Filtrexx® Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrexx® Sediment control is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for **perimeter control** of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities. Filtrexx® Sediment control traps sediment and soluble pollutants by *filtering* runoff water as it passes through the matrix of the Sediment control *and* by allowing water to temporarily pond behind the Sediment control, allowing *deposition* of suspended solids. Sediment control is also used to reduce runoff flow velocities on sloped surfaces.

Installation Method – Perimeter Control

APPLICATION

Filtrexx® Sediment control is to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Sediment control is effective when installed perpendicular to sheet or low concentrated flow, and in areas that silt fence is normally considered appropriate. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodable slopes
- Along the toe of stream and channel banks
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

Sediment control can be applied to areas of high sheet runoff and erosion, on slopes up to a 1:1 grade (should be used in conjunction with slope stabilization/erosion control technology on slopes > 4:1), around inlets, and in other disturbed areas of construction sites requiring sediment control. Sediment control may also be used in sensitive environmental areas, where migration of wildlife may be impeded by the use of fences or trenching may damage roots.

It is possible to drive over Sediment control during construction (although not recommended), however, these areas should be immediately repaired by manually moving Sediment control back into place, if disturbed. Continued heavy construction traffic may destroy the fabric mesh, reduce the dimensions, and reduce the effectiveness of the Sediment control.

ADVANTAGES AND DISADVANTAGES

Advantages

- Tubular filtration matrix allows for better trapping and removal of sediment and soluble pollutants in storm water runoff compared to planar

constructed sediment control devices (i.e., silt fence).
- Greater surface area contact with soil than typical sediment control devices, reducing potential for runoff to create rills under the device leading to unfiltered sediment.
- No trenching is required; therefore soil is not disturbed upon installation or removal.
- Sediment control 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.
- Sediment control is easily implemented as a treatment in a greater treatment train approach to erosion and sediment control.
- Organic matter and humus colloids in FilterMedia™ (filler material in Sediment control) 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™ (the mesh netting containment system) allows Sediment control to be placed in areas of high sheet flow and low concentrated flow.
- Sediment control can be direct seeded at time of application to provide greater stability and filtration capability once vegetation is established.
- 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™ improves existing soil structure if spread out and used as a soil amendment after construction activity is complete.
- Biodegradable or photodegradable Sediment control can be left on site after construction activity eliminating the need for removal and labor and disposal costs.
- Sediment control can be used on slopes to slow down runoff velocity, disperse concentrated runoff, and reduce effective slope lengths, reducing the erosive potential of stormwater runoff.
- Sediment control is less likely to obstruct wildlife movement and migration than planar/silt fence sediment control practices.
- Sediment control is available in 8 in.(200mm), 12 in. (300mm), 18 in. (450mm), 24 in. (600mm), and 32 in (800mm) diameters for customized applications and challenging situations.
- Sediment control is available in 200 ft (61m). continuous lengths to prevent weak sections and creation of concentrated flow situations typical to low points in runs of other sediment control devices. End points are sleeved together to form continuous runs of unlimited lengths without low or break points.
- Sediment control may assist in qualification for LEED® Green Building Rating and Certification credits under LEED® New Construction 2.2. Awarded credits may be possible from SS Prerequisite 1, SS Credit 5.1, SS Credit 6.2, WE Credit 2, MR Credit 4.1, MR Credit 4.2, MR Credit 5.1, MR Credit 5.2, and MR Credit 6. *Note: LEED® is an independent program offered through the US 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.*

ADVANTAGES			
	LOW	MED	HIGH
Installation Difficulty	✓		
Durability			✓
Sediment Control			✓
Soluble Pollutant Control		✓	
Runoff Flow Control		✓	
Life Cycle Cost	✓		

Disadvantages
- If filler material of Sediment control is not 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 Sediment control may be diminished thereby adversely effecting performance.

MATERIAL SPECIFICATIONS

Sediment control use only photodegradable or biodegradable Soxx™ netting materials available from Filtrexx® International, LLC and are the only mesh materials accepted in creating Sediment control for any purpose. For Soxx™ tubular mesh material specifications see Table 1.1.

