

## Section 163—Miscellaneous Erosion Control Items

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### 163.1 General Description

This work includes constructing and removing:

- Silt control gates
- Temporary erosion control slope drains shown on the Plans or as directed
- Sediment basins
- Baled straw erosion checks
- Other temporary erosion control structures shown on the Plans or directed by the Engineer

This work also includes applying temporary mulch and temporary grass.

#### 163.1.01 Definitions

Retrofit Device—A temporary sediment filter placed in front of an existing or proposed detention pond being used as a temporary sediment basin during the construction of the Project

#### 163.1.02 Related References

##### A. Standard Specifications

[Section 109—Measurement and Payment](#)

[Section 161—Control of Soil Erosion and Sedimentation](#)

[Section 171—Temporary Silt Fence](#)

[Section 500—Concrete Structures](#)

[Section 603—Rip Rap](#)

[Section 700—Grassing](#)

[Section 715—Bituminous Treated Roving](#)

[Section 822—Emulsified Asphalt](#)

[Section 860—Lumber and Timber](#)

[Section 863—Preservative Treatment of Timber Products](#)

[Section 890—Seed and Sod](#)

[Section 893—Miscellaneous Planting Materials](#)

##### B. Referenced Documents

AASHTO M252

AASHTO M294

#### 163.1.03 Submittals

Provide written documentation to the Engineer as to the average weight of the bales of mulch.

### 163.2 Materials

Provide materials shown on the Plans, such as pipe, spillways, wood baffles, and other accessories including an anti-seep collar, when necessary. The materials shall remain the Contractor's property after removal, unless otherwise shown on the Plans.

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Materials may be new or used; however, the Engineer shall approve previously used materials before use.

Materials shall meet the requirements of the following Specifications:

Material	Section
Mulch	<a href="#">893.2.02</a>
Temporary Silt Fence	<a href="#">171</a>
Concrete Aprons and Footings shall be Class A	<a href="#">500</a>
Rip Rap	<a href="#">603</a>
Temporary Grass	<a href="#">700</a>
Bituminous Treated Roving	<a href="#">715</a>
Lumber and Timber	<a href="#">860.2.01</a>
Preservative Treatment of Timber Products	<a href="#">863.1</a>
Corrugated Polyethylene Temporary Slope Drain Pipe	AASHTO M252 or M294

Additional requirements:

- Use 40d nails.
- To tack the lining material to earth flumes, use grade RS-2h or SS-1h asphaltic material that meets the requirements of [Section 822](#).
- Use rectangular, standard size baled straw in mechanically produced bales.

### 163.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

## 163.3 Construction Requirements

### 163.3.01 Personnel

General Provisions 101 through 150.

### 163.3.02 Equipment

General Provisions 101 through 150.

### 163.3.03 Preparation

General Provisions 101 through 150.

### 163.3.04 Fabrication

General Provisions 101 through 150.

### 163.3.05 Construction

#### A. Silt Control Gates

If silt control gates are required or are directed by the Engineer, follow these guidelines to construct them:

1. Clear and grade only that portion of the roadway within the affected drainage area where the drainage structure will be constructed.
2. Construct the drainage structure and backfill.
3. Install the silt control gate at the inlet of the structure. Use the type indicated on the Plans.

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4. Vary the height of the gate as required or as shown on the Plans.
5. Finish grading the roadway in the affected drainage area. Grass and mulch slopes and ditches that will not be paved. Construct the ditch paving required in the affected area.
6. Keep the gate in place until the work in the affected drainage area is complete and the erodible earth is stabilized.
7. Remove the silt gate assembly by sawing off the wood posts flush with the concrete apron. Leave the concrete apron between the gate and the structure inlet in place. The gate shall remain the property of the Contractor.

### B. Temporary Slope Drains

If temporary slope drains are required, conduct the roadway grading operation according to [Section 161](#) and follow these guidelines:

1. Place temporary pipe slope drains with inlets and velocity dissipaters (straw bales, silt fence, or aprons) according to the Plans.
2. Securely anchor the inlet into the slope to provide a watertight connection to the earth berm. Ensure that all connections in the pipe are leak proof.
3. Place the temporary slope drains as shown on the Uniform Code System for Erosion and Sediment Control Sheet for temporary items or as directed by the Engineer. Keep the slope drains in place until the permanent grass has grown enough to control erosion.
4. Remove the slope drains and grass the disturbed area with permanent grass. However, the temporary slope drains may remain in place to help establish permanent grass if approved by the Engineer.

