



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

John Elias Baldacci
Governor

October 5, 2005

John R. Nicholas
Commissioner

Eljen Corporation
Attn.: James Donlin, VP
125A McKee Street
East Hartford, CT 06108

Subject: Product Registration, Eljen GP5-24

Dear Mr. Donlin:

The Division of Health Engineering has completed a review of a registration application for your company's product. 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 Eljen GP5-24 consists of ten modules aligned along a four inch diameter perforated plastic pipe, per unit. Each module is comprised of a 12 inch by 24 inch by 4.5 inch bundle of cusped and flat plastic plates bundled together.

The modules are separated by a 1.5 inch wide void space. Nonwoven geotextile meeting ASTM D-5261 for weight and ASTM D-4491 for permeability (among other standards) is placed over the units and along the units, and anchored in the back fill.

Claim

According to the information you provided, the Eljen GP5-24 requires no gravel and is compatible with conventional onsite sewage disposal systems.

Determination

On the basis of the information and sample product submitted, the Division has determined that the Eljen GP5-24 is acceptable for use in the State of Maine, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions.

Each unit is rated at the equivalent of 54 square feet. This figure is derived from comparison of the ratio of volume to square foot rating of Eljen Indrains, plus the area of the void spaces between modules.

In the event that the product fails 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 Eljen GP5-24. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

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

Sincerely,

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

/jaj
xc: Product File

GP5-42

$$(24'' \times 12'' \times 4.5'')10 = 12,960 \text{ in.}^3$$

$$12,960 \text{ in.}^3 / 1,728 \text{ in.}^3 \text{ per ft.}^3 = 7.5 \text{ ft.}^3 \text{ per unit}$$

$$(1.5'' \times 24'' \times 9) / 144 \text{ in}^2 \text{ per ft}^2 = 2.25 \text{ ft}^2 \text{ (bottom area of voids)}$$

Indrains

$$36'' \times 48'' \times 7'' = 12,096 \text{ in.}^3$$

$$12,096 \text{ in.}^3 / 1,728 \text{ in.}^3 \text{ per ft.}^3 = 7.0 \text{ ft.}^3 \text{ per unit}$$

$$\text{Rating} = 48 \text{ ft}^2 \text{ per unit}$$

comparison

$$(7.5 \text{ ft.}^3 \times 48 \text{ ft}^2) / 7.0 \text{ ft.}^3 \text{ per unit} = 51.43 \text{ ft}^2$$

$$51.43 \text{ ft}^2 + 2.25 \text{ ft}^2 = 53.68 \text{ ft}^2 \text{ rounded up to } 54 \text{ ft}^2$$

JAJ
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Worldwide Leadership in Passive Wastewater Treatment/Disposal and Pre-Fabricated Geotechnical Drainage Systems

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SEP 02 2005

WASTEWATER &
PLUMBING PROGRAM

Russell G. Martin, P.E.
Director Wastewater & Plumbing Control
161 Capitol St
Augusta, Maine 04333

August 30, 2005

Reference: Description & General Use Approval Request
GP5-24 Chamber Technology.

Dear: Russell G. Martin

The purpose of this letter is to request the review and approval of our GP5-24 product as an alternative chamber technology. Enclosed are the Design & Installation Guidelines for this product. We have not included any sizing tables rather we will rely on the Department to provide the effective sizing credit in accordance with those given to other graveless chamber technologies.

GP5-24 Description:

Aggregate is replaced with Support Modules spaced along a perforated 4" PVC support /distribution pipe (SDP). Support Modules provide; structural integrity, flow channels and 98%void space and with thin cut edges which scarify the immediate bottom area of the trench. The perforated SDP provides structural integrity, internal distribution, increased volume and serves as a venting conduit in either pressure or gravity systems.

The standard unit (GP5-24) unit is 5 feet long and 2 foot wide, (10) Support Modules are spaced evenly along the 5-foot perforated support /distribution pipe with approximately 1½ inch spacing between each module. At each end 2.00 inches of the internal Support Distribution Pipe (SDP) is exposed to connect additional units and standard fittings for direction changes. Support Modules are constructed of recycled high impact polystyrene, a configuration of flat sheets and egg carton shaped cusped core of various widths and lengths. Each Support Module is pressure fit at the correct spacing onto the 5 foot SDP. The units are covered and protected during backfill operations with a high quality geotextile cover fabric supplied by the manufacturer.

ELJEN CORPORATION

125A McKee Street, East Hartford, CT 06108 • Tel: 800-444-1359 • Fax: 860-610-0427

Email: info@eljen.com • Website: Eljen.com

Basic Function

The basic function of all chamber type products including the GP5-24 is quite simple. Create an artificial space devoid of stone, providing open bottom area for biological growth and a concentrated biological treatment zone. The native soil treatment performance is governed by the soil classification determined by State or Local regulations.

With regard to product performance, all chamber type technologies are identical in that they depended on the native soil to provide treatment and establish the rate of absorption.

While the GP5-24 chamber clearly has a different form than traditional chambers the function is the same with some obvious improvements. The GP5-24 sidewall absorption area provides a 100% wetted sidewall perimeter versus the traditional chamber sidewall area which is partially open. One may also see the many advantages of the internal distribution pipe.

