

WAKE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER PERMIT

NO PERMIT(S) FOR CONSTRUCTION, LOCATION OR RELOCATION ACTIVITY SHALL BE ISSUED UNTIL AN AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION AUTHORIZATION HAS BEEN ISSUED
PERMIT VOID IF NOT IN COMPLIANCE WITH ZONING REGULATIONS AND/OR IF SITE IS ALTERED OR INTENDED USE CHANGED

OPERATIONS PERMIT

PERMIT # WRP-006823-2018 **APPLICATION DATE:** 10/01/2018 **BLDG. PERMIT#:** RBPR-004560-2018
PIN: 0789543908 **RECORDED:** Yes
TOWNSHIP: 08 - Leesville **JURISDICTION:** Wake County **ZONING:** R-40W
APPLICANT: ICG Homes LLC **BUSINESS PHONE:** (919) 876-5802
Ryan Perry **HOME PHONE:**
4020 Wake Forest RD Suite 306 **MOBILE PHONE:** (919) 302-4493
HD USE: 101A CONVENTIONAL ONE-FAMILY HOUSE **EXISTING USE:**
SITE ADDRESS: 6109 NORWOOD PLACE CT
SUBDIVISION: Norwood Place **LOT:** 4 **ACRES:** 0.92
DIRECTIONS: Glenwood Avenue (HWY 70) to Creedmoor Rd (HWY 50) Left on Lynn. Right on Ray. Left on Norwood.

Systems defined as either type III-b, III-g with a pump, IV, V or VI, in accordance with the North Carolina administrative code 15A NCAC 18a .1961, table V as adopted by reference in the "Regulations Governing Wastewater Treatment Dispersal Systems in Wake County", requires Wake County Environmental Services to conduct periodic inspections of the system type pursuant to 15A NCAC 18a. 1961 (j). Fees for these inspections will be charged as per the approved Fee Schedule. In addition, all systems are to be operated and maintained as specified in 15A NCAC 18A .1961. This permit is based in part on information provided by the homeowner and/or his/her representative in the application submitted for this permit. The Environmental Health Specialist is not responsible for false or misleading information contained in the application. The environmental health specialist is also not responsible for concealed conditions on the property or for statements in this report that may have resulted from false or misleading statements provided to him/her in the application. Neither Wake County nor the Environmental Health Specialist warrants that the septic tank system will continue to function satisfactorily in the future or that the water supply will remain potable.

OPERATION PERMIT VALID FOR: No Expiration

INSTALLED BY: BRANTLEY, CORY - 1036 - IV

PROPRIETARY SYSTEM: EZ1203HG - EZFlow EZ 1203H Geo **PRETREATMENT SYSTEM:**

SYSTEM TYPE INSTALLED: III B

OPERATION PERMIT: **STATUS:** Issued

ISSUED BY: Scott Reams

ISSUED DATE: 04/02/2019

SEPTIC TANK: David Brantley & Sons - STB-323 - 1250 gallons **DATE OF MANUFACTURE:** 12/26/2018 **FILTER:** GAG SIM/TECH - STF-110

GREASE TRAP:

DATE OF MANUFACTURE:

FILTER:

DOSING PUMP TANK: Other

DATE OF MANUFACTURE: 11/20/2018

FILTER:

CC1: 999,807

ETM1: 0.22

CC2:

ETM2:

RECIRCULATION TANK:

DATE OF MANUFACTURE:

CC1:

ETM1:

CC2:

ETM2:

SEPTIC TANK ELEVATION: 5

GREASE TRAP ELEVATION:

DOSING PUMP TANK ELEVATION: 5

RECIRCULATION TANK ELEVATION:

DISTRIBUTION DEVICE ELEVATION: 4

INSTALLED TRENCH DEPTH	INSTALLED AGGREGATE DEPTH	INSTALLED TRENCH LENGTH	INSTALLED TRENCH BOTTOM ELEVATION
24	12	60	6.66
24	12	60	7
24	12	160	7.85
24	12	160	8.85

ACTUAL PRESSURE HEAD: 2

ACTUAL FLOW RATE: 45

ACTUAL DOSE VOLUME: 186

SPECIFIC OPERATION REQUIREMENTS:

ISSUED BY:

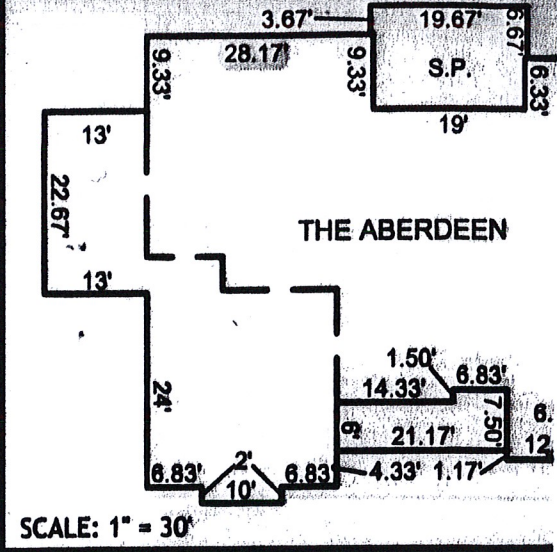


DATE: 04/02/2019

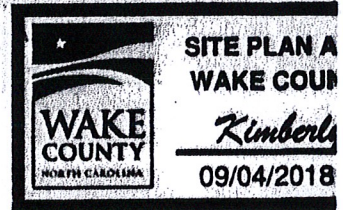
Vicinity Map
(No Scale)

CURVE	RADIUS	LENGTH	CHORD	BEARING
C1	50.00'	40.07'	39.00'	N 49°01'26" E

AWTHORNE
H. 3, SECT. 3
1986, Pg. 1606



AWTHORNE
PH. 3, SECT. 3
B.M. 1986, Pg. 1606



ERMIT 4560-2018

As Built Copy
Scale = 1" = 40'

WRP-006823

(5)

40,000 S.F.
0.92 Ac.

