

# SWPPP Cut Sheet: Filtrex<sup>®</sup> Rain Gardens

## Storm Water Quality & Quantity Technology

### PURPOSE & DESCRIPTION

The Filtrex<sup>®</sup> Rain garden is a storm water best management practice (BMP) that **utilizes soil, plants, and microbes to filter, retain, and infiltrate storm water runoff from developed sites.** Rain gardens are an important component of Low Impact Development (LID) strategy because it is relatively simple, inexpensive, effective and aesthetically attractive. Filtrex<sup>®</sup> GrowingMedia™ is an important component of a successful Rain garden installation.

### APPLICATION

Rain gardens can be used on any site utilizing a variety of design techniques. Optimum designs allow: Rain garden facility located in close proximity to source of runoff; Rain garden facilities to be dispersed uniformly throughout site; each Rain garden facility to collect runoff from sub-drainage area of 1 ac. or less (max of 2 ac); a large enough area to accommodate the Rain garden facilities within required setbacks; high infiltration, stable, well structured in-situ soils. Rain garden can be installed on sites that do not meet all criteria, but it can be difficult and/or less successful. Key components of Rain garden systems include:

- Pretreatment – It is important to filter excess debris and sediment from runoff before it reaches Rain garden system to minimize maintenance.
- Flow Entrance – It is best to allow water to sheet flow directly into the facility, where concentrated

flows enter through a curb cut or pipe it is important to dissipate the velocity of the runoff with stone, rip rap, or similar method.

- Ponding Area – Surface storage of runoff is accommodated in ponding area. Acceptable depth: 3 in -12 in (75-300mm), 6 in (150mm).
- Plant Materials – Plants in a Rain garden facility help to bind and uptake pollutants, remove water through evapo-transpiration, encourage infiltration, and create an aesthetically pleasing landscape feature.
- Mulch – The mulch layer is an important medium for the adsorption and filtering of pollutants, as well as protecting the soil from eroding and drying out. A 3 in (75mm) blanket of Filtrex<sup>®</sup> FilterMedia™ is recommended for this application.
- Planting Soil – The soil in a Rain garden facility is specifically designed to filter pollutants, infiltrate water, and support plant growth. The soil must have a minimum infiltration rate of 2 in (50mm)/hr. A mixture of 75% coarse construction sand (grain size 0.02 in – 0.04 in [0.5-1.0mm]) and 25% Filtrex<sup>®</sup> GrowingMedia™ is recommended for this application.
- Underdrain with Pea Gravel Diaphragm – An underdrain is necessary when in-situ soils have infiltration rate of < 1 in/hr in order to ensure that the facility drains properly. A perforated pipe surrounded w/ a 6-9 in (150-225mm) layer of pea gravel leading to



discharge point will serve this purpose.

- Overflow Outlet – All Rain garden facilities must provide a means for excess water to overflow and be conveyed downstream.

### INSTALLATION

1. Filtrexx® GrowingMedia™ used for Rain garden facilities shall meet all Filtrexx® specifications.
2. Contractor is required to be Filtrexx® Certified™ Installer determined by Filtrexx® International, LLC (440-926-8041; Filtrexx.com). Certification shall be considered current if appropriate ID is shown at time of bid or time of application (list found at www.filtrexx.com). Look for Filtrexx® Certified™ Installer Seal.
3. Schedule a pre-construction meeting with Engineer, Filtrexx® Certified™ Installer, and any other consultants that will be involved in the Rain garden installation.
4. Rain garden facilities will be placed at locations indicated on plans as directed by the Engineer.
5. Rain garden areas should be protected from compaction during the site construction phase.
6. Construction site shall be graded and stabilized prior to the installation of Rain garden facilities.
7. In-situ soils compacted during site construction shall be roto-tilled to 18 in (450mm) to restore porosity and infiltration cap. in areas designated Rain garden.
8. Excavation/grading of Rain garden area shall be done w/ equipment outside limits of Rain garden system, or equipment w/ marsh tracks or light equipment w/ turf tires.
9. Rain garden areas must be protected from erosion and sedimentation after final grades have been established for the facility.
10. Install underdrain system and observation wells, if specified.
11. Rain garden soil mix shall consist of 25% Filtrexx® GrowingMedia™ and 75% coarse (grain size 0.02 in – 0.04 in [0.5-1.0mm]) construction sand that is clean and free of deleterious materials. The soil shall be mixed thoroughly to ensure a homogenous and consistent texture.
12. Rain garden soils shall be installed in lifts of 12 – 18 in (300-450mm). Each lift shall be lightly watered to encourage natural compaction. **No mechanical compacting.**
13. Rain garden base should be at least 2 ft (600mm) above bedrock or geologic structures.
14. Rain garden soil mix shall have a minimum infiltration rate of 2 in (50mm) per hour.

