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# CARUSO HOMES

## PRESSURE MANIFOLD SYSTEM ENGINEERED OPTION PERMIT

1425 BAPTIST GROVE RD  
FUQUAY- VARINA, NC 27526

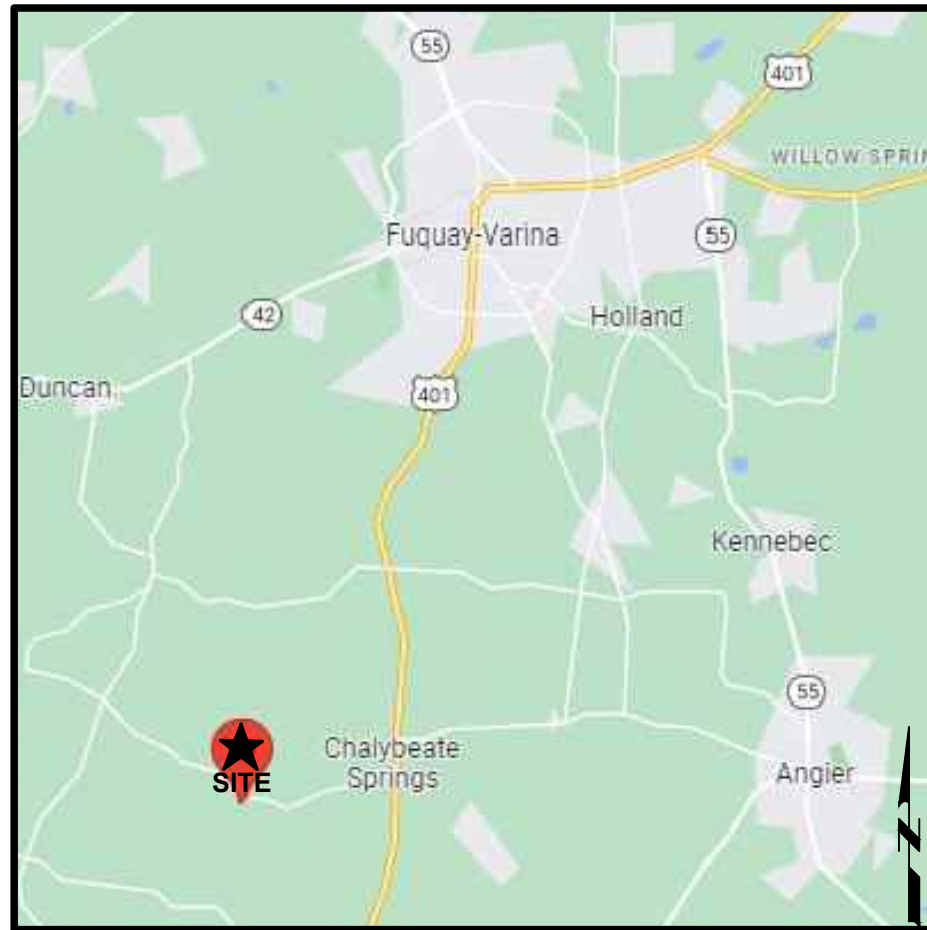
PROJECT No. A73268.00

HARNETT COUNTY, NC

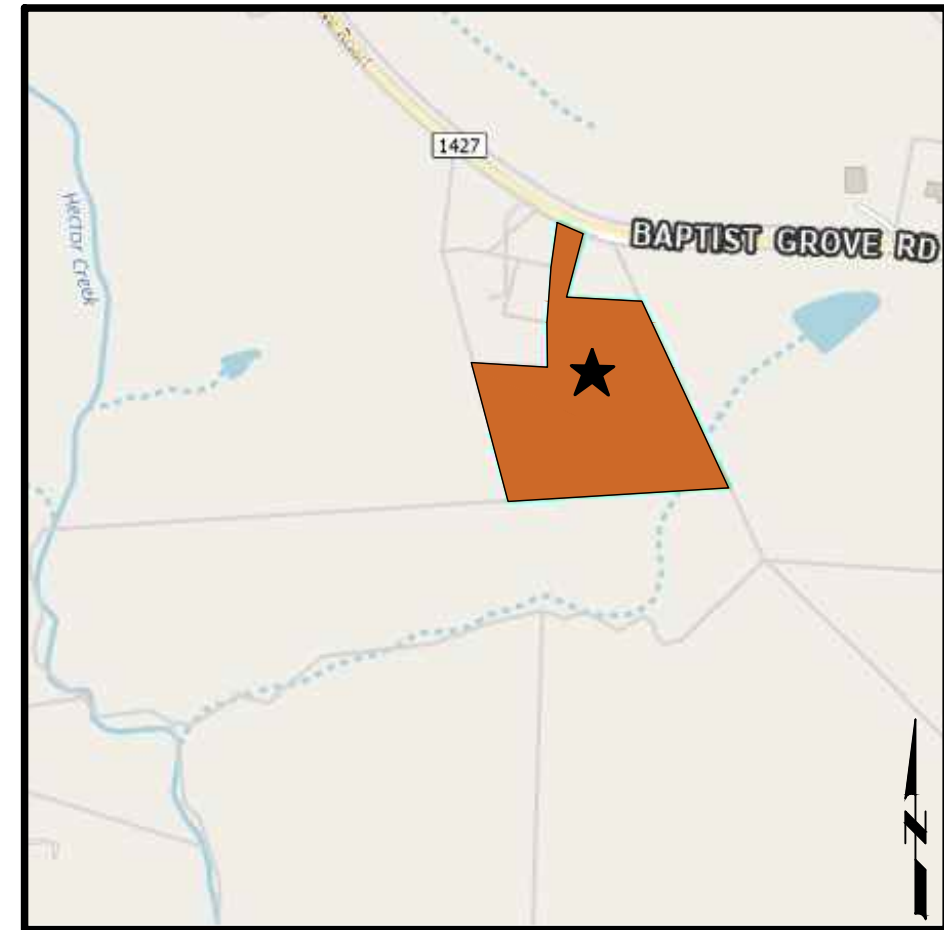
PIN#: 0643-77-5737

### SCHEDULE OF DRAWINGS:

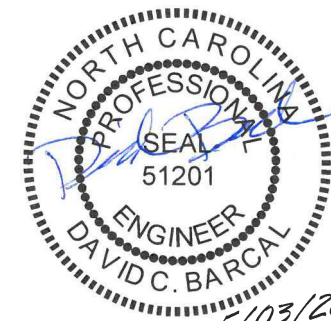
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|-------|-----------------------------|
| C-100 | COVER SHEET                 |
| C-101 | SITE LAYOUT                 |
| C-102 | TREATMENT DISPOSAL AREA     |
| C-103 | NOTES                       |
| C-104 | FORCE MAIN PLAN AND PROFILE |
|       |                             |
