



Geotextile Sand Filter

Australia

Design & Installation Manual



Innovative Onsite Products & Solutions Since 1970

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Glossary of Terms

| | |
|-----------------------|---|
| A42 Module | 122 cm x 61 cm x 18 cm (L x W x H) |
| Cover Fabric | The geotextile cover fabric (provided by manufacturer) that is placed over the GSF modules. |
| Design Flow | The estimated peak flow that is used to size a GSF system is 120 liters per day per person. |
| GSF | The Eljen Geotextile Sand Filter Modules and the sand layer at the base and along the sides of the modules. |
| GSF Module | The individual module of a GSF system. The module is comprised of a cuspated plastic core and corrugated geotextile fabric. |
| Specified Sand | To ensure proper system operation, the system MUST be installed using ASTM C33 Sand. ASTM C33 sand will have less than 10% passing the #100 Sieve and less than 5% passing the # 200 sieve. Ask your material supplier for a sieve analysis to verify that your material meets the required specifications. |

TABLE 1: SPECIFIED SAND SIEVE REQUIREMENTS

| ASTM C33 SAND SPECIFICATION | | |
|--------------------------------|------------------------------|---|
| Sieve Size | Sieve Square Opening Size | Specification Percent Passing (Wet Sieve) |
| 9.5 mm | 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 |

GSF System Description

Primary Treatment Zone

- Perforated pipe is centered above the GSF module to distribute septic effluent over and into corrugations created by the cusped core of the geotextile module.
- Septic effluent is filtered through the Bio-Matt fabric. The module's unique design provides increased surface area for biological treatment that greatly exceeds the module's footprint.
- Open air channels within the module support aerobic bacterial growth on the modules geotextile fabric interface, surpassing the surface area required for traditional absorption systems.
- An anti-siltation geotextile fabric covers the top and sides of the GSF module and protects the Specified Sand and soil from clogging, while maintaining effluent storage within the module.

Secondary Treatment Zone

- Effluent drips into the Specified Sand layer and supports unsaturated flow into the native soil. This Specified Sand/soil interface maintains soil structure, thereby maximizing the available absorption interface in the native soil. The Specified Sand supports nitrification of the effluent, which reduces oxygen demand in the soil, thus minimizing soil clogging from anaerobic bacteria.
- The Specified Sand layer also protects the soil from compaction and helps maintain cracks and crevices in the soil. This preserves the soil's natural infiltration capacity, which is especially important in finer textured soils, where these large channels are critical for long-term performance.
- Native soil provides final filtration and allows for groundwater recharge.

FIGURE 1: GSF SYSTEM OPERATION

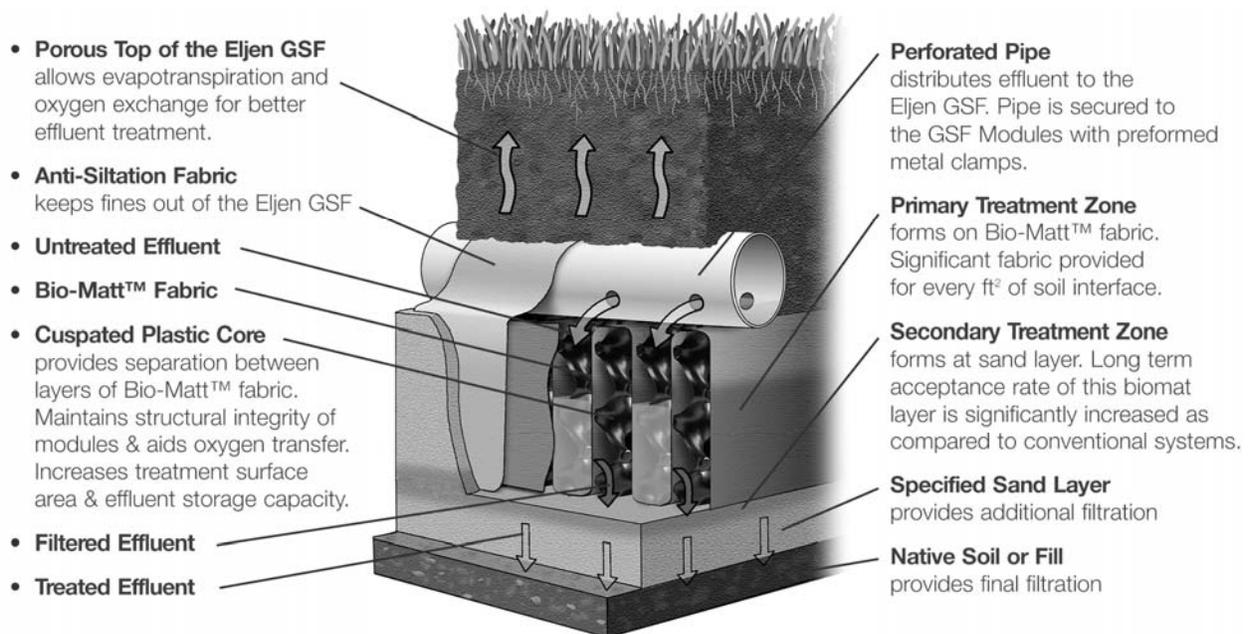
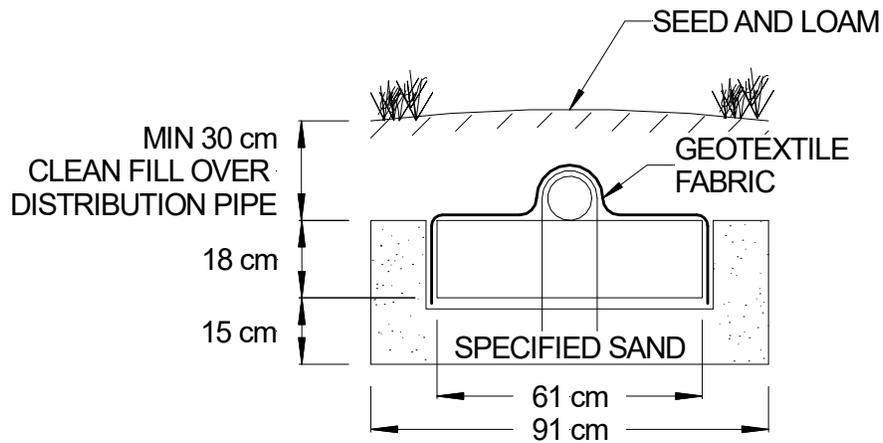


FIGURE 2: TYPICAL A42 GSF CROSS SECTION



A42 MODULE (L x W x H) 122 CM x 61 CM x 18 CM

All systems are required to have a minimum of:

- 15 cm of Specified Sand is at the edges of the GSF module.
- 15 cm of Specified Sand is at the beginning and end of each GSF Row.
- 15 cm of Specified Sand is directly below the GSF module.
- 30 cm of clean fill above the module.

