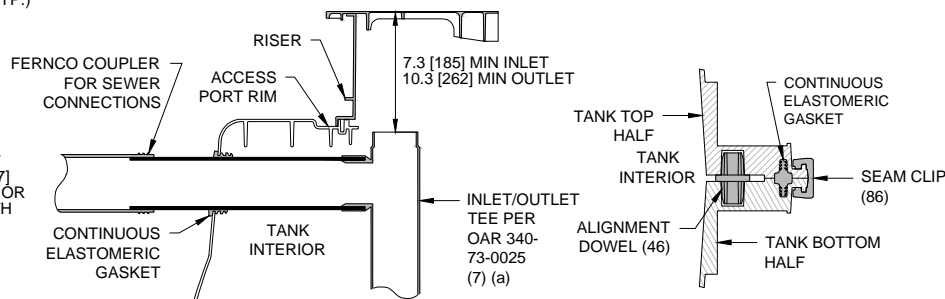


TANK EXTERIOR	
LENGTH	175.6 [4,460]
WIDTH	61.7 [1,567]
HEIGHT	54.5 [1,384]



VOLUME PARAMETERS		COMPARTMENT A	COMPARTMENT B
TOTAL CAPACITY	1,787 gal [6,765 L]	1,191 gal [4,508 L]	596 gal [2,256 L]
VOLUME AT 47" LIQUID LEVEL	1,638 gal [6,201 L]	1,092 gal [4,134 L]	546 gal [2,067 L]
VOLUME AT 40" LIQUID LEVEL	1,393 gal [5,273 L]	929 gal [3,517 L]	464 gal [1,756 L]
INCREMENTAL VOLUME (average)	33.0 gal/in [49.2 L/cm]	22.0 gal/in [32.8 L/cm]	11.0 gal/in [16.4 L/cm]

STRUCTURAL DESIGN LOADS	
HYDRAULIC	62.4 pcf
HYDROSTATIC	62.4 pcf
EARTH	600 psf
WHEEL-LOAD	2,500 lbs

WITH 3 FT OF COVER  
TANK **IS NOT** TRAFFIC RATED

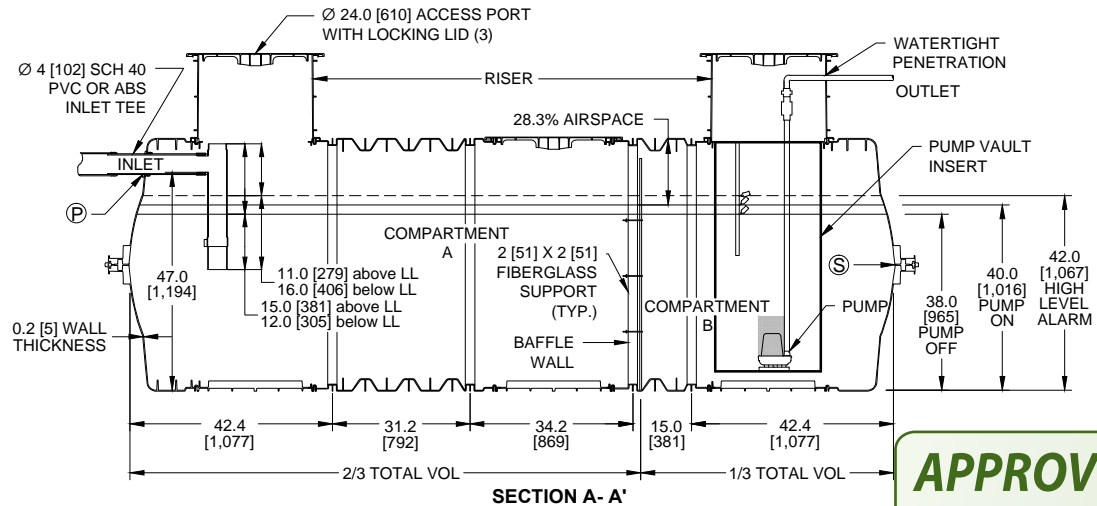
**DOSING ASSEMBLIES PER OAR 340-073-0055:**

PUMP ON, OFF AND HIGH LEVEL SWITCH HEIGHTS SHOWN FOR FOUR BEDROOM RESIDENCE WITH MAXIMUM DESIGN DAILY FLOW OF 450 GALLONS PER DAY.

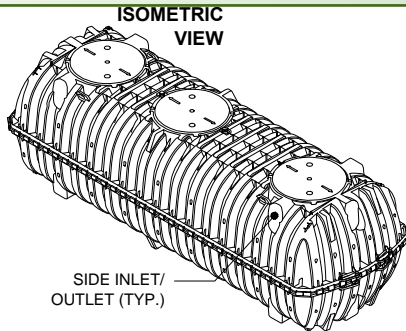
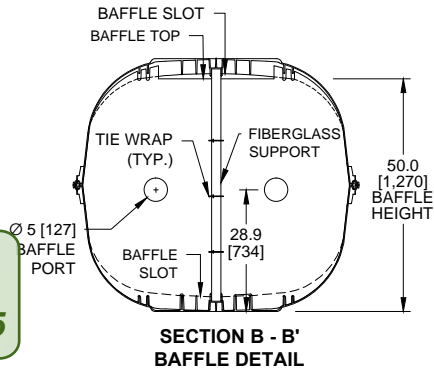
HIGH LEVEL SWITCH CONNECTED TO AUDIBLE AND VISUAL ALARM.

MINIMUM 33% DESIGN FLOW STORAGE PROVIDED BETWEEN HIGH LEVEL ALARM SWITCH AND INLET INVERT (150 GAL. REQUIRED, 172 GAL. PROVIDED).

MAXIMUM 20% DESIGN FLOW PER PUMP DOSE (90 GAL. MAX. ALLOWABLE, 73 GAL. PROVIDED).



**APPROVED**  
*By Randy Trox at 9:10 am, Jul 02, 2015*



**NOTES:**

- TANK NOT RATED FOR VEHICULAR TRAFFIC, A 2500-lb WHEEL LOAD IS THE MAXIMUM CAPACITY.
- ALL RESIN USED IS COMPLIANT WITH IAPMO STANDARDS. THE TANK WILL BE IAPMO CERTIFIED.
- TANK MARKINGS INCLUDE: MANUFACTURER NAME, MODEL NUMBER, DATE OF MANUFACTURE, LIQUID CAPACITY, MAXIMUM BURIAL DEPTH, INLET, AND OUTLET.
- EXTERIOR OF ACCESS OPENING LID INCLUDES THE FOLLOWING WARNING WRITTEN IN ENGLISH, FRENCH & SPANISH: "DANGER DO NOT ENTER: POISON GASES."
- MAXIMUM BURIAL DEPTH IS 36 in [914 mm]. MINIMUM BURIAL DEPTH IS 6 in [152 mm].
- ALL DRAWING DIMENSIONS IN INCHES [MILLIMETERS] UNLESS OTHERWISE NOTED.
- SEE INSTALLATION INSTRUCTIONS PROVIDED AT: [www.infiltratorsystems.com](http://www.infiltratorsystems.com).
- A WATERTIGHTNESS TEST IS REQUIRED PER OAR 340-0730023(3). TESTING SHALL BE CONDUCTED BY FILLING THE TANK TO A POINT AT LEAST 2 INCHES ABOVE THE POINT OF RISER CONNECTION TO THE TOP OF TANK. DURING THE TEST THERE MAY BE NO MORE THAN A ONE-GALLON LEAKAGE OVER A 24-HOUR PERIOD.
- INLET AND OUTLET FITTINGS MUST BE INSTALLED PER OAR 340-73-0025(7).
- THE RISER COVER IS LESS THAN 50 POUNDS.
- REFER TO INSTALLATION INSTRUCTIONS FOR EXCAVATION, BEDDING, AND BACKFILLING REQUIREMENTS.
- ANTI-BUOYANCY CONTROL MEASURES MAY BE REQUIRED TO RESTRAIN THE TANK IN CONDITIONS WHERE GROUNDWATER IS HIGHER THAN 36 in [914 mm] ABOVE THE BOTTOM OF THE TANK AND BACKFILL OVER THE TANK WILL BE LESS THAN 12 in [305 mm] DEEP. REFER TO TANK INSTALLATION INSTRUCTIONS FOR CONTROL MEASURE OPTIONS AND DETAILS.



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

Oregon IM-1530  
Single Compartment Partitioned  
Septic Dosing Tank

Drawn by: JLK	Date: 07/02/2015
Scale: NOT TO SCALE	Checked by: DJL
Sheet: 1 of 2	

RISER AND LID CONNECTION

DETAILED PRODUCT SPECIFIC RISER AND LID CONNECTION GUIDANCE IS AVAILABLE FROM INFILTRATOR SYSTEMS AT:

www.infiltratorsystems.com

THE IM- AND TW-SERIES TANK RISER CONNECTION GUIDANCE DOCUMENT PROVIDES A FULL DESCRIPTION OF THE CONNECTION TYPE AND METHOD FOR EACH COMPATIBLE RISER.

