GST™ Leaching Systems

RHODE ISLAND

INSTALLATION AND OPERATION MANUAL

This Manual is applicable to:

GST6206, GST6212, GST6218, GST3706, GST3712, GST3718

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1.0 ABOUT GST

Geomatrix Systems, LLC (Geomatrix) Gravel Sand Treatment system (GST™) is an adaptation of the time proven stone leaching trench. This traditional leaching system has been improved with the use of a reusable, removable form to accurately shape and construct leaching fingers along the sides of a central distribution channel. The forms are property of Geomatrix, available through authorized representatives and rented on a per system basis. The fingers are constructed with clean washed ½ inch to ¾ inch stone and are surrounded with ASTM C-33 sand. These fingers serve to increase the sidewall surface area by more than six times that of a traditional stone leaching trench. Additionally, the narrow profile of the leaching fingers and central distribution channel (stone structure), combined with the uniform profile of the sand treatment media, serve to enhance oxygen transfer efficiencies. Enhanced oxygen transfer results in better treatment of the wastewater pollutants and a leach field with a longer lifespan. GST has direct stone to soil and/or sand contact for enhanced long-term performance. This is the same basis that time proven sand filters and stone leaching trenches utilize. GST can be configured with standard gravity, pressure and/or time dosed distribution. GST can be utilized with pretreated wastewater or septic tank effluent when sized accordingly. GST is also compatible with a SoilAir® system (SoilAir).

GST has a high surface area to void space ratio. This ratio results in more complete filling and draining of the GST stone structure with wastewater doses which in turn results in greater gas flux and aeration, enhancing treatment.

The GST is available in Rhode Island in 6 inches, 12 inches, and 18 inches tall, 37 inches or 62 inches wide.

Geomatrix products are the result of intensive research and development, including in-house and third-party testing. Test reports are available by contacting Geomatrix.

While some codes do not require the use of pressure distribution (PD), treatment units, flow equalization or SoilAir, Geomatrix, highly recommends the use of these features to enhance treatment and system lifespan, especially where high flows and challenging waste streams are present.

2.0 GST Schematics

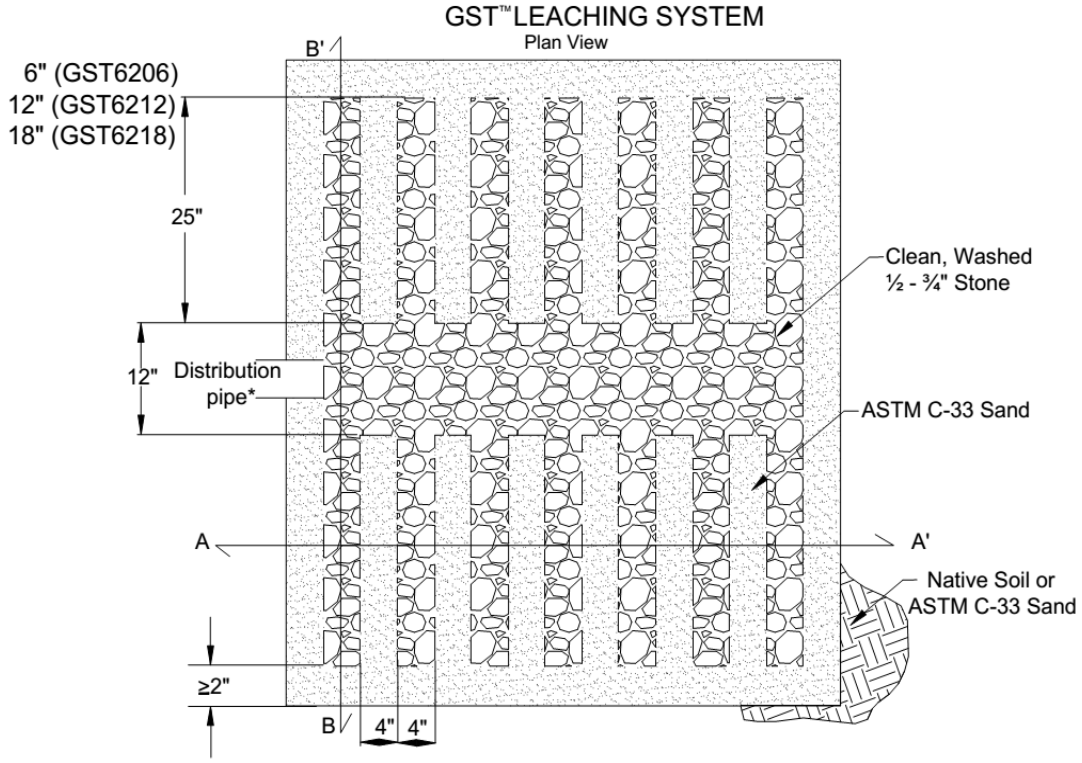
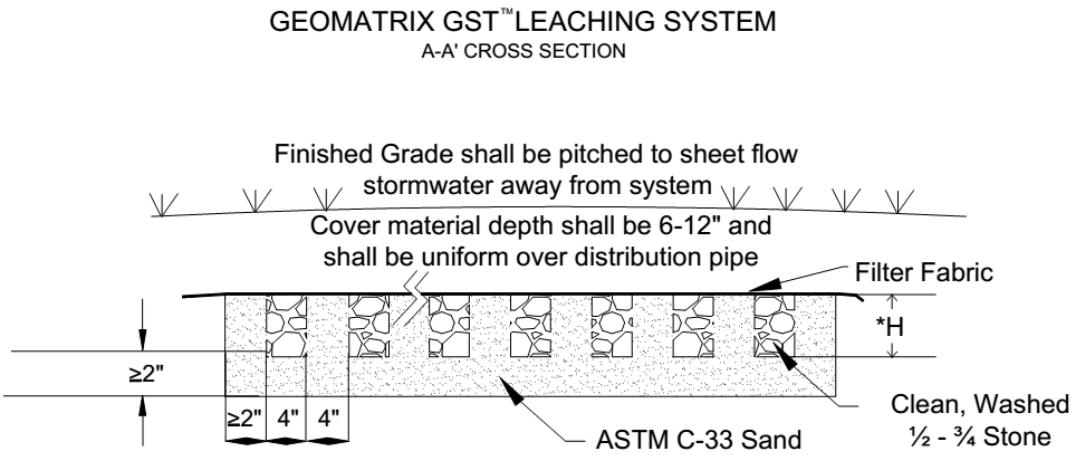