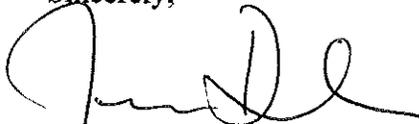
Another obvious improvement of the GP5-24 is there is no sealed top. The GP5-24 provides a breathable cover fabric allowing oxygen movement into the system while increasing evaporation and evapotranspiration. The combination of a 100% wetted perimeter breathable surface area for sidewalls and top further increase aerobic conditions within the system. Sharp plastic core material is clean and always devoid of fines. The sharp edges of each module also provide a scarified surface to the underlying soil. Venting techniques shown in the enclosed Installation & Design manual also provided for additional oxygen and aerobic conditions for both gravity and pressure installations.

Precedents for Approval

Maine has previously approved chamber technology products based on research from nationally recognized experts; Amerson, Tyler, Converse and Siegrist to list a few. We respectfully request that the GP5-24 Chamber product be included in your approved product listing as a chamber technology. We are not requesting any additional credit or than what the State has determined and approved for other chamber technologies.

If you should have any questions please feel free to contact me at: (860) 610-0426 or email jmdeljen@cs.com

Sincerely,



James Donlin
Eljen Corporation

Enclosures: GP5-24 Design & Installation Guidelines / Specifications

GP5-24

An Alternative System

Design & Installation Guidelines

Eljen Corporation
125 McKee Street
East Hartford, CT 06108
PH: 1-800-444-1359 FX: 1860610-0427
Email: eljeninformation@aol.com
September 2005
GP5-24

INTRODUCTION

The GP5-24 product is unlike any other Alternative System on today's market allowing Greater Flexibility for Designers and Contractors.

The GP5-24 it can just as easily be used with Gravity or Pressure Installations.

Currently soil based absorption system products are limited and rigid in their design configuration for heights, widths, lengths and diameters lacking flexibility and installation adaptability.

Open bottom area and a 100% wetted side wall. Unlike other Alternative systems, the GP5-24 allows free oxygen into the system through the top of the product as well as sidewalls and the use of venting. As a result evaporation and evapotranspiration are also improved.

The GP5-24 product is designed as a simple easy to install system with multiple applications.

Direction changes are accomplished with inexpensive off the shelf fittings.

Units may also be cut along any point ensuring you install exactly what the plan calls for without waste since all cut sections are reusable.

Side by Side installations are also possible

Simply place the units next to each other and cover both units with fabric so that the GP5-24 sidewall soil interface is protected and the internal sides of the product are open to each other. This effectively doubles the trench width while maintaining open and unrestricted distribution.

SYSTEM DESCRIPTION

Aggregate is replaced with Support Modules spaced along a perforated PVC support / distribution pipe (SDP). Support Modules provide; structural integrity, flow channels and 98%void space. The perforated SDP provides structural integrity, internal distribution, increased volume and serves as a venting conduit.

The standard GP5-24 unit is 5 feet long and 2 foot wide, (10) Support Modules are spaced evenly along the 5-foot perforated support /distribution pipe with approximately 1½ inch spacing between each module. At each end 2.00 inches of the internal Support Distribution Pipe (SDP) is exposed to connect units and for standard fittings. Support Modules are constructed of recycled high impact polystyrene. Utilizing a configuration of flat sheets and egg carton shaped cusped core of various widths and lengths. This configuration is banded together to create Support Modules. Each Support Module is pressure fit at the correct spacing onto the 5 foot SDP. The units are covered and protected during backfill operations with a high quality geotextile cover fabric supplied by the manufacturer.

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TERMS & DEFINITIONS

GP	(Gravity / Pressure)
GP5	(Gravity Pressure, Five foot unit length) Standard unit length
GP524	(Gravity Pressure, Five foot length x Twenty four inches wide)
SM	(Support Modules) Pressure fit onto Support Distribution Pipe
SDP	(Support Distribution Pipe) Internal pipe provides module support / distribution and venting
LPP	(Low Pressure Pipe) 1.5" – 2.00" diameter

ADVANTAGES

GP5-24 allows Engineers, Designers and Installers a wide variety of options not available with any other product on the market today.

- Cost effective replacement to traditional Chamber and Stone Systems
- Two low pressure pipe (LPP) distribution invert heights, primary and secondary
- Two gravity distribution invert heights primary and secondary
- Quick and easy installations
- Connecting modules, is as easy as connecting 4" diameter pipe
- Pre-Assemble pressure or gravity configuration outside the trench
- Triple wall perforated SDP / distribution pipe
- 63% more void space than stone / aggregate
- 100% wetted surface areas 360 degrees
- 100% breathable system
- Venting, simple and effective
- Direction change is accomplished with off the shelf standard fittings
- No special tools needed for installation
- Trenches
- At-Grade
- Mounds
- Beds
- Raised system
- Serial Distribution
- Pressure & Gravity
- Improved evapotranspiration
- Improved evaporation
- Increased oxygen transfer
- No end plates or costly direction changing devices
- Easy venting both pressure and gravity systems
- No need to install more product than the design requires
- All Modules can be cut to within inches of length needed and reused
- Zero product waste
- Lightweight five-foot unit weighs approximately 8.5 lbs
- Manufacture provided high quality breathable cover fabric supplied with all product
- 100% unrestricted flow between modules in the doubled-up configurations
- Fixed film cusped and flat sheet creates additional surface area for biological growth

STANDARD INSTALLATION GUIDANCE

1.0 Excavated trench width:

Ensure space remains for placement of supplied cover fabric to drape over the sides of each GP5-24 unit or row and sufficient room for backfilling either side. At least three inches of cover fabric should lay flat on bottom of trench and secured in place during backfilling.