FILTERMEDIA™ CHARACTERISTICS

Specifications for Sediment control use only Certified Filtrexx® 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. All Certified Filtrexx® 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 Certified FilterMedia™ refer to Certified FilterMedia™ Specifications in Appendix 5.25. Look for the Filtrexx® Certified™ FilterMedia™ Seal from our international network of Filtrexx® Certified™ Installers.

PERFORMANCE

Performance testing and research on Sediment control has been extensive. Results from testing and research programs conducted on Sediment control include: hydraulic flow through rate, ponding rate and calculation (behind Sediment control), sediment storage capacity (inside + behind tool), total solids removal efficiency, suspended solids removal efficiency (with and w/out biopolymer and polymer flocculants), turbidity reduction (with and w/out biopolymer and polymer flocculants), nitrate-N removal efficiency, total P removal efficiency, soluble reactive P removal efficiency (with and w/out Nutrient Agent), petroleum hydrocarbon (motor oil) removal efficiency, and heavy metals (Cu, Fe, Mn, Zn) removal efficiency. For a summary of performance testing, research results, and design specifications see Table 1.1 and Table 1.2. For copies of full reports contact Filtrexx® International, LLC.

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 Sediment control deteriorates or fails, it shall be repaired or replaced with an effective alternative.

DESIGN CRITERIA

The sediment and pollutant removal process characteristic to Sediment control combines both filtering and deposition from settling solids. This is different than methods that rely on ponding for deposition of solids for sediment control (i.e., silt fence). Ponding occurs when water flowing to the Sediment control accumulates faster than the hydraulic flow through rate of the Sediment control. Typically, hydraulic flow-through rates for Sediment control are 50% greater than geotextile filter fabric (silt fence). *Greater hydraulic flow-through rates reduce ponding, therefore reducing the need for taller sediment control structural design height.* Additionally, Sediment control does not blind as easily with small soil/sediment colloids, as do

Filtering Water

planar geotextile sediment control barriers (such as silt fence). However, installation and maintenance is especially important for proper function and performance. For engineering design details see Figure 1.1. For a summary of specifications for product/practice use, performance and design see Table 1.1 and Table 1.2.

For most standard perimeter control applications, a 12 in (300mm) diameter Sediment control can replace a 24 to 36 in (600 to 900mm) silt fence. See Table 1.3 and 1.4 and Figure 1.2 for standard design specifications for maximum allowable slope lengths. Note: In some low flow conditions, an 8 in (200mm) Sediment control may replace a 24 in (600mm) silt fence. Design consideration should be given to the duration of the project, total area of disturbance, rainfall/runoff potential, soil erosion potential, and sediment loading.

Runoff Flow:
Sheet runoff flow and ponding depth should not exceed the height of the Sediment control. If overflow of the device is a possibility, larger diameter Sediment control should be constructed, other sediment control devices may be used, or management practices to reduce runoff should be installed. Alternatively, a second Sediment control may be constructed or used in combination with

Figure 1.3 Filtrexx® Sediment Control Design Tool for Sediment 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			
			sediment control (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

Use on Ecological Sensitive Sites

compost erosion control blankets or rolled erosion control blankets to slow runoff and reduce erosion. The Filtrexx® Design Tool™ can assist in planning and designing what diameter Sediment control should be used, correct spacing requirements, and what rainfall and site conditions can lead to runoff breaching of the Sediment control. For a copy of the Filtrexx® Design Tool™ contact Filtrexx® Technical Support at 440-926-2607.

Level Contour:
Sediment control should be placed on level contours to assist in dissipating low concentrated flow into sheet flow and reducing runoff flow velocity. Do not construct Sediment control to concentrate runoff or channel water. Sheet flow of water should be perpendicular to the Sediment control at impact and relatively un-concentrated. Placing Sediment control on undisturbed soil will reduce the potential for undermining.

Runoff and Sediment Accumulation:
Where possible, Sediment control should be placed at a 5 ft (1.5m) or greater distance away from the toe of the slope to allow for proper runoff accumulation for sediment deposition and to allow for maximum sediment storage capacity behind the device. If a 5 ft (1.5m) distance is not available, due to construction restrictions, a second Sediment control may be installed to increase ponding and sediment accumulation capacity. Steeper slopes allow less sediment storage behind the sediment control device and may require larger Sediment control or shorter slope lengths.

