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filtrexx®
SUSTAINABLE TECHNOLOGIES

SECTION 1: CONSTRUCTION

Filtrexx® Slope Interruption (SiltSoxx™)

PURPOSE & DESCRIPTION

Filtrexx® SiltSoxx™ is a three-dimensional tubular runoff and erosion control device used for **slope interruption and slope length reduction** on hill slopes prior to final stabilization during construction activities. Slope interruption slows runoff velocity and reduce soil erosion by dissipating the energy of overland sheet flow runoff, reducing its erosive potential, while also trapping moving sediment and soluble pollutants. Reducing runoff velocity reduces the potential of rill erosion formation on hill slopes. Slope interruption traps sediment and soluble pollutants by *filtering* runoff water as it passes through the matrix of the slope interruption *and* by allowing water to temporarily pond behind the Soxx™, allowing *deposition* of suspended solids.

APPLICATION

Slope interruption is to be installed horizontally across the contour of hill slopes, perpendicular to sheet flow, where erosion control practices are required or runoff velocity control is recommended. Slope interruption is most effective where runoff is in the form of sheet flow and on long slopes prone to rill erosion. Slope interruption also provides sediment control and filtration of soluble pollutants from runoff.

Slope interruption can be applied to areas of high sheet runoff and erosion, and slopes up to a 1:1 grade. Slope interruption should never be the only form of slope erosion control and should be used in conjunction with Slope protection or rolled erosion control blankets (RECB). Slope interruption may also be used in sensitive environmental areas, where wildlife migration may be impeded by the use of silt fences or trenching may damage plant roots.

It is possible to drive over slope interruption during construction; however, these areas should be immediately repaired by manually moving back into place, if disturbed. Heavy construction traffic may destroy the fabric, reduce the dimensions, and reduce the effectiveness of the slope interruption.

ADVANTAGES AND DISADVANTAGES

Advantages

- Slope interruption can be used on hill slopes to slow runoff velocity, disperse concentrated runoff, and reduce effective slope lengths; thereby reducing the erosive potential of storm water runoff.
- Tubular filtration matrix allows for better trapping and removal of sediment and soluble pollutants in storm water runoff compared to planar constructed slope interruption devices, such as silt fence.
- Slope interruption has greater surface area contact with soil than typical sediment control devices, reducing potential for runoff undercutting the device, leading to unfiltered sediment.
- No trenching is required, therefore soil and plant roots are not disturbed upon installation.
- Slope interruption can be installed year-round in difficult soil conditions such as frozen or wet ground, and dense and compacted soils, as long as stakes can be driven.
- Slope interruption is easily implemented as a treatment in a greater treatment train approach to any erosion and sediment control plan.
- Slope interruption can be easily installed on top of rolled erosion control blankets (RECB), bonded fiber matrices (BFM), soil stabilizers, or slope protection.

Slow Runoff Rate on Steep Slopes and Sensitive Sites

- Organic matter and humus colloids in FilterMedia™ have the ability to bind and adsorb phosphorus, metals, and hydrocarbons that may be in storm water runoff.
- Microorganisms in FilterMedia have the ability to degrade organic pollutants and cycle captured nutrients in storm water runoff.
- Soxx (mesh netting containment system) allow slope interruption to be placed in areas of high sheet flow and low concentrated flow, unlike conventional (loose) filter berms.
- Slope interruption can be direct seeded at time of application to provide greater stability and filtration capability once vegetation is established.
- Slope interruption can be used as a temporary erosion control measure, or vegetated and left in place to permanently slow storm runoff velocity.
- FilterMedia is organic and can be left on site after permanent stabilization is complete, to be used in landscape design and/or seeded and planted with permanent vegetation.
- FilterMedia can be used as a soil amendment to improve existing soil structure if spread after construction activity is complete.
- Biodegradable slope interruption can be left on site after construction activity and may eliminate the need for removal, and labor and disposal costs.
- Slope interruption is less likely to obstruct wildlife migration than planar/fence slope interruption devices.
- Slope interruption is available in 5 in (125mm); 8 in (200mm), 12 in (300mm), 18 in (450mm), 24 in (600mm), 32 in (800mm) diameters for customized applications and challenging situations, although 8 in (200mm) diameter is recommended for most applications.
- Slope interruption is available in 200 ft (61 m) continuous lengths to prevent weak sections and inadvertent creation of concentrated flows typically found in low points of sediment control devices. End points are sleeved together to create unlimited continuous lengths.
- Slope interruption may assist in qualification for LEED® Green Building Rating and Certification credits under LEED Building Design & Construction (BD+C), New Construction v4. Awarded credits may be possible from the categories of Sustainable Sites, Water Efficiency, Materials & Resources, and Innovation. *Note: LEED is an independent program offered through the U.S. Green Building Council. LEED credits are determined on a per project basis by an independent auditing committee. Filtrexx neither guarantees nor assures LEED credits from the use of its products. LEED is a trademark of the U.S. Green Building Council.*

ADVANTAGES			
	LOW	MED	HIGH
Installation Difficulty	✓		
Durability			✓
Runoff Control		✓	
Erosion Control		✓	
Sediment Control		✓	
Soluble Pollutant Control		✓	

Disadvantages

- If filler material of slope interruption is not Filtrexx® Certified℠ FilterMedia, performance may be diminished.
- If not installed correctly, maintained or used for a purpose or intention that does not meet specifications performance may be diminished.
- If land surface is extremely bumpy, rocky, or changes elevation abruptly ground surface contact to slope interruption may be diminished thereby adversely effecting performance.
- Slope interruption should not be the only form of site erosion control.
- Slope interruption should not be used to direct or channel runoff water.
- Slope interruption is not used for perimeter control of sediment.
- Slope interruption should only be used on hill slopes and never in intermittent, ephemeral, or perennial streams.

