

SECTION 730 SEEDING

730.1 DESCRIPTION

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

730.2 MATERIALS

- A. **General:** The seed shall comply with the requirements of the South Dakota Seed Law.
- B. **Origin Limitations:** Seed furnished shall have been grown in South Dakota, North Dakota, Montana, Wyoming, Nebraska, Iowa, or Minnesota. Seed grown outside this area may be approved after the Contractor has furnished written certification from three seed suppliers confirming that seed grown within this area is not readily available.
- C. **Seed Testing:** Seed shall be tested within 18 months prior to planting. Testing shall be performed by a State Seed Lab, Commercial Seed Testing Lab, or a registered member of the Society of Commercial Seed Analysts (Registered Seed Technologist). A certified test report shall be furnished prior to the start of seeding operations. Seed not planted within the 18 month period shall be retested for dormant seed, hard seed and germination and a new certified test report shall be furnished. A certified test report will not be required on projects where the plans quantity of seed is 100 pounds (50 kilograms) or less.
- D. **Labeling:** Each bag of seed delivered to the project shall bear a tag which shows the following information:
 - 1. Name and address of supplier.
 - 2. County and project number for which seed is to be used.
 - 3. Suppliers lot number for each kind of seed in the mixture.
 - 4. Origin (where grown) for each kind of seed.
 - 5. Purity, germination, and other information required by South Dakota Seed Law, for each kind of seed.
 - 6. Pounds (kilograms) of bulk seed of each kind of seed in each bag.
 - 7. Total pounds (kilograms) of bulk seed mixture in each bag.
 - 8. Pounds (kilograms) of pure live seed (PLS) of each kind of seed in each bag.
 - 9. Total pounds (kilograms) of PLS mixture in each bag.
 - 10. Dormant Seed and Hard Seed.

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

- E. Inoculation of Legumes:** Prior to seeding, legumes (alfalfa, clovers, etc.) shall be inoculated with fresh culture of the appropriate nitrogen fixing bacteria in accordance with instruction accompanying the inoculant. A certification of the inoculation shall be furnished.

730.3 CONSTRUCTION REQUIREMENTS

- A. General Requirements:** Within seasonal limitations, seeding shall be done as soon as finish grading and topsoiling on each section have been completed.

Seeding or related work shall not be done when the ground is frozen or 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 interferes with uniform seed application, or on areas under water.

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

Fertilizing and mulching shall be provided as specified in Sections 731 and 732.

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

- B. Seasonal Limitations:** Seeding shall not be done between June 1 and August 1, without written authorization from the Region Engineer.
- C. Application Rate:** The seed mixture shall be applied at the plan specified rate of pounds of PLS per acre (kilograms of PLS per hectare). If a retest of the seed mixture shows a reduction in PLS, adjustment of the seed mixture rate will not be made. Payment will be reduced as set forth in Section 730.4.

The Contractor will be required to calibrate the drill or hydroseeder on each project. Calibration runs may be performed on areas to be seeded.

- D. Equipment and Methods:**

- 1. Seedbed Preparation:** Initial preparation of newly graded areas for seeding shall be worked to a depth of approximately 3 inches (75 mm). 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 with 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 3 inches (75

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mm) in diameter shall be broken up. The number of additional passes required to break up lumps or clods shall be kept to a minimum. Working the soil to a fine pulverized condition shall be avoided. The final prepared seedbed shall be left in a roughened condition consisting mainly of lumps two to three inches (50 mm to 75 mm) in diameter, for maximum resistance to erosion.

After seedbed preparation has been completed, the Contractor shall pick up and dispose of all loose stones or boulders having a vertical projection of 3 inches (75 mm) or more above the soil surface. Logs, stumps, brush, weeds, cobbles, or other foreign material which interferes with the proper operation of drills or other implements shall be disposed of by the Contractor.

2. **Reseeding of Previously Seeded Areas:** Existing weeds and cover crop shall be preserved for mulch. The seed shall be drilled directly into existing cover if possible, or by mowing and disking to permit penetration of drill openers and placement of seed to the specified depth.
3. **Drilling:** The specified seed mixture shall be uniformly drilled using a press drill equipped with individually mounted, adjustable, spring loaded, double disk furrow openers fitted with depth control bands or drums.

The depth control bands or drums shall provide a loose planting depth of 1 to 1½ inches (25 mm to 38 mm), (distance from band to edge of opener disk), before compaction by the press wheel, and a final planting depth of ¾ to 1 inch (20 mm to 25 mm) 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 shall have no weight carrying wheels at the ends of the seedbox. 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 seedbox shall be equipped with positive feed mechanisms which will accurately meter the seed, and agitators which will prevent bridging in the seedbox and keep the seed uniformly mixed during drilling. The drill shall conform to the following:

a. Drill Width Maximums:

- 1) Single units10 feet (3 meters)
- 2) Flex coupled side by side units..... 16 feet (5 meters)
(max. two 8 foot (two 2.5 meter) members)
- 3) Max. drill row (openers) spacing.....8 inches (200 mm)

Each drill shall be equipped with a metering device which will measure the area covered by the drill.

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Each drill shall be equipped with fabricated baffles or partitions mounted a maximum of two foot (600 mm) on centers and flush with the top of the seed box and extending downward to within four inches (100 mm) of the bottom of the seed box.

On areas where a press drill cannot be operated satisfactorily, hydraulic, cyclone or knapsack hand operated, or other broadcast type seeders may be used.

4. Hydroseeding: The equipment shall be designed specifically for hydroseeding or hydromulching application. The nozzle shall be adaptable to hydraulic seeding requirements. Storage tanks shall have a means of estimating the volume used or remaining in the tank.

E. Care During Construction and Final Inspection: Dirt ridges which result from seeding operations or from traffic shall be smoothed so they will not interfere with future mowing operations.

Following completion of seeding operations, foot, vehicular, or equipment traffic over the seeded area shall be avoided. Areas damaged from such traffic shall be reworked and reseeded.

Prior to acceptance of the project, any area on which the original seed has been lost or displaced shall be reseeded.

F. Excluded Areas: Certain areas outside the right-of-way widths which are devoted to cultivation, and undisturbed areas within the right-of-way widths which have a good growth of grass may be excluded from seeding operations.

730.4 METHOD OF MEASUREMENT

Seeding will be measured to the nearest pound (kilogram) of PLS furnished and planted. Unauthorized increases in the specified rate of seeding will not be measured for payment. Seed required for calibration of the drill will be measured. Reseeding of areas damaged from causes beyond the control of the Contractor will be measured and added to the original quantities used.

The weight of PLS is computed by multiplying the purity, times the sum of the germination and dormant seed value, times the weight of bulk seed applied. The purity, dormant seed, and germination values will be as shown on the bag tag. When a lower combined dormant seed and germination value is determined by a retest, the retested value will be used in determining PLS.

730.5 BASIS OF PAYMENT

Pure live seed will be paid for at the contract unit price per pound (kilogram). Payment will be full compensation for the preparation of the seedbed, labor, tools, equipment, and incidentals necessary. **The cost of the inoculant and its application shall be incidental to the contract unit price for the specified seeding item(s).**