Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

DENVER J. STUTLER, JR.
SECRETARY

March 23, 2006

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

Re: Office of Design, Specifications
Section 104
Proposed Specification: 1040600.D01

Dear Mr. Davis:

We are submitting, for your approval, two copies of a proposed Supplemental Specification for Prevention, Control and Abatement of Erosion and Water Pollution.

This change was proposed by Jerome Taylor of the State Drainage Office to eliminate Natural Hay Bales as an erosion control method for protection against downstream accumulations of silt and temporary erosion and sediment control practice based on current information available.

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.

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

PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION.
(REV 3-20-06)

ARTICLES 104-6 through 104-9 (Pages 125-129) are deleted and the following substituted:

104-6 Construction Requirements.

104-6.1 Limitation of Exposure of Erodible Earth: The Engineer may limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other water impoundments or to prevent detrimental effects on property outside the project right-of-way or damage to the project. Limit the area in which excavation and filling operations are being performed so that it does not exceed the capacity to keep the finish grading, grassing, sodding, and other such permanent erosion control measures current in accordance with the accepted schedule.

Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 750,000 ft^2 ~~[70,000 m^2]~~ without specific prior approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.
The Engineer may increase or decrease the amount of surface area the Contractor may expose at any one time.

104-6.2 Incorporation of Erosion Control Features: Incorporate permanent erosion control features into the project at the earliest practical time. Use approved temporary erosion control features to correct conditions that develop during construction which were not foreseen at the time of design, to control erosion prior to the time it is practical to construct permanent control features, or to provide immediate temporary control of erosion that develops during normal construction operations, which are not associated with permanent erosion control features on the project.

The Engineer may authorize temporary erosion control features when Topsoil is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

104-6.3 Scheduling of Successive Operations: Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable. Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

104-6.4 Details for Temporary Erosion Control Features:

104-6.4.1 General: Use temporary erosion and water pollution control features that consist of, but are not limited to, temporary grassing, temporary sodding, temporary mulching, sandbagging, slope drains, sediment basins, sediment checks,

berms, ~~baled hay or straw~~*synthetic bales*, floating turbidity barrier, staked turbidity barrier and silt fence. For design details for some of these items, refer to the Water Quality Section of the Design Standards.

104-6.4.2 Temporary Grassing: The Engineer may designate certain areas of grassing constructed in accordance with Section 570 as temporary erosion control features. The Engineer may direct the Contractor to omit permanent type grass seed from grassing and then reduce the specified rate of spread for fertilizer used in conjunction with grassing operations when such work is designated as a temporary erosion control feature.

104-6.4.3 Temporary Sod: Furnish and place sod in accordance with Section 575 within areas designated by the Engineer to temporarily control erosion. If the Engineer determines that the sod will be of a temporary nature, he may not require fertilizer and lime. Keep the sod in a moist condition in order to ensure growth. The Department will pay for all required watering under Item No. 570-9~~ [2570-9]~~.

104-6.4.4 Temporary Mulching: Furnish and apply a 2 to 4 inch~~ [50 to 100 mm]~~ thick blanket of ~~straw or hay~~ mulch to designated areas, then mix or force the mulch into the top 2 inches~~ [50 mm]~~ of the soil in order to temporarily control erosion. Use only ~~undecayed straw or hay~~ *mulch products* which can readily be cut into the soil and which otherwise compl~~ies~~*y* with 981-3. The Contractor may substitute other measures for temporary erosion control, such as hydromulching, chemical adhesive soil stabilizers, etc., for mulching~~ with straw or hay~~, if approved by the Engineer. When beginning permanent grassing operations, plow under temporary mulch materials in conjunction with preparation of the ground.

104-6.4.5 Sandbagging: Furnish and place sandbags in configurations to control erosion and siltation.

104-6.4.6 Slope Drains: Construct slope drains in accordance with the details shown in the plans, the Design Standards, or as may be approved as suitable to adequately perform the intended function.

