

JAJ
Jacobsen, James

From: Jacobsen, James
Sent: Wednesday, April 07, 2010 11:03 AM
To: 'DLENTZ@INFILTRATORSYSTEMS.NET'
Subject: Quick 4 Plus final design

Hello,

I have read your letter of 03/31/10 and concur with your conclusion that the design modifications to the Quick 4 Plus Standard chamber design do not need a revised approval letter.

Feel free to contact me if you have any questions.

James A. Jacobsen
Project Manager, Webmaster
Division of Environmental Health
Drinking Water Program
Subsurface Wastewater Unit
286 Water Street, Augusta, ME 04333
Phone: 207-287-5695 Fax: 207-287-3165
<http://www.maine.gov/dhhs/eng/plumb/index.htm>

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APR 05 2010

WASTEWATER &
PLUMBING PROGRAM

March 31, 2010

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

Re: Quick4 Plus Standard Chamber
Final Design Configuration Notification

Dear Mr. Jacobsen,

Infiltrator Systems Inc. (Infiltrator) previously received approval from the Department for use of the Quick4 Plus Standard chamber. At the time Infiltrator's request was made and approval was issued, we were actively working to finalize the chamber design. From the time of our previous regulatory submissions until now, we have modified the design that was previously submitted for the product. These modifications will not adversely affect the performance of the product, and this letter is being provided for informational purposes only. All other Quick4 Plus chamber models have been finalized without change.

Unless the Department feels that a response or action is warranted, Infiltrator proposes that the approval letter that was previously issued for the Quick4 Plus Standard chamber remain in effect. The remainder of this letter describes the final design of the chamber and provides a comparison with the previously approved Quick4 Standard chamber.

Summary of Final Quick4 Plus Standard Chamber Design

The table below provides a comparison of key parameters between the previously approved Quick4 Standard and the final configuration of the Quick4 Plus Standard chamber. Illustrations and images of the Quick4 Plus Standard final design are included in Attachment 1.

Product	Nominal Exterior Width (in)	Overall Height (in)	Open Bottom Area (sf/ft)	Louvered Sidewall Height (in)	Invert Heights (in)	Total Storage Volume (gal/ft)
Quick4 Standard	34	12	2.27	8	8	10.9
Quick4 Plus Standard (final design)	34	12	2.41	8.8	5.3, 8, 12.7	11.4

Other notable features are described below:

- **Center support** – The original Quick4 Plus Standard design included a single center support feature. Infiltrator opted to include an additional center support in the final chamber design. This feature was added to enhance overall structural performance.
- **Open bottom area** – The addition of a second center support resulted in a change in the open bottom area from the original design of 2.45 sf/ft to 2.41 sf/ft. However, the final design open bottom area value of 2.41 sf/ft is substantially greater than the 2.27 sf/ft of open bottom area provided by the Quick4 Standard chamber. The larger open bottom area equates to increased infiltrative capacity.

- **Arch shape** – The images in Attachment 1 show the geometry of the dome to be more of a semi-circle or arch design versus the previous version, which resembled a high-radius arch fixed above near linear sidewall structures. This change enabled an increase of the chamber louvered sidewall profile from 8 inches to 8.8 inches.
- **Endcap system** – The original Quick4 Plus Standard design included an 8-inch-high end cap system with dual compatibility on both the Quick4 Plus Standard and Quick4 Plus Standard Low Profile (LP) chambers. Infiltrator's final design for the Quick4 Plus Standard chamber is not compatible with the 8-inch-high end cap system. Instead, the end cap system for the Quick4 Plus Standard is approximately the same height as the 12-inch-high chamber. There are two end caps available, depending upon inletting/outletting needs, as discussed below:
 - *Quick4 Plus All-in-One 12 Endcap* – This end cap may be used at the end of a chamber row or in-line with chambers. The in-line feature allows construction of chamber rows with a center feed, as an option to inletting at the ends of the chamber rows. Pipe connection options include the end (drill points for gravity or pressure pipe), sides, or top.
 - *Quick4 Plus 12 Endcap* - This end cap is installed at the end of the chamber and allows installation of a pipe from the end only. This end cap does not provide side-inletting capability. Pipe connection options include drill points for gravity or pressure pipe.

Please contact me at (860) 577-7198 if any further information is required about these design modifications.

Best Regards,

David Lentz

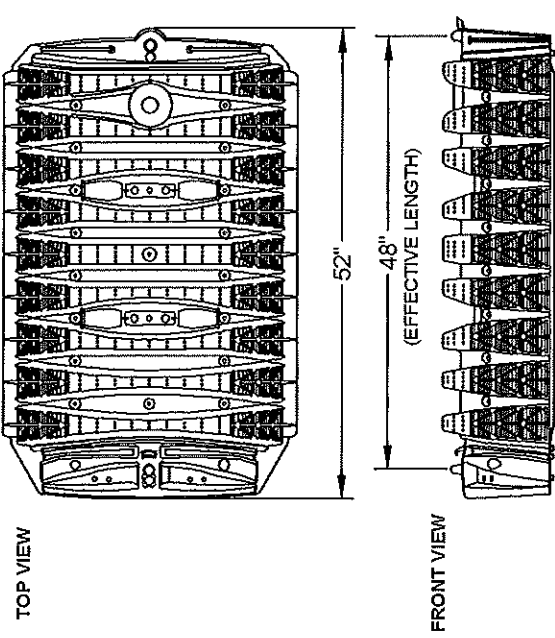
David Lentz, P.E.
Regulatory Director
Science & Government Affairs

cc: Ben Berteau, Infiltrator Systems Inc.
Blake Johnston, Infiltrator Systems Inc.

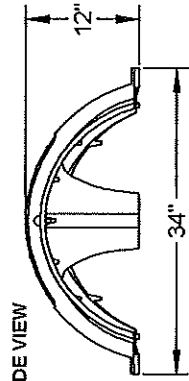
Attachment 1

Quick4 Plus Standard Chamber Final Design Illustrations

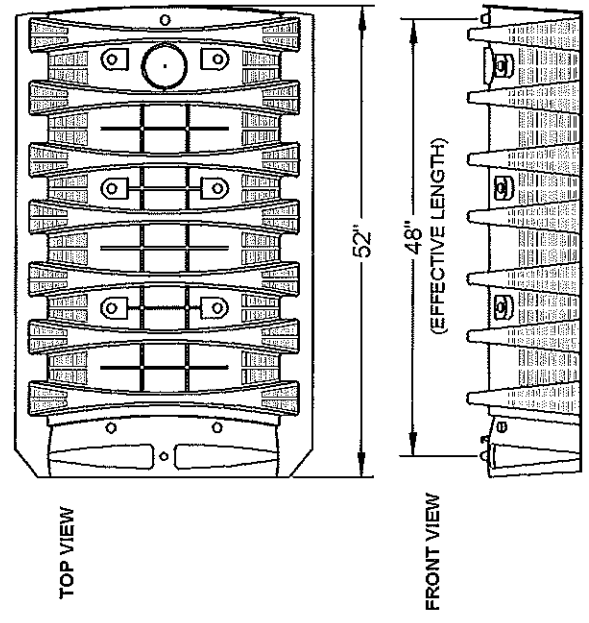
QUICK4 PLUS STANDARD



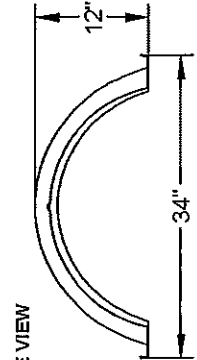
SIDE VIEW



QUICK4 STANDARD CHAMBER



SIDE VIEW



CHAMBER SPECIFICATIONS

FEATURES	QUICK4 PLUS STANDARD CHAMBER	QUICK4 STANDARD CHAMBER
OVERALL LENGTH	52.0 INCHES	52.0 INCHES
EFFECTIVE LENGTH	48.0 INCHES	48.0 INCHES
OVERALL HEIGHT	12.0 INCHES	12.0 INCHES
OVERALL WIDTH	34.0 INCHES	34.0 INCHES
OPEN BOTTOM AREA	2.41 SF/LF	2.27 SF/LF
OPEN SIDEWALL AREA (minimum)	0.26 SF/LF	0.20 SF/LF
OPEN SIDEWALL AREA (AOR*)	0.61 SF/LF	0.56 SF/LF

* As measured along the soil Angle Of Repose

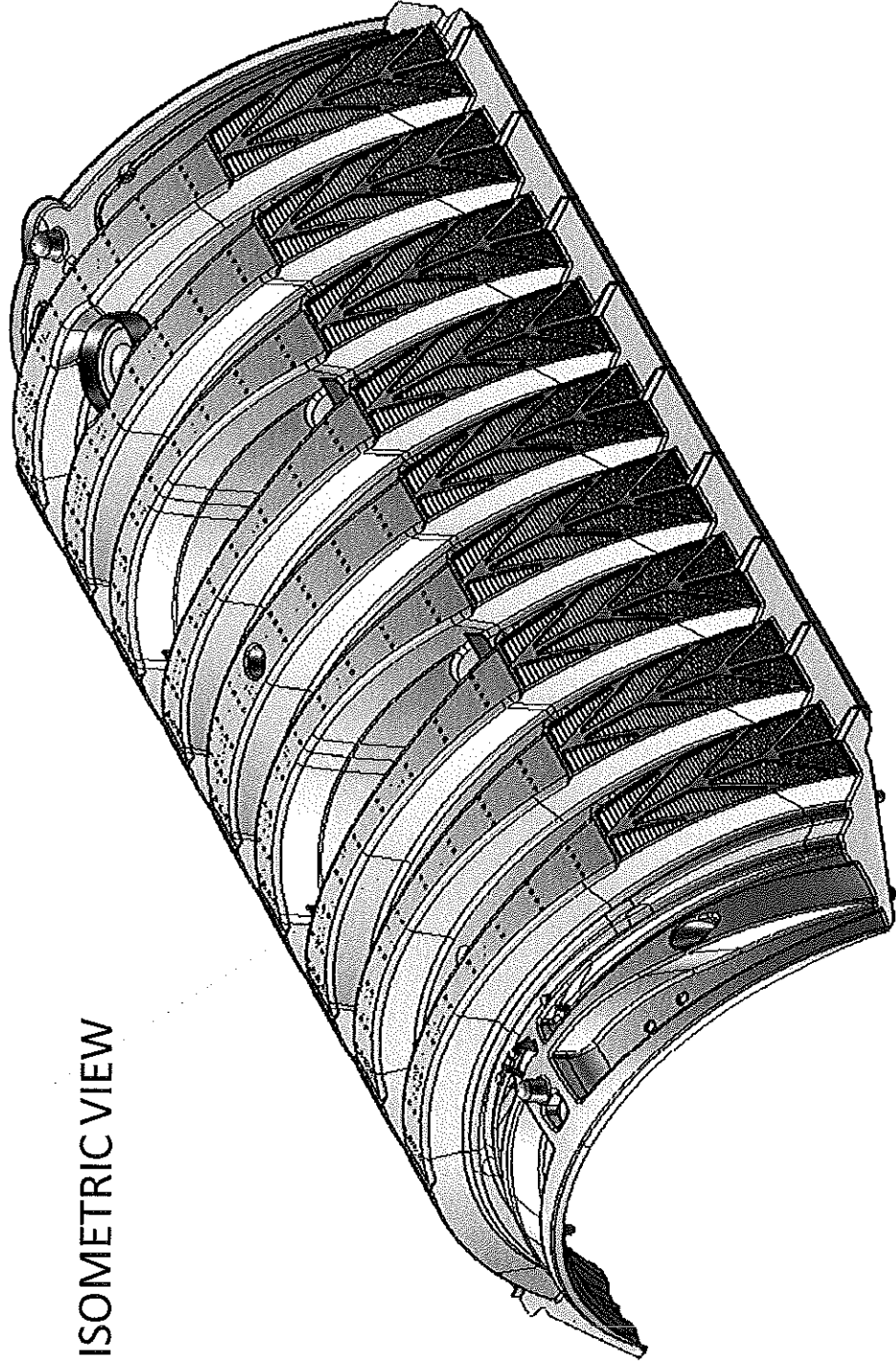
INFILTRATOR SYSTEMS, INC.
 6 BUSINESS PARK ROAD
 P.O. BOX 768
 OLD SAYBROOK, CT 06475
 PH: (800) 221-4486
 FX: (860) 577-7001
 WWW.INFILTRATORSYSTEMS.COM

INFLTRATOR SYSTEMS
 PRODUCT COMPARISON
 QUICK4 PLUS STANDARD &
 QUICK4 STANDARD

Scale NOT TO SCALE
 Date 3/4/2010
 Drawn By: LB
 Checked DJL
 A CAD No.
 Sheet 1 Of 1

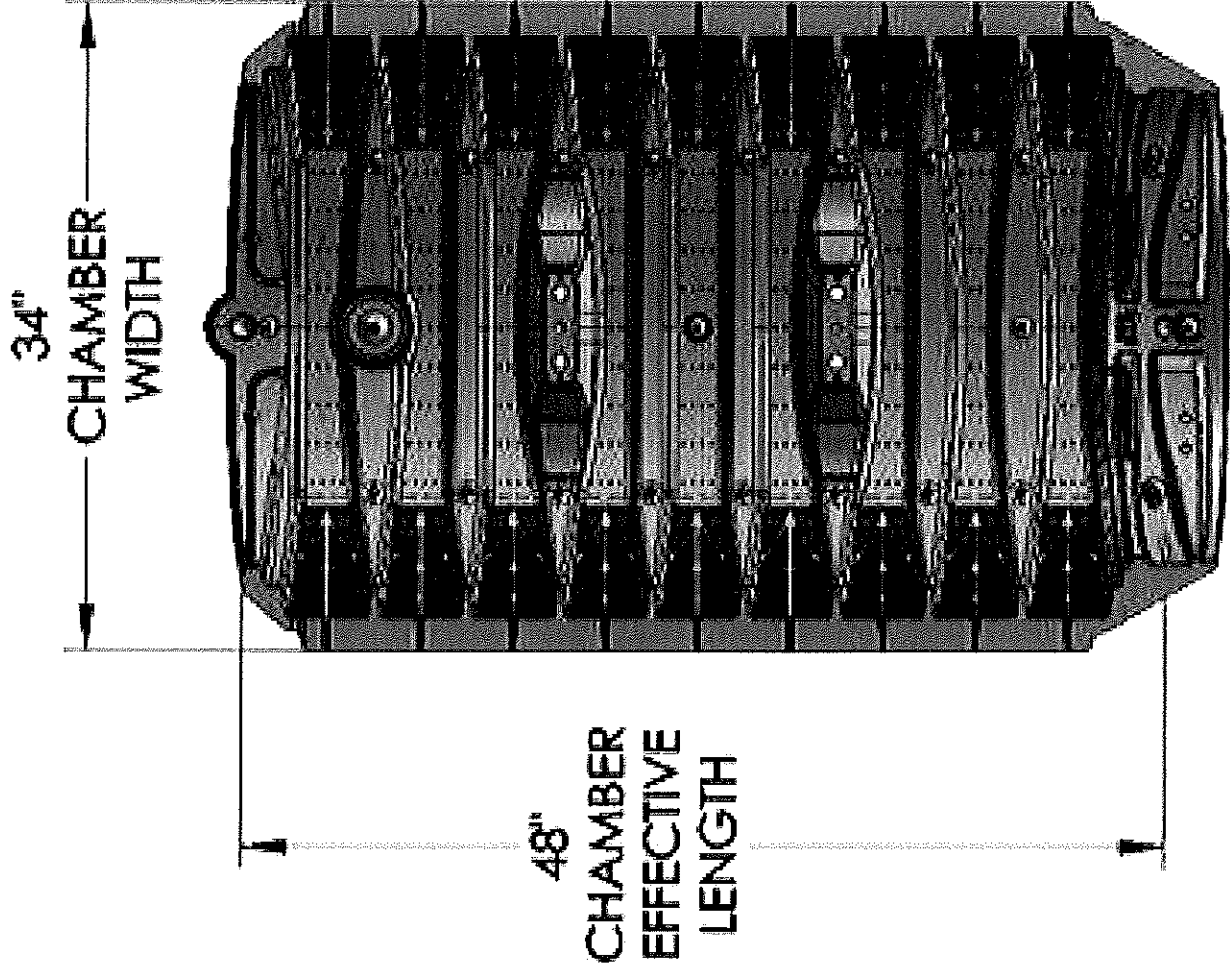
QUICK4 PLUS STANDARD

ISOMETRIC VIEW



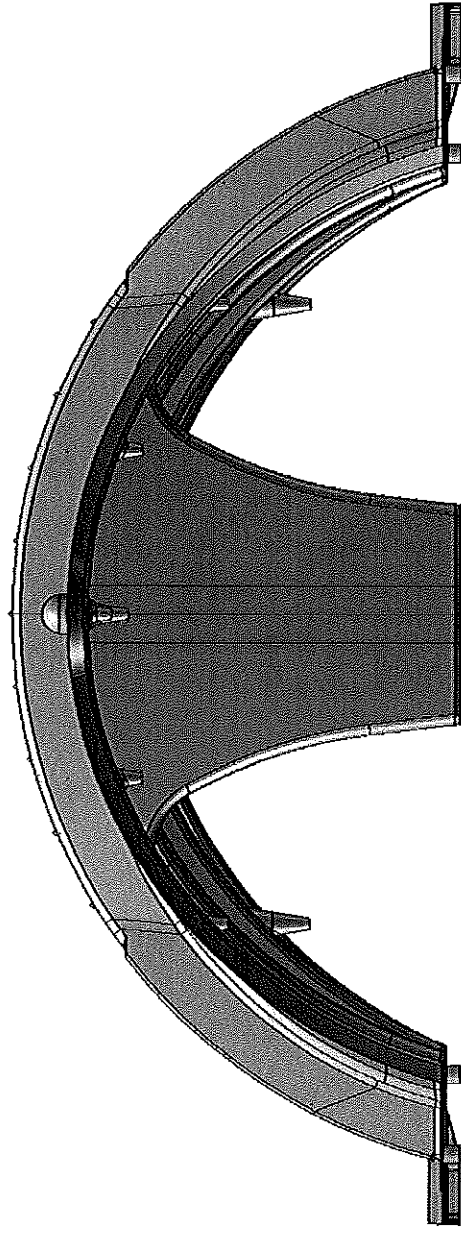
QUICK4 PLUS STANDARD

TOP VIEW

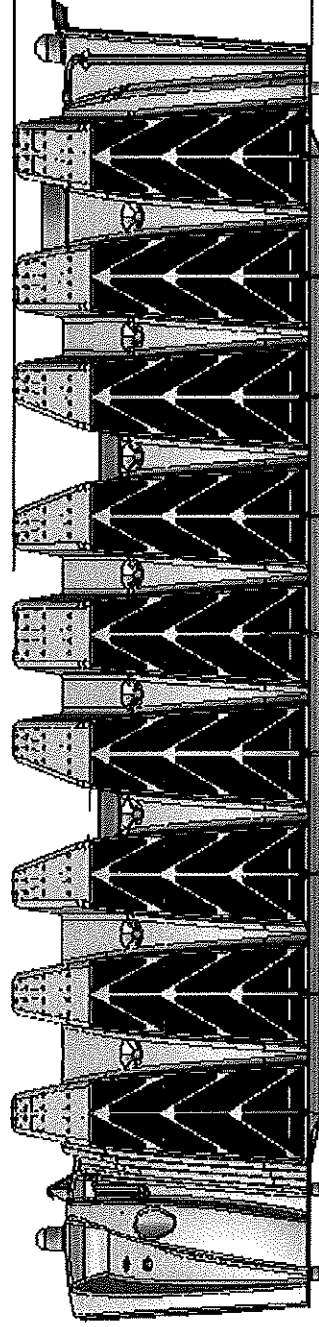


QUICK4 PLUS STANDARD

END VIEW



SIDE VIEW

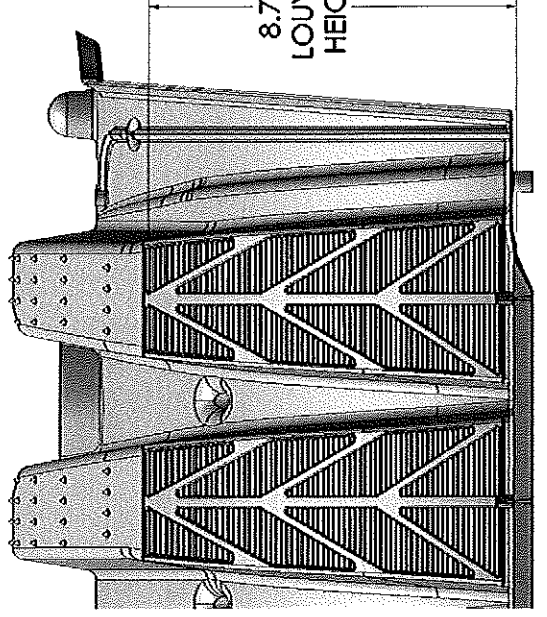


12.00"
CHAMBER
HEIGHT



OPEN BOTTOM AREA = 2.41 SF/LF
STORAGE VOLUME = 11.4 GAL/LF

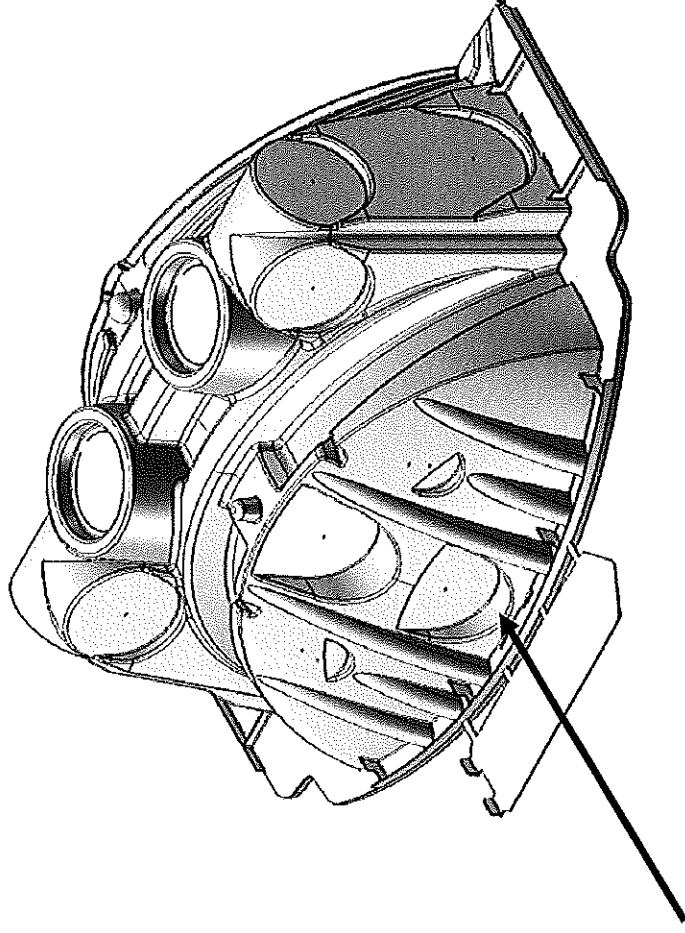
8.75"
LOUVER
HEIGHT



QUICK4 PLUS ALL-IN-ONE 12 ENDCAP

The end cap may be used at the end of a chamber row or in-line with chambers. The in-line feature allows construction of chamber rows with a center feed, as an option to inletting at the ends of the chamber rows.

