

200 EARTHWORK

ITEM 207- TEMPORARY SEDIMENT AND EROSION CONTROLS

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207.01 Description. This work consists of constructing temporary sediment and erosion control items as detailed in the plans and in compliance with the Division of Sewerage and Drainage (DOSD) Erosion and Sediment Control Regulation (adopted June 1, 1994) or ordered by the Engineer during the life of the project to control soil erosion and sedimentation. Control items include but are not limited to: stabilized construction entrances, *silt fence*, catch basin and curb inlet protection, sediment traps, basins and dams, *sediment riser pipes*, straw bales, slope drains, coarse aggregate, mulches, grasses, filter fabrics, ditch *checks* and linings, *composition berms*, *geo-textiles* and other erosion control devices and methods.

To the extent practical, coordinate temporary sediment and erosion control items with permanent control provisions contained in the contract to ensure continuous erosion control throughout the construction and post-construction period.

Provide temporary sediment and erosion controls in accordance with this specification for construction work, such as borrow pit operations, haul roads, equipment and material storage sites, stream crossings, waste areas, and temporary plant sites.

207.02 Materials. *Furnish (10-20-10) commercial fertilizer, and seed and mulch materials conforming to Item 659.*

Furnish stabilized construction entrances, filter fabric ditch checks, composition berms, rock checks, curb inlet and catch basin protection, perimeter filter fabric fence, filter dikes, sediment traps, basins and dams, sediment riser pipes, dikes, slope drains and rock channel protection materials as specified on the standard drawings and/or detailed on the drainage plans.

Furnish ditch and slope protection conforming to the requirements of Item 670.

Furnish geo-textiles conforming to Item 712.09.

207.03 Construction Requirements. *The Storm Water Pollution Prevention Plan (SWPPP) details the placement, location, and description of the temporary and permanent erosion control items. The SWPPP is typically submitted as part of the Stormwater Drainage*

Plan. City requirements for plan submittals are detailed in the Erosion and Sediment Pollution Control Regulation. Use the SWPPP along with this section description. Rearrange and modify the SWPPP and plan quantities to meet the field conditions and to adhere to the National Pollutant Discharge Elimination System (NPDES) Permit.

As a reference for erosion and sediment control Best Management Practices (BMP's), use the current version of the Ohio Department of Natural Resources (ODNR) – Rainwater and Land Development notebook on sediment and erosion control. Ensure that the SWPPP complies with all current provisions of the Ohio Water Pollution Control Act, (OWPCA) (ORC Chapter 6111) and the NPDES permit. These requirements apply to areas that do and do not require an NPDES permit.

In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal or State or local agencies, adhere to the more restrictive laws, rules, or regulations.

1. ***Clearing and Grubbing.*** *Limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, and borrow and fill operations by the amount of erosion control items capable of being placed in accordance with these specification requirements. Where attainable, preserve existing vegetation. Construction phasing may be required on large-scale developments as directed by the Engineer.*

Within 7 days following clearing and grubbing operations, stabilize all inactive cleared and grubbed areas that are scheduled to remain idle for more than 45 days with construction seed and mulch. If an area is within 50 feet (15 m) of any water body (i.e., stream, river, pond, etc.), stabilize the area with construction seed and mulch, sod, jute-matting or other approved geo-textile within 2 days following the clearing and grubbing operations if scheduled to remain idle for more than 45 days.

2. ***Installation of Sediment and Erosion Control Items.*** *Install temporary sediment and erosion control items as detailed and according to the following requirements. Keep the items functional until the upper slope drainage areas are fully stabilized.*

Construct 1 and 2 and 4 through 7 below in accordance with the Standard Drawings.

- A. ***Perimeter Controls.*** *Using perimeter filter fabric fence or composition berm to protect the project from sheet flow runoff from: off right-of-way; off construction limit locations: Using perimeter filter fabric fence protect the following project items from sheet flow runoff: water bodies, wetlands; or other significant items designated on the plan.*

Use dikes, to prevent sediment flow from coming on to the project and to non-vegetated barren areas on the project.