End Around Flow:
In order to prevent water flowing around the ends of Sediment control, the ends of the Sediment control must be constructed pointing upslope so the ends are at a higher elevation. A minimum of 10 linear ft (3m) per end each placed at a 30 degree angle is recommended.

Vegetated Sediment control :
For permanent areas Sediment control can be direct-seeded to allow vegetation established directly in the device, and may be expanded to 5 ft (1.5m) upslope and downslope from the device, for added performance. Vegetation on and around the Sediment control will assist in slowing runoff velocity for increased deposition and filtration of pollutants. 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 Sediment control.

Slope Spacing & Drainage Area:
Maximum drainage area to, and slope spacing between Sediment control is dependent on: rainfall intensity and duration used for specific design/plan, slope steepness, and width of area draining to the Sediment control. Refer to the Filtrexx® Design Tool™ (Filtrexx® Library #301) 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* (Filtrexx® Library #3313) *and Flow-Through Rates and Evaluation of Solids Separation of Compost FilterMedia™ vs. Silt Fence in Sediment Control Applications* (Filtrexx® Library #104) for more information on the Design Tool or the research project and results used to create the tool. Figure 1.3 provides an example of the user interface for the Design Tool. For a free copy of the Design Tool contact Filtrexx® Technical Support. A specification for maximum slope lengths, based on a 1 in (25 mm)/24 hr rainfall event is provided in Table 1.3 and Figure 1.2; and for a 2 in (50 mm)/24 hr rainfall event is provided in Table 1.4.

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrexx® Soxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be a Filtrexx® Certified™ Installer as determined by Filtrexx® International, LLC (440-926-2607 or visit website at Filtrexx®.com). Certification shall be considered

current if appropriate identification is shown during time of bid or at time of application (current listing can be found at www.Filtrexx®.com). Look for the Filtrexx® Certified™ Installer Seal.

3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) wooden stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
6. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
7. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
8. If the Sediment control 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.
9. Filtrexx® Sediment control is not to be used in perennial, ephemeral, or intermittent streams. See design drawing schematic for correct Filtrexx® Sediment control installation (Figure 1.1).

INSPECTION

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

MAINTENANCE

1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control 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 Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device 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.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

DISPOSAL/RECYCLING

Filtrexx® FilterMedia™ is a composted organic product recycled and 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

Close Up of Sediment Control

disposal costs compared to other sediment control devices. The mesh netting material will be extracted from the FilterMedia™ and disposed of properly by the Contractor. The photodegradable mesh netting material (FilterSoxx™) will degrade in 2 to 5 years if left on site. Biodegradable mesh netting material is available and does not need to be extracted and disposed of, as it will completely decompose in approximately 6 to 12 months. Using biodegradable Sediment control completely eliminates the need and cost of removal and disposal.

METHOD OF MEASUREMENT

Bid items shall show measurement as 8 (200), 12 (300), 18 (450), 24 (600), 32 (800) inch (mm) diameter Filtrexx® Sediment control' per linear foot (or 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.

REFERENCES CITED & ADDITIONAL RESOURCES

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Marks, A., R. Tyler, and B. Faucette. 2005. The Filtrexx® Library. Digital publication of support tools for the erosion industry. www.Filtrexx®library.com.

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Tyler, R.W., and A. Marks. 2004. Erosion Control Toolbox CD Kit. A Guide to Filtrexx® Products, Educational Supplement, and Project Videos. 3 CD set for Specifications and Design Considerations for Filtrexx® Products.

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ADDITIONAL INFORMATION

TABLES & FIGURES:

Table 1.1. Filtrexx® Soxx™ Material Specifications.

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Multi-Filament Polypropylene SafteySoxx
Material Characteristic	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Design Diameters	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (400mm)	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)
Mesh Opening	3/8 in (10mm)	3/8 in (10mm)	3/8 in (10mm)	3/8 in (10mm)	1/8 in (3mm)
Tensile Strength	ND	26 psi (1.83 kg/cm2)	26 psi (1.83 kg/cm2)	44 psi (3.09 kg/cm2)	202 psi (14.2 kg/cm2)*
% Original Strength from Ultraviolet Exposure (ASTM G-155)	23% at 1000 hr	23% at 1000 hr	ND	100% at 1000 hr	100% at 1000 hr
Functional Longevity/ Project Duration	6 mo-2 yr	9 mo-3 yr	6-12 months	1-4 yr	2-5 yr

* Tested at Texas Transportation Institute/Texas A&M University (ASTM 5035-95).