Pipe connection options include the end (drill points for gravity or pressure pipe), sides, or top.

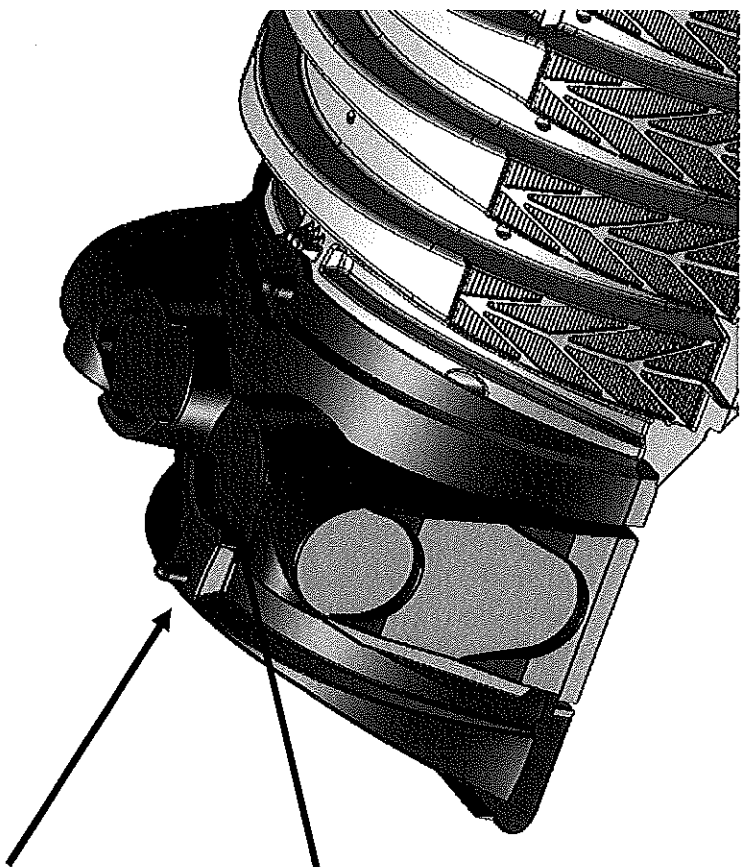


DRILL HOLE FOR IN-LINE
INSTALLATION BETWEEN
CHAMBERS

QUICK4 PLUS ALL-IN-ONE 12 ENDCAP

DUAL CONNECTION
PINS ALLOW IN-LINE
INSTALLATION
BETWEEN CHAMBERS

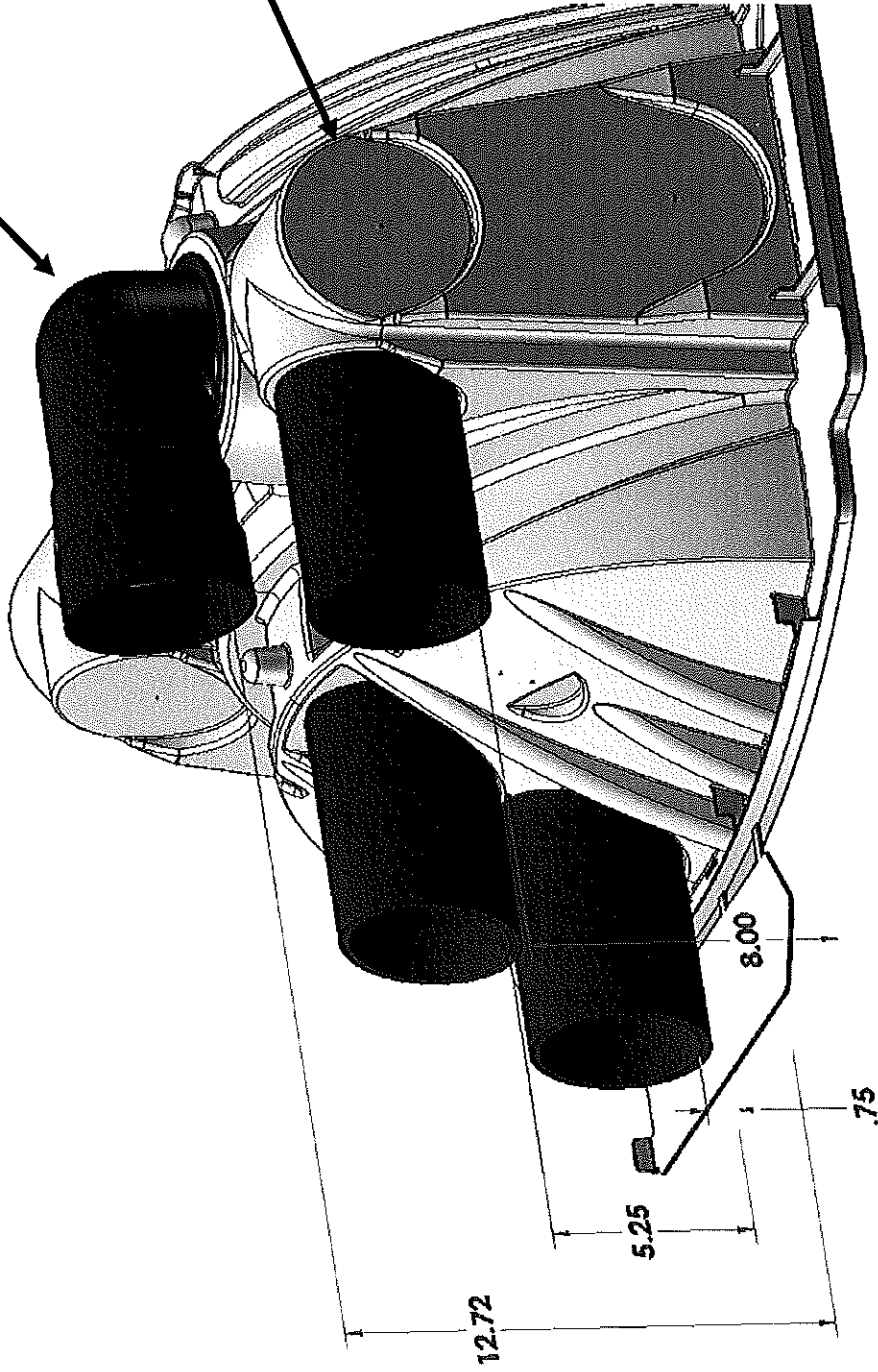
TOP INLET POINTS ALLOW
FOR EFFLUENT ENTRY OR
OBSERVATION PORT
INSTALLATION



QUICK4 PLUS ALL-IN-ONE 12 ENDCAP - INVERTS

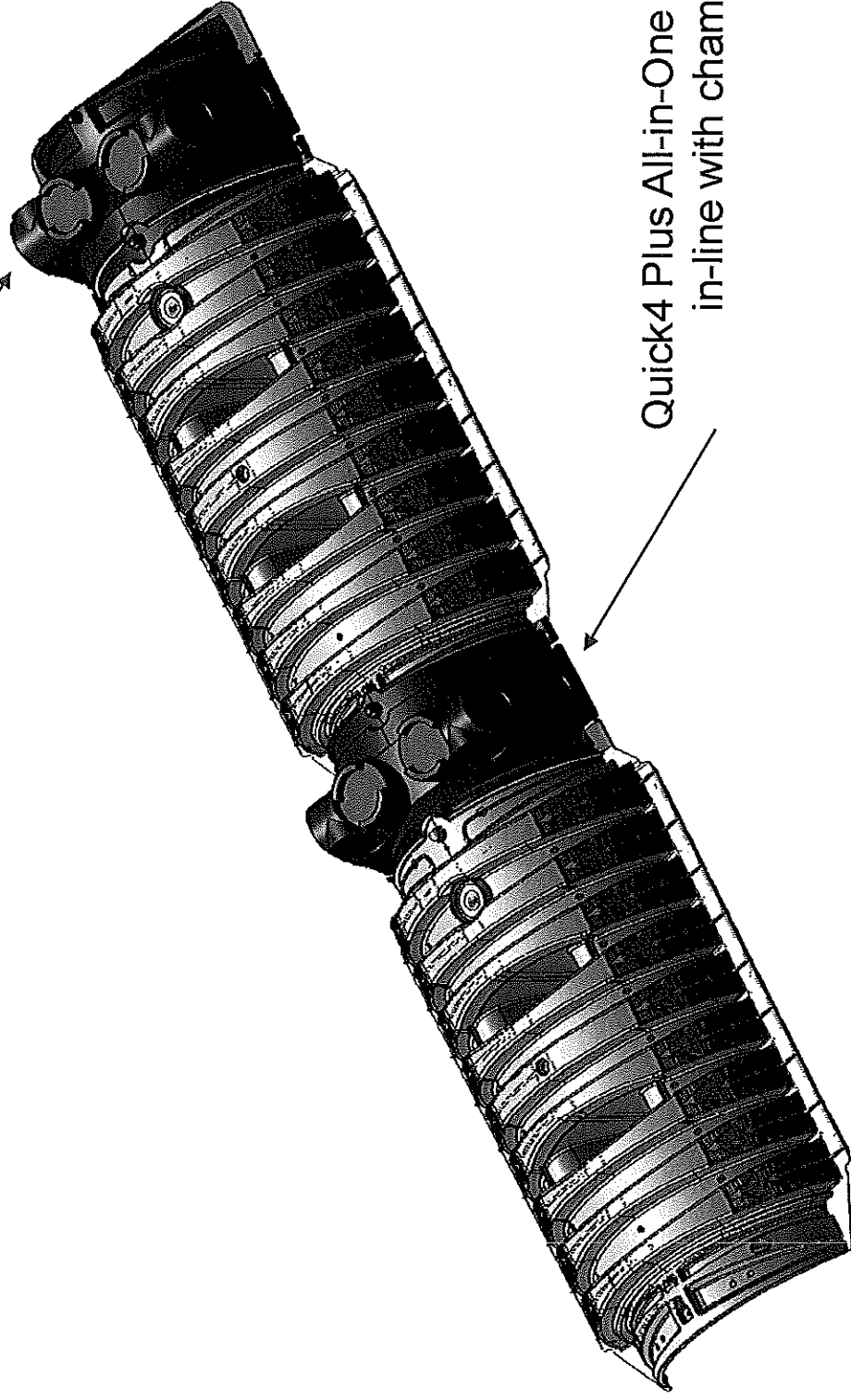
Quick4 Plus Periscope

Connection allows
serial distribution



QUICK4 PLUS STANDARD ENDCAP APPLICATION

Quick4 Plus All-in-One 12 Endcap
at end of chamber row



Quick4 Plus All-in-One 12 Endcap
in-line with chambers



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WASTEWATER &
PLUMBING PROGRAM

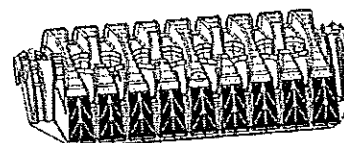
MEMORANDUM

DATE: March 31, 2010
TO: Maine Site Evaluators
FROM: Blake Johnston, Northeast Region Manager
RE: NEW Infiltrator **LOW PROFILE** Chambers

Infiltrator Systems Inc. is excited to share our most recent innovation in gravelless chamber technology with the Maine Site Evaluator community. Infiltrator makes it our goal to provide onsite wastewater professionals with a full range of products that meet the varying design requirements of systems today. We are pleased to introduce the NEW **Quick4 Plus Standard Low Profile (LP)** chamber.

The **Quick4 Plus Standard LP** chamber is similar to its Quick4 Standard predecessor in length (48 inches) and width (34 inches). The innovative features are the height and center post design. The height has been reduced from 12 inches to 8 inches. The reduced height of the **Quick4 Plus Standard LP** chamber makes it ideal for:

- Sites with a shallow groundwater table, an impervious condition or another restriction requiring a shallow drainfield placement.
- Sites where increased treatment is desired thru soil depth maximization between the infiltrative surface and limiting condition.
- All soil absorption fields where reducing the vertical profile moves infiltration closer to the ground surface, thereby improving the potential for subsoil re-aeration from the atmosphere. This promotes oxygen recharge to the biologically active vadose zone beneath the infiltrative surface and helps support aerobic decomposition of wastewater.

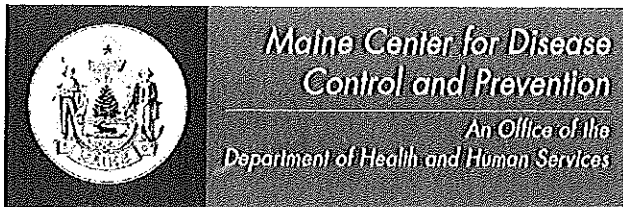


The **Quick4 Plus Standard LP** chamber is rated at **7.0 ft²/lf** (trenches), **5.8 ft²/lf** (cluster). This is the same rating as the current Quick4 Standard chamber, but with greater depth and installation flexibility.

Enclosed you will find the Quick4 Plus Standard LP cut sheet, a copy of the Maine approval letter dated February 25, 2010, Quick4 Plus Standard LP installation instructions, and standard line drawings. As always, we will continue to innovate and support our products to assist with all of your septic system design needs.

Sincerely,

Blake Johnston
Toll Free (866) 804-4898



John E. Baldacci, Governor

Brenda M. Harvey, Commissioner

Department of Health and Human Services
 Maine Center for Disease Control and Prevention
 286 Water Street
 # 11 State House Station
 Augusta, Maine 04333-0011
 Tel: (207) 287-5689
 Fax: (207) 287-3165; TTY: 1-800-606-0215

February 25, 2010

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

Subject: Product Registration, Infiltrator Quick 4 Plus Standard; Quick4 Plus Standard Low Profile (LP); Quick4 Plus Equalizer 36 Low Profile (LP); and Quick4 Equalizer 24 Low Profile (LP) Chambers

Dear Mr. Lentz:

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

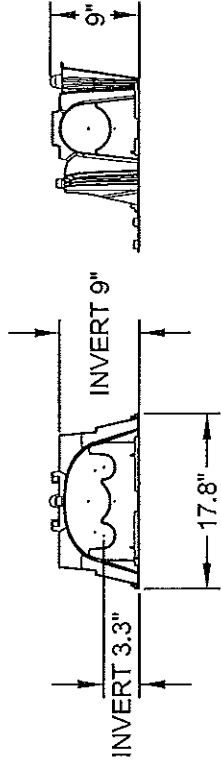
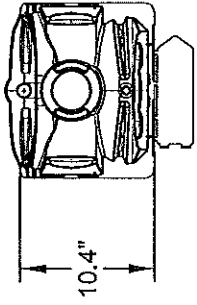
The Infiltrator Quick 4 Plus and Quick4 Equalizer 24 LP chambers consist of Infiltrator four foot long plastic chambers, with minor design changes, and a new low profile version. The design for the end caps results in a semi-circular footprint with a corresponding increase in usable bottom area and storage volume. According to the information you provided, the redesigned Infiltrator Quick 4 chambers have the following effective infiltrative surface areas:

Product	Without End Cap, Trench	Without End Cap, Cluster
Quick 4 Plus Standard	7.0 square feet/linear foot	5.8 square feet/linear foot
Quick 4 Plus Standard LP	7.0 square feet/linear foot	5.8 square feet/linear foot
Quick 4 Plus Equalizer 36 LP	5.2 square feet/linear foot	3.7 square feet/linear foot
Quick 4 Equalizer 24 LP	3.5 square feet/linear foot	2.7 square feet/linear foot

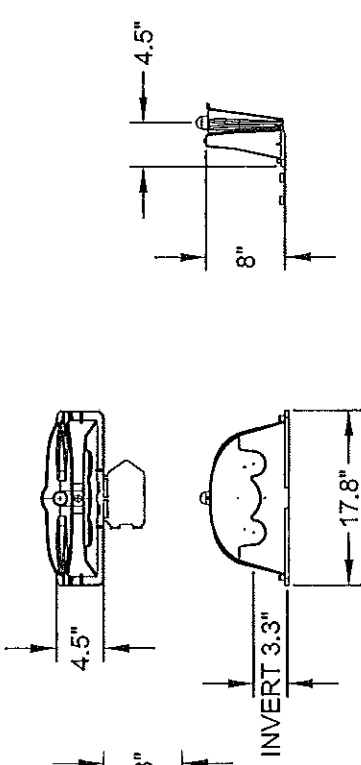
Because the end cap system for the Quick4 Plus chambers has a variety of uses, ratings for the end caps, which exclude the chamber rating provided in the sizing table above, are as follows.

- Quick4 Plus All-in-One Endcap installed at end of chamber row – 3.3 square feet/end cap or 6.6 square feet/pair of end caps.
- Quick4 Plus All-in-One Endcap installed mid-line in chamber row - 2.6 square feet/end cap.

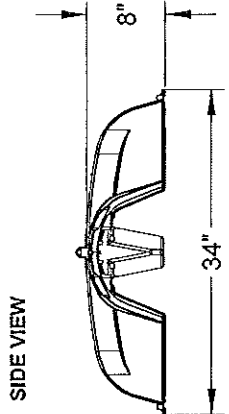
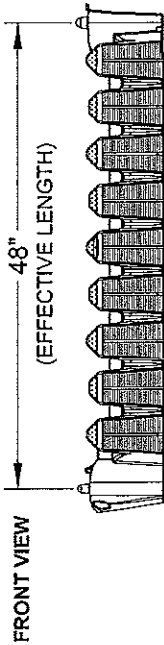
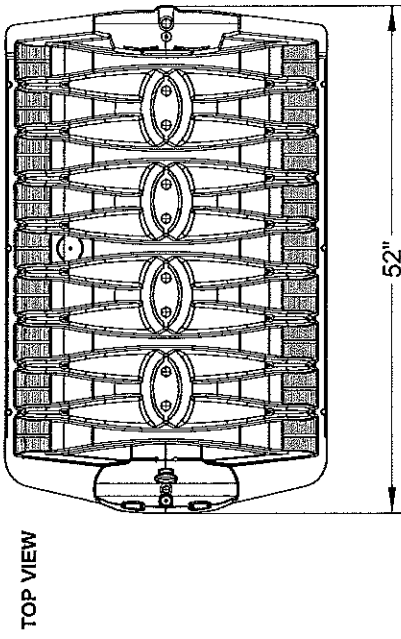
QUICK4 PLUS ALL-IN-ONE END CAP



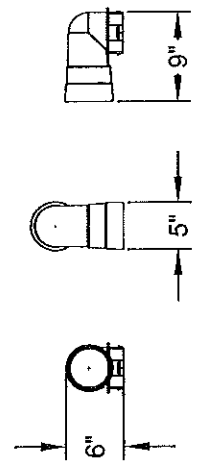
QUICK4 PLUS END CAP



QUICK4 PLUS STANDARD LOW PROFILE

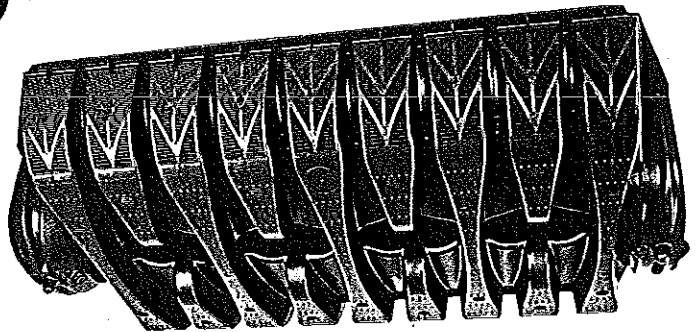


QUICK4 PLUS PERISCOPE

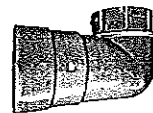


INFILTRATOR SYSTEMS, INC. 6 BUSINESS PARK ROAD P.O. BOX 748 OLD SAYBROOK, CT 06475 PH. (800) 221-4436 FX. (860) 577-7001 WWW.INFILTRATORSYSTEMS.COM	
Scale	NOT TO SCALE
Date	6/24/2009
Checked	DFH
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Drawn By:	RWD

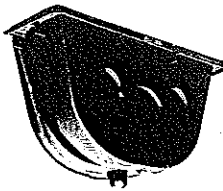
THE QUICK4® PLUS STANDARD LP CHAMBER



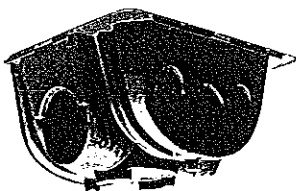
Quick4 Plus Standard LP Chamber



Quick4 Plus All-in-One Periscope

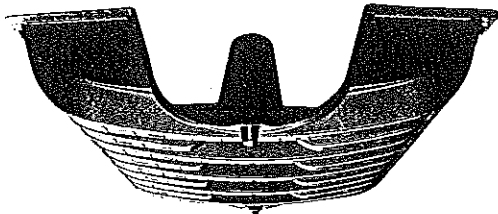


Quick4 Plus Endcap



Quick4 Plus All-in-One Endcap

Center Structural Column



The Quick4 Plus Standard Low Profile (LP) Chamber offers maximum strength through its four center structural columns. This chamber can be installed in a 36-inch-wide trench. It is shorter in height than Infiltrator's other Standard model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™, which permits 10-degree turns, right and left. It is also available in four-foot lengths to provide optimal installation flexibility. The Quick4 Plus All-in-One and Quick4 Plus Endcaps are available with this chamber and provide increased flexibility in system design and configurations.