Install perimeter filter fabric fence, composition berms, stabilized construction entrances and dikes concurrent with clearing and grubbing operations.

- B. ***Inlet Protection.*** *Construct the inlet protection or install City approved pre-fabricated inlet protection for the existing inlets at the beginning of construction and for the new inlets immediately after completing the inlet installation.*

- C. ***Construction Seeding.*** *Apply seed and mulch materials according to Item 659. Seed and mulch liberally during and after construction and before or during winter shut down to stabilize the areas in accordance with 207.03. Fertilize temporary seeding areas at one-half the application rate of the Item 659 rate. If project conditions prevent fertilizing the soil and preparing the seed bed then the fertilizing and preparation requirements of 659 may be waived. Do not place construction seed on frozen ground.*

- D. ***Slopes.*** *Place dikes, install slope drains, and construct ditches to divert water from bare non-vegetated areas and to protect cut and fill slopes. Place dikes at the top of fill slopes to protect the side slopes from erosion.*

For fill slopes, if no filing activity occurs for three or more height is greater than 8 feet (2.5 m), install dikes and slope drains.

Before cutting the slope, construct a ditch at the top of cut slopes to reduce runoff coming on the slope.

- E. ***Ditch Checks.*** *Place filter fabric ditch checks or rock checks across ditch and perpendicular to the flow to protect the ditch from erosion and to filter sediment from the flowing water.*

Place ditch checks as soon as the ditch is cut. While working on a ditch place the ditch checks by the end of the days work.

Install filter fabric ditch checks in ditches for drainage areas less than or equal to 2 acres (8,000 m²). Install rock checks in ditches for drainage areas of 2 to 5 acres (8,000 to 20,000 m²).

Install ditch checks in conjunction with sediment basins, traps, and dams.

- F. **Bale Filter Dikes.** Install bale filter dikes a few feet (meters) from the toe of a slope to filter and/direct sediment to an appropriate control item before the runoff enters a water body on or off the project limits.

Use the bale filter dikes to collect sediment from:

- (1) Areas less than 1/4 acre (1,000 m²) without a sediment pit.
- (2) Slopes with a length of less than 100 feet (30 m) and having a maximum 2.1 slope.
- (3) Use a sediment pit every 100 feet (30 m) for a 2.1 slope. Use a greater spacing of the sediment pit for flatter slopes.

Begin constructing bale filter dikes within 7 days of commencing grub operations. Complete the construction of the bale filter dikes before starting the grading operations.

- G. **Sediment Basins and Dam.** Construct basins and dams at concentrated and critical flow locations to settle out sediment before the water leaves the project. Use basins at the bottom of a ravine, at a culvert inlet or outlet, along or at the end of a ditch and at any concentrated water exit point of the project. Construct basins to retain 67 cubic yards of water for every acre of drainage area (125 m³ per 10,000 m²). Use a series of smaller basins or dams as a substitute for a larger basin or dam. Basins are to be fitted with appropriately sized riser pipes to properly detain and filter sediments.

Begin constructing sediment basins and dams immediately after commencing grubbing operations. Complete the construction of the sediment basins and dams before starting the grading operations.

- H. **River, Stream, and Water Body Protection.** Direct discharge of sediment laden water from construction activity or pumping operations is prohibited. All sediment laden water is to be diverted through a sediment trap/basin or approved filtering device. Protect all streams or water bodies passing through or on the project using perimeter filter fabric fence, composition berms or bale filter dikes to line the water edge. Divert project water flow using dike and slope protection. The Contractor may use a combination of items listed in one through seven above and other sediment and erosion control items. (Note: Stream relocations are not permitted unless the proper federal, state and local written approvals have been obtained.)

- (1) **Stream Relocation.** Fully stabilize the new stream channel with erosion control matting or 70 percent grass growth prior to

diverting flow into the new channel. This also applies to ditches that incorporate stream flow.

