



## The Monthly Dirt

A monthly newsletter on the California Construction General Permit

# DEBUNKING COMMON BMP MYTHS

### Debunking the myths surrounding fiber roll.

Fiber roll, straw wattle, coir logs, fiber logs... No wonder why there are so many myths floating around about these BMPs! Even the name is confusing since everyone calls it something different. Not to mention the wide array of installation methods and uses these fiber rolls are put through on different job sites. Seems like each contractor has a different way of using these... So, what is the correct method? In this month's edition of **The Monthly Dirt**, we are going to do a little myth busting, learn about how to properly use these BMPs, learn what they are **NOT** used for, and do a quick review of proper fiber roll maintenance.

**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. Don't be fooled by the look of fiber rolls—they don't filter.

**Myth – Fiber rolls rolled-out on the surface are effective.** Unfortunately, this myth is very prolific and widely accepted based on the sheer 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 method of fiber roll installation is effective. We found the exact opposite to be true. In many cases, instead of allowing particles to settle out, fiber roll

installed this way tended to worsen 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 purpose 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 cannot do. They filter the water and remove sediment particles and other pollutants by trapping these pollutants in the filter media. Compost socks are much heavier than fiber roll and become even heavier when they are saturated with water and fill up with captured particles. Because of their weight, compost socks are considered "self-weighting" which helps them conform well to any surface without the need for keying them in and staking them down. Which makes compost socks very effective on paved surfaces. However, when fiber roll is not secured, unlike compost socks, it will become buoyant and



▶ Is typical fiber roll installation effective? Watch this video!



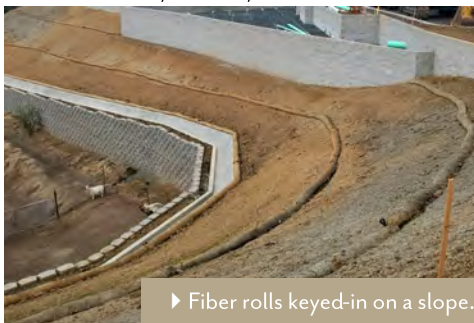


float on the water's surface. And because it is so lightweight, it is very difficult to make fiber roll conform evenly to paved surfaces.

**Myth – Curb cutbacks are not BMPs.** First let's define a curb cutback - a curb cutback is the transition where water flows from an exposed soil surface to a hardscape surface (e.g. asphalt or concrete). When installed correctly, the soil surface is maintained 4 to 6 inches **below** the surface of the hardscape to prevent water from leaving the site (*which happens to be 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 by improperly placing it on top of the hardscape ledge. But, what does this accomplish? The curb cutback is already keeping water from flowing off the soil surface and onto the hardscape. Does the runoff 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. The biggest problem with curb cutbacks is that they don't look like BMPs (or at least what we picture as BMPs). This is especially true to your untrained crews and 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 as a wheel barrow ramp. Sadly, some inspectors don't know how perimeter controls work and just want to see something that looks like a BMP on their site. So, many projects resort to doing something like what is shown in the photo above. Other than giving the site a great BMP aesthetic and sifting money out of your pocketbook, the fiber roll

isn't accomplishing anything.

**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 into the surface. This is particularly useful for slopes which are extremely steep or have soils that make trenching impractical. In addition, the Monthly Dirt 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 similar performances except when it came to the amount of surface runoff between the two studies. 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. It should be noted that both sides of the slope 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 which are susceptible to landslides or mass wasting, and 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, it won't take long until your BMP looks like flattened pancakes! 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. Plus, 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.

Fiber rolls are a good sediment control device, but when they are used incorrectly, unexpected problems can occur. 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 above that of the water upstream of the fiber roll. Dispelling myths about fiber rolls installation and use can save your site those turbid circumstances.