Quick4 Plus Standard LP Chamber

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install

Quick4 Plus All-in-One Endcap

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

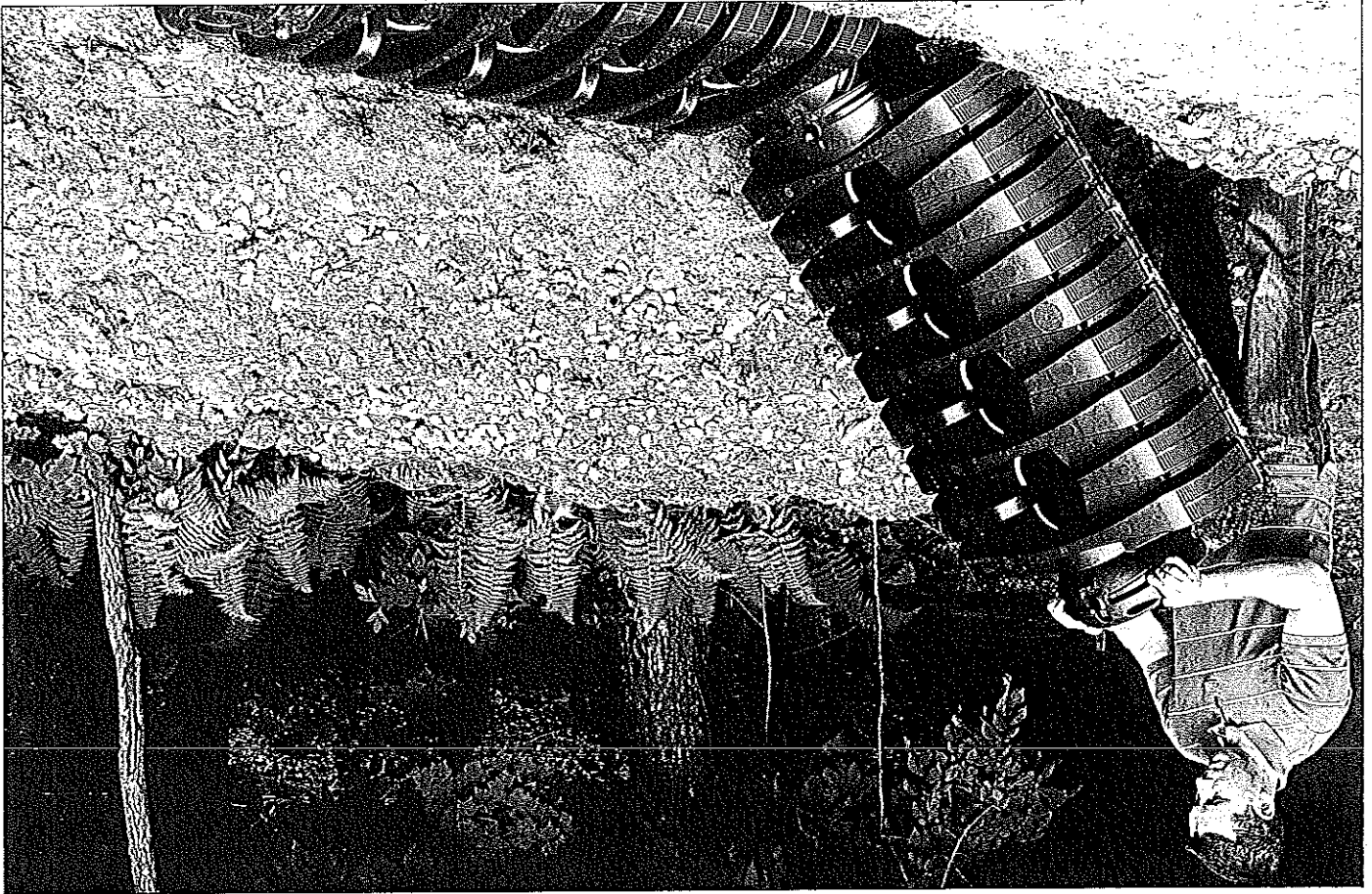
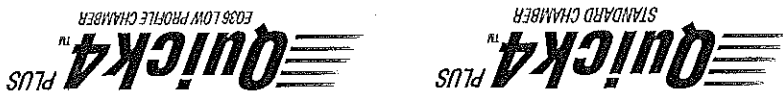
Quick4 Plus Endcap

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

Quick4™ PLUS
STD LOW PROFILE CHAMBER



Quick4® Plus Low Profile Chamber Installation Instructions



Note: When installing in sandy soil conditions, wheeled construction equipment is prohibited over the top of system. Tracked equipment can be used over top of system with a minimum of 6" of soil cover.

Before You Begin

This document addresses the installation of Quick4 Plus Standard Low Profile (LP) and Quick4 Plus Equalizer 36 Low Profile (LP) chambers. The Quick4 Plus Standard LP and the Quick4 Plus Equalizer 36 LP chambers are designed for shallow placement applications. All chambers may only be installed according to state and/or local regulations. If unsure of the installation requirements for a particular site, contact the local health department. Like conventional systems, the soil and site conditions must be approved prior to installation. Conduct a thorough site evaluation to determine the proper sizing and siting of the system before installation.

Materials and Equipment Needed

- Quick4 Plus Chambers
- Quick4 Plus Endcaps
- Quick4 Plus All-in-One Endcaps
- PVC Pipe and Couplings
- Backhoe
- Laser, Transit or Level
- Tape Measure
- Shovel and Rake
- Utility Knife
- 1/4-inch Drywall Screws*
- Drill
- Hole Saw
- Screw Gun*
- Small Valve-cover Box*
- 4-inch Cap for Inspection Port
- * 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 AASHTO H-10 load rating.
- When installing in sandy soil conditions, wheeled construction equipment is prohibited over top of system. Tracked equipment can be used over top of system with a minimum of 6" of soil cover.
- Avoid stones larger than 3 inches in diameter in backfill. Remove stones this size or larger that are in contact with chambers.

Excavating and Preparing the Site

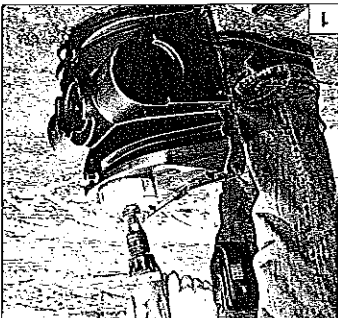
Note: As in the case with conventional systems, do not install systems in wet conditions or in overly moist soils, as this causes machinery to smear the soil.

1. Stake out location of all trenches and lines. Set elevations of tank, pipe, and trench bottom.
2. Install sedimentation and erosion control measures. Temporary drainage swales/benches may be installed to protect site during rainfall.
3. Excavate and level trenches with proper width and center-to-center separation. Verify that trenches are level or have the prescribed slope.
4. Rake bottom and sides if smearing has occurred while excavating. Remove any large stones and other debris. Do not use bucket teeth to rake trench bottom.

Note: Raking to eliminate smearing is not necessary in sandy soils. In fine textured soils (silt and clays), avoid walking in the trench to prevent compaction and loss of soil structure.

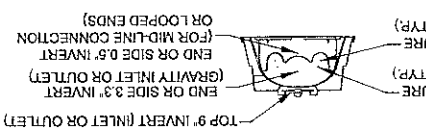
Preparing the End Cap

Note: Quick4 Plus and Quick4 Plus All-in-One Endcaps are available for use with the Quick4 Plus chambers on either end of the trench, depending upon the installer's preference and configuration requirements.



Drill end cap.

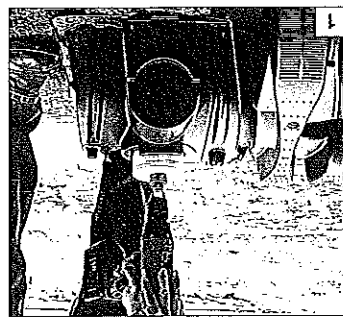
1. With a hole saw drill an opening appropriate for pipe diameter being used (normally 3 - 4 inches) on front or side of end cap using center point marking (see illustration) as a guide.
2. Snap off the molded splash plate located on the bottom front of the end cap.
3. Install splash plate into the appropriate slots below the inlet to prevent trench bottom erosion.



Installing the Quick4 Plus Periscope

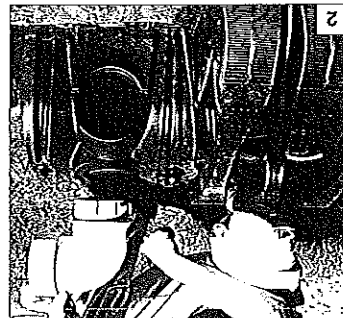
Note: Available for use with Quick4 Plus All-in-One Endcap only. Invert options based on system design.

1. With a hole saw drill the pre-marked area on top of the Quick4 Plus All-in-One Endcap.



Drill Quick4 Plus Periscope.

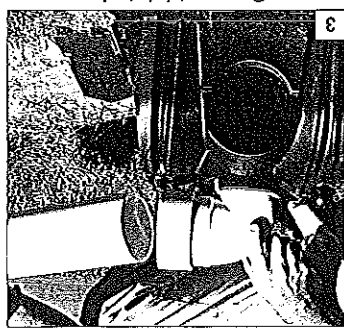
2. Insert the Quick4 Plus Periscope into the top of the Quick4 Plus All-in-One Endcap. Periscope into the top of the Quick4 Plus Periscope until it snaps into place.



Insert Quick4 Plus Periscope.

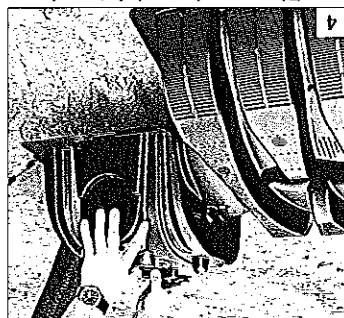
Installing the System

3. Insert a 4" Schedule 40 PVC pipe into the Quick4 Plus Periscope at the appropriate locations for the system design.
4. Rotate Quick4 Plus Periscope to desired angle.



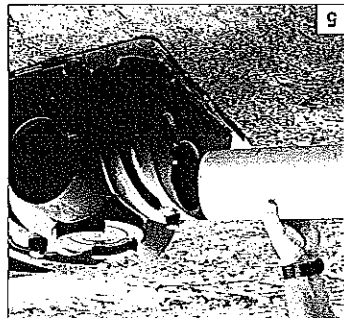
Connect inlet pipe.

1. Check the header pipe to be sure it is level or has the prescribed slope.
2. Set the invert height as specified in the design from the bottom of the inlet.
3. Place the first chamber in the trench.
4. Place the back edge of the end cap over the inlet end of the first chamber. Be sure to line up the locking pins on the top of both the chamber and end cap.



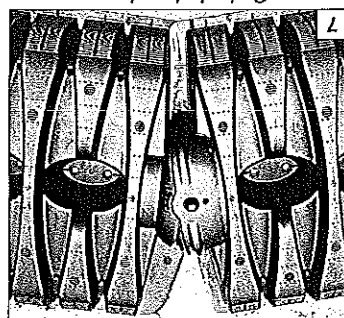
Place end cap inlet end.

5. Insert the inlet pipe 2.5 inches into the opening on the front of the end cap. Insert fully to the internal pipe stop.



Insert inlet pipe.

6. Lift and place the end of the next chamber onto the previous chamber by holding it at a 45-degree angle. Line up the chamber end between the connector hook and locking pin at the top of the first chamber. Lower the chamber to the ground to connect the chambers.



Swivel chambers.

8. Continue connecting chambers until the trench is completed.

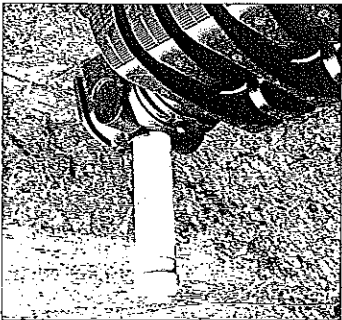
Note: The chamber allows up to 10-degree swivel in either direction at each joint. Swivel the chamber on the pin to achieve the proper direction for the trench layout.

Note: The connector hook serves as a guide to ensure proper connection and does not add structural integrity to the chamber joint. Broken hooks will not affect the structure or void the warranty.

Installing Optional Inspection Ports

Inspection ports may be installed on the chamber or the Quick4 Plus All-in-One Endcap. The Quick4 Plus Endcap does not allow inspection port construction.

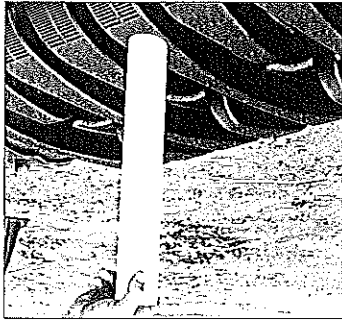
Quick4 Plus All-in-One Inspection Port



All-in-One Inspection port.

1. With a hole saw drill the pre-marked area in the top of the Quick4 Plus All-in-One Endcap to create a 4 1/3 to 4 1/2-inch opening based on type of pipe.
2. Set a cut piece of pipe of the appropriate length into the corresponding end cap's inspection port sleeve.
- Note: The sleeve will accommodate up to 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 the inspection port is below the desired grade.

Chamber Inspection Port



Chamber inspection port.

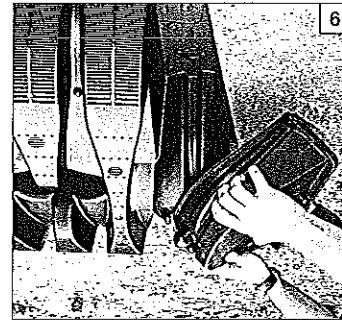
1. With a hole saw drill the pre-marked area in the top of the chamber to create a 2.5-inch opening.
2. Set a cut piece of pipe of the appropriate length into the corresponding chamber's inspection port hole.
- Note: The sleeve will accommodate up to a 2.5-inch Schedule 40 pipe.*
3. Use two screws to fasten the pipe to the chamber dome adjacent to 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 the inspection port is below the desired grade.

Covering the System

Before backfilling, the system must be inspected by a health officer or other official as required by state and local codes. Create an as-built drawing at this time for future records.

1. Backfill the system by pushing fill material over the chambers before driving over the system with wheeled construction equipment.
- Note: Do not drive over the system while backfilling in sandy soil.*
- Note: For shallow cover, sand fill, and sandy soil applications, tracked construction equipment must be used. You must mound 12 inches of soil over the system before driving over it with wheeled construction equipment, then grade it back a minimum 6 inches upon completion.*
2. It is best to mound several inches of soil over the finished grade to allow for settling. A slight crown also ensures that runoff water is diverted away from the system trench.
3. After the system is covered, the site should be seeded or sodded to prevent erosion.

Note: If system is for new home construction, it is important to leave marking stakes along the boundary of the system. This will notify contractors of the system location so they will not cross it with equipment or vehicles.

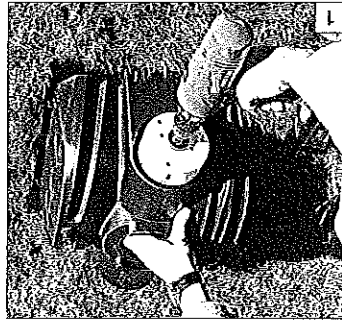


Place end cap outlet end.

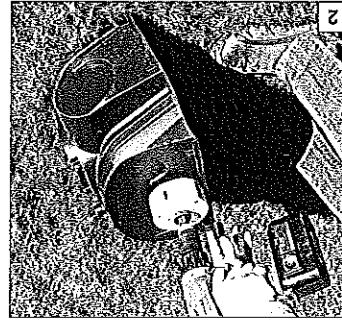
9. The last chamber in the trench requires an end cap. Lift the end cap at a 45-degree angle and align the connector hook on the top of the chamber with the raised slot on the top of the end cap. Lower the end cap to the ground and into place.
- Note: Place a few shovels of soil around the end cap to secure it during backfill.*
10. 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 joints.
11. Pack down fill by walking along the edges of trench and chambers.
- Note: In wet or clay soils, do not walk in the sidewalls.*
12. Proceed to the next trench and begin with Step 1.

Mid-line Connection

Note: See mid-line piping options on the back of this document.



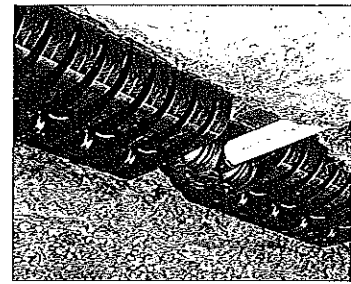
Drill endcap on side or top.



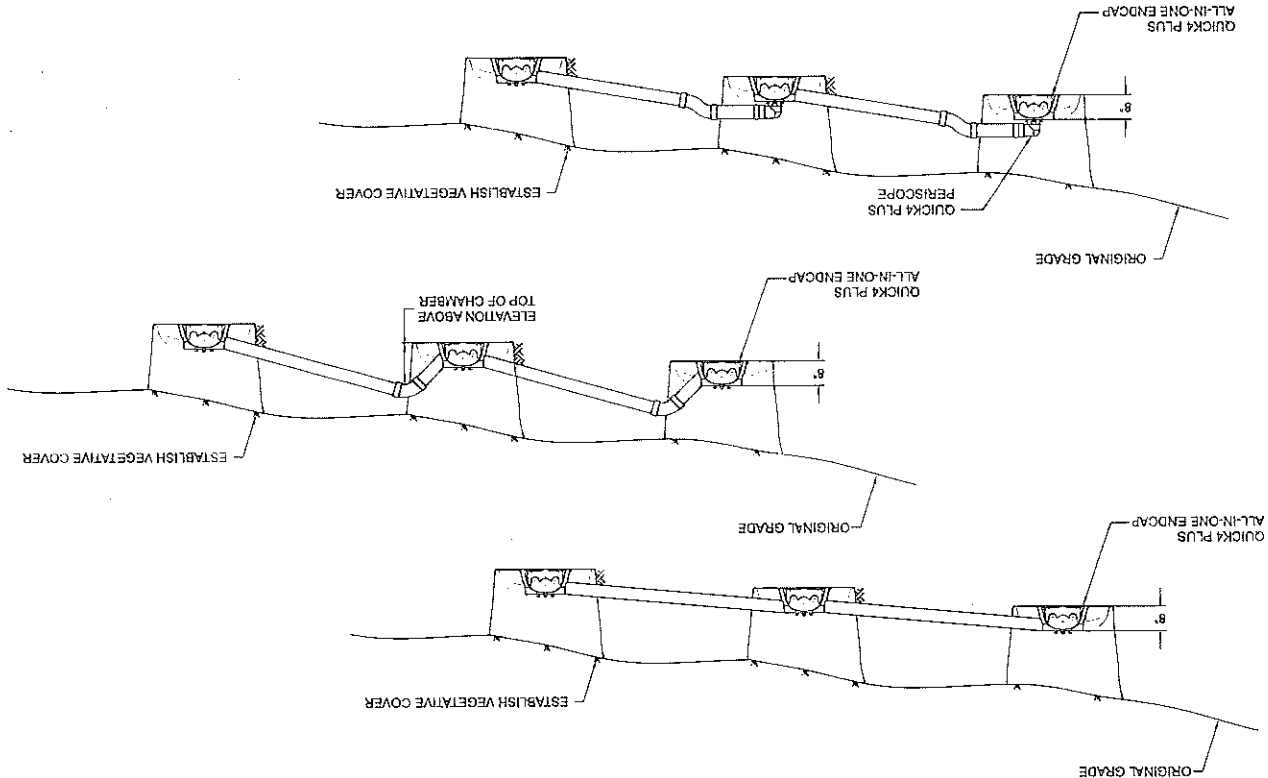
Drill endcap on end.

1. With a hole saw drill an opening appropriate for the pipe diameter being used on the side (3.3" invert) or on top (9.0" invert) of the Quick4 Plus All-in-One Endcap.
- Note: Piping configurations are determined by the preference of the installer or designer.*
2. With a hole saw, drill an opening on the end of the Quick4 Plus All-in-One Endcap to create an invert at 0.5 inches. This will allow effluent to fill both sides of the chamber line.
2. Snap off the molded splash plate located on the bottom front of the end cap.
3. Install splash plate into the appropriate slots below the inlet to prevent trench bottom erosion.
4. Place the back edge of the end cap over the inlet end of the first chamber. Be sure to line up the locking pins on the top of both the chamber and end cap.
- Optional: Fasten end cap to chamber with a screw at the top of endcap.*
5. Insert the connection pipe 2.5 inches into the opening on endcap.
6. Repeat Steps 1 through 5 for additional trenches.

All-in-One as mid-line connection.



Serial Trench System Configuration Options



Infiltrator Systems Limited Warranty

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

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

(c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty.

Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by State and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the standard Limited Warranty offered by Infiltrator. A limited number of States and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



INFILTRATOR®

systems inc.