Figure 1



*H= 6" (GST6206)
12" (GST6212)
18" (GST6218)

Figure 2

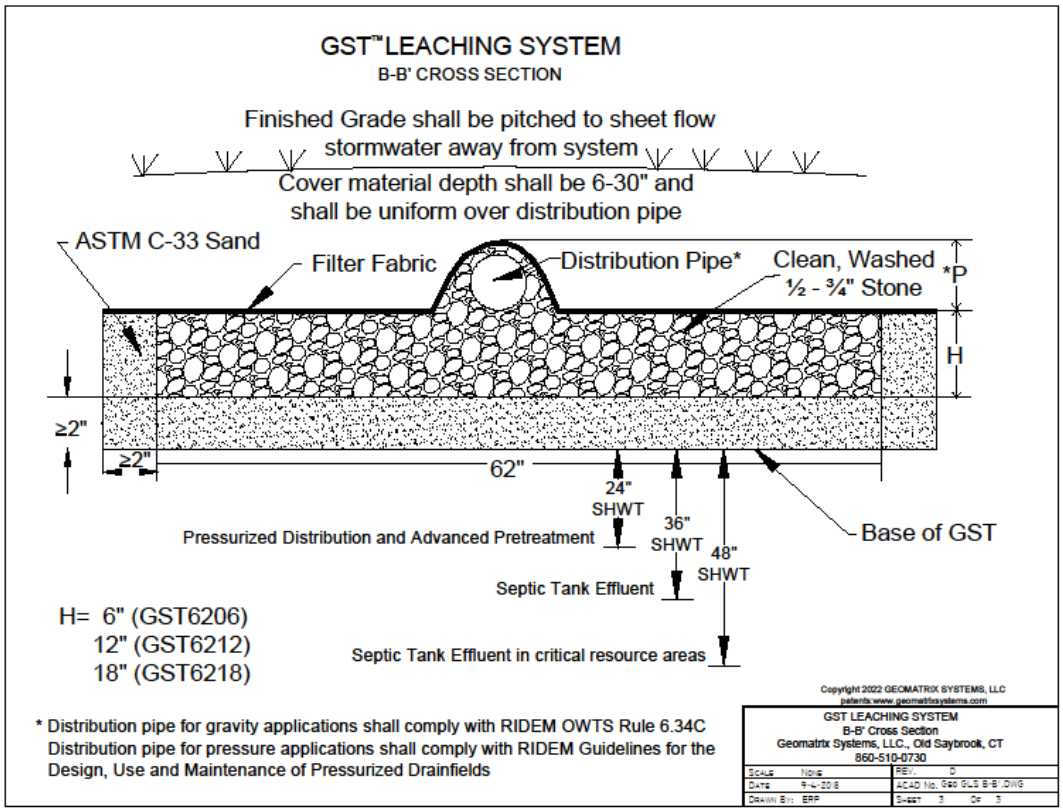


Figure 3

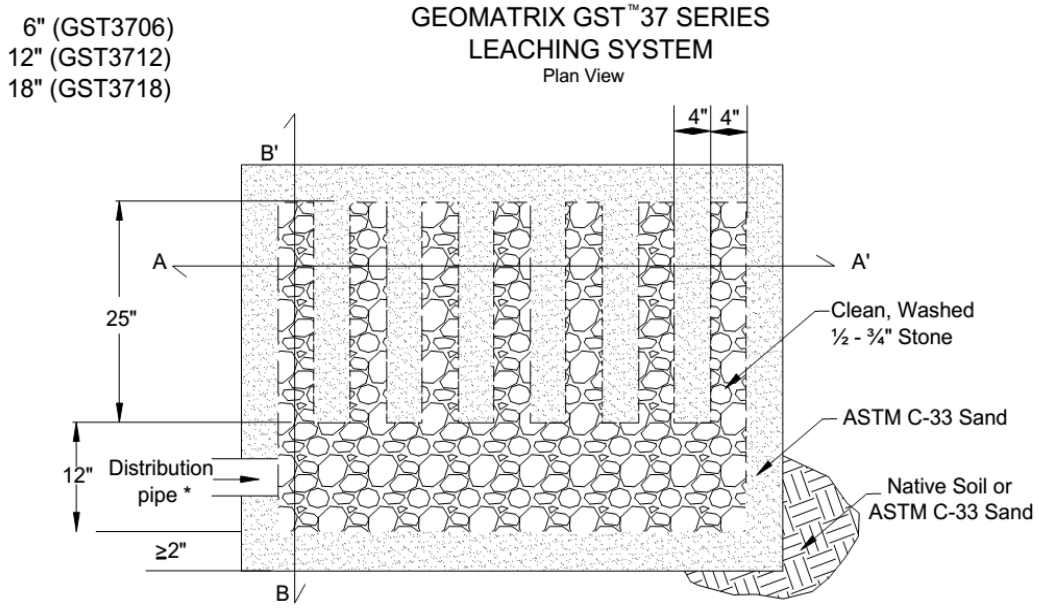
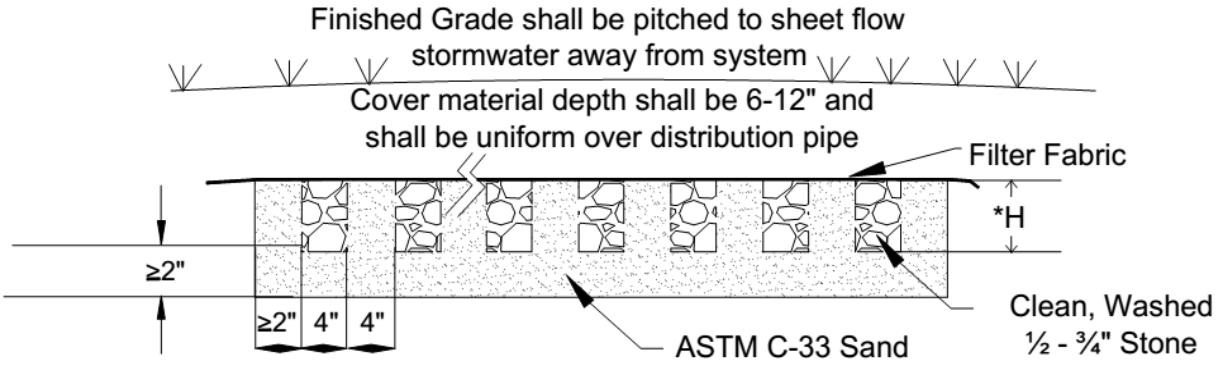


Figure 4

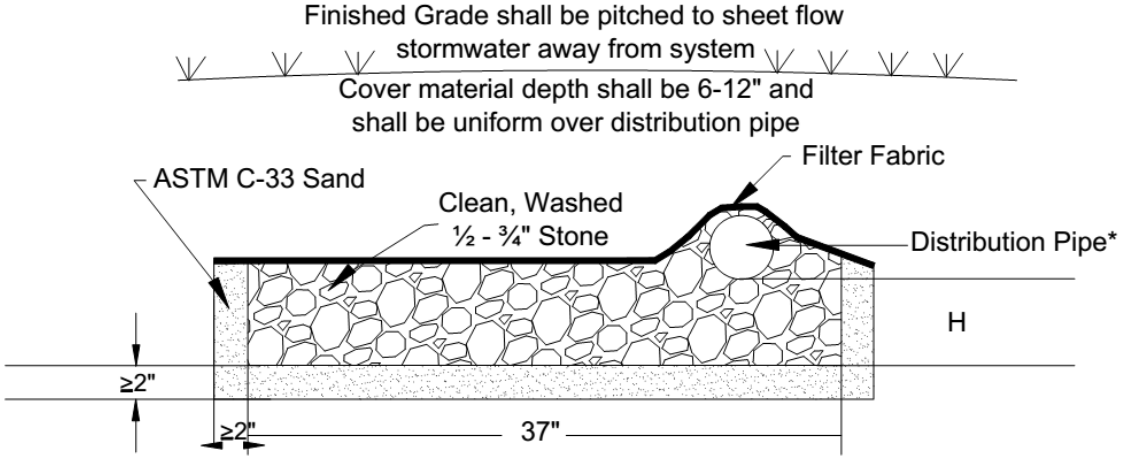
GEOMATRIX GST™37 SERIES
LEACHING SYSTEM
A-A' CROSS SECTION



*H= 6" (GST3706)
12" (GST3712)
18" (GST3718)

