPS					
		52-70	RCl wfsbk	frsPPS	+Sap				

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)		
System Type(s)	PPPPS	PNP
Site LTAR	.3	.12

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

COMMENTS:

SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

Sheet 2 of 2

PROPERTY ID #:

DATE OF EVALUATION: 9/22/17

COUNTY:

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	
P5	L/12%	0-8	RBC/wmsBK	frssPs	+ compacted				PS .25 .275
		8-38	BRC mm/SBK/abk	frssSP	[Fe] 28-38				
		38-53	RBC/wmabk/sbk	frssSP					Drive 12"?
P6	L/12%	0-2	BS/G	G					PS .275 (.125)
		2-8	RBC/wmsBK/abk	frssSP					
		8-55	BRC/wmabk/sbk	frssSP	[Fe]				
P7	L/12%	0-6	BS/G	G					PS .3 (.125)
		6-10	RBC/wfa	frssSP					
		10-55	BRC/mmabk	frssSP					
P8	L/13% lower side	0-13	Fill						PS .3 remove fill dig deeper
		13-19	RB/wf sBK						
		19-26	RBC/ MMsBK	frssSP					
		26-56	BRC/MMabk/sbk	frssSP					
				31" Trench					
P9	L/15% Lower upper old stump pit	0-3	BR/	frssP	11/2/17	X Heath	36" chroma 2 23-36 Lower (Avoid)	upper side	PS .275-.3 show Ben
		3-13	RBC/wmsbk	frssP					
		13-22	RBC/wmabk	frssP					
		22-42	BRC/wmsbk/abk	frssP FS	30in comp SP	Rock @ 32"			
		42-53	RBC/	frssP FS					

COMMENTS:

P10 L/11%
0-14 BLG frssp PS
14-40 RBCMMsbk frssp .3
42-62 RBClwmsbk frssp

P11 L/10%
0-8 BSLG frssp
Low side 8-36 BRCMmsbk/abk frssp PS
36-56 BRCwmsbk frssp .3

12 L/10%
0-6 BBLG frssp
6-21 RBCwmsbk/abk frssp
21-39 BRCwmsbk frssp PS
39-55 RBClwmsbk frssp f-s .3

13 L/13%
0-6 BSLG frssp
6-12 RbClwmsbk frssp PS.
12-36 BRC wm sbk/abk frssp .3
36-47 RBClwfsbk frssp f-s
47-60 varm frssp

14 L/10%
0-4 BrslG frssp
4-21 RBCwmsbk/abk frssp
21-34 BRCwmsbk frssp
34-52 RBClwfsbk frssp PS
52-42 varlm frssp .3

SPECIFICATIONS, CALCULATIONS, & SUPPORTING MATERIAL

FOR A GROUND ABSORPTION SEWAGE DISPOSAL SYSTEM

USING SEPTIC TANK, TS-II ADVANCED TREATMENT,

AND A LOW PRESSURE PANEL BLOCK SYSTEM

TO SERVE A 4 BEDROOM RESIDENCE

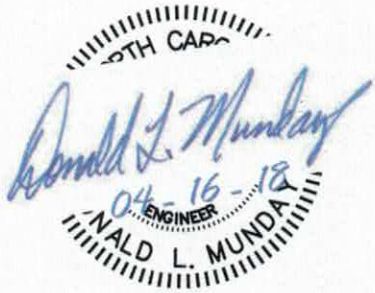
317 TUSKARORA TRAIL

MOORESVILLE, IREDELL COUNTY, NORTH CAROLINA

January 2, 2018
Revised January 26, 2018
Revised April 16, 2018

Prepared for:
Spivey Construction Company, Inc.
PO Box 4268
Mooresville, NC 28117
Phone: (704) 746-4709 (Brian McManus)

Prepared by:
PIEDMONT DESIGN ASSOCIATES, P.A.
125 East Plaza Drive, Suite 101
Mooresville, NC 28115
Phone: 704-664-7888
Fax: 704-664-1778
NCBELS No.: C-1007



Ground Absorption Sewage Disposal System
317 Tuskarora Trail
Mooresville, Iredell County, NC

INTRODUCTION AND DESIGN CONSIDERATIONS

Spivey Construction Company, Inc. is constructing a new 4 bedroom residence located at 317 Tuskarora Trail off Brawley School Road in Mooresville, Iredell County, North Carolina. Ashley Rollans, LSS evaluated the soils on the site and determined that a Low Pressure PPBPS system be used. Since a portion of the proposed septic system will be installed within the 50 foot buffer for Lake Norman, advanced treatment will be used to allow for disposal of subsurface effluent within this buffer.

The location of this system is in Mooresville, Iredell County, North Carolina. Directions to the property are as follows: From Brawley School Road in Mooresville, turn Tuskarora Trail. Lot is located on left hand side of the road.

The new system, along with proper care and maintenance, should provide many years of quality effluent treatment and disposal.

The Engineer is proposing a new top seam 1,000 gallon septic tank with baffle wall and effluent filter, (1) Orenco AX-20RTUV treatment module with integrated UV disinfection, recirculation tank and pump tank and low pressure PPBPS laterals installed with a 36-Inch trench bottom per recommendation by Ashley Rollans, LSS.

There is an existing well serving this site. The well is more than 100 feet from any of the septic system components.

The residence's sewer collection system shall comply with the latest Volume II NC Plumbing Code.

Before any further site construction, the area of the nitrification fields, both primary and repair, shall be barricaded with orange barricade fence to prevent any access by vehicles, grading equipment and there shall be no earth disturbance of this area.

The following publications shall be a part of these specifications. Any deviation between them and these specifications shall be brought to the attention of the engineer for clarification.

(1) LAWS AND RULES FOR GROUND ABSORPTION SEWAGE TREATMENT & DISPOSAL SYSTEMS. NC Department of Heath and Human Services; On-Site Water Protection Section; Administrative Code Section 15A NCAC 18A.1900, amended effective date: August 2007.
(2) GUIDANCE MATERIAL, Onsite Waste Water Management, March 1996, NC DENR Onsite Waste Water Section.
(3) INNOVATIVE WASTEWATER SYSTEM APPROVAL IWWS-2004-3-R3. (Orenco Systems, Inc. Advantex Systems)
(4) DESIGN AND INSTALLATION (Manual) OF LOW PRESSURE PIPE WASTE WATER TREATMENT SYSTEMS By: Craig Cogger; Bobby L. Carlisle; Dennis Osborne; Ed Holland Published by: UNC Sea Grant College Pub. UNC-SC-82-03 May, 1982.

COMPONENTS OF SYSTEM

Proposed collection system installed according to the NC Plumbing Code, local plumbing and ASTM D2321 latest revision.

1 – New 1,000 Gallon Septic Tank with Effluent Filter
1 – Advanced Treatment Module (Orenco Advantex AX-20RT) with integrated recirculation and pump tank.
1 – UV Disinfection Unit (with bulb) in Advantex Unit
1 – Central Valve Box
1 - Simplex Control panel with alarm (both audible and visual for advanced treatment).
Low Pressure Panel Block Distribution Network

***Adequate area is available for repair utilizing subsurface drip and has been shown on site plan.**

GENERAL REQUIREMENTS: The Contractor shall furnish, install, test, place into service and warrant the complete system. The major system components, septic tank, slotted effluent filter, textile filter (with integrated recirculation and pump tank) UV disinfection unit, pumps, central valve box, controls and nitrification field. Accessories shall be supplied by a single operating entity and shall be equal to that as specified.

Three sets of submittal documents and shop drawings for all mechanical equipment and major materials including piping, tanks, and all other accessories shall be furnished to the Engineer for approval if deviated from the plans and specifications. No equipment shall be installed prior to approval by the Engineer.

PRECAST STRUCTURES - GENERAL: This section shall apply to all new precast tanks as shown on the Contract Drawings.

APPROVALS: The tank designs shall have been approved by the Division of Environmental Health of NCDENR and shall have the approval number imprinted on the delivered tank. The tank shall be NCDHHS-OSWP Section approved and equal to that manufactured by Shoaf Precast, Inc. Openings or inserts shall be cast in during manufacture. Concrete shall have a minimum compressive strength of 4,000 PSI @ 28 days. Shop drawings shall be submitted to the Engineer for approval. If tanks are to be located in traffic area, then tanks shall be constructed to meet H-20 highway loadings. All tanks shall be top seam only.