THE ABERDEEN

Prop
Conc
Drive

NORWOOD PLACE
B.M. 2017, Pg. 2304-2305

IMPERVIOUS AREA	
House:	3,74
Drive &	
Sidewalk:	1,87
Total:	5,62
Max.:	7,50

LEGEND:

- Ex. property
- Set property
- Calculated
- Water Meter
- Sanitary Sewer
- Power Pole
- Power Pedestal
- Telephone Pole
- Cable Pedestal

NORWOOD



TEL 919 856 7400
FAX 919 856 7407

Environmental Services

Water Quality Division
336 Fayetteville St. • P.O. Box 550 • Raleigh, NC 27602

December 20, 2018

REQUIREMENTS TO COMPLETE YOUR PRESSURE MANIFOLD SYSTEM

NAME: ICG Homes LLC
ADDRESS: 4020 Wake Forest Rd, Suite 306, Raleigh, NC 27609
Re: Wastewater Permit
SEPTIC PERMIT: WRP-006823-2018
PIN: 0789 54 3908
Building Permit: RBPR-04560-2018
Property Description: Norwood Place Lot 4
Dear Sir/Madam:

Enclosed is your approved pressure manifold installation plan and the "Pressure Manifold Sewage Disposal System Maintenance Information Sheet".

To complete your permit:

A contractor **CERTIFIED** by the State of North Carolina and **REGISTERED** in Wake County, must be used to install your system.

A copy of the "Pressure Manifold Sewage Disposal System Maintenance Information Sheet" and a copy of the "Wake County Well and Septic System Owner's Guide", which contain information essential to the long-term performance of this wastewater disposal system, must be forwarded to the owner or user of the system, if other than yourself.

NOTE: IF YOU HAVE A PRIVATE WELL, ALL WELL INSPECTIONS, AND REQUIRED WATER SAMPLES MUST BE COMPLETED BEFORE YOUR PERMIT IS FINALIZED.

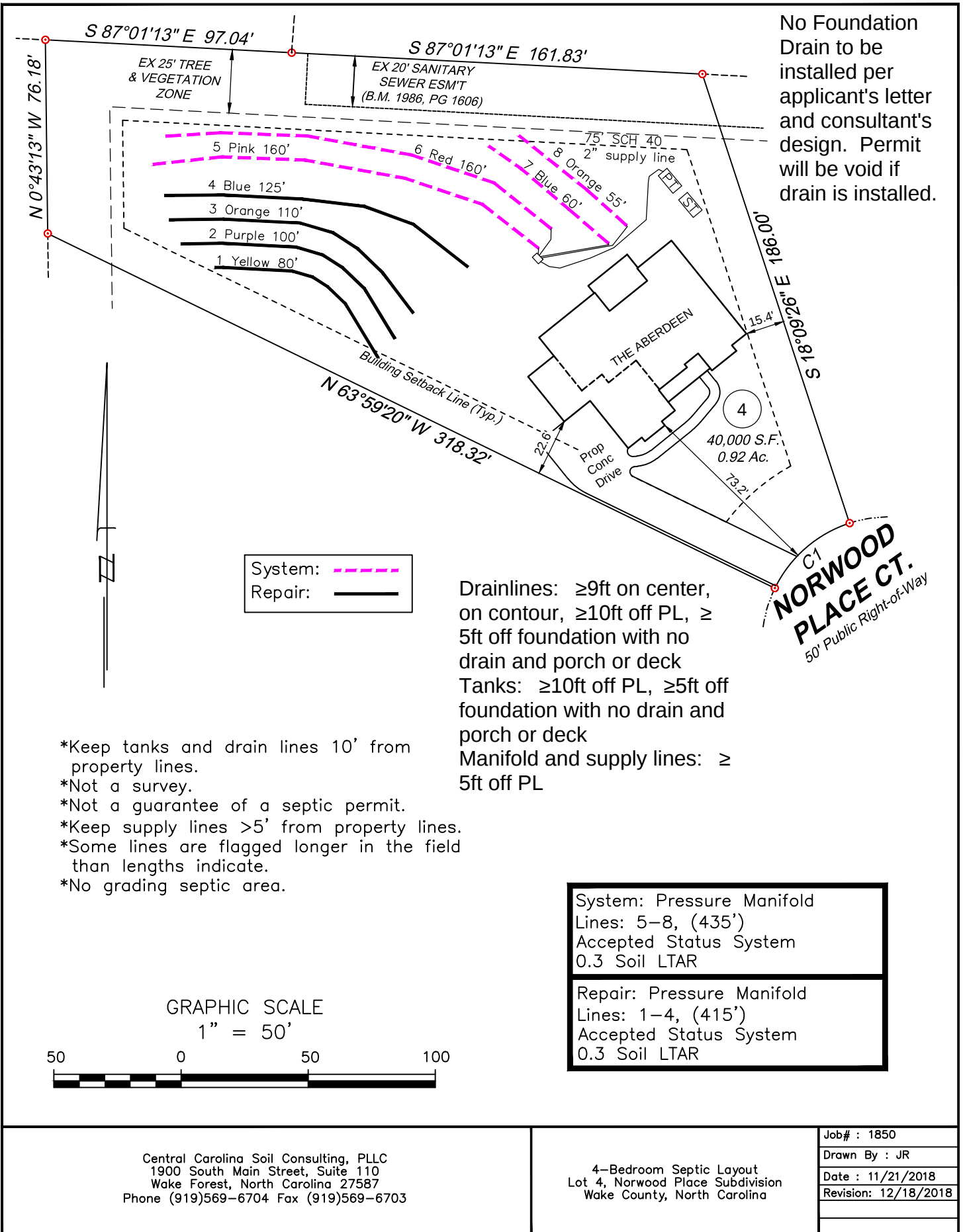
ANY PROPOSED MODIFICATION TO THE APPROVED PLANS MUST BE COORDINATED WITH YOUR SYSTEM DESIGNER

Please call (919) 856-7463 or email at bsmartin@wakegov.com if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Brett S Martin".

Brett S Martin, LSS, RS
Environmental Consultant



**Environmental
Services**

CA Site Plan Part C

PIN# 0789 54 3908

Norwood Place Lot 4

WRP-006823-2018

*See CA Site Plan Parts A & B &
Design Plan.

TEL 919 856 7400

Water Quality Division

338 Fayetteville St. • P.O. Box 550 • Raleigh, NC 27602

Purpose: This forms is to be completed when making changes to a pending or active Well, Septic, or Building Permit.

RBPR-004560-2018

D# _____ BUILDING PERMIT # _____ PIN # _____

Change of **Bedrooms** from ... _____ to _____

*Site Plan May Be Required

Change **Applicant Name** to _____

*Attach Owner Authorization

Change of **Applicant Address** to _____Change of **Applicant Phone Number** to _____Change of **Building Footprint** _____

* Site Plan Will Be Required

Foundation Drain

* No Site Plan Required

☐ Yes☒ NoChange # of **Employees** _____

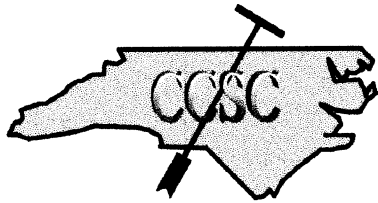
* Business, Schools, Daycares, etc.

