

The Road to Success is Always Under Construction – Soil Erosion & Construction Storm Water Compliance Tips, Techniques, & Examples

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[DEQ Soil Erosion and Construction Storm Water Program Staff by County](#)

DEQ Soil Erosion & Construction Storm Water Website: www.michigan.gov/soilerosion

Objective: Explore methods that help ensure soil erosion and sedimentation control (SESC) success on transportation projects. Tips, techniques and examples for how to achieve and stay in compliance will be provided in the following areas: SESC Plans, SESC Procedures, Maintenance Projects, Contract Language, Inspections, and Common On-Site Problems.

SESC Plans

- [Minimum requirements of Soil Erosion & Sedimentation Control Plans](#)
- Most commonly missed elements on Road plans:
 - Limits of earth disturbance
 - Example note: “The earth disturbance limit for this project will be limited to 10’ beyond the slope stake line or to the ROW line, whichever is less for all areas except for wetland areas. For areas adjacent to wetlands, the earth disturbance limit will be limited to the slope stake line.
 - Drainage & Dewatering Locations
 - Include as addendums to plans if not available during design
 - Do not place filter bags in wetlands
 - Provide space, if possible, between discharge point and wetlands, lakes or streams to give you time to react if the discharge isn’t free of sediment.
 - Timing & Sequencing
 - Road agencies typically have this through project management software and/or project clauses
 - Geared to identify seasonal considerations for SESC
 - Also used to ensure SESC measures are placed before the earth change and/or when appropriate based on the earth change activity at various times during construction.
 - Details on installation and removal of SESC measures
 - If using specification/keying systems for this, pick one and stick with it for the project – don’t use more than one.
 - The Michigan Unified Keying System is not a complete specification. If used, individual details for each item keyed must be included.
 - If manufacturer’s recommendations are incorporated into the specifications, know how to get those.

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SESC Procedures & Maintenance Projects

- Know what your procedures say and follow them
- SESC procedures outline a narrative plan for how you will perform certain routine maintenance activity. Following the narrative procedures allows you to forego development of a detailed SESC Plan.
- Ditch Clean Out
 - Leave 50' of natural vegetation between clean out and lakes or streams
 - Seed AND mulch within 5 days of final grade
- Shoulder and Road Grading
 - Grade to allow runoff to enter the ditch no closer than 100 feet from the lake or stream
 - Grade in a way that does not allow the material to discharge to a waterbody.

Contract Language

- Use contract language, where practical, to drive compliance
 - Non-compliance provisions (MDOT example)
 - Turf Establishment Performance
 - Encourages early stabilization
 - Encourages good practices/materials
 - Encourages proactive maintenance

Inspections

- Projects > 1 acre with a potential discharge to lakes or streams should generally be inspected weekly and within 24 hours of a precipitation event that results in storm water discharging from the project
- Projects < 1 acre should be inspected at least monthly
- Inspections should begin at the first earth disturbance and continue until stabilization is complete
 - Stabilized means vegetation or cover (riprap, pavement, etc.) to ensure resistance to erosion, sliding, or other earth movement.
 - Many transportation projects fail to inspect as required between the time active construction ceases and the time stabilization is achieved. Not only is this a violation, but if minor problems occur during this time, without routine inspections to catch them, they can become bigger, costlier problems.
- Inspections must be documented, but your own form can be used
 - [DEQ Example Construction/SESC Operator Log](#)
 - [MDOT Project Required Form 1126](#)
 - Be sure you are regularly receiving a copy of the logs
- [Notice of Termination](#) (NOT) for projects > 5 acres. Inspections must occur until a NOT is submitted. To fail to do this is a violation. NOT should be submitted once the site is stabilized.

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Winter Inspections

- [DEQ's winter inspection policy](#)
- On-site inspections can be ceased in lieu of desk inspections during winter months provided the following conditions occur:
 - Ensure earth change activity on the site has ceased
 - Confirm with an on-site inspection that temporary SESC measures are implemented to ensure that a discharge of sediment does not occur from the site.
 - Weather conditions must be consistently below freezing and unlikely to result in runoff from the site.
- Desk Inspections shall document that weather conditions are consistently below freezing and not likely to result in runoff
- On-site inspections shall resume if any of the conditions that had to be met to allow desk inspections initially change.

