Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services

John E. Baldacci, Governor Brenda M. Harvey, Commissioner

Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water Street
11 State House Station
Augusta, Maine 04333-0011
Tel: (207) 287-5672
Fax: (207) 287-5674; TTY: 1-800-606-0215

May 17, 2010

Infiltrator Systems Inc.
Attn.: David Lentz, P.E.
P. O. Box 768
Old Saybrook, CT 06475

Subject: Product Registration, TW-300 and TW-500 Septic Tanks

Dear Mr. Lentz:

The Division of Environmental Health has completed a review of a registration application for your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

The TW-300 and TW-500 septic tanks consist of rotomolded high density polyethylene cylindrical tanks. The tanks have molded reinforcing ribs and 24 inch diameter access opening. Gaskets are employed to seal the inlets and outlet.

On the basis of the information you provided the Division has determined that the TW-300 and TW-500 septic tanks are acceptable for use in the State of Maine, provided that they are installed, operated, and maintained in conformance with the manufacturer's directions.

In the event that the product fails to perform as claimed by the applicant, use of the product in Maine, including all installations approved pursuant to Chapter 18 of the Rules, shall cease. Use of the product shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of TW Series septic tanks. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar or competing products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

INFILTRATOR®
systems inc.

April 27, 2010

Mr. James A. Jacobsen
Wastewater and Plumbing Control Program
Division of Health Engineering
Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water St.
#11 State House Station
Augusta, Maine 04333-0011

Re: Request for Review and Approval of Infiltrator TW-300 and TW-500 Tanks

Dear Mr. Jacobsen,

Infiltrator Systems Inc. (Infiltrator) has added 300- and 500-gallon tanks to its current TW-Series tank product line. The new tanks are designated as the TW-300 and TW-500. By way of this letter, Infiltrator requests review and approval of the TW-300 and TW-500 tanks by the Maine Department of Health and Human Services. Information supporting this request is provided below and in the attachments to this letter.

Design Compared to Approved TW-Series Tanks

The TW-300 and TW-500 tank body designs mirror those of Infiltrator's other approved TW-Series tanks, with the tank wall designed as a 3-layer high-density polyethylene (HDPE) composite. Infiltrator will use the same blend of HDPE resin to manufacture the TW-300 and TW-500 as it currently uses to manufacture the approved TW-Series tanks. The tanks will be molded using the same rotational molding (rotomolding) process and equipment as is used for the current line of TW-Series tanks. Markings on the two new tank models match the markings on the approved TW-375 model. Design drawings for each tank are provided in Attachment 1.

Structural Integrity and Watertightness

Infiltrator TW-series tanks are designed to provide resistance to lateral compressive and bearing loads to which a septic tank is expected to be subjected. Per the Maine Subsurface Wastewater Disposal Rules, prefabricated polyethylene septic tanks must meet the standards for materials, wall thickness, fastening of fittings, and maximum deformation under load rescribed the Canadian Standards Association (CSA) tank standard. Attachment 2 provides an internal communication from CSA indicating that the TW-300 and TW-500 have been found to be acceptable for certification by CSA.

As with the current TW-Series tanks, watertightness will be achieved through the use of the rotomolding process. The rotomolding process is a high-temperature, low-pressure plastic forming process that uses heat and biaxial rotation (i.e. rotation on two axes) to produce hollow, single-piece parts. The only opening in the tank body following the rotomolding process is at the 24-inch-diameter access opening.

Installation Instructions

The TW-300 and TW-500 tanks are to be installed using the same methods as Infiltrator's other approved tank models. Updated installation instructions are provided in Attachment 3.

Review and Approval Request

Infiltrator's TW-300 and TW-500 designs are consistent with the existing TW-series of tanks which have been approved for use in Maine. Infiltrator requests approval of these additional tank models on the merits of Infiltrator's proposed product configuration and design, and other similar tank products that have gained acceptance for use in Maine in the past, as well as the evaluation conclusions by CSA provided in Attachment 2.

A draft suggested approval document modeled after your department's previous July 22, 2008 tank approval letter, and now including the TW-300 and TW-500 tanks, has been provided in Attachment 4.

Thank you very much for your review of this request. Please contact me at (860) 577-7198 if any further information is required.

Sincerely,

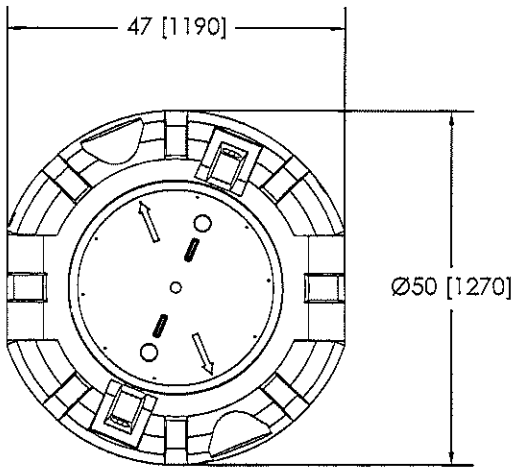
David Lentz

David Lentz, P.E.
Regulatory Director
Science & Government Affairs

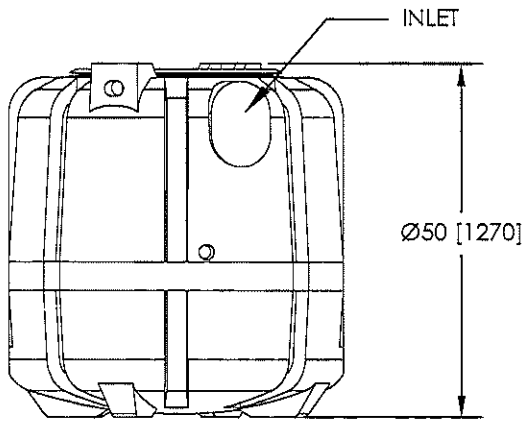
cc: Blake Johnston, Infiltrator Systems Inc.

Attachment 1

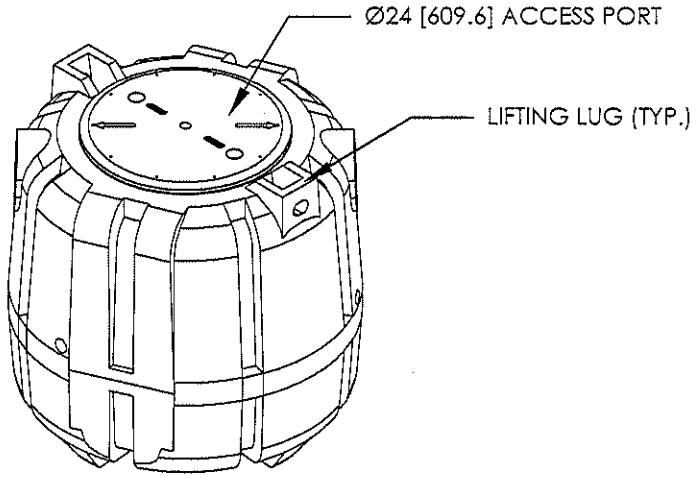
Design Drawings



PLAN



PROFILE



PARAMETER	UNITS U.S. [METRIC]	VALUE
EFFECTIVE (TOTAL) CAPACITY	gal [L]	313 [1,184]
ACCESS PORT AREA	in^2 [m^2]	425 [0.29]

1. TANK MARKINGS WILL INCLUDE: MANUFACTURER NAME, LIQUID CAPACITY, MANUFACTURE DATE, MAXIMUM BURIAL DEPTH, AND STATE DESIGNATED SERIAL NUMBER.
2. EXTERIOR OF MANHOLE COVER INCLUDES THE FOLLOWING WARNING: "DANGER DO NOT ENTER POISON GASES" WRITTEN IN ENGLISH, FRENCH, AND SPANISH.
3. MAXIMUM BURIAL DEPTH IS 48 IN [1,219 MM].
4. DIMENSIONS ON DRAWING SHOWN IN INCHES [MILLIMETERS].
5. GENERAL WALL THICKNESS TOLERANCES ±0.25 INCHES [6.3 MILLIMETERS].

INFILTRATOR septic tanks

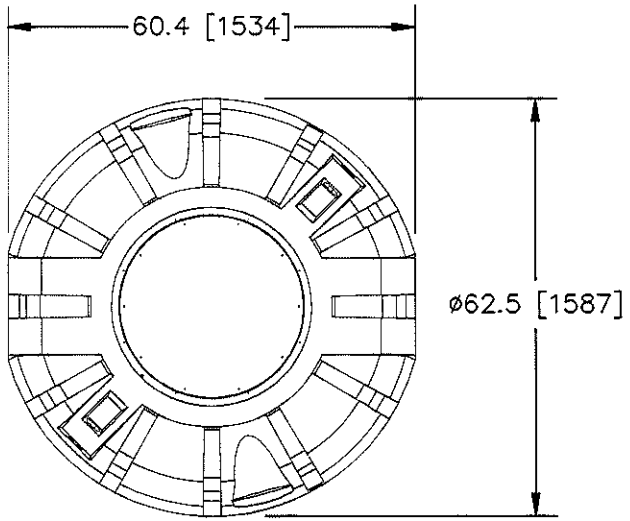
INFILTRATOR SYSTEMS INC.
6 Business Park Rd. Old Saybrook, CT 06475
(800) 221-4436

TW-300
PUMP TANK CONFIGURATION

Drawn by: LB	DWG NO. 1	Date: 03-04-10
SCALE Not To Scale	Checked by: DJL	SHEET 1 of 1

Q:\TECH RES NEW\PRODUCTS\TANK\Generic Model Specific Drawings\300\TW-300

5 4 3 2 1



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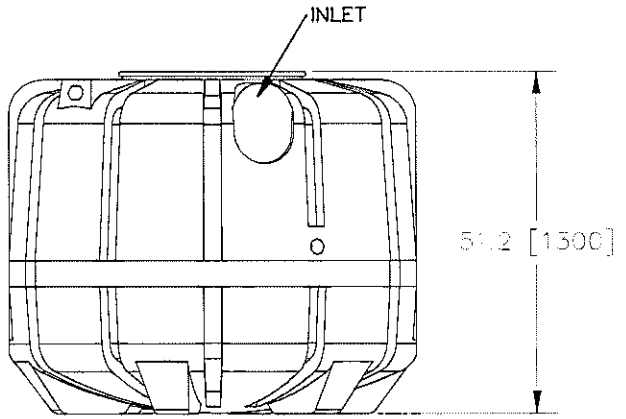
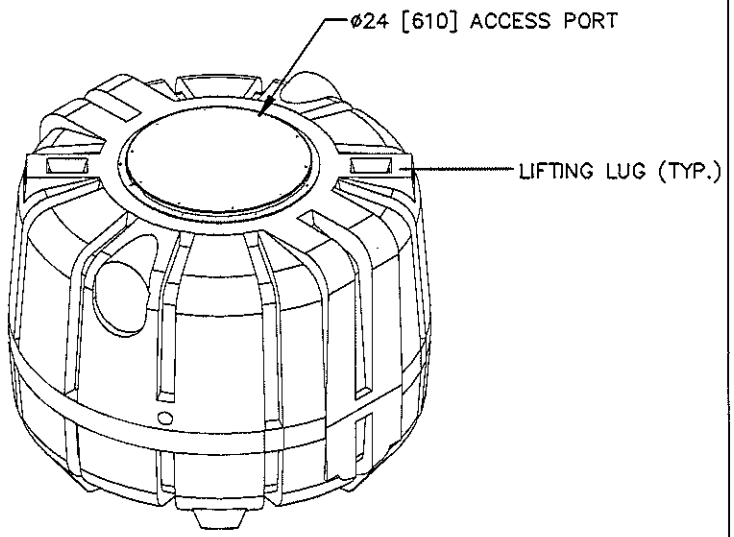


PROFILE



PARAMETER	UNITS U.S. [METRIC]	VALUE
EFFECTIVE(TOTAL) CAPACITY	gal [L]	503 [1,904]
ACCESS PORT AREA	$in^2[m^2]$	452 [0.29]

Notes:
1. TANK MARKINGS WILL INCLUDE: MANUFACTURER NAME, LIQUID CAPACITY, MANUFACTURE DATE, MAXIMUM BURIAL DEPTH, AND STATE DESIGNATED APPROVAL NUMBER.
2. EXTERIOR OF MANHOLE COVER INCLUDES THE FOLLOWING WARNING: "DANGER DO NOT ENTER POISON GASES" WRITTEN IN ENGLISH, FRENCH, AND SPANISH.
3. MAXIMUM BURIAL DEPTH IS 48 IN [1,219 MM].
4. DIMENSIONS ON DRAWING SHOWN IN INCHES [MILLIMETERS].
5. NOMINAL WALL THICKNESS IS 0.7 INCHES [18 MILLIMETERS].

INFILTRATOR® septic tanks

INFILTRATOR SYSTEMS INC.
6 Business Park Rd. Old Saybrook, CT 06475
(800) 221-4436

TW-500
PUMP/SIPHON TANK CONFIGURATION

Drawn by: M.B.	DWG NO. 1	Date: 1-28-10
SCALE Not to Scale	Checked by: DL	SHEET 1 of 1

Q:TECH_RES_NEW/PRODUCTS/TANK/Generic model specific dwgs/TW-500 Jan28_2010_1.dwg

Attachment 2

CSA Evaluation Results

From: Khaled Habib
To: Damtew Tesfaye
Cc: Lentz, Dave
Subject: RE: Infiltrator TW-500 - CSA B66 certification request
Date: Sunday, April 18, 2010 7:20:59 PM
Attachments: image001.jpg

Hello Damtew:

I reviewed the information and documents submitted by Mr. Lentz supporting his request to add tank models: TW-300 and TW-500 without the need for additional top load testing, please find following summary of my review and comments:

1) I agree that CSA certification of products under CSA B66 should be based on product testing and not design calculations and acceptance of non-CSA witnessing the testing since the standard is a performance standard and the requirements outlined within are not prescriptive.
2) However, CSA International certification process allows us to waive the performance tests when similarity exists between the new products and the previously certified products.
3) I reviewed the designs of tank models TW-300 and TW-500 in comparison with tank models TW-370 and TW-900, and I agree with Mr. Lentz on the similarity.
4) I have no technical concern on permitting Infiltrator to add tank models TW-300 and TW-500 to their CSA certified tanks without the need for additional top load testing.
5) CSA International should open a project to update Infiltrator's certification reports to add the new tanks without the need for additional top load testing.
6) The project should be opened under Job Purpose code (AC4 -Alternate Construction, No Testing. Change to Certification Record).

I hope this helps, please do not hesitate to contact me if further clarification is needed.

Regards, Khaled

From: Damtew Tesfaye
Sent: February 24, 2010 1:12 PM
To: Khaled Habib
Cc: dlentz@infiltratorsystems.net
Subject: FW: Infiltrator TW-500 - CSA B66 certification request

Hi Khaled:

I am forwarding to you a request to waive a retest of a septic tank design change (for Infiltrator Systems MC 244132)which involves the thickness of the horizontal section of the bulkhead support (client claims it serves for the purpose of shipment and not a structural component). They have used analytical design by a third party and also test done at other location not witnessed by CSA. Could we admit analytical method to approve change in design (as this is probably not a major change). Could you please review and help me resolve this as I am avoiding to set a precedence by myself. You may even meet Dave Lenz of Infiltrator on the B66 committee. Thanks

Damtew Tesfaye

From: Lentz, Dave [mailto:dlentz@infiltratorsystems.net]
Sent: Wednesday, February 10, 2010 1:03 AM
To: Damtew Tesfaye
Cc: Berteau, Ben
Subject: Infiltrator TW-500 - CSA B66 certification request

Damtew,

Infiltrator Systems Inc. (Infiltrator) will be adding a tank to its TW-Series tank product line. The new tank model is referred to as the TW-500, as this tank is a nominal 500-gallon pump, stormwater, potable water, and grease interceptor tank. By way of this email, Infiltrator requests listing of the TW-500 tank under CSA B66. Infiltrator's current CSA B66 tank certification is attached.

