

# ALABAMA DEPARTMENT OF TRANSPORTATION

DATE: August 15, 2012

Special Provision No. 12-0399

EFFECTIVE DATE: November 1, 2012

SUBJECT: Temporary Soil Erosion and Sediment Control.

Alabama Standard Specifications, 2012 Edition, SECTION 665, shall be replaced by the following:

## SECTION 665 TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

### 665.01 Description.

The Contractor shall provide and maintain temporary soil erosion and sediment control to protect the project site from erosion and adjacent property and waters from damage by sediment transport and deposition during construction. "Best Management Practices" (BMPs) shall be provided and maintained to control soil erosion and sediment transport. A BMP is any procedure, process, technique, plan or device that can be utilized to enhance the control of soil erosion and sediment transport.

### 665.02 Materials.

#### (a) TEMPORARY SEEDING.

Seeds shall be furnished in accordance with the requirements given in Item 860.01(a)1. Seed mixes used for temporary seeding shall be in accordance with the following table:

TEMPORARY SEEDING	
September through December	
Annual Ryegrass	25 pounds per acre {28 kg per hectare}
Kentucky 31 Fescue	30 pounds per acre {34 kg per hectare}
Reseeding Crimson Clover	10 pounds per acre {11 kg per hectare}
January through April 15	
Kentucky 31 Fescue	30 pounds per acre {34 kg per hectare}
Reseeding Crimson Clover	30 pounds per acre {34 kg per hectare}
Annual Ryegrass	15 pounds per acre {18 kg per hectare}
April 16 through August	
Brown Top Millet	30 pounds per acre {34 kg per hectare}
Kentucky 31 Fescue	30 pounds per acre {34 kg per hectare}
Hulled Bermuda Grass	10 pounds per acre {11 kg per hectare}

#### (b) TEMPORARY MULCHING.

Temporary mulching materials shall conform to the requirements given in Article 860.03 for Mulching Material.

#### (c) TEMPORARY PIPE.

Temporary pipe may be constructed of any type of material that will be suitable for the required work. The inside diameter of the pipe shall be selected by the Contractor based on expected flows and shall be a minimum of 12 inches {300 mm} or as shown on the plans. End treatments, joint sections, and tees shall also be of materials and sizes that are suitable for the required work. Anchors shall be installed when required to keep the pipe in place.

#### (d) POLYETHYLENE.

Polyethylene sheets may be of any size or color capable of serving the purpose intended provided it is of at least 4 mil {0.1 mm} in thickness.

(e) TEMPORARY COARSE AGGREGATE.

Temporary coarse aggregate shall be either stone or concrete from the demolition of structures on the Right of Way.

Stone aggregate for stabilized construction entrances shall meet the requirements for ALDOT Number 1 coarse aggregate given in Section 801. Concrete from the demolition of structures shall meet the gradation requirements for ALDOT Number 1 coarse aggregate given in Section 801. Reinforcing steel shall be removed from the concrete used for temporary coarse aggregate.

Stone aggregate for other erosion and sediment control purposes shall be the size shown on the plans and shall meet the requirements given in Section 801.

(f) TEMPORARY RIPRAP.

Unless shown otherwise on the plans, temporary riprap shall be either stone or concrete from the demolition of structures on the Right of Way. Stone riprap shall meet the requirements for Class 2 riprap given in Section 814. Concrete from the demolition of structures shall meet the size and weight requirements given for Class 2 riprap in Section 814. Reinforcing steel shall be cut flush with the surfaces of the demolished concrete. **The geotextile underlayment and choker shall meet the material requirements of Section 610.**

(g) HAY BALES.

Bales may be either hay or straw containing 5 cubic feet {0.14 m<sup>3</sup>} of material and having a weight {mass} of not less than 35 pounds {16 kg} with a minimum length of 3 feet {0.9 m}.

(h) SAND BAGS.

Bags may be cotton, burlap, woven polypropylene, polyethylene, polyamide fabric or other material that will adequately confine the aggregate content for the duration of the use of the bag. Bags shall be filled with sand, limestone screenings or aggregate that is smaller than ALDOT #78. Fill material shall be selected by the Contractor based on the required bag application. Each filled bag shall have minimum dimensions of 18" x 12" x 3" {450 mm x 305 mm x 75 mm} and shall have a minimum weight {mass} of 30 pounds {13 kg}.

(i) SILT FENCE.

Silt fence shall be a geotextile filter supported between posts with a wire mesh backing as shown on the plans. Posts shall be strong enough to provide and retain the fence configuration shown on the plans while being subjected to loading of silt, water and debris.