1.0 Design and Installation

1.1 REQUIREMENTS: GSF systems must meet the local rules and regulations except as outlined in this manual. The purpose of this manual is to provide the minimum design and installation information for the use of Eljen A42 GSF Modules. Exceptions and changes may be made, but should be confirmed by Eljen Pacific Inc. The manual provides a brief description of the Eljen GSF Modules with their sizing and installation specifications. This document is not inclusive of all installation options.

For more detailed design information, please contact Eljen Pacific Inc. at 0418 132 021 or paul@eljenpacific.com.

1.2 SPECIFIED SAND SPECIFICATION FOR GSF SYSTEMS: The sand immediately under, between rows and around the perimeter of the GSF system must meet **ASTM C33 SPECIFICATIONS, WITH LESS THAN 10% PASSING A #100 SIEVE AND LESS THAN 5% PASSING A #200 SIEVE**. Please place a prominent note to this effect on each design drawing. See Table 1 for more information on the sand and sieve specifications.

1.3 CONNECTIONS AND FITTINGS: Connections of lines to tanks and distribution boxes must be made using watertight mechanical seals.

1.4 PLACING GSF MODULES: The “Painted Stripe” on the GSF modules indicates the top of the module and is not intended to indicate the location of the distribution pipe. With the painted stripe facing up, all rows of GSF modules are set level, end to end on the Specified Sand layer. No mechanical connection is required between modules.

1.5 DISTRIBUTION: Gravity, pump to gravity or pressure distribution are acceptable when using the GSF System. All piping must meet the guidelines and have holes placed at 4 & 8 o'clock at 150 mm centers. A pressure manifold is placed inside the 100 mm distribution pipe when using pressure distribution. Section 4.0 of this manual goes into details of how to construct the distribution network. The minimum method of distribution is determined by the separation distance to ground water and soil type.

1.6 DISTRIBUTION BOX: Set gravity system D-box outlet invert a minimum of 1 cm per above invert of distribution pipe over modules (5 cm minimum for pumped D-Box systems). The fill below the D-Box and piping must be compacted to avoid settling. Flow Equalizers (speed levelers) are recommended for gravity and pump to gravity systems.

1.7 COVER FABRIC: Geotextile cover fabric is provided by Eljen Corporation for all GSF systems. It is placed over the top and sides of the module rows to prevent long term siltation and failure. **Cover fabric substitution is not allowed.** Fabric should drape vertically over the pipe and must not block holes in the distribution pipe or be stretched from the top of the pipe to the outside edge of the modules. “Tenting” will cause undue stress on fabric and pipe.

1.8 BACKFILL & FINISH GRADING: Complete backfill with a minimum of 30 cm of clean porous fill measured from the top of the distribution pipe. Use well graded native soil fill that is clean, porous and devoid of large rocks. Do not use wheeled equipment over the system. A light track machine may be used with caution, avoiding crushing or shifting of pipe assembly. Divert surface runoff from the Effluent Disposal Area, (EDA). Finish grade to prevent surface ponding. Topsoil and seed system area to protect from erosion.

1.9 ADDITIONAL FACTORS EFFECTING RESIDENTIAL SYSTEM SIZE: Homes with expected higher than normal water usage may consider increasing the septic tank volume as well as incorporating a multiple compartment septic tank. Consideration for disposal area may be up-sized for expected higher than normal water use.

For example:

- Luxury homes, homes with a Jacuzzi style tubs, and other high use fixtures.
- Homes with known higher than normal occupancy.

1.0 Design and Installation

1.10 GARBAGE DISPOSALS: The use of a garbage disposal (garburators) is not recommended as they can cause septic system problems by generating an increased amount of suspended solids, grease and nutrients.

The Daily Design Flow is increased by 50% if the owner wishes to use a garburator. Eljen recommends a dual compartment tank or tanks in series when using a garbage disposal unit. An effluent filter with higher filtration is recommended for systems with garbage disposals.

1.11 WATER CONDITIONERS: Water conditioners will be discharged into a separate disposal system.

1.12 VEHICULAR TRAFFIC: All vehicular traffic is prohibited over the GSF system.

1.13 SYSTEM GEOMETRY: Design systems as long and narrow as practical along site contours to minimize ground water mounding especially in poorly drained low permeability soils. If possible, design level systems with equal number of modules per row.

1.14 SEPTIC TANKS: Please refer to Australia Standards AS 1547 2012 & AS 1546 for guidance on septic tanks.

1.15 SEPTIC TANK FILTERS: Septic tank effluent filters are **REQUIRED** on the outlet end of septic tank. Filter manufactures require that filters be cleaned from time to time. Ask your installer or designer for specific cleaning requirements based on the type or make of the filter installed. Eljen requires the septic tank to be pumped every three years or as needed which would be a good time to check and conduct filter maintenance.

1.16 SYSTEM VENTING: It is strongly recommended to vent all systems. See Section 6.0 for a more detailed explanation of venting GSF products.

1.17 VERTICAL SEPARATION: The minimum distances located in Table R1 of the regulations provide guidance on vertical separation.

1.18 COMMERCIAL DESIGN CONSIDERATIONS: Commercial systems differ from residential systems relative to wastewater characteristics, effluent distribution strategies, peak flows, system size and geometry. As these systems are normally larger, the designer must also consider the collection systems and their integrity, groundwater hydrology, drainage above and below the GSF system and design accordingly.

Designers should carefully review and document with their client effluent BOD₅ and TSS concentrations and water use numbers. The designer should document that the system installation meets the technology supplier's specifications to ensure long-term performance. In addition, designers must be attentive to special details of the system, conduct follow-through startup and document technical capabilities for personnel required for Operation and Maintenance of the system.

