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

Acknowledgment of Subsurface wastewater evaluation and septic design by Central Carolina Soil Consulting, PLLC. for Cotton Farms, Lot 54 (Parcel PIN: 0643-17-9737), for issuance of an IP and CA.

For Improvement Permit (IP) issuance:
"The LSS/LG evaluation(s) attached to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3)."

For Construction Authorization (CA) issuance:
"The plans or evaluations attached to this application are to be used to issue a Construction Authorization in accordance with G.S. 130A-335(a2), (a5) and (a6)."

The LSS evaluation attached to this application was used to produce and design a subsurface wastewater septic system for permitting to obtain an IP and CA in accordance G.S. 130A-335(a2), (a3), (a5) and (a6).

Owner: Halcyon Homes, LLC

Owner's representative: [signature]

Date: 10/26/23

NCDHHS

Permit #: _____

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

County: Harnett

PIN/Lot Identifier: 0643-17-9737

Issued To: Halcyon Homes, LLC

Property Location: 67 Datton Court, Fuquay-Varina, NC 27526 (Cotton Farms, Lot 54)

AOWE/PE Plans/Evaluations Provided: Yes ☑ No ☐ If yes, name and license number of AOWE/PE: Jason Hall, AOWE #10004E

Facility Type: Single Family, 4-Bedroom

☑ New ☐ Expansion ☐ Repair ☐ System Relocation ☐ Change of Use

Basement? ☐ Yes ☑ No Basement Fixtures? ☐ Yes ☐ No

Type of Wastewater System* IIIB, pressure manifold (LPC) (Initial) IIIB, pressure manifold (LPC) (Repair)

**Please include system classification for proposed wastewater system types in accordance with 15A NCAC 18A .1961 Table V(a)*

Design Daily Flow: 480 GPD Wastewater Strength: ☑ domestic ☐ high strength ☐ industrial process

Session Law 2014-120 Section 53, Engineering Design Utilizing Low-flow Fixtures and Low-flow Technologies? ☐ Yes ☑ No
(if yes, please provide engineering documentation)

Installation Requirements/Conditions

Septic Tank Size: 1200 gallons Total Trench/Bed Length: 584 feet Trench/Bed Spacing: 9 feet on center

Trench/Bed Width: 36 inches LTAR 0.275 gpd/ft²

Additional Soil Cover: 6 inches Slope Corrected Maximum Trench/Bed Depth‡: 10 inches ***‡ Measured on the downhill side of the trench***

Aggregate Depth: n/a inches above pipe n/a inches below pipe n/a inches total

Pump Tank Size (if applicable): 1200 gallons Requires more than 1 pump? ☐ Yes ☑ No

Pump Requirements: 37.19 ft. TDH vs. 40.58 GPM Grease Trap Size (if applicable): n/a gallons

Distribution Method: ☐ Serial ☐ D-Box or Parallel ☑ Pressure Manifold(s) ☐ LPP ☐ Other: _____

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

Legal Agreements *(If the answer is "Yes" to any type of legal agreements, please attach a copy of the agreement.)*

Multi-party Agreement Required [.1937(h)]: ☐ Yes ☑ No

Easement, Right-of-Way, or Encroachment Agreement Required [.1938(j)]: ☐ Yes ☑ No

Declaration of Restrictive Covenants: ☐ Yes ☑ No

Pre-Construction Conference Required: Yes ☐ No ☑

Conditions: Infiltrator Quick4+, Standard Low Profile Chambers to be used
6" of approved additional cover material needed for Initial System
8" of approved additional cover material needed for Repair System

The construction and installation requirements of Rules .1950, .1952, .1954, .1955, .1956, .1957, .1958, and .1959 are incorporated by reference into this permit and shall be met. Systems shall be installed in accordance with the attached system layout.

AOWE/PE Print Name: Jason Hall Expiration Date: 12/31/2023

AOWE/PE Signature: _____ Date: 10/31/2023

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

See attached site sketch

NC ONSITE WASTEWATER Certification Number 10004E EVALUATOR

NCDHHS

Permit #: _____

This Section for Local Health Department Use Only

Initial submittal received: _____ by _____
Date *Initials*

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

When an applicant for a Construction Authorization, or an Improvement Permit and Construction Authorization together, submits a Construction Authorization, or an Improvement Permit and Construction Authorization application together, the permit fee charged by the local health department, the common form developed by the Department, and any necessary signed and sealed plans or evaluations conducted by a person licensed pursuant to Chapter 89C of the General Statutes as a licensed engineer or a person certified pursuant to Article 5 of Chapter 90A of the General Statutes as an Authorized On-Site Wastewater Evaluator, the local health department shall, within five business days of receiving the application, conduct a completeness review of the submittal. A determination of completeness means that the Construction Authorization or Improvement Permit and Construction Authorization includes all of the required components. If the local health department determines that the Construction Authorization or Improvement Permit and Construction Authorization is incomplete, the local health department shall notify the applicant of the components needed to complete the Construction Authorization or Improvement Permit and Construction Authorization. The applicant may submit additional information to the local health department to cure the deficiencies in the Construction Authorization or Improvement Permit and Construction Authorization. The local health department shall make a final determination as to whether the Construction Authorization or Improvement Permit and Construction Authorization is complete within five business days after the local health department receives the additional information from the applicant. If the local health department fails to act within any period set out in this subsection, the applicant may treat the failure to act as a determination of completeness. The applicant may apply for the building permit for the project upon the decision of completeness of the Construction Authorization or Improvement Permit and Construction Authorization by the local health department or if the local health department fails to act within five business days. The Authorized On-Site Wastewater Evaluator or licensed engineer submitting the evaluation pursuant to this subsection may request that the local health department revoke or suspend the Construction Authorization or Improvement Permit and Construction Authorization for cause. Upon written request of the Authorized On-Site Wastewater Evaluator or licensed engineer, the local health department shall suspend or revoke the Construction Authorization or Improvement Permit and Construction Authorization pursuant to G.S. 130A-23. The Department shall develop a common form for use as the Construction Authorization.

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

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

The following items are missing: _____

_____

Copies of this were sent to the AOWE/PE and the Applicant on _____
Date

State Authorized Agent: _____ Date: _____

☐ Complete

State Authorized Agent: _____ Date of Issuance: _____

This Construction Authorization is issued pursuant to G.S. 130A-335(a2) and (a5) using the signed and sealed plans or evaluations attached here. This Construction Authorization is subject to revocation if the site plan, plat, or the intended use changes. The Construction Authorization shall not be affected by a change in ownership of the site. This Construction Authorization is subject to compliance with the provisions of the Laws and Rules for Sewage Treatment and Disposal and to the conditions of this permit.

The Department, the Department's authorized agents, and the local health departments shall be discharged and released from any liabilities, duties, and responsibilities imposed by statute or in common law from any claim arising out of or attributed to plans, evaluations, preconstruction conference findings, submittals, or actions from a person licensed pursuant to Chapter 89C of the General Statutes as a licensed engineer or a person certified pursuant to Article 5 of Chapter 90A of the General Statutes as an Authorized On-Site Wastewater Evaluator in GS 130A-335(a2), (a5), and (a7). The Department, the Department's authorized agents, and the local health departments shall be responsible and bear liability for their actions and evaluations and other obligations under State law or rule, including the issuance of the operations permit pursuant to GS 130A-337.

