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Section 208. SOIL EROSION AND SEDIMENTATION CONTROL

208.01. Description. This work consists of installing and maintaining erosion and sedimentation controls to minimize soil erosion and control sediment from leaving the right-of-way and affecting water resources of the State of Michigan and adjacent properties. Complete this work in accordance with this section and the Soil Erosion and Sedimentation Control (SESC) Manual. The Department considers the terms “stabilization” and “erosion control measures” as defined in the SESC Manual.

Failure by the Contractor to install and maintain soil erosion controls may result in project shutdown, fines from the MDNRE, or both. The Contractor is responsible for obtaining applicable federal, state, and local permits when disturbing areas outside Department right-of-way or outside Department acquired easement areas.

208.02. Materials. Provide materials in accordance with the following:

| | |
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| Coarse Aggregate, 6A | 902 |
| Granular Material Class II | 902 |
| Dense-Graded Aggregate, 21AA, 22A | 902 |
| Open-Graded Aggregate, 34R | 902 |
| Fencing Materials | 907 |
| Culvert Pipe | 909 |
| Geosynthetics | 910 |
| Riprap | 916 |
| Heavy Riprap | 916 |
| Coarse Aggregate, 3 × 1 | 916 |
| Cobblestone | 916 |
| Temporary Plastic Sheet | 916 |
| Sand and Stone Bags | 916 |
| Turbidity Curtain | 916 |

208.03. Construction.

A. **Area Limitations.** Conduct work to minimize soil erosion.

Limit the area of earth disturbance to 50 stations of dual roadways, or 100 stations of single roadway during clearing and grading. The Engineer may change the limits of exposed surface area based on the Contractor's ability to minimize erosion and prevent offsite sedimentation.

Do not disturb lands and waters outside the limits of earth disturbance, within the right-of-way, without prior approval from the Engineer. Restore Contractor-disturbed areas beyond the plan or Engineer-approved limits at no additional cost to the Department.

Obtain and give the Engineer copies of local, state, or federally required permits before disturbing sites outside the right-of-way, such as borrow, waste or disposal areas, haul roads, or storage sites. Provide temporary and permanent erosion and sedimentation controls in accordance with the permits.

B. Time Limitations. Bring grading sections to the final earth grade as soon as possible. Completion of the final earth grade does not include topsoil or other permanent restoration measures. The Engineer will consider the earth grade final and ready for placement of topsoil and permanent soil erosion control measures when the Contractor constructs a slope, channel, ditch, or other disturbed area in accordance with subsection 205.03.N. Complete topsoil placement and stabilize slopes, channels, ditches, and other disturbed areas within 5 calendar days after final earth grade with permanent soil erosion control measures. Permanently restore and place topsoil on slopes and ditches within 150 feet of lakes, streams, or wetlands within 24 hours of achieving final earth grade, using permanent soil erosion control measures. Do not prolong trimming, finishing final earth grade, or both, to permanently stabilize the project at one time.

C. Construction and Maintenance of Erosion and Sedimentation Controls. Construct temporary or permanent erosion and sedimentation controls in accordance with the SESC Manual, details shown on the plans, or as directed by the Engineer.

Maintain temporary erosion and sedimentation controls as necessary to ensure their effectiveness until stabilization of the disturbed area. Dispose of sediment and debris removed from temporary sedimentation control devices in accordance with subsection 205.03.P.

Maintain permanent erosion controls as necessary to ensure their effectiveness until project completion and acceptance. Repair damaged areas, replace lost devices, and remove sediment as required. Dispose of sediment and debris removed from permanent sedimentation control devices in accordance with subsection 205.03.P.

1. **Check Dams.** Install, maintain, and remove check dams across ditches.
2. **Sediment Traps and Basins.** If directed by the Engineer or shown on the plans, excavate 5 cubic yards or less, for sediment traps, and greater than 5 cubic yards for sediment basins. Maintain, and fill sediment traps or sediment basins.

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Prevent the excavated material from eroding into lakes, watercourses, or wetlands. Install required check dams downstream from a trap or basin before excavating the trap or basin.

3. **Filter Bag.** Provide, place and remove, as directed by the Engineer, at least 225 square foot filter bags constructed of geotextile blanket. Pump water from the construction area into the filter bag to filter the water before it enters a watercourse. Install gravel filter berms on the downslope side of the filter bag for additional protection in sensitive areas, or where the Engineer determines the filter bag is not effectively removing the sediment. Place the filter bag in an upland vegetated area, on level ground, above, and as far as possible from watercourse banks. Use one pump discharge hose per filter bag, unless otherwise approved by the Engineer. Use multiple filter bags as necessary to ensure effective filtration. The Engineer must approve the location of the filter bag, before pumping begins. Replace or dispose of the filter bag and its contents when no longer effective or required. Dispose of filter bags in accordance with subsection 205.03.P.

The Contractor may discharge silt-free, sediment-free water directly to a watercourse.

