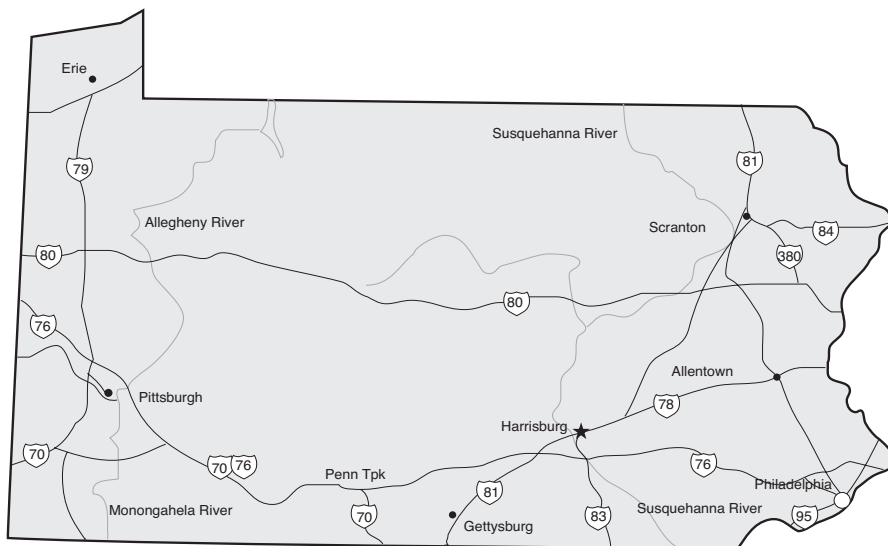




INFILTRATOR®
water technologies

Design and Installation Manual for Quick4 Chambers in Pennsylvania



Pennsylvania

Infiltrator Chambers in Pennsylvania

INTRODUCTION	2
CHAMBER TECHNOLOGY	2
PRODUCTS	3
ELEVATED SAND MOUNDS	4-7
TRENCH & BED SYSTEMS	8-13
WORKSHEET	14
NOTE TO THE SEO	15
WARRANTY	16

The purpose of this product information sheet is to provide specific design and installation information pertinent for the use of Infiltrator Quick4 chambers in Pennsylvania.

For more detailed design information,
please contact Infiltrator Water Technologies at 1-800-221-4436

www.infiltratorwater.com

Pennsylvania

MAY 2013

1

CHAMBER TECHNOLOGY

University laboratory research and extended field evaluation has verified the infiltrative efficiency advantage of the open surface architecture provided by chamber systems over old-fashioned stone and pipe systems. The advantage lies in the absence of solid bodies in the leachfield surface architecture – the matrix of combined gravel, soil and biomat at the infiltrative surface.

The stones embed into the soil surface and occupy about 60% of the potential infiltrative area. This forces the water to travel through the limited pores in the soil-filled gaps between the stones. An obstructing layer of biomat forms in all leachfields treating septic tank effluent. As the biomat develops, the infiltrative capacity of that remaining soil area is reduced to a point where ponding occurs in the leachfield.

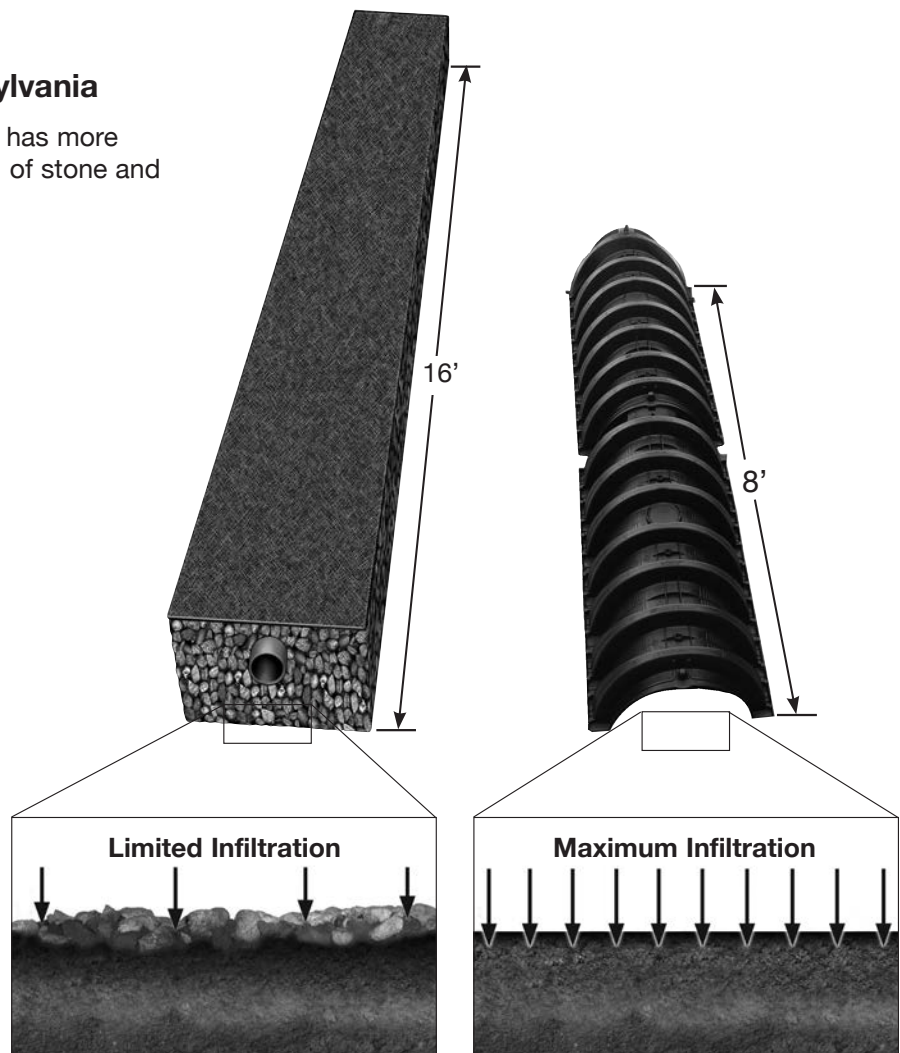
The advantage of the chamber's open surface architecture is that the entire area is available for infiltration instead of the 40% remaining area between the stones. The open surface architecture of chambers over old-fashioned stone trenches is expressed as:

$$\frac{100\% \text{ open area}}{40\% \text{ open area}} = 2.5 \text{ more infiltration potential}$$

With an added safety factor, a 40% smaller footprint will provide equal or better infiltration than a stone and pipe trench.

Side-by-Side Comparison in Pennsylvania

An 8-foot length of Infiltrator chamber trench has more effective infiltrative area than a 16-foot length of stone and pipe trench.



Stone and pipe system

Less than 50% efficiency

In the stone and pipe system, the effective infiltrative area is reduced due to the presence of stone.

