



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

John E. Baldacci, Governor

Brenda M. Harvey, Commissioner

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

January 8, 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 Endcap installed at end of chamber row - 1.1 square feet/end cap or 2.2 square feet/pair of end caps.
- Quick 4 Equalizer 24 LP - 2.9 square feet.

On the basis of the information you provided, the Division has determined that the above-listed Infiltrator Quick 4 chambers are acceptable for use in the State of Maine, provided that they are installed, operated, and maintained in conformance with the manufacturer's directions and the sizing table above.

This letter supersedes the letter dated 01/08/10.

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 Infiltrator Quick 4 Plus 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.

Sincerely,

A handwritten signature in cursive script that reads "James A. Jacobsen". The signature is written in black ink and is positioned to the right of the word "Sincerely,".

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

/jaj

xc: Product File



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January 8, 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 High Capacity, Low Profile, and Standard; Quick 4 Plus Equalizer 24; and Quick 4 Plus Equalizer 36 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 chambers consist of Infiltrator four foot long plastic chambers, with minor design changes, and a new low profile version. The design for the two end cap versions results in a semi-circular footprint with a corresponding increase in usable bottom and sidewall areas and storage volume. According to the information you provided, the Infiltrator Quick 4 Plus chambers have the following effective infiltrative surface areas:

Product	Without End Cap, Trench	Without End Cap, Cluster	With End Cap (per pair)
Quick 4 Plus Standard	7.0 square feet/linear foot	5.8 square feet/linear foot	9.2 square feet
Quick 4 Plus High Capacity	8.0 square feet/linear foot	5.8 square feet/linear foot	12.0 square feet
Quick 4 Plus Low Profile	7.0 square feet/linear foot	5.8 square feet/linear foot	9.2 square feet
Quick 4 Plus Equalizer 24	4.0 square feet/linear foot	4.0 square feet/linear foot	4.6 square feet
Quick 4 Plus Equalizer 36 & 36 Low Profile	5.2 square feet/linear foot	3.7 square feet/linear foot	6.4 square feet

On the basis of the information you provided, the Division has determined that the Infiltrator Quick 4 Plus chambers are acceptable for use in the State of Maine, provided that they are installed, operated, and maintained in conformance with the manufacturer's directions and the sizing table above.

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 Infiltrator Quick 4 Plus 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.

Sincerely,

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

/jaj
 xc: Product File



INFILTRATOR® systems inc.

December 1, 2009

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: Request for Approval
Quick4 Plus Standard Chamber
Quick4 Plus Standard Low Profile (LP) Chamber
Quick4 Plus Equalizer 36 Low Profile (LP) Chamber

Dear Mr. Jacobsen,

Infiltrator Systems, Inc. (Infiltrator) has modified the design of the approved Quick4 Standard and Quick4 Equalizer 36 (Quick4 EQ36) model chambers. The design modifications have resulted in two versions of the Quick 4 Standard chamber and one version of the Quick4 EQ36 chamber, as described in detail below. Infiltrator requests approval of the three new chamber designs when used in accordance with 10-144 CMR 241.

Summary of Chamber Design Modifications

Infiltrator has created modified chamber designs from the design of the approved Quick4 Standard and Quick4 EQ36 chambers. While the basic functions of the redesigned chambers remain the same as the approved Quick4 Standard and Quick4 EQ36 chambers, certain features have been modified to provide improved performance. The names of the proposed chamber models are shown below, along with a summary of product attributes.

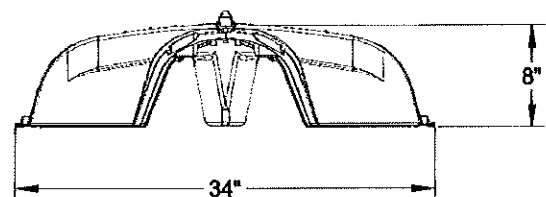
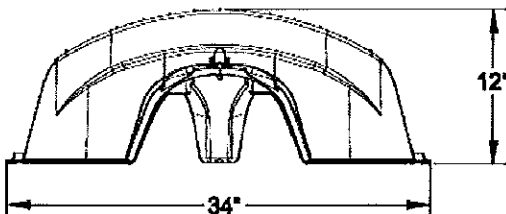
Quick4 Standard chamber design modifications:

Name: Quick4 Plus Standard Chamber

- 12 inches tall – same height as Quick4 Standard
- 34 inches wide – same width as Quick4 Standard
- 1 internal columnar support – new feature
- Increased open bottom area vs. Quick4 Standard
- Increased open sidewall area vs. Quick4 Standard

Name: Quick4 Plus Standard Low Profile Chamber

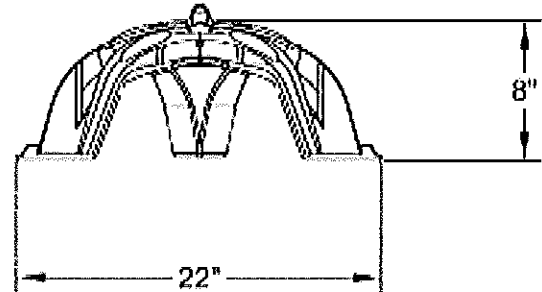
- 8 inches tall vs. 12-inch-high Quick4 Standard
- 34 inches wide – same width as Quick4 Standard
- 4 internal columnar supports – new feature
- Increased open bottom area vs. Quick4 Standard
- Equal open sidewall area vs. Quick4 Standard



Quick4 EQ36 chamber design modifications:

Name: Quick4 Plus Equalizer 36 Low Profile Chamber

- 8 inches tall vs. 12-inch-high Quick4 Equalizer 36
- 22 inches wide – same nominal width as Quick4 Equalizer 36
- 2 internal columnar supports – new feature
- Equal open bottom area as Quick4 Equalizer 36
- Similar open sidewall area as Quick4 Equalizer 36



Summary of Design Modifications

The chamber modifications include a number of improvements over the previously approved chambers. Illustrations and images of the Quick4 Plus Standard, Quick4 Plus Standard Low Profile (LP), and Quick4 Plus EQ36 Low Profile (LP) chambers and endcaps, as referenced below, are included in Attachment 1. A summary of modifications is provided below.

- 1. Increased open bottom area** – The open bottom area of the new Quick4 Plus Standard and Quick4 Plus Standard LP chambers has increased compared to the approved Quick4 Standard chamber, providing more trench bottom area for the absorption of wastewater. The open bottom area of the Quick4 Plus EQ36 LP is equal to the open bottom area of the approved Quick4 EQ36 chamber.
- 2. Functionally equivalent sidewalls** – The Quick4 Plus Standard, Quick4 Plus Standard LP, and Quick4 Plus EQ36 LP chambers provide sidewall open areas that are equal to or greater than the sidewall open areas of the approved chamber designs. This ensures that adequate open sidewall is available for the flow of wastewater to the soil.
- 3. Reduced vertical profile** – The 8-inch-high Quick4 Plus Standard LP and Quick4 Plus EQ36 LP chambers provide a lower vertical profile than the approved Quick4 Standard and Quick4 EQ36 chambers, respectively. This feature provides two distinct benefits.
 - *Promotion of aerobic treatment* – The reduced vertical profile moves infiltration closer to the ground surface, thereby improving the potential for subsoil reaeration 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 United States Environmental Protection Agency (USEPA) *Onsite Wastewater Treatment Systems Manual* (EPA/625/R-00/008, 2002) addresses absorption system height within the soil profile. The USEPA indicates that a 6-inch-high sidewall is typically sufficient for a porous aggregate system. Like the originally approved Infiltrator Standard chamber, the Quick4 Plus Standard LP chamber has a louvered sidewall height of approximately 6 inches (6.3-inch actual height). The Quick4 Plus EQ36 LP chamber also provides a 6.3-inch-high sidewall.
 - *Increased vertical separation* – For a drainfield situated where a shallow groundwater table, impervious conditions, or other restrictions limit vertical separation distance, the reduced height of the Quick4 Plus Standard LP or Quick4 Plus EQ36 LP chamber increases separation distance. This provides more soil that can contribute to wastewater treatment between the infiltrative surface and limiting condition.
- 4. Augmented structural design** – All three new chamber designs develop their structural capacity from a combination of support on the chamber “feet” and new interior, integral load-bearing support column system.
- 5. Reduced soil cover requirements** – As a result of the augmented structural design, the new designs can be installed with just 6 inches of soil in shallow-cover applications.

6. Multi-use endcap designs – Two end cap designs provide increased flexibility in how a chamber absorption system can be configured using any of the three Infiltrator Quick4 Plus chamber designs. These end caps are compatible with all three new chambers.

- *Quick4 Plus All-in-One Endcap* – Endcap 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 Endcap* - Endcap is installed at the end of the chamber and allows installation of a pipe from the end only. This endcap does not provide side-inletting capability. Pipe connection options include drill points for gravity or pressure pipe.

Table 1 includes a comparison of the proposed new chamber designs to the approved chambers.

Product	Width (in)	Height (in)	Lay Up Length (ft)	Invert Height (in)	Slidewall Height (in)
Standard chamber models					
Quick4 Plus Standard	34	12	4	3.3	8
Quick4 Plus Standard LP	34	8	4	3.3	6.3
Quick4 Standard	34	12	4	8	8
Standard	34	12	6.25	6	6
Equalizer 36 chamber models					
Quick4 Plus EQ36 LP	22.6	8	4	3.3	6.3
Quick4 EQ36	22.8	12.5	4	6	10

Table 1. Product nominal dimension comparison

Like the other approved Quick4 model chambers, the Quick4 Plus Standard, Quick4 Plus Standard LP, and Quick4 Plus EQ36 LP chamber models articulate 10 degrees in either direction from the chamber centerline, allowing for installation of the products around obstructions or in a manner that follows the contour of the land along a sloped surface.

Structural Design and Cover Requirements

The structural design of the three new chambers has been augmented, where the load-resisting capacity is developed from a combination of: 1) bearing on the "feet" at the periphery of the chamber; and 2) the interior load-bearing integral support column system. The column system is situated along the centerline of the chamber, providing mid-span load-carrying support. The support system is a molded component of the chamber and cannot be removed without cutting the product.

All three modified chamber designs are capable of withstanding the American Association of State Highway Transportation Officials (AASHTO) H-10 (16,000 lb. axle load) load with 12 inches of soil cover. In a shallow cover installation (6 inches of soil cover); the chambers are capable of supporting an axle load of 11,700 pounds, which is the equivalent of a backhoe axle load. Attachment 2 includes structural reports documenting the capacity of chambers under both loading conditions.

Approval Request

Infiltrator requests approval of the Quick4 Plus Standard, Quick4 Plus Standard LP, and Quick4 Plus EQ36 LP chambers at the same rating as approved for the Quick4 chamber line. The July 26, 2005 approval letter for the Quick4 chambers is provided in Attachment 3. The table below provides the requested sizing, which matches the approved Quick 4 sizing.

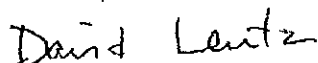
Product	Trench (sf/lf)	Cluster (sf/lf)
Quick4 Plus Standard	7	5.8
Quick4 Plus Standard LP	7	5.8
Quick4 Plus EQ36 LP	5.2	3.7

Because the end cap system for the Quick4 Plus All-in-One chambers has a variety of uses, the proposed ratings are provided on a per end cap basis below.

- Quick4 Plus All-in-One Endcap installed at end of chamber row
 - $13.3" \times 17.83" / (144 \text{ sq in/sf} \times 0.57 \text{ sizing multiplier}) = 2.9 \text{ sf/end cap}$
- Quick4 Plus All-in-One Endcap installed mid-line in chamber row
 - $10.4" \times 17.83" / (144 \text{ sq in/sf} \times 0.57 \text{ sizing multiplier}) = 2.2 \text{ sf/end cap}$
- Quick4 Plus Endcap installed at end of chamber row
 - $4.5" \times 17.83" / (144 \text{ sq in/sf} \times 0.57 \text{ sizing multiplier}) = 1.0 \text{ sf/end cap}$

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

Sincerely,



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

cc: Blake Johnston, Infiltrator Systems Inc.

Attachment 1

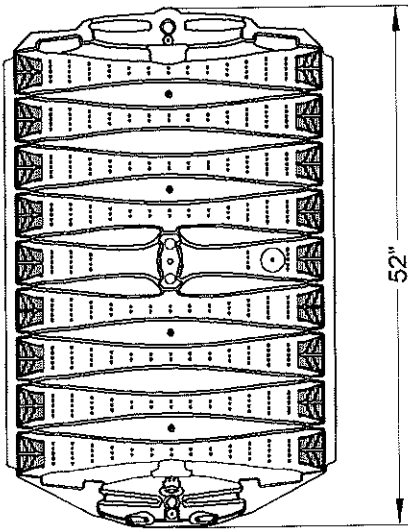
Product Illustrations and Images

Attachment 1-1

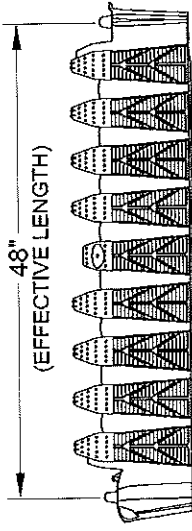
Product Illustrations and Images
Quick4 Plus Standard Chamber

QUICK4 PLUS STANDARD

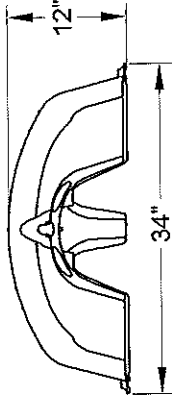
TOP VIEW



FRONT VIEW

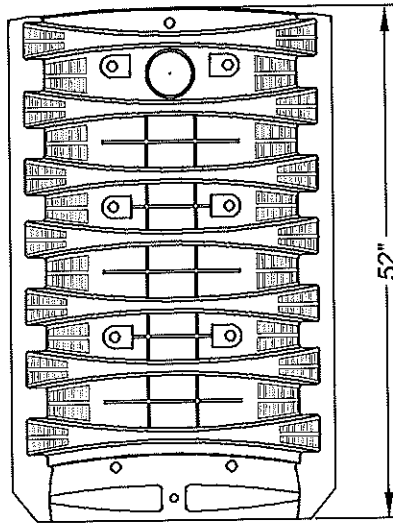


SIDE VIEW

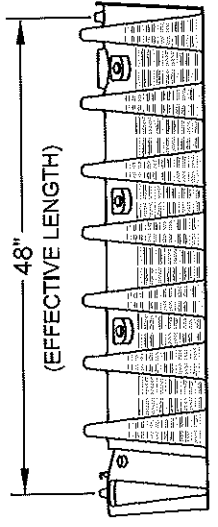


QUICK4 STANDARD CHAMBER

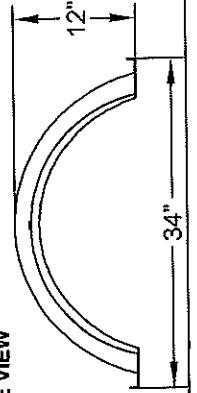
TOP VIEW



FRONT VIEW



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	2.45 SF/LF	2.27 SF/LF
OPEN SIDEWALL AREA (minimum)	0.20 SF/LF	0.20 SF/LF
OPEN SIDEWALL AREA (AOR*)	0.62 SF/LF	0.56 SF/LF

* As measured along the soil Angle Of Repose

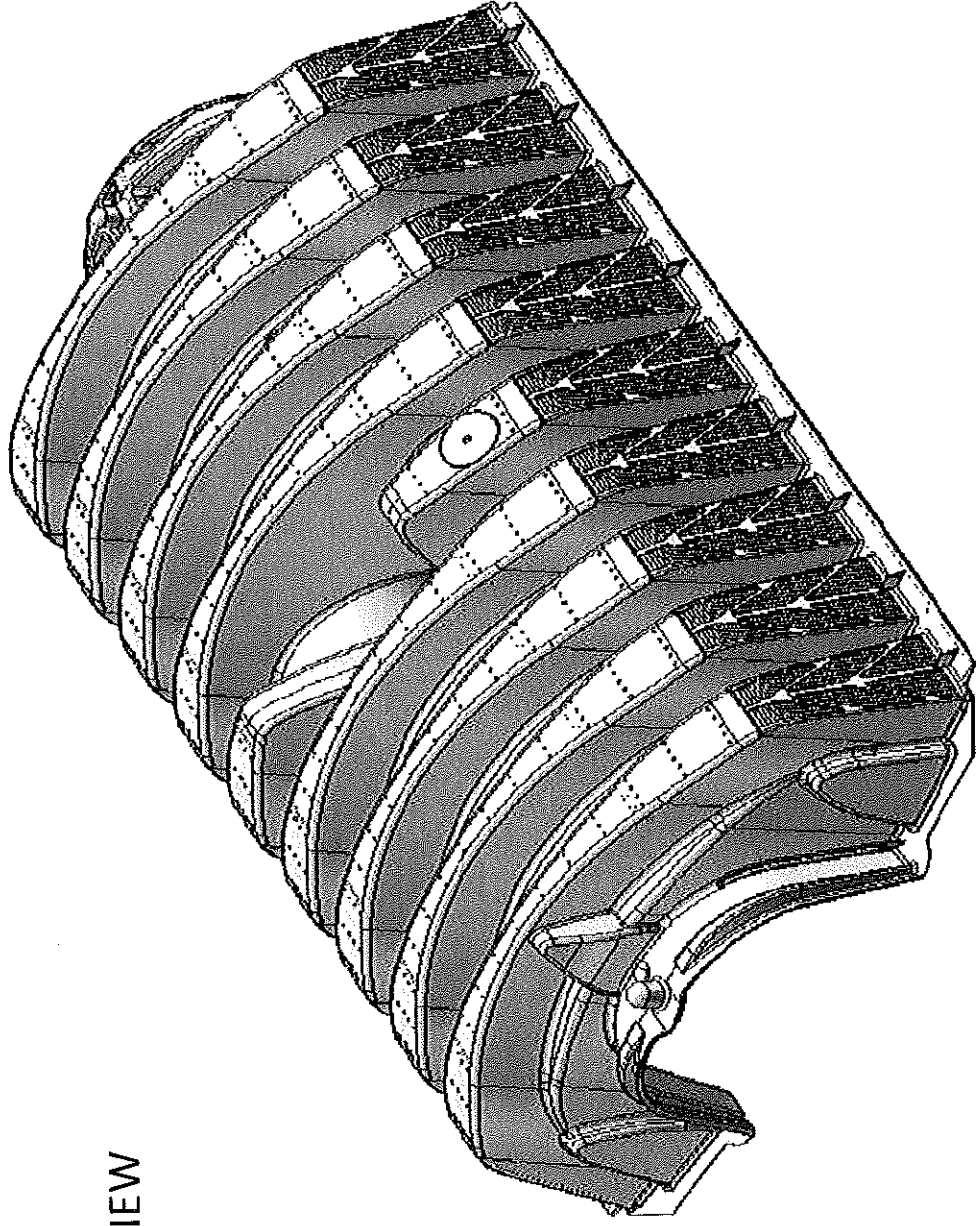
INFILTRATOR SYSTEMS, INC.
 6 BUSINESS PARK ROAD
 P.O. BOX 768
 OLD SAYBROOK, CT 06475
 PH. (800) 221-4436
 FX. (860) 577-7001
 WWW.INFILTRATORSYSTEMS.COM