Construction Authorization Expiration Date: _____

See attached site sketch

NCDHHS

Permit #: _____

Re-submittal of Construction Authorization

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

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

_____

_____

_____

_____

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

_____ _____
Signature of Authorized On-Site Wastewater Evaluator *Date*

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

LHD Follow-up Completeness Review of Construction Authorization

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

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

The following items are missing:

_____

_____

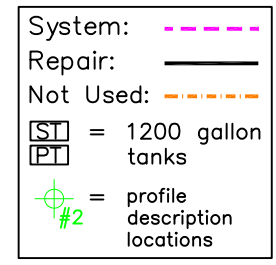
Copies of this were sent to the AOWE/PE and the Applicant on _____
Date

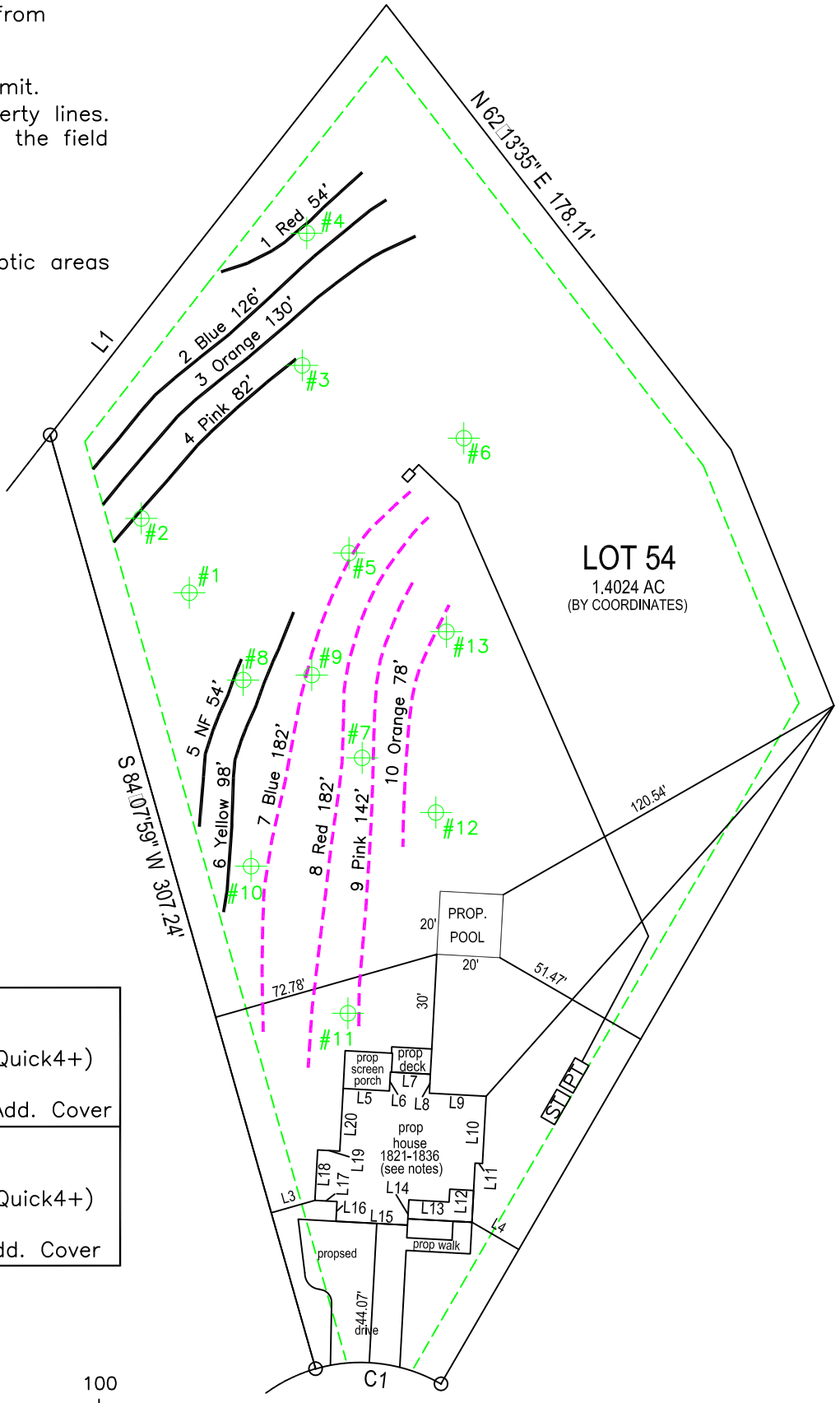
State Authorized Agent: _____ Date: _____

☐ Complete

State Authorized Agent: _____ Date: _____

*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.
*No adding soil within septic area
*No rutting–up septic area
*No cuts of >2' within 15' of septic areas





System: Pressure Manifold Lines: 7–10, (584') Low Profile Chambers System (Quick4+) 0.275 Soil LTAR 10" Trench Bottom with 6" of Add. Cover
Repair: Pressure Manifold Lines: 1–6, (544') Low Profile Chambers System (Quick4+) 0.3 Soil LTAR 8" Trench Bottom with 8" of Add. Cover

GRAPHIC SCALE
1" = 50'

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 54, Cotton Farms Subdivision
Harnett County, North Carolina

Job#: 4722
Drawn By: JR
Date: 10/25/2023
Revision:

Pressure Manifold
Septic System Design

for

Cotton Farms S/D, Lot 54
Harnett County, North Carolina

Designed by:

James Rice
Central Carolina Soil Consulting, PLLC
Wake Forest, North Carolina

10/26/2023

Cotton Farms S/D, Lot 54

Contact Information

Client:	Halcyon Homes, LLC
Attn:	Austin Robertson
Street Address:	
Phone:	919-337-5245
Email:	arobertson@halcyonhomesnc.com

Designer:	Central Carolina Soil Consulting, PLLC
Attn:	Jason Hall
Designed By:	James Rice
Street Address:	1900 South Main Street, Suite 110 Wake Forest, NC 27587
Office Phone:	919-569-6704
Cell Phone:	910-740-3226
Fax:	919-569-5703
Email:	jrice@centralcarolinasoil.com

Cotton Farms S/D, Lot 54

Layout/Design Specifications

Facility Type:	Single Family Home	
# of Bedrooms:	4	
Daily Flow:	480	gal/day
L.T.A.R.:	0.275	gal/day/sq.ft
Trench Depth:	10	in
Trench Width:	36	in
Chamber Depth:	8	in
Manifold Length:	42	in
Manifold Diameter:	4	in sch 80pvc
Supply Line Length:	220	ft
Supply Line Diameter:	2	in sch 40pvc
Supply Line Volume:	38.28	gallons
Friction Loss + Fitting Loss:	10.59	ft(supply line length + 70' for fittings in pump tank)
Design Head:	2	ft
Elevation Head:	24.60	ft
Total Head:	37.19	ft
Dose Volume:	250.54	gals
% of Pipe Vol.	0.66	
Drawdown:	12.75	in @ 19.65 gal/in
Pump Run Time:	6.17	Mins
Control Panel:	SJE Rhombus Model112 control panel (or approved equivalent)	
Pump:	Zoeller M165 Flow-Mate (or approved equivalent)	
Septic Tank Effluent Filter:	Polylok PL-68 residential effluent filter (or approved equivalent)	
Septic Tank:	Brantley 1,250 Gallon ST 323	
Pump Tank:	Brantley 1,200 Gallon PT 463	

Cotton Farms, Lot 54

Initial System TAP CHART (Low Profile Chambers, Infiltrator Quick4+)

Bench Mark:		is = 100.00	Location of BM:					**Elevation Head:**	24.60		
Pump tank elev.		29	71.00	**Pump elev.**	65.60			**Manifold elevation:**	90.20		
line	**color**	**rod read**	**Elevation**	**length**	**hole size**	**flow/tap**	**gal/day**	**trench area**	**LINE LTAR**	**# of Standard Low Profile Chambers**	**# of All-in-One 8 Endcaps**
7	Blue	10.80	89.20	182	3/4in SCH 40	12.5	147.86	546	0.2708	45	2
8	Red	12.70	87.30	182	3/4in SCH 40	12.5	147.86	546	0.2708	45	2
9	Pink	14.30	85.70	142	3/4in SCH 80	10.1	119.47	426	0.2804	35	2
10	Orange	15.90	84.10	78	1/2in SCH 80	5.48	64.82	234	0.2770	19	2

Total Number of Standard Low Profile Chambers: 144

total feet = 584 **gal/min = 40.58** **Total Number of All-in-One 8 Endcaps: 8**

% of Dose Volume	66	**Des. Flow**	**480**	**LTAR =**	**0.2750**
Dose Volume	250.54	**Pump Run=**	11.83	**LTAR + 5%**	**0.2888**
Dose Pump Time	6.17	**Tank Gal/IN**	19.65		
Drawdown in Inches	12.75				

Notes: •Initial system should be Infiltrator Quick4+, Standard Low Profile Chambers
•All-in-One 8 End Caps should be used for the Initial System upon installation

Cotton Farms, Lot 54

Repair System TAP CHART (Low Profile Chambers, Infiltrator Quick4+)