Infiltrator chambers

100% efficiency

With Infiltrator chamber systems, the entire area at the bottom of the trench is unobstructed by stone, which means total infiltrative effectiveness.

PRODUCTS

Quick4 Standard Chambers

The Quick4 Standard chambers can be installed in a 36-inch wide trench. The Contour Swivel Connection allows the chamber to swivel 10 degrees, right or left. Infiltrator chambers can be used in installations of pressurized sand mounds, beds, and trench systems. There is a variety of system inletting options to choose from.

The Quick4 chamber was designed to improve chamber performance in sands with a footprint area 21% larger than traditional Infiltrator chambers. The larger footprint provides added stability when used in sand applications. The sidewall louvers on the Quick4 chamber have a more conservative angle of repose, reducing the potential for sand or fine-textured soils to migrate through the louvers. These Quick4 design features were developed based upon Infiltrator Water Technologies' 20 years of installing systems across the country.



Quick4 Standard Chamber



Quick4 Standard MultiPort Endcap

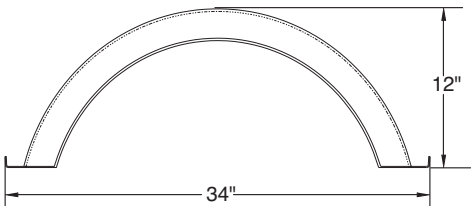
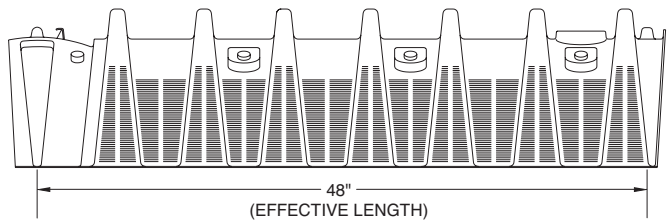
Quick4 Standard nominal chamber specifications

Size	34"W x 53"L x 12"H
Effective Length	48"
Chamber Rating	4.72 sf/lf or 18.88 ft ²
Endcap Length	2.21 lf*
Endcap Rating	10.43 sf/pair

*Effective length for installed pair of endcaps

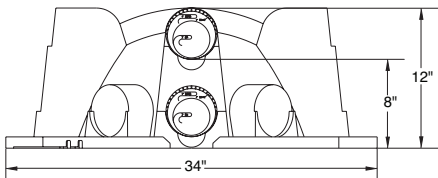
TYPICAL SIDE AND END VIEWS

(not to scale)

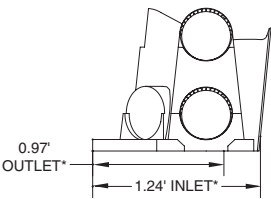


MULTIPORT ENDCAP

(not to scale)



FRONT VIEW



SIDE VIEW

*Installed lengths.

ELEVATED SAND MOUNDS

System Sizing for Quick4 Standard Chambers in Elevated Sand Mounds

TABLE 1: QUICK4 STANDARD CHAMBERS IN ELEVATED SAND MOUNDS

Percolation Rate*	Quick4 Standard Chamber				
	3	4	5	6	Each Additional
	Minimum Number of Chambers Required (Square Feet Required ÷ 18.88 SF/Chamber = Number of Chambers**				
3-5	32	40	48	56	8
6-15	32	40	48	56	8
20	32	40	48	56	8
25	32	40	48	56	8
30	32	40	48	56	8
35	35	44	52	61	9
40	38	47	56	66	10
45	41	51	61	71	11
50	43	53	64	75	11
55	45	56	68	79	12
60	48	59	71	83	12
65	50	62	74	87	13
70	52	65	77	90	13
75	54	67	81	94	14
80	56	70	84	98	14
85	58	73	87	101	15
90	60	75	90	105	15
95	62	77	93	108	16
100	64	80	96	111	16
105	66	82	98	115	17
110	67	84	101	118	17
115	69	86	104	121	18
120	71	89	106	124	18
130	78	97	117	136	20
140	81	101	122	142	21
150	85	106	127	148	22
160	92	115	138	160	23
170	95	119	142	166	24
180	98	123	147	172	25

*For average percolation rates that fall between numbers listed please refer to Table A of Pennsylvania Code Chapter 73.

**When calculating number of chambers required always round up to the next full chamber.

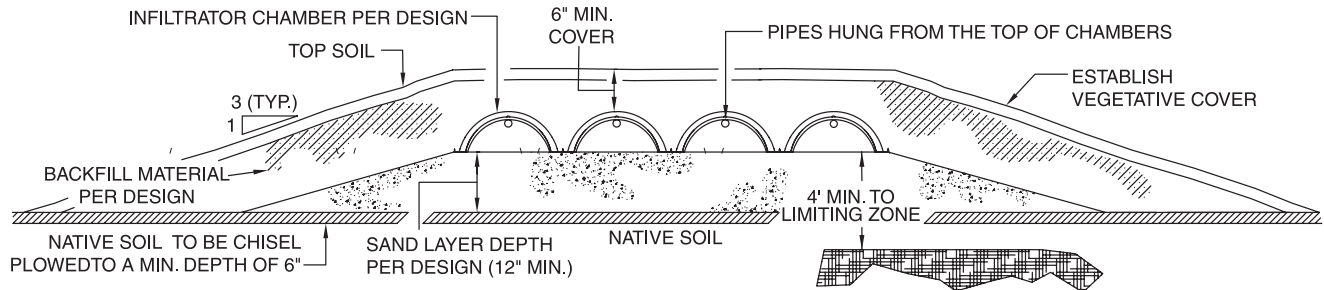
NOTE: Combined, the Quick4 MultiPort inlet and outlet endcaps add an increased sizing benefit to the system. Four endcaps are required for each center-fed row of chambers (see detail on page 6). A sizing factor of 10.43 sf/pair may be applied in a bed or a trench to account for the MultiPort Endcaps. Four Quick4 MultiPort Endcaps are equal to one Quick4 chamber. The minimum number of chambers shown above may be reduced by accounting for the number of Quick4 MultiPort Endcaps installed.