Figure 5

GEOMATRIX GST™37 SERIES
LEACHING SYSTEM
B-B' CROSS SECTION



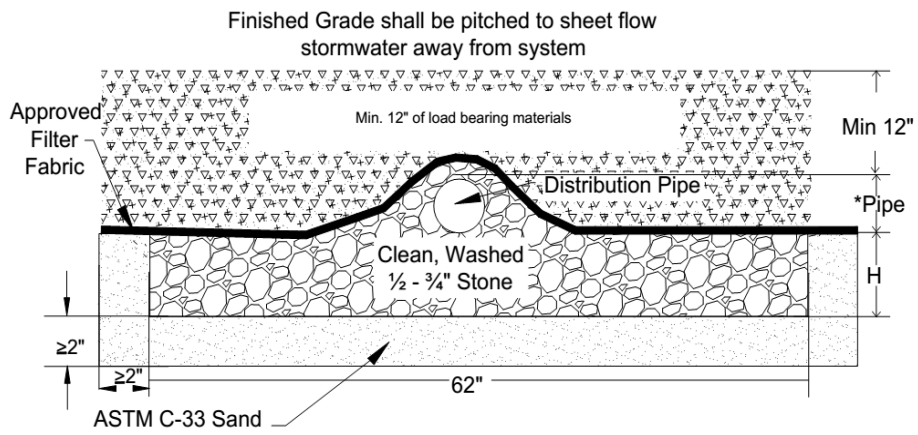
* Distribution pipe for gravity applications shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure applications shall comply with RIDEM Guidelines for Design, Use and Maintenance of Pressurized Drainfields

H= 6" (GST3706)
12" (GST3712)
18" (GST3718)