### C. Sediment Basins

Construct sediment basins according to the Plans at the required location, or as modified by the Engineer.

1. Construct the unit complete as shown, including:
  - Grading
  - Drainage
  - Rip rap
  - Spillways
  - Anti-seep collar
  - Temporary mulching and grassing on external slopes
  - Accessories to complete the basin
2. When the sediment basin is no longer needed, remove and dispose of the remaining sediment.
3. Remove the sediment basin. Grade to drain and restore the area to blend with the adjacent landscape.
4. Mulch and permanently grass the disturbed areas according to [Section 700](#).

### D. Baled Straw Erosion Checks

Construct baled straw erosion checks according to the Plan details. Substitute temporary silt fence Type B as specified in [Section 171](#) for baled straw erosion checks at the Engineer's direction or the Contractor's option.

### E. Other Temporary Structures

When special conditions occur during the design stage, the Plans may show other temporary structures for erosion control with required materials and construction methods.

### F. Temporary Grass

Use a quick growing species of temporary grass such as rye grass, millet, or a cereal grass suitable to the area and season.

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Use temporary grass in the following situations:

- To control erosion where permanent grassing cannot be planted. The Engineer will direct the planting.
- To protect an area for longer than temporary mulch is expected to last (60 calendar days).

Plant temporary grass as follows:

1. Use seeds that conform to [Subsection 890.2.01, “Seed.”](#) Perform seeding according to [Section 700](#); except use the minimum ground preparation required to provide a seed bed if further grading is required.
2. Prepare areas that require no further grading according to [Subsection 700.3.05.A, “Ground Preparation.”](#) Omit the lime unless the area will be planted with permanent grass without further grading. In this case, apply the lime according to [Section 700](#).
3. Apply mixed grade fertilizer at 400 lbs/acre (450 kg/ha). Omit the nitrogen. Mulch temporary grass according to [Section 700](#).
4. Before planting permanent grass, thoroughly plow and prepare areas where temporary grass has been planted according to [Subsection 700.3.05.A, “Ground Preparation.”](#)

### G. Temporary Mulch

When stage construction or other conditions prevent completing a roadway section continuously, apply temporary mulch to control erosion for 60 calendar days or less.

Use temporary mulch on erodible areas on or off the Right of Way, including borrow pits, temporary haul roads, or waste areas. Apply mulch as follows:

1. Plant temporary grass on areas stabilized only with temporary mulch. Mulch the area again after 60 calendar days.
2. Uniformly spread the mulch over the designated areas from 2 in to 4 in (50 mm to 100 mm) thick.
3. After spreading the mulch, walk in the mulch by using a tracked vehicle (preferred method), empty sheep foot roller, light discing, or other means that preserves the finished cross section of the prepared areas. The Engineer will approve of the method.
4. Place temporary mulch on slopes as steep as 2:1 by using a tracked vehicle to imbed the mulch into the slope. Where specified, bituminously treat temporary mulch according to [Subsection 700.3.05.G.1, “Mulch with Binder.”](#)
5. When grassing operations begin, leave the mulch in place and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.
6. Place mulch to protect the newly planted grass. This mulch is required in addition to the mulch specified in step 5.

### H. Miscellaneous Erosion Control Not Shown on the Plans

When conditions develop during construction that were unforeseen in the design stage, the Engineer may direct the Contractor to construct temporary devices such as but not limited to:

- Bulkheads
- Wooden ditch checks
- Sump holes
- Half round pipe for use as ditch liners
- U-V resistant plastic sheets to cover critical cut slopes

The Engineer and the Contractor will determine the placement to ensure erosion control in the affected area.

### I. Diversion Channels

When constructing a culvert or other drainage structure in a live stream requires diverting a stream, construct a diversion channel. Protect the bottom and sides of the channel with plastic sheeting, rip rap (either stone or sandbag), geotextile

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fabric, or other materials approved by the Engineer. Cement may be omitted in sandbag rip rap used to line diversion channels.