ELEVATED SAND MOUNDS

Distribution Lines in Each Row Chamber Configurations

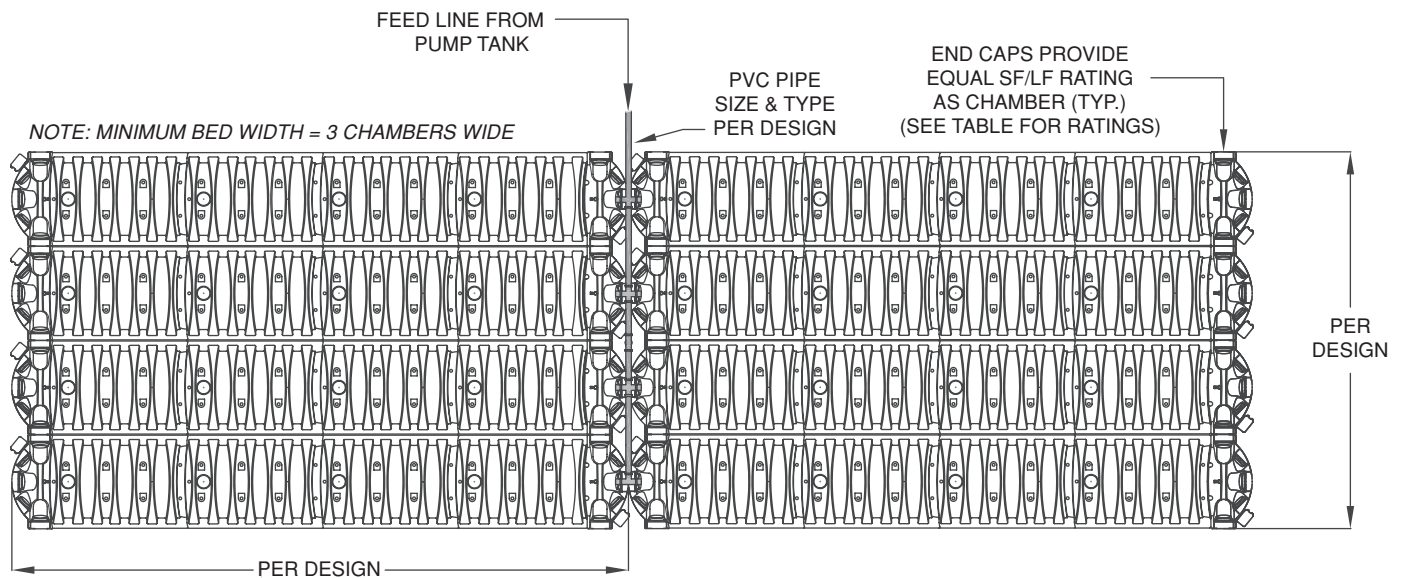
ELEVATED SOUND MOUND, CROSS SECTION

(not to scale)



CENTER FED FROM PRESSURE HEADER MANIFOLD, PLAN VIEW

(not to scale)



NOTES:

- Pipes must be hung from top of chambers (see detail).
- On slopes greater than 8% the absorption area must have a minimum length to width ratio of 4 to 1.
- Infiltrator chambers are not required to conform to orifice spacing standard established by 73.44 (c) (8).
- Minimum bed width is 3 chambers or 8.5 feet.
- Asymmetrical mound configurations are permissible (see System Sizing Example). The maximum allowable length difference between chamber rows on either side of the feed line from the pump tank is 6 feet.

ELEVATED SAND MOUNDS

Installation Instructions for Quick4 Pressurized Sand Mound Systems

Before You Begin

These installation instructions are for Quick4 Standard chambers in Pennsylvania. These chambers may only be installed according to state regulations and guidance.

Materials and Equipment Needed

- | | |
|--|---|
| <input type="checkbox"/> Quick4 chambers | <input type="checkbox"/> Utility Knife or Hole Saw |
| <input type="checkbox"/> Multiport Endcaps | <input type="checkbox"/> Backhoe/Bulldozer/Skid-Steer |
| <input type="checkbox"/> Pressure Lateral Pipe | <input type="checkbox"/> Glue |
| <input type="checkbox"/> Sand and Specified Fill Material | <input type="checkbox"/> Rake |
| <input type="checkbox"/> Plastic Pipe Straps, all Weather, 120 lb. Tensile Strength (nylon prohibited) | <input type="checkbox"/> Garden hose* |
| <input type="checkbox"/> Chisel plow* | <input type="checkbox"/> Paving blocks* *Optional |

These guidelines for construction machinery must be followed during installation.

- ☐ Avoid direct contact with chambers when using construction equipment. Chambers require a 12-inch minimum of compacted cover to support a wheel load rating of 16,000 lbs/axle or equivalent to an H-10 AASHTO load rating.
- ☐ Never drive wheeled machinery over chambers.
- ☐ Avoid stones larger than 3 inches in diameter in backfill. Remove stones this size or larger that are in contact with chambers.

Preparing the Site

NOTE: As is the case with conventional systems, do not install the systems in wet conditions or in overly moist soils, as this causes machinery to smear the soil.

1. Calculate the number of sand lifts necessary. Lifts should measure 6 to 12 inches in height.
2. Confirm that the sand used to build the mound meets Pennsylvania Code. Sand should meet requirements of Chapter 73, Section 73.55 (c).
3. Install sedimentation and erosion control measures.
4. Cut trees flush to the ground, remove surface boulders that can be easily rolled off, and remove vegetation.
5. Rough or plow the area parallel with the contour of the land. Do this by using a multiple share plow, chisel plow or a similar implement attached to lightweight equipment. Avoid rotary tilling.

Placing the Sand

1. Use a dozer or backhoe to evenly spread a one-foot lift of specified fill material over required area.

NOTE: Compaction is critical to prevent settling and will not have a significant effect on permeability of clean, sandy fill.



1.

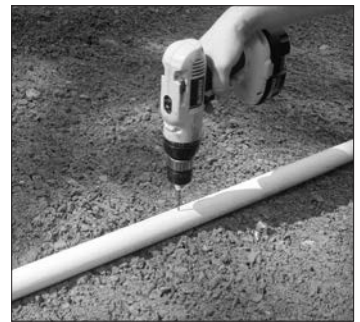
2. To obtain the necessary compaction, a tracked vehicle or wheeled backhoe can be driven over the entire bed. After first tracks are made across the bed, move across the bed at increments equal to the width of the wheels/ tracks. A vibratory plate compactor may also be used for compaction. Optimal moisture content to aid compaction is approximately 10%. Add water as necessary to obtain appropriate moisture content.

3. Place consecutive lifts following Steps 1 and 2 until design elevation is achieved (desired elevation is the infiltrative surface). Lifts should not exceed a 12-inch height.

4. Lightly drag a landscape rake over the final infiltrative surface to scarify the top 1/2 inch of the sand. Check bed elevation to be sure it is level.

Installing Chambers and Endcaps

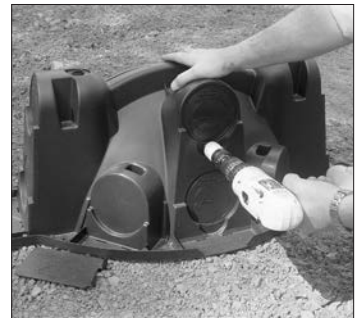
1. To allow pressure laterals to drain after each dose, drill a hole in the bottom of the pipe at the end of the pressure line. Place the snap-off splash plate or a paving block at the bottom of the trench to protect the infiltrative surface from erosion.



1. Drill hole.

2. With a hole saw, drill out the appropriate diameter hole to accommodate the pressure lateral pipe.

3. Insert the pressure lateral pipe into the endcap's drilled opening and slide it into the manifold pipe. Glue the pressure lateral pipe to the manifold pipe.



