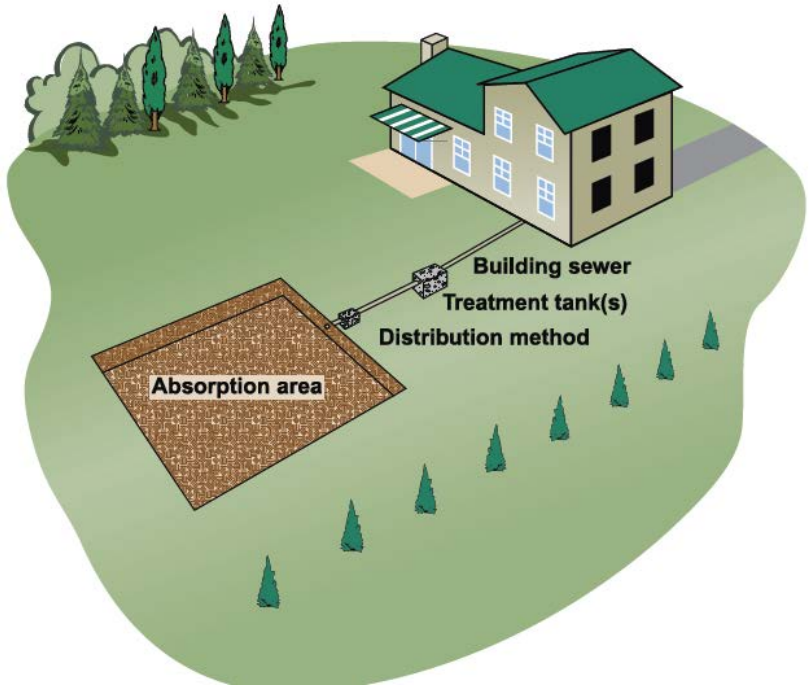
On-lot System Component Requirements

All system components used with an on-lot system employing an Eljen GSF System must meet either the requirements of Title 25, Chapter 73 or the Eljen GSF Listing.

The building sewer and all tanks used in an on-lot system must meet the requirements in Chapter 73.



The building sewer, treatment tank(s), distribution method, and absorption area make up the basic components of an On-lot sewage system.

LESSON 3-1: Eljen GSF System Components

Treatment Tanks

Eljen GSF® Listing II.B

Tank Installations must be a rectangular two-compartment tank or two rectangular tanks in a series

Round tanks are not permitted

Installations in water table require control measures against floating tanks

The outlet of the final tank or compartment must contain an effluent filter bearing the NSF seal

Round treatment tanks are not permitted with any alternate on-lot system

An effluent filter with the NSF seal must be installed on the outlet of the last tank or compartment of the septic tank.

Parts of the Eljen GSF System

This lesson will now review the Eljen GSF System starting from the bottom of the Eljen GSF to ground surface.

Sand – specified sand

Eljen GSF® Listing II.D

A minimum of twelve (12) inches of specified sand is placed over the native soil. The specified sand:

- Supports nitrification of the effluent
- Reduces oxygen demand in the soil
- Minimizes soil clogging from anaerobic bacteria

The specified sand must meet the uniform size and grading requirements of the ASTM C33 specification with less than 10 percent able to pass through a #100 sieve and less than 5 percent able to pass through a #200 sieve. Alternatively, PA DOT Type A (cement concrete sand) sand may be used.

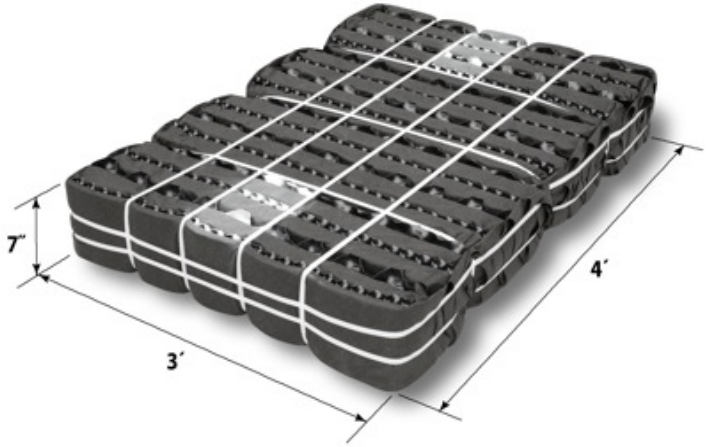
ASTM C33 SAND SPECIFICATION		
Sieve Size	Sieve Square Opening Size	Specification Percent Passing (Wet Sieve)
3/8 inch	9.52 mm	100
No. 4	4.76 mm	95 - 100
No. 8	2.38 mm	80 - 100
No. 16	1.19 mm	50 - 85
No. 30	590 µm	25 - 60
No. 50	297 µm	5 - 30
No. 100	149 µm	0 - 10
No. 200	75 µm	0 - 5

Parts of the Eljen GSF System

Eljen B43 GSF Modules

Eljen GSF® Listing I

Only use Eljen B43 modules comprised of a cuspated plastic core that is woven with Bio-Matt geotextile fabric. This creates open-air channels within the module that support aerobic bacteria growth.



