

SECTION 312110 - GRASSING FOR EROSION CONTROL

PART 1 - GENERAL

1.1 Grassing consists of the establishment of a healthy and vigorous turf over all areas of the site disturbed by the Contractor and not otherwise occupied by permanent construction. Embankments and drainage channels shall be seeded with materials and installed as specified herein.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Grass Seed

<u>Name</u>	<u>Proportion By Weight</u>	<u>Minimum Percent Of Purity</u>	<u>Minimum Percent Of Germination</u>
Type I			
Kentucky 31 Fescue	100 percent	98	90
Type II			
Kentucky 31 Fescue	75 percent	98	90
Annual Ryegrain	25 percent	98	90

B. All seed shall be fresh, clean, from new crop seed, and delivered in unopened original packages, which carry a guaranteed analysis by a recognized authority.

C. Lime: Ground limestone (dolomite) containing not less than 85% of total carbonates.

D. Commercial Fertilizer: 10-10-10 formula conforming to the applicable state of North Carolina Board of Agriculture fertilizer laws.

1. It shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis.
2. Any fertilizer which becomes caked or otherwise damaged will not be accepted.

E. Superphosphate: Phosphate rock, finely ground, as commonly used for agricultural purposes, containing not less than 18% available phosphoric acid.

F. Wood cellulose fiber mulch, for use with hydraulic application of grass seed and fertilizer: Wood cellulose fiber, Conwed Hydro Mulch as manufactured by the Conwed Corp. or equal.

G. Adhesive Additive: Adhesive shall be added to the hydroseeding operations to secure the wood fiber mulch in place. Adhesive shall be as manufactured by Hydro-Turf, Inc. or equal.

H. Water: Contractor shall make, at his expense, arrangements to ensure an adequate supply of water to meet the needs of this contract. Furnish all necessary hose, equipment, attachments and accessories.

- I. Jute Matting: A uniform open plain weave of single jute yarn, 18” in width plus or minus 1”. The yarn shall be of a loosely twisted construction and shall not vary in thickness by more than one-half its normal diameter. There shall be 78 warp ends, plus or minus 2, per width of the matting, 41 weft ends, plus or minus 1, per linear yard, and the weight shall average 1.22 pounds per linear yard of the matting with a tolerance of plus or minus 5%.
- J. Mulch: Small grain straw or tame hay, undamaged, air dry threshed and free of undesirable weed seed.

PART 3 - EXECUTION

3.1 SEED BED PREPARATION

- A. Preparation of Subgrade: Subsoil shall be graded and uniformly compacted so that it will be parallel to proposed finished grade. Subgrade material shall be loosened and mixed to a depth of 3” and all stones over 2” in size, sticks, and rubbish shall be removed. No heavy objects except lawn rollers shall be moved over prepared subgrade unless the subgrade soil is again graded and loosened as specified above before topsoil is spread.
- B. Finished Grading: After the subgrade soil has been prepared, topsoil shall be spread evenly thereon and lightly compacted. No topsoil shall be spread in a frozen or muddy condition. Final grades shall be as shown on drawings. Where final grades are not indicated, finished grades shall be sloping between points for which elevations are given or between such points and existing grades in conformity with the molding of the surface indicated by the finish grade contours. Spot elevations take precedence over the grades which might be interpolated between contours. Surfaces shall be rounded where there is an appreciable or noticeable change in slope. Good surface drainage must be provided and minor modifications in the specified grades as may be necessary for that purpose are authorized subject to approval of the A-E. Areas which must drain onto walks or pavements shall be filled so that after settlement they will be 1/2” higher than the adjacent walks or pavement. Areas toward which walks are sloped to drain shall be filled so that after settlement they will be 1/2” to 1” lower than the adjacent walk.
 - 1. Areas to be seeded shall be brought to finished grade and smoothed.
 - 2. Allowance for settlement shall be made.
 - 3. Areas where the topsoil has not been removed shall be scarified and smoothed. Remove sticks, stones and rubbish.
- C. Soil Improvements
 - 1. Application rates for soil additives and mulch.

a. Fertilizer 10-10-10	@ 20 lb. per 1000 sq. ft.
b. Lime	@ 100 lb. per 1000 sq. ft. (Apply October-March)
c. Superphosphate	@ 15 lb. per 1000 sq. ft.
d. Wood cellulose fiber mulch	As recommended by manufacturer.
e. Adhesive additive	As recommended by manufacturer.
f. Asphalt emulsion	7 gallons per 1000 sq. ft.
g. Mulch all areas	1-1/2 to 2 bales per 1000 sq. ft.

