

# Arc by Infiltrator

DESIGN & INSTALLATION MANUAL – VERMONT



# INTRODUCTION

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This manual provides general design and installation information for use of Arc chambers in the state of Vermont. The configurations presented in this document are common designs and are provided for illustrative purposes. Exceptions and changes may be made, but should be in conformance with applicable codes. The use of Arc chambers according to this manual is authorized per the Vermont Agency of Natural Resources Department of Environmental Conservation, effective July 6, 2006. Reference may be made to the Wastewater System and Potable Water Supply Rules, dated January 1, 2005 or as amended. The manual provides a brief description of Quick4 chambers, sizing specifications and installation requirements. Each revised version of this manual supersedes the previous version.

Each revised version of this manual supersedes the previous version. The use of Arc chambers in this manual at regulation sizing is authorized per product approval by the state.

All chamber configurations and installations must comply with applicable state and local rules.

CAD details in DWG format may be found on the Infiltrator Systems website at [www.infiltratorsystems.com](http://www.infiltratorsystems.com).

**For more detailed design and installation information, please contact Infiltrator Systems at 1-800-221-4436**

<b>Arc Chambers in Massachusetts</b>	
INTRODUCTION	2
PRODUCTS SPECIFICATIONS	3-10
ARC 36 SYSTEM	4
ARC 36 HIGH CAPACITY SYSTEM	4
ARC 24 SYSTEM	8
ARC 18 SYSTEM	10
SIDE PORT COUPLER	11
INSTALLATION INSTRUCTIONS	13
SYSTEM CONFIGURATIONS	15
PUMP SYSTEMS	17
LOW PRESSURE DISTRIBUTION	18
SYSTEM SIZING CHARTS	19
WARRANTY	21

## PRODUCT SPECIFICATIONS

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### Arc 36 System

- 34.5" wide chamber
- Lightweight design with articulating joints
- AASHTO H-10 load rated with proper installation.
- See Pages 4-5



### Arc 36 High Capacity System

- 34.5" wide chamber
- AASHTO H-10 load rated with proper installation.
- See Pages 4-5



### Arc 24 System

- 22.5" wide chamber
- Lightweight design with articulating joints and pivot lockout feature
- AASHTO H-10 load rated with proper installation.
- See Pages 8-9



### Arc 18 System

- 16" wide chamber
- Lightweight design with articulating joints and pivot lockout feature
- AASHTO H-10 load rated with proper installation.
- See Pages 10-11



## Additional products approved for use by Vermont Department of Health

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BioDiffuser – 16" High Capacity

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# ARC 36 AND ARC 36 HC SYSTEM

Before beginning installation, please note the following engineered features of the Arc 36 model chambers and endcaps.

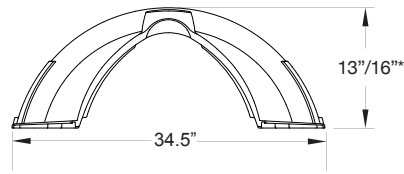
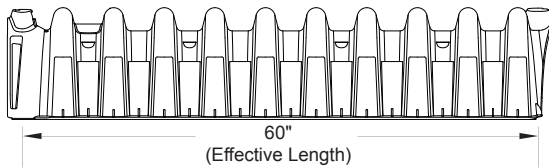
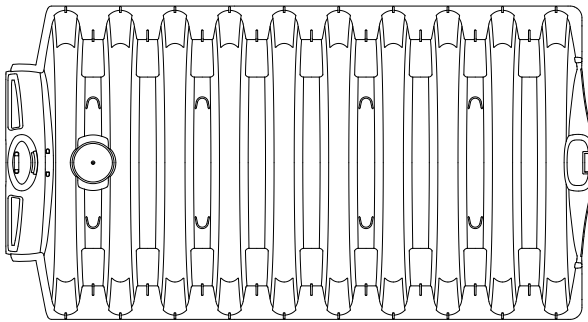
Each chamber end is either marked “Dome” or “Post” on the round observation/vent knockout ports. These indicate section of assembly, dome over post.

Arc 36 Chamber Specifications	
Length	63”
Effective Length	60”
Overall Width	34.5”
Invert Height	7.13”/10.75”*
Overall Height	13”/16”**

\*10.75” invert height for Arc 36 HC  
 \*\*16” overall height for Arc 36 HC  
 Calculations and dimensions are nominal

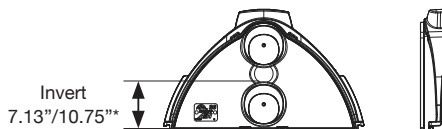


## Arc 36 and Arc 36 HC Chamber Top, Side, and End Views (not to scale)



\* 16” overall height for Arc 36 HC

## Arc 36 and Arc 36 HC Endcap Side and End Views (not to scale)



\*10.75” Invert height for Arc 36 HC

# ARC 36 AND ARC 36 HC SYSTEM

## Arc 36 Features

- The post and dome creates a positive lock securing the chambers for final engagement. Lock and drop feature for faster installation.
- The Arc 36 chamber feet are designed to provide support, particularly in sandy soils.
- Sidewall louvers are designed to allow effluent to exit the chamber sidewalls while preventing soils from migrating into the chamber void.
- Observation/venting knockout ports provide for inspection of system performance as well as a convenient location for ventilation pipes.
- Each chamber end has small knockouts on the dome positioned in the “Post” end joint. When removed, these knockouts allow for the use of zip ties to support piping in dosing systems.