Figure 6

3.0 H20 Schematics

GST™ 62" LEACHING SYSTEM
H-20

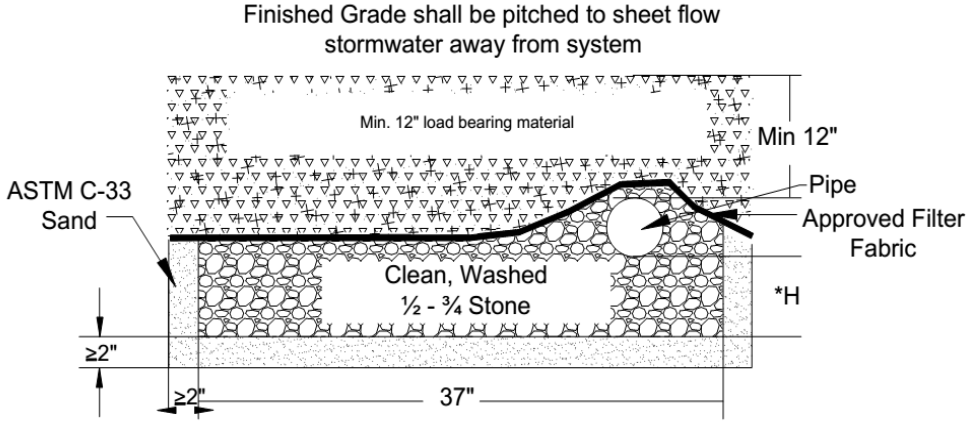


* Distribution pipe for gravity applications shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure applications shall complywith RIDEM Guidelines for the Design, Use and Maintenance of Pressurized Drainfields

H= 6" (GST6206)
12" (GST6212)
18" (GST6218)

Figure 7

GEOMATRIX GST™37 SERIES
LEACHING SYSTEM
H-20



Distribution pipe for gravity applications shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure appliations shall comply with RIDEM Guidelines for the Design, Use and Maintenance of Pressurized Drainfields

*H= 6" (GST3706)
12" (GST3712)
18" (GST3718)

Figure 8

Warning: Only authorized installers and service providers should install, inspect, maintain, or troubleshoot the GST leaching system.

4.0 GST TREATMENT CAPABILITIES

GST treats residential and commercial wastewater. When the wastewater is nonresidential by applicable standards, the Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) should be reduced by pretreatment to residential concentrations or be utilized in conjunction with a SoilAir system.

Contact Geomatrix Systems for design assistance on projects other than single family homes.

5.0 COMPONENT HANDLING AND INSPECTION

Upon delivery or pick up, inspect to ensure no damage has occurred to the forms and/or components.

Keep the GST and distribution piping clean and free of soil, dirt, oil, grease and any other substance that may impede performance.

Although rugged, accidents with heavy equipment and misuse can cause damage to the forms. The time Geomatrix or their authorized Representative spends fixing the forms will be billed at the standard Geomatrix labor rate to the responsible installer.

6.0 SYSTEM COMPONENTS

	GST Septic System Components	
	Component	Function
1	Source	Generates wastewater
2	Septic Tank	Provides separation by density
3	Effluent Filter	Strains wastewater
4	Pump Chamber (if designed)	Accumulates water for lifting and distribution to GST
5	Distribution Box	Distributes water equally to multiple laterals

6	Distribution Piping	Delivers wastewater to GST
7	GST	Treats and disperses wastewater
8	Inspection port	Provides access for monitoring water levels in the stone structure
9	Load Certified Lifting Chain	To lift forms

7.0 FLOW PATH IN A PROPERLY CONSTRUCTED GST SYSTEM IS:

7.1 Wastewater flows from a source to a properly sized septic tank where anything heavier than water sinks to the bottom of the tank and anything lighter than water floats to the top.

7.2 The water then flows from the middle of the septic tank through the outlet baffle and associated effluent filter.

7.3 When the GST is installed at a higher elevation than the septic tank, wastewater is directed to a pump chamber for lifting wastewater up to the GST.

7.4 Wastewater then flows through the distribution piping for discharge into the GST. When pressure distribution is utilized, a flow differential of less than 10% between first and last orifice is recommended.

7.5 Wastewater flows out of the distribution piping through holes/orifices that are in communication with the stone structure.

7.6 Wastewater treatment occurs in the septic tank, in the stone structure and in the ASTM C-33 sand.

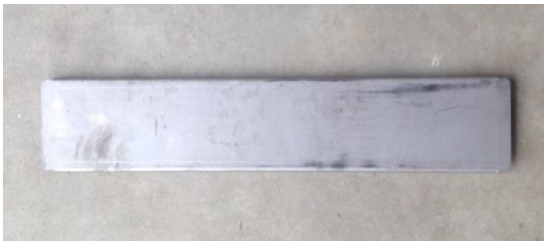
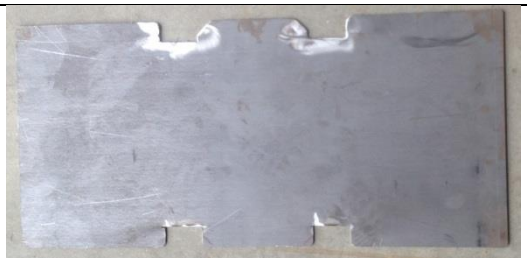
7.7 The water then infiltrates through the underlying soil for final polishing and recharge to the water table.

