## Section 208. SOIL EROSION AND SEDIMENTATION CONTROL

**208.01 Description.** This work includes the installation and maintenance of erosion and sedimentation controls required to prevent or minimize soil erosion and to control sedimentation from impacting the water resources of the State of Michigan and adjacent properties.

The Contractor shall conduct the work in a manor that minimizes or prevents soil erosion. All soil, fuels, oils, asphaltic materials, chemicals, sanitary sewage, debris, and other unsuitable materials, resulting from the construction of the project, shall be confined within the right-of-way and project limits. These materials shall be properly disposed of to prevent them from entering any water resources (surface and ground) of the State of Michigan and adjacent properties.

The Michigan Department of Environmental Quality (MDEQ), has designated the MDOT an Authorized Public Agency (APA) under authority of Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 91 as amended, Michigan Soil Erosion and Sedimentation Control (formally PA 347 of 1972, as amended). The APA designation allows the MDOT to undertake earth change activities without obtaining an individual soil erosion permit. Failure by the Contractor to install and maintain adequate soil erosion controls may result in project shutdown and/or fines from the MDEQ. The Contractor is required to obtain all applicable federal, state, and local permits when working outside of MDOT right-of-way or outside of MDOT-acquired easement areas. These permits include, but are not limited to Act 451 and National Pollutant Discharge Elimination System (NPDES), Section 404 of Federal Clean Water Act. A soil erosion permit is always required when the work disturbs more than one acre of land or is within 500 feet of a lake or stream. Local Agency Act 451, Part 91 requirements may be more restrictive.

On projects requiring stream crossing, culvert extensions at streams or drains, or wetland permits from the MDEQ, the Engineer shall notify the regional MDEQ office of the anticipated construction start date. At project completion, the completion notification card attached to the permit must be submitted to the MDEQ. For projects requiring U.S. Army Corps of Engineers or U.S. Coast Guard permits, the Engineer shall follow the notification procedures listed on these permits.

**208.02 Materials.** Materials shall meet the following requirements.


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

## 208.03 Construction.

A. **General Requirements.** Construction operations shall be conducted to prevent or minimize erosion and control all sedimentation associated with the project. All sedimentation must be kept within MDOT right-of-way and out of the surface waters of the State of Michigan. Temporary or permanent erosion and sedimentation controls shall be constructed and maintained as specified on the plans and as detailed in the *Soil Erosion and Sedimentation Control Manual* prior to commencing any construction operation (including clearing). Grading operations shall be performed as soon as possible after clearing operations. Temporary erosion and sedimentation controls, as directed by the Engineer, shall be installed to minimize potential problems, to correct conditions that develop during construction, or to stabilize inactive construction areas.

B. **Time Limitations.** All grading sections shall be brought to final grade as soon as possible. Permanent soil erosion controls for all slopes, channels, ditches, and other disturbed areas shall be completed within 5 calendar days after final grading or final earth change, as required by law. Permanent restoration of all slopes and ditches within 150 feet of any lake, stream, or wetland shall be done within 24 hours after final grading or final earth change. Where it is not possible to permanently stabilize a disturbed area, appropriate temporary erosion and sedimentation controls shall be implemented. All temporary soil erosion and sedimentation controls shall be maintained until permanent controls are in place and functional.

C. **Area Limitations.** The surface area of erodible earth material exposed at any one time will be limited to 50 stations of dual roadways (100 stations of single roadway) for clearing and grading operations. The Engineer may reduce or increase the limits of exposed surface area dependent on the Contractor's capability to keep current the finish grading, topsoil placement, seeding, mulching, and other temporary or permanent erosion and sedimentation control operations.

   When the Contractor has completed the permanent restoration on a cut slope or embankment slope, or portions thereof, the completed slope will be approved by the Engineer. Each cut or embankment slope, or portions thereof, on each side of the roadway will be considered for approval separately.

   The Contractor shall not disturb lands and waters outside the grading limits unless such work is found necessary and approved by the Engineer. Restoration of areas that are disturbed beyond the plan or approved limits, will be at the Contractor's expense.

   Prior to site disturbance where work is conducted outside the right-of-way, such as borrow operations, waste or disposal areas, haul roads, or storage sites, the Contractor shall obtain and provide the Engineer with copies of any local, state, or federally required permits. These permits shall include, but not be limited to those required under Act 451, Part 91 as ammended (Soil Erosion and Sedimentation Control), Part 303 (Wetland Protection, formerly Act 203), Part 301 (Inland Lakes and Streams, formerly Act 346), Part 31, (Water Resources Protection, Floodplain Regulatory Authority, formerly Act 245 as amended by Act 167), and Part 31 (Water Resources Protection), National Pollutant Discharge Elimination System (NPDES). Federal Section 404, Clean Water Act of 1972, permits may

also be required. Temporary and permanent erosion and sedimentation controls shall be provided by the Contractor as specified in the applicable permits.

D. **Construction of Erosion and Sedimentation Controls.** Construction of temporary or permanent erosion and sedimentation controls shall meet the requirements as specified in the *Soil Erosion and Sedimentation Control Manual* and on the plans or as directed by the Engineer.

