

B-3445

**Project Special Provisions
Erosion Control**

Currituck County

Seeding And Mulching:

(1)

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined by the Engineer. All rates are in pounds per acre (kilograms per hectare).

March 1 - August 31

September 1 - February 28

50# (55kg) Tall Fescue	50# (55kg) Tall Fescue
5# (6kg) Centipede	5# (6kg) Centipede
25# (28kg) Bermudagrass (hulled)	35# (40kg) Bermudagrass (unhulled)
500# (560kg) Fertilizer	500# (560kg) Fertilizer
4000# (4500kg) Limestone	4000# (4500kg) Limestone

Slopes 2:1 and Steeper and Waste and Borrow Locations:

March 1 - August 31

September 1 - February 28

75# (85kg) Tall Fescue	75# (85kg) Tall Fescue
25# (28kg) Bermudagrass (hulled)	35# (40kg) Bermudagrass (unhulled)
500# (560kg) Fertilizer	500# (560kg) Fertilizer
4000# (4500kg) Limestone	4000# (4500kg) Limestone

Approved Tall Fescue Cultivars:

Adventure	Adventure II	Amigo	Anthem
Apache	Apache II	Arid	Austin
Brookstone	Bonanza	Bonanza II	Chapel Hill
Chesapeake	Chieftain	Coronado	Crossfire II
Debutante	Duster	Falcon	Falcon II
Finelawn Petite	Finelawn	Finelawn I	Genesis
Grande	Guardian	Houndog	Jaguar
Jaguar III	Kentucky 31	Kitty Hawk	Monarch
Montauk	Mustang	Olympic	Pacer
Phoenix	Pixie	Pyramid	Rebel
Rebel Jr.	Rebel II	Renegade	Safari
Shenandoah	Tempo	Titan	Tomahawk
Trailblazer	Tribute	Vegas	Wolfpack
Wrangler			

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Fertilizer shall be 10-20-20 analysis. Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis.

All areas seeded and mulched shall be tacked with asphalt. Crimping of straw in lieu of asphalt tack shall not be allowed on this project.

Crimping Straw Mulch:

Crimping shall be required on this project adjacent to any section of roadway where traffic is to be maintained or allowed during construction. In areas within six feet (2 meters) of the edge of pavement, straw is to be applied and then crimped. After the crimping operation is complete, an additional application of straw shall be applied and immediately tacked with a sufficient amount of undiluted emulsified asphalt.

Straw mulch shall be of sufficient length and quality to withstand the crimping operation.

Crimping equipment including power source shall be subject to the approval of the Engineer providing that maximum spacing of crimper blades shall not exceed 8 inches (200 mm).

Temporary Seeding:

Fertilizer shall be the same analysis as specified for "Seeding and Mulching" and applied at the rate of 400 pounds (450 kilograms) and seeded at the rate of 50 pounds per acre (55kg per hectare). Sweet Sudan Grass, German Millet or Browntop Millet shall be used in summer months and Rye Grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

Fertilizer Topdressing:

Fertilizer used for topdressing on all roadway areas except slopes 2:1 and steeper shall be 10-20-20 written approval of the Engineer, a different analysis of fertilizer may be used provided grade and shall be applied at the rate of 500 pounds per acre (560 kg per hectare). Upon the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 10-20-20 analysis.

Fertilizer used for topdressing on slopes 2:1 and steeper and waste and borrow areas shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre (560 kg per hectare). Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis.

Supplemental Seeding:

The kinds of seed and proportions shall be the same as specified for "Seeding and Mulching", with the exception that no centipede seed will be used in the seed mix for

supplemental seeding. The rate of application for supplemental seeding may vary from 25# to 75# per acre (28kg to 85kg per hectare). The actual rate per acre (hectare) will be determined by the Engineer prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre (hectare), total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

Mowing:

The minimum mowing height on this project shall be 4 inches (100 mm).

Specialized Hand Mowing:

The work covered by this section consists of specialized hand mowing around or under fixed objects, including but not limited to guardrails, signs, barriers and slopes in a method acceptable to the Engineer.