6 Business Park Road • P.O. Box 768

Old Saybrook, CT 06475

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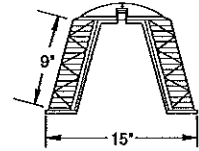
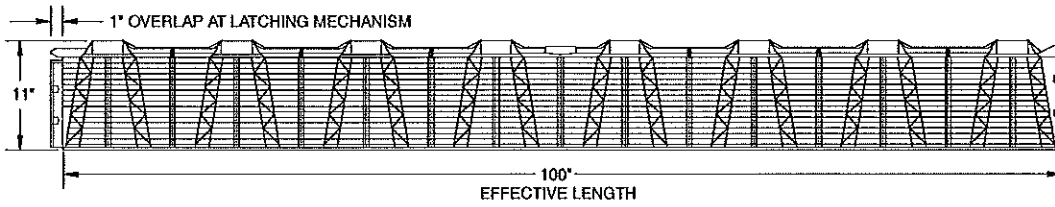
1-800-221-4436

www.infiltratorsystems.com

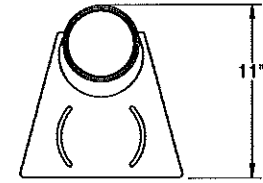
Distributed By:

Equalizer 24 Chambers

SIDE AND END VIEWS



END PLATES
(not to scale)

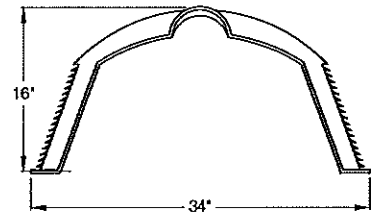
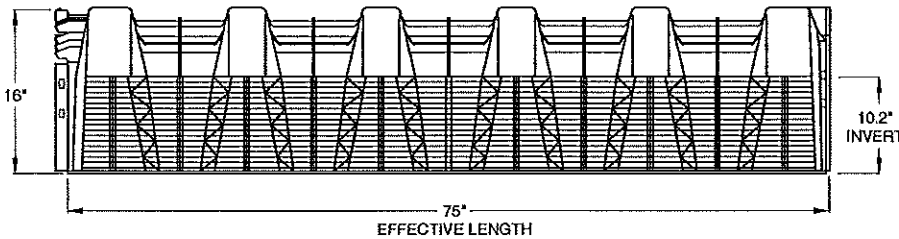


PART # EQ24EM
(6" INVERT)

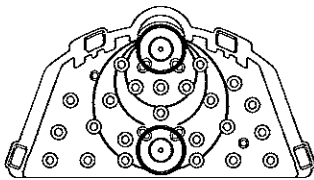
Trench Applications
33.3 maximum sq. ft. per chamber rating
4.0 maximum sq. ft. per linear foot

High Capacity Chambers

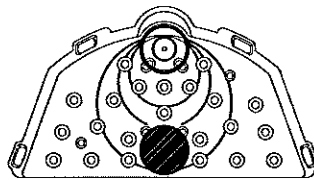
SIDE AND END VIEWS



POSILOCK END PLATES (NOT TO SCALE)



CLOSED



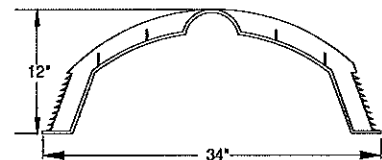
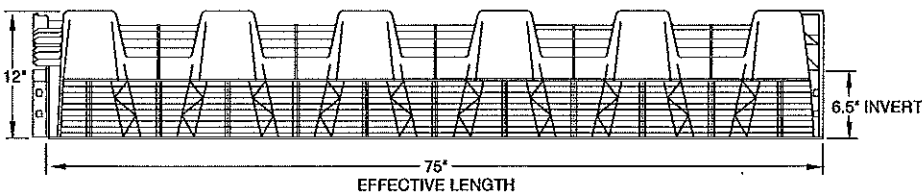
OPEN

Trench Applications
50 maximum sq. ft. per chamber rating
8.0 maximum sq. ft. per linear foot

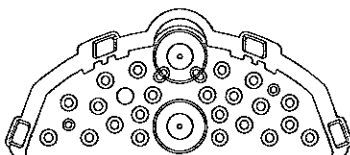
Cluster Applications
36 max.sq ft. per chamber -- bottom area only
5.76 max.sq ft. per linear foot -- bottom area only

Standard Chambers

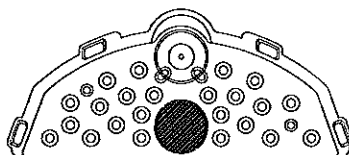
SIDE AND END VIEWS



POSILOCK END PLATES (not to scale)



CLOSED



OPEN

Trench Applications
44 maximum sq. ft. per chamber rating
7.04 maximum sq. ft. per linear foot

Cluster Applications
36 max.sq ft. per chamber -- bottom area only
5.76 max.sq ft. per linear foot -- bottom area only

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SYSTEM SIZING

Sizing of Equalizer 24 Chamber Systems

STEP 1

Use Table 1 to determine the number of Equalizer 24 chambers required based upon the number bedrooms and soil profile.

TABLE 1: DETERMINE MINIMUM NUMBER OF EQUALIZER 24 CHAMBERS (FOR RESIDENTIAL USE)

Soil Profile	Number of Bedrooms						Each Additional Bedroom
	Soil Profile	2	3	4	5	6	
		180GPD	270GPD	360GPD	450GPD	540GPD	
1	23	34	45	56	67	12	
2	18	27	36	45	54	9	
3	18	27	36	45	54	9	
4	15	22	29	36	43	8	
5	15	22	29	36	43	8	
6	15	22	29	36	43	8	
7	18	27	36	45	54	9	
8	23	34	45	56	67	12	
9	28	41	55	68	82	14	

Design of Equalizer 24 Chamber Single Row Trench Systems

Tables 2-4 will assist you in determining the size and layout of your Infiltrator Equalizer 24 system. In order to complete the system design you will need to have already identified the following criteria: soil profile, original ground slope, and area available for construction.

Note: The use of stone along the sidewall of Infiltrator chambers is not recommended. All the design criteria used in this manual does not include the use of stone. If stone is incorporated into the design, spacing must be measured from edge to edge of adjacent stone sidewalls.

STEP 2

Use Table 2 to establish the system's center-to-center spacing using the original ground slope and soil profile.

TABLE 2: DETERMINE EQUALIZER 24 CENTER-TO-CENTER SPACING IN FEET

Original Ground Slope	Soil Profile					
	6	4 & 5	2	3 & 7	1 & 8	9
0-10%	1.75 ft	1.75 ft	2.00 ft	2.25 ft	2.75 ft	2.75 ft
11-15%	1.75 ft	2.00 ft	2.25 ft	2.50 ft	2.75 ft	2.75 ft
16-20%	2.00 ft	2.25 ft	2.50 ft	2.75 ft	2.75 ft	2.75 ft

Design of Equalizer 24 Chamber Single Row Trench Systems

STEP 3

Use **Tables 3 and 4** to determine the width and length of the system based upon the available construction area on your site.
 Note: Infiltrator Systems encourages long and narrow designs to minimize linear loading rates.

TABLE 3: DETERMINE TOTAL WIDTH OF SYSTEM - OUTSIDE EDGE TO OUTSIDE EDGE OF EQUALIZER 24 CHAMBERS

Number of Rows	Spacing CL to CL				
	1.75' (1ft, 9in) 6 inch Edge to Edge	2.00' (2ft, 0in) 9 inch Edge to Edge	2.25' (2ft, 3in) 12 inch Edge to Edge	2.50' (2ft, 6in) 15 inch Edge to Edge	2.75' (2ft, 9in) 18 inch Edge to Edge
2	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
3	4.75' (4ft, 9in)	5.25' (5ft, 3in)	5.75' (5ft, 9in)	6.25' (6ft, 3in)	6.75' (6ft, 9in)
4	6.50' (6ft, 6in)	7.25' (7ft, 3in)	8.00' (8ft, 0in)	8.75' (8ft, 9in)	9.50' (9ft, 6in)
5	8.25' (8ft, 3in)	9.25' (9ft, 3in)	10.25' (10ft, 3in)	11.25' (11ft, 3in)	12.25' (12ft, 3in)
6	10.00' (10ft, 0in)	11.25' (11ft, 3in)	12.50' (12ft, 6in)	13.75' (13ft, 9in)	15.00' (15ft, 0in)
7	11.75' (11ft, 9in)	13.25' (13ft, 3in)	14.75' (14ft, 9in)	16.25' (16ft, 3in)	17.75' (17ft, 9in)
8	13.50' (13ft, 6in)	15.25' (15ft, 3in)	17.00' (17ft, 0in)	18.75' (18ft, 9in)	20.50' (20ft, 6in)
9	15.25' (15ft, 3in)	17.25' (17ft, 3in)	19.25' (19ft, 3in)	21.25' (21ft, 3in)	23.25' (23ft, 3in)
Each Add'l Row	1.75	2.00	2.25	2.50	2.75

Example 1

3-bedroom house on a profile 3 soil with original slope of 14 percent

Table 1 - minimum of 27 EQ24 chambers

Table 2 - 2.5 feet center-to-center spacing

Decide what the best layout is for the site (length and width)

Table 3 - 6 rows of 5 - 13.75 feet wide x 41.67 feet long

Table 7 - recommends a 3-inch elevation difference between rows using serial distribution

Note: If the layout was 4 rows of 7 then **Table 3** results in a system that is 8.75 feet wide x 58.33 feet long, however **Table 7** recommends 0 drop between rows (level system). Therefore since the maximum edge to edge distance required for a level system is 12 inches (2.25 feet center-to-center) then referring back to **Table 3** results in a system 8.0 feet wide x 58.33 feet long.

Example 2

4-bedroom house on a profile 2 soil with original slope of 8 percent

Table 1 - minimum of 36 EQ24 chambers

Table 2 - 2.0 feet center-to-center spacing

Decide what the best layout is for the site (length and width).

Table 3 - 6 rows of 6 - 11.25 feet wide x 50 feet long

Table 5 - recommends 0 elevation difference between rows (level system)

Note: When using the same layout of 6 rows of 6 and if the original slope was 16% instead of 8% then **Table 2** requires 2.5 feet center-to-center spacing (15 inches edge to edge). Using **Tables 3 & 4** results in a system 13.75 feet wide x 50 feet long. **Table 7** recommends a 4-inch drop between rows.

TABLE 4: DETERMINE LENGTH OF SYSTEM OF EQUALIZER 24 CHAMBERS

Number of Units Per Row	Length of System
2	16.67' (16ft, 8in)
3	25.00' (25ft, 0in)
4	33.33' (33ft, 4in)
5	41.67' (41ft, 8in)
6	50.00' (50ft, 0in)
7	58.33' (58ft, 4in)
8	66.67' (66ft, 8in)
9	75.00' (75ft, 0in)
10	83.33' (83ft, 4in)
11	91.67' (91ft, 8in)
12	100.00' (100ft, 0in)
Each Additional Unit	8.33'

DRAFT 3/4/04

SYSTEM SIZING

Design of Equalizer 24 Chamber Single Row Trench Systems

Note: The recommended elevation difference between rows in the following tables is intended to be a guideline. Many factors were considered including the difficulty of constructing systems with 2 inches or less elevation difference between rows. Each site is different and site conditions may result in a different design than those shown.

STEP 4

All Equalizer 24 Chambers installed with 1.75' (1foot, 9 inches) center-to-center spacing (6" edge to edge) should be installed level up to 9 rows. (Use Tables 5-8 to establish the recommended elevation drop between the rows of Equalizer 24 chambers.)

TABLE 5: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.00' (2FT) CENTER-TO-CENTER SPACING (9" EDGE TO EDGE)

Original Ground Slope	Number of Rows							
	2	3	4	5	6	7	8	9
1 to 12	0 in	0 in	0 in	0 in	0 in	0 in	0 in	0 in
13	0 in	0 in	0 in	0 in	0 in	0 in	0 in	3 in
14	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
15	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
16	0 in	0 in	0 in	3 in	3 in	3 in	3 in	4 in
17	0 in	0 in	0 in	3 in	3 in	3 in	4 in	4 in
18	0 in	0 in	0 in	3 in	3 in	3 in	4 in	4 in
19	0 in	0 in	0 in	4 in	4 in	4 in	4 in	4 in
20	0 in	0 in	0 in	4 in	4 in	4 in	4 in	4 in

TABLE 6: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.25' (2FT, 3IN) CENTER-TO-CENTER SPACING (12" EDGE TO EDGE)

Original Ground Slope	Number of Rows							
	2	3	4	5	6	7	8	9
1 to 11	0 in	0 in	0 in	0 in	0 in	0 in	0 in	0 in
12	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
13	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
14	0 in	0 in	0 in	0 in	3 in	3 in	3 in	3 in
15	0 in	0 in	0 in	0 in	3 in	3 in	3 in	3 in
16	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
17	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
18	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
19	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
20	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in

Design of Equalizer 24 Chamber Single Row Trench Systems

TABLE 7: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.50' (2FT, 6IN) CENTER-TO-CENTER SPACING (15" EDGE TO EDGE)

Original Ground Slope	Number of Rows							
	2	3	4	5	6	7	8	9
11	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
12	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
13	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
14	0 in	0 in	0 in	0 in	3 in	3 in	3 in	3 in
15	0 in	0 in	0 in	0 in	3 in	3 in	3 in	4 in
16	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
17	0 in	0 in	3 in	4 in	4 in	4 in	4 in	4 in
18	0 in	0 in	3 in	4 in	4 in	4 in	4 in	5 in
19	0 in	0 in	3 in	4 in	4 in	5 in	5 in	5 in
20	0 in	0 in	4 in	4 in	5 in	5 in	5 in	5 in

Note: Where 0 (zero) elevation (level system) is shown, revert to Table 3 to re-establish system width to 2.25 center-to-center spacing.

TABLE 8: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.75' (2FT, 9IN) CENTER-TO-CENTER SPACING (18" SEPARATION)

Original Ground Slope	Number of Rows							
	2	3	4	5	6	7	8	9
1 to 10	0 in	0 in	0 in	0 in	0 in	0 in	0 in	0 in
11	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
12	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
13	0 in	0 in	0 in	0 in	3 in	3 in	3 in	3 in
14	0 in	0 in	0 in	3 in	3 in	3 in	4 in	4 in
15	0 in	0 in	0 in	3 in	3 in	4 in	4 in	4 in
16	0 in	0 in	3 in	4 in	4 in	4 in	4 in	4 in
17	0 in	0 in	3 in	4 in	4 in	4 in	5 in	5 in
18	0 in	0 in	4 in	4 in	4 in	5 in	5 in	5 in
19	0 in	0 in	4 in	4 in	5 in	5 in	5 in	5 in
20	0 in	0 in	4 in	5 in	5 in	5 in	5 in	6 in

Note: Where 0 (zero) elevation (level system) is shown, revert to Table 3 to re-establish system width to 2.25 center-to-center spacing.

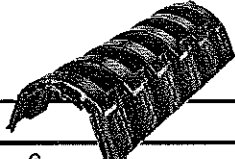
Sizing of High Capacity and Standard Chamber Trench Systems

STEP 1

Use **Tables 9 and 10** when designing a trench system to determine the number of High Capacity or Standard chambers required based upon the number bedrooms and soil profile.


Note: Chambers are to be installed with a 3-foot minimum trench separation, edge to edge of units.

TABLE 9: DETERMINE MINIMUM NUMBER OF HIGH CAPACITY CHAMBERS (FOR RESIDENTIAL USE)



Soil Profile	Number of Bedrooms						Each Additional Bedroom
	Soil Profile	2	3	4	5	6	
		180GPD	270GPD	360GPD	450GPD	540GPD	
1		15	23	30	37	45	8
2		12	18	24	30	36	6
3		12	18	24	30	36	6
4		10	15	19	24	29	5
5		10	15	19	24	29	5
6		10	15	19	24	29	5
7		12	18	24	30	36	6
8		15	23	30	37	45	8
9		18	27	36	45	54	9

TABLE 10: DETERMINE MINIMUM NUMBER OF STANDARD CHAMBERS (FOR RESIDENTIAL USE)



Soil Profile	Number of Bedrooms						Each Additional Bedroom
	Soil Profile	2	3	4	5	6	
		180GPD	270GPD	360GPD	450GPD	540GPD	
1		17	26	34	42	51	9
2		14	21	27	34	41	7
3		14	21	27	34	41	7
4		11	16	22	27	32	6
5		11	16	22	27	32	6
6		11	16	22	27	32	6
7		14	21	27	34	41	7
8		17	26	34	42	51	9
9		21	31	41	52	62	11

Sizing of High Capacity and Standard Chamber Cluster Systems

Use **Table 11** to size in a cluster system.

Note: Infiltrator Systems recommends constructing cluster systems with 6-inch separation between chambers.

TABLE 11: DETERMINE MINIMUM NUMBER OF HIGH CAPACITY OR STANDARD CHAMBERS IN A CLUSTER -- BOTTOM OPEN AREA CONSIDERED ONLY (FOR RESIDENTIAL USE)

		Number of Bedrooms					Each Additional Bedroom
Soil Profile	Soil Profile	2	3	4	5	6	
		180GPD	270GPD	360GPD	450GPD	540GPD	
	1	21	31	41	52	62	11
	2	17	25	33	42	50	9
	3	17	25	33	42	50	9
	4	13	20	26	33	39	7
	5	13	20	26	33	39	7
	6	13	20	26	33	39	7
	7	17	25	33	42	50	9
	8	21	31	41	52	62	11
9	25	38	50	63	75	13	

DRAFT 3/4/04

SYSTEM SIZING

Design of High Capacity and Standard Chamber Trench Systems

STEP 2

Use Tables 12 and 13 to determine the width of the system based upon the available construction area on your site.

TABLE 12: DETERMINE WIDTH OF SYSTEM - OUTSIDE EDGE TO OUTSIDE EDGE BETWEEN ROWS OF STANDARD OR HIGH CAPACITY CHAMBERS

Number of Rows	Spacing CL to CL	
	6.00 ft	(6ft, 0in)
	36 in Edge to Edge	
2	9.00'	(9ft, 0in)
3	15.00'	(15ft, 0in)
4	21.00'	(21ft, 0in)
5	27.00'	(27ft, 0in)
6	33.00'	(33ft, 0in)
7	39.00'	(39ft, 0in)
8	45.00'	(45ft, 0in)
9	51.00'	(51ft, 0in)
10	57.00'	(57ft, 0in)
11	63.00'	(63ft, 0in)
12	69.00'	(69ft, 0in)
Each Add'l Row	6.00	

Note: The use of stone along the sidewall of infiltrator chambers is not recommended. All the design criteria used in this manual does not include the use of stone. If stone is incorporated into the design, spacing must be measured from edge to edge of adjacent stone sidewalls.

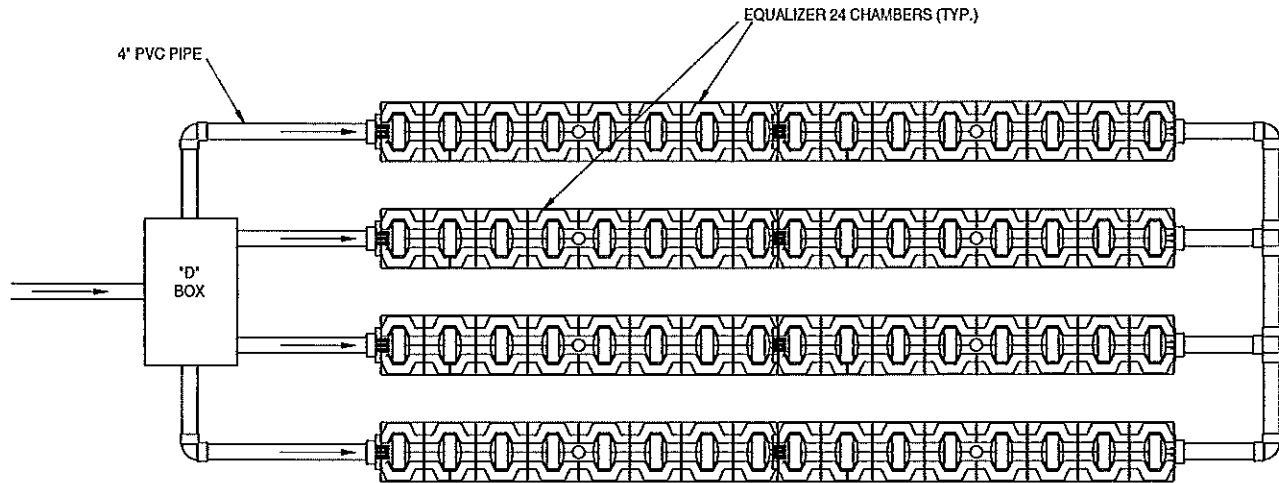
TABLE 13: DETERMINE LENGTH OF SYSTEM OF STANDARD OR HIGH CAPACITY CHAMBERS

Number of Units Per Row	Length of System
2	12.50' (12ft, 6in)
3	18.75' (18ft, 9in)
4	25.00' (25ft, 0in)
5	31.25' (31ft, 3in)
6	37.50' (37ft, 6in)
7	43.75' (43ft, 9in)
8	50.00' (50ft, 0in)
9	56.25' (56ft, 3in)
10	62.50' (62ft, 6in)
11	68.75' (68ft, 9in)
12	75.00' (75ft, 0in)
13	81.25' (81ft, 3in)
14	87.50' (87ft, 6in)
15	93.75' (93ft, 9in)
16	100.00' (100ft, 0in)
Each Additional Unit	6.25'

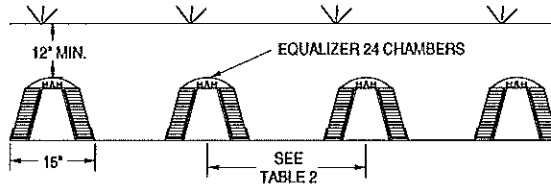
Equal Distribution

Note: The number of rows in a system and the length of each trench will vary depending on size requirements and site conditions. When designing level systems it is recommended that equal distribution be used, although it is the designer's choice.