On the Site - Things to Look For

- Other Pollutants
 - Required under Permit-by-Rule for sites >1 acre with a discharge to waters of the state
 - Common pollutants & Fixes
 - Concrete washout – Designated Washout location
 - Concrete cutting – block storm drain inlet, vac or sweep up dried material
 - Fuel Storage – locate as far away from lakes, streams & wetlands as possible and out of high traffic areas
 - Paints, grout, & similar materials – lid when not in use, store away from waterbodies out of high traffic areas
 - Best Prevention on other pollutants is to talk about this at pre-construction meetings and have folks keep an eye out for opportunities to minimize risk with these other pollutants.
- Polyacrylamides (PAMs)
 - A product that is composed of molecules with binding sites that have an affinity for soils.
 - Very effective for settling out soils from water
 - Land application decreases soil sealing
 - Also increasingly used as an additive to drilling fluids
 - Certain types of PAMs (typically cationic PAMs) can be toxic to fish and other aquatic organisms
 - If a PAM will be discharged to surface water DEQ Rule 97 authorization must occur. See the technical guidance for PAMs in your resource packet.
- Blanket Install
 - Installation is critical to success
 - Overlap the blankets

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- Install parallel with the way water will flow over the blanket
 - If this isn't prudent or feasible for the project, make sure the blankets are shingled
- Trench in the leading edge of the blanket or otherwise ensure the edge is sealed by placing dirt over the edge
- Stake according to manufacturer's recommendations

Emerging SESC Product

- Blanket Alternative – Bonded Fiber Matrix
 - Hyrdoseeding erosion control product
 - The term is applied to products which are designed, tested and proven to match or exceed the performance of erosion control blankets.
 - Allegedly it can be up to 50% cheaper than blankets due to application cost savings
 - These products are typically proprietary blends consisting of long fiber mulch and tackifier and may include fertilizer or other components.
 - Link to manufacturer video describing Bonded Fiber Matrix
<http://earthguard.com/products/earthguard-reg-fiber-matrix-fm>

