SWPPP Cut Sheet

Last Updated: 1-1-08

Section 2: Storm Water Management – Post Construction

2.4 Filtrexx Channel Soxx™

Channel Stabilization Technology

PURPOSE & DESCRIPTION

The Filtrexx Channel Soxx™ soft armoring system is designed to stabilize and prevent erosion of channel beds and banks used for storm water conveyance and concentrated flow situations. The Channel Soxx™ technology provides structural protection, erosion control, vegetation growth, and vegetation reinforcement in the same system. The Channel Soxx™ weight and anchoring system can withstand storm water velocities and hydraulic shear stresses similar to traditional soft armoring devices (turf reinforcement mats, rip rap, cellular confinement systems). The Vegetated Channel Soxx™ system is specifically designed to reinforce vegetation against intense hydraulic pressure. Once vegetation is established in the Channel Soxx™, the following storm water management parameters are increased:

- structural stability of the channel and protection system,
- reduction of bed and bank erosion,
- protection from scour erosion,
- control of runoff velocity,
- dissipation of runoff energy,
- sediment, soluble pollutant, and pathogen removal efficiency

APPLICATION

Filtrexx Channel Soxx™ are used where storm water is conveyed/channeled and soil erosion and/or vegetation stability is an issue. Channel Soxx™ are used to establish & reinforce vegetation in areas of concentrated flow and intense hydraulic pressure that typically undermine vegetation growth. Applications include:

- storm water diversion channels and ditches,
- storm water conveyance channels and ditches,
- channel/ditch bed and bank protection,
- outlet protection for storm drains, paved channels, and culverts.

INSTALLATION

1. Channel Soxx™ shall meet Filtrexx Channel Soxx™ Specifications and use Filtrexx GrowingMedia™.
2. Contractor is required to be a Filtrexx Certified™ Installer as determined by Filtrexx International, LLC (440-926-2607; www.filtrexx.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application (list found at www.filtrexx.com). Look for Filtrexx Certified™ Installer Seal.
3. Channel Soxx™ will be placed at locations indicated on plans as directed by the Engineer.
4. Channel Soxx™ must be installed and stabilized before flow is allowed from culverts and storm outlets.
5. Land surface shall be cleared of debris, including rocks, roots, large clods, and sticks prior to Channel Soxx™ installation.
6. Channel bed soil shall be compacted, graded, and made smooth prior to installation of Channel Soxx™.
7. Upslope end of Channel Soxx™ shall be installed under culvert lip or outlet drain to ensure initial water contact is on top of Channel Soxx™, not under/in front of the system.
8. Channel Soxx™ will be fabricated on-site or prefabricated and delivered to site for installation.
9. Channel Soxx™ will be fabricated using a Filtrexx Channel Soxx™ Molding Cone™, to ensure 3 in (75mm) high by 12 in (300mm) wide Channel Soxx™ construction is met.
10. Channel Soxx™ shall be placed parallel to water flow, where socks are tightly abutted to prevent water seepage between and underneath the Channel Soxx™.
11. Channel Soxx™ shall be lightly compacted and abutting edges leveled to tighten seal between socks and encourage even water flow over Channel Soxx™ system.
12. Channel Soxx™ shall not be installed on channel bed slopes greater than 10%.
13. Channel Soxx™ shall not be installed on channel banks greater than 2:1, and banks 3:1 if mowing will be conducted to manage vegetation.
14. Stakes shall be installed through the middle of the Channel Soxx™ on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) wooden stakes. Top of stakes should be cut off, leaving 3 in (75mm) above the top of the Channel Soxx™; or
15. L-shaped rebar may be installed through middle of Channel Soxx™ on 10 ft (3m) centers, where "L" shall be bent to hook over top of Channel Soxx™ & pounded to fit snug.
16. Stakes shall also be placed at the ends of Channel Soxx™ to hold it in place.
17. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
18. Channel Soxx™ may be seeded at the time of application, seed selection will be determined by the Engineer.
19. Seeded Channel Soxx™ should not be installed prior to seasons where growing vegetation is difficult.
20. Seed shall be thoroughly mixed with the GrowingMedia™ prior to construction or injected into GrowingMedia™ at time of application.
21. Optional biotechnical engineering with live stakes should be conducted after staking is complete.
22. Seeded Channel Soxx™ shall be thoroughly watered after installation and allowed to settle for 1 week.