Change of **Basement**: Add Basement _____ or Remove Basement _____**Comments** _____**Project (Site) Address** 6109 Norwood Place, Raleigh NC 27613Applicant Signature Ryan Perry Date 11/27/2018

Wake County Permit Processor _____ Date _____

☐ Sent to Plan Review Staff

Note: Any change made where a Wake County Building Permit is involved requires that this document be forwarded through the Wake County Building Permits Department. All other revision forms can be forwarded to Environmental Services representatives on the 1st floor. Be aware revision fee may be required before processing can begin.



Central Carolina Soil Consulting, PLLC
1900 South Main Street, Suite 110
Wake Forest, NC 27587
919-569-6704

Enclosed is a Pressure Manifold design for a 4-Bedroom House with a daily flow of 480 gallons/day to be installed at lot 4 in Norwood Place SD.

Design Specifications & Calculations	1-3
Site plan & layout	4
Septic Tank Diagram	5
Pump Tank Diagram	6-7
Hydraulic Profile	8
Manifold Specifications	9
Pump Specifications	10-11
Control Panel Specifications	12-13
Repair Pressure Manifold Calculations	14
Repair Site plan and Layout	15

Design - November 28, 2018

Project # 1850-Lot 4



**Department of Environmental Services
Wake County**

Approved by *Butt S. Manton*

Date: 12/18/2018

Review of this document has been made only for conformance with the design concept of the project and approval shall not relieve the designer and/or contractor from responsibility for any errors therein or for furnishing the materials, and equipment of proper dimension, size, quantity, quality and all performance characteristics to meet the requirements and intent of the contract documents.

ICG Custom Homes
480 gal/day Pressure Manifold Waste Water System
Norwood Place lot 4

Summary of calculations and materials required for installation.

Design Flow:	480 gal/day (4-bedroom house)
Soil LTAR:	0.3 gal/day/ft ²
*Total lateral length for calculations: 435' of Accepted Product (EZ-FLOW)	
Number of Pressure Manifolds:	1
Manifold #1:	4" SCH 80 PVC, 42" minimum length
Supply line:	2" sch 40 PVC at 75'
Trench Depth:	WCDES
Trench Width:	3'
Gate Valves:	1 in pressure manifold, 1 in pump tank
Check Valves:	1 in pump tank
Septic Tank:	Brantley ST 323, 1250 gallon with effluent filter
Pump Tank:	Brantley PT-463, 1200 gallons (manufacturer information).
Control Panel & Floats:	Rhombus 112 panel & floats
Pump:	Zoeller Model 140 to deliver 44.56 gpm at 17.64'
Drawdown:	~10.5", based on 19.65 gal/inch for pump tank

Calculations

Supply Line Volume:	13.05 gallons, 75' of 2" pipe
Pump Run Time:	4.76 minutes, 75% of system dosed
Pump Submergence Volume:	334.05 gallons
Maximum Pump Height:	13 inches * 19.65 gallons/inch = 255.45
4" Block:	$\frac{4" * 19.65 \text{ gallons/inch} = 78.60}{334.05 \text{ gallons}}$
Floats:	271.17 gallons
Drawdown plus High level alarm:	10.8", drawdown plus 3" for high level alarm float $13.8" * 19.65 \text{ gallons/inch} = 271.17 \text{ gallons}$
Float volume plus Pump Submergence Volume:	271.17 plus 334.05 = 605.22 gallons
Emergency Storage:	1200 gallons – 605.22 gallons = 594.78 gallons

Dosing Volume:	212 gallons (75% of system dosed)
Elevation Head:	9.35'
Pressure Head:	2'
Friction Head:	6.29'
Total Dynamic Head:	17.64'

Central Carolina Sol Consulting PRESSURE MANIFOLD DESIGN

Name: ICG Custom Homes

P.I.N. #:

D#:

Address:

Subdiv: Norwood Place

Lot#: 4

of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.30 gal/day/sq.ft

Septic Tank: 1250 gals Pump Tank: 1200 gals Sq. Foot: 1305 Stone Depth:
Brantley ST 323 Brantley PT 463

Number of Taps: 4 Length of Trenches: 435 ft(See Tap Chart for Details)

Depth of Trenches: WCDES in Manifold Length: 42 in

Manifold Diameter: 4in sch 80pvc Tap Configuration: 6 in spacing side(s) of manifold

Supply Line: length: 75 ft Diameter: 2 in sch 40pvc

Friction Loss + Fitting Loss: 6.29 ft(supply line length + 70' for fittings in pump tank)

Design Head: 2 ft Elevation Head: 9.35 ft

Total Head: 17.64 ft Pump to Deliver: 44.56 gals/min at 17.64 ft head

Dosing Volume: 212 gals,

Drawdown: 212 gals divided by 19.65 gals/in = 10.8 inches

Simplex Control Panel required; elapsed time meter and cycle counter required; Floats to be determined by type of pump tank used. A septic tank filter, or equal is required.