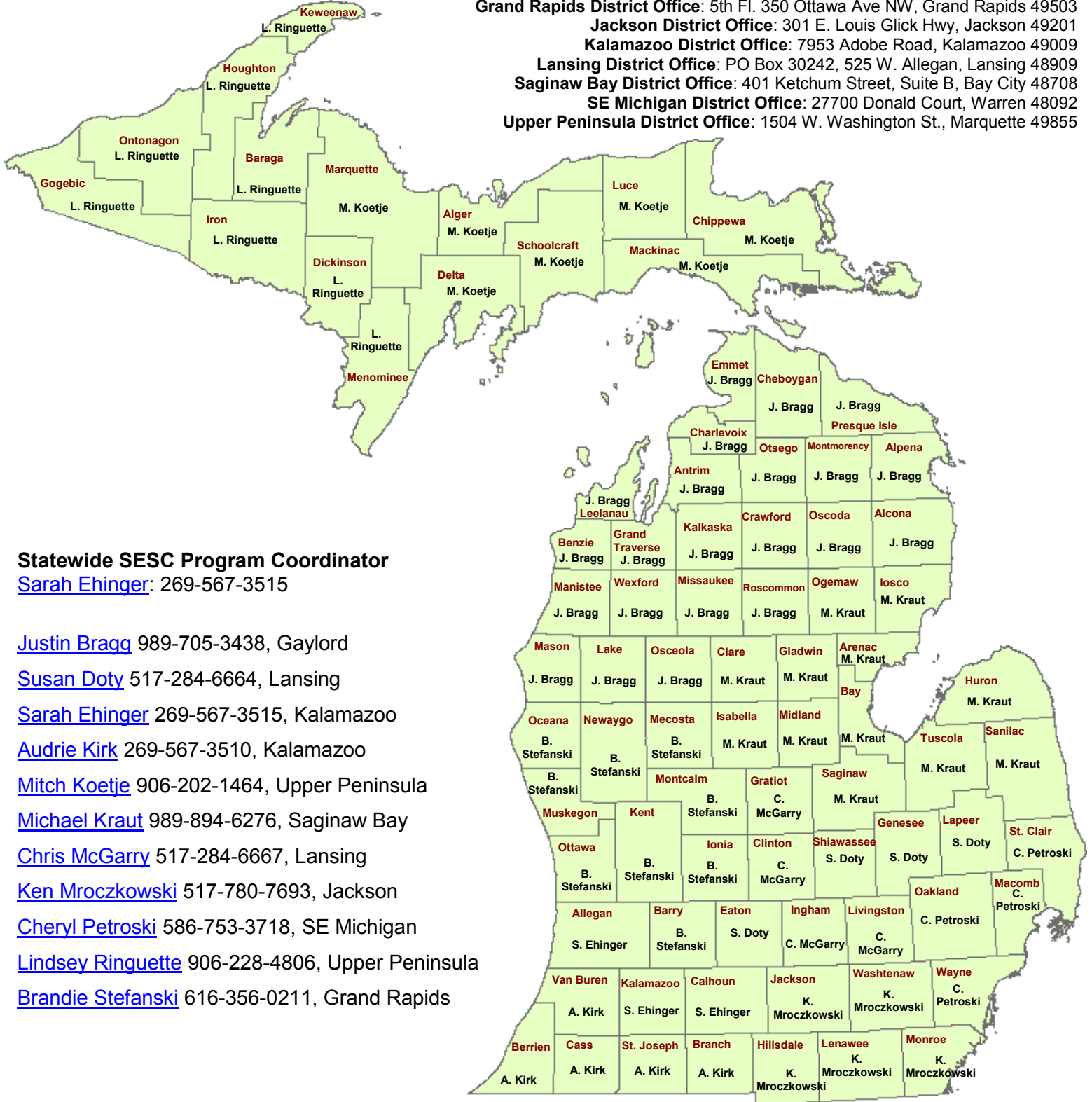
Permitting for Roads

- [Permitting Requirement of Road Improvement Agencies](#)

Soil Erosion and Sedimentation Control (SESC) & Construction Storm Water Staff

www.mi.gov/soilerosion

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Part 91, Soil Erosion and Sedimentation Control Plan

Minimum Requirements

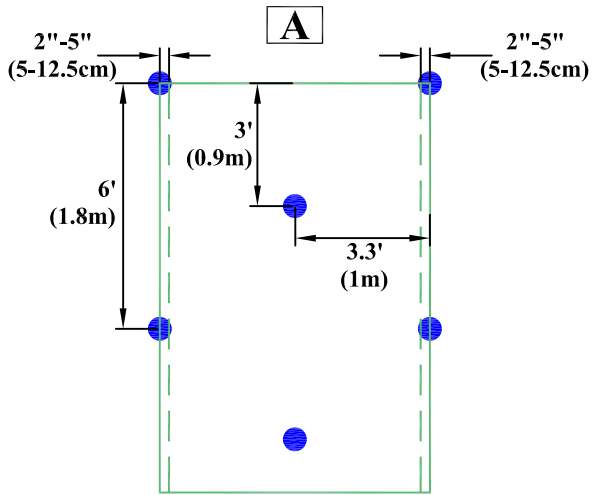
Project: _____

Rule 1703 Requirement	Included in Plan?*	Comments
Map with scale: 1" = 200' or less, or indication of exact distances between noted features on site plan	Yes No	
Legal description of property (town, range, section, quarter-quarter section)	Yes No	
Proximity of any proposed earth change to lakes and/or streams	Yes No	
Predominant land features	Yes No	
Slope description or contour intervals	Yes No	
Soils survey or written description of the soil types of the proposed exposed land area	Yes No	
Description and location of the physical limits of each proposed earth change	Yes No	
Description and location of all existing and proposed on-site drainage and dewatering facilities	Yes No	
Timing and sequence of each proposed earth change	Yes No	
Location and description for installing and removing all temporary SESC measures	Yes No	
Description and location of all proposed permanent SESC measures	Yes No	
Maintenance program for all permanent SESC measures and designation of person responsible for maintenance	Yes No	

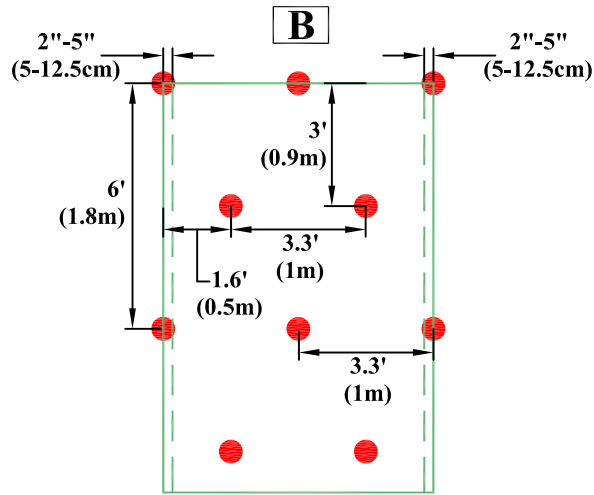
***If No is checked above, the plan must be revised to include the missing element prior to submittal/approval.**

Other Comments:

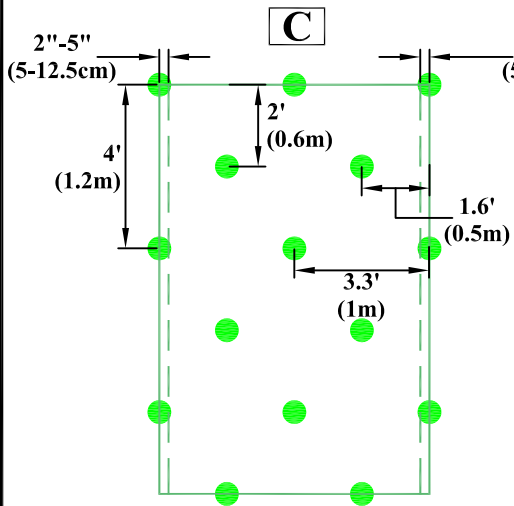
STAPLE PATTERN GUIDE



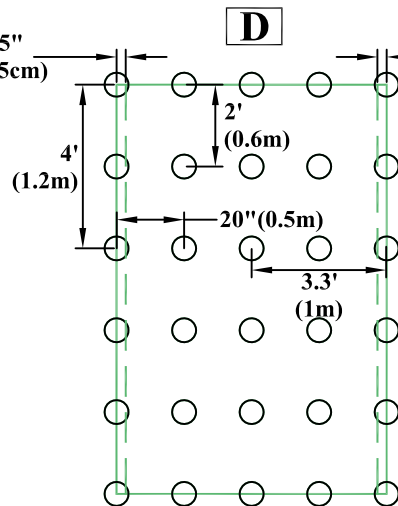
0.7 Staples per SQ.YD.



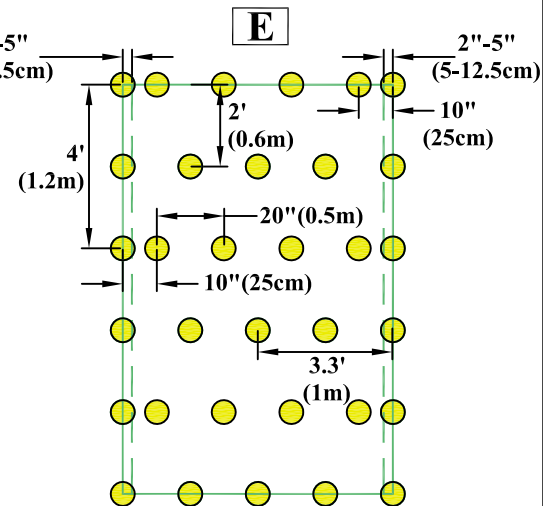
1.15 Staples per SQ.YD.



1.7 Staples per SQ.YD.



3.4 Staples per SQ.YD.



3.75 Staples per SQ.YD.

- 4:1 Slopes (A)
- 3:1 Slopes (B)
- 2:1 Slopes (C)
- 1:1 & Steeper Slopes (D)
- Medium/High Flow Channel (D)
- High Flow Channel And Shoreline (E)

NOTES:

* Use ECMDS[®] for more accurate staple pattern selection.

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Disclaimer:

The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Handout 4

1 of 1

Drawn on: 3-16-11

Drawing Not To Scale

SOIL EROSION AND SEDIMENTATION CONTROL PROCEDURES

for the

_____ COUNTY ROAD COMMISSION

(date)

INTRODUCTION

All requirements of Part 91, Soil Erosion and Sedimentation Control (SESC), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 91), and the administrative rules promulgated under the authority of Part 91 are included in this procedure by reference.

This procedure is adopted as a working document; its contents are intended to serve as guidance for all activities of the _____ Road Commission (hereafter referred to as the Agency), falling under the jurisdiction of Part 91. A copy of this procedure is provided to all Agency and contracted personnel engaged in any aspect of SESC. Those personnel are expected to understand and implement the contents of this procedure. Standards and specifications referenced in this procedure are available to all Agency and contracted personnel.

The goal of the Agency is an effective and economical SESC program to protect the soil, water, and other natural resources of _____ County. Controlling erosion and off-site sedimentation is a high priority for all maintenance and new construction projects undertaken by, or performed under contract for, this Agency.

The Agency will anticipate and plan for potential SESC problems associated with all phases of a project, including clearing, rough grading, construction, final grading, restoration, and continuing site maintenance. All earthwork for construction or heavy maintenance projects is performed in accordance with a comprehensive SESC plan which meets the requirements of Rule 323.1703. Routine maintenance projects will be done in accordance with a comprehensive SESC plan or with established maintenance guidelines referenced in this procedure.