Please contact Eljen Pacific Inc. at 0418 132 021 or paul@eljenpacific.com for recommendations on sizing prior to design and submission of plans to local authority.

2.0 GSF System Sizing

ELJEN GSF SYSTEM DESIGN PROGRAM

|  | | <i>Eljen GSF System Design Program</i> | | <input type="button" value="RESET FORM"/> | | | | |
|---|--|--|---------------------------|---|--|--|--|--|
| Date: | | Client Name: | | | | | | |
| Site Address: | | | Council Area: | | | | | |
| Designer: | | Designer Phone Number: | | Is this new construction Y or N: | | | | |
| Plumber: | | Plumber Phone Number: | | Plumber License Number: | | | | |
| <i>Note: This design program is a guide only. All design constraints and limitations must be addressed by the designer prior to design and installation.</i> | | | | | | | | |
| System Design Information | | | Design Notes and Comments | | | | | |
| Design Occupancy (Number of persons): | | | | | | | | |
| Daily Design Flow (L/Person/Day): | | | | | | | | |
| Total Daily Design Flow (L/Day): | | | | | | | | |
| Trench or Bed | | | | | | | | |
| Soil Category <i>(Note: Soil Categories 4-6 May Require additional design consideration. Please reference AS/1547 2012 when designing in these soil types.)</i> | | | | | | | | |
| Site Design Loading Rate (L/mm/day): | | | | | | | | |
| System Area Slope (%): | | | | | | | | |
| System Area Slope (converted from % slope to degrees slope): | | | | | | | | |
| System Basal Area Bore Log Depth: <i>(Note: Must be greater than 600 mm)</i> | | | | | | | | |
| Maximum System Length Based on Site Constraints: | | | | | | | | |
| Desired Rows or Trenches in System | | | | | | | | |
| Distribution Type (G = Gravity - P = Pump to Gravity - LPD = Low Pressure Distribution): | | | | | | | | |
| System Dimensions | | | | | | | | |
| Would you like to use a specific width? (y or n) Not applicable in Trenches | | | | | | | | |
| Specific Width (m) | | | | | | | | |
| Treatment Zone | | | Dispersal Zone Extension | | | | | |
| Length (m) | | | | | | | | |
| Width (m) | | | | | | | | |
| Sand Height (m) | | | | | | | | |
| Sand Area (m ²) | | | | | | | | |
| System Capacity | | | | | | | | |
| Total Daily Design Flow (L/Day): | | | | | | | | |
| Minimum Number of A42 Units Required | | | | | | | | |
| Units per Row | | | | | | | | |
| Length of Rows with 0.15 m Sand Extension | | | | | | | | |
| End to End Space Between Modules (TRENCH ONLY) | | | | | | | | |
| Materials | | | | | | | | |
| Minimum Number of A42 Units Required | | | | | | | | |
| The system requires a high vent. Are using 50mm or 100mm pipe | | | | | | | | |
| Low vent | | | | | | | | |
| Effluent Filter | | | | | | | | |
| Inspection Ports | | | | | | | | |
| Pipe Required (m) | | | | | | | | |
| Estimate of System Sand Required (m ³) | | | | | | | | |

For simple and easy system design, please use the Eljen GSF System Design Program. This design program provides all the necessary information for designing your Eljen GSF System.

This Program is for residential systems only and can be obtained from Eljen Pacific Inc. at 0418 132 021 or paul@eljenpacific.com.

3.0 Trench Installation Guidelines

1. Ensure all components leading to the GSF system are installed properly. Septic tank effluent filters are required with the GSF system.
2. Determine the number of GSF Modules required using the sizing program.
3. Prepare the site. Do not install a system on saturated ground or wet soils that are smeared during excavation. Keep machinery off infiltrative areas.
4. Plan all drainage requirements above (up-slope) of the system. Set soil grades to ensure that storm water drainage and ground water is diverted away from the absorption area once the system is complete.
5. Excavate the trench; scarify the receiving layer to maximize the interface between the native soil and specified sand.
6. Minimize walking in the trench prior to placement of the specified sand to avoid soil compaction.
7. Place specified sand in a 15 cm lift, stabilize by foot, a hand held tamping tool or a portable vibrating compactor. The stabilized height below the GSF module must be level at 15 cm.
8. Place GSF modules with **PAINTED STRIPE FACING UP**, end to end on top of the specified sand along their 122 cm length.
9. A standard perforated 100 mm distribution pipe is centered along the modules 122 cm length. Orifices are set at the 4 & 8 o'clock position.
10. All pipes are secured with manufacturers supplied wire clamps, one per module.
11. (Pressure Distribution Systems) Insert a pressure pipe (size per design and code) into the standard perforated distribution pipe. The pressure pipe orifices are set at the 12 o'clock position as shown in Figure 11. Each pressure lateral will have a drain hole at the 6 o'clock position. Each pressure lateral shall have a clean out at the end of the trench.
12. It is strongly recommended to install a 100 mm vent onto the distribution pipe. Distribution pipes can be connected to one vent or use one vent per distribution line.
13. **Cover fabric substitution is not allowed.** The installer should lay the Eljen provided geotextile cover fabric lengthwise down the trench, with the fabric fitted to the perforated pipe on top of the GSF modules. Fabric should be neither too loose, nor too tight. The correct tension of the cover fabric is set by:
 - a. Spreading the cover fabric over the top of the module and down both sides of the module with the cover fabric tented over the top of the perforated distribution pipe.
 - b. Place shovelfuls of Specified Sand directly over the pipe area allowing the cover fabric to form a mostly vertical orientation along the sides of the pipe. Repeat this step moving down the pipe.
14. Place 15 cm of Specified Sand along both sides of the modules edge. A minimum of 15 cm of Specified Sand is placed at the beginning and end of each trench.
15. Complete backfill with a minimum of 30 cm of clean porous fill measured from the top of the module. Use well graded native soil fill that is clean, porous and devoid of large rocks. Do not use wheeled equipment over the system. A light track machine may be used with caution, avoiding crushing or shifting of pipe assembly.
16. Divert surface runoff from the system. Finish grade to prevent surface ponding. Topsoil and seed system area to protect from erosion.