2.0 Excavate trench distance:

GP5-24 can be cut at any spacing gap of the perforated SDP this will allow the trench to be excavated to within six-inches of the required length. The cut off sections are reusable in other lines or a future installation.

3.0 Assembly:

GP5-24 may be assembled inside or outside of the trench depending preferences and site situation.

4.0 Connecting:

Depending on regulatory requirements the perforated SDP may be glued or simply pushed together.

5.0 Direction Changes:

Direction changes are accomplished easily and quickly by using standard, off the shelf fittings. 90°, 45°, 22.5°, T, TY, and Y fittings are readily available at most local suppliers.

6.0 Cut to Length:

The GP5-24 perforated SDP may be cut at any gap location. It is important to keep in mind where to cut the perforated SDP. We recommend cutting the pipe in the center of the gap this will allow any type of standard fitting to be pushed on to the perforated SDP for venting or direction changes. The Support Module can be may slightly pushed back along the SDP to accommodate the standard fittings.

7.0 Venting:

A 90° fitting is installed at the end of any given line and vented to the surface using four-inch non perforated pipe. Venting may be installed any where along the system by cutting the perforated SDP and installing the appropriate fittings.

8.0 Geotextile Covering:

A breathable geotextile cover material is provided with all GP5-24 products.

9.0 Backfilling:

Use clean native or fill material over GP5-24 product. Backfill material should be clean, porous and devoid of large rocks. Divert surface runoff with diversion ditches or berms. Finish grade excavated areas to prevent surface runoff from collecting on system disposal area. Seed excavated areas to protect against erosion. As with all systems do not drive or pave over GP5-24 products and disposal area.

MATERIAL SPECIFICATIONS

SDP / ADS™ Triple Wall 3000

Property	Test Method	Unit	*M.A.V.
HD polyethylene	Standard	10'	10'
Stiffness	ASTM D 2412	Psi	22
Perforations	Standard	dia / inches	0.625"
Perforation Spacing	Standard	Inches	3.5
Perforation Degrees	Standard	Degrees	120

Geotextile Cover Fabric

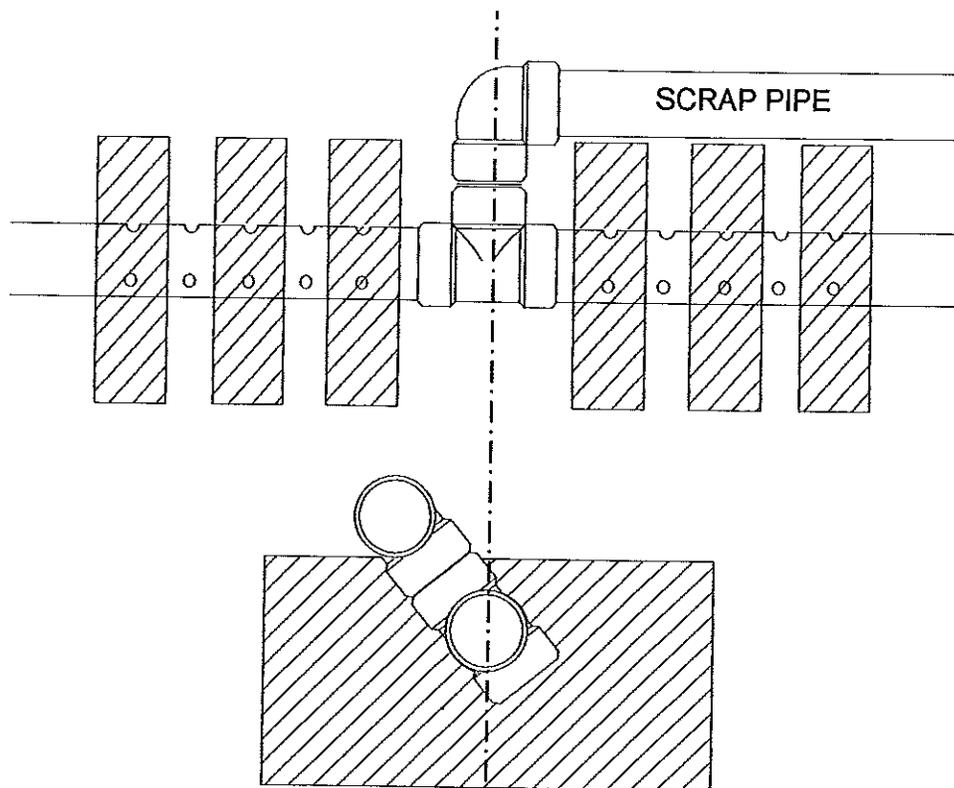
Property	Test Method	Unit	* M.A.V.
Weight	ASTM D 5261	oz/sq. yd	5.0
Grab Tensile	ASTM D 4632	Lbs	130
Grab Elongation	ASTM D 4632	%	50
Trap Tear	ASTM D 4533	Lbs	55
Puncture	ASTM D 4833	Lbs	75
Mullen Burst	ASTM D 3786	Psi	265
Permittivity	ASTM D 4491	1/sec	1.7
Water Flow	ASTM D 4491	gpm/sft	115
A.O.S.	ASTM D 4751	U.S. sieve	70
U.V. Resistance after 150 hours	ASTM D 4355	% strength retained.	70

Plastic

Property	Test Method	Unit	* M.A.V.
Polystyrene (raw)	Micrometer / Standard	0.024*	0.024*
Cusped Core Height	ASTM D 1777	1.250*	1.250*
Compressive Strength Small Configuration	ASTM D 1621	sqft	11,900 psf (82 psi)
Compressive Strength Large Configuration	ASTM D 1621	sqft	6,900 psf (48 psi)
Flow Capacity	ASTM D 4716	gpm/sqft.	15.0

* Minimum Average Value

GRAVITY INVERT CONNECTION



First unit should be covered with geotextile cover fabric prior to setting scrap pipe into position. Connection area may be filled with clean backfill taking care not to damage the connection

Connect and glue a 90 degree fitting to a Tee fitting as shown above. This will require a small section of scrap pipe.