In support of the proposed new tank model certification, I have provided a third-party review of the structural calculations for the tank. This review was conducted by Gibble Norden Champion Brown Consulting Engineers, Inc., and has been signed and sealed by a licensed professional engineer. The attachment includes a sealed copy of a TW-500 illustration and sealed structural calculations for burial at 1,200 mm (4 feet) below ground surface.

The TW-500 tank volume fits within Infiltrator's current lineup of tanks, providing a model with more capacity than the TW-375 (415-gallon pump tank) and less than the TW-900 (1055-gallon pump tank/900-gallon septic tank). The TW-500 tank body design mirrors that of Infiltrator's other CSA B66-certified TW-Series tanks, with the tank wall designed as a multi-layer (3 layers) composite. The manufacturing process is also the same as the CSA B66-certified tanks, employing a rotomolding process. An evaluation of the TW-500 compared to key CSA B66 parameters is as follows:

- Section 4.1.1 - Materials – The tank body is high density polyethylene.
- Section 4.1.2 – Quality control – The tank design, materials, and manufacturing processes match Infiltrator's current CSA B66-certified tanks.
- Section 4.1.3 – The tank has no seams, and is assembled using the same techniques as the other CSA B66-certified tanks.
- Section 4.1.4 Strength and watertightness – The tank is designed for a maximum 1,200 mm earth cover, matching the design depth of Infiltrator's other CSA B66-certified tanks.
- Section 4.4 – Sewage holding tanks – The base of the tank has been designed flat, to accommodate pump installation.
- Section 8 – Polyethylene tanks - The TW-500 tank body design mirrors that of Infiltrator's other CSA B66-certified tanks, with the nominal 17-mm (0.7 in) thick tank wall designed as a multi-layer (3 layers) composite. The manufacturing process is also the same as the CSA B66-certified tanks, employing a rotomolding process.
- Section 10 – Markings – The tank will have a marking scheme that mirrors that of the certified TW-375.

If you need additional information for review of this tank model, please contact me at 860-577-7198. Thank you in advance for your assistance.

Dave Lentz

Attachment 3

Installation Instructions

TW™-Series Septic Tanks General Installation Instructions

INFILTRATOR® septic tanks

Before You Begin

Infiltrator Systems' TW-Series Septic Tanks must be installed according to state and/or local regulations, which supercede the manufacturer's installation instructions. If unsure of the installation requirements for a particular site, contact the local health department or permitting authority.

Inspect the tank for damage before installation. While illustrations depict the TW-900™ model tank, these instructions also apply to the TW-300™,TW-375™, TW-500™, TW-1050™, TW-1250™, and TW-1500™.

Materials and Equipment Needed

- ☐ TW-Series Tank
- ☐ Manhole lids (included)
- ☐ 6 bolts per lid (included)
- ☐ Rubber gaskets (included)
- ☐ Inlet/outlet tees*
- ☐ Tape measure
- ☐ Pipe, risers, etc.
- ☐ Socket wrench
- ☐ Excavator
- ☐ Shovel
- ☐ Level
- ☐ 5" (127 mm) or 5 1/4" (133 mm) diameter hole saw
- ☐ Utility knife
- ☐ PVC pipe glue with primer

may be included

Installation Site Selection

1. Avoid installation of the tank in vehicular traffic areas. The tank is designed for non-traffic applications.

2. The maximum vehicle load is a 4,500-pound (20kN) axle load at a soil cover depth of 6 to 48* inches (152 to 1,219 mm).

**18-inch max. burial depth in Florida; 36-inch max. burial depth in North Carolina, Massachusetts, and Oregon.*

Excavating and Preparing the Site

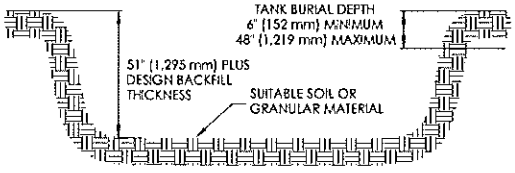
1. The excavation width and length should be 12 to 36 inches (304 to 914 mm) larger than the tank on each side.

2. Excavate to account for 51 inch (1,295 mm) height of tank, 4 inches (101 mm) of bedding (if required), and backfill thickness (permissible cover depth is 0.5 to 4 feet (152 to 1,219 mm) of soil).

3. Inspect bottom of excavation to verify suitability of native soil for tank installation. Soil with large, protruding, or sharp stones or other similar objects that may damage tank are not suitable.

4. The tank may be bed either in suitable native soil (see Backfilling the Tank section) or a minimum 4-inch (101 mm) layer of pea stone, sand, gravel, or other similar material having particles less than 3 inches (76 mm) in diameter.

5. Create a uniform, level bedding surface to ensure that the bottom of tank is uniformly supported at the base of the excavation. Verify that the base of excavation is flat.



Installing the Tank

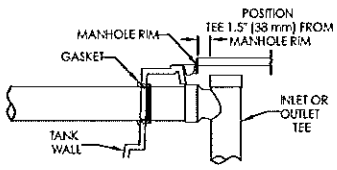
1. If the tank inlet and outlet penetrations are not drilled, drill holes (see Inlet and Outlet Hole Locations section). The gaskets supplied with the tank are compatible with Schedule 40 and SDR 35 pipe using a 5 1/4-inch (133 mm) hole saw. If using an alternative gasket (not supplied with the TW-series tank) sized for Schedule 40 pipe only (having a larger inside diameter), use a 5-inch (127 mm) hole saw.

2. Install the rubber gaskets at the inlet and outlet.

3. Slide the inlet and outlet pipes* through the gaskets.

**For North Carolina, the inlet pipe shall be a straight pipe with no tee.*

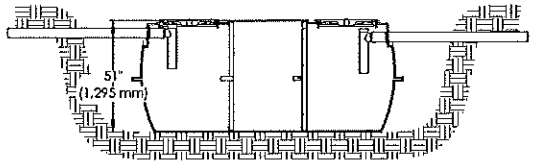
4. Horizontally position the tee as shown in the detail below.



**For Illinois, 6-inch (152 mm) drop required for inlet tee.*

5. Using lifting lugs, lower tank into excavation with tees in place.

6. Install lid, inlet and outlet piping, and risers (see Installing the Riser section) as necessary.



Backfilling the Tank

Note: The Infiltrator TW-Series Tanks do not require filling with water prior to backfill placement.

1. Backfill with suitable native soil. If native soil is unsuitable, replace unsuitable fraction with suitable soil.

2. Suitable soil shall include soil textural classes defined in the United States Department of Agriculture soil triangle. Suitable soil textural classes are based on the tank installation depth, as measured from finished grade to the top of tank.

a) For a tank installation depth of 0.5 to 2.0 feet (152 to 610 mm), suitable soil textures include:

- **i.** Sand
- **ii.** Loamy sand
- **iii.** Sandy loam
- **iv.** Loam
- **v.** Sandy clay loam
- **vi.** Sandy clay
- **vii.** The following, assuming that the sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487) is greater than 30%: silt loam, clay loam, and clay
- **viii.** The following, assuming that the sand particle fraction by weight (i.e., % that would be retained on No. 200 sieve, as per ASTM D2487) is less than 30% and the soil is shown to be dilatant (refer to Step 5 below for simple dilatancy test to be conducted in the field): silt loam, silt, clay loam, silt clay loam, silty clay, and clay

b) For a tank installation depth that is greater than 2.0 feet and up to 4.0 feet (610 to 1219 mm), suitable soil textures include:

- **i.** Sand
- **ii.** Loamy sand
- **iii.** Sandy loam
- **iv.** Loam
- **v.** Sandy clay loam
- **vi.** Sandy clay
- **vii.** Silt loam, clay loam, and clay having at least a 30% sand particle fraction by weight (i.e., % that would be retained on No. 200 sieve, as per ASTM D2487).

3. Backfill should not have stones greater than 3 inches in diameter or excessive clods that do not break apart during placement and compaction. Backfill must be capable of occupying the spaces between the tank ribs.

4. Standard field soil classification methods shall be used to determine the soil textural class.

5. Under most circumstances, the determination of soil dilatancy will not be required. Dilatancy shall be determined in the field using a test that does not require specialized equipment, per ASTM D2488, Section 14.3, and as described below.

Failure to comply with these installation instructions may invalidate the warranty.
Contact Infiltrator Systems' Technical Services Department for assistance at 800-221-4436.

a) Mold a 1/2-inch-diameter (13 mm) soil test specimen in the palm of the hand. The test specimen shall be representative of the prospective tank backfill soil.

b) Mold the test specimen, adding water if necessary, until it has a soft, but not sticky consistency.

c) Smooth the soil ball in the palm of one hand with a spatula or similar instrument.

d) Shake the soil sample by striking the hand vigorously against the other hand approximately 5 times. Do not strike hand in a manner that results in an injury.

e) Immediately following shaking, gently squeeze the soil in the palm of the hand.

f) Repeat shaking test if necessary to evaluate soil.

g) Note whether water appears on the surface of the soil specimen during shaking and squeezing.

i. If water appears on and disappears from the surface of the soil specimen, the soil is dilatant, and is suitable.
ii. If no visible change or only a slight visible change in the soil specimen occurs due to shaking or squeezing, the soil is not dilatant, and is unsuitable.

6. Do not backfill top of tank before sidewalls are completely backfilled.

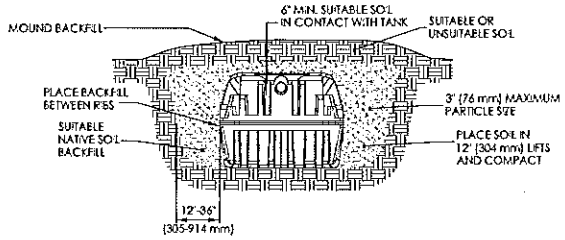
7. Place backfill around the four sidewalls in a progressive, alternating manner, so that the backfill height along the four sidewalls is maintained within a 12-inch (304 mm) tolerance.

8. Continue to place backfill along the sidewalls in 12-inch (304 mm) lifts. Place backfill between the ribs on the sidewalls such that the space between the ribs is completely filled with soil.

9. Compact backfill material either by hand tamping or mechanical compaction (includes backhoe bucket). Compact each lift prior to placement of next lift. Compact backfill from tank walls to excavation sidewalls.

10. Complete backfilling and grade the area.

11. A minimum 6-inch-thick layer of suitable soil must be placed over the top of the tank. The balance of backfill placed to finish grade above the tank may be either suitable or unsuitable soil.



Installing Under Shallow Groundwater Conditions

If the seasonal high groundwater table has the potential to rise 18 inches (457 mm) or more above the tank bottom, anti-buoyancy measures are warranted, as follows:

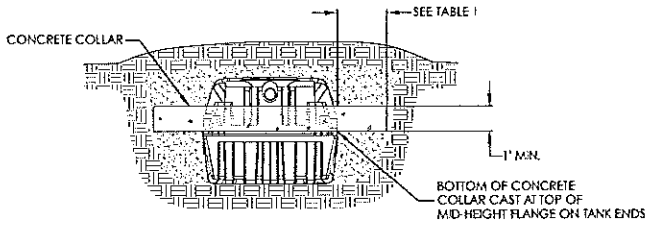
1. Option 1 - Physically Secure Tank

A ballast may be constructed using cast-in-place concrete (minimum 3,000 psi at 28 days and 6% air entrainment). Concrete shall be cast in contact with the exterior surface of the tank to allow interlock with sidewall ribs and mid-height flange at tank ends. Minimum collar dimensions are provided in the chart and figure below. The collar minimum height and width are 1 foot (0.3 m).

TABLE 1 - CONCRETE COLLAR MINIMUM DIMENSIONS

Dimension	TW-900	TW-1050	TW-1250	TW-1500
Length in ft (m)	13.0 (3.9)	15.0 (4.6)	17.0 (5.2)	20.0 (6.1)
Width in ft (m)	9.5 (2.9)	9.5 (2.9)	10.0 (3.0)	10.0 (3.0)

For the TW-300, TW-375, and TW-500 cast 1-foot-high, 2-foot-wide (0.3 m x 0.6 m) concrete ring immediately above widest part of tank belly.



2. Option 2 - Long-Term Groundwater Control

a) If site is amenable to construction of a groundwater control system, groundwater control may include:

i) Underdrain -- Bed and backfill the tank with clean pea gravel or equivalent pervious material. Pipe groundwater by gravity flow away from tank and drainfield.

ii) Interceptor trench - Construct interceptor trench upgradient of tank to maintain a groundwater table no higher than 18 inches (457 mm) above bottom of tank. Pipe groundwater away from tank and drainfield.

b) Groundwater control is not applicable if prohibited by regulation or law, or tank location is subject to flooding.

3. Short-Term Groundwater Control

a) If necessary during tank installation, maintain dry conditions by expanding excavation to create groundwater collection sump. Pump groundwater out of sump.

Installing the Riser

1. Compatible risers include 24-inch (600 mm) diameter products from EZset by Infiltrator, Polylok®, Inc., and Tuf-Tite® Corporation, in addition to 24-inch (600 mm) diameter corrugated HDPE and IPEX Ultra Rib PVC pipe.

2. Oregon watertightness testing to include filling with water at least 2 inches above riser connection, with no more than 1 gallon leakage per 24 hours, per OAR 340-073-0025(3).

Note: Installation guidance for connection of the riser to the TW-series tank is available upon request.

Installing Pumps and Related Equipment

Pumps shall be supported on a stable, level 16 x 16 inch (406 x 406 mm) platform positioned on the bottom of the tank. Precast concrete block is acceptable pump support material. One 16 x 16 inch block or two 8 x 16 inch (203 mm x 406 mm) side-by-side blocks may be used. The support block(s) shall be placed below an access opening and level upon the ribs on the tank bottom. If two blocks are used, they shall be oriented perpendicular to the ribs on the tank bottom for stability.

Installation of products such as electrical conduit and wiring, pumps, water level control equipment, valves, siphon equipment, etc. shall be in accordance with the product manufacturer's instructions and compliant with applicable state or local rules and regulations. Where possible, appurtenances shall be installed to facilitate maintenance and repair access via the tank access openings.

General Specifications

- Failure to comply with installation instructions may void warranty.
- Prior to ground disturbance, check for subsurface obstructions and utilities in conformance with local requirements.
- Tanks are only designed for installation underground.
- Operating water temperature shall be less than 140° F (60° C).
- Tanks are not fire resistant. Store away from ignition sources.
- Tanks are not suitable for potable water storage applications.
- Tanks are recommended for use as septic, rainwater/stormwater storage, and pump tanks only.