3.0 Trench Installation Guidelines

FIGURE 3: PLAN VIEW – TRENCH SYSTEM

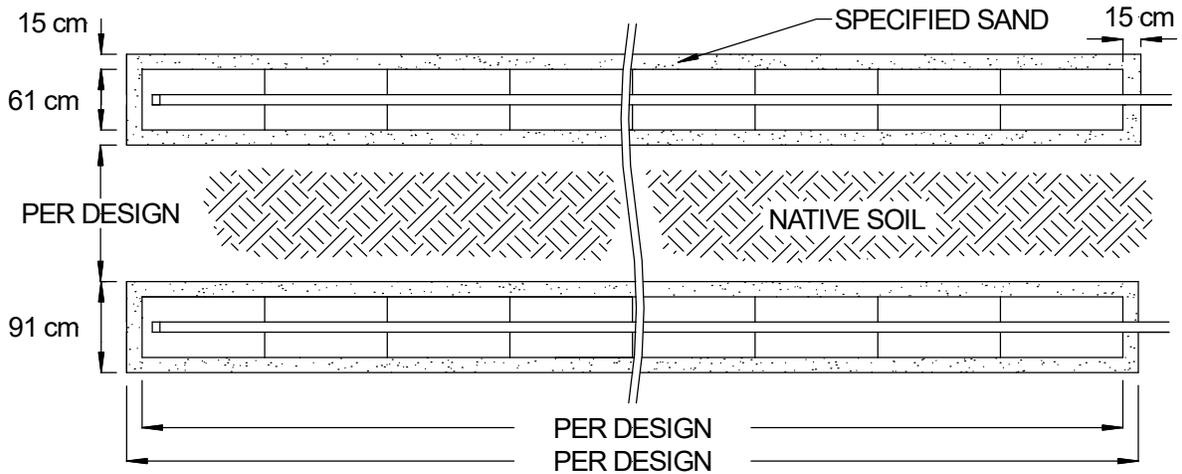


FIGURE 4: SECTION VIEW – TRENCH SYSTEM – LEVEL SITE

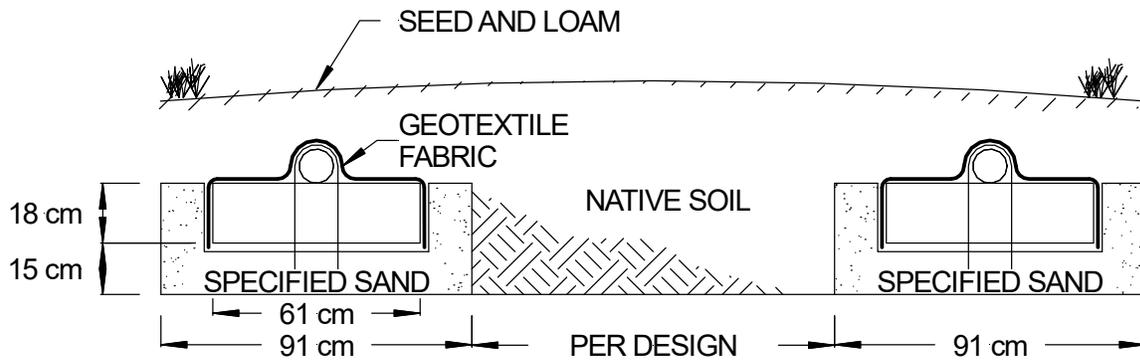
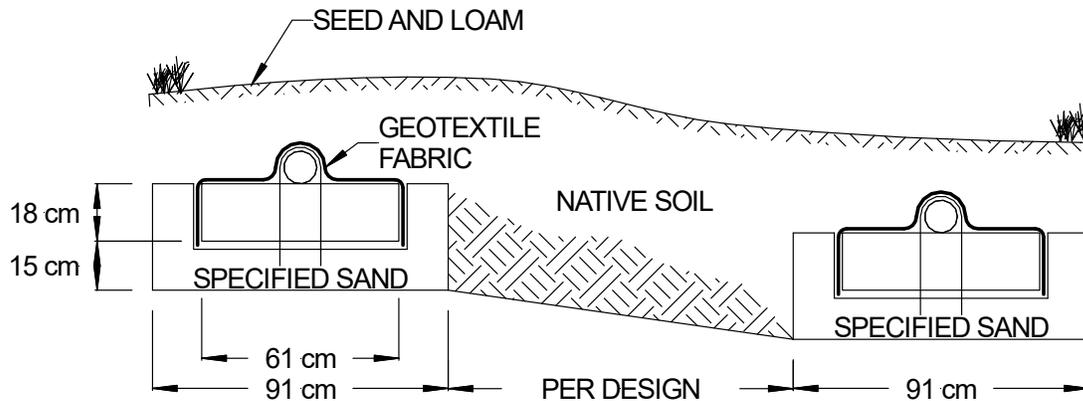


FIGURE 5: SECTION VIEW – TRENCH SYSTEM – SLOPING SITE



4.0 Bed Installation Guidelines

1. Ensure all components leading to the GSF system are installed properly. Septic tank effluent filters are required with the GSF system.
2. Determine the number of GSF Modules required using the sizing program.
3. Prepare the site. Do not install a system on saturated ground or wet soils that are smeared during excavation. Keep machinery off infiltrative areas.
4. Plan all drainage requirements above (up-slope) of the system. Set soil grades to ensure that storm water drainage and ground water is diverted away from the absorption area once the system is complete.
5. Excavate the bed absorption area; scarify the receiving layer to maximize the interface between the native soil and specified sand.
6. Minimize walking in the absorption area prior to placement of the specified sand to avoid soil compaction.
7. Place specified sand in a 15 cm lift, stabilize by foot, a hand held tamping tool or a portable vibrating compactor. The stabilized height below the GSF module must be level at 15 cm.
8. Place GSF modules with **PAINTED STRIPE FACING UP**, end to end on top of the specified sand along their 122 cm length.
9. A standard perforated 100 mm distribution pipe is centered along the modules 122 cm length. Orifices are set at the 4 & 8 o'clock position.
10. All distribution pipes are secured with manufacturers supplied wire clamps, one per module.
11. (Pressure Distribution Systems) Insert a pressure pipe (size per design and code) into the standard perforated distribution pipe. The pressure pipe orifices are set at the 12 o'clock position as shown in Figure 11. Each pressure lateral will have a drain hole at the 6 o'clock position. Each pressure lateral shall have a clean out at the end of each module row.
17. It is strongly recommended to install a 100 mm vent onto the distribution pipe. Distribution pipes can be connected to one vent or use one vent per distribution line.
12. **Cover fabric substitution is not allowed.** The installer should lay the Eljen provided geotextile cover fabric lengthwise down the row, with the fabric fitted to the perforated pipe on top of the GSF modules. Fabric should be neither too loose, nor too tight. The correct tension of the cover fabric is set by:
 - a. Spreading the cover fabric over the top of the module and down both sides of the module with the cover fabric tented over the top of the perforated distribution pipe.
 - b. Place shovelfuls of Specified Sand directly over the pipe area allowing the cover fabric to form a mostly vertical orientation along the sides of the pipe. Repeat this step moving down the pipe.
13. Place 15 cm of Specified Sand along both sides of the modules edge. A minimum of 15 cm of Specified Sand is placed at the beginning and end of each module row. A minimum of 30 cm of Specified Sand is placed in between module rows.
14. Complete backfill with a minimum of 30 cm of clean porous fill measured from the top of the module. Use well graded native soil fill that is clean, porous and devoid of large rocks. Do not use wheeled equipment over the system. A light track machine may be used with caution, avoiding crushing or shifting of pipe assembly.
15. Divert surface runoff from the system. Finish grade to prevent surface ponding. Topsoil and seed system area to protect from erosion.