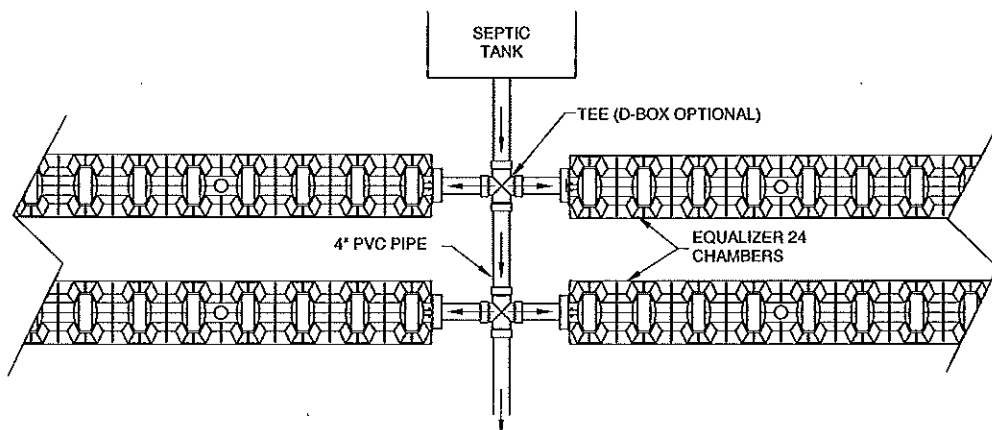
DISTRIBUTION BOX - LEVEL TRENCH SYSTEM EQUAL DISTRIBUTION (PLAN VIEW)



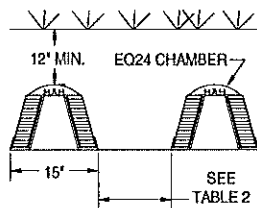
TYPICAL EQUALIZER 24 SINGLE TRENCH SYSTEM (CROSS SECTION)



CENTER INLET - LEVEL TRENCH SYSTEM EQUAL DISTRIBUTION (PLAN VIEW)



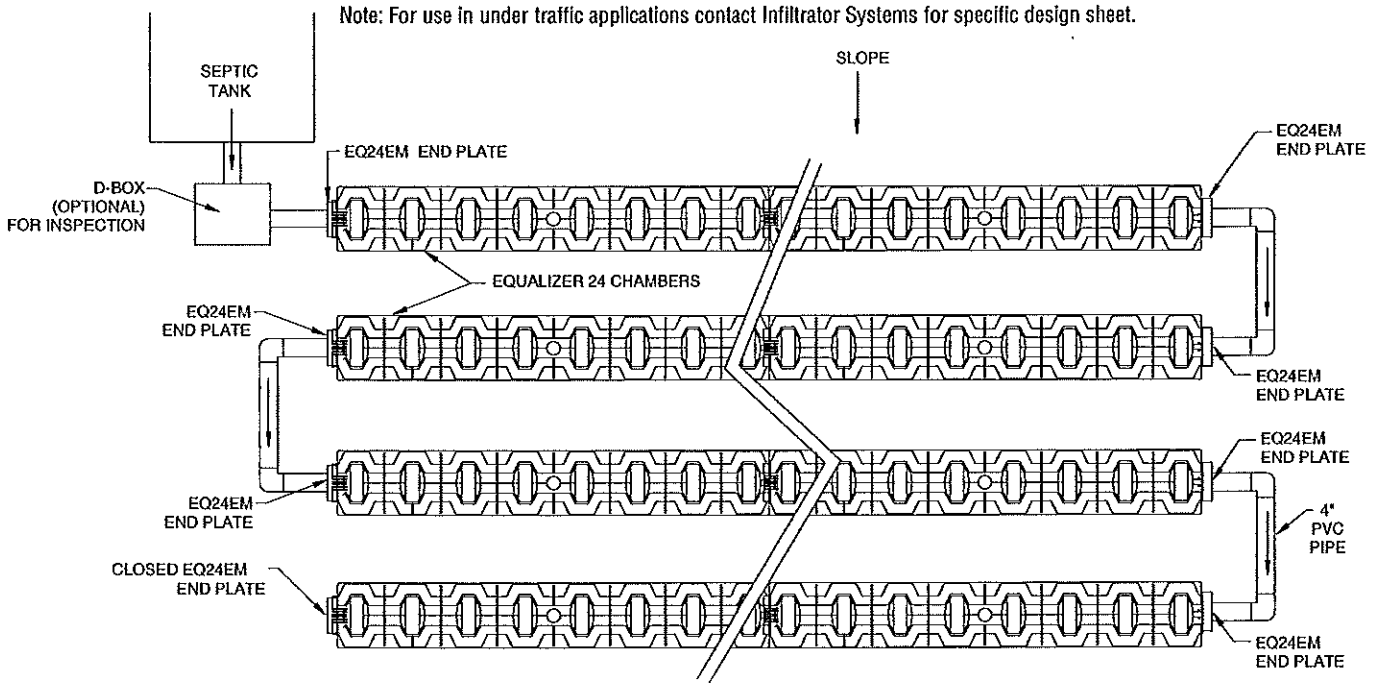
CENTER INLET - LEVEL TRENCH SYSTEM (CROSS SECTION)



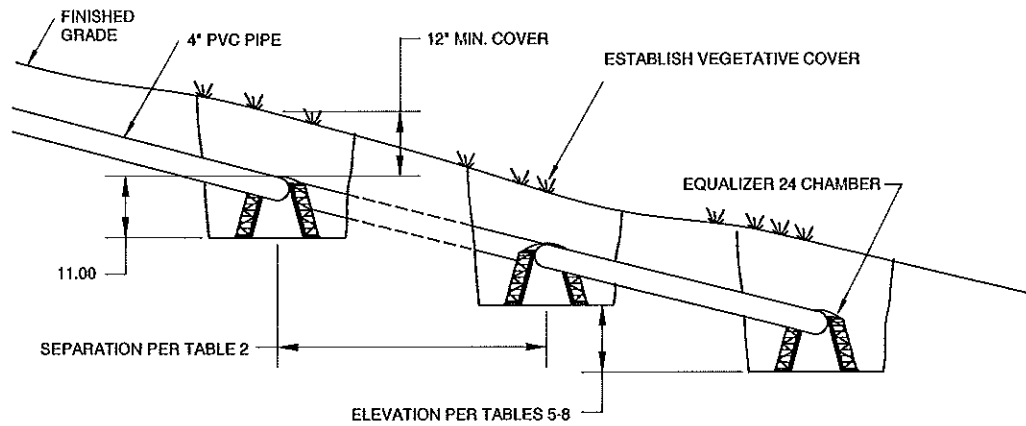
Serial Distribution

A leachfield built on a sloped site may be designed differently than that of a level system. Although distribution methods are the designers choice, it is recommended that the effluent be serially distributed.

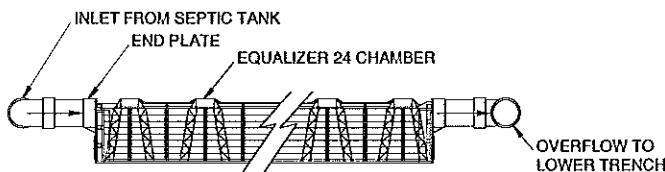
PLAN VIEW



SERIAL CROSS SECTION



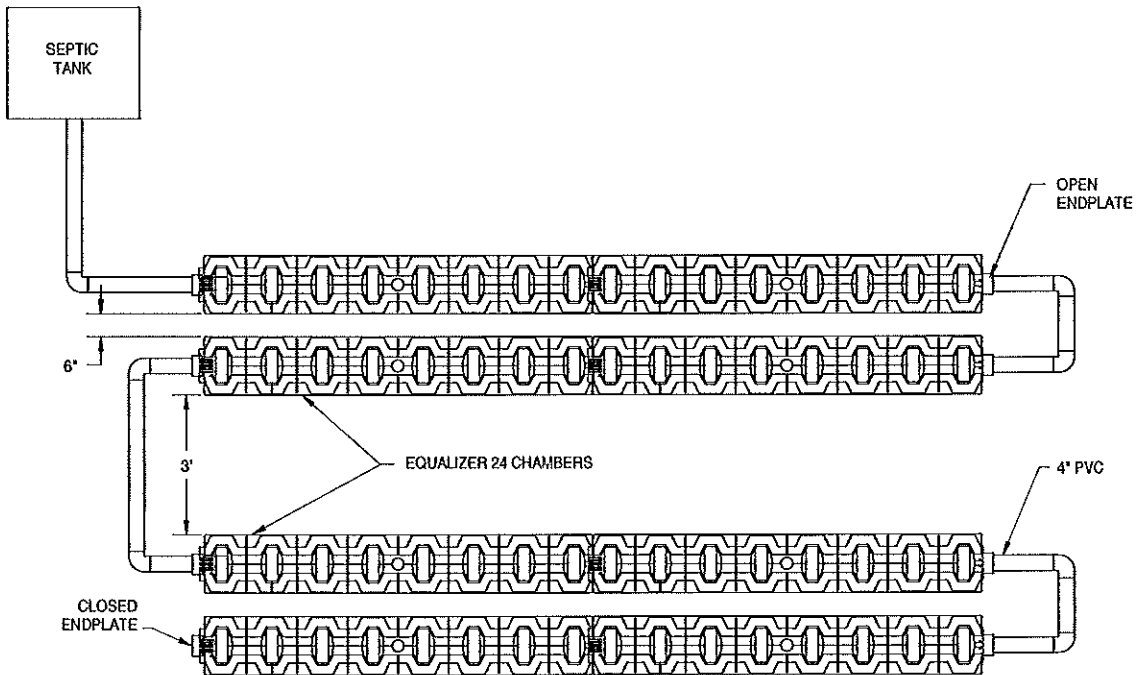
SIDE VIEW



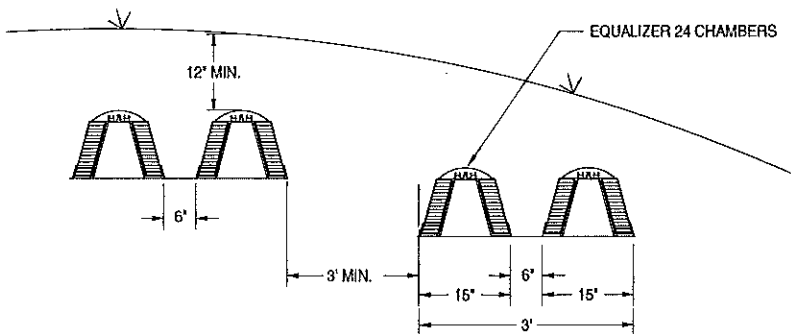
Serial Distribution

Double Row Trenches for Sloped Sites

PLAN VIEW



CROSS SECTION



Note: Trenches containing two chambers require 3' spacing between trenches.

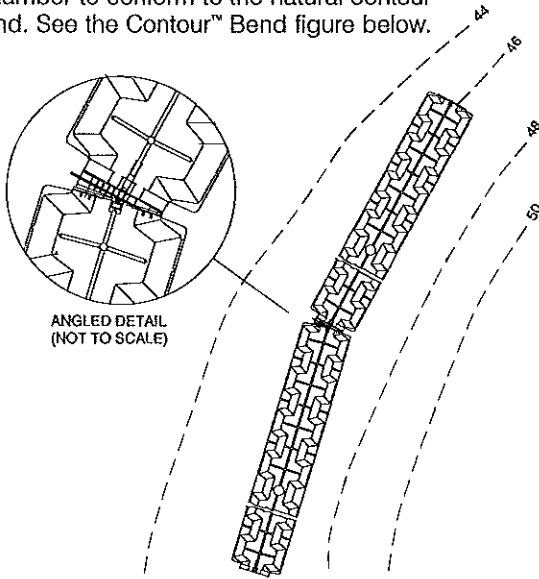
Note: A minimum of 12" of compacted cover is necessary to maintain H-10 wheel loading (16,000 lb/axle). For non-traffic areas, a minimum of 6" of cover is required.

Turn Design Configurations

Note: The use of contouring products must be shown on the original design to be installed.

Contour™ Bend

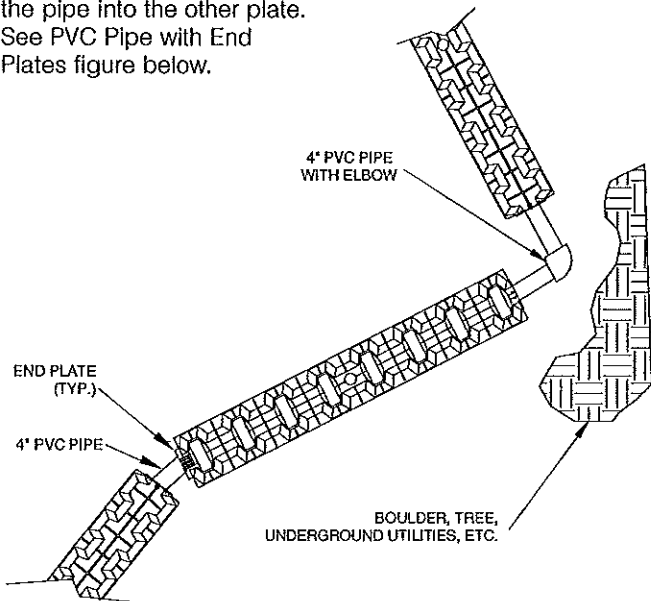
The Equalizer 24 chamber's versatility allows systems to be built with slight bends or contours, and around obstacles. Each joint may be angled 0 to 10 degrees from the center of the chamber to conform to the natural contour of the land. See the Contour™ Bend figure below.



PVC Pipe with End Plates

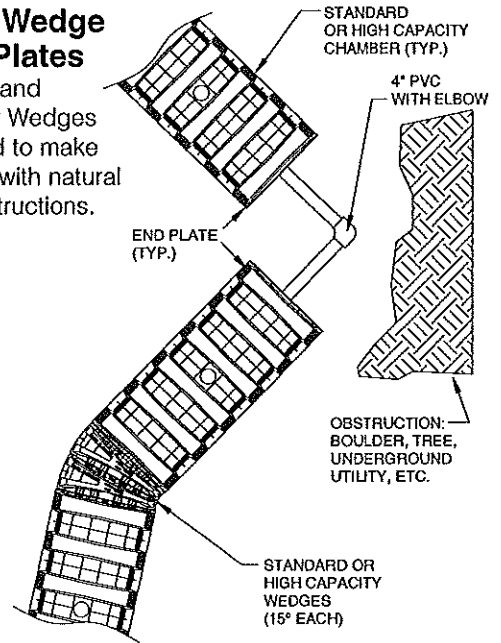
Chambers can also be easily adapted to contours, corners and obstacles with two end plates and a piece of elbowed pipe. Drill a 4-inch hole entirely through and 1-inch from the bottom of both end plates, and secure them to the chambers. Insert the 4-inch pipe and/or fittings to achieve desired angle into one of the end plates and insert the other end of the pipe into the other plate.

See PVC Pipe with End Plates figure below.



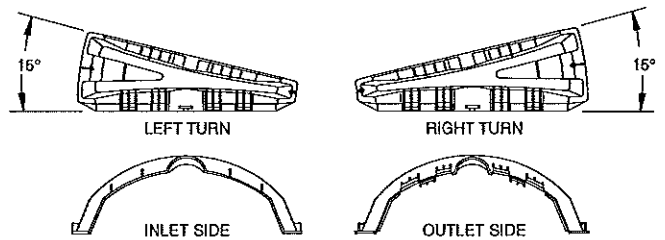
Contour™ Wedge with End Plates

The Standard and High Capacity Wedges can be utilized to make turns on sites with natural occurring obstructions.



Contour Wedge

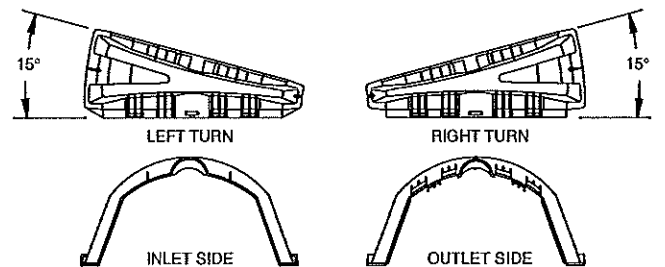
STANDARD WEDGE



Standard Wedge specifications

Size (W x L x H)	34" x 9.5" x 12"
------------------	------------------

HIGH CAPACITY WEDGE



High Capacity Wedge specifications

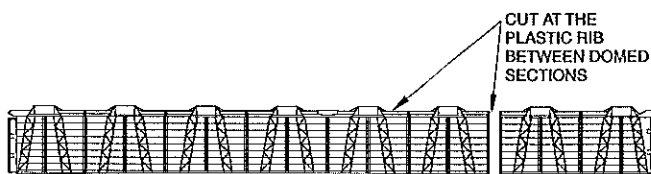
Size (W x L x H)	34" x 9.5" x 16"
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Site Constraints

Infiltrator Systems does not recommend the cutting of chambers. However, if chambers are cut to accommodate site constraints, the instructions below must be followed. Failure to follow the specific instructions below, releases Infiltrator of all liability or warranties.

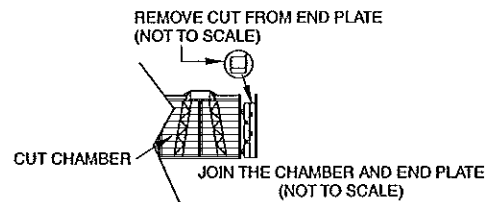
Cutting the Equalizer 24 Chambers

1. With a saw, cut the chambers between domed sections at the structural plastic rib as shown in the figure below.
2. When cutting any Infiltrator chamber, do not cut across the middle of the louvers.



Cutting and Installing the Equalizer 24 End Plates

1. Cut off the back half of the top arc of the end plate.
2. The end plate will now fit snugly into the cut end of the chamber.
3. Secure the end plate with screws.



Note: If site constraints require cutting the EQ24 chamber in a loop system, a 1/4-inch hole saw must be used to cut an opening one inch from the bottom of the EQ24EM end plate.

Before You Begin

Materials and Equipment Needed

- | | |
|--|--|
| <input type="checkbox"/> Infiltrator Chambers | <input type="checkbox"/> Glue |
| <input type="checkbox"/> End Plates | <input type="checkbox"/> 2" Diameter Pipe for Inspection Port* |
| <input type="checkbox"/> 4" Diameter Pipe for Header and Inlet | <input type="checkbox"/> 4" Cap for Inspection Port Pipe* |
| <input type="checkbox"/> 2" Drywall Screws | <input type="checkbox"/> Stakes (4)* |
| <input type="checkbox"/> Backhoe | <input type="checkbox"/> String Line* |
| <input type="checkbox"/> Laser, Transit, or Level | <input type="checkbox"/> Spray Paint* |
| <input type="checkbox"/> Shovel and Rake | <input type="checkbox"/> Small Valve-Cover Box* |
| <input type="checkbox"/> Hole Saw/Router Bit | <input type="checkbox"/> Bull Dozer* |
| <input type="checkbox"/> Screw Gun | |
| <input type="checkbox"/> Tape Measure | |
| <input type="checkbox"/> Utility Knife | * Optional |

These guidelines must be followed when using construction machinery on an Infiltrator Installation site.

- Only drive across the trenches when necessary. Never drive down the length of them.
- To avoid additional soil compaction, never drive heavy vehicles over the completed system.

This section is designed to provide installation instructions for Infiltrator chambers. These chambers may only be installed according to state and/or local regulations. If unsure of the installation requirements for a particular site, be sure to contact your local regulator.

Like conventional systems, the soil and site conditions must be approved for installation. Be sure that a thorough site evaluation is conducted to determine the proper sizing and siting of the system before proceeding with the installation.

Excavating and Preparing the Site

Note: As is the case with conventional systems, do not install the system in wet conditions or if the soil is too moist which will cause 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 each trench to required width allowing for proper center-to-center separation. Make sure the trenches are level.
4. Rake the bottom and sides if smearing has occurred while excavating. Remove any large stones and other debris. Do not use the teeth of the bucket to rake the trench bottom.

Note: Raking to eliminate smearing is not necessary in sandy soils. In fine textured soils (silts and clays), avoid walking in the trench to prevent compacting and loss of soil structure.

5. Verify that the trench is level using a level, transit, or laser.

Attaching the End Plates

The end plates can be used on both ends of the chamber. The end plates have two sets of hubs; one set for each chamber end. Use them as guides to attach the end plates to the chamber. For details on end plates refer to page 3. Select the end plate appropriate for your soil conditions and the installation requirements.

1. With a hole saw or utility knife, cut an opening for the inlet pipe on one of the pre-marked circles on the end plate, depending on the size and type of pipe used. Pre-marked circles allow for 4" SDR35, 4" SCH40, and 2" pressure pipe.

Note: The end plate is designed so the effluent will flow into it and spill out the opening on the other side. If not already provided, cut the necessary holes using the pre-marked guides.

2. Attach the end plate to the inlet end of the chamber by lining up the locking hubs with the corresponding chamber end. Applying firm pressure, lock the hubs in place on one side of the chamber and then the other.

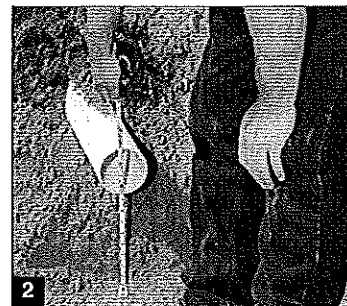
Optional: Insert 2" screws on either side of the inlet opening on the chamber flange. Tighten each screw until the end plate is firmly secured.

3. Attach a closed end plate onto the outlet end of the chamber by snapping the end plate's locking hubs onto the chamber end.

Installing the Chambers

1. Check the header pipe to be sure that it is level for level systems.

2. Set the inlet invert at the appropriate height from the bottom of the trench to the bottom of the inlet. Invert height will vary depending on which end plate is used. Precisely measure the invert on your end plate prior to setting the invert height.



3. Place the first chamber with its open end plate at the beginning of the trench.
4. Insert the inlet pipe into the end of the chamber. The pipe will only go into the unit 1" before reaching a stop.
5. Check the first chamber to be sure it is level.

6. Secure the inlet pipe to the end plate with a screw at the 12 o'clock position.



7. Lift and place the end of the next chamber onto the previous one by holding it upright at a 45-degree angle. Line up the hook on the center end of the chamber and lower it to the ground, engaging the interlocks.

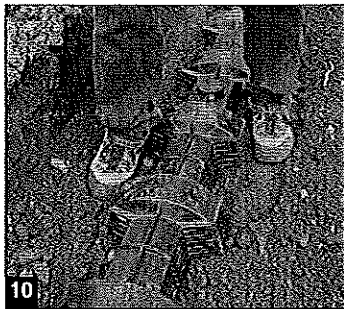
8. Continue interlocking the chambers until the trench is complete. As the chambers are installed, verify that they are level.

Note: Equalizer 24 chambers can angle left or right up to 10° per unit. This feature allows the chambers to follow the natural contour of the land for hilly or mountainous installations while maintaining a level trench bottom. Contours must be per design.

9. Fill the sidewall area to the top of the louvers by pulling fill (specified by code) from trench sides with a shovel. Be sure the fill covers the louvers.

Note: In bed systems, carefully place fill between chamber rows making sure not to dislodge the units. Do this by either ladling with the backhoe bucket or by hand with a shovel. Stakes may be used to stabilize the chamber feet.

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



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

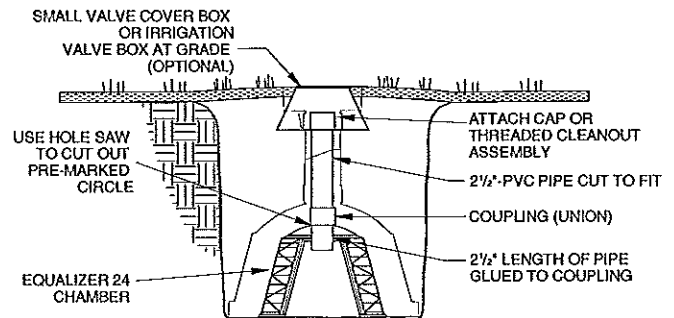
Installing Optional Inspection Ports

High Capacity and Standard chambers require a 4-inch pipe for inspection ports. Equalizer 24 chambers use a 2-inch pipe.