Bench Mark:		is = 100.00	Location of BM:					**Elevation Head:**	32.80		
Pump tank elev.		29	71.00	**Pump elev.**	65.60			**Manifold elevation:**	98.40		
line	**color**	**rod read**	**Elevation**	**length**	**hole size**	**flow/tap**	**gal/day**	**trench area**	**LINE LTAR**	**# of Standard Low Profile Chambers**	**# of All-in-One 8 Endcaps**
1	Red	2.60	97.40	54	1/2in SCH 80	5.48	49.47	162	0.3054	13	2
2	Blue	3.00	97.00	126	3/4in SCH 40	12.5	112.85	378	0.2985	31	2
3	Orange	3.40	96.60	130	3/4in SCH 40	12.5	112.85	390	0.2893	32	2
4	Pink	3.90	96.10	82	1/2in SCH 40	7.11	64.19	246	0.2609	20	2
5	NF	7.20	92.80	54	1/2in SCH 80	5.48	49.47	162	0.3054	13	2
6	Yellow	9.10	90.90	98	3/4in SCH 80	10.1	91.18	294	0.3101	24	2

Total Number of Standard Low Profile Chambers: 133

total feet = 544 **gal/min = 53.17** **Total Number of All-in-One 8 End Caps: 12**

% of Dose Vol.	75	**Des. Flow**	**480**	**LTAR =**	**0.3000**
Dose Volume	265.20	**Pump Run=**	9.03	**LTAR + 5%**	**0.3150**
Dose Pump Time	4.99	**Tank Gal/IN**	19.65		
Drawdown in Inches	13.50				

Notes: •Repair system should be Infiltrator Quick4+, Standard Low Profile Chambers
•All-in-One 8 End Caps should be used for the Repair System upon installation

MODEL 112 Control Panel

Single phase, simplex motor contactor control.

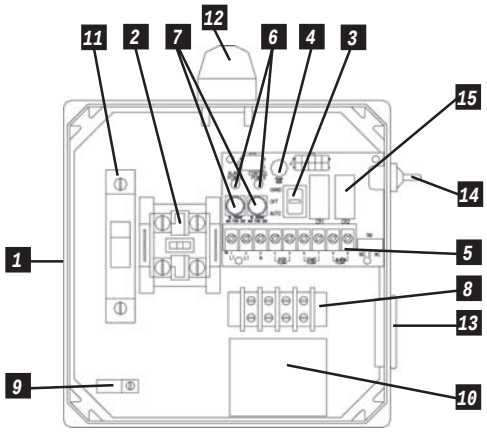
The Model 112 control panel provides a reliable means of controlling one 120, 208, or 240 VAC single phase pump in pump chambers, sump pump basins, irrigation systems and lift stations. Two control switches activate a magnetic motor contactor to turn the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system.

PANEL COMPONENTS

1. **Enclosure** measures 8 x 8 x 4 inches (20.32 X 20.32 X 10.16 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable flanges for outdoor or indoor use).

   * Options selected may increase enclosure size and change component layout.

2. **Magnetic Motor Contactor** controls pump by switching electrical lines.
3. **HOA Switch** for manual pump control (mounted on circuit board).
4. **Green Pump Run Indicator Light** (mounted on circuit board).
5. **Float Switch Terminal Block** (mounted on circuit board).
6. **Alarm and Control Fuses** (mounted on circuit board).
7. **Alarm and Control Power Indicators** (mounted on circuit board).
8. **Pump Input Power and Pump Connection Terminal Block**
9. **Ground Lug**
10. **Terminal Block Installation Label**
11. **Circuit Breaker** (optional) provides pump disconnect and branch circuit protection.



Model Shown 1121W914X

STANDARD ALARM PACKAGE

12. **Red Alarm Beacon** provides 360° visual check of alarm condition.
    Note: NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
13. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating).
    Note: NEMA 1 style utilizes an internally mounted buzzer in lieu of horn.
14. **Exterior Alarm Test/Normal/Silence Switch** allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition has been cleared.
15. **Horn Silence Relay** (mounted on circuit board).

NOTE: other options available.

FEATURES

- Entire control system (panel and switches) is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes three 20' Sensor Float® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty

c UL us LISTED

SEE BACKSIDE FOR COMPLETE LISTING OF AVAILABLE OPTIONS.

SJE Rhombus® CONTROLS

PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com

112	1	W	1	2	4	H	3A, 8A, 8C, 15A

MODEL 112

ALARM PACKAGE
- [ ] 0 = select options or no alarm package
- [X] 1 = alarm package (includes test/normal/silence switch, fuse, red light, horn & float)

ENCLOSURE RATING
- [ ] I = Indoor, NEMA 1 (metal)
- [X] W = Weatherproof, NEMA 4X (engineered thermoplastic)

STARTING DEVICE
- [X] 1 = magnetic motor contactor 120/208/240V
- [ ] 9 = magnetic motor contactor 120V only

PUMP FULL LOAD AMPS
- [ ] 0 = 0-7 FLA
- [ ] 1 = 7-15 FLA
- [X] 2 = 15-20 FLA
- [ ] 3 = 20-30 FLA

PUMP DISCONNECTS
- [ ] 0 = no pump disconnect
- [ ] 1 = pull-out with safety deadfront in a 10"x8" enclosure
- [X] 4 = circuit breaker 120V (select STARTING DEVICE option 9 above)
  120/208/240V (select STARTING DEVICE option 1 above)

FLOAT SWITCH APPLICATION
- [X] H or L = pump down or pump up
- [ ] X = no floats
  WITH alarm package
  WITHOUT alarm package

OPTIONS *Listed below*

★ ENCLOSURE UPSIZE - If you selected 3 or more of the ★ options, or one ★★ option , **a one-time enclosure upsize fee would apply.**

If additional features are required, call the factory for a quote on either a SJE-Rhombus Pro-Line or Engineered Custom control panel.

	CODE	DESCRIPTION
[ ]	1A	Red beacon only / no audio *(must select 1E if floats included)*
[ ]	1C	Horn only / no visual *(must select 1E if floats included)*
[ ]	1E	Alarm float
[X]	3A	Alarm flasher
[ ]	★ 3B	Manual alarm reset
[ ]	★ 4A	Low level cutout *(select option 4D if floats included)*
[ ]	★ 4B	Red low-level indicator & alarm *(must select 4A also)*
[ ]	4D	Low-level float
[ ]	★ 5A	Thermal cutout/heat sensor auto reset (for pumps w/thermal switch leads)
[ ]	★★5E	Seal failure circuit & red indicator (2 wire)
[ ]	6A	Auxiliary alarm contact, form C type
[X]	★ 8A	Elapsed time meter
[X]	★ 8C	Event (cycle) counter
[ ]	★★9_A	Pump overload specify amperage after number 9 followed by letter "A". Example: 912A = 12 amp pump.
	★★[ ]	0-25 FLA
	★★[ ]	25-30 FLA
[ ]	10E	Lockable latch - NEMA 4X
[ ]	10E	Lockable latch - NEMA 1
[ ]	★10F	Lightning arrester
[ ]	★10K	Anti-condensation heater

	CODE	DESCRIPTION
[ ]	11C	NEMA 1 alarm panel *must select option 6A*
[ ]	11D	NEMA 4X alarm panel *must select option 6A*
[ ]	★★14B	Main disconnect (rotary style, mounted through door) non-fused
	★★[ ]	0-20 FLA (total of both pumps)
	★★[ ]	20-30 FLA (total of both pumps)
[X]	15A	Control / alarm circuit breaker *Does not include the circuit board as in standard.*
[ ]	16A	10' cord in lieu of 20' *(per float)*
[ ]	16B	15' cord in lieu of 20' *(per float)*
[ ]	16C	30' cord in lieu of 20' *(per float)*
[ ]	16D	40' cord in lieu of 20' *(per float)*
[ ]	17A	SJE SignalMaster® / mounting strap ● *(per float)*
[ ]	17B	SJE SignalMaster® / externally weighted ● *(per float)*
[ ]	17C	Sensor Float® / internally weighted ▲ *(per float)*
[ ]	17D	Sensor Float® / externally weighted ▲ *(per float)*
[ ]	17E	Sensor Float® Mini / pipe clamp ▲ *(per float)*
[ ]	17F	Sensor Float® Mini / externally weighted ▲ *(per float)*
[ ]	19T	TOA (Test/Off/Automatic) switch and pump run light through door mounted
[ ]	19U	HOA (Hand/Off/Automatic) switch and pump run light through door mounted
[ ]	19X	Door mounted pump run indicator
[ ]	21A	SJE PumpMaster® in lieu of on/off switches ●
[ ]	21B	SJE PumpMaster® Plus in lieu of on/off switches ●
[ ]	21C	Super Single® in lieu of on/off switches ▲
[ ]	21D	Double Float® in lieu of on/off switches ▲