COMPATIBLE RISER AND LID PRODUCTS

THE INFILTRATOR IM-1530 TANK IS COMPATIBLE WITH 24 in (600 mm) DIAMETER RISER AND LID PRODUCTS FROM THE FOLLOWING MANUFACTURERS:

- TW RISER SYSTEM BY INFILTRATOR
- TUF-TITE CORPORATION
- POLYLOK INC.
- EZSET BY INFILTRATOR

THE FOLLOWING 24 in [600 mm] DIAMETER PIPE PRODUCTS ARE ALSO COMPATIBLE WITH THE INFILTRATOR IM-1530 TANK WHEN USED WITH AN INFILTRATOR PIPE ADAPTER RING:

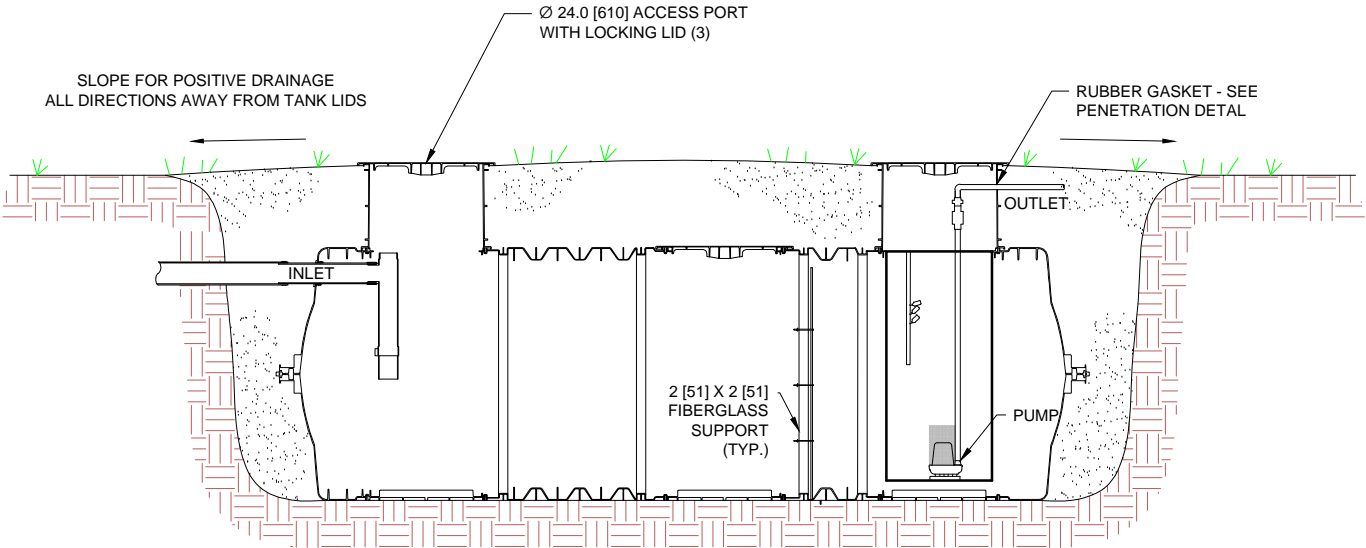
- IPEX ULTRA-RIB POLYVINYL CHLORIDE (PVC) PIPE - USE THE INFILTRATOR LID, POLYLOK 24 in [600 mm] HEAVY DUTY COVER, 24 in [600 mm] JACKEL SEPTIC TANK RISER COVER, OR EQUIVALENT PRODUCT AS A LID FOR THE IPEX PVC PIPE
- CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE - USE THE INFILTRATOR LID, EZSET LID BY INFILTRATOR, POLYLOK 24 in [600 mm X 9.5 mm] HEAVY DUTY COVER, ROTOSOLUTIONS 24 in [600 mm] SEPTIC LID, 24 in [600 mm] JACKEL SEPTIC TANK RISER COVER OR EQUIVALENT PRODUCT AS A LID FOR THE HDPE PIPE.

RISER CONNECTION AT TANK - GENERAL PROCEDURES

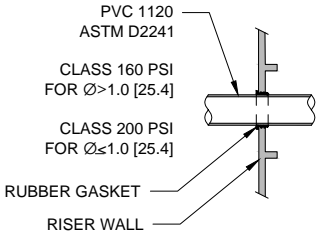
1. REFER TO INFILTRATOR SYSTEMS INC.'S IM- AND TW-SERIES TANK RISER CONNECTION GUIDANCE DOCUMENT FOR SPECIFIC RISER CONNECTION INFORMATION.
2. APPLY ISI 1500 ADHESIVE SEALANT OR EQUIVALENT BETWEEN RISER PARTS AND TANK AS SHOWN IN INFILTRATOR SYSTEM INC.'S IM- AND TW-SERIES TANK RISER CONNECTION GUIDANCE DOCUMENT.
3. ENSURE THAT ALL CONNECTION SURFACES ARE CLEAN AND DRY.
4. THE INSTALLER MUST USE DISCRETION IN DETERMINING THE BEAD SIZE AND AMOUNT OF SEALANT NEEDED TO CRAFT AND MAINTAIN A WATERTIGHT SEAL.
5. KEEP SEALANT AT A TEMPERATURE 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 PRESS THE SEALANT ONTO THE PART TO ENSURE THAT IT STAYS PROPERLY POSITIONED DURING ASSEMBLY.
8. ENSURE THAT ALL SCREWS SUPPLIED WITH RISER PRODUCTS ARE INSTALLED FOR CONNECTION OF ADAPTER RINGS, RISERS AND LIDS. DO NOT OVERTIGHTEN SCREWS. THIS MAY DAMAGE THE PLASTIC PARTS BEING CONNECTED, CAUSING THE SCREW CONNECTION TO FAIL. THIS MAY ALSO STRIP THE SCREW HEAD. USE TYPE 304 STAINLESS STEEL SCREWS.

WATERTIGHTNESS TESTING

1. CONDUCT WATER TIGHTNESS TESTING PER OAR 340-73-0025(3).
2. THE INSTALLER MUST TEST EACH TANK FOR WATERTIGHTNESS BY FILLING THE TANK TO A POINT AT LEAST 2 INCHES ABOVE THE POINT OF RISER CONNECTION TO THE TOP OF TANK.
3. DURING THE TEST, THERE MAY BE NO MORE THAN ONE GALLON OF LEAKAGE OVER A 24-HOUR PERIOD.




TANK AND RISER INSTALLATION



RISER PENETRATION GASKET DETAIL

**APPROVED**  
By Randy Trox at 9:10 am, Jul 02, 2015



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

Oregon IM-1530  
Single Compartment Partitioned  
Septic Dosing Tank  
Riser Installation Configuration

Drawn by: JLK	Date: 07/02/2015
Scale: NOT TO SCALE	Checked by: DJL
Sheet: 2 of 2	

# Infiltrator IM- and TW-Series Tank General Installation Instructions

## BEFORE YOU BEGIN

Infiltrator Systems' 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. The IM-Series referred to in this document includes the IM-540, IM-1060, and IM-1530 tanks. The TW-Series includes the TW-1250 and TW-1500 tanks.

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

## MATERIALS AND EQUIPMENT NEEDED

- |  |  |
|--|--|
| <input type="checkbox"/> Infiltrator tank                  | <input type="checkbox"/> Shovel  |
| <input type="checkbox"/> Access port lid(s) (included)     | <input type="checkbox"/> Level   |
| <input type="checkbox"/> 10 screws per lid (included)      | <input type="checkbox"/> 5-inch-diameter (125 mm) hole saw (IM-Series only)    |
| <input type="checkbox"/> 2 inlet/outlet gaskets (included) | <input type="checkbox"/> 5.25-inch-diameter (133 mm) hole saw (TW-Series only) |
| <input type="checkbox"/> Inlet/outlet tees*                | <input type="checkbox"/> Utility knife   |
| <input type="checkbox"/> Tape measure                      | <input type="checkbox"/> PVC pipe glue with primer                             |
| <input type="checkbox"/> Pipe, risers, etc.                |  |
| <input type="checkbox"/> Socket wrench                     |  |
| <input type="checkbox"/> Excavator                         |  |

\*tee inclusion varies by state/province

## INSTALLATION SITE SELECTION

1. Do not install the tank in vehicular traffic areas. The tank is designed for non-traffic applications.
2. The allowable soil cover depth is 6 to 48\* inches (150 to 1,200 mm).  
\*18-inch (450 mm) max. in Florida for Cat. 3 IM- and TW-Series tanks;  
48-inch (1,200 mm) max. in Florida for Cat. 4 IM-Series tanks; 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 Tank Buoyancy Control Guidance document, available online at [www.infiltratorsystems.com](http://www.infiltratorsystems.com), for specific excavation requirements.