| D-101 | DETAILS 1 OF 5              |
| D-102 | DETAILS 2 OF 5              |
| D-103 | DETAILS 3 OF 5              |
| D-104 | DETAILS 4 OF 5              |
| D-105 | DETAILS 5 OF 5              |
|       |                             |
| E-101 | ELECTRICAL DETAILS 1 OF 1   |



VICINITY MAP



LOCATION MAP



501 CASCADE POINTE LANE, SUITE 103  
CARY, NORTH CAROLINA 27513  
P. O. BOX 129  
MORRISVILLE, NORTH CAROLINA 27560  
TEL: (919) 467-1239 FAX: (919) 319-6510

MacCONNELL  
& Associates, P. C.



COVER SHEET

C-100

CARUSO HOMES  
PRESSURE MANIFOLD SYSTEM  
EOP  
HARNETT COUNTY, NC

BY: EE  
JOB #: A73268.00  
DATE: 5/03/2023



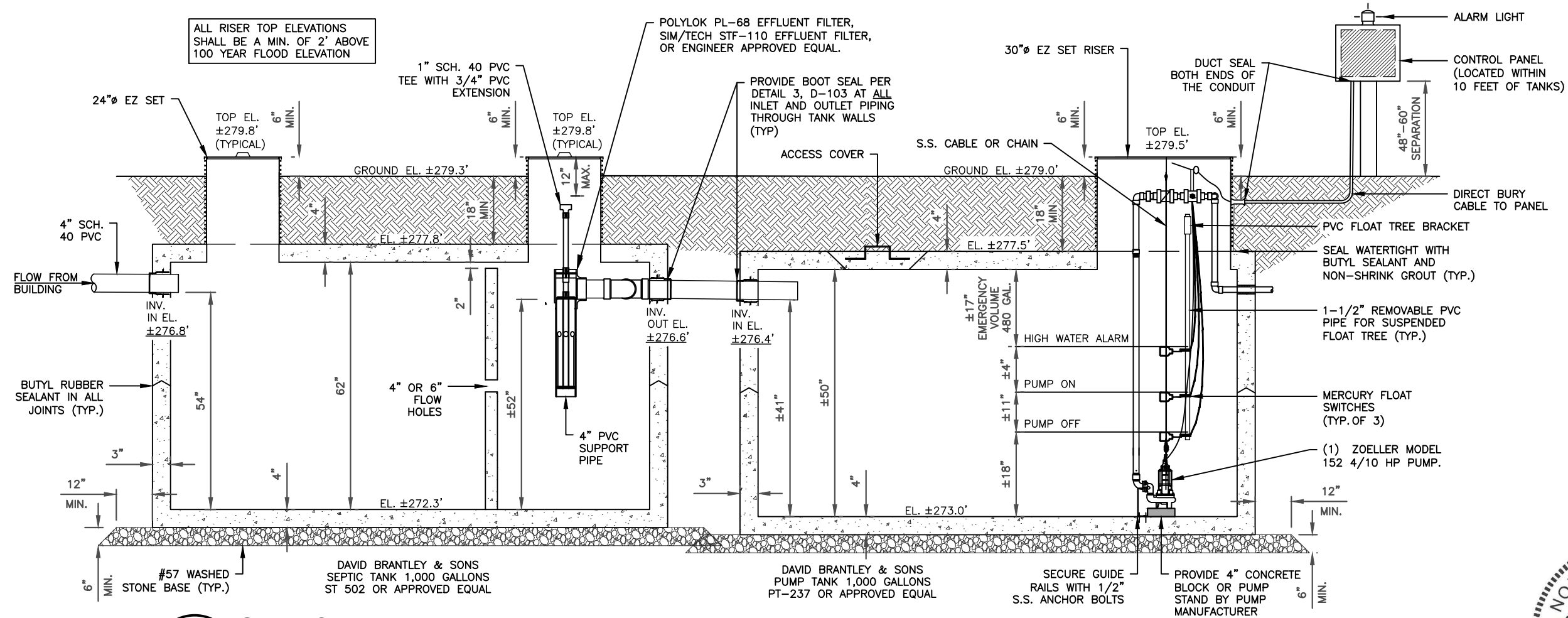
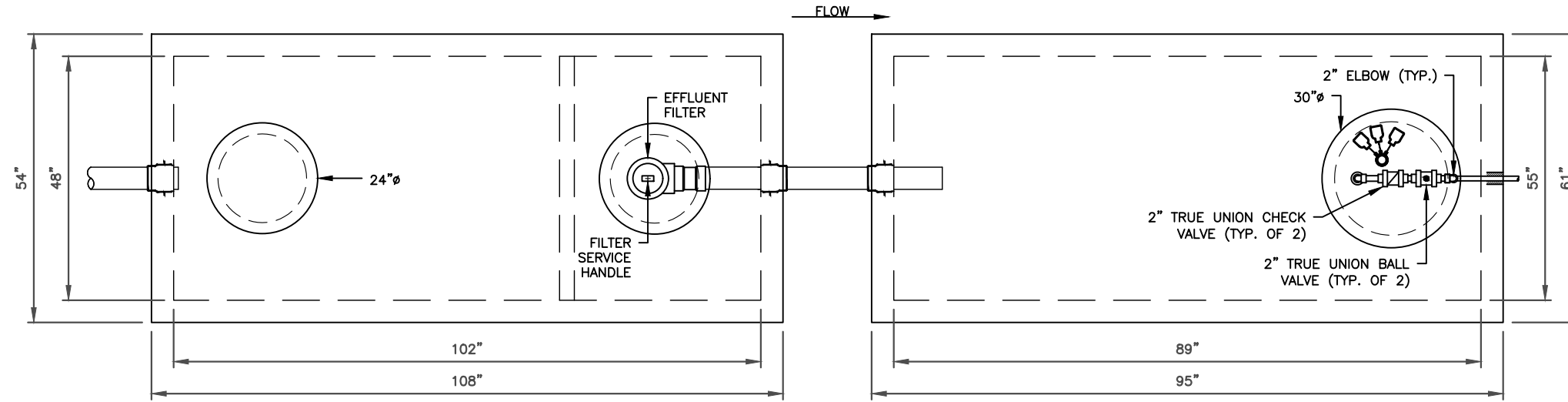








