

## Installing Infiltration Systems

### Residential Stormwater Prefabricated Units



Single Rainstore Unit



Sediment Trap and Perf Pipe  
over Geogrid



Filter Fabric and  
Drain Rock Cover



Backfill

High volume infiltration systems can be constructed from prefabricated products such as the Rainstore units. Invisible Structures manufactures Rainstore<sup>3</sup>, a stackable, plastic structure designed to store large amounts of stormwater underground. Rainstore has a 94% void space and is designed for light vehicle traffic loads when used in combination with Geogrid materials. Approximate pricing for Rainstore units and additional required products are as follows:

- Rainstore<sup>3</sup> Unit: \$30-\$38 per unit
- Geogrid: Tenax Tendrain approx. \$7 per linear foot (6'-7" width)
- Geotextile Fabric: approx. \$2 per linear foot (12.5 foot width)

#### **Materials:**

- Rainstore Units (40" x 40" x 4"). "Equal" substitutions require revised sizing and engineering approval.
- Non-Woven Geotextile Fabric (Filter Fabric) Propex Geotex 451 or Equal
- Geogrid – Tenax Tendrain, StrataGrid, or equal.
- Perforated Drain Pipe – ADS/Hancor 3000 Triple Wall HDPE Perf 3" min. ID, ASTM F810 or equal.
- Other Misc.: Zip Ties, Drain Rock (¾ – 1 ½"), Duct Tape or Gorilla Tape, 4" hose clamps, Sediment Trap with Removable Renewable Filter, Perforated Pipe, NDS Pop Up Emitter or equal clean-out.

#### **Materials Available at:**

Meeks  
2763 Lake Tahoe Boulevard  
South Lake Tahoe, CA  
(530) 544-2237

The Rock Garden  
10642 Pioneer Trail Road  
Truckee, CA  
(530) 582-3610

Alex Houghton  
Truckee, CA  
Invisible Structures Rep.  
(530) 582-6714

#### **Installation Instructions:**

1. Call Underground Service Alert, 811 or 1-800-227-2600 ([www.usanorth.org/index.htm](http://www.usanorth.org/index.htm)) to have utility companies come to your house and mark the utility lines.
2. Dig the specified size trench, as recommended on the BMP Site Evaluation. Dimensions listed include a 3" envelope surrounding the Rainstore units on all sides including top and bottom. Ensure that the bottom of the excavated area is level. Depth of excavation for the Rainstore is measured relative to the inlet from the conveyance. Layout the system preliminarily to ensure that the depths required for installation are not in conflict with bedrock, utilities, high groundwater, etc. Call for redesign if that are any constraints.

3. Photograph the open hole with tape measure showing effective depth (downhill side of flat bottomed trench on sloped lots). Retain photos for final inspection.
4. Install the sediment trap/filter at the end of the conveyance system and upstream of the infiltration system. Sediment traps are required to pre-treat runoff from driveways (swale, slotted channel drain) and optional, but highly recommended, for roof runoff from gutter downspouts to capture any sediment. *Mfg. specifies that all water entering the Rainstore3 structure must be reasonably silt and debris free to minimize maintenance and extend the system's useful life.*
5. Place 3 inches of washed drain rock in the bottom of the trench prior to installing the Rainstore units.
6. Stack and/or place side-by-side the specified number of Rainstore units, as recommended in the BMP Site Evaluation- Units: L x W x D. *Rainstore units must be installed flat side down (sharp cups up).* Press units together until the compression fittings on the cups snap fully into place.
7. Cut filter fabric to cover the top and all four sides. Be sure to cut fabric to sufficient length to allow 12" overlap to cover the top surface and all seams. Temporarily place the fabric over the Rainstores to expose the space between the excavation and the fabric covering the sides of the Rainstores.
8. Backfill, with drain rock, the space between the trench and the fabric on all 4 sides. Compact rock thoroughly in place with a heavy tamping bar filling trench with 12" lifts maximum.
9. Temporarily lay the fabric back on adjacent soil.
10. Place a layer of Geogrid over the top of the Rainstore units to bridge the cups and keep drain rock from entering the Rainstore. Zip Ties may be used to hold Rainstores and Geogrid in place.
11. Lay perforated pipe across the length of the Rainstore units with the holes UP. Attach Pop Up Emitter or equal clean out at end of pipe. This method is the best recommendation for ease of maintenance. For alternate connection detail where the inlet pipe is designed to enter Rainstores from the side, cut "X" in fabric to allow pipe penetration. Do NOT butt the pipe directly up to the fabric. The pipe will clog.
12. Place 3" layer of drain rock over the top of the Geogrid and over the top of the perforated pipe. Use ¾ to 1 ½" specified rock or larger so that holes are not blocked.
13. Fold the fabric over the drain rock, over lapping 12" minimum. Cut a slit to allow fabric to wrap around inlet pipe, and cut an "X" in the fabric to allow pipe penetration for the clean out. Use tape and/or hose clamps to seal pipe penetrations through fabric and join seams to keep soil out.

**Backfill Option 1: Grass or Native Vegetation Surface:** Fill the remaining hole to finish grade including 8" of amended soil for planted areas. Place sod, direct seed, or plant with vegetation as desired limiting landscape on top of storage structures to shallow rooted materials such as grasses, groundcovers, and low growing shrubs.

**Backfill Option 2: Gravel Surface:** Backfill the remainder of hole with gravel or rock rip rap to the desired surface elevation.

**Maintenance:** Monitor sediment trap, clean out, and pipe, and remove captured sediment at least 2 times/yr.

**More information:** on the Rainstore and other residential storm water storage units can be found at:

[www.invisiblestructures.com](http://www.invisiblestructures.com)