104-6.4.7 Sediment Basins: Construct sediment basins in accordance with the details shown in the plans, the Design Standards, or as may be approved as suitable to adequately perform the intended function. Clean out sediment basins as necessary in accordance with the plans or as directed.

104-6.4.8 Berms: Construct temporary earth berms to divert the flow of water from an erodible surface.

104-6.4.9~~ Baled Hay or Straw~~*Synthetic Bales*: ~~Provide bales having minimum dimensions of 14 by 18 by 36 inches [350 by 450 by 900 mm] at the time of placement. Construct Baled Hay or Straw dams according to details shown in the plans, as directed by the Project Engineer or as shown in the Design Standards to protect against downstream accumulations of sediment.~~

~~Use natural baled hay or straw meeting the requirements of Section 981-3 or synthetic hay bales may be used as an alternative to natural baled hay or straw.~~ *Provide synthetic bales and install synthetic bales according to details shown in the plans, as directed by the ~~Project~~ Engineer, or as shown in the Design Standards to protect against downstream accumulation of sediment.* Synthetic~~ hay~~ bales should be interlocking, have pre-made stake holes, are made of synthetic fibers (polypropylene, nylon, polyester) that meet the Environmental Protection Agency's TCLP standards, and

produced into a filter medium ~~with needle-punched fibers~~. Use synthetic ~~hay~~ bales listed on the QPL. Wash out and remove sediment deposits when the deposits reach 1/2 the height of the reusable synthetic ~~hay~~ bale or as directed by the Engineer. Dispose of the washout in accordance with 104-3 or in an area approved by the Engineer. Synthetic ~~hay~~ bales that have had sediment deposits removed may be reinstalled on the project as approved by the Engineer.

104-6.4.10 Temporary Silt Fences:

104-6.4.10.1 General: Furnish, install, maintain, and remove temporary silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown on the plans, and the Design Standards.

104-6.4.10.2 Materials and Installation: Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 985 according to those applications for erosion control.

Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective temporary silt fence that controls sediment comparable to the Design Standards, Index No. 102.

Install all sediment control devices in a timely manner to ensure the control of sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required.

At sites where exposure to such sensitive areas is prevalent, complete the installation of any sediment control device prior to the commencement of any earthwork.

After installation of sediment control devices, repair portions of any devices damaged at no expense to the Department.

Erect temporary silt fence at upland locations across ditchlines and at temporary locations shown on the plans or approved by the Engineer where continuous construction activities change the natural contour and drainage runoff. Do not attach temporary silt fence to existing trees unless approved by the Engineer.

104-6.4.10.3 Inspection and Maintenance: Inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences as directed by the Engineer.

Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the temporary silt fence or as directed by the Engineer. Dress any sediment deposits remaining in place after the temporary silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 570.

104-6.4.11 Floating Turbidity Barriers and Staked Turbidity Barriers: Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc.

both within as well as outside the right-of-way limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the plans or as approved by the Engineer. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The Engineer may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters.

104-6.4.12 Rock Bags: Furnish and place rock bags to control erosion and siltation. Place the bags as shown in the plans, the Design Standards or as directed by the Engineer. Use a fabric material with openings that are clearly visible to minimize clogging yet small enough to prevent rock loss. Use material of sufficient strength to allow removing and relocating bags without breakage. The bag size when filled with rocks shall be approximately 12 by 12 by 4 inch ~~[300 by 300 by 100 mm]~~. Use No. 4 or No. 5 coarse aggregate rock.

104-6.4.13 Artificial Coverings: General: Install artificial coverings in locations where temporary protection from erosion is needed. Two situations occur that require artificial coverings. The two situations have differing material requirements, which are described below.

(1) Use artificial coverings composed of natural or synthetic fiber mats, plastic sheeting, or netting as protection against erosion, when directed by the Engineer, during temporary pauses in construction caused by inclement weather or other circumstances. Remove the material when construction resumes.