2. Drill hole with hole saw.

4. With the pressure lateral pipe through the endcap, place the inlet end of the first chamber over the back edge of the endcap.



4. Place inlet end.

ELEVATED SAND MOUNDS

5. Secure the pressure lateral pipe to the top of the first chamber with a plastic pipe strap at the outlet end of the unit. Slide the strap up through a slot in the chamber top, down through the other slot, and cinch the two ends around the pipe.

6. Lift and place the next chamber onto the previous one at a 90-degree angle. Line up the chamber end between the connector hook and locking pin at the top of the first chamber. Lower it to the ground to engage the interlocks.

7. Secure the lateral pipe to the top of the next chamber once in place. Follow the same method in Step 5.

8. Continue interlocking chambers and securing the pipe until the row is completed.

9. Before attaching the final endcap, remove the tongue of the connector hook on the last chamber with a pair of pliers.

10. Insert the pressure lateral pipe through the hole in the final endcap and slide the endcap towards the last chamber. Lift the endcap over the modified connector hook and push straight down to secure it to the chamber.

NOTE: If cleanout extensions are required, use a hole saw to cut a hole in the endcap at the proper elevation so that the lateral pipe can extend. For clean-out access, a 90-degree elbow that extends to the soil's surface can be attached to the lateral pipe.

11. If installing multiple rows of chambers, follow Steps 1-9 to lay the next row of chambers parallel to the first. Keep a minimum separation distance between each row of chambers as required by regulation.



5. Secure the pressure lateral pipe.



9. Remove tongue of connector hook.



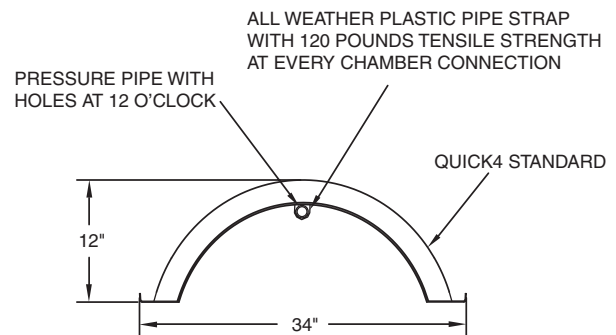
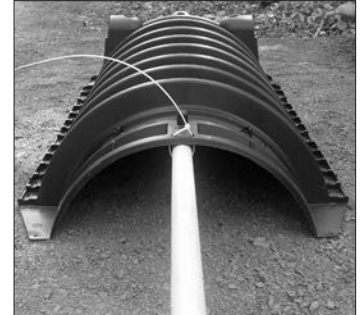
10. Attached endcap.

Pressure Pipe Design

TOP PLACEMENT

The pressure pipe may be installed at the top of the chamber for all allowable pressure applications. Advantages:

- Pipe and orifice placed closer to the chamber dome offer improved distribution
- Pipe positioned at the top of the chamber places it well above effluent
- Plastic pipe hanger easily secures pipe in place
- If necessary, trim excess plastic pipe strap before connecting chambers



Covering the System

Before backfilling, the system must be inspected by an SEO as required by state code. The system should be installed exactly as designed.

1. Place a 2-foot-high pile of berm material around the perimeter of the sand mound and directly against the outer rows of chambers for stabilization.

2. Ladle soil between the chamber rows to the top sidewall louver to prevent chamber movement before final backfill. Firm the soil between the chamber rows by walking it in. This important step assures correct structural support of the system.

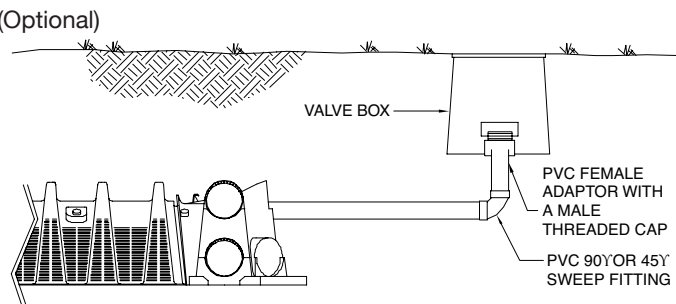
3. Push the berm material between and over the chamber rows with a tracked vehicle from the upslope side. Keep a minimum 12 inches of cover over the system. Any compaction of backfill shall be with the tracks of the equipment used for material placement.

NOTE: No wheeled machinery is allowed on chambers in mounds. Tracked vehicles may be used.

4. After the system is covered, the site should be seeded or sodded to prevent erosion.

NOTE: It is important to place marking stakes along the boundary of the system. This will notify contractors of the chamber system location so they will not traverse it with equipment or vehicles.

ACCESS FOR DRAINFIELD MAINTENANCE AND FLUSHING (Optional)



TRENCH AND BED SYSTEMS

System Sizing for Quick4 Standard Chambers in Trenches and Beds

TABLE 2: QUICK4 STANDARD CHAMBERS IN TRENCHES AND BEDS

Quick4 Standard Chamber*					
Percolation Rate*	3	4	5	6	Each Additional
	Minimum Number of Chambers Required (Square Feet Required ÷ 18.88 SF/Chamber = Number of Chambers***				
6-15	26	32	38	45	7
20	30	37	45	52	8
25	34	43	51	59	9
30	38	48	57	67	10
35	42	52	62	72	11
40	45	56	67	78	12
45	48	60	72	84	12
50	51	64	76	89	13
55	54	67	81	94	14
60	57	71	85	99	15
65	59	74	89	103	15
70	62	77	92	108	16
75	64	80	96	112	16
80	67	83	100	116	17
85	69	86	103	120	18
90	71	89	107	125	18

*All systems except sand mounds and subsurface sand filters.

**For average percolation rates that fall between numbers listed please refer to Table A of Pennsylvania Code Chapter 73.

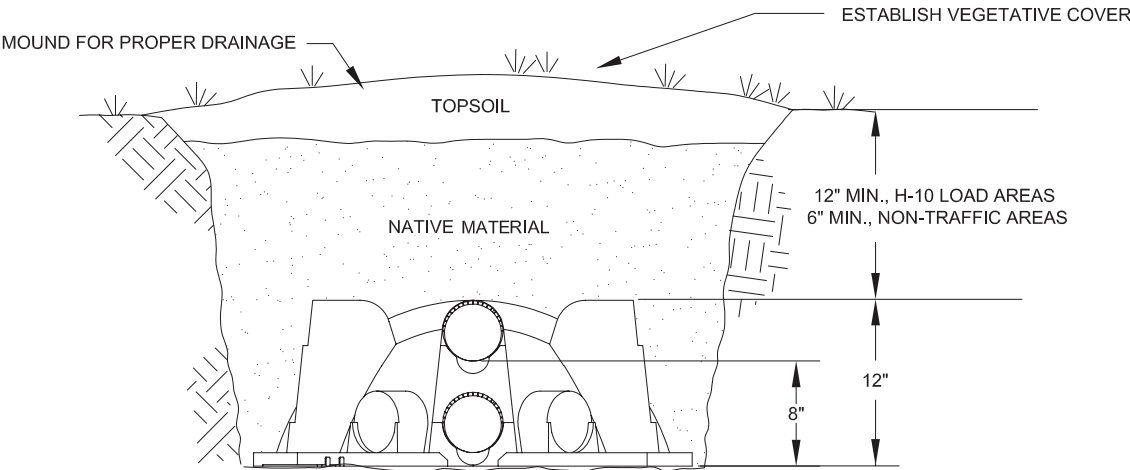
***When calculating number of chambers required always round up to the next full chamber.