MATERIAL SPECIFICATIONS

Slope interruption use only Soxx photodegradable or biodegradable netting materials available from Filtrexx International and are the only mesh materials accepted in creating slope interruption for any purpose. For Soxx Material Specifications see Table 5.1.

FILTERMEDIA™ CHARACTERISTICS

Slope interruption uses only Filtrexx Certified FilterMedia which is a coarse composted material that is specifically designed for removal of solids and soluble pollutants from storm water runoff. *FilterMedia can be altered or customized to target specific pollutants in runoff as approved by the Engineer or Filtrexx International.* Products that can be added to FilterMedia and their target pollutant removal efficiency and performance can be found in Table 5.2. All Filtrexx Certified FilterMedia has been third party tested and certified to meet minimum performance criteria defined by Filtrexx International. Performance parameters include, hydraulic flow through rate, total solids removal efficiency, total suspended solids removal efficiency, turbidity reduction, nutrient removal efficiency, metals removal efficiency, and motor oil removal efficiency. For information on the physical and chemical properties of Filtrexx Certified FilterMedia refer to the Filtrexx Design Manual, section 5.1. Look for the Filtrexx Certified FilterMedia Seal from our international network of Filtrexx Certified Installers and Manufacturers.

PERFORMANCE

Performance testing and research on Slope interruption has been extensive. For a summary of performance testing, research results, and design specifications see Table 5.2 . For copies of publications, full reports, or Tech Link summaries visit www.filtrexx.com.

Successful bidders will furnish adequate research support showing their manufactured product meets or exceeds performance and design criteria outlined in this standard specification. Research or performance testing will be accepted if it meets the following criteria: conducted by a neutral third party, utilizes standard test methods reported by ASTM or referenced in a peer reviewed scientific journal, product and control treatments are tested in triplicate, performance results are reported for product and control (control should be a bare soil under the same set of environmental and experimental conditions), results are peer reviewed, results indicate a minimum 60% TSS removal efficiency and a minimum hydraulic flow through rate of 5 gpm/ft^2. Bidders shall attach a copy of the research report indicating test methodologies utilized and results.
Note: the Contractor is responsible for establishing a working erosion and sediment control system and may, with approval of the Engineer, work outside the minimum construction requirements as needed. Where the Slope interruption deteriorates or fails, it shall be repaired or replaced with an effective alternative.

Used with Compost Erosion Control Blanket

DESIGN CRITERIA

Slope interruption is a physical barrier designed to reduce effective runoff flow length of hill slops, thereby reducing runoff velocity and the potential for rill erosion on slopes. Reducing runoff velocity is known to reduce soil erosion as expressed in the equation (Fifield, 2001):

$$KE = mV^2$$

where: KE = erosive kinetic energy of runoff
m = mass of water (unit weight)
V = runoff velocity

Notice that reducing runoff velocity will reduce the erosive energy of runoff. The lower the KE value the less erosive the runoff, and likelihood there will be less soil erosion and transport of sediment.

Additionally, slope interruption acts as small sediment and soluble pollutant (phosphorus, petroleum hydrocarbons) control device. The sediment and pollutant removal process characteristic to slope interruption combine both filtering and deposition from settling solids. This is different than methods that rely solely on flow restriction and ponding for deposition of solids for sediment control. Ponding occurs when water flowing to the slope interruption accumulates faster than the hydraulic flow through rate of the device. Typically, hydraulic flow-through rates for slope interruption are 50% greater than geotextile filter fabric (silt fence), thereby reducing flow velocity with less ponding on hill slopes. However, installation and maintenance

is especially important for proper function and performance.

For engineering design details see Figure 5.1. For a summary of specifications for product/practice use, performance and design see Table 5.1 and Table 5.2.

For most standard slope interruption device applications, an 8 in (200mm) diameter slope interruption is recommended. See Table 5.3 and 5.4 and Figure 5.1 for standard design specifications for maximum allowable slope lengths.

Level Contour:
Slope interruption should be placed on level contours to assist in dissipation of runoff flow energy into sheet flow. Do not construct slope interruption to concentrate runoff or channel water. Sheet flow of water should be perpendicular to the slope interruption at impact and relatively un-concentrated. Placing slope interruption on smooth or freshly graded soil will reduce the potential for undermining.

End Around Flow:
In order to prevent water flowing around the ends of slope interruption, the ends must be constructed pointing slightly upslope so the ends are at a higher elevation. This will ensure runoff will flow over slope interruption instead of being directed down slope or to boundary areas. A minimum of 10 linear ft (3m) per end, placed at a 30 degree angle is recommended.