Insert **do not glue** a four-inch diameter scrap pipe approximately 2-3 feet long into the 90 degree fitting the scrap pipe should be facing toward the distribution box or septic tank.

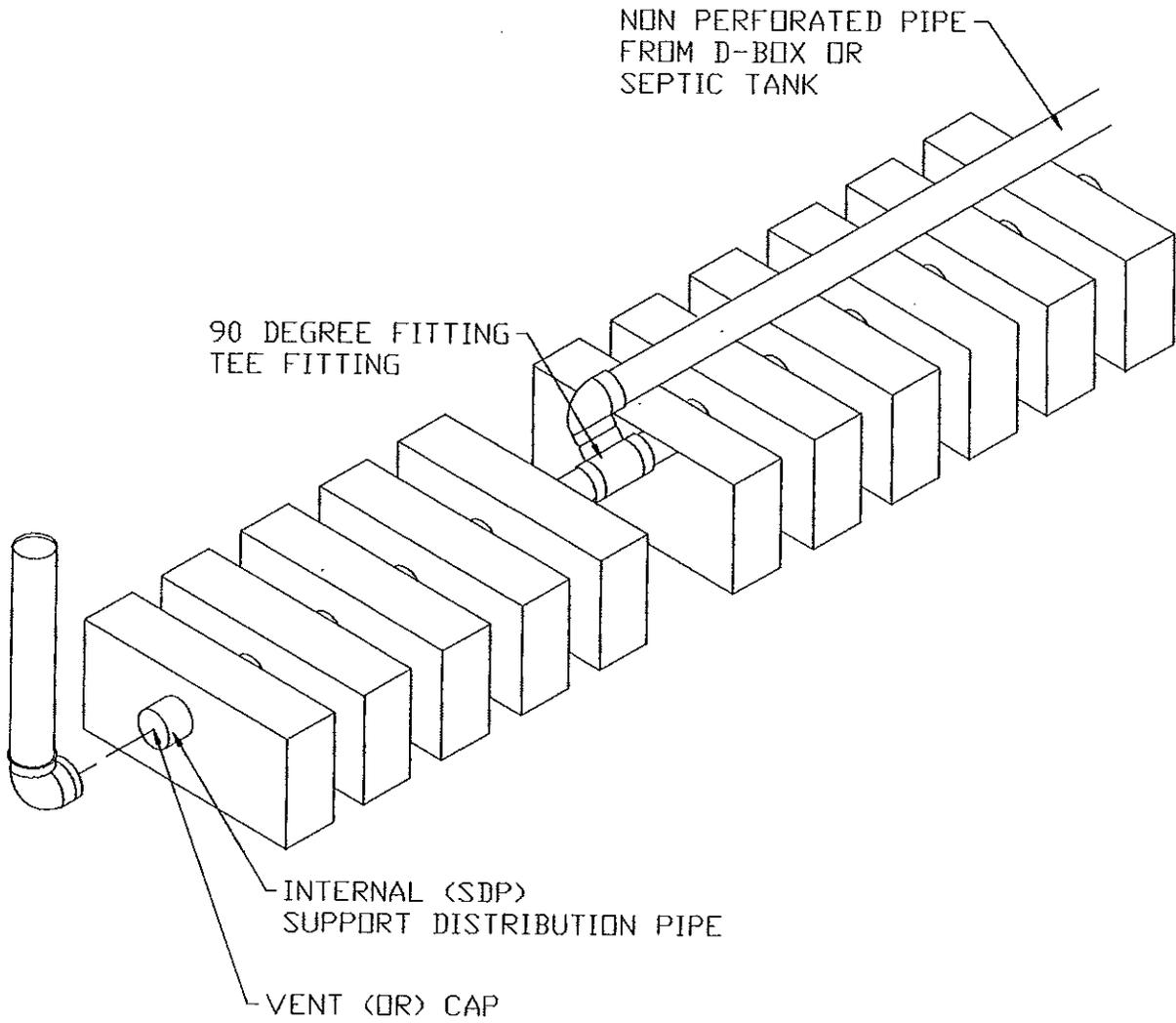
Glue the tee fitting and insert onto the SDP. Quickly, rotate left or right until the scrap pipe sits flat on top of the fabric covered support modules.

Remove the scrap pipe and plum to the distribution box or septic tank using non-perforated pipe.