1. Using a hole saw, create an opening in the pre-marked area located in the center of the chamber. Be sure to use a saw that matches the type of pipe being installed.
2. Glue a 6" long PVC pipe into a 2" coupling.
3. Insert the 6" piece of pipe into the opening at the top of the chamber so the coupling sits on top of the chamber.
4. Insert another piece of pipe into the coupling and cut it at or above grade.
5. Attach a cap or threaded cleanout assembly onto the protruding pipe.
6. A small valve-cover box may be used if the inspection port is below the desired grade.

Note: Inspection ports may also be used for venting.

INSPECTION PORT DETAIL



Covering the System

Before backfilling, the system must be inspected by a health or regulatory official as required by state and local codes. Create an as-built drawing of the system at this time, showing the location of the home, tank, d-box and trenches, with dimensions to each.

1. Backfill the trench by pushing the cover onto the units perpendicular to the chambers with a backhoe or small track dozer. Keep a minimum of 12" of compacted cover over the chambers before driving over the system.

Note: Do not drive over the system while backfilling in sand, since sand does not give adequate support.

2. It is best to mound several extra inches of soil over the finish grade to allow for settling. This also ensures that runoff water is diverted away from the system.

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

Note: For bed systems, backfill the bed by pushing the cover onto the units parallel to the chambers with a small track dozer. Keep a minimum of 12" of compacted cover over the chambers. **No wheeled machinery is allowed on top of the bed during backfilling.**

Note: For use in under traffic applications contact infiltrator systems for specific design sheet.

To come...

Maine Limited Septic Warranty for Infiltrator Chambers

(a) The structural integrity of each chamber, end plate, wedge and other accessory manufactured by Infiltrator (collectively referred to as "Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's installation instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date upon which a septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required for the septic system by applicable law, the ten (10) year warranty period will begin upon the date that installation of the septic system commences. In order to exercise its warranty rights, Holder must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for those Units determined by Infiltrator to be defective and covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

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

(c) This Limited Warranty shall be void if any part of the chamber system (chamber, end plate, wedge or other accessory) is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty.

Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change this Limited Warranty in any manner whatsoever, or to extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's corporate headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.

INFILTRATOR[®]
SYSTEMS INC

*Environmental Onsite Wastewater Solutions*SM

P.O. Box 768 6 Business Park Road Old Saybrook, CT 06475
860-577-7000 FAX 860-577-7001

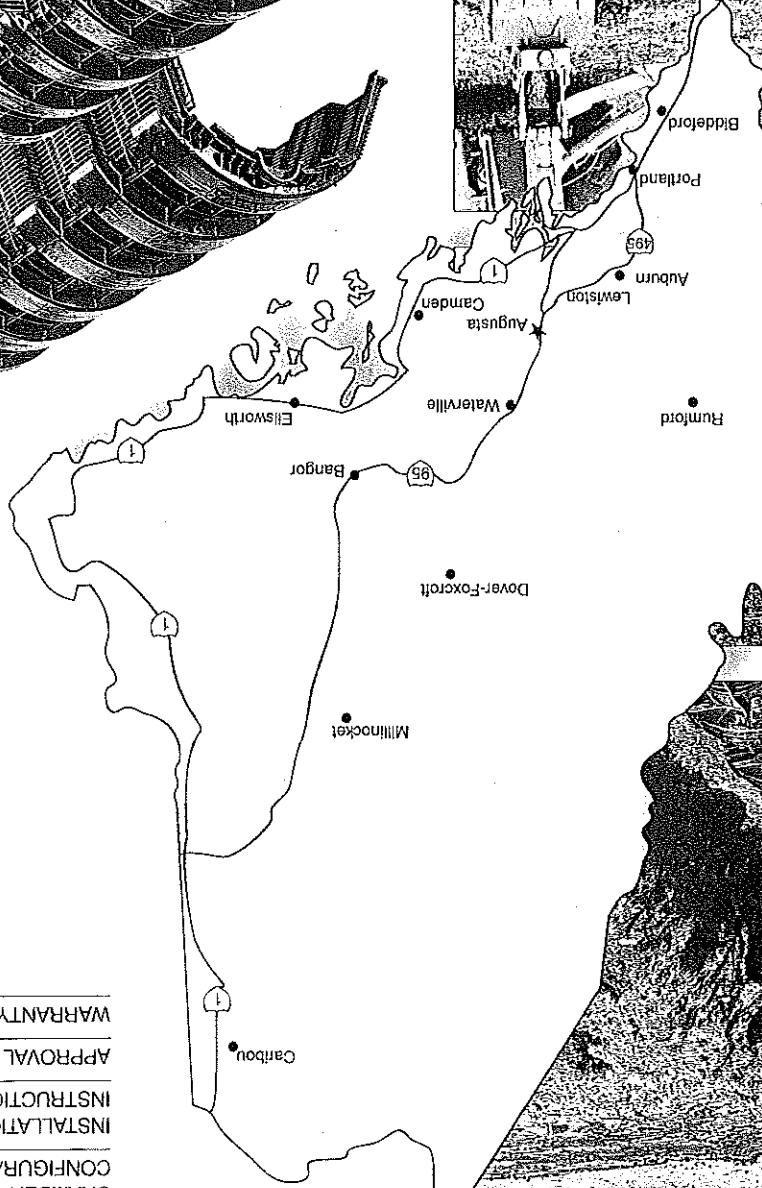
www.infiltratorsystems.com

1-800-221-4436

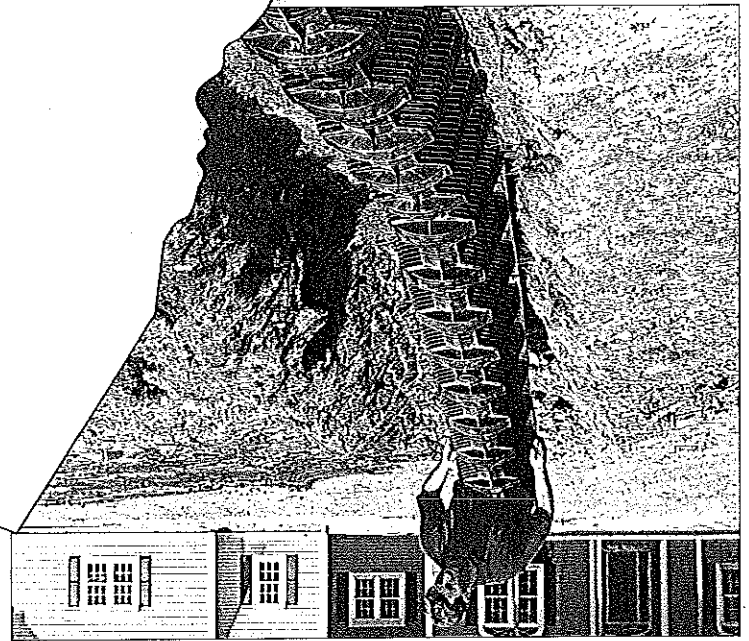
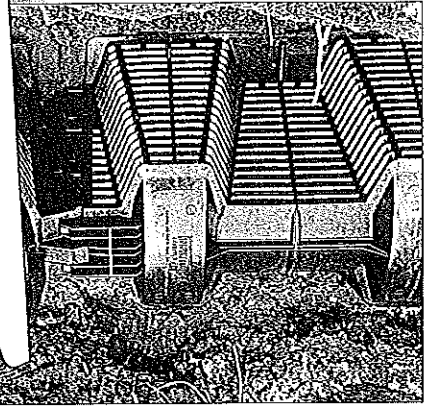
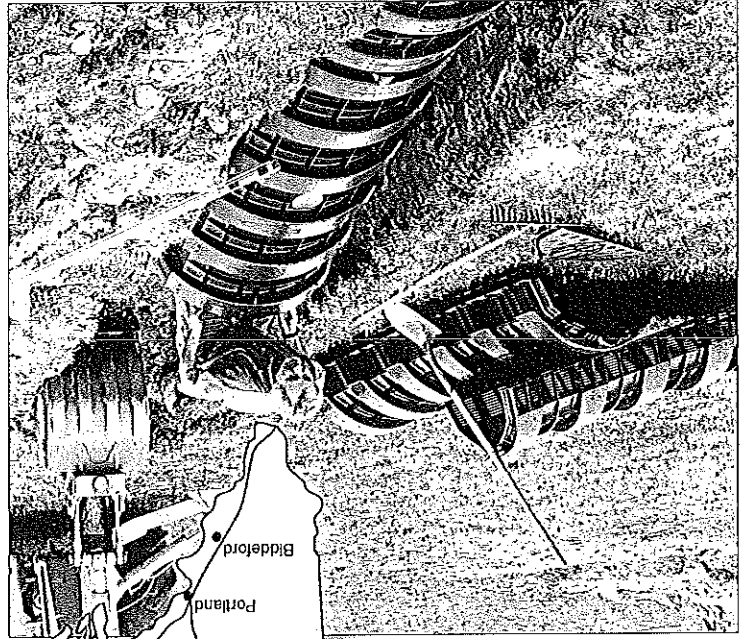
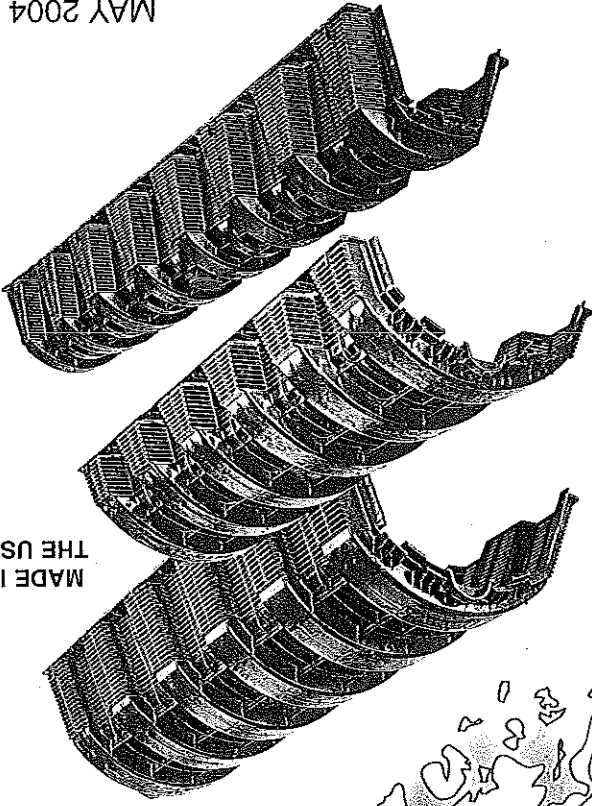
Design and Installation Manual for Infiltrator Chambers in Maine



2	INTRODUCTION
3	PRODUCTS
4	SYSTEM SIZING
11	CHAMBER CONFIGURATIONS
16	INSTALLATION INSTRUCTIONS
18	APPROVAL LETTER
19	WARRANTY



MADE IN THE USA



The purpose of this manual is to provide the minimum design and installation information for the use of Infiltrator chambers in Maine. Exceptions and changes may be made, but should be confirmed by Infiltrator Systems Inc. Each revised version of this manual supersedes the previous version.

The manual provides a brief description of each Infiltrator chamber with its sizing specifications. For more detailed design information, please contact Infiltrator Systems at 1-800-221-4436 or your local Maine Infiltrator representative.

Sidewinder® Sidewall

Infiltrator leaching chambers are an effective replacement for stone and pipe in septic leachfields. The product's unique, fully-flouvered Sidewinder sidewall wraps continuously around it for maximum infiltration area. The chamber design offers twice the leaching area below the invert than that of a same-length stone and pipe system.

Infiltrator® Chambers

The Equalizer 24 chamber fits in an 18-inch or 24-inch wide trench. High Capacity and Standard Chambers can be installed in a 36-inch wide trench.

Equalizer 24 nominal chamber specifications

Size (W x L x H)	15" x 100" x 11"
Weight	23 lbs.
Storage	34 gal (4.6 ft ³)

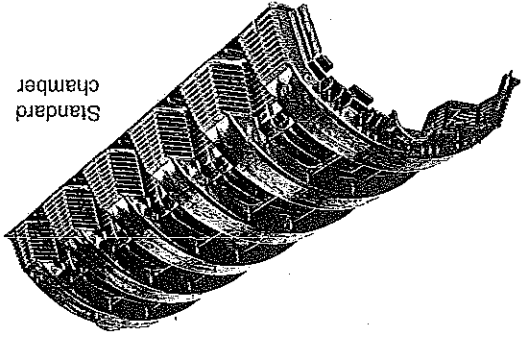
High Capacity nominal chamber specifications

Size (W x L x H)	34" x 75" x 16"
Weight	38 lbs.
Storage	112 gal (15.0 ft ³)

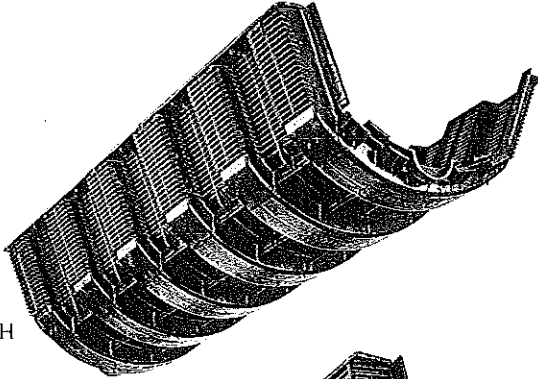
Standard nominal chamber specifications

Size (W x L x H)	34" x 75" x 12"
Weight	26 lbs.
Storage	78 gal (10.4 ft ³)

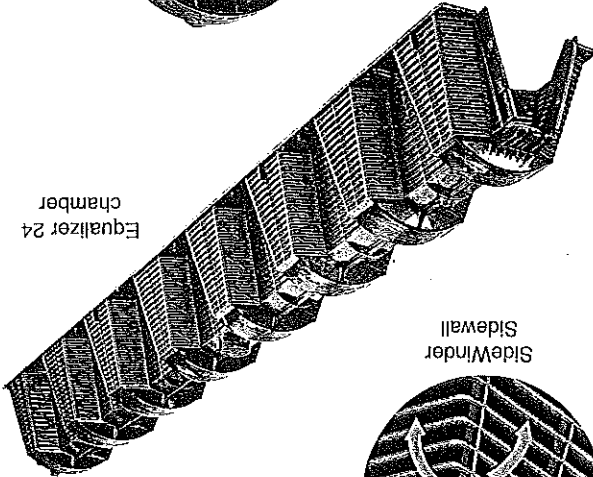
Standard chamber



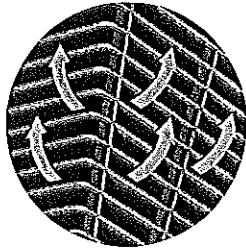
High Capacity chamber



Equalizer 24 chamber

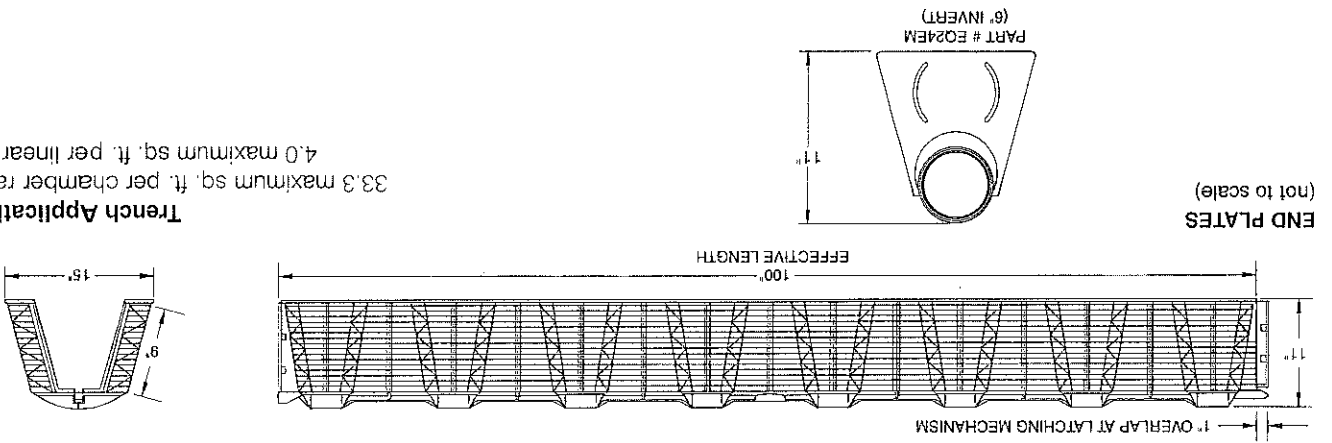


Sidewinder Sidewall



Equalizer 24 Chambers

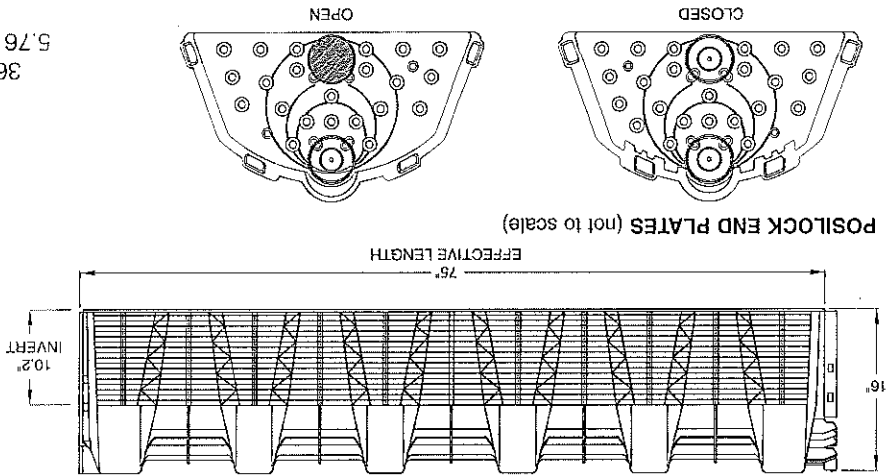
SIDE AND END VIEWS



Trench Applications
 33.3 maximum sq. ft. per chamber rating
 4.0 maximum sq. ft. per linear foot

High Capacity Chambers

SIDE AND END VIEWS



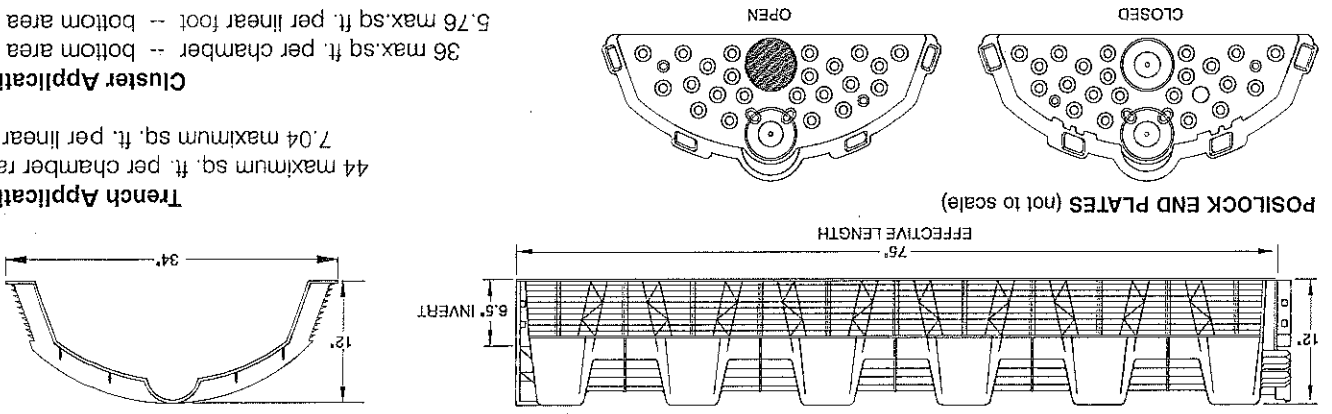
Trench Applications
 50 maximum sq. ft. per chamber rating
 8.0 maximum sq. ft. per linear foot

Cluster Applications

36 max.sq ft. per chamber -- bottom area only
 5.76 max.sq ft. per linear foot -- bottom area only

Standard Chambers

SIDE AND END VIEWS



Trench Applications

44 maximum sq. ft. per chamber rating
 7.04 maximum sq. ft. per linear foot

Cluster Applications

36 max.sq ft. per chamber -- bottom area only
 5.76 max.sq ft. per linear foot -- bottom area only

Sizing of Equalizer 24 Chamber Systems

STEP 1

Use **Table 1** to determine the number of Equalizer 24 chambers required based upon the number bedrooms and soil profile.

TABLE 1: DETERMINE MINIMUM NUMBER OF EQUALIZER 24 CHAMBERS (FOR RESIDENTIAL USE)

Number of Bedrooms	Soil Profile					
	Soil Profile	180GPD	270GPD	360GPD	450GPD	540GPD
2	2	3	4	5	6	Each Additional Bedroom
3	3	4	5	6	7	12
4	4	5	6	7	8	9
5	5	6	7	8	9	12
6	6	7	8	9	10	12
7	7	8	9	10	11	12
8	8	9	10	11	12	14
9	9	10	11	12	13	14
10	10	11	12	13	14	14

Design of Equalizer 24 Chamber Single Row Trench Systems

Tables 2-4 will assist you in determining the size and layout of your Infiltrator Equalizer 24 system. In order to complete the system design you will need to have already identified the following criteria: soil profile, original ground slope, and area available for construction.

Note: The use of stone along the sidewall of Infiltrator chambers is not recommended. All the design criteria used in this manual does not include the use of stone. If stone is incorporated into the design, spacing must be measured from edge to edge of adjacent stone sidewalls.

STEP 2

Use **Table 2** to establish the system's center-to-center spacing using the original ground slope and soil profile.