Eljen GSF® Listing II.D

The dimensions of a B43 module:

- 4 feet in length
- 3 feet wide
- 7 inches tall
- Modules are placed end-to-end on top of specified sand in an absorption area
- A calculation must be done to determine the number of modules that should be used in the filter system
- The modules may not be cut or otherwise resized

DISTRIBUTION PIPE

Depending upon the absorption area established by the on-site testing results there may be up to two different distribution pipes required.

In either gravity or pressure configurations a 4-inch-diameter standard perforated distribution pipe with holes at the 4, 8 and optional 6 o'clock positions is centered above the modules and held in place with wire clamps.

Gravity Flow Distribution

A gravity flow system uses a 4-inch standard perforated distribution pipe with holes at the 4 and 8 o'clock positions only

A 4-inch perforated distribution pipe is installed on top of the Eljen B43 modules.

LESSON 3-1: Eljen GSF System Components

DISTRIBUTION PIPE

Pressure Distribution

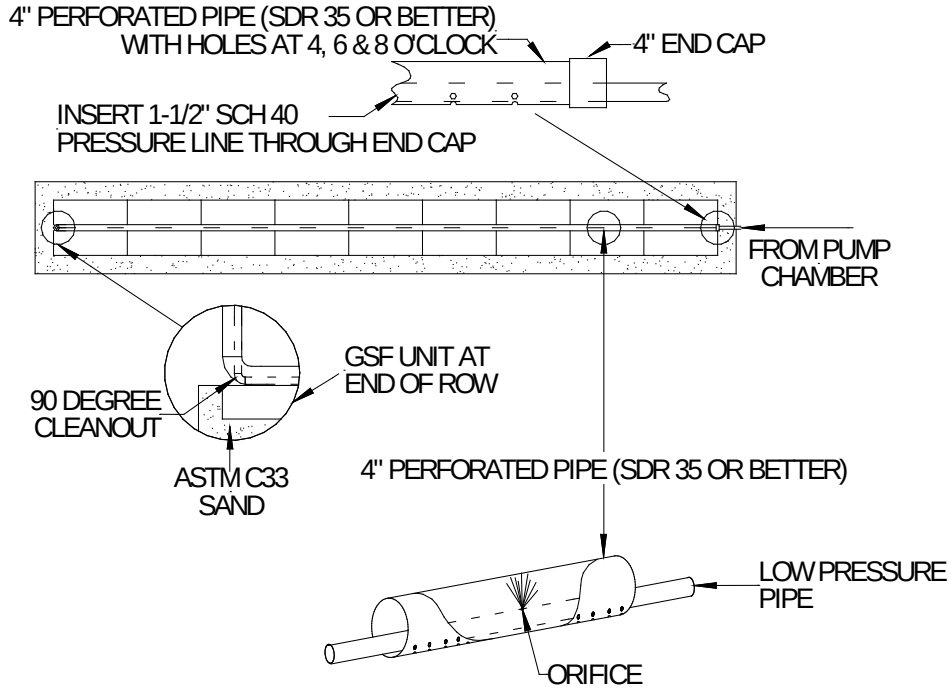
A 1.5-inch low-pressure pipe must be inserted inside the 4-inch standard perforated distribution pipe

Low-pressure pipe:

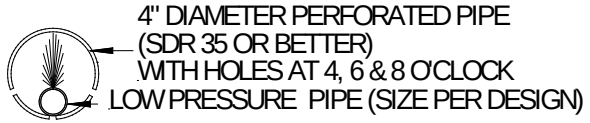
- Conform to Title 25, Section 73.44 as clarified in the Eljen design manual.
- Orifice openings must be placed at the 12 o'clock position on the low-pressure pipe
- One 1/4-inch diameter drain hole must be drilled at the 6 o'clock position of each lateral
- The distance from the last hole in the lateral to the end of the lateral shall be equal to the distance from the edge of the first module to the first hole.

