

## **Construction Storm Water Runoff Control Program**

### **Ottawa County Road Commission**

#### **Response to Question 28**

The Ottawa County Road Commission (OCRC) is a part 91 agency and currently have 13 certified storm water operators (CSWOs) on staff. Each project will have a project engineer or a district supervisor assigned to it. All project engineers and district supervisors are CSWOs. The CSWO will be responsible for the soil erosion and sedimentation control (SESC) measures at their project site. If soil or sediment is discharged to an MS4 it shall be documented on the SESC inspection report indicating the date of discharge, location, type of control that failed, corrective action, notification date, and completion date. Corrective action measures will be completed within 24 hours of notification.

When notified by the public of a soil erosion or sediment discharge to a MS4 the CSWO assigned to the project shall investigate within 24hrs of complaint and take action as detailed in previous paragraph.

For projects permitted through our Special Services Department for work in the OCRC right of way, the Ottawa County Water Resources Commissioner (OCWRC) rules shall apply. The OCWRC is the County Enforcing Agency.

#### **Response to Question 29**

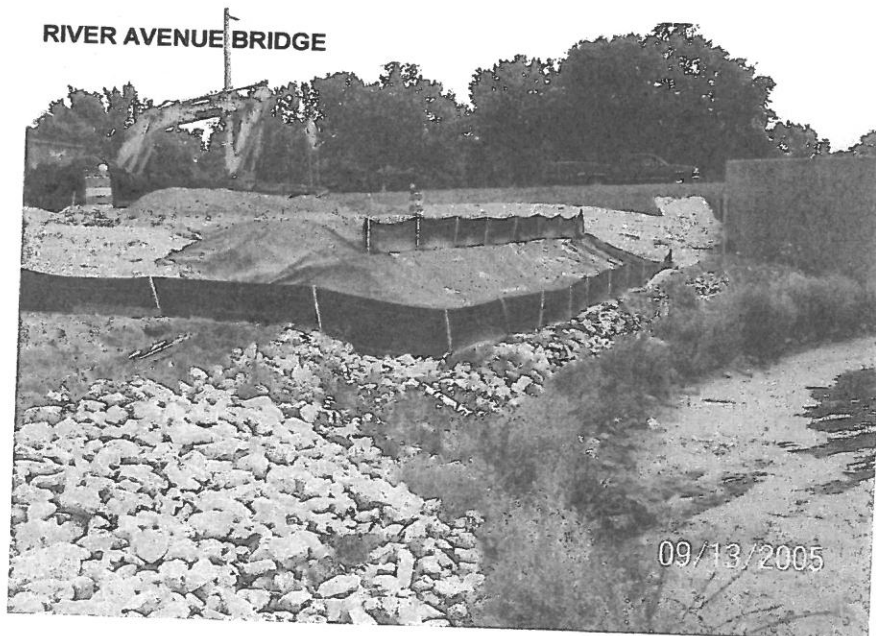
When it is perceived that a significant discharge\* of material has occurred from construction activity, the Michigan Department of Environmental Quality (MDEQ) will be contacted. The CSWO will document the amount of discharge, type, and date of discharge. The CSWO will contact the Environmental Coordinator who will contact the MDEQ notifying of the discharge and corrective action taken.

*\*Significant discharge – An amount of material which will degrade water quality.*

#### **Response to Question 31**

For planned construction activity by private development which impacts the OCRC right of way, the Special Services Engineer (SSE) reviews the plans. The SSE in the review letter to the development engineer will indicate as a condition of the right of way permit a part 91 SESC review is required from the OCWRC to comply with the State of Michigan Permit by Rule (Rule 323.2190). The OCWRC and township shall be copied with the OCRC review. The OCWRC is the County Enforcing Agency.

# Ottawa County Road Commission Soil Erosion and Sedimentation Control Procedure



Adopted by the Ottawa County Road Commission 3/22/2012

# Ottawa County Road Commission Soil Erosion and Sedimentation Control Procedure

## I. INTRODUCTION

The Board of County Road Commissioners of Ottawa County has developed and adopted this Soil Erosion and Sediment Control, (SESC), Procedure in order to implement a cost effective policy to protect the environment by addressing potential impacts to natural resources during construction and maintenance activities. All earthwork for public roads, wastewater and water utilities will be performed in accordance with this comprehensive SESC Procedure and Part 91, SESC, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (Part 91). All requirements pertinent to an Authorized Public Agency, (APA), pursuant to Part 91 and the Administrative Rules promulgated under authority of Part 91 as amended are included in this Procedure by reference.

This Procedure is adopted as a working document and its content is intended to serve as the framework for all activities of the Ottawa County Road Commission, (OCRC), under the jurisdiction of Part 91. A copy of this Procedure is available to all OCRC and contracted personnel engaged in any aspect of SESC. OCRC was initially granted APA status in June of 1976 by the State of Michigan Water Resources Commission. OCRC has diligently implemented an APA program and this update of SESC Procedure is evidence of its continued environmental stewardship thru the use of effective SESC measures and practices at construction projects and during maintenance operations. OCRC is sufficiently funded to properly administer its SESC Program and provide for inspections to assure an effective SESC program. Pursuant to Part 91 all OCRC personnel who make decisions regarding the design of SESC measures or have supervisory design review obligations will complete MDEQ SESC Comprehensive Certificate of Training. These personnel include the Road Engineer, Project Engineer(s) and Environmental Coordinator. OCRC positions entitled Operations Superintendent, District Supervisor, Assistant District Supervisor, Public Utilities Engineer or other employees as subsequently assigned by OCRC administration will obtain SESC inspector level certification entitled Construction Storm Water Operator.