• Lock and Drop



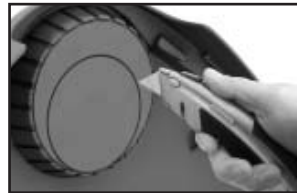
• Louvers and Feet



• Observation Port

## Arc 36 Universal Endcap

- Upper and lower knockouts accommodate both Schedule 40 and SDR 35 piping. Knockouts can be removed with a knife or hole saw. Dimples are also offered for the positioning of hole saw pilot drills.
- Endcaps are designed to attach to the chamber's dome or post end in the same fashion for each end with the Arc 36 logo facing outward.



## Arc 36 Swivel Feature

- The engagement mechanism of the Arc 36 chamber is designed to allow for a pivot between joined chambers of up to 10° in either direction.



## Arc 36 Side Port Coupler (SPC)

- SPC component snaps in place to allow additional pivoting space when used mid-line.



## Arc 36 System Configurations

- Trench Installation: Pages 11
- Additional Configurations: Pages 14-15

# ARC 24 SYSTEM

Before beginning installation, please note the following engineered features of the Arc 24 model chambers and endcaps.

Each chamber end is either marked “Dome” or “Post” on the round observation/vent knockout ports. These indicate direction of assembly, dome over post.

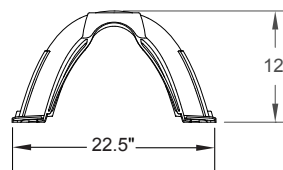
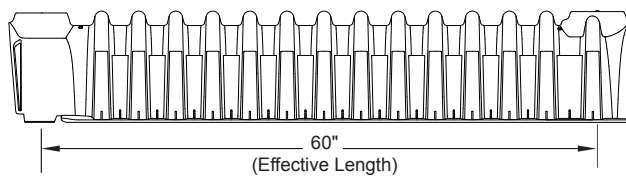
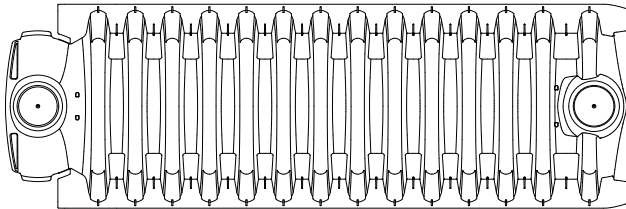
Arc 24 Chamber Specifications	
Length	67”
Effective Length	60”
Overall Width	22.5”
Invert Height	6.25”
Overall Height	12”

*Calculations and dimensions are nominal*



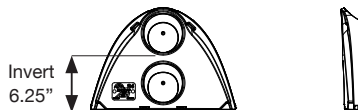
## Arc 24 Chamber

Top, Side, and End Views (not to scale)



## Arc 24 Endcap

Side and End Views (not to scale)



## ARC 24 SYSTEM

### Arc 24 Features

- Base flanges on the chambers ends over lock during final engagement to form a very strong joint.
- The Arc 24 chamber feet are designed to provide support particularly in sandy soils.
- Sidewall louvers are designed to allow effluent to exit the chamber sidewalls while preventing soils from migrating into the chamber void.
- Observation/venting knockout ports provide for inspection of system performance as well as a convenient location for ventilation pipes.
- Each chamber end has small knockouts on the roof positioned in the "Post" end joint. When removed, these knockouts allow for the use of zip ties to support piping in low pressure dosing systems.



• Overlocking Ends



• Louvers and Feet



• Observation Port



• Zip Tie Knockouts

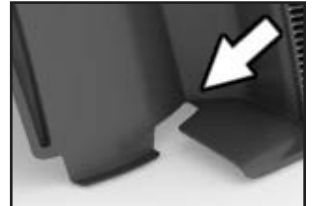
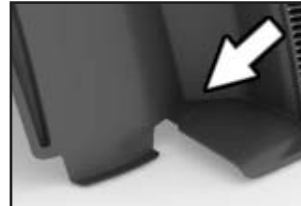
### Arc 24 Endcap

- Upper and lower knockouts accommodate both Schedule 40 and SDR 35 piping in a single hole tap. Dimples are also offered for the positioning of 4.25" hole saw pilot drills.
- Endcaps are designed to attach the chamber's dome or post end in the same fashion for each end with the Arc 24 logo facing outward.



### Arc 24 Swivel Feature

- Each chamber's post end has swivel lockout tabs at either base flange. When removed, the incoming chamber will turn up to ten degrees in the direction of the removed lockout tab. Without removal of the swivel lockout tab, the chambers will align in a straight pattern.
- Swivel lockout tabs may be removed with a striking blow to the tab and then peeling off the remaining piece of plastic or cut with a knife.



### Arc 24 Side Port Coupler (SPC)

- SPC component snaps in place to allow additional inletting options or pivoting space when used in-line.



# ARC 18 SYSTEM

Before beginning installation, please note the following engineered features of the Arc 18 model chambers and endcaps.

Each chamber end is either marked “Dome” or “Post” on the round observation/vent knockout ports. These indicate direction of assembly, dome over post.

