



## Florida Department of Transportation

JEB BUSH  
GOVERNOR

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Tallahassee, FL 32399-0450

DENVER J. STUTLER, JR.  
SECRETARY

August 31, 2006

Mr. Greg Williams  
Program Operations Engineer  
Federal Highway Administration  
545 John Knox Road, Suite 200  
Tallahassee, Florida 32303

Re: Office of Design, Specifications  
Section 570  
Proposed Specification: 5700000.D04 Performance Turf

Dear Mr. Williams:

We are submitting, for your approval, two copies of a proposed Supplemental Specification for Performance Turf.

This change was proposed by David Sadler of the State Office of Construction to combine all grassing operations under one specification section.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965DB or [duane.brautigam@dot.state.fl.us](mailto:duane.brautigam@dot.state.fl.us).

If you have any questions relating to this specification change, please call Duane F. Brautigam, State Specifications Engineer at 414-4110.

Sincerely,

Signature on File

Duane F. Brautigam, P.E.  
State Specifications Engineer

DFB/ft

Attachment

cc: General Counsel  
Florida Transportation Builders' Assoc.  
State Construction Engineer

**PERFORMANCE TURF.**  
**(REV 9-7-055-2-068-30-05)**

SECTION 570 (Pages 665-668) is deleted and the following substituted:

**SECTION 570**  
**GRASSING (BY SEEDING) PERFORMANCE TURF**

**570-1 Description.**

Establish a stand of grass *a growing, healthy turf over all areas designated on the plans.* on slopes, shoulders and ~~other specified other areas, by furnishing materials; and seeding, or by seeding and mulching, hydroseeding, or placing sod.~~ *Use sod in areas designated on the plans to be sodded. Use seed, hydroseed, bonded fiber matrix, or sod in all other areas. Maintain turf areas until final acceptance of all contract work in accordance with Section 5-11* Upon acceptance of initial work and all other Contract work in accordance with 5-11, maintain the turf areas until final acceptance. Perform all construction and maintenance operations necessary to establish a healthy and vigorous stand of turf. ~~seeding and mulching, fertilizing, and wildflower seed application as required, and maintain the grassed areas until the completion of the project.~~

The Engineer may eliminate, at his discretion, any of the items of work covered by this Section.

**570-2 Materials.**

Meet the following requirements:

<del>Mowing</del> Turf Materials .....	<del>104-7.2</del> Section 981
Grass Seed Fertilizer .....	981-1 Section 982
Wildflower Seed Water .....	981-1 Section 983
Sod .....	981-2
Mulch .....	981-3
Fertilizer, Type I .....	Section 982
Water .....	Section 983
Compost .....	Section 987

~~Prior to planting, furnish the Engineer a certification from the grower stating the age of all seed.~~

**570-3 Construction Methods.**

**570-3.1 General:** ~~Install turf at the locations shown in the plans, as early in the construction process as is practical.~~ *Incorporate turf installation into the project at the earliest practical time.*

*Shape the areas to be planted to the plan typical sections and lines and grade shown in the Contract Documents* ~~on the plans.~~

*Except in areas where the Contract Documents* ~~Engineer~~ *requires specific types of grass to match adjoining private property, any species of grass designated in Section 981 may be used. Use the methods and materials necessary to establish and maintain the initial grassing until acceptance of the Contract work in accordance with 5-11. All of the permanent grassing material shall be in place prior to final acceptance.*

*The Department will only pay for replanting as necessary due to factors determined by the Engineer to be beyond control of the Contractor.*

~~Perform the installation in the following sequence: apply finish soil layer in accordance with Section 162; prepare the area to be seeded or sodded; seed, hydroseed or place sod; spread and anchor mulch and fertilize, as applicable. In preparing the ground, disk harrow and condition the soil to an average depth of 6 inches [150 mm]. Make the soil true to grade, not compacted, free of large clods, roots, and other material which will interfere with the work or subsequent mowing and maintenance operations. Do not begin subsequent operations until the Engineer has approved the condition of the prepared areas. Limit preparation to those areas that will be seeded or sodded within 48 hours. Prior to sodding, thoroughly water areas and allow surface moisture to dry so as to prevent a muddy soil condition. Do not seed or mulch when wind velocities exceed 15 mph [25 km/h]. Sow seed only when the soil is moist. Do not perform any seeding when the ground is frozen, unduly wet or otherwise not in a tillable condition.~~

~~Whenever a suitable length of roadway slopes or adjacent areas has been graded, prepare the area and perform grassing in accordance with the Contract Documents. Incorporate grassing into the project at the earliest practical time.~~

Complete all grassing on shoulder areas prior to the placement of the friction course on adjacent pavement, unless the friction course is to be placed directly on a non-asphalt base.