TABLE 2: DETERMINE EQUALIZER 24 CENTER-TO-CENTER SPACING IN FEET

Soil Profile	Soil Profile					
	Original Ground Slope	4 & 5	2	3 & 7	1 & 8	9
0-10%	1.75 ft	1.75 ft	2.00 ft	2.25 ft	2.75 ft	2.75 ft
11-15%	1.75 ft	2.00 ft	2.25 ft	2.50 ft	2.75 ft	2.75 ft
16-20%	2.00 ft	2.25 ft	2.50 ft	2.75 ft	2.75 ft	2.75 ft

Design of Equalizer 24 Chamber Single Row Trench Systems

STEP 3

Use **Tables 3 and 4** to determine the width and length of the system based upon the available construction area on your site. Note: Infiltrator Systems encourages long and narrow designs to minimize linear loading rates.

TABLE 3: DETERMINE TOTAL WIDTH OF SYSTEM - OUTSIDE EDGE TO OUTSIDE EDGE OF EQUALIZER 24 CHAMBERS

Number of Rows	Spacing CL to CL				
	1.75' (1ft, 9in)	2.00' (2ft, 0in)	2.25' (2ft, 3in)	2.50' (2ft, 6in)	2.75' (2ft, 9in)
6 inch Edge to Edge	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
9 inch Edge to Edge	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
12 inch Edge to Edge	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
15 inch Edge to Edge	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
18 inch Edge to Edge	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
2	3.00' (3ft, 0in)	3.25' (3ft, 3in)	3.50' (3ft, 6in)	3.75' (3ft, 9in)	4.00' (4ft, 0in)
3	4.75' (4ft, 9in)	5.25' (5ft, 3in)	5.75' (5ft, 9in)	6.25' (6ft, 3in)	6.75' (6ft, 9in)
4	6.50' (6ft, 6in)	7.25' (7ft, 3in)	8.00' (8ft, 0in)	8.75' (8ft, 9in)	9.50' (9ft, 6in)
5	8.25' (8ft, 3in)	9.25' (9ft, 3in)	10.25' (10ft, 3in)	11.25' (11ft, 3in)	12.25' (12ft, 3in)
6	10.00' (10ft, 0in)	11.25' (11ft, 3in)	12.50' (12ft, 6in)	13.75' (13ft, 9in)	15.00' (15ft, 0in)
7	11.75' (11ft, 9in)	13.25' (13ft, 3in)	14.75' (14ft, 9in)	16.25' (16ft, 3in)	17.75' (17ft, 9in)
8	13.50' (13ft, 6in)	15.25' (15ft, 3in)	17.00' (17ft, 0in)	18.75' (18ft, 9in)	20.50' (20ft, 6in)
9	15.25' (15ft, 3in)	17.25' (17ft, 3in)	19.25' (19ft, 3in)	21.25' (21ft, 3in)	23.25' (23ft, 3in)

Example 1

3-bedroom house on a profile 3 soil with original slope of 14 percent

Table 1 - minimum of 27 EQ24 chambers

Table 2 - 2.5 feet center-to-center spacing

Decide what the best layout is for the site (length and width)

Table 3 - 6 rows of 5 - 13.75 feet wide x 41.67 feet long

Table 7 - recommends a 3-inch elevation difference between rows using serial distribution

Note: If the layout was 4 rows of 7 then **Table 3** results in a system that is 8.75 feet wide x 58.33 feet long, however **Table 7** recommends 0 drop between rows (level system). Therefore since the maximum edge to edge distance required for a level system is 12 inches (2.25 feet center-to-center) then refer ring back to **Table 3** results in a system 8.0 feet wide x 58.33 feet long.

Example 2

4-bedroom house on a profile 2 soil with original slope of 8 percent

Table 1 - minimum of 36 EQ24 chambers

Table 2 - 2.0 feet center-to-center spacing

Decide what the best layout is for the site (length and width)

Table 3 - 6 rows of 6 - 11.25 feet wide x 50 feet long

Table 5 - recommends 0 elevation difference between rows (level system)

Note: When using the same layout of 6 rows of 6 and if the original slope was 16% instead of 8% then **Table 2** requires 2.5 feet center-to-center spacing (15 inches edge to edge). Using **Tables 3 & 4** results in a system 13.75 feet wide x 50 feet long. **Table 7** recommends a 4-inch drop between rows.

Number of Units Per Row	Length of System
2	16.67' (16ft, 8in)
3	25.00' (25ft, 0in)
4	33.33' (33ft, 4in)
5	41.67' (41ft, 8in)
6	50.00' (50ft, 0in)
7	58.33' (58ft, 4in)
8	66.67' (66ft, 8in)
9	75.00' (75ft, 0in)
10	83.33' (83ft, 4in)
11	91.67' (91ft, 8in)
12	100.00' (100ft, 0in)
Each Additional Unit	8.33'

TABLE 4: DETERMINE LENGTH OF SYSTEM OF EQUALIZER 24 CHAMBERS

Number of Units Per Row	Length of System
2	16.67' (16ft, 8in)
3	25.00' (25ft, 0in)
4	33.33' (33ft, 4in)
5	41.67' (41ft, 8in)
6	50.00' (50ft, 0in)
7	58.33' (58ft, 4in)
8	66.67' (66ft, 8in)
9	75.00' (75ft, 0in)
10	83.33' (83ft, 4in)
11	91.67' (91ft, 8in)
12	100.00' (100ft, 0in)
Each Additional Unit	8.33'

Design of Equalizer 24 Chamber Single Row Trench Systems

Note: The recommended elevation difference between rows in the following tables is intended to be a guideline. Many factors were considered including the difficulty of constructing systems with 2 inches or less elevation difference between rows. Each site is different and site conditions may result in a different design than those shown.

STEP 4

All Equalizer 24 Chambers installed with 1.75' (1foot, 9 inches) center-to-center spacing (6" edge to edge) should be installed level up to 9 rows. (Use Tables 5-8 to establish the recommended elevation drop between the rows of Equalizer 24 chambers.)

TABLE 5: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.00' (2FT) CENTER-TO-CENTER SPACING (9" EDGE TO EDGE)

	Number of Rows							
Original Ground Slope	2	3	4	5	6	7	8	9
1 to 12	0 in	0 in	0 in	0 in	0 in	0 in	0 in	0 in
13	0 in	0 in	0 in	0 in	0 in	0 in	0 in	3 in
14	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
15	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
16	0 in	0 in	0 in	3 in	3 in	3 in	3 in	4 in
17	0 in	0 in	0 in	3 in	3 in	3 in	4 in	4 in
18	0 in	0 in	0 in	3 in	3 in	3 in	4 in	4 in
19	0 in	0 in	0 in	4 in	4 in	4 in	4 in	4 in
20	0 in	0 in	0 in	4 in	4 in	4 in	4 in	4 in

TABLE 6: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.25' (2FT, 3IN) CENTER-TO-CENTER SPACING (12" EDGE TO EDGE)

	Number of Rows							
Original Ground Slope	2	3	4	5	6	7	8	9
1 to 11	0 in	0 in	0 in	0 in	0 in	0 in	0 in	0 in
12	0 in	0 in	0 in	0 in	0 in	0 in	0 in	3 in
13	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
14	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
15	0 in	0 in	0 in	0 in	3 in	3 in	3 in	3 in
16	0 in	0 in	3 in	3 in	3 in	3 in	4 in	4 in
17	0 in	0 in	3 in	3 in	3 in	4 in	4 in	4 in
18	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
19	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
20	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in

Design of Equalizer 24 Chamber Single Row Trench Systems

TABLE 7: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.50' (2FT, 6IN) CENTER-TO-CENTER SPACING (15" EDGE TO EDGE)

Number of Rows								
Original Ground Slope	2	3	4	5	6	7	8	9
11	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
12	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
13	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
14	0 in	0 in	0 in	0 in	3 in	3 in	3 in	3 in
15	0 in	0 in	0 in	0 in	3 in	4 in	4 in	4 in
16	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
17	0 in	0 in	3 in	4 in	4 in	4 in	4 in	4 in
18	0 in	0 in	3 in	4 in	4 in	4 in	4 in	5 in
19	0 in	0 in	3 in	4 in	4 in	5 in	5 in	5 in
20	0 in	0 in	4 in	4 in	5 in	5 in	5 in	5 in

Note: Where 0 (zero) elevation (level system) is shown, revert to Table 3 to re-establish system width to 2.25 center-to-center spacing.

TABLE 8: RECOMMENDED ELEVATION DIFFERENCE BETWEEN ROWS OF EQUALIZER 24 CHAMBERS FOR 2.75' (2FT, 9IN) CENTER-TO-CENTER SPACING (18" SEPARATION)

Number of Rows								
Original Ground Slope	2	3	4	5	6	7	8	9
1 to 10	0 in	0 in	0 in	0 in	0 in	0 in	0 in	0 in
11	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
12	0 in	0 in	0 in	0 in	0 in	0 in	3 in	3 in
13	0 in	0 in	0 in	0 in	0 in	3 in	3 in	3 in
14	0 in	0 in	0 in	3 in	3 in	3 in	4 in	4 in
15	0 in	0 in	0 in	3 in	3 in	4 in	4 in	4 in
16	0 in	0 in	3 in	3 in	4 in	4 in	4 in	4 in
17	0 in	0 in	3 in	4 in	4 in	4 in	5 in	5 in
18	0 in	0 in	4 in	4 in	4 in	5 in	5 in	5 in
19	0 in	0 in	4 in	4 in	5 in	5 in	5 in	5 in
20	0 in	0 in	4 in	5 in	5 in	5 in	5 in	6 in

Note: Where 0 (zero) elevation (level system) is shown, revert to Table 3 to re-establish system width to 2.25 center-to-center spacing.

Sizing of High Capacity and Standard Chamber Trench Systems

STEP 1

Use **Tables 9 and 10** when designing a trench system to determine the number of High Capacity or Standard chambers required based upon the number bedrooms and soil profile.

Note: Chambers are to be installed with a 3-foot minimum trench separation, edge to edge of units.

TABLE 9: DETERMINE MINIMUM NUMBER OF HIGH CAPACITY CHAMBERS (FOR RESIDENTIAL USE)

Soil Profile	Number of Bedrooms					
	2	3	4	5	6	Each Additional Bedroom
1	15	23	30	37	45	45
2	12	18	24	30	36	36
3	12	18	24	30	36	36
4	10	15	19	24	29	29
5	10	15	19	24	29	29
6	10	15	19	24	29	29
7	12	18	24	30	36	36
8	15	23	30	37	45	45
9	18	27	36	45	54	54

TABLE 10: DETERMINE MINIMUM NUMBER OF STANDARD CHAMBERS (FOR RESIDENTIAL USE)

Soil Profile	Number of Bedrooms					
	2	3	4	5	6	Each Additional Bedroom
1	17	26	34	42	51	51
2	14	21	27	34	41	41
3	14	21	27	34	41	41
4	11	16	22	27	32	32
5	11	16	22	27	32	32
6	11	16	22	27	32	32
7	14	21	27	34	41	41
8	17	26	34	42	51	51
9	21	31	41	52	62	62

Sizing of High Capacity and Standard Chamber Cluster Systems

Use Table 11 to size in a cluster system.

Note: Infiltrator Systems recommends constructing cluster systems with 6-inch separation between chambers.

TABLE 11: DETERMINE MINIMUM NUMBER OF HIGH CAPACITY OR STANDARD CHAMBERS IN A CLUSTER -- BOTTOM OPEN AREA CONSIDERED ONLY (FOR RESIDENTIAL USE)

Soil Profile	Number of Bedrooms					
	2	3	4	5	6	Each Additional Bedroom
Soil Profile	180GPD	270GPD	360GPD	450GPD	540GPD	
1	21	31	41	52	62	11
2	17	25	33	42	50	9
3	17	25	33	42	50	9
4	13	20	26	33	39	7
5	13	20	26	33	39	7
6	13	20	26	33	39	7
7	17	25	33	42	50	9
8	21	31	41	52	62	11
9	25	38	50	63	75	13

Design of High Capacity and Standard Chamber Trench Systems

STEP 2

Use Tables 12 and 13 to determine the width of the system based upon the available construction area on your site.

TABLE 12: DETERMINE WIDTH OF SYSTEM - OUTSIDE EDGE TO OUTSIDE EDGE BETWEEN ROWS OF STANDARD OR HIGH CAPACITY CHAMBERS

Note: The use of stone along the sidewall of infiltrator chambers is not recommended. All the design criteria used in this manual does not include the use of stone. If stone is incorporated into the design, spacing must be measured from edge to edge of adjacent stone sidewalks.

Spacing CL to CL	Number of Rows	Each Add'l Row
6.00 ft (6ft, 0in)	2	9.00' (9ft, 0in)
	3	15.00' (15ft, 0in)
	4	21.00' (21ft, 0in)
	5	27.00' (27ft, 0in)
	6	33.00' (33ft, 0in)
	7	39.00' (39ft, 0in)
	8	45.00' (45ft, 0in)
	9	51.00' (51ft, 0in)
	10	57.00' (57ft, 0in)
	11	63.00' (63ft, 0in)
	12	69.00' (69ft, 0in)
		6.00

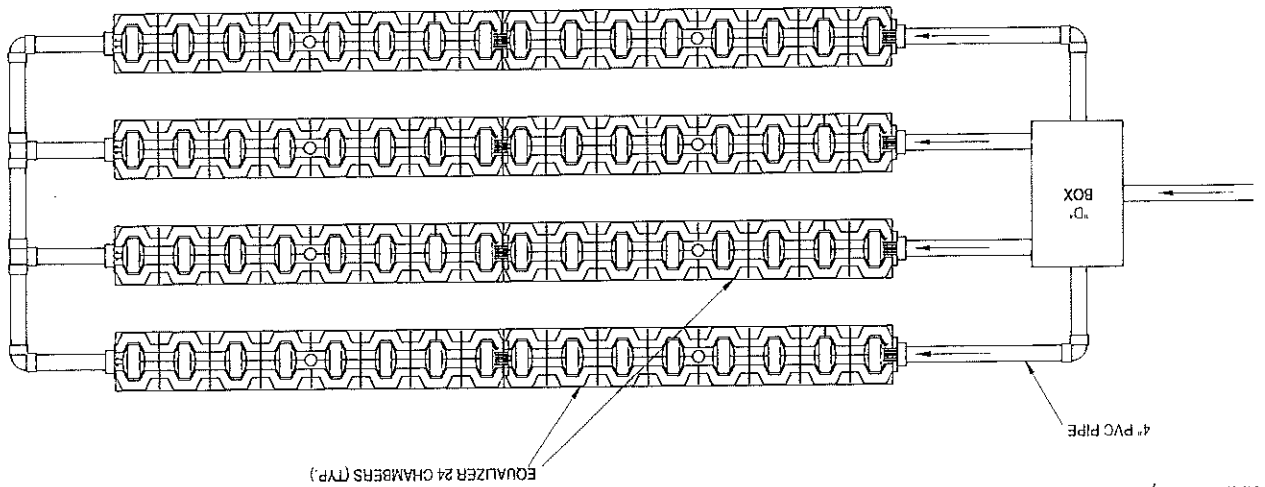
TABLE 13: DETERMINE LENGTH OF SYSTEM OF STANDARD OR HIGH CAPACITY CHAMBERS

Number of Units Per Row	Length of System
2	12.50' (12ft, 6in)
3	18.75' (18ft, 9in)
4	25.00' (25ft, 0in)
5	31.25' (31ft, 3in)
6	37.50' (37ft, 6in)
7	43.75' (43ft, 9in)
8	50.00' (50ft, 0in)
9	56.25' (56ft, 3in)
10	62.50' (62ft, 6in)
11	68.75' (68ft, 9in)
12	75.00' (75ft, 0in)
13	81.25' (81ft, 3in)
14	87.50' (87ft, 6in)
15	93.75' (93ft, 9in)
16	100.00' (100ft, 0in)
	6.25'

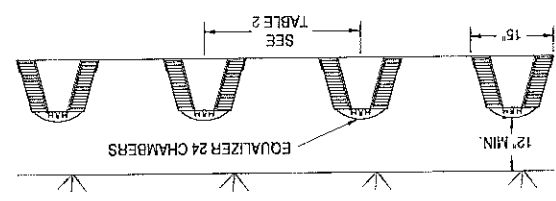
Equal Distribution

Note: The number of rows in a system and the length of each trench will vary depending on size requirements and site conditions. When designing level systems it is recommended that equal distribution be used, although it is the designer's choice.

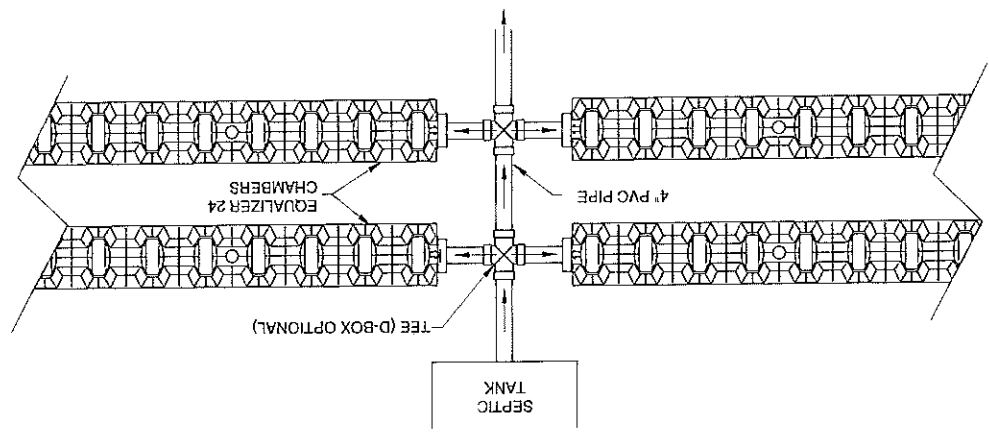
DISTRIBUTION BOX - LEVEL TRENCH SYSTEM EQUAL DISTRIBUTION
(PLAN VIEW)



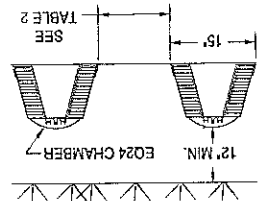
TYPICAL EQUALIZER 24 SINGLE TRENCH SYSTEM
(CROSS SECTION)



CENTER INLET - LEVEL TRENCH SYSTEM EQUAL DISTRIBUTION
(PLAN VIEW)

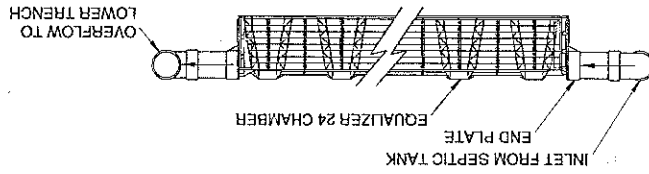
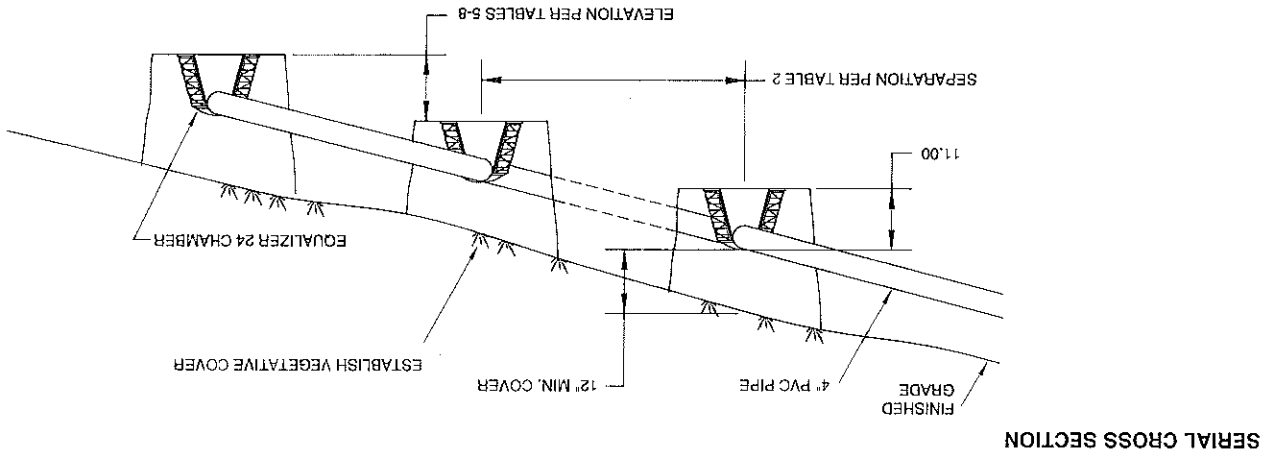
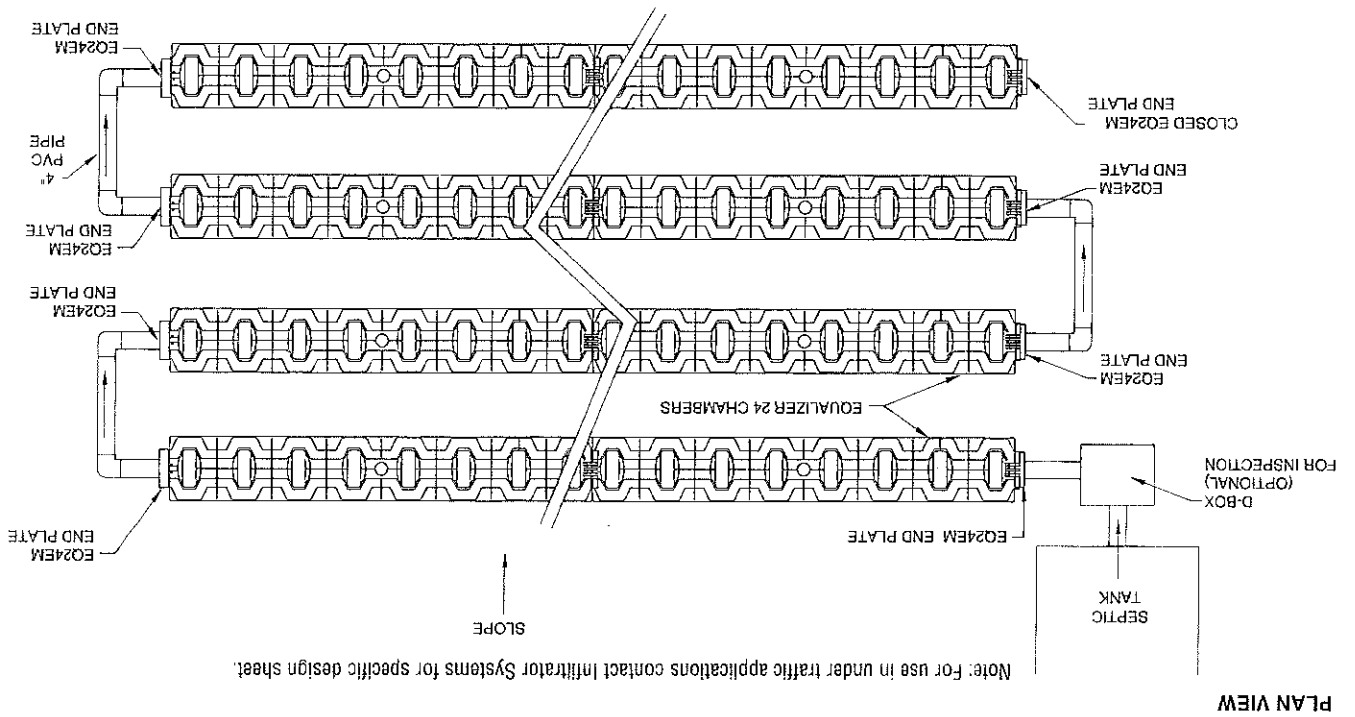