Runoff Flow and Sediment Accumulation:
Slope interruption is designed to act as a 'speed bump' for sheet flow on hill slopes. It is acceptable for runoff to pond and periodically breach the slope interruption device. Slope interruption may be spaced closer together to decrease sheet flow velocity and reduce erosion potential. Slope interruption should always be used in conjunction with slope protection, rolled erosion control blankets (RECB), bonded fiber matrices (BFM), or soil stabilizers. Some erosion control blankets can significantly reduce runoff volume and flow rate and should be considered in the design process. Alternatively, engineered soils or Low Impact Development practices may be employed to further reduce runoff volume and flow velocity, thereby reducing the potential for soil erosion. The Filtrexx Design Tool, developed by The Ohio State University, can assist in planning and design spacing for Slope interruption based on your site and rainfall/runoff conditions (Figure 5.3). For instructions and a copy of the Filtrexx Design Tool, refer to the Filtrexx Design Manual, Section 5.4 and 5.4a.

Slope interruption is also a sediment and soluble pollutant filtration device which will accumulate sediment behind the upslope side of the device. Sediment accumulation should be routinely maintained to ensure optimum performance of the device. Larger diameter slope interruption will store larger volumes of sediment; therefore, reducing maintenance, however, larger slope interruption may perform more like sediment control devices than runoff velocity control devices.

Vegetated Slope Interruption:
For permanent control of runoff velocity slope interruption can be direct-seeded to allow vegetation establishment directly in the device. Extending the vegetation 5 ft (1.5m) upslope and down slope from the device, can further increase performance. Vegetation on and around the slope interruption will assist in slowing runoff velocity for increased deposition and filtration of pollutants. Additionally, the reduction of runoff velocity may increase the stability and sustainability of plant establishment and growth where runoff is prone to destabilize vegetation. The option of adding vegetation will be at the discretion of the Engineer. No additional soil amendments or fertilizer are required for vegetation establishment in the slope interruption.

Slope Spacing:
Slope spacing between slope interruption is dependent on: rainfall intensity and duration, and slope steepness and length. Refer to the Filtrexx Design Tool developed by The Ohio State University to accurately design a plan based on your site and climate conditions. See *Design Capacity Prediction Tool for SiltSoxx™ and Silt Fence* and *Flow-Through Rates and Evaluation of Solids Separation of Compost FilterMedia™ vs. Silt Fence in Sediment Control*

Vegetated for Permanent Option

Applications (http://www.filtrexx.com/research-library/) for more information on the Design Tool or the research project and results used to create the tool. A specification for maximum slope lengths, based on a 1 in (25 mm)/24 hr rainfall event is provided in Table 5.3 and Figure 5.2; and for a 2 in (50 mm)/24 hr rainfall event is provided in Table 5.4.

INSTALLATION

1. Slope interruption used for hill slope runoff velocity and erosion control, and removal of sediment and soluble pollutants in storm runoff shall meet Filtrexx Soxx Material Specifications and use Filtrexx Certified FilterMedia.
2. Contractor is required to be a Filtrexx Certified Installer as determined by Filtrexx International (877-542-7699). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application (call Filtrexx at 877-542-7699 for a current list of installers). Look for the Filtrexx Certified Installer Seal.
3. Slope interruption will be placed at locations indicated on plans as directed by the Engineer. Slope interruption shall be installed horizontally, along the contours of slopes, and perpendicular to sheet runoff flow.
4. Stakes shall be installed through the middle of the slope interruption on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) wooden stakes. 5" diameter Soxx may use 1" (25 mm) x 1" (25 mm) x 18 " (0.5 m) wooden stakes.

Figure 5.3 Filtrexx® Design Tool™ for Runoff Control Applications.

Step 1: Choose units. ft or m		ft			
Step 2: Choose input: Tr or I		Tr			
total rainfall	inches	1.5	storm duration	hours: 24	
Step 3: Choose input: A or W		W			
width of area	ft	400.00	length of slope	ft: 250	43560
Step 4: Input slope	%	10			452.588
Step 5: Input reduction runoff percent	%	10			
		siltsoxx (8,12,16)	silt fence (24, 30)		
Step 6: Input effective length of filter	ft	400	400		
Step 7: Input diameter/height of filter	inches	12	36		

Step 8: Find time to overflow filter and total flow/ft the filter can handle

Step 9: On figure find for given flow expected time to overflow filter

Part A. Evaluation of q_l

I inches/hr	A acres	s percent	Q gpm	L_{ss} ft	q_l gpm/ft
0.063	2.2957	10	58.15	400	0.145

Part B. Predicted time and total flow to top filter.

	q_o gpm/hr	D inches	Effective D inches	Time Overflow hr	Total Flow gal/f	Filter OKAY time > tr
Sediment Control (Coarse Material)	0.145	12	9.6	**99.1**	**865**	OKAY
Silt Fence	0.145	36	30.6	**97.5**	**851**	OKAY

5. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
6. Loose FilterMedia may be backfilled along the upslope side of the slope interruption, filling the seam between the soil surface and the device, improving filtration and sediment retention.
7. If the slope interruption is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation. The engineer will specify seed requirements.

See design drawing details for correct Filtrexx Slope Interruption installation (Figure 5.1).

