# The Monthly Dirt

A Monthly Newsletter on the California Construction General Permit

By WGR Southwest, Inc.

## Dispelling Myths

July - August 2018

"***The 5 Second Rule***" regarding the cleanliness of fallen food, the Great Wall of China being visible from space, and shaving thickens hair - **<u>are all myths</u>** … they are not true! Food is contaminated by the amount of bacteria on the floor, not how long the food stays there. The Great Wall of China is not visible to the naked eye from space (check it out for yourself on Google Earth); and put away those razors … your hair is not going to grow in thicker. These are known as urban legends. But this is not the only place legends abound; there are plenty of myths when it comes to sediment control techniques. So, in this edition of the ***Monthly Dirt*** we are going to try to dispel, or at least shed some light on, some common sediment control myths.

**Myth – Fiber rolls filter storm water** No, they do not! We can prove it. You know the story of the Three Little Pigs. What did one of the pigs use to build his house? Straw. Why, because it filters water? No. Why do many residents in developing countries still use straw on their roofs? Because it, more or less, keeps the water out. Compacted straw does not filter, but rather repels, water. The job of fiber rolls is to slow the flow by creating a miniature dam. When water velocity slows, particles settle out.

**Myth – Fiber rolls rolled-out on the surface are effective** If fact or fiction was determined by popular vote, this statement would be true based on the overwhelming number of construction sites where it occurs. It is very common to find fiber roll surrounding a site that is neither keyed-in (trenched 2-3") nor staked down. The ***Monthly Dirt*** has actually performed studies to determine if this typical installation of fiber roll installation is effective. (Refer to the video link on the next page.) We have found the opposite to be true. In many cases, it worsened the turbidity. It would have been better to not have used fiber roll at all.

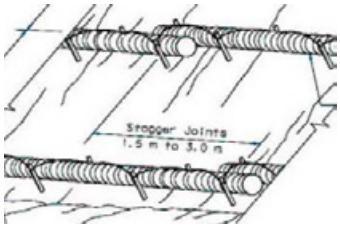
**Myth – Doubling up fiber roll and silt fence provides better protection** Sorry, false again. It mostly just wastes your money. Remember, the goal of these devices is to slow the flow, not filter. When properly installed, fiber roll or silt fence sufficiently slows the flow by itself. No significant velocity reduction is gained by doubling up the two devices.

**Myth – Fiber roll and compost socks do the same thing** Well, this is a half-truth. It is true that they both slow the flow causing sedimentation to occur. However, compost socks do something that fiber rolls do not do. They filter the water and remove sediment particles and other pollutants. These pollutants become entrained in the filter media. Compost socks are much heavier than fiber roll and become heavier as they are saturated with water and fill up with captured particles. Therefore, compost socks are "self-weighting" and will conform well to the surface without the need to key them in and stake them down. This allows compost socks to be used effectively on paved surfaces. When it is not secured, fiber roll actually will float on water and it is very difficult to make the fiber roll to uniformly conform to paved surfaces. Therefore, it should not be used on paved surfaces or hardened ground.

**Myth – Curb cutbacks are not BMPs** First let's define a curb cutback - it is used when there is a transition where water flows from an exposed soil surface to a hardscape surface. A curb cutback is when the soil surface is maintained 4 to 6 inches below the surface of the hardscape (about the same height of a fiber roll). In such cases, many people want to install a fiber roll either by properly keying it in and staking it down at the transition, or improperly by placing it on top of the hardscape ledge. But, what does this accomplish that the curb cutback is not already accomplishing? Does the water flow know that it has been stopped by concrete instead of straw? No, of course not! It just "knows" that it stopped, and particles need to settle out. But, the problem with curb cutbacks is that they don't look like BMPs … not to your untrained crews and not to the untrained inspector. If your crews don't know what you are trying to accomplish with the curb cutback, they may short circuit it by filling it in for a wheel barrow ramp. Sadly, often inspectors don't know how perimeter controls work and are wanting to see something that looks like a BMP. So, many projects resort to doing something like what is shown in the photo to the right. Other than giving everyone a "*warm and fuzzy*" and spending money, the fiber roll is accomplishing nothing.

