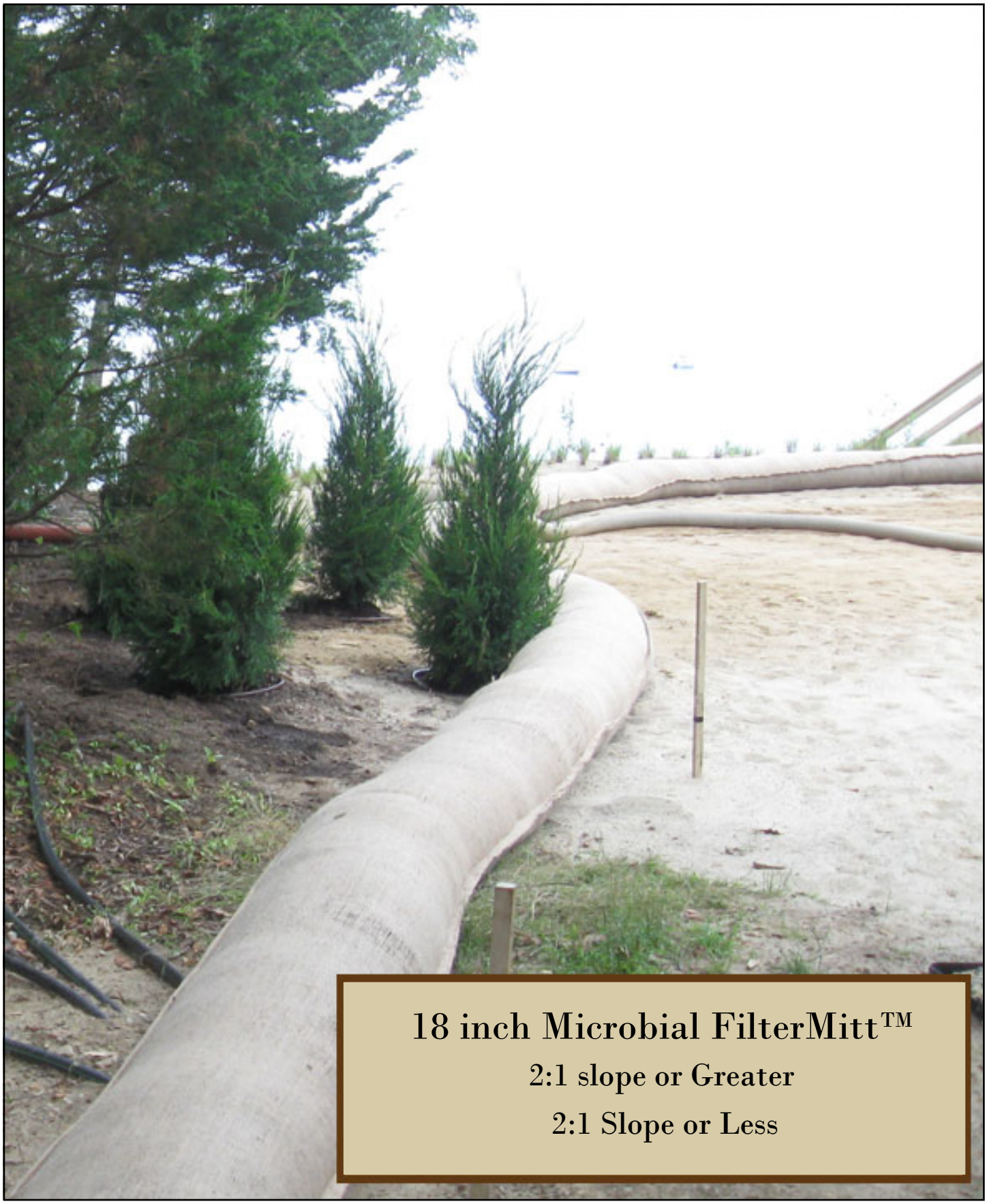


18 inch Microbial FilterMitt™

2:1 slope or Greater

2:1 Slope or Less

Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

Think Differently!

QUICK REFERENCE GUIDE

Microbial *Filtermitt™*	Used for	Vegetated Permanent erosion control
Microbial *Filtermitt™* Berm	Used for	Vegetated Permanent erosion control where a large range of anticipated water flow is expected
Microbial and *PowerBoost™* Mulch *EarthBlanket™*	Used for	Vegetated Permanent erosion control to prevent sheet flow, Stabilizes soil and prevents sediment loss on slopes of varying steepness.
Sediment *Filtermitt™*	Used for	Un-vegetated temporary erosion control
Sediment *Filtermitt™* Berm	Used for	Un-vegetated temporary erosion control where a large range of anticipated water flow is expected
Sediment *EarthBlanket™*	Used for	Un-vegetated temporary erosion control to prevent sheet flow, Stabilizes soil and prevents sediment loss on slopes of varying steepness.
Topdressing	Used for	Enhancing soil structure and performance to hold moisture while increasing the soils organic matter.
Microbial Inoculants	Used for	Adding a large number of beneficial microorganisms into the soil. Microbial Inoculants helps improve soil structure, fertility, and, ultimately, plant health, also inhibit diseases. Used in storm water management to remediate persistent hydrocarbons which contaminate sediments found in storm water by renewing the populations of active beneficial microorganisms.
Environmental fence	Used for	Protection of storm water management products, keeping intruders out of the wetlands, also allowing wildlife access to their habitat.

Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

COMPOST PRODUCTS

EarthBoost™	Used for	Topdressing, potting mixes, gardens, and prescription soil blending.
PowerBoost™ Mulch	Used for	Useful in light erosion applications on gentle slopes, flat areas, or where lower water flows are anticipated. It also ideal for use as decorative and functional mulch for annuals, perennials, shrubs, and trees.
FiberRoot™ Mulch	Used for	Erosion control applications Microbial and Sediment *FilterMitt™* *EarthBlanket™*, also for woodland plant mulch.

EarthBlanket™ DEPTHS FOR VARIOUS RAINFALL RATES

Annual Rainfall Flow Rate	Total Precipitation (Rainfall Erosivity Index)	*EarthBlanket™* Depth (Vegetated Surface)	*EarthBlanket™* Depth (Unvegetated Surface)
Low	1 - 25 inches (20 – 90)	½ - ¾ inch (12.5 – 19mm)	1 – 1½ inches (25 – 37.5mm)
Average	26 – 60 inches (91 – 200)	¾ - 1 inch (25 – 50mm)	1½ - 2 inches (37 – 50mm)
High	> 51 inches (> 201)	1 - 2 inches (25 – 50mm)	2 – 4 inches (50 – 100mm)

Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

Think Differently!

SLOPES, SLOPE LENGTHS, and *Filtermitt™* DIAMETERS

Step 1: Select annual rainfall flow rate from charts below.

Annual Rainfall/Flow rate	Precipitation/Year (Rainfall Erosivity index)	*Filtermitt™* Diameter (inches)
Low	1in. to 25 in.	12”
Average	26 in. to 50 in.	12” or 18”
High	51 in. and above	18”

State	Annual Rainfall inches/ year 2008
Massachusetts	43.84
Maine	43.52
Connecticut	44.39
New Hampshire	36.53
Vermont	33.69
Rhode Island	41.91

Step 2: Pick slope percent and length in feet for job

Slope Percent	9 inch	12 inch	18 inch	24 inch	32 inch
5% and less	375	475	525	625	725
10%	185	240	275	375	475
15%	130	160	185	300	425
20%	95	120	135	250	375
25%	75	85	90	185	250
30%	55	70	85	120	185
35%	50	65	75	100	140
40%	45	60	70	85	110
45%	40	50	55	75	85
50%	35	45	50	60	60
75%	20	30	35	40	45
100%	10	15	20	25	30

Step 3: Pick *Filtermitt™* diameter.

Note: For areas not accessible by truck, use Alternative method which can be carried by hand.

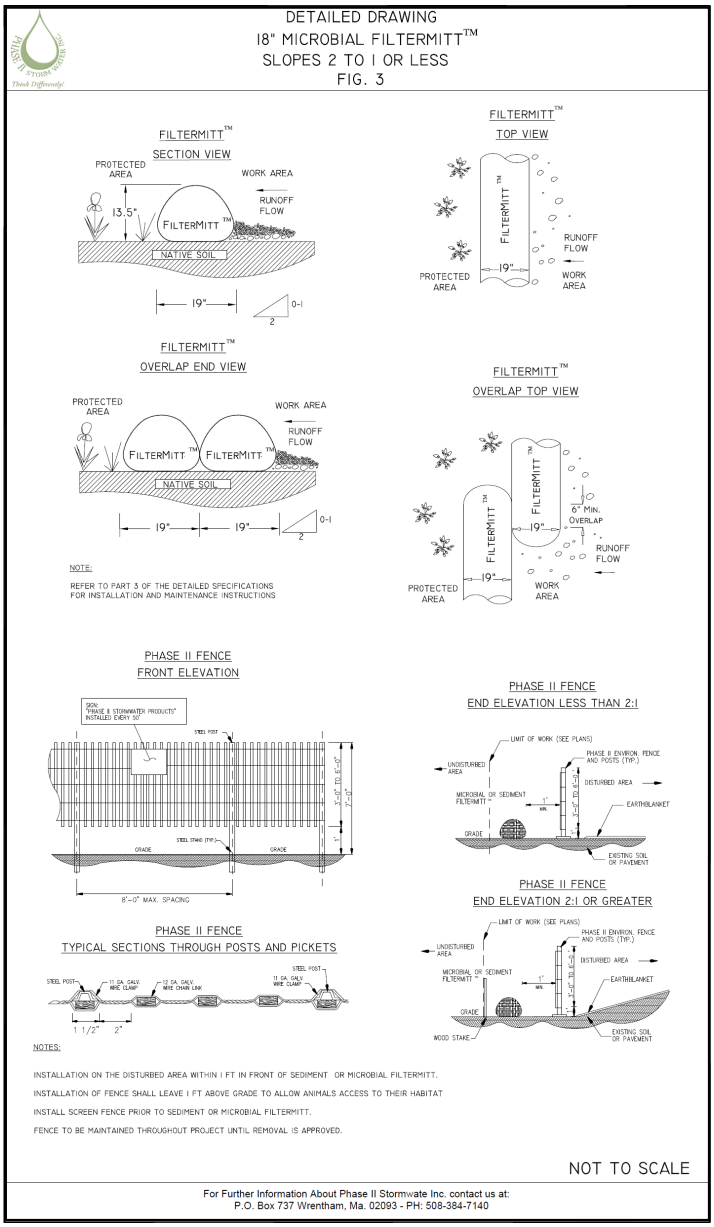
Note: *Filtermitts™* Berms are used in areas where greater water flow is anticipated, used in conjunction with *Filtermitts™* .