The SESC procedures of the Agency are subject to review by Agency staff and the Michigan Department of Environmental Quality (MDEQ). Procedures will be revised as standards and techniques for SESC evolve. Any revisions to the procedures must be reviewed and approved by the MDEQ prior to formal adoption.

All Agency personnel who make decisions regarding the design, inspection, or implementation of SESC measures must complete the MDEQ's SESC training and pass the final exam. This includes personnel in the following positions:

(Please indicate the appropriate position titles, such as manager, supervisor, engineer, foreman, inspector, etc. There may be one position or there may be several; you tell us.)

STANDARDS AND SPECIFICATIONS

The most recent versions of the documents listed below are available at the Agency, are routinely consulted by all staff, and guide the implementation of SESC measures:

1. Michigan Department of Transportation Specifications for SESC, including:
 - a. The most recent edition of *Standard Specifications for Construction*
 - b. Soil Erosion and Sedimentation Control Measures, *Standard Plan R-96-C*, or subsequent revisions
 - c. *Soil Erosion and Sedimentation Control Manual*
2. Michigan Department of Environmental Quality, *Guidebook of Best Management Practices for Michigan Watersheds*.
3. The manufacturer's standards and specifications for SESC products

THE SOIL EROSION AND SEDIMENTATION PROCESS

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 proceeds relatively independently of human activity. Accelerated soil erosion is a result of human activity. After soil has been exposed or topography altered, wind or moving water can rapidly move sediments into water bodies or onto adjacent property. Accelerated erosion and off-site sedimentation must be prevented during and after construction and maintenance activities.

Base erosion potential is the amount of erosion expected from a site after vegetation has been removed. Whenever and wherever possible, avoid construction or soil disturbance in locations with a high base erosion potential or a preexisting natural erosion condition. Such sites logically possess high-accelerated erosion potential; seek viable sites with lower erosion potential as alternatives.

The Agency will utilize slope and soil information to estimate the base erosion potential of the site. Information will be obtained from the county soil survey, topographic maps, and on-site analysis. The Revised Universal Soil Loss Equation (RUSLE) or other commonly accepted methods will be used in determining the project route and prescribing SESC measures.

The scheduling of a project, with respect to the growing season and accepted seeding dates, will be considered when selecting SESC measures for a project. Liberal use of erosion control blankets, securely anchored mulch, or other erosion resistant materials will be used when a project extends beyond the growing season.

PRINCIPLES OF SESC

The Agency recognizes seven basic principles of SESC:

1. Design and construct terrain features, such as slopes and drainageways, to minimize the erosion potential of the exposed site. Consider soil type, time of year, proximity to waterways, duration of exposure, length and steepness of the slope, and the anticipated volume and intensity of runoff.
2. Minimize the area of unstabilized soils left unprotected from runoff and wind.
3. Minimize the amount of time areas of unstabilized soils are exposed to erosive forces.
4. As soon as it is practical after earth disturbance, protect exposed soils with temporary or permanent vegetation, mulch, or other approved erosion resistant material.
5. Avoid concentrating runoff. If concentrated runoff is unavoidable, implement measures to reduce runoff to a non-erosive velocity.
6. Trap eroded sediments on-site with temporary and permanent barriers, basins, or other sediment retention measures and allow for the controlled discharge of runoff at a non-erosive velocity.
7. Implement a continuous inspection and maintenance procedure, which includes written documentation of the SESC actions.

The foregoing principles guide the SESC decisions of the Agency during planning, design, and installation for both construction and maintenance sites and during the performance of routine maintenance tasks.

PLANNING AND DESIGN

Effective SESC begins with planning, including locating projects to best meet each project objective while minimizing the potential for erosion.

Minimize the number of stream crossings to reduce disturbance to streams and protect water quality. When a stream crossing is necessary, locate it at a stable reach of the stream and either at a right angle to the direction of flow or so the culvert or waterway opening is aligned to accommodate the natural course of the stream. If possible, avoid project locations which encroach on lakes, streams, floodplains, or wetlands. Structures placed below the ordinary high water mark, encroachments into floodplains, potential impediments to navigation or riparian rights, or changes to channel characteristics must have approval of local, state, or federal authorities as appropriate.