PRECAST TANK INSTALLATION: Installer shall excavate for and install all precast concrete tanks as per plans. Installer shall ensure that the tank remains level and true to grade after placement and filling with water. All precast tanks shall be tested for water tightness by an approved method such as 24-hour water tightness test with maximum allowable leakage not to exceed a maximum of 1/2-inch rise or fall in 24 hours or vacuum test. Contractor shall use clean, potable water free of any sediment for testing. Test shall be run with risers/and inlet/outlet pipes in place. Testing shall begin after the water level in the tank has stabilized. Each tank shall be installed in the location and to the elevations shown on the plans. A 6" undercut shall be made to allow for washed stone leveling course for the tank to rest on.

SEPTIC TANK: The new septic tank shall be 1,000-gallon capacity, precast concrete with full baffle. The tank shall have approved access risers with lids to allow easy access to each chamber from ground level. The first chamber of the septic tank shall consist 2/3 to 3/4 of the volume of the total tank and the baffle shall contain a horizontal opening across the tank at about midway its height. Locate the septic tank at such elevation to accept drainage from the residence. Access holes and covers shall be DHHS approved as called for on the plan. Tank shall be a top seam only. The tank shall bear a manufacturer's serial number and be supplied by a manufacturer approved by DEH. The outlet tee of the tank shall have an effluent filter as specified on the plans.

SEPTIC TANK FILTER: An Orenco Model FTP0436-28 micro-filter with 1/16-inch infiltration shall be at the outlet end in the second septic tank. Handle for the filter shall be extended to be within 12 inches of the underside of the riser access lid. The filter shall be manufactured by Orenco Systems, Inc., 814 Airway Avenue, Sutherlin, Oregon 97479. (800) 348-9843. Filter is available through AQWA at (888) 552-2792.

TANK TESTING: All tanks shall be tested for water tightness by an approved method such as 24-hour water tightness test with maximum allowable leakage not to exceed ½ inch per 24 hours. Testing shall begin after the water level in the tank has stabilized. Any leaking shall be corrected and the tanks retested.

Once testing of the tank has been completed, the tank shall be backfilled in lifts with well compacted, debris free earth to a level, which directs surface water away from the tanks. Tank access holes shall be installed and grouted watertight and the earth raked smooth for grassing. Grade over the tank shall be sloped to prevent surface water from entering the tank through the access.

ADVANTEX TEXTILE FILTER: One textile-containing packed bed media filter module model AX-20RTUV with cover shall be used, one module per 480 gallons per module per day. The module shall be as described in manufacturer's literature attached herein.

The module shall be pressure dosed with effluent filtered from the septic tank. Discharge from the module shall be collected in solid PVC pipe with gravity flow into the lower chamber of the unit. Effluent shall be recirculated over the textiles located above the recirculation chamber. If effluent levels are elevated enough, effluent shall pass through to the UV disinfection located within the unit. In the second chamber of the unit, the effluent shall be dosed to the drain field based on a predetermined demand dose volume set in the final dosing chamber.

The Advantex Textile packed bed media filter module shall be designed installed and operated to meet the following treatment standards (TS-II):

1. Biochemical Oxygen Demand, 5-day (BOD_5) < 10 mg/l
2. Total Suspended Solids (TSS) < 10 mg/l
3. Ammonium-nitrogen (NH_3-N) < 10 mg/l
4. Total Nitrogen (TN) (TKN+Nitrate+Nitrite) <20 mg/l or >60% Removal
5. Fecal coliform bacteria densities < 1,000 colonies/100 mL

Standards are arithmetic means, except fecal coliforms is a geometric mean.

Advantex Unit and all associated appurtenances are available through AQWA at (888) 552-2792.

UV DISINFECTION: A UV disinfection unit model UV-125/3-P manufactured by Orenco shall be installed per the detail on plan sheet U-2 and in the specifications. The UV bulb, wiring and controls need to be installed at this time. Contractor shall ensure a 2/10 drop between invert in and out on the trap. Pipe shall be primed and glued prior to installation. Cleanouts shall extend a minimum of 6 inches above finished grade. Unit is available through AQWA at (888) 552-2792.

CONTROL PANEL: Control panel for the advanced treatment unit shall be mounted 36" or more above grade and readily accessible. The unit shall be as manufactured by Orenco Systems, Inc. The treatment system control panel shall be designed to control the treatment unit dosing pump. The control panel shall be provided factory pre-wired and tested in a NEMA 4X lockable fiberglass enclosure which shall contain the following components. Motor contactors and circuit breakers for use with 230V AC 1 Ph current using a max 1½ HP motor, programmable logic unit shall include time functions, elapsed pump run clock and pump cycle counter, motor function, valve controls and float input function and fused transformer for valves. An audiovisual alarm condition light and siren shall be mounted on the top of the panel and include a separately fused transformer. The unit shall have a hand-off-auto (H-O-A) switch. Product shall be as supplied by AQWA at (888) 552-2792.

The controller shall be able to perform the following functions: receive input for floats and provide operator set timer controlled pump operation.

Floats, pump and control circuits, and the control panel shall meet the requirements of Rule .1952(c). Panel and control equipment shall include lightning protection, be protected from unauthorized access, and remain accessible at all times to the system operator.

The activation of any alarm shall result in the activation of a dry and a 120 V powered alarm contacts. These contacts may be used to activate externally mounted alarm devices and telemetry systems. The alarm contacts will automatically reset when the R/O-N Switch for the activated alarm is placed in the reset / off position.

Panel Operation:

- High Level Alarm Float: When lifted this float will activate the audible alarm and the illuminated pushbutton.
- Pump Enable Float: When lifted this float will activate the normal dose function.
- Redundant Off & Low Level Alarm Float: When lowered this float will activate the audible alarm and illuminated pushbutton. This float will also deactivate the pump in both auto and manual.
- Pump Operation: The pump dosing cycles will be controlled by the liquid level in the tank.

Components Include:

- Motor contractor & circuit breaker rated for use with 230VAC, 1Ph and 1 Ph max
- Top mounted audiovisual alarm (360 degree flashing red light and 90dB minimum)

FLOAT SWITCHES: Water level float control switches shall be equal to Orenco System, Inc., mercury or mechanically activated switches, with cable of adequate length to terminate in the pump control panel. No splicing of wire allowed between switches and control box. Use mercury switched on control circuits and properly rated mechanical switches on power circuits. Conduit between the pump tank and he control panel shall be sealed to prevent sewer gas from entering the control panel. The dosing tanks shall have 3 float switches, a low-level "pump off" switch, a "pump enabling" float and at "high water alarm" float. Floats shall be hung from a PVC bracket attached to the riser of the pump flow inducer assembly. Handle shall be within 12 inches of lid of riser. Float clamps or brackets shall be supplied by the manufacturer. The lower level control or "pump-off" must be positioned above the pump, so that the pump remains submerged at all times. The upper level control "pump-enabling" is positioned to pump a specified volume of effluent or assures that a full dose is available for dosing. The "high water alarm" control float is mounted above the "pump enabling" float. (+/-6-inches). (Note: Care must be taken to insure that floats do not become fouled by other components in the tank such as the electric power cord or the lifting rope.)

(8) Carefully backfill manifold trenches to finish grade with clean (debris free earth (no stone).

(9) Leave absorption area with a raked surface, ready for grassing.

(9) The installation contractor shall stabilize the area of construction by planting and seeding with Kentucky 31 tall fescue and shall keep the planted area watered and mulched until such time that a hardy stand of grass is established. (See Seeding Specification.)

UTILITY CROSSING AND LOCATIONS

The contractor is responsible for locating all services before beginning work on the site. The plans are approximate and may not show all utilities.