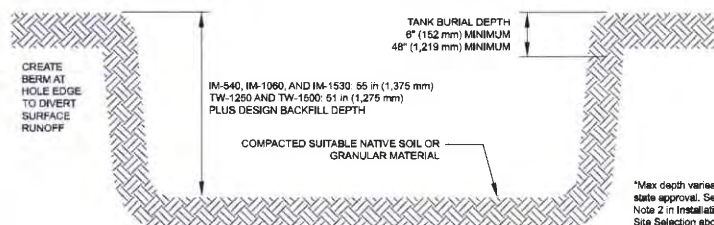
2. Excavate to account for the height of tank. 55 inches (1,375 mm) for the IM-Series tanks and 51 inches (1,275 mm) for the TW-Series tanks. Also account for 4 inches (100 mm) of bedding (if required), and backfill thickness (permissible cover depth is 0.5 to 4 feet (150 to 1,200 mm) of soil).

**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 installed either in suitable native soil (see Backfilling the Tank section) or a minimum 4-inch (100 mm) layer of well-graded granular soil having particles less than 3 inches (75 mm) in diameter, or maximum 0.5-inch (13 mm) diameter crushed stone.

5. Create a uniform, compacted, level surface to ensure that the bottom of the tank is evenly supported. Verify that the installation surface 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 applicable 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-Series tanks, and a 5¼-inch-diameter (133 mm) hole saw with TW-Series tanks.

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

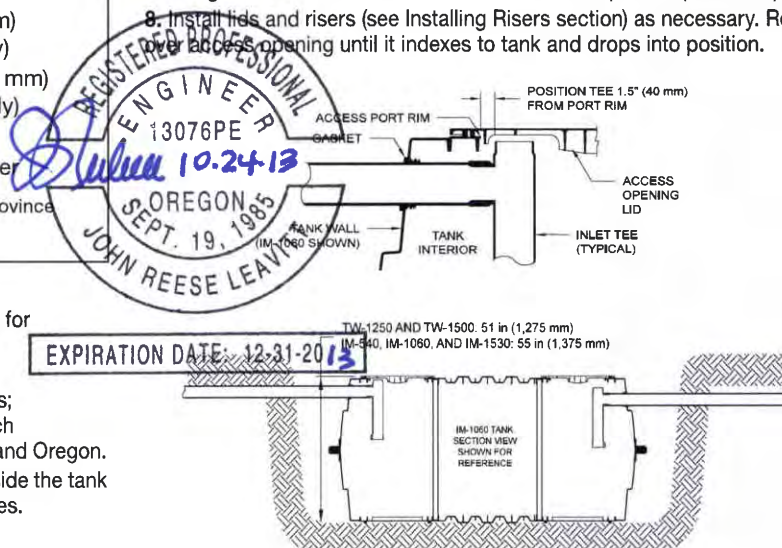
5. Using the tank's integral lifting lugs, lower tank into excavation.

6. Slide the inlet and outlet pipes\* through the gaskets. Soapy lubricant may be used to slide the pipe in.

\*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, allowing the tee to fit into the recess in the access port lid (see detail).

8. Install lids and risers (see Installing Risers section) as necessary. Rotate lid per access opening until it indexes to tank and drops into position.

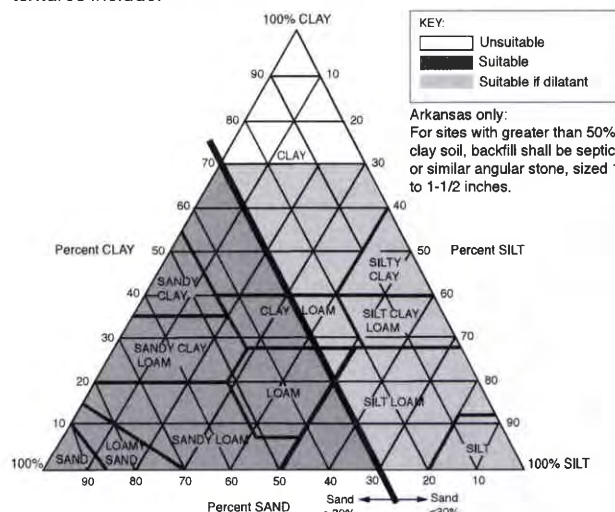


## BACKFILLING THE TANK

**Note: Infiltrator tanks do not require filling with water prior to backfill placement. Water filling and backfilling to the tank mid-height is required if the tank is left in either an open or backfilled excavation that may fill with water from rain or other sources.**

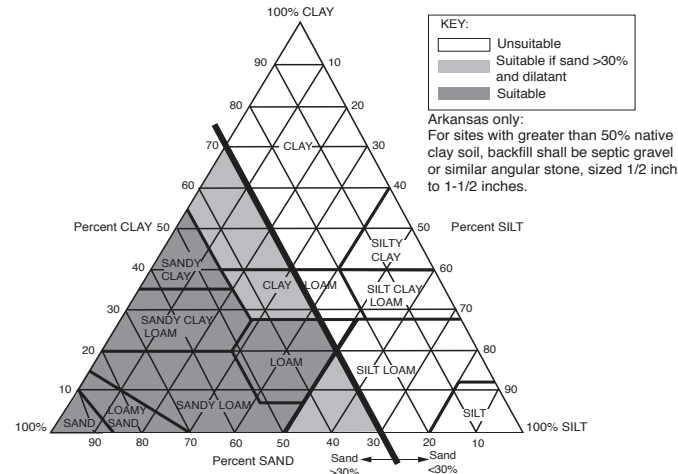
1. Backfill with suitable native soil. If native soil is unsuitable, replace unsuitable fraction with suitable soil. If suitable soil is not locally available, contact Infiltrator Systems for assistance.
2. Suitable soil shall include soil textural classes defined in the United States Department of Agriculture 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 soil cover depth of 0.5 to 2.0 feet (150 to 600 mm), suitable soil textures include:



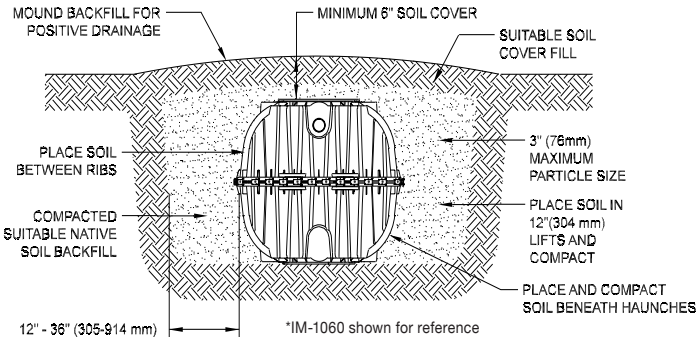


a) For a tank soil cover depth that is greater than 2.0 feet and up to 4.0 feet (600 to 1,200 mm), suitable soil textures include:



1. 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 and beneath the haunches.
2. Standard field soil classification methods shall be used to determine the soil textural class.
- Note: 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. Complete instructions can be found at [www.infiltratorsystems.com](http://www.infiltratorsystems.com)**
3. Do not backfill top of tank before sidewalls are completely backfilled.
4. Place and compact soil by walking-in beneath the haunches of the tank.
5. Place backfill around the four sidewalls in an alternating manner, so that the backfill height along the four sidewalls is maintained within a 12-inch (300 mm) tolerance.
6. 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.
7. Compact backfill material either by walking-in, hand tamping or mechanical compaction (includes backhoe bucket). If mechanical compaction is used, such as a walk-behind tamper or backhoe bucket, a single pass is recommended. Compact each lift prior to placement of next lift. Compact backfill from tank walls to excavation sidewalls.
8. Complete backfilling and grade the area.
9. 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.
10. 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.**
11. 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.**



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 30 inches (750 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 Table 1. Refer to Infiltrator IM- and TW-Series Tank Buoyancy Control Guidance document for more information.

Table 1: Tank models <sup>1</sup> and conditions requiring buoyancy control <sup>2</sup>		
Water height above tank bottom	Soil cover depth above tank <sup>3</sup>	
	6 in (150 mm) to 12 in (300 mm)	Above 12 in (300 mm)
Above outlet pipe saddle	Do not install	Do not install
36 in (900 mm) to outlet pipe saddle <sup>4</sup>	All models	None
30 in (750 mm) to 36 in (900 mm)	All models except IM-540 and IM-1060	None
Less than 30 in (750 mm)	None	None

1. IM-540, IM-1060, TW-1250, TW-1500, and IM-1530.
2. See Infiltrator IM- and TW- Series Tank Buoyancy Control Guidance for detailed information on the use of controls.
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 Tank Riser Connection Guidance.
2. In Oregon only, 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. One 16 x 16 inch block or two 8 x 16 inch (200 mm x 400 mm) side-by-side blocks may be used. Limit block height to account for pump height and liquid levels during pump cycles. Block(s) should be placed below an access opening and level upon the tank bottom. For two blocks, orient them 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 will void warranty.
- Prior to ground disturbance, check for subsurface obstructions and utilities in conformance with applicable requirements.
- Operating water temperature shall be less than 100° F (40° C).
- Tanks are not fire resistant. Store away from ignition sources.
- Removal of structural bulkheads is prohibited; removal of locking clips on the IM-Series tank 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 or other non-potable unit.
- 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**