Table 1: TW-Series Polyethylene Tank Nominal Volume Chart

Height[1] (In)	Total Liquid Volume in Tank at Indicated Height													
	TW-300		TW-375		TW-500		TW-900		TW-1050		TW-1250		TW-1500	
	Gal	L	Gal	L	Gal	L	Gal	L	Gal	L	Gal	L	Gal	L
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	2	3	12	2	8	10	37	11	43	14	53	17	64
2	2	9	8	31	5	19	22	82	25	95	30	115	37	140
3	5	19	15	57	8	30	41	156	48	181	58	218	71	267
4	9	34	23	85	13	49	62	236	72	273	87	330	107	404
5	15	57	30	115	20	76	84	317	97	368	117	444	143	543
6	21	79	39	147	28	106	106	400	122	463	148	558	180	683
7	28	106	47	180	37	140	128	483	148	560	178	674	218	825
8	36	136	56	214	48	182	150	567	174	657	209	791	256	968
9	43	163	66	249	59	223	172	653	200	756	240	910	294	1,112
10	50	189	75	285	71	269	195	739	226	855	272	1,029	332	1,257
11	57	216	85	321	83	314	218	826	252	956	304	1,149	371	1,404
12	65	246	95	358	95	360	242	915	279	1,057	336	1,270	410	1,551
13	72	273	105	396	105	397	265	1,004	306	1,160	368	1,393	449	1,700
14	80	303	115	434	118	447	289	1,093	334	1,263	400	1,516	489	1,849
15	87	329	125	473	130	492	313	1,184	361	1,367	433	1,640	528	2,000
16	95	360	135	512	142	537	337	1,276	389	1,472	466	1,765	569	2,152
17	102	386	146	552	154	583	361	1,368	417	1,578	500	1,892	609	2,305
18	110	416	157	595	166	628	386	1,461	445	1,685	533	2,019	650	2,459
19	118	447	169	639	179	678	411	1,555	474	1,792	567	2,146	690	2,614
20	126	477	180	682	191	723	436	1,650	502	1,901	601	2,275	732	2,769
21	134	507	192	726	204	772	462	1,747	532	2,012	636	2,407	774	2,928
22	141	534	203	770	216	818	488	1,847	562	2,126	671	2,541	816	3,091
23	149	564	215	814	228	863	515	1,948	592	2,241	708	2,678	860	3,256
24	156	590	226	855	241	912	542	2,053	624	2,361	745	2,819	905	3,425
25	164	621	236	894	253	958	569	2,154	654	2,475	781	2,955	948	3,589
26	171	647	246	932	265	1,003	595	2,251	683	2,587	815	3,086	990	3,747
27	178	674	256	971	277	1,048	620	2,346	712	2,695	849	3,215	1,031	3,903
28	186	704	267	1,009	289	1,094	644	2,439	740	2,802	883	3,342	1,072	4,057
29	193	731	276	1,046	300	1,136	669	2,533	769	2,909	916	3,469	1,112	4,210
30	200	757	286	1,083	312	1,181	693	2,625	796	3,015	950	3,594	1,152	4,362
31	208	787	296	1,119	324	1,226	718	2,717	824	3,120	982	3,719	1,192	4,514
32	215	814	305	1,154	336	1,272	741	2,807	852	3,223	1,015	3,842	1,232	4,663
33	222	840	314	1,189	347	1,313	765	2,895	878	3,325	1,047	3,964	1,271	4,810
34	230	871	323	1,222	359	1,359	788	2,983	905	3,426	1,079	4,084	1,309	4,956
35	236	893	332	1,255	370	1,400	811	3,070	931	3,526	1,110	4,203	1,347	5,101
36	243	920	340	1,286	382	1,446	834	3,155	957	3,624	1,141	4,320	1,385	5,243
37	251	950	348	1,317	393	1,488	856	3,240	983	3,721	1,172	4,436	1,422	5,384
38	258	977	356	1,346	404	1,529	877	3,320	1,008	3,814	1,201	4,548	1,458	5,521
39	264	999	363	1,373	416	1,575	898	3,398	1,031	3,904	1,230	4,657	1,494	5,654
40	271	1,026	370	1,400	427	1,616	920	3,484	1,057	4,003	1,261	4,772	1,532	5,798
41	278	1,052	376	1,425	438	1,658	938	3,549	1,078	4,080	1,286	4,869	1,562	5,915
42	285	1,079	383	1,449	449	1,699	957	3,623	1,100	4,166	1,314	4,972	1,596	6,042
43	292	1,105	389	1,471	460	1,741	976	3,695	1,123	4,249	1,340	5,074	1,629	6,167
44	299	1,132	394	1,492	471	1,783	994	3,765	1,144	4,331	1,366	5,172	1,661	6,288
45	304	1,151	399	1,511	481	1,821	1,011	3,829	1,164	4,406	1,390	5,263	1,690	6,399
46	310	1,173	404	1,530	490	1,855	1,025	3,878	1,179	4,465	1,410	5,337	1,715	6,492
47	313	1,185	409	1,547	498	1,885	1,036	3,923	1,193	4,517	1,427	5,402	1,737	6,574
48	313	1,185	413	1,565	502	1,900	1,045	3,954	1,203	4,553	1,439	5,446	1,750	6,626
49	313	1,185	417	1,577	504	1,908	1,055	3,994	1,212	4,588	1,448	5,481	1,762	6,669

Notes: 1. Height measured from inside surface at bottom of corrugation in tank.
2. Gal = gallons
3. L = liters

Inlet and Outlet Hole Locations

Drill height markings are provided on the Infiltrator TW-900, TW-1050, TW-1250, and TW-1500 to serve as a guide for inlet and outlet hole locations. Markings "A" (lower) and "B" (upper) are located at the inlet end. *Note: holes may be drilled at the end or side inlet and outlet locations.* Markings "C" (lower), "D" (middle), and "E" (upper) (TW-900 only) are located at the outlet end. The circular centering symbol next to the marking letter indicates the centerpoint location for the hole saw. The pilot drill bit on the hole saw should be positioned on the centering symbol to properly align the hole saw.

The drill height markings below are provided to set the inlet and outlet invert heights based on state and/or local regulations. The chart below provides the proper inlet and outlet drill points. Note that state, provincial and local regulatory requirements take precedence over the information provided in the table below.

State or Province	Inlet Drill Location	Outlet Drill Location	Invert Drop (in) [mm]	Inlet Invert Height[2] (in) [mm]	Outlet Invert Height[2] and Liquid Level (in) [mm]
DE, FL, IA, MA, ON	A	D	2 [51]	42 [1,067]	40 [1,016]
AR, CA, CO, CT, ID, IN[1], KS, KY[1], MO, MT, ND, PA, SD, TX, VT, WV[1]	B	C	3 [76]	42.75 [1,086]	39.75 [1,010]
All Others	A	C	2.25 [57]	42 [1,067]	39.75 [1,010]

Notes:

1. Florida, Indiana, Kentucky, Oregon, and West Virginia tanks are factory drilled.

2. Invert heights are measured from the interior surface at the bottom of the tank.

INFILTRATOR SYSTEMS, INC. ("Infiltrator")
INFILTRATOR® TW™-SEPTIC TANK LIMITED WARRANTY

FIVE (5) YEAR MATERIALS AND WORKMANSHIP LIMITED WARRANTY

(a) This limited warranty is extended to the end user of an Infiltrator TW™ Septic Tank. A Septic Tank manufactured by Infiltrator, when installed and operated in accordance with Infiltrator's installation instructions and local regulation by a licensed installer, is warranted to you: (i) against defective materials and workmanship for five (5) years after installation. Infiltrator will, at its option, (i) repair the defective product or (ii) replace the defective materials. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Septic Tank.

(b) In order to exercise its warranty rights, you must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect.

(c) YOUR EXCLUSIVE REMEDY WITH RESPECT TO ANY AND ALL LOSSES OR DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER SHALL BE SPECIFIED IN SUBPARAGRAPH (a) ABOVE. INFILTRATOR SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND, HOWEVER OCCASIONED, WHETHER BY NEGLIGENCE OR OTHERWISE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

(d) THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY GIVEN BY INFILTRATOR AND SUPERSEDES ANY PRIOR, CONTRARY, ADDITIONAL, OR SUBSEQUENT REPRESENTATIONS, WHETHER ORAL OR WRITTEN. INFILTRATOR DISCLAIMS AND EXCLUDES TO THE GREATEST EXTENT ALLOWED BY LAW ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FINESSE FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. NO PERSON (INCLUDING ANY EMPLOYEE, AGENT, DEALER, OR REPRESENTATIVE) IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY CONCERNING THIS PRODUCT, EXCEPT TO REFER YOU TO THIS LIMITED WARRANTY. EXCEPT AS EXPRESSLY SET FORTH HEREIN, THIS WARRANTY IS NOT A WARRANTY OF FUTURE PERFORMANCE, BUT ONLY A WARRANTY TO REPAIR OR REPLACE.

(e) YOU MAY ASSIGN THIS LIMITED WARRANTY TO A SUBSEQUENT PURCHASER OF YOUR HOME.

(f) NO REPRESENTATIVE OF INFILTRATOR HAS THE AUTHORITY TO CHANGE THIS LIMITED WARRANTY IN ANY MANNER WHATSOEVER, OR TO EXTEND THIS LIMITED WARRANTY.

CONDITIONS AND EXCLUSIONS
There are certain conditions or applications over which Infiltrator has no control. Defects or problems as a result of such conditions or applications are not the responsibility of Infiltrator and are NOT covered under this warranty. They include failure to install the Septic Tank in accordance with instructions or applicable regulatory requirements or guidance, altering the Septic Tank contrary to the installation instructions and disposing of chemicals or other materials contrary to normal septic tank usage.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of a Septic Tank 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 a Septic Tank.

Distributed By:

INFILTRATOR®
systems inc.

6 Business Park Road • P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • FAX 860-577-7001
1-800-221-4436
www.infiltratorsystems.com

Attachment 4

Draft Suggested Approval Language

DRAFT

DATE

David Lentz, P.E.
Infiltrator Systems, Inc
6 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475

Subject: Product Registration, TW Series Septic Tanks

Dear Mr. Lentz:

The Division of Environmental Health has completed a review of a registration application for your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The TW Series septic tanks consist of seven models: TW-300 (300 gallons capacity), TW-375 (375 gallons capacity), TW-500 (500 gallons capacity), TW-900 (900 gallons capacity), TW-1050 (1,050 gallons capacity), TW-1250 (1,250 gallons capacity), and TW-1500 (1,500 gallons capacity).

Claim

According to the information you provided, the TW Series septic tanks comply with the and Canadian Standards Association standard for plastic septic tanks.

Determination

On the basis of the information and sample product submitted, the Division has determined that the TW-Series septic tanks are acceptable for use in the State of Maine, provided that they are installed, operated, and maintained in conformance with the manufacturer's directions.

In the event that the product fails to perform as claimed by the applicant, use of the product in Maine, including all installations approved pursuant to Chapter 18 of the Rules, shall cease. Use of the product shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of TW Series septic tanks. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar competing products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

Jacobsen, James

From: Lentz, Dave [dlentz@infiltratorsystems.net]
Sent: Tuesday, April 27, 2010 4:01 PM
To: Jacobsen, James
Cc: Johnston, Blake
Subject: Infiltrator TW-300 and TW-500 approval request
Attachments: ME TW-300 and 500 approval request_042710.pdf; ATT150419.txt

Jim,

Hello, I hope you are doing well. Infiltrator will be manufacturing two new pump tank models (300- and 500-gallon capacity) this spring, and we would like to have these products approved for use in Maine. The attached letter provides a request for review and approval. I provided a suggested approval letter in our request, and modeling this letter directly from the approval you issued for the TW-375 through TW-1500. I will send you are hard copy of the approval request letter in the mail.

Thank you,
Dave Lentz

David Lentz, P.E.
Regulatory Director
p. 860-577-7198
f. 860-577-7001
c. 860-575-8099
www.infiltratorsystems.com

INFILTRATOR®
systems inc.

October 5, 2011

Mr. James Jacobsen
Subsurface Wastewater Program
Division of Environmental Health
Maine Department of Health and Human Services
286 Water Street, 3rd Floor
Augusta, ME 04333-0011

Re: Infiltrator IM-1060 tank design update

Dear Mr. Jacobsen,

Infiltrator Systems Inc. (Infiltrator) previously submitted IM-1060 tank design information to the Department for review and acceptance. Since this time, refinements have been made to the design. The refinements constitute routine engineering and production changes that occur throughout the life cycle of a product, and the IM-1060 has maintained continuous compliance with rules and standards applicable to its regulatory acceptance. This letter is provided as an update for the Department's files. The modified IM-1060 design is scheduled to enter production in late October 2011.

Design modifications are illustrated in Attachment 1, and a comparison of regulated parameters is provided in Attachment 2. Modifications represent voluntary, targeted structural enhancements undertaken to meet Infiltrator's internal design benchmarks. The modifications do not affect regulated parameters associated with the state's septic tank rules and American and Canadian prefabricated tank manufacturing standards[1]. As shown in Attachment 2, only the volume, airspace, and number of locking clips changed. Volume and airspace increased because during molding, the tank materials shrink less than originally estimated. The clip count increased to provide two locking clips per corner.

Infiltrator has merged the installation instructions and riser connection guidance for its TW-Series and IM-1060 tanks into single documents, with updated documents in Attachments 3 and 4, respectively.

The design refinements and a structural evaluation were reviewed and approved by an independent third-party organization. The International Association of Plumbing and Mechanical Officials' (IAPMO's) Product Certification Committee examined the changes and structural analysis and determined that the tank has maintained continuous compliance with its prefabricated tank manufacturing standards. An affirmation letter from IAPMO is provided in Attachment 5.

Given the nature of the improvements and the fact that the IM-1060 has maintained continuous compliance, Infiltrator proposes leaving the acceptance documentation issued by the Department "as is". If the Department feels that a modification to the acceptance documentation is warranted, please contact me at (860) 577-7198 to discuss necessary actions.

Sincerely,

David Lentz

David Lentz, P.E.
Regulatory Director

[1] Specifically, certifications under standards published by the International Association of Plumbing and Mechanical Officials (IAPMO) and the Canadian Standards Association (CSA), respectively.

Attachment 1

Design Refinement Illustrations

Infiltrator IM-1060 Tank

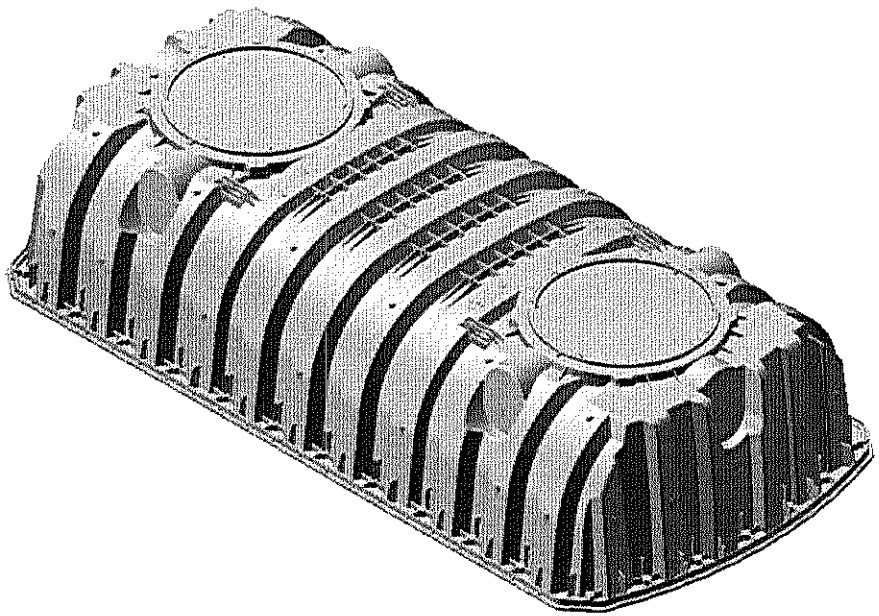
Illustrations Showing Enhancements of Tank Body from Initial to Current Design