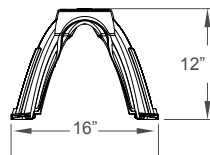
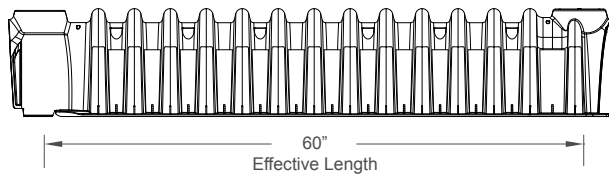
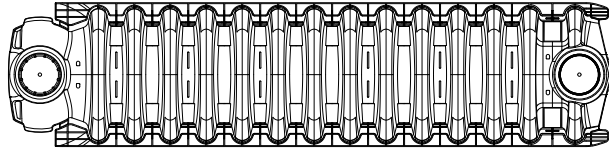
Arc 18 Chamber Specifications	
Length	67”
Effective Length	60”
Overall Width	16”
Invert Height	6.24”
Overall Height	12”

*Calculations and dimensions are nominal*



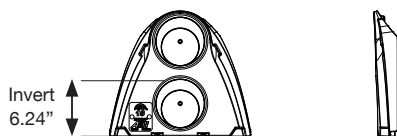
## Arc 18 Chamber

Top, Side, and End Views (not to scale)



## Arc 18 Endcap

Side and End Views (not to scale)





# ARC 18 SYSTEM

## Arc 18 Features

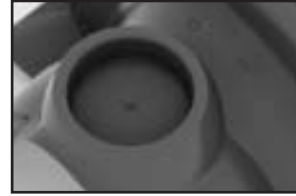
- Base flanges on the chambers ends over lock during final engagement to form a very strong joint.
- The Arc 18 chamber feet are designed to provide support particularly in sandy soils.
- Sidewall louvers are designed to allow effluent to exit the chamber sidewalls while preventing soils from migrating into the chamber void.
- Observation/venting knockout ports provide for inspection of system performance as well as a convenient location for ventilation pipes.
- Each chamber end has small knockouts on the roof positioned in the “Post” end joint. When removed, these knockouts allow for the use of zip ties to support piping in low pressure dosing systems.



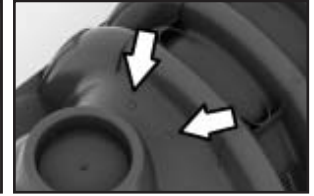
• Overlocking Ends



• Louvers and Feet



• Observation Port



• Zip Tie Knockouts

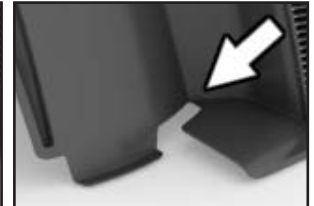
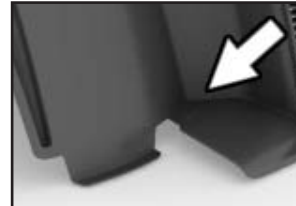
## Arc 18 Endcap

- Upper and lower knockouts accommodate both Schedule 40 and SDR 35 piping in a single hole tap. Dimples are also offered for the positioning of 4.25” hole saw pilot drills.
- Endcaps are designed to attach the chamber’s dome or post end in the same fashion for each end with the Arc 18 logo facing outward.



## Arc 18 Swivel Feature

- Each chamber’s post end has swivel lockout tabs at either base flange. When removed, the incoming chamber will turn up to ten degrees in the direction of the removed lockout tab. Without removal of the swivel lockout tab, the chambers will align in a straight pattern.
- Swivel lockout tabs may be removed with a striking blow to the tab and then peeling off the remaining piece of plastic or cut with a knife.



## SIDE PORT COUPLER

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Included in the Arc chamber line is the Side Port Coupler (SPC).  
The following Arc chamber model has an accompanying SPC:

Arc 18  
Arc 24  
Arc 36  
Arc 36 HC



### **Function:**

*The SPC offers flexibility of pivoting when installed in series between two chambers within the chamber line to allow for increased turning capability.*



# INSTALLATION INSTRUCTIONS

## Preparation

- Excavate to proper width and depth as described in the system design or permit and as required by state and local codes.
- Smooth irregularities in the excavation and clear any large rocks or debris from the bottom surface area. Slope of the bottom area shall be determined by the system design, as well as state and local codes.

## Installation

- Installation of the any Arc leaching system begins with laying the first chamber onto the prepared bottom surface area dome end first. Each additional chamber is then laid dome over post by raising the post end of the incoming chamber and slightly pulling the chamber back until the dome stops at the underlying post. As the incoming chamber is laid flat on the bottom, slide the lower base flanges under the raised base flanges of the previously installed chamber.



- As the incoming chamber is lowered down onto the excavation bottom, the two chambers fully engage in a straight-line pattern creating a very strong joint.

**Note:** If the following chamber is simply laid onto the preceding chamber the joint will not be fully engaged.

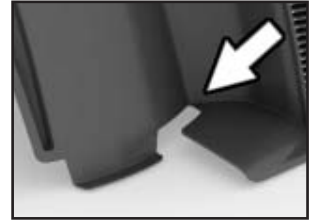
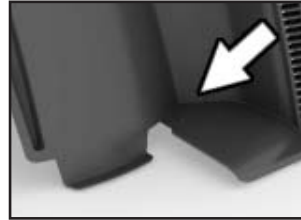
## Turns

- The Arc chambers are designed with an articulating joint that allows for a turn of up to 20° of movement with maximum of 10° in either direction.

**Note:** The Arc 24 is designed with lockout tabs.

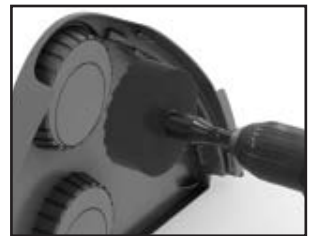


- If a turn application is desired with the Arc 24 chamber, the lockout tab should be removed before installing the incoming chamber. The lockout tab is located at the base flange of the previously-installed chamber (on its “Post” end).
- Strike or cut the lockout tab and tear the remaining tab material away from the chamber.
- If sharper turns are required, 4” pipe and fittings may be used.



