

Engineered Erosion Control Practices

Jute Netting

Netting made of jute can be laid and anchored over straw or other mulch to protect it from wind and water damage. Netting will help reduce soil erosion and provides a good environment for vegetative growth. Jute is biodegradable and will eventually decompose.

When to Use

Jute netting can be used on areas that may erode near structures such as homes or on small, steep, disturbed areas.

Netting can be used alone (without mulch) as an alternative to straw or wood mulches on flat sites for dust control and seed germination enhancement.

It should not be used alone where runoff quantities are expected to be high.

The use of jute netting is not appropriate for all situations. Examples of when it is not appropriate:

- Steep slopes with sandy soils
- Steep slopes with many rocks on the surface
- Steep slopes with a significant amount of fire burned vegetation remaining.

Specifications

The soil surface should be reasonably smooth. Remove rocks and other obstructions which rise above the level of the soil surface. Jute netting should be cloth of a uniform plain weave of undyed and unbleached single jute yarn. The material should weigh about 1.2 pounds per linear yard and have approximately 78 warp ends per width of cloth and 41 weft ends per linear yard.

Most nurseries and landscape contractors can find netting that meets these recommended specifications.

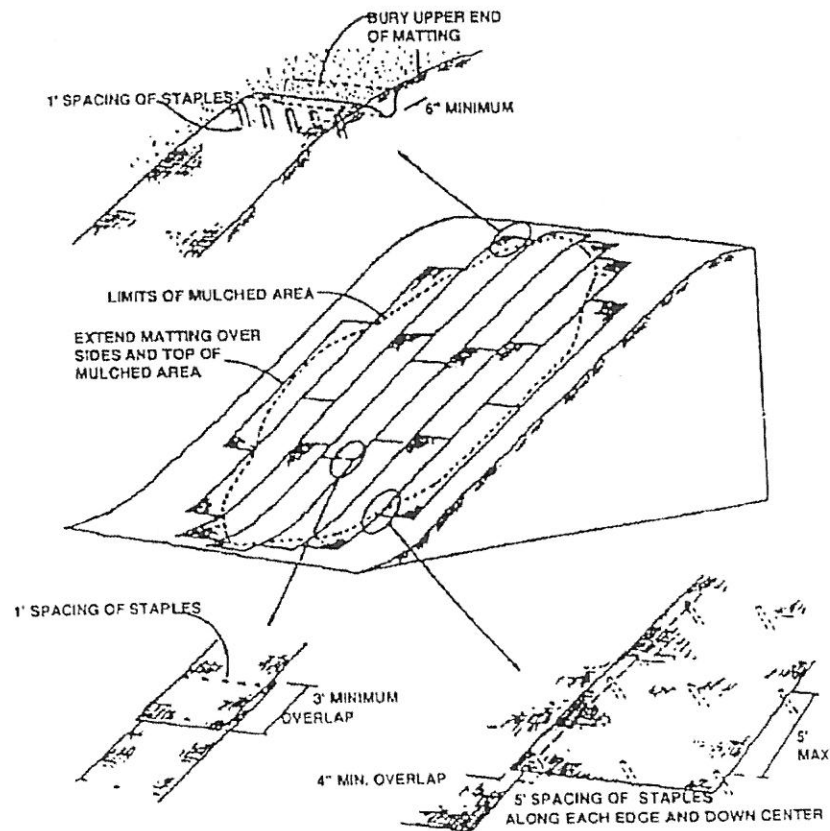
Individual rolls of netting should be applied up and down slope—never along the contour.

Bury the upper end of the netting at the top of the slope in a trench at least 6-8 inches deep.

Lay out rolls so edges overlap each other by 4 inches. Extremely important: When more than one roll is required going down the slope, the ends going down the slope should overlap by at least 3 feet. Anchor the netting to the soil surface with pins or staples. Pins and anchors should be 10 inches long and made of heavy, rigid, galvanized wire.

Staples and pins need to be driven into the soil and spaced about 5 feet apart. Spacing between staples at the end overlaps should be at 1 foot.

Jute Netting



Sandbag protection

An inexpensive temporary barrier or wall, 1-2 feet high, can be constructed by stacking sand-filled or earth-filled bags. They can be placed to divert mud and other debris flows away from buildings. They will not, however, provide protection from high debris flows.