Silt fence shall meet the requirements given in Section 810 and AASHTO M 288 as supplemented by the following requirements:

- The support backing for the geotextile shall be 14 gage steel wire mesh. The vertical spacing of the wire in the mesh shall be 6 {150 mm} inches. The minimum horizontal spacing of the wires shall be 6 inches {150 mm} and the maximum horizontal spacing shall be 12 inches {300 mm}.

- The geotextile filter shall be either a non-woven geotextile or a woven geotextile composed of monofilament yarns.

A list of geotextile materials acceptable for use in this application (List II-3 "GEOTEXTILES") is given in the ALDOT manual titled "Materials, Sources, and Devices with Special Acceptance Requirements".

(j) WATTLES.

A wattle shall be a tubular shaped product specifically manufactured for erosion and sediment control. Biodegradable wattles shall be manufactured using interwoven biodegradable plant material such as straw, coir, or wood shavings in biodegradable or photodegradable netting that is of sufficient strength to resist damage during handling, installation and use. Wattles manufactured using non-biodegradable materials shall be completely removed from the project when no longer required or useful. Disposal shall be in accordance with recommendations from the wattle manufacturer.

The required minimum diameter of the wattle shall be determined based upon its intended application and shall be as follows unless shown otherwise on the plans. When installed for the purposes of slowing sheet flow or by interrupting the lengths of longer slopes (slopes longer than 50 feet {15 m}), the minimum diameter of the wattle shall be 9 inches {230 mm}. For all other applications including perimeter sediment barriers the minimum diameter of the wattle shall be 20 inches {500 mm}. Wattles of smaller than required diameter may be provided as a stacked installation in accordance with manufacturer recommendations for stacking if the total height of the installation is at least 20 inches {500 mm}. The diameter or height will be verified by measuring the wattle after installation. **Wattles installed in a ditch check application shall have a geotextile underlayment which shall meet the material requirements of Section 610.**

A list of acceptable manufactured wattle products (LIST II-24 "TEMPORARY EROSION AND SEDIMENT CONTROL PRODUCTS") is given in the ALDOT manual titled "Materials, Sources, and Devices with Special Acceptance Requirements".

(k) SILT DIKES.

Silt dikes shall be a triangular shaped cross section with a height of at least 8" {200 mm} in the center with equal length sides and a 16" to 20" {400 mm to 500 mm} base. The triangular shape shall be urethane foam. The outer cover shall be a woven geotextile fabric placed around the urethane foam. The geotextile shall also extend beyond both sides of the triangle at least 2 feet {600 mm}. Dikes shall be attached to the ground with wire staples in accordance with the silt dike manufacturer's recommendations.

(l) BRUSH BARRIER.

Brush Barriers shall be constructed of selected brush, limbs and small trees from the clearing operations. The **geotextile underlayment and choker** shall meet the material requirements of Section 610.

(m) MANUFACTURED INLET PROTECTION DEVICE.

Manufactured Inlet Protection Devices shall be provided in accordance with requirements shown on the plans. Manufactured inlet protection devices shall consist of filter fabric held in place by a rigid frame. The frame shall be strong enough to support the stormwater flow and weight of any sediment that accumulates on the filter. The manufactured inlet protection device shall have an overflow feature to allow the passage of water during high flow conditions. The filter fabric shall have the following properties:

- Minimum Tensile Strength (Machine Direction) of 80 pounds {355 Newtons} (ASTM D 4632);
- Minimum Permittivity of  $0.05 \text{ sec}^{-1}$  (ASTM D 4491);
- Maximum Apparent Opening Size of US Std #30 sieve {0.60 mm} (ASTM D 4751);
- Minimum UV Stability of 70% (ASTM D 4355 at 500 hours).

A list of acceptable manufactured inlet protection devices (LIST II-24 "TEMPORARY EROSION AND SEDIMENT CONTROL PRODUCTS") is given in the ALDOT manual titled "Materials, Sources, and Devices with Special Acceptance Requirements".

(n) FLOATING BASIN BOOM.

Floating basin booms shall consist of a reinforced fabric attached on the upper side to floatation members and ballasted on the lower side with chains or weights to form a bottom-tensioned floating curtain boom. Floating basin booms shall be devices manufactured specifically for use in containing sediment suspended in water.

All materials used in the floating basin boom shall comply with the requirements shown on the plan details and the manufacturer's recommendations for the intended application.

The floatation members shall be made of foam with a minimum diameter of 6 inches {150 mm} or as shown on the plans. The skirt depth below the foam floatation shall be a minimum of 5 feet {1.5 meters} or as shown on the plans. The ballast shall be galvanized proof coil chains or other acceptable weights capable of retaining the skirt in a vertical position. The boom shall be Yellow or International Orange in color.