Note: Combined, the Quick4 MultiPort inlet and outlet endcaps add an increased sizing benefit to the system. Two endcaps are required for each end-fed row of chambers (see detail on page 14). A sizing factor of 10.43 sf/pair may be applied in a bed or trench to account for the MultiPort Endcaps. Four Quick4 MultiPort Endcaps are equal to one Quick4 chamber. The minimum number of chambers shown above may be reduced by accounting for the number of Quick4 MultiPort Endcaps installed.

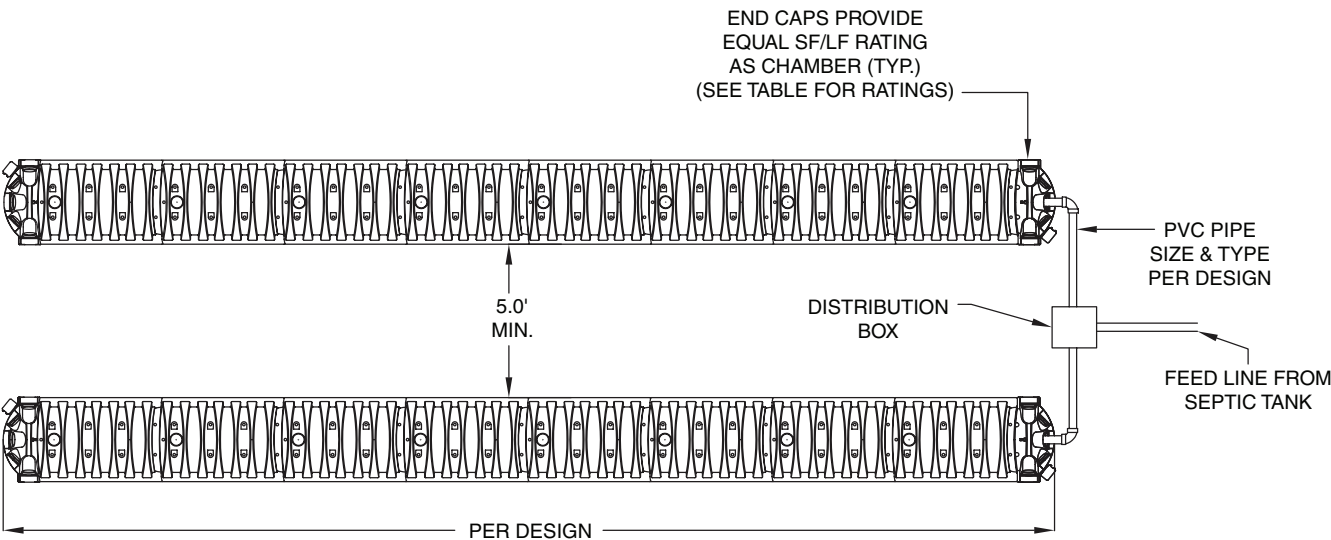
TRENCH AND BED SYSTEMS

Quick4 Standard Trench Configurations

TYPICAL CROSS SECTION
(not to scale)



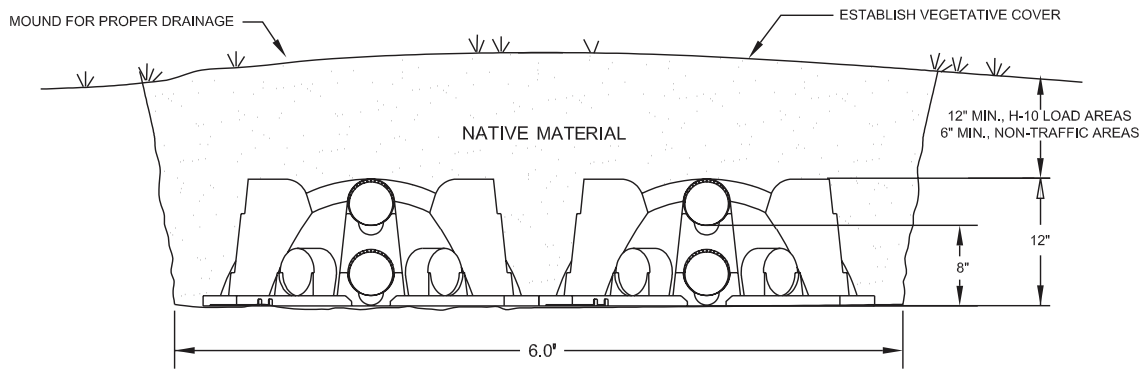
TYPICAL PLAN VIEW
(not to scale)