4.0 Bed Installation Guidelines

FIGURE 6: PLAN VIEW – BED SYSTEM

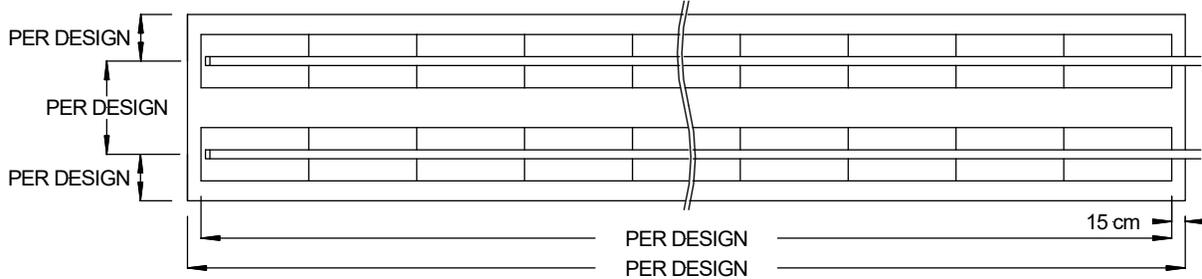
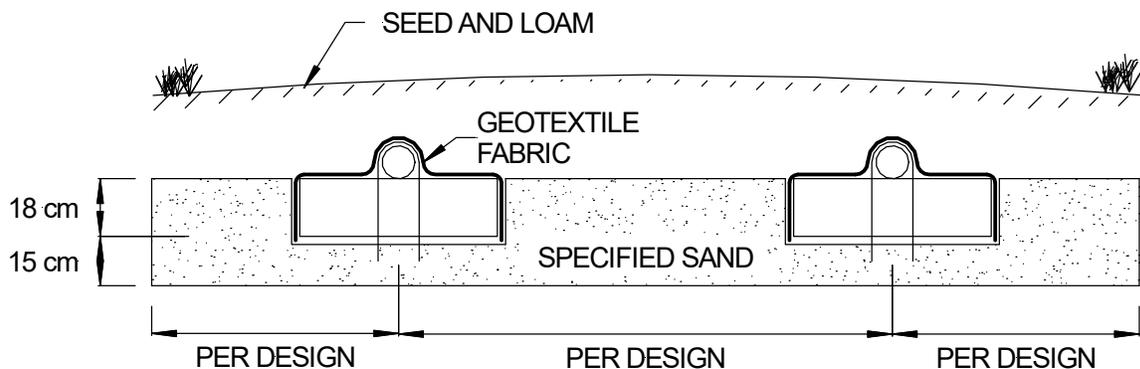


FIGURE 7: SECTION VIEW – BED SYSTEM



5.0 Eljen GSF Systems on Level Sites

5.1 SYSTEM CONFIGURATIONS: Design level systems with 30 cm minimum spacing between module rows and 15 cm from the end or edge of system perimeter. The system sand, GSF modules, and distribution pipes are installed level at their design elevations.

5.2 DISTRIBUTION PIPE LAYOUT: Approved 100 mm perforated pipe runs along the center of the modules. Ends may be connected with approved solid pipe at the far end of the system and at mid points in, gravity systems as long as equal distribution is insured to all rows. Solid pipe is used to connect perforated lines to the distribution box.

6.0 Eljen GSF Systems on Sloped Sites

6.1 SYSTEM CONFIGURATIONS: Sequential and serial dosed GSF systems may be used on sloped sites where applicable.

6.2 ROW SPACING: Systems with up to 15 cm elevation drop between adjacent module rows use 30 cm minimum spacing. If over 15 cm drop, use a minimum of 2 times the elevation drop as minimum spacing between module rows.

6.3 DISTRIBUTION BOX: Provide a distribution box at the beginning of the first row of modules for effluent velocity reduction and a system inspection port. Lower rows can utilize drop boxes, or distribution boxes with flow equalizer to ensure effluent is loaded to the upslope trench before continuing to lower trenches within the system.