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**1 SEPTIC TANK AND PUMP TANK**  
D-101 NTS



3/03/2023

501 CASCADE POINTE LANE, SUITE 103  
CARY, NORTH CAROLINA 27513  
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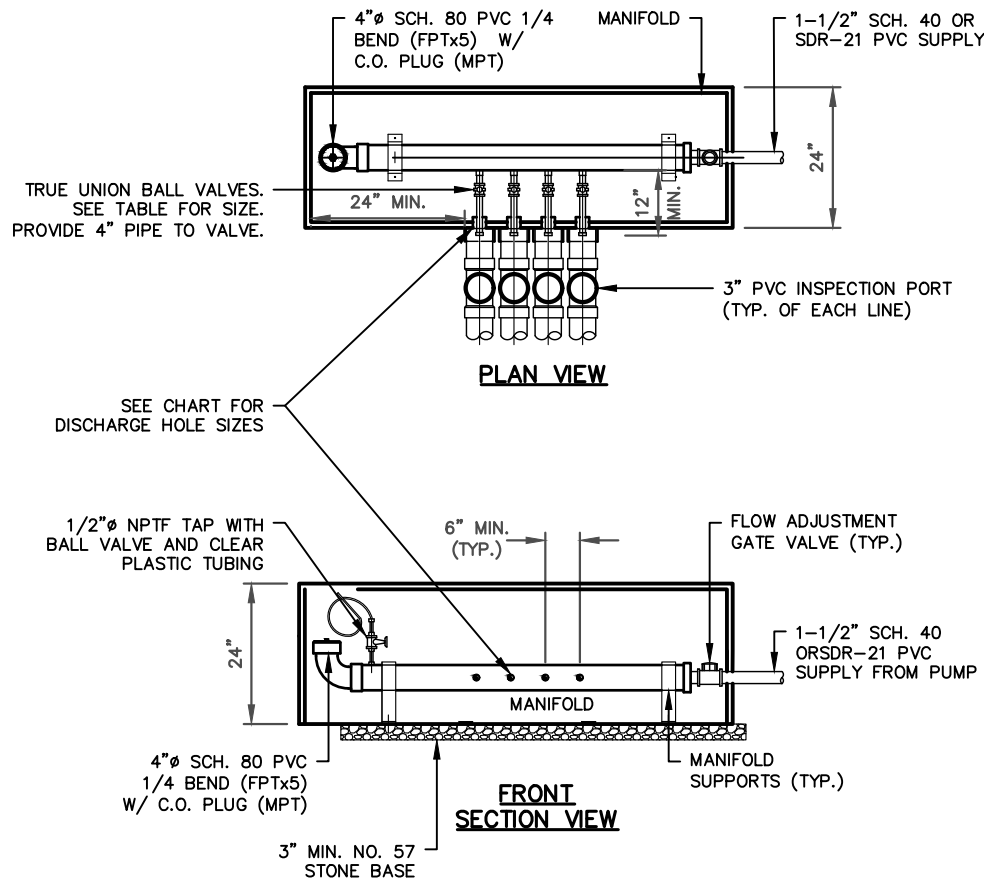
CARUSO HOMES  
1425 BAPTIST GROVE RD  
PRESSURE MANIFOLD SYSTEM  
EOP

DETAILS - 1 OF 5  
D-101

BY: EE  
JOB #: A73268.00  
DATE: 5/03/2023

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**PRESSURE MANIFOLD (INITIAL LINES)  
TAP CHART**

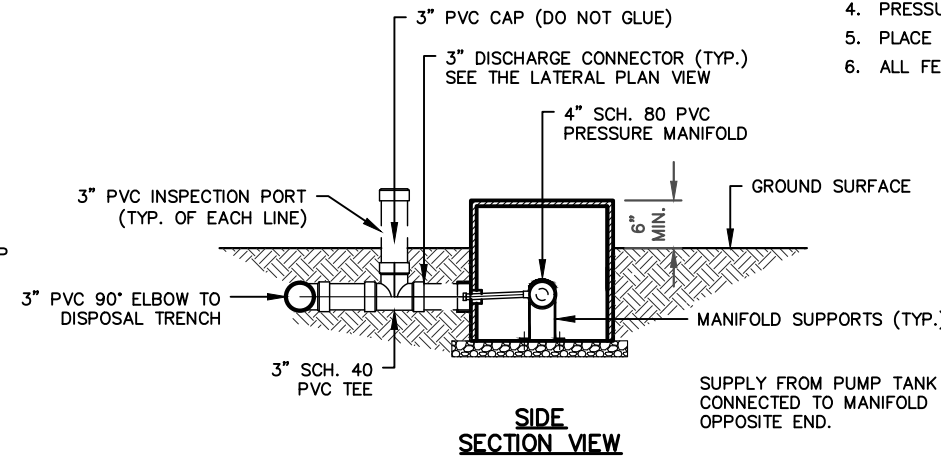
MANIFOLD TAP	LINES	FLAG COLOR	HOLE SIZES	LENGTH
1	7	RED	1/2" SCH. 40	110'
2	8	PURPLE	1/2" SCH. 40	110'
3	9	BLUE	1/2" SCH. 80	110'
4	10	ORANGE	1/2" SCH. 80	90'