### J. Temporary Ditch Checks

Temporary ditch checks shall be constructed and placed according to Plan details. Temporary ditch checks may be constructed of stone plain rip rap according to [Section 603](#) or of sand bags as in [Section 603](#) without Portland cement.

Place plastic filter fabric on ditch section before placing rip rap.

Temporary ditch checks shall be cleaned of sediment when 1/2 the height of the temporary ditch check has been reached. They remain in place until the permanent ditch protection is in place or being installed and the removal is approved by the Engineer.

These ditch checks may remain in place to aid in establishing permanent grass in vegetated waterways, if approved by the Engineer.

### K. Construction Exits

Locate construction exits at any point where vehicles will be leaving the project onto a public roadway. Install construction exits at the locations shown in the plans and in accordance with plan details.

### L. Retrofit

Add the retrofit device to the permanent outlet structure as shown on the Plan details.

When all land disturbing activities that would contribute sediment-laden runoff to the basin are complete, clean the basin of sediment and stabilize the basin area with vegetation.

When the basin is stabilized, remove the retrofit device from the permanent outlet structure of the detention pond.

### M. Inlet Sediment Trap

Inlet sediment traps consist of a temporary device placed around a storm drain inlet to trap sediment. An excavated area adjacent to the sediment trap will provide additional sediment storage.

Inlet sediment traps may be constructed of Type C silt fence, plastic frame and filter, hay bales, baffle box, or other filtering materials approved by the Engineer.

Construct inlet sediment traps according to the appropriate specification for the material selected for the trap.

Place inlet sediment traps as shown on the Plans or as directed by the Engineer.

### 163.3.06 Quality Acceptance

General Provisions 101 through 150.

### 163.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

## 163.4 Measurement

### A. Silt Control Gates

Silt control gates are measured for payment by the entire structure constructed at each location complete in place and accepted. Silt control gates constructed at the inlet of multiple lines of drainage structures are measured for payment as a single unit.

### B. Temporary Slope Drains

Temporary slope drains are measured for payment by the linear foot (meter ) along the pipe including the inlet spillway and outlet apron or other dissipation devices, when required.

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### C. Sediment Basins

Sediment basins are measured for payment by the entire structure complete, including construction, maintenance, and removal. Measurement also includes:

- Earthwork
- Drainage
- Spillways
- Baffles
- Rip rap
- Final cleaning to remove the basin

Permanent and temporary grassing for sediment basins is measured separately for payment.

### D. Diversion Channels

Diversion channels are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

### E. Temporary Grass

Temporary grass is measured for payment by the pound (kilogram). Lime, when required, is measured by the ton (megagram).

### F. Temporary Mulch

Temporary mulch is measured for payment by the ton (megagram). The weight for measurement will be the product of the number of bales used and the average weight per bale as determined on scales provided by the contractor or state certified scales. The contractor shall provide written documentation to the Engineer as to the average weight of the bales.

### G. Baled Straw Erosion Checks

Baled straw erosion checks are measured by the linear foot (meter). Type “B” temporary silt fence is measured as baled straw when substituted by the Contractor or the Engineer.

### H. Temporary Ditch Checks

Temporary ditch checks are measured for payment per each ditch check, which will include the entire structure at each location.

### I. Construction Exits

Construction exits are measured per each which will include all work necessary to construct the exit including the required geotextile fabric placed beneath the aggregate.

### J. Retrofit

Retrofit will be measured for payment per each. The construction of the detention pond and permanent outlet structure will be measured separately under the appropriate items.

### K. Inlet Sediment Trap

Inlet sediment traps, regardless of the material selected, are measured per each which includes all work necessary to construct the trap including any incidentals and providing the excavated area for sediment storage.

### 163.4.01 Limits

General Provisions 101 through 150.

## **163.5 Payment**

### **A. Silt Control Gates**

The specified silt control gates are paid for at the Contract Unit Price per each. Payment is full compensation for:

- Furnishing the material and labor
- Constructing the concrete apron as shown on the Plans
- Excavating and backfilling to place the apron
- Removing the gate

### **B. Temporary Slope Drains**

Temporary slope drains are paid for by the linear foot (meter). Payment is full compensation for materials, construction, removal (if required), inlet spillways, velocity dissipaters, and outlet aprons.

