



INTEROFFICE MEMORANDUM

INFORMATION
HSES 01-015

DATE: April 26, 2001

TO: County Health Department Directors/Administrators
ATTN: Environmental Health and Engineering Directors

THROUGH: Sharon Heber, *Sydney* Dr.P.H., Director, Division of Environmental Health

FROM: *Gerald Briggs* Gerald Briggs, Chief, Bureau of Onsite Sewage Programs

SUBJECT: Alternative Drainfield Approval-Cultec

Attached is a copy of the agreement with Cultec, Inc. for approval of their chamber drainfield system as an alternative drainfield system for use in the State of Florida. Please note items 3 and 4 of the attachment. These chambers are approved on a square foot for square foot basis when compared to a gravel drainfield. The Contactor EZ24 is rated at 10.75 square feet per 8 foot chamber section. The Contactor 100 system is rated at 21.5 square feet per 7.5 foot chamber section. System approval includes utilization of the Cultec #410 filter fabric per the manufacturer's installation instructions.

Also attached is a copy of the drawings and information package for the approved systems.

Attachments



Jeb Bush
Governor

Robert G. Brooks, M.D.
Secretary

November 13, 2000

Mr. Robert DiTullio, Jr.
Vice President
Cultec, Inc.
878 Federal Road
Brookfield, CT 06804

Dear Mr. DiTullio;

We received your letter dated October 11, 2000 requesting approval of the Contactor EZ24 and Contactor 100 chambers for use as alternative drainfield systems in onsite sewage treatment and disposal systems in the State of Florida. Your request includes the two styles in three installation configurations. Those installation configurations are for gravity flow along the bottom of the chamber at the infiltrative surface, low-pressure distribution through 2-inch perforated pipe located at the external top of the chamber, and gravity flow through standard 4-inch perforated drainfield pipe located at the external top of the chamber.

The Cultec chamber is a unique system, not yet tested in the State of Florida. There are many dissimilar design features that distinguish this type of chamber from other chamber systems approved for use in the state. Therefore, please be advised that the department is willing to grant approval for a maximum of sixty systems for evaluation. The conditions of the approval are as follows:

1. Cultec shall provide a database for the sixty systems. The database shall, for each system installed, include the following information:
 - The model number of the chamber, i.e. Contactor EZ24 or Contactor 100.
 - The configuration of the system, i.e. gravity bottom flow, gravity pipe distribution, or low-pressure pipe distribution.
 - The date of construction approval of each installation.
 - The address of each installation.
 - The licensed contractor for each installation.
 - The daily flow of each installation.
 - The soil loading rate for each installation.
 - The drainfield size of each installation.
 - The estimated seasonal high water level relative to the original grade at the site.
 - Whether the system is sub-surface, filled, or mounded.
2. The database shall be upgraded every three months, with the first report due 15 days after construction approval of the first installation.
3. The Contactor EZ24 system shall be rated at 10.75 square feet / 8.0 ft chamber section.
4. The Contactor 100 system shall be rated at 21.50 square feet / 7.5 ft chamber section.
5. Two inspection ports shall be included in each installation. The ports shall be installed at approximately the $\frac{1}{4}$ and $\frac{3}{4}$ lengths of the drainfield.
6. The systems shall be inspected every August and February for a period of four inspections per system. An inspection includes an examination of the inspection port

and recording the liquid depth (ponding level) of the effluent in the chamber, as well as comments on the condition of the system in general. An updated report shall be submitted by September 30 and March 31 of each year.

7. System approval includes utilization of the Cultec #410 filter fabric per installation instructions.

Except as herein noted, all systems shall be installed in accordance with sections 381.0065-381.0067 Florida Statutes, and all rules in Chapter 64E-6, FAC. The systems shall also meet the following conditions:

1. All licensed septic tank contractors who are going to install these systems shall be field instructed by certified employees of Cultec, Inc on the proper installation and backfilling requirements of the systems prior to installation.
2. Prior to the first installation in each county, contact the local Health Department to provide hands on training for the county health department staff.
3. The Contactor EZ24 and Contactor 100 chamber systems can be installed in subsurface, filled, or mound trench or bed systems. In bed systems the maximum centerline to centerline spacing of the distribution pipe shall be 36 inches.
4. The chambers may be used to house low pressure distribution networks.
5. A copy of the applicable limited warranty shall be provided to each homeowner/builder.

Department approval of any alternative system application or any other type system does not guarantee or imply that any individual system installation will perform satisfactorily for a specific period of time. The individual system design engineer or the registered septic tank contractor, if an engineer didn't design the system, is primarily responsible for determining the best system design to meet specific wastewater treatment and disposal needs and to address the specific property site conditions and limitations

Your application request has been approved in accordance with the provisions noted above. If you disagree with the provisions of the approval you have the right to request either a formal or informal hearing under the provisions of section 120.569 and 120.57, Florida Statutes. Please give the grounds for requesting a hearing and why you feel the agency's provisions are unacceptable. A request for hearing must be in writing and submitted to this office within twenty one (21) days after receipt of this approval letter. Administrative Hearing proceedings are covered by Chapter 120, Florida Statutes, and Chapters 10-2 and 28-5, Florida Administrative Code.

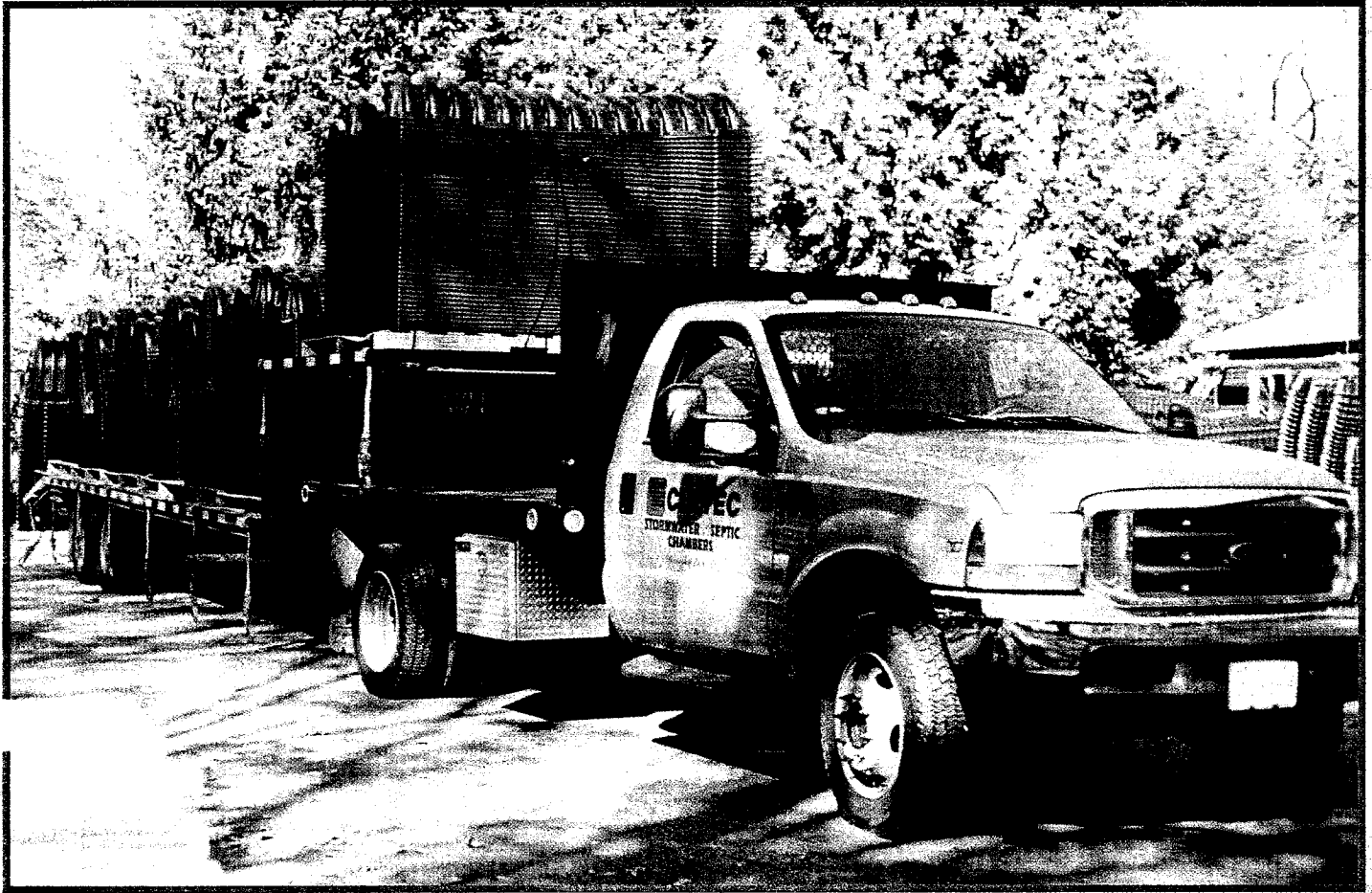
If you have any questions please call me at (850) 245-4070.