WATER LINE VERTICAL SEPARATION: Clear separation distance when a water line crosses over a sewer must be at least 18-inches at the closest point. When conditions prevent an 18-inch clear separation from being maintained, or whenever it is necessary for the water line to cross under the sewer, both the water line and sewer shall be constructed of ferrous materials with mechanical joints equivalent to water main standards for a distance of at least 10 feet on each side of the point of crossing, with full sections of pipe centered at the point of crossing.

STORM DRAIN SEPARATION: Horizontal separation between sewer lines and storm drains shall be at least ten feet. Vertical separation between sewer lines and storm drains at crossings shall be at least eighteen inches at the closest point unless the sewer is of cast iron pipe or encased in concrete for at least ten feet on either side of the crossing.

CONSTRUCTION SEQUENCE

The new tanks, treatment, pumps, control panel, distribution boxes and nitrification field shall be installed complete, tested and accepted before receiving any waste.

1. Installation of the septic system shall be coordinated with the Owner and LHD. Scheduling shall be as necessary to comply with overall facility operation.
2. Installation of the system shall be performed to the satisfaction of the Owner, Design Engineer, LSS and the local Health Department.
3. The Contractor shall install all components of the system in strict accordance with the plans and specifications. Upon completion of the system construction, the Contractor shall charge the system with water and go through a complete cycle. Any failure or discrepancy shall be corrected immediately. The Manufacturer of the component and the Contractor shall warrant the component and system for one year from the date of acceptance by the Owner.

*Rule of Thumb: "If soil is too wet to plow, it is too wet to disturb for nitrification field for excavation."

After the system is installed, the following should be checked to insure that the system would not be overloaded with excess rainwater and run off:

- The distribution field is shaped to shed rainwater and is free of low area.
- All tank access lids shall be inspected for watertight construction, diversion of surface water and secured but readily accessible to all the chambers.
- The recirculation pump shall be checked for proper operation and ease of removal for service or replacement.
- All metal installed in tanks shall be stainless steel.
- Effluent filters shall be accessible and easily removed for servicing.

Installation of the system shall be performed under the supervision of the Local Health Department.

The system shall not be operated until the Project Engineer certifies in writing that the system has been installed in accordance with the approved plans and specifications, and the installation is approved by the local Health Department.

The Wastewater System Installation Contractor shall agree to provide a minimum of one year regular service to the Owner for maintenance and upkeep of this system at no additional cost to the Owner, and such one year period shall begin from the date of final inspection and acceptance of the system construction by the Owner, the

Engineer, and representatives of the Division of Environmental Health. After the above one year period has expired, the Installation Contractor shall offer a continuation of maintenance and upkeep service at a reasonable charge as may be negotiated between the installation Contractor and the Owner. Such service shall include checking the entire system at least monthly, offering quick response servicing in case of a malfunction of the system (maximum of 24 hours after warning is given by the "Owner's Warning Panel") and performing such servicing of components and replacing of worn or defective equipment as may be necessary to keep the system operating in good condition. In the event that the Installation Contractor will not be willing to agree to the above described one year maintenance period, then any other time period must be acceptable to the Owner, the Engineer, and to the Representative of the Division of Environmental Health.

A set of As-Built plans shall be prepared by a Professional Surveyor licensed to practice in the State of North Carolina. The Surveyor shall be hired by the Contractor to perform the work. The Contractor shall provide the "As-Built" plans to the Engineer. The Engineer shall provide the signed and sealed "As-Builts" to the local Health Department and Owner which will show actual vertical and horizontal location and design of all system components and contain a complete list of all mechanical equipment installed whenever any deviations were made from the approved plans and specifications. The Contractor shall forward to the Engineer two bound sets of all manufacturer's component data along with the "As Built" data.

OPERATING PERMIT

1. An Operation Permit may be issued by the Local Health Department after all conditions of the improvement permit have been met; the Design Engineer certifies in writing that the system has been installed in accordance with the approved plans and specifications.

2. The operation permit shall include description of facilities served and sewage system components, as-built plans and specifications, legal documents, operation and maintenance manual, monitoring and performance requirements, and other operating conditions deemed appropriate.

OPERATING CHECK AND ADJUSTMENTS

1. After permanent power has been connected and all components of the system have been installed, the contractor shall schedule a time for the checking of the system for proper operation. The check shall be performed in the presence of the Design Engineer, Septic System Contractor, Local Health Department Representative and Owner. Any discrepancies shall be corrected until the system operates as designed.
2. Fill the septic tank and treatment unit with water.
3. Inspect collection system for line, grade, inverts, infiltration and leakage.
4. With turn ups installed at the end of the laterals, contractor shall turn on the pump. Once all of the laterals have been filled with treated effluent, the contractor shall adjust the gate valves at the central valve box so that the head at the end of each of the laterals is 3.0' from top of panel. Once the head has been set, contractor shall remove the test tubes and leave at the site, close valve box and set drawdown on pump based on tank size.

OPERATING MAINTENANCE

This work shall be performed only by operators knowledgeable of the system. Operation, Maintenance and Inspection Procedures shall include but not be limited to the following:

- Enter into a contract with a licensed septic tank operator to inspect and clean effluent filter in septic tank and recirculation tank.
- Minimum system inspection/maintenance frequency shall be a minimum of every 6 months, however more frequent inspection is recommended. This system is classified as a (Type Va) Reporting required every 6 months and inspection by the Local Health Department once a year.
- Septic system shall be inspected annually and shall be pumped a minimum of every three years or when solids accumulate to 1/3 the volume of the tank.
- The system should be observed by one, three, six and nine months after initial installation, and every 6 months thereafter. An inspection report should be completed and filed each time the system is checked.
- The pump control timer shall be checked to verify that the pump run time is correct to ensure the correct dosing volume in the recirculation tank. Adjustment shall be made as required.
- Pressure head at the advanced treatment unit should be checked and adjusted one month after installation and annually thereafter.
- All piping and fittings shall be checked annually for damage and/or proper operation and corrections made immediately.

- The property should be inspected to insure all surface water is deflected away from the fields and tank. Any ponding of surface water should be corrected.
- Grasses shall be mowed and maintained and any erosion shall be corrected promptly.
- The nitrification field area shall be checked for leakages, blowouts or malfunction, indications of damp or mushy areas compared to surrounding area or evidence of noticeable odor of sewage. Repairs shall be made immediately.
- The recirculation pump electrical panel and wiring should be checked to insure tight, clean connections with no corrosion and proper operation.
- Pump switches shall be checked for free operation and proper level set.
- Check septic tank and recirculation tank for evidence of damage or leakage. Check the quality of effluent including grease and sludge accumulation.

The current system owner (**Spivey Construction Co., Inc.** and subsequent owners) shall establish an operation and maintenance program and procedure based on experience obtained from similar installations.

The current system owner (**Spivey Construction Co., Inc**. and subsequent owners) shall be responsible to comply with all above operating and maintenance procedures in addition to any so specified on the operation permit issued by the Lincoln County Health Department or may be necessary in the future for the operation of the system to meet all public health laws, rules and regulation regarding the wastewater system.

Failure to comply with these operating and maintenance procedures will necessitate immediate legal action by the Iredell County Health Department to suspend or revoke the operation permit.

OWNERSHIP RESPONSIBILITY FOR THE SYSTEM:

It must be kept in mind that this system is designed to accept a moderate amount of wastewater at domestic waste strength (which is call the EFFLUENT), in a minimal water absorbing soil.

Conservation measures must be undertaken by all members of the operation to minimize the volume and strength of waste water entering the disposal system, including, but not limited to, the following:

(a) Provide water conserving plumbing fixtures within the facility. Installing water closets that require no more than 1.6 gallons per flush.
(b) Develop conservative water use habits.
(c) Monitor and maintain the system as necessary for proper operation. Establish a procedure to read and record water meter readings on a monthly basis. Retain records.
(d) Check and pump the grease trap and septic tank sludge on a regular basis as will be specified in the operating permit or as may be required.
(e) Make rapid repairs to leaking plumbing fixtures and faucets.