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary.

Design Diameter / **Design & Performance**	**8 in (200mm)**	**12 in (300mm)**	**18 in (450mm)**	**24 in (600mm)**	**32 in (800mm)**	**Testing Lab/ Reference**	**Publication(s)**
Effective Height	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	25 in (630mm)	38 in (960mm)	57 in (1450mm)	75 in (1900mm)	100 in (2500mm)		
Density (when filled)	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%	Soil Control Lab, Inc	
Maximum continuous length	unlimited	unlimited	unlimited	unlimited	unlimited		
Staking Requirement	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)		
Maintenance Requirement (sediment accumulation removal at X height)	3.25 in (80mm)	4.75 in (120mm)	7.25 in (180mm)	9.5 in (240mm)	13 in (325mm)		

(continued on next page)

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary. *(continued)*

Initial Maintenance Requirement based on Rainfall-Runoff*	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**	2 – 5 yr	2 – 5 yr	2 – 5 yr	2 – 5 yr	2 – 5 yr		
Maximum Slope Length (<2%)	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	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	USDA ARS Environmental Quality Lab/University of Georgia	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Sediment Storage Capacity***	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%	Soil Control Lab, Inc	International Erosion Control Association, 2006
Total Suspended Solids Removal	78%	78%	78%	78%	78%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Turbidity Reduction	63%	63%	63%	63%	63%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
TSS Removal w/ PAM	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%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary. *(continued)*

Turbidity Reduction w/ PAM	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%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Total Phosphorus Removal	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%	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%	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%	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%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Ammonium-N Removal	15%	15%	15%	15%	15%	USDA ARS Environmental Quality Lab	
Ammonium-N Removal w/ Nutrient Agent	33%	33%	33%	33%	33%	USDA ARS Environmental Quality Lab	
Motor Oil Removal	96%	96%	96%	96%	96%	Soil Control Lab, Inc	International Erosion Control Association, 2006
Diesel Fuel Removal	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Soil Control Lab, Inc	
Gasoline Removal	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Soil Control Lab, Inc	
Iron (Fe) Removal	22%	22%	22%	22%	22%	Soil Control Lab, Inc	
Zinc (Zn) Removal	9%	9%	9%	9%	9%	Soil Control Lab, Inc	
Manganese (Mn) Removal	8%	8%	8%	8%	8%	Soil Control Lab, Inc	

(continued on next page)

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary. *(continued)*

Total coliform Removal^	67%	67%	67%	67%	67%	USDA ARS Environmental Quality Lab	
E. coli Removal^	67%	67%	67%	67%	67%	USDA ARS Environmental Quality Lab	
Enterococcus Removal^	47%	47%	47%	47%	47%	USDA ARS Environmental Quality Lab	
E. coli Removal w/ Bacteria Agent^	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	
Fecal coliform Removal w/ Bacteria Agent^	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	
Enterococcus Removal w/ Bacteria Agent^	91%	91%	91%	91%	91%	USDA ARS Environmental Quality Lab	
Clay (<0.002mm) Removal#	65%	65%	65%	65%	65%	USDA ARS Environmental Quality Lab	
Silt (0.002-0.05mm) Removal#	64%	64%	64%	64%	64%	USDA ARS Environmental Quality Lab	
Other Recommended Uses	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).