Certified Phase II Stormwater Inc.

Summary of 18” Microbial *FilterMitt*™ Detailed Drawings

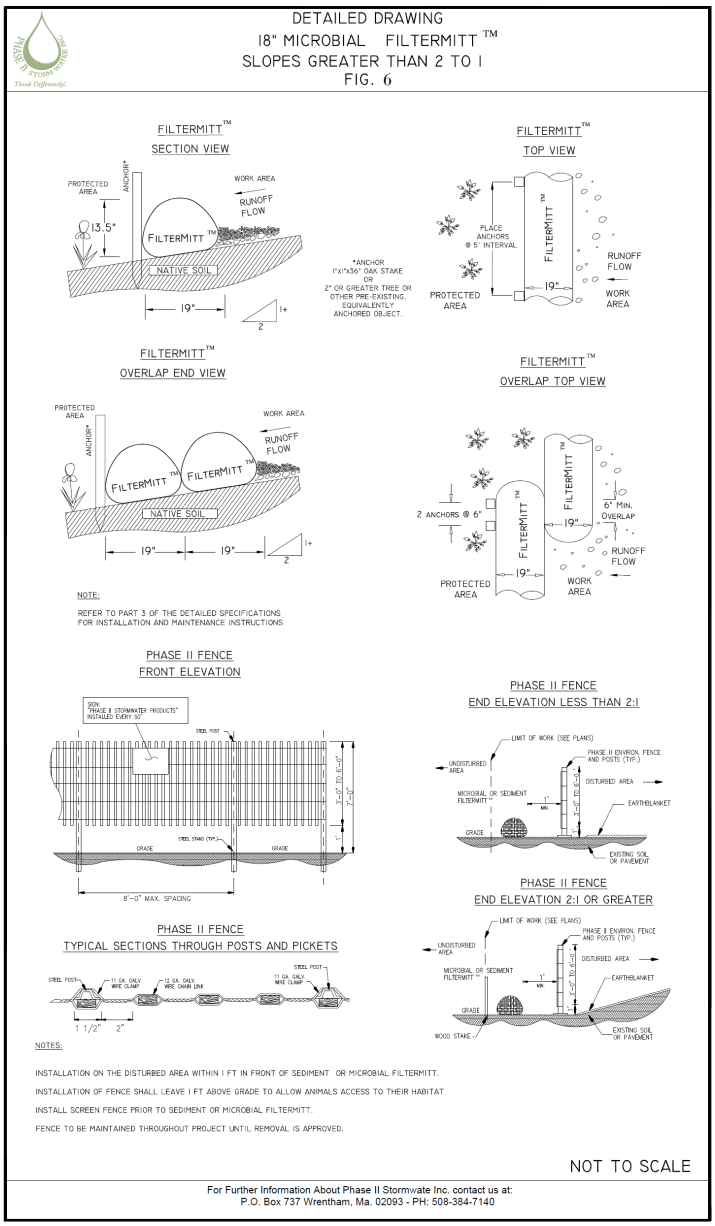
2:1 Slope or Less

Fig. 3



2:1 Slope or Greater

Fig. 6



Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

GENERAL DESCRIPTIONS

Page

PART 1. – GENERAL

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PART 2. – PRODUCTS

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PART 3. – INSTALLATION, MAINTENANCE, & POST CONSTRUCTION
Microbial *FilterMitt™*

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PART 4. – DETAILED DRAWINGS

18" Microbial *FilterMitt™* Figures 3 & 6 19

Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

PART 1.