The SESC Procedure of the OCRC is subject to periodic review by OCRC and the Michigan Department of Environmental Quality, (MDEQ). This Procedure will automatically revise as MDOT standards and specifications for SESC evolve. For example, this Procedure references the application of the most recent, (2003), version of Michigan Department of Transportation, (MDOT), standards and specifications. Proposed OCRC Procedure revision(s) not related to MDOT standards and specifications will require review and approval by the MDEQ prior to formal adoption.

## A. SESC STANDARDS AND SPECIFICATIONS

The most recent version of MDOT construction standards and specifications pertaining to SESC contain the official SESC measures which will be utilized by the OCRC. These standards and specifications reference the MDOT SESC Manual. The MDOT unified keying system for delineating SESC measures is included in this Procedure as an attachment.

## B. SOIL EROSION & SEDIMENTATION CONTROL PROCESS /OCRC OBJECTIVE

“Soil erosion is classified as either natural or accelerated. Natural erosion is a geological process facilitated by time, climate, and other environmental site conditions, which can proceed independently of human activity. Accelerated soil erosion typically occurs as a result of human activity. After soil has been exposed or topography altered moving water or wind can rapidly transport sediments into waterbodies or upon adjacent property. The OCRC will strive to prevent potential accelerated erosion and off-site sedimentation from entering waters of the state or adjacent properties while undertaking construction and maintenance activities”<sup>1</sup>.

## C. FIVE PRINCIPLES OF SOIL EROSION AND SEDIMENTATION CONTROL

The OCRC will operate an APA program based on the five basic principles of SESC:

1. “Plan the project to fit the particular topography, soils, waterways, and natural vegetation at a site.
2. Expose the smallest practical area of land for the shortest possible time, by scheduling and staging project activities.
3. Apply soil erosion prevention practices as a first line of defense against on-site deterioration. Use practices that minimize erosion on a site to prevent sediment from being produced and the need for costly controls to trap and control sediment.
4. Apply sediment control practices as a perimeter protection to prevent sediment from leaving the site.
5. Implement a thorough inspection, maintenance, and follow-up program. Erosion and sedimentation cannot be effectively controlled without a thorough, periodic check of the site and continued maintenance of the control measures.”<sup>2</sup>

## II. PROJECT PLANNING & DESIGN FOR CONSTRUCTION ACTIVITIES

Effective SESC begins with project planning which is considered the critical component in this Procedure. OCRC planning will typically involve an engineer, (employed by the OCRC or a consultant), who possesses a valid SESC training certificate. This engineer is expected to conduct the research necessary to prepare an effective SESC plan in

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<sup>1</sup> Model

<sup>2</sup> 2006 MDEQ Soil Erosion and Sedimentation Control Training Manual

consultation/cooperation with one or more of the following: OCRC staff, a consulting engineer, an environmental consultant and/or representative of an independent contractor. The OCRC employs, (internally or contractually), the technical expertise to research issues related to proposed road work such as environmental resources/permitting, soils, drainage patterns and their related watersheds, and to recommend SESC measures including location of these control measures and the estimated cost of installation. Additionally, aerial and topographic maps, OCRC surveys, and past project information are available at the OCRC Grand Haven office. Proposed project site visitation will be conducted to develop a comprehensive SESC plan containing information in accordance with Rule 1703.

OCRC will consider horizontal and vertical alignments of roadways to avoid or appropriately attend to critically erodible sites. Alignments will be consistent with MDOT design criteria and to the extent possible minimize natural resource impact by reducing the extent of cuts and fills and/or disturbance to surface and groundwater flows.

Before starting any earth change OCRC will identify any critical and/or sensitive areas and be attentive to SESC protection in these areas throughout the planning and construction/maintenance process. A critical area may contain infertile or droughty soils, long or steep slopes, concentrated flows, or any other condition which may cause an area to be difficult to stabilize. A sensitive area may contain a wetland, lake, stream or other regulated natural resource. Earthwork activities shall not commence at any natural resource area until all appropriate permits are obtained. SESC in a critical or sensitive area shall be timely, implemented based on appropriate soil erosion and sediment control measures, monitored and maintained daily.

OCRC will discuss all aspects of SESC during the project organizational/meeting process which will include pre-construction meeting and may include pre-bid and construction progress meetings. This process will involve all parties involved in the construction process to ensure successful implementation of Part 91 procedures, site specific SESC and adherence to pertinent laws protecting Michigan's natural resources.

