

SECTION 7200 – SEEDING

7201 SCOPE. This section covers the furnishings of all labor, equipment, tools and materials, and the performance of all work for seeding, sodding and landscaping as designated on the contract drawings.

7202 GENERAL. The seeding work shall consist of furnishing and drilling in or sowing seed by an experienced seeding contractor having approved equipment manufactured expressly for the purpose, such as a seed drill with fertilizer attachment, mulch chopper and blower for the application of hay or straw mulch, mulch puncher or straight serrated disc for punching mulch into soil and a cultipacker that may be used for final compaction except as otherwise approved by the Engineer.

For public improvement projects seeding shall be required at all locations shown on the plans and for all grass covered areas that are disturbed by construction operations, either by grading, parking of equipment, temporary roads, or any other operation that has destroyed the existing grasses of the original site, and that is not designated on the drawings to be replaced with sod.

For all other types of construction, including that work done under a right-of-way permit, seeding shall be required where areas are disturbed by construction within the right-of-way in established yards or as directed by the Engineer.

7203 MATERIAL.

Seed shall be the kind and mixture specified herein. Seed shall be free of noxious weed seeds and shall not have more than one (1%) percent of weed seeds. Seed shall be delivered to the site in original containers, each fully labeled, bearing the name, or trademark and a warranty of the producer and a certificate of the percentage of the purity and germination of each kind of seed specified. The tags shall be made available to the Engineer for filing.

- A. Temporary Seeding. Establish fast-growing annual vegetation to provide erosion control for up to twelve (12) months and reduce the amount of sediment moving off the site. Annual plants, which sprout rapidly and survive for only one (1) growing season are suitable for establishing temporary vegetative cover. The Engineer may require mowing of temporary vegetation.

This practice applies where short-lived vegetation can be established before final grading or in a season not suitable for permanent seeding.

Species*	Seeding Rate		Plant Characteristics
	lbs. per Acre	Lbs. per 1,000 ft.2	
Oats	80 lbs	2 lbs.	Not cold tolerant, height up to 2 feet
Cereals: Rye/Wheat	90 / 120	2.0 / 2.5	Cold tolerant, height up to 3 feet, low pH tolerant
Milletts, Sudangrass	45 / 60	1.0 / 1.5	Warm season annual, aggressive growth, height up to 5 feet
Annual Ryegrass	75	2	May be added to mix, not heat tolerant, height up to 16 inches
Annual Lespedeza**Plus Tall Fescue	15 plus 45	0.5 plus 1.0	Warm season annual legume, makes own nitrogen, tolerates low pH

B. Permanent. Permanent seeding shall match the existing grass type in established turf areas or as indicated or specified. In others areas seed shall be one of the following types. A mixture of seed types may be used if approved by the Engineer.

Seed Type	Planting Depth (inches)	Seeding Rate.	
		Lbs. PLS/ 1,000 SF	Lbs PLS/ Acre
Bermudagrass	1/8	1.5-3	20
Kentucky Bluegrass	1/8	2-3	50
Tall Fescue	1/8 – 1/4	6-8	80
Perennial Rye	1/8 – 1/4	6-8	80

Pure Live Seed (PLS) = Amount of Seed Guaranteed to Grow

Use the following equations to determine the amount of seed required.

$$\%PLS = \%Purity \times \%Germination$$

$$Lbs. Bulk Seed Required = \frac{Lbs. PLS Recommended}{\%PLS}$$

Nurse crops such as wheat (1 bushel/acre), annual rye (1 bushel/acre), or oats (1 1/2 bushels/acres) shall also be used with all seeding mixtures. Small grain nurse crops should be planted about one (1) inch deep if planted separately and grasses and legumes one-half (1/2) inch deep. Nurse seed can be planted at shallower depths if mixed and planted with the permanent seed mix.

Native grass seed blends shall be used where indicated or specified. The seed mixture shall be as specified for the specific project and location.