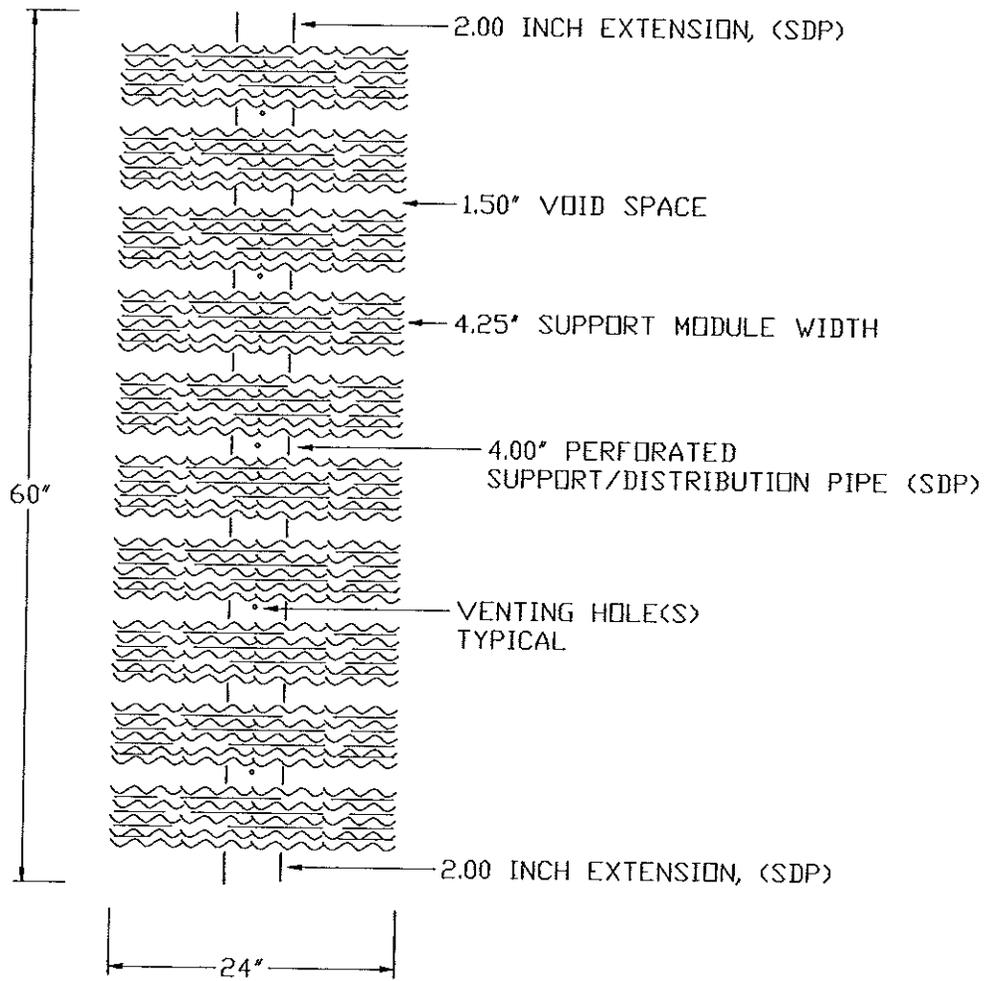
The rest of the installation may be installed by connecting units to the opposite end of the tee fitting along the trench length.

GRAVITY DISTRIBUTION

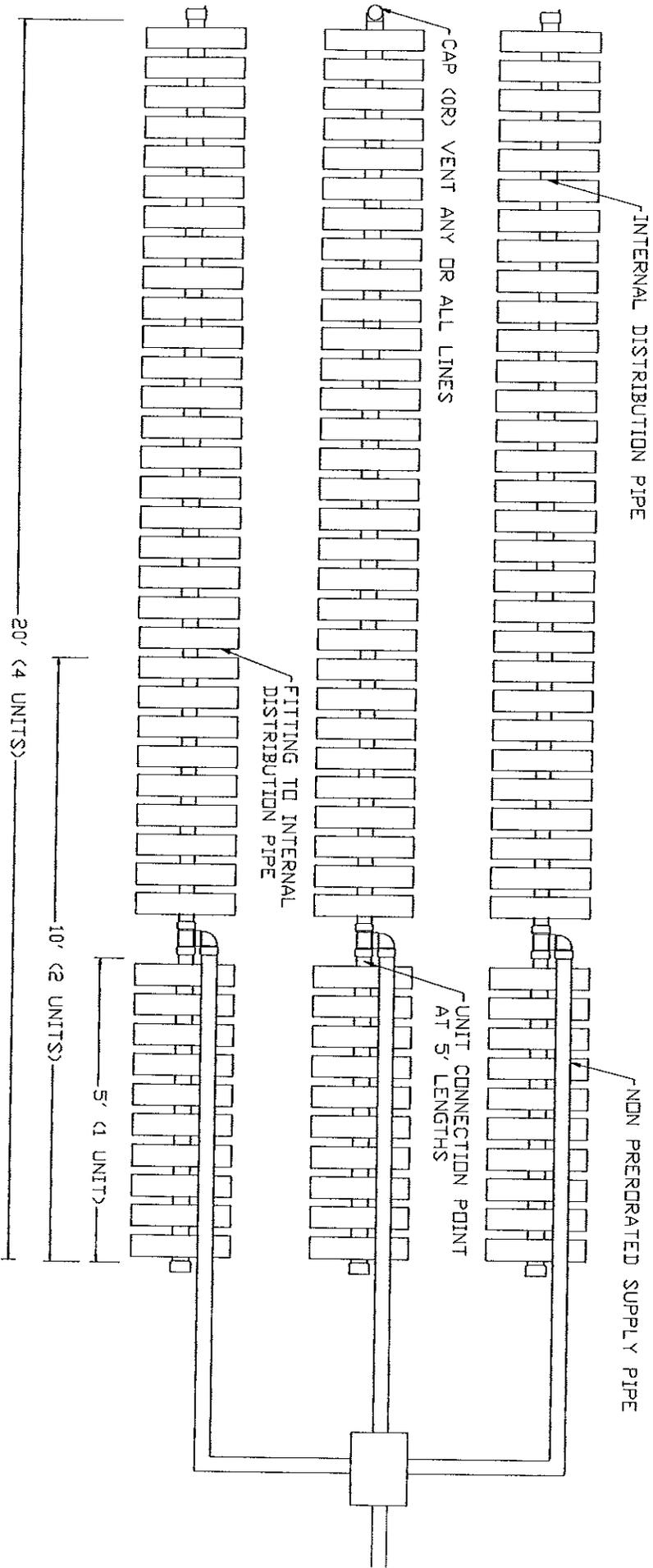
Invert Connection, Placement and Configuration