**PRESSURE MANIFOLD (REPAIR LINES)  
TAP CHART**

MANIFOLD TAP	LINES	FLAG COLOR	HOLE SIZES	LENGTH
1	1	BLUE	1/2" SCH. 80	60'
2	2	ORANGE	1/2" SCH. 40	80'
3	3	YELLOW	1/2" SCH. 40	75'
4	4	PINK	1/2" SCH. 40	75'
5	5	PURPLE	1/2" SCH. 80	70'
6	6	ORANGE	1/2" SCH. 80	60'

**NOTES:**

1. LOCATE CENTERLINE OF BALL VALVE 4" FROM MANIFOLD.
2. MANIFOLD DISCHARGE PIPES SHALL EXTEND 2" FROM EDGE OF BOX INTO 3" PVC GRAVITY PIPE.
3. FIELD PRESSURE SHALL BE SET TO TWO FEET OF HEAD.
4. PRESSURE MANIFOLD SHALL BE CONCRETE OR BY EZ SET, PRESSBOX, OR AN APPROVED EQUAL.
5. PLACE MANIFOLD IN CENTER OF BOX.
6. ALL FEEDER LINES TO BE INSTALLED ON AT LEAST 1% POSITIVE GRADE.



**1 PRESSURE MANIFOLD**  
D-102 NTS



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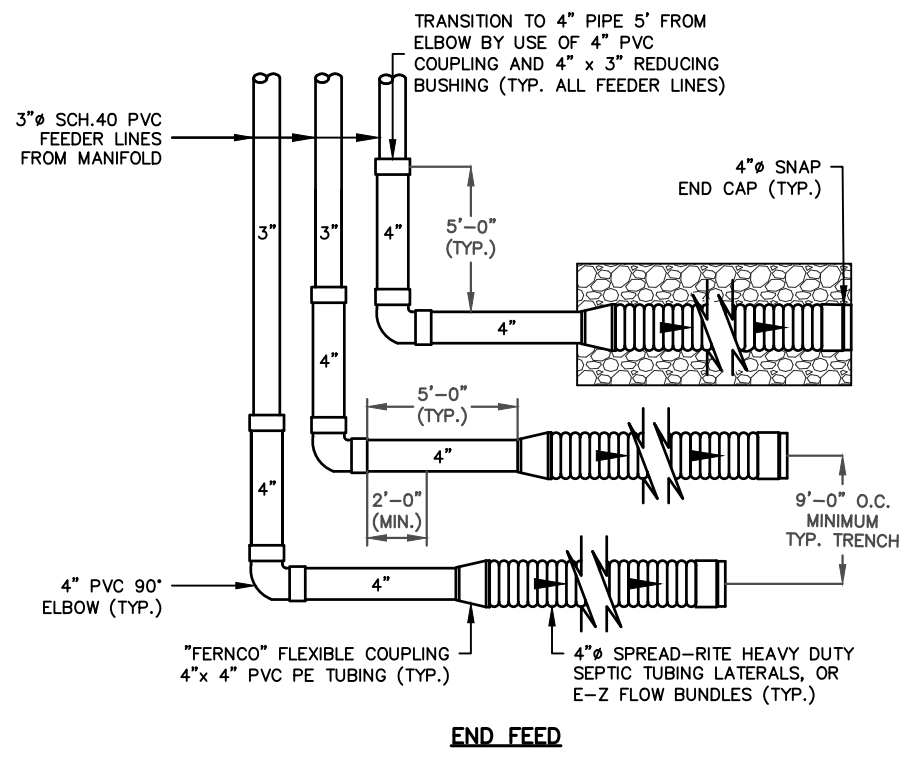
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1425 BAPTIST GROVE RD  
PRESSURE MANIFOLD SYSTEM  
EOP  
HARNETT COUNTY, NC

