

## **Polymer Stabilized Fiber Matrix Specification: EarthGuard Fiber Matrix**

### **USE WITH 2006 STANDARDS.**

Use as a temporary source control for soil stabilization. Temporary hydraulic mulch (polymer stabilized fiber matrix) is used to cover and protect disturbed soil area by flocculating suspended solids and sediment from runoff.

Refer to SS-3 Hydraulic Mulch and SS-5 Soil Binders, of the Caltrans Storm Water Quality Handbook Construction Site Best Management Practices (BMPs) Manual for information related to the use of this BMP.

Include contract item 074039 Temporary Hydraulic Mulch (Polymer Stabilized Fiber Matrix).

Edit Paras 1 & 3 to replace "Storm Water Pollution Prevention Plan" with "Water Pollution Control Program" if SSP 07-340 is used.

### **10-1. TEMPORARY HYDRAULIC MULCH (POLYMER STABILIZED FIBER MATRIX)**

Temporary hydraulic mulch (polymer stabilized fiber matrix) shall be furnished, applied, maintained, and later removed at locations shown on the approved Storm Water Pollution Prevention Plan in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

**2**

Temporary hydraulic mulch (polymer stabilized fiber matrix) shall consist of applying a polymer stabilized fiber matrix to active and nonactive disturbed areas.

**3**

Polymer stabilized fiber matrix shall be used as a water pollution control practice for soil stabilization. The Storm Water Pollution Prevention Plan shall include the use of temporary hydraulic mulch (polymer stabilized fiber matrix).

**4**

### **MATERIALS**

#### **Tackifier**

The tackifier shall conform to the provisions in Section 20-2.11, "Stabilizing Emulsion," of the Standard Specifications. The tackifier shall be nonflammable, nontoxic to aquatic organisms, and shall have no growth or germination inhibiting factors.

**5**

The tackifier shall be a liquid formulation having polyacrylamide (PAM) as the primary active ingredient, and shall be available as a prepackaged product. The PAM shall be a linear, anionic copolymer of acrylamide and sodium acrylate. The residual monomer content of the PAM shall not exceed 0.05 percent by weight.

**6**

Tackifier shall conform to and be labeled as one of the following:

- A. Tackifier shall be formulated as a water-in-oil emulsion and shall contain a minimum of 2.6 pounds pure PAM per gallon. The pure PAM shall be a minimum of 30 percent active.
- B. Tackifier shall be formulated as a liquid dispersed polyacrylamide (LDP) and shall contain a minimum of 4.4 pounds pure PAM per gallon. The pure PAM shall be a minimum of 35 percent active.

**7**

The prepackaged product label shall indicate that the PAM is registered and approved by the California Department of Food and Agriculture as an auxiliary soil and plant substance, and nonplant food ingredient.

**8**

If requested by the Engineer, the Contractor shall provide certification of the percent of pure PAM present by weight, the percent activity, the average molecular weight, and the charge density of the PAM; and shall provide a material safety data sheet for the prepackaged product.

**9****Wood Fiber**

Wood fiber shall conform to the provisions in Section 20-2.07, "Fiber," of the Standard Specifications and these special provisions. Fiber shall be long strand, whole wood fibers, thermo-mechanically processed from clean, whole wood chips, containing a minimum of 25 percent at 3/8 inch long, with a minimum of 40 percent retained on a No. 25 sieve. The wood chips shall not contain lead paint, printing ink, varnish, petroleum products, seed germination inhibitors, or chlorine bleach. Fiber shall not be produced from sawdust, cardboard, paper, or paper by-products.

**10****Cellulose Fiber**

Cellulose fiber shall conform to the provisions in Section 20-2.07, "Fiber," of the Standard Specifications and these special provisions. Cellulose fiber shall be produced from natural or recycled (pulp) fiber, such as wood chips, sawdust, newsprint, chipboard, corrugated cardboard, or a combination of these processed materials. Cellulose fiber shall be free of synthetic or plastic materials, and shall not contain more than 7 percent ash.

**11**

A coloring agent shall be added to the polymer stabilized fiber matrix to contrast with the area on which it is applied. The coloring agent shall not include copper, mercury, or arsenic, and shall be biodegradable and nontoxic.

**12**

A Certificate of Compliance for temporary hydraulic mulch (polymer stabilized fiber matrix) shall be furnished to the Engineer in accordance with the provisions in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications. The Certificate of Compliance shall include a list of pollutant indicators and potential pollutants not visually detectable as described under "Sampling and Analysis Plan for Non-Visible Pollutants" in the Storm Water Pollution Prevention Plan and Water Pollution Control Program Preparation Manual of the Storm Water Quality Handbooks issued by the Department.