When temporary drain inlets and pipe slope drains are removed, they remain the Contractor's property and may be reused or removed from the Project as the Contractor desires. Reused pipe or inlets are paid for the same as new pipe or inlets.

### **C. Sediment Basin**

Sediment basins, measured according to [Subsection 163.4, "Measurement,"](#) are paid for by the unit, per each, for the type specified on the Plans. Price and payment are full compensation for work and supervision to construct, and remove the sediment basin, including final clean-up.

### **D. Diversion Channel**

Diversion channels are not paid for separately; they are included in the price bid for the drainage structure or for other Contract Items.

### **E. Temporary Grass**

Temporary Grass is paid for by the pound. Payment is full compensation for all equipment, labor, ground preparation, materials, fertilizer, mulch, and other incidentals except Lime. Lime (when required) is paid for by the ton.

### **F. Temporary Mulch**

Temporary mulch is paid for by the ton. Payment is full compensation for all materials, labor, maintenance, equipment and other incidentals.

### **G. Baled Straw Erosion Checks**

Baled straw erosion checks, complete in place and accepted is paid for at the Contract Unit Price bid. Payment is full compensation for constructing, and removing (when directed) the straw checks.

When the Contractor substitutes a Type "B" silt fence for baled straw erosion checks, or when the Engineer directs this substitution, payment is made at the bid price per linear foot (meter) for baled straw erosion checks.

### **H. Temporary Ditch Checks**

Temporary ditch checks are paid for per each. Payment is full compensation for all materials, construction, and removal. Reused stone plain rip rap or sandbags are paid for on the same basis as new items. Filter fabric required under rip rap ditch checks is included in the price bid for each ditch check.

### **I. Construction Exits**

Construction exits are paid for per each. Payment is full compensation for all materials including the required geotextile, construction, and removal.

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### J. Retrofit

This item is paid for at the Contract Unit Price per each. Payment is full compensation for all work, supervision, materials (including the stone filter), labor and equipment necessary to construct and remove the retrofit device from an existing or proposed detention pond outlet structure.

### K. Inlet Sediment Trap

Inlet sediment traps are paid for per each. Payment is full compensation for all materials, construction, and removal

If temporary erosion control measures are required due to Contractor negligence, carelessness, or failure to install permanent controls as part of the work as scheduled, the Contractor shall perform such work at no additional expense to the Department. Perform the work according to [Subsection 107.13](#).

Erosion control work on approved borrow pits or approved haul roads to borrow pits measured for payment will include only items specifically provided for in the Plans and determined not to be maintenance work as stated in [Subsection 106.10.D](#). If the Contractor secures his or her own pit, erosion control measures will be at his or her expense. If a pit is approved and the Contractor elects to use another pit, the Department will pay only up to the contract amount.

The Items in this Section (except temporary grass and temporary mulch) are made as partial payments as follows:

- When the item is installed and put into operation the Contractor will be paid 75 percent of the Contract price.
- When the Engineer instructs the Contractor that the Item is no longer required and is to remain in place or is removed, whichever applies, the remaining 25 percent will be paid.

Temporary devices may be left in place at the Engineer's discretion at no change in cost. Payment for temporary grass and temporary mulch is shown in [Section 161](#).

Payment is made under:

Item No. 163	Construct and remove silt control gate, type__	Per each
Item No. 163	Construct and remove temporary pipe slope drains__	Per linear foot (meter)
Item No. 163	Construct and remove baled straw erosion check__	Per linear foot (meter)
Item No. 163	Construct and remove sediment basin type__, Requires Sta. No.	Per each
Item No. 163	Construct and remove temporary ditch checks__	Per each
Item No. 163	Construct and remove construction exits	Per each
Item No. 163	Construct and remove retrofit, Sta. No.____	Per each
Item No. 163	Construct and remove inlet sediment trap	Per each
Item No. 163	Temporary Grass	Per pound (kilogram)
Item No. 163	Temporary Mulch	Per ton (megagram)
Item No. 700	Agricultural lime__	Per ton (megagram)

### 163.5.01 Adjustments

General Provisions 101 through 150.