

APPROVED:

Division Administrator

By: \_\_\_\_\_

FEDERAL HIGHWAY ADMINISTRATION

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Supplemental Technical Specification for

**SEEDING**

SCDOT Designation: SC-M-810-4 (01/25)

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**1.1 Description**

This work consists of permanent cover, permanent grassing for resurfacing projects and temporary cover, including liming and fertilizing (when specified), and applying mulch on all areas shown on the Plans or where directed by the Resident Construction Engineer (RCE) in accordance with these Specifications. The Contractor coordinates temporary and permanent cover applications with the construction of fill and cut slopes. In order to limit the area of erodible material, the RCE may require that partially completed slopes be stabilized.

**1.2 Materials**

Prior to application, submit required material certifications to the RCE for acceptance. At the time of application, the Contractor will furnish the RCE with invoices, material tags, and/or other supporting documentation for all materials received in order to verify application rates.

**1.2.1 Seed**

Use seed that conforms to all state laws and all requirements and regulations of the South Carolina Department of Agriculture (SCDA). Seeds containing species designated by the State Crop Pest Commission as a plant pest (i.e., noxious weeds) are not permitted. Use seed that is individually packaged or bagged and tagged. Each tag must clearly state:

- Name of company or responsible party for analysis (seller or grower)
- Net weight
- Botanical name
- Common name
- Variety
- Lot number
- Percent purity (pure seed)
- Percent germination  $\geq 80\%$
- Percent by weight other crop seed
- Percent by weight of inert matter
- Percent by weight common (non-noxious) weed seed  $\leq 1.0\%$  (99.0% weed free)
  - If weed seed is present, provide a list of species by botanical name
- Origin
- Date of packaging or date tested (date must be within 9 months of the planned date of seed application)

When mixtures of different types of permanent seed are called for in the seeding schedule it is preferred that the Contractor use pre-blended permanent seed mixtures listed on the most recent edition of the *SCDOT Qualified Product List 88* for the specific location and application. These pre-blended permanent seed mixtures are individually packaged or bagged and tagged with the tag specifying the botanical and common name of each species contained in the blend, and the percentages of each species.

SCDOT reserves the right to review, test, reject, or approve all seed before seeding operations begin.

Seed must be used within nine (9) months from the date of packaging. Seed exceeding nine (9) months from the date of packaging will not be accepted.

### 1.2.2 Agricultural Granular Lime

Use solid agricultural granular lime for all permanent cover applications that is agricultural grade, standard ground limestone conforming to the current *Rules, Regulations, and Standards of the Fertilizer Board of Control*. These rules, regulations, and standards are promulgated and issued by the Fertilizer Board of Control at Clemson University in accordance with Section 16 of the *South Carolina Liming Materials Act*. Ensure that each bag has affixed in a conspicuous manner a tag or label, or in the case of bulk sales, a delivery slip showing brand or trade name, calcium carbonate equivalent, percent by weight passing prescribed U. S. Standard Sieves, and other pertinent information to identify lime as being agricultural grade, standard ground limestone.

### 1.2.3 Fast Acting Lime

Use fast acting liquid forms and/or dry forms of lime for all permanent cover, permanent grassing for resurfacing projects and temporary cover by seeding applications that meet all of the requirements of agricultural grade granular lime specified herein, except percent by weight passing U.S. Standard Sieves.

### 1.2.4 Granular Fertilizer

Use slow release granular fertilizer for all permanent cover applications that complies with state fertilizer laws. In a mixed fertilizer such as 10-10-10, the first number represents the percent of nitrogen required, the second number represents the percent of available phosphoric acid required, and the third number represents the percent of water soluble potash required in the fertilizer. Potash is potassium chloride and is often referred to as the potassium (K) in the fertilizer mix. 10-10-10 represents the percent (%) of Nitrogen – Phosphorus- Potassium commonly referred to as the (N-P-K).

**Use fertilizer that incorporates a minimum of 50% slow release (water insoluble) nitrogen.** The statements water insoluble, slowly available or slowly available soluble nitrogen also indicate slow release forms of nitrogen. Typically the slow release fertilizer will list the percentage of nitrogen (expressed as a percentage by weight of the package contents) that is in the slow release form. For example when a 10-10-10 fertilizer is labeled as 5% slow release nitrogen, the bag contains 10% total nitrogen, with 5% being slow release nitrogen. To determine the total percent of nitrogen in slow release form, divide the slow release percentage by the total percentage, and multiply by 100. In this example,  $5\% / 10\% \times 100 = 50\%$  of the total nitrogen is in slow release form.

Use fertilizer that has a package slip clearly stating the percentage of nitrogen, percentage of slow release nitrogen, percentage of phosphoric acid, and percentage of potash along with the weight (pounds) of nitrogen, weight (pounds) of phosphoric acid, and weight (pounds) of potash. Animal by-product or municipal waste fertilizers are not acceptable under this Specification.

### 1.2.5 Biological Growth Stimulants

Provide biological growth stimulants for all permanent cover, permanent grassing for resurfacing projects and temporary cover by seeding applications. Use biological growth stimulants that provide an immediate seedbed adjustment to help stimulate seed germination, improve the availability of nutrients to the plant, increase the number and depth of root development, and generate robust plant growth that is more tolerant of changes in environmental conditions.

Use biological growth stimulants that:

- Contain natural components that encourage nutrient uptake, nitrogen metabolism, and carbohydrates storage,

- Improve fertilizer utilization in the soil by increasing the enzymatic and microbial nutrient conversion activity,
- Improve photosynthetic production resulting in greater root mass and improved disease resistance,
- Contain components to improve nutrient and water uptake by the plant,
- Contain plant growth hormones which act as a stimulant to improve vegetative growth and intake of micro nutrients and can reduce damage from disease and insect infestation, and
- Contain components that increases biological activity in the soil to improve stress tolerance/drought resistance, reduces sodium uptake in sandy soils, provides more phosphorus availability, and increases cation exchange capacity resulting in earlier germination and better root establishment.

Provide biological growth stimulants that contain compounds such as:

- Humic acid (humates),
- Humectants,
- Cold water processed seaweed/kelp extract,
- Beneficial microbes,
- Cytokinins,
- Gibberellins,
- Auxins (growth hormones), and
- Endo-mycorrhizae.

Animal by-products or municipal waste products are not acceptable biological growth stimulants under this specification. Liquid fertilizers **are not** acceptable as biological growth stimulants under this specification.

Provide biological growth stimulants composed of non-toxic materials.

Provide Biological Growth Stimulants that have no germination or growth inhibiting factors and do not form a water-resistant crust that can inhibit plant growth. Furnish biological growth stimulants where all components are pre-packaged by the manufacturer to assure material performance and compliance with the minimum requirements in Table 3.

**Table 3: Minimum Biological Growth Stimulant Requirements**

BGS Property	Test Method	Required Value
<b>Physical</b>		
Acute Toxicity	ASTM 7101 EPA Method 2021 or EPA Method 2002	Non Toxic
<b>Performance</b>		
Seed Germination	ASTM D7322 <sup>1</sup>	200% minimum
Plant Mass	ASTM D7322 <sup>1</sup>	110% minimum

<sup>1</sup> ASTM test methods developed for Rolled Erosion Control Products (RECPs) that have been modified for comparison to control between 14 and 21 days.