4. **Sand and Stone Bags.** Provide, place, maintain, remove, and dispose of sand or stone bags. Use non-contaminated sediment-free materials, approved by the Engineer. The stone from stone bags may remain in place after the required period, if the bags are cut open and the stone spread evenly, as directed by the Engineer.
5. **Silt Fence.** Provide, install, maintain, remove, and dispose of silt fence, consisting of woven geotextile fabric stapled to, and supported by posts. Place material removed from trenching in the silt fence on the upslope side of the silt fence. In areas where water ponds behind the silt fence, provide a stone filter to channel away the water and prevent failure. Silt fence may remain in place after the required period, if directed by the Engineer.
6. **Gravel Filter Berm.** Provide, place, maintain, remove, and dispose of gravel filter berms consisting of coarse aggregate 6A or open-graded aggregate 34R. Do not use gravel filter berm in lieu of a check dam in a ditch.
7. **Inlet Protection, Fabric Drop.** Provide, place, maintain, and remove fabric drop inlet protection devices, as directed by the Engineer. Remove and dispose of accumulated sediment as necessary.

8. **Inlet Protection, Geotextile and Stone.** Provide, place, maintain, remove, and dispose of geotextile blanket, coarse aggregate 6A, or open-graded aggregate 34R, or both, for inlet protection. Remove and dispose of accumulated sediment as necessary.
9. **Inlet Protection, Sediment Trap.** Excavate, provide, maintain, remove, and dispose of sediment traps consisting of geotextile blanket, and coarse aggregate 6A, or open-graded aggregate 34R. Remove and dispose of accumulated sediment as necessary.
10. **Temporary Plastic Sheets or Geotextile Cover.** Provide, place, maintain, remove, and dispose of plastic sheets or geotextile cover. Secure temporary plastic sheets or geotextile cover as directed by the Engineer.
11. **Sand Fence.** Provide, maintain, remove, and dispose of fence to prevent sand from migrating onto roads.
12. **Aggregate Cover.** Provide, place, maintain, remove, and dispose of geotextile separator and dense-graded aggregate 21AA, coarse aggregate 3×1, coarse aggregate 6A or other Engineer-approved material.
13. **Gravel Access Approach.** Provide, place, maintain, remove, and dispose of geotextile separator and coarse aggregate 3×1 or other Engineer approved-material.
14. **Turbidity Curtain.** Provide, install, maintain, remove, and dispose of shallow or deep turbidity curtain at the locations shown on the plans, or as directed by the Engineer.

Use shallow turbidity curtain when the water is no greater than 2 feet deep. Use deep turbidity curtain when the water is greater than 2 feet deep.

Provide a floating or staked turbidity curtain, as required. During removal, minimize sediment loss.
15. **Intercepting Ditch.** Construct and maintain intercepting ditches at the location shown on the plans, or as directed by the Engineer. Remove ditches when directed by the Engineer.

D. Removal of Erosion and Sedimentation Control Facilities. Remove or obliterate temporary erosion and sedimentation controls when the permanent controls are complete and approved, unless otherwise directed by the Engineer. Do not remove temporary controls next to lakes, watercourses, or wetlands until the establishment of turf on the adjacent slopes. Before placing topsoil, permanent seed, and

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fertilizer, remove or incorporate mulch, placed for temporary erosion control, into the slope. Minimize erosion and sedimentation into watercourses during removal of erosion controls. Repair damage caused during the removal of erosion controls at no additional cost to the Department.

208.04. Measurement and Payment.

| Pay Item | Pay Unit |
|--|-----------------|
| Erosion Control, Check Dam, Stone | Foot |
| Erosion Control, Sediment Trap | Each |
| Erosion Control, Sediment Basin | Cubic Yard |
| Erosion Control, Filter Bag | Each |
| Erosion Control, Sand Bag | Each |
| Erosion Control, Stone Bag | Each |
| Erosion Control, Silt Fence | Foot |
| Erosion Control, Gravel Filter Berm | Foot |
| Erosion Control, Inlet Protection, Fabric Drop..... | Each |
| Erosion Control, Inlet Protection, Geotextile and Stone | Each |
| Erosion Control, Inlet Protection, Sediment Trap | Each |
| Erosion Control, Temp Plastic Sheet/Geotextile Cover..... | Square Yard |
| Erosion Control, Sand Fence | Foot |
| Erosion Control, Aggregate Cover | Square Yard |
| Erosion Control, Gravel Access Approach | Each |
| Erosion Control, Maintenance, Sediment Removal | Cubic Yard |
| Erosion Control, Turbidity Curtain, Shallow..... | Foot |
| Erosion Control, Turbidity Curtain, Deep..... | Foot |
| Ditch, Intercepting..... | Station |

The Department will not pay for repairing or replacing temporary or permanent SESC measures damaged by the Contractor's negligence. The Department will pay for repairing or replacing temporary or permanent SESC measures damaged by causes other than the Contractor's negligence, at the contract unit price for the relevant pay items.

A. Erosion Control, Check Dam, Stone. The Engineer will measure **Erosion Control, Check Dam, Stone** in place. The unit price for **Erosion Control, Check Dam, Stone** includes the cost of providing, placing, maintaining, and removing the stone check dam.