## Installation of Endcaps & Pipe Connections

- Prior to installing endcaps, remove the appropriate knockout for pipe connections. Snap an endcap on each end of the drain lines with the product or company logo facing out (knockouts can be removed with a knife or a 4” hole saw).



- Upper endcap 4” knockouts — always used as inlet for each line. A four-inch hole saw may be used.

## Splash Plates

- Splash plates are mandatory on each inlet endcap for gravity delivery of effluent.
- Company provided splash plates are installed by simply aligning the holes on the splash plate with the corresponding dimples on the endcap and snapping into place.
- Splash plates are used separately.



## INSTALLATION INSTRUCTIONS (Continued)

### Filter Fabric

The use of filter fabric is recommended, and is required, in certain soil conditions. If used, drape the fabric to completely cover the louvered sidewalls of the chambers to prevent soil intrusion, while allowing water and air to pass through.

The following single or combination of conditions warrant the use of filter fabric:

- The backfill material is fine or very fine uniform sand.
- The drainfield will be left uncovered.
- The drainfield will not be protected from surface drainage (i.e. downspouts, barrel-tile roofs, paved areas, and neighboring property, etc.).

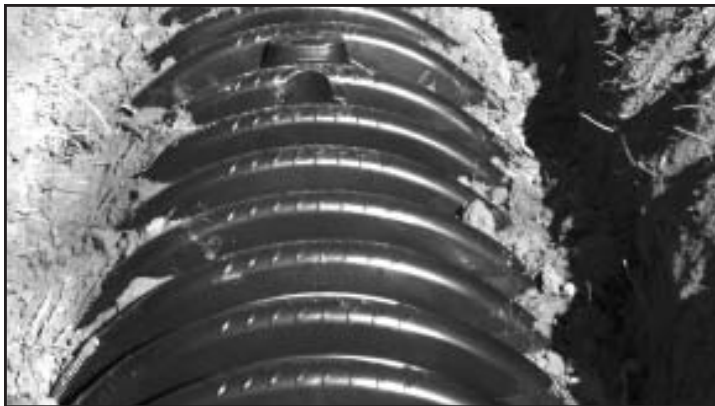
Filter fabric should meet the following specifications and can be purchased from most Infiltrator Systems distributors:

- Fabric: Spun bonded, made up of nylon fibers, hydrophilic in nature
- Weight: 0.35 – 1 oz/yd<sup>2</sup>

### Ventilation

Drainfield ventilation is recommended, but not required, to allow oxygen to access the drain field especially when cover soil quality is questionable.

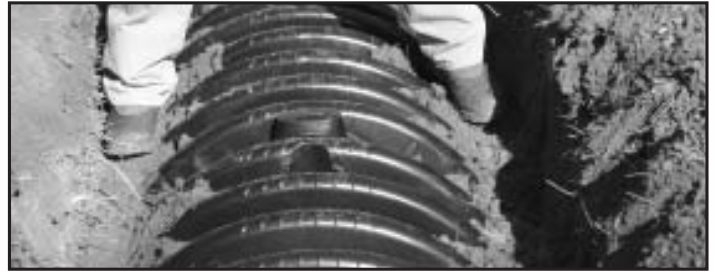
- Knockouts are provided in the top of all Arc chambers. The dome/post feature of the Arc 24 chamber also acts as a knock-out for observation/vent ports. Here a PVC pipe may be introduced into the chamber and vented to atmosphere.
- Make certain the vent is assembled in such a fashion as to prevent rainwater from entering, effluent from exiting the chamber line.
- Several outlet products are available for this purpose.



### Backfill

- Modestly compact the sidewall area backfill material by simply walking down the sides of the chambers. Sidewall compaction is important to begin the stabilization process of the soil, to support the chamber sidewalls,

and help prevent fine sand migration into the chamber louvers. This procedure may be accomplished any time during the installation or covering process.



- All Arc chambers are AASHTO H-10 load rated. Where vehicular loading is anticipated during installation of the system or construction of the facility, AASHTO H-10 loading (16,000 lbs/axle) is achieved by backfilling with a minimum of 12" of properly compacted cover.
- Do not drive heavy equipment over a system comprised of non-compacted cover material without first bridging the excavation. Use lightweight or tracked equipment to push the soil onto the system to the proper height set forth by local and state codes.

### Final Grade

- Make certain that storm water is diverted away from the drainfield. System final grade should be crested or sloped, never left flat or concave. Channel water away from the drainfield.
- Final grading subcontractors and landscapers should be alerted and instructed to proper covering procedures, cover materials, and finish contours and elevations.
- Final grade material should be slightly to moderately limited soil to help maintain an aerobic state in the drain field.
- Stabilize the drainfield area with grass-type vegetation prior to heavy rains if possible.