Anchors capable of holding the floating basin boom in place shall be made of a material recommended by the manufacturer.

(o) **SEDIMENTATION BASINS.**

Components of sedimentation basins shall meet the requirements shown on the plans. Materials for the construction of the sedimentation basins shall be selected from the lists in the Department's "Materials, Sources and Devices with Special Acceptance Requirements" if lists are available for the materials. If lists are not available, materials shall be provided in accordance with all applicable Department specifications and shall be of a quality that enables the sedimentation basin to function as intended for the duration of the need of the sedimentation basin.

The Contractor shall submit a description of all of the materials proposed for the construction of the sedimentation basins. The proposed list of materials shall be submitted with the submittal of the Stormwater Management Plan (SWMP) that is described in Subarticle 108.04(b).

(p) **FLOCCULANT.**

The type of Flocculant that is furnished shall be the type that is manufactured for use in controlling erosion and sediment. Flocculant shall be in the form of blocks, powder, or sock sets as shown to be required on the plans. With the exception of sock sets, the exact chemical makeup of the Flocculant shall be selected by the manufacturer based on testing of the soil and potential sediment at the site of construction. Flocculant placement and application rates shown on the plans shall be verified by the Flocculant manufacturer to be effective for the type of soil and sedimentation that must be controlled. Three copies of the documentation of the effectiveness of the Flocculant and of the manufacturer's testing shall be submitted as an attachment to the Stormwater Management Plan that is described in Subarticle 108.04(b).

A list of acceptable flocculants (LIST II-24 "TEMPORARY EROSION AND SEDIMENT CONTROL PRODUCTS") is given in the ALDOT manual titled "Materials, Sources, and Devices with Special Acceptance Requirements".

(q) **FLOW BAFFLES.**

Flow Baffles shall be a rolled erosion control product supported between posts with a wire mesh backing as shown on the plans. The posts and wire mesh shall meet the same requirements as given for silt fence. The rolled erosion control product shall consist of 100 % coconut (coir) fibers and meet the following requirements:

- Minimum Weight of 20 ounces per square yard {678 grams per square meter} (ASTM D 5261);
- Open Area of 50% as determined by physical measurement.

A list of materials acceptable for use in this application (List II-24 "TEMPORARY EROSION AND SEDIMENT CONTROL PRODUCTS") is given in the ALDOT manual titled "Materials, Sources, and Devices with Special Acceptance Requirements".

(r) **Basin Dewatering Devices.**

Basin Dewatering Devices shall be a product or structure that withdraws water from the surface of the basin and meets the requirements that are shown on the plans.

(s) **CONTRACTOR RETAINED TURBIDIMETERS.**

Turbidimeters shall be a device capable of measuring the nephelometric turbidity units (NTU) of construction stormwater that meets the following requirements:

- Portable waterproof device that meets USEPA Method 180.1 with a 0-1000 NTU range;
- Sample Tubes, Calibration Kit, and Protective Carrying Case;
- Rechargeable Battery, USB Interface, Cable, and Computer Software.

A list of equipment acceptable for use in this application (List II-24 "TEMPORARY EROSION AND SEDIMENT CONTROL PRODUCTS") is given in the ALDOT manual titled "Materials, Sources, and Devices with Special Acceptance Requirements".

**665.03 Construction Requirements.**

(a) **EROSION CONTROL AND RUNOFF CONVEYANCE.**

1. **TEMPORARY SEEDING AND MULCHING.**

a. **Inspection to Evaluate Temporary Stabilization.**

The project shall be inspected in accordance with the requirements given in Item 107.21(d)2. Areas of the project not undergoing active construction shall be evaluated for temporary stabilization requirements.

**b. Temporary Mulching Only.**

At locations where final grading should be completed within 60 calendar days, all bare ground shall be stabilized with temporary mulching applied by either hydraulic or conventional methods at a rate of no less than 3.0 tons per acre.

**c. Temporary Seeding and Mulching.**

At locations where final grading will not be completed within 60 calendar days, all bare ground shall be stabilized with temporary seeding and mulching.

Ground preparation will not be required for temporary seeding and temporary mulching except as follows. Areas to be seeded temporarily shall be left in a rough graded condition. Areas that are smooth or hard shall be lightly scarified with scarifying teeth or some other acceptable method, running perpendicular to the direction of water flow. The intent of this scarifying is to obtain a rough area to hold seed and prevent the formation of rills and gulleys. Areas where sight distances must be maintained shall be bladed smooth. All debris in these areas shall be removed to allow mowing.