CENTER INLET - LEVEL TRENCH SYSTEM
(CROSS SECTION)



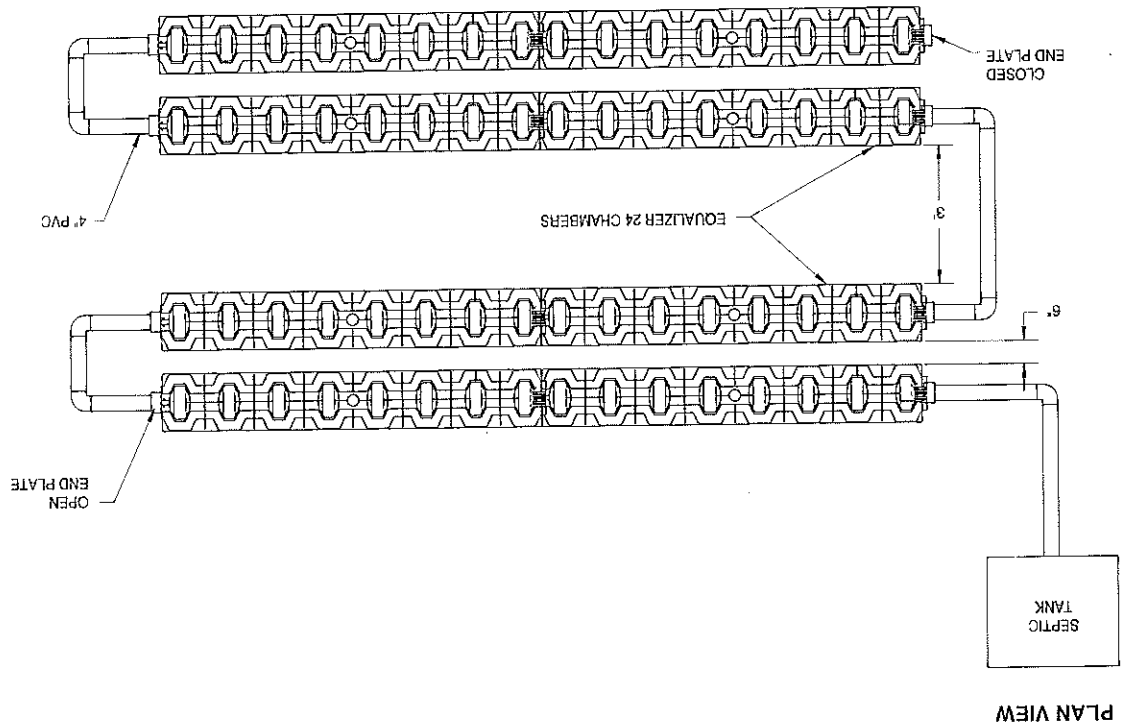
Serial Distribution

A leachfield built on a sloped site may be designed differently than that of a level system. Although distribution methods are the designers choice, it is recommended that the effluent be serially distributed.

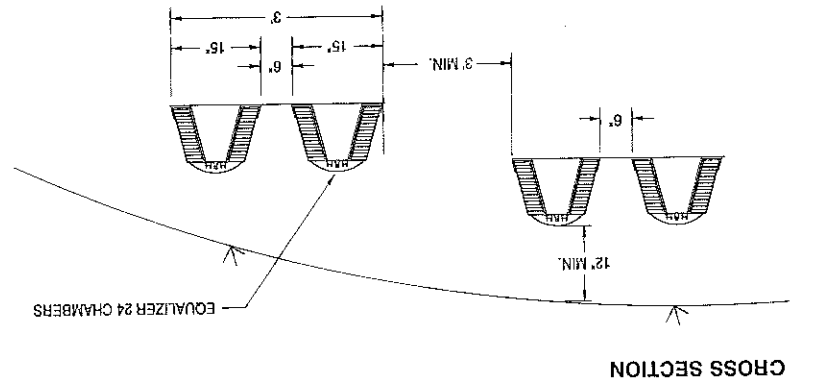


Serial Distribution

Double Row Trenches for Sloped Sites



PLAN VIEW



CROSS SECTION

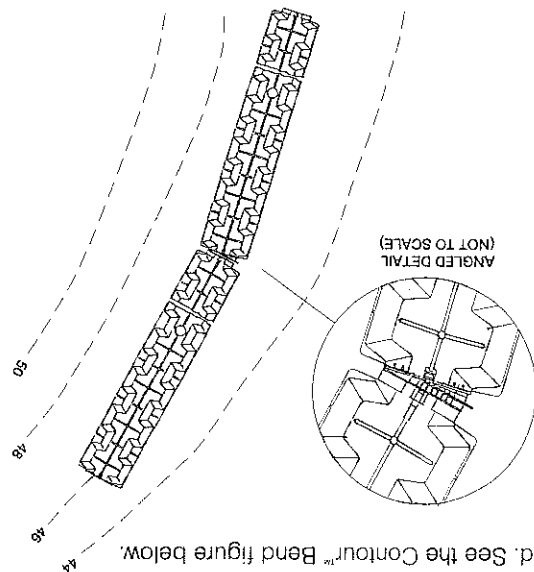
Note: Trenches containing two chambers require 3' spacing between trenches.
 Note: A minimum of 12" of compacted cover is necessary to maintain H-10 wheel loading (16,000 lb/axle). For non-traffic areas, a minimum of 6" of cover is required.

Turn Design Configurations

Note: The use of contouring products must be shown on the original design to be installed.

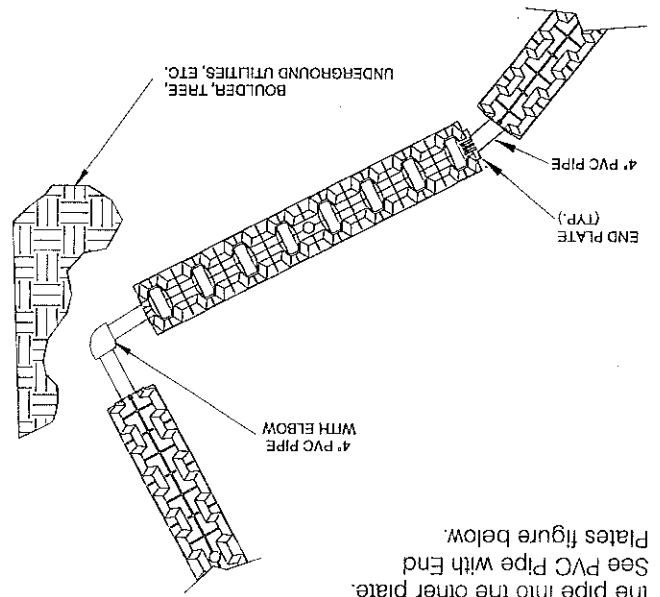
Contour™ Bend

The Equalizer 24 chamber's versatility allows systems to be built with slight bends or contours, and around obstacles. Each joint may be angled 0 to 10 degrees from the center of the chamber to conform to the natural contour of the land. See the Contour™ Bend figure below.



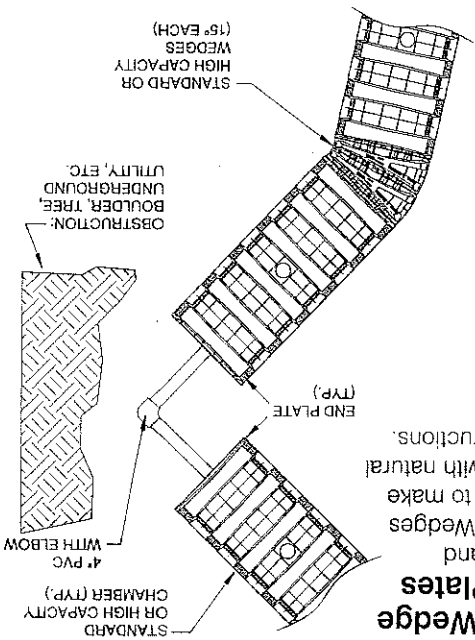
PVC Pipe with End Plates

Chambers can also be easily adapted to contours, corners and obstacles with two end plates and a piece of elbowed pipe. Drill a 4-inch hole entirely through and 1-inch from the bottom of both end plates, and secure them to the chambers. Insert the 4-inch pipe and/or fittings to achieve desired angle into one of the end plates and insert the other end of the pipe into the other plate. See PVC pipe with End Plates figure below.



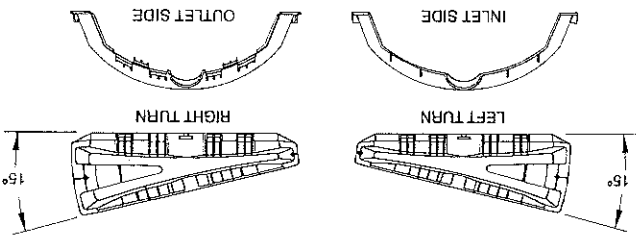
Contour™ Wedge with End Plates

The Standard and High Capacity Wedges can be utilized to make turns on sites with natural occurring obstructions.



Contour Wedge

STANDARD WEDGE



Standard Wedge specifications

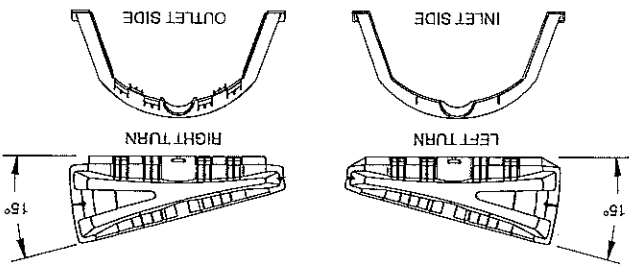
Size (W x L x H)

34" x 9.5" x 12"

High Capacity Wedge specifications

Size (W x L x H)

34" x 9.5" x 16"



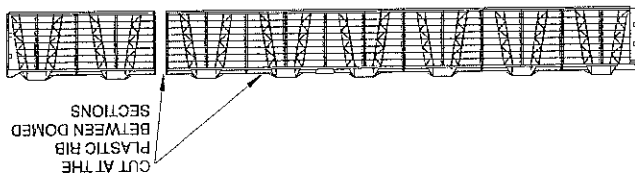
HIGH CAPACITY WEDGE

Site Constraints

Infiltrator Systems does not recommend the cutting of chambers. However, if chambers are cut to accommodate site constraints, the instructions below must be followed. Failure to follow the specific instructions below, releases Infiltrator of all liability or warranties.

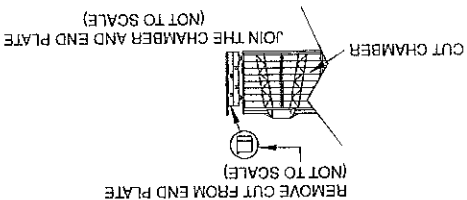
Cutting the Equalizer 24 Chambers

1. With a saw, cut the chambers between domed sections at the structural plastic rib as shown in the figure below.
2. When cutting any infiltrator chamber, do not cut across the middle of the louvers.



Cutting and Installing the Equalizer 24 End Plates

1. Cut off the back half of the top arc of the end plate.
2. The end plate will now fit snugly into the cut end of the chamber.
3. Secure the end plate with screws.



Note: If site constraints require cutting the EQ24 chamber in a loop system, a 1/4-inch hole saw must be used to cut an opening one inch from the bottom of the EQ24EM end plate.

Before You Begin

Materials and Equipment Needed

- Infiltrator Chambers
- End Plates
- 4" Diameter Pipe for Header and Inlet
- 4" Cap for Inspection Port
- Port Pipe*
- Backhoe
- Laser, Transit, or Level
- Shovel and Rake
- Hole Saw/Router Bit
- Screw Gun
- Tape Measure
- Utility Knife
- * Optional
- Bull Dozer*
- Small Valve-Cover Box*
- Spray Paint*
- String Line*
- Stakes (4)*
- Port Pipe*
- 2" Drywall Screws
- Only drive across the trenches when necessary.
- Never drive down the length of them.
- To avoid additional soil compaction, never drive heavy vehicles over the completed system.

These guidelines must be followed when using construction machinery on an infiltrator installation site.

This section is designed to provide installation instructions for infiltrator chambers. These chambers may only be installed according to state and/or local regulations. If unsure of the installation requirements for a particular site, be sure to contact your local regulator. Like conventional systems, the soil and site conditions must be approved for installation. Be sure that a thorough site evaluation is conducted to determine the proper sizing and siting of the system before proceeding with the installation.

Excavating and Preparing the Site

- Note: As is the case with conventional systems, do not install the system in wet conditions or if the soil is too moist which will cause 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/basins may be installed to protect the site during rainfall events.
 3. Excavate and level each trench to required width allowing for proper center-to-center separation. Make sure the trenches are level.
 4. Rake the bottom and sides if smearing has occurred while excavating. Remove any large stones and other debris. Do not use the teeth of the bucket to rake the trench bottom. Note: Raking to eliminate smearing is not necessary in sandy soils. In fine textured soils (silt and clays), avoid walking in the trench to prevent compacting and loss of soil structure.
 5. Verify that the trench is level using a level, transit, or laser.

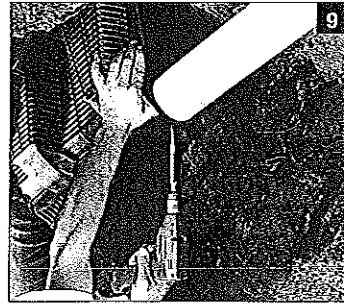
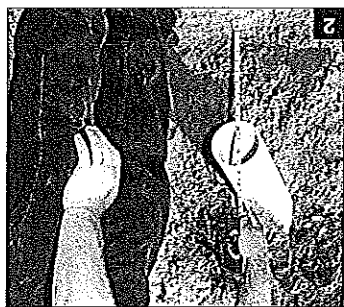
Attaching the End Plates

The end plates can be used on both ends of the chamber. The end plates have two sets of hubs; one set for each chamber end. Use them as guides to attach the end plates to the chamber. For details on end plates refer to page 3. Select the end plate appropriate for your soil conditions and the installation requirements.

1. With a hole saw or utility knife, cut an opening for the inlet pipe on one of the pre-marked circles on the end plate, depending on the size and type of pipe used. Pre-marked circles allow for 4" SDR35, 4" SCH40, and 2" pressure pipe. Note: The end plate is designed so the effluent will flow into it and spill out the opening on the other side. If not already provided, cut the necessary holes using the pre-marked guides.
2. Attach the end plate to the inlet end of the chamber by lining up the locking hubs with the corresponding chamber end. Applying firm pressure, lock the hubs in place on one side of the chamber and then the other. Optional: Insert 2" screws on either side of the inlet opening on the chamber flange. Tighten each screw until the end plate is firmly secured.
3. Attach a closed end plate onto the outlet end of the chamber by snapping the end plate's locking hubs onto the chamber end.

Installing the Chambers

1. Check the header pipe to be sure that it is level for level systems.
2. Set the inlet invert at the appropriate height from the bottom of the trench to the bottom of the inlet. Invert height will vary depending on which end plate is used. Precisely measure the invert on your end plate prior to setting the invert height.
3. Place the first chamber with its open end plate at the beginning of the trench.
4. Insert the inlet pipe into the end of the chamber. The pipe will only go into the unit 1" before reaching a stop.
5. Check the first chamber to be sure it is level.
6. Secure the inlet pipe to the end plate with a screw at the 12 o'clock position.



7. Lift and place the end of the next chamber onto the previous one by holding it upright at a 45-degree angle. Line up the hook on the center end of the chamber and lower it to the ground, engaging the interlocks.

8. Continue interlocking the chambers until the trench is complete. As the chambers are installed, verify that they are level.

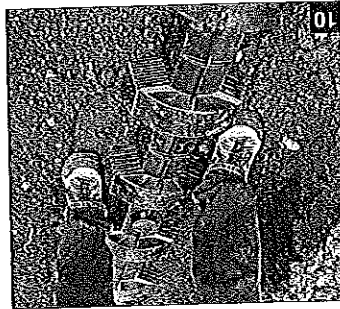
Note: Equalizer 24 chambers can angle left or right up to 10° per unit. This feature allows the chambers to follow the natural contour of the land for hilly or mountainous installations while maintaining a level trench bottom. Contours must be per design.

9. Fill the sidewall area to the top of the louvers by pulling fill (specified by code) from trench sides with a shovel. Be sure the fill covers the louvers.

Note: In bed systems, carefully place fill between chamber rows making sure not to dislodge the units. Do this by either laddling with the backhoe bucket or by hand with a shovel. Stakes may be used to stabilize the chamber feet.

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

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



Installing Optional Inspection Ports

High Capacity and Standard chambers require a 4-inch pipe for inspection ports. Equalizer 24 chambers use a 2-inch pipe.

1. Using a hole saw, create an opening in the pre-marked area located in the center of the chamber. Be sure to use a saw that matches the type of pipe being installed.
 2. Glue a 6" long PVC pipe into a 2" coupling.
 3. Insert the 6" piece of pipe into the opening at the top of the chamber so the coupling sits on top of the chamber.
 4. Insert another piece of pipe into the coupling and cut it at or above grade.
 5. Attach a cap or threaded cleantout assembly onto the protruding pipe.
 6. A small valve-cover box may be used if the inspection port is below the desired grade.
- Note: Inspection ports may also be used for venting.

Covering the System

Before backfilling, the system must be inspected by a health or regulatory official as required by state and local codes. Create an as-built drawing of the system at this time, showing the location of the home, tank, d-box and trenches, with dimensions to each.

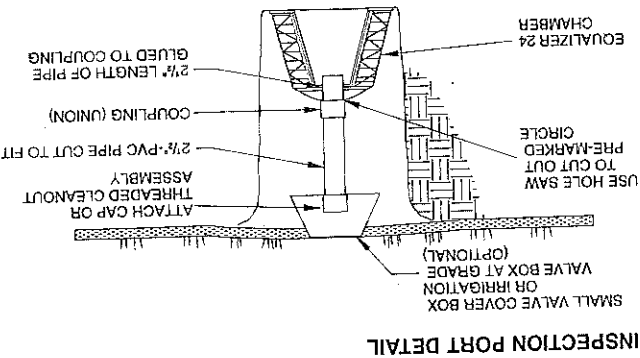
1. Backfill the trench by pushing the cover onto the units perpendicular to the chambers with a backhoe or small track dozer. Keep a minimum of 12" of compacted cover over the chambers before driving over the system.

Note: Do not drive over the system while backfilling in sand, since sand does not give adequate support.

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

Note: For bed systems, backfill the bed by pushing the cover onto the units parallel to the chambers with a small track dozer. Keep a minimum of 12" of compacted cover over the chambers. No wheeled machinery is allowed on top of the bed during backfilling.

Note: For use in under traffic applications contact Infiltrator systems for specific design sheet.





JOHN ELIAS BALDCCI
GOVERNOR

STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
DIVISION OF HEALTH ENGINEERING
11 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0011

April 14, 2004

JOHN R. NICHOLAS
ACTING COMMISSIONER

Infiltrator Systems, Inc.
Attn: Stephen P. Minor, Sales Representative
4303 Vineland Road, Suite F1
Orlando, FL 32811

Subject: Design and Installation Manual, High Capacity Sidewinder, Standard Sidewinder, and EQ-24 Chambers

Dear Mr. Minor:

Thank you for your letter dated March 22, 2004 regarding a revised Design and Installation Manual (Manual) for your company's products. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules).

Product Description

The High Capacity Sidewinder, Standard Sidewinder, and EQ-24 Chambers consists of plastic chambers with lowered sides. The High Capacity Sidewinder, Standard Sidewinder, and EQ-24 Chambers is designed for use with conventional onsite sewage disposal areas and drip irrigation disposal areas.

Determination

On the basis of the information submitted, the Division has determined that the revised Manual for your company's products, specifically the High Capacity Sidewinder, Standard Sidewinder, and EQ-24 Chambers, meets the requirements of the Subsurface Wastewater Disposal Rules.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of High Capacity Sidewinder, Standard Sidewinder, and EQ-24 Chambers. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

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

Sincerely,

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

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TTY: (207) 287-2070

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OFFICE: 161 CAPITOL STREET

xc: Product File

/faj



Maine Limited Septic Warranty for Infiltrator Chambers

(a) The structural integrity of each chamber, end plate, wedge and other accessory manufactured by infiltrator (collectively referred to as "Units"), when installed and operated in a leachfield of an onsite septic system in accordance with infiltrator's installation instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date upon which a septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required for the septic system by applicable law, the ten (10) year warranty period will begin upon the date that installation of the septic system commences. In order to exercise its warranty rights, Holder must notify infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for those Units determined by infiltrator to be defective and covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

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

(c) This Limited Warranty shall be void if any part of the chamber system (chamber, end plate, wedge or other accessory) is manufactured by anyone other than infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper sifting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty.

Further, in no event shall infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and infiltrator's installation instructions.

(d) No representative of infiltrator has the authority to change this Limited Warranty in any manner whatsoever, or to extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the standard Limited Warranty offered by infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact infiltrator's corporate headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



Environmental Onsite Wastewater SolutionsSM

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1-800-221-4436

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; 5,888,778; 5,839,844 Canadian Patent: 1,329,959; 2,004,564 Other patents pending.
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