Provide biological growth stimulants from a manufacturer listed on the most recent edition of the *SCDOT Qualified Product List 74* and provide documentation of testing at an approved independent laboratory demonstrating performance based on enhanced plant germination.

1.2.6 Mulch

Mulch is required for all permanent cover, permanent grassing for resurfacing projects and temporary cover applications. Only use mulch that is certified weed free. Wood chip mulch is not acceptable for seeding applications.

#### 1.2.6.1 Straw or Hay Mulch with Tackifier

Use straw or hay mulch material that consists of certified weed free straw or hay. Use straw that consists of stalks of wheat, rye, barley, oats, or other approved straw. Use hay that consists of Timothy, Peavine, Alfalfa, Coastal Bermuda, or other grasses from approved sources. Use materials that are reasonably dry and reasonably free from mature seed-bearing stalks, roots, or bulblets of Johnson grass, Nutgrass, Sandburg, Wild Garlic, Wild Onion, Wild Mustard, Crotonaria, Pigweed, Witchweed, and Cocklebur. Comply with all state and federal domestic plant quarantine regulations. Do not use straw mulch in urban areas or in areas adjacent to sidewalks, guardrails, curbs, curb and gutters, or concrete medians.

Do not use straw or hay mulch with tackifiers for temporary cover by mulch applications on slopes steeper than 4H:1V.

Anchor straw mulch material using one of the following tacking agents:

##### 1.2.6.1.1 Organic or Chemical Tackifier

Use an organic or chemical tackifier that consists of guar gum, plantago, polysaccharides, polymer synthetic resin, polypectate, liquid latex, or other material that will give similar adhesive properties as asphalt emulsion when sprayed on straw mulches. Organic or chemical tackifiers require approval by the RCE.

##### 1.2.6.1.2 Hydraulic Straw Tackifiers

Use Hydraulic Erosion Control Products (HECP) as hydraulic straw tackifiers that meet the requirements of this Specification. Apply HECP at the manufacturer's recommended rate for straw binding.

##### 1.2.6.1.3 Emulsified Asphalt

Use an Anionic Emulsified Asphalt that meets the requirements of the *South Carolina Department of Transportation (SCDOT) Standard Specifications for Highway Construction, 2025* (or the latest) edition. Dilute Emulsified Asphalt at the manufacturing plant with water, if necessary, to provide a homogenous and satisfactory material for spraying.

#### 1.2.6.2 Hydraulic Erosion Control Products (HECPs)

Refer to *SCDOT Supplemental Technical Specification SC-M-815-11 (latest revision)* for HECP description, materials, and construction requirements.

#### 1.2.6.3 Compost Mulch

Refer to *SCDOT Supplemental Technical Specification SC-M-815-3 (latest revision)* for Compost Mulch description, materials, and construction requirements.

### 1.3 Seeding Plan

The Contractor is required to prepare and submit a seeding plan to the RCE utilizing the seeding schedule for all permanent cover, permanent grassing for resurfacing projects and temporary cover by seeding applications. The RCE reserves the right to reject or approve all seeding plans before applications are initiated.

### 1.3.1 Soil Analysis

A soil analysis is required for all permanent cover applications, but is optional for permanent grassing on resurfacing projects or temporary cover by seeding as a means to obtain better results. A soil analysis is required to incorporate agricultural granular lime and/or granular fertilizer into a seeding plan/application.

Collect one (1) soil sample for each distinguishable representative soil type. One (1) sample consists of mixing ten (10) sub-samples taken uniformly over each distinguishable representative soil type. Soil samples should be taken from stockpiles where the material will be the top six (6) inches of the seedbed. Take each sub-sample within the top four (4) to six (6) inches of the soil surface.

Submit a separate soil sample for each representative soil type to a SCDOT certified soil testing laboratory.

The soil analysis determines the need and rate of agricultural granular lime and slow release nitrogen, phosphoric, potash granular fertilizer applications. At a minimum, a standard soil test includes pH, buffer pH, extractable phosphorus, potassium, lime requirements and recommendations, calculations for CEC (cation exchange capacity), and fertilizer requirements and recommendations. At the discretion of the RCE, a soil organic matter test may be required.

The recommended fertilizer rates from a soil analysis are not to be exceeded in order to meet the requirements of the SCDOT National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit.

### 1.3.2 Permanent Cover

#### 1.3.2.1 Simplified Seeding Schedule

Select a pre-blended permanent seed mixture from *SCDOT Qualified Product List 88* for the Upper State or the Lower State as applicable to the project. The Lower State consists of all counties east of and including Aiken, Lexington, Richland, Kershaw, and Chesterfield Counties. The Upper State consists of all counties west of the Lower State, i.e. all the remaining counties (see Figure 1).

Select the appropriate pre-blended permanent seed mixture based on the two applications (slopes, or shoulders/medians) and the time of year of the application (spring/summer or fall/winter).

#### 1.3.2.2 Detailed Seeding Schedule

For sites where a pre-blended permanent seed mixture from *SCDOT Qualified Product List 88* is not applicable, select seed from Table 1, Perennials, and Table 2, Annuals, for the Upper State and the Lower State as applicable to the project. The Lower State consists of all counties east of and including Aiken, Lexington, Richland, Kershaw, and Chesterfield Counties. The Upper State consists of all counties west of the Lower State, i.e. all the remaining counties (see Figure 1).

If the seed listed in the tables is not available, the Contractor may select the most practical alternative seed available as a substitute. The Contractor must submit data to the RCE showing that the substitute seed is appropriate for the specific application.

If the Common Name of the seed listed in Table 1 or Table 2 is not available, use the listed Botanical Name of the seed.

#### 1.3.2.2.1 Permanent Cover for Slopes

Select a minimum of two (2) seed types from Table 1 for all permanent cover for slopes based on the specific application, the time of year of the application, and the availability of the seed. A minimum of one (1) of the seed types selected must be a turf-type species.

The Contractor must also add a minimum of one (1) acceptable annual nurse crop species from Table 2 at the rate shown in Table 2, or a mix of two (2) or more annual nurse crops species from Table 2 with one species applied at a minimum rate of approximately 75% of the rate shown in Table 2 and the other species applied at a rate that does not exceed approximately 50% of the rate shown in Table 2.

When utilizing two (2) perennial seed types from Table 1, apply the primary turf type species at the rate shown in Table 1 and the Contractor may apply the additional perennial seeds at a rate less than the rate shown in Table 1.

#### 1.3.2.2.2 Permanent Cover for Medians and Shoulders

Use a minimum of one (1) turf-type species from Table 1 and one (1) acceptable annual nurse crop from Table 2 for medians and shoulders in the Upper State and Lower State based on the specific application, the time of year of the application, and the availability of the seed.

#### 1.3.3 Permanent Grassing for Resurfacing Projects

Select a pre-blended permanent seed mixture from *SCDOT Qualified Product List 88* for the Upper State or the Lower State as applicable to the project. The Lower State consists of all counties east of and including Aiken, Lexington, Richland, Kershaw, and Chesterfield Counties. The Upper State consists of all counties west of the Lower State, i.e. all the remaining counties (see Figure 1). Select the appropriate pre-blended permanent seed mixture based on the two applications (slopes, or shoulders/medians) and the time of year of the application (spring/summer or fall/winter).