If approved by the Engineer, and not prohibited by permit, broken concrete may be used for erosion and sedimentation controls provided all the reinforcing steel has been removed or flush cut. The use of asphaltic material and/or broken brick for checkdams or riprap is prohibited.

1. **Check Dams.** This work shall consist of installing and maintaining a check dam across a ditch or watercourse.

2. **Sediment Traps and Basins.** This work shall consist of excavating, maintaining, and filling in, if directed, a sediment trap (5 cubic yards or less) or sediment basin (greater than 5 cubic yards) as shown on the plans or where directed.

   The excavated material shall not be allowed to erode into a lake, watercourse, or wetland. Check dams that are to be installed at the downstream side of the trap or basin should be installed prior to the excavation of the sediment trap or basin.

3. **Filter Bag.** This work shall consist of furnishing, placing, and disposing of a minimum 250 square foot filter bag constructed of geotextile blanket. Water pumped from construction operations shall be pumped into and allowed to filter through the filter bag before entering any watercourse. A separate silt fence or gravel filter berm shall be installed around the filter bag for additional protection in sensitive areas or where the filter bag is not effectively removing the sediment. Water being pumped may be discharged directly into the watercourse provided it remains silt free. The filter bag should be located on level ground above and no closer than 20 feet from the banks of the stream channel. The location of the filter bag will be approved by the Engineer. The filter bag and its contents shall be properly disposed of by the Contractor.

4. **Sand and Stone Bags.** This work shall consist of furnishing, placing, maintaining, removing and disposing of sand or stone bags. All materials in the bags shall be non-contaminated and free from releasing sediments as approved by the Engineer.

5. **Silt Fence.** This work shall consist of furnishing, erecting, maintaining, removing, and disposing of a silt fence, consisting of a post-supported geotextile. All material removed for trenching in the silt fence must be placed on the upstream side of the silt fence. In areas where water ponds behind the silt fence, a stone filter may be needed to outlet the water and prevent failure. Broken posts are to be replaced immediately at the Contractor's expense.

6. **Gravel Filter Berm.** This work shall consist of furnishing, placing, maintaining, removing and disposing of coarse aggregate 6A or 34R. This device is not to be used in lieu of a check dam in a ditch.

7. **Inlet Protection, Fabric Drop.** This work shall consist of furnishing, placing, maintaining, removing and disposing of sediments, silt fence, stone check dam and/or filter berm as directed by the Engineer.

8. **Inlet Protection, Geotextile and Stone.** This work shall consist of furnishing, placing, maintaining, removing and disposing of geotextile filter fabric and 34R or 6A aggregate. This device shall cover any part of the structure into which water or sediments may enter. The fabric must be adequately wrapped on all sides of the structure.

9. **Inlet Protection, Sediment Trap.** This work shall consist of excavating the trap, furnishing, maintaining, removing and disposing of geotextile fabric, and 34R or 6A aggregate.

10. **Temporary Plastic Sheets or Geotextile Cover.** This work shall consist of furnishing, placing, maintaining, removing and disposing of plastic sheets or geotextile cover. It shall be adequately secured as approved by the Engineer.

11. **Sand Fence.** This work shall consist of furnishing, maintaining, removing and disposing of fence used to prevent sand from blowing onto roads.

12. **Aggregate Cover.** This work shall consist of furnishing, placing, maintaining, removing and disposing of the geotextile fabric and dense-graded 21AA, coarse aggregate 3x1 or coarse aggregate, 6A.

13. **Gravel Access Approach.** This work shall consist of furnishing, placing, maintaining, removing, and disposing of geotextile fabric and dense-graded aggregate, 22A or coarse aggregate, 3x1. This device provides access to a paved approach from a construction work site and minimizes fugitive dust and tracking of soil onto the public road.

E. **Maintenance of Erosion and Sedimentation Controls.** The Contractor shall maintain all temporary erosion and sedimentation controls during the period that the temporary controls are required and all permanent erosion controls until the contract has been completed and accepted. Such maintenance shall consist of the repair of all damaged areas, replacement of lost facilities, and periodic removal of sediment. Sediment traps and basins shall be cleaned out when they are half full or as directed. Sediment or debris collected by a silt fence shall be removed when it has accumulated to one half of the fence height. The removed sediment or debris shall be disposed of according to Subsection 205.03.A.4.

F. **Removal of Erosion and Sedimentation Control Facilities.** Temporary erosion and sedimentation controls shall be removed or obliterated when the permanent controls are in place and approved, unless ordered to be left in place by the Engineer. Temporary controls adjacent to lakes, watercourses, or wetlands shall be left in place until the adjacent slopes have turf establishment. Mulch placed for temporary erosion control shall be

incorporated into the slope, or removed, prior to placement of topsoil, permanent seeding, and fertilizing operations. Care shall be exercised during removal of erosion controls to minimize erosion or sedimentation into watercourses. Any damage caused during the removal operations shall be repaired at the Contractor's expense.

Sand filled bags must be disposed of at an upland site or as approved by the Engineer. If approved, stone from stone filled bags may be placed in the bottom of the watercourse if the stream hydraulics are not changed.