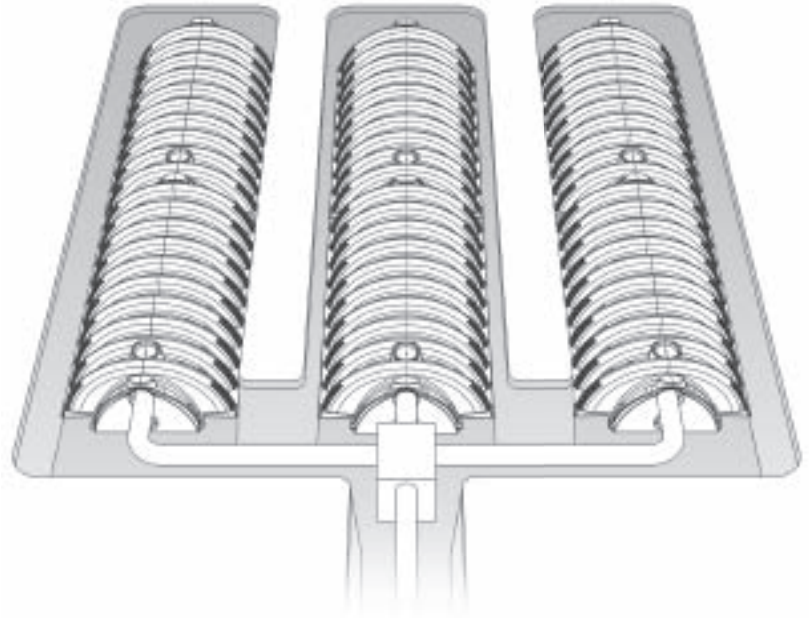
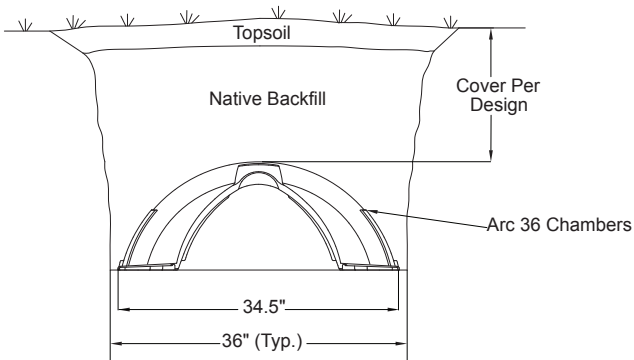
# SYSTEM CONFIGURATIONS

## Trench System

The typical installation is utilized on level sites.

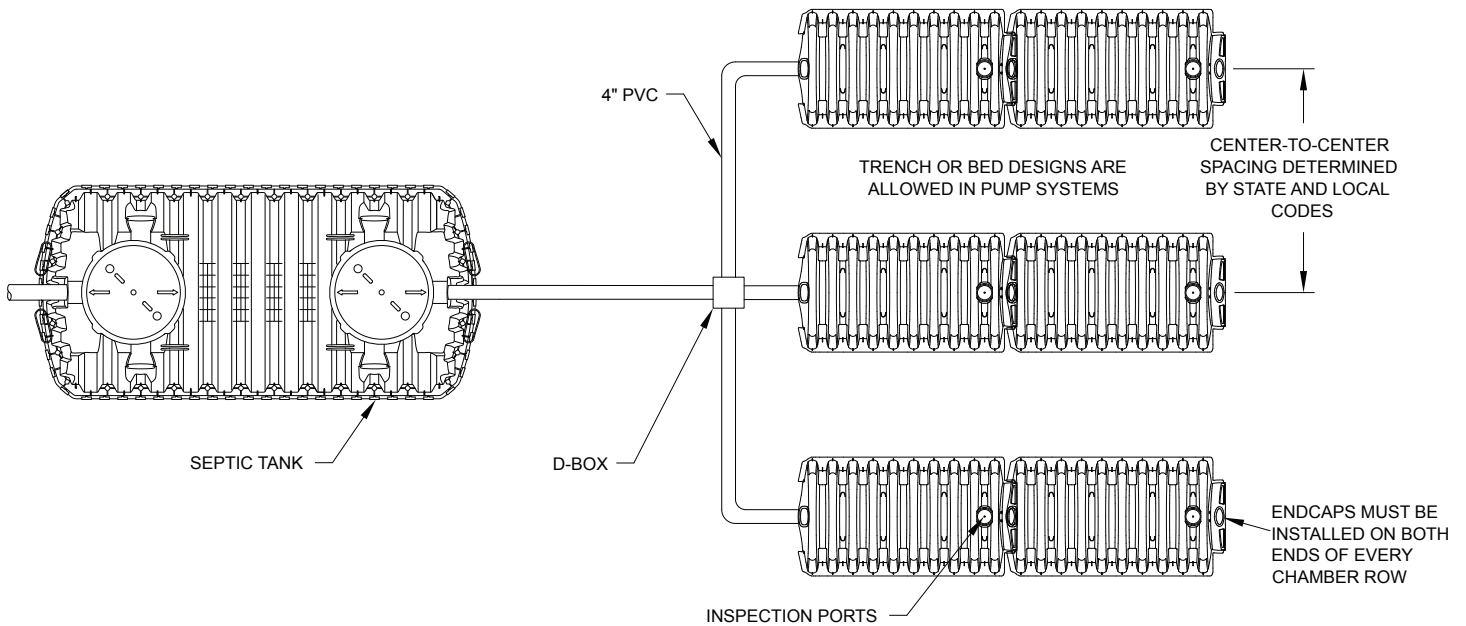
### Typical Trench: Cross-Section

Typical (not to scale)



### Typical Trench: Plan View

Typical (not to scale)