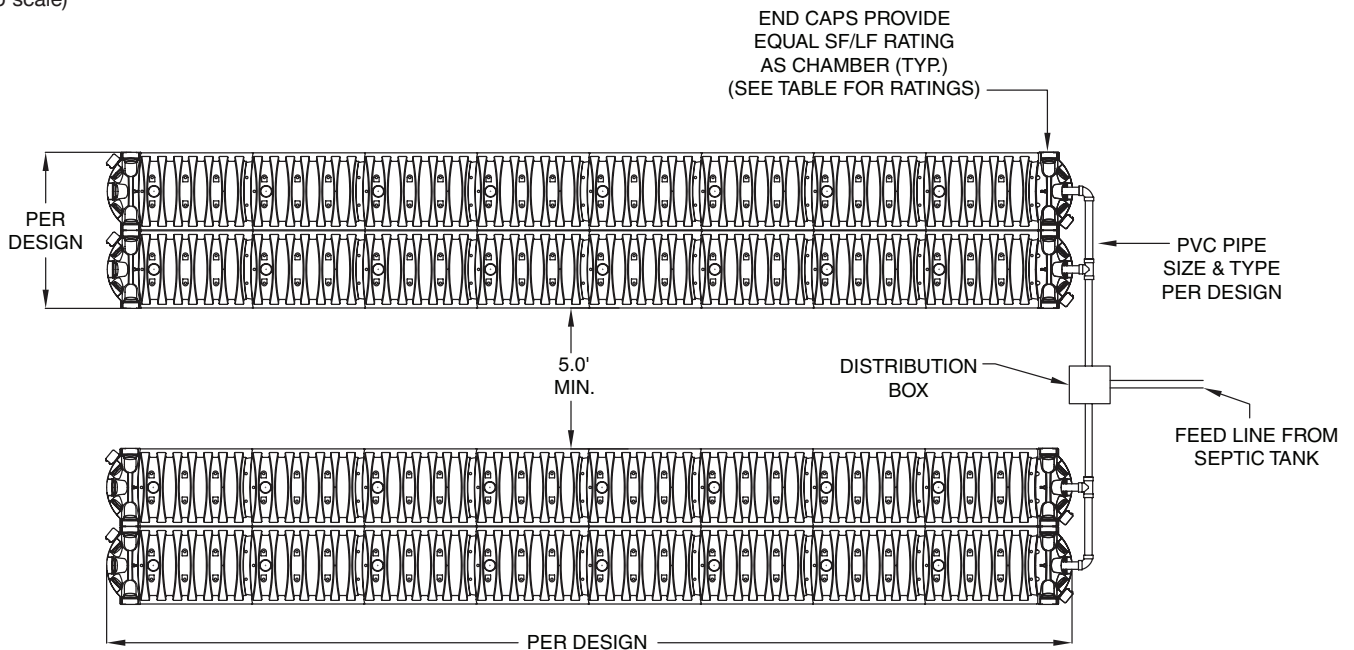
TRENCH AND BED SYSTEMS

Quick4 Standard Side-by-Side Trench Configurations

TYPICAL CROSS SECTION (not to scale)



TYPICAL PLAN VIEW (not to scale)

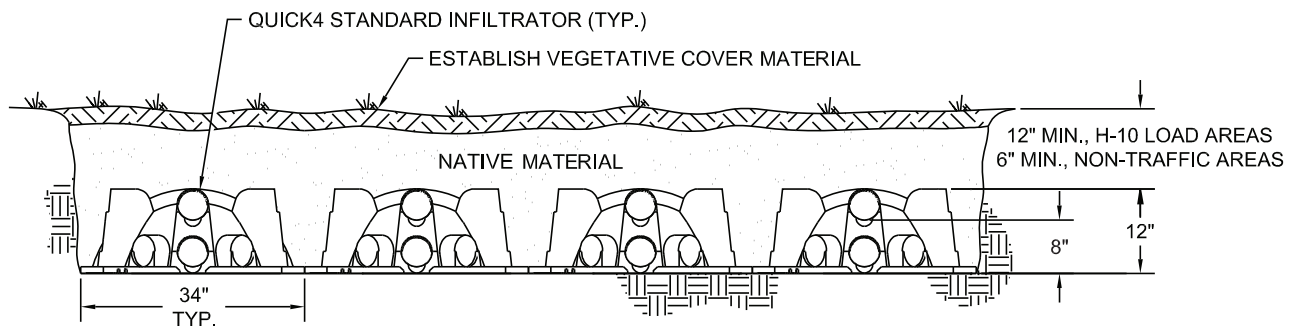


TRENCH AND BED SYSTEMS

Quick4 Standard Bed Configuration

TYPICAL CROSS SECTION

(not to scale)



TRENCH AND BED SYSTEMS

Installation Instructions for Quick4 Standard Trench and Bed Systems

Before You Begin

These installation instructions are for Quick4 Standard chambers in Pennsylvania. These chambers may only be installed according to state regulations and guidance.

Materials and Equipment Needed

- | | |
|---|---|
| <input type="checkbox"/> Quick4 chambers | <input type="checkbox"/> Shovel and rake |
| <input type="checkbox"/> Multiport Endcaps | <input type="checkbox"/> Tape measure |
| <input type="checkbox"/> Pressure Lateral Pipe | <input type="checkbox"/> Utility knife or screwdriver |
| <input type="checkbox"/> Sand and Specified Fill Material | <input type="checkbox"/> Hole saw* |
| <input type="checkbox"/> Backhoe | <input type="checkbox"/> 2" drywall screws* |
| <input type="checkbox"/> Laser, transit or level | <input type="checkbox"/> Small valve cover box* |

*Optional

These guidelines for construction machinery must be followed during installation.

- ☐ Avoid direct contact with chambers when using construction equipment. Chambers require a 12-inch minimum of compacted cover to support a wheel load rating of 16,000 lbs/axle or equivalent to an H-10 AASHTO load rating.
- ☐ Never drive down the length of the trenches.
- ☐ To avoid additional soil compaction, never drive vehicles over the completed system.

Excavating and Preparing the Site

NOTE: As is the case with conventional systems, do not install the systems in wet conditions or in overly moist soils, as this causes machinery to smear the soil.

1. Stake out the location of all trenches and lines. Set the elevations of the tank, pipe, and trench bottom.
2. Install sedimentation and erosion control measures. Temporary drainage swales/berms may be installed to protect the site during rainfall events.
3. Excavate and level trenches with proper center-to-center separation in accordance with permit design. Verify that the trenches are level or have the prescribed slope and width.
4. Rake the bottom and sides if smearing has occurred while excavating. Remove any large stones and other debris.

Preparing the Endcap

1. With a screwdriver or utility knife start the tear-out seal at the appropriate diameter for the inlet pipe. The seal allows for a tight fit for 3-inch, 4-inch SDR35, and 4-inch Schedule 40 pipe.

NOTE: If 3-inch Schedule 40 pipe is used, make several slits around knockouts after tearing out seals to allow for more flexibility.

2. Pull the tab on the tear-out seal to create an opening on the endcap.

3. Snap off the molded splash plate located on the bottom front of the endcap.

4. Install splash plate into the appropriate slots below the inlet to prevent trench bottom erosion.

5. Insert the inlet pipe into the endcap at the beginning of the trench.



1. Start tear-out seal.



2. Pull tab on tear-out seal.



4. Install splash plate.



5. Insert inlet pipe.

TRENCH AND BED SYSTEMS

Installing the System

1. Check the header pipe to be sure it is level or has the prescribed slope.
2. Set the invert to appropriate height from the bottom of the trench.

3. Place the inlet end of the first chamber over the back edge of the endcap.
4. Lift and place the end of the next chamber onto the the previous chamber by holding it at a 90-degree angle. Line up the chamber end between the connector hook and locking pin at the top of the first chamber. Lower it to the ground to connect the chambers.



3. Place first chamber onto endcap.

NOTE: When the chamber end is placed between the connector hook and locking pin at a 90-degree angle, the pin will be visible from the back side of the chamber.

NOTE: The connector hook serves as a guide to insure proper connection and does not add structural integrity to the chamber joint. Broken hooks will not affect the structure nor void the warranty.

5. Swivel the chamber on the pin to the proper direction for the trench layout.

NOTE: The Quick4 chamber allow for 10 degrees of swivel in either direction at each joint.

6. Where the system design requires straight runs, use the StraightLock™ tabs to ensure straight connections. To activate the tabs, pop the tabs up with your thumb to lock into place.

7. Continue connecting chambers until trench is completed.

NOTE: As chambers are installed, verify they are level or have the prescribed slope.