● Mechanically-activated ▲ Mercury-activated

SAMPLE

MODEL 112 | 1 | W | 9 | 1 | 4 | H | 3A 8A

- **Alarm Package**
- **Enclosure Rating**
- **Starting Device**
- **Pump Full Load Amps**
- **Pump Disconnect**
- **Float Switch Application**
- **Options: Flasher, Elapsed Time Meter**

Trusted. Tested. Tough.®

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER® PUMP COMPANY

SECTION: 2.15.090
FM2785
0821
Supersedes
0720

TECHNICAL DATA SHEET

HIGH HEAD FLOW-MATE SERIES

Models 161/4161, 163/4163, 165/4165 Submersible Effluent Pumps

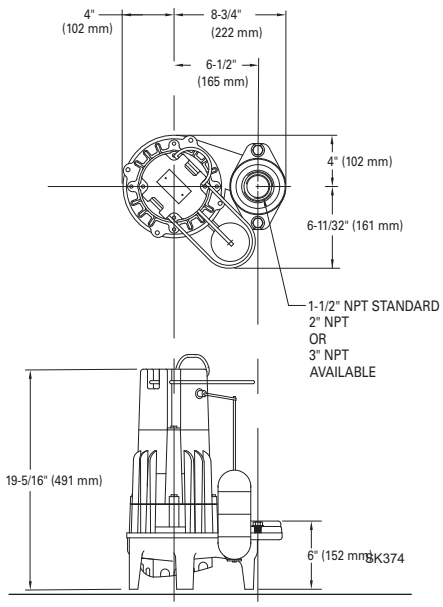
PRODUCT SPECIFICATIONS

MOTOR	Horse Power	1/2 (161/4161, 163/4163) or 1 (165/4165)
	Voltage	115 - 575
	Phase	1 or 3 Ph
	Hertz	60 Hz
	RPM	3450
	Type	Permanent split capacitor or 3 Ph
	Insulation	Class B
	Amps	2.4 - 15.5
PUMP	Operation	Automatic or nonautomatic
	Auto On/Off Points	15-3/4" (400 mm) / 5-1/4" (133 mm)
	Discharge Size	1-1/2" NPT (optional 2" or 3" flange)
	Solids Handling	3/4" (19 mm) spherical solids
	Cord Length	20' (6 m) standard
	Cord Type	1 Ph: UL listed 3-wire neoprene cord and plug or 3 Ph: 4-wire with no plug
	Max. Head	86.5' (26 m)
	Max. Flow Rate	100 GPM (379 LPM)
	Max. Operating Temp.	130 °F (54 °C)
	Cooling	Oil filled
	Motor Protection	Auto reset thermal overload (1 Ph)
MATERIALS	Upper Bearing	Ball bearing
	Lower Bearing	Ball bearing
	Mechanical Seals	Carbon and ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Bronze
	Hardware	Stainless steel
	Motor Shaft	SAE 1117 carbon steel or 416 stainless steel*
	Gasket	Neoprene square ring and gasket

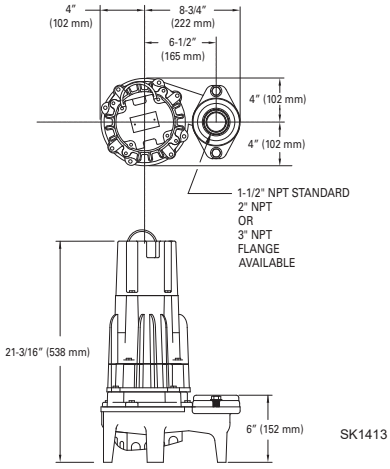
*Single seal models are built with a carbon steel motor shaft, and double seal models are built with a stainless steel motor shaft.

NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

SINGLE SEAL



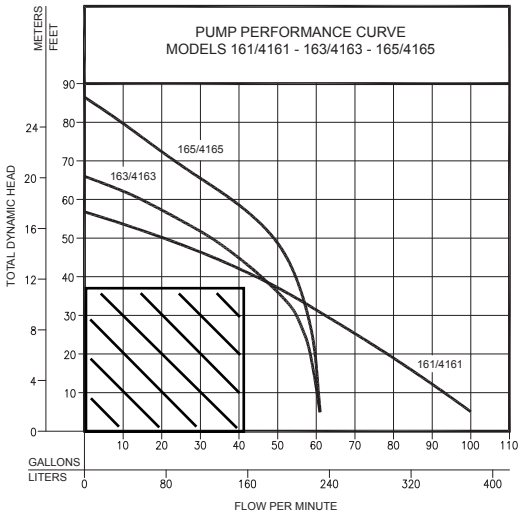
DOUBLE SEAL



502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | zoellerpumps.com

TOTAL DYNAMIC HEAD FLOW PER MINUTE

MODELS		161/4161		163/4163		165/4165	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters
5	1.5	100	379	61	231	61	231
10	3.0	93	352	60	227	60.5	229
15	4.6	86	326	60	227	60.3	228
20	6.1	79	299	59	223	60	227
25	7.6	71	267	57	216	59	223
30	9.1	62	235	55	208	58	220
40	12.2	45	170	46	174	55	208
50	15.2	20	76	33	125	50	189
60	18.3	--	--	15	57	39	148
70	21.3	--	--	--	--	22.5	85
80	24.4	--	--	--	--	10	38
Shut-off Head:		56 ft. (17.1 m)		66 ft. (20.1 m)		86.5 ft. (26.4 m)	



Model	MODEL COMPARISON											CERTIFICATIONS
	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs	Kg	Simplex	Duplex	
M161	Single	Auto	115	1	15.0	1/2	60	80	36	1	---	cCSAus (1)
N161	Single	Non	115	1	15.0	1/2	60	80	36	2 or 3 & 5	4 & 5	CSA (3)
N4161	Double	Non	115	1	15.5	1/2	60	87	39	3 & 5	4 & 5	cCSAus (1)
BN161	Single	Auto	115	1	15.0	1/2	60	84	38	---	---	CSA (2)
D161	Single	Auto	230	1	7.5	1/2	60	80	36	1	---	cCSAus
E161 / E4161	Single / Double	Non	230	1	7.5	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus
* H161	Single	Auto	200	1	8.8	1/2	60	80	36	1	---	cCSAus
* I161 / I4161	Single / Double	Non	200	1	8.8	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus
* J161 / J4161	Single / Double	Non	200	3	6.4	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* F161 / F4161	Single / Double	Non	230	3	5.2	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* G161 / G4161	Single / Double	Non	460	3	2.9	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* BA161/BA4161	Single / Double	Non	575	3	2.4	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
BE161	Single	Auto	230	1	7.5	1/2	60	84	38	---	---	cCSAus
M163	Single	Auto	115	1	15.0	1/2	60	80	36	1	---	cCSAus (1)
N163 / N4163	Single / Double	Non	115	1	15.0	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	CSA (2)
BN163	Single	Auto	115	1	15.0	1/2	60	84	38	---	---	CSA (2)
D163	Single	Auto	230	1	7.5	1/2	60	80	36	1	---	cCSAus
E163 / E4163	Single / Double	Non	230	1	7.5	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus
* H163	Single	Auto	200	1	8.5	1/2	60	80	36	1	---	cCSAus
* I163 / I4163	Single / Double	Non	200	1	8.5	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus
* J163 / J4163	Single / Double	Non	200	3	6.0	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* F163 / F4163	Single / Double	Non	230	3	4.8	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* G163 / G4163	Single / Double	Non	460	3	2.9	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* BA163/BA4163	Single / Double	Non	575	3	2.4	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
BE163	Single	Auto	230	1	7.5	1/2	60	84	38	---	---	cCSAus
D165	Single	Auto	230	1	10.2	1	60	80	36	1	---	cCSAus
E165 / E4165	Single / Double	Non	230	1	10.2	1	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus
* H165	Single	Auto	200	1	12.6	1	60	80	36	1	---	cCSAus
* I165 / I4165	Single / Double	Non	200	1	12.6	1	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5	cCSAus
* J165 / J4165	Single / Double	Non	200	3	7.5	1	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* F165 / F4165	Single / Double	Non	230	3	7.4	1	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* G165 / G4165	Single / Double	Non	460	3	3.7	1	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
* BA165/BA4165	Single / Double	Non	575	3	3.0	1	60	80 / 87	36 / 39	3 & 5	4 & 5	cCSAus
BE165	Single	Auto	230	1	10.2	1	60	84	38	---	---	cCSAus

* no molded plug (1) cCSAus approved unit available with 20 Amp plug. (2) CSA approved unit with 15 Amp plug.