Height <sup>1</sup>		Total liquid volume in tank at indicated height									
		IM-540		IM-1060		TW-1250		TW-1500		IM-1530	
		U.S. Gal	Liters	U.S. Gal	Liters	U.S. Gal	Liters	U.S. Gal	Liters	U.S. Gal	Liters
1	3	3	11	3	11	14	53	17	64	8	30
2	5	8	30	13	49	30	115	37	140	24	89
3	8	14	53	28	106	58	218	71	267	43	164
4	10	21	80	46	174	87	330	107	404	67	254
5	13	29	109	65	246	117	444	143	543	93	353
6	15	37	141	86	326	148	558	180	683	121	459
7	18	46	173	107	405	178	674	218	825	151	571
8	20	55	207	129	488	209	791	256	968	182	687
9	23	64	243	152	575	240	910	294	1,112	213	808
10	25	74	279	176	666	272	1,029	332	1,257	246	932
11	28	84	317	200	757	304	1,149	371	1,404	280	1,060
12	30	94	356	225	852	336	1,270	410	1,551	315	1,191
13	33	105	396	251	950	368	1,393	449	1,700	350	1,324
14	36	116	437	277	1,049	400	1,516	489	1,849	386	1,460
15	38	127	480	303	1,147	433	1,640	528	2,000	422	1,597
16	40	138	523	330	1,249	466	1,765	569	2,152	459	1,736
17	43	150	566	357	1,351	500	1,892	609	2,305	496	1,876
18	46	161	611	384	1,454	533	2,019	650	2,459	533	2,017
19	48	173	656	411	1,556	567	2,146	690	2,614	570	2,159
20	50	186	702	438	1,658	601	2,275	732	2,769	608	2,302
21	53	198	749	465	1,760	636	2,407	774	2,928	646	2,445
22	56	210	796	493	1,866	671	2,541	816	3,091	684	2,590
23	58	223	843	521	1,972	708	2,678	860	3,256	723	2,735
24	61	235	891	549	2,078	745	2,819	905	3,425	761	2,881
25	64	248	940	577	2,184	781	2,955	948	3,589	800	3,028
26	66	261	988	605	2,290	815	3,086	990	3,747	839	3,176
27	69	274	1,038	633	2,396	849	3,215	1,031	3,903	879	3,326
28	71	287	1,088	662	2,506	883	3,342	1,072	4,057	918	3,477
29	74	300	1,137	691	2,616	916	3,469	1,112	4,210	958	3,625
30	76	313	1,185	719	2,722	950	3,594	1,152	4,362	996	3,772
31	79	326	1,233	747	2,828	982	3,719	1,192	4,514	1,035	3,918
32	81	338	1,281	775	2,934	1,015	3,842	1,232	4,663	1,073	4,064
33	84	351	1,328	802	3,036	1,047	3,964	1,271	4,810	1,112	4,208
34	86	363	1,375	830	3,142	1,079	4,084	1,309	4,956	1,150	4,352
35	89	375	1,421	857	3,244	1,110	4,203	1,347	5,101	1,187	4,495
36	91	387	1,466	884	3,346	1,141	4,320	1,385	5,243	1,225	4,637
37	94	399	1,511	911	3,449	1,172	4,436	1,422	5,384	1,262	4,778
38	97	411	1,555	938	3,551	1,201	4,548	1,458	5,521	1,299	4,918
39	99	422	1,598	965	3,653	1,230	4,657	1,494	5,654	1,336	5,057
40	102	433	1,640	992	3,755	1,261	4,772	1,532	5,798	1,372	5,194
41	104	444	1,681	1,018	3,854	1,286	4,869	1,562	5,915	1,408	5,330
42	107	455	1,722	1,044	3,952	1,314	4,972	1,596	6,042	1,444	5,464
43	109	465	1,761	1,069	4,047	1,340	5,074	1,629	6,167	1,478	5,596
44	112	475	1,799	1,094	4,141	1,366	5,172	1,661	6,288	1,512	5,724
45	114	485	1,836	1,118	4,232	1,390	5,263	1,690	6,399	1,545	5,849
46	117	494	1,871	1,142	4,323	1,410	5,337	1,715	6,492	1,577	5,970
47	119	503	1,905	1,165	4,410	1,427	5,402	1,737	6,574	1,608	6,087
48	122	512	1,938	1,187	4,493	1,439	5,446	1,750	6,626	1,638	6,199
49	124	520	1,970	1,208	4,573	1,448	5,481	1,762	6,669	1,666	6,306
50	127	528	1,999	1,228	4,648	–	–	–	–	1,692	6,407
51	130	535	2,027	1,247	4,720	–	–	–	–	1,717	6,498
52	132	542	2,050	1,265	4,789	–	–	–	–	1,737	6,575
53	135	547	2,071	1,278	4,838	–	–	–	–	1,754	6,639
54	137	551 <sup>2</sup>	2,087	1,287	4,872	–	–	–	–	1,766 <sup>2</sup>	6,686

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

2. The total capacity of the IM-540 tank is 552 gallons; the total capacity of the IM-1530 tank is 1,769 gallons.

Failure to comply with these installation instructions may invalidate the warranty. Contact Infiltrator Systems' Technical Services Department for assistance at 1-800-221-4436.

## INLET AND OUTLET HOLE LOCATIONS

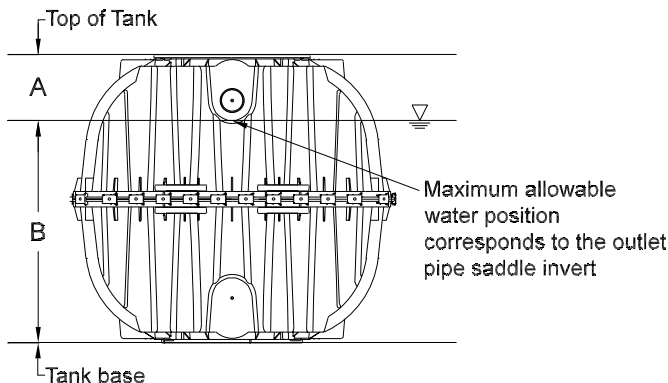
Drill height marks are provided on all Infiltrator tank models to guide inlet and outlet hole drilling. On the TW-Series tanks, marks “A” (lower) and “B” (upper) are located at the inlet end, while marks “C” (lower) and “D” (middle) are located at the outlet end. A single drill height mark is provided at each end or side port on the IM-Series tanks (example illustrated below). Holes may be drilled at the end or side inlet and outlet

locations, as allowed by state and/or local regulations. The drill height mark indicates the center point location for the hole saw. The pilot drill bit on the hole saw should be positioned at the center of the drill height mark to align the hole saw properly. Table 3 provides drilling and invert information by regulatory jurisdiction for the installation of 4-inch-diameter (100 mm) pipe.

**Table 3: Inlet and Outlet Hole Locations<sup>4</sup>**

Jurisdiction <sup>1</sup>	Inlet Drill Location	Outlet Drill Location	Invert Drop (in) [mm]	Inlet Invert Height (in) [mm]		Outlet Invert Height <sup>2</sup> and Liquid Level (in) [mm]
				Above Inside Bottom of Tank <sup>2</sup>	Above Excavation Base <sup>3</sup>	
IM-540 and IM-1530						
All	All	All	3.00 [76]	47.00 [1,994]	47.20 [1,199]	44.00 [1,118]
IM-1060						
All	End	End	3.00 [76]	47.00 [1,994]	47.20 [1,199]	44.00 [1,118]
	Side	Side	3.00 [76]	47.50 [1,207]	47.70 [1,212]	44.50 [1,130]
	Side	End	3.50 [89]	47.50 [1,207]	47.70 [1,212]	44.00 [1,118]
	End	Side	2.50 [64]	47.00 [1,994]	47.20 [1,199]	44.50 [1,130]
TW-1250 and TW-1500						
FL	B	D	2.75 [70]	42.75 [1,086]	43.45 [1,102]	40.00 [1,016]
DE, IA, MA, ON	A	D	2.00 [51]	42.00 [1,067]	42.70 [1,086]	40.00 [1,016]
AR, CA, CO, CT, ID, IN, KS, KY, MO, MT, ND, OR, PA, SD, TX, VT, WV	B	C	3.00 [76]	42.75 [1,086]	43.45 [1,102]	39.75 [1,010]
All Others	A	C	2.25 [57]	42.00 [1,067]	42.70 [1,086]	39.75 [1,010]

**NOTES:** 1. Indiana, Kentucky, Oregon, West Virginia, and certain Florida and Texas tanks are factory drilled. 2. Invert heights are measured from the lowest interior surface at the bottom of the tank to the invert. 3. Invert heights are measured from the base of the excavation to the invert. 4. State, provincial, and local regulatory requirements supersede Table 3 information.