GENERAL DESCRIPTION Microbial *FilterMitt™*

M 101-1 MATERIAL:

A. Microbial *FilterMitt™*
Detains sediment, absorbs orders and degrades volatile organic compounds allows water by-pass, and is a food resource for beneficial microorganisms, which remediate by metabolizing wood preservatives, petroleum products, pesticides
And both chlorinated and non chlorinated hydrocarbons in stormwater runoff from reaching water resources, prevents erosion and silting on embankments parallel to creeks, lakes, and rivers, prevents erosion and turf loss on roadsides, hillsides, playing fields, and golf courses.

B. Beneficial Microorganism Inoculation:
Need to meet the Phase II Stormwater Inc. standards. See table 3.

C. Fence:
Use a Certified Phase II Stormwater Inc. Professional. See Fig. 3 & 6.

M 101-2 INSTALLATION:

A. All Microbial Phase II Stormwater Inc. application/installation must be done by a certified Phase II Stormwater Inc. installer.

B. All invasive removals must be done by a Phase II Stormwater Inc. professional.

C. All Microbial Phase II Stormwater Inc. application/installation should be used for pre-construction, construction and post-construction.

D. Fence should be installed 1 Foot in front of *FilterMitt™* See Fig. 3 & 6.

M 101-3 MAINTENANCE:

A. Apply beneficial microorganisms to the Certified Phase II Stormwater device every two months during the growing season to assure that the beneficial microorganisms meet the desired range as described in the Certified Phase II Stormwater Inc. specifications. Only when meeting these desired ranges can you be sure the Phase II Stormwater Inc. is remediation persistent contaminated pollutants found in the stormwater, as well as improving soil structure, and hydrological conductivity.

B. Apply beneficial microorganisms to improve the vigor and vitality of either planted or existing vegetation.

C. Remove any solid particles that have accumulated to one half the effective height of the stormwater filtering device.

D. Remove any invasive exotic or native vegetation that maybe disturbing the functioning of the stormwater filtering device.

PART 1. GENERAL (Continued)

M 101- 4 BENEFICIAL MICROOGRANISMS INOCULATION:

A. Improve soil pore space which Increases water infiltration.
B. Feed on pollutants which Reduces contamination of water resources.
C. Increase soil surface tension which Reduces movement of soil particles.
D. Increase water storage in soil which Reduces water usage.
E. Increase carbon storage in soils which Helps clean air.
F. Improve plant nutrients uptake which Establishes healthier plants.

M 101- 5 INVASIVE REMOVALS:

A. Prior to permit approval and prior final inspection, we recommend a plan for stormwater maintenance and invasive plant control. Invasives reduce biodeversity, threaten native species and often fail to stablize soils.

M 101- 6 USE:

A. Check dam & dikes
B. Permanent & temporary erosion protection
C. Vegetation & soil amendment

Certified Phase II Stormwater Inc.
18" Microbial *FilterMitt™*

PART 1. GENERAL INSPECTION

M 102 – 1 MATERIAL INSPECTION:

A. Installation Contractor submits a sample of materials [1 gallon] to a Certified Phase II Stormwater Inc. Testing Lab. Phone # 1-508-384-7140

B. The "Certified Phase II…" Will send the Installation contractor, either a "Certificate of Materials Approval" or a list of recommendations that when completed as described will bring the existing materials into compliance with the criteria as set forth for Certified Phase II Stormwater Inc.

C. Upon receipt of "Certificate of Materials Approval" from a Certified Phase II Stormwater Inc. Testing Lab, the Installation Contractor will submit copies of the "Certificate " to the design professional, the regulating agency, and the property owner, or whoever submitted the permit.

D. The Installation Contractor will notify the Regulating Agency of the time and day the work will begin.

E. A sample of the Materials On-Site will be taken by a Certified Professional Phase II Stormwater Inspector, to verify that the materials that were "Certified" are the materials that are being installed.

F. The methods and procedures of the installation of the materials, as designed and specified in the Stormwater Pollution Prevention Plan will also be inspected, to assure that the installation also is in compliance.

PART 1. GENERAL

M 103-1 MONITORING and DOCUMENTATION

A. The property owner or site contractor is required to monitor the stormwater control device after every significant rain event, as specified and designed in the SWPPP

B. Any failures due to either the design or the installation of the devices shall be noted with a written, dated document and Photographs.

C. The site contractor is to follow up with a Certified letter to the design professional and the Installation contractor, stating the date, and the location of the failure, preferably accompanied with a photo description of the problem, requesting a site visit to resolve these issues within a timely manner.

.

D. The stormwater control devices are to be inspected periodically to assure that they meet all project requirements as described in the Certified Phase II Stormwater Inc. Manual and by a Certified Phase II Stormwater Professional Inspector.

Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

PART 2.