SEEDING SPECIFICATIONS

SLOPES 3:1 or FLATTER

1. Apply agricultural lime at the rate of 90 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizers at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate:

DATE	TYPE	PLANTING RATE
Aug 15 - Nov 1	Tall Fescue	200 lb/ac or 7 lb/1000 sf
Nov 1 - Mar 1*	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Abruzzi Rye	25 lb/ac or 2 lb/1000 sf
Mar 1 - Apr 15	Tall Fescue	200 lb/ac or 7 lb/1000 sf
Apr 15 - Jul 30	Hulled Common or Bermuda	30 lb/ac or 1 lb/1000 sf
Jul 15 - Aug 15	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Brown Millet or	35 lb/ac or f lb/1000 sf
	Sorghum-Sudan Hybrids	30 lb/ac or : lb/1000 sf

4. Mulch with straw applied at the rate of 75-100 lb/1000 sf.

* Heavily mulched during January - March period.

SLOPES GREATER THAN 3:1 TO 2:1

1. Apply agricultural lime at the rate of 90 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizers at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate.

DATE	TYPE	PLANTING RATE
Mar 1 - Jun 1	Sericea Lespedeza (scarified) &	50 lb/ac or 11 lb/1000 sf
Mar - Apr	Add Tall Fescue or	150 lb/ac or 32 lb/1000 sf
Mar - Jun	Add Weeping Lovegrass	5 lb/ac or c lb/1000 sf
Jun - Sep 1**	Tall Fescue and	60 lb/ac or 12 lb/1000 sf
	Brown Top Millet	35 lb/ac or f lb/1000 sf
	Sorghum Sudan Hybrids	30 lb/ac or: lb/1000 sf
Sep - Mar 1	Sericea Lespedeza (unhulled-unscarified)	70 lb/ac or 1: lb/1000 sf
	Tall Fescue	150 lb/ac or 32 lb/1000 sf
	Millet or Sudan	20 lb/ac or 2 lb/1000 sf

** Temporary - Reseed September 1 at recommended rates.

4. Mulch with 3" straw applied at the rate of 50-90 lb/1000 sf and anchor with asphalt emulsion tack coat applied at the rate of 3-5 gal/1000 sf or 200-300 gal/ac.+

Angler PI 3 Bedroom LP Panel Block System
113 Angler Place
Mooresville, Iredell County, North Carolina

Original Date: February 2, 2017
Revised Date: February 2, 2017

TANK ANTI-BUOYANCY CALCULATIONS

1,000 Gallon Septic Tank

Based on Shoaf Precast Tank Company
STB-347

Outer Length	9.00	Ft.		
Inner Length	8.50	Ft.		
Outer Width	4.83	Ft.		
Inner Width	4.33	Ft.		
Outer Height	5.63	Ft.		
Inner Height	5.04	Ft.		
Wt of Water Displaced	15,268.50	Lbs.		Outer Length x Outer Width x Outer Length x 62.4 Lb/CF (Wt of Water)
Wt of Tank	4,306.50	Lbs.	Top & Bottom	Outer Length x Outer Width x 150 Lb/CF x 2 (Top & Bottom) x Slab Thickness
	1,827.60	Lbs.	Ends	Inner Width x Inner Height x 150 Lb/CF x 2 (Ends) x Wall Thickness
	3,214.06	Lbs.	Sides	Outer Height x Outer Length x 150 Lb/CF x 2 (Sides) x Wall Thickness
	1,045.62	Lbs.	Baffle	Inner Width x (Inner Height-3 Inches) x 150 Lb/CF x x Wall Thickness
	10,393.78	Lbs.	Total Tank Wt.	Sum Above four
Wt of Overburden	6,525.00	Lbs.	15" Cover	Outer Length x Outer Width x 120 Lb/CF (Saturated Soil Wt) x Soil Thickness
Total	16,918.78	Lbs.		Sum of Total Tank Wt. & Soil Overburden

Water	**15,268.50**	<	**16,918.78**	Tank

**Buoyancy Calculations Account for Fluid in Tank, Do Not Pump When Ground is Saturated or During Extremely Wet Conditions.*

Please CALL prior to inspection
Name: Ashley Rollans
Number: 704-746-5046

Permit #212983

RECEIVED OCT. 16 2017

HEALTH DEPARTMENT ENVIRONMENTAL HEALTH DIVISION

...WILL BECOME INVALID IF INFORMATION PROVIDED ON THIS APPLICATION IS FALSIFIED OR ...D. THE IMPROVEMENT PERMIT IS VALID FOR EITHER 60 MONTHS OR WITHOUT EXPIRATION ...UBMITTED - APPLICATION WITH SITE PLAN 60 MONTHS, APPLICATION WITH COMPLETE, SCALED PLAT WITHOUT EXPIRATION. SEE 15A NCAC 18A .1937(f) FOR DETAILS)

Paid $500.00

APPLICATION FOR: X Improvement Permit ___Authorization To Construct ___ Existing System Inspection

2. Page 2: *Site Plan Worksheet* Form MUST Accompany This Application

The following optional attachments may also be submitted: X Survey Plat, Scaled no more than 1 Inch = 60 Feet

Place check ( ) beside whichever is submitted if applicable ___Custom Site Plan, Scaled no more than 1 Inch = 60 Feet

3. **Applicant Information:**

Applicant Name	Mailing Address	Home Phone #	Alternate Phone #
Brian McManus	PO Box 4268 Mooresville, NC 28117		704-746-4709
Owner Name	**Mailing Address**	**Home Phone #**	**Alternate Phone #**
Jim & Angela Johnston	111 Longfellow Lane Mooresville, NC 28117	336-749-3500	704-460-7369

4. **Property Information:**

Street Address	Subdivision Name	Section/Phase and Lot Number
317 Tuskarora Trail, Mooresville, NC 28117	CL & T	6 # 1725

Driving Directions: West on Brawley School Road approx 6 miles, right on Tuskarora Trail approx .8 miles, Destination on left.

5. **RESIDENTIAL Site Development Information:** *(Check or Complete ALL that apply)*

(X) New, Single Family Residence
( ) New, Multi-Family Residence
( ) Expansion of Existing Septic System
( ) Repair To Failing Septic System due to ___
( ) Other ___

Maximum Number of Bedrooms 4
Maximum Number of Occupants ___
If Expansion, Current Number of Bedrooms ___

( ) Crawl Space Foundation?
( ) Concrete Slab Foundation?
(X) Basement w/Plumbing?
( ) Basement w/out Plumbing?

IF Non-Residential Site Development: Type of Business ___
Square Footage of Building ___
Maximum Number of Employees ___
Maximum Number of Seats ___

6. **Proposed Water Supply:**

(X) New Well ( ) Existing Well ( ) Community Well ( ) City Water ( ) Other Public Water

7. **Desired Septic System Type:** *(You may rank in order of preference, if any)* ( ) EXISTING SYSTEM installed ___ *Year*

( ) Alternative (X) Conventional ( ) Innovative ( ) Modified Conventional ( ) Other ___

8. Please Answer The Following ( ) Yes (X) No Does the site contain any jurisdictional wetlands?
To The Best of Your Ability: ( ) Yes (X) No Is any non-domestic sewage (i.e. industry) to be generated?
( ) Yes (X) No Is the site subject to approval by any other public agency?

I have read this application and certify that the information provided herein is true, complete, and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed.

9. Signature: ___ 10/16/2016

Property owner or owner's legal representative signature (SIGNATURE REQUIRED) — DATE

IREDELL COUNTY HEALTH DEPARTMENT *ENVIRONMENTAL HEALTH DIVISION:*

SITE PLAN WORKSHEET

SEE THE "SAMPLE SITE PLAN" BELOW. ***INCOMPLETE SITE PLANS WILL BE RETURNED TO YOU FOR COMPLETION AND MAY RESULT IN A DELAY IN THE ISSUANCE OF YOUR SEPTIC SYSTEM PERMIT!!!***

Place an (X) beside each item as you complete the site plan:

X Property Line measurements are clearly identified...

X All proposed structures are indicated...

SHOW: proposed house or business footprint, wells, water lines, patios, pools and decks, and any other item that will occupy space on the site

X Front and side setbacks from property line...

____ Area you prefer your septic system to be placed...

X Preferred driveway location and configuration, preferred well location...