**Myth – Fiber rolls must always be keyed-in.** Even though the CASQA BMP fact sheet for fiber rolls seems to indicate that they must be keyed-in (or trenched), the Caltrans BMP

fact sheet allows for an alternative method of achieving good surface conformity by using a lashing method. Stakes are driven into the ground on both sides of the fiber roll and a rope or steel cable is used to press the fiber roll down onto the surface. This is particularly useful for slopes that are extremely steep or have soils that make trenching impractical. Besides this, the ***Monthly Dirt*** has performed some trials of different types of fiber roll installations on our test slope. When comparing two side-by-side installations of fiber roll where everything was the same except one was keyed-in but the other was not, we noted that we got similar performance except for the amount of surface runoff. The side that had the keyed-in fiber roll had less flow because it was facilitating the infiltration of runoff into the hillside. The side that was not keyed-in had noticeably more surface flow and, therefore, less infiltration. Of course, both sides had been applied with 3,500 lbs./acre of hydraulic mulch and erosion was not occurring as evidenced by the very clear runoff. This test taught us a valuable lesson. There are many hillsides that are susceptible to landslides or mass wasting. When fiber roll, used as a linear-control, is not keyed-in, there will be less infiltration of water into the slope and, therefore, less chance of slope failure.




**Myth – Perimeter controls only need to be installed once and will last the duration of the project** This is the belief held by most project estimators. They typically will only include one initial installation of perimeter controls in their budgets and schedules even for multi-year projects. But, you don't have to be on a project very long until your BMP looks something like this photo. All BMPs need maintenance. Fiber roll, compost socks, and silt fence will all take a beating from the sun, wind, and construction activities. They will eventually wear out and need to be replaced. In addition, as site conditions change, the perimeter control strategy will also need to change. Fiber roll might have been a perfectly good sediment control measure during the grading phase, but compost socks or gravel bag berms may be more appropriate during the vertical phase after paving and concrete work has been completed.

So, the next time you drop your donut … don't pick it up and put it in your mouth, even if it was only 3 seconds. In the same regard, use common sense not the sense-of-the-common when installing perimeter controls.

***MD***



## Upcoming Training

- ✓ Storm Water Awareness Week, **Sept. 24 – 28, 2018**
  *A week of free storm water education!*
- ✓ QSP/QSD Training in Lodi, CA, **Oct. 16-18, 2018**
  - o Sign up at www.gotswppp.com
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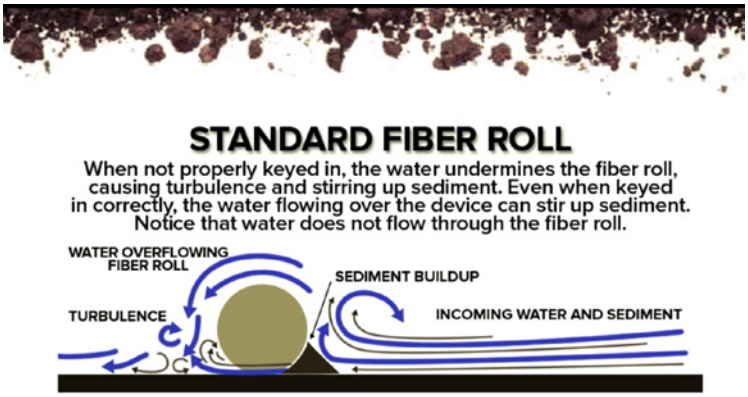
(For more information about these classes, please email jteravskis@wgr-sw.com )

### How Fiber Rolls Can Worsen Water Quality




Fiber rolls are a good sediment control device, but when they are used incorrectly, unexpected problems can occur. The problem is that most people misunderstand how they work. When correctly installed, they operate as miniature dams, holding the water back, and allowing particles to settle out. But when they are not correctly used, they are like failing dams. Water that builds up behind a fiber roll will have enough head pressure to blow out weak spots beneath it. This jetting action will cause turbulence and stir up sediment, thus elevating the turbidity often above the turbidity value of the water upstream of the fiber roll. This is why it is crucial to use erosion control methods in conjunction with fiber rolls.

Click on the link to the right to watch a video of a test that we performed between fiber rolls and compost socks.