**208.04 Measurement and Payment.**

| **Contract Item (Pay Item)** | **Pay Unit** |
|---|---|
| Erosion Control, Check Dam, Stone | Foot |
| Erosion Control, Sediment Trap | Each |
| Erosion Control, Sediment Basin | Cubic Yard |
| Erosion Control, Maintenance, Sediment Removal | 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 |

A. **Erosion Control, Check Dam, Stone** will be measured in place by length and includes furnishing, placing, and maintaining the check dam. No allowances will be made for repairs or replacements due to damage caused by the contractor's operation or negligence. **Erosion Control, Check Dam, Stone** replacement due to reasons other than the Contractor's operations or negligence will be measured and paid for separately. Removal and disposal of **Erosion Control, Check Dam, Stone**, if required, will be paid for as **Erosion Control, Maintenance, Sediment Removal**.

B. **Erosion Control, Sediment Trap or Basin.**

1. **Erosion Control, Sediment Trap** will include all equipment, materials, and labor required for the excavation, construction, maintenance, and removal of the Erosion Control, Sediment Trap. Removal and disposal of accumulated sediment or debris will be measured and paid for as **Erosion Control, Maintenance, Sediment Removal**.

2. **Erosion Control**, **Sediment Basin** will be measured by volume, loose measure and will include all equipment, materials, and labor required for the excavation, construction, maintenance, and removal of the sediment basin. Removal and disposal of the

accumulated sediment or debris will be measured and paid for as **Erosion Control, Maintenance, Sediment Removal**.

C. **Erosion Control, Maintenance, Sediment Removal** will be measured by volume, loose measure, and will include cleaning sediment from traps, basins, from the high side of the silt fence, and any other erosion control device listed in the soil erosion control manual needing sediment cleaning as required. All material removed from cleaning will be disposed of at an upland site approved by the Engineer.

D. **Erosion Control, Filter Bag** includes furnishing, placing, maintaining, and disposing of the bag and its contents, and restoration of the filter bag site.

E. **Erosion Control, Sand Bag** and **Erosion Control, Stone Bag** will be measured in place by each and includes furnishing, placing, maintaining, removing and disposing of the sand or stone bags. The stone from the **Erosion Control, Stone Bag**, may be left in place only if the bags are cut opened and properly disposed of, and the stone spread evenly as directed by the engineer. No allowances will be made for repairs or replacement due to damage caused by the Contractor's operations or negligence.

F. **Erosion Control, Silt Fence** will be measured in place by length and includes furnishing, erecting, maintaining, removing, and disposing of the fence and posts. **Erosion Control, Silt Fence** may be left in place if directed by the Engineer. No allowance will be made for overlaps, repairs or replacement due to damage caused by the Contractor's operation or negligence. **Erosion Control, Silt Fence**, replaced due to reasons other than the Contractor's operations or negligence will be measured and paid for separately. Removal and disposal of accumulated sediment or debris will be measured and paid for as **Erosion Control, Maintenance, Sediment Removal**.

G. **Erosion Control, Gravel Filter Berm,** will be measured in place by length and includes furnishing, placing, maintaining, removing, and disposing of the Gravel Filter Berm. No allowances will be made for repairs or replacements due to damage caused by the Contractor's operation or negligence. **Erosion Control, Gravel Filter Berms,** replacement due to reasons other than the Contractor's operations or negligence will be measured and paid for separately.

H. **Erosion Control, Inlet Protection.**

1. **Erosion Control, Inlet Protection, Fabric Drop** will include all equipment, materials, and labor required for construction, maintenance, and removal of the Erosion Control, Inlet Protection Fabric Drop.

2. **Erosion Control, Inlet Protection, Geotextile and Stone** will include all equipment, materials, and labor required for construction, maintenance, and removal of the Erosion Control, Inlet Protection Geotextile and Stone.

3. **Erosion Control, Inlet Protection, Sediment Trap** will include all equipment, materials, and labor required for the excavation, construction, maintenance, and removal of the Erosion Control, Inlet Protection, Sediment Trap. Removal and disposal

of accumulated sediment or debris will be measured and paid for as **Erosion Control, Maintenance, Sediment Removal**.

I. **Erosion Control, Temporary Plastic Sheet/Geotextile Cover** will include all equipment, materials, and labor required for the construction, maintenance, and removal of the Erosion Control, Temporary Plastic Sheet/Geotextile Cover.

J. **Erosion Control, Sand Fence** will be measured in place by length and will include all equipment, materials, and labor required for construction, maintenance, and removal of the Erosion Control, Sand Fence.

K. **Erosion Control, Aggregate Cover** will be paid for by area and will include all equipment, labor, and material required for construction, maintenance, and removal of the Erosion Control, Aggregate Cover.

L. **Erosion Control, Gravel Access Approach,** will be paid for by each and will include all equipment, labor, and material required for construction, maintenance, and removal of the **Erosion Control, Gravel Access Approach**. Temporary culverts and/or ditching required to maintain any existing drainage courses will not be paid for separately, but is included with the pay item **Erosion Control, Gravel Access Approach**.