Sincerely,

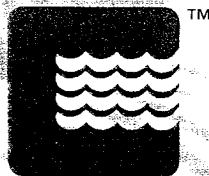


Paul Booher, PE
Bureau of Onsite Sewage Programs

RECHARGER™ and CONTACTOR™ by CULTEC



For On-Site Wastewater and Stormwater Management Systems...
Provide Your Customer With High Quality, Cost Effective
CULTEC Polyethylene Chambers.
From **Lowest Profile** to **Highest Storage**... #1 IN BOTH!



CULTEC

"Water, water everywhere..."®

1-800-4CULTEC **www.cultec.com**

Some pipe manufacturers claim to offer total
STORMWATER MANAGEMENT but
THEIR TOTALS DO NOT COMPARE TO OURS!

RECHARGER



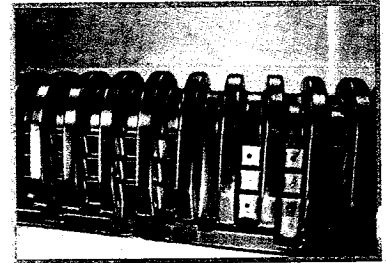
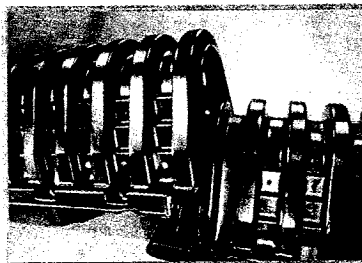
RECHARGER HD
FAR EXCEEDS ANY H-20
WHEEL LOAD REQUIREMENT
FOR INSTALLATION UNDER
PAVED, TRAFFICKED AREAS.

CULTEC chambers effectively serve environmentally sensitive areas while making valuable land available for parking lots, athletic fields and other applications. Open ponds may not be desirable for locations such as airports (which attract birds) or in areas where insurance and aesthetic considerations make them unfeasible. For underground stormwater management maintenance, use **CULTEC STORMFILTER™**

High-capacity, open bottom **RECHARGER** chambers provide greater storage and much higher infiltrative capability.

*Less area and less crushed stone is required with **RECHARGER** stormwater management systems.*

CULTEC'S patented fully shouldered connection...The Strongest Available.



◀ Airport Runway Stormwater Management Project.



CONTACTOR



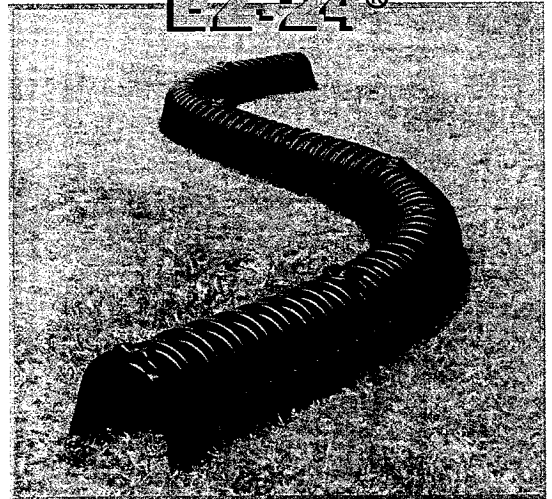
CULTEC CONTACTOR has the solutions to your ON-SITE WASTEWATER TREATMENT or stormwater management problems.

CULTEC chambers interlock simply by overlapping the larger rib of the chamber over the preceding chamber's smaller end rib.

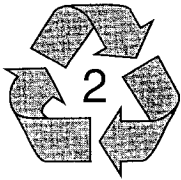
Always specify CULTEC 410 FILTER FABRIC when using CONTACTOR or RECHARGER systems. It eliminates the use of crushed stone, prevents soil intrusion and promotes high efficiency.

In 1999, CULTEC introduced the industry's *first and only flexible chamber:*

EZ-24®



U.S. and Canada patents and other patents pending. All rights reserved.

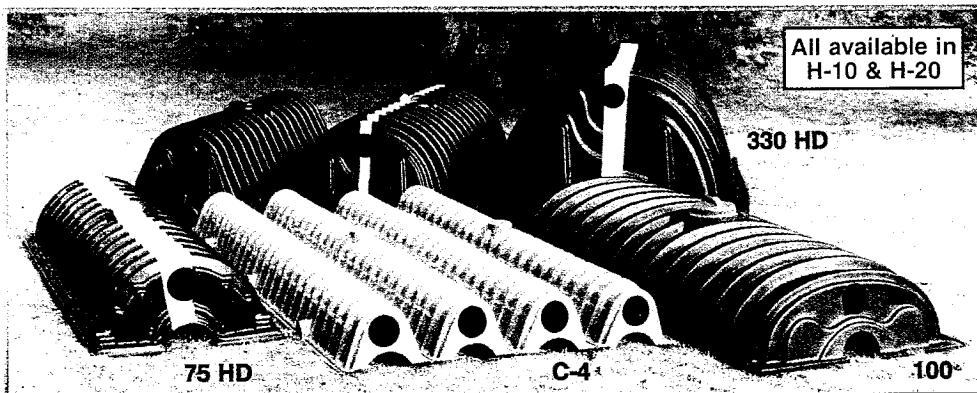


Shown at right:
CULTEC 410
FILTER FABRIC
covering
CONTACTOR
chambers.



CULTEC—YOUR WISEST CHOICE!

Whether you are limited by high groundwater or are trying to get the highest storage in a given area, CONTACTOR and RECHARGER chambers are now available in at least 10 sizes ranging from 8.5" - 32.5" high and having capacities from 25 up to 425 gal per unit that effectively meet the demands of realistic site conditions.



Structural Integrity!

All CULTEC H-20 chambers are specifically designed for paved, trafficked areas.

CULTEC CHAMBER SPECIFICATIONS

Model	Capacity CF/LF	Height	Invert Height	Width	Overall Length
Field Drain C-1	0.40	8.5"	3"	12"	8.5'
Field Drain C-2	0.80	8.5"	3"	24"	8.5'
Field Drain C-3	1.20	8.5"	3"	36"	8.5'
Field Drain C-4	1.60	8.5"	3"	48"	8.5'
Contactor EZ-24	0.83	12.5"	6"	16"	8.5'
Contactor 75	1.60	12.4"	6"	30"	7.2'
Contactor 100	2.20	12.5"	6"	36"	7.5'
Contactor 125	2.20	18"	12"	30"	7.5'
Recharger 180	3.33	20.5"	14"	36"	7.33'
NEW Recharger 280	6.00	26.5"	20"	47"	8.0'
Recharger 330	7.40	30.5"	24"	52"	7.5'
Recharger 400	7.70	32.5"	25"	52"	7.5'

STORMFILTER — In-line Secondary Filter System

Now with oil
removal
capability!



STORMFILTER is a large capacity polyethylene chamber consisting of a combination of high quality screen and particulate filters. The filters remove both large and small particles from the stormwater entering the system that would otherwise block and eventually lower the overall ability of the stormwater management system. Its removable filters can be easily cleaned or replaced making your present system as good as when it was installed. **STORMFILTER** may be used with any existing stormwater management system, however, we guarantee it most effective when used with **CONTACTOR™** and **RECHARGER™** chambers.

A clean system = A more effective system

Authorized CULTEC Distributor:



CULTEC, INC.

878 Federal Road
Brookfield, CT 06804

PH: 203-775-4416

PH: 800-4-CULTEC

FX: 203-775-1462

<http://www.cultec.com>

Cultec@aol.com

FREE technical assistance, preliminary drawings, engineering manual, stormwater video, miniature chamber models, and AutoCAD design diskettes available upon request.