*Please contact us if you have any questions …*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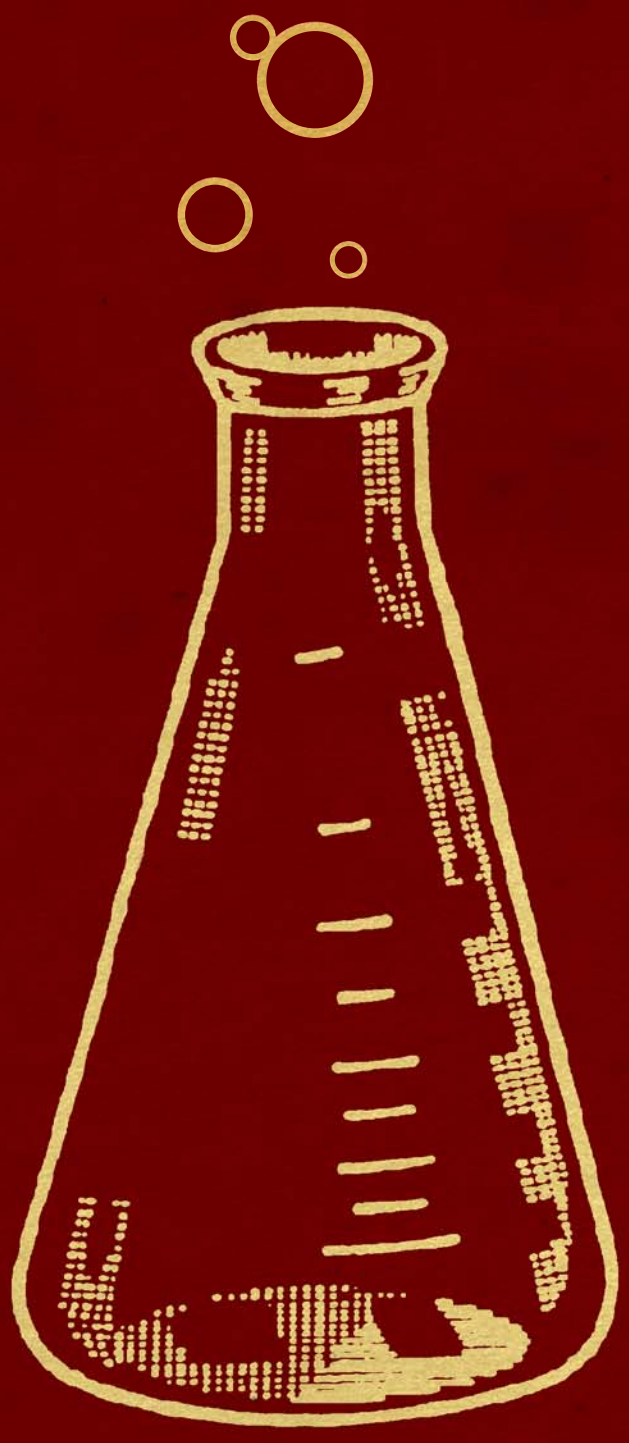
STORM WATER AWARENESS WEEK



ENVIRONMENTAL

# CHEMISTRY

*Understandable Principles Applied To Everyday Situations*

September 24-28, 2018 • stormwaterawarenessweek.org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# PRODUCT SPOTLIGHT

Designed for portability and durability the waterproof T-100 turbidity meter is ideal for monitoring turbidity in chemical, food and industrial applications. The microprocessor-based T-100 turbidity meter uses an infrared LED light source and delivers unprecedented repeatability and accuracy while offering resolution as low as 0.01 NTU. This lightweight meter is a valuable analytical tool for field-testing and quality control.