3.2 SEEDING

- A. Seed may be sown immediately after application of soil additives, provided the bed has remained in a good, friable condition and has not become muddy or hard. If it has become hard, it shall be tilled to a friable condition again.
- B. Seed must be sown within 21 calendar days after grading is completed, and whenever the weather and soil conditions are favorable.
- C. Seeding shall be accomplished by any accepted method such as, but not limited to, hand broadcast, cultipacker, drill type, or the hydraulic method. The hydraulic method may be required on embankments with slopes greater than 3 to 1.
- D. Sowing of Seed: Immediately before any seed is to be sown, the ground shall be scarified and raked until the surface is smooth, friable and of uniform medium-fine texture. The method of sowing the seed may be varied at the discretion of the Contractor on his responsibility to establish a smooth, uniform turf composed of the grasses specified. Sowing of seed shall be at the rates as shown below.

<u>Name</u>	<u>Dates For Seeding</u>	<u>Rate Pounds Per Acre</u>
Type I		
Kentucky 31 Fescue	Feb. 15 - Oct. 15	200
Type II		
Kentucky 31 Fescue Annual	Oct. 15 - Feb. 15	150
Ryegrain	Oct. 15 – Feb. 15	50

- E. Wood Cellulose Fiber Mulch Spreader: Hydraulic equipment used for the application of seed and slurry of prepared wood pulp and adhesive additive shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing up to 40 pounds of fiber for each 100 gallons of water. The discharge line shall be equipped with a set of hydraulic spray nozzles that will provide even distribution of the slurry on the various slopes to be mulched. The slurry tank shall have a minimum capacity of 1000 gallons and shall be mounted on a traveling unit which may be either self-propelled or drawn by a separate unit that will place the slurry tank and spray nozzles near the areas to be mulched so as to provide uniform distribution without waste. Smaller tank capacity may be used provided that the equipment has the necessary agitation system and sufficient pump capacity to spray the slurry in a uniform coat over the surface of the area to be mulched. A hose unit may, at the Contractor's option, be attached to the hydroseeding equipment for a more accurate and uniform coverage.
- F. Installation of Jute Matting: Unroll jute matting downgrade and run each strip parallel to the previous strip with a 2" overlap. Bury the top end of the jute strip in a trench 4" deep. Staple the matting 10" on center at intervals 4' apart. Staples should be No. 8 gauge wire 8" to 10" in length. Jute matting shall be used on all slopes with a gradient steeper than a 2-1/2 to 1 slope. Ditches which are subject to erosion shall receive jute matting.
- G. Mulch: Spread straw mulch and tack with asphalt emulsion using application rates specified above.

- H. Clean-Up: Any soil, manure, or similar material which has been brought onto paved areas by hauling operations, shall be promptly removed. Upon completion of the planting, all excess soil, stones and debris shall be removed from the site.

3.3 MAINTENANCE AND PROTECTION

- A. Maintenance of grass areas shall consist of watering, weeding, mowing and reseeding as necessary to control soil erosion. It shall continue until acceptance of the project.
- B. Maintenance shall also include all temporary protection fences, barriers and signs, where deemed necessary, and all other work incidental to proper maintenance.

PART 4 - TEMPORARY SEEDING

- 4.1 In accordance with the North Carolina State “Erosion and Sediment Control Planning and Design Manual”, measures shall be taken to provide temporary seeding to temporarily stabilize denuded areas that will not be brought to final grade for a period of 21 working days.
- 4.2 Temporary seeding is the planting of rapid-growing annual grasses, small grains, or legumes to provide initial, temporary cover for erosion control on disturbed areas.
- 4.3 Temporary seeding mixtures shall be included along with the fescue or annual ryegrain materials specified within this Section.
- 4.4 Recommendations for temporary seeding shall be as shown within Tables 6.10a, 6.10b, and 6.10c included in the “Practice Standards and Specifications” section of the North Carolina State “Sediment Control Planning and Design Manual”. Seeding mixture species and application rates are as follows:

	<u>Species</u>	<u>Rate (Lb/Acre)</u>
<u>Late Winter and Early Spring</u>	Rye (Grain)	120
	Annual Lespedeza	50
<u>Summer</u>	German Millet	40
<u>Fall</u>	Rye (Grain)	120

END OF SECTION 312110