15. Ensure that final grades are achieved as specified, taking into account the mulch layer that will be added after planting. Fine grading is extremely important for Rain gardens facilities. They are typically only 6 in (150mm) deep so an error of 2 in (50mm) may cause a 33% change in storage volume!
16. Install vegetation specified in the planting plan.
17. Install a 3 in (75mm) Filtrexx® FilterMedia™ blanket as mulch over the entire Rain garden area, or as specified by the Engineer. Install erosion control at entrance points in the form of surge stone or river rock, or as specified.
18. New planting may require irrigation during establishment.

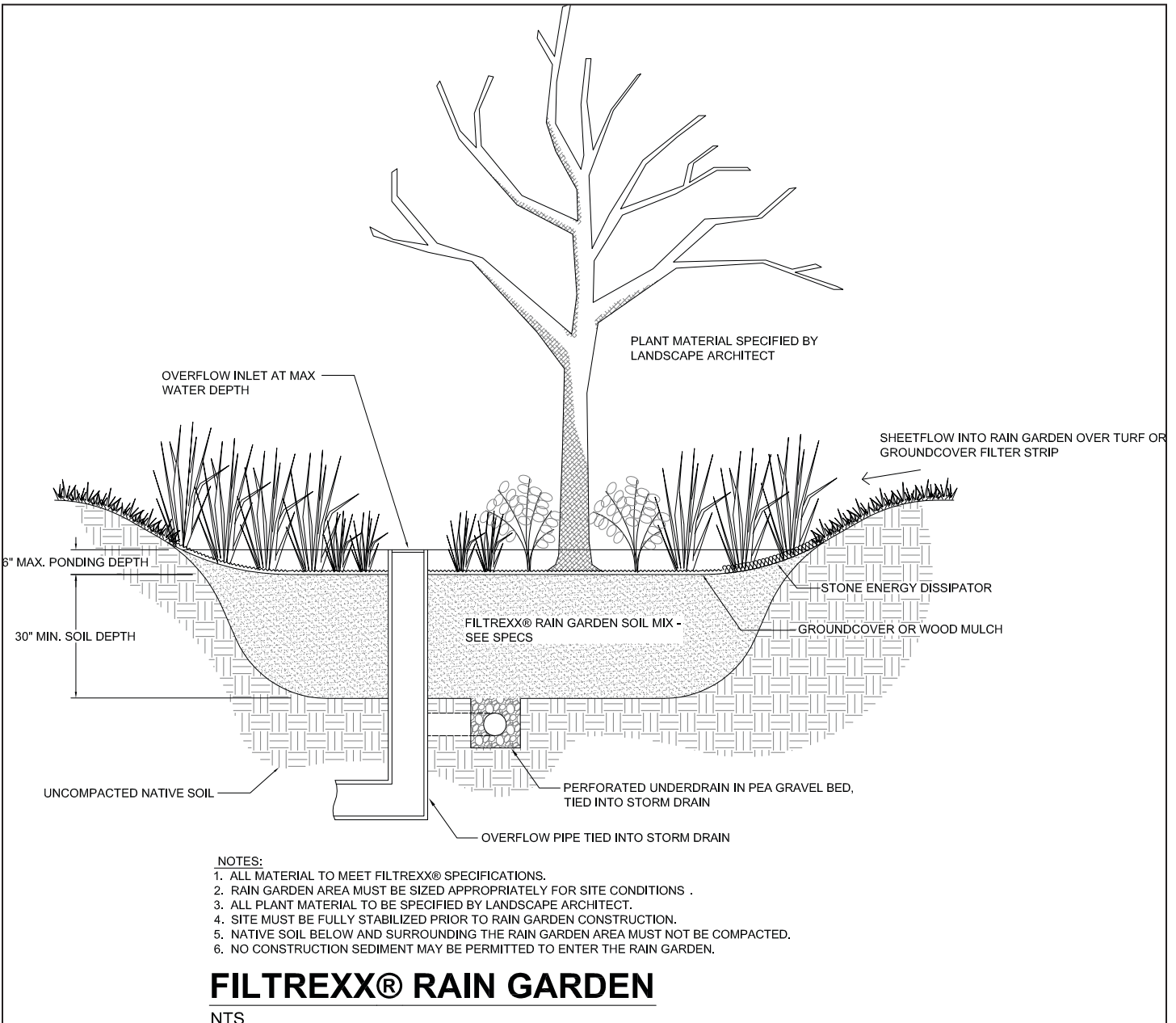
### INSPECTION AND MAINTENANCE

Regular inspection should occur throughout the installation process at the following times:

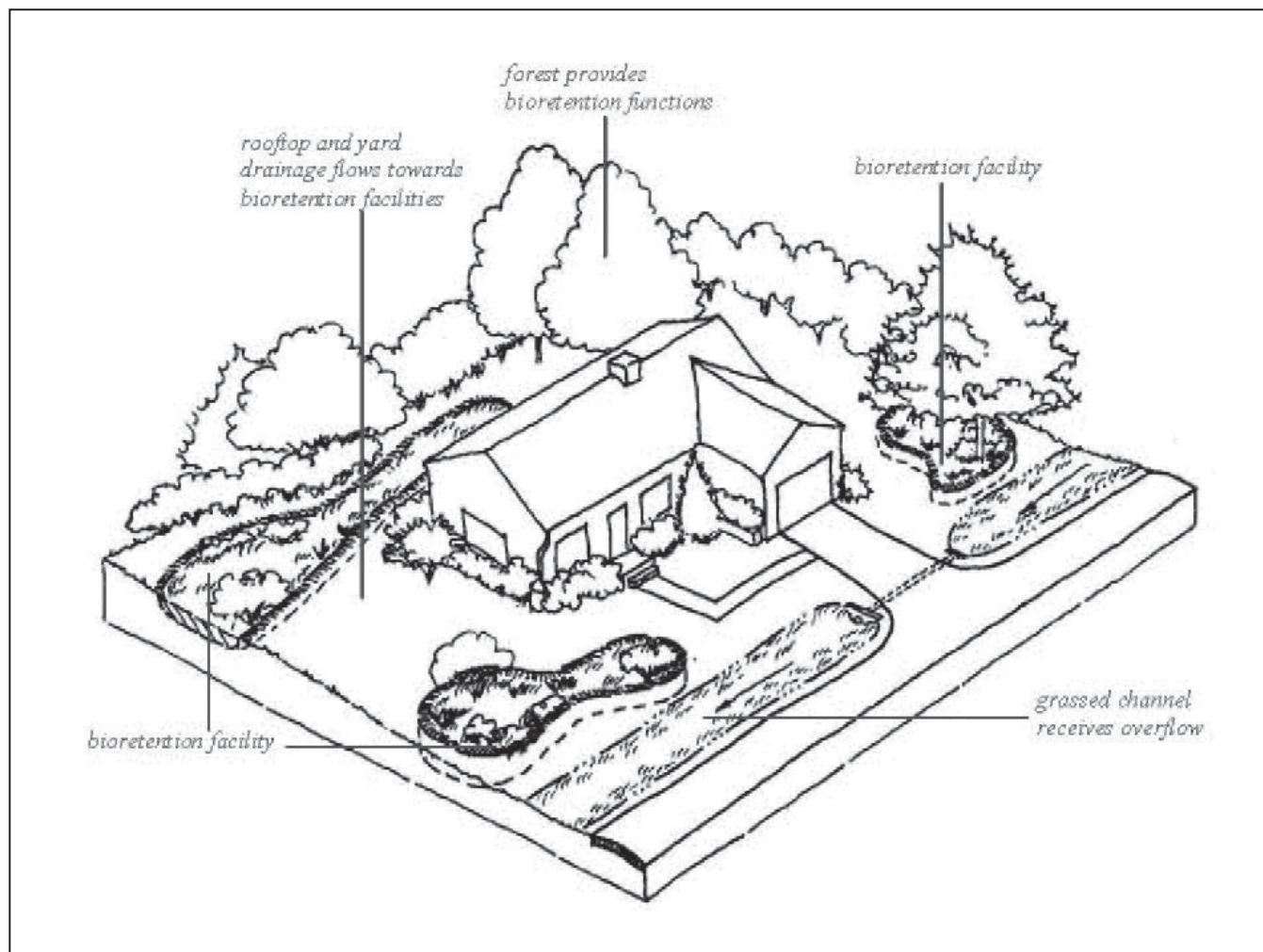
1. Pre-construction meeting.
  2. Stabilization of construction site and beginning of excavation.
  3. Installation of underdrain.
  4. Delivery and installation of soil materials, including GrowingMedia™.
  5. Establishment of final grades of Rain garden facility.
  6. Delivery and installation of plant material.
  7. Delivery and installation of FilterMedia™ blanket or mulch.
  8. Establishment phase of plant material.
- Regular maintenance shall include:
9. The Contractor shall ensure that the site upstream from the Rain garden area remains stabilized and does not contribute excessive sediment that may impair the performance of the Rain garden area.
  10. Plant materials may need to be irrigated during establishment.
  11. Plant materials that do not establish, may need to be replaced.
  12. The Rain garden facility should be monitored for invasive non-native plant species. Any that are found should be eradicated.
  13. FilterMedia™ should be replaced as necessary to ensure complete coverage of the surface of the Rain garden area.



**Table 7.1.** Typical Rain Garden Cross-section.



**Table 7.2.** Rain Garden Placement on a Residential Site.



**Table 7.3.** Rain Garden Placement in a Parking Lot.