7.0 Mound Installation Guidelines

1. Ensure all components leading to the GSF system are installed properly. Septic tank effluent filters are required with the GSF system.
2. Determine the number of GSF Modules required using the sizing program.
3. Prepare the site. Do not install a system on saturated ground or wet soils that are smeared during excavation. Keep machinery off infiltrative areas.
4. Plan all drainage requirements above (up-slope) of the system. Set soil grades to ensure that storm water drainage and ground water is diverted away from the absorption area once the system is complete.
5. Remove the organic soil layer. Scarify the receiving layer to maximize the interface between the native soil and Specified Sand. Minimize walking in the absorption area prior to placement of the Specified Sand to avoid soil compaction.
6. Place fill material meeting local requirements (or Specified Sand requirements) onto the soil interface as you move down the excavated area. Place specified sand in a 15 cm lifts, stabilize by foot, a hand held tamping tool or a portable vibrating compactor. The stabilized height below the GSF module must shall meet the mound design requirements.
7. Place GSF modules with **PAINTED STRIPE FACING UP**, end to end on top of the specified sand along their 122 cm length.
8. A standard perforated 100 mm distribution pipe is centered along the modules 122 cm length. Orifices are set at the 4 & 8 o'clock position.
9. All distribution pipes are secured with manufacturers supplied wire clamps, one per module.
10. (Pressure Distribution Systems) Insert a pressure pipe (size per design and code) into the standard perforated distribution pipe. The pressure pipe orifices are set at the 12 o'clock position as shown in Figure 11. Each pressure lateral will have a drain hole at the 6 o'clock position. Each pressure lateral shall have a clean out at the end of each module row.
18. It is strongly recommended to install a 100 mm vent onto the distribution pipe. Distribution pipes can be connected to one vent or use one vent per distribution line.
11. **Cover fabric substitution is not allowed.** The installer should lay the Eljen provided geotextile cover fabric lengthwise down the row, with the fabric fitted to the perforated pipe on top of the GSF modules. Fabric should be neither too loose, nor too tight. The correct tension of the cover fabric is set by:
 - a. Spreading the cover fabric over the top of the module and down both sides of the module with the cover fabric tented over the top of the perforated distribution pipe.
 - b. Place shovelfuls of Specified Sand directly over the pipe area allowing the cover fabric to form a mostly vertical orientation along the sides of the pipe. Repeat this step moving down the pipe.
12. Ensure there is 15 cm of specified sand surrounding the GSF modules in the mound. Slope the sand away from the mound as described on the plan.
13. Complete backfill with a minimum of 30 cm of clean porous fill measured from the top of the modules. Use well graded native soil fill that is clean, porous and devoid of large rocks. Do not use wheeled equipment over the system. A light track machine may be used with caution, avoiding crushing or shifting of pipe assembly.
14. Divert surface runoff from the system. Finish grade to prevent surface ponding. Topsoil and seed system area to protect from erosion.

7.0 Mound Installation Guidelines

FIGURE 8: PLAN VIEW – MOUND SYSTEM

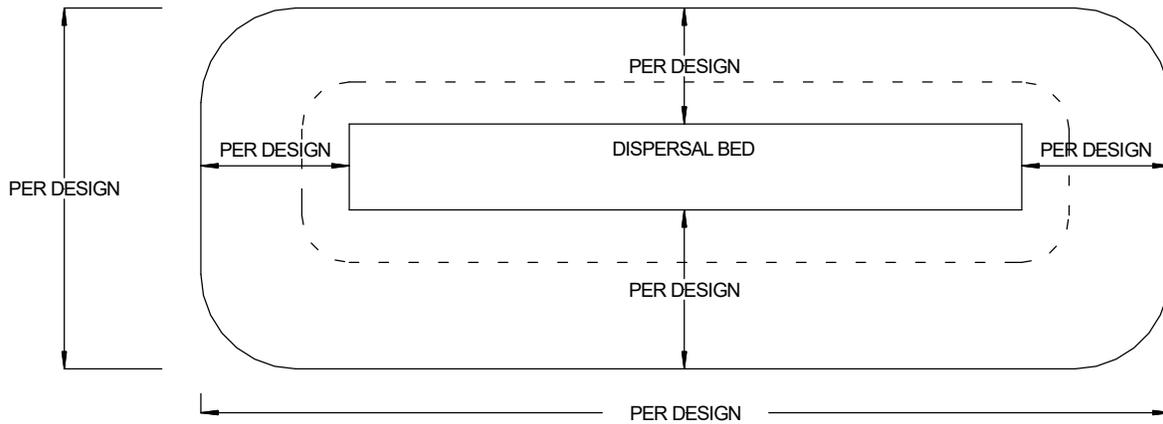


FIGURE 9: CROSS SECTION – MOUND SYSTEM

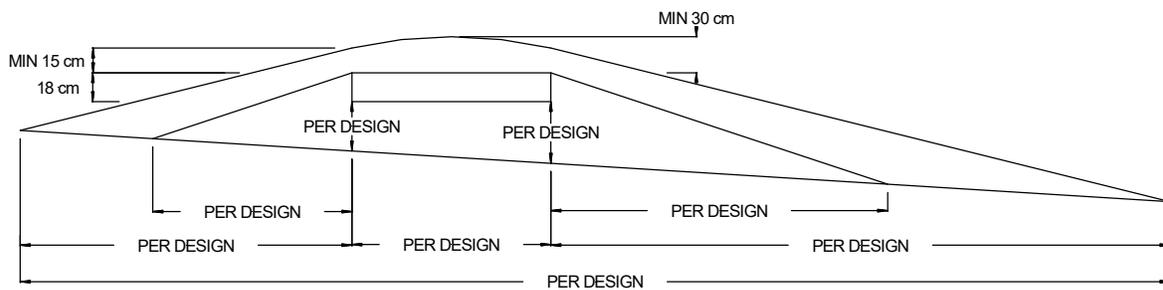
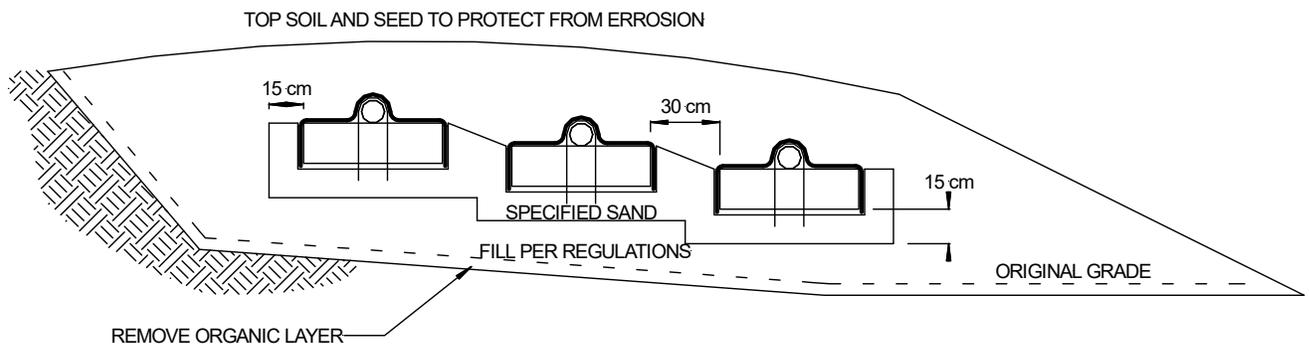