INFILTRATOR SYSTEMS
 PRODUCT COMPARISON
 QUICK4 PLUS STANDARD &
 QUICK4 STANDARD

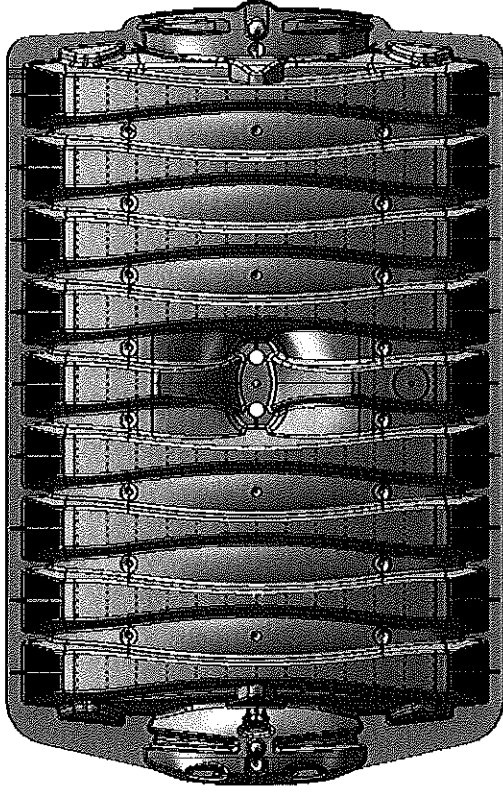
Scale NOT TO SCALE
 Date 9/29/2009
 Drawn By: RWD
 Checked DFH
 ACAD No.
 Sheet 1 Of 1

QUICK4 PLUS STANDARD

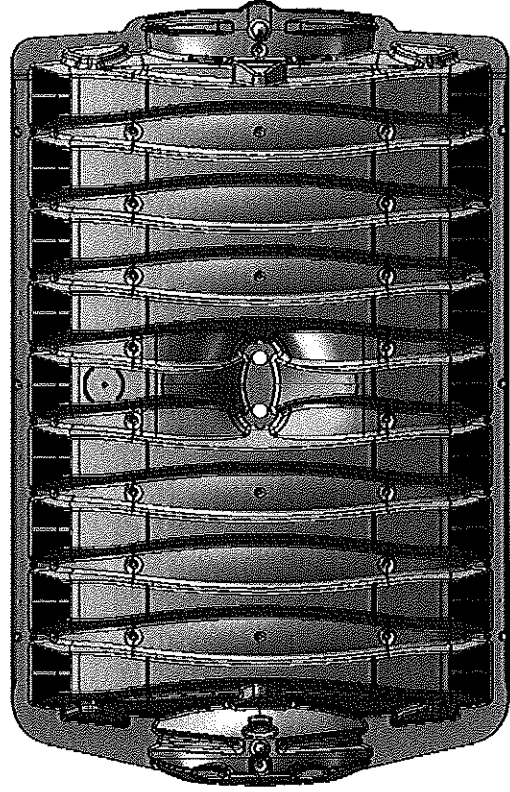
ISOMETRIC VIEW



QUICK4 PLUS STANDARD



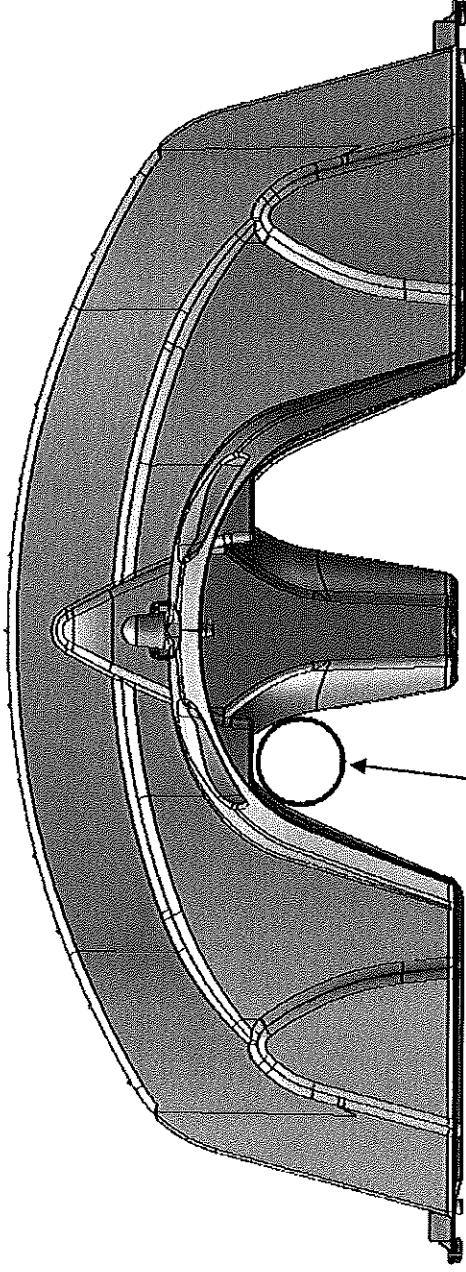
TOP VIEW



BOTTOM VIEW

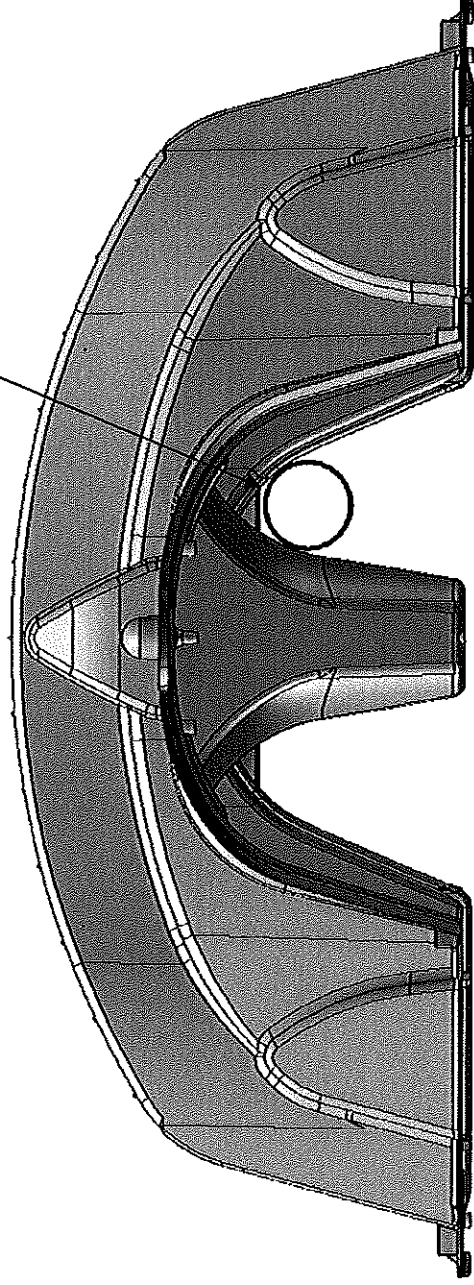
QUICK4 PLUS STANDARD

INLET



2" PRESSURE DOSING OPTION

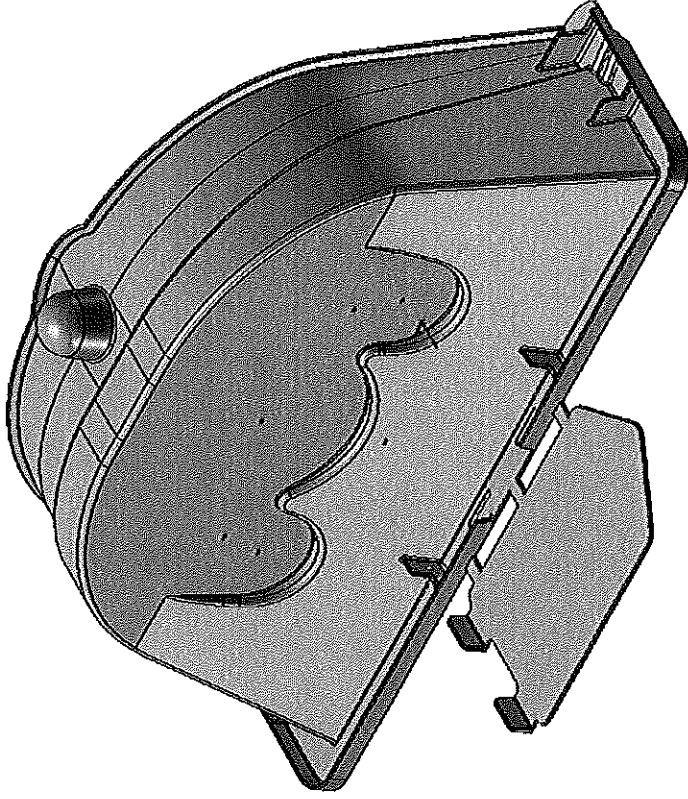
OUTLET



QUICK4 PLUS STANDARD – ENDCAP OPTIONS

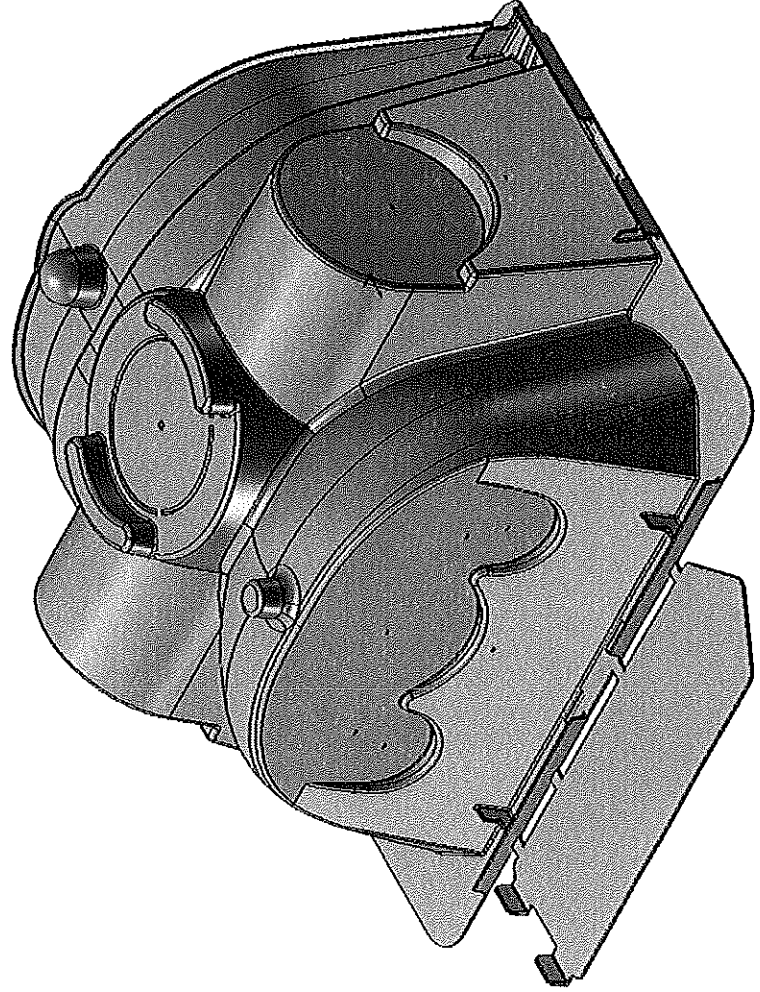
The *Quick4 Plus All-in-One Endcap* is compatible with the Quick4 Plus chamber product line, including:

- Quick4 Plus Standard chamber
- Quick4 Plus Standard LP chamber



QUICK4 PLUS ENDCAP

QUICK4 PLUS ALL-IN-ONE ENDCAP

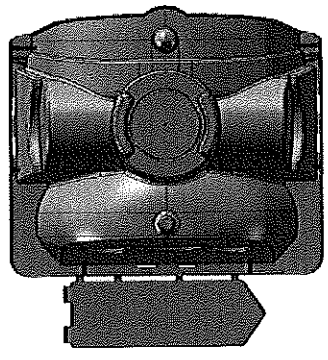
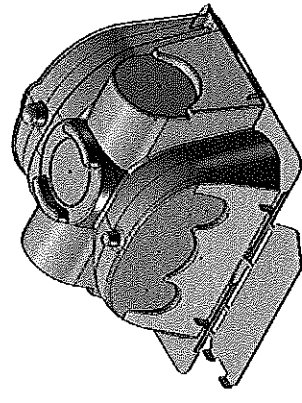




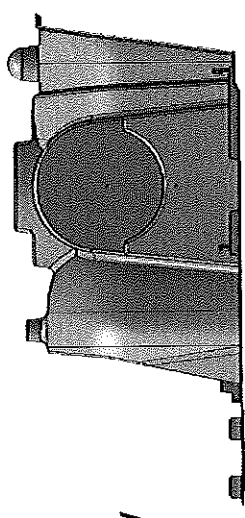
QUICK4 PLUS ALL-IN-ONE ENDCAP

The *Quick4 Plus All-in-One Endcap* 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 (see next page).

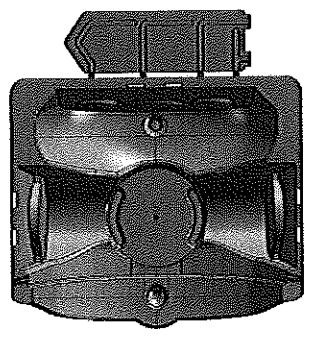
Pipe connection options include the end (drill points for gravity or pressure pipe), sides, or top.



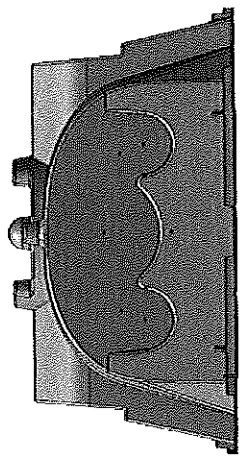
TOP VIEW



SIDE VIEW



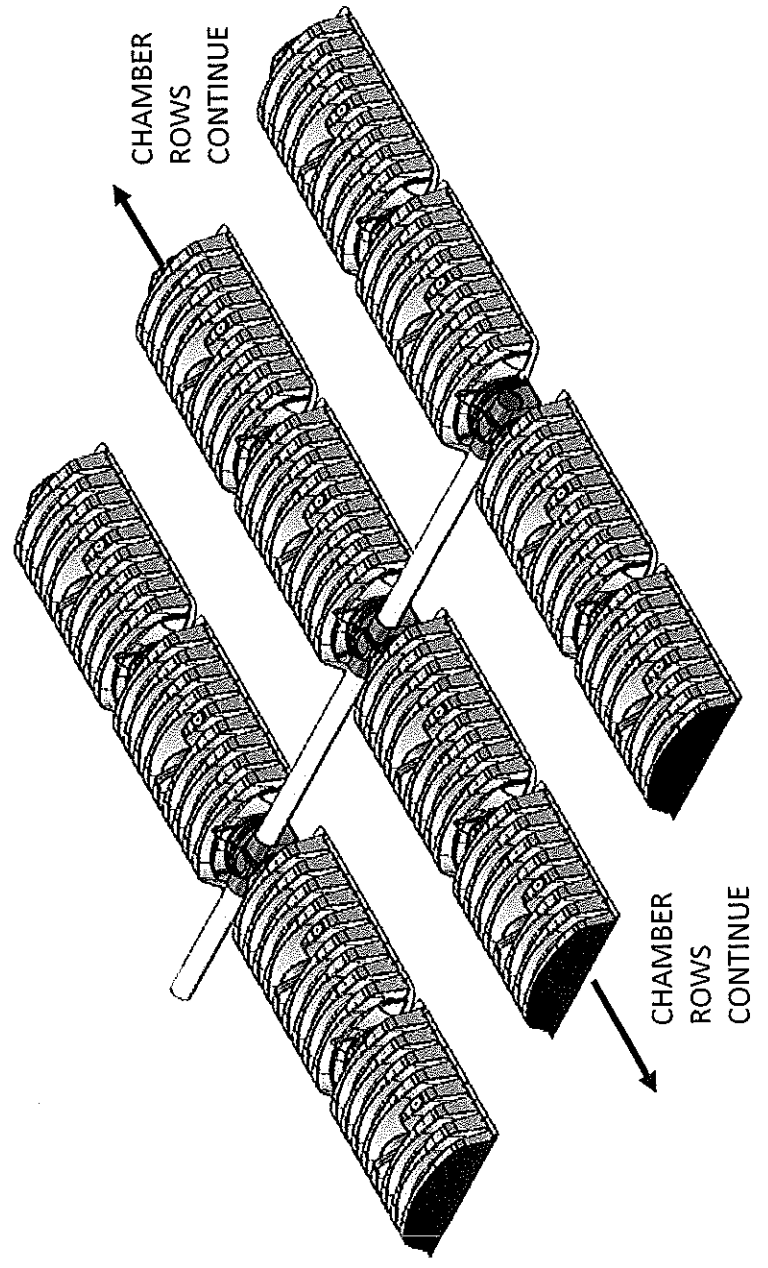
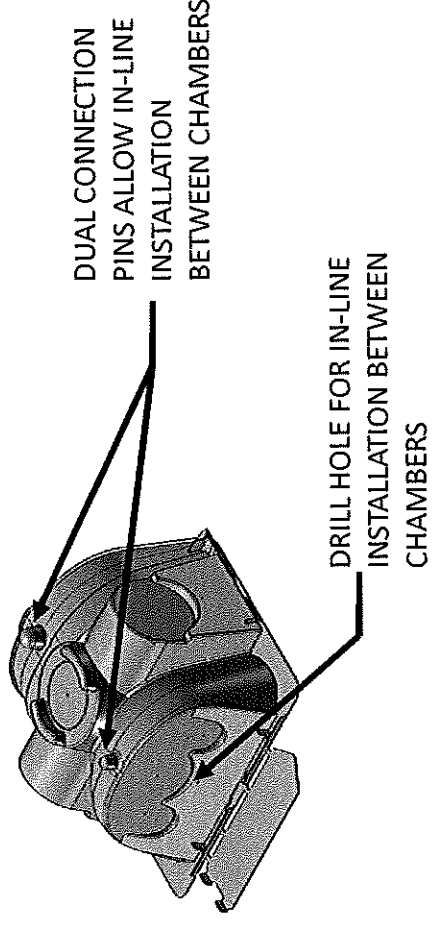
BOTTOM VIEW



END VIEW

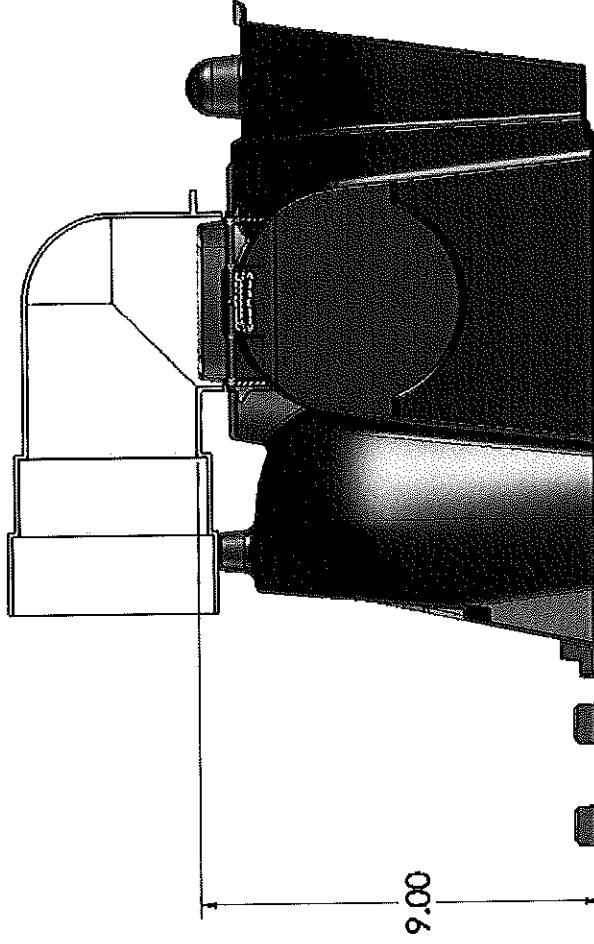
QUICK4 PLUS ALL-IN-ONE ENDCAP

The *Quick4 Plus All-in-One Endcap* may be used in-line with chambers to construct a center-fed wastewater dispersal system, as shown below. The end caps can also be installed on the end of the chamber for end-fed configurations.