*Please contact us if you have any questions ...*

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happy valentine's day

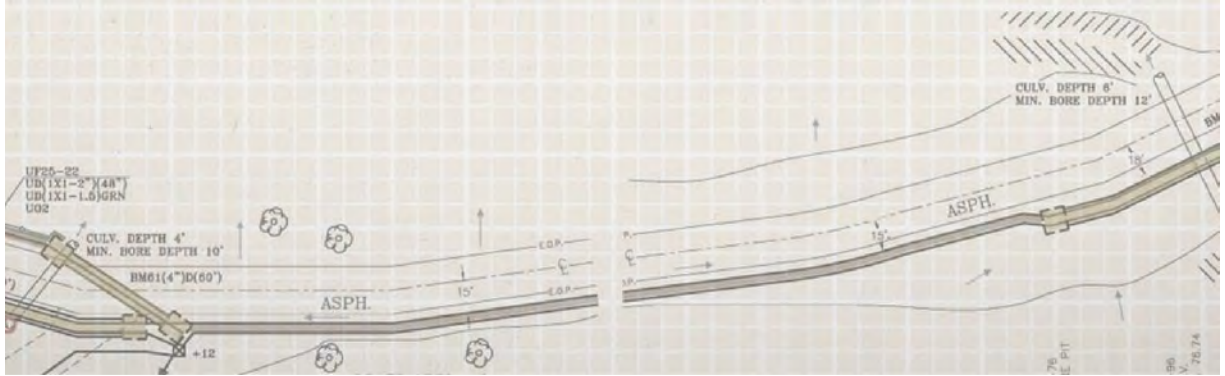


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# BMP ROUNDUP

A WESTERN THEMED HANDS-ON BMP LEARNING EXPERIENCE

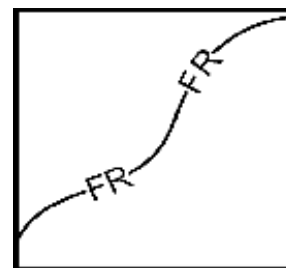
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Standard Symbol

### 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**

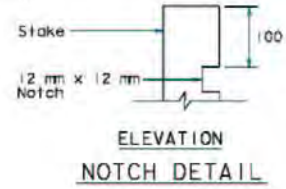
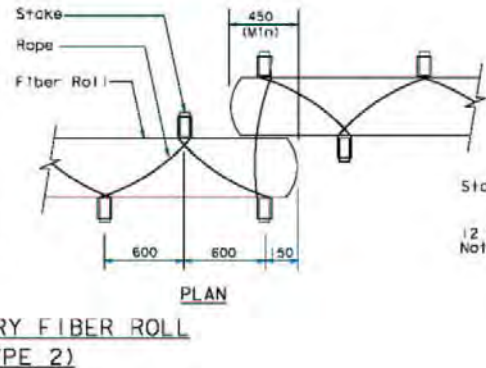
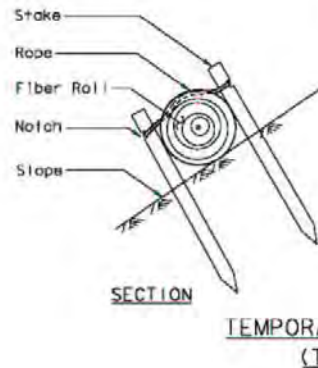
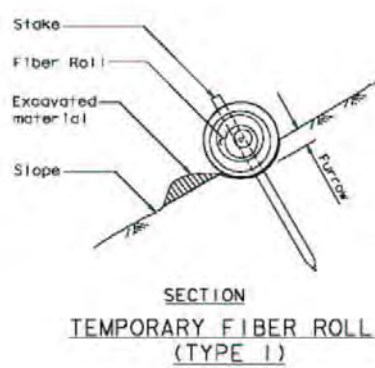
- Fiber rolls are typically left in place.
- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

