

# Soil Erosion Program

County of Mason  
102 E 5<sup>th</sup> Street  
Scottville, MI 49454  
(231) 757-9366

## GENERAL REQUIREMENTS AND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL PLANS

### Temporary Erosion/Sediment Control Measures:

The documents submitted for our review must show a reasonable representation of all of the control measures that are anticipated to be necessary during all stages of the earth change, i.e., from the time that the site is stripped of the existing vegetation until the site is permanently stabilized with a non-erodible surface (Note: A site that has been seeded and mulched is not considered to be permanently stabilized until the surfaces are well vegetated). The documents must include detailed drawings showing the proper use, materials, and installation of all temporary and permanent erosion/sediment control measures along with the requirement that the control measures be properly installed, maintained, relocated, modified, etc. as necessary to perform their intended function and be in compliance with the law.

Erosion and sediment controls are required for earth changes above the waterline to prevent sediment from entering the water. **PROPER EROSION CONTROL MEASURES ARE REQUIRED ALONG ALL WATERBODY EDGES FOR PROJECTS THAT ARE CLOSE TO A LAKE/STREAM. LARGER COMMERCIAL PROJECTS WILL BE REQUIRED TO INSTALL AND MAINTAIN BERMS/TRENCHES/ SEDIMENT TRAPS FOR EROSION CONTROL.**

The documents must include a project schedule and sequence with sufficient detail to show that the following requirements will be met: 1) earth changes shall be staged to keep the area of the disturbed earth surfaces as small as practicable for the shortest possible period of time; 2) all disturbed earth surfaces shall be expeditiously brought to the final grade and permanently stabilized; 3) the surface restoration work shall be a continuous operation and shall proceed concurrently with other items of work; 4) the work schedule and sequence to be followed is the one that will have the least potential for causing erosion/sediment damage.

### Permanent Erosion and Sediment Control Measures:

All disturbed earth surfaces steeper than 3:1 and up to 2:1 (horz:vert) shall be restored with pegged sod, erosion control blanket, or other pre-approved equivalent. All disturbed earth surfaces steeper than 2:1 (horz:vert) shall be restored with rock rip-rap, erosion control blanket, or other pre-approved equivalent. No new slopes shall be constructed steeper than 1:1 unless specifically waived by the Soil Erosion Inspector. Earth surfaces on pre-existing slopes steeper than 2:1 are to be armored with riprap, erosion control blanket, or other pre-approved equivalent. These requirements apply to all ditch/cut/fill slopes.

**All stream crossing slopes [both sides] must be stabilized with non-woven filter fabric and rip-rap [angular or field stone] from water line up to top of roadbase, regardless of slope.**

In all areas of channelized flow, if the water velocity is between 4 fps and 6 fps for a 25-yr/24-hr storm, the channel shall be restored with pegged sod or other pre-approved equivalent. The sod shall extend a minimum of 1' above the channel bottom, measured vertically, or above the normal depth of flow for a 25-yr/24-hr storm. The sod seams shall be staggered in the direction parallel with the flow of water. In V-bottom ditches the sod seams shall not be installed in the bottom of the vee. The sod shall be entrenched such that the top of the root mat is to the line and grade of the adjacent ground.

In all areas of channelized flow, if the water velocity is greater than 6 fps for a 25-yr/24-hr storm, the channel shall be armored with riprap, pavement, or other pre-approved equivalent materials. The armor shall extend a minimum of 1 foot above the channel bottom, measured vertically, or above the normal depth of flow for a 25-yr/24-hr storm, whichever is the greatest.

Regardless of the velocity, all areas of channelized flow having a continuous baseflow shall be permanently stabilized with riprap, pavement, or other pre-approved method (bioengineering is encouraged). The riprap, pavement, etc. shall extend above the channel bottom to the normal depth of the baseflow. The surfaces within the channel above the normal depth of baseflow must be restored according to the velocity and normal depth requirements for a 25-yr/24-hr storm as discussed previously.

All riprap shall be sized such that the smallest stones will not be displaced by the water velocities resulting from a 25-yr/24-hr storm. The depth of the riprap shall be 1.5 times the smallest stone dimension or 8 inches, whichever is the greatest. All riprap shall be underlain by geotextile fabric. All riprap shall be entrenched such that the top of the riprap is to the line and grade of the adjacent ground.

Where subsurface water movement or excavations below the water table may cause seeps, soil erosion, soil slippage, sloughing, caving, or other earth movement, adequate subsurface drainage facilities and permanent surface stabilization measures shall be installed as necessary to prevent slope instability, soil erosion, and sedimentation.

The same end result of structural stability is required for earth impoundments. The suitability of the in-place foundation soils must be analyzed; the embankment cross-section, soils, compaction, outlet structures, etc. must be engineered to prevent slope instability, piping, seepage, settlement, etc. This also applies to existing earth fills that will be subjected to an increase in the backwater elevation due to an alteration of the drainage structures or due to stormwater diversions. Anti-seepage collars must be installed on all impoundment pipe outlets. On the interior surfaces of impoundments, the permanent stabilization method, materials, plant species, etc. must be carefully chosen to ensure that the method is appropriate for the range of water level fluctuations, and/or inundation duration and frequency of occurrence.

The existing surface cover types must also be analyzed and modified as necessary in areas that are not being disturbed but will be experiencing a change in water velocities, the range of water level fluctuations, and/or inundation duration and frequency of occurrence due to stormwater diversions and/or alterations of drainage control structures. The State law requires that all drainage conveyances be designed to prevent erosive velocities, therefore, in the locations where the existing ground surface cover will be subjected to erosive water velocities as a result of this project, the use of energy dissipators and velocity control structures will be required unless all affected surfaces are protected as necessary to prevent long term erosion problems.

The plans must show detail drawings of the configuration and dimensions of all riprap culvert aprons, energy dissipators, spillways, and downdrains. All riprap downdrains and impoundment spillways must be engineered using the USDA "Rock Chute" design method or other appropriate "engineered" method.

#### Performance Guarantees:

Performance guarantees are required at the discretion of the County Enforcement Agency for most earth changes that exceed 1000 cubic yards (27,000 cubic feet) of earthwork. If required the project must be bonded for \$1000 per acre of work. The performance guarantee may be in the form of a surety bond, cash bond, or irrevocable letter of credit. If the project owner is a government agency, in lieu of a bond, an agreement may be entered into between the project owner and the Soil Erosion Inspector whereby the owner agrees to act on the bond on our behalf in the event that the contractor defaults in performing the permit requirements. However, for this option to be considered, the contractor must be bonded to the owner for 100% of the permit requirements, i.e., the contract documents must incorporate all of the work as approved and required by this office.

#### Maintenance:

The State law requires that the soil erosion and sediment control plan include "a program proposal for the continued maintenance of all permanent soil erosion control facilities which remain after project completion, including the designation of the person responsible for the maintenance..."