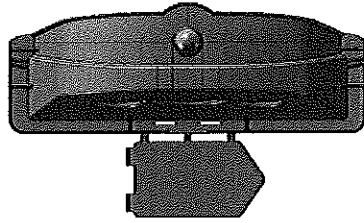
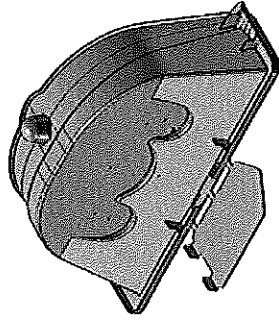
QUICK4 PLUS ALL-IN-ONE ENDCAP – TOP INLETTING

The top of the *Quick4 Plus All-in-One Endcap* may be used as the inletting point. The configuration shown below ensures that the entire louvered sidewall of the *Quick4 Plus Standard chamber* (8-inch-high sidewall) is available for wastewater infiltration. The inlet piping system connected to the end cap is manufactured by Infiltrator, and this device attaches to the end cap via a snap coupler system.

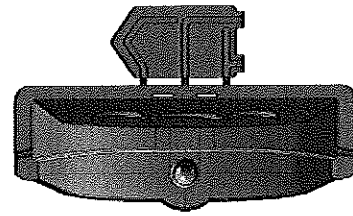


QUICK4 PLUS ENDCAP

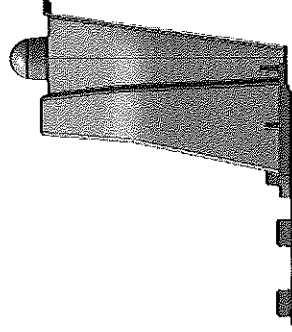
The *Quick4 Plus Endcap* is installed at the end of the chamber and allows installation of a pipe from the end only. This endcap does not provide side-inletting capability. Pipe connection options include drill points for gravity or pressure pipe.



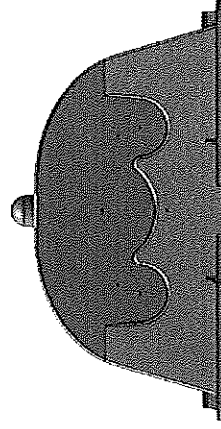
TOP VIEW



BOTTOM VIEW

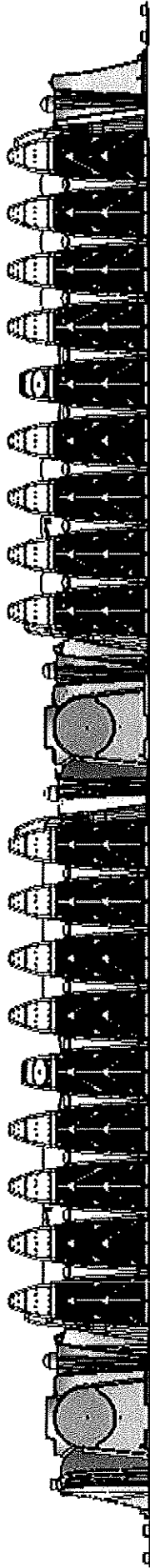


SIDE VIEW



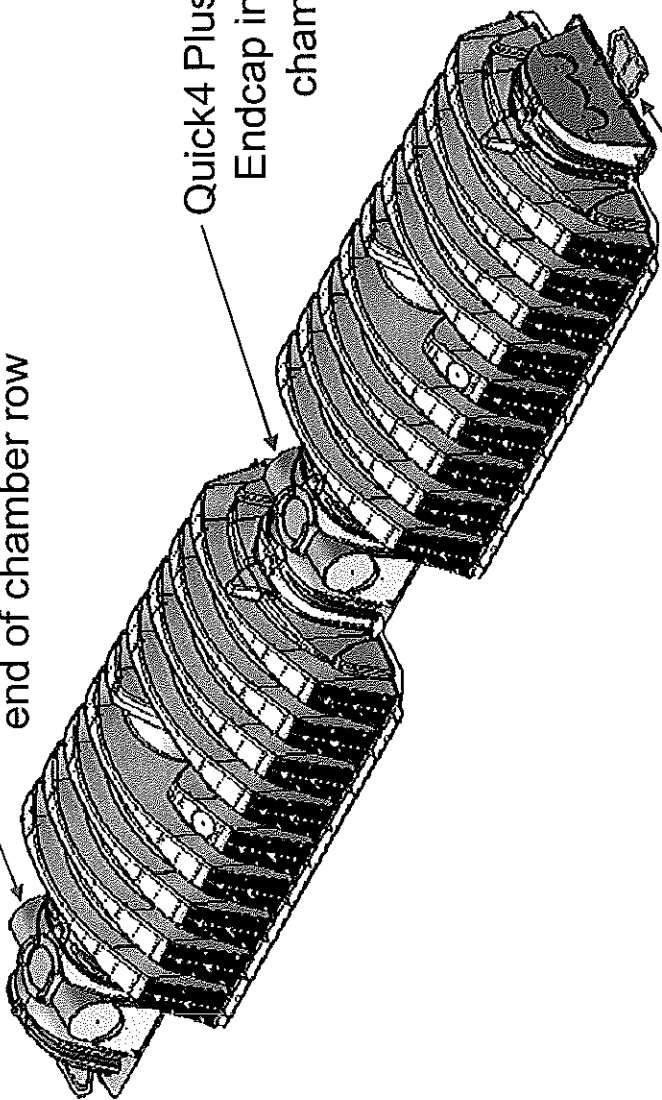
END VIEW

QUICK4 PLUS ENDCAP APPLICATION



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

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



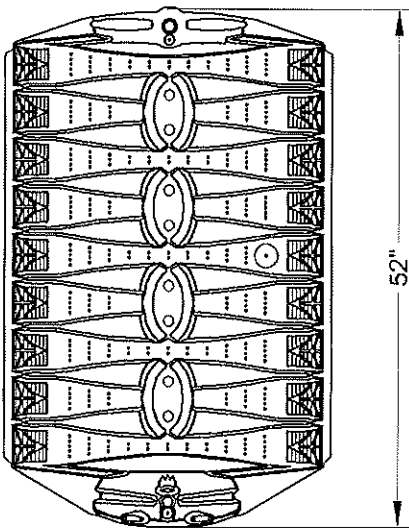
Quick4 Plus Endcap at end of
chamber row

Attachment 1-2

Product Illustrations and Images
Quick4 Plus Standard Low Profile Chamber

QUICK4 PLUS STANDARD LOW PROFILE CHAMBER

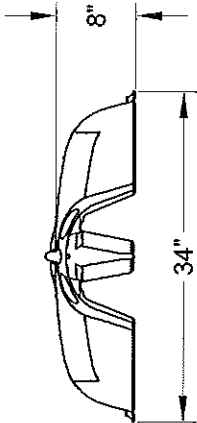
TOP VIEW



FRONT VIEW

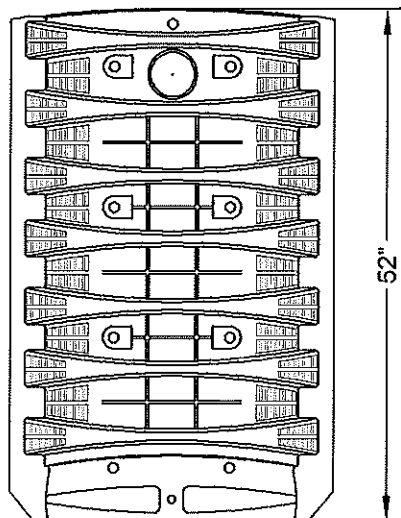


SIDE VIEW

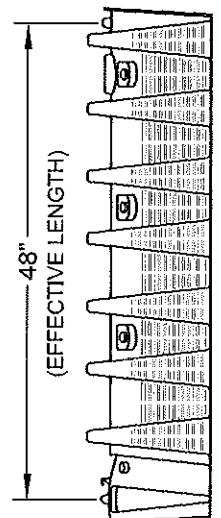


QUICK4 STANDARD CHAMBER

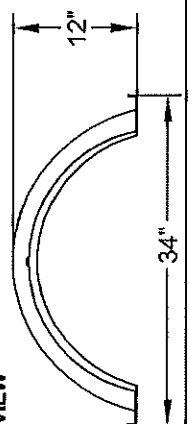
TOP VIEW



FRONT VIEW



SIDE VIEW



CHAMBER SPECIFICATIONS

FEATURES	QUICK4 PLUS STANDARD LP CHAMBER	QUICK4 STANDARD CHAMBER
OVERALL LENGTH	52.0 INCHES	52.0 INCHES
EFFECTIVE LENGTH	48.0 INCHES	48.0 INCHES
OVERALL HEIGHT	8.0 INCHES	12.0 INCHES
OVERALL WIDTH	34.0 INCHES	34.0 INCHES
OPEN BOTTOM AREA	2.44 SF/LF	2.27 SF/LF
OPEN SIDEWALL AREA (minimum)	0.20 SF/LF	0.20 SF/LF
OPEN SIDEWALL AREA (AOR*)	0.44 SF/LF	0.56 SF/LF

* As measured along the soil Angle Of Repose

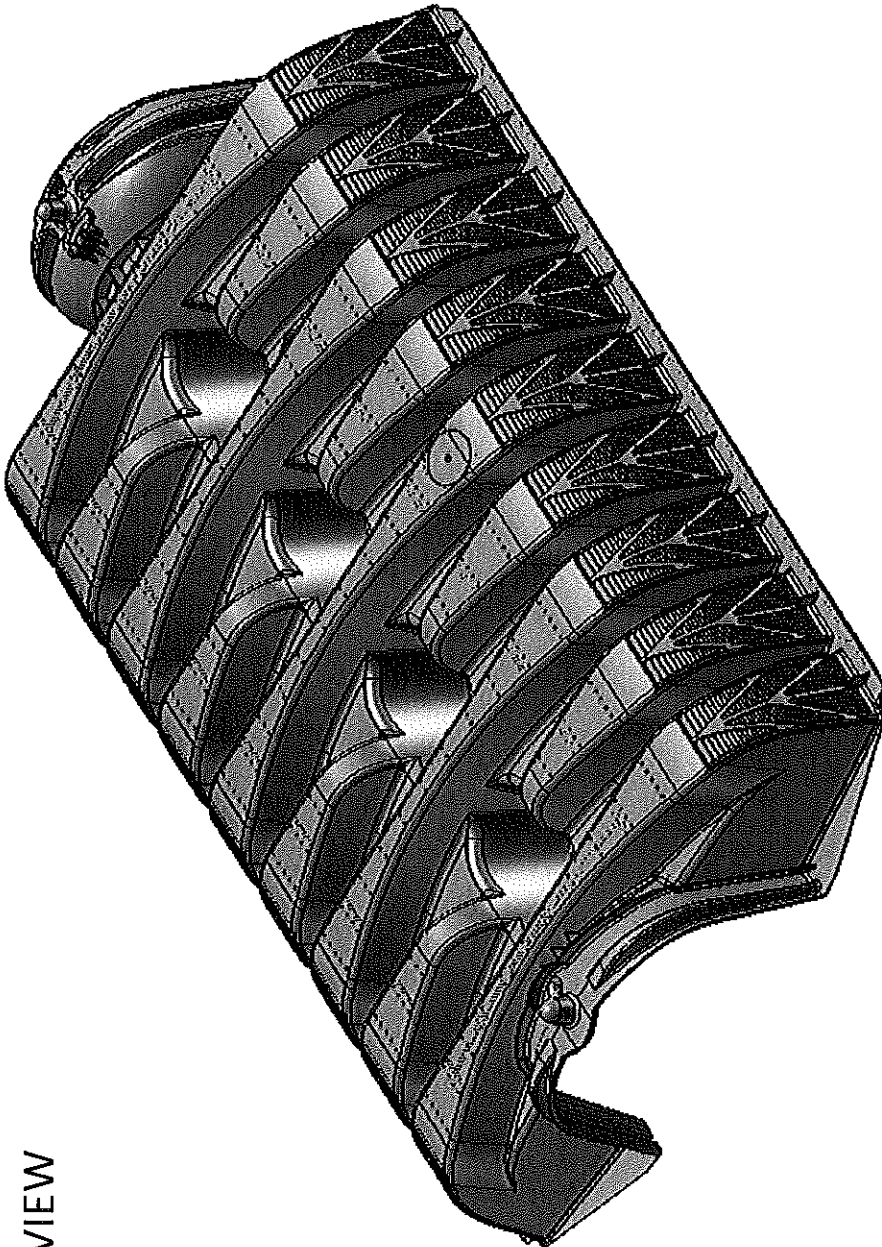
INFILTRATOR SYSTEMS, INC.
 6 BUSINESS PARK ROAD
 P.O. BOX 768
 OLD SAYBROOK, CT 06475
 PH. (800) 221-4436
 FX. (860) 577-7001
 WWW.INFILTRATORSYSTEMS.COM

INFILTRATOR SYSTEMS
 PRODUCT COMPARISON
 QUICK4 PLUS STANDARD LP
 & QUICK4 STANDARD

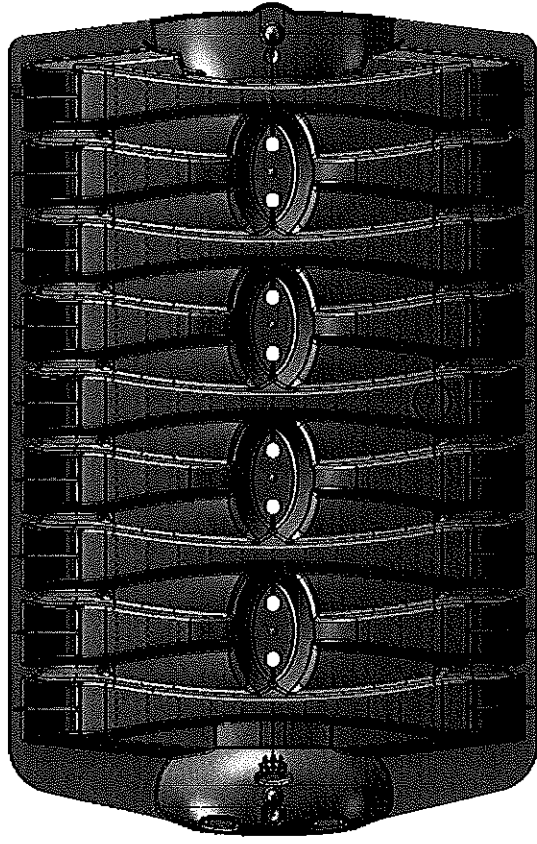
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 Date 11/9/2009 ACAD No.
 Drawn By: RWD Sheet 1 Of 1