8. The last chamber in the trench requires an endcap. Lift the endcap at a 45-degree angle and insert the connector hook through the opening on the top of the endcap. Applying firm pressure, lower the endcap to the ground to snap it into place. Do not remove the tear-out seal.



8. Attach endcap to chamber.

9. To ensure structural stability, fill the sidewall area by pulling soil from the sides of the trench with a shovel. Start at the joints where the chambers connect. Continue backfilling the entire sidewall area, making sure the fill covers the louvers.

10. Pack down the fill by walking along the edges of the trench and chambers. This is an important step in assuring structural support.

11. Proceed to the next trench and begin with Step 1.

Installing Optional Inspection Ports

1. With a hole saw drill the pre-marked area in the top of the chamber to create a 4-inch opening.
2. Set a cut piece of pipe of the appropriate length into the corresponding chamber's inspection port sleeve.

NOTE: The sleeve will accommodate a 4-inch Schedule 40 pipe.

3. Use two screws to fasten the pipe to the sleeve around the inspection port.
4. Attach a threaded cap or cleanout assembly onto the protruding pipe at the appropriate height.
5. A small valve cover box may be used if inspection port is below the desired grade.

Covering the System

Before backfilling, the system must be inspected by an SEO as required by state code. The system must be installed exactly as designed.

1. Backfill the trench by pushing fill material over the chambers with a backhoe. Keep a minimum of 12 inches of cover over the chambers. Any compaction of backfill shall be with the tracks of the equipment used for material placement.

Note: No wheeled machinery is allowed on chambers in mounds. Tracked vehicles may be used.

2. It is best to mound several inches of soil over the finish grade to allow for settling. This ensures that runoff water is diverted away from the system.
3. After the system is covered, the site must be seeded or sodded to prevent erosion.

NOTE: It is important to place marking stakes along the boundary of the system. This will notify contractors of the chamber system location so they will not traverse it with equipment or vehicles.

SYSTEM SIZING WORKSHEET

Sizing of onsite wastewater treatment systems (OWTS) will vary depending on location, soil characteristics, application rates and the characteristics of the wastewater. It is the responsibility of the designer to verify that systems are designed and sized appropriately according to manufacturer's and Pennsylvania regulations and guidance.

The following example is based on Pennsylvania DEP suggested loading rates for sizing infiltration surfaces.

SYSTEM DESIGN EXAMPLE FOR AN ELEVATED SAND MOUND

NOTE: This example is for illustration purposes only.

Given the following information:

House size: 3 bedrooms
Daily flow rate: 400 gal/day
Percolation rate: 6-15 min/inch
Application rate: 0.667 gal/day/sf

SYSTEM CALCULATIONS

Determine required square footage:

$$400 \text{ gal/day} \div 0.667 \text{ gal/day/sf} = 600 \text{ sf required}$$

Determine total number of chambers required:

$$600 \text{ sf} \div 18.88 \text{ sf/chamber (chamber rating)} = 32 \text{ chambers}$$

SYSTEM LAYOUT (with endcap credit)

NOTE: Like chambers, MultiPort Endcaps receive bottom area credit. Two pairs of endcaps are equivalent to 1 chamber.

The following example shows how to reduce the number of chambers required by taking advantage of the MultiPort Endcap credit.

Install the system in a bed layout using a center-fed manifold.

Install 8 rows of Quick4 Standard chambers with 4 chambers in one row and 3 in the other

8 pairs of MultiPort Endcaps are required:

$$8 \text{ pairs} \times 10.43 \text{ sf/pair (endcap credit)} = 83.4 \text{ sf provided}$$

$$83.4 \text{ sf} \div 18.88 \text{ sf/chamber} = 4.4 \text{ chambers replaced}$$

Total number of chambers: 28 Quick4 Standard chambers

Total square footage provided by chambers:

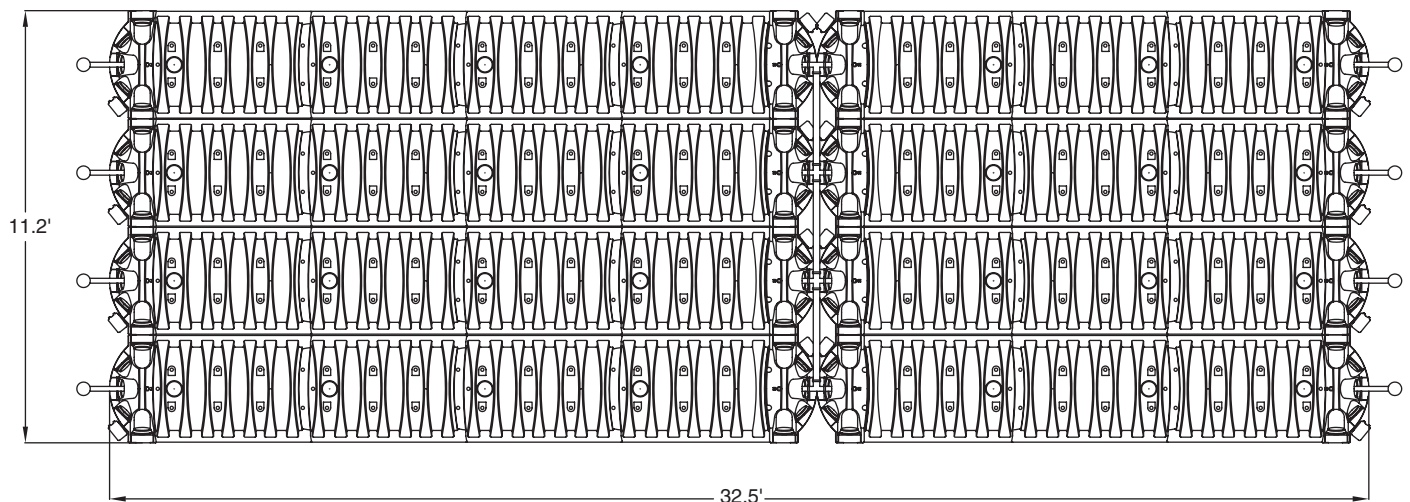
$$28 \text{ chambers} \times 18.88 \text{ sf/chamber} = 528.6 \text{ sf}$$

Total square footage:

$$\text{chamber area} + \text{endcap area} = 528.6 \text{ sf} + 83.4 \text{ sf} = 612 \text{ sf}$$

Design Example

**TYPICAL 3 BEDROOM,
6-15 MIN/INCH PERC RATE PLAN VIEW**
(not to scale)



NOTES:

- Pipes must be hung from top of chambers (see detail).
- On slopes greater than 8% the absorption area must have a minimum length to width ratio of 4 to 1.
- Infiltrator chambers are not required to conform to orifice spacing standard established by 73.44 (c) (8).
- Minimum bed width is 3 chambers or 8.5 feet.
- Asymmetrical mound configurations are permissible (see System Sizing Example). The maximum allowable length difference between chamber rows on either side of the feed line from the pump tank is 6 feet.