The engineer will prepare plans and/or specifications, in accordance with Rule 1703, detailing SESC measures for contracted or in-house construction projects. In addition, a construction sequence that schedules the installation and maintenance requirements of each temporary and permanent SESC measure will be addressed as part of project planning and construction (*see figure 1*). These measures shall be installed per the plan. It is the objective of the OCRC to insure timely and effective implementation of SESC measures at all projects. Location of temporary and permanent SESC measures will be included on project plans. It shall be the responsibility of the engineer to require installation and maintenance of these measures in accordance with the plans and specifications. Temporary SESC measures shall be installed prior to or upon commencement of specific earth change activities. Temporary measures will be maintained daily and removed only after permanent SESC measures are in place and a disturbed area is stabilized. Permanent SESC measures shall be installed within 5 days of final grade in accordance with manufacturer's specifications and the guidelines as set forth in a project plans and specifications.

Rule 1703 states and the OCRC agrees to the following minimum SESC plan requirements for construction which disturbs one or more acres of land, or which is within 500 feet of a lake or stream. The OCRC shall design the plan to effectively reduce accelerated soil erosion and sedimentation or both. "The plan shall include, but not be limited to, all of the following:

- a) A map at a scale of not more than 200 feet to the inch that shows the proximity of the proposed earth change to any lake or stream, or both; and contour intervals or slope description.
- b) A soils survey or a written description of the soil types of the exposed land area contemplated for the earth change.
- c) Details for proposed earth changes will address all of the following:
  - 1) A description and the location of the physical limits of each proposed earth change.
  - 2) A description and the location of all existing and proposed on-site drainage and dewatering facilities.
  - 3) The timing and sequence, (*see figure 1*), of each proposed earth change.
  - 4) The location and description for installing and removing all proposed temporary soil erosion and sediment control measures.
  - 5) A description and the location of all proposed permanent soil erosion and sediment control measures.
  - 6) A SESC maintenance program as specified within this Procedure in Section V."<sup>3</sup>

### III. ROAD and UTILITY CONSTRUCTION/RECONSTRUCTION

#### A. STANDARDS AND SPECIFICATIONS

The most recent version of MDOT construction standards and specifications pertaining to SESC contain the official SESC measures which will be utilized by the OCRC. These standards and specifications reference the MDOT SESC Manual. The MDOT unified keying system for delineating SESC measures is included in this Procedure as an attachment.

#### B. SOIL EROSION AND SEDIMENTATION CONTROLS

The following is a list of typical OCRC SESC measures. All other SESC measures acceptable to the OCRC are contained in the attached MDOT Standard Plans for SESC measures R-96.

1. Permanent/Temporary Seeding. Erosion control measure used to stabilize disturbed areas which include proper preparation and protection of the seedbed.

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<sup>3</sup> Model and MI Public Act of 504, Part 91 Administrative Rules

2. Silt Fence. This work shall consist of furnishing, erecting, maintaining, removing, and disposing of a silt fence, (post-supported geotextile). All material removed for trenching in the silt fence must be placed on the upstream side of the silt fence. Silt fence must be buried in this trench a minimum 6 inches.
3. Check Dam. This SESC control consists of installing and maintaining a temporary and/or permanent check dam across a drainage pattern. A temporary check dam shall be maintained and removed when the engineer determines a project has adequately stabilized.
4. Energy Dissipater/Rip Rap, (plain or heavy). This method will be used at outlets of culverts, drainage pipes or other conduits to reduce the velocity of the water and prevent scouring.
5. Mulch Blanket. The standard mulch blanket applied over topsoil and seed provides an immediate and effective cover over raw erodible slopes by furnishing protection against rain and wind erosion. A high velocity mulch blanket will be used when appropriate for stabilizing the stream/ditch bottom and side slopes of high erosion risk waterways. High risk is defined by excessive channel gradient and/or high water flow.
6. Temporary Bypass Channel. A method utilized when a dry construction area is needed to isolate and protect stream or other concentrated flow from construction areas.
7. Plain Cobble Ditch. Cobblestone over geotextile in swale is used on slopes to contain concentrated flow and prevent gully erosion.
8. Sediment Trap and Basin. This control consists of excavating, maintaining a sediment trap, (5 cubic yards or less), or sediment basin, (greater than 5 cubic yards), as shown on the plan and/or as directed by the engineer. The trapped material shall be removed and placed in a manner to not allow sedimentation into a lake, stream, or wetland. A check dam shall be installed downstream of a sediment trap or basin.

#### C. TEMPORARY SOIL EROSION & SEDIMENTATION CONTROLS

All temporary erosion and sedimentation controls shall be maintained daily until a disturbed area is determined by the engineer to be stabilized. Required maintenance may consist of the repair of all destabilized areas, storage areas, staging areas, inactive construction areas, replacement of critical SESC measures which may have been temporarily removed or damaged, and periodic removal of sediment. Sediment traps and basins shall be cleaned out when they are approximately half full or as directed by the engineer. Sediment collected by a silt fence shall be removed when it has accumulated to one half of the fence height. Removed sediment and associated debris shall be disposed of at an upland site and properly contained per MDOT standards and specifications.