**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
IM-Series <sup>1</sup>	13" (330 mm)	43" (1,075 mm)
TW-Series <sup>2</sup>	11" (280 mm)	39" (975 mm)

1. IM-Series tanks include the IM-540, IM-1060, and IM-1530.
2. TW-Series tanks include the TW-1250 and TW-1500.

## 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, FITNESS 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 IM- and TW-Series Tank Riser Connection Guidance Document

## 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.

## Required Tools

- Screw gun
- Extended drill driver bit (6-12", 150-300 mm) optional
- Caulk gun
- Marker or marking pencil
- Brush
- Rag
- Utility knife
- Latex gloves
- #14 x 1/4 stainless steel screws (supplied with Infiltrator TW Risers)

## 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 use or testing. 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.
- Note:** To speed up the process of fastening the screws Infiltrator Systems recommends the use of an extended drill driver bit (6-12", 150-300 mm).
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 receiving hole. Reducing the screw gun torque helps to prevent over-tightening the screws and stripping the receiving holes. Be sure to insert screws in a "star" pattern, tightening opposite sides of the riser or pipe adapter.

**Note: Use #14 x 1/4-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:

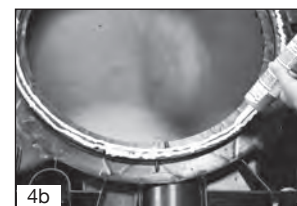
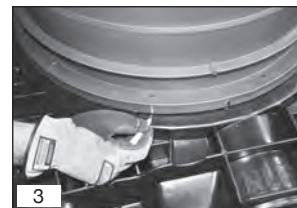
- Infiltrator TW Riser
- EZset by Infiltrator
- Tuf-Tite® Corporation
- PolyLok™ Inc.

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

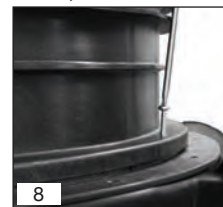
- IPEX Ultra-Rib™ PVC pipe
- Corrugated high density polyethylene (HDPE) pipe

## 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.
3. Once proper alignment has been achieved, mark the riser and tank to identify correct alignment orientation.
4. Apply 2 continuous beads of 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.

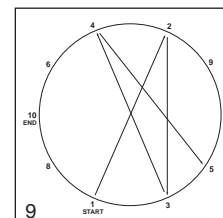


5. Invert the TW Riser and center over the Infiltrator connector ring in the proper alignment position determined in step 3.
6. Verify that the sealant remains properly aligned on TW Riser.
7. The 10 holes on the riser should be aligned with the 10 receiving holes on the Infiltrator tank connector ring.
8. 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 1/4-inch stainless steel screws.



**Note:** To speed up the process of fastening the screws, Infiltrator Systems recommends the use of an extended drill driver bit. (6-12", 150-300 mm).

9. Tighten screws in a "star" pattern, tightening screws on opposite sides of the TW Riser. Repeat the star pattern at least twice, without over tightening screws. This will compress the sealant to the tank evenly during fastening.



10. Spread excess sealant in the interior joint between the tank and riser with a small putty knife or manually.

11. Connect additional TW Riser sections or the included Infiltrator lid as needed.

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

13. Following tank backfilling, visually examine the riser to Infiltrator connector ring joint for damage resulting from backfill placement. Repair or replace if damaged. Allow 24 hours sealant cure-time before testing or putting into service.



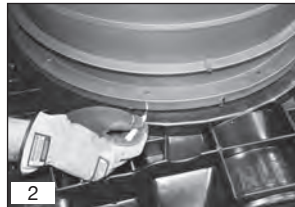
## EZset by Infiltrator Riser

1. Install riser assembly prior to backfilling tank.

2. Align EZset Riser Section over Infiltrator connector ring and mark 10 evenly spaced pilot hole locations so that they match up to receiving holes on the Infiltrator connector ring.

3. Drill 10 new pilot holes into EZset Riser Section.

4. Apply 2 continuous beads of ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes on the top surface of the Infiltrator connector ring. The sealant thickness must be adequate to fill the gap beneath the EZset Riser Section.



5. Invert EZset Riser Section and center over the Infiltrator connector ring.

6. Verify that the ISI 1500 Adhesive Sealant remains properly aligned on the EZset Riser Section.

7. Align the 10 drilled pilot holes on the EZset Riser Section with the 10 receiving holes on the Infiltrator connector ring.

**Note:** To speed up the process of fastening the screws, Infiltrator Systems recommends the use of an extended drill driver bit (6–12", 150–300 mm).

8. Fasten the EZset Riser Section to the Infiltrator connector ring with ten #14 x 1¼-inch stainless steel screws.

9. Tighten screws in a "star" pattern, tightening screws on opposite sides of the EZset Riser Section. Repeat the star pattern at least twice, without over tightening screws. Compress the ISI 1500 Adhesive Sealant to tank evenly during fastening.

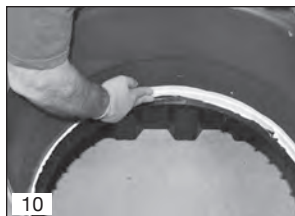
10. Spread the excess sealant into the interior joint between the tank and riser with a small putty knife or manually. Ensure there is even coverage on both surfaces.

11. Connect additional EZset riser sections or EZset lid as needed.

12. **Note: Do not use the supplied Infiltrator tank lid, as it does not provide a watertight seal with the EZset riser. Instead, use EZset lid with the EZset riser.**

13. Backfill tank in accordance with Infiltrator's tank installation instructions.

14. Following tank backfilling, visually examine the riser to Infiltrator connector ring joint for damage resulting from backfill placement. Repair or replace if damaged. Allow 24 hours sealant cure-time before testing or putting into service.



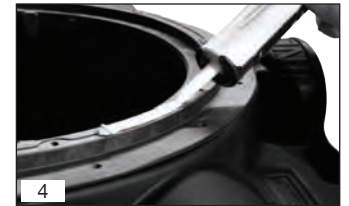
## Tuf-Tite® Corporation Riser

1. Install riser assembly prior to backfilling tank.

2. Align Tuf-Tite adapter ring over Infiltrator connector ring and mark 10 evenly spaced pilot hole locations so that they match up to receiving holes on the Infiltrator connector ring.

3. Drill new pilot holes into Tuf-Tite adapter ring.

4. Apply 2 continuous beads of ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes on the top surface of the Infiltrator connector ring. The sealant thickness must be adequate to fill the gap beneath the Tuf-Tite adapter ring.



5. Invert Tuf-Tite adapter ring and center over the Infiltrator connector ring.

6. Verify that the ISI 1500 Adhesive Sealant remains properly aligned on the Tuf-Tite adapter ring.

7. Align the 10 drilled pilot holes on the Tuf-Tite adapter ring with the 10 receiving holes on the Infiltrator connector ring.

8. Fasten the Tuf-Tite adapter ring to the Infiltrator connector ring with ten #14 x 1¼-inch stainless steel screws.



9. Tighten screws in a "star" pattern, tightening screws on opposite sides of the Tuf-Tite adapter ring. Repeat the star pattern at least twice, without over tightening screws. Compress the ISI 1500 Adhesive Sealant to tank evenly during fastening.

10. Connect the Tuf-Tite riser to the Tuf-Tite adapter ring and install lid according to Tuf-Tite's instructions.

**Note: The Infiltrator tank lid provides a watertight seal with the Tuf-Tite riser and may be used.**

11. Backfill tank in accordance with Infiltrator's tank installation instructions.

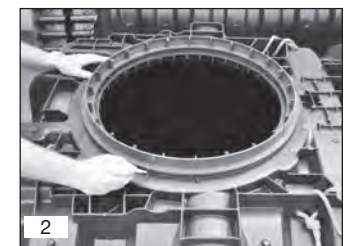
12. Following tank backfilling, visually examine the riser to Infiltrator connector ring joint for damage resulting from backfill placement. Repair or replace if damaged. Allow 24 hours sealant cure-time before testing or putting into service.

## PolyLok™ Inc. Riser

PolyLok riser must be installed using Infiltrator Pipe Adapter Ring.

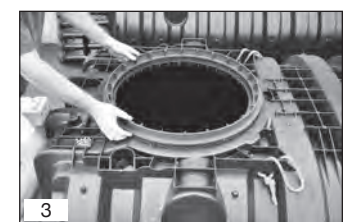
1. Install riser assembly prior to backfilling tank.

2. Align the 10 pilot holes on the PolyLok Riser-to-Riser Adapter Ring with the 10 receiving holes on the Infiltrator connector ring and mark both pieces to identify proper alignment.



3. Apply 2 continuous beads of ISI 1500 Adhesive Sealant in alignment with the factory-drilled screw holes on the top surface of PolyLok Riser-to-Riser Adapter Ring. Sealant thickness must fill gap beneath pipe adapter.

4. Align the 10 blind pilot holes on the PolyLok Riser-to-Riser Adapter Ring with the 10 receiving holes on the Infiltrator connector ring using the marking made during step two. Center and press to create an even seal.





5. Fasten PolyLok Riser-to-Riser Adapter Ring to Infiltrator connector ring using ten #14 x 1/4-inch stainless steel screws.

6. Tighten screws in a “star” pattern, tightening screws on opposite sides of the PolyLok Riser-to-Riser Adapter Ring. Repeat star pattern at least twice, without over tightening screws.