August 30, 2011

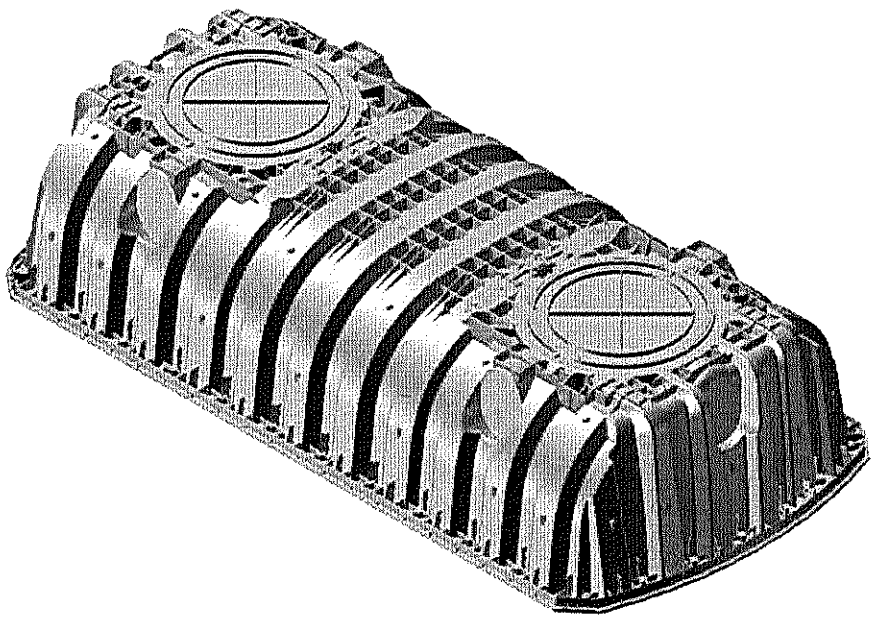
Exterior Surfaces

Exterior Surfaces

Initial

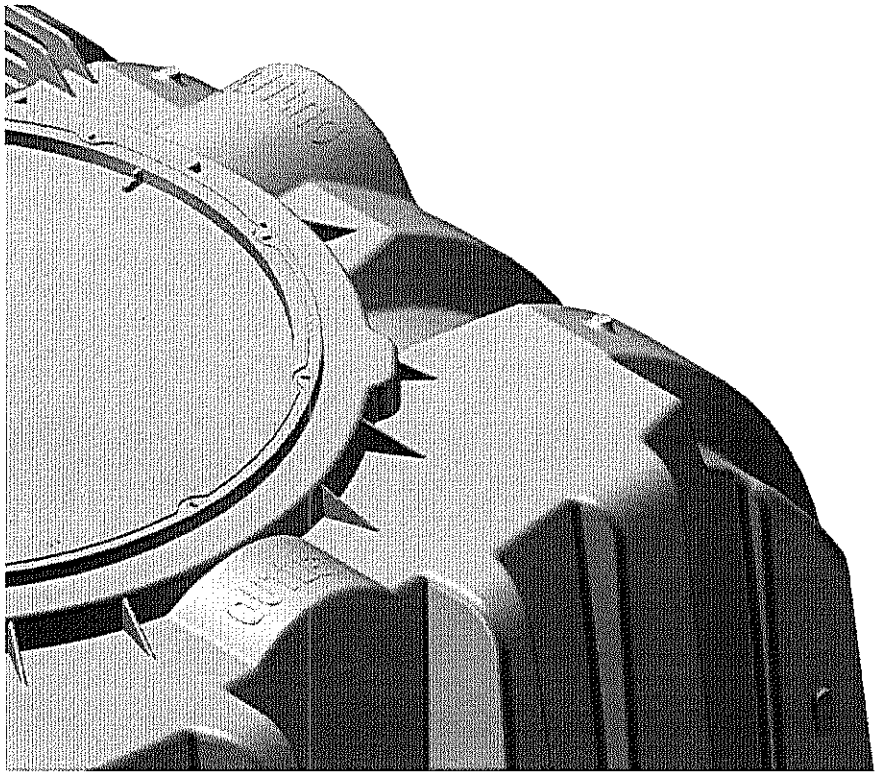


Current



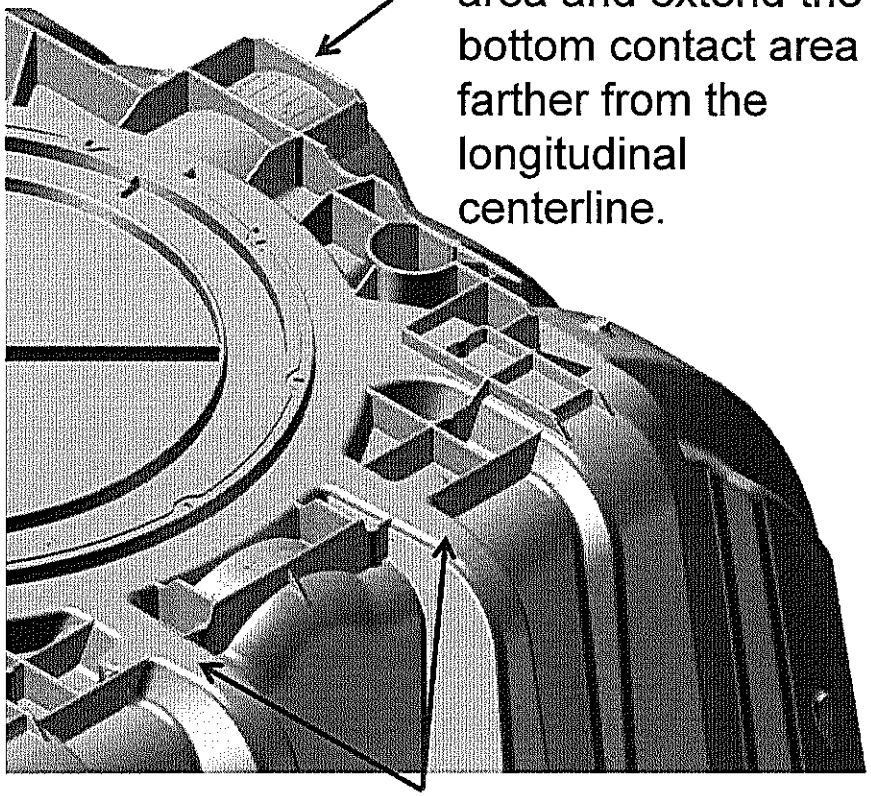
Exterior Surfaces

Initial



Current

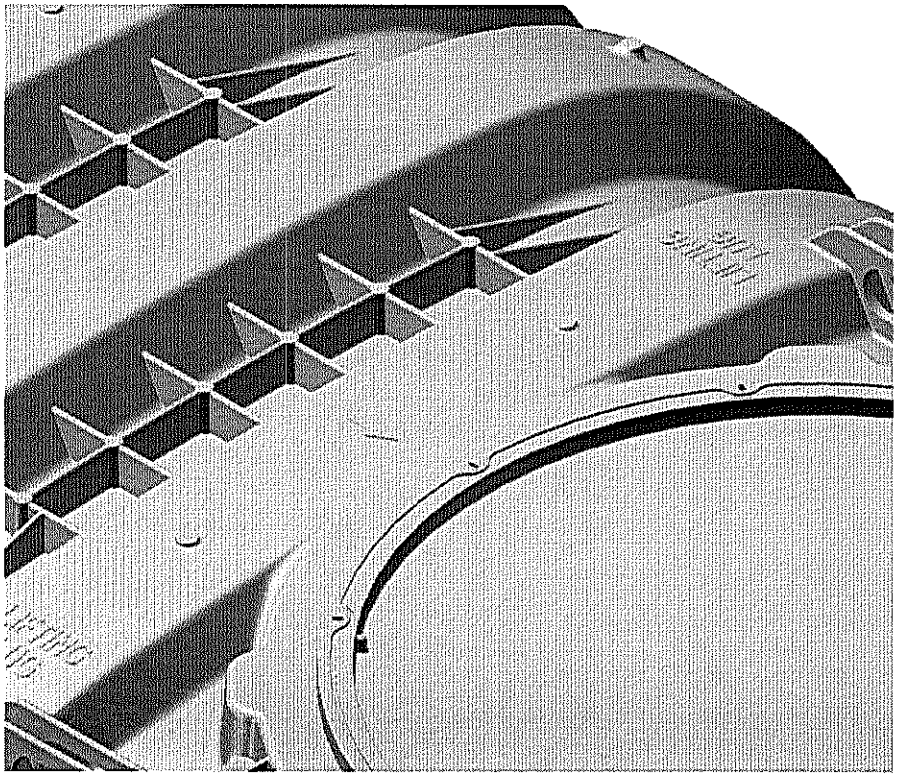
To increase rotational stability in an open excavation, ribs were extended to increase the bottom contact area and extend the bottom contact area farther from the longitudinal centerline.



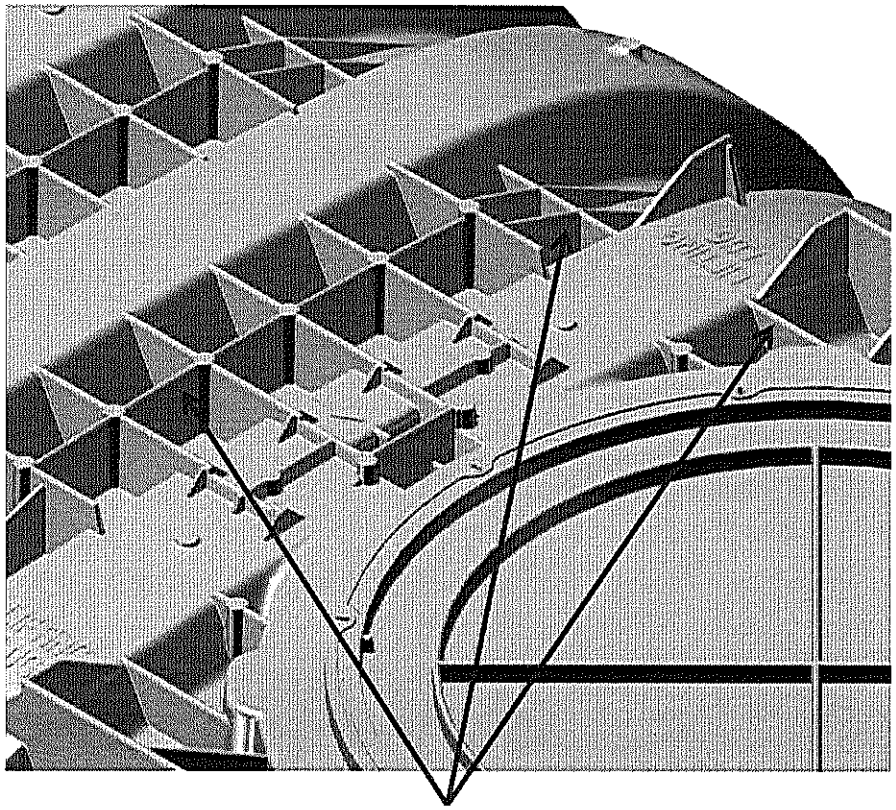
Corrugations at the ends of the tank were extended to connect into the access port ring. Ribs were added between and above the new corrugations.

Exterior Surfaces

Initial



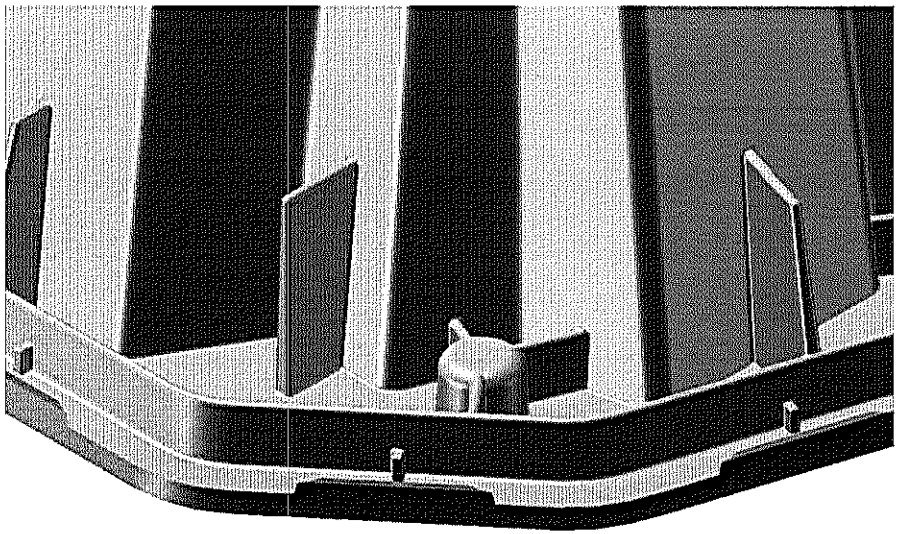
Current



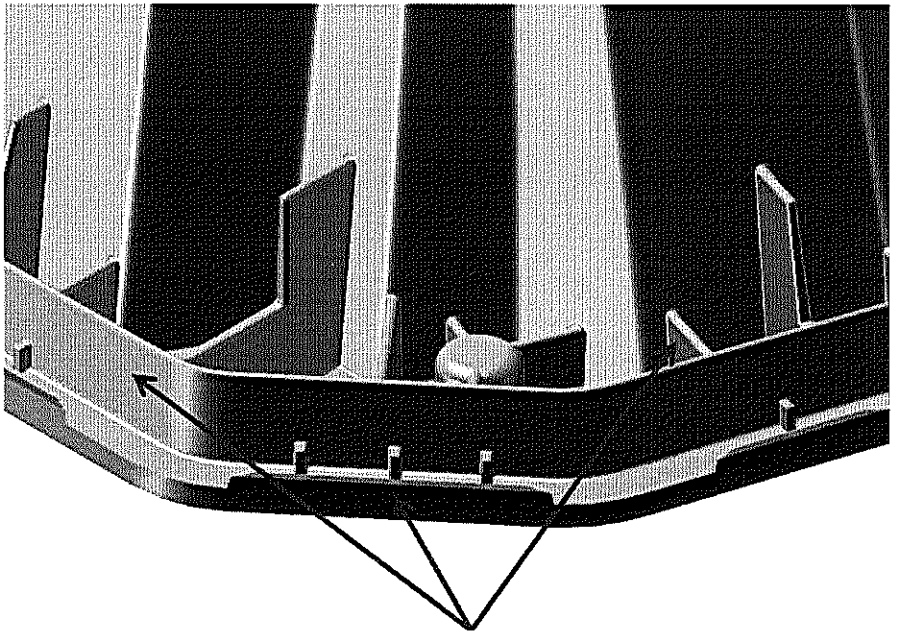
Ribs were extended laterally and vertically. Gussets were added and extended between the corrugations.

Exterior Surfaces

Initial



Current

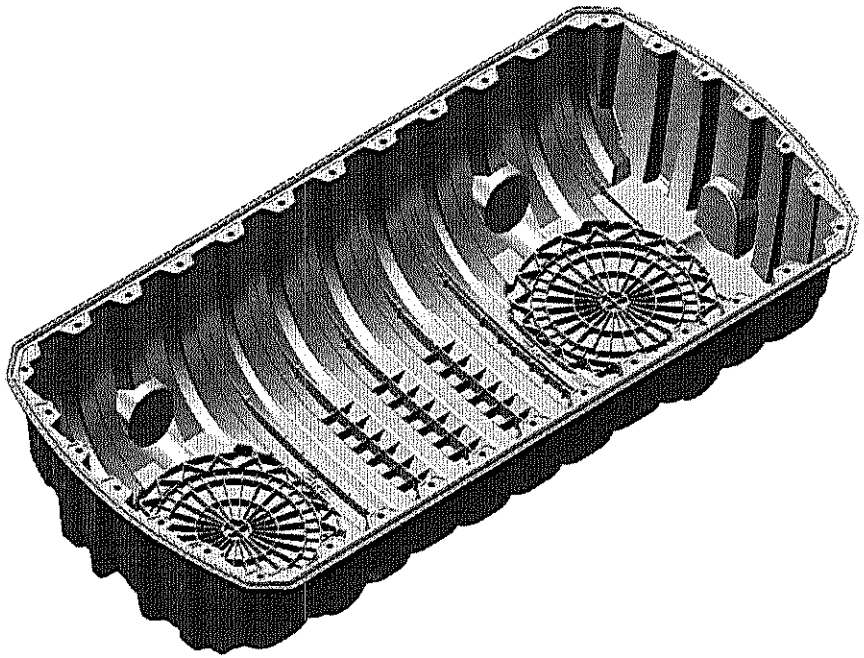


Existing ribs were extended vertically along the mid-height of the tank. New ribs were added, connecting the peripheral rib to the tank body corrugations. An additional locking clip was added at the four chamfered corners of the tank, bringing the total from 64 to 68.