INSPECTION

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Slope interruption should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional slope interruption may be required to reduce effective slope length or sediment removal may be necessary. It is acceptable for runoff to breach the slope interruption during runoff events. Slope interruption shall be inspected until the hill slope has been permanently stabilized and construction activity has ceased.

MAINTENANCE

1. The contractor shall maintain the slope interruption in a functional condition at all times and it shall be routinely inspected.
2. If the slope interruption has been damaged, it shall be repaired, or replaced if beyond repair.
3. The contractor shall remove sediment at the base of the upslope side of the slope interruption when accumulation has reached 1/2 of the effective height of the Soxx, or as directed by the engineer.
4. Slope interruption shall be maintained until the hill slope has been permanently stabilized and construction activity has ceased.
5. The FilterMedia will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the engineer.

For long-term sediment and pollution control applications, Slope interruption can be seeded at the time of installation to create a permanent runoff velocity control and vegetative filtering system for sediment and soluble pollutants (contained vegetative filter strip). These devices will remain intact at the end of construction activity. The appropriate seed mix shall be determined by the engineer.

DISPOSAL/RECYCLING

FilterMedia is an organic, composted product manufactured from locally generated organic, natural, and biologically based materials. Once all soil has been stabilized and construction activity has been completed, the FilterMedia may be dispersed with a loader, rake, bulldozer or similar device and may be incorporated into the soil as an amendment or left on the soil surface to aid in permanent seeding or landscaping. Leaving the FilterMedia on site reduces removal and disposal costs. The mesh netting material will be extracted from the FilterMedia and disposed of properly by the contractor. The photodegradable mesh netting material (Soxx) may degrade if left on site. Biodegradable mesh netting material is available and may eliminate the need and cost of removal and disposal.

As an alternative, vegetated slope interruption can be left on-site as permanent slope interruption devices used to slow storm water runoff velocity and reduce stress from sheet flow on permanent vegetation.

METHOD OF MEASUREMENT

Bid items shall show measurement as 'X inch (X mm) diameter Filtrexx® Slope interruption/SiltSoxx™' per linear foot (linear meter), installed.

Engineer shall notify Filtrexx of location, description, and details of project prior to the bidding process so that Filtrexx can provide design aid and technical support.

Maintain Sheet Flow in Large Drainage Areas

ADDITIONAL INFORMATION

For other references on this topic, including additional research reports and trade magazine and press coverage, visit the Filtrexx website at www.filtrexx.com

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Call for complete list of international installers.

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TABLES & FIGURES:

Table 5.1. Filtrexx® Soxx™ Material Specifications.

Material Type	Cotton BioSoxx™	5 mil High Density Polyethylene (HDPE)	5 mil High Density Polyethylene (HDPE)	Multi-Filament Polypropylene (MFPP, previously HDPP)	Multi-Filament Polypropylene SafteySoxx™	Multi-Filament Polypropylene DuraSoxx®	Multi-Filament Polypropylene DuraSoxx® (Heavy Duty)
Material Characteristic	Biodegradable	Oxo-degradable	Photodegradable	Photodegradable	Photodegradable	Photodegradable	Photodegradable
Design Diameters	8 in (200mm), 12 in (300mm)	8 in (200mm), 12 in (300mm), 18 in (400mm)	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (400mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (400mm)
Mesh Opening	1/8 in (3mm)	3/8 in (10mm)	3/8 in (10mm)	3/8 in (10mm)	1/8 in (3mm)	1/8 in (3mm)	1/8 in (3mm)
Tensile Strength	ND	26 psi (1.83 kg/cm^2)	26 psi (1.83 kg/cm^2)	44 psi (3.09 kg/cm^2)	202 psi (14.2 kg/cm^2)*	202 psi (14.2 kg/cm^2)	242 psi (16.99 kg/cm^2)
% Original Strength from Ultraviolet Exposure (ASTM G-155)	ND	ND	23% at 1000 hr	100% at 1000 hr	100% at 1000 hr	100% at 1000 hr	100% at 1000 hr
Functional Longevity/ Project Duration***	up to 12 months**	6 mo-3.5 yr	9 mo-4 yr	1-4 yr	2-5 yr	2-5 yr	2-5 yr

* Tested at Texas Transportation Institute/Texas A&M University (ASTM 5035-95).
** Data based on Caltrans research and specifications
*** Functional longevity ranges are estimates only. Site specific environmental conditions may result in significantly shorter or longer time periods.

Table 5.2. Filtrexx® Slope Interruption Performance and Design Specifications Summary.

Design Diameter / Design & Performance	5 in (125mm)	8 in (200mm)	12 in (300mm)	18 in (450mm)	24 in (600mm)	32 in (800mm)	Testing Lab/ Reference	Publication(s)
Effective Height	4 in (100mm)	6.5 in (160mm)	9.5 in (240mm)	14.5 in (360mm)	19 in (480mm)	26 in (650mm)	The Ohio State University, Ohio Agricultural Research and Development Center	Transactions of the American Society of Agricultural & Biological Engineers, 2006
Effective Circumference	15 in (380mm)	25 in (630mm)	38 in (960mm)	57 in (1450mm)	75 in (1900mm)	100 in (2500mm)		
Density (when filled)	7.8 lbs (12 kg/m)	13 lbs/ft (20 kg/m)	32 lbs/ft (50 kg/m)	67 lbs/ft (100 kg/m)	133 lbs/ft (200 kg/m)	200 lbs/ft (300 kg/m)	Soil Control Lab, Inc	
Air Space	20%	20%	20%	20%	20%	20%	Soil Control Lab, Inc	
Maximum continuous length	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited		
Staking Requirement	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)		
Maintenance Requirement (sediment accumulation removal at X height)	2 in (50mm)	3.25 in (80mm)	4.75 in (120mm)	7.25 in (180mm)	9.5 in (240mm)	13 in (325mm)		