(2) Use artificial coverings as erosion control blankets, at locations shown in the plans, to facilitate plant growth while permanent grassing is being established. For the purpose described, use non-toxic, biodegradable, natural or synthetic woven fiber mats. Install in accordance with 571-3 as for plastic erosion mat. Install erosion control blankets capable of sustaining a maximum design velocity of 6.5 ft/sec ~~[2 m/sec]~~ as determined from tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the Department. Furnish to the Engineer, two certified copies of manufacturers test reports showing that the erosion control blankets meet the requirements of this Specification. Certification must be attested, by a person having legal authority to bind the manufacturing company. Also, furnish two 4 by 8 inch ~~[100 by 200 mm]~~ samples for product identification. The manufacturers test records shall be made available to the Department upon request. Leave the material in place, as installed, to biodegrade.

104-6.5 Removal of Temporary Erosion Control Features: In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project in such a manner that no detrimental effect will result. The Engineer may direct that temporary features be left in place.

104-7 Maintenance of Erosion Control Features.

104-7.1 General: Provide routine maintenance of permanent and temporary erosion control features, at no expense to the Department, until the project is complete and accepted. If reconstruction of such erosion control features is necessary due to the Contractor’s negligence or carelessness or, in the case of temporary erosion control

features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the Department. If reconstruction of permanent or temporary erosion control features is necessary due to factors beyond the control of the Contractor, the Department will pay for replacement under the appropriate Contract pay item or items.

Inspect all erosion control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.50 inches ~~[12 mm]~~ or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan, Contractor's Erosion Control plan and as specified in the State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

104-7.2 Mowing: The Engineer may direct mowing of areas within the limits of the project, in addition to and apart from those areas specified in Section 580. Mow these designated areas within seven days of receiving such order. Remove and properly dispose of all litter and debris prior to the mowing operation. Use conventional and specialized equipment along with hand labor to mow the entire area including slopes, wet areas, intersections, overpasses and around all appurtenances. Mow all areas to obtain a uniform height of 6 inches ~~[150 mm]~~, unless directed otherwise by the Engineer.

104-8 Protection During Suspension of Contract Time.

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet ~~[150 m]~~, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The Engineer may direct the Contractor to perform, during such suspensions of operations, any other erosion control work deemed necessary.

104-9 Method of Measurement.

When separate items for temporary erosion control features are included in the Contract, the quantities to be paid for will be: (1) the areas, in square yards ~~[square meters]~~, of Artificial Coverings; (2) the area, in acres ~~[hectares]~~, of Mowing; including litter, debris removal and disposal, equipment, labor, materials and incidentals; (3) the volume, in cubic yards ~~[cubic meters]~~, of Sandbagging, measured in accordance with 530-4.1; (4) the length, in feet ~~[meters]~~, of Slope Drains (Temporary), measured along the surface of the work constructed; (5) the number of Sediment Basins acceptably constructed; (6) the number of Sediment Basin Cleanouts acceptably accomplished; (7) the number of ~~hay or straw~~ *synthetic* bales;(8) the length, in feet ~~[meters]~~, of Floating Turbidity Barrier; (9) the length, in feet ~~[meters]~~, of Staked Turbidity Barrier; (10) the length, in feet ~~[meters]~~, of Staked Silt Fence; (11) seeding materials in accordance with Section 570 and (12) the number of Rock Bags acceptably placed.

The quantity of floating turbidity barrier, relocated turbidity barrier, staked turbidity barrier, and staked silt fence to be paid for will be the total length, in feet

~~[meters]~~, furnished, installed, and accepted at a new location, regardless of whether materials are new or used or relocated from a previous installation on the project.