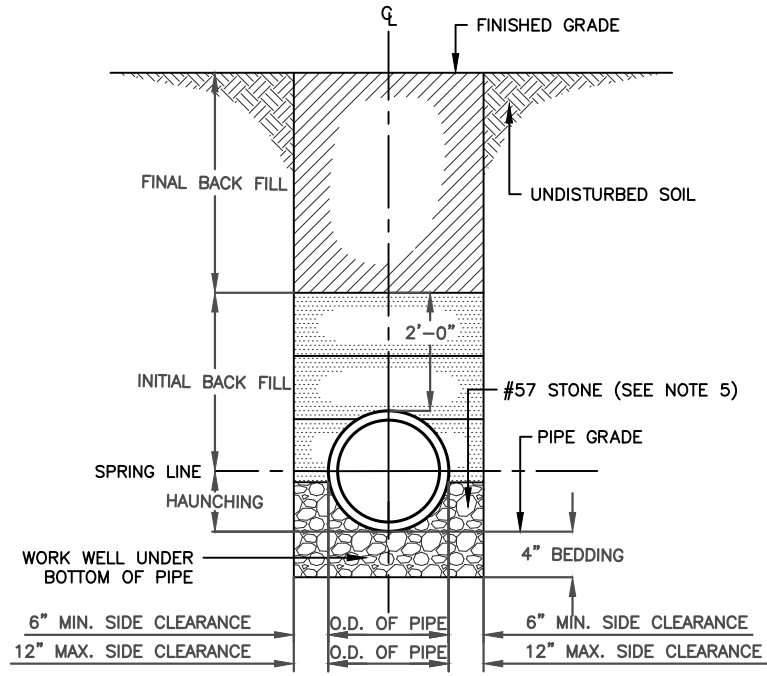
DETAILS - 2 OF 5  
D-102



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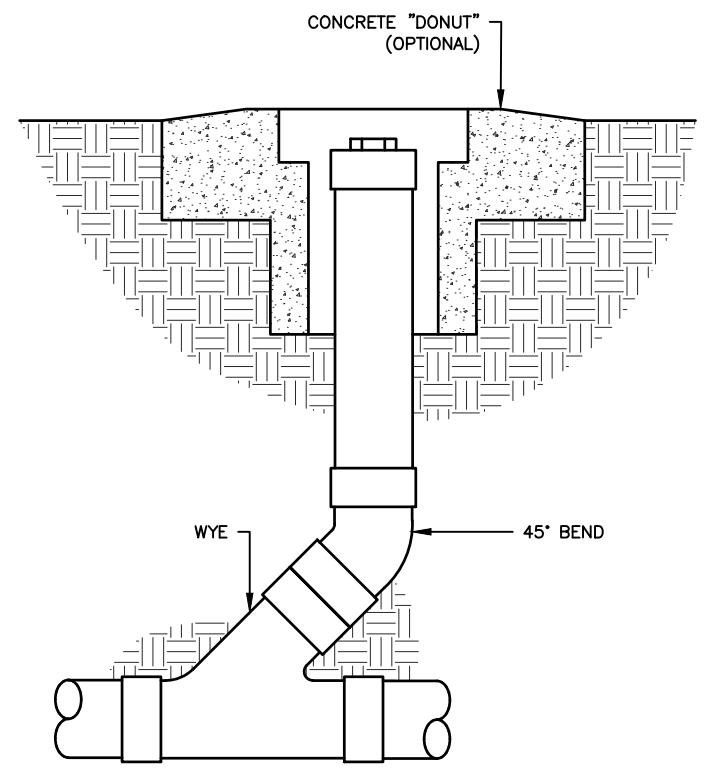


**1 LATERAL PLAN VIEW**  
D-103 NTS



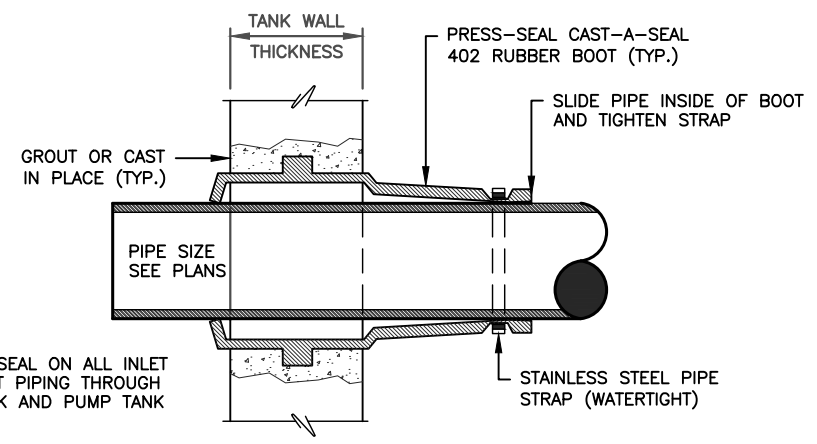
- NOTES:**
- FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND THE BRACING.
  - NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
  - ALL BACK FILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
  - BACK FILL SHALL BE TAMPED IN 6" LAYERS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
  - STONE BEDDING TO BE USED IF ROCK IS ENCOUNTERED.

**2 GRAVITY SEWER INSTALLATION DETAIL**  
D-103 NTS



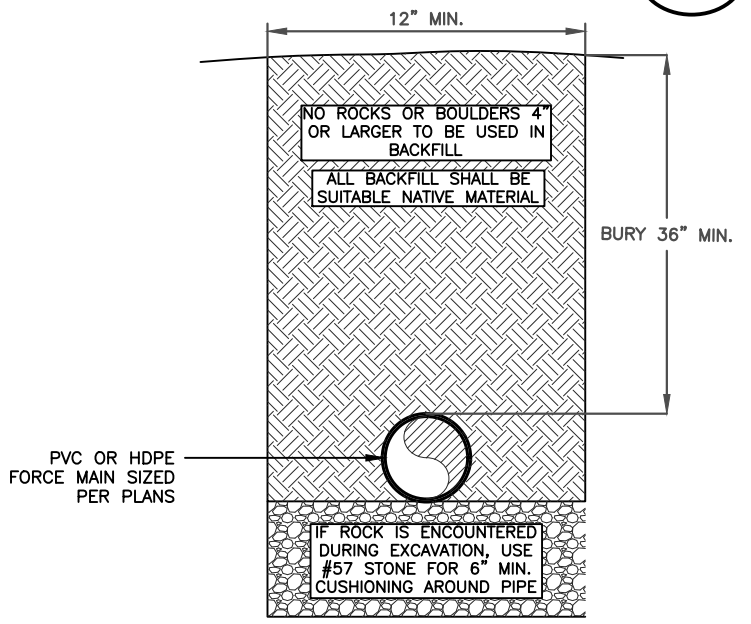
- NOTES:**
- PIPING TO BE SCH. 40 PVC.
  - SEE SITE PLAN FOR PIPE SIZE.

**3 GRAVITY CLEANOUT**  
D-103 NTS

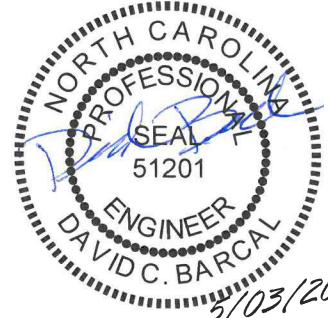


- NOTE:**
- USE BOOT SEAL ON ALL INLET AND OUTLET PIPING THROUGH SEPTIC TANK AND PUMP TANK WALLS.