Interior Surfaces

Interior Surfaces

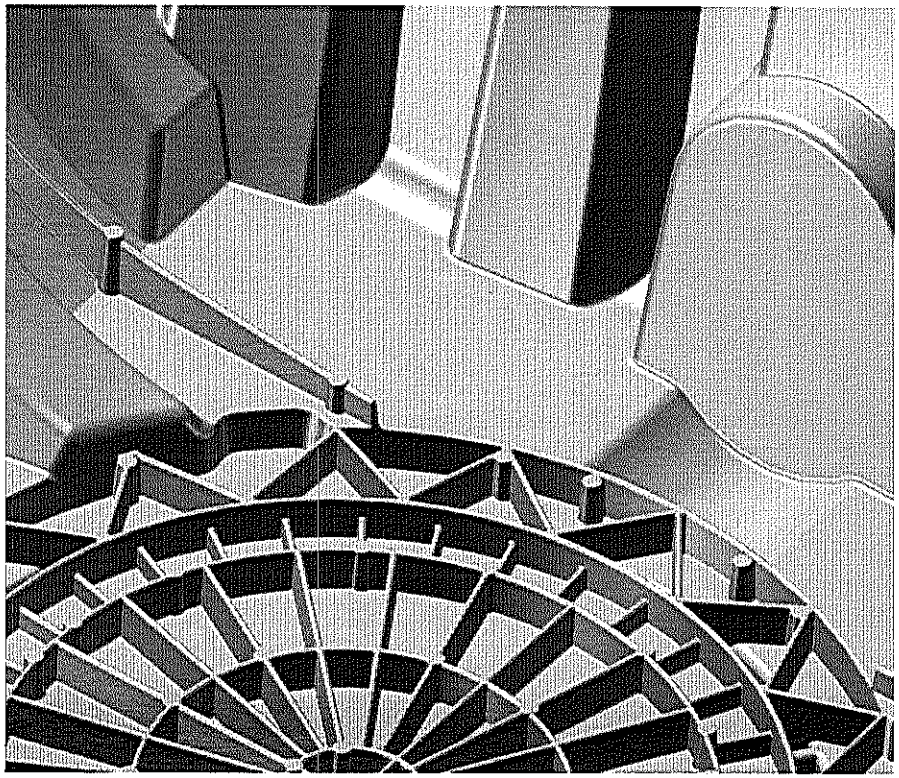
Initial



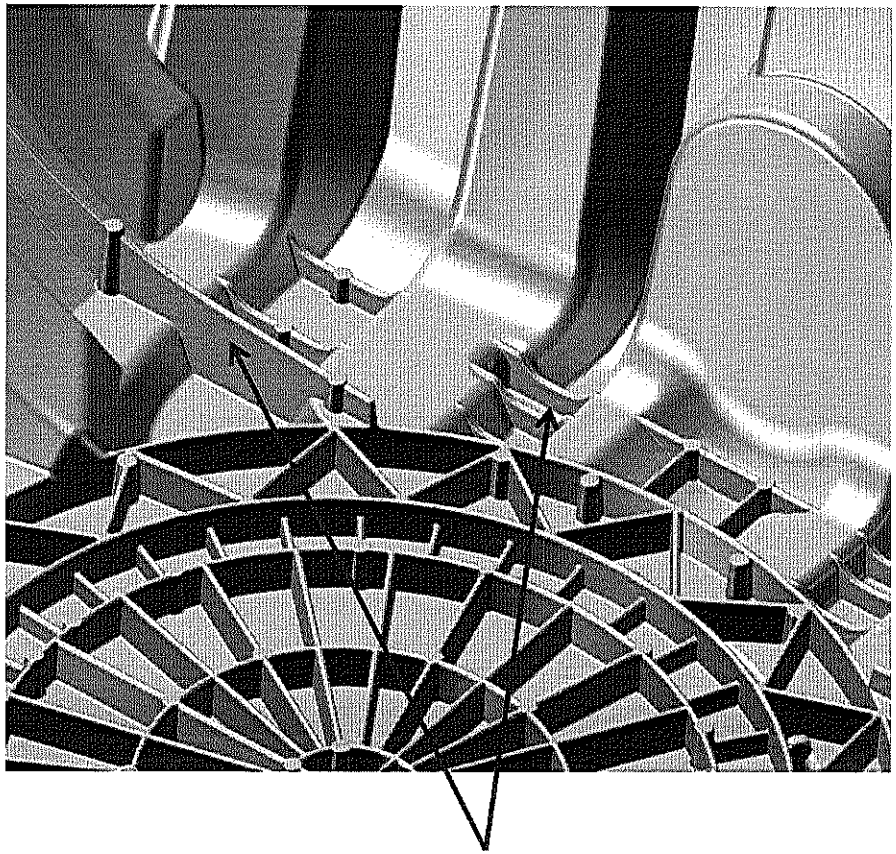
Current

Interior Surfaces

Initial



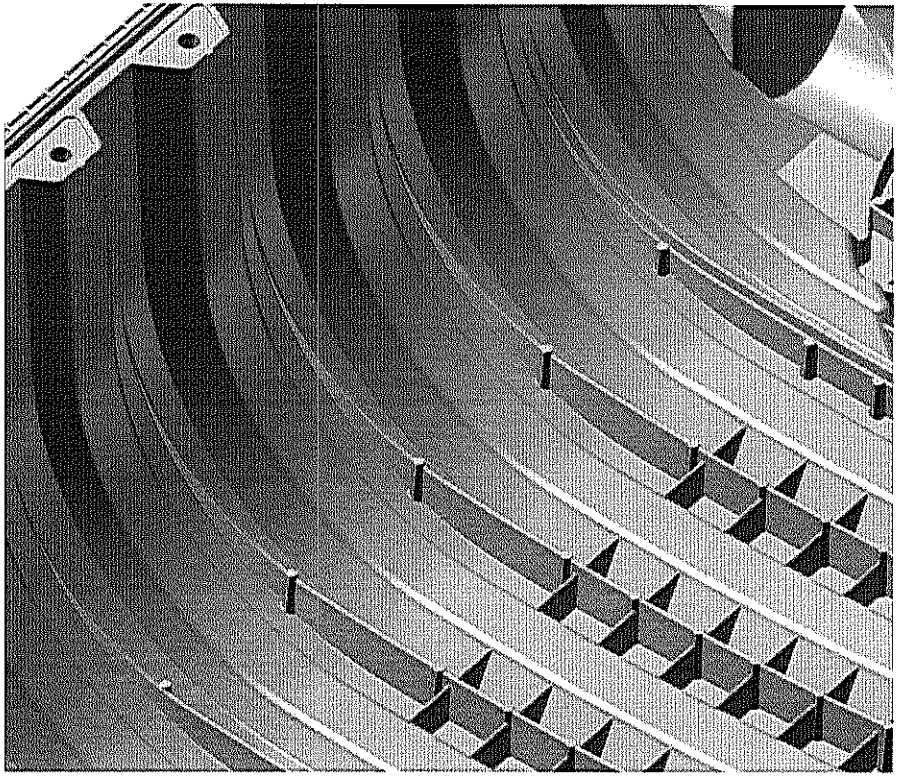
Current



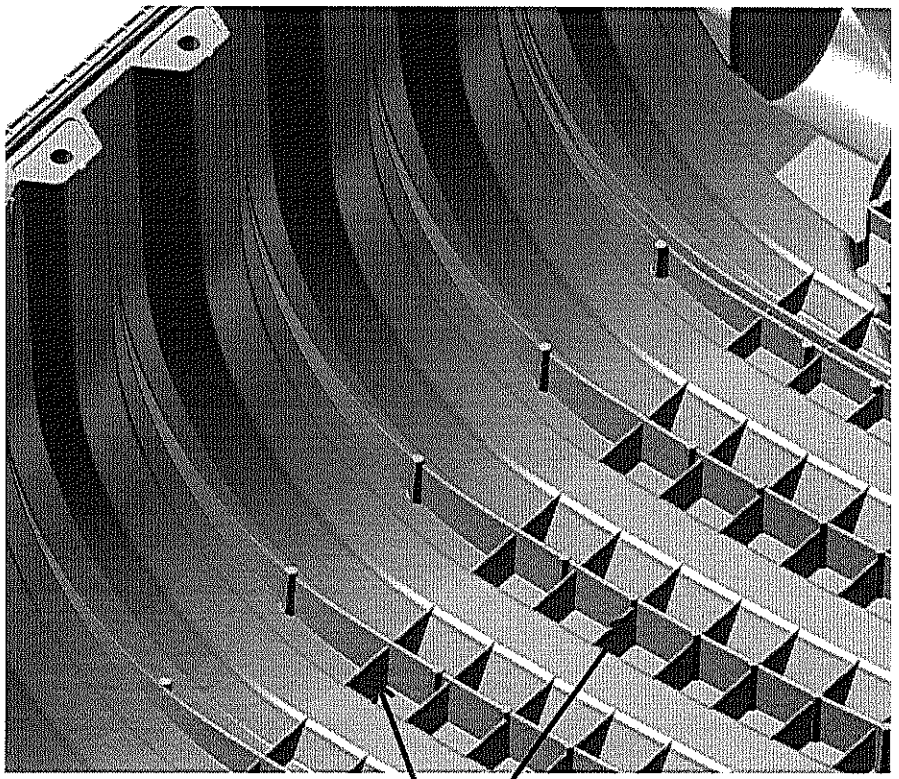
Interior hoop ribs were increased in height. Also shown is the corrugation modifications at the ends of the tank, tying into the access ports, as shown in earlier images.

Interior Surfaces

Initial



Current

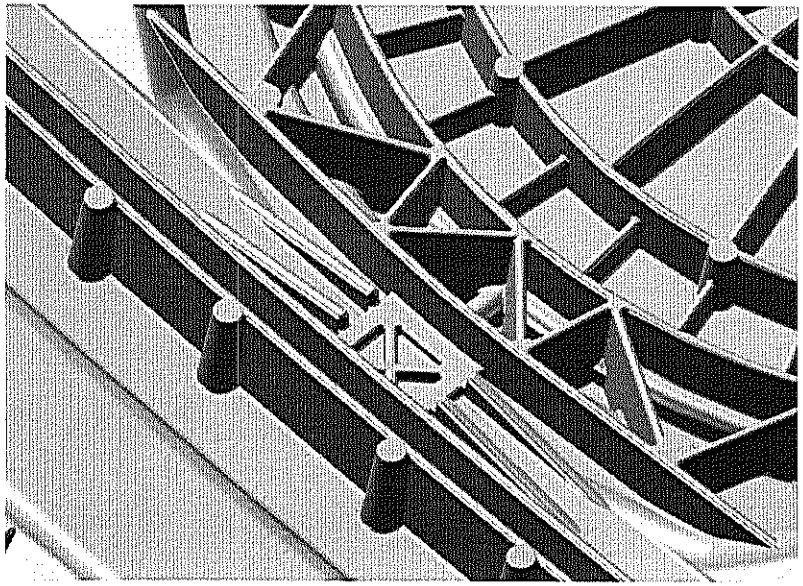


Interior hoop ribs were increased in height. Additional ribs were added outward from the longitudinal tank axis.

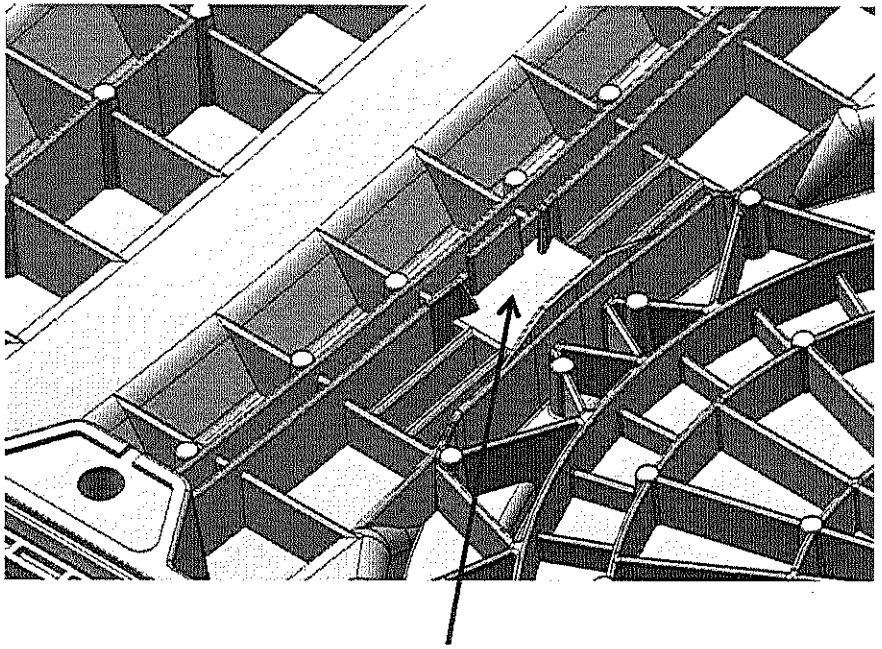
Interior Surfaces - Fiberglass Post Seat

Interior Surfaces - Fiberglass Post Seat

Initial

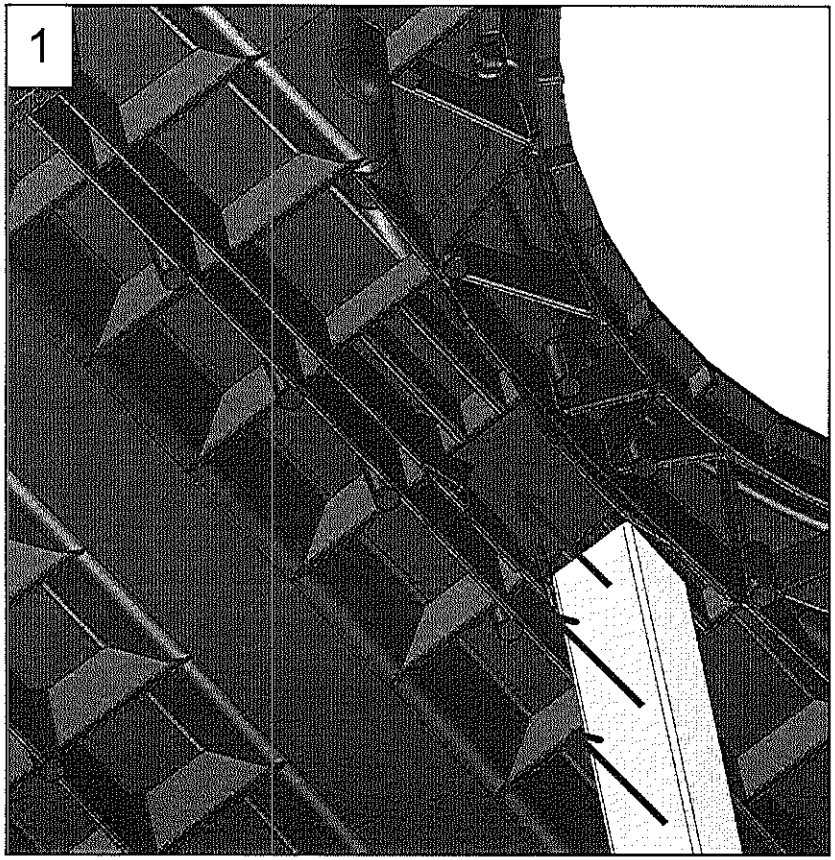


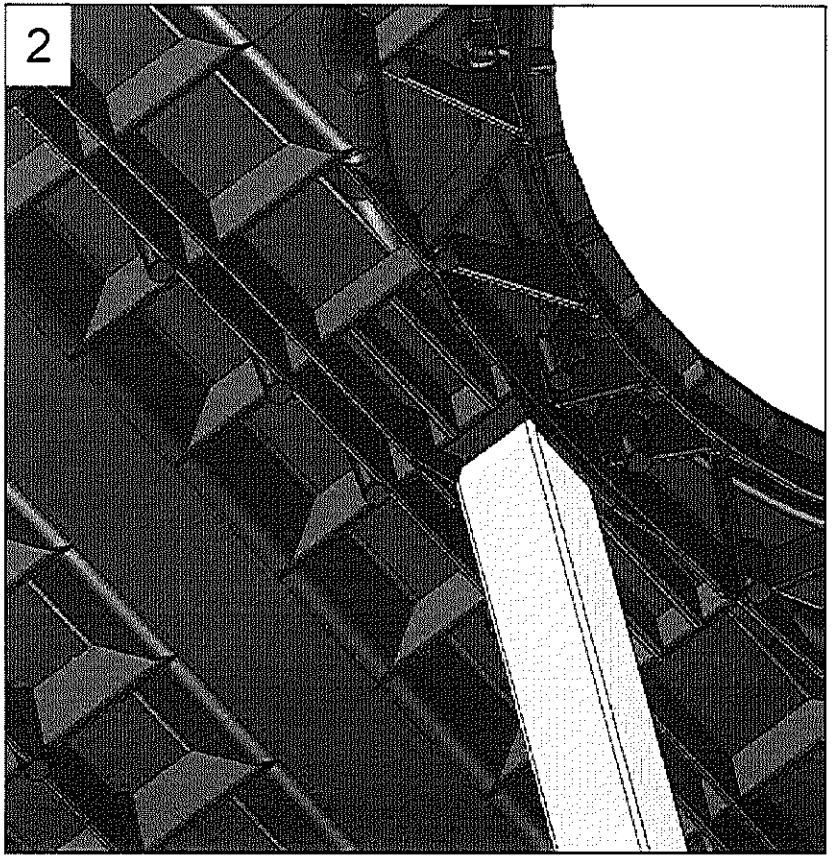
Current



The fiberglass post seat was enhanced to simplify the post installation procedure. The original ramp system was replaced with a snap-in platform system, allowing post installation with the tank top and bottom connected and clipped. The overlap of the seat ribs with the post remains greater than 1 inch at each side of the post. See post connection detail on page 13.