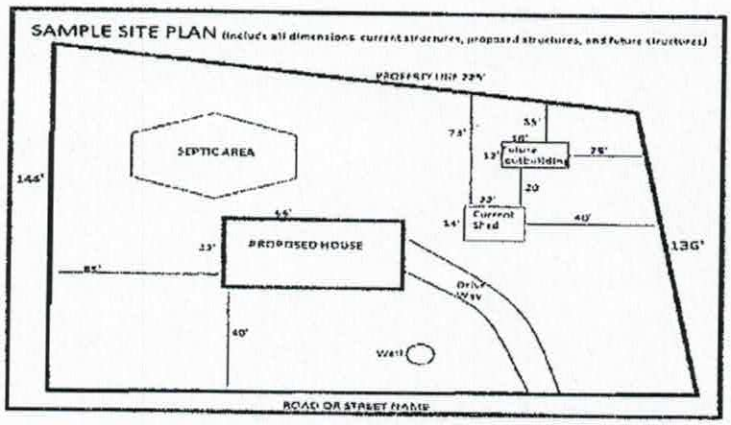
X North arrow, or other sufficient indicator of direction...

Circle N/A on the following if appropriate:

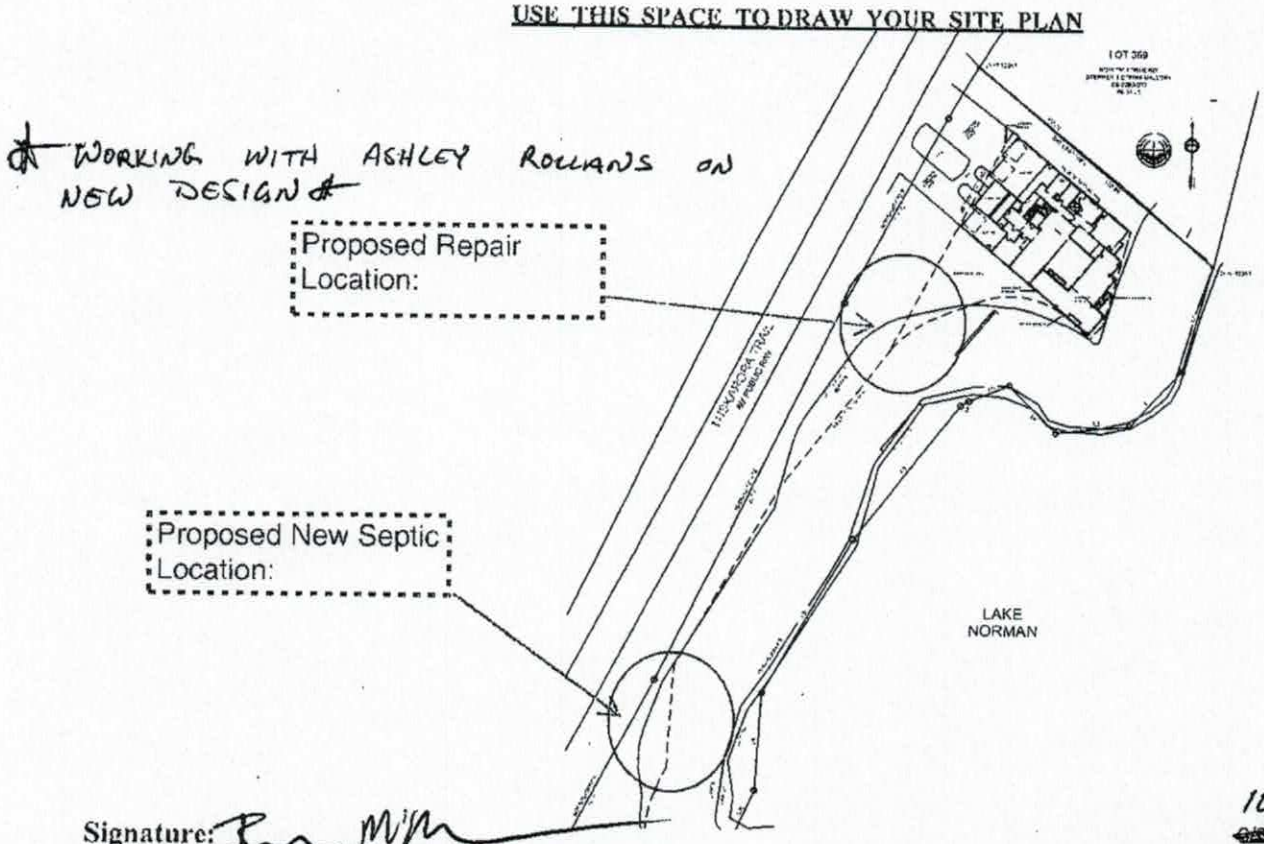
X Location of septic systems and wells within 100' of your property... N/A