Application of 1000 pounds {1120 kg} of 8-8-8 fertilizer per acre {hectare} shall be applied by either hydraulic or conventional methods. Seeding and mulching shall also be applied by either hydraulic or conventional methods at a rate of no less than 2.0 tons per acre, separately or concurrently with fertilizer.

**d. Anchoring of Temporary Mulching near Traffic and Streams.**

Temporary mulch within 10 feet {3 meters} of traffic or live streams shall be anchored by either crimping, the application of a tackifier adhesive, or the installation of a mulch control netting in accordance with the requirements given in Section 656.

**e. Acceptance of Temporary Seeding and Mulching.**

Full payment for Temporary Mulching will be made after application of the mulch in accordance with the requirements given in Section 656. Payment for Temporary Seeding will be made in full upon satisfactory application. Acceptance of the Temporary Seeding item requires a cover of living plants capable of effectively preventing soil erosion until such time that permanent soil erosion prevention measures can be installed.

**2. POLYETHELENE.**

Polyethylene sheets shall be placed to eliminate soil erosion on the surfaces of slopes, berms, ditches, and at other locations shown on the plans, accepted SWMP, or as directed by the Engineer. The sheets shall be installed flat and securely anchored to the ground after the ground has been cleared of all objects that may tear the sheets. Upstream sheets shall overlap downstream sheets a minimum of 6 inches {150 mm}. Anchors are considered incidental to this work.

**3. TEMPORARY EARTH BERMS.**

Temporary earth berms shall be constructed at the top of cut or fill sections and at other locations where the diversion of water is required. Stream diversion is addressed in Sections 107 and 524. Temporary earth berms shall be constructed at locations shown on the plans, the approved SWMP or as directed by the Engineer. Temporary earth berms may be plated with polyethylene or aggregate. The height of the berms shall be a minimum of 2 feet {600 mm} after compaction. The width of the top of the berm shall be 2 feet {600 mm} with 2:1 side slopes. The construction of berms is encouraged and berms of a very temporary nature may be constructed by the windrowing of material. There will be no direct payment for berms not meeting requirements given in this Section and the requirements shown in the plans. If Pay Item 665-T is not included in the contract, the cost of constructing Temporary Earth Berms will be considered incidental to the grading operation.

#### 4. TEMPORARY PIPE.

Temporary Pipe shall be sized to carry the anticipated volumes of flow and shall be installed as permitted by the Engineer or as shown on the plans. The length shall be as determined by the Engineer. Temporary pipes may be placed without the bedding requirements required for the installation of permanent pipe. Pipes shall be securely anchored. Any required tees or joint sections are considered incidental to the work. End treatments shall be installed in a manner to allow the pipe to function effectively.

#### 5. STABILIZED CONSTRUCTION ENTRANCE.

Stabilized construction entrances shall be constructed of materials, at the locations, and to the dimensions shown on the plans, as modified in the accepted SWMP or as directed by the Engineer. The Contractor shall be responsible for maintaining the construction entrance to prevent sediment tracking.

#### 6. DUST CONTROL.

The contractor shall prevent visible dust from leaving the project site by effective means as approved and directed by the Engineer. Dust control shall be considered ineffective where dust creates a potentially unsafe condition, public nuisance or condition endangering the value, utility or appearance of any property.

#### 7. SLOPE TRACKING.

Slope tracking or the surface roughening of slopes shall be accomplished by the walking of tracked equipment upslope and downslope (not along the slope) over the entire erodible area. Slope tracking shall be performed on slopes that are 4:1 or steeper and longer than 20 feet. Slope tracking shall be performed immediately after the final shaping of the slope.

#### (b) SEDIMENT CONTROL.

##### 1. PLACEMENT OF SEDIMENT CONTROL BMPs IN STREAMS.

Sediment control BMPs shall not be placed in a live stream for the purpose of capturing upland sediment. Additionally, no live stream shall be dammed or ponded for the purpose of water access and usage. Secondary sediment control BMPs in the form of Floating Basin Booms may be placed in live streams parallel to the flow along the bank only as shown in the plans or at the direction of the Engineer.

##### 2. DITCH CHECKS.

Ditch checks shall be constructed at locations shown on the plans, the accepted SWMP or as directed by the Engineer. Materials and products used to construct ditch checks may include sand bags, hay bales, wattles with geotextile, silt fence, silt dikes, or rock with geotextile. The materials used shall be installed in accordance with the requirements given in this Section, the requirements shown on the plans and the manufacturer's recommendations for manufactured products.