M 201-1 PERFORMANCE and DESIGN SPECIFICATIONS

TABLE 1

Performance Design Diameter	9 in.	12 in.	18 in.	**Testing Lab Reference**
Effective Height	9 in. plus or minus 1”	12 in. plus or minus 1”	13.5 in.plus or minus 1”	Phase II Stormwater Inc. Lab
Effective Circumference	25.1 in.	38 in.	56.5 in.	Phase II Stormwater Inc. Lab
Density dry	11.5 Lbs/per linear ft.	25.5 Lbs/per linear ft.	55.25 Lbs/per linear ft.	Phase II Stormwater Inc. Lab
Maximum Sediment Storage Height	4 in.	6 in.	6.75 in.	Phase II Stormwater Inc. Lab
Maximum Continuous Length	1-100/per linear ft.	1-100/per linear ft.	1-100/per linear ft.	Phase II Stormwater Inc. Lab
Staking Requirement 2.1 Slope or greater	Maximum every 10 linear ft.	Maximum every 10 linear ft.	Maximum every 10 linear ft.	Phase II Stormwater Inc. Lab
Outside Casing 100% Biodegradable Hessen	50% 7 Mill 50% 10 Mill	50% 7 Mill 50% 10 Mill	50% 7 Mill 50% 10 Mill	Phase II Stormwater Inc. Lab
Maintenance Requirement (remove sediment)	2 in.	3 in.	3.5 in.	Phase II Stormwater Inc. Lab
Functional Longevity	2-7 yrs	2-7 yrs	2-7 yrs	Phase II Stormwater Inc. Lab
Maximum Slope Length (<2%)	750 ft.	1000 ft.	1300 ft.	Phase II Stormwater Inc. Lab
Hydraulic Flow Through Rate	6 -14 Gpm per linear ft.	6 -14 Gpm per linear ft.	6 -14 Gpm per linear ft.	Soil Control Lab Inc.
Total Solids Removal	98%	98%	98%	Soil Control Lab Inc.

PART 2.

M 201- 2 PERFORMANCE and DESIGN SPECIFICATIONS

TABLE 1 (Continued)

Performance Design Diameter	9 in.	12 in.	18 in.	**Testing Lab Reference**
Total Suspended Solids Removal	81%	81%	81%	Soil Control Lab Inc.
Turbidity Reduction	70%	70%	70%	Soil Control Lab Inc.
Total Phosphorus Removal	11%	11%	11%	Soil Control Lab Inc.
Nitrate N Removal	50.4%	50.4%	50.4%	Soil Control Lab Inc.
Motor Oil Removal	99%	99%	99%	Soil Control Lab Inc.
Iron (Fe) Removal	22%	22%	22%	Soil Control Lab Inc.
Zinc (Zn) Removal	74%	74%	74%	Soil Control Lab Inc.
Manganese (Mn) Removal	72%	72%	72%	Soil Control Lab Inc.

Certified Phase II Stormwater Inc.
18 inch Microbial *FilterMitt™*

PART 2.

M 202 PHYSICAL and CHEMICAL REQUIREMENTS

TABLE 2

Compost Parameters	Test Method & Name Reported As	Requirement
pH	TMECC 04.11-A Electrometric pH 1:5 Slurry Method pH Units	6.0-8.5
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0 - 5
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/- 5 deg C % Wet Weight Basis	30 – 60 %
Organic Matter Content	TMECC 05.07-A Matter Method. Loss on Ignition Organic Matter Method % Dry Weight Basis	25 - 65 %
Maturity Percent Emergence %Relative Seedling Vigor %Relative to positive control	TMECC 05.05-A Biological Assays. Seedling Emergence and Relative Growth	100% 100%
Stability (respirometry)	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO_2-C/g OM per day mg CO_2-C/g TS per day	< 8
Particle Size	TMECC 02.12-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	Inches & Percentage Passing 3" (75 mm) 98% to 100% 1" (25 mm) 90% to 100% ¾" (19 mm) 70% to 100% ¼" (6.4 mm) 30% to 75% Maximum particle size: 4" (100 mm)
Physical Contaminants (man made inert)	TMECC 02.02-C % dry weight basis	< 1%
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria <1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella <3 MPN/4 grams dry wt.	Pass

PART 2.

M 203 BIOLOGICAL REQUIRMENTS

TABLE 3

Property	Test Method	Requirement Low-High
Active Bacterial (mg/g)	DIC/ Epifluorescence Microscopy	Range 15 – 30
Total Bacterial (mg/g)	DIC/ Epifluorescence Microscopy	Range 150 – 300+
Active Fungal (mg/g)	DIC/ Epifluorescence Microscopy	Range 2 - 10
Total Fungal (mg/g)	DIC/ Epifluorescence Microscopy	Range 150 – 200+

These desired ranges are meant to maintain the diversity, and active populations of beneficial microorganisms.

These organisms are responsible for maintaining clean water as they metabolize polluted contaminants that reside in stormwater.