B. Erosion Control, Sediment Trap or Basin.

1. **Erosion Control, Sediment Trap.** The unit price for **Erosion Control, Sediment Trap** includes the cost of excavating, constructing, maintaining, and removing sediment traps.

The Department will pay separately for removing and disposing of accumulated sediment or debris from a sediment trap as **Erosion Control, Maintenance, Sediment Removal**.

2. **Erosion Control, Sediment Basin.** The Engineer will measure **Erosion Control, Sediment Basin** by volume, loose measure. The unit price for **Erosion Control, Sediment Basin** includes the cost of excavating, constructing, maintaining, and removing the sediment basin.

The Department will pay separately for removing and disposing of accumulated sediment or debris from a sediment basin as **Erosion Control, Maintenance, Sediment Removal**.

- C. **Erosion Control, Filter Bag.** The unit price for **Erosion Control, Filter Bag** includes the cost of providing, placing, maintaining, and disposing of the filter bag and its contents, and restoring the filter bag site.

The unit price for **Erosion Control, Gravel Filter Berm** includes the cost of gravel filter berm used in conjunction with a filter bag.

- D. **Erosion Control, Sand Bag and Erosion Control, Stone Bag.** The Engineer will measure **Erosion Control, Sand Bag** and **Erosion Control, Stone Bag** in place. The unit prices for **Erosion Control, Sand Bag** and **Erosion Control, Stone Bag** include the cost of providing, placing, maintaining, removing, and disposing of the sand or stone bags.

- E. **Erosion Control, Silt Fence.** The Engineer will measure **Erosion Control, Silt Fence** in place excluding overlaps. The unit price for **Erosion Control, Silt Fence** includes the cost of providing, installing, maintaining, removing, and disposing of the fence and posts.

The Department will pay separately for removing and disposing of accumulated sediment or debris from behind silt fence as **Erosion Control, Maintenance, Sediment Removal**.

- F. **Erosion Control, Gravel Filter Berm.** The Engineer will measure **Erosion Control, Gravel Filter Berm** in place. The unit price for **Erosion Control, Gravel Filter Berm** includes the cost of providing, placing, maintaining, removing, and disposing of the gravel filter berm.

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G. Erosion Control, Inlet Protection.

1. **Erosion Control, Inlet Protection, Fabric Drop.** The unit price for **Erosion Control, Inlet Protection, Fabric Drop** includes the cost of constructing, maintaining, and removing inlet protection fabric drops.
2. **Erosion Control, Inlet Protection, Geotextile and Stone.** The unit price for **Erosion Control, Inlet Protection, Geotextile and Stone** includes the cost of constructing, maintaining, and removing geotextile and stone inlet protection.
3. **Erosion Control, Inlet Protection, Sediment Trap.** The unit price for **Erosion Control, Inlet Protection, Sediment Trap** includes the cost of excavating, constructing, maintaining, and removing sediment traps for inlet protection.

The Department will pay separately for removing and disposing of accumulated sediment or debris from a sediment trap inlet protection device as **Erosion Control, Maintenance, Sediment Removal**.

H. Erosion Control, Temporary Plastic Sheet/Geotextile Cover. The unit price for **Erosion Control, Temporary Plastic Sheet/Geotextile Cover** includes the cost of constructing, maintaining, and removing temporary plastic sheets and geotextile covers.

I. Erosion Control, Sand Fence. The Engineer will measure **Erosion Control, Sand Fence** in place. The unit price for **Erosion Control, Sand Fence** includes the cost of constructing, maintaining, and removing sand fence.

J. Erosion Control, Aggregate Cover. The unit price for **Erosion Control, Aggregate Cover** includes the cost of constructing, maintaining, and removing aggregate cover.

K. Erosion Control, Gravel Access Approach. The unit price for **Erosion Control, Gravel Access Approach** includes the cost of temporary culverts and ditching required to maintain existing drainage courses through or around gravel access approaches, and providing, constructing, maintaining, and removing gravel access approaches.

L. Erosion Control, Maintenance, Sediment Removal. The Engineer will measure **Erosion Control, Maintenance, Sediment Removal** by volume, loose measure. The unit price for **Erosion Control, Maintenance, Sediment Removal** includes the cost of removing sediment and debris from erosion and sedimentation control devices, as required by the SESC Manual, and as necessary to ensure their effectiveness.

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M. **Erosion Control, Turbidity Curtain.** The Engineer will measure **Erosion Control, Turbidity Curtain, Shallow** and **Erosion Control, Turbidity Curtain, Deep** in place. The unit prices for **Erosion Control, Turbidity Curtain, Shallow** and **Erosion Control Turbidity Curtain, Deep** include the cost of providing, installing, maintaining, and removing turbidity curtains.

The unit price for **Erosion Control, Maintenance, Sediment Removal** includes the cost of removing and disposing of accumulated sediment or debris retained by the turbidity curtain.

N. **Intercepting Ditch.** The Engineer will measure **Ditch, Intercepting** in place along the ditch centerline. The unit price for **Ditch, Intercepting** includes the cost of constructing, maintaining, and removing the intercepting ditch.