104-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control features and for mowing. Any additional costs resulting from compliance with the requirements of this Section, other than construction, routine maintenance, and removal of temporary erosion control features and mowing, will be included in the Contract unit prices for the item or items to which such costs are related. The work of Grassing or Sodding designated as a temporary erosion control feature in accordance with 104-6.4.2 or 104-6.4.3 will be paid for under the appropriate pay items specified in Sections 570 and 575.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

Additional temporary erosion control features constructed as directed by the Engineer will be paid for as unforeseeable work.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the Department's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

Payment will be made under:

Item No.– 104- 1-	Artificial Coverings - per square yard.
~~Item No. 2104- 1-~~	~~Artificial Coverings - per square meter.~~
Item No.– 104- 4-	Mowing - per acre.
~~Item No. 2104- 4-~~	~~Mowing - per hectare.~~
Item No. –104- 5-	Sandbagging - per cubic yard.
~~Item No. 2104- 5-~~	~~Sandbagging - per cubic meter.~~
Item No. –104- 6-	Slope Drains (Temporary) - per foot.
~~Item No. 2104- 6-~~	~~Slope Drains (Temporary) - per meter.~~
Item No. –104- 7-	Sediment Basins - each.
~~Item No. 2104- 7-~~	~~Sediment Basins - each.~~
Item No. –104- 9-	Sediment Basin Cleanouts - each.
~~Item No. 2104- 9-~~	~~Sediment Basin Cleanouts - each.~~
~~Item No. 104- 10-~~	~~Baled Hay or Straw - each.~~
~~Item No. 2104- 10-~~	~~Baled Hay or Straw - each.~~
Item No. –104- 10	*Synthetic Bales - ~~each~~per foot*.
Item No. –104- 11-	Floating Turbidity Barrier - per foot.
~~Item No. 2104- 11-~~	~~Floating Turbidity Barrier - per meter.~~
Item No. –104- 12-	Staked Turbidity Barrier - per foot.
~~Item No. 2104- 12-~~	~~Staked Turbidity Barrier - per meter.~~
Item No. –104- 13-	Staked Silt Fence - per foot.
~~Item No. 2104- 13-~~	~~Staked Silt Fence - per meter.~~
Item No. –104- 16-	Rock Bags - each.

~~Item No. 2104- 16- Rock Bags - each.~~
Item No. –104- 75- Relocate Floating Turbidity Barrier - per foot.
~~Item No. 2104- 75- Relocate Floating Turbidity Barrier - per meter.~~

PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION.
(REV 3-20-06)

ARTICLES 104-6 through 104-9 (Pages 125-129) are deleted and the following substituted:

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Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 750,000 ft^2 without specific prior approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.
The Engineer may increase or decrease the amount of surface area the Contractor may expose at any one time.

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The Engineer may authorize temporary erosion control features when Topsoil is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

104-6.3 Scheduling of Successive Operations: Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable. Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

104-6.4 Details for Temporary Erosion Control Features:

104-6.4.1 General: Use temporary erosion and water pollution control features that consist of, but are not limited to, temporary grassing, temporary sodding, temporary mulching, sandbagging, slope drains, sediment basins, sediment checks,

berms, synthetic bales, floating turbidity barrier, staked turbidity barrier and silt fence. For design details for some of these items, refer to the Water Quality Section of the Design Standards.

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104-6.4.3 Temporary Sod: Furnish and place sod in accordance with Section 575 within areas designated by the Engineer to temporarily control erosion. If the Engineer determines that the sod will be of a temporary nature, he may not require fertilizer and lime. Keep the sod in a moist condition in order to ensure growth. The Department will pay for all required watering under Item No. 570-9.

104-6.4.4 Temporary Mulching: Furnish and apply a 2 to 4 inch thick blanket of mulch to designated areas, then mix or force the mulch into the top 2 inches of the soil in order to temporarily control erosion. Use only mulch products which can readily be cut into the soil and which otherwise comply with 981-3. The Contractor may substitute other measures for temporary erosion control, such as hydromulching, chemical adhesive soil stabilizers, etc., for mulching, if approved by the Engineer. When beginning permanent grassing operations, plow under temporary mulch materials in conjunction with preparation of the ground.

104-6.4.5 Sandbagging: Furnish and place sandbags in configurations to control erosion and siltation.