**Notes:**

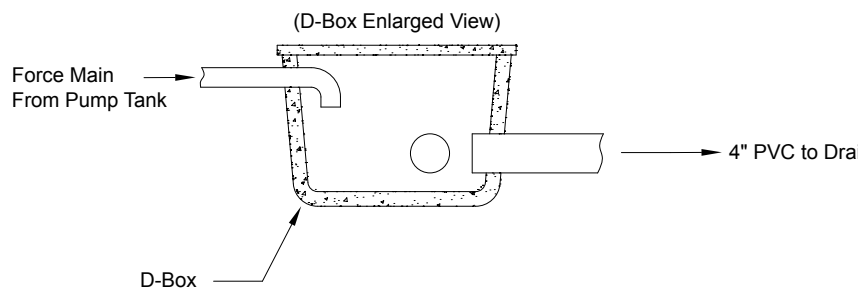
1. System configuration applies to other approved chamber models.
2. Approved chambers are for non-traffic applications, but are capable of withstanding AASHTO H-10 loadings with 12" of cover minimum.

# ADDITIONAL SYSTEM CONFIGURATIONS

## Pump Systems: Pump to D-Box

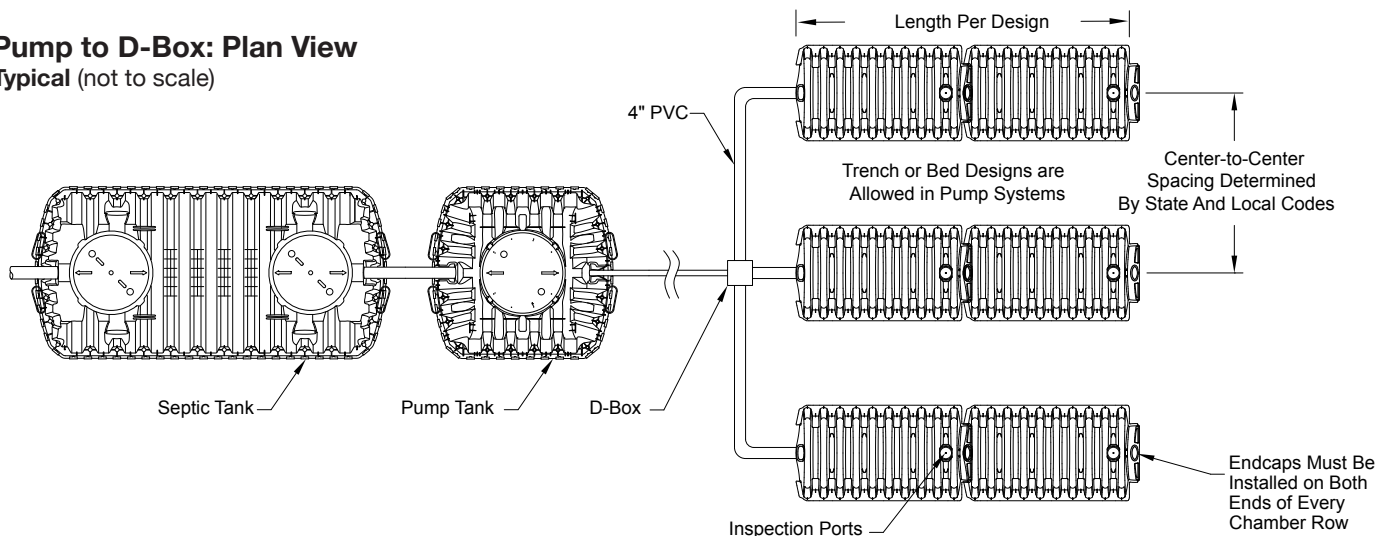
### Pump to D-Box: Section View

Typical (not to scale)



### Pump to D-Box: Plan View

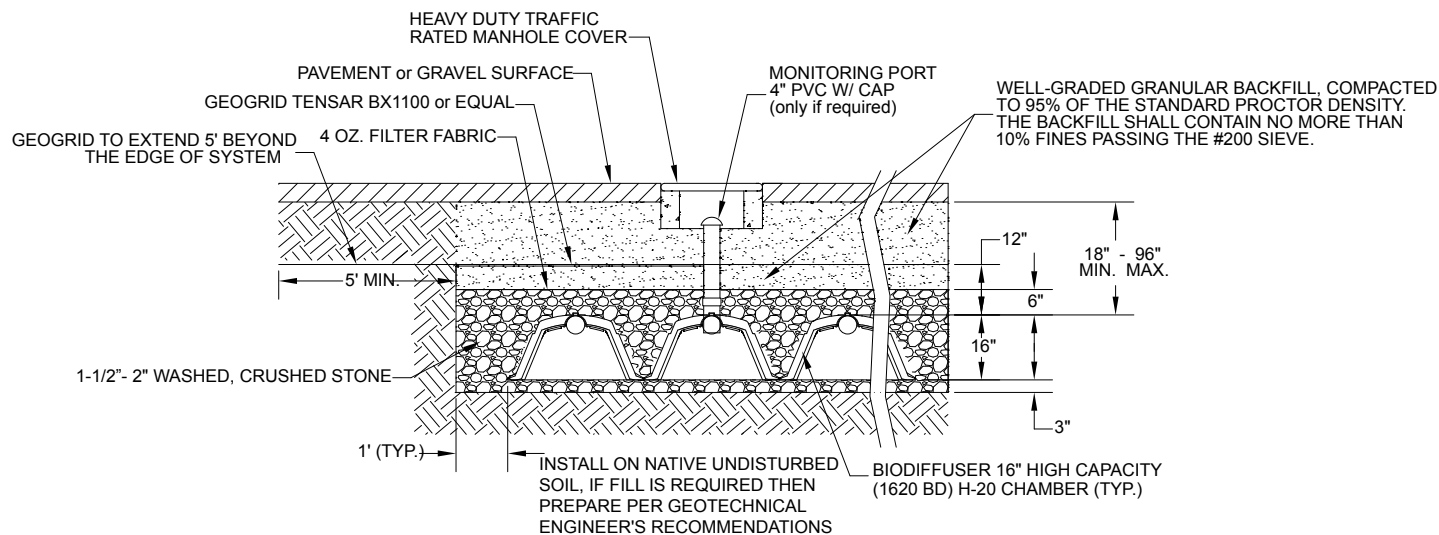
Typical (not to scale)