**13**

The Contractor shall provide written documentation certifying the polymer stabilized fiber matrix was applied in accordance with specified rates, including area of application, time of application, and quantities used.

**14**

Monitoring for pollutants not visually detectable in storm water is required by the General Construction NPDES Permit for soil amendments, including soil stabilization products.

**15**

**APPLICATION**

Polymer stabilized fiber matrix shall be applied as follows:

**15A\*. Determine total fiber rate based upon slope and soil conditions and as recommended by the polymer stabilized fiber matrix manufacturer. Adjust quantities of Wood Fiber and Cellulose (paper) Fiber but maintain a minimum of 50 percent Wood Fiber. Consider the following application rates:**

<b>1H:1V slope</b>	<b>2500-3000 lbs/acre total fiber</b>
<b>1.5H:1V slope</b>	<b>2000-2500 lbs/acre</b>
<b>2H:1V slope</b>	<b>1800-2000 lbs/acre</b>
<b>3H:1V slope</b>	<b>1500-1800 lbs/acre</b>
<b>4H:1V slope</b>	<b>1200-1500 lbs/acre</b>
<b>5H:1V slope</b>	<b>1000-1200 lbs/acre</b>

**Determine tackifier application rates based on the slope:**

<b>1H:1V slope</b>	<b>10+ gal/acre</b>
<b>1.5H:1V slope</b>	<b>9 gal/acre</b>
<b>2H:1V slope</b>	<b>8 gal/acre</b>
<b>3H:1V slope</b>	<b>7 gal/acre</b>
<b>4H:1V slope</b>	<b>6 gal/acre</b>
<b>5H:1V slope</b>	<b>5 gal/acre</b>

- A. The following mixture in the proportions indicated shall be applied with hydroseeding equipment. Successive applications or passes shall be used to achieve the indicated rate:

Material	Application Rate
Wood Fiber	_____ lbs/acre
Cellulose Fiber	_____ lbs/ acre
Tackifier	_____ gal/acre

- B. The dilution of fiber to water per acre shall be as required to facilitate even application of material.
- C. Material shall be applied to form a continuous mat covering all of the disturbed soil surface, shall have a minimum thickness of 1/16 inch, and shall have no gaps between the mat and the soil surface.
- D. Material shall be applied from 2 or more directions to achieve a continuous mat.
- E. Material shall be applied in layers to avoid slumping and to aid drying.

- F. Material shall be applied during dry weather, with a minimum of 24 hours of dry weather between completion of material application and predicted precipitation.

## 16

### MAINTENANCE

The polymer stabilized fiber matrix shall be reapplied when the area treated with polymer stabilized fiber matrix exhibits visible erosion. The polymer stabilized fiber matrix shall be reapplied within 24 hours of identifying visible erosion, or longer if approved by the Engineer.

## 17

### REMOVAL

Removal shall consist of mechanically incorporating the stabilized fiber matrix into the soil with tracklaying equipment, disking, or other method approved by the Engineer.

## 18

### MEASUREMENT AND PAYMENT

The quantity of temporary hydraulic mulch (polymer stabilized fiber matrix) to be paid for will be measured by the square yard as determined from measurements along the slope of the actual areas covered by the temporary hydraulic mulch (polymer stabilized fiber matrix).

#### **19. Edit to delete "maintenance and" if Paras 21 & 22 are used.**

The contract price paid per square yard for temporary hydraulic mulch (polymer stabilized fiber matrix) shall include full compensation for furnishing all labor, materials (including polymer stabilized fiber matrix), tools, equipment, and incidentals, and for doing all the work involved in applying polymer stabilized fiber matrix, complete in place, including maintenance and removal of polymer stabilized fiber matrix, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

## 20

Temporary hydraulic mulch (polymer stabilized fiber matrix) disturbed or displaced by the Contractor's vehicles, equipment, or operations shall be reapplied at the Contractor's expense.

#### **21. Include Paras 21 & 22 when District policy allows cost sharing for maintaining critical temporary BMPs. Add and include funds for supplemental work item 066595, "Water Pollution Control Maintenance Sharing." Consult with District Storm Water Coordinator for District policy.**

The cost of maintaining the temporary hydraulic mulch (polymer stabilized fiber matrix) will be borne equally by the State and the Contractor. The division of cost will be made by determining the cost of maintaining temporary hydraulic mulch (polymer stabilized fiber matrix) in conformance with the provisions in Section 9-1.03, "Force Account Payment," of the Standard Specifications and paying to the Contractor one-half of that cost.

## 22

Cleanup, repair, removal, disposal, or replacement due to improper installation or the Contractor's negligence will not be considered as included in the cost for performing maintenance.