(continued on next page)

Table 5.2. Filtrexx® Slope Interruption Performance and Design Specifications Summary. (continued)

Design Diameter / Design & Performance	5 in (125mm)	8 in (200mm)	12 in (300mm)	18 in (450mm)	24 in (600mm)	32 in (800mm)	Testing Lab/ Reference	Publication(s)
Initial Maintenance Requirement based on Rainfall-Runoff*	13 in (33 cm); 665 L/linear m	22 in (55 cm); 1109 L/linear m	32 in (80 cm); 1388 L/linear m	42 in (105 cm); 1825 L/linear m	64 in (160 cm); 2776 L/linear m	86 in (215 cm); 3885 L/linear m	The University of Georgia & Auburn University	
Functional Longevity**	6 mo – 5 yr	6 mo – 5 yr	6 mo – 5 yr	6 mo – 5 yr	6 mo – 5 yr	6 mo – 5 yr		
Maximum Slope Length (<2%)	360 ft (110m)	600 ft (183m)	750 ft (229m)	1000 ft (305m)	1300 ft (396m)	1650 ft (500m)	The Ohio State University, Ohio Agricultural Research and Development Center	Filtrexx® Design Tool™, Filtrexx® Library #301, Filtrexx® Tech Link #3304 & #3311
Hydraulic Flow Through Rate	4.5 gpm/ft (56 L/min/m)	7.5 gpm/ft (94 L/min/m)	11.3 gpm/ft (141 L/min/m)	15.0 gpm/ft (188 L/min/m)	22.5 gpm/ft (281 L/min/m)	30.0 gpm/ft (374 L/min/m)	The Ohio State University, Ohio Agricultural Research and Development Center; University of Guelph, School of Engineering/ Watershed Research Group	Filtrexx® Tech Link #3311 & #3313, #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006, Second Interagency Conference on Research in Watersheds, 2006
P Factor (RUSLE)	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	USDA ARS Environmental Quality Lab/ University of Georgia	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Sediment Storage Capacity***	104 cu. in (1710cc)	174 cu. in (2850cc)	396 cu. in (6490cc)	857 cu. in (14040cc)	1631 cu. in (26840cc)	2647 cu. in (43377 cc)		Filtrexx® Tech Link #3314
Total Solids Removal	98%	98%	98%	98%	98%	98%	Soil Control Lab, Inc	International Erosion Control Association, 2006
Total Suspended Solids Removal	78%	78%	78%	78%	78%	78%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006

Table 5.2. Filtrexx® Slope Interruption Performance and Design Specifications Summary. (continued)

Design Diameter / Design & Performance	5 in (125mm)	8 in (200mm)	12 in (300mm)	18 in (450mm)	24 in (600mm)	32 in (800mm)	Testing Lab/ Reference	Publication(s)
Turbidity Reduction	63%	63%	63%	63%	63%	63%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Clay (<0.002mm) Removal	65%	65%	65%	65%	65%	65%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Silt (0.002-0.05mm) Removal	64%	64%	64%	64%	64%	64%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
TSS Removal w/PAM	97%	97%	97%	97%	97%	97%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
TSS Removal w/ Flocculent	97%	97%	97%	97%	97%	97%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Turbidity Reduction w/PAM	98%	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Turbidity Reduction w/ Flocculent	94%	94%	94%	94%	94%	94%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006

(continued on next page)

Table 5.2. Filtrexx® Slope Interruption Performance and Design Specifications Summary. (continued)

Design Diameter / Design & Performance	5 in (125mm)	8 in (200mm)	12 in (300mm)	18 in (450mm)	24 in (600mm)	32 in (800mm)	Testing Lab/ Reference	Publication(s)
Total Phosphorus Removal	34%	34%	34%	34%	34%	34%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Reactive Phosphorus Removal	38%	38%	38%	38%	38%	38%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Total Phosphorus Removal w/ Nutrient Agent	60%	60%	60%	60%	60%	60%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Reactive Phosphorus Removal w/ Nutrient Agent	99%	99%	99%	99%	99%	99%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Nitrate-N Removal	25%	25%	25%	25%	25%	25%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Ammonium-N Removal	15%	15%	15%	15%	15%	15%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Ammonium-N Removal w/ Nutrient Agent	33%	33%	33%	33%	33%	33%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Motor Oil Removal w/ Hydrocarbon Agent	99%	99%	99%	99%	99%	99%	USDA ARS Environmental Quality Lab	International Erosion Control Association, 2006
Diesel Fuel Removal w/ Hydrocarbon Agent	99%	99%	99%	99%	99%	99%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Gasoline Removal w/ Hydrocarbon Agent	54%	54%	54%	54%	54%	54%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link