QUICK4 PLUS STANDARD LP

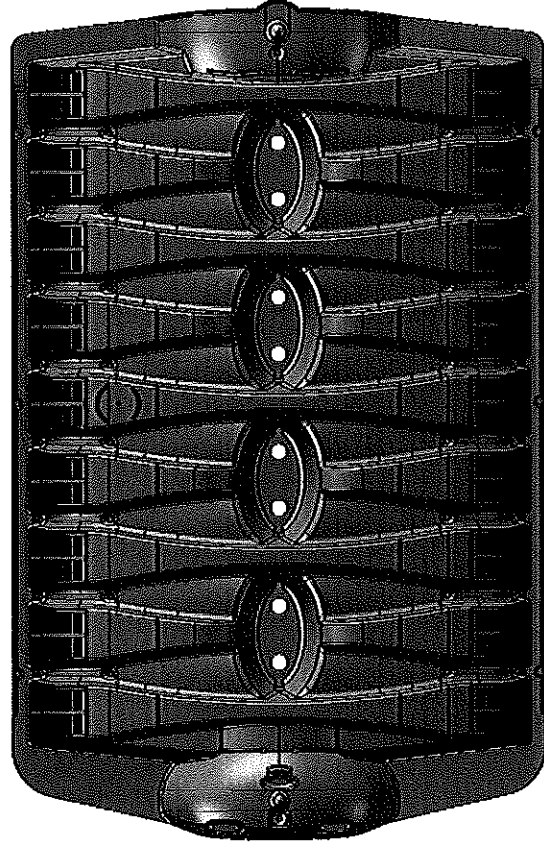
ISOMETRIC VIEW



QUICK4 PLUS STANDARD LP



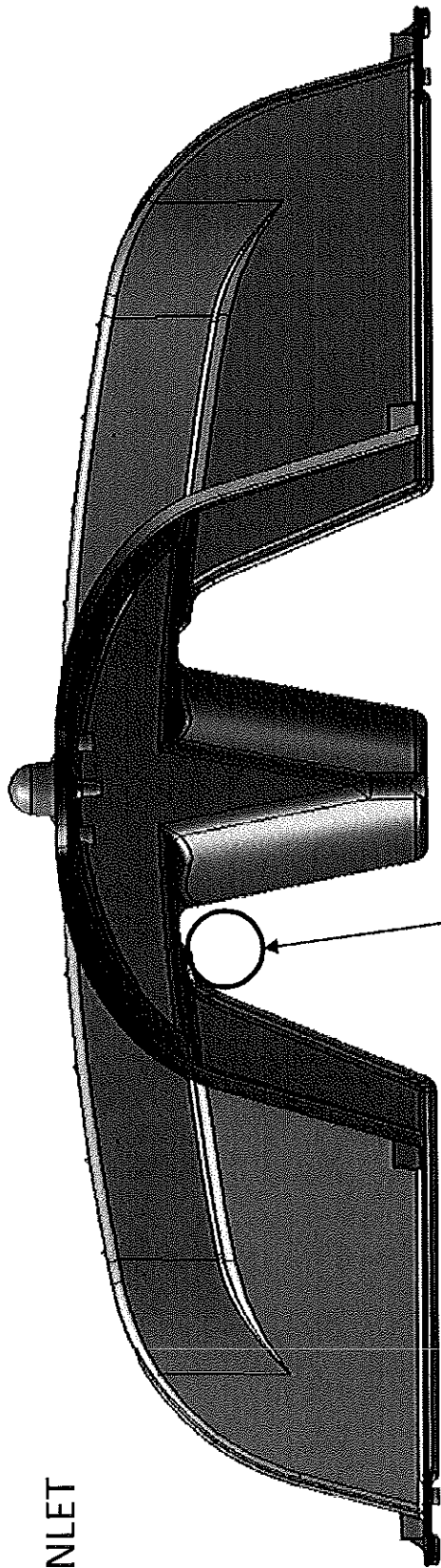
TOP VIEW



BOTTOM VIEW

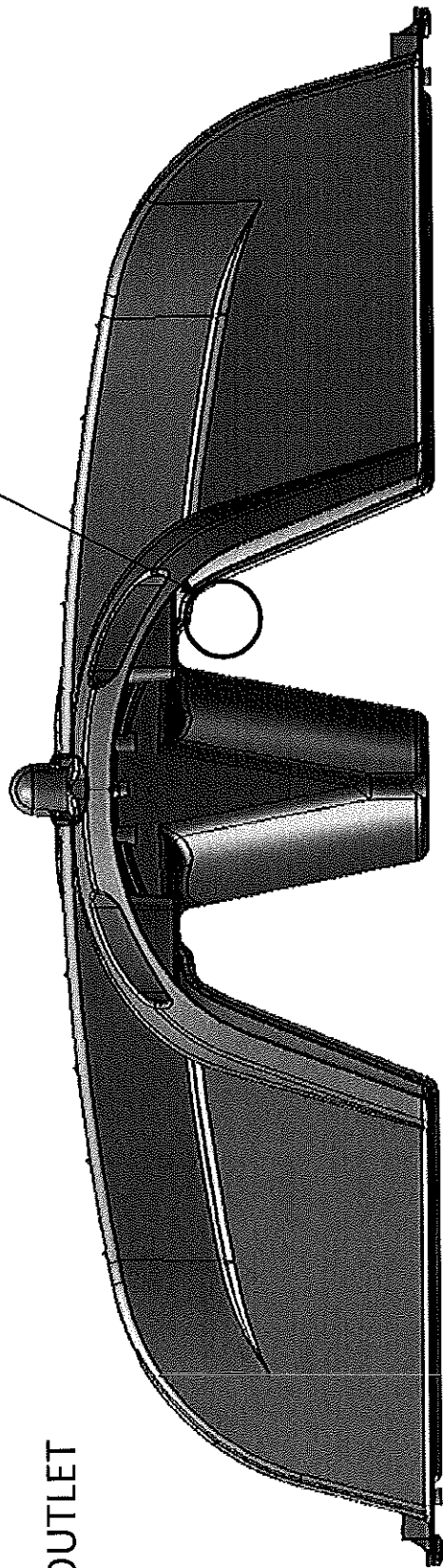
QUICK4 PLUS STANDARD LP

INLET



2" PRESSURE DOSING OPTION

OUTLET

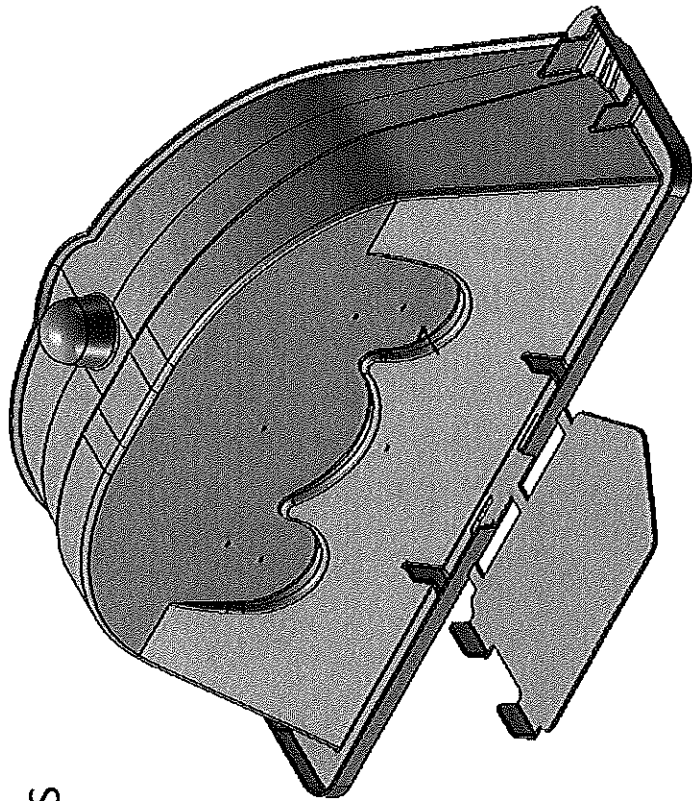
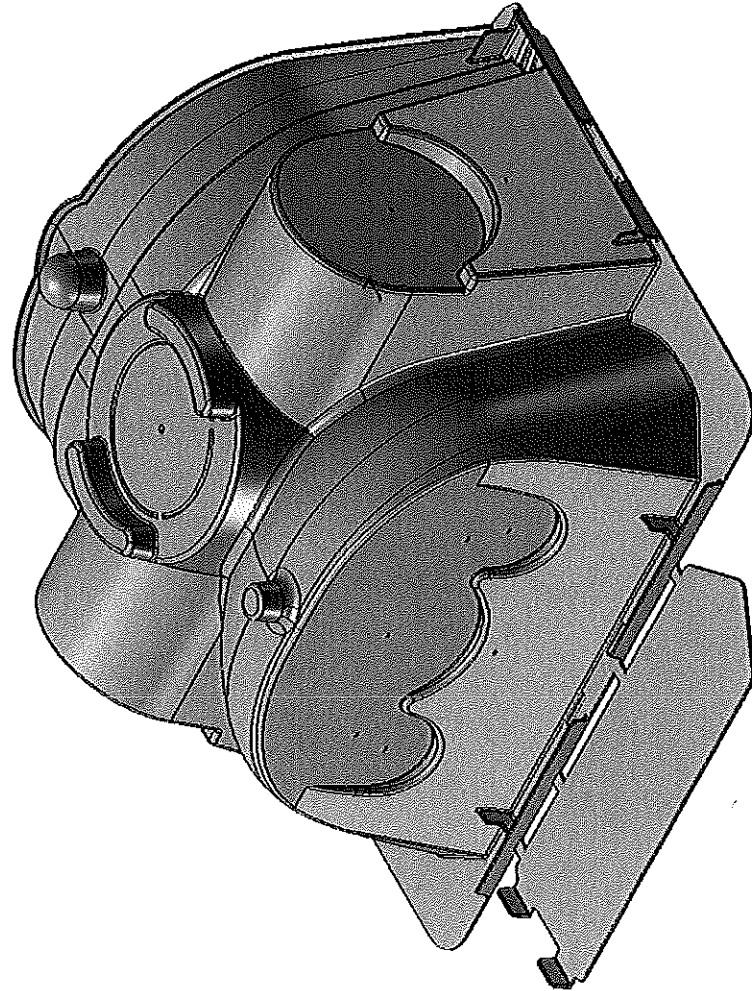


QUICK4 PLUS STANDARD LP – ENDCAP OPTIONS

The *Quick4 Plus All-in-One Endcap* is compatible with the Quick4 Plus chamber product line, including:

- Quick4 Plus Standard LP chamber
- Quick4 Plus Standard chamber

QUICK4 PLUS ALL-IN-ONE ENDCAP

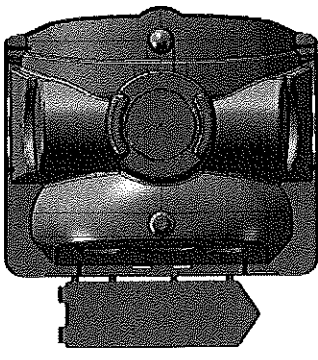
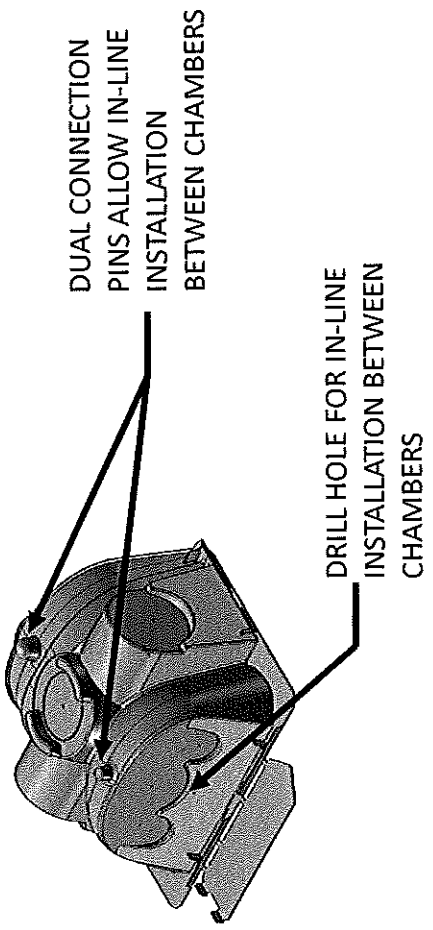


QUICK4 PLUS ENDCAP

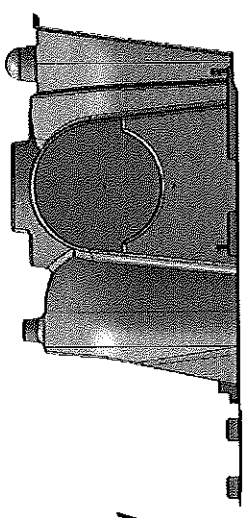
QUICK4 PLUS ALL-IN-ONE ENDCAP

The *Quick4 Plus All-in-One Endcap* 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.

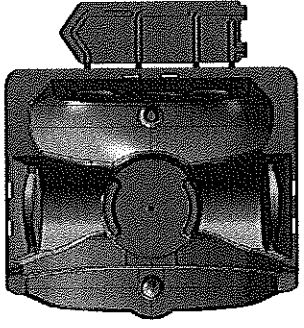
Pipe connection options include the end (drill points for gravity or pressure pipe), sides, or top.



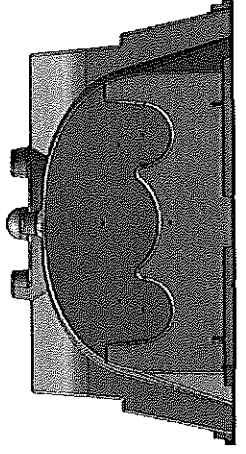
TOP VIEW



SIDE VIEW



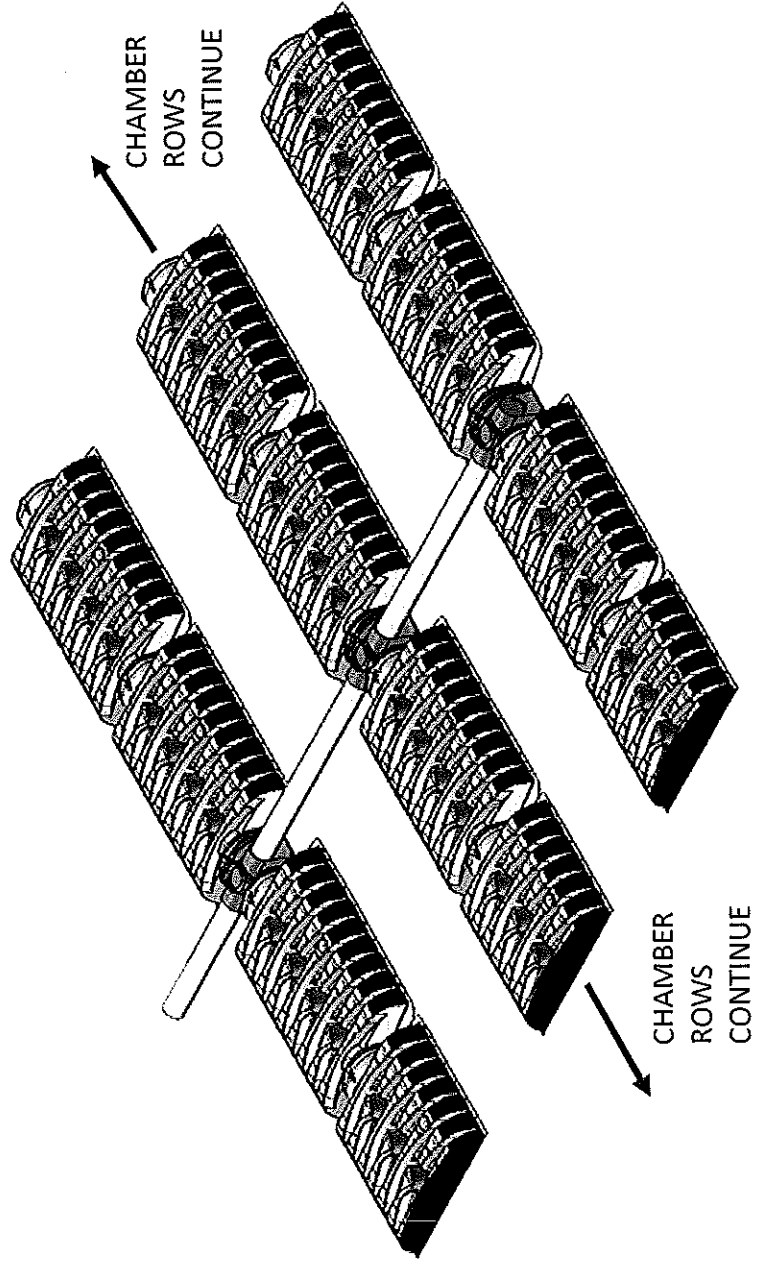
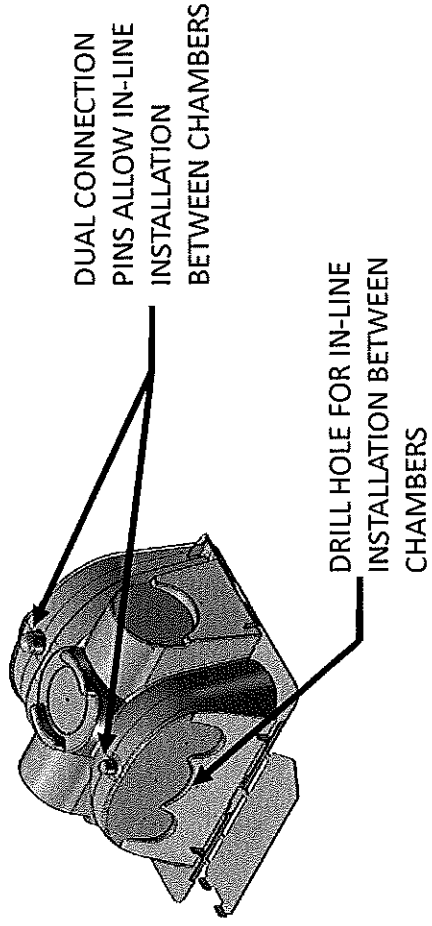
BOTTOM VIEW



END VIEW

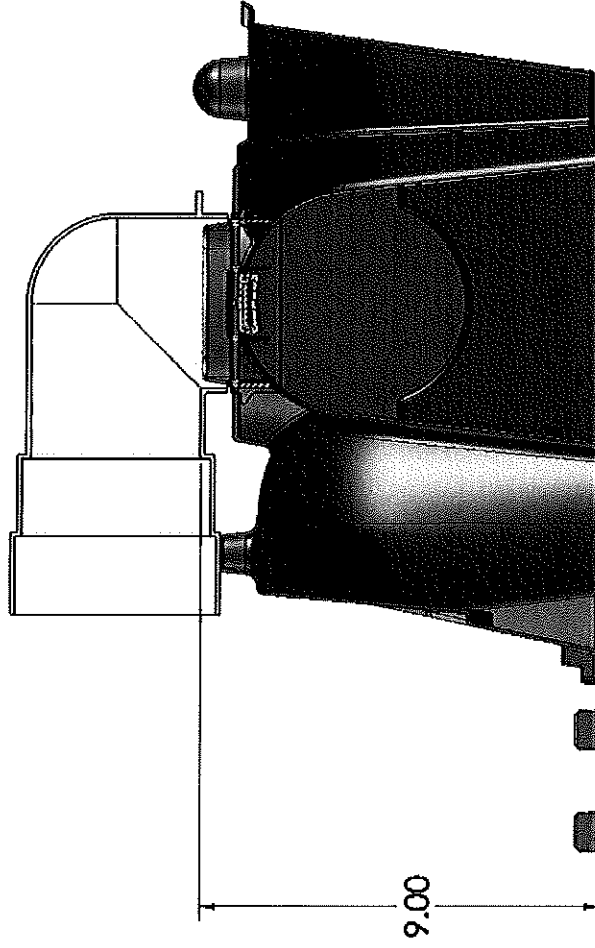
QUICK4 PLUS ALL-IN-ONE ENDCAP

The *Quick4 Plus All-in-One Endcap* may be used in-line with chambers to construct a center-fed wastewater dispersal system, as shown below. The end caps can also be installed on the end of the chamber for end-fed configurations.