~~**570-3.2 Sequence of Operations:** Perform the operations in the following sequence: Apply finish soil layer materials in accordance with Section 162, prepare the area to be seeded, seed, spread and cut in mulch and fertilize.~~

~~In preparing the ground for sowing of seeds, disk harrow and thoroughly pulverize the soil to an average depth of 6 inches [150 mm]. Make the soil true to grade, not compacted and free of large clods, roots, and other material which will interfere with the work or subsequent mowing and maintenance operations. Do not begin subsequent operations until the Engineer has approved the condition of the prepared areas.~~

~~**570-3.3.2 Seeding:** While the soil is still loose, scatter the *specified* seed uniformly over the *grassing prepared* area and immediately mix it into the seed bed to a depth of 1/4 inch [6 mm], using the specified seed.~~

~~Thoroughly dry mix the separate types of seed immediately before sowing. Do not use wet seed.~~

~~*At the Contractor's option,* The Engineer will allow the wildflower seed to *may* be included in the *grassing-turf seeding* operation or performed separately from the grass *turf* seeding. ~~operation in areas shown on the plans.~~~~

~~Ensure that the wildflower seed is uniformly planted by drilling or placing the seed into the soil at an average depth of 1/8 inch [3 mm], but not exceeding 1/4 inch [6 mm], into the designated area at the specified rate.~~

~~**570-3.4 Mulching:** When areas require mulch, as shown on the plans *Where the plans indicate seeded areas to be mulched,* apply approximately 12 inches [50-25 mm], loose thickness, of the mulch material uniformly over the seeded area, and cut the mulch material into the soil to produce a loose mulched thickness of 3 to 4 inches [75 to 100 mm]. Do not use harrows. The Contractor may use *Use of* compost meeting the requirements of Section 987 in lieu of *as* mulch *is acceptable unless otherwise specified.*~~

~~When mulching on steep slopes, where the use of a machine for the cutting in process *anchoring mulch* is not practical/ble, secure the mulch after the seeding operation by either using an erosion control fabric, *erosion blanket or BFM* (see 570-3.4) or; spreading a string net over the mulch using stakes driven flush with the top of the mulch at 6 foot [1.8 m] centers and string parallel and perpendicular with diagonals in both directions.~~

~~**570-3.3 Sod:** Place the sod on the prepared surface, with edges in close contact, and embed it firmly and smoothly by light tamping with appropriate tools. Do not use sod which has been cut for more than 48 hours.~~

~~Place the sod to the edge of all landscape areas as shown in the plans and to the edge and 1 inch as shown in the Design Standards.~~

~~[25 mm] below adjoining pavement with an even surface and edge. Peg sod at locations where the sod may slide. Drive pegs through sod blocks into firm earth, flush with the sod soil surface, at intervals approved by the Engineer. The work and materials for pegging of sod as directed by the Engineer will be paid for as Unforeseeable Work.~~

~~Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge. In areas with steep slopes, place rolled sod in the following manner:~~

~~\_\_\_\_\_ 1. From the top of the slope break point, roll the sod down the slope to the toe, with sod overlapping 3 inches [75 mm], and peg in the overlap locations;~~

~~\_\_\_\_\_ 2. At the top of the slope adjacent to the edge of pavement, place rolled sod parallel to the roadway with sod overlapping the previously placed sod rolled down the slope.~~

~~\_\_\_\_\_ For sod blocks, stagger the setting of the sod pieces as shown in the Design Standards, Index 105 to avoid a continuous seam along the line of flow. Tamp the outer pieces of sod to produce a feathered edge effect.~~

~~Maintain the sodded areas in a satisfactory condition until final acceptance of the project. Include in such maintenance the filling, leveling, and repairing of any washed or eroded areas, as may be necessary. The Department will pay for resodding necessary due to factors determined by the Department to be beyond the control of the Contractor.~~

~~Mow the sodded areas when competing vegetation height exceeds 20 inches in height.~~

~~Monitor placed sod for growth of pest plants and noxious weeds. If pest plants and/or noxious weeds manifest themselves within 30 days of placement of the sod during the months April through October, within 60 days of placement of the sod during the months of November through March treat affected areas by means acceptable to the Department at no expense to the Department. If pest plants and/or noxious weeds manifest themselves after ~~during~~ the time frames described above from date of placement of sod, the Engineer, at his sole option, will determine if treatment is required and whether or not the Contractor will be compensated for such treatment. If compensation is provided, payment will be made as Unforeseeable Work as described in 4-4.~~

~~Remove and replace any sod as directed by the Engineer.~~

**570-3.34 Hydroseeding:** Use equipment specifically designed for mixing the wood fiber, seed, fertilizer, tackifier and dye, and applying the slurry uniformly over the areas to be hydroseeded.

