Filter Socks Used for Sediment Management

Laying prefabricated filter sock at a property in Orewa

Definition

A tubular stormwater sediment control and filtration device, consisting of a mesh tube filled with a filter material (e.g. compost, sawdust, straw), used to intercept and filter runoff.

Purpose

- To intercept and filter overland stormwater flows.
- To intercept and filter runoff before it enters a cesspit or inlet.
- To reduce the velocity of runoff flows within a channel.
- To contain and filter discharges from pumped stormwater or concrete wash water (commonly referred to as a “turkeys nest”).

There are other uses for filter socks but this document is restricted to sediment management.

Typical Application

- On small low gradient sites (e.g. short batter fills and around watercourses and vegetated or protected areas).
- As a secondary containment and treatment structure where it is not possible to divert flows to a sediment retention facility.
- Where it is necessary to slow channel velocity.
- Where concrete wash water or pumped stormwater is required to be treated prior to discharge.

Design

Perimeter Control
Ensure the appropriate sized compost filter sock is used (see design criteria below).

300mm Diameter Filter Sock

Slope Steepness (%)	Maximum Slope Length (m)	Spacing of Returns (m)
Flatter than 2%	100	N/A
2%-10%	40	30
10%-20%	30	25
20%-33%	10	10
33%-50%	5	10
>50%	2	5

450mm Diameter Filter Sock

Slope Steepness (%)	Maximum Slope Length (m)	Spacing of Returns (m)
Flatter than 2%	150	N/A
2%-10%	60	30
10%-20%	40	25
20%-33%	20	20
33%-50%	10	10
>50%	5	5

Installation

- Always install filter socks on contour. Where this is not possible or where there are long sections of filter sock, install short filter sock returns projecting upslope from the filter sock to minimise concentration of flows. Returns are to be a minimum of 2m in length.
- Where more than one length of filter sock is used, the filter socks are to be overlapped a minimum of 1m or, according to the manufacturer's recommendation, joined by a sleeve.
- Install filter sock "wings" at either end of the filter sock projecting a sufficient length upslope to prevent outflanking.
- Filter socks are to be pegged and secured depending on the application.
- For additional security, bale twine may be used as shown in the picture below. The bale twine is secured (4 turns with a half hitch) to the pine stakes and tensioned when the stakes are driven into place.

Compost socks with returns projecting upslope.

Compost socks with 1m overlapping joint.

Compost socks joined using a sleeve and pegged using bailing twine.

Compost sock used for inlet protection.

Securing Filter Sock

Straw sock secured in place using stakes and bale twine; note that the stakes are placed every 600mm.

Stormwater Inlet Protection

Compost sock used for inlet protection; note the overlap on the up-slope.

- Place the filter sock around the stormwater inlet, ensuring a complete seal around the inlet.
- Use the appropriate sized filter sock that is at least the height of the kerb.

Check Dams

- As per current TP90 specifications.
- The check dams shall be pegged in place to ensure that they are secure.

Compost sock used as a check dam.

Compost sock used to contain and filter cement waste.

Compost Specifications

The compost medium used in the filter socks shall be free from contaminants and meet the following specifications:

Parameter	Unit of Measure	Specification
pH	pH units	5.0-8.5
Moisture Content	% wet weight basis	>60
Organic Matter Content	% dry weight basis	25-100
Particle size	% passing a selected mesh size, dry weight basis	50mm 99% passing; 10mm 30-50% passing (or 50-70% retained); maximum 50mm.

"Turkeys Nest"

- Set up a ring of filter socks, with the proposed pumping discharge point in the centre of the ring.
- Ensure that the treated discharge from the "turkeys nest" will not result in erosion or the remobilisation of sediment.
- The size of the ring will depend on the flows that are to be pumped. The flow and size of the ring will need to be such that the ring is not overtopped.
- A flooring membrane may be used to collect settled debris.

Concrete Wash "Turkeys Nest"

- Installed as per "turkeys nest" above. Use of a proprietary pH reducer may be necessary to adjust the pH.
- Filtered waste should never be discharged into the stormwater system or natural waterway.

Construction Specifications

Filter Socks

- Filter socks can either be filled on site or prefabricated in suitable lengths prior to delivery to the site.
- The filter sock shall be produced from HDPE or polyester material with abrasion resistant netting weaves (a thread diameter of not less than 0.3mm). The recommended weave for compost sock is an opening in the knitted mesh of 1-5mm when filled and for straw socks no more than 20mm openings.
- This sock shall then be filled with compacted filter material meeting the specifications below.

Sawdust Specification

- No treated wood sawdust.
- Free from contaminants.

Straw Specification

- Free from weed seeds.
- Free from contaminants.

General Specifications for sock media

- The filter medium shall be clean and free from contamination.

The material used to fill the sock will depend on the application. For example if the sock is to be used as a filter, a porous material like rocks or wood bark will not be effective.

Maintenance

- Filter socks should be inspected regularly and after each rainfall event to ensure filtration and sediment control efficiency is maintained.
- Accumulated sediment greater than 50% of the height of the filter sock should be removed, or another filter sock placed on top of the existing filter sock to maintain adequate sediment control.
- Excessive ponding behind the filter sock indicates that the filter medium has become clogged and the effectiveness of the filter sock as a sediment control has been reduced. The filter sock shall either be replaced, or another filter sock placed on top of the existing filter sock to ensure adequate sediment control.
- Reuse of filter socks is allowed provided the integrity of the sock and fill media is maintained.