

4.5-q FIBER ROLL

Alternative Names: Fiber Roll Barriers, Sediment Log, Coir Roll and Coir Log

DESCRIPTION

Fiber rolls are sediment control devices made from fibrous organic material, such as rice or coconut fibers, rolled inside a tubular mesh sock. A fiber roll may also be constructed by tightly rolling an erosion control blanket to form a multi-layer roll. Fiber rolls help reduce overland flow velocities by interrupting and intercepting runoff and capturing sediment on steep slope settings. Placing multiple strings of fiber rolls in a system along the contours of a slope provide a benefit by helping interrupt overland flow and intercepting sediment loads before they migrate to receiving surface waters.

SITE SUITABILITY

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes.
- Along sidewalks and curbs to prevent sediment from washing into streets and gutters.
- As check dams in unlined ditches.
- Around storm drains and drain inlets.
- Downslope of exposed soil areas.
- Around temporary material spoil and stockpiles, such as topsoil stockpiles (refer to Section 4.5-n Stockpile Management).
- On sloped pavements leading to a street, storm drain, or water course.

Advantages

- They can be easily molded to fit undulating terrain.
- As inlet protection, fiber rolls can prevent sediment from entering storm drain systems during periods of low runoff.
- Easy to install, recyclable, and movable to different locations.
- Available in a variety of diameters and lengths.
- More effective and durable than sand bags.
- The rolls are less visually obtrusive than other erosion and sediment controls, such as silt fencing.
- Fiber rolls can be used to help establish permanent vegetation.

Disadvantages

- Not effective during periods of high runoff, and not effective for channels.
- The volume of sediment that can be captured is small; once the area behind the fiber roll fills with sediment, runoff may allow sediment to flow over the roll.
- Need frequent inspection and maintenance, because they can be moved by flowing water if not properly staked or trenched in.
- Not appropriate for use on slopes subject to creep, slumping, or landslide.

BMP DESIGN APPROACH	
<input type="checkbox"/>	Pollutant Source Control
<input type="checkbox"/>	Hydrologic Source Control
<input checked="" type="checkbox"/>	Stormwater Treatment
SCALE OF APPLICATION	
<input checked="" type="checkbox"/>	All SFR and MFR < 1 acre
<input checked="" type="checkbox"/>	MFR 1-5 Acre and CICU < 5 acres
<input checked="" type="checkbox"/>	MFR and CICU > 5 acres and all WQIPs
TYPE OF APPLICATION	
<input checked="" type="checkbox"/>	Temporary
<input type="checkbox"/>	Permanent

- Difficult and cumbersome to move when saturated.
- Fiber rolls will eventually break down and decompose completely.

DESIGN CONSIDERATIONS

- Do not rely upon fiber rolls to intercept and control concentrated stormwater flows.
- Ensure that fiber rolls are Certified Weed Free by the manufacturer. Do not use straw-filled fiber rolls, because of the possible inclusion of invasive-weed seed in the straw.
- Choose the appropriate size fiber roll by considering that larger rolls can trap a greater amount of sediment while smaller rolls are easier to handle. (Fiber roll diameters range from 9 to 20 inches.)
- When fabricating fiber rolls from erosion control blankets (such as using clean pine needles), construct the rolls to have at least an 8 inch diameter, and band them with degradable material every 4 feet.



Pine needle wattles are also effective and can be created using clean pine needles and biodegradable geotextile fabric.

- For temporary BMPs in construction settings, control site runoff over paved surfaces (e.g. around drain inlets) by using weighted fiber rolls (fiber roll with gravel and organic mulch inside) or non-weighted fiber rolls with gravel bag weights placed on top. Be sure to fit the fiber roll tightly against the pavement and any concrete wall or edge, to prevent gaps.

- Adjust spacing of fiber rolls according to ground slope and soil character. Use the following spacing as a general guide, but for loamy soils, place the rolls closer together, and for rocky soils, place the rolls farther apart.

Slope	Distance Apart (feet)
4:1	40
3:1	30
2:1	20
1:1	10

- To increase effectiveness of fiber rolls, use them in combination with other surface soil erosion/re-vegetation practices, such as surface roughening, mulching, erosion control blankets, and hydraulic mulching.
- Do not rely on fiber rolls for sediment control over winter, because ice build-up can allow stormwater to flow over the fiber roll and render it ineffective.

INSTALLATION

- Install fiber rolls prior to site disturbance.
- Install fiber rolls from the bottom of the slope upward, to capture any sediment unintentionally released during installation.
- Install fiber rolls along the contour, perpendicular to the slope direction. Turn the ends of each fiber roll upslope a minimum of 6 inches, to prevent runoff from flowing around the end of the roll.
- When rolls are installed abutting each other, overlap the ends at least 6 inches to create a tight join, to prevent sediment from escaping.
- Consider the slope of the hill when keying in fiber rolls. Key the roll to one-half the height of the fiber roll on steeper slopes and one-third the height of the fiber roll on less steep slopes.
- Remove rocks, clods, or other obstructions so the fiber roll has direct contact with the soil.
- Place excavated material on the uphill side of the key trench, to prevent downhill contamination.
- After placing the fiber roll in the trench, compact the excavated material along the base on the uphill side. Stabilize loose soil on the downhill side.
- Stake the rolls using two biodegradable wood stakes, one on each side of the fiber roll, placed every 3 to 4 feet and driven in perpendicular to the slope. Tie the stakes tightly together, above the fiber roll, to provide extra support.
- Use weighted fiber rolls or weigh down with gravel bags when used on paved surfaces.
- Use an additional row of wooden stakes on the downhill side of the fiber roll on highly erodible soils and on slopes 2:1 (run to rise) or greater.
- Fiber rolls at the toe of slopes greater than 5:1 (run to rise) should be at least 20 inches in diameter to be effective. An equivalent installation, such as stacked smaller diameter fiber rolls, can be used to achieve a similar level of protection.