For sites where a pre-blended permanent seed mixture from *SCDOT Qualified Product List 88* is not applicable, select one (1) turf-type species from Table 1 and one (1) acceptable annual nurse crop from Table 2 in the Upper State and Lower State based on the specific application, the time of year of the application and the availability of the seed.

#### 1.3.4 Temporary Cover by Seeding

The Contractor will create a seeding plan and determine all rates of application necessary to produce the required stand of temporary grass and follow the application procedures of this Specification. Select a minimum of one (1) seed type from Table 2 for all temporary cover by seeding based on the specific application, the time of year of the application and the availability of the seed.

#### 1.3.5 Seeding Dates and Rates of Application

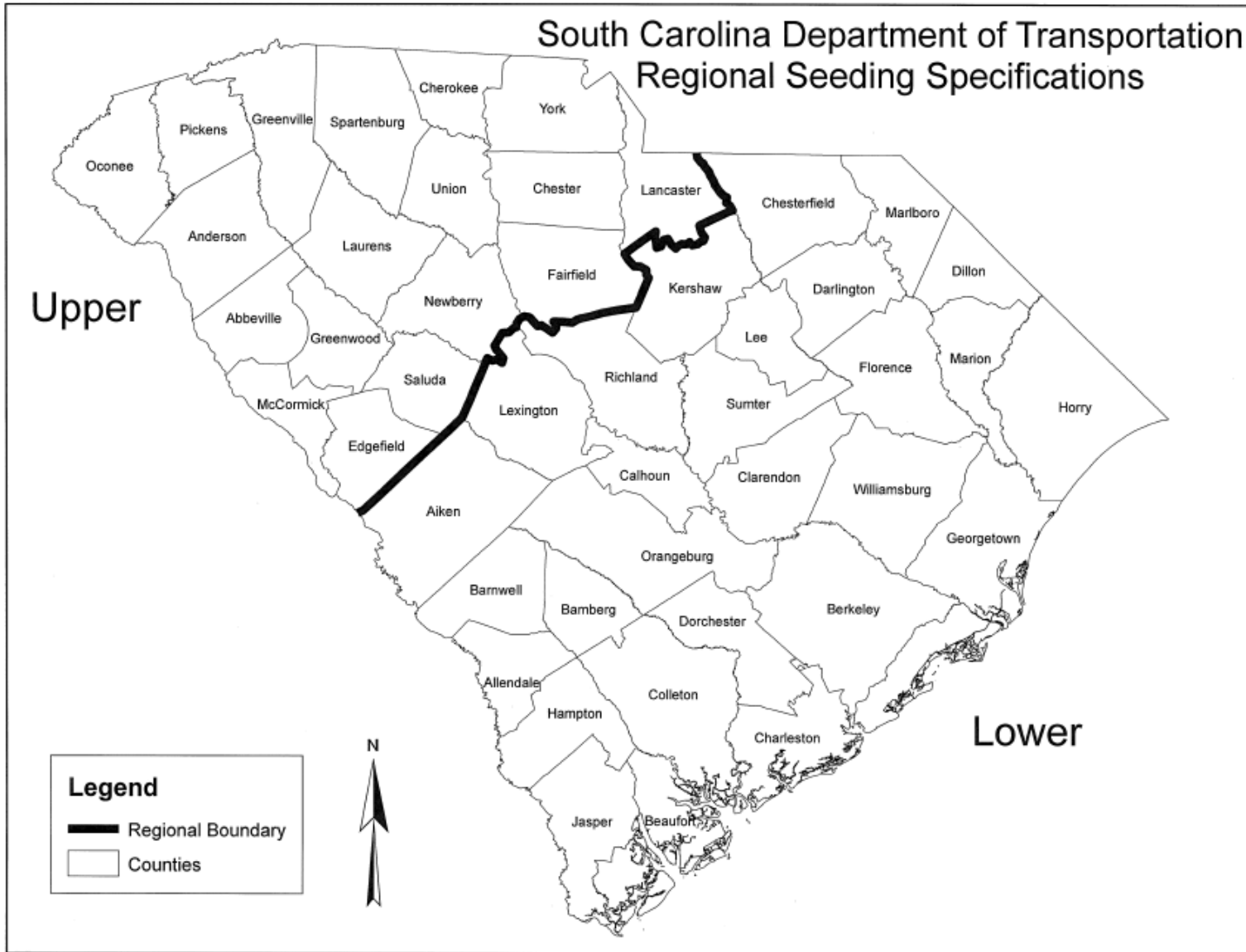
Select seed in accordance with Section 1.2.1 of this Specification. Using the pre-blended permanent seed mixtures included in *SCDOT Qualified Product List 88* or the seeding tables of this Specification, the Contractor will create a seeding plan and determine all rates of application necessary to produce the required stand of grass and follow the application procedures of this Specification.

Perform seeding during the periods and at the rates suggested in the tables included with this section. If extended forecasts are favorable, the RCE may approve up to a (1) month variance to

the periods indicated. For example, if warmer weather extends into the fall, then the spring and summer seeding plan can be applied with the RCE's prior, written approval. Do not perform any type of seeding application when the ground is frozen, and/or when the 10-day forecasted low temperature remains below 35 degrees Fahrenheit. Do not perform any type of seeding application when the ground is excessively wet. Do not perform any type of seeding application when the ground is excessively dry (periods of drought) unless watering is specified in the Contract, or as directed by the Resident Construction Engineer (RCE). During periods of adverse conditions, use temporary cover by mulch according to this Specification.

Unless directed by the RCE, do not perform permanent cover or permanent grassing for resurfacing projects during the December, January, and February months. Temporary cover by mulch or seeding should be applied during this time.

FIGURE 1: UPPER AND LOWER STATE MAP





**TABLE 1: PERENNIALS** \* Months shaded in gray represent applicable planting dates.

COMMON NAME <sup>6</sup>	BOTANICAL NAME	APPROVED SITE(S)	PLANTING RATE (LB/ACRE)	PLANTING LOCATION	Planting Dates*											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>TURF-TYPE GRASSES (SELECT ONE)</b>																
Bahia <sup>1</sup>	Paspalum notatum	Shoulders, Slopes, or Medians	30	Upper State												
				Lower State												
Common Bermudagrass <sup>2</sup> (hulled = hull absent)	Cynodon dactylon	Shoulders, Slopes, or Medians	50	Upper State												
				Lower State												
Common Bermudagrass <sup>2</sup> (unhulled = hull present)	Cynodon dactylon	Shoulders, Slopes, or Medians	60	Upper State												
				Lower State												
Carpet Grass / Centipede <sup>3</sup>	Axonopus affinis Eremochloa ophiuroides	Shoulders, Slopes or Medians	15 10	Upper State												
				Lower State												
Tall Fescue (KY-31) <sup>3</sup>	Festuca arundinacea	Shoulders, Slopes, or Medians	75	Upper State												
				Lower State												
<b>GRASSES</b>																
Weeping Lovegrass	Erograstis curvula	Slopes	10	Upper State												
				Lower State												
Indiangrass	Sorghastrum nutans	Slopes	10	Upper State												
				Lower State												
Little Bluestem	Andropogon scoparius	Slopes	10	Upper State												
				Lower State												
Coastal Panicgrass	Panicum amarum	Slopes	20	Upper State												
				Lower State												
Switchgrass	Panicum virgatum	Slopes	10	Upper State												
				Lower State												
Perennial Rye Grass <sup>4</sup>	Lolium perrene	Shoulders, Slopes, or Medians	15	Upper State												
				Lower State												
Virginia Wild Rye	Elymus virginicus	Shoulders, Slopes, or Medians	6	Upper State												
				Lower State												
<b>LEGUMES<sup>4</sup></b>																
White Clover	Trifolium repens	Shoulders, Slopes, or Medians	5	Upper State												
				Lower State												
Crownvetch	Coronilla varia	Slopes	25	Upper State												
				Lower State												
Sericea Lespedeza (Scarified seed)	Lespedeza cuneata	Slopes	50	Upper State												
				Lower State												
Sericea Lespedeza (Unscarified seed)	Lespedeza cuneata	Slopes	80	Upper State												
				Lower State												