**Product Specifications:**

- Range: 0 to 1000 NTU
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- Accuracy: +/- 2% below 500 NTU; +/- 3% above 500 NTU.
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# SPILL CONTAINMENT

## NESTABLE 2-DRUM POLY SPILL PALLET

| Part # | Description | Spill Cap. gal. (L) |
|---|---|---|
| 61EN5222-YE | 2-Drum 51 x 26 x 21 | 66 gallons |

## 4-DRUM SPILL PALLETS

| Part # | Description | Spill Cap. gal. (L) |
|---|---|---|
| 61EN5400-YE | 4-Drum Slim 54 X 54 X 11.25 | 66 gallons |
| 61EN5001-YE | 4-Drum 50 x 50 x 17 | 83 gallons |

## IBC SPILL PALLET

| Part # | Description | Spill Cap. gal. (L) |
|---|---|---|
| 61EN5469-YE | IBC 2000i Pallet 73 x 80.5 x 29.5 | 385 gallons |

## POLY SPILL CART

| Part # | Description | Spill Cap. gal. (L) |
|---|---|---|
| 61EN5200-YE | Spill Cart 66.5 x 29 x 43.9 | 57 gallons |
| 61EN5200-YE-A | Spill Cart All Terrain Dolly (ATC) | 57 gallons |


## POLY DOLLY

| Part # | Description | Spill Cap. gal. (L) |
|---|---|---|
| 61EN5300-YE | Polly Dolly 69 x 31 x 26.5 | 70 gallons |
| 61EN5300-YE-A | Polly Dolly All Terrain Dolly (ATD) | 70 gallons |

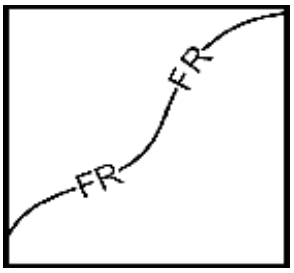

## SPILL SCOOTER

| Part # | Description | Spill Cap. gal. (L) |
|---|---|---|
| 61EN5205-YE | Scooter 35 x 8.75 | 11 gallons |
| 61EN5205-BK | Handle 36.62 x 10 | N/A |

**American Textile & Supply, Inc.**
3439 Regatta Blvd. Richmond, CA 94804
For more information, contact Michele Bell * mbell@americantex.com (510)701-8370

# Fiber Rolls

SC-5




Standard Symbol

**BMP Objectives**

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

## Definition and Purpose

A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fibers that is rolled or bound into a tight tubular roll and placed on the toe and face of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. Fiber rolls may also be used for inlet protection and as check dams under certain situations.

## Appropriate Applications

- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.
- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- Below the toe of exposed and erodible slopes.
- Fiber rolls may be used as check dams in unlined ditches if approved by the Resident Engineer (RE) or the District Construction Storm Water Coordinator (refer to SC-4 “Check Dams”).
- Fiber rolls may be used for drain inlet protection if approved by the RE or the District Construction Storm Water Coordinator (refer to SC-10 “Storm Drain Inlet Protection”).
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along the perimeter of a project.

## Limitations

- Runoff and erosion may occur if fiber roll is not adequately trenched in.
- Fiber rolls at the toe of slopes greater than 1:5 may require the use of 500 mm (20” diameter) or installations achieving the same protection (i.e., stacked smaller diameter fiber rolls, etc.).
- Fiber rolls may be used for drainage inlet protection if they can be properly anchored.
- Difficult to move once saturated.
- Fiber rolls could be transported by high flows if not properly staked and trenched in.
- Fiber rolls have limited sediment capture zone.
- Do not use fiber rolls on slopes subject to creep, slumping, or landslide.

## Standards and Specifications

### *Fiber Roll Materials*

- Fiber rolls shall be either:

  (1) Prefabricated rolls.

  (2) Rolled tubes of erosion control blanket.

### *Assembly of Field Rolled Fiber Roll*

- Roll length of erosion control blanket into a tube of minimum 200 mm (8 in) diameter.
- Bind roll at each end and every 1.2 m (4 ft) along length of roll with jute-type twine.

### *Installation*

- Slope inclination of 1:4 or flatter: fiber rolls shall be placed on slopes 6.0 m apart.
- Slope inclination of 1:4 to 1:2: fiber rolls shall be placed on slopes 4.5 m apart.
- Slope inclination 1:2 or greater: fiber rolls shall be placed on slopes 3.0 m apart.
- Stake fiber rolls into a 50 to 100 mm (2 to 4 in) trench.