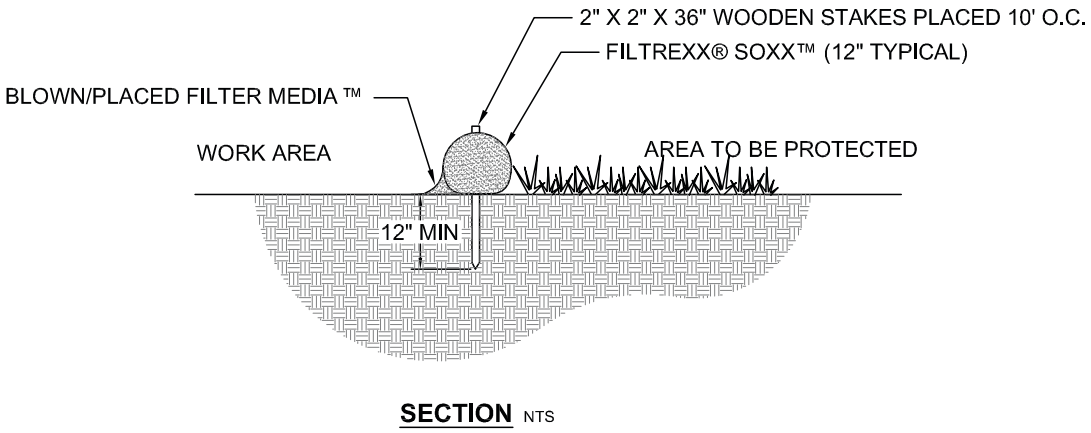
** Functional Longevity is dependent on UV exposure, freeze/thaw frequency, region of US/Canada, runoff-sediment frequency/duration/loading, and adherence to specified maintenance requirement.

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

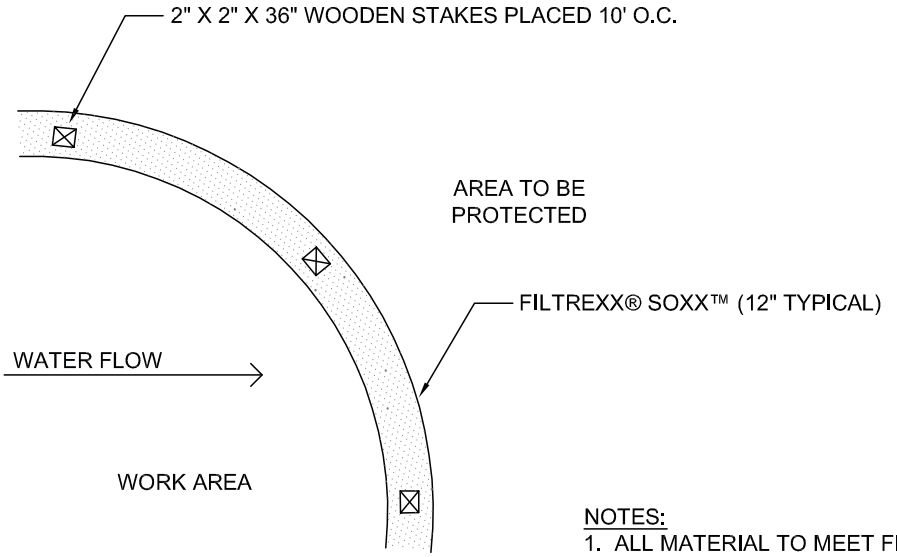
^ Based on manure treated soils where bare soil control exhibited an average MPN for total coliform = 2.02X108/100 mL, E. coli. = 1.72X108/100 mL, Enterococcus = 1.43X106/100 mL .

Based on average runoff-sediment concentrations on 2500 mg/L on a silt loam soil.

Figure 1.1. Engineering Design Drawing for Sediment Control



SECTION NTS



PLAN NTS

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX® SEDIMENT CONTROL

NTS

Figure 1.2. Maximum Slope Lengths of Filtrexx® Sediment Control Based on a 1 in (25 mm)/24 hr Rainfall Event.