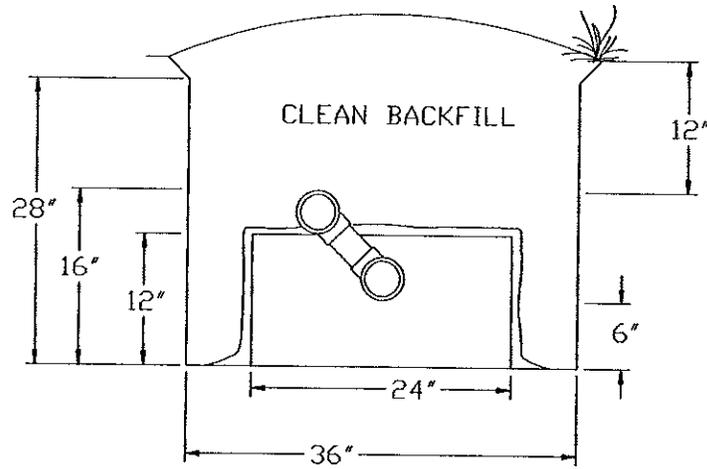
DIMENSIONED PLAN VIEW



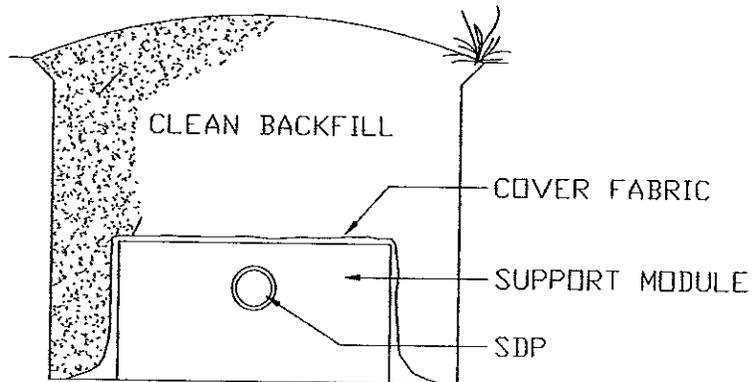
TRENCH LAYOUT



GRAVITY CROSS SECTION



The Non Perforated connection pipe from D-Box or septic tank shown on top. Positioned at the end of the first GP5 unit installed. Non Perforated connection pipe should be resting on top of the fabric cover.



The remaining units in the trench do not require a pipe on top. All GP5 units are fed via the perforated internal Support Distribution Pipe (SDP) from the 12" invert connection point.

GP5-24 SPECIFICATIONS

Configuration Widths, Heights, Inverts, Pressure & Gravity

Model	Width (Inches)	Height (Inches)	Length (Inches)	Gravity Invert (Inches)	Pressure Invert (Inches)
GP5-24	24	12	60	12	12

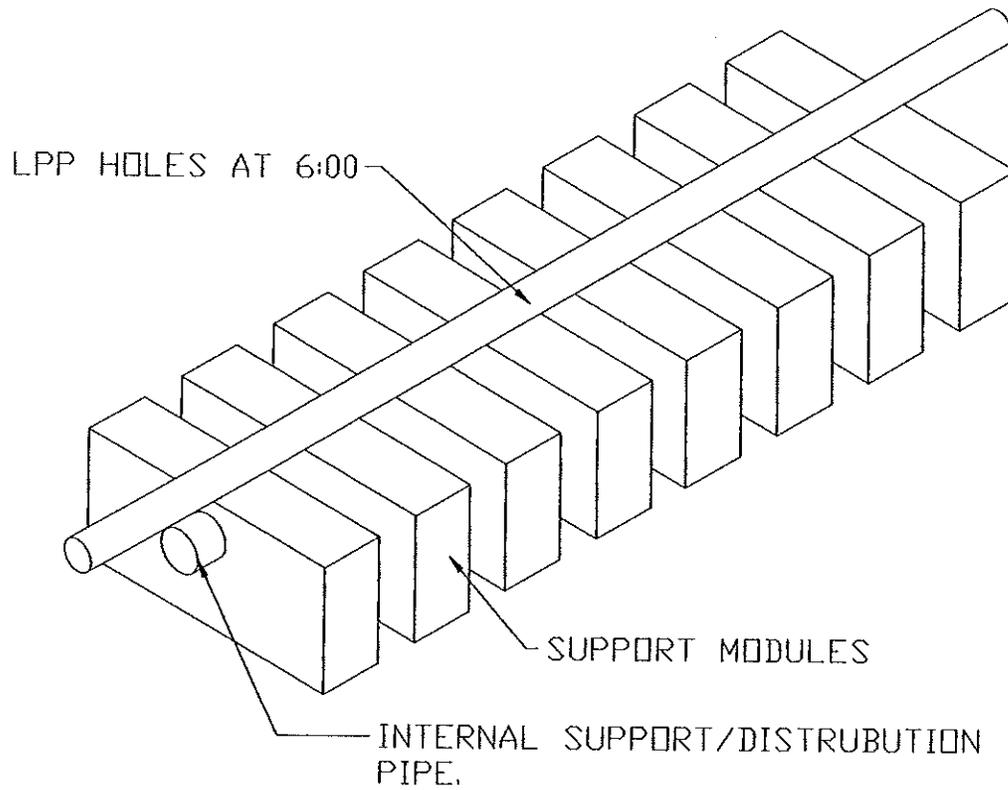
Volume Capacity Standard (Five-foot Units 98% Voids)