____ Location of easements and rights of ways on your property... N/A

____ Location of any designated wetlands on the property... N/A



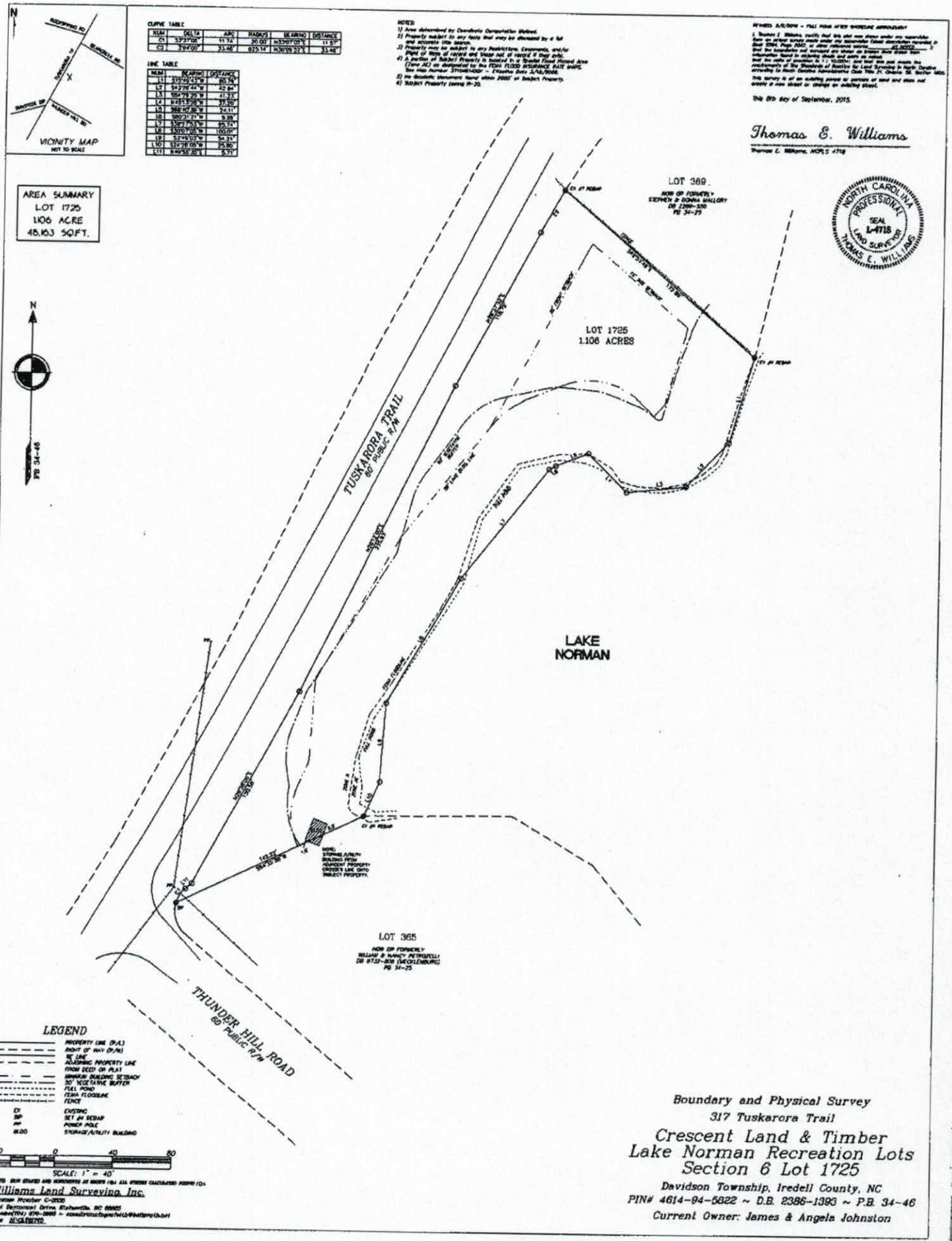
USE THIS SPACE TO DRAW YOUR SITE PLAN

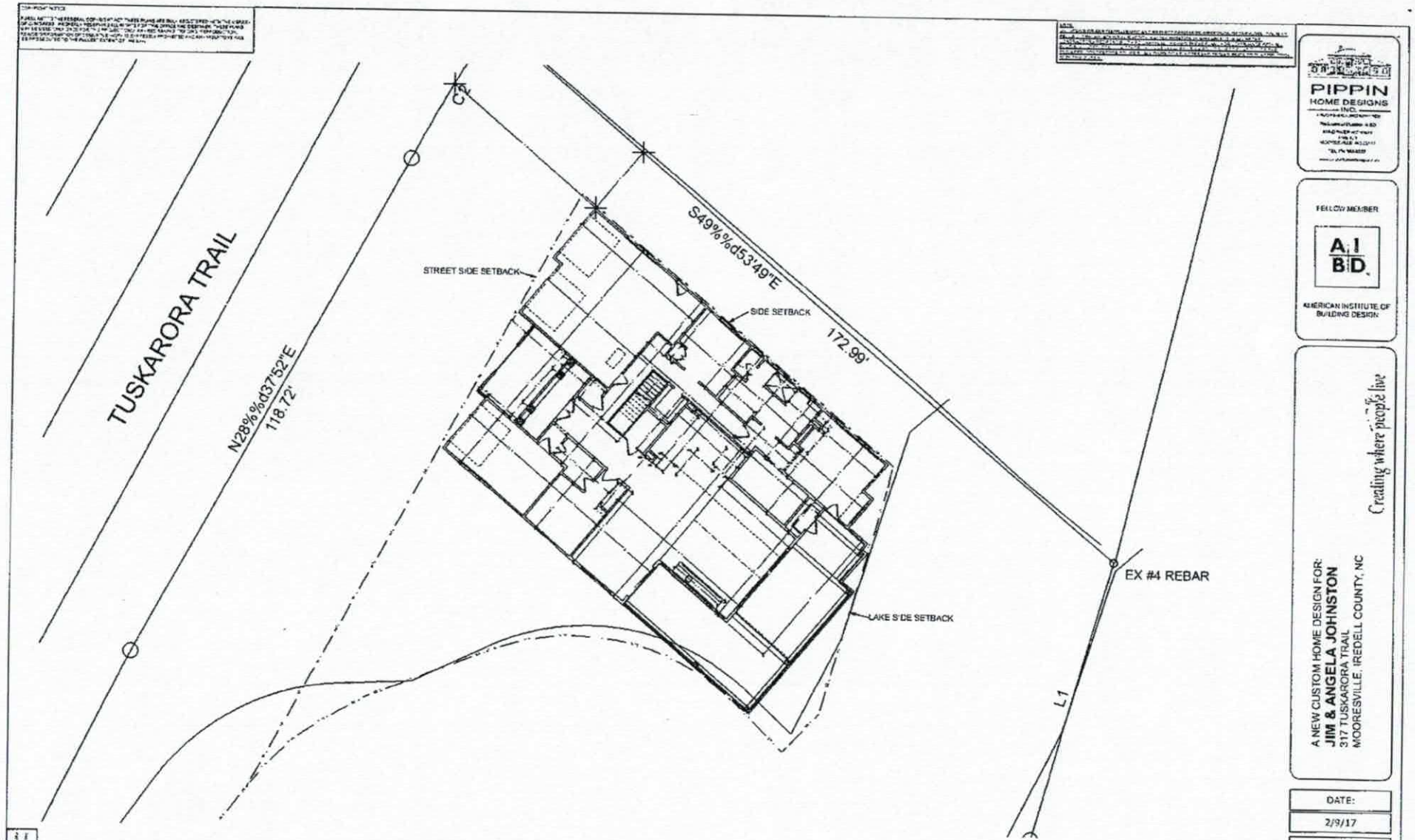


Signature: [signature] *REQUIRED* property owner or owner's legal representative signature.

10.16.17 ~~08/2016~~

DATE


VICINITY MAP
NOT TO SCALE
CURVE TABLE
LINE TABLE
NOTES:
I, Thomas E. Williams, certify that this plat was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book 1594, Page 2065, etc.) (other reference source, ALSCO) that the boundaries not surveyed are shown as broken lines drawn from information found in existing deeds and plats as noted, that the ratio of precision is 1 / 10,000+ (unadjusted) and that I have met and exceeds the requirements of the Standards of Practice for Land Surveying in North Carolina according to North Carolina Administrative Code Title 21, Chapter 56, Section 1600.
This survey is of an existing parcel or parcels of land and does not create a new street or change an existing street.
This 8th day of September, 2015.
Thomas E. Williams
Thomas E. Williams, NCPLS 4718
NORTH CAROLINA PROFESSIONAL SEAL L-4718 LAND SURVEYOR THOMAS E. WILLIAMS
AREA SUMMARY
LOT 1725
1.106 ACRE
48,163 SQ.FT.
LOT 389
HOB OF FORMERLY
STEPHEN & DONNA MALLORY
DB 2299-350
PB 34-29
LOT 1725
1.106 ACRES
TUSKARORA TRAIL
60' PUBLIC R/W
LAKE
NORMAN
LOT 365
HOB OF FORMERLY
WILLIAM & NANCY PETROSELLI
DB 9737-808 (MECKLENBURG)
PB 34-25
THUNDER HILL ROAD
60' PUBLIC R/W
LEGEND
PROPERTY LINE (P/L)
RIGHT OF WAY (P/W)
ADJOINING PROPERTY LINE
FROM DEED OR PLAT
MINIMUM BUILDING SETBACK
50' VEGETATIVE BUFFER
FEMA FLOODLINE
FENCE
EX. EXISTING
SIB SET 1/2 REBAR
PP POWER POLE
SCALE: 1" = 40'
Williams Land Surveying, Inc.
License Number C-2020
Boundary and Physical Survey
317 Tuskarora Trail
Crescent Land & Timber
Lake Norman Recreation Lots
Section 6 Lot 1725
Davidson Township, Iredell County, NC
PIN# 4614-94-5822 ~ D.B. 2386-1393 ~ P.B. 34-46
Current Owner: James & Angela Johnston



SITE PLAN-2

PIPPIN HOME DESIGNS INC.