##### 3. SEDIMENT BARRIERS.

Sediment barriers shall be constructed at the locations shown on the plans, the accepted SWMP or where directed by the Engineer to intercept sheet flow runoff and to treat concrete washout wastewater. Sediment barriers utilized for sediment control adjacent to the construction limits or a live stream shall be installed prior to beginning any grubbing work in the contributing drainage area. Types of sediment barrier may include silt fence, hay bales, sand bags, silt dikes or wattles. The materials used shall be installed in accordance with the requirements given in this Section, the requirements shown on the plans and the manufacturer's recommendations for manufactured products.

##### 4. BRUSH BARRIERS.

Brush barriers shall be constructed at the locations shown on the plans, the approved SWMP or where directed or permitted by the Engineer. Brush barriers may be constructed in rural areas where natural ground is sloping away from the project. Brush barriers shall be compacted to a relatively dense barrier with uniform heights of between 3 and 5 feet and base widths of between 5 and 10 feet {between 1.5 m and 3.0 m} perpendicular to the flow. Geotextile underlayment and choker shall be securely attached to the faces of brush barriers. These barriers shall be removed when no longer needed unless otherwise directed by the Engineer.

#### 5. INLET PROTECTION.

Inlet protection shall be installed at locations and in accordance with requirements shown on the plans for the appropriate stages of construction or as directed by the Engineer. Approved manufactured products shall be installed as per manufacturer's recommendations. Site constructed protection may include wattles, silt fence, sand bags, drainage sumps or other practices shown on the plans or directed by the Engineer. In no case will in-structure protection be allowed.

Stage 1 Inlet Protection shall be installed after the outflow drainage has been installed and prior to the construction of the inlet. Stage 1 Inlet Protection shall be ditch checks and/or sediment barriers and shall allow sufficient access to continue inlet construction.

Stage 2 Inlet Protection shall be installed after the inlet is constructed and prior to backfilling. Stage 2 Inlet Protection shall be a sediment barrier. Hay bales are not acceptable for use during this stage of inlet construction.

Stage 3 Protection is required after inlets are completed through grate installation and prior to complete stabilization of the area surrounding the inlet. Stage 3 Inlet Protection for drop inlets shall be in accordance with requirements and details shown on the plans. Stage 3 Inlet Protection shall be a manufactured inlet protection device or constructed with coarse aggregate, wattles or sand bags. Hay bales are not acceptable for use during this stage of inlet construction.

Stage 4 Inlet Protection for drop inlets shall be in accordance with requirements shown on the plans. Stage 4 Inlet Protection shall be a manufactured inlet protection device or constructed with hay bales, wattles or sandbags stacked at least three bags high. Hay bales, sand bags and wattles shall be used as a barrier along the perimeter of the slope paved apron as shown on the plans for a minimum distance of 20 feet {6.1 m}. If impervious surfaces extend beyond 20 feet {6.1 m}, sand bags shall be used as a barrier across the surface 20 feet {6.1 m} from the inlet. Stage 4 Protection will only be required where there is surrounding impervious surfaces that may receive sediment laden runoff.

All inlet protection installations shall be constructed to ensure that runoff does not bypass the inlet. Components of inlet protection may be reused on future installations provided the condition meets the material requirements given in this Section.

#### 6. OUTLET PROTECTION.

Outlet protection required by the plans or directed by the Engineer shall be installed in accordance with the details shown on the plans as soon as practicable after the completion of the drainage structures.

#### 7. DRAINAGE SUMPS.

Temporary drainage sumps shall be constructed as shown on the plans and in locations directed or permitted by the Engineer using the Erosion and Sediment Control Plan (ESCP) as guidance for the location. In general, the shape should be rectangular at the surface with the longer dimension parallel to the flow of water. The minimum volume shall be that shown on the plans. Sumps may be constructed with larger volumes as directed and permitted by the Engineer.

Construction of the sumps shall be accomplished by methods and equipment suitable for the purpose and acceptable to the Engineer. The sump may be supplemented by the use of a ditch check, temporary pipe, polyethylene or other temporary items shown on the plans or approved by the Engineer.

When the sump is deemed of no further use, it shall be backfilled with suitable material and compacted as directed and the area dressed and shaped to blend with the adjacent natural ground.