FIGURE 10: CROSS SECTION – MOUND SYSTEM



8.0 Dosing Distribution Guidance

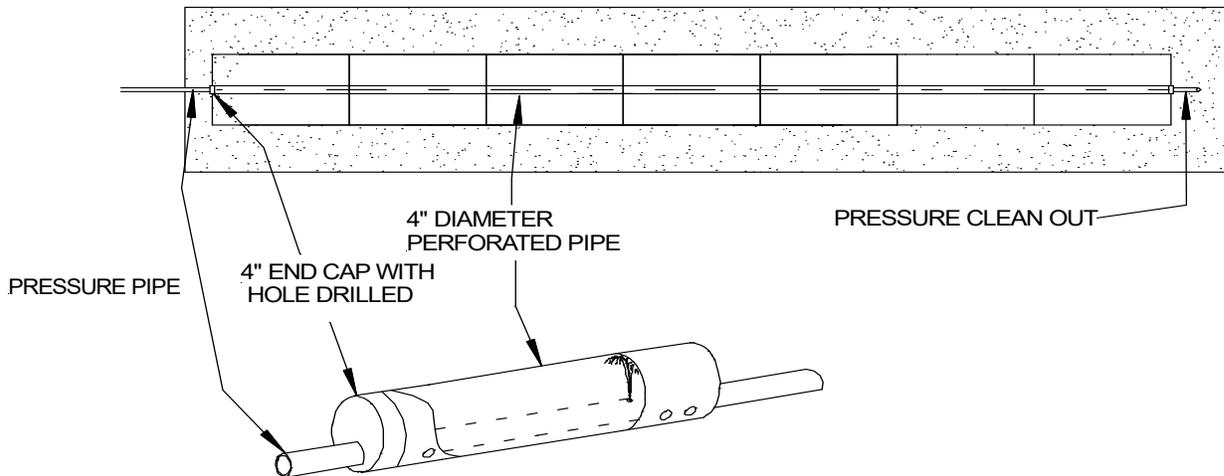
8.1 DOSING DESIGN CRITERIA: Dosing volume must be set to deliver a maximum of **10 liters per Module per dosing cycle**. Head loss and drain back volume must be considered in choosing the pump size and force main diameter.

8.2 PUMP TO DISTRIBUTION BOX: Specify an oversized distribution box for pumped systems. Provide velocity reduction in the D-box with a tee or baffle. Set D-box invert a minimum of 5 cm higher than invert of perforated pipe over GSF modules. Do not use flow equalizers or other restricting devices in the outlet lines of the D-box.

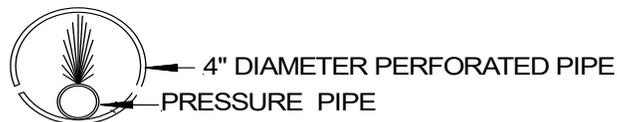
9.0 Pressure Distribution Guidance

Standard procedures for design of pressure distribution networks apply to the GSF filter. A minimum orifice size according to the regulations shall be maintained. A drain hole is required at the 6 o'clock position of each pressure lateral for drainage purposes. The lateral pipe network (*size per design and code*) is placed within a standard perforated distribution pipe. The perforations in the outer pipe are set at the 4 and 8 o'clock position, the drilled orifices on the pressure pipe are set to spray at the 12 o'clock position directly to the top of the perforated pipe as shown below.