Use wood fiber that is made of 100% hardwood or softwood and does not contain reprocessed wood or paper fibers. Ensure that a minimum of 50% of the fibers are equal to or greater than 0.15 inch [4 mm] in length and a minimum of 50% of the fibers will be retained on a twenty-five mesh screen. ~~Mix the wood fiber with water meeting the requirements of Section 983 at the rate of approximately 50 pounds [23 kg] of fiber to 100 gallons [380 liters] of water.~~

~~Mix fertilizer as required into the hydroseeding slurry. at the rates specified in 570-3.7.~~

~~Mix seed into the slurry at rates in accordance with Design Standards, Index 104.~~

~~Use tackifier that is a guar gum in powder form, pre-packaged in the hydroseeding mix, at the rate of 1.5 pounds [1 kg] per 50 pounds [23 kg] of wood fiber, with minimum viscosity of 4,500 cps.~~

~~Use dye that is pre-packaged in the hydroseeding mix. Ensure that the dye does not contain growth or germination inhibiting chemicals.~~

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

~~Do not use acrylamide and polyacrylamide containing materials in hydroseeding. These may include tackifiers, flocculants or moisture-holding compounds.~~

~~If the moisture content of air-dry wood fiber exceeds 15%, proportionally increase wood fiber material as directed by the Engineer. Maintain the slurry uniformity by continuously agitating the mixture during the application, and use within 24 hours of combining materials with water. Apply the hydroseeding slurry at the rate of 2,000 pounds [908 kg] of material per acre for slopes up to 4:1, and at the rate of 2,500 pounds [1,135 kg] of material per acre for slopes up to 3:1. For slopes 3:1 or greater, or slope lengths greater than 40', use Bonded Fiber Matrix (see section 570-3.4 below), in place of wood fiber and tackifier, at manufacturer's specified rates.~~

**570-3.45 Bonded Fiber Matrix (BFM):** Meet the minimum physical and performance criteria of this Specification for use of BFM in hydroseeding operations or temporary non-vegetative erosion and sediment control methods.

Provide evidence of product performance testing, manufacturer's certification of training and material samples to the Engineer at least seven calendar days prior to installation.

Ensure that the BFM is composed of long strand, thermally processed wood fibers held together by crosslinked hydro-colloid tackifier (>10%), which, upon drying becomes water-insoluble and non-dispersible. Ensure that the BFM contains biodegradable dye to aid in uniform application of the material and that the resulting matrix performs in a manner equal or superior to biodegradable erosion control blankets (ECBs). Provide documentation of manufacturer's testing at an independent laboratory to the Engineer, demonstrating superior performance of BFM as measured by reduced

water runoff, reduced soil loss and faster seed germination in comparison to erosion control blankets.

Use only BFMs that contain all components pre-packaged by the manufacturer to assure material performance. Deliver materials in UV and weather resistant factory labeled packaging. Store and handle products in strict compliance with the manufacturer's directions.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

~~Do not use acrylamide and polyacrylamide containing materials in the BFM slurry. These may include tackifiers, flocculants or moisture holding compounds.~~

Meet the following requirements after application of the formed matrix:

Ensure that the tackifier does not dissolve or disperse upon re-wetting.

Ensure that the matrix has no gaps between the product and the soil and that it provides 100% coverage of all disturbed soil areas after application.

Ensure that the matrix has a minimum water holding capacity of 1.2 gal/lb.

Ensure that the matrix has no germination or growth inhibiting properties and does not form a water-repelling crust.

Ensure that the matrix is comprised of materials which are 100% biodegradable and 100% beneficial to plant growth.

~~Provide certification of successful completion of training by the BFM manufacturer in the proper procedures for the mixing and application of the product. Mix and apply the BFM in strict compliance with the manufacturer's recommendations.~~

~~Apply the BFM to geotechnically stable slopes at the manufacturer's recommended rates. Use specially designed hydraulic seeding/mulching machines with fan type nozzle (50-degree tip) for the application. Apply the BFM from opposing directions to the soil surface in successive layers, thereby reducing the "shadow effect" and achieving 100% coverage of all exposed soil. Do not apply the BFM immediately before, during or after rainfall, so that the matrix will have an opportunity to dry for up to 24 hours after the installation. In difficult conditions of extreme slope or daily precipitation, where applications of BFM may fail, Engineer may allow use of alternative technologies to accomplish necessary seeding operations.~~

~~Degradation of BFM will occur naturally as a result of chemical and biological hydrolysis, UV exposure and temperature fluctuations. Re-application, as determined by the Engineer, will be required if BFM-treated soils are disturbed or water quality or turbidity tests show the need for an additional application. The work and materials for reapplication, will be paid for as Unforeseeable Work.~~