- After removing fiber rolls, backfill and repair trenches, depressions, or other ground disturbances using excess sediment captured by the fiber roll.

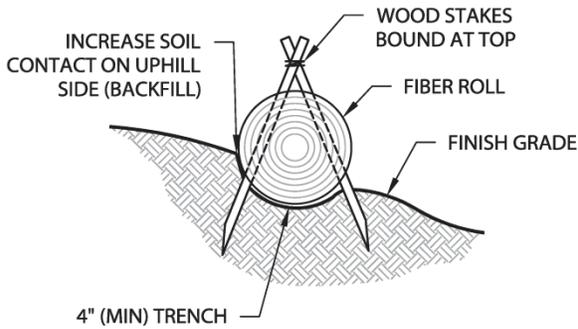
INSPECTION AND MAINTENANCE

- Remove sediment when deposits reach one-third the height of the barrier. Use sediment as fill material or remove from the site.
- Inspect fiber rolls prior to forecasted rain events and after rain events.
- Inspect daily during construction.
- Repair or replace split, torn, unraveling, slumping, or otherwise ineffective fiber rolls.

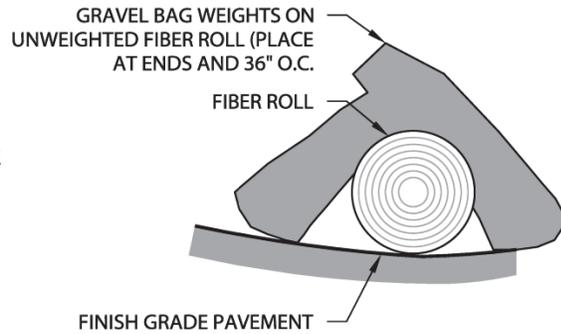


*Hay bales are **not** allowed in the Lake Tahoe Region due to the potential for carrying invasive weeds.*

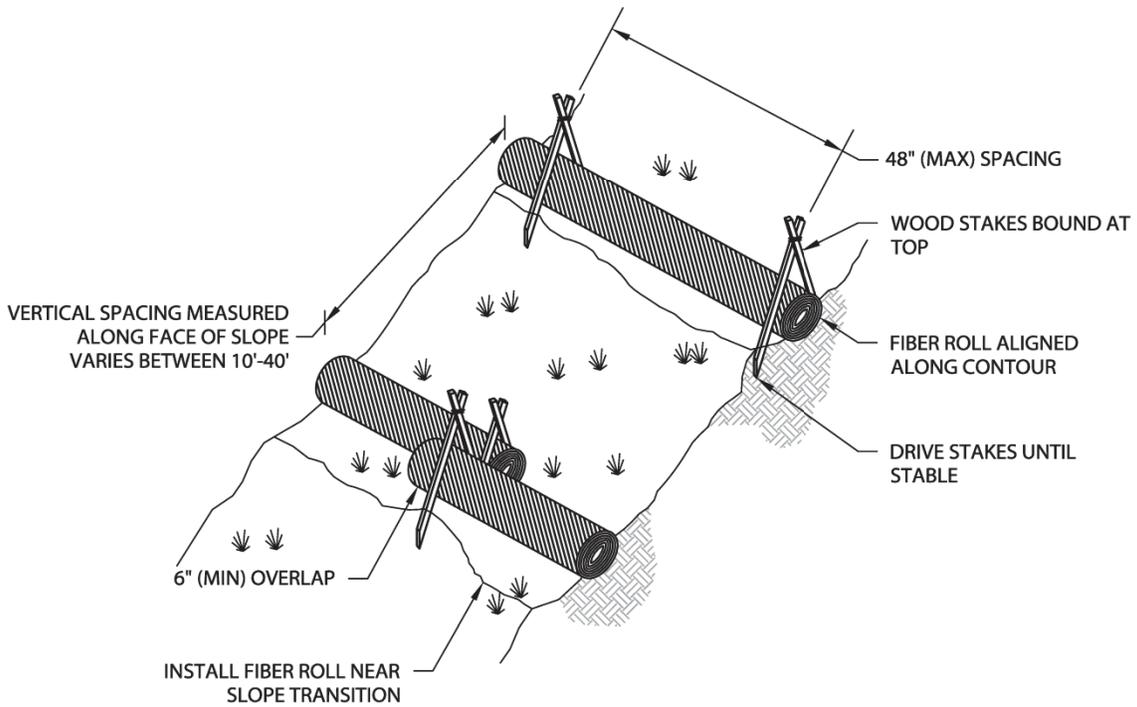
Fiber Rolls Figure



OFF PAVEMENT



ON PAVEMENT



FIBER ROLL - ON SLOPE

THE TAHOE REGIONAL PLANNING AGENCY (TRPA) SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS DETAIL.