

SECTION 70

SEEDING

70.1 DESCRIPTION

A. General

This work consists of preparing a seedbed and furnishing and planting seed on disturbed areas within limits of the work.

B. Related Work

Section 71 Fertilizing

Section 72 Mulching

Section 76 Compost Application

70.2 MATERIALS

A. General

The seed furnished shall be the best quality seed available for the kind and variety specified. The seed shall comply with the requirements of the South Dakota Seed Law and shall be "Blue Tag" certified governed by Federal Regulations.

B. Origin Limitations

Seed furnished shall have been grown in South Dakota or an area comparable to South Dakota's growing conditions.

C. Seed Testing

Seed shall be tested within eighteen (18) months prior to the planting date. Testing shall be performed by a commercial seed testing lab or a registered member of the Society of Commercial Seed Analysts (Registered Seed Technologist). The Contractor shall furnish the Engineer with a certified test report prior to the start of seeding operations. Seed not planted within the eighteen (18) month period shall be retested for dormant seed, hard seed, and germination. A new certified test report shall be furnished. Testing shall be the responsibility of the Contractor.

D. Labeling

Before seeding begins, the Engineer shall verify that each bag of seed delivered to the project bears a tag, which shows the following information:

- Name and address of supplier.
- Project number for which the seed is to be used.
- Suppliers lot number for each kind of seed in the mixture.
- Origin (where grown) for each kind of seed.
- Purity, germination, and other information required by South Dakota Seed Law for each kind of seed.
- Pounds of bulk seed of each kind of seed in each bag.
- Total pounds of bulk seed mixture in each bag.
- Pounds of pure live seed (PLS) of each kind of seed in each bag.
- Total pounds of pure live seed (PLS) mixture in each bag.
- Dormant seed and hard seed.

When bulk seed is referred to, it is defined as total seed, including pure live seed (PLS), inert matter, crop seed, and weed seed.

E. Seed Mixes

Seed mixes for small applications, under two acres, may be the following:

a. Irrigated Lawn mix

- 80% of at least 3 varieties of Kentucky Bluegrass
- 20% Perennial Ryegrass
- Rate of application – 175# per acre

b. Non-irrigated lawn mix

- 20% Blue Fescue
- 20% Chewings Fescue
- 20% Creeping Red Fescue
- 20% Hard Fescue
- 10% Perennial Ryegrass
- 10% NuBlue Kentucky Bluegrass
- Rate of application – 200# per acre

c. Road Ditch mix

- 40% Crested Wheatgrass
- 30% Perennial Ryegrass
- 20% Hard Fescue
- 10% Annual Ryegrass
- Rate of application – 100# per acre

Seed mixes for seeding areas over two acres shall be designed to meet site-specific requirements, such as soil type, orientation, slope, irrigation/no-irrigation, soil nutrients, and other.

The Contractor shall submit a seed mix listing the specific varieties of seed in the mix intended to be for use. The submittal shall be sent to the City of Rapid City Engineering Division, 300 Sixth Street Rapid City, S.D. 57701 for approval. A new submittal will be required annually. One submittal at the beginning of the year or one submittal for each project will be acceptable. If the mix changes from the original yearly submittal a new submittal will be required.

70.3 CONSTRUCTION REQUIREMENTS

A. General Requirements

Within seasonal limitations, seeding shall be done as soon as finish grading and topsoiling have been completed.

The topsoil to be used in the areas to be seeded or hydroseeded shall have a minimum depth of 6 inches.

Seeding or related work shall not be done when the condition of the soil is such that a satisfactory seedbed or uniform seed placement cannot be obtained. Seed shall not be sown when the wind is strong enough to interfere with uniform seed application. Seed shall not be sown on areas under water.

Slopes shall be worked longitudinally, on contour, during the preparation of areas, drilling, and after seeding.

Fertilizing shall be provided as indicated in Section 71. Mulching shall be provided as indicated in Section 72.

The Engineer may approve necessary adjustment in the requirements outlined to obtain the most satisfactory results under varying conditions.

The Contractor shall calibrate the drill or hydro seeder on each project. Calibration runs may be performed on areas to be seeded.

B. Seasonal Limitations

Seeding shall not be done between June 15 and August 31 without written authorization from the Engineer.

Seeding may be done when the ground is not frozen and condition of the soil permits preparation of a satisfactory seedbed. Seeding shall not be done without authorization from the Engineer.

C. Equipment and Methods

1. Seedbed Preparation

~~Initial preparation of newly graded areas for seeding shall be worked to a depth of approximately three (3) inches.~~ Initial preparation of newly graded areas for seeding shall be worked to a minimum depth of 6 inches. Every effort shall be made to obtain this depth on the first pass with tillage equipment. The implement used shall be a tool carrier with rigid shanks and sweeps or chisels or a heavy duty disk as appropriate to the conditions. The implement shall have positive means of controlling depth of penetration.

Lumps or clods exposed by the initial pass of tillage equipment over three (3) inches in diameter shall be broken up. The number of additional passes required breaking up lumps or clods shall be kept to a minimum. Working the soil to a fine, pulverized condition shall be avoided.