**4 PIPE THRU TANK PENETRATIONS**  
D-103 NTS



**5 FORCE MAIN PIPE LAYING TRENCH**  
D-103 NTS



**MacCONNELL & Associates, P. C.**

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BY: EE  
JOB #: A73268.00  
DATE: 5/03/2023

CARUSO HOMES  
1425 BAPTIST GROVE RD  
PRESSURE MANIFOLD SYSTEM  
EOP  
HARNETT COUNTY, NC

DETAILS - 3 OF 5  
D-103



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MACCONNELL AND ASSOCIATES, P.C.  
CARUSO HOMES  
PRESSURE MANIFOLD DESIGN - INITIAL

MACCONNELL AND ASSOCIATES, P.C.  
CARUSO HOMES  
PRESSURE MANIFOLD DESIGN - REPAIR

Name: Caruso Homes P.L.N. #: 0643-77-5737 D#: N/A  
 Address: 1425 Baptist Grove Rd Subdiv: Lot#: 2  
Harnett County, North Carolina  
 # of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.3 gal/day/sq.ft  
 Septic Tank: 1000 gals Pump Tank: 1000 gals Sq. Foot: 1260 Stone Depth: N/A

Name: Caruso Homes P.L.N. #: 0643-77-5737 D#: N/A  
 Address: 1425 Baptist Grove Rd Subdiv: Lot#: 2  
Harnett County, North Carolina  
 # of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.3 gal/day/sq.ft  
 Septic Tank: 1000 gals Pump Tank: 1000 gals Sq. Foot: 1260 Stone Depth: N/A

Number of Taps:	<u>4</u>	Length of Trenches:	<u>420</u>	ft(See Tap Chart for Details)
Depth of Trenches:	<u>20</u>	in	Manifold Length:	<u>42</u>
Manifold Diameter:	<u>4 inches</u>	Tap Configuration:	<u>6 in spacing</u>	<u>1</u> side(s) of manifold
Supply Line length:	<u>130</u>	ft	Diameter(Supply Line):	<u>1-1/2 in. SCH40 PVC Pipe</u> ID (Inch) <u>1.61</u>

Number of Taps:	<u>6</u>	Length of Trenches:	<u>420</u>	ft(See Tap Chart for Details)
Depth of Trenches:	<u>24</u>	in	Manifold Length:	<u>54</u>
Manifold Diameter:	<u>4 inches</u>	Tap Configuration:	<u>6 in spacing</u>	<u>1</u> side(s) of manifold
Supply Line length:	<u>266</u>	ft	Diameter(Supply Line):	<u>1-1/2 in. SCH40 PVC Pipe</u> ID (Inch) <u>1.61</u>

Friction Loss + Fitting Loss:	<u>8.69</u>	ft(supply line length + 70' for fittings in pump tank)			
Design Head:	<u>2</u>	ft	Elevation Head:	<u>14.40</u>	ft
Total Head:	<u>25.1</u>	ft	Pump to Deliver:	<u>25.2</u>	gals/min at <u>25.1</u> ft head

Friction Loss + Fitting Loss:	<u>30.90</u>	ft(supply line length + 70' for fittings in pump tank)			
Design Head:	<u>2</u>	ft	Elevation Head:	<u>22.2</u>	ft
Total Head:	<u>55.1</u>	ft	Pump to Deliver:	<u>37.8</u>	gals/min at <u>55.1</u> ft head

Dosing Volume: 212 gals,  
 Pump Selection: Drawdown: 212 gals divided by 20.3 gals/in = 10.5 inches head

Dosing Volume: 203 gals,  
 Pump Selection: Drawdown: 203 gals divided by 20.3 gals/in = 10.0 inches head

Pump Selection: As shown on the construction drawings.

TAP CHART

Pump Tank Elevation	279.0	Pump Elevation	273.3	Manifold Elevation	287.7	High Point in Forcemain:	287.7		
Line	Color	Rod Read	Relative Elevation	Length	Hole Size	flow/tap	gal/day	Trench Area	LINE LTAR
7	Red	287.3	110	1/2in SCH 40	7.11	135.5	330	0.411	
8	Purple	286.5	110	1/2in SCH 40	7.11	135.5	330	0.411	
9	Blue	285.7	110	1/2in SCH 80	5.48	104.5	330	0.317	
10	Orange	284.7	90	1/2in SCH 80	5.48	104.5	270	0.387	
			total feet =	<u>420</u>	gal/min =	<u>25.2</u>	LTAR =	<u>0.300</u>	
% of Dose Vol.	78%	Des. Flow	480	(tar + 5%)	0.315				
Dose Volume	212	Pump Run=	19.06	(tar W/ 25% reduction)	0.400				
Dose Pump Time	8.4	Tank Gal/IN	20.3	(tar + 5%)	0.420				
Drawdown in Inches	10.5	Elev. Head	14.40						
Supply Line Length	130	Velocity fps	3.97						

Pump Tank Elevation	279.0	Pump Elevation	273.3	Manifold Elevation	295.5	High Point in Forcemain:	295.5		
Line	Color	Rod Read	Relative Elevation	Length	Hole Size	flow/tap	gal/day	Trench Area	LINE LTAR
1	Blue	295.3	60	1/2in SCH 80	5.48	69.6	180	0.387	
2	Orange	294.8	80	1/2in SCH 40	7.11	90.4	240	0.376	
3	Yellow	294.2	75	1/2in SCH 40	7.11	90.4	225	0.402	
4	Pink	293.7	75	1/2in SCH 40	7.11	90.4	225	0.402	
5	Purple	292.3	70	1/2in SCH 80	5.48	69.6	210	0.332	
6	Orange	291.7	60	1/2in SCH 80	5.48	69.6	180	0.387	
			total feet =	<u>420</u>	gal/min =	<u>37.8</u>	LTAR =	<u>0.300</u>	
% of Dose Vol.	74%	Des. Flow	480	(tar + 5%)	0.315				
Dose Volume	203	Pump Run=	12.71	(tar W/ 25% reduction)	0.400				
Dose Pump Time	5.37	Tank Gal/IN	20.3	(tar + 5%)	0.420				
Drawdown in Inches	10.0	Elev. Head	22.20						
Supply Line Length	266	Velocity fps	5.95						

Comments:

Comments:

Hydraulic Profile

Hydraulic Profile

Supply Line Velocity Check	ID (INCH)	gal/ft	Velocity Check (>2ft/s)
1-1/4 in. SCH40 PVC Pipe	1.38	0.077654555	5.40
1-1/2 in. SCH40 PVC Pipe	1.61	0.105696478	3.96
2 in. SCH40 PVC Pipe	2.067	0.174216673	2.41