#### D. REMOVAL OF SESC CONTROLS

Temporary erosion and sediment controls will be removed or obliterated when the permanent controls are in place and the earth change has stabilized. Care shall be

exercised during removal of temporary controls to not cause erosion or sedimentation of lakes, streams or wetlands of the State of Michigan or upon adjacent properties.

#### IV. ROUTINE OCRC MAINTENANCE

Maintenance operations are subject to the same SESC considerations and requirements that pertain to construction activities. Routine OCRC maintenance includes, but is not limited to, the following minor operations:

- a) Gravel road and shoulder maintenance
- b) Roadside ditch regrading
- c) Culvert, underdrain, bridge, storm sewer, wastewater and water conduit or manhole/catch basin cleanout or maintenance
- d) Road or shoulder washout repair

In lieu of developing written SESC plans, the OCRC will use the following guidelines for the above maintenance operations:

##### A. GRAVEL ROAD AND SHOULDER MAINTENANCE

- a) Shape road surface to maintain existing cross section while avoiding forming points of concentrated flow to roadside ditches and/or the waters of the state.
- b) Direct concentrated flow to a stable outlet and thru a vegetative buffer or equivalent prior to discharge to the waters of the state.
- c) Conduct gravel road shaping and patching operations and shoulder grading in a manner that curtails deposition of graded material into roadside ditches and/or the waters of the state.

##### B. ROADSIDE DITCH REGRADING

- a) Except in an emergency "Conduct ditching operations in the dry or in periods of low water flow.
- b) Retain at least 50 feet of natural vegetation in ditch between the terminus of ditching and any lake, stream or wetland. If it is necessary to remove this vegetated filter in a ditch line, do so only after the remainder of the ditch is revegetated and stable.
- c) If vegetation is removed or if existing vegetation is inadequate to filter sediments from runoff, install temporary or permanent check dams, sediment traps or both."<sup>4</sup>
- d) If site conditions allow, maintain roadside ditch bottoms and leave corresponding side slopes undisturbed.
- e) Seed and mulch ditch maintenance areas within 5 working days of completing final grade. Utilize temporary and/or permanent SESC measures suitable for anticipated flow velocities such as topsoil, seed and mulch/mulch blanket and/or riprap. Construct temporary and/or permanent check dams and temporary sediment traps when necessary to reduce runoff velocities and collect sediment. These techniques may be either temporary or permanent, depending on the

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<sup>4</sup> Model



conditions at the site. Inspection and follow up maintenance will be conducted when necessary. Clean sediment from check dams and/or sediment basins to restore capacity when approximately 50% full. Place sediment at an upland disposal site and properly stabilize. Maintain check dam integrity to assure runoff does not create erosion by undermining or traveling around the ends of the dam.

- f) Where possible new ditches and channels in the ROW will be designed with 2H: 1V or flatter side slopes.

**C. CULVERT, UNDERDRAIN, BRIDGE, UTILITY CONDUIT or MANHOLE/CATCH BASIN MAINTENANCE.**

- a) Separate all work from surface water flow.
- b) “Stabilize culvert ends with rip rap over geotextile or other suitable erosion resistant material.
- c) Stabilize all disturbed areas with sod, seed, mulch, or other suitable erosion resistant material within 5 working days of completing final grade.”<sup>5</sup>
- d) Maintain storm sewer, wastewater and water conduits, manholes/catch basins in the manner and frequency necessary to protect the waters of the state from sedimentation.
- e) Acquire all applicable permits from the MDEQ or other natural resource protection permitting authorities.

**D. WASHOUT REPAIR**

- a) Separate all work from surface water flow.
- b) Stabilize disturbed areas outside the traveled portion of the road with seed and mulch, sod or other erosion resistant material.
- c) Maintain properly designed and constructed SESC measures which convey runoff to a drain with a stable outlet.
- d) Direct erosive flow to a point properly designed to accept concentrated runoff.
- e) Address concentrated flow down a slope using a properly designed swale, drop structure or other appropriate SESC technique.

**V. REPAIR & INSPECTIONS**

SESC repair of OCRC projects and maintenance will include implementing necessary repairs or corrections to existing temporary or permanent SESC measures. Repairs to temporary SESC measures will be prioritized based on potential resource impact and completed within 24 working hours of inspection; permanent measures in need of repair

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<sup>5</sup> Model

will normally be corrected within 5 working days of detection of the problem. Temporary measures will be implemented within 24 working hours to contain sediments from damaged permanent measures and any temporary measures will be maintained until permanent measures are repaired.

The OCRC project engineer is responsible for SESC inspections related to construction projects. These SESC inspections will occur, at a minimum, once per work week. Construction inspections will also occur within 24 hours of a storm event unless delayed by a weekend or holiday. A storm related inspection may substitute as the weekly inspection. The District Supervisor and/or the Assistant District Supervisor, under the direction of the Operations Superintendent, shall be responsible for SESC inspections related to routine road maintenance. Since maintenance is a minor operation of short duration inspection frequency is at the discretion of the District Supervisor or the Assistant District Supervisor. Any District Supervisor or Assistant District Supervisor with SESC responsibilities shall be a Certified Storm Water Operator.