\* Months shaded in gray represent applicable planting dates.

<sup>1</sup>Bahia<sup>1</sup>: Use at discretion of RCE based on project location.

<sup>4</sup>Perennial Rye Grass: Do not use Annual Italian Rye grass (Lolium multiforum).

<sup>2</sup>Common Bermudagrass: Do not use Giant Bermudagrass (NK-37).  
plant

<sup>5</sup>Only use pre-inoculated legumes or use an appropriate inoculant with the seed at

<sup>3</sup>Tall Fescue (KY-31): Do not use Tall Fescue (Lolium arundinacea).

<sup>6</sup>If Common Name of seed is not available, use seed with the listed Botanical Name.

**TABLE 2: ANNUALS**

COMMON NAME <sup>5</sup>	BOTANICAL NAME	APPROVED SITE(S)	NURSE CROP RATE (LB/ACRE)	TEMP COVER RATE (LB/ACRE)	PLANTING LOCATION	Planting Dates*											
						JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Crimson Clover <sup>1</sup>	Trifolium incarnatum	Shoulders, Slopes, or Medians	20	20	Upper State												
					Lower State												
Lespedeza <sup>1</sup> Kobe / Korean	Lespedeza striata / stipulacea	Shoulders, Slopes	15	60	Upper State												
					Lower State												
Browntop Millet <sup>2</sup>	Panicum ramosum	Shoulders, Slopes, or Medians	10	40	Upper State												
					Lower State												
German Millet <sup>2</sup> (Foxtail Millet)	Setaria italica	Shoulders, Slopes, or Medians	10	40	Upper State												
					Lower State												
Japanese Millet <sup>2</sup>	Echinochloa crusgalli	Slopes	10	50	Upper State												
					Lower State												
Oats	Avena sativa	Slopes	40	110	Upper State												
					Lower State												
Hairy Vetch <sup>1</sup>	Vicia villosa	Slopes	15	50	Upper State												
					Lower State												
Pearl Millet	Pennisetum glaucum	Slopes	15	50	Upper State												
					Lower State												
Sudangrass	Sorghum bicolor	Slopes, Buffers	20	60	Upper State												
					Lower State												
Barley	Hordeum vulgare	Slopes	55	110	Upper State												
					Lower State												
Wheat <sup>4</sup>	Triticum spp.	Slopes, Buffers	35	110	Upper State												
					Lower State												
Rye Grain <sup>3,4</sup>	Secale cereale	Shoulders, Slopes, or Medians	40	110	Upper State												
					Lower State												

\* Months shaded in gray represent applicable planting dates.

<sup>1</sup> Only use pre-inoculated legumes or an appropriate inoculant with the seed at planting.

<sup>2</sup> Mow Millet (*no lower than 3 inches*) once it reaches a height of 18 - 24 inches or at the discretion of the RCE to reduce competitiveness with permanent vegetation.

<sup>3</sup> Rye Grain: Do not use Annual Italian Rye Grass (Lolium multiforum).

<sup>4</sup> Mow Wheat and Rye Grain (*no lower than 3 inches*) once they reach a height of 18 - 24 inches or at the discretion of the RCE to reduce competitiveness with permanent vegetation.

<sup>5</sup> If the Common Name of the seed listed is not available, use seed with the listed Botanical Name. Do not use Wild Bird, Wild Animal, or Domestic Feed Seed.



## 1.4 Construction

### 1.4.1 Seedbed Preparation

Ensure the seedbed conforms to the finished grade and cross-section shown on the Plans or as otherwise directed by the RCE. Perform minor shaping and evening of uneven and rough areas outside of graded sections as directed by the RCE in order to provide more effective erosion control and for ease of mowing operations.

Use select material, compost or other acceptable soil amendments for shoulders and slopes if good seedbed material is not located on site. If soil amendments were not provided with the contract bid items, the use of these materials will be at no cost to the department, unless prior approval is requested and received from the RCE.

Loosen the seedbed (including cut slopes) to a minimum depth of three (3) inches before select material, compost, other acceptable soil amendments, agricultural lime, fertilizer, mulch, or seed is applied. Prepare the seedbed in a manner that ensures the seeding application remains on slopes and germinates. The acceptable method is grooving the slopes parallel with the adjacent roadway.

Ensure that the seedbed is uniform and remove stones larger than two and one-half (2½) inches in any dimension, large clods, roots, or other debris brought to the surface.

### 1.4.2 Soil Amendment – Compost

Note: Compost is used to establish a bid price in CY in the event that the RCE determines that compost is necessary. Compost is not intended to be used for all projects or an entire project site.

For seedbeds that have little or no topsoil, and are determined to be deficient from the results of the soil analysis, furnish, place, and mix certified weed free compost to a minimum depth of three (3) inches into the seedbed in order to ensure a good stand of grass. Refer to *SCDOT Compost Supplemental Technical Specification (SC-M-815-3) or latest revision* for description, materials, and construction requirements.

Provide compost when seedbeds are excessively nutrient deficient to the extent of requiring costly fertilizer additions, and/or have excessively low pH values (lower than 5.0) to the extent of requiring costly lime additions.

### 1.4.3 Soil Amendment – Select Material

Note: Select material is used to establish a bid price in CY in the event that the RCE determines that select material is necessary. Select material is not intended to be used for all projects or an entire project site.

For seedbeds that have little or no topsoil, or are determined to be deficient from the results of the soil analysis, furnish, place, and mix select material to a minimum depth of 3 inches into the seedbed in order to ensure a good stand of grass.

Provide select material for seedbeds that are excessively nutrient depleted to the extent of requiring costly fertilizer additions, and/or have excessively low pH values (5.0 or lower) to the extent of requiring costly lime additions.

Select material consists of a friable material containing grass roots and is comparatively porous, capable of growing grass, and stable in nature. When compacted, select material will resist erosion and be capable of supporting vehicles when relatively wet.