Table 5.2. Filtrexx® Slope Interruption Performance and Design Specifications Summary. (continued)

Design Diameter / Design & Performance	5 in (125mm)	8 in (200mm)	12 in (300mm)	18 in (450mm)	24 in (600mm)	32 in (800mm)	Testing Lab/ Reference	Publication(s)
Cadmium (Cd) Removal w/ Heavy Metal Agent	73%	73%	73%	73%	73%	73%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Chromium (Cr) Removal w/ Heavy Metal Agent	47%	47%	47%	47%	47%	47%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Copper (Cu) Removal w/ Heavy Metal Agent	70%	70%	70%	70%	70%	70%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Nickel (Ni) Removal w/ Heavy Metal Agent	69%	69%	69%	69%	69%	69%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Lead (Pb) Removal w/ Heavy Metal Agent	73%	73%	73%	73%	73%	73%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Zinc (Zn) Removal w/ Heavy Metal Agent	53%	53%	53%	53%	53%	53%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Iron (Fe) Removal	22%	22%	22%	22%	22%	22%	Soil Control Lab, Inc	
Manganese (Mn) Removal	8%	8%	8%	8%	8%	8%	Soil Control Lab, Inc	
Total coliform Removal	67%	67%	67%	67%	67%	67%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
E. coli Removal	67%	67%	67%	67%	67%	67%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Enterococcus Removal	47%	47%	47%	47%	47%	47%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
E. coli Removal w/ Bacteria Agent	98%	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Fecal coliform Removal w/ Bacteria Agent	98%	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Enterococcus Removal w/ Bacteria Agent	91%	91%	91%	91%	91%	91%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link
Other Recommended Uses	Slope Interruption	Inlet Protection, Ditch Protection, Slope Interruption	Inlet protection, Ditch Protection, Concrete Washout, Filtration System, Slope Interruption	Ditch Protection, Concrete Washout, Filtration System	Ditch Protection, Concrete Washout, Filtration System	Ditch Protection, Concrete Washout, Filtration System		

* Based on rainfall intensity of 12.5 cm (5 in)/hr applied to a bare clay loam soil at a 10% slope; runoff flow rate of 108 ml/sec/linear m (0.52 gpm/linear ft); and mean runoff volume of 230 L/m2 (6.3 g/ft2).

** Functional Longevity is dependent on mesh material type, UV exposure, freeze/thaw frequency, region of US/Canada, runoff-sediment frequency/ duration/loading, and adherence to specified maintenance requirement. Functional longevity ranges are estimates only. Site specific environmental conditions may result in significantly shorter or longer time periods.