NOTE TO THE SEO

Below are **KEY POINTS** that can help you better understand the correct installation of a chamber system by Infiltrator Systems, Inc.

Sand Mound Construction

- Cut trees close to the ground and remove all vegetation and boulders.
- Rough or plow the area parallel with the contour of the land by using a multiple share plow, chisel plow, or a similar implement. Avoid rotary tilling.
- Add the appropriate amount of sand in 12-inch lifts. With a backhoe or dozer, run a single pass over each lift to compact the sand material. Move across the bed at increments equal to the width of the tracks or tires.
- Grade the infiltrative surface to level.
- Lightly drag a landscape rake over the final infiltrative surface to level and scarify the top 1 1/2" of the sand. You are now ready to proceed with the chamber installation.

Installing the Chambers in Pressurized Systems

- First excavate or build the appropriate sized bed, trenches, or mound.
- Build the manifold for the system laterals in accordance with permitted design.
- Lay the manifold out so that each lateral will be lined up correctly with the endcaps.
- Cut the appropriate-sized hole in the endcaps at the correct elevation.
- Insert the lateral through the hole in the endcap and slide it tight against the manifold.
- Connect and glue all of the laterals to the manifold and cut them to the exact length. Drill the holes in the laterals at the designed dimensions and distances if not already present.
- Attach Quick4 chambers to the endcaps in each row. Hang the pipe with an appropriate pipe strap at the outlet end of each chamber. Attach the next chamber and continue to hang the lateral from each chamber. The holes should be placed at the 12 o'clock position so that the effluent sprays straight up into the inside of the chamber.
- If a drain back/weep hole is required, place an anti-scouring device under each hole.
- Once each row is the correct length, add a cap to the end of the lateral. If a cleanout is required, drill a hole in the outlet endcap and extend the lateral out through the endcap and up to the ground surface using a 90-degree or 45-degree elbow. A valve box can be installed for access during maintenance.

Backfilling and Final Grade

- First support the chamber sidewall by adding soil between the chamber rows to the top of the louvers. Pack the soil down by "walking it in." This is a crucial step that assures correct structural support for the chambers.
- Using tracked machinery, push the cover material over the chamber rows lengthwise or across the system from the upslope side. A 12" minimum cover is required over the system to support an AASHTO H-10 load (16,000-pound axle load). No wheeled vehicles are permitted on top of the Infiltrator sand mound. Backhoes and excavator arms may be used to cover the system as well.
- Once the system is covered, the site should be seeded or sodded to prevent erosion.

WARRANTY

Limited Five-Year Warranty for Pennsylvania

(a) Infiltrator Water Technologies (the "Company") warrants that the Infiltrator units, when installed and operated in a leachfield of an on-lot system in accordance with the manufacturer's instructions and the Pennsylvania Department of Environmental Protection's approved on-lot system sizing criteria for chambers and pursuant to all necessary building permits, are warranted for a period of five (5) years from the date of installation (i) to be free from

defective materials and workmanship; and (ii) to perform in accordance with the state and local leachfield performance requirements in effect on the date of installation. This warranty extends only to the property owner. For purposes of this warranty, the Infiltrator Chamber System must be installed in accordance with all site conditions required by state and local codes for the installation of drain rock and pipe systems and sized according to the Department of Environmental Protection's approved on-lot system sizing criteria for chambers.

(b) System failures determined to be due to improper siting, excessive water usage, improper grease disposal, or improper operation are not part of this warranty.

Upon notification of a system failure, Infiltrator Water Technologies may, at its option, perform or have performed certain tests to determine the cause of failure. A registered soil scientist or professional engineer may be used to evaluate the soil conditions and compare those conditions with any original evaluation which may appear on the permit.

In order to exercise these warranty rights, the property owner must notify the Company in writing at its corporate headquarters within 15 days of the alleged defect. The notice shall be accompanied by (i) a copy of the warranty which is signed and dated by the installer and the property owner as set forth below; (ii) a copy of the appropriate permit for the septic system; and (iii) proof to the Company's satisfaction that the septic tank has been maintained in accordance with the Company's operating instructions. In the event of a breach of warranty due to a failure of the leachfield, the Company will provide and install Infiltrator units as necessary to extend the size of the leachfield. Infiltrator Water Technologies will not be responsible for pumps and any other necessary mechanical devices needed to extend the leach-

field. In the event of any other breach of warranty, the Company will provide replacement Infiltrator units.

(c) THE WARRANTY IN SUBPARAGRAPH (a) AND THE REMEDIES IN SUBPARAGRAPH (b) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES. ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE SHALL NOT EXTEND BEYOND THE PERIOD IN SUBPARAGRAPH (a). THE WARRANTY DOES NOT EXTEND TO INCIDENTAL, CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES. THE COMPANY SHALL NOT BE LIABLE FOR PENALTIES OR LIQUIDATED DAMAGES, LOSS OF PRODUCTION AND PROFITS, LABOR AND MATERIALS, OVERHEAD COSTS, OR OTHER LOSS OR EXPENSE. SPECIFICALLY EXCLUDED ARE DAMAGE DUE TO ORDINARY WEAR AND TEAR, ALTERATION, ACCIDENT, MISUSE, ABUSE, OR NEGLIGENCE; THE UNITS BEING SUBJECTED TO STRESSES OR VEHICLE TRAFFIC GREATER THAN THOSE PRESCRIBED IN THE INSTALLATION INSTRUCTIONS OR OPERATION INSTRUCTIONS; FAILURE TO MAINTAIN THE MINIMUM GROUND COVERS SET FORTH IN THE OPERATION INSTRUCTIONS; THE PLACEMENT OF IMPROPER MATERIALS INTO THE SYSTEM; OR ANY OTHER EVENT NOT CAUSED BY THE COMPANY. THIS WARRANTY SHALL BE VOID IF THE PROPERTY OWNER FAILS TO COMPLY WITH ALL OF THE TERMS SET FORTH IN SUBPARAGRAPH (b).

FURTHERMORE, IN NO EVENT SHALL THE COMPANY BE RESPONSIBLE FOR ANY LOSS OR DAMAGE TO THE PROPERTY OWNER, THE UNITS, OR ANY THIRD PARTY RESULTING FROM THE INSTALLATION OR SHIPMENT OF THE UNITS, OR FROM ANY PRODUCT LIABILITY CLAIMS OF THE ORIGINAL PROPERTY OWNER OR ANY THIRD PARTY. THE COMPANY SHALL NOT BE RESPONSIBLE FOR ENSURING THAT INSTALLATION OF THE SYSTEM IS COMPLETED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, RULES, AND REGULATIONS.

(d) No representative of the Company has the authority to change this warranty in any manner whatsoever, or to extend this warranty. No warranty applies to any party other than to the property owner.



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U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,116; 5,401,459; 5,511,903; 5,716,163; 5,588,778; 5,839,844 Canadian Patents: 1,329,959; 2,004,564 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickCut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, Inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.

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Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436