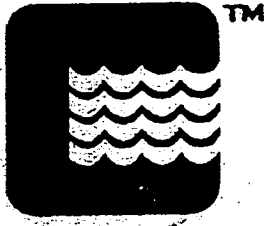
U.S. Patent No. 5,087,151

U.S. Patent No. 5,419,838

Other U.S. and Canadian patents

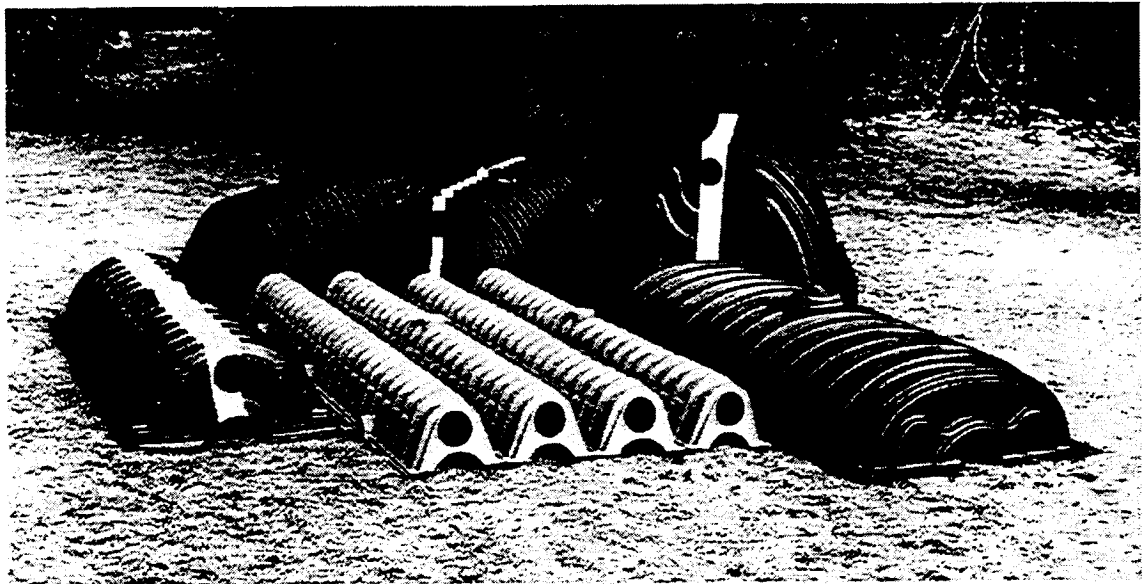
Other U.S. and Canadian patents pending

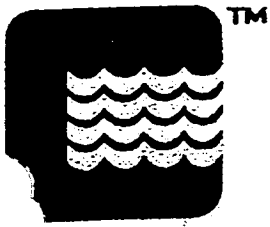
CONTACTOR and RECHARGER
are registered trade names of Cultec, Inc.
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Product Information for

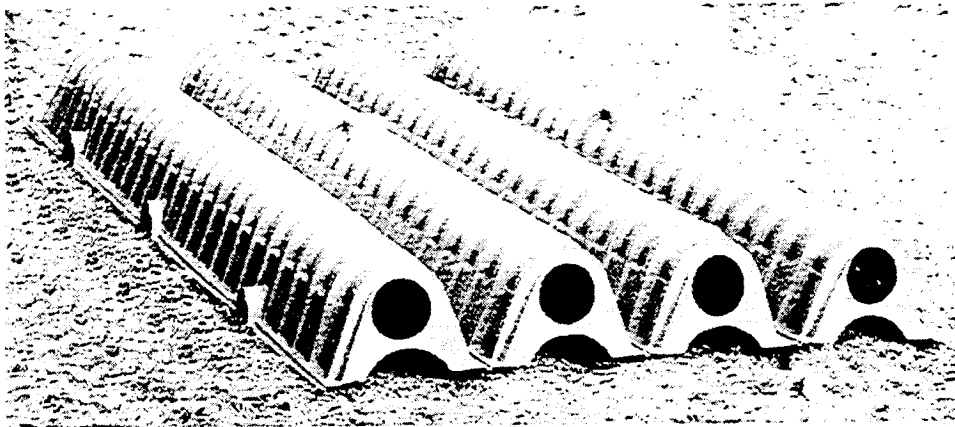
- **FIELD DRAIN® PANEL**
- **CONTACTOR™ EZ-24**
- **CONTACTOR™ 75**
- **CONTACTOR™ 100**
- **CONTACTOR™ 125**
- **RECHARGER™ 180**
- **RECHARGER™ 330**
- **RECHARGER™ 400**
- **STORMFILTER**
- **CULTEC Filter Fabric**
- **CULTEC Inspection Cover**
- **CULTEC Splash Deflector**



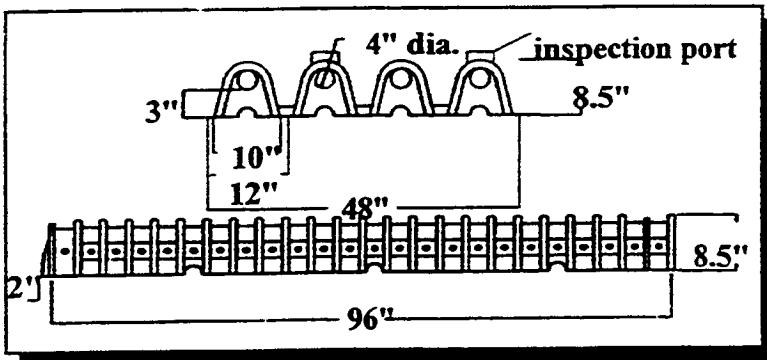


CONTACTOR™ FIELD DRAIN® PANEL

by Cultec, Inc.



- *Practical*
- *Efficient*
- *Cost Effective*
- *Easily Installed*
- *Durable*
- *Chemically Resistant*



Ultra low profile, only 8.5" high.

Practical for near surface designs.

Save on fill requirements for mound systems.

Well suited for use in either a trench or bed design.

For maximum effectiveness in a gravel-free septic system, use CULTEC 410 Fabric.

Easy to use 4' x 8' panels.

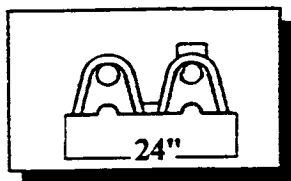
Superior flexibility in both length and width.

A four foot wide, four channel system which can be easily modified to:

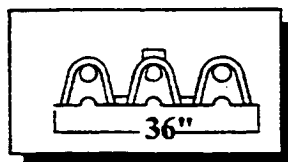
ONE,



TWO



or THREE
foot channel (widths).



Identification of Cultec's Heavy Duty H-20 Rated Chambers

All of Cultec's chambers are available in both light duty and heavy duty models. We manufacture our chambers in two different gauge thicknesses. A lighter gauge is used for untrafficked, mostly residential use. The heavier gauge HD model is used in traffic installations such as driveways, parking lots, and athletic fields (*which may be subject to occasional vehicular use and parking, etc.*). Cultec heavy duty (HD) model chambers are specifically designed for use under unpaved/paved trafficked areas. Currently we mark all seven Cultec HD chambers with a stripe for easy recognition.

Making the Choice between Cultec Heavy Duty vs. Standard Light Duty Chambers

When a choice is to be made between Cultec HD and Cultec Standard LD or other manufacturer's chambers, the installer must evaluate several important factors.

- 1.) ***Is the completed installation of chambers subject to vehicular traffic?***
If the area will be trafficked, choose Cultec HD models in your design.

- 2.) ***In the future, will the completed system be subject to traffic or should you consider traffic as a possibility?***
For instance, a playing field may someday be used for an extra parking area. Often when an initial design is completed an assessment of future situations has not been thorough. The result can be both unnecessary and costly. By evaluating the location of the system, particularly commercial, industrial, or institutional applications, we usually recommend the advantage of using Cultec's HD chamber.