Maintenance/inspection related to OCRC Public Utilities, (wastewater and water), shall be the responsibility of a Public Utilities employee, (with a Storm Water Operator Certificate), as designated by the Public Utilities Director. The OCRC may designate other personnel, who have successfully completed pertinent SESC training and passed the appropriate final exam, to be responsible for periodic inspection and documentation of the condition of any SESC measures related to construction or maintenance and initiate improvements if required. Inspection(s) will continue until a construction or maintenance activity is final. A construction operation or maintenance activity is not final until stabilized. OCRC reserves the right to designate regulatory responsibilities involved in inspection and repair to a qualified/certified consulting engineer and understands this designation does not waive OCRC legal obligation(s) as owner or alter the commitments of this SESC Procedure. The OCRC reserves the right to coordinate SESC inspections with MDEQ National Pollutant Discharge Elimination System, (NPDES), reporting when appropriate.

## **VI. COMPLIANCE AND ENFORCEMENT**

OCRC assumes responsibility for SESC practices associated with projects or maintenance whether performed by OCRC operations or a private contractor. OCRC shall ensure contracts include specific language describing the SESC obligations within SESC Procedure. Compliance by a private contractor involved in an OCRC project can be ensured with project plans, specifications, and bid documents that describe and quantify items for the installation and maintenance of permanent and temporary SESC measures.

If a contractor does not provide SESC measures as specified in the contract, OCRC may withhold payments, terminate the contract, and/or pursue payment of performance bond. Enforcement procedures are under the direction of delegated OCRC administrative personnel pursuant to the authority of the Board of the Ottawa County Road Commission.

Figure 1

# SESC Sequencing Form – OCRC

Project Name and/or Project # \_\_\_\_\_

Location \_\_\_\_\_

Proposed Start Date \_\_\_\_\_ Proposed Completion Date \_\_\_\_\_

**CONSTRUCTION SCHEDULE:** Fill in expected chronological sequence / time of year for each major phase of the Soil Erosion and Sedimentation Control process. Include temporary and permanent erosion control measures thru final restoration.

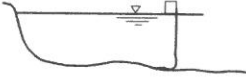



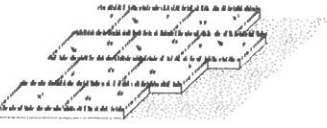

	Operation Time Schedule – Fill in approximate date(s)											
Construction Sequence	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec

Comments:

**Attachment 10**

**APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES**  
 (COMPREHENSIVE DETAILS ARE LOCATED IN SECTION 6 OF  
 THE SOIL EROSION & SEDIMENTATION CONTROL MANUAL)

- A = SLOPES
- B = STREAMS AND WATERWAYS
- C = SURFACE DRAINAGEWAYS
- D = ENCLOSED DRAINAGE (INLET & OUTFALL CONTROL)
- E = LARGE FLAT SURFACE AREAS
- F = BORROW AND STOCKPILE AREAS
- G = DNRE PERMIT MAY BE REQUIRED

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
1	 TURBIDITY CURTAIN	A Turbidity Curtain is used when slack water area is necessary to isolate construction activities from the watercourse. The still water area contains the sediments within the construction limits.		•					
2	 GRUBBING OMITTED	Retains existing root mat which assists in stabilizing slopes. Assists in the revegetation process by providing sprout growth. Reduces sheet flow velocities preventing rilling and gulying. Discourages off-road vehicle use.		•			•		
3	 PERMANENT/TEMPORARY SEEDING	Inexpensive but effective erosion control measure to stabilize flat areas and mild slopes. Permits runoff to infiltrate soil, reducing runoff volumes. Proper preparation of the seed bed, fertilizing, mulching and watering is critical to its success.		•	•		•	•	
4	 DUST CONTROL	Dust control can be accomplished by watering, and/or applying calcium chloride. The disturbed areas should be kept to a minimum. PERMANENT/TEMPORARY SEEDING (KEY 3) should be applied as soon as possible.		•			•	•	
5	 SODDING	Provides immediate vegetative cover such as at spillways and ditch bottoms. Proper preparation of the topsoil, placement of the sod, and watering is critical to its success.		•			•	•	
6	 VEGETATED BUFFER STRIPS	Reduces sheet flow velocities preventing rilling and gulying. Assists in the collection of sediments by filtering runoff. Assists in the establishment of a permanent vegetative cover.		•			•		

**MDOT**  
 Michigan Department of Transportation

PREPARED BY  
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 ENGINEER OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION  
 BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

**SOIL EROSION & SEDIMENTATION CONTROL MEASURES**

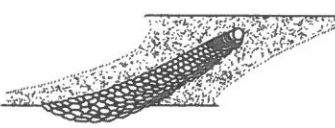
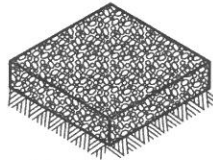


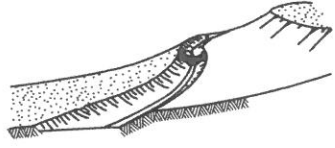
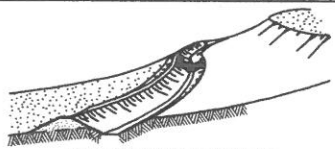