Interior Surfaces - Fiberglass Post Seat





With all 68 locking clips engaged on the tank exterior, the bottom of the post can be inserted into the bottom seat from above. The top of the post then enters the top seat through the side of one of the two locking ribs.

Attachment 2

Comparison of Regulatory Parameters for Original and Current Designs

Attachment 2

Comparison of Initial and Current Technical Specifications
Infiltrator IM-1060 Tank

Parameter	Units	Initial IM-1060 Design	Current IM-1060 Design	Status
Length	inches	127.0	127.0	Same
Width	inches	62.2	62.2	Same
Length-to-width ratio	---	2.3	2.3	Same
Height	inches	127.0	127.0	Same
Liquid depth	inches	44	44	Same
Working capacity	gallons	1,070	1,094	Increased
Total capacity	gallons	1,247	1,287	Increased
Compartments	number	1 or 2	1 or 2	Same
1st compartment volume	---	2/3 of working capacity	2/3 of working capacity	Same
2nd compartment volume	---	1/3 of working capacity	1/3 of working capacity	Same
Access ports	number	2	2	Same
Access opening diameter	inches	24	24	Same
End-to-end invert drop	inches	3	3	Same
Inlet tee diameter	inches	4	4	Same
Free vent area	square inches	37.6	37.6	Same
Airspace	%	16.5	17.6	Increased
Airspace height above liquid level	inches	10.2	10.2	Same
Tank wall thickness	inches	0.2	0.2	Same
Partition thickness	inches	0.31	0.31	Same
Partition height above liquid level	inches	6	6	Same
Alignment dowels	---	34	34	Same
Locking clips at seam	---	64	68	Increased

Attachment 3

Combined TW-Series and IM-1060 Installation Instructions

Infiltrator IM™- and TW™- Series Septic Tank General Installation Instructions

INFILTRATOR® septic tanks

Before You Begin

Infiltrator Systems' septic tanks must be installed according to state and/or local regulations, which supersede the manufacturer's installation instructions. If unsure of the installation requirements for a specific site, contact the health department or permitting authority.

WARNING: IMPLOSIONS MAY CAUSE SERIOUS INJURY
Follow Infiltrator Systems Inc. vacuum test instructions

Materials and Equipment Needed

- ☐ Infiltrator IM or TW tank
- ☐ Access port lids (included)
- ☐ 10 screws per lid (included)
- ☐ Inlet/outlet gaskets (included)
- ☐ Inlet/outlet tees*
- ☐ Tape measure
- ☐ Pipe, risers, etc.
- ☐ Socket wrench
- ☐ Excavator
- ☐ Shovel
- ☐ Level
- ☐ 5-inch-diameter (125 mm) hole saw (IM tanks)
- ☐ 5¼-inch-diameter (133 mm) hole saw (TW-Series only)
- ☐ Utility knife
- ☐ PVC pipe glue with primer

tee inclusion varies by state/province

Installation Site Selection

1. Avoid installation of the tank in vehicular traffic areas. The tank is designed for non-traffic applications.

2. The maximum vehicle load is a 4,500-pound (20 kN) axle load at a soil cover depth of 6 to 48* inches (150 to 1,200 mm).

**18-inch (450 mm) max. in Florida for Cat. 3 TW and IM-1060 tanks; 48-inch (1,200 mm) max. in Florida for Cat. 4 IM-1060; 36-inch (900 mm) max. in Massachusetts, New Hampshire, North Carolina, and Oregon.*

3. The tank shall not be installed where the subsurface water level outside the tank exceeds the height of the outlet pipe saddle. Follow Table 4 guidelines.

Excavating and Preparing the Site

1. Unless buoyancy control measures are required, the excavation width and length should be 12 to 36 inches (300 to 900 mm) larger than the tank on each side. See Infiltrator IM- and TW-Series Septic Tank Buoyancy Control Guidance document, available online at www.infiltratorsystems.com, for specific excavation requirements.

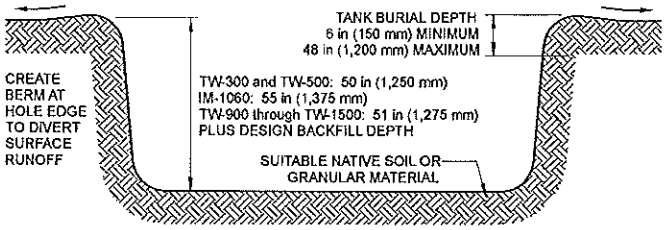
2. Excavate to account for the height of tank. 55 inches (1,375 mm) for the IM-1060, 51 inches (1,275 mm) for the TW-900 through TW-1500, and 50 inches (1,250 mm) for the TW-300 and TW-500. Also account for 4 inches (100 mm) of bedding (if required), and backfill thickness (permissible cover depth is 0.5 to 4 feet (150 to 1,200 mm) of soil).

Note: If the water level outside the tank exceeds the height of the outlet pipe saddle, tank structural integrity may be compromised. Follow Table 4 guidelines.

3. Inspect bottom of excavation to verify suitability of native soil for tank installation. Soils with large, protruding, or sharp stones or other similar objects that may damage the tank are not suitable.

4. The tank may be bed either in suitable native soil (see Backfilling the Tank section) or a minimum 4-inch (100 mm) layer of pea stone, sand, gravel, or other similar material having particles less than 3 inches (75 mm) in diameter.

5. Create a uniform, level bedding surface to ensure that the bottom of the tank is evenly supported at the base of the excavation. Verify that the base of excavation is flat.



Installing the Tank

1. Inspect the tank for damage before installation.

2. If the tank inlet and outlet penetrations are not drilled, drill holes using the drill points provided at each of the inlet and outlet ports according to the Inlet and Outlet Hole Locations section of this document. The inlet and outlet may be drilled on either the sides or ends of the tank, as required based on applicable codes and site conditions.

Florida, Indiana, Kentucky, Oregon, West Virginia and certain Texas tank inlet/outlet holes are factory drilled.

3. The gaskets supplied with the tank are compatible with Schedule 40 and SDR 35 pipe using a 5-inch-diameter (125 mm) hole saw with IM tanks, and a 5¼-inch-diameter (133 mm) hole saw with TW-Series tanks.

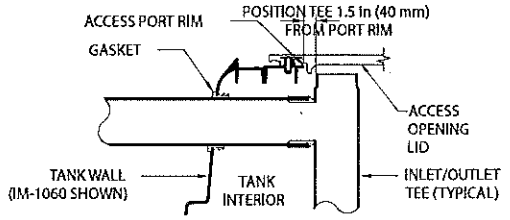
4. Install the rubber gaskets at the inlet and outlet.

5. Using the tank's integral lifting lugs, lower tank into excavation.

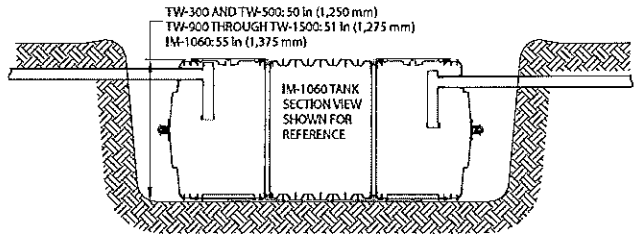
6. Slide the inlet and outlet pipes* through the gaskets.

**For North Carolina, the inlet pipe shall be a straight pipe with no tee.*

7. Horizontally position the tee 1½ inches (40 mm) from the access port rim as shown in the detail below. This allows the tee to fit into the access port lid.



Note: Illinois requires a 6-inch-diameter (150 mm) drop for inlet tee.



8. Install lids and risers (see Installing Risers section) as necessary.

Backfilling the Tank

Note: Infiltrator tanks do not require filling with water prior to backfill placement. Water filling is advisable if tank is left in an open excavation that may fill with water.

1. Backfill with suitable native soil. If native soil is unsuitable, replace unsuitable fraction with suitable soil.

2. Suitable soil shall include soil textural classes defined in the United States Department of Agriculture soil triangle. Suitable soil textural classes are based on the tank installation depth, as measured from finished grade to the top of tank.

a). For a tank installation depth of 0.5 to 2.0 feet (150 to 600 mm), suitable soil textures include:

i. Sand
ii. Loamy sand
iii. Sandy loam
iv. Loam
v. Sandy clay loam
vi. Sandy clay
vii. The following, assuming that the sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487) is greater than 30%: silt loam, clay loam, and clay
viii. The following, assuming that the sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487) is less than 30% and the soil is shown to be dilatant (refer to Step 5 below for simple dilatancy test to be conducted in the field): silt loam, silt, clay loam, silt clay loam, silty clay, and clay

b). For a tank installation depth that is greater than 2.0 feet and up to 4.0 feet (600 to 1,200 mm), suitable soil textures include:

i. Sand
ii. Loamy sand
iii. Sandy loam
iv. Loam
v. Sandy clay loam
vi. Sandy clay
vii. Silt loam, clay loam, and clay having at least a 30% sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487).

3. Backfill should not have stones greater than 3 inches (75 mm) in diameter or excessive clods that do not break apart during placement and compaction. Backfill must be capable of occupying the spaces between the tank ribs.

4. Standard field soil classification methods shall be used to determine the soil textural class.

5. Under most circumstances, the determination of soil dilatancy will not be required. Dilatancy shall be determined in the field using a test that does not require specialized equipment, per ASTM D2488, Section 14.3, and as described below.

a). Mold a ½-inch-diameter (13 mm) soil test specimen in the palm of the hand. The test specimen shall be representative of the prospective tank backfill soil.

b). Mold the test specimen, adding water if necessary, until it has a soft, but not sticky consistency.

c). Smooth the soil ball in the palm of one hand with a spatula or equal.

d). Shake the soil sample by striking the hand vigorously against the other hand approximately 5 times. Do not strike hand in a manner that results in an injury.

e). Immediately following shaking, gently squeeze the soil in the palm of the hand.

f). Repeat shaking test if necessary to evaluate soil.

g). Note whether water appears on the surface of the soil specimen during shaking and squeezing.

i. If water appears on and disappears from the surface of the soil specimen, the soil is dilatant, and is suitable.

ii. If no visible change or only a slight visible change in the soil specimen occurs due to shaking or squeezing, the soil is not dilatant, and is unsuitable.

6. Do not backfill top of tank before sidewalls are completely backfilled.

7. Place backfill around the four sidewalls in a progressive, alternating manner, so that the backfill height along the four sidewalls is maintained within a 12-inch (300 mm) tolerance.

8. Continue to place backfill along the sidewalls in 12-inch (300 mm) lifts. Place backfill between the ribs on the sidewalls such that the space between the ribs is completely filled with soil.

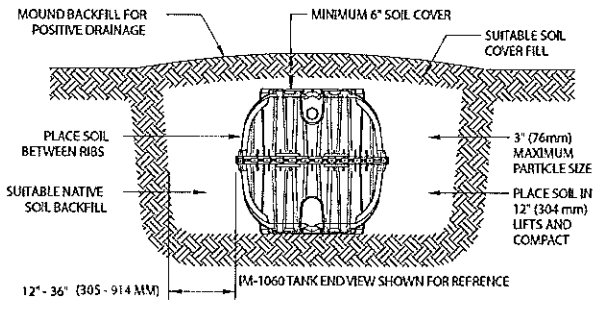
9. Compact backfill material either by hand tamping or mechanical compaction (includes backhoe bucket). Compact each lift prior to placement of next lift. Compact backfill from tank walls to excavation sidewalls.

10. Complete backfilling and grade the area.

11. A minimum 6-inch-thick (150 mm) layer of suitable soil must be placed over the top of the tank. The balance of backfill placed to finish grade above the tank may be either suitable or unsuitable soil.

12. Establish a strong stand of erosion-resistant vegetation.

Note: Grade to prevent the backfilled excavation from filling with surface runoff. If the water level in the backfilled excavation exceeds the height of the outlet pipe saddle, tank structural integrity may be compromised. Follow Table 4 guidelines.



Short and Long-Term Groundwater Control

It may be necessary to implement groundwater control measures during tank installation. Maintain dry conditions by expanding the excavation to create a short-term groundwater collection sump for temporary placement of a dewatering pump if needed. Long-term groundwater control measures such as underdrains and interceptor trenches may be sensible if the site is amenable to construction of a control system and such systems are not prohibited by regulation or law, and the tank location is not subject to flooding. Properly installed underdrains and groundwater interceptor trenches may prevent the need for tank buoyancy control measures.

Installing Under Shallow Groundwater Conditions

Buoyancy control measures may be required if the Infiltrator tank is to be installed with less than 12 inches (300 mm) of soil backfill cover, and where the water level outside the tank has the potential to rise 24 inches (600 mm) or more above the elevation of the tank bottom. Otherwise, no control measures are required (see Table 1). The need for buoyancy control measures must be determined based on backfill cover depth and height of water outside of tank above the tank bottom according to the following table. Refer to Infiltrator IM- and TW-Series Septic Tank Buoyancy Control Guidance document for more information.

Table 1: Tank models[1] and conditions requiring buoyancy control[2]

Water height above tank bottom	Soil cover depth above tank[3]		
	6" (min) (150 mm)	12" (300 mm)	18" (450 mm)
Above outlet pipe saddle	Do not install	Do not install	Do not install
36" (900 mm) to outlet pipe sadle[4]	All models	TW-300/500	None
30" (750 mm) to 36" (900 mm)	All models except IM-1060	TW-300/500	None
24" (600 mm) to 30" 750 mm)	TW-300/500	None	None
Less than 24" (600 mm)	None	None	None

[1] *TW-300, TW-500, TW-900, TW-1050, IM-1060, TW-1250, TW-1500.*
[2] *See Infiltrator IM- and TW-Series Septic Tank Buoyancy Control Guidance for more information.*
[3] *No controls are required for soil cover depths exceeding 12" (300 mm).*
[4] *The tank shall not be installed where the water level outside the tank exceeds the height of the outlet pipe saddle. Follow Table 4 guidelines.*

Installing Risers

1. Compatible risers include 24-inch (600 mm) diameter products such as the Infiltrator TW-Riser, EZset by Infiltrator, PolyLok®, Inc., and Tuf-Tite® Corporation, in addition to 24-inch (600 mm) diameter corrugated HDPE and IPEX Ultra Rib® PVC pipe. Follow Infiltrator's IM- and TW-Series Septic Tank Riser Connection Guidance.

2. Oregon watertightness testing shall include filling with water at least 2 inches above riser connection, with no more than 1 gallon leakage per 24 hours, per OAR 340-073-0025(3).

Installing Pumps and Related Equipment

Pumps may be supported on a stable, level 16 x 16 inch (400 x 400 mm) platform positioned on the bottom of the tank. Precast concrete block is acceptable pump support material. One 16 x 16 inch block or two 8 x 16 inch (200 mm x 400 mm) side-by-side blocks may be used. The support block(s) should be placed below an access opening and level upon the tank bottom. If two blocks are used, they should be oriented perpendicular to ribs on the tank bottom, if present, for stability.

Installation of products such as electrical conduit and wiring, pumps, water level control equipment, valves, siphon equipment, etc. shall be in accordance with the product manufacturer's instructions and compliant with applicable state or local rules and regulations. Appurtenances shall be fastened to the tank riser system and not the tank body or access opening rim. Where possible, appurtenances shall be installed to facilitate maintenance and repair access via the tank access openings.

