

Septic Tanks, Distribution Boxes, and Chamber Leaching Systems Approved for Use in Santa Cruz County

SEPTIC TANK EFFLUENT DISTRIBUTION BOXES INSTALLATION PROCEDURE AND APPROVED MODELS

A distribution box is used to divide the effluent flow from a septic tank into two or more leach trenches for soil absorption. Equal distribution is very important in order to take advantage of all of the available leaching area. Spreading the effluent dose over all parts of the system maintains a relatively low soil loading rate and provides better effluent treatment. Distribution boxes also provide a readily accessible means of locating the leaching device, making flow adjustments as needed, monitoring the disposal system, and making additions to the system.

Distribution boxes are typically made of reinforced concrete with plumbing “knock outs” into the box. The inlet must be higher than the outlets, with all outlets at the same level. The box must be large enough to accommodate the pipes and fittings used and still allow for flow adjustment. A sturdy gas-tight lid (and risers as needed) shall be provided to allow access from the surface. A list of approved manufacturers and distribution box model numbers is presented below.

The correct installation of distribution boxes requires proper planning and careful construction techniques. The location of the box(es) and associated plumbing, as well as the required elevations, must be worked out in advance. Grading of all portions of the system must be done with care such that the leach trench maximum allowable depth may be maintained. The distribution box(es) must be “wet set” on a pad of cement or grout on level undisturbed or mechanically compacted soil. All the outlet plumbing must be set into the box as level as possible with final flow adjustments made prior to final backfill. All piping must be resealed with grout. Environmental Health Service staff must perform an inspection that demonstrates that the flow out of the box has been properly adjusted as part of construction inspection for final system approval. Adequate water must be available at the site for the flow test.

Fine adjustments of flows to each leachfield shall be made as necessary to maintain the proper function of the distribution box. If any leachfield fails, a valve must be installed on the pipe from the distribution box to the leachfield and closed to stop the failure.

APPROVED EFFLUENT DISTRIBUTION DEVICES

M. C. Nottingham	Models:D-48 (5 exit ports) D-49 (3 exit ports)
Tom’s Septic Tanks	Septic tank with built-in AD@ box And all separate AD@ boxes
O.S.I.	Hydrosplitter
Zabel	Flow-divider

(Other IAPMO or NSF approved devices may be approved for use in Santa Cruz County by the Health Officer upon submittal of satisfactory supporting documentation)

APPROVED SEPTIC TANK LIST - County of Santa Cruz

Material	Brand	Sizes (Gallons)	IAPMO Certified	NSF Certified
Fiberglass	Loomis	750/1000/ 1250/1500	Yes	No
	Fiber Enterprises	750/1000/1250/1500/ 2000/3000/3500/4000/ 4500/5000/6000/7000/ 8000/9000/10000/11000/ 12000	Yes	No
	Orenco	500/1000/1500/2000	Yes	Yes, NSF 40
	Xerxes	1000/1500	Yes	No
Polyethylene	Norwesco	500/1000/1250/1500	Yes	No
	Roth Multitank	300/500/750/900/1000/ 1060/1250/1500	Yes	Yes, NSF 61
	Snyder	750/900/1050/1250/1500/	Yes	No
	Infiltrator	540/1060/1530	Yes	No
Concrete	Jensen Precast	750/1000/1200/1500/ 2000/25000	Yes	No
	Don Chapin Pinnacle	750/1000/1250/1500/ 2000/2500/ 3000	Yes	No
	Selvage	810/1200/1500/2000	Yes	No
	P & L Concrete	500/750/1000/1200/1500/ 1900/2000	Yes	No

CHAMBER LEACHING SYSTEMS REGULATIONS

These regulations have been developed and promulgated pursuant to Section 7.38.150(B) of the County Code. This section of the County Code directs the Health Officer to develop regulations and standards for the use of chamber leaching systems. The following regulations shall be used for the sizing, installation and inspection of chamber leaching systems, only. All other aspects of onsite wastewater treatment and disposal shall be regulated as provided by Chapter 7.38 of the County Code.

BACKGROUND

The leaching of septic tank effluent into the ground in Santa Cruz County has historically been primarily accomplished by the use of rock filled trenches. The rock in the trenches does not aid in the treatment of septic effluent, but rather serves to support the distribution pipe and the soil excavation, and provides velocity reduction. Chambered leachfields have been in use in the United States and other countries for twenty-five years. Chambered leachfields made of light weight, synthetic materials have installation advantages for sites where equipment access is difficult. The Santa Cruz County Board of Supervisors approved an amendment to Chapter 7.38 of the County Code effective in 1997 which provides for the use of chamber leaching in the county.

REVIEW OF PROPRIETARY LEACHING CHAMBERS AND APPROVAL FOR USE

Chamber leaching devices are proprietary products that are engineered to provide for the disposal of septic tank effluent. Since each product may have different design aspects that may affect the infiltration of effluent into the ground, the manufacturers of each product must provide a product package for the review of the Health Officer that supports the use of their product. The package must contain the following documentation:

- 1) Studies conducted by agencies not associated with the manufacturer regarding the use of the product as a leaching device.
- 2) Acceptance or approval letters by other regulatory agencies.
- 3) Review or approval documents from recognized standards and testing organizations, such as International Association of Plumbing and Mechanical Officials (IAPMO), Underwriters Laboratories, Uniform Plumbing Code, ANSI, NSF, etc.
- 4) Recommended sizing and installation standards.