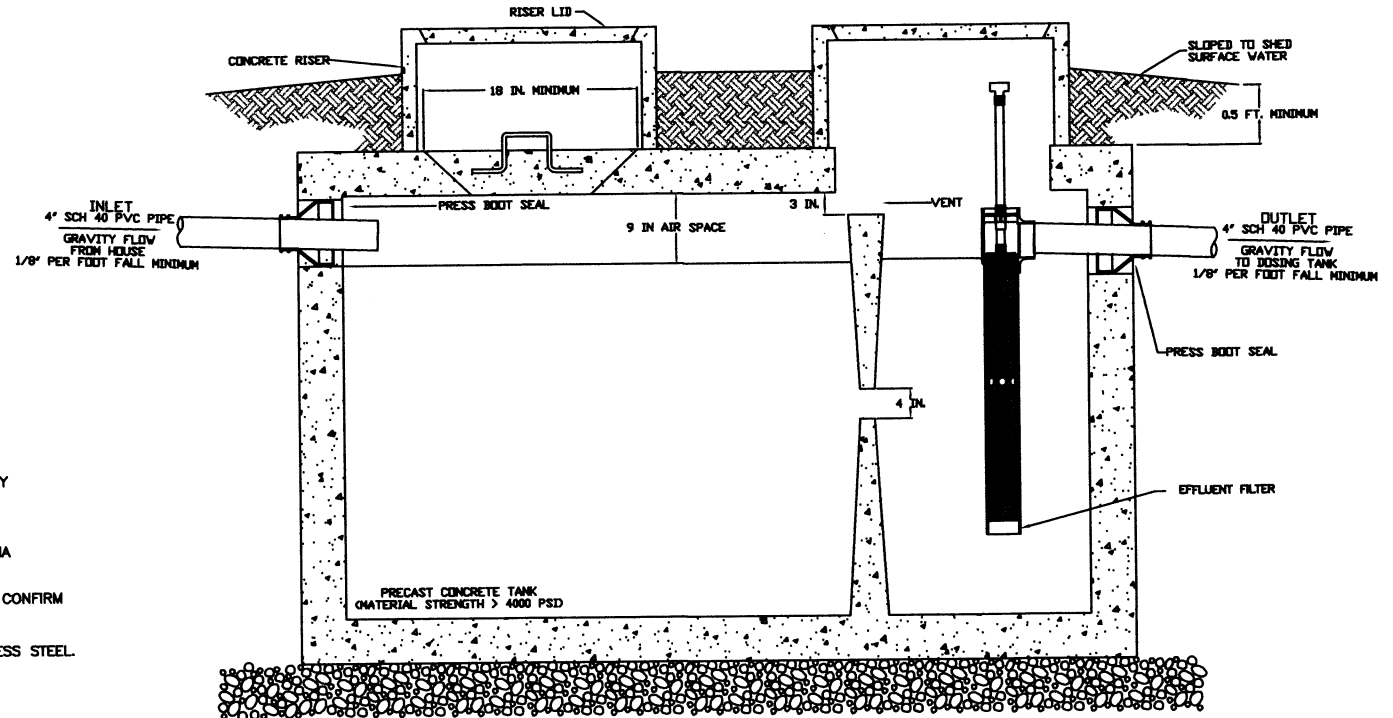
Possible pumps: Hydromatic: Goulds: Myers:
Zoeller: 140 Other:

TAP CHART

Bench Mark		is = 100.00 set at		Pump elev.		Design Head: 2		Manifold elev. 96.10	
line	color	rod read	Elevation	length	hole size	flow/tap	gal/day	trench area	LINE LTAR
5	Pink	4.9	95.10	160	1in SCH 80	16.8	180.97	480	0.377
6	Red	5.2	94.80	160	1in SCH 80	16.8	180.97	480	0.377
7	Blue	6.1	93.90	60	1/2in SCH 80	5.48	59.03	180	0.328
8	Orange	7.0	93.00	55	1/2in SCH 80	5.48	59.03	165	0.358

	total	feet =	435	gal/min =	44.56	LTAR =	0.30
% of Dose Vol.	75		<u>Des. Flow</u>	480		(Itar + 5%)	0.32
Dose Volume	212		Pump Run=	10.77		(Itar W/ INOV)	0.40
Dose Pump Time	4.76		Tank Gal/IN	19.65		(Itar + 5%)	0.42
Drawdown in Inches	10.8		Elev. Head	9.35			
Supply Line Length	75						
Comments:							

Ex. 1250 GAL BRANTLEY SEPTIC TANK SCHEMATIC NOT TO SCALE



NOTES

1. ALL TANKS SHALL BE LEAK TESTED SUCH THAT EXFILTRATION OCCURS AT A RATE WHICH DOES NOT EXCEED TEN GALLONS PER TWENTY-FOUR HOURS PER 1,000 GALLONS OF TANK CAPACITY
2. ALL TANKS SHALL REST ON A BED OF #57 WASHED GRAVEL. THE MINIMUM THICKNESS OF THE GRAVEL BED IS 6 INCHES.
3. ALL TANKS MUST BE APPROVED FOR USE BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL HEALTH (DEH).
4. INVERTS SHOWN ARE APPROXIMATE. THE INSTALLER SHALL FIELD CONFIRM PRIOR TO CONSTRUCTION.
5. ALL HARDWARE INSTALLED INSIDE OF TANKS SHALL BE OF STAINLESS STEEL.
6. TANK DIMENSIONS VARY BY MANUFACTURER.