~~Provide evidence of product performance testing, manufacturer's certification of training and material samples to the Engineer at least seven calendar days prior to installation.~~

**570-3.5 Rolling:** Immediately after seeding or sodding, roll the entire grassed or mulched area with a cultipacker, traffic roller/lightweight turf roller or a horticultural

roller. Make at least two passes over the entire area. *Provide a true and even surface without any displacement of materials or deformation. Do not roll hydroseeded or BFM-treated areas.*

**570-3.6 Watering:** *Water all turf areas as necessary to produce a healthy and vigorous stand of turf. Ensure that the water used for turf irrigation meets the requirements of Section 983.*

~~Provide a vehicle for applying water to the grassed turf areas equipped with either a calibrated tank or an approved metering device installed at such point on the vehicle as to measure the water at the time of application. Thoroughly water sod immediately after placing, but Do not water newly seeded areas to force the seed germination.~~

~~do not apply water to hydroseeded or BFM treated areas for at least 24 hours after installation. Do not apply more than 1 inch [25 mm] of water per week for sustaining the grass growth. Use water only on vegetated areas when permitted by the Engineer.~~

**570-3.7 Fertilizing:** *Fertilize as necessary based on a soil testing performed in accordance with Section 162, spread an initial application of an appropriate fertilizer formulation at the rate recommended by the soil testing laboratory. Refer to Section 982 for fertilizer rates. calculations.*

*For bid purposes, base estimated quantities on an initial application of 265 lbs/acre [300 kg/ha] and one subsequent application of 135 lbs/acre [150 kg/ha] of 16-04-8.*

~~Spread the fertilizer by hand on steep slopes or other areas where machine spreading may not be practical.~~

~~Seeding: Spread the fertilizer over the grassed seeded area, in one or more applications as specified above, four to five weeks after the grass seed germinates.~~

~~in one or more applications as specified below.~~

~~Sodding: Spread the fertilizer over the area, in one or more applications as specified above, one to two weeks after the sod placement.~~

~~Hydroseeding: An initial application of fertilizer shall be mixed into the hydroseeding slurry. The Engineer will determine if additional fertilization may be necessary.~~

~~Spread an initial application of 265 lbs/acre [300 kg/ha] of 16-4-8.~~

~~If the project has not reached final acceptance in accordance with Article 5-11, spread subsequent applications of 135 lbs/acre [150 kg/ha] of 16-4-8 approximately 60 calendar days after the initial application without mixing into the soil.~~

~~The Contractor may spread the fertilizer by hand on steep slopes or other areas where machine spreading may not be practicable.~~

#### **570-4 Maintenance Turf Establishment.**

~~Maintain the planted areas as an acceptable stand of grass until final acceptance of the project at no expense to the Department. Perform all work necessary, including watering and fertilizing, to sustain an established turf until final acceptance, at no additional expense to the Department. Include in such maintenance Provide the filling, leveling, and repairing of any washed or eroded areas, as may be necessary.~~

~~An acceptable stand of grass Established turf is defined as follows:~~

~~a 1 by 1 foot [300 by 300 mm] area containing a minimum of 16 live, viable, healthy wildflower and/or grass seedlings.~~

*Established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand).*

*No bare spots larger than one square foot ~~{0.1m<sup>2</sup>}~~.*

*No continuous streaks running perpendicular to the face of the slope.*

*No bare areas comprising more than 1% of any given 1,000 square foot ~~{100-m<sup>2</sup>}~~ area.*

*No deformation of the turf areas caused by mowing or other Contractor equipment.*

*Monitor turf areas and remove all competing vegetation, pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I “List of Invasive Species”, Current Edition, www.fleppc.org). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf or wildflower species. Use herbicides in accordance with 7-1.7.*

*Take responsibility for litter removal, ~~watering~~ and mowing turf (including undisturbed areas within the project limits) until final acceptance. Begin mowing new turf after establishment of a healthy root system. Mow all turf to the height of not less than 6 inches ~~{150 mm}~~. Mow the sodded areas when competing vegetation height exceeds 20 inches in height. Do not mow wildflower areas until at least three weeks after the peak of the bloom period and do not mow lower than 6 inches ~~{150 mm}~~. Do not use selective herbicides in wildflower areas.*

*If at the time that all other work on the project is completed, but all ~~the~~ turf areas have not met the requirements for established turf set forth in 570-4, continuously maintain all ~~the~~ turf areas until the requirements for established turf set forth in 570-4 have been met.*

*During the entire establishment period and until turf is established in accordance with this specification, continue inspection (once every seven days and after each 1/2 inch of rain) and maintenance of erosion and sedimentation control items in accordance with Section 104. Take responsibility for the proper removal and disposal of all erosion and sedimentation control items after turf has been established.*