# TRAFFIC CONFIGURATIONS

## BioDiffuser 16" High Capacity Chamber (BD1620) H-20 SYSTEM DETAIL

Typical (not to scale)



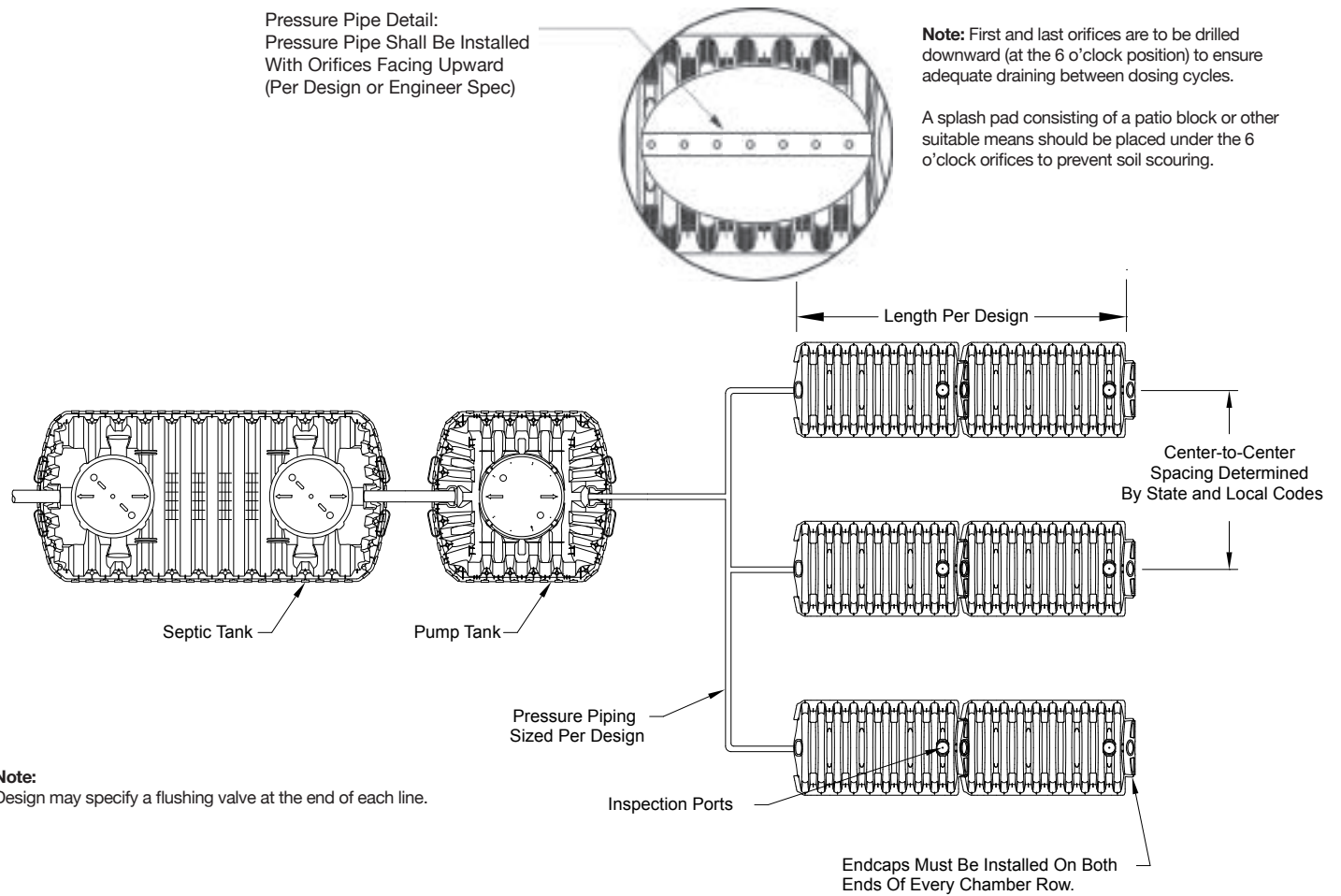
**NOTE:** Due to stone on the bottom of trench, these applications must be sized similarly to stone beds.