104-6.4.6 Slope Drains: Construct slope drains in accordance with the details shown in the plans, the Design Standards, or as may be approved as suitable to adequately perform the intended function.

104-6.4.7 Sediment Basins: Construct sediment basins in accordance with the details shown in the plans, the Design Standards, or as may be approved as suitable to adequately perform the intended function. Clean out sediment basins as necessary in accordance with the plans or as directed.

104-6.4.8 Berms: Construct temporary earth berms to divert the flow of water from an erodible surface.

104-6.4.9Synthetic Bales: Provide synthetic bales and install synthetic bales according to details shown in the plans, as directed by the Engineer, or as shown in the Design Standards to protect against downstream accumulation of sediment. Synthetic bales should be interlocking, have pre-made stake holes, are made of synthetic fibers (polypropylene, nylon, polyester) that meet the Environmental Protection Agency's TCLP standards, and produced into a filter medium. Use synthetic bales listed on the QPL. Wash out and remove sediment deposits when the deposits reach 1/2 the height of the reusable synthetic bale or as directed by the Engineer. Dispose of the washout in accordance with 104-3 or in an area approved by the Engineer. Synthetic bales that have had sediment deposits removed may be reinstalled on the project as approved by the Engineer.

104-6.4.10 Temporary Silt Fences:

104-6.4.10.1 General: Furnish, install, maintain, and remove temporary silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown on the plans, and the Design Standards.

104-6.4.10.2 Materials and Installation: Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 985 according to those applications for erosion control.

Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective temporary silt fence that controls sediment comparable to the Design Standards, Index No. 102.

Install all sediment control devices in a timely manner to ensure the control of sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required.

At sites where exposure to such sensitive areas is prevalent, complete the installation of any sediment control device prior to the commencement of any earthwork.

After installation of sediment control devices, repair portions of any devices damaged at no expense to the Department.

Erect temporary silt fence at upland locations across ditchlines and at temporary locations shown on the plans or approved by the Engineer where continuous construction activities change the natural contour and drainage runoff. Do not attach temporary silt fence to existing trees unless approved by the Engineer.

104-6.4.10.3 Inspection and Maintenance: Inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences as directed by the Engineer.

Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the temporary silt fence or as directed by the Engineer. Dress any sediment deposits remaining in place after the temporary silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 570.

104-6.4.11 Floating Turbidity Barriers and Staked Turbidity Barriers: Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the plans or as approved by the Engineer. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The Engineer may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters.

104-6.4.12 Rock Bags: Furnish and place rock bags to control erosion and siltation. Place the bags as shown in the plans, the Design Standards or as directed by the Engineer. Use a fabric material with openings that are clearly visible to minimize clogging yet small enough to prevent rock loss. Use material of sufficient strength to allow removing and relocating bags without breakage. The bag size when filled with rocks shall be approximately 12 by 12 by 4 inch. Use No. 4 or No. 5 coarse aggregate rock.

104-6.4.13 Artificial Coverings: General: Install artificial coverings in locations where temporary protection from erosion is needed. Two situations occur that require artificial coverings. The two situations have differing material requirements, which are described below.

(1) Use artificial coverings composed of natural or synthetic fiber mats, plastic sheeting, or netting as protection against erosion, when directed by the Engineer, during temporary pauses in construction caused by inclement weather or other circumstances. Remove the material when construction resumes.

(2) Use artificial coverings as erosion control blankets, at locations shown in the plans, to facilitate plant growth while permanent grassing is being established. For the purpose described, use non-toxic, biodegradable, natural or synthetic woven fiber mats. Install in accordance with 571-3 as for plastic erosion mat. Install erosion control blankets capable of sustaining a maximum design velocity of 6.5 ft/sec as determined from tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the Department. Furnish to the Engineer, two certified copies of manufacturers test reports showing that the erosion control blankets meet the requirements of this Specification. Certification must be attested, by a person having legal authority to bind the manufacturing company. Also, furnish two 4 by 8 inch samples for product identification. The manufacturers test records shall be made available to the Department upon request. Leave the material in place, as installed, to biodegrade.