### 1.4.4 Permanent Cover

Where land disturbing activities have permanently ceased on the Project initiate permanent cover on all disturbed areas within 7 days. Where land disturbing activities are resumed within 14 days, stabilization measures are not required to be initiated on that portion of the Project. If permanent cover is not feasible within the 7 day timeframe (e.g., where snow cover, frozen ground, or drought conditions prevent stabilization) initiate as soon as reasonably practical.

Following the preparation of the seedbed according to this Specification, perform permanent cover within 3 days or prior to a rainfall event that compacts the prepared seedbed. If a rain event occurs that compacts or erodes the seedbed prior to performing permanent cover, the seedbed must be repaired, as determined by the RCE, prior to application(s) of permanent cover.

After sowing permanent seed, apply an appropriate mulch as listed in this Specification within 3 days or prior to a rainfall event that compacts the prepared seedbed. On small areas inaccessible to machinery, the seed may be covered by hand rakes or other methods satisfactory to the RCE. Add fertilizer and lime as directed by a soil analysis and approved seeding plan.

#### 1.4.5 Permanent Grassing for Resurfacing Projects

Resurfacing projects are defined as projects that typically consist of improving shoulders with a width of less than six feet due to backfill from resurfacing or upgrading deficient shoulders.

All permanent grassing for resurfacing projects requires the application of HECF Type 3 with a minimum application rate of 3,000 pounds per acre.

#### 1.4.6 Temporary Cover

Where land disturbing activities have temporarily ceased on the Project and will not resume for a period exceeding 14 days, initiate temporary cover by mulch or temporary cover by seeding on all disturbed areas within 7 days. Where land disturbing activities on a portion of the Project are temporarily ceased, and the land disturbing activities are resumed within 14 days, temporary stabilization measures are not required to be initiated on that portion of the Project. Initiate temporary cover by seeding within 45 days if the Project will not be worked for a period longer than 60 days to ensure a stand of grass by day 60.

Use temporary cover on slopes to coincide with the embankment work in 10-foot increments. When 10 feet of fill is in place, perform temporary cover on the slope.

Scarify all temporary cover areas before fill is placed on top of the temporary cover area.

##### 1.4.6.1 Temporary Cover by Mulch

Use an appropriate mulch as listed in Table 4 of this Specification. Apply the mulch with a minimum continuous soil coverage of 95% that is maintained across the entire application area.

Temporary cover by mulch may be used on isolated problem areas or where it is not feasible or practical to bring an area to final slope and grade. Finish the surface so that permanent cover can be performed without serious disturbance by additional grading.

##### 1.4.6.2 Temporary Cover by Seeding

Soil samples, watering and any other section of this Specification can be used to obtain better results but are not required unless directed by the RCE.

Following the preparation of the seedbed according to this Specification, sow seed prior to a rainfall event that compacts the seedbed.

Perform seeding work during the periods and at the rates specified in Section 1.5 of this Specification. If extended forecasts are favorable, the RCE may approve up to a one (1) month variance to the periods indicated.

After sowing temporary seed, apply an appropriate mulch within 3 days as listed in this Specification prior to a rainfall event that compacts the seedbed. On small areas inaccessible to machinery, the seed may be covered by hand rakes or other methods satisfactory to the RCE. When required add fertilizer and agricultural lime as directed by a soil analysis and approved seeding plan.

Temporary cover by seeding may be used in isolated problem areas or where it is not feasible or practical to bring an area to final slope and grade. Finish the surface so that permanent cover can be applied without disturbance from additional grading.

#### 1.4.7 Agricultural Lime

Use agricultural granular lime for all permanent cover applications. A soil analysis is required prior to agricultural granular lime applications. The soil analysis determines the need and rate of granular lime application for a given application area. Based on the results of the soil analysis, furnish granular lime to provide a long term pH adjustment. Following advance preparation and placing of soil amendments when called for in the Contract or directed by the RCE, uniformly spread lime over the designated areas. Thoroughly mix agricultural granular lime with the soil to a depth of approximately two (2) inches. Mixing is not required when spreading lime with hydraulic methods.

Adequately scarify all slopes subject to slides and inaccessible to power equipment. Lime may be applied by approved mechanical spreaders or by hydraulic methods as a mixture of lime and seed.

Apply all agricultural granular lime at a rate that is within  $\pm 10\%$  of the weight recommendation of the soil analysis. Do not apply more than 4,000 lbs/acre of agricultural lime in a single application. If a soil analysis recommends greater than 4,000 lbs/acre, apply agricultural lime by:

- Surface apply 4,000 lbs/acre initially, after 3 months, surface apply the additional lime not to exceed 4,000 lbs/acre to meet the overall recommended application.
- If the initial soil analysis recommends greater than 6,000 lbs/acre, provide select material, compost or other acceptable soil amendments to the seedbed according to this Specification, and then perform an additional soil analysis to determine the recommended agricultural lime application.

Agricultural granular lime is not required for temporary cover by seeding applications unless a soil analysis is requested by the RCE and indicates a pH below 5.0.

#### 1.4.8 Fast Acting Lime

Use fast acting liquid or fast acting dry forms of lime for all permanent cover, permanent grassing for resurfacing projects and temporary cover by seeding applications. Fast acting liquid and dry lime provides an immediate pH adjustment. Apply fast acting liquid lime at a rate of 5 gallons per acre or per the manufacturer's recommendations. Apply fast acting dry lime at a rate of 100 pounds per acre or per the manufacturer's recommendations.

#### 1.4.9 Agricultural Granular Fertilizer

Use agricultural granular fertilizer for all permanent cover applications. A soil analysis is required prior to agricultural granular fertilizer applications. The soil analysis determines the need and rate of fertilizer applications for the specific vegetation species. Following advance seedbed preparation

and placing of soil amendments when called for in the Contract or directed by the RCE, uniformly spread fertilizer over the designated areas.

Adequately scarify all slopes that are inaccessible to power equipment. Fertilizer may be applied by approved mechanical spreaders or by hydraulic methods. When fertilizer is applied with combination seed and fertilizer drills, no further incorporation is necessary. Apply the fertilizer and seed together when hydraulic methods of seeding are used.

Use fertilizer that incorporates a minimum of 50% slow release (water insoluble) nitrogen for all permanent cover applications under this Specification.

Apply all fertilizer at a rate no greater than the weight recommendation from the soil analysis, but no less than **90%** of the weight recommendation (10% deduction from the recommended weight). Apply fertilizer that is within **±2** percentage points of the recommendation of the soil analysis, but do not exceed the recommended weights from the soil analysis.

When a fertilizer blend meeting the soil analysis requirements is not readily available, the Contractor may combine fertilizers of different compositions to meet the soil analysis composition requirements. Apply the fertilizer at a rate to achieve the amount of nitrogen, phosphoric acid, and potash that would have been accomplished by utilizing the fertilizer specified by the soil analysis.

In all cases, under the guidelines of this Specification, apply nitrogen and phosphorus at a rate that does not exceed the soil analysis recommendation while keeping the actual nitrogen and phosphorus rate as close to the soil analysis recommended rate to the maximum extent practical.

#### 1.4.10 Biological Growth Stimulants

Use biological growth stimulants for all permanent cover, permanent grassing for resurfacing projects and temporary cover by seeding applications. Ensure that all biological growth stimulant applications strictly follow the manufacturer's rates and recommendations to avoid damage or burning of the seedbed. Use approved hydraulic methods to apply biological growth stimulants.