*Notify the Engineer, with a minimum of seven calendar days advance notice, to conduct inspections of the turf at approximate 90-day intervals during the establishment period to determine establishment. Results of such inspections will be made available to the Contractor within seven calendar days of the date of inspection. Determination of an established turf will be based on the entire project and not in sections.*

*Upon the determination by the Engineer that the requirements of 570-4 have been met and an established turf has been achieved and all erosion and sedimentation control items have been removed, the Engineer will release the Contractor from any further responsibility provided for in this Specification.*

*The Contractor’s establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the Engineer to be beyond the control of the Contractor, his Subcontractors, Vendors or Suppliers:*

*a. Determination that the deficiency was due to the failure of other features of the Contract.*

*b. Determination that the deficiency was the responsibility of a third party performing work not included in the Contract or its actions*

The Department will *only* pay for replanting as necessary due to factors determined *by the Department* to be beyond *the* control of the Contractor.

~~—Mow the planted grass areas to a height of 6 inches [150 mm] when competing vegetation height exceeds 20 inches [500 mm] in height. Do not mow wildflower areas until at least three weeks after the peak of the bloom period and do not mow lower than 6 inches [150 mm]. Do not use selective herbicides in wildflower areas.~~

***576-4 Responsible Party.***

*For the purposes of this Specification, the Contractor shall be the responsible party throughout construction and establishment periods.*

*Upon final acceptance of the Contract in accordance with 5-11, the Contractor's responsibility for maintenance of all the work or facilities within the project limits of the Contract will terminate in accordance with 5-11; with the sole exception that the facilities damaged due to lack of established turf and the obligations set forth in this Specification for Performance Turf shall continue thereafter to be responsibility of the Contractor as otherwise provided in this Section.*

***576-6 Disputes Resolution.***

*The Contractor and the Department acknowledge that use of the Disputes Review Board is required and the determinations of the Disputes Review Board for disputes arising out of the Performance Turf Specification will be binding on both the Contractor and the Department, with no right of appeal by either party, for the purposes of this Specification.*

*Any and all Disputes Review Board meetings after final acceptance of the Contract in accordance with 5-11 shall be requested and paid for by the Contractor. The Department will reimburse the Contractor for all fees associated with meetings.*

***576-7 Failure to Perform.***

*Should the Contractor fail to timely submit any dispute to the Dispute Review Board, refuse to submit any dispute to the Dispute Review Board, fail to provide an established turf in accordance with 570-4 within one-year of final acceptance of the Contract in accordance with 5-11, or fail to compensate the Department for any remedial work performed by the Department in establishing a turf and other remedial work associated with lack of an established turf, including but not limited to, repair of shoulder or other areas due to erosion and removal of sediments deposited in roadside ditches and streams, as determined by the Disputes Review Board to be the Contractor's responsibility, the Department shall suspend, revoke or deny the Contractor's certificate of qualification under the terms of Section 337.16(d)(2), Florida Statutes, until the Contractor provide an established turf or full and complete payment for the remedial work made to the Department. In no case shall the period of suspension, revocation, or denial of the Contractor's certificate of qualification be less than six (6) months. Should the Contractor choose to challenge the Department's notification of intent for suspension, revocation or denial of qualification and the Department's action is upheld, the Contractor shall have its qualification suspended for a minimum of six (6) months or until the remedial action is satisfactorily performed, whichever is longer.*

## 570-5 Method of Measurement.

**570-5.1 General:** The quantities to be paid for will be *plan quantity in square yards based on the area shown in the plans, completed and accepted. This includes grass seed, wildflower seed, hydroseeding or BFM application, sod, water and fertilizer.* for the following items accepted:

- \_\_\_\_\_ (1) The area, in square feet [square meters], of seeding.
- \_\_\_\_\_ (2) The area, in square feet [square meters], of seeding and mulching.
- \_\_\_\_\_ (3) The weight, in pounds [kilograms], of grass seed.
- \_\_\_\_\_ (4) The weight, in tons [metric tons], of mulch material.
- \_\_\_\_\_ (5) The weight, in tons [metric tons], of fertilizer.
- \_\_\_\_\_ (6) The volume, in thousand gallons [kiloliters], of water.
- \_\_\_\_\_ (7) The weight, in pounds [kilograms], of wildflower seed.
- \_\_\_\_\_ (8) The area, in acres [hectares], of mowing.

**570-5.2 Area Quantities:** For the quantities paid for on a square foot [square meter] basis, no deductions will be made for the areas occupied by turnouts in rural sections.

**570-5.3 Seed:** The quantity of grass or wildflower seed will be determined from packaged weights or by other appropriate methods.