### **Maintenance and Inspection**

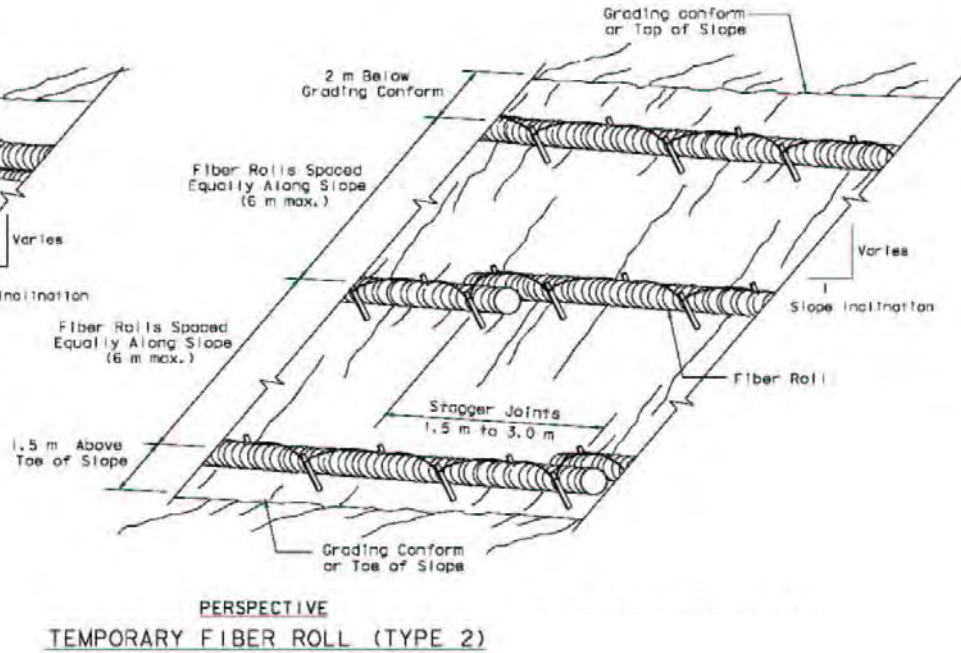
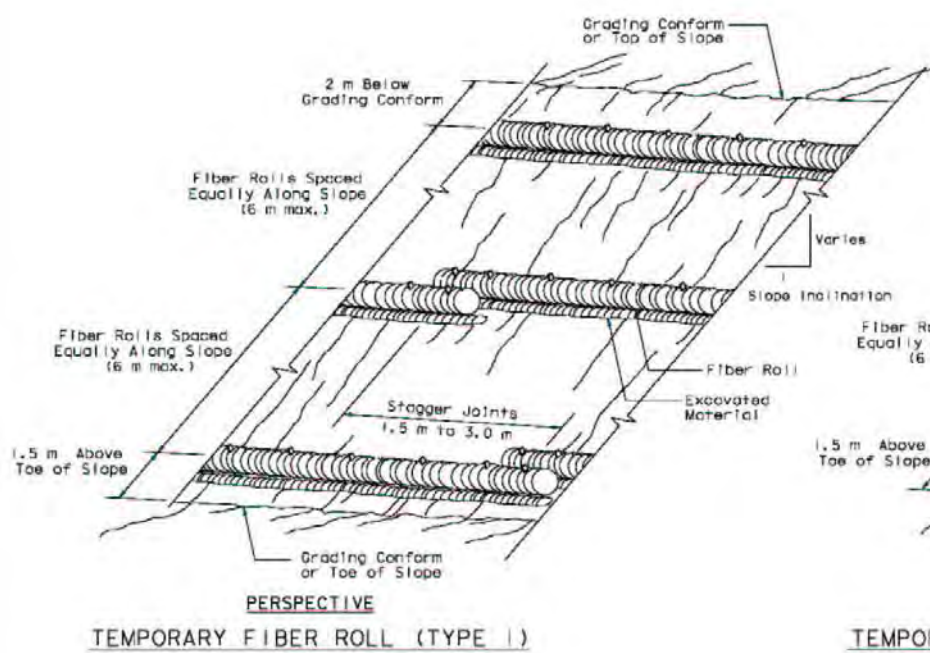
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- Inspect fiber rolls when rain is forecast. Perform maintenance as needed or as required by the RE.
- Inspect fiber rolls following rainfall events and at least daily during prolonged rainfall. Perform maintenance as needed or as 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