Additional cords lengths are available in 25' (8 m), 35' (11 m), and 50' (15 m).

SELECTION GUIDE

1. Integral float operated mechanical switch, no external control required.
2. For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM1228 for correct model of simplex control panel.
4. See FM0712 for correct model of duplex control panel.
5. Variable level control switch 10-0743 used as a control activator, specify simplex (3) float or duplex (4) float system. Refer to FM0526.

⚠ 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 Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | zoellerpumps.com

POLYLOK™ Inc.
Innovations in Precast, Drainage & Wastewater Products
Zabel® A Division of Polylok Inc.

PL-68 Effluent Filter

PL-68 Filter and Tee

PL-68 is much more than just an effluent filter. The housing can also be used as an inlet baffle (tee) or an outlet baffle. The housing is designed to accept Polylok's snap in gas deflector to deflect gas bubbles away from the tee and to keep the solids in the tank.

Features:

- Offers 68 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Accepts 3/4" PVC handle.
- Locks in any 360° position when used with PL-68 Tee.
- PL-68 Housing can be used as an inlet or outlet tee.
- Gasket prevents bypass.

PL-68 Installation:

Ideal for residential waste flows up to 800 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-68 filter into tee.
5. Replace and secure the septic tank cover.

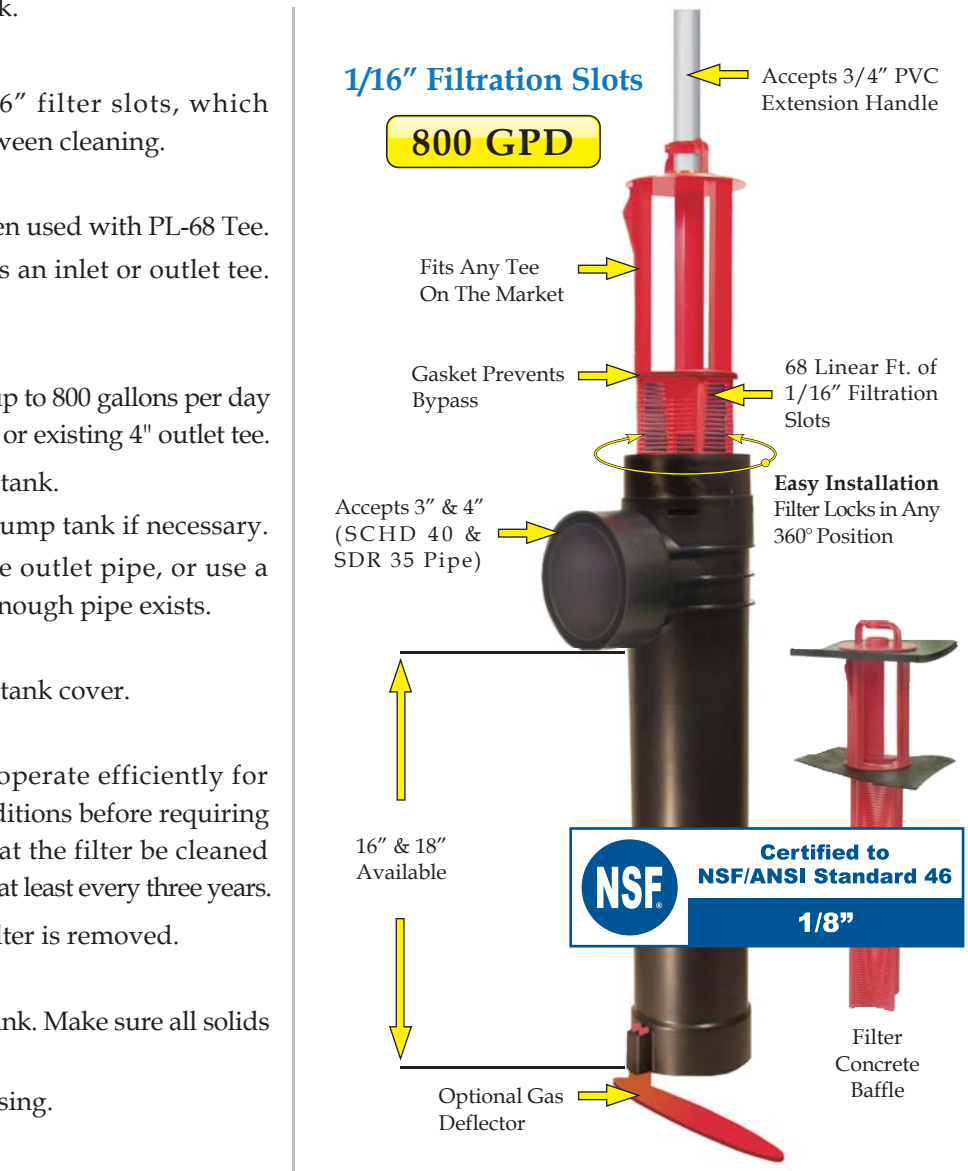
PL-68 Maintenance:

The PL-68 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-68 out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.

Related Products:

PL-68 Filter Concrete Baffle
Extend & Lok™



Extend & Lok™
Easily installs into existing tanks.

Spacer Bushing 4" SCHD 40 to SDR 35

Spacer Bushing 4" SCHD 40 to 110mm Pipe

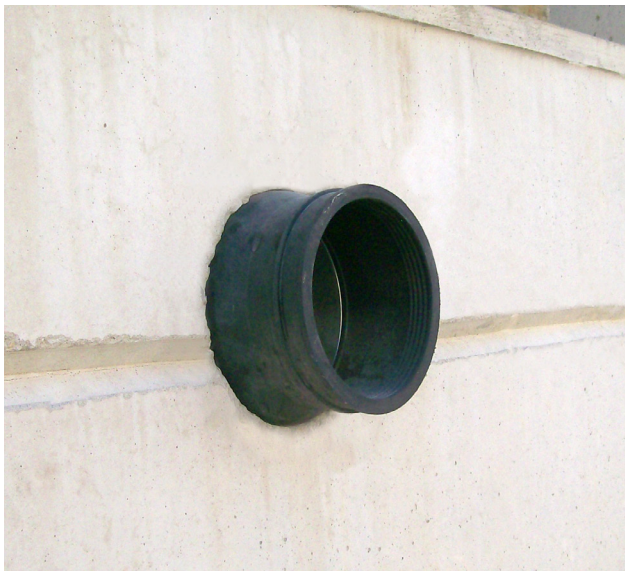
2" Extender

CAST-A-SEAL 402/402F
PIPE TO MANHOLE & TANK CONNECTOR

What It Is

The Cast-A-Seal 402/402F is a simple cast-in pipe-to-manhole connector that offers a watertight flexible connector that is cast into the structure when the concrete is poured.

The key lock is integrally cast-in during the production process providing a secure seal for storm water and sanitary collection systems.



How It Works

- The connector is folded into the casting position.
- It is placed on the reusable mandrel and then placed on the form.
- After curing, the mandrel is removed.
- The connector is then simply unfolded at the jobsite.
- Take-up clamps made from series 304 stainless steel with quick adjusting screws secure the connector to the pipe.

Why It's Better

- Durable and reusable mandrel forms.
- Integrally cast into the structure at time of casting.
- Contractor can backfill immediately after pipe insertion.
- The 4" connector is available in either open or closed end face.
- Contractor can save time and money by backfilling immediately.

Where To Use

- Manholes
- Wet wells
- Square pump and lift stations
- Stormwater structures
- On-site treatment structures
- Junction chambers
- Grease interceptors

CARE & STORAGE
PAGE 5

Phone: 800-348-7325
Fax: (260) 436-1908

PRESS-SEAL CORPORATION
Protecting Our Planet's Clean Water Supply
ISO 9001: Registered • Version 02.16.22.11.17

Email: sales @press-seal.com
Web: www.press-seal.com

CAST-A-SEAL 402/402F
SUBMITTAL SPECIFICATIONS

A flexible pipe-to-structure connector shall be employed in the connection of the sanitary sewer pipe to precast structures. The connector shall be Cast-A-Seal® 402/402F as manufactured by Press-Seal Corporation, Fort Wayne, Indiana, or approved equal. The connector shall be the sole element relied on to assure a flexible, watertight seal of the pipe to the precast structure. The connector shall consist of a rubber gasket and an external take-up clamp.