*** Sediment Storage Capacity = sediment accumulation behind (directly upslope) + within the device.

Figure 5.1. Engineering Design Drawing for Slope Interruption

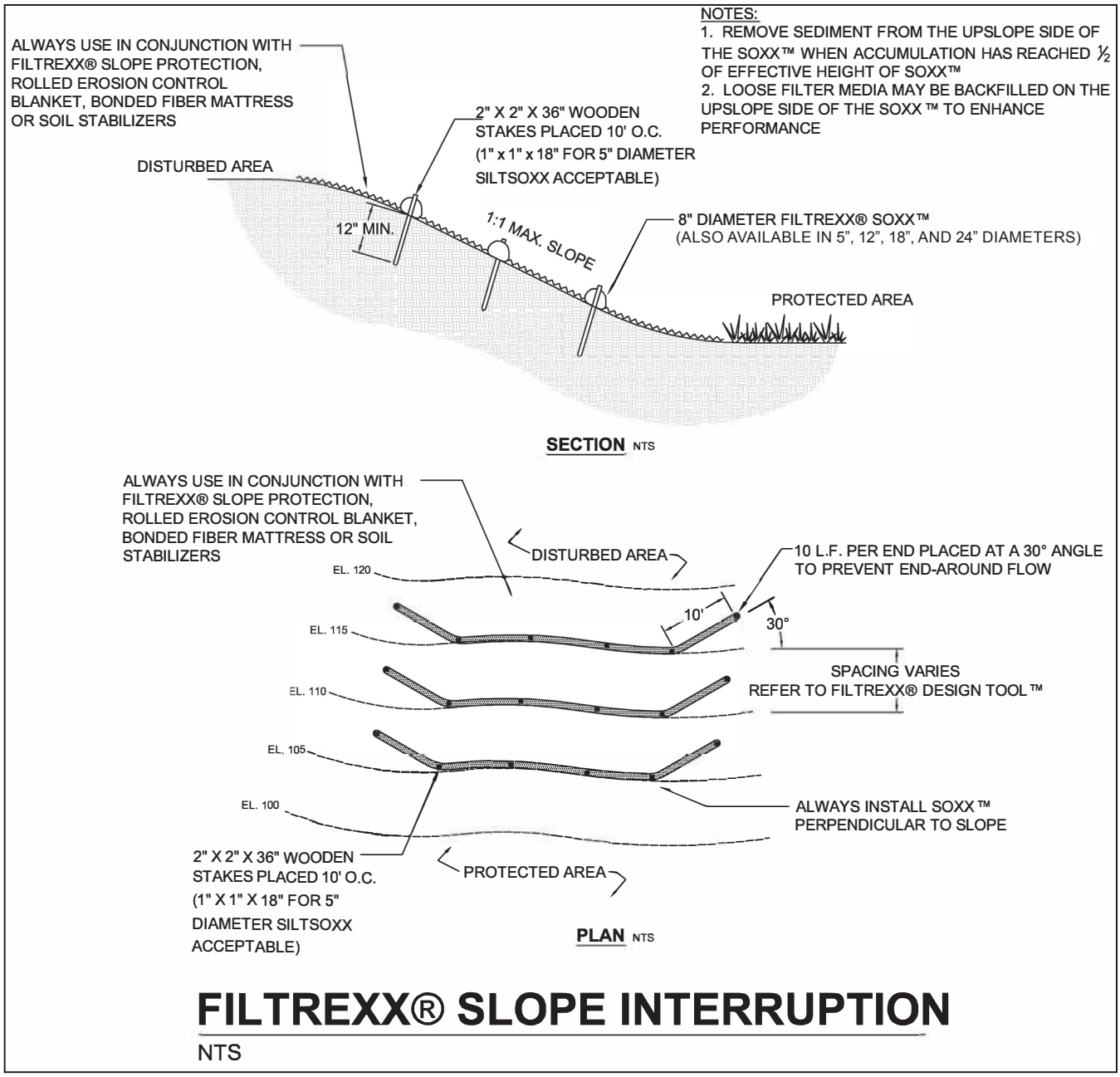

Figure 5.1. Engineering Design Drawing for Staking of SiltSoxx™

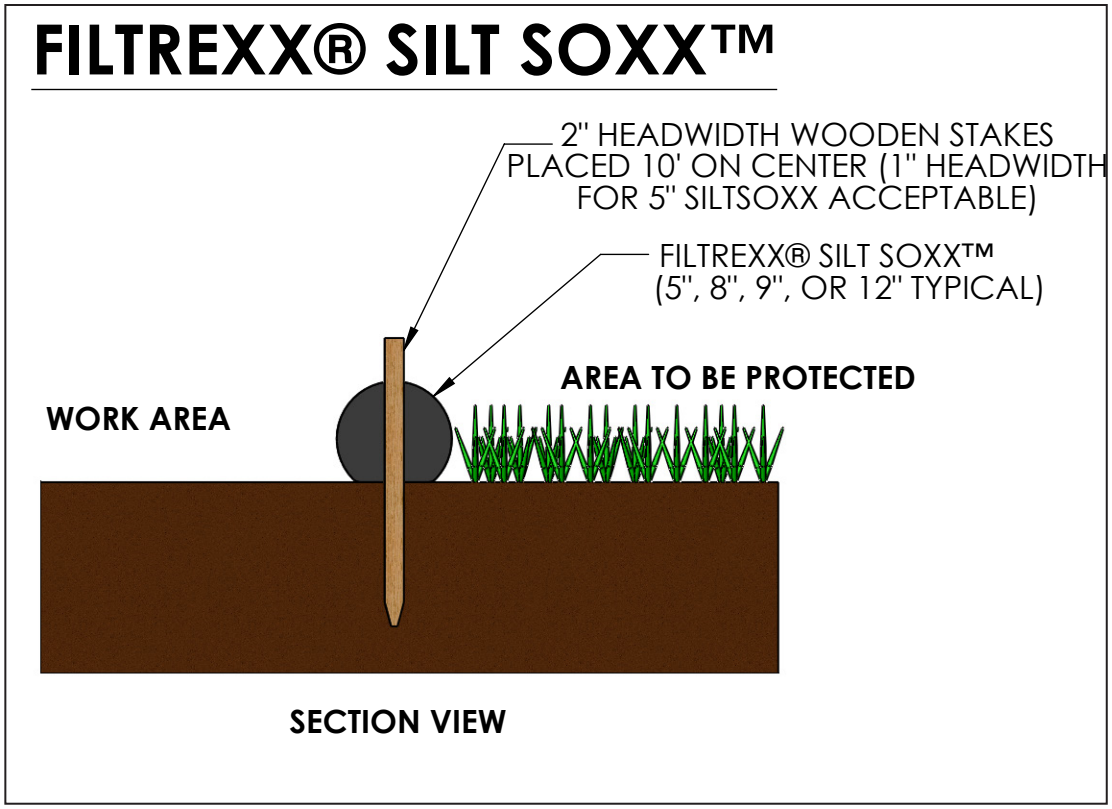

Figure 5.2. Maximum Slope Lengths of Filtrexx® Slope Interruption Based on a 1 in (25 mm)/24 hr Rainfall Event.