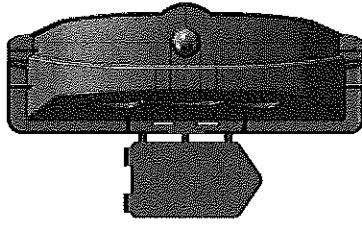
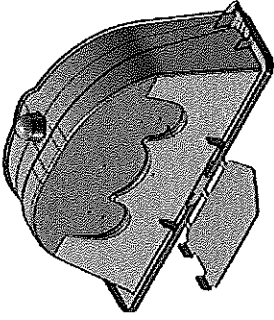
QUICK4 PLUS ALL-IN-ONE ENDCAP – TOP INLETTING

The top of the *Quick4 Plus All-in-One Endcap* may be used as the inletting point. The configuration shown below ensures that the entire lowered sidewall of the *Quick4 Plus Standard Low Profile (LP) chamber* (6.3-inch-high sidewall) is available for wastewater infiltration. The inlet piping system connected to the end cap is manufactured by *Infiltrator*, and this device attaches to the end cap via a snap coupler system.

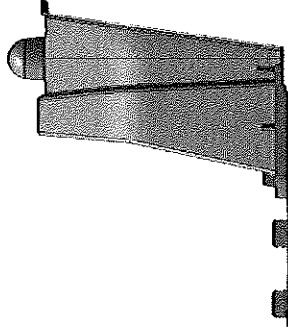


QUICK4 PLUS ENDCAP

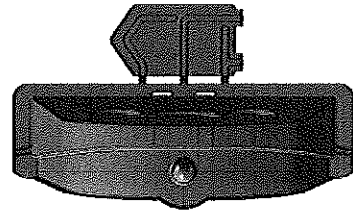
The *Quick4 Plus Endcap* is installed at the end of the chamber and allows installation of a pipe from the end only. This endcap does not provide side-inletting capability. Pipe connection options include drill points for gravity or pressure pipe.



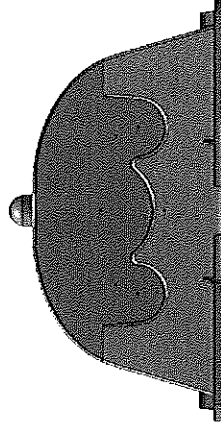
TOP VIEW



SIDE VIEW



BOTTOM VIEW



END VIEW

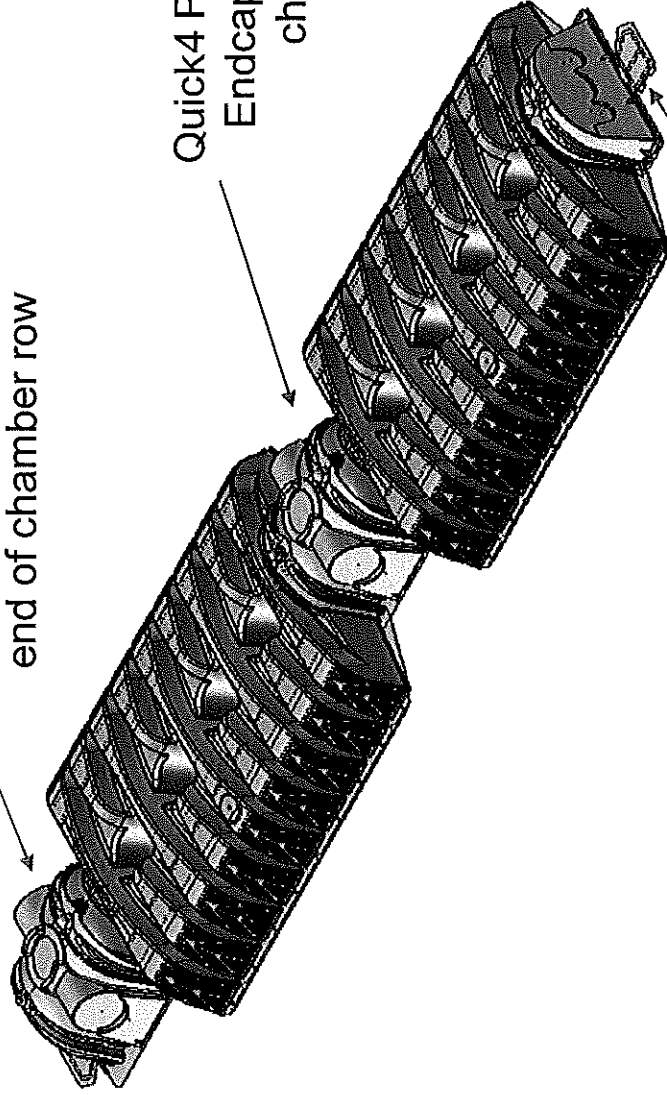
QUICK4 PLUS ENDCAP APPLICATION



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

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

Quick4 Plus Endcap at end of chamber row

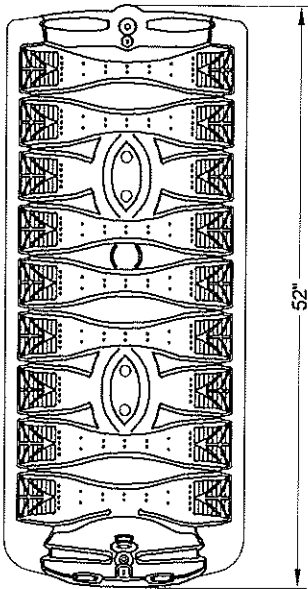


Attachment 1-3

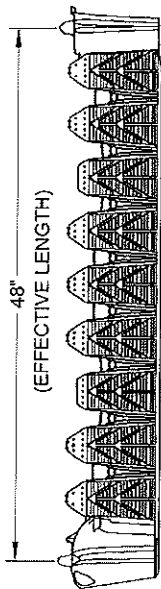
Product Illustrations and Images
Quick4 Plus EQ36 Low Profile Chamber

QUICK4 PLUS EQUALIZER 36 LOW PROFILE (LP) CHAMBER

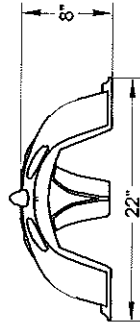
TOP VIEW



FRONT VIEW

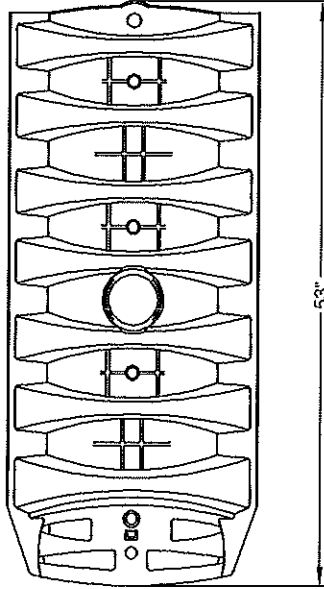


SIDE VIEW

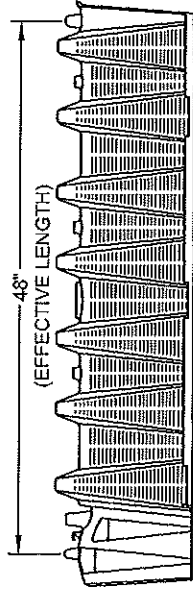


QUICK4 EQUALIZER 36 CHAMBER

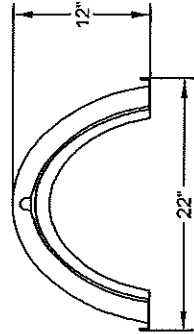
TOP VIEW



FRONT VIEW



SIDE VIEW



NOMINAL SPECIFICATIONS

FEATURES	QUICK4 PLUS EQUALIZER 36 LP CHAMBER	QUICK4 EQUALIZER 36 CHAMBER
OVERALL LENGTH	52.0 INCHES	52.0 INCHES
EFFECTIVE LENGTH	48.0 INCHES	48.0 INCHES
OVERALL HEIGHT	8.0 INCHES	12.5 INCHES
OVERALL WIDTH	22.6 INCHES	22.8 INCHES
OPEN BOTTOM AREA	1.61 SF/LF	1.61 SF/LF
OPEN SIDEWALL AREA	0.20 SF/LF	0.29 SF/LF
OPEN SIDEWALL AREA (AOR*)	0.44 SF/LF	0.49 SF/LF

* As measured along the soil angle of repose

INFILTRATOR SYSTEMS, INC.
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 WWW.INFILTRATORSYSTEMS.COM

INFILTRATOR SYSTEMS INC.
 PRODUCT COMPARISON
 QUICK4 PLUS EQUALIZER 36
 LP & QUICK4 EQUALIZER 36

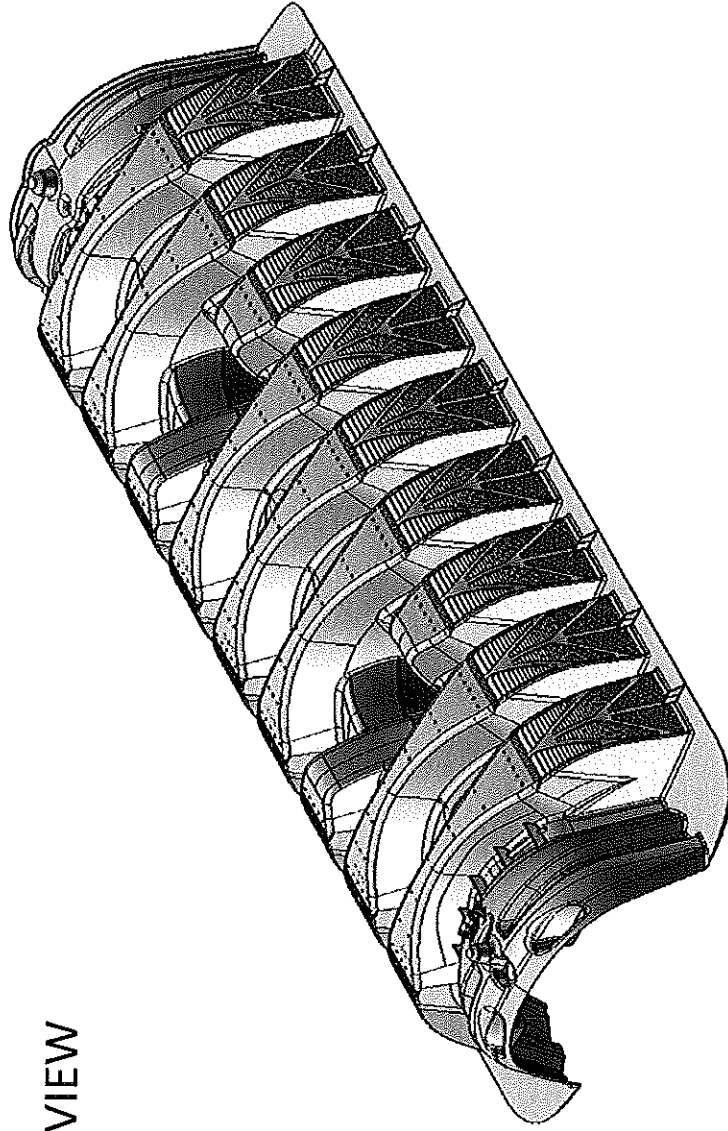
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Date 11/9/2009 ACAD No.

Drawn By: RWD Sheet 1 Of 1

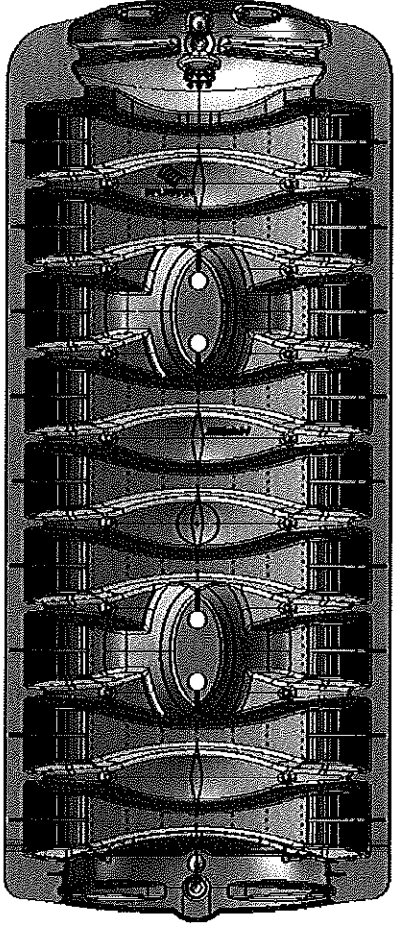
QUICK4 PLUS EQUALIZER 36 LP

ISOMETRIC VIEW

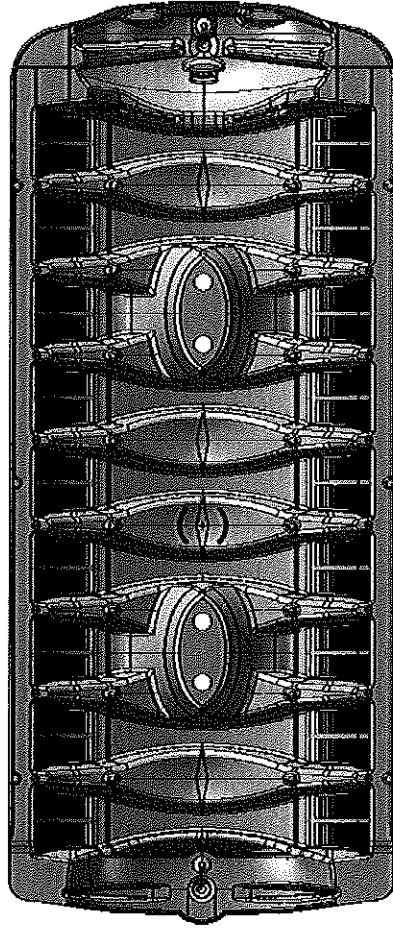


QUICK4 PLUS EQUALIZER 36 LP

TOP VIEW

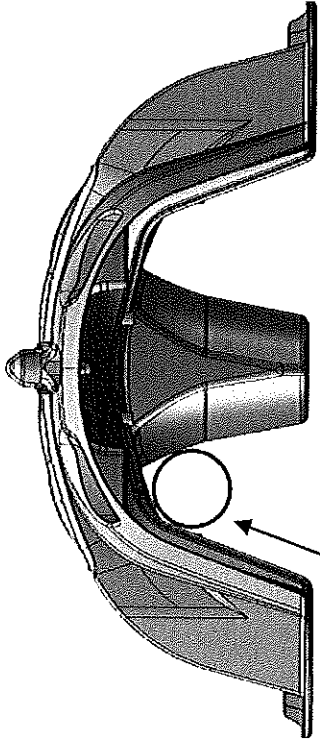


BOTTOM VIEW



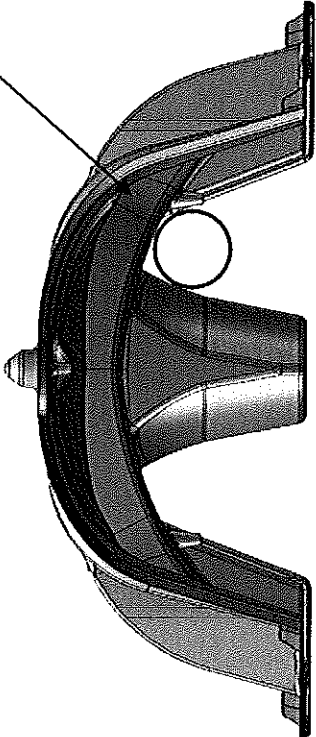
QUICK4 PLUS EQUALIZER 36 LP

INLET



2" PRESSURE DOSING OPTION

OUTLET

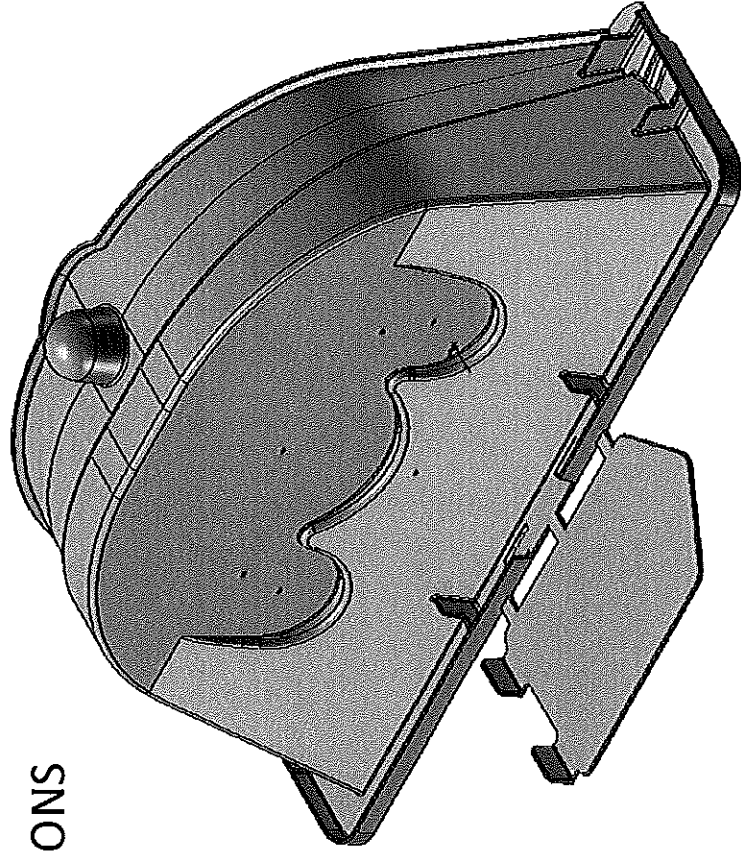
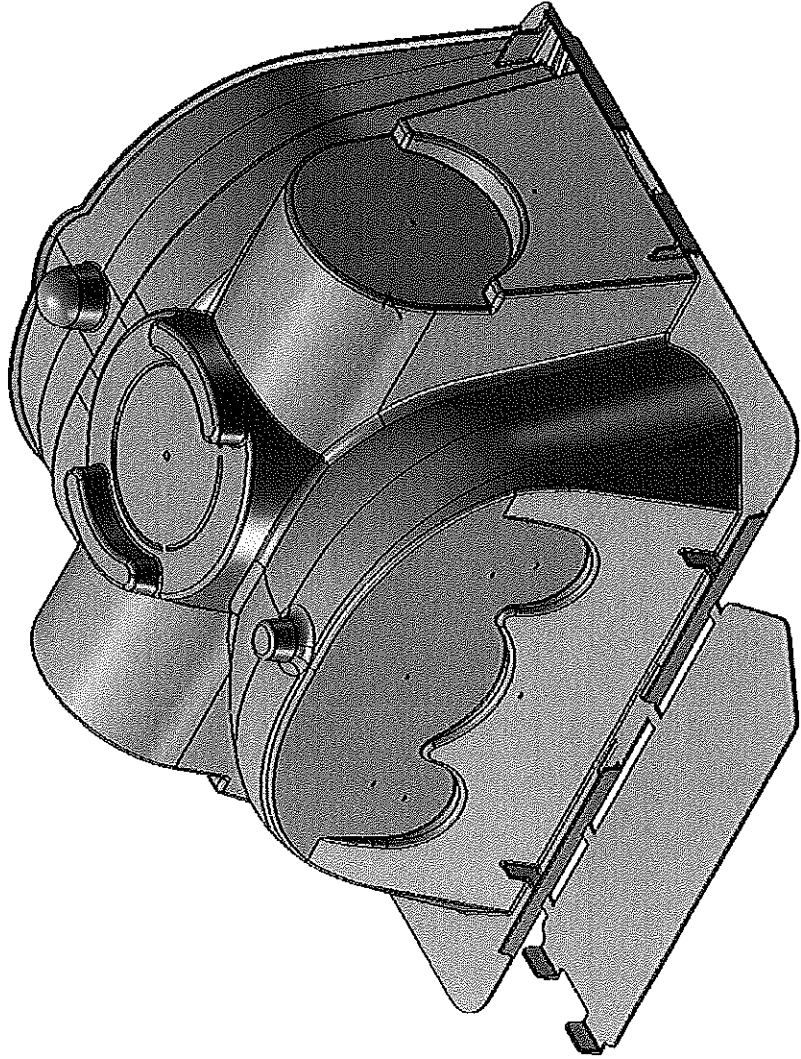