7. Spread the excess sealant into the interior and exterior joint between the tank and riser with a small putty knife or manually. Ensure there is even coverage on both surfaces.

8. Connect PolyLok riser to PolyLok Riser-to-Riser Adapter Ring and install according to PolyLok’s instructions.

**Note: Do not use the supplied Infiltrator tank lid, as it does not provide a watertight seal with the PolyLok Riser system.**

9. Backfill tank in accordance with Infiltrator’s tank installation instructions.

10. Following tank backfilling, visually examine the riser to Infiltrator Tank Adapter Ring connection for damage resulting from backfill placement. Repair or replace if damaged. Allow 24 hours sealant cure-time before testing or putting into service.

## 24-inch (600-mm) HDPE Pipe

Note: The 24-inch (600-mm) 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 2 continuous beads of 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.

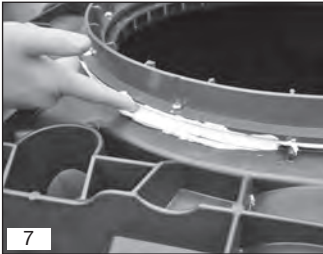
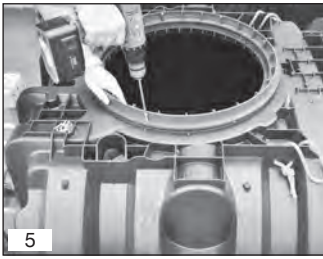
4. Align the 10 blind pilot holes on the Infiltrator Pipe Adapter Ring with the 10 receiving holes on the Infiltrator connector ring using the indexing tabs on the inside of the ring. Center and press to create an even seal.

5. Fasten Infiltrator Pipe Adapter Ring to Infiltrator reinforcing ring using ten #14 x 1/4-inch stainless steel screws. Tighten in star pattern. Repeat star pattern at least twice, without over tightening screws.

6. Spread excess sealant in the interior joint between the tank and riser with a small putty knife or manually.

7. 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 continuously 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.



8. Fasten HDPE pipe to Infiltrator Pipe Adapter Ring using ten #12 x 1/4-inch (5.5 mm x 31 mm) stainless steel screws from inside the pipe.

9. 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.

10. 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.

11. Backfill tank in accordance with Infiltrator’s tank installation instructions.

12. Following tank backfilling, visually examine the riser to Infiltrator Pipe Adapter Ring connection for damage resulting from backfill placement. Repair or replace if damaged. Allow 24 hours sealant cure-time before testing or putting into service.



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

24-inch (600-mm) 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 2 continuous beads of 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 1/4-inch 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.

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 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 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. Allow 24 hours sealant cure-time before testing or putting into service.



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.



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# Infiltrator IM- and TW-Series Tank Buoyancy Control Guidance

NOVEMBER 2013



## Before you Begin

This document presents recommended buoyancy control methods for Infiltrator Systems Inc.'s (Infiltrator's) IM- and TW-Series tanks. Tank buoyancy control methods must be implemented according to state and/or local regulations, which may supersede the guidelines in this document. If unsure of the requirements for a particular site, contact the local health department or permitting authority.

This document provides procedures to determine if tank buoyancy control is required based on site conditions. Please obtain the following information to determine if control is necessary and what methods are applicable:

- Infiltrator tank model
- Maximum height of water outside the tank and above the tank bottom elevation
- Depth of soil cover over the tank top

Once tank buoyancy control measures are determined to be required and a method has been selected and implemented, refer to Infiltrator IM- and TW-Series Tank Installation Instructions and Riser Connection Guidance documents, as applicable, for completing the installation.

## How to Use this Document

1. Become familiar with the descriptions in the Compatible Devices and Products section.
2. Verify that the water level outside the tank is below the outlet pipe saddle height using Step 1, Tables 1 and 2, and Figure 1.
3. Determine if buoyancy control is required using Step 1, Table 2. If buoyancy control is required, proceed to Step 2.
2. Use the respective table for the tank model from Step 2, Table 3 to determine the appropriate buoyancy control methods for the site conditions.
5. Once a preferred buoyancy control method is selected, follow the procedures for implementation provided in Step 3.

## Parts and Supplies

The parts and supplies necessary are to be purchased separately from the tank. All parts and supplies are either commercially available or available through Infiltrator's network of tank distributors. Some parts may require fabrication on site using common construction practices.

## Compatible Devices and Products

Infiltrator tanks are compatible with the following products for buoyancy control:

- **Tie-down straps:** high-tensile-strength webbing, 10,000 lb (4,500 kg) minimum capacity, nylon or polyester, with corrosion-resistant hardware.
- **Concrete deadmen anchors:** concrete-filled plastic half pipe, precast parking bumper, precast traffic barrier, or poured block.
- **Helical anchors:** Chance™ No-Wrench Screw Anchors with minimum 6-inch (150 mm) diameter, Class 7 or equal.

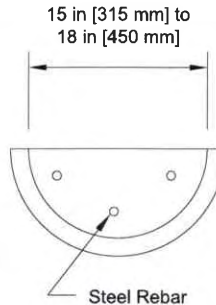
## Tie-Down Straps

Straps are commercially available in varying lengths and with assorted hardware and tightening options. Nylon or polyester strapping with minimum 10,000 lb (4,500 kg) capacity is required for buoyancy control use with Infiltrator tanks. Place straps up and over the tank at specified locations only (see Figure 5). Tighten straps snugly with a ratchet or turnbuckle system to remove all slack and slightly pre-load the system. All connections, fittings, and hardware must be corrosion resistant or coated with epoxy or other corrosion-resistant materials to inhibit deterioration in the subsurface environment. Consider encapsulating such components in heat-shrink tubing or painting on additional corrosion-resistant coatings prior to burial.



## Concrete Deadmen Anchors

Recommended concrete deadmen anchors include filled plastic half pipe, precast parking bumpers and traffic barriers, and poured blocks. The weight of the deadmen anchors combined with the weight of soil above them provides buoyancy control when properly secured. Deadmen anchors are placed at the bottom of the tank excavation on opposite sides of the tank. The deadmen anchors are fastened to each other with tie-down straps placed up and over the tank at the locations specified for each tank model (see Figure 5).

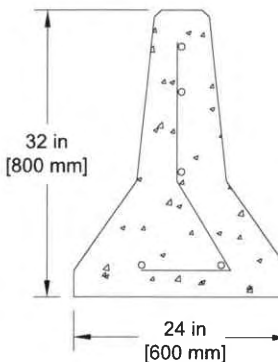
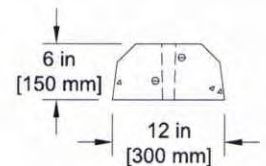


## Concrete-filled plastic half pipe

Use Schedule 40 PVC plastic pipe having a minimum inside diameter of 15 inches (375 mm) or HDPE corrugated pipe having a minimum inside diameter of 18 inches (450 mm) cut in half lengthwise. Fill with concrete having a minimum unit weight of 145 lbs/ft<sup>3</sup> (2.32 metric tons/m<sup>3</sup>) reinforced with three equally spaced 40-grade, 1/2-inch (13 mm) diameter steel bars. Weight is 61 lbs/ft (91 kg/m) minimum.

## Concrete parking bumper

Use commercially available steel-reinforced parking bumpers with typical dimensions of 12 inches wide by 6 inches high (300 mm x 150 mm). Weight is 58 lbs/foot (86 kg/m) minimum.



## Concrete traffic barrier

Use commercially available steel-reinforced concrete traffic barrier or equivalent. Typical dimensions include a 24-inch-wide base tapering to a 6-inch-wide top, with a height of approximately 32 inches (600 mm x 150 mm x 800 mm). Weight is 390 lbs/foot (580 kg/m) minimum.

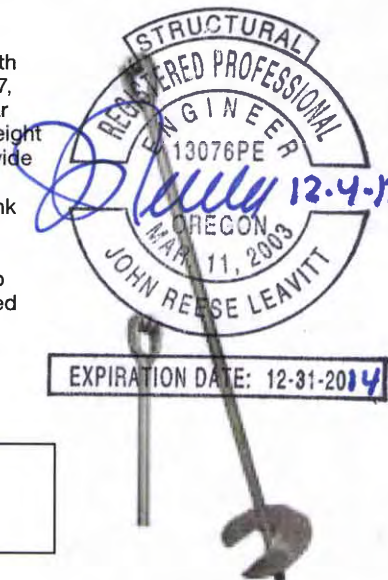
## Poured Blocks

Concrete precasters can pour blocks of various dimensions and weights. Blocks are often an affordable option if they satisfy the weight requirements for use as buoyancy control (see Table 3 and the Supplemental Force section of Step 2 for more information).

## Helical Anchors

Chance™ No-Wrench Screw Anchors with a 6-inch (150 mm) diameter flight, Class 7, or equal. These anchors rely on the shear strength of the soil combined with the weight of the soil above the anchor flight to provide holding strength. Proper installation is to 4 feet (1.2 m) below the bottom of the tank excavation and to within 5° of alignment with the webbing load. Determine the proper locations for anchor installation to ensure that tie-down straps will be aligned properly for each tank model (see Step 3: Implementation), and follow anchor manufacturer installation instructions.