# ADDITIONAL SYSTEM CONFIGURATIONS

## Low Pressure Distribution System

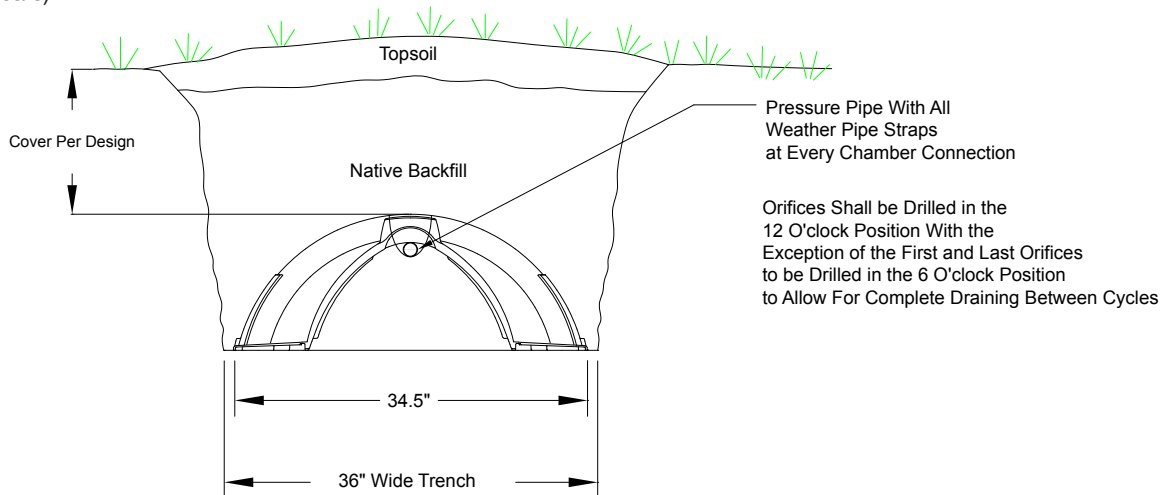
### Pressure Dosing: Plan View with Detail

Typical (not to scale)



### Pressure Distribution: Pipe Support Installation Cross-Section

Typical (not to scale)



**Notes:**

1. System configuration applies to other approved chamber models.
2. Approved chambers are for non-traffic applications, but are capable of withstanding AASHTO H-10 loadings with 12" of cover minimum.

# SYSTEM SIZING – BED AND TRENCH

**Table 1. Regulation Sizing - Bed Configurations**

Percolation Rate (min/inch)	Number of Chambers in Aggregate-Free Bed Systems			
	3 Bedrooms		Each Additional Bedroom	
	ARC 36	ARC 36 HC	ARC 36	ARC 36 HC
4	20	20	3	3
6	20	20	3	3
8	22	21	4	3
10	25	23	4	4
12	27	26	5	4
14	30	27	5	4
16	31	30	5	5
18	33	31	5	5
20	35	33	6	5
22	37	34	6	5
24	38	36	7	6
26	40	37	7	6
28	41	38	7	6
30	43	40	7	7
32	44	41	7	7
34	46	43	7	7
36	47	44	8	7
38	48	45	8	7
40	49	46	8	7
42	50	47	8	8
44	51	48	9	8
46	53	49	9	8
48	54	50	9	8
50	55	51	9	8
52	56	52	9	9
54	57	54	9	9
56	58	55	9	9
58	59	55	9	9
60	60	56	9	10

**Table 2. Regulation Sizing - Trench Configurations**

Percolation Rate (min/inch)	Number of Chambers in Aggregate-Free Trench Systems			
	3 Bedrooms		Each Additional Bedroom	
	ARC 36	ARC 36 HC	ARC 36	ARC 36 HC
4	20	16	3	2
6	20	16	3	3
8	20	17	3	3
10	20	18	3	3
12	22	20	3	3
14	23	22	4	3
16	25	23	4	4
18	27	25	4	4
20	28	26	5	4
22	30	27	5	4
24	31	29	5	5
26	32	30	5	5
28	33	31	6	5
30	34	32	6	5
32	35	33	6	6
34	36	34	6	6
36	37	35	6	6
38	38	36	7	6
40	39	37	7	6
42	40	37	7	6
44	41	38	7	7
46	42	39	7	7
48	43	40	7	7
50	44	41	7	7
52	45	41	7	7
54	46	42	8	7
56	47	43	8	7
58	47	44	8	7
60	48	45	8	7

**NOTES:**

- ARC chambers are rated as follows:  
ARC 36 – 4.54 ft<sup>2</sup>/ linear foot;  
ARC 36 HC - 4.86 ft<sup>2</sup>/ linear foot.
- ARC Side Port Couplers are rated as follows:  
ARC 36 SPC – 3.55 ft<sup>2</sup>/ unit;  
ARC 36 HC - 4.45 ft<sup>2</sup>/ unit.
- Minimum chamber units cited in Table 1 are for reference only. Actual chamber line lengths may vary. Please size system in accordance with Vermont Wastewater System and Potable Water Supply Rules.
- The design flow for an ARC chamber system servicing a single family residence shall be based upon a minimum of three (3) bedrooms.
- The “Additional Bedroom” specifications listed in Table 1 assume one person per bedroom.
- The minimum and maximum percolation rates for trench and bed designs when utilizing Arc chambers are 4 min/inch and 60 min/inch respectively. For “mound system” sizing see Table 3.



# SYSTEM SIZING – MOUND

Table 3. ARC 36 and ARC 36 HC Sizing in Mound Applications

Percolation Rate (min/inch)	Number of Chambers in Aggregate-Free Trench Systems			
	3 Bedrooms		Each Additional Bedroom	
	ARC 36	ARC 36 HC	ARC 36	ARC 36 HC
120	19	17	3	3

# WARRANTY

## INFILTRATOR SYSTEMS, INC. STANDARD LIMITED WARRANTY

(a) The structural integrity of each chamber, endcap 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 one (1) 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, endcap 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.



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

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**Contact Infiltrator Systems' Technical Services Department for assistance at 1-800-221-4436**