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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 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 all 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. **SILTFENCING AND/OR A 1' TRENCH IS 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 ERSION 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 e final grade and permanently stabilized; 3) the surface 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 (horiz:vert) shall be restored with pegged sod erosion control blanket, or other pre-approved equivalent. All disturbed earth surfaces steeper than 2:1 (horiz: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 department. Earth surfaces on pre-existing slopes steeper than 2:1 are to be armored with rip-rap, erosion control blanket, or other pre-approved equivalent. The 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 road base, regardless of slope.

In all areas of channelized flow, if the water velocity is between 4fps and 6fps 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 or 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 channelized flow, if the water velocity is greater than 6 fps for a 25-yr/24-hr storm, the channel shall be armored with rip-rap, pavement, or other pre-approved equivalent materials. The armor 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, whichever is the greatest.

Regardless of the velocity, all areas of channelized flow having a continuous baseflow shall be permanently stabilized with rip-rap, pavement, or other pre-approved method (bioengineering is encouraged). The rip-rap, 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.

A rip-rap 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 rip-rap shall be 1.5 times the smallest stone dimension or 8", whichever is greater. All rip-raps shall be underlain by geotextile fabric. All rip-rap shall be entrenched such that the top of the rip-rap 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, sedimentation.

The same end result of structural stability is required for earth impoundment. 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, seep, settlement, etc. This also applies to existing earth fills that will be subject to an increase in the backwater elevation due to an alteration of the drainage structures or due to storm water 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 storm water diversions and/or alterations of drainage control structures. The State law requires that all drainage conveyances be designed to prevent 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 rip-rap culvert aprons, energy dissipator, spillways, and downdrains. All rip-rap 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 for most earth changes that exceed 1000 cubic yards (27,000 cubic feet) of earthwork. 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, agreement may be entered into between the project owner and the Department 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 or the maintenance...”

Appeals:

The LMAS District Health Department Board of Appeals will be serving as the appeals board for Part 91, the Soil Erosion and Sedimentation Control program. Appeals may be submitted at your local county office.

CONSTRUCTION REQUIREMENTS

1. Slope Stabilization:

- A. Roof gutters/downspouts and/or ground surface protection shall be installed as needed to prevent erosion of the slopes beneath roof drip lines and at roof/floor drain discharge points.
- B. All disturbed earth surfaces steeper than 3:1 and up to/including 2:1 (horiz:vert) shall be restored with pegged sod or erosion control fabric/mats. All disturbed earth surfaces steeper than 2:1 (horiz:vert) shall be restored with rock rip-rap or other pre-approved equivalent.
- C. No permanent slopes to be created steeper than 2:1 (horiz:vert) unless pre-approved.
- D. All areas on pre-existing slopes steeper than 2:1 (horiz:vert) will be permanently stabilized with rip-rap or other pre-approved equivalent.
- E. Slopes near retaining walls shall be constructed to convey surface runoff down the slope without causing erosion retaining walls constructed of timbers, ungrouted rocks or stones, etc., will be lined with geotextile fabric on the uphill face of the wall to prevent soil from exfiltrating through the wall.
- F. All sod shall be entrenched such that the top of the sod is to the line and grade of the adjacent ground. The sod seams shall be staggered in the direction parallel to flow of surface runoff.
- G. All rip-rap will be underlain with filter fabric and be large enough not to be displaced during storm events – 4-6” minimum is recommended. Front/sides to be trenched into sub-grade.
- H. All earth changes are to be permanently stabilized with topsoil/seed/mulch to establish a good vegetative surface cover, unless areas are determined by MCCD to be fully self-contained.
- I. Silt fence shall be properly installed as needed at the downhill perimeter of the exposed soil surfaces to prevent sediment damage to a lake/stream and keep all sediment onsite.