Model	Width (Inches)	Height (Inches)	Length (Inches)	Gravity Gal/ Unit	Pressure Gal/ Unit
GP5-24	24	12	60	73.0	73.0

Gravity/ Pressure Unit Surface Area 1:1 Based on Invert Heights

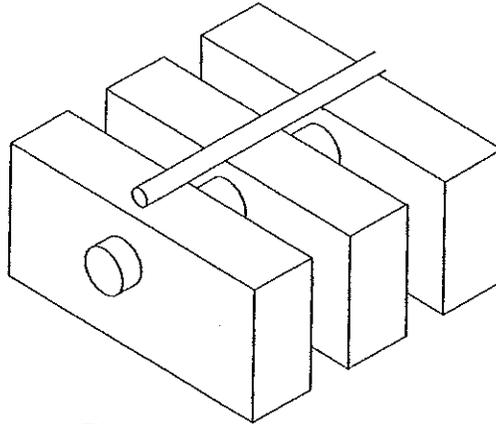
Model	Width (Inches)	Height (Inches)	Length (Inches)	Invert Height	1:1 Sqft/Lf	1:1 Sqft/ Unit
GP5-24	24	12	60	12	4.0	20.0
GP5-24	24	12	60	6	3.0	15.0

PRESSURE INSTALLATION PIPE LOCATION

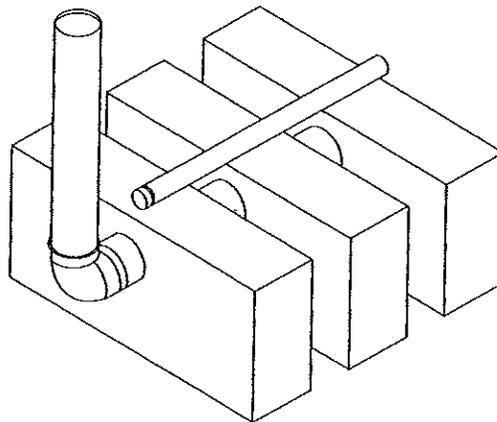


Above shows LPP distribution pipe directly on top of the Support Modules

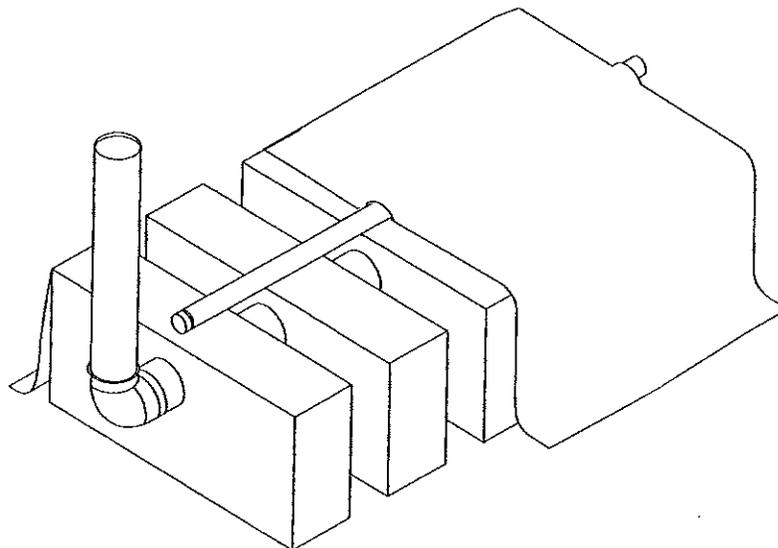
PRESSURE PIPE PLACEMENT / VENTING/ COVERING



Above shows Low Pressure Pipe on top of support modules prior to geotextile cover.