8.0 MATERIALS REQUIRED FOR SYSTEM INSTALLATION

Materials required for system installation not supplied by Geomatrix	
1	Septic tank which meets all applicable standards
2	Pump tank which meets applicable standards (If required refer to design)
3	Piping for wastewater transport and distribution.
4	Distribution box or manifold (If required refer to design)
5	*Air supply line piping (Refer to section 17.0 for air line sizing if applicable)
6	*¾" Electrical Conduit (If Applicable)
6	ASTM C33 sand
7	½" to ¾" clean washed stone
8	Filter fabric
9	Miscellaneous fittings (couplers, caps, elbows Etc.)
10	Two-part solvent/glue
11	Common construction tools

***MAY NOT BE NECESSARY ON ALL SYSTEMS; SEE SECTION 17.0 FOR DETAILS**

Materials required for system installation supplied by Geomatrix	
GST Form	
Lifting frame	

Finger covers	
Center covers	
Inspection Port Components	  
Inspection port cap	

9.0 SYSTEM COMPONENTS DESIGN, CONSTRUCTION AND MATERIAL SPECIFICATIONS

9.1 ASTM C-33 Sand Specifications

ASTM C-33 Sand Specification	
Sieve Size	**Percent Passing**
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	5-30
#100	0-10
#200	0-3

9.2 Clean Washed ½ to ¾ inch Stone

Clean Washed ½ to ¾ Inch Stone	
Sieve Size	**Percent Passing (by weight)**
2-Inch	N/A
1.5-Inch	N/A
1-Inch	100
3/4- Inch	90-100
1/2-Inch	20-55
3/8-Inch	0-15
#4	0-5
#40	0-3
#200	0-1.5

10.0 SITE LAYOUT

GST must be installed according to applicable state and/or local regulations. If unsure of the installation requirements for a particular site, contact Geomatrix, your designer, engineer, or regulatory agent.

10.1 Septic Tank Sizing

Septic tank sizing shall comply with RI DEM OWTS Rule 6.27.

10.2 System Sizing

Systems must be sized relative to the hydraulic capacity of the surrounding soils using standard system sizing methodology. Refer to Geomatrix state design manuals for specific guidance in designing systems in your state.

GST	Dimensions (W x H)	Effective Leaching Credit (ELC) (SF/LF)	Edge to Edge Spacing
GST 6206	62” x 6”	10.3	6”
GST 6212	62” x 12”	17.5	6”
GST 6218	62” x 18”	24.8	12”
GST 3706	37” x 6”	6.2	6”
GST 3712	37” x 12”	10.3	6”
GST 3718	37” x 18”	14.4	12”

$$\text{Required Length of GST} = \frac{FT^2 \text{ REQUIRED}}{\text{ELC}}$$

10.3 Excavation Width

GST	Minimum Inches of ASTM-C33 Sand Required on Each Side of GST	Minimum Excavation Width	Recommended Excavation Width
GST 6206	2”	66”	70"
GST 6212	2”	66”	70"
GST 6218	2”	66”	70"
GST 3706	2”	41”	45"
GST 3712	2”	41”	45"
GST 3718	2”	41”	45"

Excavation width table refers only to the excavation dimensions that will be backfilled with ASTM C-33 sand and ½” – ¾” clean washed stone. This table does not take into account site conditions that require strip and fill procedures.

11.0 SITE PREPARATION

The area directly above and adjacent to any septic system should be protected from heavy vehicle traffic and excess weight loads to prevent compaction before, during and post construction.

Prior to construction, it is recommended that the proposed septic system location be staked and flagged/fenced to prevent encroachment during home construction. If vehicle encroachment is expected to be a problem, after construction, barriers such as garden timbers, railroad ties, fences, walls, etc. should be used to protect the septic system area.

Do not install the system in wet conditions or in overly moist soil; this can cause smearing and compaction of the native soil horizon.

The soil between the dispersal trenches shall remain undisturbed when practical and not in a bed configuration. If the presence of boulders and/or other obstacles makes trench construction impractical, the entire leach field area may be excavated as necessary and backfilled with ASTM C-33 sand or RI DEM approved septic fill to the design elevation.

11.1. Mark out location of system components. Set stakes for location and elevation reference points. Ensure trees and shrubs are removed to prevent root intrusion.

11.2. Excavate system area to design elevation. Excavation depth should allow for at least 2 inches of ASTM C-33 sand below GST.

11.3. The bottom of excavation must be level. Excavation should be sufficiently large enough to accommodate GST system design width and length. Refer to Section 10.3 for excavation sizing. Rake the bottom and sides of the excavation to provide proper scarification and remove stones larger than 1 ½ inches and any other debris. In fine textured soils prone to compaction, minimize walking in the excavation to prevent compaction and loss of soil structure.