FIGURE 11: PRESSURE PIPE PLACEMENT

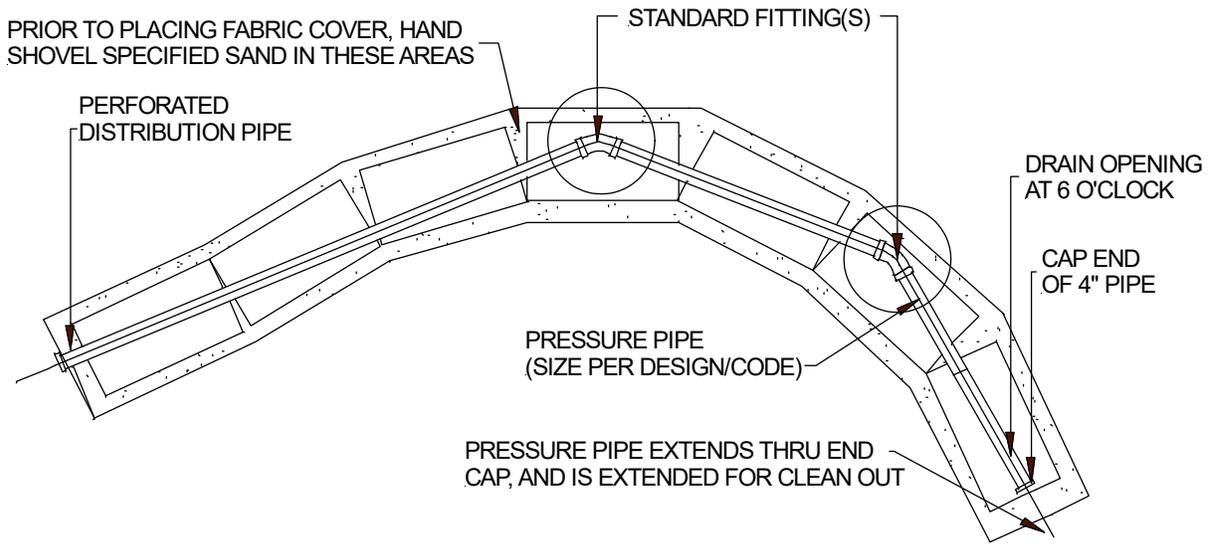


PRESSURE PIPE CROSS SECTION FOR ALL APPLICATIONS



9.0 Pressure Distribution Guidance

FIGURE 12: CONTOURED TRENCH PRESSURE DISTRIBUTION



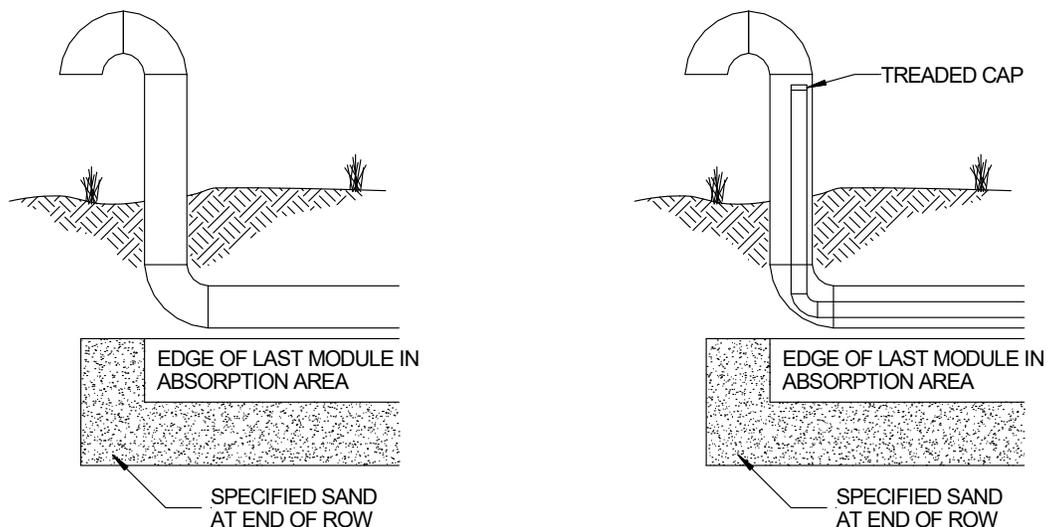
GSF Pressure Distribution trench placed on a contour or winding trenches to maintain horizontal separation distances may also be used in Dosed or Gravity system by removing the pressure pipe and using the perforated distribution pipe.

10.0 System Ventilation

10.1 SYSTEM VENTILATION: It is strongly recommended to install a 100 mm vent onto the distribution pipe. Distribution pipes can be connected to one vent or use one vent per distribution line. This will ensure proper aeration of the modules and sand filter. The GSF has aeration channels between the rows of GSF modules connecting to cuspatations within the GSF modules.

10.2 VENT PIPE FOR GRAVITY AND LOW PRESSURE SYSTEMS: If the system is a low pressure distribution system, ensure that the LPP clean outs are located in the vent for easy access.

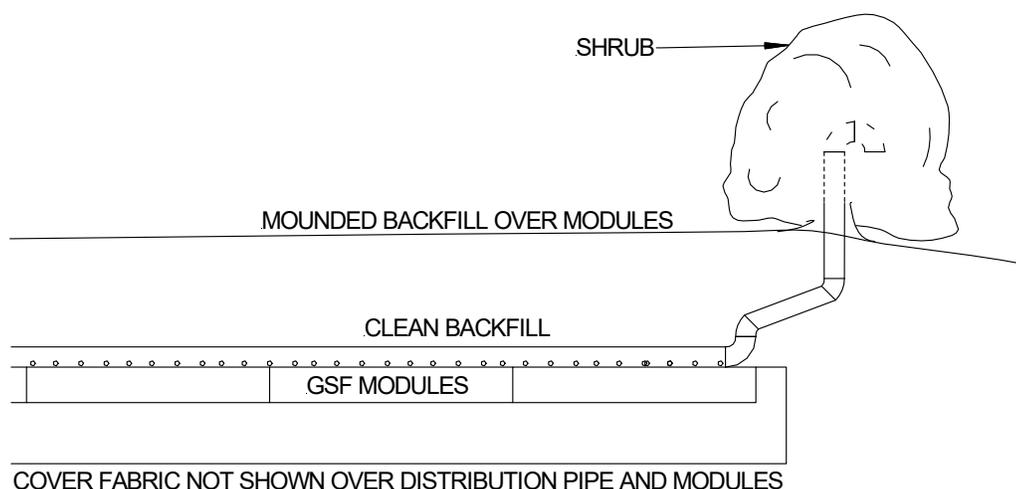
FIGURE 13: VENT LAYOUTS FOR GRAVITY AND LOW PRESSURE SYSTEMS



10.0 System Ventilation

10.3 VENTILATION PLACEMENT: In a GSF system, the vent is usually a pipe extended to a convenient location behind shrubs, as shown in Figure 14. Corrugated pipe may be used. If using corrugated pipe, ensure that the pipe does not have any bends that will allow condensation to pond in the pipe. This may close off the vent line. The pipe must have an invert higher than the system so that it does not drain effluent.

FIGURE 14: GSF WITH 100 mm VENT EXTENDED TO CONVENIENT LOCATION



11.0 Eljen GSF Inspection & Maintenance

Please follow these recommended steps to assure that your Eljen GSF system provides you with years of trouble-free service. *Note: Additional monitoring and maintenance may be required by your local code.*

- Inspection of the area around the Eljen GSF system every 12 months by the homeowner to ensure that there is no ponding or surfacing of effluent.
- If a service provider is required, the service provider shall inspect at least the following items at an interval frequency recommended by the manufacturers and/or Counties requirements:
 - Inspect septic tanks, dosing tanks (if installed), and lift pump tanks (if installed) for structural integrity of the tank, inlet and outlet baffles, pumps, siphons, and electrical connections.
 - If a Pump Dosed or Low Pressure Distribution system is installed, ensure that the pumping/pressure system is operational;
 - Ensure that the absorption area cleanouts and/or vents are in proper working condition;
 - Ensure that the septic effluent filter is cleaned regularly and is in proper working condition.
- A service provider shall inspect and pump excess solids in accordance with the manufacturers and/or the Counties requirements. Eljen recommends pumping tanks every 3-5 years depending on use.

COMPANY HISTORY

Established in 1970, Eljen Corporation created the world's first prefabricated drainage system for foundation drainage and erosion control applications. In the mid-1980s, we introduced our Geotextile Sand Filter products for the passive advanced treatment of onsite wastewater in both residential and commercial applications. Today, Eljen is a global leader in providing innovative products and solutions for protecting our environment and public health.

COMPANY PHILOSOPHY

Eljen Corporation is committed to advancing the onsite industry through continuous development of innovative new products, delivering high quality products and services to our customers at the best price, and building lasting partnerships with our employees, suppliers, and customers.



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