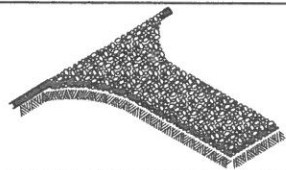
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 F.H.W.A. APPROVAL

6-3-2010  
 PLAN DATE

**R-96-E**

SHEET  
 1 OF 6

**Attachment 10**

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
7	 <p>RIPRAP</p>	Used where vegetation cannot be established. Very effective in protecting against high velocity flows. Should be placed over a geotextile liner.	•	•	•	•			•
8	 <p>AGGREGATE COVER</p>	Can be used in any area where a stable condition is needed for construction operations, equipment storage or in heavy traffic areas. Reduces potential soil erosion and fugitive dust by stabilizing raw areas.	•				•	•	
9	 <p>BENCHES</p>	Reduces sheet flow velocities preventing rilling and gulying. Assists in the collection and filtering of sediments. Provides access for stabilizing slopes.	•					•	
10	 <p>DIVERSION DIKE</p>	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying. Collects and diverts runoff to properly stabilized drainage ways. Works well with INTERCEPTING DITCH (KEY 11)	•				•	•	
11	 <p>INTERCEPTING DITCH</p>	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying. Works well with DIVERSION DIKE (KEY 10)	•				•	•	
12	 <p>INTERCEPTING DITCH AND DIVERSION DIKE</p>	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying.	•				•	•	
13	 <p>GRAVEL FILTER BERM</p>	Useful in filtering flow prior to its reentry into a lake, stream or wetland. Works well with SEDIMENT TRAP (KEY 20) and TEMPORARY BYPASS CHANNEL (KEY 35). Not to be used in lieu of a CHECK DAM (KEY 37) in a ditch.	•		•			•	
14	 <p>GRAVEL ACCESS APPROACH</p>	Provides a stable access to roadways minimizing fugitive dust and tracking of materials onto public streets and highways.						•	•

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

**SOIL EROSION & SEDIMENTATION  
CONTROL MEASURES**

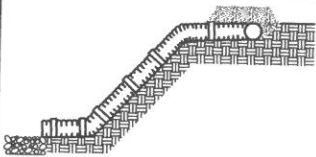

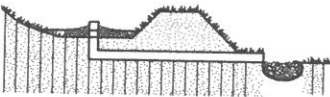
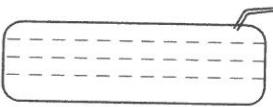


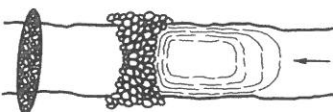

9-10-2010  
F.H.W.A. APPROVAL

6-3-2010  
PLAN DATE

**R-96-E**

SHEET  
2 OF 6

**Attachment 10**

KEY	DETAIL	CHARACTERISTICS	CHARACTERISTICS								
			A	B	C	D	E	F	G		
15	 <p>SLOPE DRAIN SURFACE</p>	<p>Excellent device for carrying water down slopes without creating an erosive condition.</p> <p>Generally used in conjunction with DIVERSION DIKE (KEY 10), INTERCEPTING DITCH (KEY 11) and INTERCEPTING DITCH AND DIVERSION DIKE (KEY 12) to direct flow to a stable discharge area or SEDIMENT TRAP (KEY 20).</p>		•		•					
16	 <p>TREES, SHRUBS AND PERENNIALS</p>	<p>Trees, shrubs and perennials can provide low maintenance long term erosion protection. These plants may be particularly useful where site aesthetics are important along the roadside slopes.</p>		•				•			
17	 <p>PIPE DROP</p>	<p>Effective way to allow water to drop in elevation very rapidly without causing an erosive condition.</p> <p>Also works as a sediment collector device.</p> <p>May be left in place as a permanent erosion control device.</p>		•		•					
18	 <p>DEWATERING WITH FILTER BAG</p>	<p>It may be necessary to dewater from behind a cofferdam or construction dam to create a dry work site.</p> <p>Discharged water must be pumped to a filter bag.</p> <p>A GRAVEL FILTER BERM (KEY 13) may be placed downslope of the filter bag to provide additional filtration prior to entering any stream or wetland.</p>				•					•
19	 <p>ENERGY DISSIPATORS</p>	<p>A device to prevent the erosive force of water from eroding soils.</p> <p>Used at outlets of culverts, drainage pipes or other conduits to reduce the velocity of the water.</p> <p>Prevents structure scouring and undermining.</p>		•	•	•	•				
20	 <p>SEDIMENT TRAP</p>	<p>Used to intercept concentrated flows and prevent sediments from being transported off site or into a watercourse or wetland.</p> <p>The size of a Sediment Trap is 5 cubic yards or less.</p> <p>Works well when used with CHECK DAM (KEY 37).</p>		•		•	•				
21	 <p>SEDIMENT BASIN</p>	<p>A Sediment Basin is used to trap sediments from an upstream construction site.</p> <p>Requires periodic inspections, repairs, and maintenance.</p> <p>Where practical, sediments should be contained on site.</p> <p>A Sediment Basin should be the last choice of sediment control.</p> <p>The size of a Sediment Basin is greater than 5 cubic yards.</p>				•					•
22	 <p>VEGETATIVE BUFFER AT WATERCOURSE</p>	<p>This practice is used to maintain a vegetative buffer adjacent to a watercourse.</p> <p>When utilized with SILT FENCE (KEY 26) it will, under normal circumstances, prevent sediment from leaving the construction site.</p>		•	•	•		•	•		