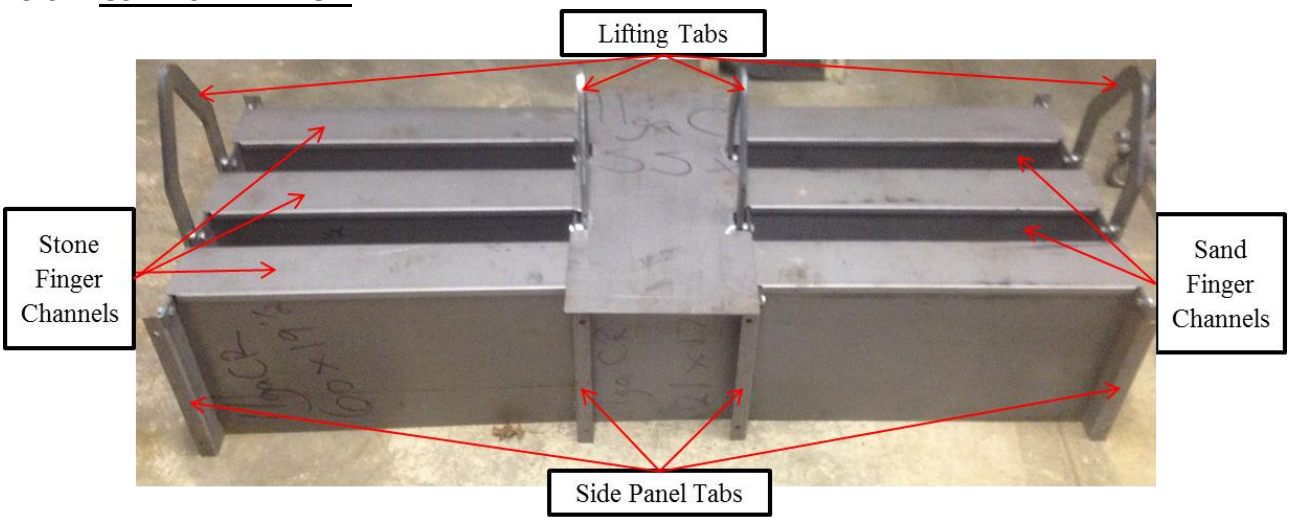
12.0 INSTALLATION OF ASTM C-33 SAND BASE

12.1 Place a 2 inch minimum layer of ASTM C-33 sand (sand) in the excavation.

12.2 Utilize a laser level or similar equipment, excavation equipment, rakes, shovels etc. to ensure that the sand base is a minimum of 2 inches thick and level.

If possible, heavy equipment should be kept off the sand base. If unavoidable, a tracked machine with a ground pressure not exceeding 2.5 psi may be utilized, with extreme care, to cross the sand base. You must avoid multiple trips over the same area, abrupt starting and stopping and excessive time spent working in one location on the sand base. All turns should be made beyond the sand footprint and only track in a straight line across the sand bed. Operating a machine on the bed should only be done if absolutely necessary. In summary, uniform sand density is critical to system performance and can be negatively impacted by machinery and other static and dynamic loads on the sand base.

13.0 GST INSTALLATION



13.1. Set the first GST form into the trench using the provided lifting frame.

13.1.1 Attach provided lifting frame to the excavator using a chain. Attach the lifting frame to GST form by hooking the 4 of the lifting tabs with the 4 lifting frame hooks.

13.1.2 Ensure the GST form is positioned at the end of the designed trench.

13.1.3. Ensure the form is aligned so that the system can be installed straight and maintain the required 2 inches of ASTM C-33 sand on either side of the GST forms.

13.1.3. Ensure that the GST form is not "racked". The finger channels and the center channel should be rectangular. If the center channel lids are not dropping into place the forms are likely racked.

Correct:

Incorrect:

13.2 Set the remainder of the forms in the trench.

13.2.1 Set the forms in the trench so that the 4 side panel tabs touch. Side panel tabs do not hook together.

13.2.2 Again, ensure that all forms are properly lined up within the trench and that the forms are not racked.

13.3 Set finger covers and center covers into place

13.3.1 Standing at the end of the line of forms, place a finger cover on the first finger opening.

13.3.2 Now place a finger cover on every second finger opening. If done correctly there should be a cover on the first and the last finger opening.

13.3.3 Place the center covers over the central stone channel only after all finger covers have been placed. Center covers lock finger covers into place.

13.4 Place sand in and around forms.

13.4.1 Place sand in and around forms. Do not fill in the area where the next set of forms will go) until the sand is level with the top of the forms. The sand on the sides of the forms should be compacted by foot or with a 2x4.

13.4.2 Using a 2x4, compact the sand within the finger channels only after completely filling the forms. The object of packing the sand is not full compaction of the sand but rather ensuring that the system sand will not excessively settle and ensuring there are no large void spaces in the sand fingers. Over compaction of the sand fingers will make it difficult to pull the forms out. Uniform compaction is the key to proper installation. Typically three tamps with a 2x4 per finger is appropriate; however, if after the form is pulled sand is above the stone the density is likely too great. Conversely, if the sand in the fingers is lower than the stone the density is too low. All sand is different and the same sand can vary depending on moisture content. After the first form is pulled the compaction can be fine-tuned.

Uniform compaction helps ensure wastewater will uniformly infiltrate through each sand finger at the same rate. Uniform infiltration equates to uniform treatment. Care should be taken to ensure a uniform level of compaction is maintained throughout the entire installation process.

13.4.3 Once all fingers have been compacted, refill the sand finger channels to the top of the form. Using a shovel or broom, remove excess sand from the finger and center channel covers.

13.5. **Remove all finger and center channel covers.**

13.5.1 Place all covers on the side of the trench; they will not be needed again until after the forms have been removed.

13.6 Fill Forms with clean washed ½ to ¾ inch stone.

13.6.1 Fill all remaining finger channels and center channel with approved stone to a level 2- 4 inches above the top of the forms.

13.6.2 Use a rake to evenly distribute stone only after enough stone has been placed to keep the rake from moving sand from the sand finger channels into the stone finger channels.

13.7 Pull Forms out and move ahead

13.7.1 Attach the load certified chain to the lifting frame to the excavator using a chain. Attach lifting frame to GST form by hooking all 4 of the lifting tabs to the lifting frame hooks.

13.7.2 DO NOT PULL FORMS YET. Ensure forms will be pulled out straight by monitoring the angle of the chain. This is most easily done with one person standing in front of the GST and another person standing on the side of the GST working together to help the operator maintain a completely vertical chain. Alternatively, one person can eyeball the lifting chain from two positions 90 degrees apart.