QUICK4 PLUS EQUALIZER 36 LP – ENDCAP OPTIONS

The *Quick4 Plus All-in-One Endcap* is compatible with the Quick4 Plus chamber product line, including:

- Quick4 Plus Equalizer 36 LP
- Quick4 Plus Standard
- Quick4 Plus Standard LP

QUICK4 PLUS ALL-IN-ONE ENDCAP

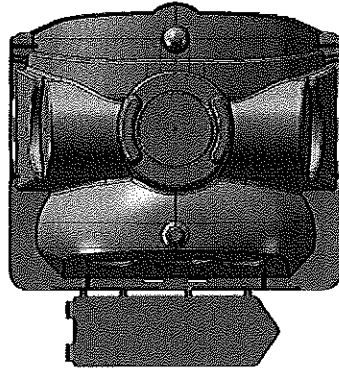


QUICK4 PLUS ENDCAP

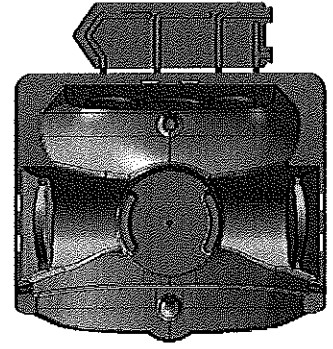
QUICK4 PLUS ALL-IN-ONE ENDCAP

The *Quick4 Plus All-in-One Endcap* 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.

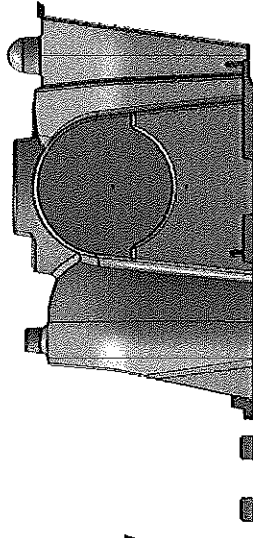
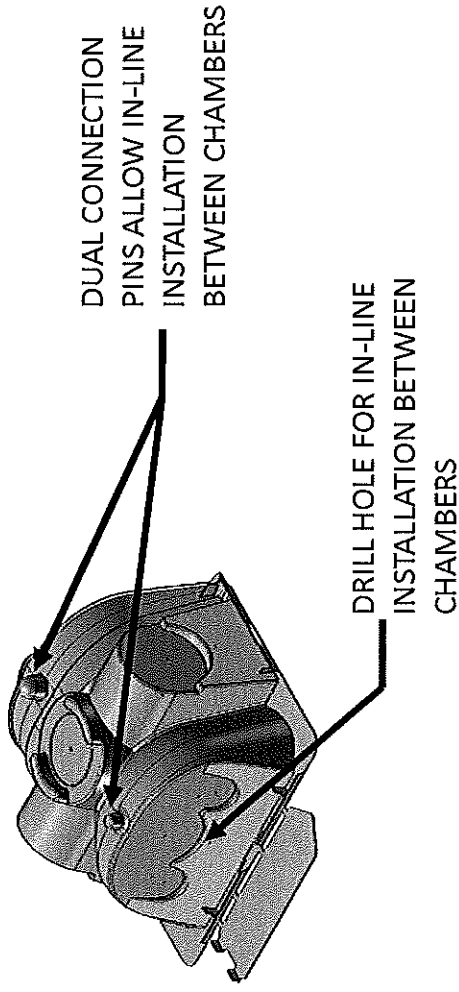
Pipe connection options include the end (drill points for gravity or pressure pipe), sides, or top.



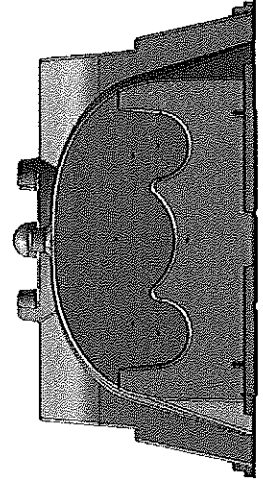
TOP VIEW



BOTTOM VIEW



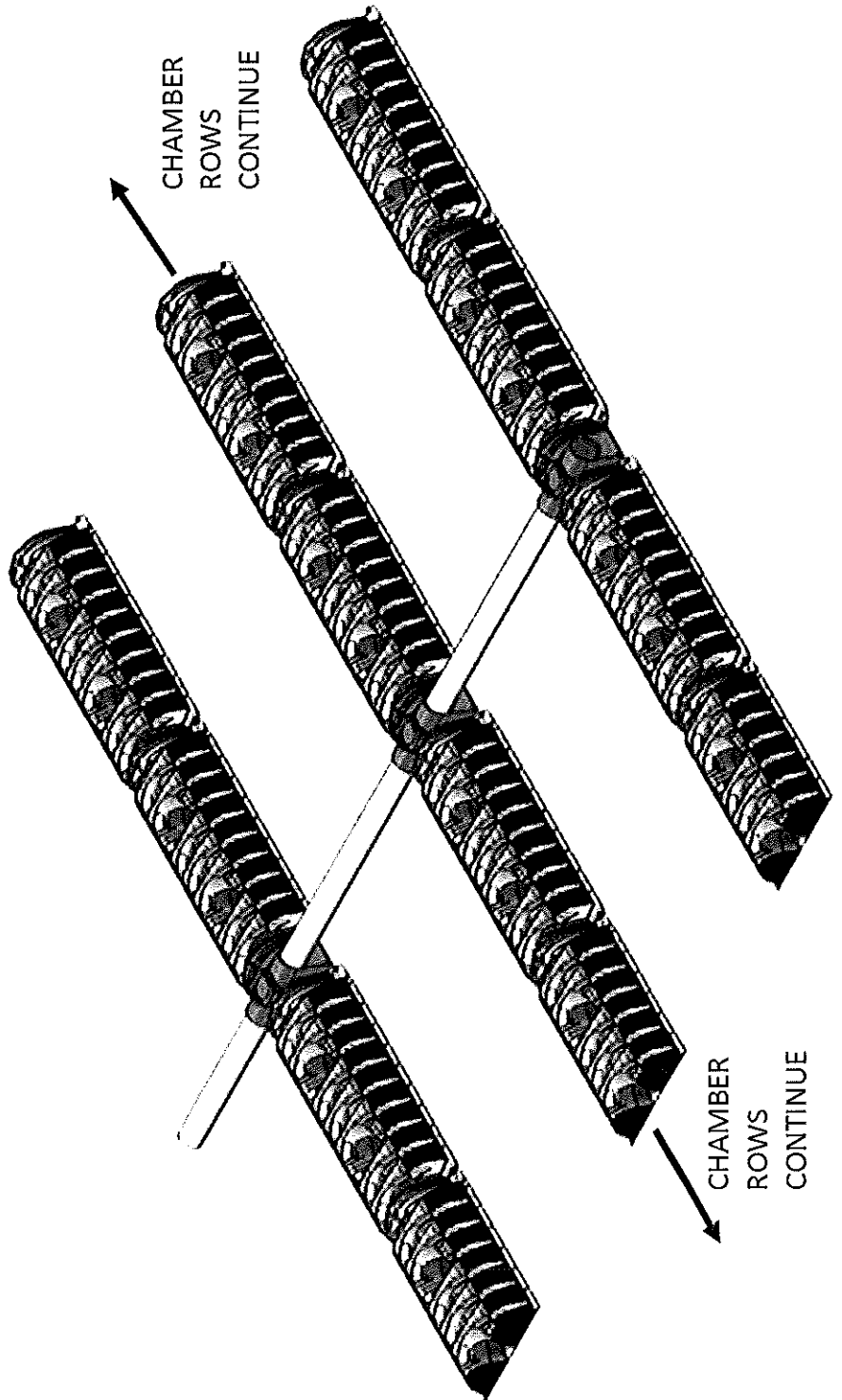
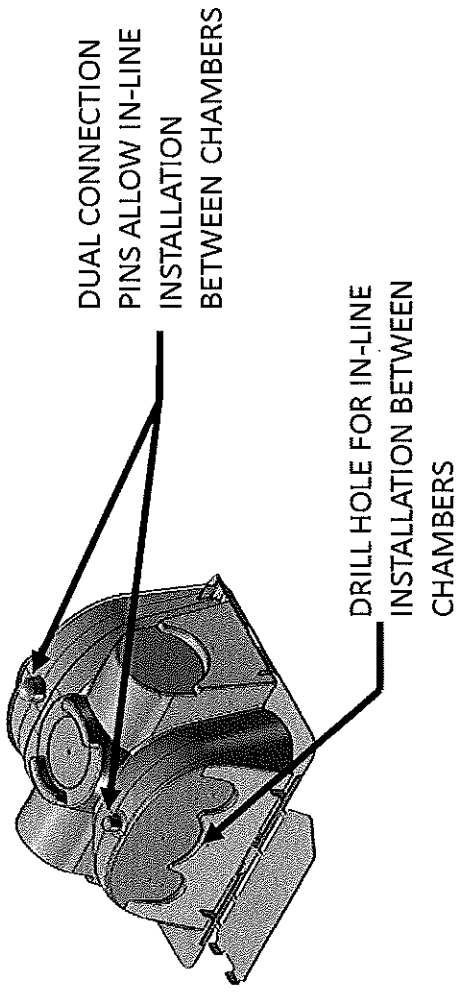
SIDE VIEW



END VIEW

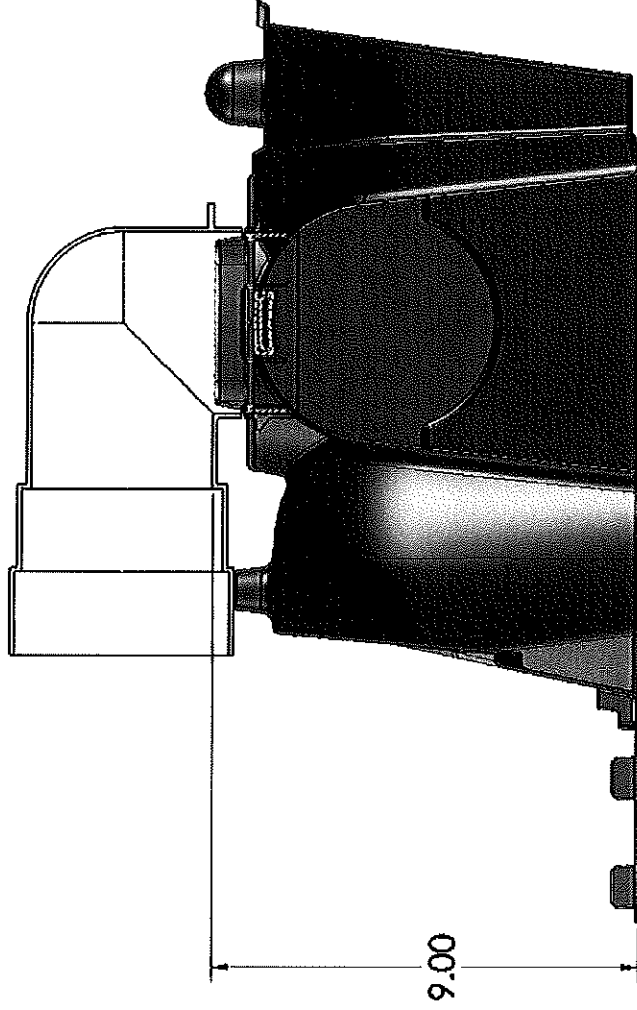
QUICK4 PLUS ALL-IN-ONE ENDCAP

The *Quick4 Plus All-in-One Endcap* may be used in-line with chambers to construct a center-fed wastewater dispersal system, as shown below. The end caps can also be installed on the end of the chamber for end-fed configurations.



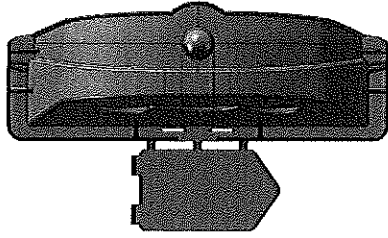
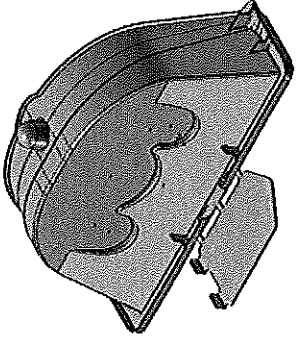
QUICK4 PLUS ALL-IN-ONE ENDCAP – TOP INLETTING

The top of the *Quick4 Plus All-in-One Endcap* may be used as the inletting point. The configuration shown below ensures that the entire louvered sidewall of the Quick4 Plus Equalizer 36 LP chamber (6.3-inch-high sidewall) is available for wastewater infiltration. The inlet piping system connected to the end cap is manufactured by Infiltrator, and this device attaches to the end cap via a snap coupler system.

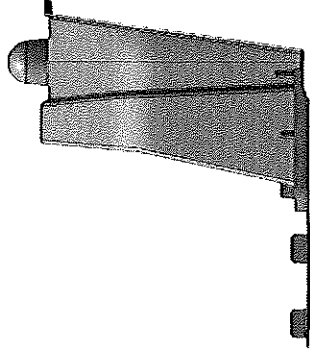


QUICK4 PLUS ENDCAP

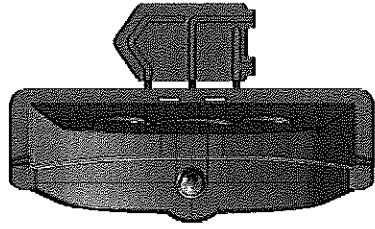
The *Quick4 Plus Endcap* is installed at the end of the chamber and allows installation of a pipe from the end only. This endcap does not provide side-inletting capability. Pipe connection options include drill points for gravity or pressure pipe.



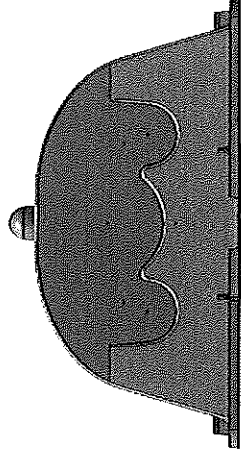
TOP VIEW



SIDE VIEW



BOTTOM VIEW



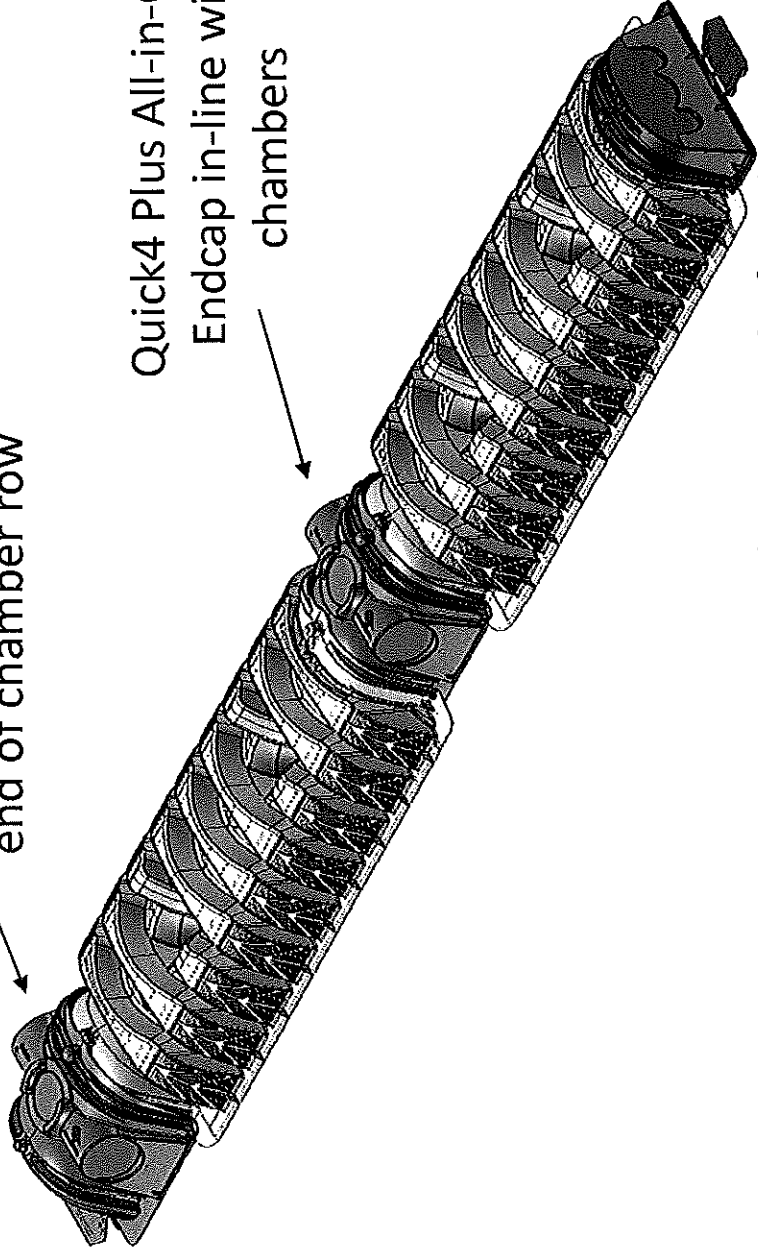
END VIEW

QUICK4 PLUS EQUALIZER 36 LP ENDCAP APPLICATION



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

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



Quick4 Plus Endcap at end of
chamber row

Attachment 2
Structural Testing Results

Attachment 2-1

Structural Testing Results
Quick4 Plus Standard Chamber



ISI Structural Ground Testing

Comparison of Quick4™ Plus Standard Prototype Chamber and the Quick4™ Standard Chamber at Mid-Chamber via ISI Raised Bed Test Protocol

Test Date: April 9, 2009 **Test Site:** Rhodes Construction
Old Saybrook, CT

Test Conditions: Dry, temp 55° F

Personnel: Mark Youngclaus, Doug Paul of Infiltrator Systems
Ray Winchester of Gible, Norden, Champion, Brown Consulting Engineers
John McClain of Rhodes Construction

Test Objective:

Compare the deflections of the Quick4™ Plus Standard Chamber and the Quick4™ Standard Chamber using the Infiltrator Systems Inc. (ISI) test protocol for raised bed applications, and verify that the test protocol loads can be applied without the chambers collapsing, fracturing, or breaking.