The rubber gasket element shall be constructed solely of synthetic or natural rubber, and shall meet or exceed the physical property requirements of ASTM C 923.

The external take-up clamp shall be constructed of Series 300 non-magnetic stainless steel and shall utilize no welds in its construction. The clamp shall be installed by torquing the adjusting screw using a torque-setting wrench available from the connector manufacturer.

Selection of the proper size connector for the structure and pipe requirement, and installation thereof, shall be in strict conformance with the recommendations of the connector manufacturer. Any dead end pipe stubs installed in connectors shall be restrained from movement per ASTM C 923.

The finished connection shall provide sealing to 13 psi (minimum) and shall accommodate deflection of the pipe to 7 degrees (minimum) without loss of seal.

Vacuum testing shall be conducted in strict conformance with ASTM C 1244 prior to backfill. Other testing shall be conducted in strict conformance with the requirements of the connector manufacturer.

Product Performance

Cast-A-Seal 402/402F meets and/or exceeds all requirements of ASTM C 923, including physical properties of materials and performance testing, including:

- 13 PSI minimum in straight alignment
- 10 PSI at minimum 7° angle
- 10 PSI minimum under shear load of 150 lbs/in. pipe diameter

Cast-A-Seal 402/402F meets and/or exceeds the requirements of the following Standards, Specifications, Codes, and Test Methods:

- IAPMO/ANSI Z1000 Standard for Prefabricated Septic Tanks
- IAPMO/ANSI Z1001 Standard for Prefabricated Gravity Grease Interceptors
- NPCA Best Practices Manual for Precast Concrete On-Site Wastewater Tanks
- NOWRA Model Code Framework
- ASTM C 1227 Standard Specification for Precast Concrete Septic Tanks
- ASTM C 1644 Standard Specification for Resilient Connectors Between Reinforced Concrete On-SIte Wastewater Tanks and Pipes (CAS 402)
- ASTM C 1613 Standard Specification for Precast Concrete Grease Interceptor Tanks
- ASTM C 923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
- ASTM C 1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test
- ASTM C 1478 - Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes, and Laterals

Phone: 800-348-7325
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PRESS-SEAL CORPORATION
Protecting Our Planet's Clean Water Supply
ISO 9001: Registered • Version 02.16.22.11.17

Email: sales @press-seal.com
Web: www.press-seal.com

CAST-A-SEAL 402/402F
SELECTION GUIDE

PIPE SIZE	CAST-A-SEAL 402	PIPE O.D. RANGE	WALL THICKNESS*	APPLICATION
1.25” - 2” 31 - 51 mm	452.0250	1.5” - 2.75” 38 - 70 mm	2.5” - 6” 64 - 150 mm	STANDARD
4” 100 mm	452.0450	4.2” - 4.7” 107 - 119 mm	2.5” - 6” 64 - 150 mm	STANDARD
4” 100 mm	452.0402F1	4.2” - 4.7” 107 - 119 mm	2.5” - 4.0” 64 - 102 mm	Closed Face
6” 150 mm	452.0650	6.2” - 6.7” 157 - 170 mm	2.5” - 6” 64 - 150 mm	STANDARD
3” 75 mm	CAS ADAPTER	3.2” - 3.6” 81 - 91 mm	---	Use with 4” CAST-A-SEAL

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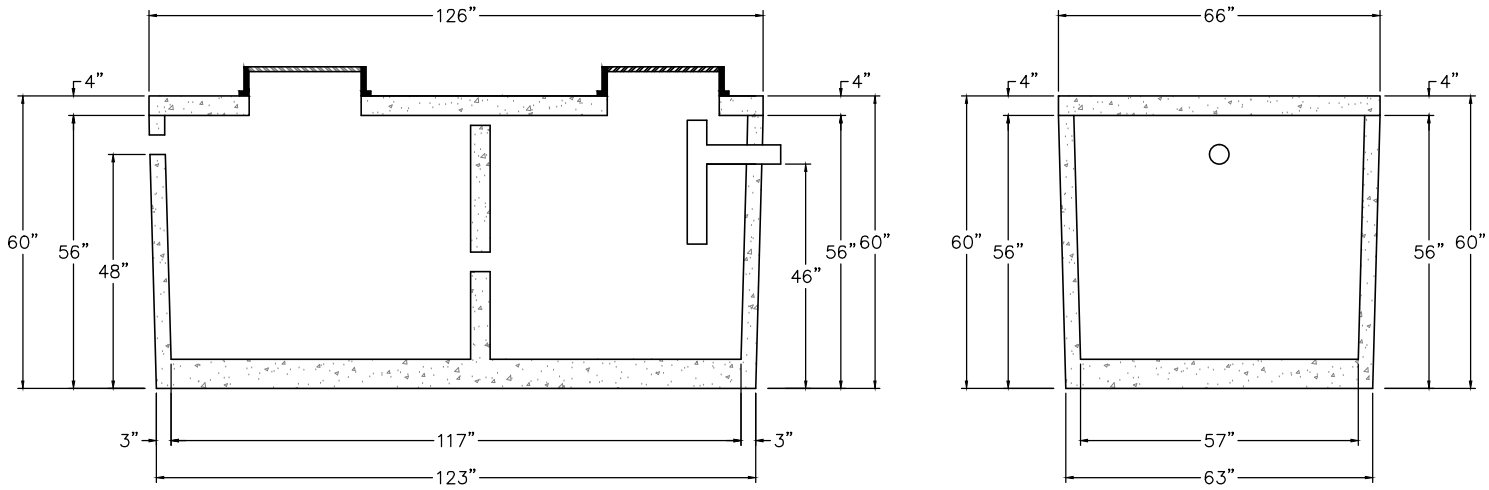


1,250 ST 323

NTS

NON TRAFFIC BEARING

DAVID BRANTLEY & SONS
37 Pine Ridge Rd.
Zebulon, NC 27597
Office 252-478-3721
Fax 919-573-0443
installer@gmail.com

PREPARED FOR : David Brantley & Sons
37 Pine Ridge Rd.
Zebulon, NC 27597

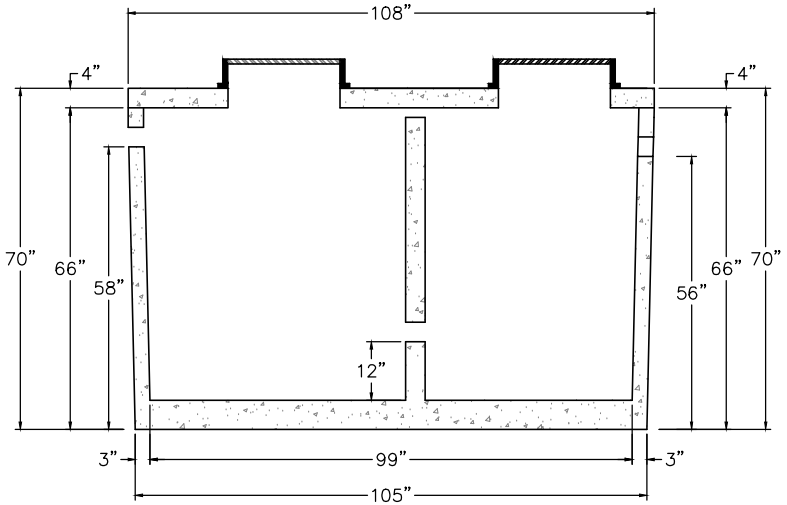
DATE : April 11, 2014

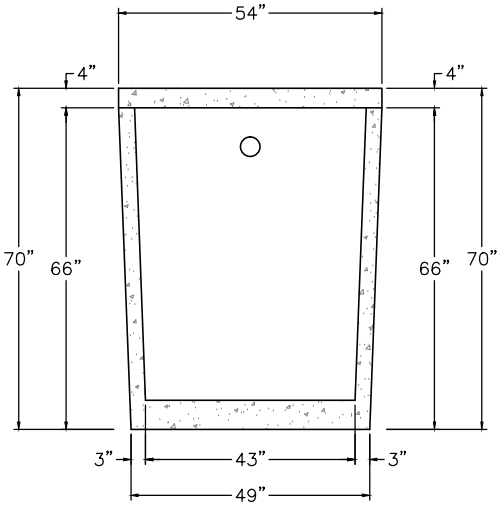
CONTACT:
CORY BRANTLEY

REVISION NO.	DATE
Original Submittal	April 11, 2014
Revision 1	
Revision 2	
Revision 3	
Master Set	------