The Health Officer shall evaluate the package regarding the quality of the studies conducted, the quality and quantity of the agencies and organizations that permit and/or endorse the product, and shall evaluate the manufacturer's recommended sizing and installation standards for appropriateness in Santa Cruz County. The Health Officer shall specify sizing requirements based on soil characteristics, soil percolation rates, installation requirements, and construction inspection points.

CHAMBER LEACHING REGULATIONS FOR INFILTRATOR SYSTEMS, INC.

APPROVAL FOR USE IN SANTA CRUZ COUNTY

A product package has been prepared and submitted by Infiltrator System. The package contains studies conducted by researchers at the University of Wisconsin, the Water Authority of Western Australia, the City of Amarillo, and numerous other independent research reports that support the use of Infiltrator products. The Uniform Plumbing Code recognizes the use of plastic chamber leaching devices. Infiltrator products are approved in 15 states and 24 counties in California. After evaluating the package prepared by Infiltrator Systems, Inc., leaching chambers models: Quick4 High Capacity, Quick4 Standard, Quick4 Equalizer 36 and Quick4

Equalizer 24 are hereby approved for use in Santa Cruz County with the conditions noted in this report and on the attached table. A permit must be obtained from the County Environmental Health Service for their installation as wastewater leaching devices. Model H-20 Infiltrator products were approved in May, 1999, for use in driveways and parking lots.

SIZING

Attached to this report is a sizing chart approved for the use of four models of Infiltrator leaching chambers. This chart represents the sizing recommended by the Manufacturer with the exception that a 6-15 Minute Per Inch (MPI) soil sizing range was combined with the 16-30 MPI range to match County percolation rate ranges. Thus, the County sizing criteria for 6-30 MPI soils are more conservative for the soils in the 6-15 MPI range. The application rates from the US EPA Design Manual for Onsite Wastewater Treatment and Disposal Systems (EPA 625/1-80-012, table 7-2, p.214) provided the basis for sizing of Infiltrator chambered systems submitted by the manufacturer. A peak flow of 150 gallons per day per bedroom was used as estimated residential flows, which is more conservative than current design flows for rock filled trenches in Santa Cruz.

A comparison of conventional rock filled trenches to Infiltrator chamber leachfields indicates that the amount of disposal area required is approximately equal for two parallel trenches. The conventional, rock filled leach field requirements for a three-bedroom house with 6-30 MPI soils would require a total of 138 lineal feet of trench that has a 2 ½ feet of rock in an 18 inches wide trench. The two parallel rock filled trenches would require approximately 552 square feet of ground surface disposal area. Use of the Infiltrator Quick4 High Capacity model for the same parcel would require 125 lineal feet of chambers (32 chambers at 4.0 lineal feet/chamber). The Infiltrator system would require approximately 558 square feet of ground surface disposal area.

County Code permits a 50% reduction of leaching requirements where there is an approved pretreatment device such as a sand filter or approved proprietary treatment unit prior to the leaching device. This reduction factor shall also apply to Infiltrator chamber models approved in this report.

For commercial installation, only the Infiltrator Quick4 High Capacity model will be permitted. Similarly to rock filled trenches, commercial systems will be designed based on the peak daily flow. The sizing chart indicates the peak gallons per day per chamber for the different soil percolation rates.

INSTALLATION

All setbacks and maximum trench depth requirements specified in Chapter 7.38 shall apply to the installation and siting of all chamber leaching devices. Trenches for the Quick4 High Capacity and Quick4 Standard Models shall be placed at least 3 feet edge to edge and the Quick4 Equalizer 36 and Quick4 Equalizer 24 shall be at least 2 feet edge to edge. The manufacturer's installation procedures appear appropriate. The installer shall read and follow the manufacturer's installation instructions. See the attached Infiltrator, Inc. installation procedures for the H-20 rated models in driveways and parking lots. Inspection risers shall be provided at the end of each trench. Traffic rated riser boxes with cast iron grade rings and lids are required for inspection risers in driveways or parking lots.

INSPECTIONS

The installer shall demonstrate to the inspector that trenches are level and prepared (scarified) according to the manufacturer's instructions. Representative sections of each trench

shall be left open until inspected.

INFILTRATOR SYSTEMS, INC. CHAMBER LEACHING SIZING REQUIREMENTS

30% discount included in chart for fast and medium perc rates
 (Total Linear Feet of Trench/Number of Chambers/sq. feet)

MODEL	1-5 MPI	6-30 MPI	31-60 MPI	
Quick4 HIGH CAPACITY	3 FEET SPACING BETWEEN TRENCHES			
1 Bedroom	72/18/500	88/22/600	140/35/900	
2 Bedrooms	92/23/625	108/27/750	172/43/1125	
3 Bedrooms	108/27/750	132/33/900	208/52/1350	
4 Bedrooms	128/32/875	152/38/1050	240/60/1575	
Additional Bedrooms	20/5/125	24/6/150	32/8/225	
Peak GPD/Chamber	11.868	9.936	6.624	

Gopher barrier required on chambers unless waived by EHS

If infiltrators are installed deeper than 4 foot total trench depth, 30% discount is not applicable