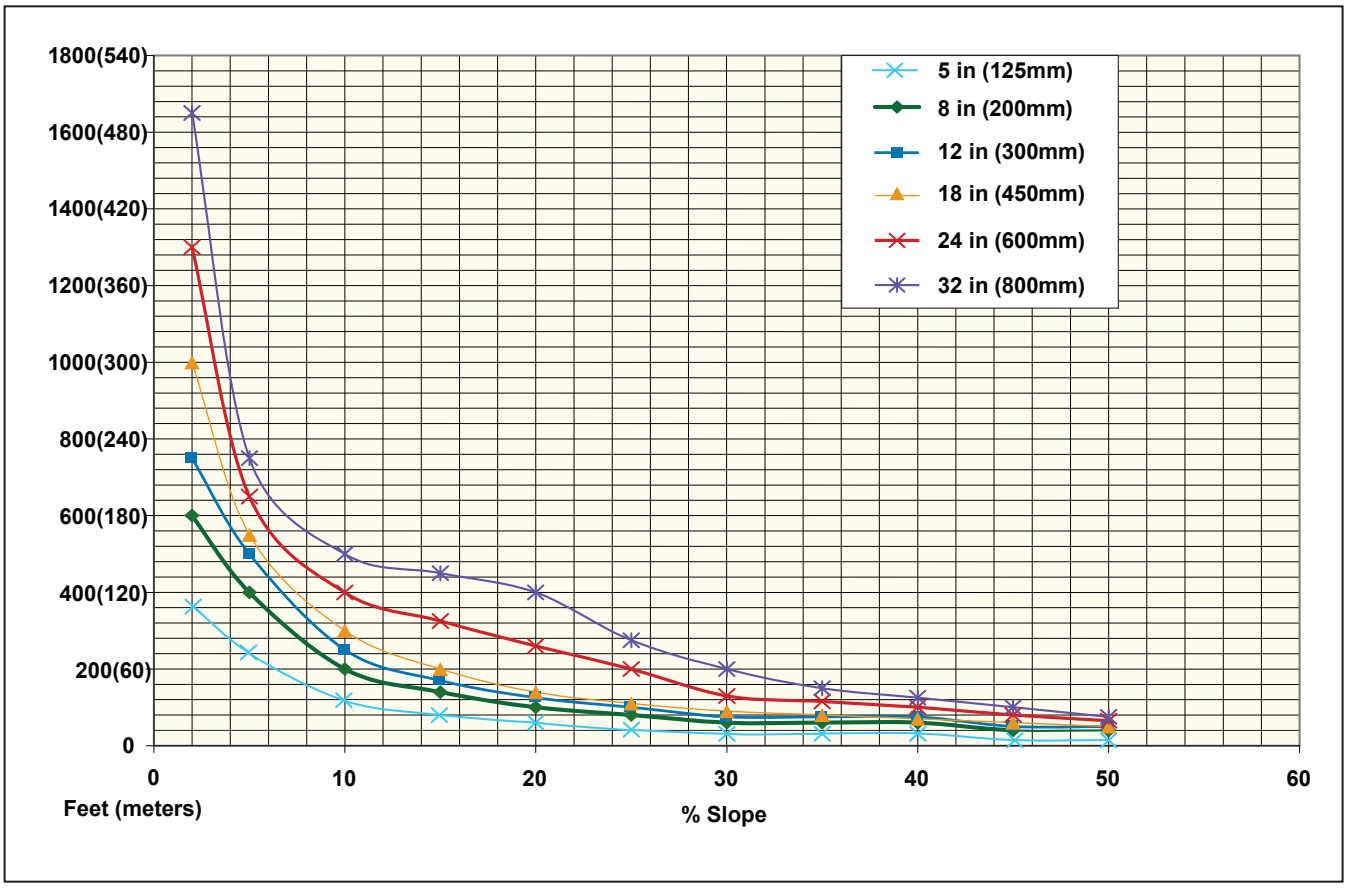

Table 5.3. Maximum Slope Lengths of Filtrexx® Slope Interruption Based on a 1 in (25 mm)/24 hr Rainfall Event.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*					
	5 in (125 mm) Sediment control	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	4 in (100 mm)**	6.5 in (160 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	360 (110)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	240 (73)	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	120 (37)	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	85 (26)	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	60 (18)	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	48 (15)	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	36 (11)	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	36 (11)	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	36 (11)	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	24 (7)	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	24 (7)	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

** Effective height of Slope interruption after installation and with constant head from runoff as determined by Ohio State University.

Table 5.4. Maximum Slope Lengths of Filtrexx® Slope Interruption Based on a 2 in (50 mm)/24 hr Rainfall Event.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*					
	5 in (125 mm) Sediment control	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	4 in (100 mm)**	6.5 in (160 mm) **	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	180 (55)	300 (90)	375 (110)	500 (150)	650 (200)	850 (260)
5	120 (37)	200 (60)	250 (75)	275 (85)	325 (100)	400 (120)
10	60 (18)	100 (30)	125 (35)	150 (45)	200 (60)	275 (85)
15	42 (13)	70 (20)	85 (25)	100 (30)	160 (50)	225 (70)
20	30 (9)	50 (15)	65 (20)	70 (20)	130 (40)	180 (55)
25	24 (7)	40 (12)	50 (15)	55 (16)	100 (30)	150 (45)
30	18 (6)	30 (9)	40 (12)	45 (13)	65 (20)	100 (30)
35	18 (6)	30 (9)	40 (12)	45 (13)	55 (18)	75 (23)
40	18 (6)	30 (9)	40 (12)	45 (13)	50 (15)	60 (38)
45	12 (4)	20 (6)	25 (8)	30 (9)	40 (12)	50 (15)
50	12 (4)	20 (6)	25 (8)	30 (9)	35 (10)	40 (12)

* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

** Effective height of Slope interruption after installation and with constant head from runoff as determined by Ohio State University.