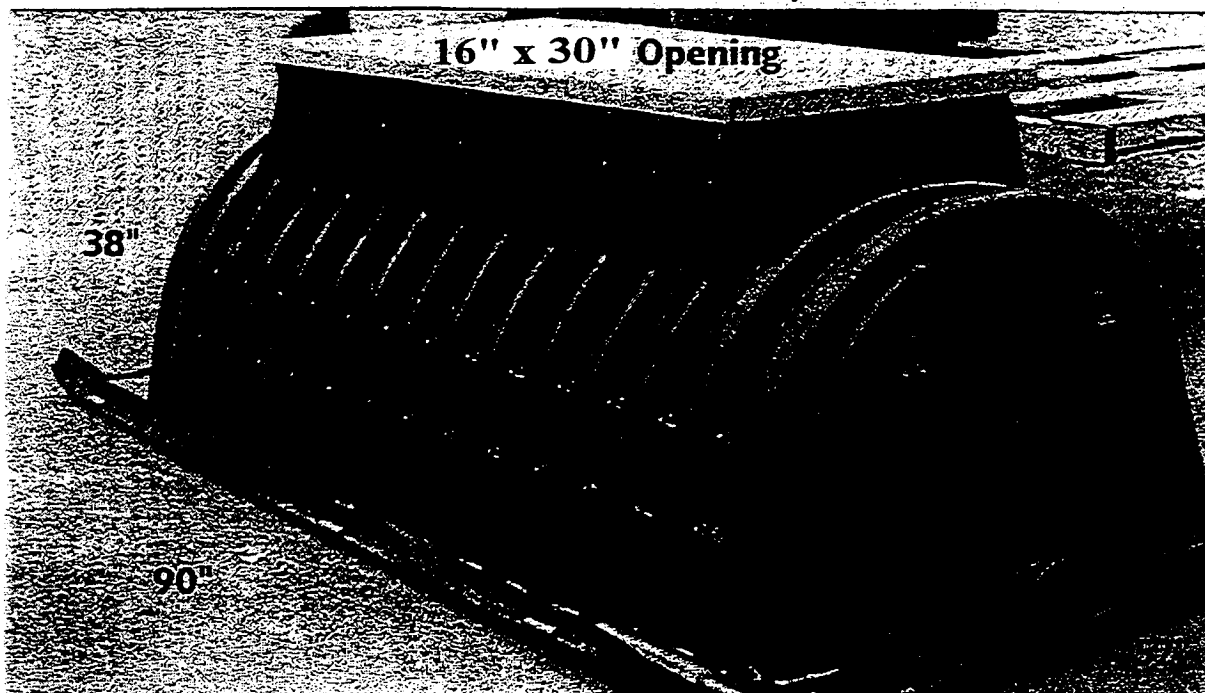
- 3.) ***Why should I choose Cultec's HD models over other plastic chambers?***
We construct Cultec's heavy duty chambers from a thicker, heavier gauge polyethylene designed to be installed under realistic, onsite conditions. While other manufacturers choose to offset structural integrity with unrealistic installation requirements, we design Cultec's HD chambers to do the job with no pampering required as part of the installation.

Sometimes, manufacturers of other chambers may have little or virtually no difference between their standard vs. heavy duty chambers. Instructions to bury the standard chamber deeper to attain H-20 performance may be the only difference. Requiring an increased burial depth to attain an H-20 wheel load requirement can result in an unsatisfactory installation.

Cultec HD chambers build safety into the product and takes into account the actual burial process. To obtain an H-20 wheel load rating, the chamber has specific burial depth requirements. However, even at our recommended burial depths, every one of Cultec's HD models exceeds the H-20 specified requirements.

Take care of all your stormwater management filtration needs
with
STORMFILTER

By Cultec, Inc.



DESIGNED BY EXPERTS

STORMFILTER is a patented stormwater filtration chamber designed by Cultec, Inc., manufacturers of the largest capacity polyethylene stormwater chamber available--the RECHARGER™ 330.

LENGTHEN THE EFFECTIVENESS OF YOUR SYSTEM

With *STORMFILTER*, you can maintain a consistently productive system without any long term deterioration of effectiveness.

STORMFILTER is a large capacity polyethylene chamber consisting of a combination of high quality screen and particulate filters. The filters remove both large and small particles from the stormwater entering the system that would otherwise block and eventually lower the overall ability of the stormwater management system. Its removable filters can be easily cleaned or replaced making your present system as good as when it was installed.

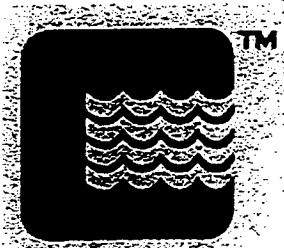
We may install an optional alarm on your *STORMFILTER* to notify you of periodic servicing.

WIDE RANGE OF APPLICATION

STORMFILTER may be used with any existing stormwater management system, however, we guarantee it most effective when used with CONTACTOR™ and RECHARGER™ chambers.

A clean system = A more effective system

CULTEC, INC.
878 Federal Road
Brookfield, CT 06804



Phone (203) 775-4416
Phone (800) 4-CULTEC
Fax (203) 775-1462

Pr98-06.wpd
1998 Cultec Engineering Manual

To determine the effectiveness of stabilization measures put in place, the first inspection of siltation catch basins and STORMFILTER should be made immediately after, or sometimes, during the first rainfall of the SMS operation. Both an initial determination of site stability and pre-treatment by basins effectiveness is made at this time.

Service on the STORMFILTER depends on the proficiency of site stability and separation by settling basins. To reduce service of the STORMFILTER, efforts should be made to optimize the efficiency of site stabilization and settling basins.

We recommend that a single STORMFILTER be installed for every 5000 cubic feet of SMS storage or stormwater transfer/day.

Inspection schedules can be properly evaluated based upon the initial inspection results. Typically, on a fully stabilized site barring any unusual circumstances, inspections should be made every three months or whenever an extreme storm situation occurs.

Proper maintenance should allow the life of the filter elements to exceed two years.

If the STORMFILTER appears to display excessive cleaning requirements, review the performance of the pre-treatment devices.

STORMFILTER is a final filter. Employment of the use of STORMFILTER that leads in the direction of a primary filter will further increase service.

INSTALLATION APPLICATIONS

STORMFILTER may be used in various ways:

- ▶ STORMFILTER is designed to interlock with Cultec RECHARGER 330 chambers with the same overlapping rib connection and arched transfer opening for effluent. However, STORMFILTER is effective for any underground chamber system.
- ▶ STORMFILTER may be used as a final filter before stormwater discharges into a conduit or watercourse.
- ▶ STORMFILTER is used for stormwater before feeding a pond.
- ▶ STORMFILTER is positioned between catch basins or man holes.

A commonly asked question at seminars presenting the Cultec System is: "Will the fabric block up over time?"

The answer is: Yes, it will at some point block up, as will any filter subjected to impurities. However, it will not block up as quickly as a stone/soil or soil interface.

Tear Strength

Cultec 410 fabric does not tear easily. It is a non-woven spun bound multidirectional fiber material produced with polypropylene, a strong plastic fiber. Even when Cultec 410 fabric is cut or punctured with a sharp object it is very difficult to tear.

Limited Elongation

Cultec 410 fabric has a maximum stretch of approximately 50%. The combination of a high tear strength and limited elongation provide a material that will span the voids between the ribs of the chamber, creating an effluent tunnel from the chamber base up the sides to the top of the arch of the unit.

The contact of the effluent with the fabric is directly interfaced to surrounding soil producing percentage of efficiency greater than that available with either crushed stone or that provided by open gridded chamber side walls.

An additional benefit to Cultec's two-part chamber and Cultec 410 fabric is the promotion of transevaporative capability over the installations upper surface--something not possible with solid plastic or concrete chamber top surfaces.

Burst Strength

Cultec 410 fabric has a burst strength of 190-240 psi. Using fabric with a relatively high burst strength eliminates the concern of the possibility of small stones blowing through the fabric. Cultec 410 is suitable for installation for any properly designed system including those subjected to H2O traffic loading.