General Specifications

- Failure to comply with installation instructions may void warranty.
- Prior to ground disturbance, check for subsurface obstructions and utilities in conformance with applicable requirements.
- Operating water temperature shall be less than 140° F (60° C).
- Tanks are not fire resistant. Store away from ignition sources.
- Removal of structural bulkheads is prohibited; removal of locking clips on the IM-1060 mid seam connection is also prohibited.
- Suitable for potable applications only if the tank bearing an NSF/ANSI 61 certification mark, otherwise tank is recommended for use in septic, rainwater/stormwater storage, and pump applications only.
- Infiltrator tanks are designed for installation underground. Contact Infiltrator Systems for above-ground use requirements.

⚠ WARNING: IMPLOSIONS MAY CAUSE SERIOUS INJURY
Follow Infiltrator Systems Inc. vacuum test instructions

Table 2: Infiltrator Tank Nominal Volume Chart

Height1		TOTAL LIQUID VOLUME IN TANK AT INDICATED HEIGHT													
in	cm	TW-300		TW-500		TW-900		TW-1050		TW-1250		TW-1500		IM-1060	
		Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	3	1	2	2	8	10	37	11	43	14	53	17	64	3	11
2	5	2	9	5	19	22	82	25	95	30	115	37	140	13	49
3	8	5	19	8	30	41	156	48	181	58	218	71	267	28	106
4	10	9	34	13	49	62	236	72	273	87	330	107	404	46	174
5	13	15	57	20	76	84	317	97	368	117	444	143	543	65	246
6	15	21	79	28	106	106	400	122	463	148	558	180	683	86	326
7	18	28	106	37	140	128	483	148	560	178	674	218	825	107	405
8	20	36	136	48	182	150	567	174	657	209	791	256	968	129	488
9	23	43	163	59	223	172	653	200	756	240	910	294	1,112	152	575
10	25	50	189	71	269	195	739	226	855	272	1,029	332	1,257	176	666
11	28	57	216	83	314	218	826	252	956	304	1,149	371	1,404	200	757
12	30	65	246	95	360	242	915	279	1,057	336	1,270	410	1,551	225	852
13	33	72	273	105	397	265	1,004	306	1,160	368	1,393	449	1,700	251	950
14	36	80	303	118	447	289	1,093	334	1,263	400	1,516	489	1,849	277	1,049
15	38	87	329	130	492	313	1,184	361	1,367	433	1,640	528	2,000	303	1,147
16	40	95	360	142	537	337	1,276	389	1,472	466	1,765	569	2,152	330	1,249
17	43	102	386	154	583	361	1,368	417	1,578	500	1,892	609	2,305	357	1,351
18	46	110	416	166	628	386	1,461	445	1,685	533	2,019	650	2,459	384	1,454
19	48	118	447	179	678	411	1,555	474	1,792	567	2,146	690	2,614	411	1,556
20	50	126	477	191	723	436	1,650	502	1,901	601	2,275	732	2,769	438	1,658
21	53	134	507	204	772	462	1,747	532	2,012	636	2,407	774	2,928	465	1,760
22	56	141	534	216	818	488	1,847	562	2,126	671	2,541	816	3,091	493	1,866
23	58	149	564	228	863	515	1,948	592	2,241	708	2,678	860	3,256	521	1,972
24	61	156	590	241	912	542	2,053	624	2,361	745	2,819	905	3,425	549	2,078
25	64	164	621	253	958	569	2,154	654	2,475	781	2,955	948	3,589	577	2,184
26	66	171	647	265	1,003	595	2,251	683	2,587	815	3,086	990	3,747	605	2,290
27	69	178	674	277	1,048	620	2,346	712	2,695	849	3,215	1,031	3,903	633	2,396
28	71	186	704	289	1,094	644	2,439	740	2,802	883	3,342	1,072	4,057	662	2,506
29	74	193	731	300	1,136	669	2,533	769	2,909	916	3,469	1,112	4,210	691	2,616
30	76	200	757	312	1,181	693	2,625	796	3,015	950	3,594	1,152	4,362	719	2,722
31	79	208	787	324	1,226	718	2,717	824	3,120	982	3,719	1,192	4,514	747	2,828
32	81	215	814	336	1,272	741	2,807	852	3,223	1,015	3,842	1,232	4,663	775	2,934
33	84	222	840	347	1,313	765	2,895	878	3,325	1,047	3,964	1,271	4,810	802	3,036
34	86	230	871	359	1,359	788	2,983	905	3,426	1,079	4,084	1,309	4,956	830	3,142
35	89	236	893	370	1,400	811	3,070	931	3,526	1,110	4,203	1,347	5,101	857	3,244
36	91	243	920	382	1,446	834	3,155	957	3,624	1,141	4,320	1,385	5,243	884	3,346
37	94	251	950	393	1,488	856	3,240	983	3,721	1,172	4,436	1,422	5,384	911	3,449
38	97	258	977	404	1,529	877	3,320	1,008	3,814	1,201	4,548	1,458	5,521	938	3,551
39	99	264	999	416	1,575	898	3,398	1,031	3,904	1,230	4,657	1,494	5,654	965	3,653
40	102	271	1,026	427	1,616	920	3,484	1,057	4,003	1,261	4,772	1,532	5,798	992	3,755
41	104	278	1,052	438	1,658	938	3,549	1,078	4,080	1,286	4,869	1,562	5,915	1,018	3,854
42	107	285	1,079	449	1,699	957	3,623	1,100	4,166	1,314	4,972	1,596	6,042	1,044	3,952
43	109	292	1,105	460	1,741	976	3,695	1,123	4,249	1,340	5,074	1,629	6,167	1,069	4,047
44	112	299	1,132	471	1,783	994	3,765	1,144	4,331	1,366	5,172	1,661	6,288	1,094	4,141
45	114	304	1,151	481	1,821	1,011	3,829	1,164	4,406	1,390	5,263	1,690	6,399	1,118	4,232
46	117	310	1,173	490	1,855	1,025	3,878	1,179	4,465	1,410	5,337	1,715	6,492	1,142	4,323
47	119	313	1,185	498	1,885	1,036	3,923	1,193	4,517	1,427	5,402	1,737	6,574	1,165	4,410
48	122	313	1,185	502	1,900	1,045	3,954	1,203	4,553	1,439	5,446	1,750	6,626	1,187	4,493
49	124	313	1,185	504	1,908	1,055	3,994	1,212	4,588	1,448	5,481	1,762	6,669	1,208	4,573
50	127	–	–	–	–	–	–	–	–	–	–	–	–	1,228	4,648
51	130	–	–	–	–	–	–	–	–	–	–	–	–	1,247	4,720
52	132	–	–	–	–	–	–	–	–	–	–	–	–	1,265	4,789
53	135	–	–	–	–	–	–	–	–	–	–	–	–	1,278	4,838
54	137	–	–	–	–	–	–	–	–	–	–	–	–	1,287	4,872

1. Height measured from inside surface at bottom of corrugation in tank.

TW-Series Inlet and Outlet Hole Locations

Drill height markings are provided on the Infiltrator TW-900, TW-1050, TW-1250, and TW-1500 to serve as a guide for inlet and outlet hole locations. Markings "A" (lower) and "B" (upper) are located at the inlet end. Markings "C" (lower), "D" (middle), and "E" (upper) (TW-900 only) are located at the outlet end. Note: holes may be drilled at the end or side inlet and outlet locations. The circular centering symbol next to the marking letter indicates the centerpoint location for the hole saw. The pilot drill bit on the hole saw should be positioned on the centering symbol to properly align the hole saw.

The drill height markings below are provided to set the inlet and outlet invert heights based on state and/or local regulations. The chart below provides the proper inlet and outlet drill points. Note that state, provincial and local regulatory requirements take precedence over the information provided in the table below.

Table 3: Inlet and Outlet Hole Locations

State or Province	Inlet Drill Location	Outlet Drill Location	Invert Drop (in) [mm]	Inlet Invert Height[2] (in) [mm]	Outlet Invert Height[2] and Liquid Level (in) [mm]
DE, FL, IA, MA, ON	A	D	2 [51]	42 [1,067]	40 [1,016]
AR, CA, CO, CT, ID, IN[1], KS, KY[1], MO, MT, ND, PA, SD, VT, WV[1]	B	C	3 [76]	42.75 [1,086]	39.75 [1,010]
TX	B	D	2.75 [70]	42.75 [1,086]	40 [1,016]
All Others	A	C	2.25 [57]	42 [1,067]	39.75 [1,010]

Notes:

1. Florida, Indiana, Kentucky, Oregon, West Virginia, and certain Texas tanks are factory drilled.

2. Invert heights are measured from the lowest interior surface at the bottom of the tank.

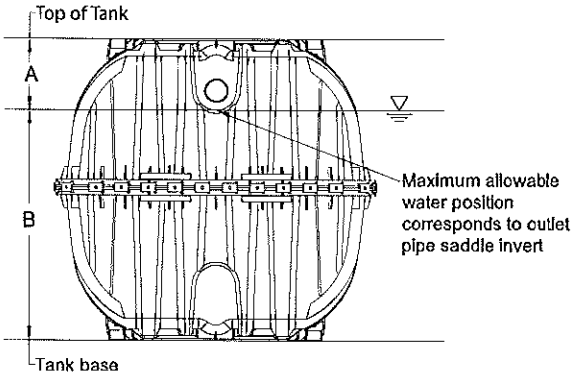
3. Invert heights based on 4-inch-diameter (100 mm) inlet/outlet pipes.

IM-1060 Inlet and Outlet Hole Locations

Drill height markings are provided on the Infiltrator IM-1060 to serve as a guide for inlet and outlet hole locations. The IM-1060 is manufactured to have an end inlet invert height of 47 inches (1,194 mm) above the interior surface of the tank bottom when using the drill height guide markings and 4-inch-diameter (100 mm) pipes. The end outlet invert height is 44 inches (1,118 mm), corresponding to a 3-inch (76 mm) drop from end inlet to end outlet. The side inlets have invert heights of 47.5 inches (1,207 mm), and side outlets have invert heights of 44.5 inches (1,130 mm). This corresponds to a side inlet to side outlet invert drop of 3 inches (76 mm); a side inlet to end outlet invert drop of 3.5 inches (89 mm); and an end inlet to side outlet invert drop of 2.5 inches (64 mm).

Table 4: Maximum Allowable Subsurface Water Elevation

Tank Model	Vertical Distance to Maximum Allowable Water Elevation Outside of Tank	
	A - From Top of Tank	B - From Tank Base
TW-300	13" (330 mm)	36" (900 mm)
TW-500	13" (330 mm)	38" (975 mm)
TW-900	11" (280 mm)	39" (975 mm)
TW-1050	11" (280 mm)	39" (975 mm)
IM-1060	13" (330 mm)	43" (1,075 mm)
TW-1250	11" (280 mm)	39" (975 mm)
TW-1500	11" (280 mm)	39" (975 mm)



INFILTRATOR SYSTEMS, INC. ("Infiltrator")
INFILTRATOR® SEPTIC TANK LIMITED WARRANTY
FIVE (5) YEAR MATERIALS AND WORKMANSHIP LIMITED WARRANTY

(a) This limited warranty is extended to the end user of an Infiltrator Septic Tank. A Septic Tank manufactured by Infiltrator, when installed and operated in accordance with Infiltrator's installation instructions and local regulation by a licensed installer, is warranted to you: (i) against defective materials and workmanship for five (5) years after installation. Infiltrator will, at its option, (i) repair the defective product or (ii) replace the defective materials. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Septic Tank.

(b) In order to exercise its warranty rights, you must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect.

(c) YOUR EXCLUSIVE REMEDY WITH RESPECT TO ANY AND ALL LOSSES OR DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER SHALL BE SPECIFIED IN SUBPARAGRAPH (a) ABOVE. INFILTRATOR SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND, HOWEVER OCCASIONED, WHETHER BY NEGLIGENCE OR OTHERWISE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

(d) THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY GIVEN BY INFILTRATOR AND SUPERSEDES ANY PRIOR, CONTRARY, ADDITIONAL, OR SUBSEQUENT REPRESENTATIONS, WHETHER ORAL OR WRITTEN. INFILTRATOR DISCLAIMS AND EXCLUDES TO THE GREATEST EXTENT ALLOWED BY LAW ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FINESSE FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. NO PERSON (INCLUDING ANY EMPLOYEE, AGENT, DEALER, OR REPRESENTATIVE) IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY CONCERNING THIS PRODUCT, EXCEPT TO REFER YOU TO THIS LIMITED WARRANTY. EXCEPT AS EXPRESSLY SET FORTH HEREIN, THIS WARRANTY IS NOT A WARRANTY OF FUTURE PERFORMANCE, BUT ONLY A WARRANTY TO REPAIR OR REPLACE.

(e) YOU MAY ASSIGN THIS LIMITED WARRANTY TO A SUBSEQUENT PURCHASER OF YOUR HOME.

(f) NO REPRESENTATIVE OF INFILTRATOR HAS THE AUTHORITY TO CHANGE THIS LIMITED WARRANTY IN ANY MANNER WHATSOEVER, OR TO EXTEND THIS LIMITED WARRANTY.

CONDITIONS AND EXCLUSIONS

There are certain conditions or applications over which Infiltrator has no control. Defects or problems as a result of such conditions or applications are not the responsibility of Infiltrator and are NOT covered under this warranty. They include failure to install the Septic Tank in accordance with instructions or applicable regulatory requirements or guidance, altering the Septic Tank contrary to the installation instructions and disposing of chemicals or other materials contrary to normal septic tank usage.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of a Septic Tank 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 a Septic Tank.

Distributed By:

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Infiltrator IM™- and TW™- Series Septic Tanks Riser Connection Guidance Document

INFILTRATOR® septic tanks

Before You Begin

This document provides recommended procedures for the connection of commercially available riser products to Infiltrator® Systems' (Infiltrator's) IM- and TW- Series tanks.

The intent of this document is to provide procedures for making the connection between the riser and tank. Once this connection has been made, the riser manufacturer's standard installation instructions should be used to complete the assembly.

Risers must be installed according to state and/or local regulations, which supersede the guidelines in this document. If unsure of the requirements for a particular site, contact the local health department or permitting authority.

Parts and Supplies

The parts and supplies necessary for installation of a riser system on Infiltrator IM- and TW- Series tanks must be purchased separately from the tank. All parts and supplies are commercially available. Contact Infiltrator or the riser manufacturer for assistance obtaining parts and supplies.

General Guidelines

1. Complete riser assembly installation, including installation of adapter ring, riser(s), and lid prior to backfilling tank.

Note: Risers are to be connected to Infiltrator's access port connector ring (referred to herein as "Infiltrator connector ring"). The Infiltrator connector ring is a permanent component of the tank body, and is the connection point for the riser component.

2. Ensure that all connection surfaces are clean and dry.

3. Sealant shall be ISI 1500 Adhesive Sealant or equivalent.

4. Sealants vary between manufacturers. Sealant identified herein represents a minimum recommendation. The installer must use discretion in determining the size and amount of sealant needed to craft and maintain a watertight seal.

5. Keep sealant at a temperature (at least 60° F/16° C) that maintains its workability. Keep it free from dirt and debris that may compromise a watertight seal.

6. When applying sealant to a part, ensure continuous application to avoid gaps that may cause leaks. Apply an adequate quantity to ensure a sealed connection.

7. Physically spread the sealant into the channel on the Infiltrator connector ring to ensure that it distributes properly during assembly.

8. The ISI 1500 Adhesive Sealant requires 24 hours for proper curing prior to backfilling. Determine curing times for other sealants based on manufacturer's recommendations.

9. Ensure that all screws supplied with riser products are installed for connection of adapter rings, risers, and lids. Insert screws only in prescribed locations.

10. Do not over tighten screws. This may damage the plastic parts being connected, causing the screw connection to fail. This may also strip the screw head. Be sure to insert screws in a "star" pattern, tightening opposite sides of the riser or pipe adapter.

Note: Use #14 x 1¼-inch stainless steel screws

11. In addition to the measures shown in this document, additional sealant may also be applied to the exterior joint connection to help establish and maintain watertight connections.

Compatible Products

The Infiltrator IM- and TW- Series tanks are compatible with 24-inch (600-mm) diameter riser products from the following manufacturers:

- Infiltrator TW Riser
- EZset by Infiltrator
- Tuf-Tite® Corporation
- PolyLok™ Inc.