The test protocol includes: cover chambers with 12 inches of soil and cross chambers along a load line with test vehicles. Reduce soil cover thickness to 6 inches and repeat vehicle loading test.

Step 1: Cross chambers at the corrugation with heavy-duty work truck (9,000 lbs gross vehicle weight).

Step 2: Cross chambers at the corrugation with backhoe (15,880 lbs gross vehicle weight).

Conclusions:

Step 1 (12-inch soil cover): All chambers successfully passed this step of the ISI shallow cover load capacity test protocol at the corrugation without collapse, fracturing or breaking.

Step 2 (6-inch soil cover): All chambers successfully passed this step of the ISI shallow cover load capacity test protocol at the corrugation without collapse, fracturing or breaking.

Additional Testing:

In effort to cause failure, drive the backhoe across the chambers with a full bucket of soil, having a front axle weight of 11,640 lbs and exerting 44 pounds per square inch

(psi) of stress on the chambers. The applied load in this situation exceeds the load applied under an AASHTO H-10 loading condition. All chambers successfully passed this additional step of the ISI shallow cover load capacity test protocol at the corrugation without collapsing, fracturing, or breaking.

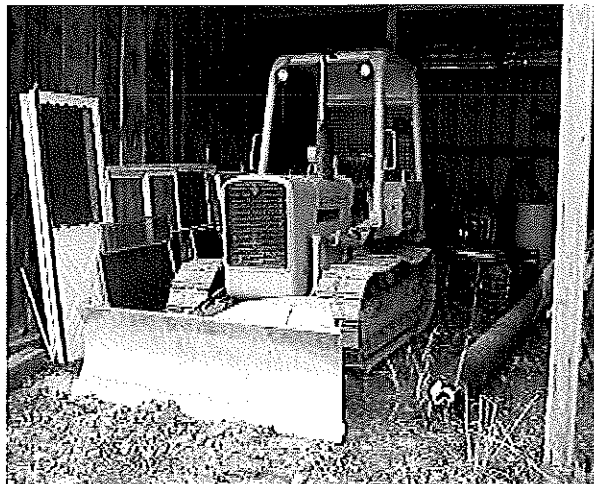
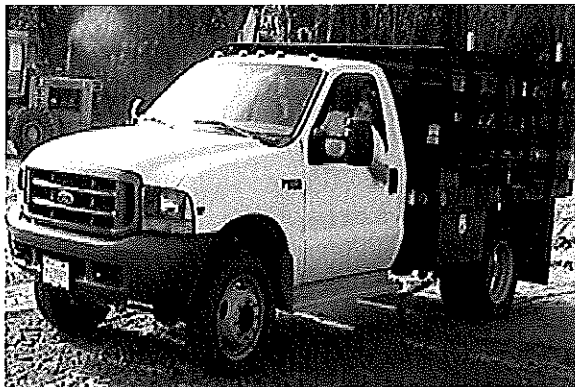
Test Procedure: ISI Bed Test Protocol

1. Install chambers per manufacturer's installation instructions.
2. Install deflection monitoring lasers and video cameras.
3. Compact sidewalls and backfill (using C33 septic sand) per installation instructions.
4. Compact and level top of bed using the John Deere dozer.
5. After each test load, verify that minimum soil cover thickness remains over load line. Add or remove to maintain 12 inches of soil cover.
6. Scrape soil cover from 12 inches to 6 inches and repeat vehicle test loads.

Test Results Attached:

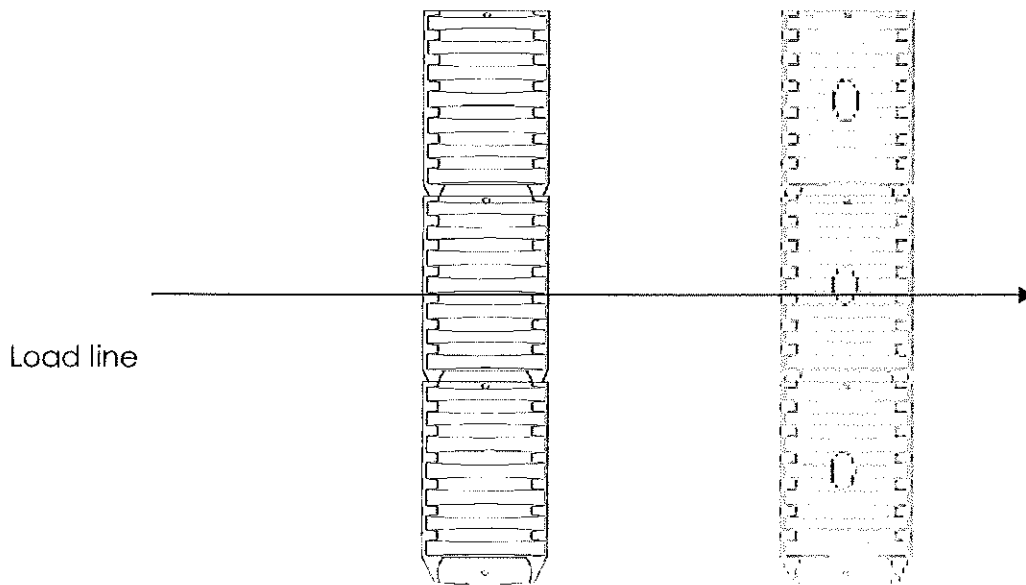
TABLE 1

Vehicle	Front Axle Weight (lbs)	Rear Axle Weight (lbs)	Gross Weight (lbs)
Ford F-450 Stake Bed Truck	4,780	4,620	9,400
John Deere 310 Backhoe	5,000	10,880	15,880
John Deere 310 Backhoe With full bucket of soil	11,640	7,720	19,360





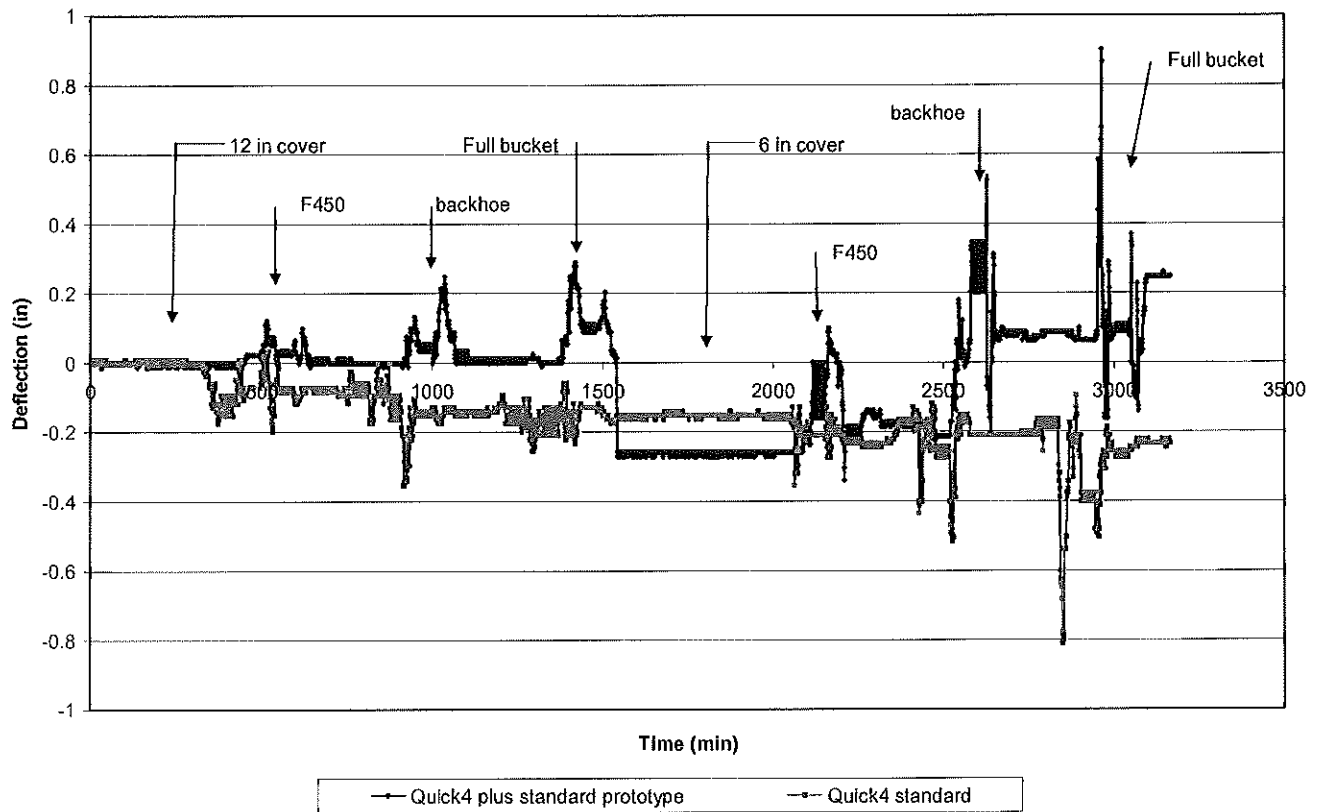
VIDEO CAMERAS, LIGHTS, & LASER DEFLECTION GAGE



Row 1: Quick4 Standard

Row 2: Quick4 Plus Standard

Comparison of Quick4 Plus Standard Prototype and Quick4 Standard chambers



Attachment 2-2

Structural Testing Results
Quick4 Plus Standard Low Profile Chamber

Structural Testing
AASHTO H-10 Load at 12 Inches of Soil Cover and
ISI Shallow Cover Test Protocol
Quick4™ Plus Standard Low Profile Prototype Chamber

Test Date: November 10 - 12, 2008

Test Site: Rhodes Construction -
Old Saybrook, CT

Test Conditions: Dry, Temp 53° F

Personnel: Roy Moore, Brian Coppes, Mark Youngclaus and Doug Paul Infiltrator
Systems Inc.

John McClain, Rhodes Construction

Test Objective:

Verify the load rating conformance of the Quick4™ Plus Standard Low Profile (LP) prototype chamber against the International Association of Plumbing and Mechanical Officials (IAPMO) protocol for a 16,000 pound (lb.) axle load [equivalent to an H-10 load, as defined by the American Association of State Highway and Transportation Officials (AASHTO)] and the ISI Shallow Cover protocol [Step 1: Cross trenches at corrugation with heavy duty work truck (9,000 lbs gross vehicle weight). Step 2: Cross trenches at corrugation with backhoe (15,880 lbs gross vehicle weight)]. The objective is to load installed chambers without collapsing, fracturing, or breaking.

Conclusions:

The Quick4™ Plus Standard LP chamber successfully passed both protocols at the mid-chamber lower corrugation without collapsing, fracturing, or breaking.

Test Procedure:

1. Excavate trenches to allow installation of chamber and placement of either 12 inches or 4 inches (for shallow cover) of soil over dome.
2. Install chambers in trench per manufacturer's installation instructions.
3. Install deflection monitoring equipment and video cameras.
4. Walk in sidewalls and backfill per manufacturer's installation instructions.
5. Finish grade per manufacturer's instructions.
6. Mound soil an extra 1.5 inches above grade adjacent to trench to account for compaction during loading.
7. After each test load, verify adequate soil cover thickness remains over load line. Add or remove soil accordingly to maintain soil cover.
8. Apply loads per Table 1.

Test Results

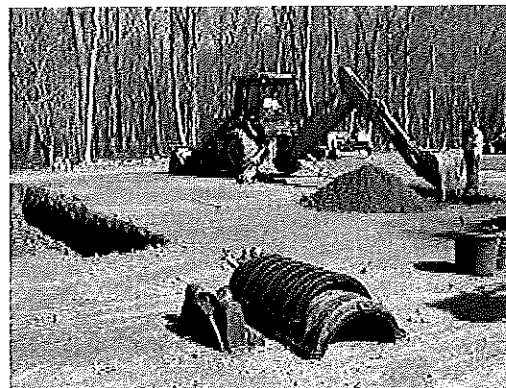
For the loading sequence presented in Table 1, test results are provided in Figures 1 and 2 and Table 2.

TABLE 1
Load Sequence

Vehicle	Front Axle Weight (lbs)	Rear Axle Weight (lbs)	Gross Vehicle Weight (lbs)
Ford F-450 Stake Bed Truck	4,300	4,700	9,000
John Deere 510 Backhoe	4,180	11,700	15,880
Ford L-8000 Truck w/ load	---	9,500	---
Ford L-8000 Truck w/ load	---	12,000	---
Ford L-8000 Truck w/ load	---	14,000	---
Ford L-8000 Truck w/ load	---	16,000	---