#### 8. SEDIMENTATION BASINS.

Sedimentation basins shall be constructed in accordance with the details shown on the plans and at the locations shown on the plans or as directed by the Engineer. Sedimentation basins shall be constructed prior to beginning grading operations in the contributing drainage area. Where sedimentation basins are to be constructed in locations where permanent ditches are required, the required ditch lines and grades shall be utilized for the construction of the sedimentation basins. During removal of the sedimentation basin, aggregate used to construct the sedimentation basin may remain in the ditch as a permanent lining. Sedimentation basins are designed to allow the removal of sediment and turbidity from stormwater runoff by the flocculation and settlement of suspended particles. The removal of sediment and turbidity shall be accomplished by the retention of stormwater

runoff in the basin for a period of time before completely draining. In no case shall sediment be allowed to exceed one third of the height of the forebay or drainage sump adjacent to the inlet of the basin.

9. FLOCCULANT.

Flocculant shall be used in accordance with the Flocculant manufacturer's requirements and the requirements shown on the plans for water turbidity control. Flocculant shall be introduced to flowing stormwater prior to retention BMPs. The effectiveness of the Flocculant will be monitored by the Engineer. Additional Flocculant shall be placed as directed by the Engineer if needed for supplemental reduction of turbidity.

10. FLOW BAFFLES.

Flow Baffles shall be installed in sedimentation basins or ditch applications as required by the plans to reduce the velocity of stormwater runoff. They shall be installed in accordance with the details shown on the plans.

11. BASIN DEWATERING DEVICES.

Basin Dewatering Devices shall be installed in sedimentation basins in accordance with the details shown on the plans. Each device shall be capable of dewatering the full capacity of the basin over a period of 72 hours unless otherwise specified in the plans.

12. FLOATING BASIN BOOMS.

Floating basin booms shall be installed only for secondary sediment containment or to prevent the migration of sediment within a water body. Floating Basin Booms shall be installed at the locations shown on the plans, the accepted SWMP or as directed by the Engineer. Installation shall be as shown on the plans and as recommended by the manufacturer. Basin Booms shall not be installed in locations where they will not be effective or in conditions where continuous maintenance is not practical.

(c) CONTRACTOR RETAINED TURBIDIMETERS

When water sampling and testing is required per Item 107.21(d)2., the Contractor shall furnish the required quantity of Turbidimeters for use by the Engineer. The Contractor shall provide documentation of professional calibration of the device prior to delivery to the project and shall maintain annual professional calibration during the time that it is required on the project. Daily calibration shall be performed by the Engineer. The Contractor shall immediately replace any Turbidimeters that are in need of annual professional calibration or are otherwise not properly functioning, without additional compensation. The Contractor shall retain ownership of the device and will be notified once the Engineer determines that the device is no longer needed.

(d) MAINTENANCE AND REMOVAL REQUIREMENTS.

The Contractor shall be responsible for periodic inspection, preventative maintenance and immediate repairs of all temporary soil erosion and sediment control items. The Contractor shall maintain on-site, or have readily available, sufficient erosion and sediment control devices and materials to perform maintenance, repairs, and prepare the site for impending rain events. All BMPs which capture sediment shall be cleaned by the removal and disposal of sediment when the holding capacity reaches one third full and when necessary for the BMP to remain functional. Any offsite sediment loss shall be removed as directed by the Engineer. Any offsite-tracking of sediment onto public roadways shall be removed and construction entrances shall be stabilized as needed.

All temporary soil erosion and sediment control BMPs shall be removed from the project when no longer needed unless shown otherwise on the plans, the SWMP, or directed or permitted by the Engineer. Removal of temporary controls shall be only after permanent controls are in place and functioning properly. The removal of all controls shall be followed by the immediate stabilization of the area as directed by the Engineer.

**665.04 Method of Measurement.**

(a) TEMPORARY SEEDING.

Temporary Seeding (Item 665-A) will be measured in acres {hectares} computed from surface measurements taken parallel to the treated surface. Computations will be to the nearest 0.1 of an acre {0.01 ha}.

(b) TEMPORARY MULCHING.

Temporary Mulching (Item 665-B) will be measured in units of tons {metric tons}. Proof of material weight shall be provided to the Engineer by the Contractor upon delivery of the materials to the project site. The weight ticket shall contain all items required in Subarticle 109.01(h)2. with the exception of the name of the producer and the truck number.

(c) TEMPORARY PIPE.

Temporary Pipe (Item 665-C) will be measured in linear feet {meters} to the nearest foot {0.1 m} with measurements taken along the center line of the pipe.

(d) POLYETHYLENE.

Polyethylene sheets (Item 665-E) will be measured in square yards {square meters} computed from surface measurements of the area treated. Computations will be to the nearest 0.1 square yard {0.1 square meter}.

(e) TEMPORARY EARTH BERMS.