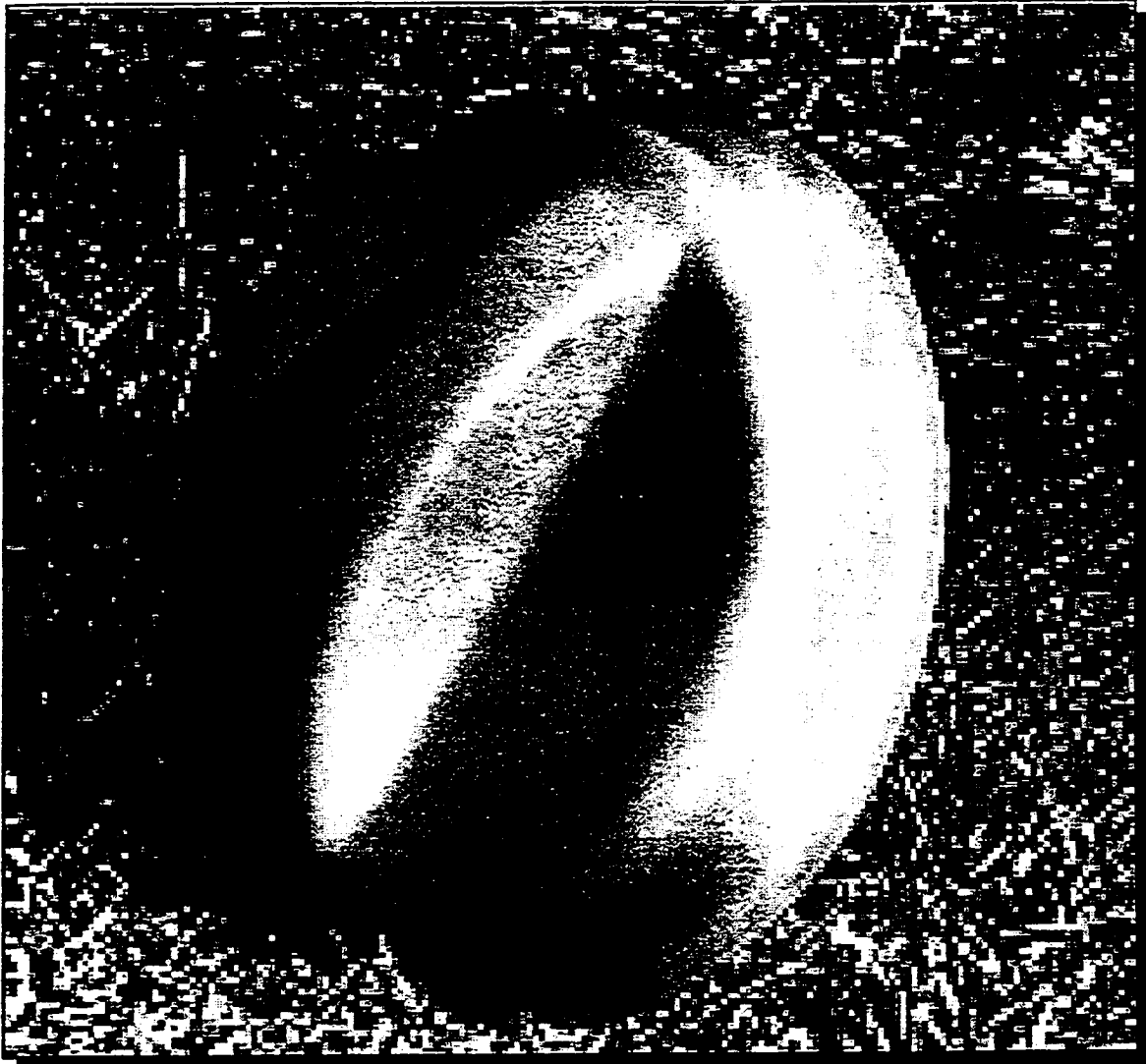
When calculating with a mullen burst of 190 psi this translates to 27,360 lb/sf--far above H2O requirements. The assurance of proper fabric performance is promoted by two situations: ¹ the load cone dissipation of buried loads (see fig.1) and ² the fact that Cultec 410 fabric measures greater load bearing on the top of the ribs where it is pressed by the load to the ribs, as opposed to the reduced load the fabric is subjected to in the span between the ribs.

Barrier to Soil Intrusion

Cultec 410 effectively performs two important functions relating to the soil interface.

Firstly, it provides an effective barrier to soil particulate intrusion that no open grill chamber side on stone interface can offer.

Cultec Inspection Cover



Use Cultec Inspection Cover when using the 6" inspection port on any of Cultec's Chambers.

SATISFIED CULTEC CUSTOMERS

Although too many to name them all, the following is a list of some of our customers and projects supplied by Cultec, Inc.

15900 SF Retail Facility - Maple Shade, NJ
201B Forest Street - Marlboro, MA
ABSCO Welding Building - Woodmont, CT
Applebee's, Inc. - Tewksbury, MA
Ashley National Forest - Manila, UT
Babson College - Arthur M. Blank Center for Entrepreneurial Studies - Wellesley, MA
Banbury Subdivision - Boise, ID
Bank of Missouri - Cape Girardeau, MO
Bayer Aspirin - Morristown, NJ
Bellport Marina - Bellport, NY
Benny's Plaza - Fairhaven, MA
BJ Warehouse - Portsmouth, NH
Brookhaven Landfill - Brookhaven, NY
Brookside Bagels - Simsbury, CT
Camp Judeau Campground - Bedford, NH
Camp Como - Como, CO
Captain Parkers Restaurant - Yarmouth, MA
Catholic SS Building - Guam
Cedar Springs Terrace Nursing Home - Johnston, RI
Chestnut Point 713A - Harrisburg, PA
Cinnamon Ridge - Goffstown, NH
City of Santa Monica Parking Garage - Santa Monica, CA
Club Med San Salvador - Bahamas
College of the Sequoias - Visalia, CA
Comfort Inn on the Bay - Naples, FL
Comfort Suites Hotel - Linthicum Heights, MD
E. Granby Garage - E. Granby, CT
EMC Corp. - Hopkinton, MA
Federal Aviation Administration - Atlantic City, NJ
Fire Island National Seashore - Long Island, NY
Franklin County Hospital - Indiana
Gas Station - Springfield, MA
Georgetown Club - Georgetown, MA
Gordon College - Wenham, MA
Gravenhurst Plastics, Ltd. - Gravenhurst, Ontario
Guam Visitor's Center - Guam
Gym Kids - Cornwall, NY
Habitat for Humanity - Litchfield, CT
Johnson & Wales College - Providence, RI
Lake George Campground - Lake George, NY
Le Chambord Restaurant - Stormville, NY
Lexington Corporate Center - Lexington, MA
Masonite Corporation - Towanda, PA
Massachusetts General Hospital - Boston, MA
MCI Telecommunication - Elmsford, NY
Meadowview Nursing Home - N. Reading, MA
Motel 6 - Seekonk, MA
Movie Prop - CA
Movie Tens (10 Theaters) - Mishawaka, IN
Nantucket Memorial Airport - Nantucket, MA
Nanuet Shopping Mall - Nanuet, NJ
New Gate Shopping Center - Naples, FL
New England Motor Freight - Pennsauken, NJ
Nicholas County School Board - Summersville, WV
Oaklawn Assisted Care - Cranston, RI
Orleans Square - Orleans, MA
Overbrook & Twin Lakes Roadway - Largo, FL
P&T Containers - Lawrence, MA
Panther Creek Elementary School - Nettie, WV
PE O'Hair & Co. - San Francisco, CA
Peaslee Place - Merrimack, NH
Pembroke Hospital - Pembroke, MA
Quinn's Inn - Cornwall, Ontario
Riders Ridge Phase II - Owings Mills, MD
Rite Aid Drug Store #3909 - Lexington, KY
Robtec Corporation - Guadalajara, Mexico
Rolands Church - RI
Royal Farms Store - Salisbury, MD
Ruby Tuesdays - Rehobeth, DE
San Eli Plaza - El Paso, TX
Scott Circle Housing - Lincoln, MA
Shell Gas Station - North Hampton, MA
Showcase Cinemas - Deerfield Township, OH
Sousa Realty & Development - Hudson, NH
South Columbia Medical Center - Augusta, GA
South County Hospital - Wakefield, RI
Specialty Resources - San Pedro, CA
St. Anne's Day School - Annapolis, MD
St. Joseph's School - St. Josephs, MO
St. Paul Lutheran Church - St. Joseph, MO
Suncoast Medical Center - Cape May Courthouse, NJ
Taco Bell - Norwalk, CT
Taco Bell - Stamford, CT
Thayer Academy - Braintree, MA
Town of Emerald Island - Emerald Island, NC
Travelers Insurance Group - Armonk, NY
Trelco Corp./Harvest Church - Guam
Tuft's University - Cambridge, MA
Turtle Tunnel Project - Upton, MA
Uniroyal, Inc. - Naugatuck, CT
University Hospital - Augusta, GA
Video Street - Temple Terrace, FL
Village Four - Chesapeake Harbor - Annapolis, MD
Virgin Islands National Park - Charlotte Amalie, VI
Wal-Mart - Charles Town, WV
Walgreens - Granite City - Granite City, IL
Walgreens - Laurel Springs, NJ
Wendy's Corporation - Ormand Beach, FL
Westchester University - Westchester, PA



LIMITED WARRANTY

Cultec, Inc. guarantees the structural integrity of each CONTACTOR™ and/or RECHARGER™ unit when installed according to our instructions.

This warranty applies to the original purchaser against defective materials in workmanship for 10 years from date of purchase.

Within 45 days of an apparent defect the purchaser must inform Cultec, Inc. in writing.

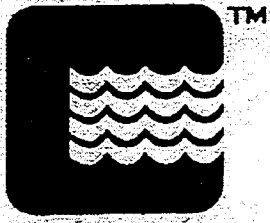
Cultec, Inc. will supply a replacement unit.

The cost of removal and/or installation of the units is specifically excluded from this warranty.

Only the terms of this warranty apply.