Ford F-450



John Deere 510



Ford L-8000

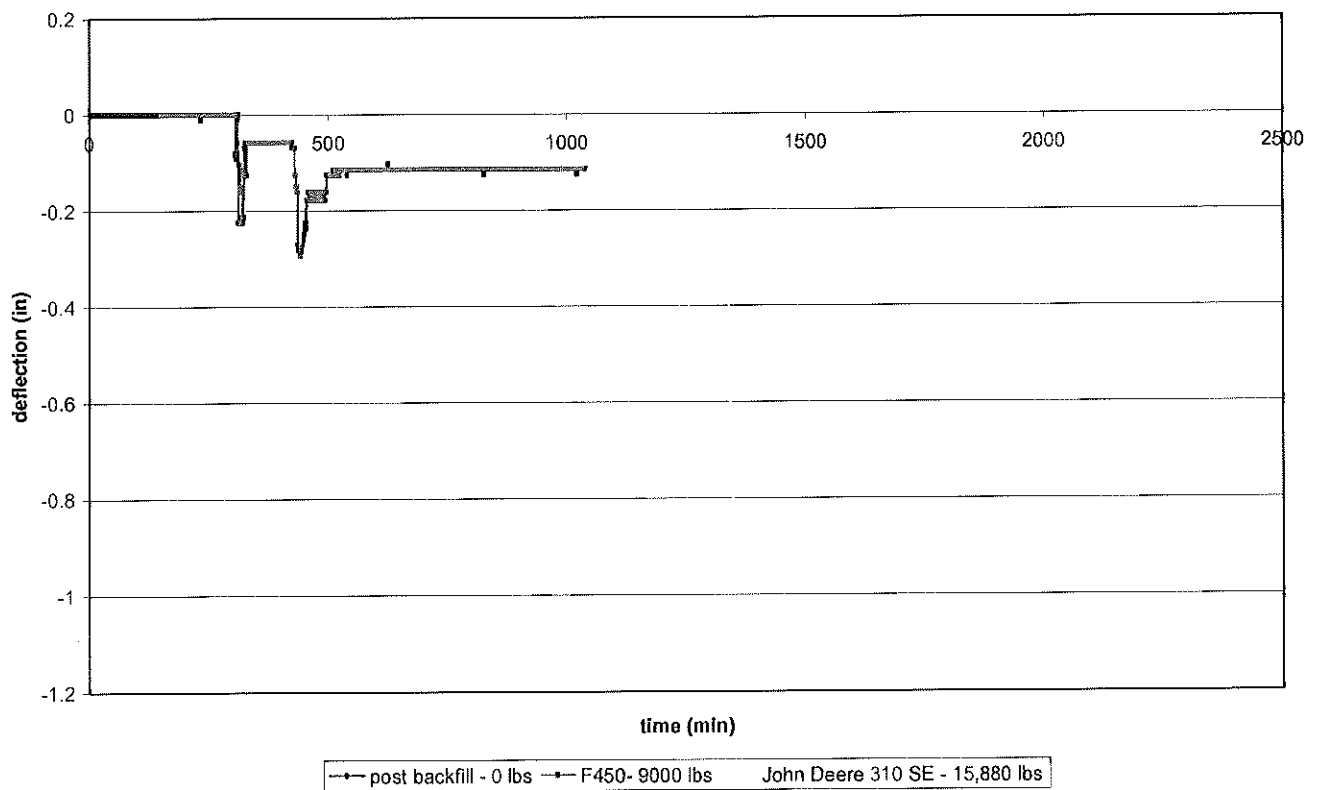


Backfill with Dozer

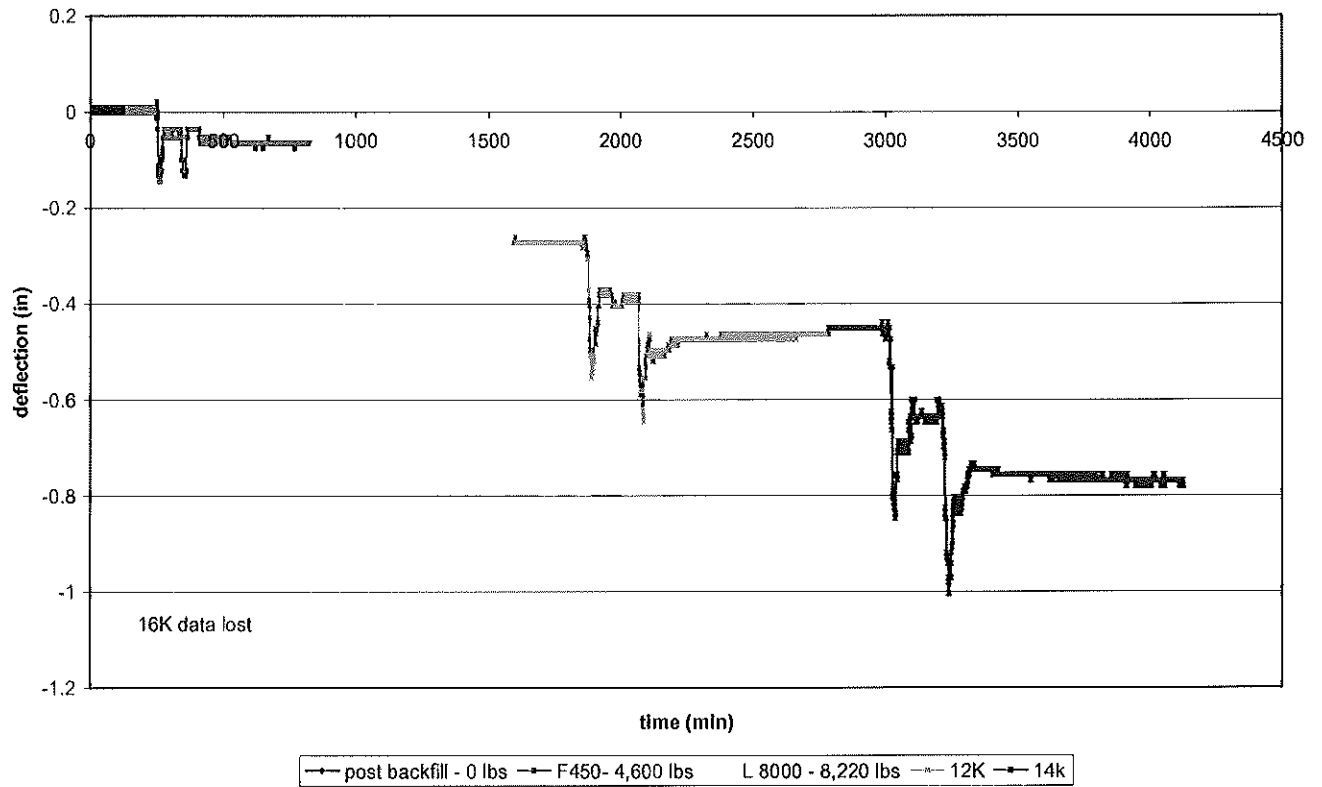


VIDEO CAMERAS, LIGHTS, & LASER DEFLECTION GAGE

**Quick4 Plus Standard Low Profile prototype 4in Soil Shallow Cover Test
November 10, 2008**



Quick4 Plus Standard Low Profile H10 Test Deflection
November 11, 2008



Attachment 2-3

Structural Testing Results
Quick4 Plus EQ36 Low Profile Chamber



ISI Structural Ground Testing

Comparison of Quick4™ Plus Equalizer 36 LP Prototype Chamber and the Quick4™ Equalizer 36 Chamber at Mid-Chamber and Latch via ISI Raised Bed Test Protocol

Test Date: April 23, 2009 **Test Site:** Rhodes Construction
Old Saybrook, CT

Test Conditions: Dry, temp 65° F

Personnel: Mark Youngclaus, Doug Paul of Infiltrator Systems
Ray Winchester of Gible, Norden, Champion, Brown Consulting Engineers
John McClain of Rhodes Construction

Test Objective:

Compare the deflections of the Quick4™ Plus Equalizer 36 Low Profile (LP) Chamber and the Quick4™ Equalizer 36 Chamber using the Infiltrator Systems Inc. (ISI) test protocol for raised bed applications, and verify that the test protocol loads can be applied without the chambers collapsing, fracturing, or breaking.

The test protocol includes: cover chambers with 12 inches of soil and cross chambers along a load line with test vehicles. Reduce soil cover thickness to 6 inches and repeat vehicle loading test.

Step 1: Cross chambers at the corrugation and latch with heavy-duty work truck (9,000 lbs gross vehicle weight).

Step 2: Cross chambers at the corrugation and latch with backhoe (15,880 lbs gross vehicle weight).

Conclusions:

Step 1 (12-inch soil cover): All chambers successfully passed this step of the ISI shallow cover load capacity test protocol at the corrugation without collapse, fracturing or breaking.

Step 2 (6-inch soil cover): All chambers successfully passed this step of the ISI shallow cover load capacity test protocol at the corrugation without collapse, fracturing or breaking.

Additional Testing:

In effort to cause failure, drive the backhoe across the chambers with a full bucket of soil, having a front axle weight of 11,640 lbs and exerting 44 pounds per square inch

(psi) of stress on the chamber dome. The applied load in this situation exceeds the load applied under an AASHTO H-10 loading condition. All chambers successfully passed this additional step of the ISI shallow cover load capacity test protocol at the corrugation without collapsing, fracturing, or breaking.

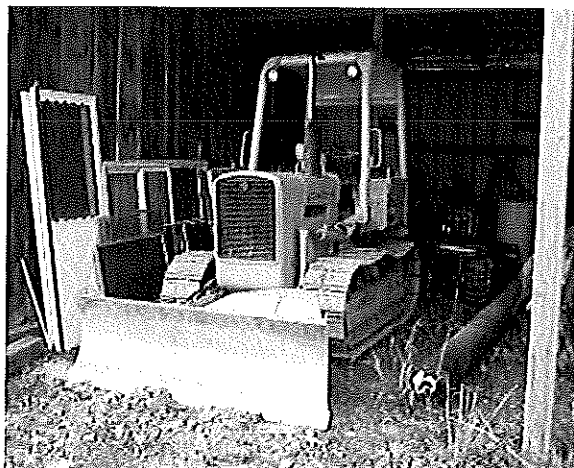
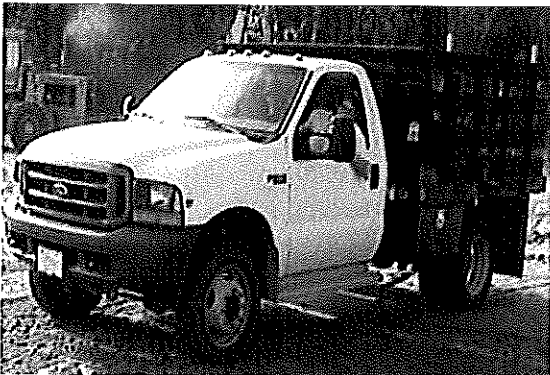
Test Procedure: ISI Bed Test Protocol

1. Install chambers per manufacturer's installation instructions.
2. Install deflection monitoring lasers and video cameras.
3. Compact sidewalls and backfill (using C33 septic sand) per installation instructions.
4. Compact and level top of bed using the John Deere dozer.
5. After each test load, verify that minimum soil cover thickness remains over load line. Add or remove to maintain 12 inches of soil cover.
6. Scrape soil cover from 12 inches to 6 inches and repeat vehicle test loads.

Test Results Attached:

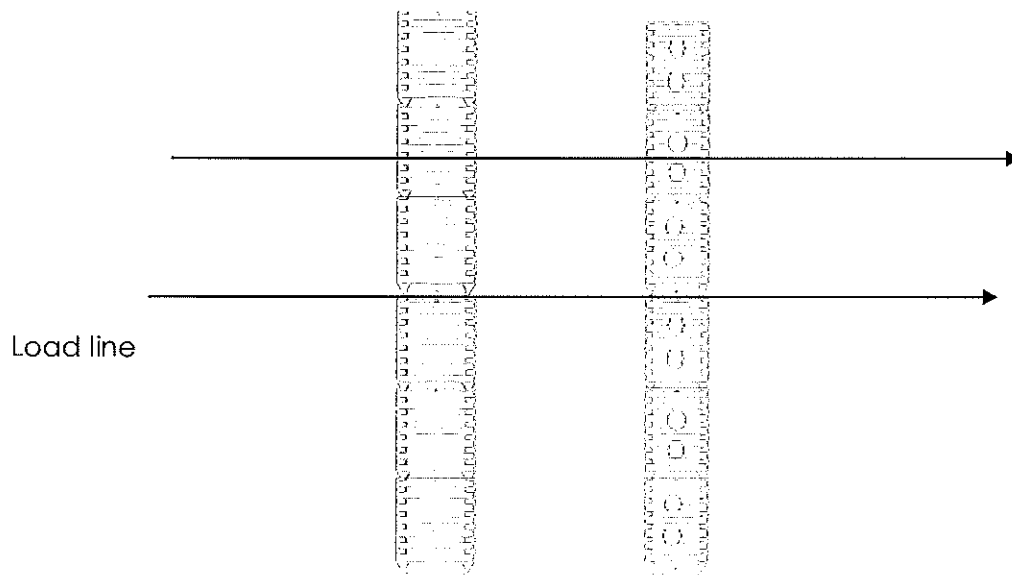
TABLE 1

Vehicle	Front Axle Weight (lbs)	Rear Axle Weight (lbs)	Gross Weight (lbs)
Ford F-450 Stake Bed Truck	4,780	4,620	9,400
John Deere 310 Backhoe	5,000	10,880	15,880
John Deere 310 Backhoe With full bucket of soil	11,640	7,720	19,360





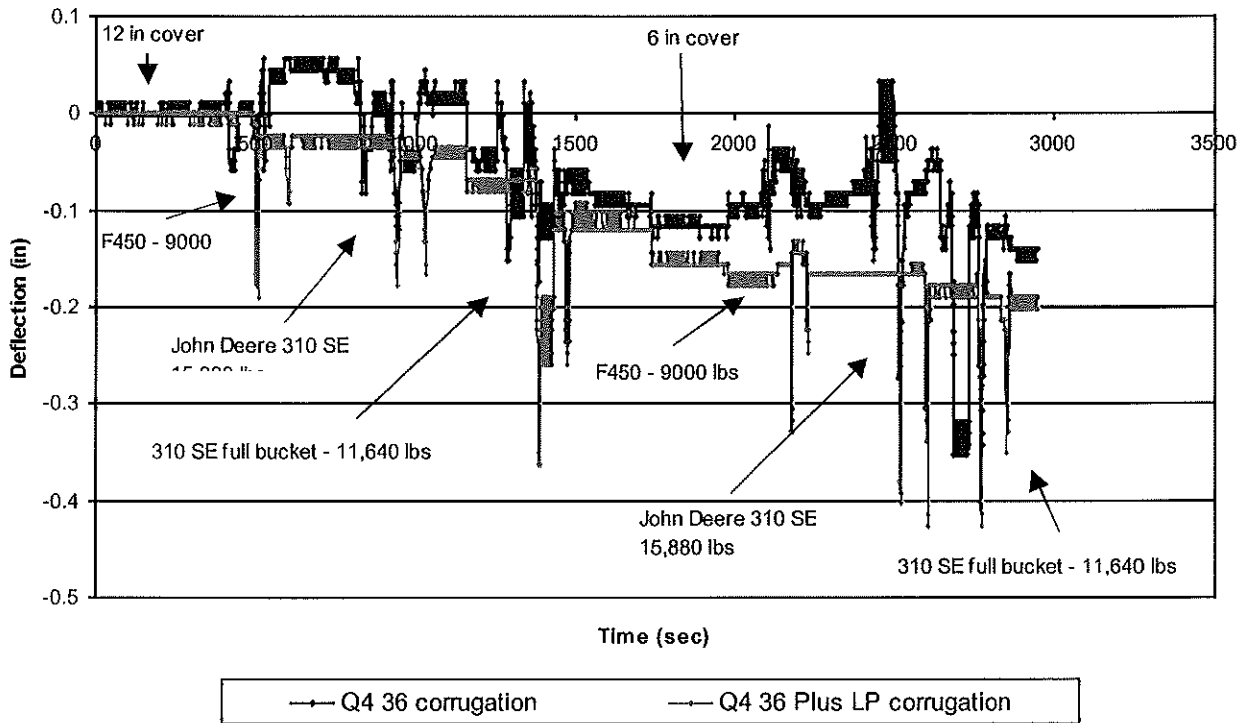
VIDEO CAMERAS, LIGHTS, & LASER DEFLECTION GAGE



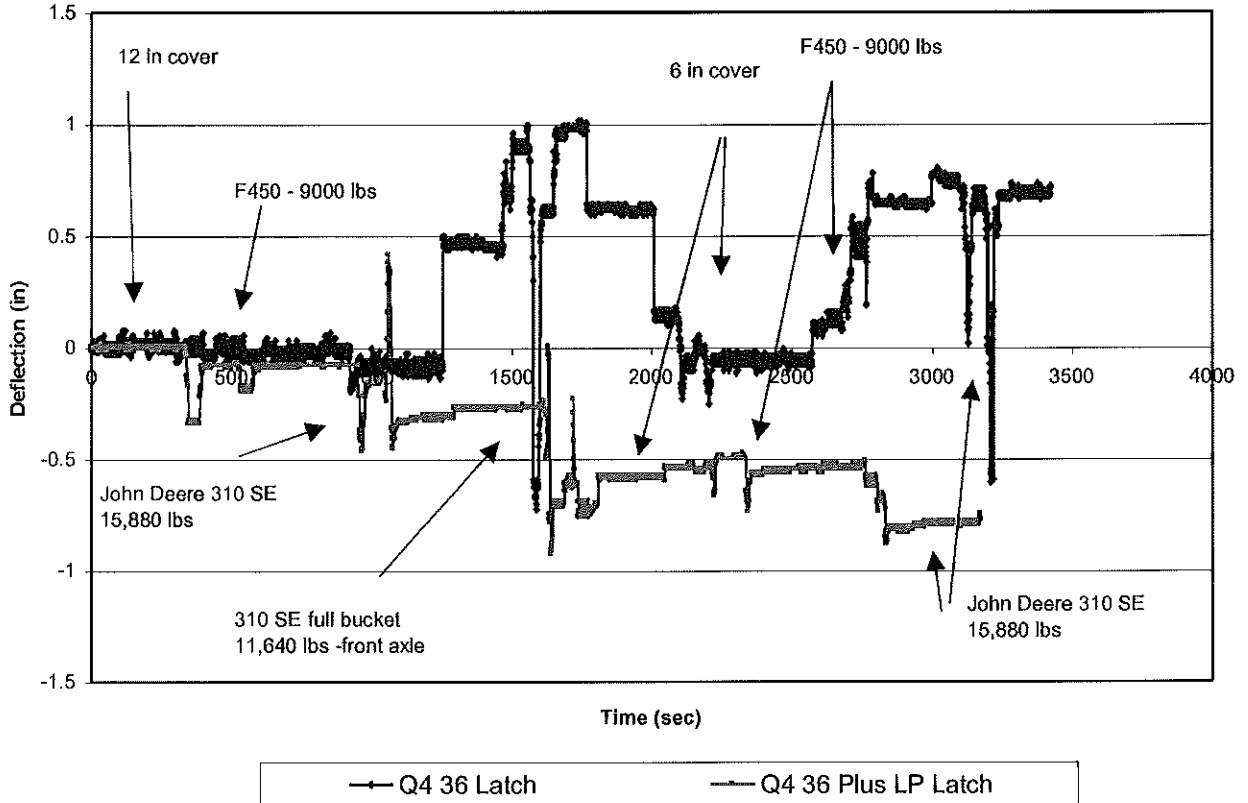
Row 1: Quick4 Equalizer 36

Row 2: Quick4 Plus Equalizer 36 LP

Q4 36 Plus LP corrugation and Q4 36 corrugation



Q4 36 Plus LP Latch and Q4 36 Latch



Attachment 3

Quick4 Chamber Approval Letter



STATE OF MAINE
 DEPARTMENT OF HEALTH AND HUMAN SERVICES
 DIVISION OF HEALTH ENGINEERING
 286 WATER STREET
 AUGUSTA, MAINE
 04333-0011

John Elias Baldacci
 Governor

July 26, 2005

John R. Nicholas
 Commissioner

Infiltrator Systems, Inc.
 Attn.: Brian Parker, Environmental Scientist
 6 Business Park Road
 P. O. Box 768
 Old Saybrook, CT 06475

Subject: Product Registration, Infiltrator Quick 4 High Capacity and Standard, Quick 4 Equalizer 24, and Quick 4 Equalizer 36 Chambers

Dear Mr. Parker:

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.

Product Description

The Infiltrator Quick 4 chambers consist of conventional Infiltrator plastic chambers, except that all Quick 4 chambers are four feet long, rather than 6.3 or 8.3 feet long, depending upon original model. A new design for the end caps results in a semi-circular footprint with a corresponding increase in usable bottom and sidewall areas and storage volume.

Claim

According to the information you provided, the Infiltrator Quick 4 chambers have the following effective infiltrative surface areas:

Product	Without End Cap, Trench	Without End Cap, Cluster	With End Cap (per pair)
Quick 4 Standard Chamber	7.0 square feet/linear foot	5.8 square feet/linear foot	9.2 square feet
Quick 4 High Capacity Chamber	8.0 square feet/linear foot	5.8 square feet/linear foot	12.0 square feet
Quick 4 Equalizer 24	4.0 square feet/linear foot	4.0 square feet/linear foot	4.6 square feet
Quick 4 Equalizer 36	5.2 square feet/linear foot	3.7 square feet/linear foot	6.4 square feet

Determination

On the basis of the information, the Division has determined that the Infiltrator Quick 4 chambers are acceptable for use in the State of Maine, provided that they are installed, operated, and maintained in conformance with the manufacturer's directions and the sizing table above.

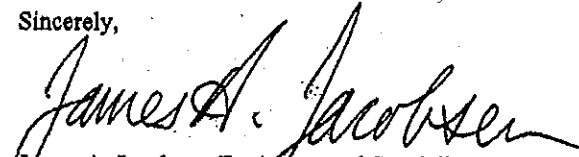
In the event that the products fail to perform as claimed by the applicant, use of the new or experimental technology in Maine, including all installations approved pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of Infiltrator Quick 4 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.

Page 2, Letter to Infiltrator Systems, Inc.

This letter supersedes the letter dated July 7, 2005 which erroneously referenced liner foot rating for the end caps. If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,



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

/jaj

xc: Product File