- Drive stakes at the end of each fiber roll and spaced 600 mm (2 ft) apart if Type 2 installation is used (refer to Page 4). Otherwise, space stakes 1.2 m (4 ft) maximum on center if installed as shown on Pages 5 and 6.
- Use wood stakes with a nominal classification of 19 by 19 mm (3/4 by 3/4 in), and minimum length of 600 mm (24 in).
- If more than one fiber roll is placed in a row, the rolls shall be overlapped; not abutted.

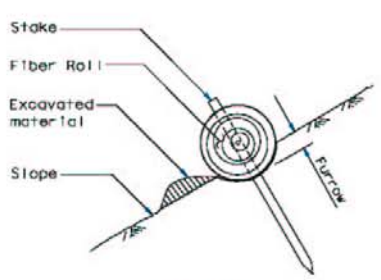
***Removal***

- Fiber rolls are typically left in place.
- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

## Maintenance and Inspection

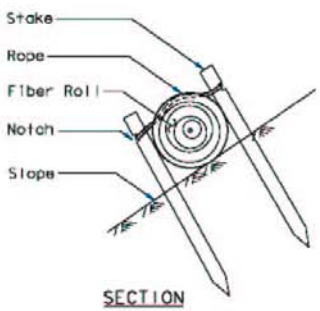
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- Inspect fiber rolls when rain is forecast. Perform maintenance as needed or as required by the RE.
- Inspect fiber rolls following rainfall events and a least daily during prolonged rainfall. Perform maintenance as needed or as required by the RE.
- Maintain fiber rolls to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches three quarters (3/4) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

# Fiber Rolls




SECTION

TEMPORARY FIBER ROLL
(TYPE 1)

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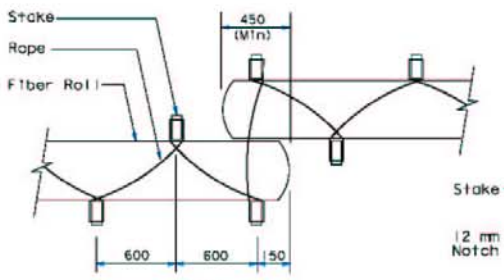
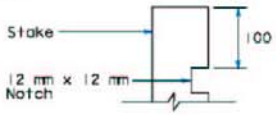



PLAN

TEMPORARY FIBER ROLL
(TYPE 2)