BRANTLEY TANK MODEL
1,250 ST 323

SHEET NUMBER
1 of 1





1,200 PT 463

NTS

NON TRAFFIC BEARING

DAVID BRANTLEY & SONS
37 Pine Ridge Rd.
Zebulon, NC 27597
Office 252-478-3721
Fax 919-573-0443
installer@gmail.com

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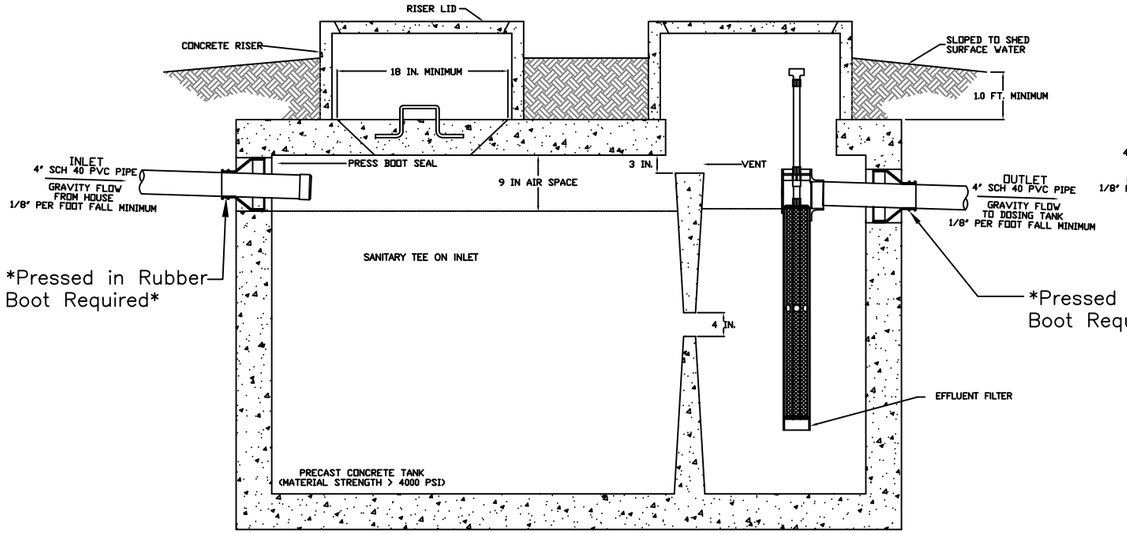
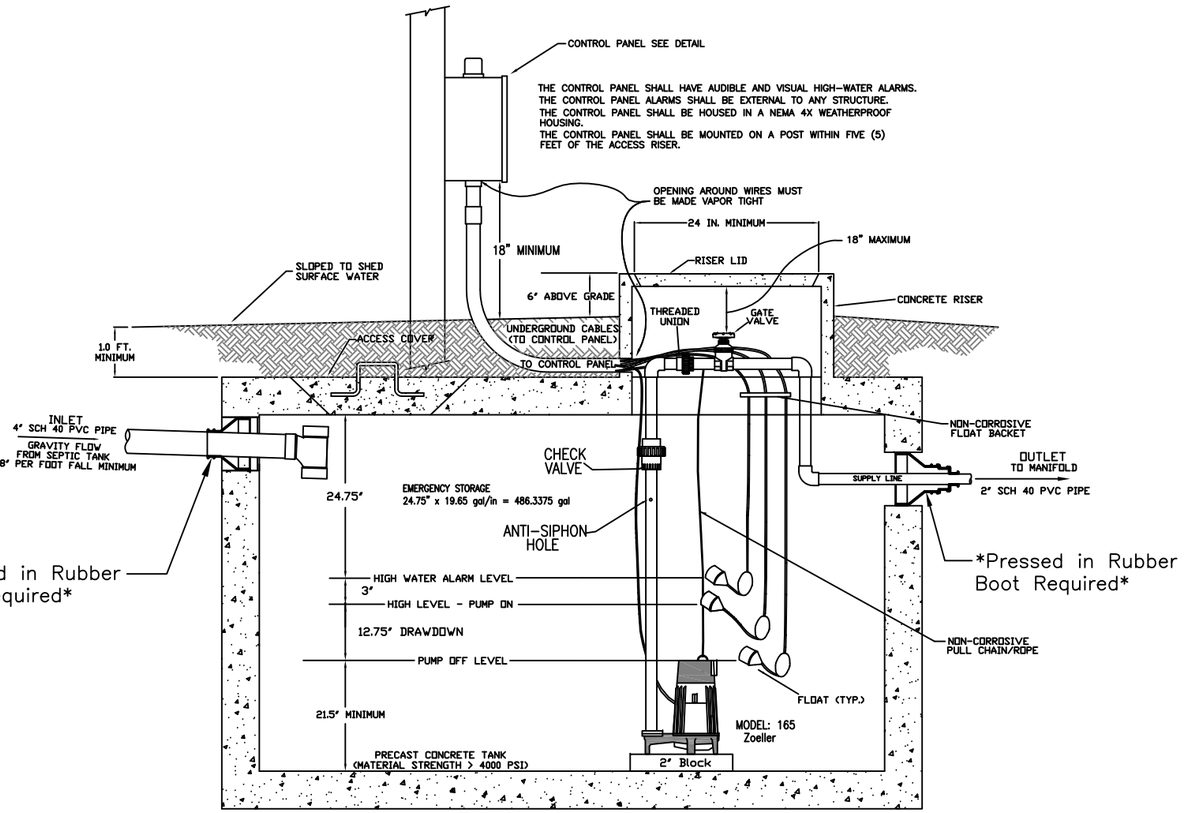
Master Set	------

BRANTLEY TANK MODEL
1,200 PT 463

SHEET NUMBER
1 of 1



1200 GAL SEPTIC TANK SCHEMATIC
NOT TO SCALE



1200 GAL PUMP TANK SCHEMATIC
NOT TO SCALE

NOTES

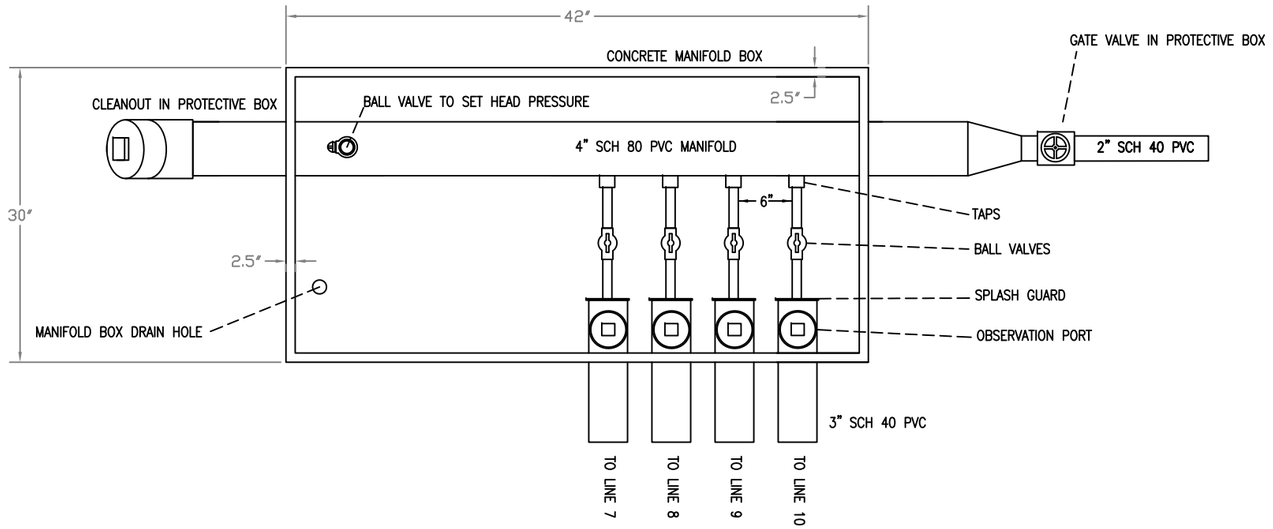
1. ALL TANKS SHALL BE LEAK TESTED SUCH THAT EXFILTRATION OCCURS AT A RATE WHICH DOES NOT EXCEED TEN GALLONS PER TWENTY-FOUR HOURS PER 1,000 GALLONS OF TANK CAPACITY
2. ALL TANKS SHALL REST ON A BED OF #57 WASHED GRAVEL. THE MINIMUM THICKNESS OF THE GRAVEL BED IS 6 INCHES.
3. ALL TANKS MUST BE APPROVED 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.
8. NO ELECTRICAL SPLICES SHALL BE MADE INSIDE THE PUMP TANK.