C. Sod. Sod may be required, in lieu of seeding, if indicated on the plans. The sod shall be of the same type as removed or damaged and shall be of the best grade. If type is not indicated or unknown, sod shall be either Kentucky Blue Grass or tall fescue. The sod shall contain a growth of not more than ten (10%) percent of other grasses and clovers, shall be free from all prohibited and noxious weeds and shall be three-fourths (3/4") inch to one and one-fourth (1-1/4) inch thick. Sod shall be cut in strips not less than 18 inches wide and three (3) feet long.

D. Fertilizer. Commercial fertilizer for seeded areas shall consist of inorganic nitrogen only unless soil tests for the specific site indicate the need for other components.

It shall be uniform in composition, free flowing, and delivered to the site with certification showing weight, analysis, and name of manufacturer. It shall be stored until use in a weatherproof storage place in such a manner that it will be kept dry and its effectiveness will not be impaired.

E. Mulch. Mulch for application to seedbed areas shall include wheat straw, oat straw, smooth brome grass hay, Sudan grass hay or prairie hay. Mulch shall be free of prohibited and noxious weed seeds. Hydro mulching will be allowed at the Contractor's option.

7204 INSTALLATION.

A. Time Of Seeding. Seeding and fertilizing shall be performed during periods shown in the following tables unless otherwise approved by the Engineer. Seeding and fertilizing shall not be done during periods of such severe drought, high winds, or excessive moisture, as determined by the Engineer, that satisfactory results are not likely to be obtained.

Temporary Seeding

Species	Acceptable Dates	Optimum Dates
Oats	Feb, May, Aug 1-15, Sep 16-30	Mar, Apr
Rye/Wheat	Jan thru May, Jul 16- Sep 15, Nov 1-15	Sep 16-Oct 31
Millet, Sudangrass	May 1-15, Jul 1-Aug 15	May 16-Jun 30
Annual Ryegrass	Jan, Feb, May, Jul 16- Aug 15, Sep 15-30	Mar, Apr, Aug 16-Sep 15
Annual Lespedeza plus Tall Fescue	Jan, Feb, May	Mar, Apr

Permanent Seeding

Species	Acceptable Dates	Optimum Dates
Bermudagrass	Jun, Jul	Apr 16-May 31
Kentucky Bluegrass, Tall Fescue, Perennial Rye	Feb 1 – Mar15, Apr 15-May 31, Aug 1-15, Sep 16-Oct 31	Mar 16-Apr 15 Aug 16-Sep 15

- B. Application Of Fertilizer. Before tilling of the soil for seeded areas, the commercial fertilizer of the type specified shall be uniformly distributed over the entire site at the rate of 60 lbs./acre for quick release type or 90 lbs./acres for slow release type, and incorporated into the soil to a depth of at least two (2) inches by discing or harrowing methods or with a fertilizer drill. The fertilizer may be applied with the seeding operation only if a seed drill with a fertilizer attachment is used. Fertilizer may be broadcast in small areas not accessible to equipment.

The use of fertilizer shall not be allowed with native grass seed.

- C. Preparation Of The Seedbed. The area to be seeded shall be thoroughly tilled to a depth of at least three (3") inches by discing, harrowing or other approved methods until the soil is well pulverized. After completion of the tilling operation, the surface shall be cleared of all stones, stumps, or other objects larger than one and half (1-1/2) inches in thickness or diameter, and of roots, wire, grade stakes, and other objects that might be a hindrance to maintenance operations. Areas tilled shall then be brought to the desired line and grade and maintained until seeding and mulching is complete to ensure a smooth area with no gullies or depressions.

Any objectionable undulations or irregularities in the surface resulting from tillage or other operations shall be removed before planting operations are begun. Seedbed preparation shall be performed only during periods when satisfactory results are likely to be obtained. When results are not satisfactory because of drought, excessive moisture or other causes, the work shall be stopped until such conditions have been corrected to the satisfaction of the Engineer.