13.7.3 Pull form straight out 2 -3 inches and then stop. Do not use to much force to break the forms free as once they begin to move it takes significantly less force to keep them moving. Too much force could result in the form moving more than desired.

13.7.4 Before pulling the forms out any further, use a 2x4 to hit the finger panels. The vibrations will ensure any sand that has not dropped out will drop out of the sand fingers. Sand typically sticks in the form when it is over compacted.DO NOT HIT THE SAND. Hitting the sand instead of the form could cause further compaction of the sand making it more difficult to get the sand to drop out of the form.

13.7.5 Slowly begin pulling the form, again ensuring that the chain maintains a completely vertical angle. If the sand has not separated form the form stop pulling and hit the finger panels again.
Typically, the sand will separate from the forms immediately. Sand will adhere to the forms more if over compacted, wet, or the temperature is near freezing.

Throughout the GST installation adjust the level of sand compaction depending upon the height of the sand fingers after pulling the forms. Sand should not be visible above the stone when the level of compaction is correct and enough stone is used. If sand is visible, cover visible sand with stone to ensure structure is stable.

13.7.7 Move the form ahead (leap frog) to the front of the line of forms ensuring that the tabs on the side panels are touching and that the forms are properly aligned in the trench. The inspection port should be placed at the end of a trench, see Section 14.0.

Once the forms have been removed do not step on the GST if the shape of the fingers is evident until more stone has been added to the sand stone structure. Stepping on the sections where forms are still in place is allowable.

Over compacted sand is visible above the stone, sand structure is not stable

Correct level of compaction and stone cover- sand is not visible above the stone, sand structure is stable

13.7.8 Repeat steps 13.7.1 – 13.7.7 until all forms but the last in line have been removed and moved ahead. Removing the last form, before the entire row is complete will allow to sand and stone shape to be compromised.

13.7.9 After pulling the last form in the line place a layer of stone over the entire row of GST. The stone should be thick enough to cover all sand fingers and be level with the stone fingers and center channel. The finished product should appear to be a flat bed of stone. It is allowable to walk on the stone covered GST row once this stone has been placed over the system.

14.0 INSPECTION PORT.

Installation of inspection ports is required on each GST trench on all systems.

14.1 Glue together inspection port components.

14.1.1 Using a 2 part solvent weld (prime and glue) the inspection port base tee and the inspection port female adaptor to opposite ends of a length of SDR 35 pipe long enough to extend from the system bottom elevation too just below finish grade. Install threaded plug into the female adaptor.

14.2 Insert assembled inspection port in to any center channel opening along the length of the GST trench before stone is put in to place. This inspection port is located in the last GST form in a row.

14.3 Hold inspection port off to one side to ensure that the 4 inch distribution pipe can pass the inspection port while remaining within the boundary of the central stone channel.

14.4 Fill around the inspection port with system stone.

14.5 When pulling out forms containing inspection ports, hold down the inspection port to ensure it is not lifted out with the form.

15.0 DISTRIBUTION PIPING

15.1 Distribution piping shall be positioned so the perforations are at the 5 and 7 o'clock positions unless otherwise specified.

15.2 Distribution piping is installed in the center of the GST so that the pipe perforations are in contact with the central stone channel.

15.3 The distribution pipe may have to be dug into the central stone channel by hand if the elevation is too high. If the elevation is too low more stone will need to be added. Care must be taken to ensure digging for the distribution piping remains within the central stone channel and does not stray into the sand fingers on either side.

15.4 The distribution pipe is to be covered with a crown of stone 2 inches above the top of the pipe.

16.0 FILTER FABRIC

16.1 Filter fabric which meets RI DEM OWTS Rules is to be placed over the system after the distribution pipe has been covered with stone.

17.0 AIR SUPPLY LINE AND CONDUIT INSTALLATION

17.1 Air supply line installation

17.1.1 An air supply line will allow for supplemental aeration if necessary. For typical installations with runs of 50 feet or less, the air supply line should be a minimum of 2 inch SCH40 PVC. Runs from 50 to 200 feet should be a minimum of 3 inch SCH40 PVC. Contact Geomatrix for runs longer than 200 feet.

The air supply line should pitch towards the GST and is installed by teeing into the distribution piping anywhere downstream of the septic tank or pump tank at an elevation equal to or higher than the top elevation of the GST. The air supply line is then extended with appropriate fittings to a location that would be convenient for future connection to a SoilAir blower. Glue piping components together as described above.

17.2 Electrical Conduit installation

17.2.1 Extend a ¾ inch electrical conduit from the Septic tank to a location that would be convenient for future connection to a SoilAir blower. Glue piping components together as described above.

17.2.2 Extend a ¾ inch electrical conduit from a power source to a location that would be convenient for future connection to a SoilAir blower. Glue piping components together as described above.

18.0 BACKFILLING

18.1 Starting with a shovel, carefully place clean backfill on the Filter fabric to hold it in place.

Gently cover the filter fabric with a layer of clean backfill to ensure that the filter fabric is not compromised by large stones or debris. Ensure that the filter fabric is not moved during the initial backfilling stages as this could allow fines to enter the system

Final cover backfill material for placement over the sand should be clean and free of stones larger than 1½ inches and debris. This cover material should be suitable for growing grass.

Acceptable cover depth over the GST distribution piping should be 6 – 30 inches. Whatever depth is selected, the depth of cover shall not vary by more than 15% across the entire system and extend a minimum of 18 inches beyond the sand bed footprint.

If the GST is to be installed under an area where vehicle traffic is likely, a minimum of 12 inches of load bearing material is required. A geogrid such as Tensar BX1100 or equal can also be utilized.