Central Carolina Soil Consulting,
PLLC

1900 South Main Street, Suite 110
Wake Forest, North Carolina 27587
Phone (919)569-6704 Fax (919)569-6703

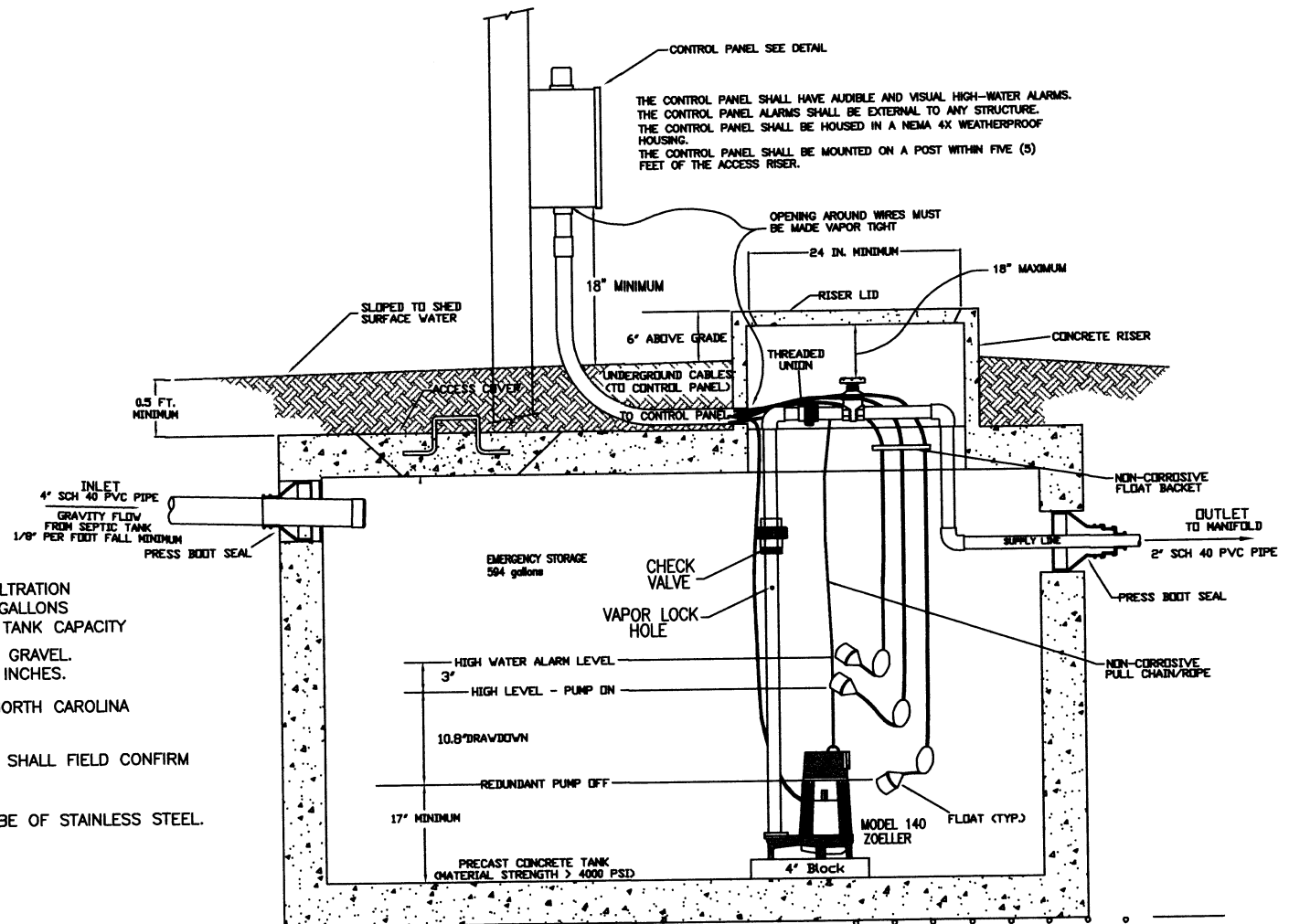
Job# : 0000

Drawn By : xxx

Date : 00/00/0000

Revision:

1200 GAL BRANTLEY PUMP TANK SCHEMATIC NOT TO SCALE



NOTES

1. ALL TANKS SHALL BE LEAK TESTED SUCH THAT EXFILTRATION OCCURS AT A RATE WHICH DOES NOT EXCEED TEN GALLONS PER TWENTY-FOUR HOURS PER 1,000 GALLONS OF TANK CAPACITY
2. ALL TANKS SHALL REST ON A BED OF #57 WASHED GRAVEL. THE MINIMUM THICKNESS OF THE GRAVEL BED IS 6 INCHES.
3. ALL TANKS MUST BE APPROVED FOR USE BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL HEALTH (DEH).
4. INVERTS SHOWN ARE APPROXIMATE. THE INSTALLER SHALL FIELD CONFIRM PRIOR TO CONSTRUCTION.
5. ALL HARDWARE INSTALLED INSIDE OF TANKS SHALL BE OF STAINLESS STEEL.
6. TANK DIMENSIONS VARY BY MANUFACTURER.
7. DRAWDOWN WILL VARY WITH TANK DIMENSIONS. ON 480 GALLONS AT 19.65 GALLONS PER INCH.
8. NO ELECTRICAL SPLICES SHALL BE MADE INSIDE

Central Carolina Soil Consulting,
PLLC

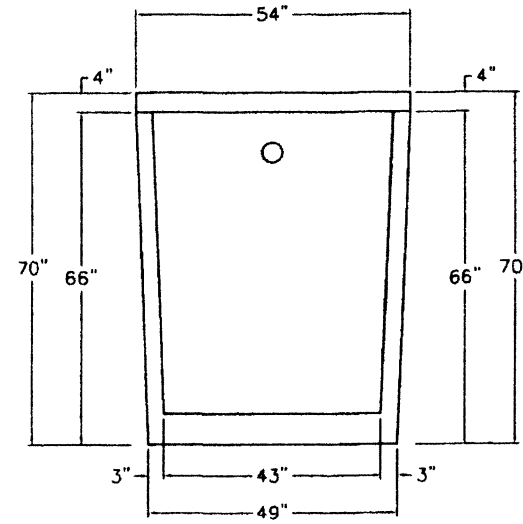
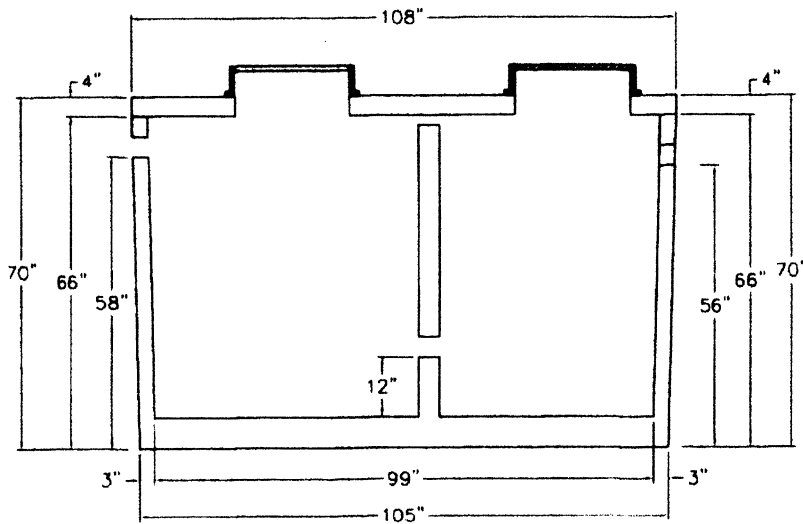
1900 South Main Street, Suite 110
Wake Forest, North Carolina 27587
Phone (919)569-6704 Fax (919)569-6703

Job# : 0000

Drawn By : xxx

Date : 00/00/0000

Revision:

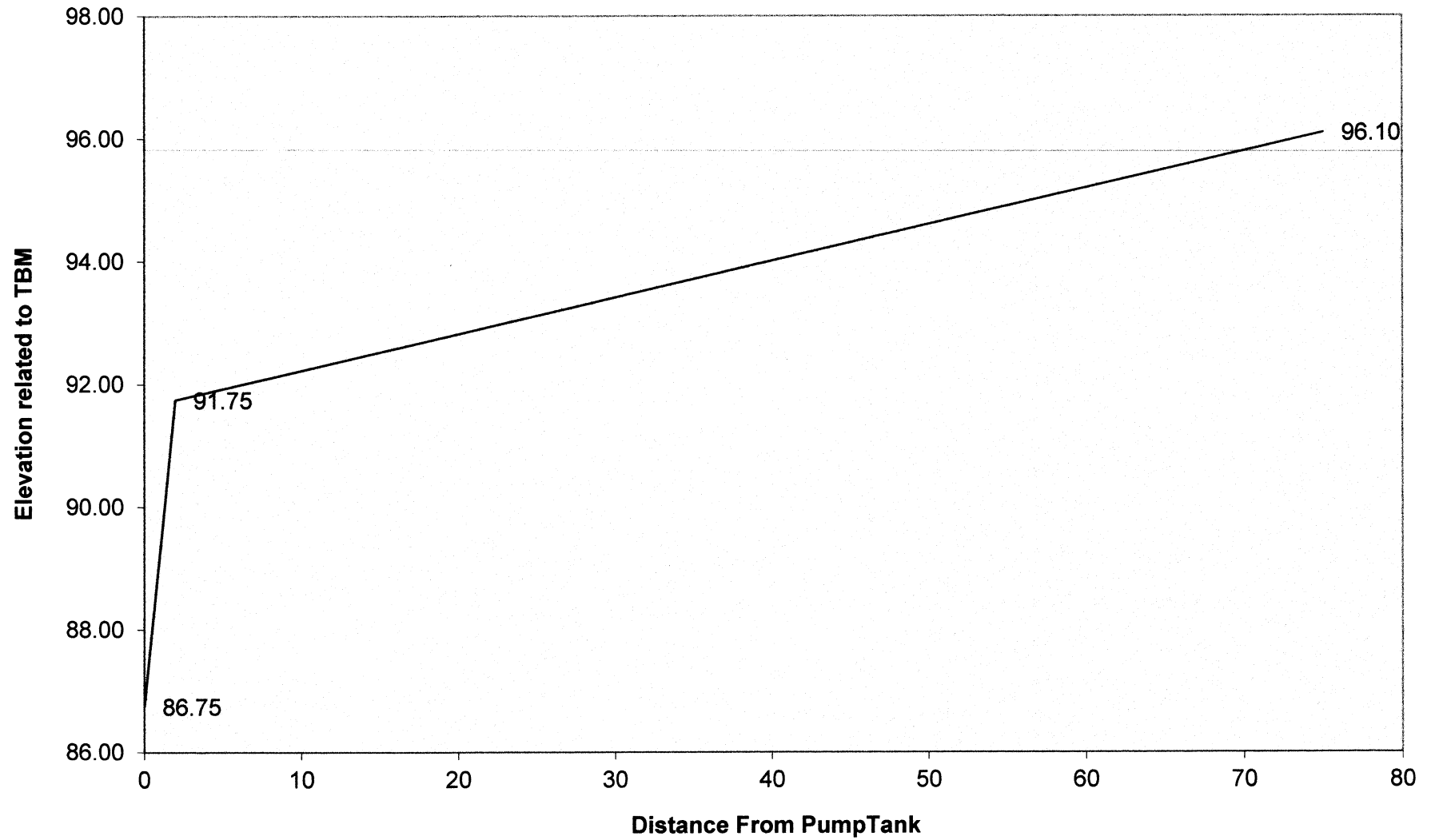


1,200 PT 463
NT8

NON TRAFFIC BEARING

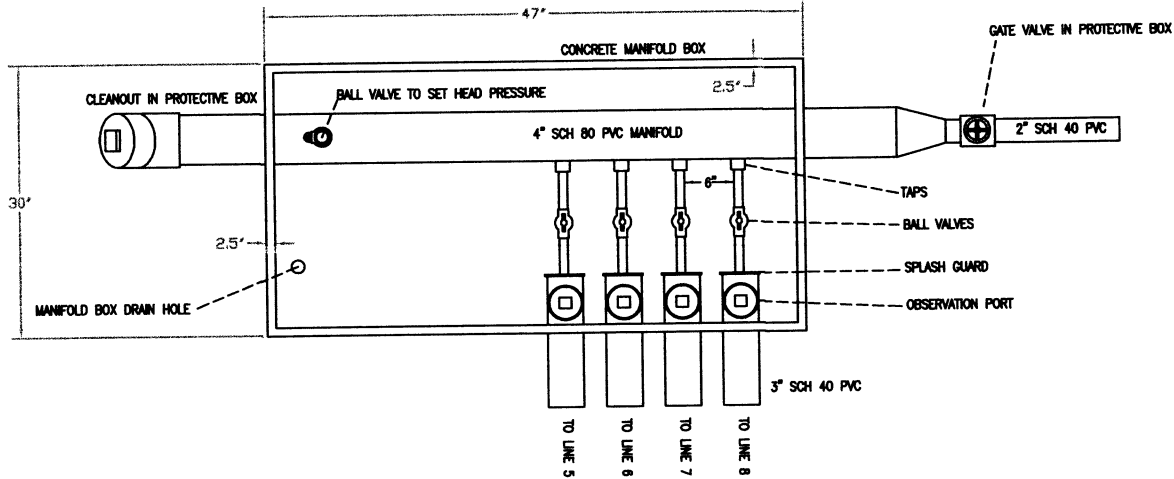
DAVID BRANTLEY & SONS 37 Pine Ridge Rd. Zebulon, NC 27587 Office 252-478-6721 Fax 919-579-0443 brantley@gmail.com		PREPARED FOR : David Brantley & Sons 37 Pine Ridge Rd. Zebulon, NC 27587	EXCHANGED BY: David Brantley Section 1 Section 2 Section 3 Section 4	DATE: April 11, 2014	SHEET NUMBER 1 of 1
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Hydraulic Profile

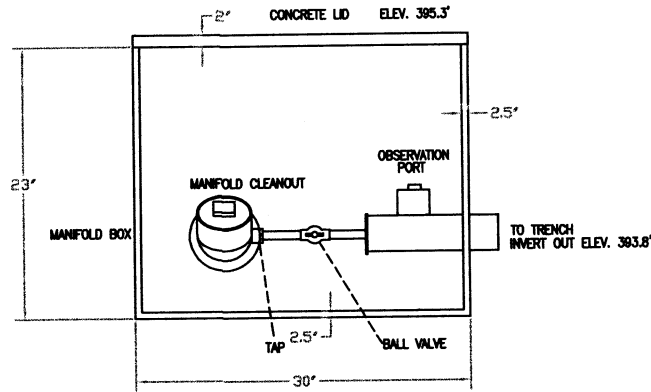


Taps will be installed on other side of manifold for field installaion as compared to this schmatic.