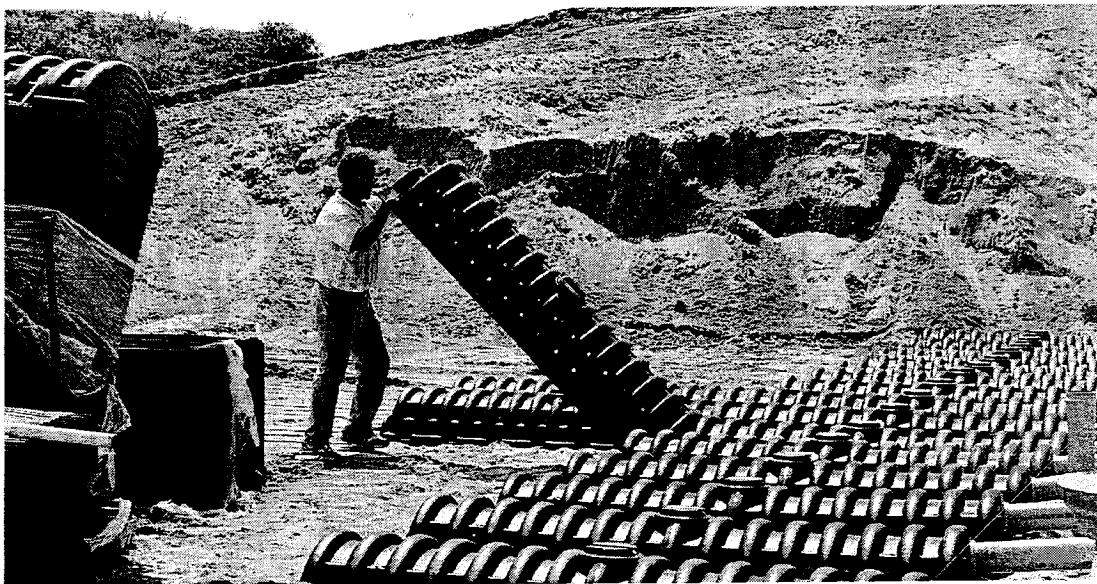
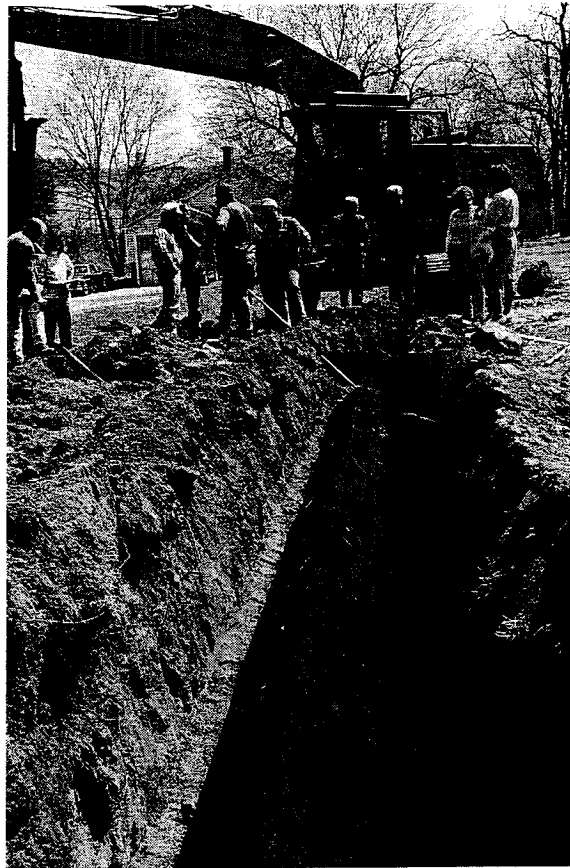
No other warranty is actual or implied.

Cultec, Inc.
878 Federal Road
Brookfield, CT 06804
800-428-5832



Installation of CULTEC CHAMBERS for Septic

- FIELD DRAIN® PANEL
- CONTACTOR™ EZ-24
- CONTACTOR™ 75
- CONTACTOR™ 100
- CONTACTOR™ 125
- RECHARGER™ 180
- RECHARGER™ 330
- RECHARGER™ 400
- CULTEC Filter Fabric
- CULTEC Inspection Cover
- CULTEC Splash Deflector



Septic Design for Cultec Chambers

Model	Lay-Up Length (L_{LU})
FIELD DRAIN® PANEL	8.00'
CONTACTOR™ Model EZ-24	8.00'
CONTACTOR™ Model 75	6.25'
CONTACTOR™ Model 100	6.50'
CONTACTOR™ Model 125	6.25'
RECHARGER™ Model 180	6.33'
RECHARGER™ Model 330	6.25'
RECHARGER™ Model 400	6.17'

A.) HOW TO CALCULATE NUMBER OF CHAMBERS REQUIRED

- 1.) Square feet of leaching required according to local or state code (A_L): _____ SF/LF (A_L)
- 2.) State Allowance SF/LF for the chamber you choose (SA_C): _____ SF/LF (SA_C)
(find out from your local or state health department)
- 3.) Lineal Feet of System Required (L_C): (A_L) ÷ (SA_C) = _____ LF system (L_C)
- 4.) Number of chambers (C) needed: (L_C) ÷ (L_{LU}) = _____ chambers (C)

B.) HOW TO CALCULATE FABRIC REQUIRED

- 1.) Lineal Feet of Fabric Required (L_f): (L_C) = (L_f) _____ LF fabric (L_f)
Use the recommended fabric width for each chamber.

Model	Fabric Width Required
FIELD DRAIN® PANEL	2.0'
CONTACTOR™ Model EZ-24	3.0'
CONTACTOR™ Model 75	3.5'
CONTACTOR™ Model 100 & 125	4.0'
RECHARGER™ Model 180	5.0'
RECHARGER™ Model 330 & 400	7.5'

- ▶ Set first unit (Model R with two closed ends) in the trench. Position the large rib end of the chamber toward the effluent feed pipe to start the line.

☞ **OPTIONAL** (See fabric installation if not using a splash deflector):

Place the splash deflector under the feed pipe discharge to prevent rutting of the base soil.

- ▶ Continue the line of chambers by joining the units using patented interlocking rib connection. Overlap the larger rib over the smaller rib of the preceding chamber. No screws needed.

Continue and end the line of chambers using Model E (one open end and one closed end).

COVERING WITH FILTER FABRIC

If backfilling the system with stone, please skip the following steps and go onto BACKFILLING.

After a line of chambers is installed, cover it with Cultec Filter Fabric before backfilling. Filter fabric keeps dirt from getting back into the chambers and provides an effective drainage interface for both the sidewalls and the top of the chambers.

PLEASE NOTE:

No guarantee of performance of Cultec Chambers will be honored if any other than Cultec Filter Fabric is used.

Recommended width of fabric:

Model	Fabric Roll Width
FIELD DRAIN® PANEL <i>*(only cover the outsides of the panel, you do not have to cover the center of the panel)</i>	C-1 (one channel) 2' C-2 (two channels) 4' C-3 (three channels) 2' x 2* C-4 (four channels) 2' x 2*
CONTACTOR™ Model EZ-24	3.0'
CONTACTOR™ Model 75	3.5'
CONTACTOR™ Model 100	4'
CONTACTOR™ Model 125	4'
RECHARGER™ Model 180	5'
RECHARGER™ Model 330	7.5'
RECHARGER™ Model 330	7.5'

BACKFILLING

- ▶ Material used to backfill the Cultec Chamber System should be clean, permeable and approved. It should also be free of large stones.

PLEASE NOTE:

Cultec chambers will out perform equally sized conventional pipe and stone trenches significantly and can be installed in the complete range of soil types. A simple way to improve the performance of CONTACTOR™, RECHARGER™ and FIELD DRAIN® gravel-free systems is to use the best soil possible when backfilling. Cultec #410 filter fabric then covers the chambers. By using a coarse, clean, silt-free, and permeable sand backfill, the effectiveness of the installation can be extended by 20%-30% or more. In soils that percolation rates are less than 1-20, the relatively small investment of using the select material is a wise investment. Use 1.5" - 2" diameter clean washed broken stone when backfilling chambers for gravel systems.

- ▶ Put backfill material on the sides and mound over the top of the chambers before traveling over the system for further grading.

When covering the system for final backfill and determination of grade it is best to use a small tract machine or backhoe bucket. If using a loader or straight blade type machine, keep loose fill in front of the blade to a height of 1' - 1 ½' above the chamber top. Traverse perpendicular to the line of chambers. After this has been done to the complete installation, you may proceed to set final grade.

For untrafficked installations:

Residential installations require a minimum of cover. Cover chambers with 6" - 9" of 85% compacted fill.