**570-5.4 Mulch Material:** The quantity will be determined by weighing on truck scales, or by other appropriate methods. The Contractor shall advise the Engineer of the time and place of such weighing. Weighing will be done in the general vicinity of the project.

## 570-6 Basis of Payment.

**570-6.1 General:** Prices and payments will be full compensation for all work and materials specified in this Section.

*The work and materials for pegging of sod and re-planting as directed by the Engineer (as provided in 575 3.2), will be paid for as Unforeseeable Work.*

**570-6.2 Seeding:** When mulching is not specified, price and payment will be full compensation for all work and materials not specifically included in the items of separate payment shown below. The item of Seeding will include specifically all preparations of the ground, the application of the seed, the rolling, tilling or other specified work.

**570-6.3 Seeding and Mulching:** When mulching is specified, price and payment will be full compensation for everything specified in 570-6.2 and, in addition, will include the cost of applying, cutting in, rolling, and anchoring, where required, of the mulch material, but will not include the furnishing of the mulch material.

**570-6.4 Seed:** Price and payment for Grass Seed (Permanent Type) and, Grass Seed (Quick Growing Type) will be full compensation for the furnishing of the seed, at the site of its use. Price and payment for Wildflower Seed will include furnishing, applying, and mixing the seed into the seed bed.

### 570-6.5 Mulch Material:

**570-6.5.1 General:** Price and payment will be full compensation for the furnishing and spreading of the mulch material, at the site of its use.

**570-6.6 Water:** The quantity of water, ordered at the specific time of its being applied and which is actually used, determined by the specific metering device or by calibrated tank, will be paid for at the Contract price per thousand gallons [kiloliters] of

~~Water for Grassing. Such quantity will include all water authorized by the Engineer, which is used until the time of acceptance of the work.~~

**570-6.71 Payment Items:** Payment will be made under:

- ~~Item No. 104 4 Mowing per acre.~~
- ~~Item No. 2104 4 Mowing per hectare.~~
- ~~Item No. 570- 1- Seeding, *Performance Turf-Complete* - per square yard.~~
- ~~Item No. 2570 1 Seeding, *Complete* per square meter.~~
- ~~Item No. 570 2 Seeding and Mulching per square yard.~~
- ~~Item No. 2570 2 Seeding and Mulching per square meter.~~
- ~~Item No. 570 3 Grass Seed (Permanent Type) per pound.~~
- ~~Item No. 2570 3 Grass Seed (Permanent Type) per kilogram.~~
- ~~Item No. 570 4 Mulch Material per ton.~~
- ~~Item No. 2570 4 Mulch Material per metric ton.~~
- ~~Item No. 570 5 Fertilizer per ton.~~
- ~~Item No. 2570 5 Fertilizer per metric ton.~~
- ~~Item No. 570 9 Water for Grassing per thousand gallons.~~
- ~~Item No. 2570 9 Water for Grassing per kiloliters.~~
- ~~Item No. 570 10 Grass Seed (Quick Growing Type) per pound.~~
- ~~Item No. 2570 10 Grass Seed (Quick Growing Type) per kilogram.~~
- ~~Item No. 570 12 Wildflower Seed per pound.~~
- ~~Item No. 2570 12 Wildflower Seed per kilogram.~~

**PERFORMANCE TURF.**  
**(REV 8-30-05)**

SECTION 570 (Pages 665-668) is deleted and the following substituted:

**SECTION 570**  
**PERFORMANCE TURF**

**570-1 Description.**

Establish a growing, healthy turf over all areas designated on the plans. Use sod in areas designated on the plans to be sodded. Use seed, hydroseed, bonded fiber matrix, or sod in all other areas. Maintain turf areas until final acceptance of all contract work in accordance with Section 5-11.

**570-2 Materials.**

Meet the following requirements:

- Turf Materials .....Section 981
- Fertilizer.....Section 982
- Water.....Section 983

**570-3 Construction Methods.**

**570-3.1 General:** Incorporate turf installation into the project at the earliest practical time.

Shape the areas to be planted to the plan typical sections and lines and grade shown in the Contract Documents.

Except in areas where the Contract Documents requires specific types of grass to match adjoining private property, any species of grass designated in Section 981 may be used. Use the methods and materials necessary to establish and maintain the initial grassing until acceptance of the Contract work in accordance with 5-11. All of the permanent grassing material shall be in place prior to final acceptance.

The Department will only pay for replanting as necessary due to factors determined by the Engineer to be beyond control of the Contractor.

Complete all grassing on shoulder areas prior to the placement of the friction course on adjacent pavement.

**570-3.2 Seeding:** At the Contractor’s option, wildflower seed may be included in the turf seeding operation or performed separately from the turf seeding.