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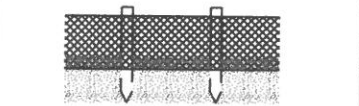
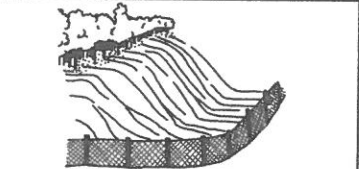

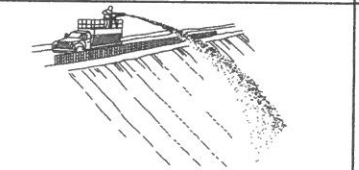
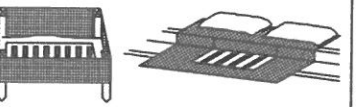
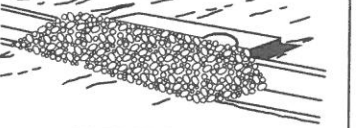
9-10-2010  
 F.H.W.A. APPROVAL

6-3-2010  
 PLAN DATE

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 3 OF 6

**Attachment 10**

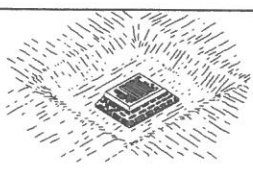

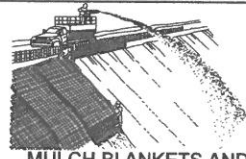
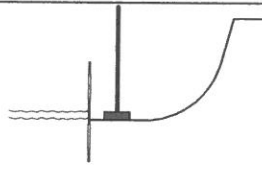
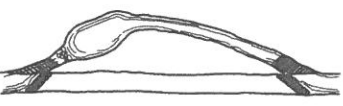
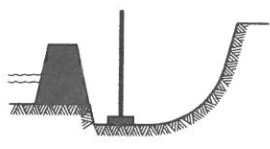

KEY	DETAIL	CHARACTERISTICS									
			A	B	C	D	E	F	G		
23	 <p><b>STREAM RELOCATION</b></p>	<p>A detail depicting the proper procedures for stream relocation. Maintains same width, depth, and flow velocity as the natural stream. Revegetate banks with PERMANENT/TEMPORARY SEEDING (KEY 3), MULCHING AND MULCH ANCHORING (KEY 28), MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS (KEY 33) and woody plants to shade the stream.</p>			•						•
24	 <p><b>SAND AND STONE BAGS</b></p>	<p>Sand and stone bags are a useful tool in the prevention of erosion. Can be used to divert water around a construction site by creating a DIVERSION DIKE (KEY 10). Works well for creating a CONSTRUCTION DAM (KEY 36) and temporary culvert end fill.</p>	•	•	•	•	•	•	•	•	
25	 <p><b>SAND FENCE AND DUNE STABILIZATION</b></p>	<p>A Sand Fence traps blowing sand by reducing wind velocities. Can be used to prevent sand from blowing onto roads. Must be maintained until sand source is stabilized.</p>	•					•	•		
26	 <p><b>SILT FENCE</b></p>	<p>A permeable barrier erected below disturbed areas to capture sediments from sheet flow. Can be used to divert small volumes of water to stable outlets. Ineffective as a filter and should never be placed across streams or ditches where flow is concentrated.</p>	•					•	•		
27	 <p><b>PLASTIC SHEETS OR GEOTEXTILE COVER</b></p>	<p>Plastic Sheets can be used to create a liner in temporary channels. Can also be used to create a temporary cover to prevent erosion of stockpiled materials.</p>	•	•	•				•		
28	 <p><b>MULCHING AND MULCH ANCHORING</b></p>	<p>Anchored mulch provides erosion protection against rain and wind. Mulch must be used on seeded areas to promote water retention and growth. Should be inspected after every rainstorm and repaired as necessary until vegetation is well established.</p>	•		•			•	•		
29	 <p><b>INLET PROTECTION FABRIC DROP</b></p>	<p>Provides settling and filtering of silt laden water prior to its entry into the drainage system. Can be used in median and side ditches where vegetation will be disturbed. Allows for early use of drainage systems prior to project completion.</p>			•			•			
30	 <p><b>INLET PROTECTION GEOTEXTILE AND STONE</b></p>	<p>Provides settling and filtering of silt laden water prior to its entry into the drainage system. Should be used in paved areas where drainage structures are existing or proposed. Allows for early use of drainage systems prior to project completion.</p>			•			•			