The work of specialized hand mowing shall be completed with mechanically powered trimmers, string trimmers, hand operated rotary mowers, or self-propelled mowers of sufficient size and quality to perform the work timely and efficiently.

The quantity of mowing to be performed will be affected by the actual conditions which occur during the construction of the project. The quantity of mowing may be increased, decreased or eliminated entirely at the direction of the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

The quantity of specialized hand mowing to be paid for will be the actual number of man hours worked while hand mowing along the surface of the ground, at the direction of the Engineer. Where an area has been mowed more than once, at the direction of the Engineer, separate measurement will be made each time the area is mowed.

Payment will be made under:

Specialized Hand Mowing..... HR

Minimize Removal Of Vegetation

The Contractor shall minimize removal of vegetation at stream banks and disturbed areas within the project limits as directed by the Engineer.

Stockpile Areas

The Contractor shall install and maintain erosion control devices sufficient to contain sediment around any erodible material stockpile areas as directed by the Engineer.

Waste Areas And Borrow Sources:

Payment for temporary erosion control measures, except those made necessary by the Contractor's own negligence or for his own convenience, will be paid for at the appropriate contract unit price for the devices or measures utilized in borrow sources and waste areas.

No additional payment will be made for erosion control devices or permanent seeding and mulching in any commercial borrow or waste pit. All erosion and sediment control practices which may be required on a commercial borrow or waste site will be done at the Contractor's expense.

Safety Fence:**Description:**

The work of "Safety Fence" shall consist of furnishing, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland or water, and as directed by the Engineer in accordance with the special provisions included herein. The fence shall be installed prior to any land disturbing activities.

Materials:**Fence Material:**

Polyethylene or polypropylene fence shall be a preconstructed safety fence approved by the Engineer.

Posts:

Either wood posts or steel posts may be used. Wood posts shall be nominal 2" x 4" (51 mm x 102 mm) or 4" x 4" (102 mm x 102 mm), lengths as required, structural light framing, grade No. 2, Southern Pine. Steel posts shall be at least 5 feet (1.6 m) in length, approximately 1 3/8" (35 mm) wide measured parallel to the fence, and have a minimum weight of 1.25 lb./ft. (1.9 kg/m) of length. The steel post shall be equipped with an anchor plate having a minimum area of 14 square inches (90 square centimeters).

Clearing and Grading:

No additional clearing and grubbing is anticipated for the installation of this fence; however, if any clearing and grubbing is required, it will be the minimum required for the installation of the safety fence. Such clearing shall include satisfactory removal and disposal of all trees, brush, stumps and other objectionable material.

The fence shall be erected to conform to the general contour of the ground. When determined necessary by the Engineer, minor grading along the fence line shall be done to meet this requirement provided no obstructions to proper drainage are created.

Installation:

Posts shall be set and maintained in a vertical position and may be hand set or set with a post driver. If hand set, all backfill material shall be thoroughly tamped. If power driven, wood posts may be sharpened to a dull point. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30 degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence fabric shall be attached to the wood posts with one 2" (51 mm) galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

Method of Measurement:

The quantity of safety fence to be paid for shall be the actual number of linear feet (meter) of "Safety Fence", installed in place and accepted. No direct payment will be made for post and post bracing. Cost shall be included in the cost of the fence per linear foot (meter).

Basis of Payment:

The quantity of safety fence measured as provided above will be paid for at the contract unit price per linear foot (meter) of safety fence. Such payment will be full compensation for the work as described in the above paragraphs, including but not limited to clearing and grading, furnishing and installing fence fabric with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Safety Fence..... LF (M)

Gravel Construction Entrance:

Description:

The work covered by this section consists of furnishing, installing, and maintaining and removing any and all material required for the construction of a Gravel Construction Entrance.


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Materials:

The filter fabric shall meet the requirements of Section 1056 for Type 2 Fabric.

Stone shall be Class A Stone and shall meet the requirements of Section 1042 for Stone for Erosion Control, Class A.

Construction:

The Contractor shall install a Gravel Construction Entrance in accordance with the details in the plans and at locations as directed by the Engineer.