Certified Phase II Stormwater Inc.

18 inch Microbial *FilterMitt™*

PART 3.

INSTALLATION, MAINTENANCE, & POST CONSTRUCTION

M 301 MATERIALS:

A. FilterMitt casing material need to meet Certified Phase II Stormwater Inc. specifications in Table 1 ,100% organic hessian fabric (burlap), this woven fabric facilitates a 1/16" - 3/8" opening, is 100% biodegradable and does not need to be removed as it will be thoroughly utilized as a microbial food resource and will become incorporated within the organic materials..

B. Media inside the device needs to meet Phase II Stormwater Inc. specifications in tables 1, 2, and 3.

C. Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ benefits pre-construction, construction and post-construction phases of development.

D. Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ specifications meet the highest performance criteria.

E. Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ exceeds the AASHTO, EPA, State & Federal regulations.

F. All Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ installations shall be done by a Phase II Stormwater Inc. Certified Professional to assure that all the specifications as described, will be met, and the project will succeed as it was designed.

G. Using Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ for pre-construction, construction and post construction development means that the erosion control devise can be made on site with little or no soil disturbance, or compaction, or it can be delivered in varying section lengths, pre-filled and placed into position where it is needed most. This saves on installation time and costs, as well as environmental impacts.

PART 3.

INSTALLATION, MAINTENANCE, & POST CONSTRUCTION

M 302 INSTALLATION:

A. All Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ installations shall be done by a Phase II Stormwater Inc. Certified Professional.

B. If installation is not done by a Certified Phase II Stormwater Inc. Certified Professional, than the installation of the project may not comply with the design specifications and performance standards; the project will be declined.

C. A Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ can be constructed on site or delivered prefilled: minimal onsite labor time.

D. Can be tailored to site requirements; individual units can be made in lengths from 1-100 linear feet.

E. When the Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ is properly installed, water will not be able to bypass around the ends.

F. Because the Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ conforms to the grade, there is no need to re-grade with heavy equipment which causes soil disturbance and creates conditions for more erosion.

G. The movement of heavy equipment compacts the soil which increases flow rate and damages soil structure making it more difficult to establish seed germination.

H. Staking with hardwood stakes at maximum 10 foot intervals ensures stability against water flow for slopes 2:1 and greater. Ends of individual Certified Phase II Stormwater Inc. Microbial *FilterMitt*™ are overlapped or sleaved based on site conditions and staked to ensure integrity on slopes 2:1 or greater. End stakes should be placed no more than one foot from terminal ends on slopes 2:1 or greater. See Figure 6 page 20.

I. Protective fencing is recommended to protect structures from construction disturbance, or vehicle and foot traffic. Fence should be placed in front of the Certified Phase II Stormwater Inc. Microbial *FilterMitt*™.
See Figures 3 & 6, pages 19 and 20.

PART 3.

INSTALLATION, MAINTENANCE, & POST CONSTRUCTION

M 303 MAINTENANCE:

A. To ensure proper functioning, regular inspections, and if necessary, maintenance should take place after installation. Microbial *FilterMitt™* should be inspected immediately by contractor or agent after each rainfall-producing event, and at least daily during prolonged rainfall events. Proper functioning and sediment accumulation should be checked during inspection. Deposited sediments should be removed by contractor, when the level of the deposition reaches approximately one half the effective height of the Microbial *FilterMitt™*.

B. Beneficial microorganisms need be applied to the certified Phase II Stormwater device every two months during the growing season to ensure that the beneficial microorganisms meet the desired range as described in the certified Phase II Stormwater Inc. specifications. Only when meeting these desired ranges can you be sure the Phase II Stormwater Inc. is remediating the persistent structure, and hydrological conductivity.

C. Identify and remove all invasive plants within the order of conditions footprint once per month during growing season.

D. Apply Beneficial Microorganisms to improve the vigor and vitality of either planted or existing native vegetation.

E. Remove any invasive exotic or native vegetation that may be disturbing the functioning of the stormwater filtering device.

PART 3.

INSTALLATION, MAINTENANCE, & POST CONSTRUCTION

M 304 POST CONSTRUCTION:

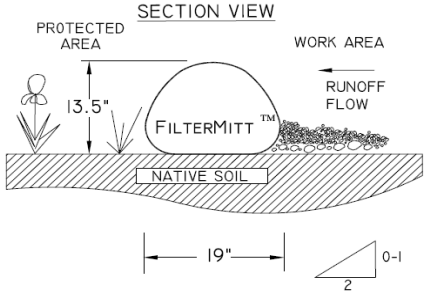
A. Leave in place to continue filtering pollutants from storm water run-off.