104-6.5 Removal of Temporary Erosion Control Features: In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project in such a manner that no detrimental effect will result. The Engineer may direct that temporary features be left in place.

104-7 Maintenance of Erosion Control Features.

104-7.1 General: Provide routine maintenance of permanent and temporary erosion control features, at no expense to the Department, until the project is complete and accepted. If reconstruction of such erosion control features is necessary due to the Contractor’s negligence or carelessness or, in the case of temporary erosion control features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the Department. If reconstruction of permanent or temporary erosion control features is necessary due to factors beyond the control of the Contractor, the Department will pay for replacement under the appropriate Contract pay item or items.

Inspect all erosion control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.50 inches or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan, Contractor's Erosion Control plan and as specified in the State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

104-7.2 Mowing: The Engineer may direct mowing of areas within the limits of the project, in addition to and apart from those areas specified in Section 580. Mow these designated areas within seven days of receiving such order. Remove and properly dispose of all litter and debris prior to the mowing operation. Use conventional and specialized equipment along with hand labor to mow the entire area including slopes, wet areas, intersections, overpasses and around all appurtenances. Mow all areas to obtain a uniform height of 6 inches, unless directed otherwise by the Engineer.

104-8 Protection During Suspension of Contract Time.

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The Engineer may direct the Contractor to perform, during such suspensions of operations, any other erosion control work deemed necessary.

104-9 Method of Measurement.

When separate items for temporary erosion control features are included in the Contract, the quantities to be paid for will be: (1) the areas, in square yards, of Artificial Coverings; (2) the area, in acres, of Mowing; including litter, debris removal and disposal, equipment, labor, materials and incidentals; (3) the volume, in cubic yards, of Sandbagging, measured in accordance with 530-4.1; (4) the length, in feet, of Slope Drains (Temporary), measured along the surface of the work constructed; (5) the number of Sediment Basins acceptably constructed; (6) the number of Sediment Basin Cleanouts acceptably accomplished; (7) the number of synthetic bales;(8) the length, in feet, of Floating Turbidity Barrier; (9) the length, in feet, of Staked Turbidity Barrier; (10) the length, in feet, of Staked Silt Fence; (11) seeding materials in accordance with Section 570 and (12) the number of Rock Bags acceptably placed.

The quantity of floating turbidity barrier, relocated turbidity barrier, staked turbidity barrier, and staked silt fence to be paid for will be the total length, in feet, furnished, installed, and accepted at a new location, regardless of whether materials are new or used or relocated from a previous installation on the project.

104-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control features and for mowing. Any additional costs resulting from compliance with the

requirements of this Section, other than construction, routine maintenance, and removal of temporary erosion control features and mowing, will be included in the Contract unit prices for the item or items to which such costs are related. The work of Grassing or Sodding designated as a temporary erosion control feature in accordance with 104-6.4.2 or 104-6.4.3 will be paid for under the appropriate pay items specified in Sections 570 and 575.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

Additional temporary erosion control features constructed as directed by the Engineer will be paid for as unforeseeable work.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the Department's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

Payment will be made under:

Item No. 104- 1-	Artificial Coverings - per square yard.
Item No. 104- 4-	Mowing - per acre.
Item No. 104- 5-	Sandbagging - per cubic yard.
Item No. 104- 6-	Slope Drains (Temporary) - per foot.
Item No. 104- 7-	Sediment Basins - each.
Item No. 104- 9-	Sediment Basin Cleanouts - each.
Item No. 104- 10	Synthetic Bales - per foot.
Item No. 104- 11-	Floating Turbidity Barrier - per foot.
Item No. 104- 12-	Staked Turbidity Barrier - per foot.
Item No. 104- 13-	Staked Silt Fence - per foot.
Item No. 104- 16-	Rock Bags - each.
Item No. 104- 75-	Relocate Floating Turbidity Barrier - per foot.