Sediment Barrier – Compost Filter Sock

DEFINITION
Compost filter socks are 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. Compost filter socks trap sediment and soluble pollutants by *filtering* runoff water as it passes through the matrix of the compost filter socks *and* by allowing water to temporarily pond behind the compost filter socks, allowing *deposition* of suspended solids. Compost filter socks are also used to reduce runoff flow velocities on sloped surfaces.

PURPOSE
Compost filter socks are to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Compost filter socks are 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.

CONDITIONS
Compost filter socks should be installed where runoff can be filtered without damaging the compost filter sock or the area behind the sock.

DESIGN CRITERIA

Compost filter socks are designed to retain sediment transported in sheet flow from disturbed areas. Compost filter socks perform the same function as silt fence, allow a higher flow rate, and are usually faster and cheaper to install. Where all runoff is to be treated by the compost filter sock the maximum slope length behind the compost filter sock shall not exceed those shown in Table 1. The drainage area shall not exceed ¼ acre for every 100 ft of compost filter sock.

The sediment and pollutant removal process characteristic to compost filter socks combines both filtering and deposition from settling solids. This is different than methods that rely on ponding for deposition of solids for sediment control, such as silt fence. Ponding occurs when water flowing to the compost filter sock accumulates faster than the hydraulic flow through rate of the compost filter sock. Hydraulic flow-through rates for compost filter socks are 50% greater than silt fence filter fabric. Greater hydraulic flow-through rates reduce ponding. Compost filter sock mesh netting shall meet the netting specification in Table 2. Compost filter socks shall meet the specifications in Table 3. Compost used in compost filter socks shall meet the specification described under Compost Filter Media Specifications.

CRITERIA FOR COMPOST FILTER SOCK PLACEMENT

Land Slope	Maximum Slope Length Above Compost Filter Sock
Percent	Feet
<2	100
2 to 5	75
5 to 10	50
10 to 20	25
>20*	15
*In areas where the slope is greater than 20%, a flat area length of 10 ft between the toe of the slope to the compost filter sock should be provided.	

Table 1

A 12 inch diameter compost filter sock shall be used on developments where the life of the project is greater than or equal to six months. A 12 inch diameter compost filter sock may also be used on minor projects, such as residential home sites or small commercial developments.

COMPOST FILTER MEDIA SPECIFICATIONS

Compost used for compost filter sock filler material (filter media) shall be weed free and derived from a well-decomposed source of organic matter. The compost shall be produced using an aerobic composting process meeting CFR 503 regulations including time and temperature data. The compost shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow US Composting Council Test Methods for the Examination of Composting and Compost guidelines for laboratory procedures:

A. PH – 5.0-8.0 in accordance with TMECC 04.11-A, “Electrometric pH Determinations for Compost”
B. Particle size – 99% passing a 2 in (50mm) sieve and a maximum of 40% passing a 3/8 in (9.5mm) sieve, in accordance with TMECC 02.02-B, “Sample Sieving for Aggregate Size Classification”. *(Note- In the field, product commonly is between ½ in [12.5mm] and 2 in [50mm] particle size.)*

C. Moisture content of less than 60% in accordance with standardized test methods for moisture determination.
D. Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.
E. A sample shall be submitted to the Engineer for approval prior to being used and must comply with all local, state and federal regulations.

CONSTRUCTION SPECIFICATIONS

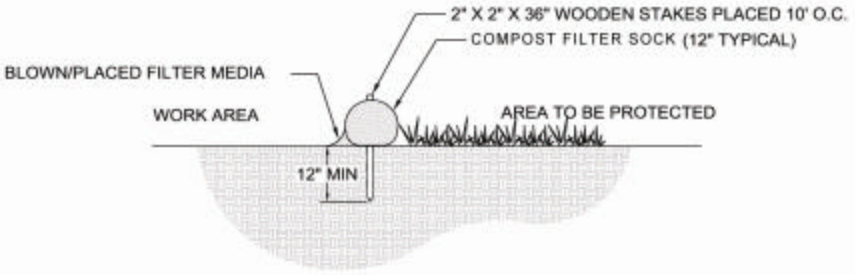
The compost filter sock shall be installed according to this specification, as shown on the plans or as directed by the engineer. For installation of the compost filter sock see Figure 1.

1. Compost filter socks should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second compost filter sock shall be constructed at the top of the slope.
2. Stakes shall be installed through the middle of the compost filter sock 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 compost filter socks are used on pavement, heavy concrete blocks shall be used behind the compost filter socks to help stabilize during rainfall/runoff events.
3. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
4. Loose compost may be backfilled along the upslope side of the compost filter sock, filling the seam between the soil surface and the device, improving filtration and sediment retention.
5. If the compost filter sock 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.
6. Compost filter socks are not to be used in perennial, ephemeral, or intermittent streams.

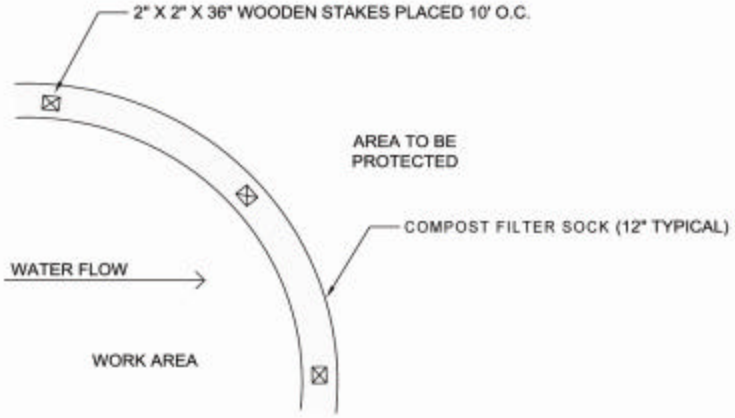
MAINTENANCE

Sediment shall be removed once it has accumulated to one-half the original height of the barrier. Compost filter socks shall be replaced whenever it has deteriorated to such an extent that the effectiveness of compost filter sock is reduced. Compost filter socks shall remain in place until disturbed areas have been permanently stabilized. All sediment accumulation at the compost filter sock shall be removed and properly disposed of before the compost filter sock is removed.

FIGURE 1



SECTION NTS



PLAN NTS

COMPOST FILTER SOCK

NTS

Table 2.

Material Type	Multi-Filament Polypropylene	Multi-Filament Polypropylene
Material Characteristic	Photodegradable	Photodegradable
Mesh Opening	3/8 in (10mm)	1/8 in (3mm)
Tensile Strength (ASTM 5035-95)	44 psi (3.09 kg/cm^2)	202 psi (14.2 kg/cm^2)*
% Original Strength from Ultraviolet Exposure (ASTM G-155)	100% at 1000 hr	100% at 1000 hr

Table 3.

	12 in (300mm) Diameter
Effective Circumference	38 in (960mm)
Density (when filled)	32 lbs/ft (50 kg/m)
Air Space	20%
Hydraulic Flow Through Rate	11.3 gpm/ft (141 L/min/m)
P Factor (RUSLE)	0.1-0.32