For trafficked installations under pavement:

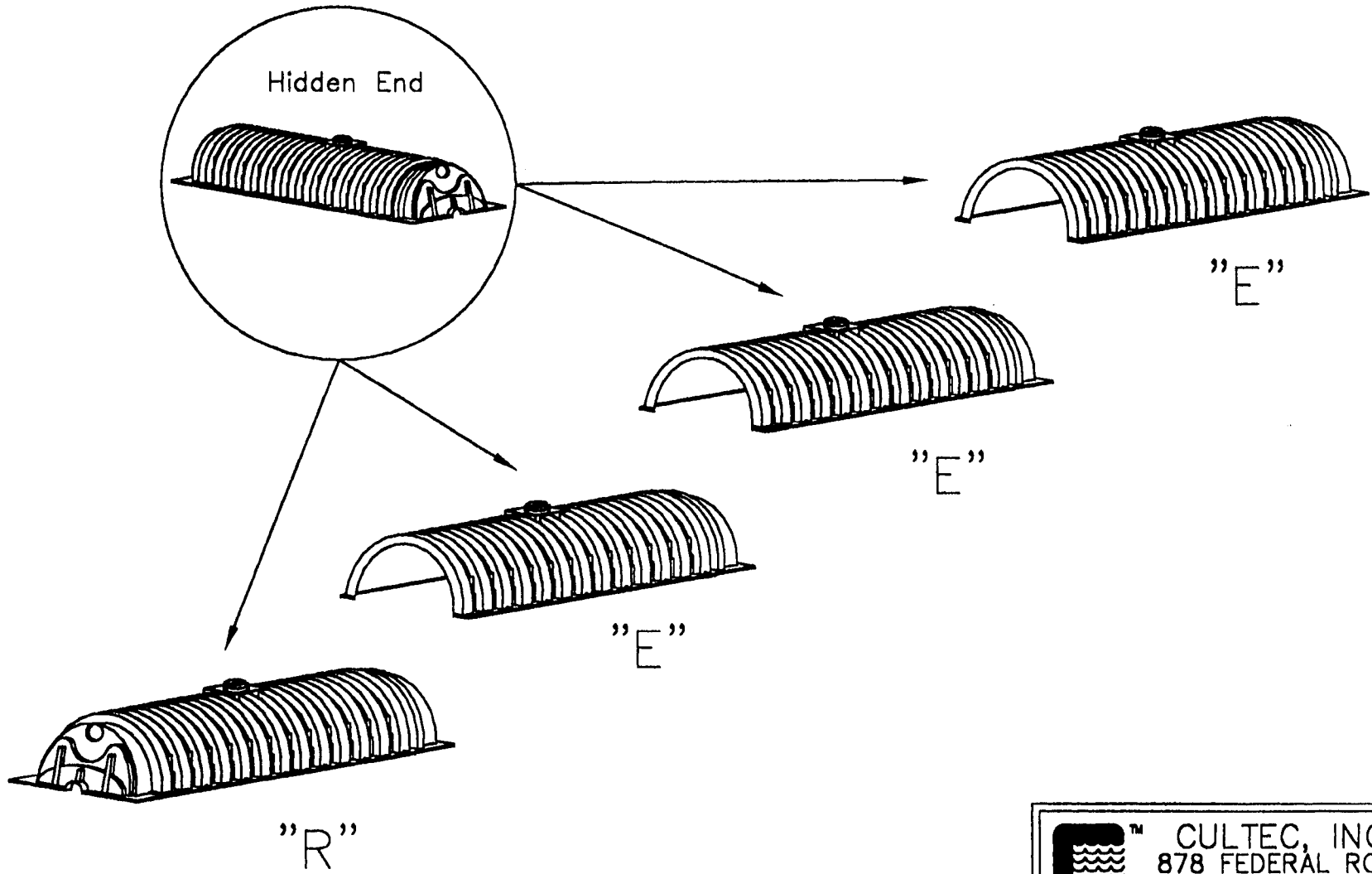
Model	Recommended Minimum Cover
FIELD DRAIN® HD PANEL	14"
CONTACTOR™ Model EZ-24HD	14"
CONTACTOR™ Model 75HD	12"
CONTACTOR™ Model 100HD	14"
CONTACTOR™ Model 125HD	12"
RECHARGER™ Model 180HD	14"
RECHARGER™ Model 330HD	16"
RECHARGER™ Model 400HD	15"


Typical Installation for Cultec Gravelless Septic System using Filter Fabric



CULTEC, INC.
878 FEDERAL ROAD
BROOKFIELD, CT 06804

Typical Cultec Installation for Septic Contactor™ & Recharger™



 **CULTEC, INC.**
878 FEDERAL ROAD
BROOKFIELD, CT 06804

Installation of the Fabric Interface for a Stone-Free Septic System

- 1) Before the starting Cultec chamber is put in place, lay approximately 1 ½ - 2 feet of the properly sized cloth on the ground at the beginning of the line.
- 2) Position the starting chamber on top of the 1 ½ - 2 feet of fabric.

The setting in place of the fabric in this manner allows it to be held firmly in place and also serves as a splash deflector to the effluent discharged from the feed pipe above.

- 3) With the fabric now being held at the starting end, you may install the total line of the chambers.
- 4) Pull the free end of the fabric interface to the end of the line of the chambers making sure to the center of the fabric is even with the center of the chambers, which allows the fabric to drape over evenly to the base of the units.

Approximately 1-2 feet of extra fabric will be evident if the directions for determining fabric length are followed correctly.

- 5) After pulling the fabric tightly over the chambers, throw 5-6 shovels full of either broken stone or soil over the cloth where it meets the base of the final end wall.
- 6) Inspect the fabric along the entire line of Cultec chambers. Look for slight bends in the line where some further positioning of the fabric may be necessary. Inspect also for roots that may prevent the fabric from its proper positioning to the base of the chamber.

Fabric interface is always recommended for sand or soil backfill to prevent intrusion of the particles. Fabric interface may also be chosen when backfilling the chambers with broken stone. Fabric increases the effective area for particulate filtration and intrusion. An additional benefit of using fabric interface with stone backfill is the availability of particulate settlement, which occurs after effluent leaves the chamber through the discharge openings. Much of the available discharge opening(s) may be blocked if no fabric is used. Fabric interface provides a large void between the ribs and is accessible to effluent.

No guarantee of performance of Cultec chambers will be honored if any other than Cultec specified fabric is used.

✓ CONTACTOR™, RECHARGER™ and FIELD DRAIN® PANEL Chambers can be easily inspected.

Many questions associated with unknown aspects of conventional systems are eliminated. Every CONTACTOR™, RECHARGER™ and FIELD DRAIN® PANEL may be inspected since they have an optional 6" (4" for FIELD DRAIN PANEL) inspection port in the center of each unit.

✓Cultec chambers have an optional pipe support for use in Gravity and Pressure Distribution Systems.

✓Cultec Chambers have uniquely patented integral vertical support panels.

Support panels provide vertical strength, sufficient effluent transfer & maintain the dimension of chamber width; keeping the chamber from spreading apart under load application. Integrally formed repeating vertical support panels produce a unitized structure. The support panels are repeated through the continuous line of chambers at a minimum of every 6.25' (8' maximum).

✓ More effective than conventional systems and other plastic chambers.

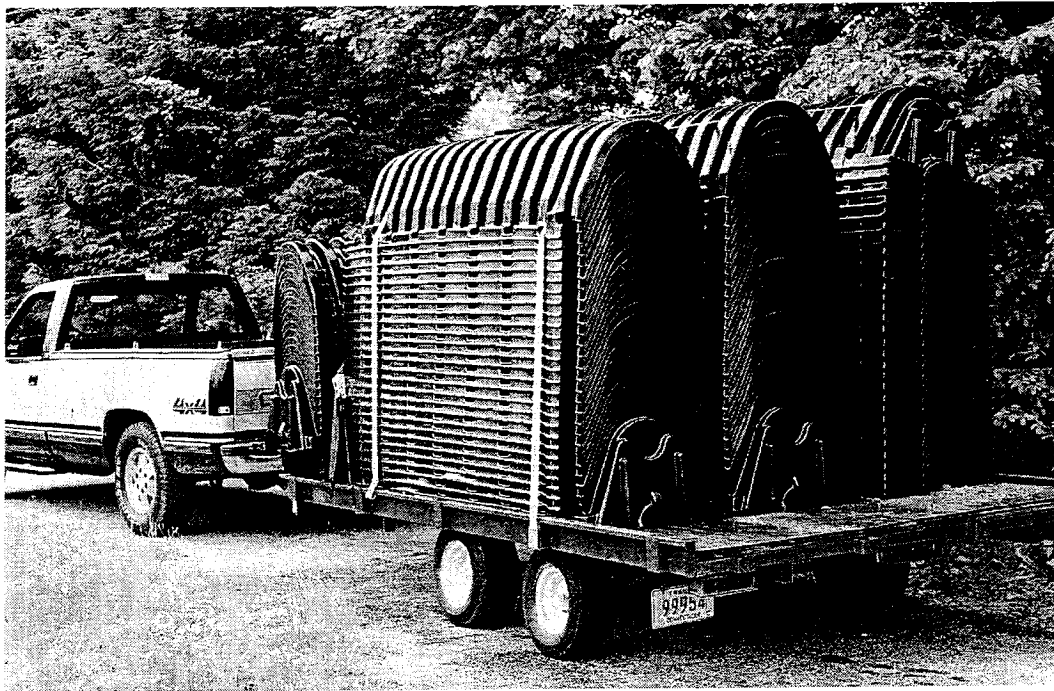
Cultec Chambers have the highest infiltrative area rating of any plastic chamber system. Direct contact is possible between effluent and soil with Cultec Chambers with CONTACTOR™, RECHARGER™ and FIELD DRAIN® PANEL open chamber bottoms.