Temporary Earth Berms (Item 665-T) will be measured in linear feet {meters} to the nearest foot {0.1 meter} with measurements taken along the top of the berm. Aggregate or polyethylene protection will be paid separately if directed or permitted by the Engineer. There will be no direct payment for berms not meeting requirements given in this Section or shown in the plans.

(f) TEMPORARY COARSE AGGREGATE.

Temporary Coarse Aggregate (Item 665-N) will be measured in units of tons {metric tons}.

(g) TEMPORARY RIPRAP.

Temporary Riprap (Item 665-I) will be measured in units of tons {metric tons}. Geotextile installed as underlayment and choking for riprap ditch checks shall be measured separately and payment made in accordance with the requirements given in Section 610.

(h) HAY BALES.

Hay Bales (Item 665-F) will be measured per each bale unless used in Stage 4 Inlet Protection.

(i) SAND BAGS.

Sand Bags (Item 665-G) will be measured per each bag unless used in Stage 3 or 4 Inlet Protection.

(j) SILT FENCE AND SILT FENCE REMOVAL.

Silt Fence (Item 665-J) and Silt Fence Removal (Item 665-O) will be measured along the top of the fence fabric in linear feet {meters} to the nearest foot {0.1 m}.

(k) WATTLES.

Wattles (Item 665-Q) will be measured after installation in linear feet {meters} to the nearest 0.1 foot {0.01 meter} with measurements taken along the top of the wattle installation unless used in Stage 3 or 4 Inlet Protection. Wattles installed as sediment barriers or ditch checks shall have a diameter of 20 inches {500 mm} verified by measurement of the circumference anywhere along the length of the wattle which shall be at least 56 inches {1.42 m}. Payment for stacked wattles will be made at the contract price for a single 20 inch {500 mm} diameter wattle. Wattles installed as slope interrupters shall have a diameter of 9 inches {230 mm} verified by measurement of the circumference anywhere along the length of the wattle which shall be at least 25 inches {0.64 m}. Field measurements will be used to verify lengths shown on shipping documentation. The lesser of the two lengths will be used for payment. Geotextile installed as underlayment for wattle ditch checks shall be measured separately and payment made in accordance with the requirements given in Section 610.

(l) SILT DIKES.

Silt Dikes (Item 665-R) will be measured in linear feet {meters} to the nearest 0.1 foot {0.01 meter} with measurements taken along the top of the dike.

(m) BRUSH BARRIERS.

Brush Barriers (Item 665-S) will be measured in linear feet {meters} to the nearest foot {0.1 meter} with measurements taken along the top of the barrier. Geotextile installed as underlayment and choking will be measured separately and payment made in accordance with the requirements given in Section 610.

(n) INLET PROTECTION.

Materials used to construct Stage 1 and 2 Inlet Protection will be measured for payment as appropriate for items such as silt fence, wattles, hay bales, etc. This also applies to curb inlet protection necessary beyond Stage 2.

Stages 3 and 4 Inlet Protection (Item 665-P) for drop inlets will be measured per each stage of each inlet protected if protected in accordance with the details shown on the plans.

(o) DRAINAGE SUMP EXCAVATION.

Drainage Sump Excavation (Item 665-K) will be measured in cubic yards {cubic meters} computed from dimensions of the sump size and depth approved by the Engineer. Material removed during sump maintenance operations will be measured for payment as Drainage Sump Excavation to the nearest cubic yard {0.1 cubic meter}. No measurement will be made for material used as backfill when the sump is closed.

Removal of sediment collected by sedimentation basins, sediment retention barriers, ditch checks and inlet protection will be measured as drainage sump excavation if soil erosion is being prevented to the maximum extent practicable.

If the proposal does not contain this item, measurement and payment will be made under the Item of Unclassified Excavation. Material removed will not be paid as muck excavation regardless of the consistency.

(p) SEDIMENTATION BASINS.

Each component and work item required for the construction of a Sedimentation Basin will be measured individually for payment. Excavation and embankment will be measured as Unclassified Excavation. Removal of captured sediment will be measured as drainage sump excavation. Typical items required to construct the sedimentation basin may include unclassified excavation, aggregates, riprap, filter fabric, polyethylene, flocculant, flow baffles, rolled erosion control products, seeding, basin dewatering device, temporary pipe, etc.

(q) FLOCCULANT.

Flocculant powder (Item 665-V) will be measured per pound.

Flocculant blocks (Item 665-W) will be measured per each.

Flocculant socks (Item 665-Y) will be measured per set.

(r) FLOW BAFFLES.