When to Use

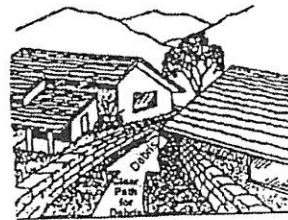
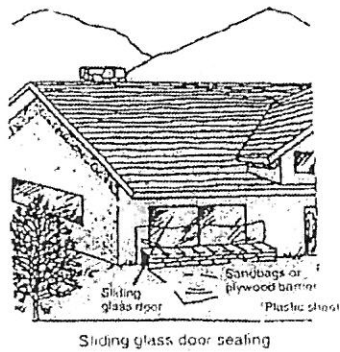
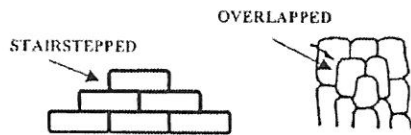
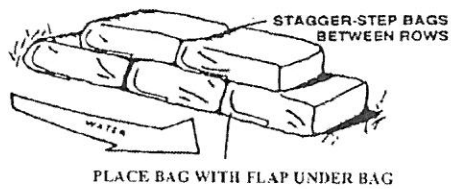
- To protect building sites vulnerable to low mud debris flows from steep, erodible slopes that are partially or completely void of vegetation due to wildfire.
- As an inexpensive, temporary protection method for homes before predicted rainfall.

Methods and Materials

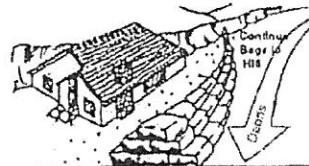
Sandbag barriers are easy to construct. Burlap or poly bags are readily available at feed stores. Fire stations and other emergency centers might have bags on hand.

Place filled bags to direct debris flow away from buildings and other structures. Do not try to dam or stop debris flows.

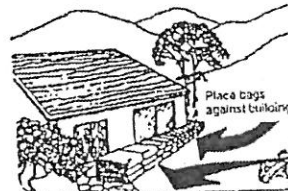
Sandbag Protection



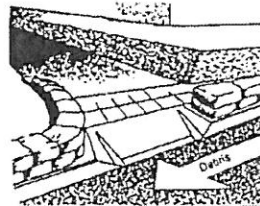
Sliding glass door sealing
Directing flows between buildings



Directing debris away from buildings



Building protection



Controlling debris/storm flows in streets

Silt Fence

What is a Silt Fence?

This is a temporary barrier made of woven wire and fabric filter cloth (geotextile) used to catch sediment-laden runoff from small areas of disturbed soil to keep silt from getting in streams and homes.

When is a Silt Fence Used?

Silt fences are used for specific situations. Major considerations are slope, slope length, and the amount of drainage area from which the fence will catch runoff. Silt fences should be installed on the contour of a slope. Silt fences should not be installed across drainage ways, swales, gullies, ditches or other areas of concentrated water flow. Silt fences should be installed near homes, roads, ponds, and streams to divert debris flows away from these sites. Here are some design considerations:

Design Considerations for Silt Fence

Slope Steepness	Maximum Slope Length
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2:1½(50%)	50 feet
3:1½(33%)	75 feet
4:1½(25%)	125 feet
5:1½(20%)	175 feet
<5:1½(<20%)	200 feet

What Materials are Needed?

Fence Posts

Posts should be at least 36 inches long. Wood posts should be of hardwood with a minimum cross-section area of three inches. Steel posts should be standard "T" section and should weigh no less than one pound per linear foot.

Wire

Wire fence should be at least 14-gauge with openings no larger than six inches square.

Geotextile Fabric

Geotextile fabric should have the following minimum material properties to be suitable for this type of use. These materials can be obtained from fencing contractors, ranch equipment suppliers, and home improvement stores.

Minimum Required Material Properties

Geotextile Property	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lb)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lb)	40	ASTM D751 (mod)
Equivalent Opening Size	40-80	US standard sieve sizes
Ultraviolet Radiation Stability	90	ASTM G26

How is a Silt Fence Installed?

Prefabricated silt fence should be used whenever possible to minimize installation labor requirements. An eight-inch deep trench is dug along the silt fence alignment. The silt fence is unrolled and stretched tight while the posts are driven at least 16 inches below the ground surface. Sections of silt fence shall be joined at a post by overlapping the geotextile six inches and wrapping it around the post before the post is driven. The wire shall be overlapped and wired to the post. After the silt fence is erected, the trench is backfilled and the backfill is tamped by wheel rolling with small equipment or foot traffic.

What Maintenance is Needed?

Inspect the silt fence after every runoff event. Repair any damage immediately. Remove sediment and other debris from the upstream side of the fence when it accumulates to the extent that visible bulges develop in the silt fence. Remove the silt fence after vegetation or other permanent erosion control measures are installed and functional.

Silt Fence Illustrations