FELLOW MEMBER AIBD AMERICAN INSTITUTE OF BUILDING DESIGN

Creating where people live

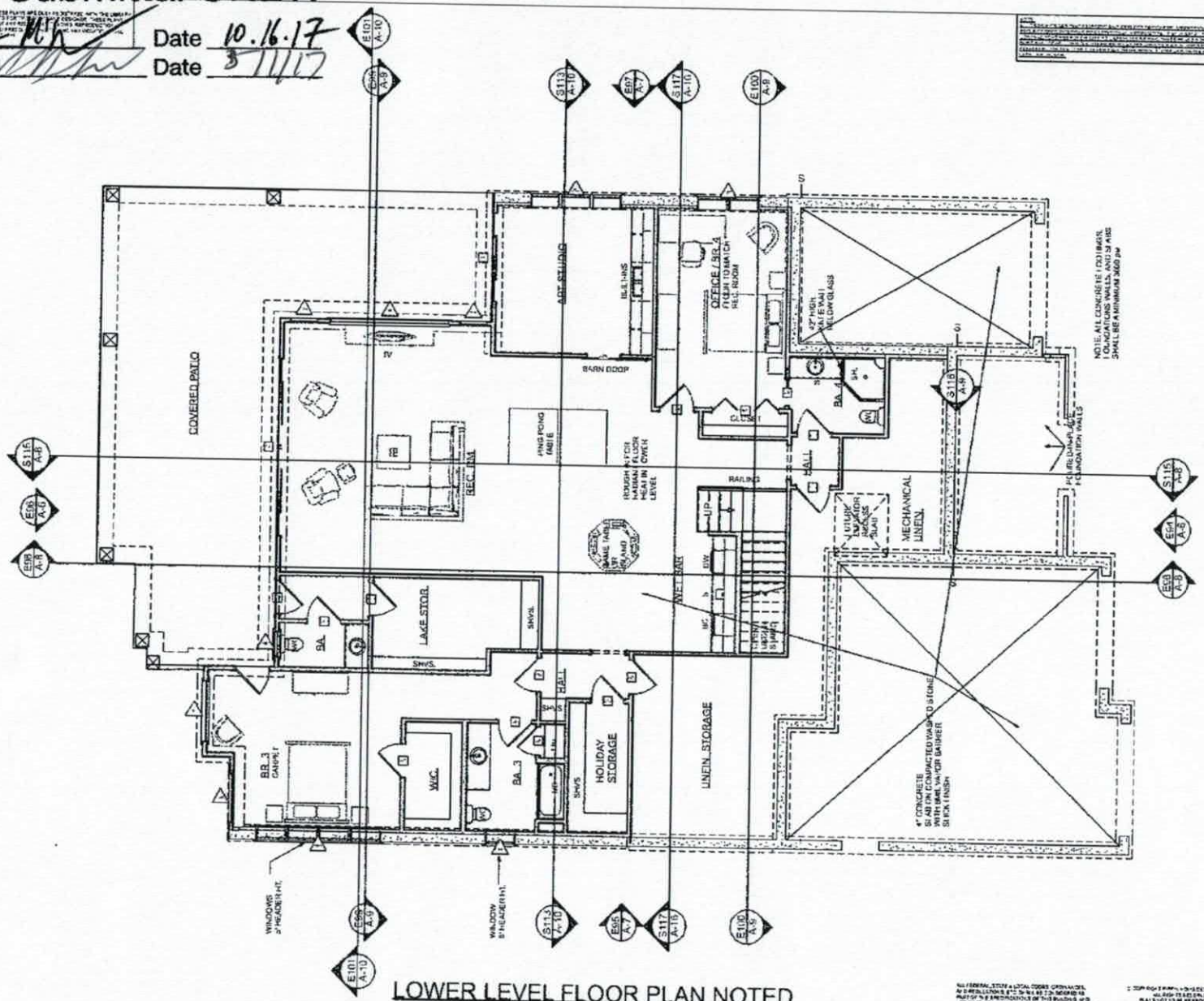
A NEW CUSTOM HOME DESIGN FOR:
JIM & ANGELA JOHNSTON
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NC

DATE:
2/9/17
SCALE:
NTS
SHEET:
SP-2

Acknowledgement of
Plans Submittal ONLY!

Date 10.16.17

Date 3/14/17



LOWER LEVEL FLOOR PLAN NOTED

PIPPIN
HOME DESIGNS
INC.

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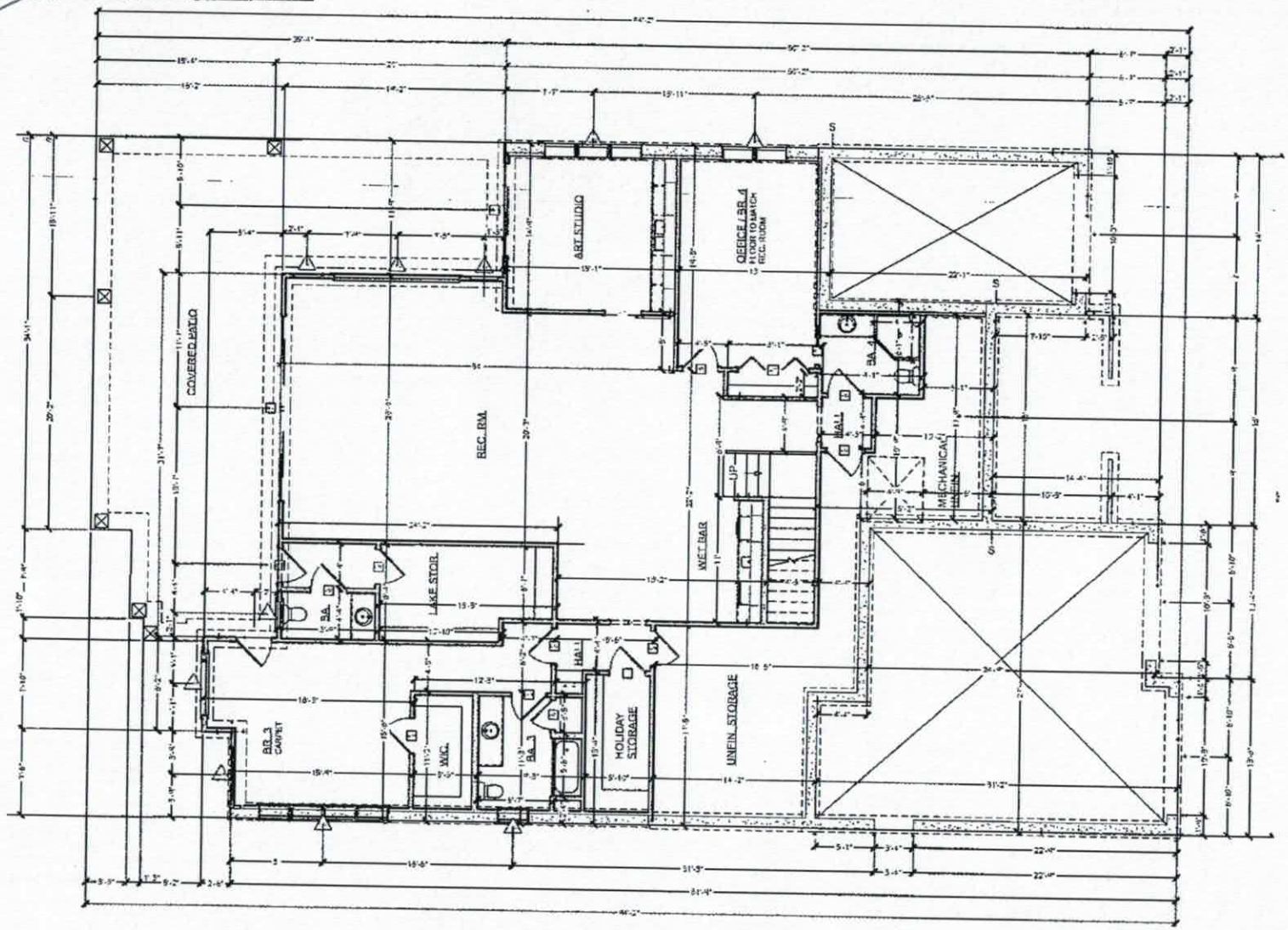
A NEW CUSTOM HOME DESIGN FOR:
JIM & ANGELA JOHNSTON
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NC

DATE:
2/9/17
SCALE:
1/4" = 1'0"
SHEET:
A-1

Acknowledgement of
Plans Submittal ONLY!