Use of compost meeting the requirements of Section 987 as mulch is acceptable unless otherwise specified.

**570-3.3 Sod:** Place the sod on the prepared surface, with edges in close contact. Do not use sod which has been cut for more than 48 hours.

Place the sod to the edge of all landscape areas as shown in the plans and as shown in the Design Standards.

Peg sod at locations where the sod may slide. Drive pegs through sod blocks into firm earth, flush with the sod soil surface, at intervals approved by the Engineer. The work and materials for pegging of sod as directed by the Engineer will be paid for as Unforeseeable Work.

Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge.

Monitor placed sod for growth of pest plants and noxious weeds. If pest plants and/or noxious weeds manifest themselves within 30 days of placement of the sod during the months April through October, within 60 days of placement of the sod during the months of November through March treat affected areas by means acceptable to the Department at no expense to the Department. If pest plants and/or noxious weeds manifest themselves after the time frames described above from date of placement of sod, the Engineer, at his sole option, will determine if treatment is required and whether or not the Contractor will be compensated for such treatment. If compensation is provided, payment will be made as Unforeseeable Work as described in 4-4.

Remove and replace any sod as directed by the Engineer.

**570-3.4 Hydroseeding:** Use equipment specifically designed for mixing the wood fiber, seed, fertilizer, tackifier and dye, and applying the slurry uniformly over the areas to be hydroseeded.

Use wood fiber that is made of 100% hardwood or softwood and does not contain reprocessed wood or paper fibers. Ensure that a minimum of 50% of the fibers are equal to or greater than 0.15 inch in length and a minimum of 50% of the fibers will be retained on a twenty-five mesh screen.

Mix fertilizer as required into the hydroseeding slurry.

Mix seed into the slurry at rates in accordance with Design Standards,

Index 104.

Ensure that the dye does not contain growth or germination inhibiting chemicals.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

**570-3.5 Bonded Fiber Matrix (BFM):** Meet the minimum physical and performance criteria of this Specification for use of BFM in hydroseeding operations or temporary non-vegetative erosion and sediment control methods.

Provide evidence of product performance testing, manufacturer's certification of training and material samples to the Engineer at least seven calendar days prior to installation.

Ensure that the BFM is composed of long strand, thermally processed wood fibers held together by crosslinked hydro-colloid tackifier (>10%), which, upon drying becomes water-insoluble and non-dispersible. Ensure that the BFM contains biodegradable dye to aid in uniform application of the material and that the resulting matrix performs in a manner equal or superior to biodegradable erosion control blankets (ECBs). Provide documentation of manufacturer's testing at an independent laboratory to the Engineer, demonstrating superior performance of BFM as measured by reduced water runoff, reduced soil loss and faster seed germination in comparison to erosion control blankets.

Use only BFMs that contain all components pre-packaged by the manufacturer to assure material performance. Deliver materials in UV and weather

resistant factory labeled packaging. Store and handle products in strict compliance with the manufacturer's directions.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

Meet the following requirements after application of the formed matrix:

Ensure that the tackifier does not dissolve or disperse upon re-wetting.

Ensure that the matrix has no gaps between the product and the soil and that it provides 100% coverage of all disturbed soil areas after application.

Ensure that the matrix has a minimum water holding capacity of 1.2 gal/lb.

Ensure that the matrix has no germination or growth inhibiting properties and does not form a water-repelling crust.

Ensure that the matrix is comprised of materials which are 100% biodegradable and 100% beneficial to plant growth.

Mix and apply the BFM in strict compliance with the manufacturer's recommendations.

Apply the BFM to geotechnically stable slopes at the manufacturer's recommended rates.

Degradation of BFM will occur naturally as a result of chemical and biological hydrolysis, UV exposure and temperature fluctuations. Re-application, as determined by the Engineer, will be required if BFM-treated soils are disturbed or water quality or turbidity tests show the need for an additional application. The work and materials for re-application, will be paid for as Unforeseeable Work.

**570-3.6 Watering:** Water all turf areas as necessary to produce a healthy and vigorous stand of turf. Ensure that the water used for turf irrigation meets the requirements of Section 983.

**570-3.7 Fertilizing:** Fertilize as necessary based on soil testing performed in accordance with Section 162. Refer to Section 982 for fertilizer rates.

For bid purposes, base estimated quantities on an initial application of 265 lbs/acre and one subsequent application of 135 lbs/acre of 16-0-8.

#### **570-4 Turf Establishment.**

Perform all work necessary, including watering and fertilizing, to sustain an established turf until final acceptance, at no additional expense to the Department. Provide the filling, leveling, and repairing of any washed or eroded areas, as may be necessary.