Deliver materials and products sealed in factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures, and construction operations.

#### 1.4.11 Mulch

Apply mulch according to Table 4.

**TABLE 4: MULCH**

Mulch <sup>1,5</sup>	Applicable Slopes <sup>2</sup>	Minimum Application Rate (LB/ACRE -dry) <sup>3</sup>	Min Slope Length (FT)
Straw or Hay with Tackifier	≤ 4:1	2,000	N/A
HECP Type 1 - Tracer under RECP	Per RECP	1,000	N/A

HECP Type 1	≤ 4:1	2,000	N/A
HECP Type 2	4:1 < S ≤ 3:1	2,500	N/A
HECP Type 3	3:1 < S ≤ 2:1	3,000	N/A
HECP Type 4	2:1 < S ≤ 1:1	3,500	N/A
	> 1:1	4,000 (temp cover only) <sup>4</sup>	
Compost Mulch	≤ 2:1	200 CY/ACRE	N/A
When site constraints exceed the acceptable application for mulch, use Rolled Erosion Control Products (RECPs); Erosion Control Blankets (ECB) or Turf Reinforcement Matting (TRM)			
Temporary ECB <sup>2</sup> or Type 1 TRM	≤ 2:1	N/A	5
Type 2 TRM	≤ 1.5:1	N/A	5
Type 3 TRM	≤ 1:1	N/A	5

- 1 A higher level of mulch may be applied than as specified on the Plans, Specifications, and other terms of the Contract. In this situation, the higher level mulch is applied at the specified mulch rate for the actual slope conditions of the site in accordance with the mulch tables. Payment is made for the mulch specified not the higher level mulch.
- 2 The maximum allowable continuous slope length for all straw and hay mulch, HECP, compost mulch, and ECB applications is 50 feet. **Slope interruption devices or TRMs are required for continuous slope length longer than 50 feet. At the discretion of the RCE, use slope interruption devices on slope lengths less than 50 feet when slope erosion is observed.**
- 3 Strictly comply with the manufacturer's mixing recommendations and installation instructions for the actual slope steepness and the actual continuous slope length of the application.
- 4 HECP Type 4 may be used for permanent cover applications on slopes 1:1 or greater at a minimum rate of 4,500 pounds per acre as directed by the RCE only when proper TRM installation is not practical due to site constraints. **Slope interruption devices or TRMs are required for continuous slope length longer than 50 feet. At the discretion of the RCE, use slope interruption devices on slope lengths less than 50 feet when slope erosion is observed.**
- 5 Wood chips or shredded woody materials generated during the clearing stage when trees are shredded using large tub grinders is an acceptable temporary mulch. At the discretion of the RCE, place wood chip mulch on slopes ≤ 3:1. Wood chip mulch **is not** acceptable for temporary seeding or permanent seeding applications.

#### 1.4.11.1 Straw or Hay Mulch with Tackifier

Uniformly apply straw or hay mulch material at the rate of 2,000 pounds per acre. Straw mulch may be spread either by hand, by appropriate mechanical spreaders, or by blowers. Apply straw mulch to allow sunlight penetration, air circulation, partial shading of the ground, and conservation of soil moisture. Secure newly laid straw mulch with an approved tackifier. Replace all straw mulch displaced during the tackifier application process.

##### 1.4.11.1.1 Organic or Chemical Tackifier

Consist of guar gum, plantago, polysaccharides, polymer synthetic resin, polypectate, liquid latex, or other material that will give adhesive properties when sprayed on straw mulches. Applications should be heavier at edges, in valleys, and at crests of banks and other areas where the straw mulch may be moved by wind or water. All other areas must have a uniform application of the



tackifier. Use tacking agents approved by the RCE, and apply them at the manufacturer's recommended rate.

#### 1.4.11.1.2 Hydraulic Straw Tackifier

Apply hydraulic tackifier at the manufacturer's recommended rate for straw binding.

#### 1.4.11.1.3 Emulsified Asphalt

Dilute Emulsified Asphalt at the manufacturing plant with an equal amount of water and uniformly apply it over the straw mulch material as a film. Apply the film at approximately 0.20 gallon of dilution per square yard to sufficiently bond together the straw mulch and prevent wind erosion without creating a heavy coating of asphalt material.

Emulsified Asphalt is not applicable for use in urban areas or along sidewalks, curb and gutters, bridges, and water bodies.

#### 1.4.11.2 Hydraulic Erosion Control Products (HECPs)

Refer to *SCDOT Supplemental Technical Specification for HECPs (SC-M-815-11)* or latest revision for HECP construction requirements.

#### 1.4.11.3 Compost Mulch

Refer to *SCDOT Supplemental Technical Specification for Compost (SC-M-815-3)* or latest revision for compost mulch construction requirements.

#### 1.4.12 Protection of Structures

Cover any parts of bridges, culverts, guardrails, fences, signs, sidewalks, curb and gutters, catch basins, pipe ends, and other structures as necessary to prevent discoloration before spraying organic or chemical tackifiers.

### 1.5 Inspection

Ensure that all seed, fast acting lime, biological growth stimulants, agricultural granular lime, granular fertilizer, straw and hay mulch, HECPs, or acceptable soil amendments are applied according to this Specification.

Prior to performing any of the operations covered with this Specification, the Contractor must notify and coordinate with the RCE a minimum of 24 hours in advance. At the time of installation, the Contractor must provide and complete the SCDOT Seeding Inspection Form 800.04. The completed form must be signed and provided it to a member of the RCE's staff at the time of installation; forms completed prior to or after installation will not be accepted. If a member of the RCE's staff is not immediately available, the completed and signed inspection form shall be submitted to the RCE no later than the next working day. Failure to produce, or submit, a completed inspection form, may result in the RCE denying payment.

### 1.6 Maintenance

Perform all maintenance necessary to keep permanent cover, permanent grassing for resurfacing projects, temporary cover by seeding, and temporary cover by mulch areas in a satisfactory condition until the work is finally accepted. This includes mowing, repairing areas of erosion and washes, and applying additional seed, lime, fertilizer, and mulch to areas where a satisfactory stand of grass has not been achieved because of erosion. Water seeded areas as directed by the RCE. The Contractor is not responsible for permanent cover, permanent grassing for resurfacing

projects, temporary cover by seeding, and temporary cover by mulch areas damaged by insects, animals, or extreme rainfall events. An extreme rainfall event is defined as being a 25-year storm event or greater based on the inches of rain received per time interval (30-min, 1-hr, 3-hr, 6-hr, 24-hr etc.) for the particular location, and is determined from current NOAA precipitation tables provided by the Contractor.

#### 1.6.1 Selective Watering

Note: Selective Watering for Vegetation is used to establish a bid price per gallon of water in the event that the RCE determines that watering is necessary. Selective Watering for Vegetation is not intended to be used for all projects or an entire project site.

Selective Watering for vegetation consists of selectively applying water to seeded areas that are slow to develop or deficient in adequate density. Use Selective Watering to enhance germination and enhance root growth in poor growth areas. The Contractor shall coordinate with the RCE to determine if watering is necessary.