Date 10.16.17

Date 5-24-18



LOWER LEVEL FLOOR PLAN DIMENSIONED

PIPPIN
HOME DESIGNS
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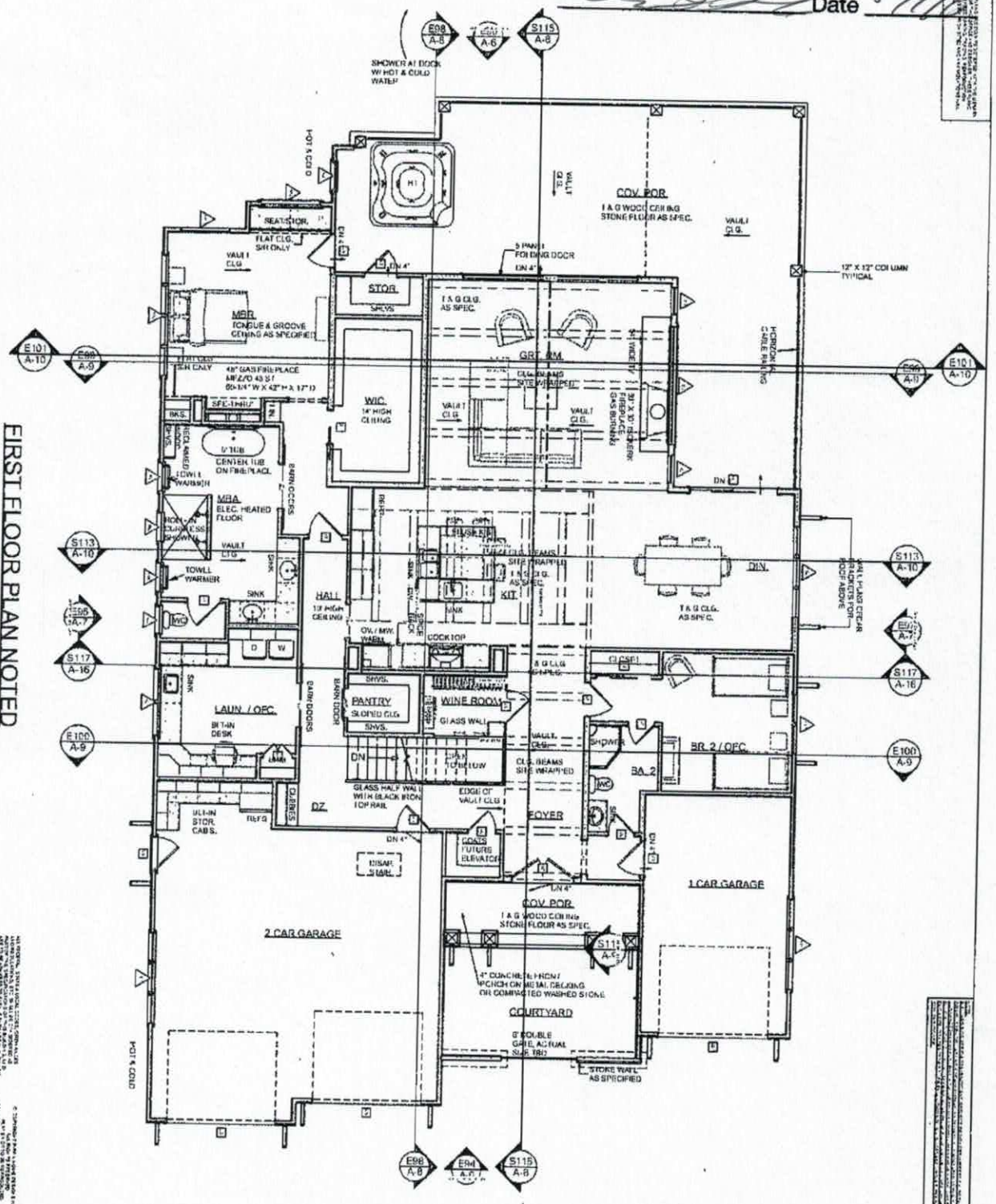
A NEW CUSTOM HOME DESIGN FOR:
JIM & ANGELA JOHNSTON
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NC

DATE:
2/9/17
SCALE:
1/4" 1'0"
SHEET:
A-2

Acknowledgement of
Plans Submittal ONLY

Date 10.17

Date



DATE:	SCALE:	SHEET:
2/9/17	1/4" = 1'0"	A-3

A NEW CUSTOM HOME DESIGN FOR
JIM & ANGELA JOHNSTON
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NC

Creating where people live

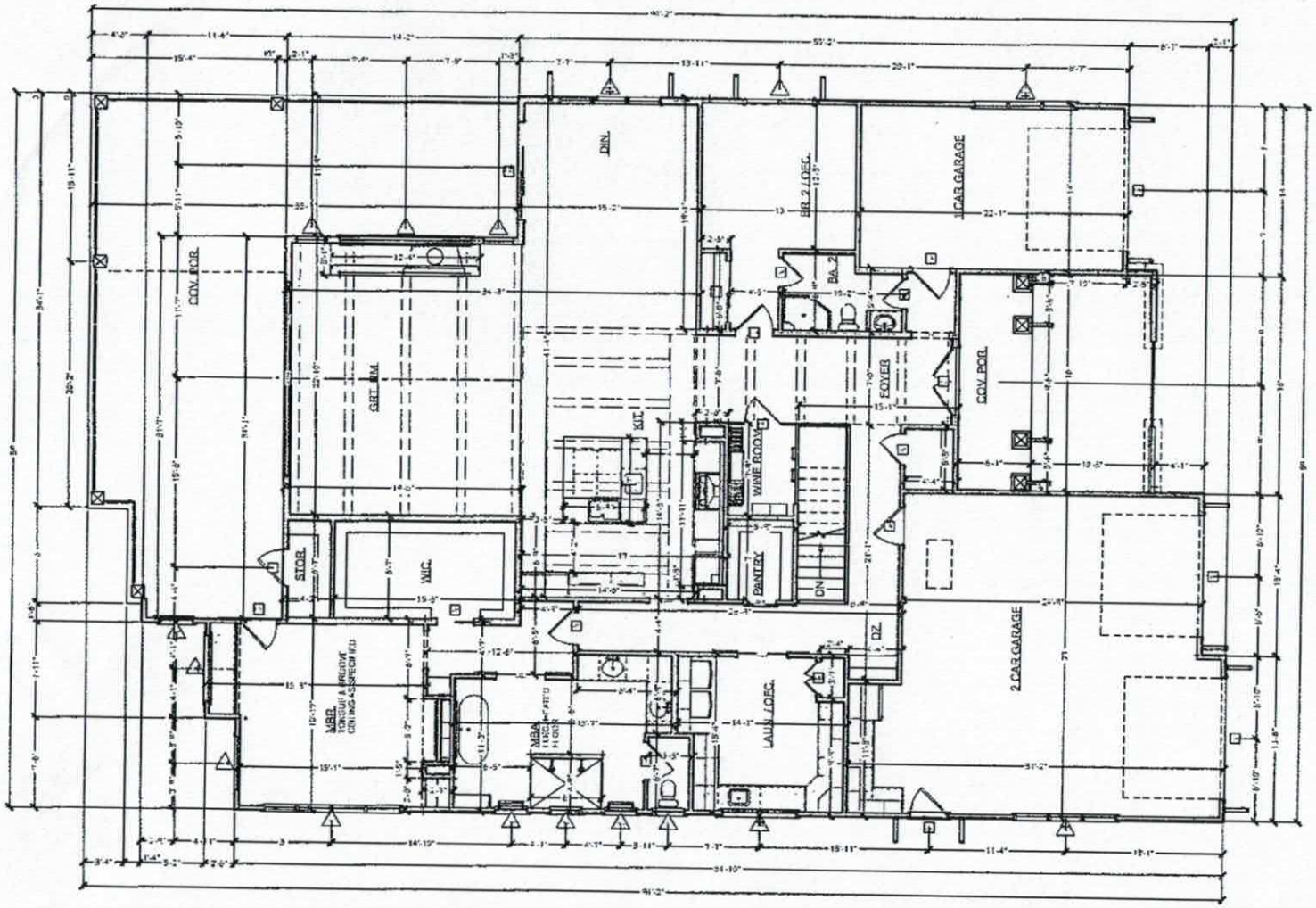
AIBD — AMERICAN INSTITUTE OF BUILDING DESIGN — FELLOW MEMBER

PIPPIN HOME DESIGNS, INC.

Acknowledgement of Plans Submittal ONLY!

Date 10.16

Date 5-1-18



FIRST FLOOR PLAN DIMENSIONED

PIPPIN HOME DESIGNS INC.

FELLOW MEMBER AIBD AMERICAN INSTITUTE OF BUILDING DESIGN

Creating where people live

A NEW CUSTOM HOME DESIGN FOR:
JIM & ANGELA JOHNSTON
317 TUSKARORA TRAIL
MOORESVILLE, IREDELL COUNTY, NC

DATE:
2/9/17
SCALE:
1/4" 1'0"
SHEET:
A-4