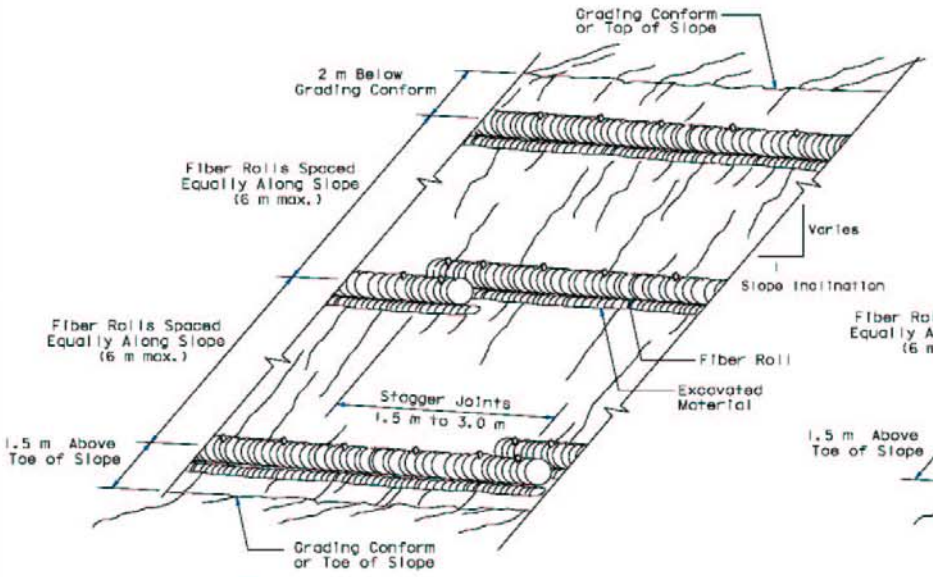



ELEVATION

NOTCH DETAIL

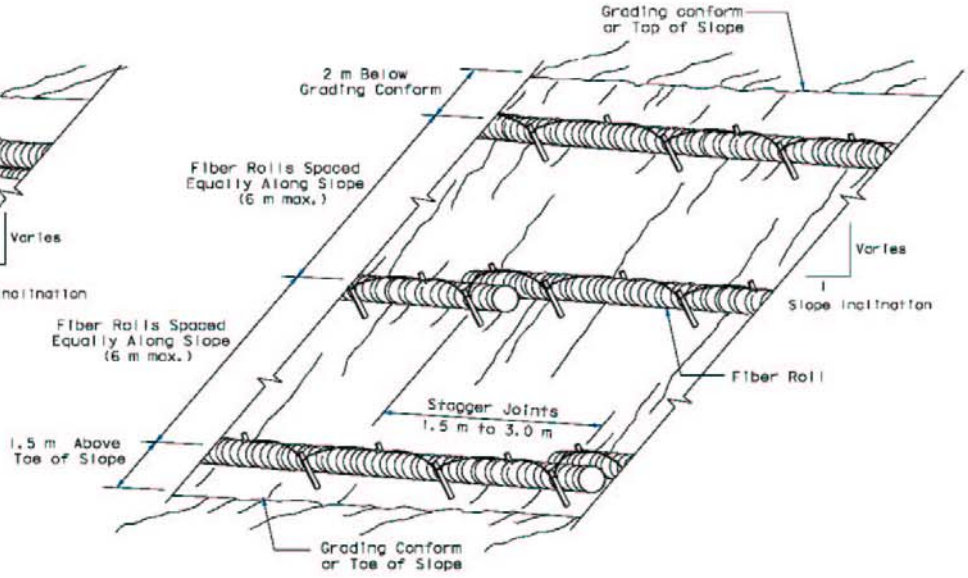
NOTE

1. Temporary fiber roll spacing varies depending upon slope inclination.



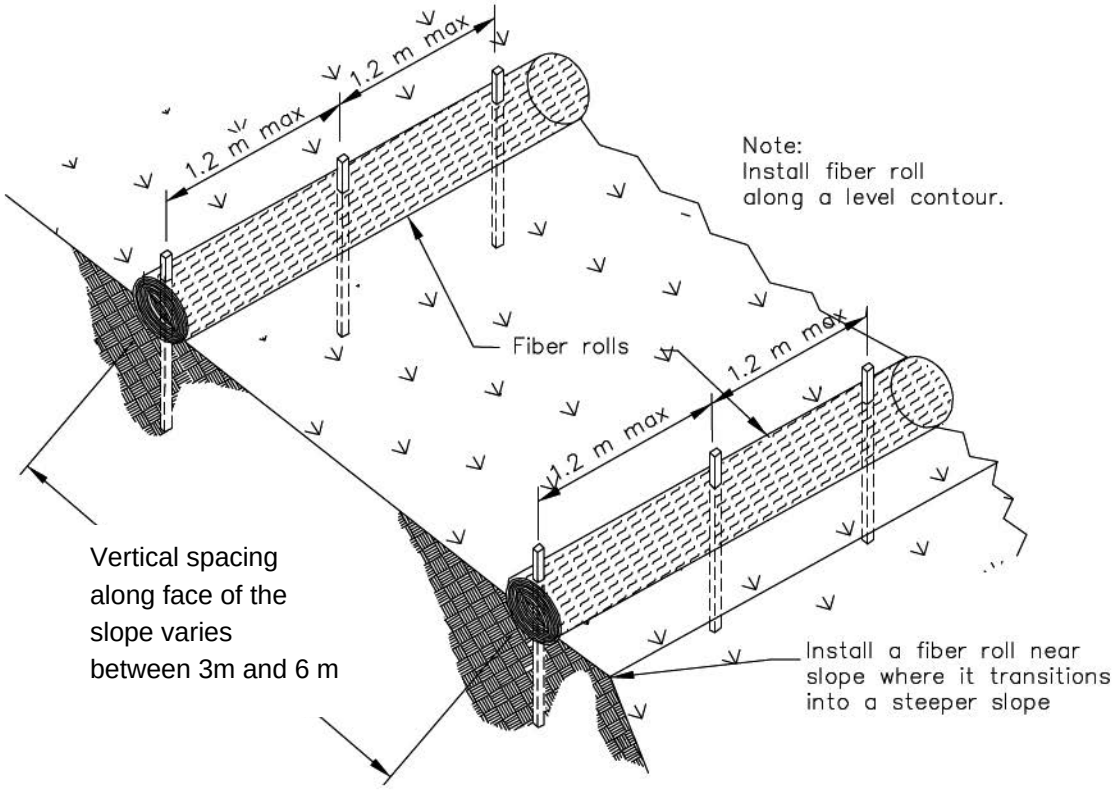

PERSPECTIVE

TEMPORARY FIBER ROLL (TYPE 1)