When directed by the RCE use the following guidelines in areas where germination has not occurred within 21 days after seeding:

- Keep the soil moist but not excessively wet until the seed germinates.
- Water a minimum of three (3) days a week for two (2) weeks preferably watering two (2) or three (3) times a day in small quantities.
- Use fine spray and low pressure to avoid soil wash and to prevent uncovering buried seeds.
- When applicable, water during early morning hours or early evening hours.
- Do not water when rain is forecasted for the area.

When directed by the RCE, use the following guidelines in areas where adequate density is a problem after emergence:

- Apply one (1) inch of water per irrigation event. (Note: 1-acre-inch = 27,154 gallons. This is the volume of water necessary to cover one (1) acre one (1) inch deep.)
- During summer, water two (2) to three (3) days per week.
- During winter, water once every ten (10) to fourteen (14) days.
- If rainfall occurs, suspend watering according to rainfall amount.

Closely monitor the deficient areas to ensure germination and density of cover. Further analysis of the soil, application of soil amendments, or re-seeding may be necessary if the problem area persists.

#### 1.6.2 Mowing

Mowing consists of mowing areas as necessary to provide adequate sight areas and to maintain the project in a satisfactory manner. Mowing is performed by the Contractor where directed by the RCE, and such mowing will commence within seven (7) days following written notification by the RCE. Failure of the Contractor to comply with this requirement may be grounds for stopping work on the project or withholding payment of the monthly construction estimate.

Mow shoulders, medians, and slopes when vegetation reaches a height of approximately eighteen (18) to twenty four (24) inches or as directed by the RCE. Do not perform mowing of slopes resulting in ruts, furrows or grooves. Do not perform mowing of slopes that damage or inhibits the establishment of the slope vegetation.

Use mowing equipment equipped with safety devices designed to prevent injury or property damage caused by flying debris propelled from under the mowing equipment. Keep all mowing

equipment in good operating condition and keep the equipment maintained to provide a clean, sharp cut of vegetation at all times. If the RCE determines the equipment is defective to the point that the quality of work or safety is affected, immediately repair or replace the equipment.

Ensure that mowing results in a uniform vegetation height of four (4) to six (6) inches, unless otherwise directed by the RCE. Mow as closely as possible to all fixed objects exercising care not to damage trees, plants, shrubs, signs, delineators, or other appurtenances which are a part of the facility. Hand trimming around such objects will be required of the Contractor. If a separate pay item is not included for Guardrail/Cable Rail Mowing, then all necessary hand trimming shall be incidental to the Mowing pay item.

Remove litter and debris prior to beginning mowing operations. Immediately remove and properly dispose of all litter and debris resulting from mowing operations. Mowed grass is not normally removed unless it becomes a hazard as determined by the RCE.

Do not perform mowing when, in the opinion of the RCE, slope, soil and weather conditions are such that rutting or other damage to the Project may occur. The seven-business-day period may be extended by the RCE until the soil and weather conditions become suitable for mowing on the project.

## **1.7 Acceptance**

### **1.7.1 Permanent Cover**

Before acceptance of permanent cover, a uniform perennial vegetative cover with a uniform density of 70% of the seeded area is required by the Contractor. A well-developed root system must be established to sufficiently survive dry periods and winter weather and be capable of reestablishment in the spring.

If a satisfactory stand of permanent, perennial vegetative cover, with a uniform density of 70% of the seeded area, is not achieved within 45 days of the permanent cover application, the Contractor is required to reapply permanent cover within 7 days at no additional cost to the department.

### **1.7.2 Permanent Grassing for Resurfacing Projects**

Before acceptance of permanent grassing for resurfacing projects, a perennial vegetative cover with a uniform density of 70% of the seeded area is required by the Contractor. A well-developed root system must be established to sufficiently survive dry periods and winter weather and be capable of reestablishment in the spring.

If a satisfactory stand of permanent, perennial vegetative cover, with a uniform density of 70% of the seeded area, is not achieved within 45 days of the permanent grassing for resurfacing projects application, the Contractor is required to reapply permanent grassing for resurfacing projects within 7 days at no additional cost to SCDOT.

### **1.7.3 Temporary Cover by Mulch**

Before acceptance of temporary cover, the Contractor is required to produce temporary cover sufficient to control erosion for a given area and length of time before the next phase of construction or the establishment of permanent cover is to commence.

At the RCE's discretion, if the temporary cover is disturbed by the prime, grading, other Contractor, etc., the temporary cover will be re-established at no cost to the department.

The Contractor is required to achieve temporary stabilization, meeting the requirements of this Specification, regardless of the time of the year the work is performed.

#### 1.7.4 Temporary Cover by Seeding

Before acceptance of temporary cover, the Contractor is required to produce temporary cover sufficient to control erosion for a given area and length of time before the next phase of construction or the establishment of permanent cover is to commence.

If a satisfactory stand of temporary vegetative cover, with a uniform density of 70% of the seeded area, is not achieved within 21 days of temporary cover by seeding application, the Contractor is required to reapply temporary cover by seeding within 7 days at no additional cost to the department.

The Contractor is required to produce a satisfactory stand of temporary cover meeting the requirements of this Specification regardless of the time of the year the work is performed.

### 1.8 Measurement

Permanent Cover, Permanent Grassing for Resurfacing Projects and Temporary Cover by Seeding - The quantity of permanent cover, permanent grassing for resurfacing projects, and temporary cover by seeding is the ground surface area with acceptable vegetation or stand of cover and is measured by the one-acre (ACRE) unit, complete and accepted.

Lime - The quantity of agricultural granular lime is the weight applied and is measured by the pound (LB), complete and accepted. Weights are determined by approved scales or by guaranteed weight of sacks shown on the manufacturer's tag. Furnish invoices or documentation of the materials received on the project to the RCE.

Fertilizer - The quantity of fertilizer is the weight applied and is measured by the pound (LB), complete and accepted. Quantities are measured for each of the three fertilizer components (nitrogen, phosphoric acid, and potash). Weights are determined by approved scales or by guaranteed weight of sacks shown on the manufacturer's tag. Furnish invoices or documentation of the materials received on the project to the RCE.

Mulch - The quantity of mulch (including temporary cover by mulch) is the ground surface area covered and is measured by the one-acre (ACRE) unit, complete and accepted. Furnish invoices or documentation of the materials received on the project to the RCE.

Selective watering for vegetation - The quantity of selective watering for vegetation is the amount of water applied as directed by the RCE and is measured in gallons (GAL). This is measured by actual gallons utilized from a water tank equipped with a water meter, or by utilizing a measuring stick and volume tables for the tank, or the number of gallons applied by a pump based on the pump rating and the actual time the pump is operated.

Mowing - The quantity of mowing is the area of ground surface area mowed at the direction of the RCE and is measured by the one-acre (ACRE) unit, complete and accepted. Separate measurements will be made and added to the quantity for payment each time the area is mowed.

Compost - The quantity of compost is the volume of compost placed on the site as shown in the plans, and/or as directed by the RCE, and is measured by the cubic yard (CY), complete and accepted. The quantity of compost is the actual number of cubic yards measured and placed on site. Furnish invoices or documentation of the materials received on the project to the RCE.