- (2) ***Stream and River Crossing (Causeways).*** *Fording is not allowed. Provide a crossing for construction equipment that allows equipment to cross without causing erosion of stream banks or sediment deposits in the channel. Plan and locate crossings well in advance of needing them. Minimize disturbance to water bodies during construction, maintenance and removal of the stream crossing. Construct the crossings as narrow as practical. Make crossings in shallow areas rather than deep pools where possible. Minimize clearing, grubbing, and excavation of stream banks, bed, and approach sections. Utility line crossing of streams must incorporate the installation of dams and bypass pumping.*

Construct the stream crossing to a water elevation at least 1 foot (0.3 m) above the normal water elevation.

When the stream crossing fills more than 1/3 the width of the stream then use culvert pipes to permit the movement of aquatic life.

The following minimum requirements apply where culverts are used. Place culverts on the existing stream bed to avoid a drop in water elevation at the downstream end of the pipe. Furnish culverts with a diameter at least two times the depth of normal minimum diameter of 18 inches (0.45 m). Provide a sufficient number of culverts to completely cross the channel from stream bank to stream bank with no more than 10 feet (3 m) between each culvert.

For all fill and surface material placed in the channel, around the culverts, or on fill Types B, C, or D extend rock fill up slope from original stream bank for 50 feet (10 m) to catch and remove erodible material on the surface of the crossing provide clean non-toxic Item 601 dump rock.

The Contractor may elect to leave the dump rock fill used around the pipe. Avoid impoundment or a restriction to fish passage when the rock remains. Remove all pipe.

207.04 Maintenance. *Properly maintain temporary erosion control features with the Engineer's approval. Dispose of silt removed from erosion control features in accordance with federal, state and local regulations.*

The Engineer or designated City Inspector will check temporary and permanent erosion control items for compliance at a frequency to be determined by the Engineer.

1. ***Perimeter Filter Fabric Fence, Composition Berms, Filter Fabric Ditch Checks, Rock Checks, Inlet Protection, Dike, and Bale Filter Dikes.*** Remove trapped sediment when it reaches half of the lowest section. Make appropriate corrections when the control items become non-functional. Maintain the control features until the upstream disturbance has been stabilized or their removal has been approved by the Engineer or designated City Inspector.
2. ***Sediment Basins and Dams.*** Remove deposited sediment when sediments reduce the initial volume of the sediment basin or dam by one-half. Make appropriate corrections if these control items fail. Remove dams and basins when upstream disturbance has been stabilized or their removal has been approved by the Engineer or designated City Inspector.
3. Remove all temporary erosion control items before the project is accepted. Dispose of the removed materials in accordance with federal, state and local regulations.
4. Weekly, and on occasion, daily street cleaning may be required on many construction projects. This includes the maintenance of stabilized construction entrances, sweeping and manual removal of dirt or mud in the street gutters. Note: The flushing of sediment, mud or any other non-stormwater liquids or materials into the storm conveyance system is illegal.

207.05 Performance. For private work the City holds the Property Owner responsible for the proper installation, maintenance and removal of soil erosion and sediment control items. If proper control of soil erosion and sedimentation is not being provided by the Owner or the Contractor representing the Owner, penalties include but are not limited to: holding of sewer permits and inspections, criminal prosecution and fines.

With the Engineer's concurrence, the Contractor may install additional erosion control items, make adjustments to meet the field conditions and anticipated future work or corrections based on the City's scheduled storm water inspections. All erosion and sediment control practices are subject to field modification at the discretion of the City of Columbus and/or the Ohio EPA.

For Capital Improvements Projects (CIP's) the City will withhold progress payments if proper sediment and erosion controls are not provided and will continue to withhold progress payments until proper controls are placed.