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

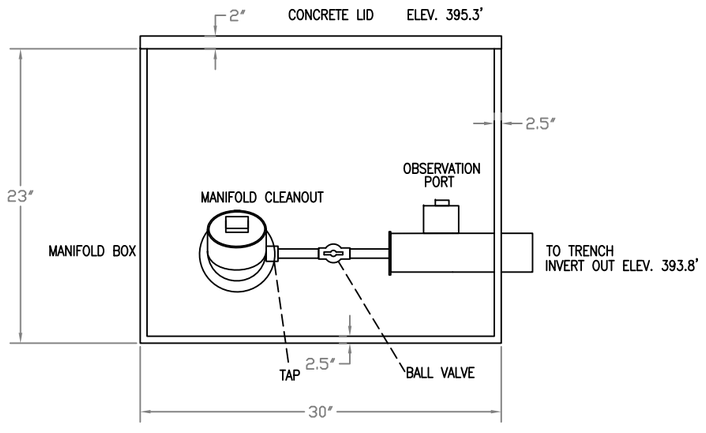
Septic and Pump Tank Details
Cotton Farms S/D, Lot 54
Harnett County, North Carolina

Job#: 4722
Drawn By: JR
Date: 10/26/2023

PRESSURE MANIFOLD DETAILS
TOP VIEW



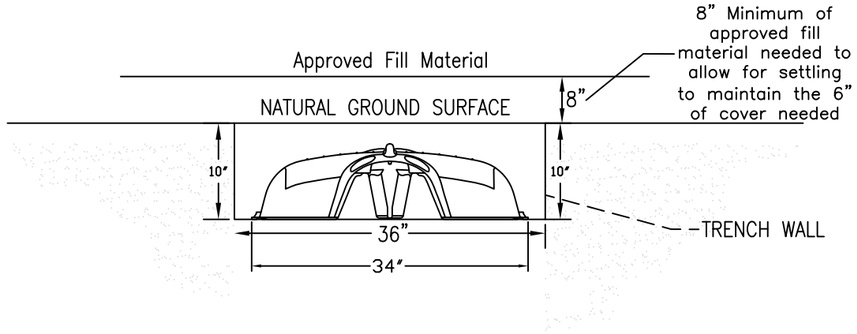
PRESSURE MANIFOLD DETAILS
END VIEW



TAP SCHEDULE	
LINE #	TAP
7	$\frac{3}{4}$" SCH 40
8	$\frac{3}{4}$" SCH 40
9	$\frac{3}{4}$" SCH 80
10	$\frac{1}{2}$" SCH 80

At-Grade System
Infiltrator Quick4 Plus
Low Profile Chambers DETAILS

Example only: Installed trench bottom should match design.



NOTE :

1. LPC INSTALLATION SHALL MEET THE REQUIREMNTS INCLUDED IN ITS INNOVATIVE APPROVAL
2. TRENCH BOTTOM SHALL BE AT LEAST 12" FROM ANY RESTRICTIVE SOIL LAYER
3. END CAP SHALL BE PROVIDED AT END OF ALL LPC LINES AND TRENCH BOTTOMS SHALL BE LEVEL
4. THIS IS A GENERIC TRENCH PROFILE FOR AN AT-GRADE TRENCH DEPTH.

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

Manifold and Trench Details
Cotton Farms S/D, Lot 54
Harnett County, North Carolina

Job#: 4722
Drawn By: JR
Date: 10/26/2023

INFILTRATOR®
water technologies

Quick4 PLUS™ CHAMBER SYSTEMS

The Quick4® Plus Standard Low Profile (LP) Chamber

Quick4 Plus™ Series

The Quick4 Plus Standard Low Profile (LP) offers maximum strength through its four center structural columns. This chamber can be installed in a 36-inch-wide trench. It is shorter in height than Infiltrator's other Standard model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™, which permits turns up to 15°, right or left. The Quick4 Plus All-in-One 8 and Quick4 Plus Endcaps provide increased flexibility in system design and configurations.

Maximum Strength

Quick4 Plus Standard LP Chamber Specifications

Size 34"W x 53"L x 8"H (864 mm x 1346 mm x 203 mm)
Effective Length 48" (1219 mm)
Louver Height 6.3" (160 mm)
Storage Capacity 32 gal (121 L)
Invert Height 3.3" (84 mm), 9.6" (244 mm)

Quick4 Plus Standard Low Profile (LP) Chamber Benefits:

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Four center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12" of cover

Quick4 Plus All-in-One Periscope Benefits:

- Allows for raised invert installations
- 180° directional inletting
- 12" raised invert is ideal for serial applications

Quick4 Plus All-in-One 8 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe

Quick4 Plus Endcap Benefits:

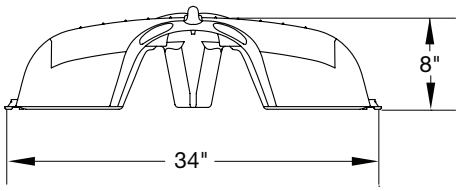
- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe

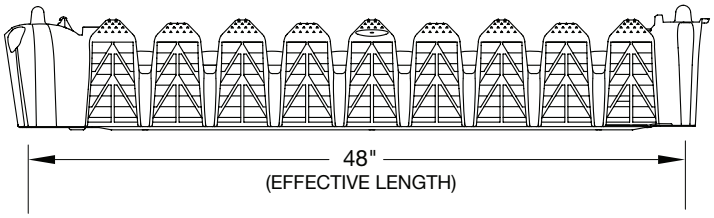
Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)

IAPMO R&T

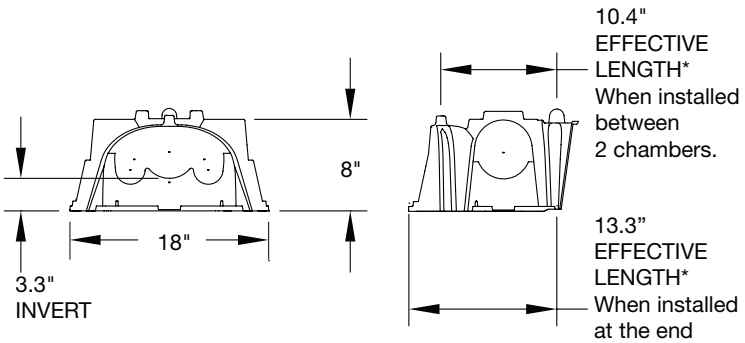
APPROVED in _____

Quick4 Plus Standard Low Profile Chamber

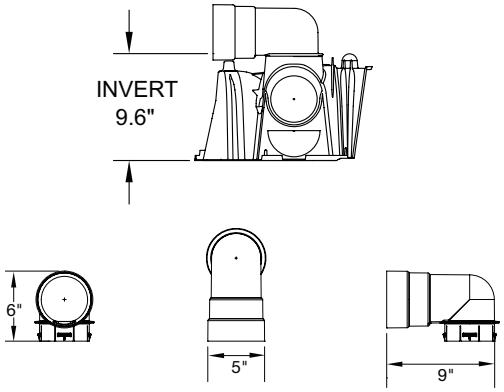




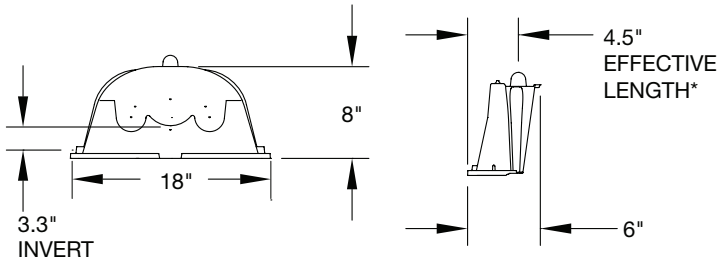
Quick4 Plus All-in-One 8 Endcap



Quick4 Plus All-in-One Periscope



Quick4 Plus Endcap



INFILTRATOR WATER TECHNOLOGIES, LLC ("INFILTRATOR")
Infiltrator Water Technologies, LLC STANDARD LIMITED Drainfield WARRANTY

(a) The structural integrity of each chamber, endcap, EZflow expanded polystyrene and/or other accessory manufactured by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder. The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.

INFILTRATOR®
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