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**Attachment 10**

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
31	 <p><b>INLET PROTECTION SEDIMENT TRAP</b></p>	<p>An Inlet Protection Sediment Trap is a temporary device that can be used in areas where medium flows are anticipated. Effective in trapping small quantities of sediments prior to water entering the drainage system. Can be used in areas such as median and side ditches.</p>			•		•		
32	 <p><b>SLOPE ROUGHENING AND SCARIFICATION</b></p>	<p>A simple and economical way to reduce soil erosion by wind and water. Can be accomplished by harrowing with a disk, back blading, or tracking with a dozer perpendicular to the slope.</p>	•				•	•	
33	 <p><b>MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS</b></p>	<p>Mulch blankets provide an immediate and effective cover over raw erodible slopes affording excellent protection against rain and wind erosion. High velocity mulch blankets work well for stabilizing the bottom of ditches in waterways.</p>	•		•		•	•	
34	 <p><b>COFFERDAM</b></p>	<p>Used to create a dry construction area and protect the stream from raw erodible areas. Must be pumped dry or dewatered according to DEWATERING WITH FILTER BAG (KEY 18).</p>		•					•
35	 <p><b>TEMPORARY BYPASS CHANNEL</b></p>	<p>Utilized when a dry construction area is needed. Isolates stream flows from raw erodible areas minimizing erosion and subsequent siltation. Can incorporate SEDIMENT BASIN (KEY 21), CHECK DAM (KEY 37), and GRAVEL FILTER BERM (KEY 13) to remove sediments from water. Construction sequence of events may be necessary.</p>		•					•
36	 <p><b>CONSTRUCTION DAM</b></p>	<p>Used to create a dry or slack water area for construction. Isolates the stream from raw erodible areas. Can be created out of any non-erodible materials such as SAND AND STONE BAGS (KEY 24), a gravel dike with clay core or plastic liner, steel plates or plywood.</p>		•					•
37	 <p><b>CHECK DAM</b></p>	<p>Can be constructed across ditches or any area of concentrated flow. Protects vegetation in early stages of growth. A Check Dam is intended to reduce water velocities and capture sediment. A Check Dam is not a filtering device.</p>	•		•			•	

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NOTES:

THIS STANDARD PLAN WILL SERVE AS A KEY IN THE SELECTION OF THE APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL DETAILS. THIS PLAN ALSO PROVIDES THE KEY TO THE NUMBERED EROSION CONTROL ITEMS SPECIFIED ON THE CONSTRUCTION PLANS. REFER TO THE MDT SOIL EROSION & SEDIMENTATION CONTROL MANUAL, SECTION 6 FOR SPECIFIC DETAILS, CONTRACT ITEMS (PAY ITEMS), AND PAY UNITS.

COLLECTED SILT AND SEDIMENT SHALL BE REMOVED PERIODICALLY TO MAINTAIN THE EFFECTIVENESS OF THE SEDIMENT TRAP, SEDIMENT BASIN, AND SILT FENCE. AGGREGATES PLACED IN STREAMS SHOULD CONTAIN A MINIMUM OF FINES.

TEMPORARY EROSION AND SEDIMENTATION CONTROL PROVISIONS SHALL BE COORDINATED WITH THE PERMANENT CONTROL MEASURES TO ASSURE EFFECTIVE CONTROL OF SEDIMENTS DURING CONSTRUCTION OF THE PROJECT.

ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AFTER VEGETATION ESTABLISHMENT OR AT THE DISCRETION OF THE ENGINEER. CARE SHALL BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.

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**INSPECTION REPORT**

FILE 108

Completed form to project files — cc: Construction Field Services Division

CONTROL SECTION	JOB NUMBER	ROUTE	REPORT NUMBER	DATE
CONSTRUCTION ENGINEER OR MAINTENANCE COORDINATOR		STORM WATER OPERATOR NO.		COMPREHENSIVE TRAINING NO.
INSPECTOR NAME (Please print)		INSPECTOR (Signature)		
AMOUNT, TYPE & DATE OF LAST PRECIPITATION RESULTING IN RUNOFF FROM THE CONSTRUCTION SITE				DATE OF LAST INSPECTION
CONTRACTOR				

COMPLETE THIS SECTION FOR WINTER CONSTRUCTION INSPECTIONS	
WEEKLY REPORTING PERIOD	AVERAGE TEMPERATURE
HIGH TEMPERATURE	

LOCATION/ STATION	TYPE OF CONTROL	INSTALLATION DATE	CORRECTIVE ACTION REQUIRED (See Note 5)	NOTIFICATION DATE	COMPLETION DATE


- NOTES:**
1. This form must be used when documenting SESC inspections.
  2. To authorize changes to measures shown on the SESC Plan, inspectors must have completed Comprehensive SESC Training.
  3. Inspectors must be Certified Storm Water Operators.
  4. Until the Notice of Termination is submitted, site must be inspected every 7 days or within 24 hours after every precipitation event that results in runoff from the site.
  5. Corrective action must be made within 24 hours if sediment has entered waters of the state or if public safety may be compromised. Otherwise, corrective action must be made within 5 calendar days.

ENTER REMARKS ON PAGE 2

REMARKS

12 horizontal lines for handwritten notes.

SKETCHES



A large grid area for sketches, approximately 20x20 units in size, enclosed in a rectangular border.