Cultec Chambers are the only chamber system to offer upper surface evaporative capability. The combination of the ribbed design and the spacing between the ribs covered with our engineered filter fabric promotes effective infiltration on sidewalls and on the top of the units.

When the effluent feed pipe is positioned above the overall height of the unit (which is usually the case in the typical septic installation) this total drainage interface averages more than 60% higher than a conventional PVC pipe and stone system of comparable size and storage capacity is 100% higher. In conventional pipe and stone systems, the use of dirty crushed stone can totally seal the available bottom interface that is normally determined to be the most effective. CONTACTOR™, RECHARGER™ and FIELD DRAIN® PANEL use more of the available interface. The availability of greater storage capacity provides time to allow proper infiltration in the Cultec system.

✓ If desired, CONTACTOR™, RECHARGER™ and FIELD DRAIN® PANEL Chambers may be removed from the ground and reused.

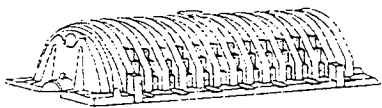
Cultec Systems can stack up against pipe and stone!



The CONTACTOR™s carried on the trailer in this picture will install 700 lineal feet of CONTACTOR™ System.

When compared to conventional pipe and stone trenches, these

110 pieces of CONTACTOR™ replace 1700' of two foot wide septic trench.



17 eight-yard dump trucks of stone.

Truck drivers and operators.

A Loader.

Pressure Distribution System

You will notice that our recommended installation of the effluent feed pipe for pressure distribution in Cultec Chamber Systems is unique.

We recommend using 2" S-40 ASTM 1785 pipe having 3/8" diameter holes drilled one foot on center. The 3/8" holes are drilled at 90° offset. By positioning the holes 45° from vertical, the effluent discharges freely onto the top of the chamber. The Cultec #410 filter fabric cover does not interfere with the discharge.

A carrier formed on top of the chamber holds the 2" pipe and is covered with Cultec #410 filter fabric.

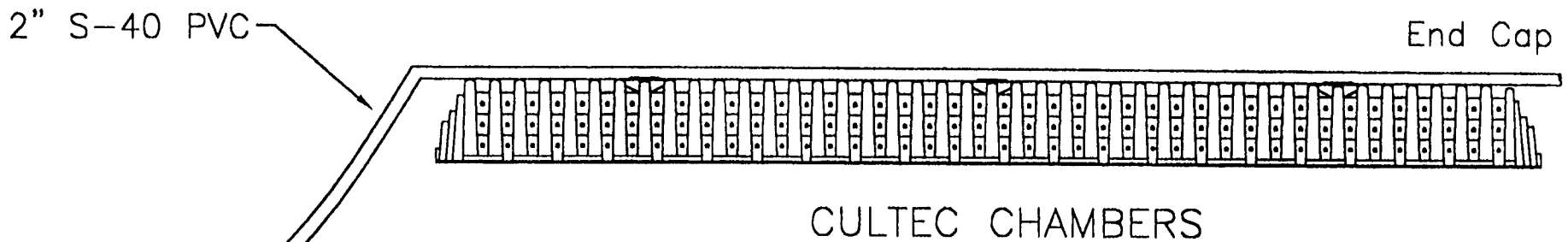
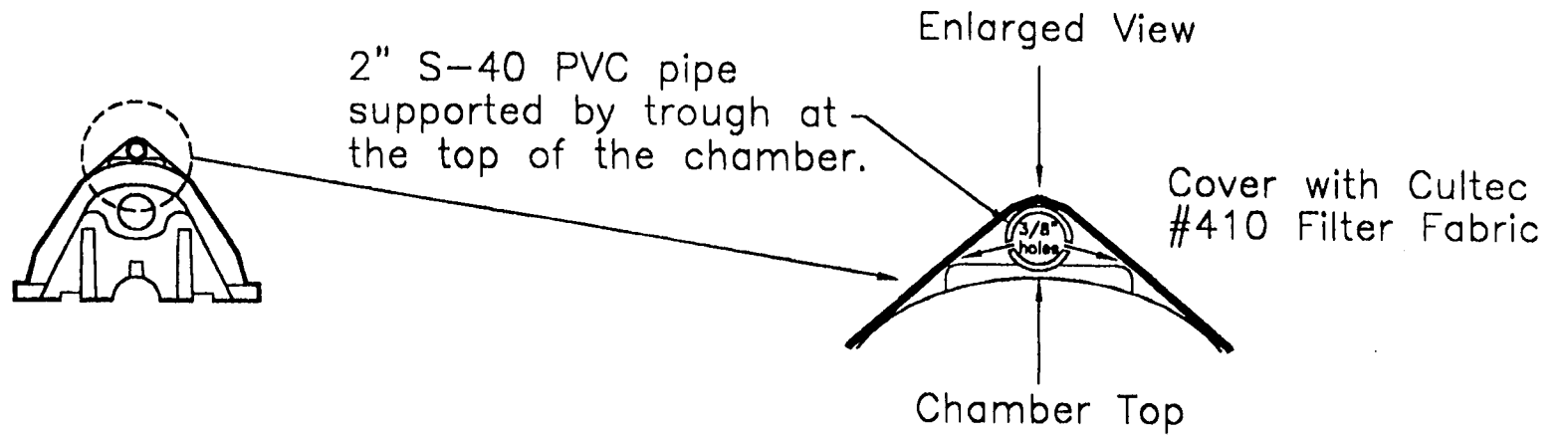
REASONS FOR THIS DESIGN:

- 1.) Cultec #410 filter fabric has a combination of characteristics and properties that combine with this design to attain optimum performance. The two most important features are:
 - a.) High degree of capillary distribution of effluent and ability to discharge into the surrounding soil.
 - b.) Limited elongation of fabric that prevents the fabric from interfering with effluent discharge. When effluent impinges upon the fabric, it is quickly absorbed and interfaced with a greater total soil area than a trickle down gravity distribution system.
- 2.) **In pipe and stone pressure distribution systems effluent follows the path of least resistance. If that path remains unchanged, effluent continues to follow—constantly directed in one location.**

Using the discharge onto the fabric augments the pressure distribution process by providing more total area of effluent distribution thereby decreasing the total concentration of effluent application per square foot of system. This phenomenon is key to the longevity of a system.

- 3.) **Chamber systems that discharge directly onto a soil base have disadvantages.**
 - a.) Straight line discharge from the discharge hole onto the soil limits effectiveness and causes rutting or washout resulting in silting. Silting will reduce the long term effectiveness of the system.

Recommended Installation for Cultec Pressure Distribution System



Lift Station

 **CULTEC, INC.**
878 FEDERAL ROAD
BROOKFIELD, CT 06804

Title: **Chamber Leachfield Systems,
An Alternative to Conventional Gravel-Filled Systems,**

Author(s): R. May.

Corp Author(s):

Citation: **Journal of Environmental Health
JEVHAH, Vol. 53, No. 5, p 43-44, March/April 1991. 13 ref.**

Conventional septic system leachfields normally have been constructed utilizing gravel-filled trenches beds. However, gravel has potential damaging impacts: compaction of moist soil by weight and

velocity of gravel during installation, creation of a low permeability layer by fines entrained with gravel, physical obstruction of the soil interface and the potential for high BODs and SS loadings in the stone voids at the soil interface. Open-bottom chamber systems offer ease of construction and inspection, high storage volumes and eliminate the negative impacts of stone gravel. A significant body of data supports the conclusion that a leachfield system that does not cover the soil interface with gravel can outperform the comparable gravel-covered interface by a factor of more than 2 to 1. This factor has been used in several states which allow installation of chamber systems sized at 50-60% of conventional gravel systems. This practice has not resulted in any documented problems and, in one large study, has been supported as superior to conventional practice. (Author's abstract) 35 888888888