Method Of Measurement:

Gravel Construction Entrance will not be measured for payment under this section.

Basis Of Payment:

Payment for installation of Filter Fabric shall be paid for at the contract unit price per square yard (square meter) "Filter Fabric for Drainage".

Payment for installation of Class A Stone shall be paid for at the contract unit price per ton (metric ton) "Stone for Erosion Control, Class A".

Such price and payment shall be considered full compensation for all work covered by this provision including all materials, construction, maintenance, and removal of Gravel Construction Entrance as directed by the Engineer.

Floating Turbidity Curtain:

The Contractor shall install a floating turbidity curtain to deter silt suspension and movement of silt particles during construction. The curtain shall be constructed at locations as directed by the Engineer.

The curtain material shall be made of a tightly woven nylon, plastic or other non-deteriorating material meeting the following specifications:

Property	value
Grab tensile strength	*md-370 lbs (1.65 kn) *cd-250 lbs (1.11 Kn)
Mullen burst strength	480 psi (3307 kpa)
Trapezoid tear strength	*md-100 lbs (0.45 kn) *cd-60 lbs (0.27 Kn)
Apparent opening size	70 us standard sieve (0.210 mm)
Percent open area	4% permittivity 0.28 sec-1

*md - machine direction

*cd - cross machine direction

In the event that more than one width of fabric is required, a six inch (150 mm) overlap of the material shall also be required.

The curtain material shall be supported by a flotation material having over 29 lbs/ft (43 kg/m) buoyancy. The floating curtain shall have a 5/16 inch (7.8 mm) galvanized chain as a ballast, and dual 5/16 inch (7.8 mm) galvanized wire ropes with a heavy vinyl coating as load lines.

The floating turbidity curtain shall be maintained in a satisfactory condition by the Contractor until its removal is requested by the Engineer.

The quantity of floating turbidity curtain to be paid for under this item shall be the actual number of square yards (square meters) of curtain installed as specified and accepted.

The quantity of floating turbidity curtain as measured above will be paid for at the contract unit price per square yard (square meter) for "Floating Turbidity Curtain". Such price and payment will be full compensation for the work as described in the above paragraphs including but not limited to furnishing all materials, tools, equipment, and all incidentals necessary to complete the work.

Special Sediment Control Fence:

Description:

The work covered by this section consists of the construction, maintenance, and removal of special sediment control fence. Place special sediment control fence as shown on the plans or as directed by the Engineer.

Materials:

(A) Posts:

Either wood or steel posts may be used. Wood posts shall be a minimum of 6 feet long (1.8 m), at least 3 inches (75 mm) in diameter, and straight enough to provide a fence without noticeable misalignment. Steel posts shall be at least 5 feet (1.5 m) in length, approximately 1 3/8 inches (35 mm) wide measured parallel to the fence, and have a minimum weight of 1.25 lb/ft (1.86 kg/m) of length. The post shall be equipped with an anchor plate having a minimum area of 14.0 square inches (9000 square millimeters), and shall have a means of retaining wire in the desired position without displacement.

(B) 1/4 inch (6.4mm) Hardware Cloth:

Hardware cloth shall have 1/4 inch (6.4mm) openings constructed from #24 gauge wire. Install hardware cloth according to the detail shown on the plans.

(C) Sediment Control Stone:

Sediment control stone shall meet the requirements of Section 1005. Install stone according to the detail shown on the plans.

Maintenance and Removal:

The Contractor shall maintain the special sediment control fence until the project is accepted or until the fence is removed, and shall remove and dispose of silt accumulations at the fence when so directed by the Engineer in accordance with Section 1630.

Method of Measurement:

The quantity of 1/4 inch (6.4mm) hardware cloth to be paid for will be the actual number of linear feet (meters) measured along the ground, which has been completed and accepted.

The quantity of sediment control stone will be measured according to Article 1610-4.

Basis of Payment:

Payment for special sediment control fence will be as follows:

1/4 inch (6.4mm) Hardware Cloth.....	LF (M)
Sediment Control Stone.....	TON (MT)