Select Material - The quantity of select material is the volume of select material placed on the site as shown in the plans, and/or as directed by the RCE, and is measured by the cubic yard (CY), complete and accepted. The actual volume placed is the material's loose volume at the point of delivery, and is determined by scaling and counting the loads, and applying a 35% deduction for shrinkage.

When there is a dispute with quantities measured in the field, the Contractor may request one (1) re-measure be performed by the RCE. The RCE, or an employee designated by the RCE, will re-measure the areas in question. Quantities calculated from the re-measure will be considered final.

## **1.9 Payment**

Payment for the accepted quantity for each pay item, measured in accordance with this Specification, is determined using the Contract unit bid price for the applicable pay item. The payment includes all direct and indirect costs and expenses necessary to complete the work.

Payment for permanent cover is full compensation for furnishing all materials (excluding agricultural granular lime, granular fertilizer, mulch, select material, compost, other soil amendments, mowing and watering for vegetation); payment includes all other materials such as seed, fast acting lime, biological growth stimulants, etc., and also includes all labor, soil samples and analysis, equipment, tools, supplies, transportation, and any incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. Payment is 100% of the Contract unit price for permanent cover upon installation meeting the requirements of this Specification. If permanent cover is not placed to the requirements of this Specification or the approved seeding plan, the RCE may withhold payment until an acceptable application is completed at no additional cost to the department. If germination does not occur in accordance with Section 1.7, any re-application deemed necessary by the RCE will be performed at no additional cost to the department. If a re-application is necessary for any of the reasons/events referenced in Section 1.6, then the department will provide additional payments for permanent cover and the necessary components provided in the contract bid items. In the event that the RCE directed the original application during the winter months (December, January and February), and an acceptable permanent cover does not establish, then the department will provide payment for one (1) additional application of permanent cover and the necessary components provided in the contract bid items.

Payment for permanent grassing for resurfacing projects is full compensation for furnishing all materials, including seed, fast acting lime, biological growth stimulants, mulch, water, etc., as well as all labor, equipment, tools, supplies, transportation, all other materials, soil samples and analysis (optional) and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. If the Contractor elects to incorporate agricultural granular lime and granular fertilizer into the seeding plan following a soil analysis, these items are also incidental to the bid item for permanent grassing for resurfacing projects. Payment is 100% of the Contract unit price for permanent grassing for resurfacing projects upon installation which meet the requirements of this Specification. If permanent grassing for resurfacing projects is not placed to the requirements of this Specification or the approved seeding plan, the RCE may withhold payment until an acceptable application is completed at no additional cost to the department. If germination does not occur in accordance with Section 1.7, any re-application deemed necessary by the RCE will be performed at no additional cost to the department. If a re-application is necessary for any of the reasons/events referenced in Section 1.6, then the department will provide additional payments for permanent grassing for resurfacing projects. In the event that the RCE directed the original application during the winter months (December, January and February), and an acceptable permanent cover does not establish, then the department will provide payment for one (1) additional application of permanent grassing for resurfacing projects.

Payment for temporary cover by mulch is not provided with a Contract unit bid price. Payment for temporary cover by mulch is included in the Contract unit bid price for the pay items straw or hay mulch with tackifier, or HECF Type 1, 2, 3, or 4, and is full compensation for furnishing all materials and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications,

and other terms of the Contract. Payment is 100% upon approval of acceptable application of mulch meeting the requirements of this Specification.

Payment for temporary cover by seeding is full compensation for furnishing all materials (excluding mulch), such as seed, fast acting lime, biological growth stimulants, water, etc., as well as all labor, equipment, tools, supplies, transportation, all other materials, soil samples and analysis (optional), and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. If the Contractor elects to incorporate agricultural granular lime and granular fertilizer into the seeding plan following a soil analysis, payment will be provided at the Contract unit bid prices. Payment is 100% of the contract unit price for temporary cover by seeding upon installation meeting the requirements of this Specification. If temporary cover by seeding is not placed to the requirements of this Specification or the approved seeding plan, the RCE may withhold payment until an acceptable application is completed at no additional cost to the department. If germination does not occur in accordance with Section 1.7, any re-application deemed necessary by the RCE will be performed at no additional cost to the department. If a re-application is necessary for any of the reasons/events referenced in Section 1.6, then the department will provide additional payments for temporary cover.

Agricultural Lime - Payment for agricultural granular lime is full compensation for furnishing and applying lime as specified or directed and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. If a reapplication of Permanent Cover or Temporary Cover by Seeding is required for the same area for any reason other than a 25-year storm event, any required lime will be applied at no additional cost to SCDOT.

Granular Fertilizer - Payment for granular fertilizer is made for each of the three fertilizer components (nitrogen, phosphoric acid, and potash). Payment for granular fertilizer is full compensation for furnishing and applying fertilizer as specified or directed and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. If a reapplication of Permanent Cover or Temporary Cover by Seeding is required for the same area for any reason other than a 25-year storm event, any required Granular Fertilizer will be applied at no additional cost to SCDOT.

Mulch - Payment for mulch (straw or hay with tackifier and HECP Type 1,2,3, and 4) is full compensation for furnishing and applying mulch, as specified or directed, and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. When a higher level of mulch is applied than that specified on the Plans, Specifications, and other terms of the Contract, payment is for the mulch specified. If a reapplication of Permanent Cover or Temporary Cover by Seeding is required for the same area for any reason other than a 25-year storm event, any required Mulch will be applied at no additional cost to SCDOT.

Selective Watering for Vegetation - Payment for selective watering for vegetation is full compensation for furnishing and applying water as specified or directed by the RCE and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract.

Mowing - Payment for mowing is full compensation for mowing vegetation to an acceptable height in areas specified or directed and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract. No adjustments in unit price will be made in case of overruns or under runs of this item.

Compost - Payment for compost is full compensation for furnishing and placing compost as directed by the RCE and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract.

Select Material - Payment for select material is full compensation for furnishing and placing select material as directed by the RCE and includes all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, Specifications, and other terms of the Contract.

Payment for all items included with this Specification will be made under bid item numbers provided in Table 5.

**TABLE 5: BID ITEM NUMBER**

<b>Bid Item Number</b>	<b>Description</b>	<b>Units</b>
8100100	Permanent Cover	ACRE
8100102	Permanent Grassing for Resurfacing Projects	ACRE
8100200	Temporary Cover by Seeding	ACRE
8101100	Select Material	CY
8101105	Compost	CY
8101110	Straw or Hay Mulch with Tackifier	ACRE
8104005	Fertilizer (Nitrogen)	LB
8104010	Fertilizer (Phosphoric Acid)	LB
8104015	Fertilizer (Potash)	LB
8105005	Agricultural Granular Lime	LB
8109050	Selective Watering	GAL
8109901	Mowing	ACRE
8151201	Hydraulic Erosion Control Product (HECP) Type 1	ACRE
8151209	Hydraulic Erosion Control Product (HECP) Type1 as Tracer under RECP	ACRE
8151202	Hydraulic Erosion Control Product (HECP) Type 2	ACRE
8151203	Hydraulic Erosion Control Product (HECP) Type 3	ACRE
8151204	Hydraulic Erosion Control Product (HECP) Type 4	ACRE