INSPECTION and MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event for the first year after installation or until permanent vegetation has established. If product dislodgement occurs, or vegetation does not establish, Channel Soxx™ should be repaired and/or reseeded. If bank or bed erosion occurs, the area should be repaired immediately. Vegetation practices should be inspected for noxious or invasive weeds.

1. The Contractor shall maintain the Channel Soxx™ in a functional condition at all times and it shall be routinely inspected.
2. Seeded Channel Soxx™ shall be maintained until a uniform 70% minimum cover of the applied area has been vegetated, or permanent vegetation has established.
3. Seeded Channel Soxx™ may need to be irrigated in hot and dry weather and seasons, or arid and semi-arid climates to ensure vegetation establishment.
4. Where a Channel Soxx™ fails or becomes dislodged, the Contractor will ensure the product is in good contact with the soil, repair, and use additional staking if necessary.
5. Where bank or bed erosion occurs, the Contractor will regrade the soil if necessary and repair or replace the Channel Soxx™
6. Where vegetation does not establish the Contractor will reseed, replant, or provide an approved and functioning alternative.
7. Channel Soxx™ shall be left on-site and become part of the permanent landscape, unless otherwise specified by the Engineer.
8. Regular mowing of grass vegetation on seeded Channel Soxx™ to a minimum height of 4 in (100mm) and a maximum height of 10 in (250mm) will deter invasive weeds, allow sunlight to kill captured pathogens, and provide maximum sediment removal efficiency and sediment storage capacity in the vegetation.
9. Storm debris and trash deposited on Channel Soxx™ should be removed immediately.
10. Sediment shall be removed if it reaches 25% of the height of the vegetation (mowed) to prevent diversion of storm runoff and reduction of vegetation health and cover.