- D. Placement Of Seed. Seeding may be accomplished by means of approved mechanical power-drawn drills followed by packer wheels, or by broadcast-type seeders or hydraulic type seeders in small areas not accessible to machine methods, or as approved by the city Engineer.

Mechanical power-drawn drills shall have depth bands set to maintain a planting depth of at least one-quarter (1/4") inch but not to exceed one-half (1/2") inch. Seed drills shall be set to space the rows not more than

four (4") inches apart. All seed sown by broadcast-type seeders shall be "raked in" or otherwise covered with soil to a depth of at least one-quarter inch. Water shall be applied when necessary.

Hydraulic seeding equipment shall include a pump capable of being operated at one hundred (100) gallons per minute and at one hundred (100) pounds per square inch pressure, unless otherwise directed. The equipment shall have an acceptable gauge and a nozzle adaptable to hydraulic seeding requirements. Storage tanks shall have a means of agitation and a means of estimation of the volume used, or remaining in the tank.

Seed shall not be drilled or sown during windy weather or when the ground is frozen or otherwise untillable.

- E. Mulching. Straw or hay mulch shall be applied uniformly to seeded areas at a rate to provide coverage of 75% of the area. Baled straw or hay shall be broken up and loosened sufficiently before being fed into the blower hopper to avoid the placing of matted or unbroken clumps. The use of wet straw or hay is prohibited.

Mulching shall be performed within twenty-four (24) hours after seeding, but not be done during windy or rainy weather or when such weather is imminent. Mulching shall be started at the windward side of relatively flat areas, or at the upper part of steep slopes and shall continue uniformly until each area is covered.

The mulching material shall be disced or punched into the soil so that it is partially covered. Several passes may be required, if a straight disc is used, in order to mix the mulching material with the topsoil sufficiently to ensure protection from erosion by either wind or water. The mulch tilling operation shall be performed parallel to the ground contours.

- F. Maintenance. All seeded areas shall be protected against damage by vehicle and pedestrian traffic by the use of barriers and appropriate warning signs. If at any time before completion and acceptance of the seeding work any portion of the seeded area becomes gullied or otherwise damaged, Contractor shall repair such damaged areas with soil to original grade, re-seeding and re-mulching. All costs of repair work shall be borne by the Contractor.

- G. Establishment Period and Acceptance.

- a. Contractor shall be responsible for the growth of the seeded area(s).

- b. Owner will inspect seeding for emergence 30 days after seeding work is completed. Contractor will be notified of and permitted to attend the inspection(s).
 - i. Any areas deemed by Owner to be thin, weak or dead will be replaced by Contractor.
 - ii. All washouts will be reseeded immediately after the germination inspection.
 - iii. Any portion of the seeded area that is not in good growing condition at the end of 30 days shall be re-seeded at Contractor's expense.
- c. Owner will inspect seeding for establishment and acceptance no sooner than 60 days after seeding work is completed. Contractor will be notified of and permitted to attend the inspection(s).
- d. Owner acceptance will be based upon seeded areas are in live, healthy, growing, and well-established condition without eroded areas, bare spots, weeds, undesirable grasses, disease, or insects.
 - i. Satisfactory establishment of grass shall based upon:
 - 1. Healthy, uniform, close stands of grass, 90 percent weed free, and without surface grade irregularities.
 - 2. Coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 6 by 6 inches.
 - 3. Minimum of 2" in height.
- e. During the warranty period, correct and reseed any defects in the seeded areas and grass stand, such as weedy areas, eroded areas, and bare spots, until all affected areas are accepted by Owner.
- f. After acceptance by the Owner, the Contractor shall notify the adjacent property owner(s) that the Contractor's maintenance obligation is complete and maintenance is now the responsibility of the property owner.

H. MEASUREMENT AND PAYMENT. The Engineer will measure "Seeding" by the lump sum. No measurement will be made of the area seeded. Payment for "Seeding" at the contract unit price is full compensation for the specified work.