Heavy equipment should be preferably kept off the system. If unavoidable, a tracked machine with a ground pressure not exceeding 2.5 psi may be utilized, with extreme care, to cross the system if a minimum of 12 inches of specified material is over the GST distribution piping. You must avoid multiple trips over the same area, abrupt starting and stopping, and excessive time spent working in one location. All turns should be made beyond the sand footprint and only track/run in a straight line across the system. Operating a machine on the bed should only be done as absolutely necessary. In summary, material densities are critical to system performance and can be negatively impacted by machinery and other static and dynamic loads on and around the system.

Uniform cover depth, material consistency, permeability, and compaction across the entire GST system results in consistent oxygen transfer to the entire system; this results in uniform performance.

18.2 Cover material should be graded to direct storm and surface water away from the system. Seed and mulch disturbed area immediately after installation to stabilize soil.

19.0 START-UP AND OPERATION PROCEDURE

Due to the passive nature of the GST, normal system function will begin when system use is initiated.

20.0 SEPTIC DO'S AND DON'TS

Do:

- Conserve water to reduce the amount of wastewater that must be treated and disposed.
- Repair any leaking faucets and toilets.
- Only discharge biodegradable wastes into system.
- Restrict garbage disposal use.
- Divert downspouts and other surface water away from your drain field & tanks.
- Keep your septic tank cover accessible for tank inspections and pumping.
- Have your septic tank pumped regularly and checked for leaks and cracks.
- Call a professional when you have problems.
- Compost your garbage or put it in the trash.

Don't:

- Don't flush sanitary napkins, tampons, condoms, cigarette butts, diapers, wipes and such products into your system.
- Don't dump solvents, oils, paints, paint thinner, disinfectants, pesticides or poisons down the drain.
- Don't dig in your drain field or build anything over it.
- Don't plant anything other than grass over your drain field.
- Don't drive over your drain field or compact it in any way.

21.0 SYSTEM INSPECTION AND MAINTENANCE

Pursuant to the RI DEM Alternative and Experimental OWTS Technology Certification issued for the GST Leaching System, all residential systems must be inspected at least twice annually. Quarterly inspections are required at all commercial establishments and for those systems with a design flow of 2000 GPD or more. The following checklist may be used for these inspections.

Designer & Installer Information:

Date of Installation	
Copy of Plan available?	**Yes** **No**
Designer Name	
Designer Company	
Designer Address	
Designer Telephone	
Installer Company	
Installer Address	
Installer Telephone	

Site Information

Street address	
Town/ County/ State	
Map/ Lot	
Municipal Contact Name & Telephone	
Permit Number	
Water Supply	**Public** **Private**
If private, Well Info	
Soil Type / Perc Rate	
Relevant Site Characteristics	
Proximities to bodies of water, wetlands, etc.	

System Information

GST model	
SoilAir model	
SoilAir Serial#	
HyAir model	
HyAir vessel size	

System Information:

Design Flow	**_____ Gallons Per Day _____# of bedrooms**
Design Type (Circle all that apply)	**Basic Combination D-Box Multiple Beds (#_____)** **Pump Gravity Raised In-Ground** **Flow equalizers Velocity reducers**
Site Slope	**Level _____%**
System Slope	**Level _____%**
Inspection Locations	
Linear Feet	
Number of Laterals	
Sand Bed Dimensions & Number of Beds	
Other Comments:	

Diagram System Location:
Identify the location of structures such as; septic tank & access lids, treatment field, vents, wells, restrictive features, property lines, pools and foundations, etc.

System Maintenance and Service Record

Date:	PERFORMED BY:	DESCRIPTION OF SERVICE:

STANDARD LIMITED WARRANTY

(a) The structural integrity of leaching products ("Product(s)") manufactured by Geomatrix Systems, LLC (Geomatrix), when installed and operated in a leach field of a septic system, in accordance with Geomatrix's instructions for the Product, is warranted to the original purchaser ("Purchaser") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Product; provided, however, that if a permit is not required by applicable law, the warranty period will begin upon the date that the Product is received by the Purchaser. To exercise its warranty rights, Purchaser must notify Geomatrix in writing at its main office in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Geomatrix will supply replacement Products for Products determined by Geomatrix to be covered by this Limited Warranty. Geomatrix's liability specifically excludes the cost of removal and/or installation of the Product.

(b)THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCT, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the leaching system is manufactured by anyone other than Geomatrix. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Geomatrix shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Purchaser or any third party. Specifically excluded from Limited Warranty coverage are damage to the Product due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Product; the Product being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground cover set forth in the installation instructions; the placement of improper materials into the system containing the Product; failure of the Product or the septic system due to improper siting or improper sizing, excessive water usage including leaking or running plumbing fixtures, storm water flow into leach field and/or Product, insufficient oxygen to meet the demands of the wastewater, improper grease disposal, or improper operation; or any other event not caused by Geomatrix. This Limited Warranty shall be void if the Purchaser fails to comply with all of the terms set forth in this Limited Warranty. Furthermore, in no event shall Geomatrix be responsible for any loss or damage to the Purchaser, the Product, or any third party resulting from installation or shipment, or from any product liability claims of Purchaser or any third party. For this Limited Warranty to apply, the Product must be installed in accordance with all conditions required by the septic system designer, state and local codes; all other applicable laws; and Geomatrix's installation instructions.

(d) No representative of Geomatrix has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Purchaser.

This represents the Standard Limited Warranty offered by Geomatrix. A limited number of states and counties have different warranty requirements. Any purchaser of Product should contact Geomatrix's main office in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of the Product.

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