Flow Baffles (Item 665-H) will be measured along the top of the baffle material in linear feet {meters} to the nearest foot {0.1 m}.

(s) BASIN DEWATERING DEVICES.

Basin Dewatering Devices (Item 665-X) will be measured per each. Elevated device rest, outlet pipes, valves, and end treatments serving the basin dewatering device are considered to be a part of the device and will not be measured separately for payment.

(t) TEMPORARY PIPE END TREATMENTS.

Temporary Pipe End Treatments (Item 665-D) will be measured per each.

(u) FLOATING BASIN BOOMS.

Floating Basin Booms (Item 665-L) will be measured in linear feet {meters} to the nearest 0.1 foot {0.01 meter} with measurements taken along the top line of the boom.

(v) CONTRACTOR RETAINED TURBIDIMETERS.

Contractor Retained Turbidimeters (Item 665-M) will be measured per each.

**665.05 Basis of Payment.**

(a) UNIT PRICE COVERAGE.

The payment for all temporary erosion control items, except drainage sumps, shall include the maintenance of the items until their removal. The excavation of sediment collected by drainage sumps, ditch checks, sediment barriers and other sediment control BMPs will be considered Drainage Sump Excavation as long as erosion is being controlled to the maximum extent practicable.

Payment for Stage 3 and Stage 4 Inlet Protection shall include the installation and maintenance of all items at quantities shown on the plans as being required or permitted.

Payment for sedimentation basins will be made for individual components and work items required for construction and shall be full compensation for the installation, maintenance and removal of all components of the sedimentation basin as constructed in accordance with requirements shown on the plans.

Payment for flocculant shall be full compensation for testing (if required), furnishing and placing the flocculant.

Payment for the accepted Turbidimeter shall include furnishing of the device with all the required accessories and for any required calibrations. Payment shall be for the exclusive use of the device for the duration of the contract or until the Engineer determines that there will be no further need for the device.

In the event that temporary or permanent erosion control measures become necessary due to the negligence or actions of the Contractor, or for the contractor's convenience the temporary work shall be performed at the Contractor's expense. Temporary or permanent erosion control measures installed in previously stabilized areas that are necessary due to required work sequencing will be paid as outlined in this section.

Payment will not be made for any temporary erosion or sediment control measures installed due to the methods chosen by the Contractor to perform the required work. Measures include those utilized for convenience, for access to the work (work bridges or platforms, stream crossings, access roads, haul roads), those utilized for treating or handling water in order to assist the Contractor in the execution of the work (diversions, dewatering, conveyances) or those utilized for protecting the Contractor's work or staging areas. Payment will also not be made for measures installed outside of the right of way or easements such as material pits, haul or access roads, plant sites, and staging areas.

The unit price shall be full compensation for furnishing all materials unless otherwise noted, the construction and installation of the materials into complete erosion or sediment control measures, and shall include all equipment, tools, labor, and incidentals necessary to complete the work, to maintain all work in an acceptable condition as long as deemed necessary by the Engineer, and to remove all items, except silt fence, as directed. Direct payment will be made for the removal of silt fence and the excavation required for drainage sump maintenance.

(b) PAYMENT WILL BE MADE UNDER ITEM NO. :

- 665-A Temporary Seeding - per acre {hectare}
- 665-B Temporary Mulching - per ton {metric ton}
- 665-C Temporary Pipe - per linear foot {meter}
- 665-D Temporary Pipe End Treatment - per each
- 665-E Polyethylene - per square yard {square meter}
- 665-F Hay Bales - per each
- 665-G Sand Bags - per each
- 665-H Flow Baffle - per linear foot {meter}
- 665-I Temporary Riprap, Class \_\_\_\_ - per ton {metric ton}
- 665-J Silt Fence - per linear foot {meter}
- 665-K Drainage Sump Excavation - per cubic yard {cubic meter}
- 665-L Floating Basin Boom - per linear foot {meter}
- 665-M Contractor Retained Turbidimeter - per each
- 665-N Temporary Coarse Aggregate, ALDOT Number \_\_\_\_ - per ton {metric ton}
- 665-O Silt Fence Removal - per linear foot {meter}
- 665-P Inlet Protection, Stage 3 or 4 - per each
- 665-Q Wattle - per linear foot {meter}
- 665-R Silt Dike - per linear foot {meter}
- 665-S Brush Barrier - per linear foot {meter}
- 665-T Temporary Earth Berm - per linear foot {meter}
- 665-V Flocculant Powder - per pound {kilogram}
- 665-W Flocculant Block - per each
- 665-X Basin Dewatering Device - per each
- 665-Y Flocculant Sock - per set