Supply Line Velocity Check	ID (INCH)	gal/ft	Velocity Check (>2ft/s)
1-1/4 in. SCH40 PVC Pipe	1.38	0.077654555	8.10
1-1/2 in. SCH40 PVC Pipe	1.61	0.105696478	5.95
2 in. SCH40 PVC Pipe	2.067	0.174216673	3.61

1  
D-104

PRESSURE MANIFOLD CALCULATIONS (INITIAL)

2  
D-104

PRESSURE MANIFOLD CALCULATIONS (REPAIR)

DETAILS - 4 OF 5  
D-104

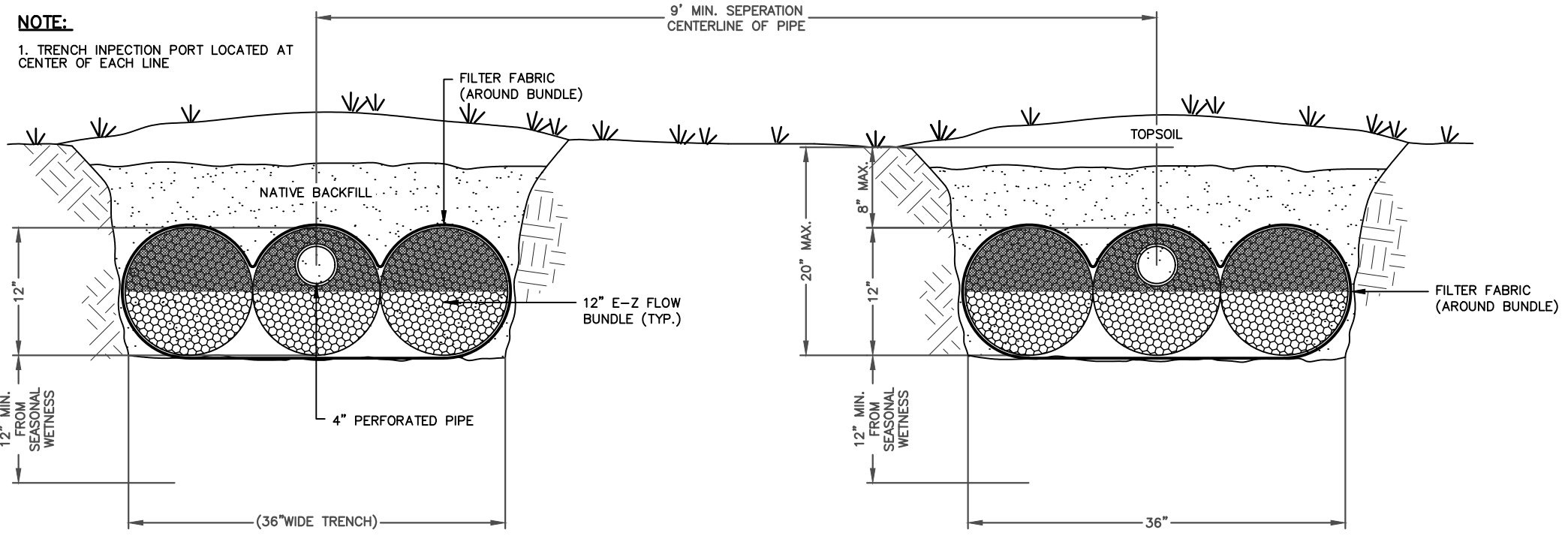
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1425 BAPTIST GROVE RD  
PRESSURE MANIFOLD SYSTEM  
EOP  
HARNETT COUNTY, NC

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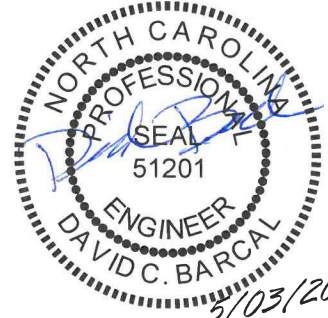
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**1**  
D-105 **EZ FLOW TYPICAL TRENCH DETAIL**  
NTS



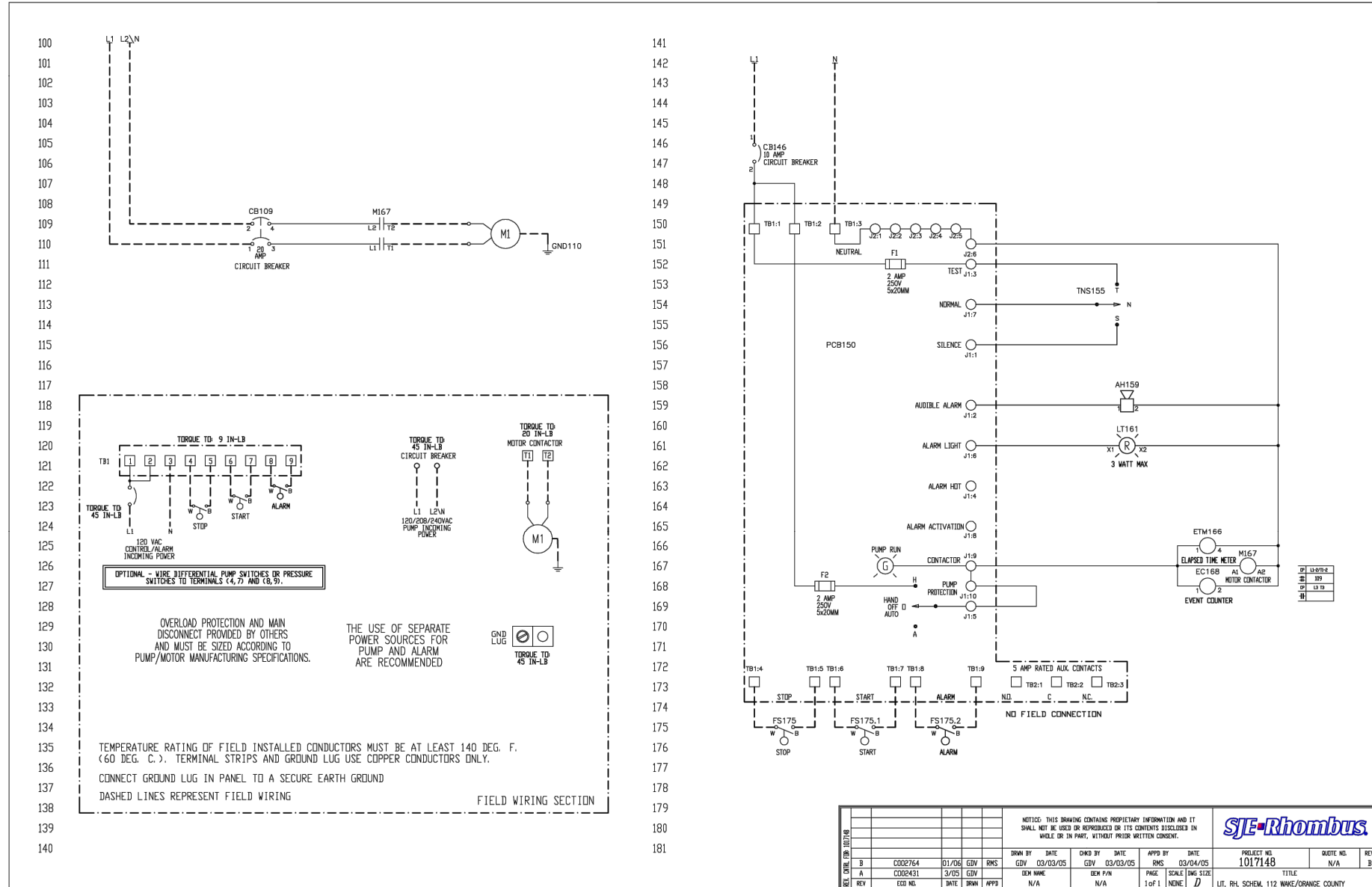
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CARUSO HOMES  
1425 BAPTIST GROVE RD  
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DETAILS - 5 OF 5  
D-105



