

## **SECTION 02930**

### **GRASSING**

#### **PART 1 – GENERAL**

##### **1.1 SCOPE OF WORK**

The CONTRACTOR shall furnish all labor, equipment, tools, and materials necessary to perform all tasks required to complete all grassing within the limits of right-of-way and other disturbed areas shown on the plans, in coordination with all other divisions of WORK. Any incidental work, material, or appurtenances not specifically shown, but necessary for completion of the WORK, shall be furnished as required. All unpaved areas cleared and grubbed, graded, filled, excavated, or otherwise disturbed during construction, both within and beyond the right-of-way limits shown on the plans, shall be grassed. Grassing includes both temporary and permanent grassing.

##### **1.2 GENERAL**

The CONTRACTOR shall be responsible for verifying the condition and suitability of areas to receive grassing. The WORK to be performed under this section consists of preparing the seedbed or area to be sodded, furnishing, and placing sod, furnishing, placing, and covering limestone, fertilizer, and seed, compacting seedbeds, furnishing and securing mulch, mowing, and other operations necessary for the permanent establishment of grasses. All disturbed areas are to be grassed.

The CONTRACTOR shall adapt his operations to variations in the weather, seasons of the year, and soil conditions as necessary for the establishment of temporary and permanent grass cover.

Before acceptance and final payment is made for the grassing work, a complete and full coverage of all areas are to be filled, reseeded, and completely covered with grass.

Areas where washing is evident are to be regraded, stabilized with degradable woven mesh, secured with stakes in accordance with the manufacture's recommendations, and re-grassed.

#### **PART 2 – PRODUCTS**

##### **2.1 GENERAL**

- A. Permanent grassing shall be established on all unpaved areas graded or disturbed during construction.

- B. Materials shall be approved by the Engineer prior to use and shall include limestone, fertilizer, seed, and mulching materials.

## **2.2 FERTILIZER**

- A. Provide a mixed fertilizer with a designation such as 10-10-10, where the first number represents the minimum percent of nitrogen required, the second number represents the minimum percent of available phosphoric acid required, and the third number represents the minimum percent of water soluble required in the fertilizer. For centipede grass, use only 15-0-15 or 16-4-8 fertilizer. Fertilizer shall be delivered to the site in bags labeled with the manufacturer's guaranteed analysis.

## **2.2 GRASS SEED**

- A. Provide grass seed which is:
  - 1. Free from noxious weed seeds, and recleaned.
  - 2. Grade A recent crop seed.
  - 3. Treated with appropriate fungicide at time of mixing.
  - 4. Delivered to the site in sealed containers with dealer's guaranteed analysis.

## **2.3 LIME**

- A. Limestone shall be agricultural grade limestone containing no less than 85 percent by weight of combined calcium and magnesium carbonate. All limestone shall be graded so the 100 percent will pass through U.S. Standard 10 mesh screen and 40 percent will pass through U.S. Standard mesh screen. Any hardened or caked limestone shall be pulverized to its original condition before being used.
- B. Bag tags or delivery slip for bulk loads shall indicate brand or trade name, calcium carbonate equivalent, and other pertinent data to identify the lime.

## **2.4 WOOD CELULOSE FIBER**

- A. Provide wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer.
- B. Material to be heat processed to contain no germination or growth inhibiting factors.
- C. It shall be dyed (non-toxic) an appropriate color to facilitate metering.

## **2.5 STRAW MULCH**

- A. Provide straw or hay material.
  - 1. Straw to be stalks of wheat, rye, barley, or oats.
  - 2. Hay to be timothy, peavine, alfalfa, or coastal bermuda.
- B. Material to be reasonably dry and reasonably free from mature seed-bearing stalks, roots, or bulblets or Johnson Grass, Nutgrass, Wild Onion and other noxious weeds.

## **2.6 EXCELSIOR FIBER MULCH**

- A. To consist of 4" to 6", average length, wood fibers cut from sound, green timber.
- B. Make cut in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood.

## **2.7 EROSION CONTROL BLANKET**

- A. Provide on areas as shown on the plans.
- B. Provide Erosion Control Blanket S150, from North American Green, or approved equal.

## **2.8 SODDING**

Sodding shall be required in established lawn areas or where seeding will not remain due to washing. All sod shall comply with State Seed Laws of the State of South Carolina. Sod shall be of similar variety of that displaced.