After seedbed preparation has been completed, the Contractor shall pick up and dispose of all loose stones or boulders having a vertical projection of two (2) inches (or more) above the soil surface. Logs, stumps, brush, weeds, cables, or other foreign material, which might interfere with the proper operation of drills, mowers, or other implements, shall be disposed of by the Contractor.

2. Mulching

Top dress newly seeded areas with mulch per section 72.

2.3. Reseeding of Previously Seeded Areas

Existing weeds and cover crop shall be preserved for its mulch value. The seed shall be drilled directly into existing cover if possible, or mowing and disking shall be provided to permit penetration of drill openers and placement of seed to the specified depth.

3.4. Drilling

The specified seed mixture shall be drilled in uniformly, using a press drill equipped with individually mounted, adjustable, spring-loaded, double-disk furrow openers, fitting with depth control bands or drums.

The depth control bands or drums shall provide a loose planting depth of one to one and one-half (1 - 1 ½) inches (distance from band to edge of opener disk) before compaction by the press wheel and a final planting depth of three-fourths to one (¾ - 1) inch behind the press wheel.

The press drill shall be mounted on rear press wheels, which carry a major portion of the weight of the drill and having no weight carrying wheels at the ends of the seed box. The press wheels shall be mounted independently of the furrow

openers. A press wheel shall follow directly behind each opener to compact the soil over the drill row.

The seed box shall be equipped with positive feed mechanisms, which will accurately meter the seed to be planted, and agitators which will prevent bridging in the seed box and keep seeds uniformly mixed during drilling. The drill shall conform to the following:

Drill Width Maximums:

| | |
|---------------------------------------|---------|
| Single Units | 10 feet |
| Flex coupled side-by-side units | 16 feet |
| (max. two 8-foot members) | |

Each drill shall be equipped with a meter, which will measure the area covered by the drill.

Each drill shall be equipped with fabricated baffles or partitions mounted a maximum of two (2) feet on centers and flush with the top of the seed box and extending downward to within four (4) inches of the bottom of the seed box.

On areas where a press drill cannot be operated satisfactorily, hydraulic, cyclone, knapsack hand-operated, or other broadcast type seeders may be used, when approved by the Engineer.

4.5. Hydro seeding

Drilling is the preferred method of seeding. The Contractor shall obtain written permission from the Engineer to hydro seed.

The specified seed mixture shall be hydro seeded uniformly, using a hydro seeder.

The hydro seeder shall be equipped with a gear-driven pump and a paddle agitator. Agitation by re-circulation from the pump will not be allowed. Agitation shall be sufficient to produce homogeneous slurry of seed and fertilizer in the designated proportions.

Fertilizer of the specified formulation shall be included at the specified rate.

Specified seed mixtures shall be included at the specified rate. No seed shall be added to the slurry until immediately prior to beginning the seeding operation.

Legume seed shall be pellet inoculated with the appropriate bacteria. Inoculation rates shall be four times that required for dry seeding.

The time allowed between placement of seed in the hydro seeder and emptying of the hydro seeder tank shall not exceed thirty (30) minutes.

Wood cellulose fiber mulch shall be degradable, wood cellulose fiber or one hundred percent (100%) recycled long-fiber pulp, free from weeds or other foreign matter toxic to seed germination and suitable for hydro mulching.

D. Care During Construction and Final Inspection

The Contractor is responsible for smoothing dirt ridges, which result from his operations or from traffic. Such ridges shall be smoothed so they will not interfere with future mowing.

Following completion of seeding operations, foot, vehicular, or equipment traffic over the seeded area shall be kept to a minimum.

Areas damaged from such traffic shall be reworked and reseeded as determined by the Engineer.

The Contractor shall, prior to acceptance of the project, reseed any area on which the original seed has been lost or displaced.

E. Watering

After seed, fertilizer and mulch have been placed, it shall be watered to provide a moist condition through the mulch as well as into the underlying soil bed.

For a period of three weeks after seeding and initial watering, the Contractor shall apply adequate water to insure proper germination of the seed and growth of the grass. The Engineer may waive watering requirements if adequate natural moisture has been present. At the end of the three (3) week watering period, the Engineer will make an inspection to determine if the grass is alive and growing. If seed has not satisfactorily rooted into the soil and is not alive and growing, the Engineer will determine if new seed and/or additional watering, at the Contractors expense, are required. Replaced seed shall be watered as required for the original.

After the Engineers acceptance of the newly seeded areas, the Contractor shall notify all affected property owners, with notification of watering requirements provided by the Owner, that they will be responsible for watering the newly seeded areas. The Contractor shall provide written verification that affected property owners have both been notified and have accepted the condition of the newly seeded areas. The growing season is defined as May through September.

70.4 METHOD OF MEASUREMENT

Seeding will be measured to the nearest square yard. Measurement for fertilizer and mulch will be the same as for the seeding. Tickets indicating the appropriate application rate has been met shall be furnished to the Engineer to verify this area.

70.5 BASIS OF PAYMENT

Seeding will be paid for at the contract unit price per square yard. This price will be full compensation for the preparation of the seed and for labor, tools, equipment, and incidentals necessary.

Payment for seeding, fertilizing, and mulch will all be included under the same bid item. Water for seeding shall be considered incidental and shall be included in the unit price bid for seeding.

END OF SECTION