Figure 4.1. Engineering Design Drawings for Filtrexx Channel Soxx™

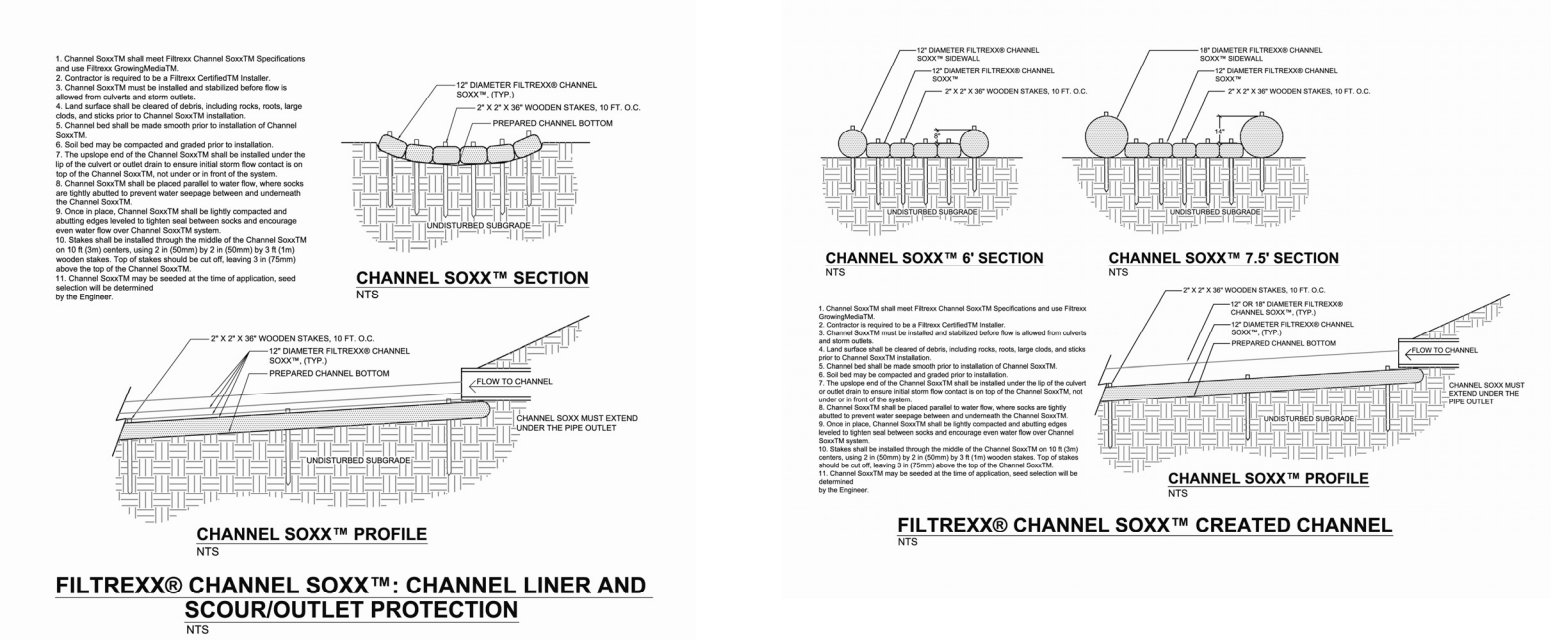

Figure 4.2. Staking Details for Filtrexx Channel Soxx™.

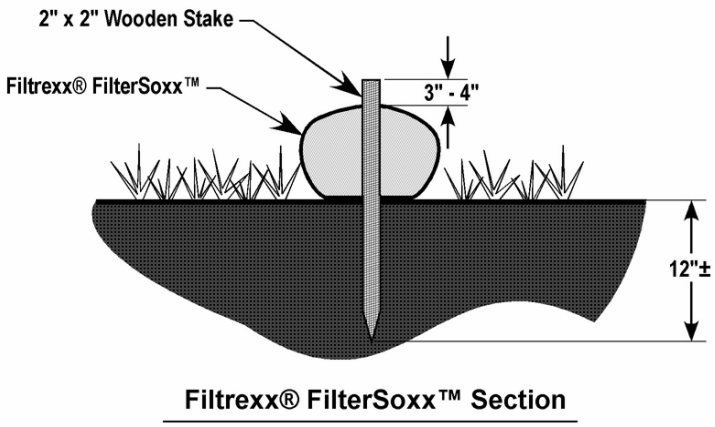

Table 4.2. Flow Dissipater Sizing for Storm Outlets.

Culvert Size	Apron width at pipe	Apron length for low flow	Apron length for high flow
8 in (200mm)	2-3 ft (0.6-1m)	3-5 ft (1-1.5m)	5-7 ft (1.5-2.1m)
12 in (300mm)	3-4 ft (1-1.2m)	4-6 ft (1.2-1.8m)	8-12 ft (2.4-3.6m)
18 in (450mm)	4-6 ft (1.2-1.8m)	6-8 ft (1.8-2.4m)	12-18 ft (3.6-5.5m)
24 in (600mm)	6-8 ft (1.8-2.4m)	8-12 ft (2.4-3.6m)	18-22 ft (5.5-6.7m)
30 in (750mm)	8-10 ft (2.4-3m)	12-14 ft (3.6-4.3m)	22-28 ft (6.7-8.5m)
36 in (900mm)	10-12 ft (3-3.6m)	14-16 ft (4.3-4.9m)	28-32 ft (8.5-9.8m)
42 in (1050mm)	12-14 ft (3.6-4.3m)	16-18 ft (4.9-5.5m)	32-38 ft (9.8-11.6m)
48 in (1200mm)	14-16 ft (4.3-4.9m)	18-25 ft (5.5-7.6m)	38-44 ft (11.6-13.4m)

(Source: Kentucky Erosion Prevention and Sediment Control Field Guide)