The following 24-inch (600-mm) diameter pipe products are also compatible with the Infiltrator IM-1060 tank:

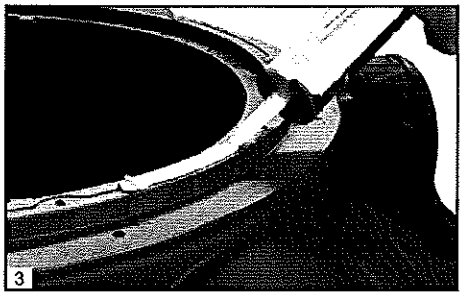
- IPEX Ultra-Rib™ PVC pipe
- Corrugated high density polyethylene (HDPE) pipe

Infiltrator TW Riser

1. Install riser assembly prior to backfilling tank.

2. Place the TW Riser over the Infiltrator connector ring and rotate the TW Riser to the proper alignment. Proper alignment is ensured for the TW-Series tanks when the indexing tabs on the bottom of the riser drop into the receiving slots of the Infiltrator connector ring and alignment arrows on the riser and tank are aligned. For the IM-Series tanks, proper alignment is ensured when the receiving slots on the bottom of the riser engage the indexing tabs on the Infiltrator connector ring. Note the proper alignment position and remove the TW Riser.

3. Apply ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes in the channel on the top surface of the Infiltrator connector ring. The sealant thickness must be adequate to fill the gap beneath the TW Riser.

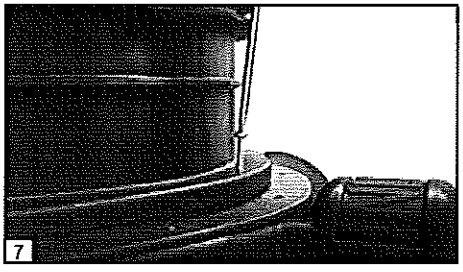


4. Invert the TW Riser and center over the Infiltrator connector ring in the proper alignment position determined in step 2.

5. Verify that the sealant remains properly aligned on EZset riser.

6. The 10 blind pilot holes on the riser should be aligned with the 10 receiving holes on the Infiltrator connector ring.

7. Fasten the TW Riser to the Infiltrator connector ring with 10 factory-supplied screws. If the factory-supplied screws are not available, use ten #14 x 1¼-inch (4.9 mm x 37 mm) stainless steel screws.



PolyLok™ Inc. Riser

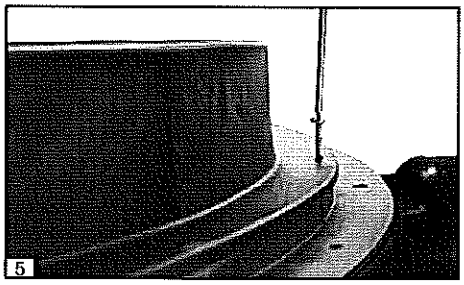
PolyLok riser must be installed using Infiltrator Pipe Adapter Ring.

1. Install riser assembly prior to backfilling tank.

2. Apply ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes on the top surface of Infiltrator connector ring. Sealant thickness must fill gap beneath pipe adapter.

4. Align the 10 blind pilot holes on the Infiltrator Pipe Adapter Ring with the 10 receiving holes on the Infiltrator connector ring using the indexing tabs on the inside of the ring. Center and press to create an even seal.

5. Fasten Infiltrator Pipe Adapter Ring to Infiltrator connector ring using ten #14 x 1¼-inch (6.2 mm x 32 mm) stainless steel counter sink screws. Tighten in a star pattern. ***Note: counter sink screws are not supplied with the Infiltrator Pipe Adapter Ring.***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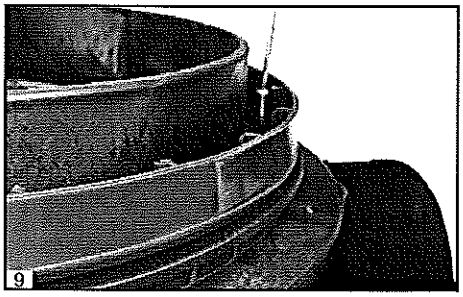
6. Center the PolyLok Riser-to-Riser Adapter ring over Infiltrator Pipe Adapter Ring and mark ten even locations on the Infiltrator Pipe Adapter Ring for pilot holes.

7. Drill 1/8-inch (3.5-mm) pilot holes at marked locations on the PolyLok Riser-to-Riser Adapter Ring so that screws will connect to adjacent Infiltrator Pipe Adapter Ring.

8. Center the PolyLok Riser-to-Riser Adapter Ring over the Infiltrator Pipe Adapter Ring and apply ISI 1500 Adhesive Sealant in the space between the PolyLok Riser-to-Riser Adapter Ring and Infiltrator Pipe Adapter Ring to fill the gap.

9. Fasten PolyLok Riser-to-Riser Adapter Ring to Infiltrator Pipe Adapter Ring using ten #12 x ¾-inch (5.5 mm x 19 mm) stainless steel screws.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10. Tighten screws in a "star" pattern, tightening screws on opposite sides of the PolyLok and Infiltrator rings. Repeat star pattern at least twice, without over tightening screws.

11. Connect PolyLok riser to PolyLok Riser-to-Riser Adapter Ring and install according to PolyLok's instructions.

12. Backfill tank in accordance with Infiltrator's IM-1060 tank installation instructions.

13. Following tank backfilling, visually examine the riser to Infiltrator Tank Adapter Ring connection for damage resulting from backfill placement. Repair or replace if damaged.

24-inch (600-mm) HDPE Pipe

Note: The 24" HDPE pipe must be installed using the Infiltrator Pipe Adapter Ring.

1. Install riser assembly prior to backfilling tank.

2. Cut HDPE pipe along an inner corrugation to allow lid to fit properly. Cut should be smooth and even.

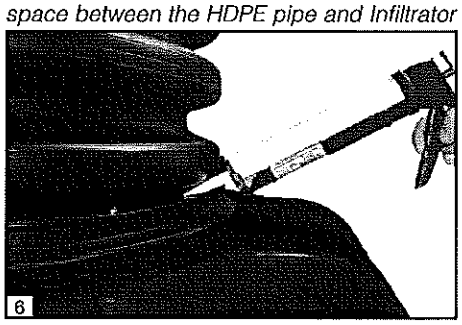
3. Apply ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes on the top surface of Infiltrator connector ring. Sealant thickness must fill gap beneath Infiltrator Pipe Adapter Ring.

4. Align the 10 blind pilot holes on the Infiltrator Pipe Adapter Ring with the 10 receiving holes on the Infiltrator connector ring using the indexing tabs on the inside of the ring. Center and press to create an even seal.

5. Fasten Infiltrator Pipe Adapter Ring to Infiltrator reinforcing ring using ten #14 x 1¼-inch (6.2 mm x 31 mm) stainless steel screws. Tighten in star pattern. Repeat star pattern at least twice, without over tightening screws.

6. Center the HDPE pipe over the Infiltrator Pipe Adapter Ring and apply ISI 1500 Adhesive Sealant in the space between the pipe and Infiltrator Pipe Adapter Ring to fill the gap.

Note: Use additional ISI 1500 Adhesive Sealant to fill gap and seal space between the HDPE pipe and Infiltrator Pipe Adapter Ring.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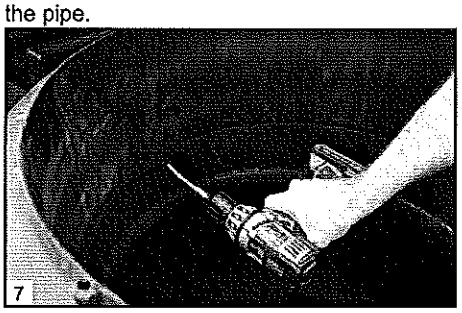
7. Fasten HDPE pipe to Infiltrator Pipe Adapter Ring using ten #12 x 1¼-inch (5.5 mm x 31 mm) stainless steel screws from inside the pipe.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8. Tighten screws in a "star" pattern, tightening screws on opposite sides of the Infiltrator Pipe Adapter Ring. Repeat the star pattern at least twice, without over tightening screws.

9. Use the Infiltrator TW-Series septic tank lid, or equivalent product as a lid for the HDPE pipe. Follow lid manufacturer's instructions to complete riser installation.

10. Backfill tank in accordance with Infiltrator's IM-1060 tank installation instructions.

11. Following tank backfilling, visually examine the riser to Infiltrator Pipe Adapter Ring connection for damage resulting from backfill placement. Repair or replace if damaged.

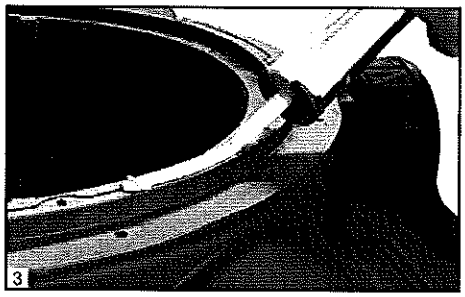
24-inch (600-mm) IPEX Ultra-Rib™ PVC Pipe

24" IPEX pipe must be installed using the Infiltrator Pipe Adapter Ring.

1. Install riser assembly prior to backfilling tank.

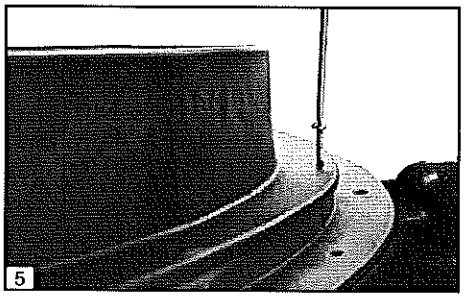
2. Cut IPEX pipe along an inner corrugation to allow lid to fit properly. Cut should be smooth and even.

3. Apply ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes in the channel on the top surface of Infiltrator connector ring. Sealant thickness must fill gap beneath Infiltrator Pipe Adapter Ring.



4. Align the 10 blind pilot holes on the Infiltrator Pipe Adapter Ring with the 10 receiving holes on the Infiltrator connector ring using the indexing tabs on the inside of the ring. Center and press to create an even seal.

5. Fasten Infiltrator Pipe Adapter Ring to Infiltrator connector ring using ten #14 x 1¼-inch (6.2 mm x 31 mm) stainless steel screws. Tighten in star pattern. Repeat the star pattern at least twice, without over tightening screws.



6. Center the IPEX pipe over Infiltrator Pipe Adapter Ring and mark ten even locations on the pipe for pilot holes.

7. Drill 1/8-inch (3.5-mm) pilot holes at marked locations on the IPEX pipe so that screws will connect to the adjacent Infiltrator Pipe Adapter Ring.

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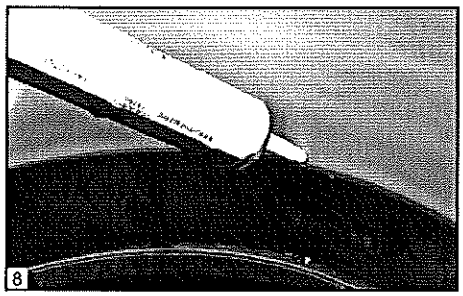
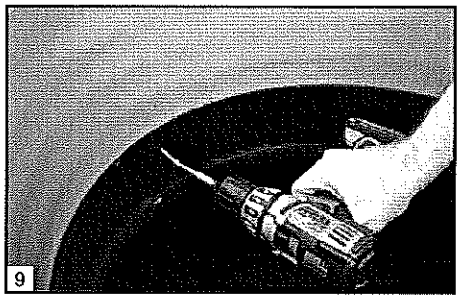
8. Center the IPEX pipe over the Infiltrator Pipe Adapter Ring and apply ISI 1500 Adhesive Sealant in the space between the pipe and Infiltrator Pipe Adapter Ring to fill the gap.



9. Fasten IPEX pipe to Infiltrator Pipe Adapter Ring using ten #14 x 1¼-inch (6.2 mm x 31 mm) stainless steel screws from the inside of pipe.



10. Tighten screws in a "star" pattern, tightening screws on opposite sides of the Infiltrator Pipe Adapter Ring. Repeat the star pattern at least twice, without over tightening screws.

11. Use the ISI TW-Series septic tank lid, or equivalent product as a lid. Follow lid manufacturer's instructions to complete riser installation.

12. Backfill tank in accordance with Infiltrator's IM-1060 septic tank installation instructions.

13. Following tank backfilling, visually examine the riser to Infiltrator Pipe Adapter Ring connection for damage resulting from backfill placement. Repair or replace if damaged

Disclaimer: These recommended procedures have been developed to identify best practices for achieving a watertight connection between tank and riser under typical tank installation conditions. These procedures have been shown to result in a watertight connection between the riser assemblies identified in this document and Infiltrator tanks. Infiltrator does not guarantee a watertight connection between tank and riser because achieving a watertight connection is dependent upon a combination of installer practices and procedures, and field conditions. Please contact Infiltrator's Technical Services Department at 800-221-4436 if difficulty is encountered during riser connection installation. Additionally, Infiltrator developed these recommendations in cooperation with the specific riser manufacturers (excluding the HDPE and IPEX alternatives) referenced above. Please contact the appropriate riser manufacturer for concerns associated with anything that does not involve the tank-to-riser connection.

September 28th, 2011

David Lentz, P.E.
Infiltrator Systems Inc.
6 Business Park Road
PO Box 768
Old Saybrook, CT 06475

Re: File No. 5765
Infiltrator IM-1060 corrugated thermoplastic tank

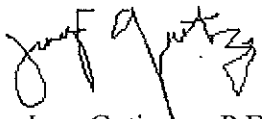
Dear Mr. Lentz,

IAPMO R&T Inc. has reviewed and accepted modifications to the design of the Infiltrator Systems Inc. IM-1060 corrugated thermoplastic tank. The design modifications have been reviewed by IAPMO R&T Inc. technical staff as well as the International Association of Plumbing and Mechanical Officials (IAPMO) Product Certification Committee, with the following findings:

- Infiltrator has incorporated a number of improvements to the tank design that was originally certified by IAPMO R&T Inc. in March 2011.
- The modifications represent voluntary, targeted enhancements undertaken as part of routine product improvement initiatives.
- Improvements include:
    - the addition or modification of structural features, such as corrugations, ribs, and gussets;
    - enhancement of the seat for the fiberglass posts to simplify the tank assembly process; and
    - widening the base and increasing the basal contact area to provide a more stable surface to stand on and support the tank, increasing tank stability within an excavation prior to backfilling.
- No changes were made to the overall dimensions, materials of construction, or manufacturing processes for the product, as specified by the standard IAPMO IGC 262-2010.
- None of the voluntary improvements affect manufacturing specifications identified in applicable IAPMO tank manufacturing standards or result in non-compliance with applicable IAPMO tank manufacturing standards.

- IAPMO R&T Inc. has determined that the modified Infiltrator IM-1060 design is fully compliant with applicable IAPMO standards for prefabricated thermoplastic tanks. Therefore, no change to the IM-1060 product certification is warranted as a result of the product improvements.

Sincerely,



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Jacobsen, James

From:	Lentz, Dave [dlentz@infiltratorsystems.net]
Sent:	Wednesday, October 05, 2011 3:49 PM
To:	Jacobsen, James
Cc:	Johnston, Blake
Subject:	IM-1060 - Design enhancement update
Follow Up Flag:	Follow up
Flag Status:	Red
Attachments:	ME IM-1060 design refinement update_Jacobsen_100511.pdf; ATT1894759.txt

Jim,

Hello, I hope you had a great summer. Infiltrator previously submitted IM-1060 tank design information to the Department for review and acceptance. Since this time, we refined the design as part of the normal product life cycle. The attached letter, which provides the details of the refinements, is provided as an update for the Department's files.

The IM-1060 has maintained continuous compliance, and given the nature of the improvements, Infiltrator proposes leaving the acceptance documentation issued by the Department "as is". If you feel that a modification to the acceptance documentation is warranted, please contact me at (860) 577-7198 to discuss necessary actions.

Sincerely,
Dave Lentz

INFILTRATOR
systems inc.

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