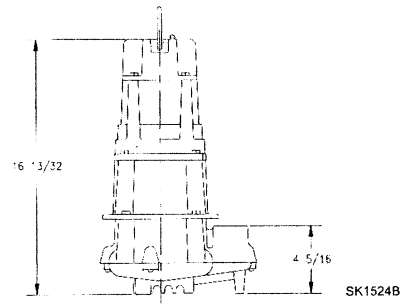
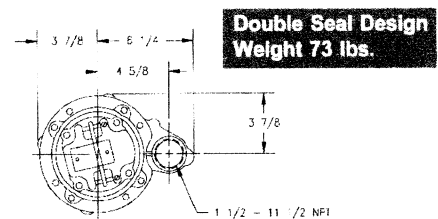
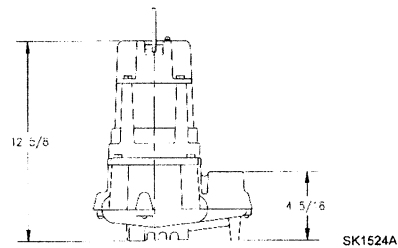
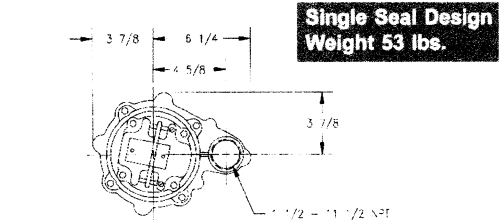
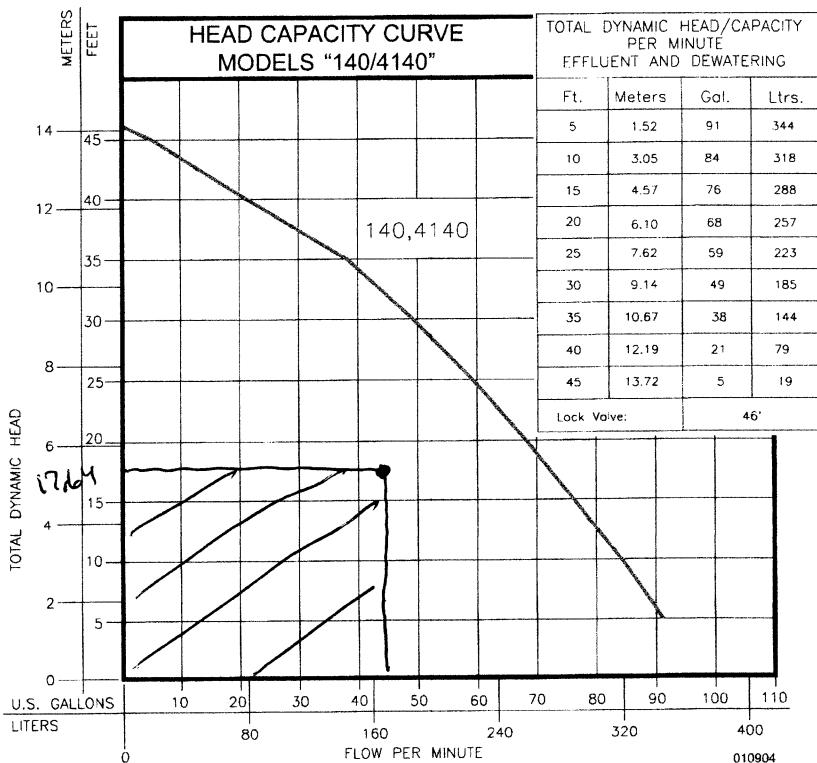
PRESSURE MANIFOLD DETAILS
TOP VIEW



PRESSURE MANIFOLD DETAILS
END VIEW



TAP SCHEDULE	
LINE #	TAP
5	1" SCH 80
6	1" SCH 80
7	½" SCH 80
8	½" SCH 80



CONSULT FACTORY FOR SPECIAL APPLICATIONS

- Electrical alternators, for duplex systems, are available and supplied with an alarm.
- Mechanical alternators, for duplex systems, are available with or without alarms.
- Control alarm systems are available for 1 phase pumps used in simplex system. See FM0732.
- Variable level control switches are available for controlling single phase systems.
- Double piggyback variable level float switches are available for variable level long cycle controls.
- Sealed Qwik-Box available for outdoor installations. See FM1420.
- Over 130°F. (54°C.) special quotation required.
- Refer to FM0806 for 200° F. applications.

140 Series - 53 lbs. 4140 Series - 73 lbs

140/4140*** MODELS					Control Selection		
Model	Model	Volts-Ph		Mode	Amps	Simplex	Duplex
N140	N4140	115	1	Non	15.0	1 or 1 & 5	2 or 3 & 4
E140	E4140	230	1	Non	7.5	1 or 1 & 5	2 or 3 & 4
BN140	BN4140	115	1	Non	15.5	1 or 1 & 5	2 or 3 & 4
BE140	BE4140	230	1	Non	7.5	1 or 1 & 5	2 or 3 & 4

SELECTION GUIDE

1. Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
2. Mechanical alternator M-Pak 10-0072 or 10-0075.
3. See FM0712 for correct model of Electrical Alternator E-Pak.
4. Variable level control switch 10-0225 used as a control activator, specify duplex (3) or (4) float system.

CAUTION

All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electric Code (NEC) and the Occupational Safety and Health Act (OSHA).

RESERVE POWERED DESIGN

For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.



<http://www.zoeller.com>

ZOELLER
PUMP CO.

MAIL TO: P.O. BOX 16347
Louisville, KY 40256-0347
SHIP TO: 3649 Cane Run Road
Louisville, KY 40211-1961
(502) 778-2731 • 1 (800) 928-PUMP
FAX (502) 774-3624

Manufacturers of . . .