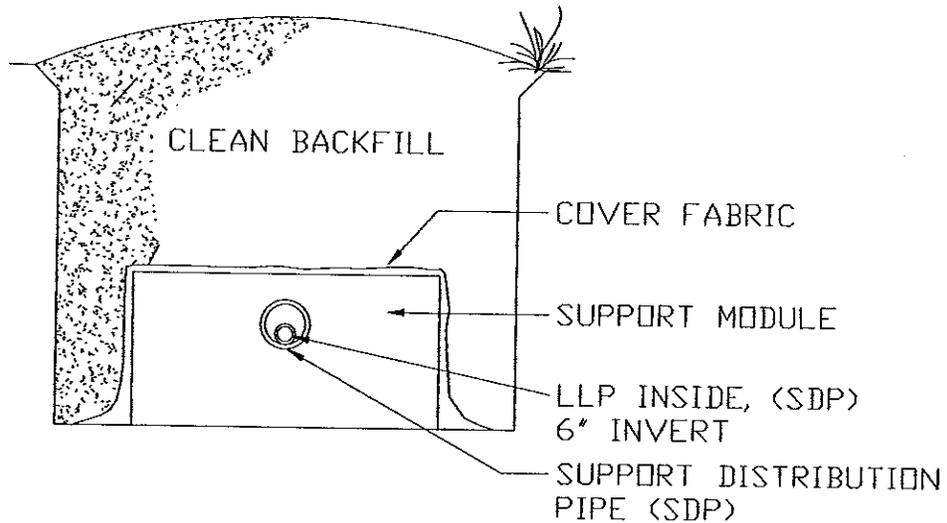


Above drawing shows Low Pressure pipe with cap installed and Vent attached to the SDP

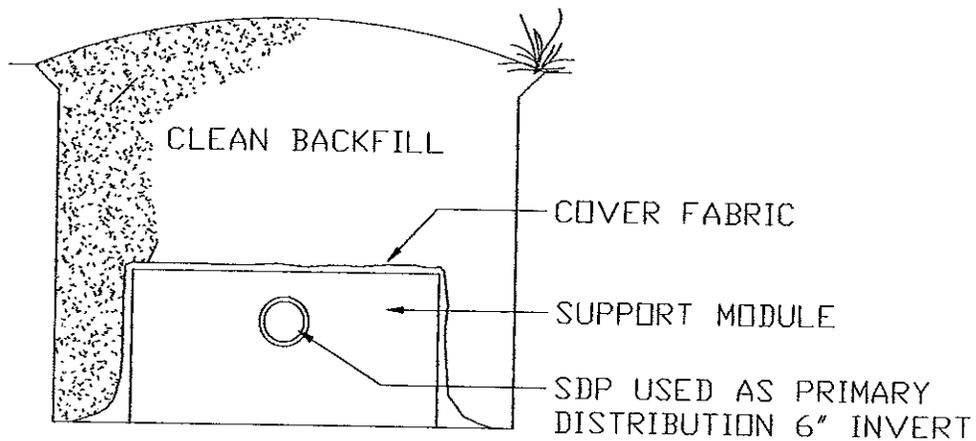


Low Pressure Pipe installed unit covered with geotextile fabric and Vent provided

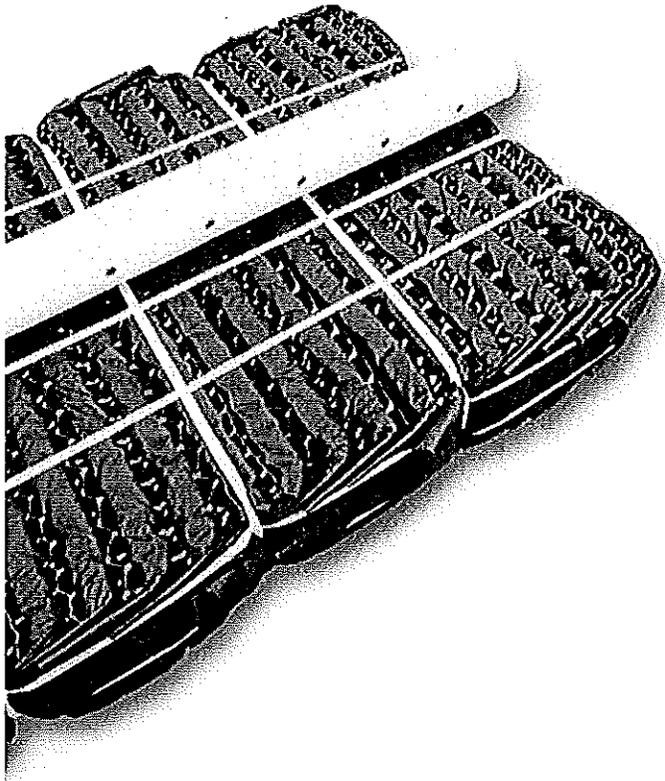
ALTERNATIVE INVERT HEIGHTS



Alternate Low Pressure Pipe (LPP) installed inside the Support Distribution Pipe. Orifices are drilled at the 12:00 position and drain holes are placed as required at the 6:00 position. This configuration will provide a 6" invert height.



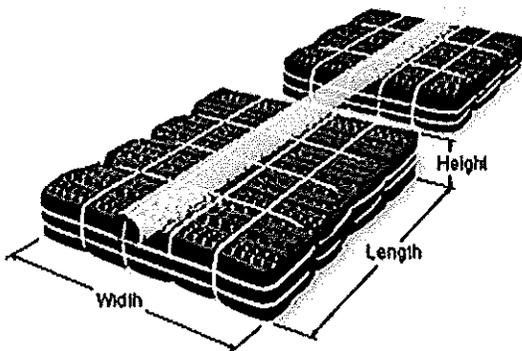
Alternate Gravity Distribution connect influent line from Septic Tank or D-Box directly to the Support Distribution Pipe. This configuration will provide an invert height of 6".



800-444-1359 • Info@eljen.com

In-Drain™ Geotextile Sand Filter (GSF)

Type	Length	Width	Height	Weight
B	4'	3'	7"	22 lbs.
Half B	2'	3'	7"	11 lbs.
A	4'	2'	7"	18 lbs.



ELJEN IN-DRAIN GSF UNIT SPECIFICATIONS

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