Pressure distribution is required in the following instances:

1. All elevated absorption area systems
2. When the percolation rate exceeds 60 min/in
3. All systems having a total absorption areas in excess of 2,500 square feet



PRESSURE PIPE CROSS SECTION FOR ALL APPLICATIONS



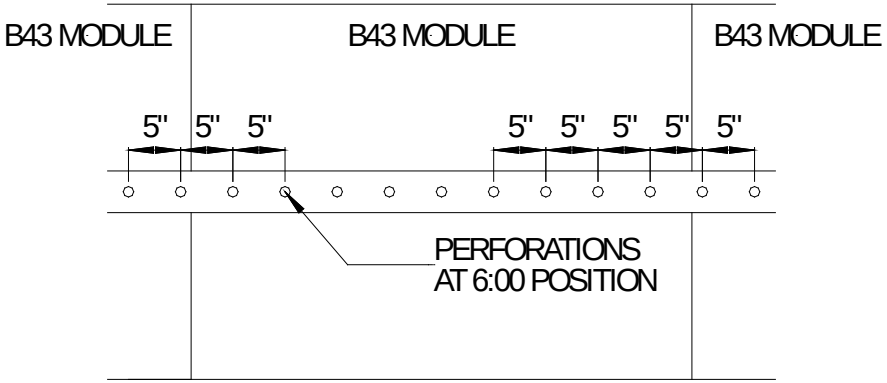
Pipe and perforated pipe hole arrangement for pressure applications.

DISTRIBUTION PIPE

Distribution Pipe Perforations (pressure systems only)

The 4 inch distribution pipe (SDR-35 or better) may have perforations that conform to either:

Option 1) Pipe purchased from a manufacturer shall have a 3-hole perforation with 5/8" diameter holes located at the 4 o'clock, 6 o'clock, and 8 o'clock positions



3-hole manufactured pipe

DISTRIBUTION PIPE

Distribution Pipe Perforations (pressure systems only)

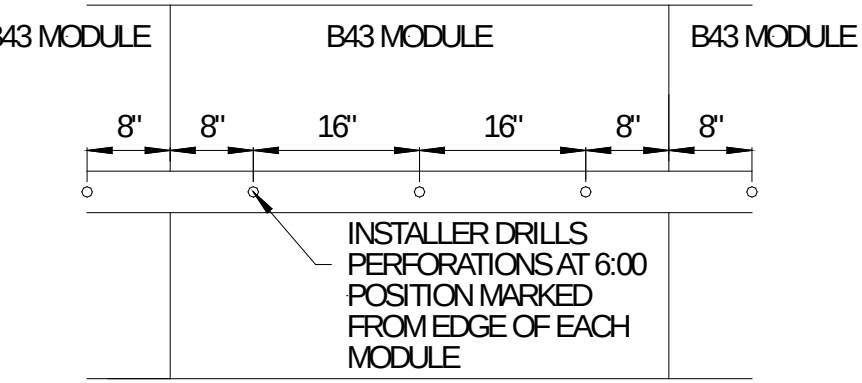
Option 2) Pipe purchased from a manufacturer shall have a 2-hole perforation with 5/8 diameter holes located at the 4 o'clock and 8 o'clock positions.

Additional perforations at the 6 o'clock position are acceptable provided that there are three 6 o'clock perforations in the pipe for each B43 module.

The perforations shall be placed such that the first hole be placed 8" from the end of the B43 module.

Subsequent perforations shall be placed 16" center to center.

The diameter of the perforations at the 6 o'clock shall be either 5/8 diameter or 3/4 diameter.



2-hole manufactured pipe with holes drilled by contractor at 6 o'clock

Pressure Distribution

Dosing

Eljen GSF® Listing II.C

The dosing volume must satisfy two conditions:

Condition 1: The dosing volume must be less than 4 gallons per dose per Eljen B43 module. Maximum dose = number of modules x 4 gallons.

Example: If there were 25 modules, the maximum dose would be 100 gallons.

25 modules x 4 gallons = 100 gallons

Condition 2: The maximum volume each B43 module can treat must be less than 30 gpd per module.

If the dosing conditions are not met, additional modules may be required.

Typical control panel for a pressure dosed or pressurized systems.

If a pump is required to lift the effluent to the Eljen GSF System, a timed dose is required.

Parts of the Eljen GSF System

Barrier material – anti-siltation fabrics

An anti-siltation geotextile fabric covers the top and sides of the Eljen GSF modules. This geotextile fabric:

- Protects the modules and specified sand from fines
- Maintains effluent storage within the module
- Provided by manufacturer

The anti-siltation geotextile fabric is installed over the distribution pipe and modules.

Cover material

- Minimum of 8 inches deep
- Meet the specifications in Title 25, Section 73.52(b)(14 and 15)
- Protects the system and prevents erosion
- If cover material is greater than 18 inches, the system requires venting

The cover material has been placed over the absorption area and seeded.