"QUALITY PUMPS SINCE 1939"

Central Carolina Soil Consulting
PRESSURE MANIFOLD DESIGN - REPAIR SYSTEM

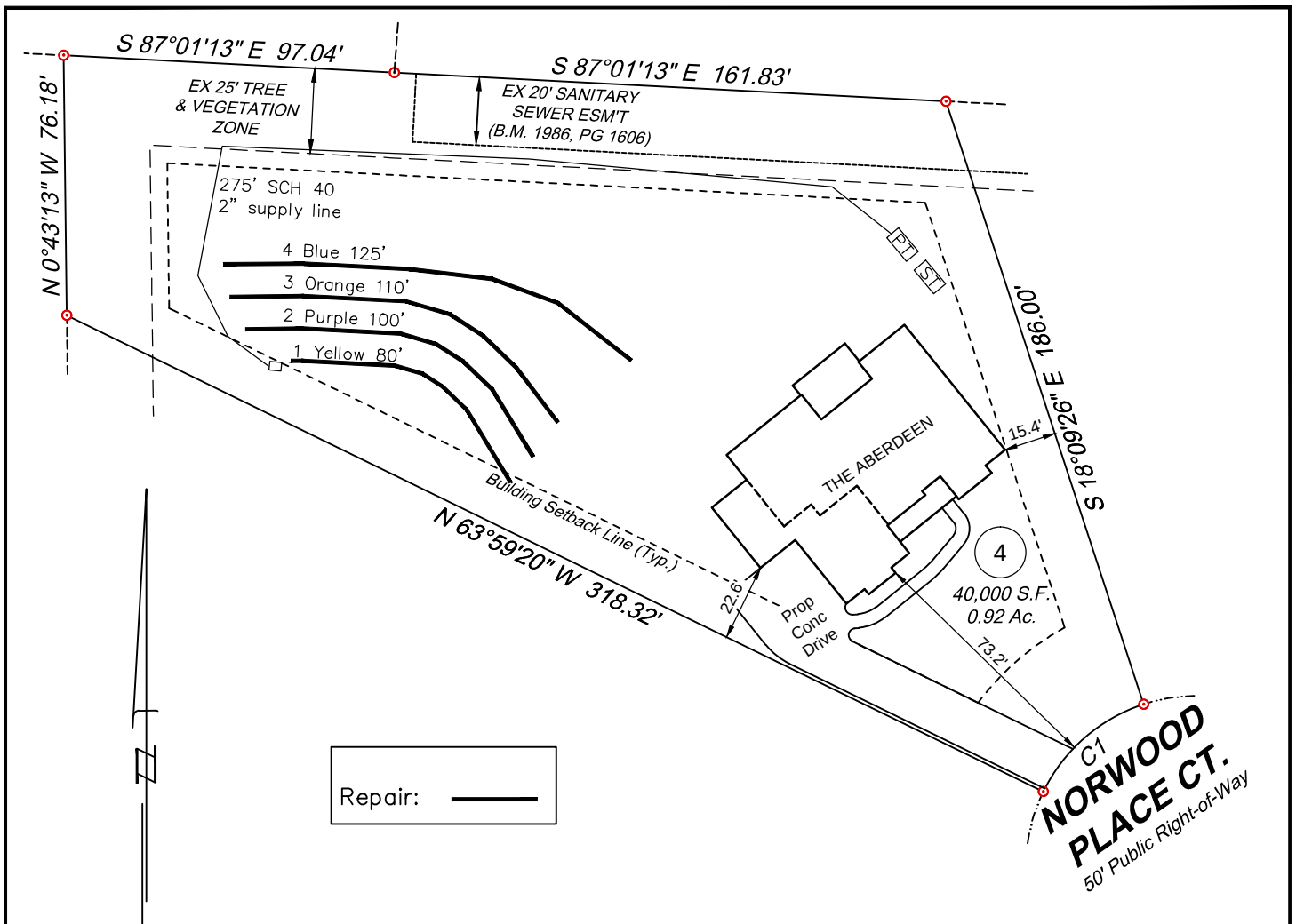
Name: ICG Custom Homes P.I.N. #: 0 D#: 0
 Address: 0 Subdiv: Norwood Place Lot#: 4
 # of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.30 gal/day/sq.ft
 Septic Tank: 1250 gals Pump Tank: 1200 gals Sq. Foot: 1245 Stone Depth:
 Number of Taps: 4 Length of Trenches: 415 ft(See Tap Chart for Details)
 Depth of Trenches: WCDES in Manifold Length: 42 in
 Manifold Diameter: 4in sch 80pvc Tap Configuration: 6 in spacing 1 side(s) of manifold
 Supply Line: length: 275 ft Diameter: 2 in sch 40pvc
 Friction Loss + Fitting Loss: 12.16 ft(supply line length + 70' for fittings in pump tank)
 Design Head: 2 ft Elevation Head: 11.75 ft
 Total Head: 25.91 ft Pump to Deliver: 39.81 gals/min at 25.91 ft head
 Dosing Volume: 202 gals,
 Drawdown: 202 gals divided by 19.65 gals/in = 10.3 inches

Simplex Control Panel required; elapsed time meter and cycle counter required; Floats to be determined
 by type of pump tank used. A septic tank filter, or equal is required.
 Possible pumps: Hydromatic: Goulds: Myers:
 Zoeller: 140 Other:

TAP CHART

Bench Mark	<u>0</u>	is = 100.00	set at				Design Head:	<u>2</u>	
Pump tank elev.		<u>8.25</u>	91.75	Pump elev.	86.75		Manifold elev.	98.50	
line	color	rod read	Elevation	length	hole size	flow/tap	gal/day	trench area	LINE LTAR
1	Yellow	2.5	97.50	80	1/2in SCH 40	7.11	85.73	240	0.357
2	Purple	3.0	97.00	100	3/4in SCH 80	10.1	121.78	300	0.406
3	Orange	3.5	96.50	110	3/4in SCH 80	10.1	121.78	330	0.369
4	Blue	4.3	95.70	125	3/4in SCH 40	12.5	150.72	375	0.402

	total	feet =	415	gal/min =	39.81	<u>LTAR =</u>	0.30
% of Dose Vol.	75		<u>Des. Flow</u>	<u>480</u>		(ltar + 5%)	0.32
Dose Volume	202		Pump Run=	12.06		(ltar W/ INOV)	0.40
Dose Pump Time	5.08		Tank Gal/IN	<u>19.65</u>		(ltar + 5%)	0.42
Drawdown in Inches	10.3		Elev. Head	11.75			
Supply Line Length	275						
Comments:							



- *Keep tanks and drain lines 10' from property lines.
- *Not a survey.
- *Not a guarantee of a septic permit.
- *Keep supply lines >5' from property lines.
- *Some lines are flagged longer in the field than lengths indicate.
- *No grading septic area.

System: Pressure Manifold
Lines: 5–8, (435')
Accepted Status System
0.3 Soil LTAR

Repair: Pressure Manifold
Lines: 1–4, (415')
Accepted Status System
0.3 Soil LTAR

Central Carolina Soil Consulting, PLLC
1900 South Main Street, Suite 110
Wake Forest, North Carolina 27587
Phone (919)569-6704 Fax (919)569-6703

4-Bedroom Septic Layout
Lot 4, Norwood Place Subdivision
Wake County, North Carolina

Job# : 1850
Drawn By : JR
Date : 11/21/2018
Revision: 12/18/2018