B. Rake by hand, {no machine for spreading} material used as a soil amendment on existing site.

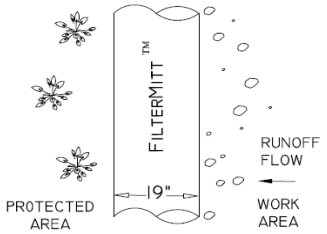
C. **Certification Disclaimer:**
Phase II Stormwater Inc. warrants only that any product which has been certified and meets Certified Phase II Stormwater Inc. “Certification Program” criteria for such certification and except as expressly set forth herein: Phase II Stormwater Inc. Makes no warranty, express or implied as to any product which has not been certified under the Phase II Stormwater Inc. “Certification Program”, including any warranty as to merchantability or fitness for a particular purposed and Phase II Stormwater Inc. hereby expressly disclaims all other warranties; Phase II Stormwater Inc. shall not be liable for any loss, injury, claim, liability, or damage of any kind resulting in any way from any errors, omissions, content, information, opinions or assessments contained in the Phase II Stormwater Inc. “Certification Program”; and, Phase II Stormwater Inc. shall not be liable, in any event for any incidental, consequential, special, exemplary or punitive damages (including without limitation for lost data, lost profits or loss of goodwill) of any kind or nature arising out of the certification of any product under the Phase II Stormwater Inc. “Certification Program”, whether such liability is asserted on the basis of contract, tort, or otherwise, even if Phase II Stormwater Inc. has been made aware of the possibility of such loss or damage in advance.

DETAILED DRAWING
18" MICROBIAL FILTERMITT™
SLOPES 2 TO 1 OR LESS
FIG. 3

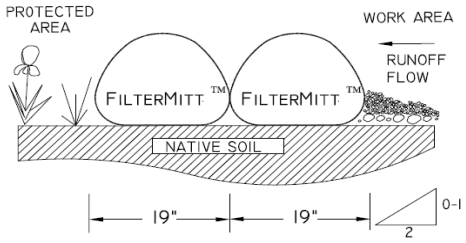
FILTERMITT™ SECTION VIEW



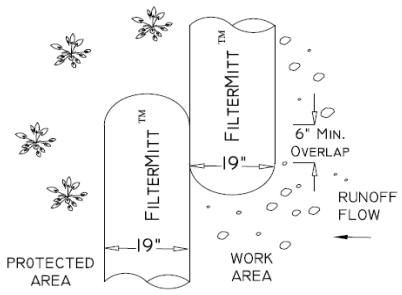
FILTERMITT™ TOP VIEW



FILTERMITT™ OVERLAP END VIEW



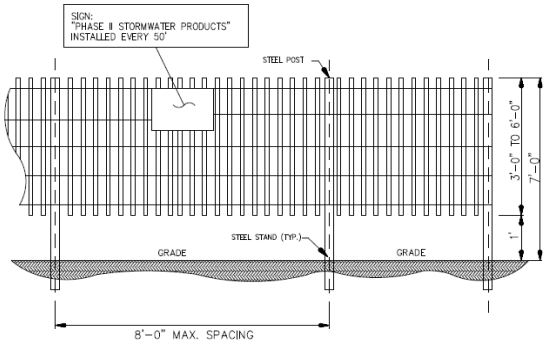
FILTERMITT™ OVERLAP TOP VIEW



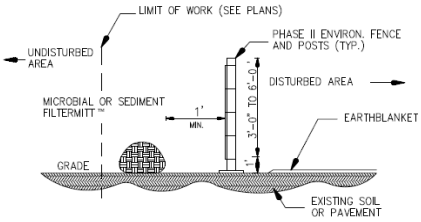
NOTE:

REFER TO PART 3 OF THE DETAILED SPECIFICATIONS FOR INSTALLATION AND MAINTENANCE INSTRUCTIONS

PHASE II FENCE FRONT ELEVATION

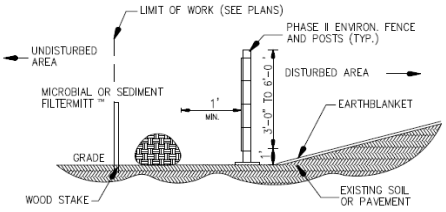


PHASE II FENCE END ELEVATION LESS THAN 2:1



PHASE II FENCE TYPICAL SECTIONS THROUGH POSTS AND PICKETS

PHASE II FENCE END ELEVATION 2:1 OR GREATER



NOTES:

INSTALLATION ON THE DISTURBED AREA WITHIN 1 FT IN FRONT OF SEDIMENT OR MICROBIAL FILTERMITT.

INSTALLATION OF FENCE SHALL LEAVE 1 FT ABOVE GRADE TO ALLOW ANIMALS ACCESS TO THEIR HABITAT

INSTALL SCREEN FENCE PRIOR TO SEDIMENT OR MICROBIAL FILTERMITT.