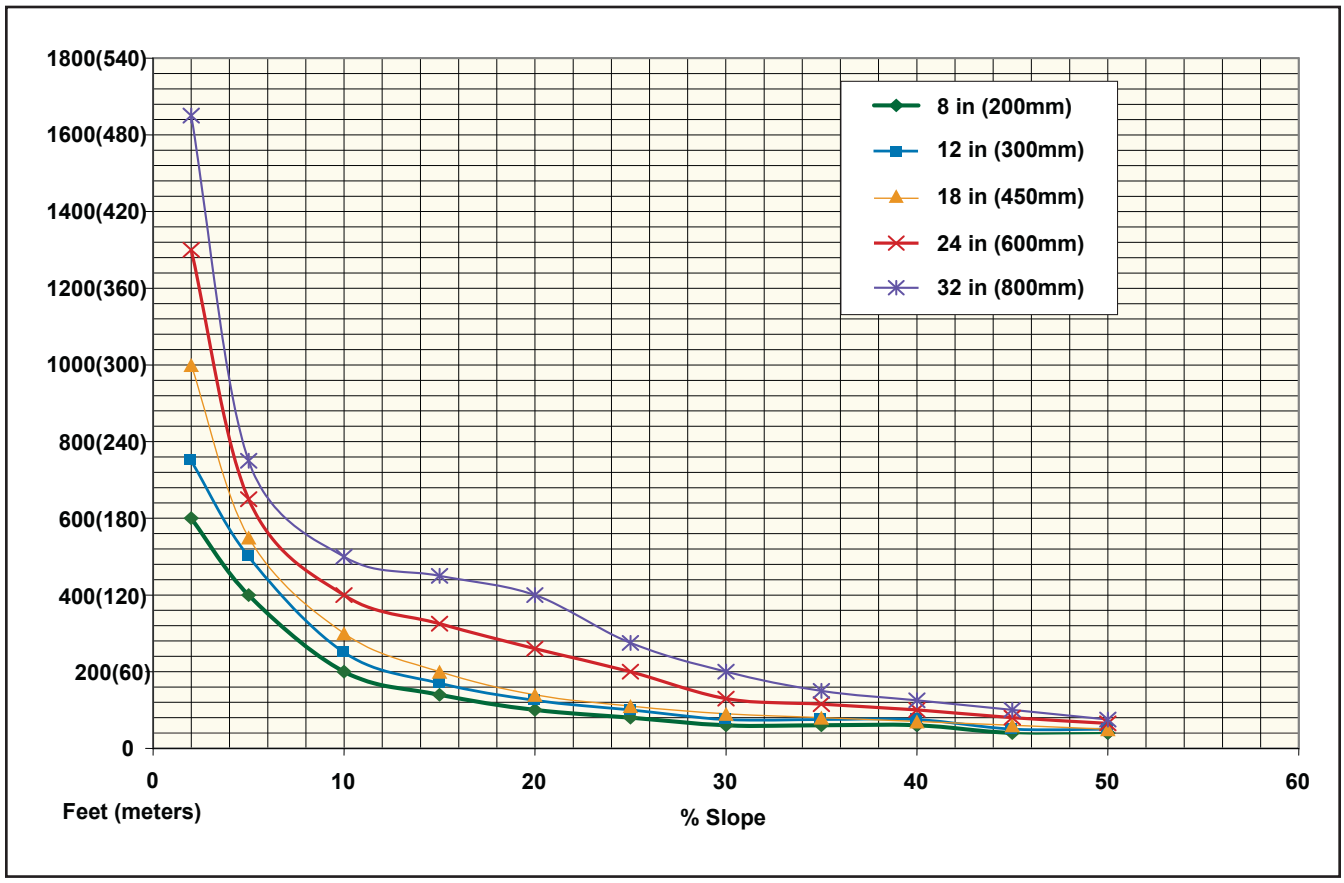


Table 1.3. Maximum Slope Lengths for Filtrexx® Sediment Control Based on a 1 in (25 mm)/24 hr Rainfall Event.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	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
	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)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	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 Sediment control after installation and with constant head from runoff as determined by Ohio State University.

Table. 1.4. Maximum Slope Lengths for Filtrexx® Sediment Control Based on a 2 in (50 mm)/24 hr Rainfall Event.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	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
	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)	300 (90)	375 (110)	500 (150)	650 (200)	850 (260)
5	200 (60)	250 (75)	275 (85)	325 (100)	400 (120)
10	100 (30)	125 (35)	150 (45)	200 (60)	275 (85)
15	70 (20)	85 (25)	100 (30)	160 (50)	225 (70)
20	50 (15)	65 (20)	70 (20)	130 (40)	180 (55)
25	40 (12)	50 (15)	55 (16)	100 (30)	150 (45)
30	30 (9)	40 (12)	45 (13)	65 (20)	100 (30)
35	30 (9)	40 (12)	45 (13)	55 (18)	75 (23)
40	30 (9)	40 (12)	45 (13)	50 (15)	60 (38)
45	20 (6)	25 (8)	30 (9)	40 (12)	50 (15)
50	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, 2 in/ 24 hr (50 mm/24 hr) rain event.

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