Typical working torque:  
¾" Rod 400 ft. lbs. (542 N·m)  
1" Rod 1,000 ft. lbs. (1,356 N·m)  
1¼" Rod 2,300 ft. lbs. (3,118 N·m)





## Step 1 – Determine Need for Buoyancy Control

Required information: the maximum height of water outside the tank and above the tank bottom AND the depth of soil cover above the tank top. Tank buoyancy control may be required if the water level outside the tank has the potential to rise 30 inches (750 mm) or more above the bottom of the tank, AND less than 12 inches (300 mm) of soil cover is to be placed as backfill over the tank top. Otherwise, no buoyancy control is required.

## Allowable Subsurface Water Elevation

Groundwater elevation, groundwater table, and water table are terms for the subsurface condition where water is held in the subsurface soil pores or rock. The seasonal high groundwater elevation represents the highest point the water table has the potential to reach at any time of the year, and is not necessarily the level at which groundwater may be observed seeping from the soil at the time of tank installation. In general, a qualified soil evaluator or engineer can estimate the seasonal high groundwater elevation from careful examination of the soil profile.

Under certain conditions, a perched water table may be present in the subsurface. A perched water table occurs where there is an impermeable or low-permeability soil that causes water to be present in the soil pores above the main water table. A perched water table elevation may exceed the seasonal high elevation of the main water table. The vertical position of the tank must account for both the seasonal high groundwater table and any existing or future perched water table condition. **Verify that the subsurface water level will not exceed the height of the outlet pipe saddle of the tank, as show in Tables 1 and 2, and Figure 1.**

## Table 2 Instructions

1. In the left-hand column of Table 2, locate the row corresponding to the height of the water elevation outside the tank and above the tank bottom (Parameter I) for the site conditions. See Figure 2.
2. Follow that row to the right until reaching the column corresponding to the depth of soil cover proposed above the tank top (Parameter II). See Figure 2.
3. If the tank model is described in that cell, then buoyancy control is required as described for the tank (proceed to Step 2). If the tank model is not listed in that cell, then no buoyancy control is required.
4. The tank shall not be installed where the water level outside the tank exceeds the height of the outlet pipe saddle. Follow guidelines in Tables 1 and 2.

**Table 2: Infiltrator tank models<sup>1</sup> and conditions requiring buoyancy control**

Parameter I: Water height <sup>2</sup> above tank bottom		Parameter II: Soil cover depth above tank top <sup>3</sup>	
		A	B
		6 in (150 mm) to 12 in (300 mm)	Above 12 in (300mm)
1	Above outlet pipe saddle <sup>4</sup>	Do not install	Do not install
2	36" (900 mm) to outlet pipe saddle	All models	None
3	30" (750 mm) to 36" (900 mm)	All models except IM-540 and IM-1060	None
4	Less than 30" (750 mm)	None	None

### NOTES:

1. Infiltrator tank models include: IM-540, IM-1060, TW-1250, TW-1500 and IM-1530.
2. Water height corresponds to seasonal high groundwater elevation or perched water elevation measured from bottom-of-tank elevation.
3. Minimum 6 inches soil cover backfill required above all Infiltrator tanks.
4. The tank shall not be installed where the water level outside the tank exceeds the height of the outlet pipe saddle. Follow Table 1 guidelines.

## Design Example

A contractor plans to install an IM-1060 tank where the water level outside the tank has the potential to rise to 37 inches (940 mm) above the tank bottom (Parameter I), and the design plan calls for 8 inches (200 mm) of soil cover above the top of the tank (Parameter II). In Step 1, Table 2, a 37-inch (940-mm) exterior water height corresponds to row 2 (36 inches [900 mm] to outlet pipe saddle) under Parameter I. The 8-inch (200-mm) soil cover corresponds to column A (6 inches [150 mm] to 12 inches [300 mm]) under Parameter II in Table 2. At the intersection of Parameter I, row 2 and Parameter II, column A, Cell 2A indicates "All models", meaning all tank models, including the IM-1060, require buoyancy control under these conditions. Referring to Step 2, Table 3, under the IM-1060 heading, Case 1 would apply for 37 inches (940 mm) of water above the bottom of tank and 8 inches (200 mm) of soil cover. Available options are as follows (see specific strapping and construction information under Step 3):

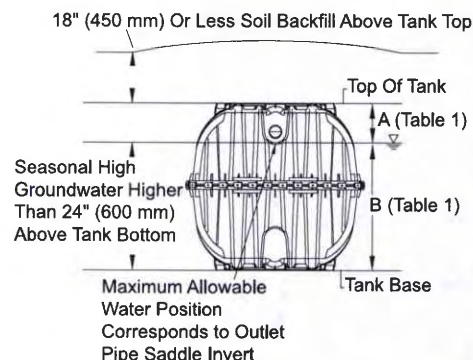
- If concrete block is specified to anchor the IM-1060, the total combined minimum weight of blocks placed on each side of the tank shall be 2,700 pounds (1,225 kg). The size and shape can be determined by locally available materials. Connect using two straps.
- For concrete-filled half pipe and concrete traffic barrier, the minimum length on each side of the tank would be 4.2 feet (1.3 m), while at least 4.5 feet (1.4 m) of concrete parking bumper would be required. These controls would be connected with two straps, ensuring that the control extends a minimum of 6 inches (150 mm) beyond the strap positions (see Figure 3).
- If helical anchors were selected, a minimum of two 6-inch (150 mm) diameter anchors per side of tank (4 total) would be installed using two straps.

**Table 1: Maximum Allowable Subsurface Water Elevation**

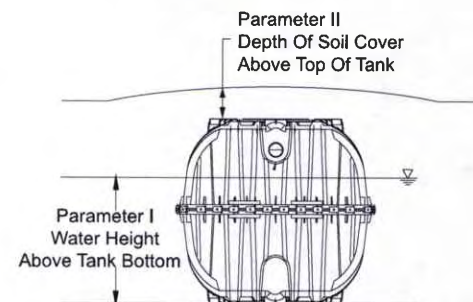
Tank Model	Vertical Distance to Maximum Allowable Water Elevation Outside of Tank	
	A - From Top of Tank	B - From Tank Base
IM-Series <sup>1</sup>	13" (330 mm)	43" (1,075 mm)
TW-Series <sup>2</sup>	11" (280 mm)	39" (975 mm)

1. IM-Series tanks include the IM-540, IM-1060 and IM-1530.
2. TW-Series tanks include the TW-1250 and TW-1500.

**Figure 1: Water Elevation**



**Figure 2: Buoyancy Control Parameters**



**Table 2: Infiltrator tank models and conditions requiring buoyancy control**

Parameter I: Water height above tank bottom		Parameter II: Soil cover depth above tank top	
		A	B
		6 in (150 mm) to 12 in (300 mm)	Above 12 in (300 mm)
1	Above outlet pipe saddle	Do not install	Do not install
2	36 in (900 mm) to outlet pipe saddle	All models	None
3	30 in (750 mm) to 36 in (900 mm)	All models except IM-540 and IM-1060	None
4	Less than 30 in (750 mm)	None	None

## Step 2 – Determine Buoyancy Control Method

Step 2 is used if the Step 1 analysis shows that buoyancy control is required for the tank model and the conditions of installation. As before, the maximum height of the water outside of the tank and above the tank bottom AND the depth of soil cover above the tank top must be known for the installation conditions to complete Step 2.

### Table 3 Instructions

For each tank model, find the Case row on the left side of the table that corresponds to both the water height (Parameter I) and soil cover measurements (Parameter II) for the tank installation conditions. Follow the row to the right for a listing of the appropriate buoyancy control methods for the installation conditions under each method description column. Refer to the Compatible Devices and Products and Step 3 – Implementation sections of this document for additional information.