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SJE-Rhombus									
REV	NO.	DATE	BY	APPD	REV	NO.	DATE	BY	APPD
B		01/06	GDV	RMS					
A		3/25	GDV						
DRAWN BY: GDV 03/03/05					PROJECT NO: 1017140				
CHKD BY: GDV 03/03/05					QUOTE NO: N/A				
APPD BY: RMS 03/04/05					REV: B				
REV: EGO N/A					PAGE: 1 OF 1				
					TITLE: UT, RH, SCHEM, 112 WAKE/ORANGE COUNTY				

## ELECTRICAL SPECIFICATIONS

- CONTROL PANEL(S) WILL BE APPROXIMATELY 12"X10"X6" AND A NEMA 4X, UL RATED ENCLOSURE. PANEL(S) WILL BE SUPPLIED BY SJE RHOMBUS MODEL 112 CONTROL PANEL 1121W124H8AC10E15AI7J.
- PANEL(S) SHALL BE MOUNTED, BY THE ELECTRICIAN WITHIN 10' OF THE TANK UNITS AND 48" - 60" OFF THE FINISHED GRADE TO THE BOTTOM OF THE ENCLOSURE.
- THE ELECTRICIAN SHALL MAKE THE INTERNAL PANEL CONNECTIONS OF THE PUMP AND CONTROL CORDS. CONTROL PANELS WILL CONTAIN A WIRING SCHEMATIC IDENTIFYING ALL TERMINAL CONNECTIONS. THE SYSTEM INSTALLER WILL BUNDLE AND MARK EACH CORD WITH THE APPROPRIATE IDENTIFICATION AND SECURE IN THE ACCESS RISER AT THE PUMP POINT.
- THE SIMPLEX DEMAND DOSE CONTROL PANEL REQUIRES DEDICATED CIRCUITS OF 15 AMPS, 115 VOLTS, SINGLE PHASE SUPPLIED FOR THE PUMP.
- THE CONTROL PANEL REQUIRES A DEDICATED CIRCUIT OF 15 AMPS, 115 VOLTS SUPPLIED FOR THE ALARM/CONTROL SIDE OF THE PANEL.
- A MINIMUM CONDUIT SIZE OF 1½" SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICIAN AS A CONNECTION BETWEEN THE CONTROL PANEL AND THEIR RESPECTIVE TERMINATION POINTS OUT IN THE TREATMENT AREA.
- ALL OPEN CONDUIT ENDS SHALL HAVE REMOVABLE CLAY TYPE DUCT SEAL EMBEDDED TO PREVENT GASES AND MOISTURE FROM ENTERING THE CONTROL PANEL. DO NOT USE PERMANENT SILICONE OR EXPANDABLE FOAM PRODUCTS.
- ALL PUMP AND FLOAT CONTROL CORDS WILL BE SUPPLIED WITH EITHER 30' OR 50' LEADS. THIS WILL HELP KEEP SPLICES TO A MINIMUM AND SHOULD BE AVOIDED IF AT ALL POSSIBLE. IF A SPLICE MUST BE USED, IT MUST BE MADE ABOVE GRADE IN A PLASTIC NEMA 4X JUNCTION BOX.
- ALARMS SHALL BE AUDIBLE AND VISUAL.
- AUDIBLE/VISIBLE ALARMS SHALL BE EXTERNAL TO ANY STRUCTURE.
- PROVIDE DISCONNECT PER N.E.C.
- ALL ELECTRICAL INSTALLATION SHALL BE PER N.E.C.
- PROVIDE MANUAL TRANSFER SWITCH AND PLUG FOR PORTABLE EMERGENCY GENERATOR. PROVIDE DISCONNECT PER N.E.C.

ELECTRICAL  
DETAILS

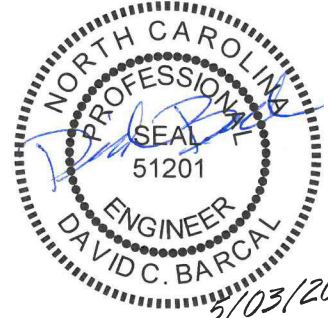
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5/03/2023

1 DEMAND DOSED SIMPLEX CONTROL PANEL  
E-101 NTS