2. In all areas concentrated water flow for a 25 year/24hr. storm event, the soil surface shall be armored with appropriate sure cover material permanently stabilize the flow line.
 - A. If the flow is between 4 and 6 feet per second, the disturbed earth surfaces shall be armored with pegged sod or erosion control fabric/mats. The sod shall extend a minimum of 1' above the normal depth of flow.
 - B. If the flow is greater than 6 feet per second the disturbed earth surfaces shall be armored with rip-rap, pavement, or other pre-approved non-erodible surface.
 - C. All flow lines with a continuous base flow shall be permanently stabilized with rip-rap, pavement, or other pre-approved method (bioengineering is encouraged). The rip-rap, pavement, etc. shall extend a minimum of 1' above the normal depth of flow.
 - D. Check dams and/or ditches sediment tarps shall be installed in flow lines as needed to trap sediment and prevent erosive water velocities.
3. All disturbed earth surfaces that are not permanently stabilized with good vegetation or pavement prior to the winter months of each year will be protected with the temporary erosion/sediment controls necessary to prevent erosion into any lakes, streams, or drainage facilities during the winter months and the spring snowmelt/runoff period.
4. Permittee is responsible for the proper installation and timely maintenance of all erosion/sediment controls necessary to prevent erosion/sediment damage to any lake, stream, or drainage facility.
5. All earth changes will be completed to surfaces remaining exposed for the shortest possible period of time. All disturbed earth surfaces shall be expeditiously brought to the final grade permanently stabilized with good vegetation, pavement, and/or other non-erodible surface cover. The surface restoration work shall be a continuous operation and shall proceed concurrently with other work.
6. Sediment will be removed from runoff water before it leaves the site of the earth change.
7. All flushing, dewatering, pumping, well development, etc., shall be done with no erosion/sediment damage any lake, stream, or drainage facility. Temporary control measures will be installed prior to these operations to remove sediment and limit the water flow to a non-erosive velocity.
8. Temporary sediment controls shall be installed at all storm sewers and culvert inlets that are down gradient of any exposed oil or gravel surfaces that are a result of this project.
9. Any facility designed/constructed for the control or conveyance of water within, around, rough, or from the earth, the area will be designed/constructed to limit the flow of water to a non-erosive velocity.
10. Excavations and embankments shall be constructed with positive drainage and/or the drainage facilities necessary to prevent ponding of water and blockage of existing drainage patterns with the exception of constructed wetlands and those facilities specifically engineered for storm water management. Provisions shall be made to safely convey storm water runoff down cut and fill slopes to prevent soil erosion, sedimentation, and erosive water velocities.
11. Wind velocity reduction fences, dust control measures, and temporary and permanent stabilization measures shall be installed as necessary to protect disturbed earth surfaces from wind erosion.
12. Where subsurface water movement causes seeps, soil erosion, soil slippage, sloughing, caving, or other earth movement, the permittee shall install subsurface drainage facilities as necessary to prevent slope instability, soil erosion, and sedimentation.

GENERAL CONDITIONS:

1. In issuing this permit, LMASDHD has relied on the information the permit has provided in the permit application. Any changes to the current plan/permit must be submitted to LMASDHD for approval/inclusion in existing permit or a violation may be issued.
2. The permit shall be kept at the project site and available for inspection at all times during the project.
3. All work authorized by this permit will be done under the approved SESC plan and in compliance with all requirements of Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act, Act No. 451 of PA of 1994, as amended, and the administrative rules.
4. The requirements of this permit will be enforced by the LMASDHD. In the event of failure to complete the work within the specified time period or failure to comply with all requirements of Part 91 of Act 451, and/or the Permit, the Department may issue a notice of violation; issue a cease and desist order; seek injunctive relief; institute civil or criminal proceedings; order such work as necessary to eliminate any danger to persons or damage to property, lakes, streams, or drainage facilities; order the completion of work authorized by the permit; and/or may enter upon the land to construct, implement, and maintain soil erosion and sediment control measures, the cost of which shall be reimbursed to the Department by the property owner.
5. The permit is permissive and its issuance does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to public or private property or any invasion of public or private rights, nor any infringement of federal, state, or local law or regulations, nor does it eliminate the necessity of obtaining such permits or approvals from other units of government as may be required by law. This permit is issued with the understanding that it does not prevent the Department or the State of Michigan from the establishment of further requirements for control at any time
6. The permittee shall immediately notify the Department of any change in ownership.
7. The issuance of this permit shall not impose any liability upon the LMASDHD for damages to persons or property.
8. Permittee is responsible for requesting permit extension to cover project completion.
9. Upon a final site visit, the Department will issue a Certification of Completion to close the permit out.