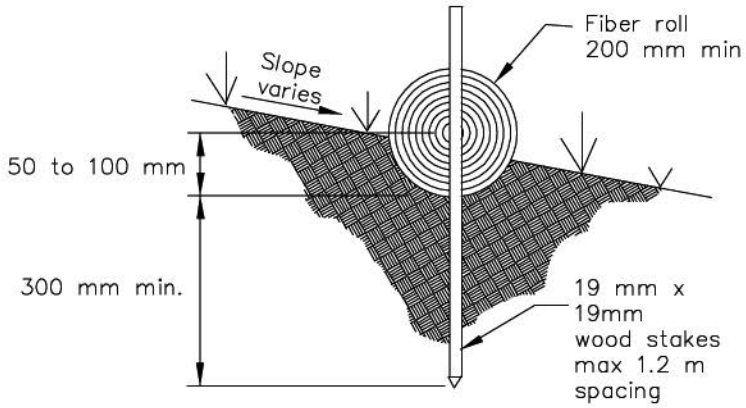

PERSPECTIVE

TEMPORARY FIBER ROLL (TYPE 2)



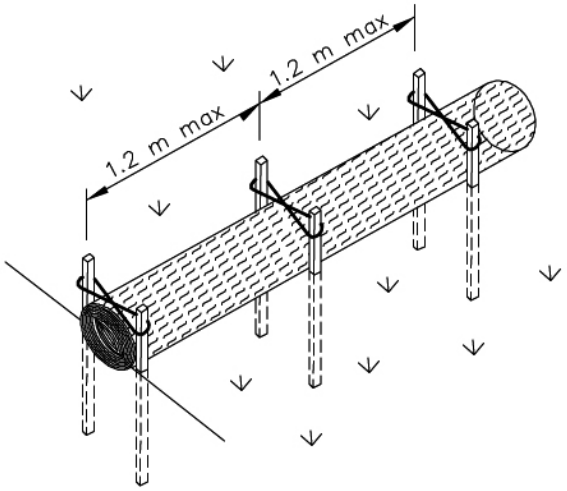

TYPICAL FIBER ROLL INSTALLATION

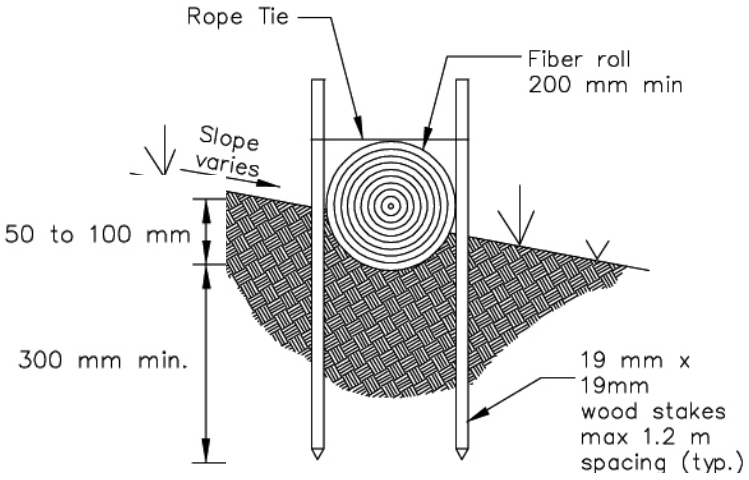
N.T.S.




ENTRENCHMENT DETAIL

N.T.S.




OPTIONAL ENTRENCHMENT DETAIL

N.T.S.