**Table 3: Buoyancy Control Selection**

Case	Parameter I: Water height above tank bottom	Parameter II: Soil cover depth above tank top	Minimum supplemental force required <sup>1</sup> (total, both tank sides)	Buoyancy Control Methods (minimum per side of tank)			
				Concrete-filled half pipe (min. length/side)	Concrete parking bumpers (min. length/side)	Concrete traffic barriers (min. length/side)	Helical anchors (min. no./side)
IM-540							
1	36 in (900 mm) to outlet pipe saddle <sup>2</sup>	6 in (150 mm) to 12 in (300 mm)	2,200 lbs (1,000 kg)	3.8 ft (1.2 m)	3.8 ft (1.2 m)	3.8 ft (1.2 m)	2
IM-1060							
1	36 in (900 mm) to outlet pipe saddle <sup>2</sup>	6 in (150 mm) to 12 in (300 mm)	2,700 lbs (1,225 kg)	4.2 ft (1.3 m)	4.5 ft (1.4 m)	4.2 ft (1.3 m)	2
TW-1250							
1	30 in (750 mm) to 36 in (900 mm)	6 in (150 mm) to 12 in (300 mm)	1,900 lbs (865 kg)	5.5 ft (1.7 m)	5.5 ft (1.7 m)	5.5 ft (1.7 m)	2
2	36 in (900 mm) to outlet pipe saddle <sup>2</sup>	6 in (150 mm) to 12 in (300 mm)	5,100 lbs (2,325 kg)	6.5 ft (2.0 m)	8.0 ft (2.4 m)	5.5 ft (1.7 m)	2
TW-1500							
1	30 in (750 mm) to 36 in (900 mm)	6 in (150 mm) to 12 in (300 mm)	3,000 lbs (1,365 kg)	7.7 ft (2.3 m)	7.7 ft (2.3 m)	7.7 ft (2.3 m)	2
2	36 in (900 mm) to outlet pipe saddle <sup>2</sup>	6 in (150 mm) to 12 in (300 mm)	6,700 lbs (3,050 kg)	8.5 ft (2.6 m)	10.5 ft (3.2 m)	7.7 ft (2.3 m)	2
IM-1530							
1	30 in (750 mm) to outlet pipe saddle <sup>2</sup>	6 in (150 mm) to 12 in (300 mm)	4,300 lbs (1,955 kg)	6.3 ft (2.0 m)	6.5 ft (2.0 m)	6.3 ft (2.0 m)	2

#### NOTES:

1. See Supplemental Force discussion below.
2. IM-Series outlet pipe saddle height is 43 inches (1,075 mm) above tank bottom.
3. TW-1250 and TW-1500 outlet pipe saddle height is 39 inches (975 mm) above tank bottom.

### Supplemental Force

The minimum supplemental downward force required is included in Table 3 to allow custom buoyancy control methods. These values include a factor of safety of 1.5 applied to the calculated force required to restrain the tank. Custom-designed buoyancy control methods shall consider saturated conditions. So long as buoyancy control is provided that supplies the minimum weight listed in the table (for poured-concrete blocks or other methods designed by third parties), the tanks will be stable for the water height outside the tank and above the tank bottom and corresponding soil cover conditions. All Infiltrator strapping and fastening recommendations would still apply for custom-designed buoyancy control methods. Contact Infiltrator's Technical Services Department with any questions regarding supplemental force requirements.



### Step 3 – Implementation

Effective buoyancy control of Infiltrator tanks requires careful preparation, thorough excavation, precise placement, secure strapping and proper backfilling, as described and illustrated below.

#### Excavation Requirements

It is recommended that the excavation width provide a minimum of 36 inches (900 mm) clearance beyond the tank on all sides when utilizing buoyancy control. This will allow sufficient space within the excavation to place deadmen anchors and fasten strapping. The excavation should provide a minimum of 48 inches (1,200 mm) when using Chance™ No-Wrench Screw Anchors to allow for room to properly install the screw anchors. The actual excavation size shall be determined by the installer. Refer to Infiltrator IM- and TW-Series Tank Installation Instructions for additional excavation procedures.

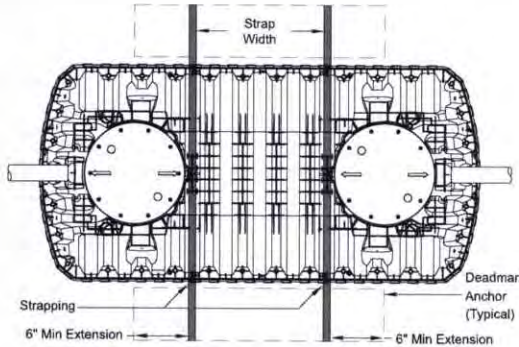
#### Concrete-filled Half Pipe Construction

Concrete-filled half pipe shall be supported with soil or other stabilizing means below the pipe haunches prior to concrete placement. The stabilization shall prevent the pipe from rolling during placement and curing of the concrete. Concrete shall be allowed to cure for a minimum of one day prior to tank backfilling.

#### Placement of Deadmen and Anchors

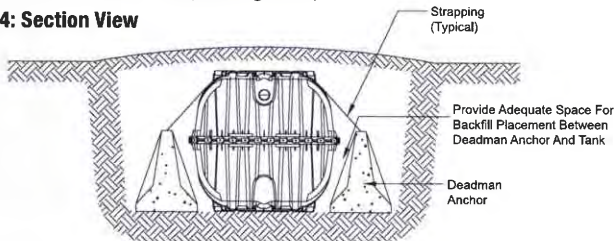
Concrete deadman anchors are to be installed at the bottom of the tank excavation, parallel to the long axis of the tank (see Figure 3).

Figure 3: Plan View



The deadmen should be placed close to, but not touching, the tank on both sides of the tank to allow the placement of backfill between the deadman anchor and tank sidewall (see Figure 4).

Figure 4: Section View

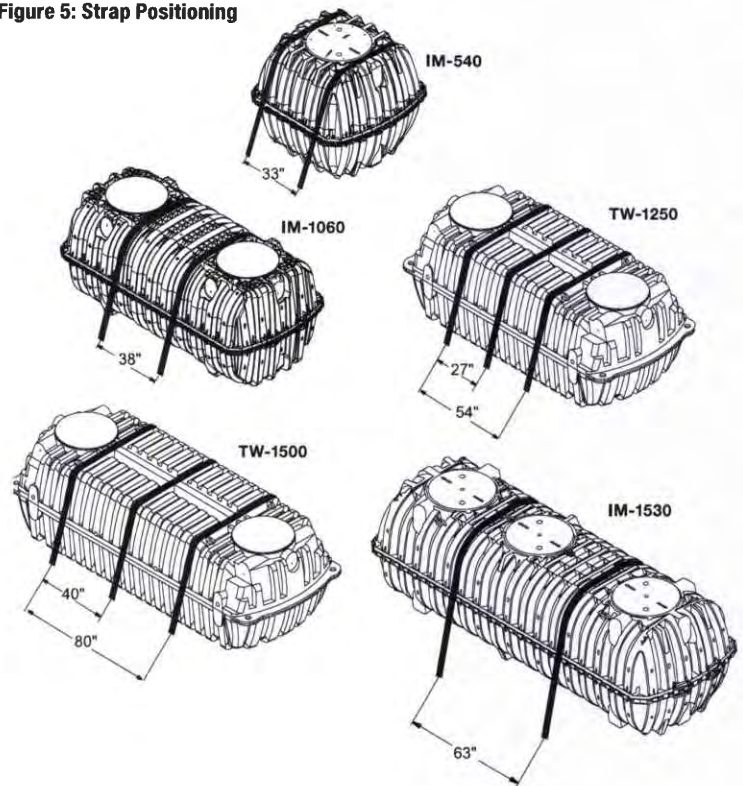


Helical anchors should be installed so that the eye loop is level with the bottom of the tank excavation. They must be in line with the tank model strapping locations (see Figure 5) or lifting lugs, as appropriate. Anchors must also be installed at such a distance from and angle to the tank so that the strapping is within 5° of alignment with the anchor shaft per manufacturer's recommendations.

#### Strapping

Preparation and fastening of webbing to/over the tanks is critical for tank stability under constant and fluctuating water conditions both inside and outside the tank. Straps must be placed at the specified strapping locations for each model as illustrated in Figure 5. The IM-Series tank strapping locations correspond to structurally reinforced areas of the tank body. These locations correspond to corner lifting lugs and alignment with interior structural bulkheads for the TW-1250 and TW-1500 models. The IM-Series tanks do not have corner lifting lugs for fastening strapping. Straps must never be placed over access openings, lids, or inlet/outlet piping. Straps must be tightened with a ratchet or turnbuckle system to remove slack and slightly pre-load the system.

Figure 5: Strap Positioning



#### STRAPPING NOTES:

1. The buoyancy control shall be centered across the straps (excludes helical anchors). The control shall extend a minimum of 6 inches (150 mm) beyond the maximum strap width (see Figures 3 and 5).
2. The minimum deadman length corresponds to the tank model-specific strap width plus 12 inches (300 mm).
3. The TW-1250 and TW-1500 shall be secured to the buoyancy control using three straps (excludes helical anchors).
4. For helical anchors installed on the TW-1250 and TW-1500, the outside straps shall be used to connect the 2 anchors per tank side. No center strap is required.

#### Backfill and Cover

Place backfill between deadman anchor and tank sidewall to fully fill void and tank body corrugations. A minimum 6" layer (150 mm) of suitable cover material is required over all Infiltrator tank installations. Mound cover to direct surface water drainage away from the tank excavation footprint. Establish a strong stand of erosion-resistant vegetation. Refer to Infiltrator IM- and TW-Series Tank Installation Instructions for complete backfilling and cover procedures.

#### General Specifications

- Prior to ground disturbance, check for subsurface obstructions and utilities in conformance with applicable requirements.
- Excavations shall conform to applicable safety regulations.
- Follow manufacturer instructions for all products and devices used for Infiltrator tank buoyancy control.
- Buoyancy control methods described herein do not account for unanticipated conditions such as surface flooding or other natural disasters, unintended removal of cover fill over tank, etc.
- Buoyancy control methods described herein are recommendations only; consult a professional engineer if desired.



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