Sod shall be cut in strips or rectangular sections which may vary in length but shall be of equal width and of a size that will permit the sections to be lifted and rolled without breaking. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. When the soil is too dry, the sod shall be cut only after the CONTRACTOR has watered the sod sufficiently to moisten the soil to a depth at which the sod is to be cut. Torn or unevenly cut strips or sections will not be acceptable.

Sod shall be placed after the soil has been prepared as specified. Care shall be always exercised to retain the native soil on the roots of the sod during the process of stripping, transporting, and planting. Dumping from vehicles will not be permitted. The sod shall be transplanted within 24 hours from the time of stripping, unless stored in a satisfactory manner. During delivery and while in stacks, the sod shall be kept moist and shall be protected from exposure to the air and sun.

Sod shall be laid smoothly, edge to edge, with staggered joints. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with acceptable equipment to eliminate all air pockets, provide a true and even surface, and assure knitting. Small gaps or voids remaining after the sod is laid shall be filled with topsoil.

Staking of sod on slopes will not be required; however, the CONTRACTOR shall be solely responsible for replacing sod displaced by erosion or other causes.

After rolling, sod shall be irrigated to a depth sufficient that the underside of the sod section and the soil four (4) inches below the sod is thoroughly wet. Sod shall be watered during the first three to four weeks as necessary to maintain moist soil to a depth of at least two (2) inches.

## **2.9 TEMPORARY GRASSING**

Temporary grassing shall be performed in selected areas in advance of permanent grassing operations for the purpose of minimizing erosion in graded and disturbed areas during construction operation. Temporary grassing is a supplement to and not a substitute for, permanent grassing operations, erosion, or sediment control measures. The WORK shall include preparing seedbeds; furnishing, placing, and covering fertilizer and seeds; mowing; and any other operations necessary for establishing temporary grassing of the required areas.

Temporary Grassing shall be done promptly at the location and times directed by the Engineer and under the following conditions:

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1. When a graded area cannot be brought to final grade and remain undisturbed and permanently grassed during construction, temporary grassing shall be provided until final grade can be obtained, and the graded area permanently grassed.
2. When washing or erosion can occur on disturbed areas where temporary suspension of construction activity has taken place.
3. When an immediate ground cover is desirable to minimize washing, erosion, sedimentation, or pollution on any area.
4. When the season of the year is not suitable for establishing permanent grassing.

Areas to be grassed shall be loosened to a depth of five (5) inches. The surface to be seeded shall have adequate terraces and other irregularities in which seed and fertilizer can lodge so that the grassing materials cannot be easily dislodged by wind, rain, or surface runoff.

Seed and Fertilizer shall be applied uniformly at the required application rates over the prepared area to be grassed.

10-10-10 Fertilizer shall be applied at a rate of 500 pounds per acre.

Mulch shall be spread uniformly by hand or by mechanical spreader and blowers in the amount of 60 bales per acre.

Areas of Temporary Grassing shall be maintained in satisfactory condition until being permanently grassed. The maintenance shall include repair of erosion, reseeding, and mowing. All WORK to maintain areas of temporary seeding shall be done promptly at the direction of the District Engineer.

## **PART 3 – EXECUTION**

### **3.1 GENERAL**

- A. Seed these areas immediately upon completion of grading or construction and clean-up operations.
  1. Slopes greater than four horizontal to one vertical.
  2. Utility rights-of-way adjacent to stream banks.

### **3.2 SEEDING SCHEDULE**

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- A. Unless otherwise provided, select the type of seeding from the tables shown below for the upper state and the lower state regions as applicable to the project. The total seed rate in pounds per acre is the sum shown for all the varieties of seed opposite the schedule number in the seeding schedules included herein.
- B. Adhere to the following permanent seeding schedules:

Seeding Schedule for Permanent Vegetation Upper State				
Schedule No.	Common Name of Seed	Pounds/acre Rural1	Pounds/acre Urban1	Planting Dates
1	Common Bermuda (hulled)3	23	23	March 15 to August 14
	Sericea Lespedeza (scarified)2	50	50	
	Kentucky 31 Fescue	50	60	
	Weeping Love Grass2	10	10	
2	Kentucky 31 Fescue	50	80	August 15 to March 14
	Sericea Lespedeza (unhulled, unscarified)2	80	80	
	Common Bermuda (unhulled)3	30	30	
	Weeping Love Grass2	10	10	
	Reseeding Crimson Clover4	20	0	
	Annual Rye Grass5	5	15	
	Rye Grain	20	0	
<p>1 Includes rural areas adjacent to well-developed lawns.</p> <p>2 Not required on shoulders, medians, etc. and on slopes under 5 feet in height.</p> <p>3Do not use Giant Bermuda seed including NK-3.</p> <p>4Provide an inoculant for treating reseeding crimson clover seed of a pure culture of nitrogen-fixing bacteria selected for a maximum vitality and ability to transform nitrogen from the air into soluble nitrates and deposit them in the soil. Ensure that inoculants consist of purebred cultures and are not more than one year old. Do not plant clover in medians or in rural areas adjacent to well-developed lawns.</p> <p>5the use of Italian Rye Grass is prohibited on all projects.</p>				

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C. Temporary seeding schedule

Seeding Schedule for Temporary Vegetation			
Schedule No.	Common Name of Seed	Pounds/acre	Planting Dates
1	Brown Top Millet	50	April 1 to August 15
2	Rye Grain	55	August 16 to March 31
	Annual Rye Grass <sup>1</sup>	15	
1 The use of Italian Rye Grass is prohibited.			

### 3.3 GROUND PREPARATION

- A. Bring all areas to proper line, grade and cross section indicated on the plans.
- B. Repair erosion damage prior to commencing seeding operations.
- C. The seedbed shall be prepared in topsoil placed by the CONTRACTOR. The soil shall be scarified or otherwise loosened to a depth of five (5) inches or more. All clods are to be broken up and all rocks and debris removed. The upper three (3) inches of soil shall be worked into an acceptable seedbed using a pulverizer, drags, or harrow. 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.
- D. Limestone shall be uniformly applied at a minimum amount of 2000 pounds per acre and worked into the soil prior to incorporation of the seed.
- E. Fertilizer, limestone, and seed shall be applied within 24 hours of completing seedbed preparation.

### 3.4 APPLICATION OF FERTILIZER

- A. Spread uniformly over areas to be seeded.

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1. Rate of 1,000 lbs. per acre.
  2. Fertilize centipede at the application rate of 20 pounds per acre of 16-4-8 or 15-0-15.
  3. Use approved mechanical spreaders.
- B. Mix with soil to depth of approximately 3 inches.

### **3.5 SOWING METHODS**

- A. General:
1. Perform seeding during the periods and at the rates specified in the seeding schedules.
  2. Do not conduct seeding work when ground is frozen or excessively wet.
  3. Produce satisfactory stand of grass regardless of period of the year the Work is performed.

### **3.6 MULCHING**

Mulch shall be applied to the seedbed area within 36 hours after completion of the seeding operation.

1. Prior to applying mulch, all roots, debris, and rocks greater than two (2) inches in diameter are to be removed from the seedbed area.
2. Care shall be taken not to displace soil or seed during mulching operations.
3. Mulch shall be spread uniformly by hand or by mechanical spreaders and blowers in the amount of 60 bales per acre.
4. Mulch on slopes greater than 5 percent is to be held in place by applying emulsified asphalt in the amounts of 250 gallons of emulsified asphalt per acre or shall be held in place by woven mesh properly staked.
5. Mulch in ditch lines is to be held in place by woven mesh and replaced as required if washed away by heavy rains.



Other suitable means of holding the mulch in place may be used with prior approval of the District Engineer.

### **3.7 SECOND APPLICATION OF FERTILIZER**

- A. When plants are established and showing satisfactory growth, apply nitrogen at the rate of 1.0 pound per 1000 square feet.
- B. Apply in dry form unless otherwise directed by the Engineer.
- C. Do not apply to stands of temporary grasses.

### **3.8 MAINTENANCE**

- A. Maintain all seeded areas in satisfactory condition until final acceptance of the work.
- B. Areas not showing satisfactory evidence of germination within six weeks of the seeding date shall be immediately reseeded, fertilized and/or mulched.
- C. Repair any eroded areas.
- D. Maintenance shall include mowing, repair of areas of erosion and washing, repair of damaged areas, areas of soft material likely to cause rutting, and reseeding as necessary to establish a sufficient uniform grass cover.

### **3.9 ACCEPTANCE**

- A. Permanently seeded areas (Schedule "B") will be accepted when the grass attains a height of two inches.
- B. No acceptance will be made of temporary seeded areas (Schedule "A"); Rework and seed with Schedule "B".

**END OF SECTION**

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