

## SECTION 29

### SEEDING AND MULCHING

#### 29-1 General

##### 29-1.01 Scope

This section describes the requirements for furnishing and installing seed, straw mulch, fertilizer, and stabilizing emulsion. The requirements include the type of materials to be used, methods and requirements for installation and measurement for payment.

This section does not include temporary erosion control required elsewhere in these specifications.

##### 29-1.02 Description of Work

Work under this section shall include, but not be limited to, compacting and smoothing areas, disposing of debris, firming loose soil, roughening the seedbed, furnishing and applying the seed, straw mulch, fertilizer, and stabilizing emulsion.

##### 29-1.03 Sequence of Work

Work under this section shall be completed as soon as a portion of the pipe alignment or structure requiring erosion control has been completed and there is no further need to access these locations with heavy equipment.

Seedbed preparation shall be followed immediately and, in turn, by seeding, mulching, and application of fertilizer and stabilizing emulsion.

##### 29-1.04 Location

Generally, the areas that will require seeding and mulching, are identified in the Special Conditions of this Contract and are subject to change by the District Engineer.

The Contractor shall, at his sole cost, seed and mulch any areas disturbed by his activities which lie outside the working limits, as shown on the plans, if it is determined by the District Engineer that those areas will benefit from the process.

##### 29-1.05 Submittals

Submittals supplied by the Contractor shall include: tags and labels from seed containers, catalog data and application instructions for the fertilizer and stabilizing emulsion, and a sample and load slips for the straw. The Contractor's attention is directed to the General Conditions of this Contract under "Submittals".

##### 29-1.06 Inspection

Each phase of the work shall pass inspection by the District Engineer before commencing work on the next phase. The phases shall consist of, but not be limited to, compacting and smoothing the areas, preparation of the seedbed, seeding operation, mulching operation, and application of the fertilizer and stabilizing emulsion.

## 29-2 Materials and Installation

### 29-2.01 General

The seeding and mulching operation shall consist of a four step process; seedbed preparation, seeding, mulching with straw, and applying the fertilizer and stabilizing emulsion together as the last step. The last three steps shall be accomplished within 48 hours of starting the seeding operation.

### 29-2.02 Seedbed Preparation

The areas to be seeded shall be reasonably smooth and shall conform to the original contours or new contours as shown on the plans before actual seedbed preparation begins. Any debris, including rocks and roots which would interfere with seeding, growth, or maintenance of the vegetation, or as specified elsewhere in these specifications, shall be removed.

The surface areas to be seeded, including fill slopes, shall be compacted by first bringing the soil to optimum moisture by drying or adding water, and track walking or rolling firm. The areas shall then be roughened by scarifying, discing, borrowing, or otherwise worked to a depth of 2" to 4". Scarifying operations shall be cross slope, where possible.

Cut slopes shall be dressed to neat line and all loose material raked to the toe and removed.

### 29-2.03 Seeding

All seed shall be delivered to the site tagged and labeled in accordance with California Agricultural Code. The seed shall be of a quality which has a minimum pure live seed content of 80% (% purity x % germination) and weed seed shall not exceed 0.5%. Legume seed shall be pellet inoculated with appropriate bacteria.

The seeding mixture and rates shall be specified in the Special Conditions of this Contract.

The seed shall be broadcast with a truck or tractor mounted automatic seeder, where possible. Hand held breast seeders, (belly grinders) are suitable for small areas.

### 29-2.04 Straw Mulch

Straw shall be blown or hand broadcasted onto the ground at the rate specified in the Special Conditions of this contract. The application technique shall create a uniform depth of not less than two to three inches. The straw fibers shall be applied to form a uniform mat of loose straw through which no more than 15 percent of the original ground surface can be seen. No large clumps or unscattered straw shall be present after application.

Straw shall be clean rice, barley or wheat straw. Fibers shall not be chopped less than 6-inches in length.

### 29-2.05 Fertilizer and Stabilizing Emulsion

The fertilizer shall be commercial type ammonium phosphate (16-20-0) and shall contain a minimum of 16% nitrogen, 20% available phosphoric acid, and 0% water soluble potash, and shall contain a minimum of 12 percent sulfur. The fertilizer shall be uniform in composition, dry and free flowing, pelleted or granular. All fertilizer shall be delivered in unbroken, or unopened

containers, labeled in accordance with applicable state regulations and bearing the warranty of the producer and the grade furnished.

The fertilizer shall be applied at the rate specified in the Special Conditions of this contract.

The stabilizing emulsion shall be a concentrated liquid chemical that forms a plastic film upon drying and allows water and air to penetrate. The film shall be nonflammable and shall have an effective life of at least one year.

Stabilizing emulsion shall be nontoxic to plant or animal life and nonstaining to concrete or painted surfaces. In the cured state, the stabilizing emulsion shall not be re-emulsifiable. The material shall be registered with and licensed by the State of California, Department of Food and Agriculture, as an "auxiliary soil chemical."

The fertilizer and stabilizing emulsion shall be mixed together with water and applied uniformly and at the correct rates over the seed and straw mulch.

#### 29-2.06 Maintenance

The Contractor shall be responsible for a successful ground cover and its survival through the Contract Maintenance warranty period. This may include, but not be limited to, applying water or additional seed, fertilizer, or stabilizing emulsion. Any failed areas shall be replanted and successfully grown into mature plants, at the sole cost of the Contractor.

### 29-3 Measurement and Payment

#### 29-3.01 Measurement

Work performed under this section shall be measured to the nearest one-tenth acre using the inclined areas of those locations to receive seeding and mulching, as directed by the District Engineer.

The Contractor shall seed and mulch any areas disturbed by his activities which lie outside the working limits as shown on the plans if it is determined by the District Engineer that those areas will benefit from the process. These areas shall not be measured for payment.

#### 29-3.02 Payment

Payment shall be based on the number of acres completed with seeding and mulching. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all seeding and mulching over those areas described herein and any other areas disturbed by the Contractor's operations and not measured for payment. A description of the work is included at the head of this section. Any work associated herewith and not included in this or other bid items shall be deemed as included in the contract unit price for the Seeding and Mulching.