Capital Improvement Projects will comply with all applicable Federal, State, and local laws in the conduct of the work. The Contractor represents and warrants that the erosion control items under this item will be performed so as to be in compliance with the requirements of the Clean Water Act, 33 U.S.C. Sections 1251 et seq. and the Ohio Water Pollution Control Act, O.R.C. Sections 6111301 et seq. and related rules. The Contractor warrants and agrees that it is equipped to limit water pollution for its activity in accordance with applicable state and federal standards.

Provide personnel, equipment, and other services necessary to comply with this requirement and include costs for the same in the bid.

The Contractor further agrees to indemnify and hold harmless the City, and shall reimburse the City for the actual cost of any liability, damage judgment or finding, fine, penalty, or expense as a result of a violation of the above noted laws arising out of the activity of the Contractor in its performance of the contract.

The Contractor shall reimburse the City within 10 calendar days of the amount of the assessment, damage judgment or finding, fine, penalty, or expense or the City may withhold this amount from the Contractor's next pay estimate and deliver that sum to the permitting agencies issuing the assessment, damage judgment or finding, fine, or penalty.

These assessments are not to be construed as a penalty but are actual damages to recover the costs assessed against the City due to the Contractor's refusal or failure to comply with the above requirements.

These above provisions survive the completion and/or termination of the contract.

207.06 Method of Measurement. *The City will measure the work as follows:*

- 1. Fertilizer by the ton (metric ton) under Item 659 Commercial Fertilizer.*
- 2. Construction, Seeding and Mulching by the square yard (square meter).*
- 3. Slope Drains by the linear foot (meter).*
- 4. Perimeter Filter Fabric Fence, Composition Berm and Bale Filter Dike by the linear foot (meter).*
- 5. Filter Fabric Ditch Check by the linear foot (meter).*
- 6. Inlet Protection by the linear foot (meter).*
- 7. Rock Channel Protection, Type C or D with or without filter by the cubic yard (cubic meter).*
- 8. Sediment, Basins and Dams by the cubic yard (cubic meter) of excavation and embankment.*
- 9. Dikes by the cubic yard (cubic meter) of excavation and embankment.*
- 10. Construction Ditch Protection and Slope Protection by the square yard (square meter).*

11. *Sediment Removal by the cubic yard (cubic meter).*
12. *Risers for Sediment Basins, Traps or Dams by the linear foot (meter).*
13. *Stabilized Construction Entrances by the cubic yard (cubic meter).*

207.07 Basis of Payment. *The City will not pay if temporary erosion and sediment control items are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled, install such temporary work at no expense to the City.*

The Department will pay for accepted quantities at the contract price as follows:

<i>Item</i>	<i>Unit</i>	<i>Description</i>
207	<i>Square Yard (Square Meter)</i>	<i>Construction Seeding and Mulching</i>
207	<i>Linear Foot (Meter)</i>	<i>Slope Drains</i>
207	<i>Cubic Yard (Cubic Meter)</i>	<i>Sediment Basins and Dams</i>
207	<i>Linear Foot (Meter)</i>	<i>Perimeter Filter Fabric Fence, Composition Berm</i>
207	<i>Linear Foot (Meter)</i>	<i>Bale Filter Dike</i>
207	<i>Linear Foot (Meter)</i>	<i>Filter Fabric Ditch Check</i>
207	<i>Linear Foot (Meter)</i>	<i>Inlet Protection</i>
207	<i>Cubic Yard (Cubic Meter)</i>	<i>Dikes</i>
207	<i>Square Yard (Square Meter)</i>	<i>Construction Ditch Protection</i>
207	<i>Square Yard (Square Meter)</i>	<i>Construction Slope Protection</i>
207	<i>Cubic Yard (Cubic Meter)</i>	<i>Rock Channel Protection Type C or D with or without filter</i>
207	<i>Cubic Yard (Cubic Meter)</i>	<i>Sediment Removal</i>
207	<i>Linear Foot (Meter)</i>	<i>Riser Pipe for Sediment Basins, Traps or Dams</i>
207	<i>Cubic Yard (Cubic Meter)</i>	<i>Stabilized Construction Entrance</i>