Established turf is defined as follows:

Established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand).

No bare spots larger than one square foot.

No continuous streaks running perpendicular to the face of the slope.

No bare areas comprising more than 1% of any given 1,000 square foot area.

No deformation of the turf areas caused by mowing or other Contractor equipment.

Monitor turf areas and remove all competing vegetation, pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I “List of Invasive Species”, Current Edition, [www.fleppc.org](http://www.fleppc.org)). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf or wildflower species. Use herbicides in accordance with 7-1.7.

Take responsibility for litter removal and mowing turf (including undisturbed areas within the project limits) until final acceptance. Begin mowing new turf after establishment of a healthy root system. Mow all turf to the height of not less than 6 inches. Mow the sodded areas when competing vegetation height exceeds 20 inches in height. Do not mow wildflower areas until at least three weeks after the peak of the bloom period and do not mow lower than 6 inches. Do not use selective herbicides in wildflower areas.

If at the time that all other work on the project is completed, but all turf areas have not met the requirements for established turf set forth in 570-4, continuously maintain all turf areas until the requirements for established turf set forth in 570-4 have been met.

During the entire establishment period and until turf is established in accordance with this specification, continue inspection (once every seven days and after each 1/2 inch of rain) and maintenance of erosion and sedimentation control items in accordance with Section 104. Take responsibility for the proper removal and disposal of all erosion and sedimentation control items after turf has been established.

Notify the Engineer, with a minimum of seven calendar days advance notice, to conduct inspections of the turf at approximate 90-day intervals during the establishment period to determine establishment. Results of such inspections will be made available to the Contractor within seven calendar days of the date of inspection. Determination of an established turf will be based on the entire project and not in sections.

Upon the determination by the Engineer that the requirements of 570-4 have been met and an established turf has been achieved and all erosion and sedimentation control items have been removed, the Engineer will release the Contractor from any further responsibility provided for in this Specification.

The Contractor’s establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the Engineer to be beyond the control of the Contractor, his Subcontractors, Vendors or Suppliers:

- a. Determination that the deficiency was due to the failure of other features of the Contract.
- b. Determination that the deficiency was the responsibility of a third party performing work not included in the Contract or its actions

The Department will only pay for replanting as necessary due to factors determined by the Department to be beyond the control of the Contractor.

#### **570-5 Responsible Party.**

For the purposes of this Specification, the Contractor shall be the responsible party throughout construction and establishment periods.

Upon final acceptance of the Contract in accordance with 5-11, the Contractor’s responsibility for maintenance of all the work or facilities within the project limits of the

Contract will terminate in accordance with 5-11; with the sole exception that the facilities damaged due to lack of established turf and the obligations set forth in this Specification for Performance Turf shall continue thereafter to be responsibility of the Contractor as otherwise provided in this Section.

**570-6 Disputes Resolution.**

The Contractor and the Department acknowledge that use of the Disputes Review Board is required and the determinations of the Disputes Review Board for disputes arising out of the Performance Turf Specification will be binding on both the Contractor and the Department, with no right of appeal by either party, for the purposes of this Specification.

Any and all Disputes Review Board meetings after final acceptance of the Contract in accordance with 5-11 shall be requested and paid for by the Contractor. The Department will reimburse the Contractor for all fees associated with meetings.

**570-7 Failure to Perform.**

Should the Contractor fail to timely submit any dispute to the Dispute Review Board, refuse to submit any dispute to the Dispute Review Board, fail to provide an established turf in accordance with 570-4 within one-year of final acceptance of the Contract in accordance with 5-11, or fail to compensate the Department for any remedial work performed by the Department in establishing a turf and other remedial work associated with lack of an established turf, including but not limited to, repair of shoulder or other areas due to erosion and removal of sediments deposited in roadside ditches and streams, as determined by the Disputes Review Board to be the Contractor's responsibility, the Department shall suspend, revoke or deny the Contractor's certificate of qualification under the terms of Section 337.16(d)(2), Florida Statutes, until the Contractor provide an established turf or full and complete payment for the remedial work made to the Department. In no case shall the period of suspension, revocation, or denial of the Contractor's certificate of qualification be less than six (6) months. Should the Contractor choose to challenge the Department's notification of intent for suspension, revocation or denial of qualification and the Department's action is upheld, the Contractor shall have its qualification suspended for a minimum of six (6) months or until the remedial action is satisfactorily performed, whichever is longer.

**570-8 Method of Measurement.**

The quantities to be paid for will be plan quantity in square yards based on the area shown in the plans, completed and accepted.

**570-9 Basis of Payment.**

Prices and payments will be full compensation for all work and materials specified in this Section.

Payment will be made under:

Item No. 570- 1- Performance Turf - per square yard.