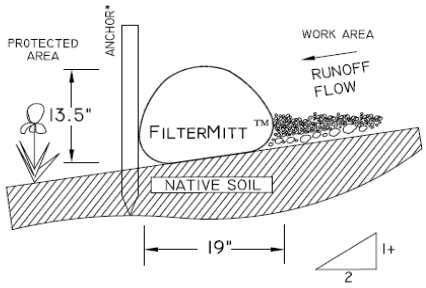
FENCE TO BE MAINTAINED THROUGHOUT PROJECT UNTIL REMOVAL IS APPROVED.

NOT TO SCALE

For Further Information About Phase II Stormwater Inc. contact us at:
P.O. Box 737 Wrentham, Ma. 02093 - PH: 508-384-7140

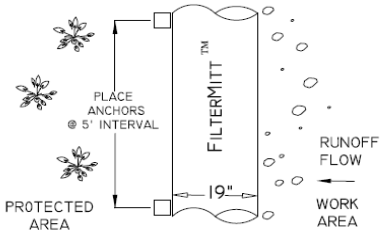
DETAILED DRAWING
18" MICROBIAL FILTERMITT ™
SLOPES GREATER THAN 2 TO 1
FIG. 6

FILTERMITT™ SECTION VIEW

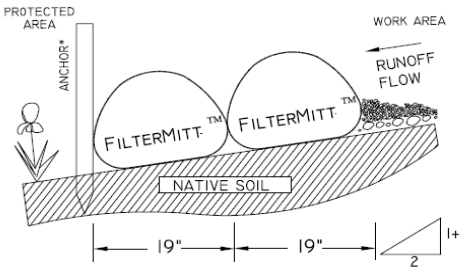


*ANCHOR
1"x1"x36" OAK STAKE
OR
2" OR GREATER TREE OR OTHER PRE-EXISTING, EQUIVALENTLY ANCHORED OBJECT.

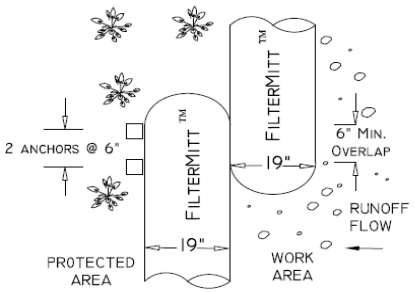
FILTERMITT™ TOP VIEW



FILTERMITT™ OVERLAP END VIEW



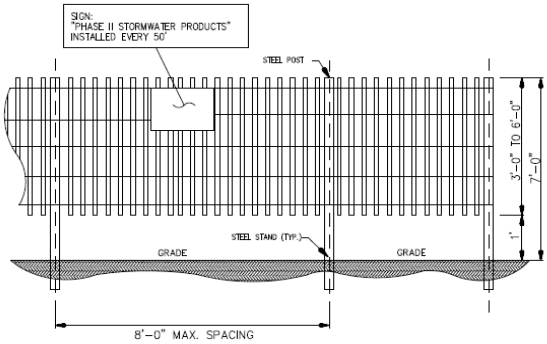
FILTERMITT™ OVERLAP TOP VIEW



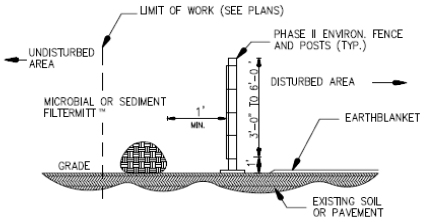
NOTE:

REFER TO PART 3 OF THE DETAILED SPECIFICATIONS FOR INSTALLATION AND MAINTENANCE INSTRUCTIONS

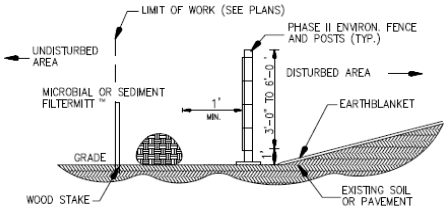
PHASE II FENCE FRONT ELEVATION



PHASE II FENCE END ELEVATION LESS THAN 2:1



PHASE II FENCE END ELEVATION 2:1 OR GREATER



PHASE II FENCE TYPICAL SECTIONS THROUGH POSTS AND PICKETS

NOTES:

INSTALLATION ON THE DISTURBED AREA WITHIN 1 FT IN FRONT OF SEDIMENT OR MICROBIAL FILTERMITT.

INSTALLATION OF FENCE SHALL LEAVE 1 FT ABOVE GRADE TO ALLOW ANIMALS ACCESS TO THEIR HABITAT

INSTALL SCREEN FENCE PRIOR TO SEDIMENT OR MICROBIAL FILTERMITT.

FENCE TO BE MAINTAINED THROUGHOUT PROJECT UNTIL REMOVAL IS APPROVED.

NOT TO SCALE

For Further Information About Phase II Stormwater Inc. contact us at:
P.O. Box 737 Wrentham, Ma. 02093 - PH: 508-384-7140