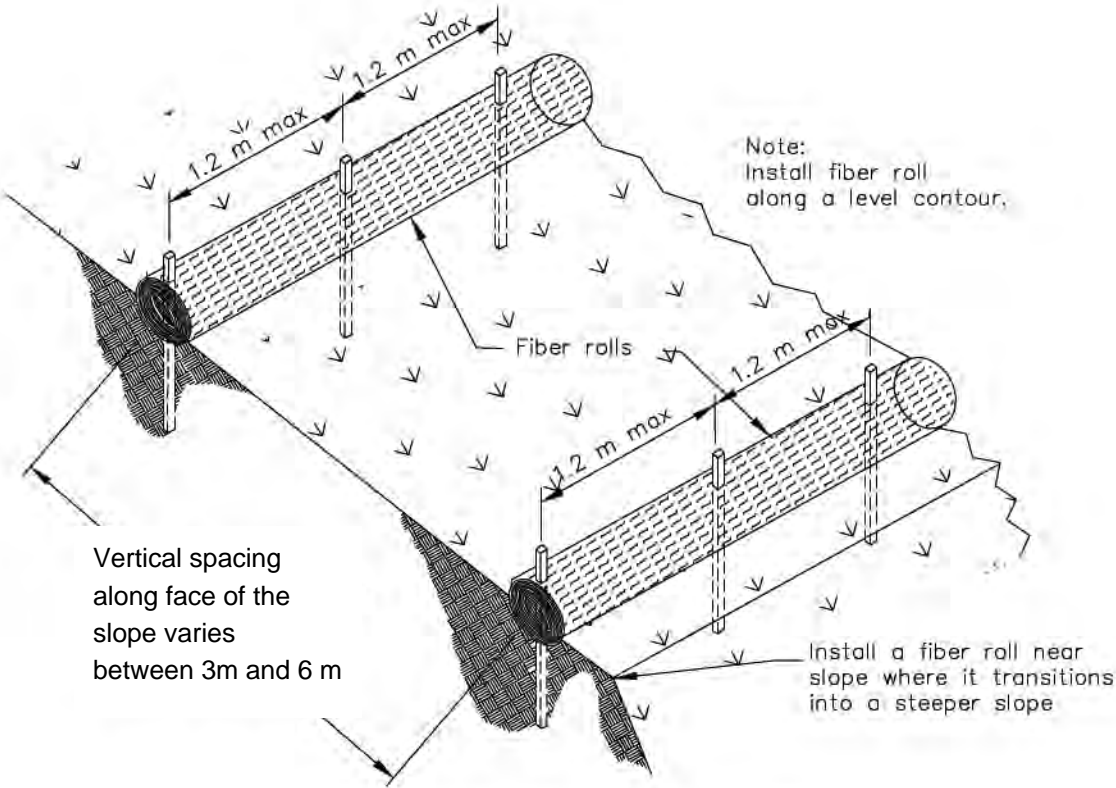
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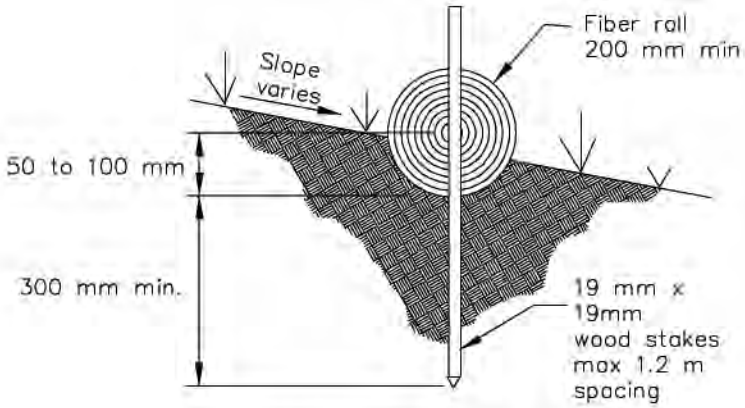
NOTE  
1. Temporary fiber roll spacing varies depending upon slope inclination.



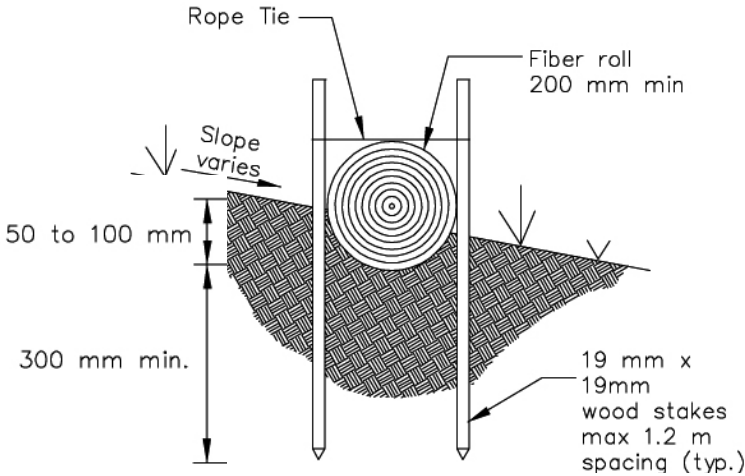
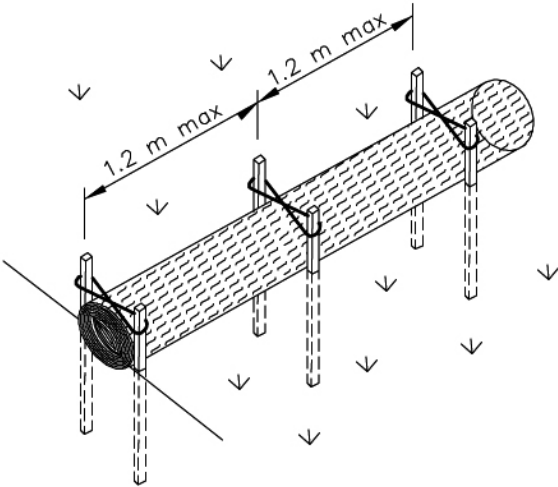




TYPICAL FIBER ROLL INSTALLATION  
N.T.S.



ENTRENCHMENT DETAIL  
N.T.S.



OPTIONAL ENTRENCHMENT DETAIL

N.T.S.