Develop a comprehensive SESC plan in accordance with Rule 323.1703 for incorporation into the design plans for all phases of all projects. Clearly show the scope, location, and installation details for all SESC measures on the plans, in the specifications, and in the special guidelines for in-house or contracted construction and maintenance projects. Provide a section in the plans to list miscellaneous quantities of SESC materials to address unanticipated control requirements. In addition, include a construction sequence which specifically schedules the installation and maintenance requirements of each temporary and permanent SESC measure included in the design.

Emphasize the placement and maintenance of both temporary and permanent SESC measures on plans and guidelines, and handle as bid items in contracts when feasible. Contracts will specify that temporary SESC measures shall be installed prior to, or upon commencement of, earth change activity and shall be removed only after permanent SESC measures are in place and the site is stabilized. Permanent SESC measures shall be in accordance with the manufacturer's specifications and the guidelines set forth in the standards and specifications adopted by the Agency.

Install permanent SESC measures for all slopes, channels, ditches, or any disturbed land area within five (5) calendar days after final grading or completion of the final earth change. If permanent stabilization of a disturbed area is not possible upon completion of an earth change, maintain temporary SESC measures until the site is stabilized.

Select horizontal and vertical alignments of rights-of-way to avoid critically erodible sites along the proposed route and minimize disturbance to surface and groundwater flows. Alignments will be consistent with safety criteria and, to the extent possible, fit into the natural landscape to reduce the number and size of cuts and fills.

Control the concentration of water on slopes with infiltration areas, intercepting ditches, diversion berms, or drop structures with stable outlets. Reduce the concentration and velocity of runoff by use of horizontal surface roughening, reduction of effective slope length, and the prompt installation of mulch, geotextile, or other appropriate surface covering.

Design ditches and channels with the flattest side slopes permitted by the right-of-way (preferably 3H:1V, or flatter) and broad, flat or rounded bottoms. Channels shall be vegetated or armored with geotextile, riprap, or other suitable material as necessary to prevent erosion at anticipated flows.

Place check dams, sediment traps, or both, in combination to reduce runoff velocity and trap sediments in unstabilized ditches or channels. These devices may be either temporary or permanent, depending on the conditions at the site. Plans must include a routine inspection and maintenance schedule. Structures designed to trap sediments shall be cleaned out to full capacity when found to be 50 percent full and the sediment removed to an approved upland disposal site. Maintain check dam integrity and contours to ensure runoff does not create erosion by undermining or travelling around the ends of the structures.

Culverts and other structures placed in channels often constrict flood flows, increase water velocity, and increase the potential for erosion. In situations with such potential, protect the culvert or structure embankment slopes and the downstream channel and banks with riprap or other erosion resistant material. Design road crossings to locate culverts, bridges, or other in-stream structures to minimize changes to channel cross-section and orientation.

CONSTRUCTION

All phases of construction and in-house maintenance, including the installation and maintenance of SESC measures, will follow the schedule prescribed in the SESC plan or maintenance guidelines. The first step in the construction sequence is the placement of SESC measures around the perimeter of the proposed earth change to effectively prevent sediment from entering any lake, stream, wetland, or adjacent property. The construction sequence is completed by the conversion of temporary SESC measures to permanent controls and full stabilization of soils on the site.

Schedule and perform clearing operations to permit the timely and sequential installation of SESC measures. The maximum area of erodible soils exposed at any time will be based on site characteristics and stated in the phasing, staging, and sequencing section of plans or guidelines.

If embankment slopes terminate near a lake or stream, maintain or establish a protective buffer of vegetation between the water body and the disturbed area whenever feasible. Place silt fence or an equivalent SESC treatment at the toe of the disturbed portion of the embankment; additional courses of silt fence may be required along intermediate contours of long or steep slopes.

Perform all maintenance and new construction operations in the dry by placing cofferdams or similar structures around work done below the ordinary high water mark or legally established level of a lake.

When a temporary diversion channel is used, slopes of the channel must be stabilized with vegetation or erosion resistant materials before water is released to the channel. Install sediment traps, check dams, or filters in the channel to remove sediments from runoff which may leave the site or discharge to a water body.

Locate all stockpiles, waste material, and spoils in upland areas where they can be properly contained and will not erode into water bodies or on to adjacent properties.

Conduct site restoration and stabilization in a manner that ensures adequate temporary or permanent SESC measures are in place and functioning at the end of each workday.

INSPECTIONS

Agency personnel who have successfully completed the SESC training required by Section 9123 of Part 91 and passed the final exam are responsible for inspecting and documenting the condition of the SESC measures on a daily basis and initiating changes or maintenance if required.

Violations or problems with SESC measures are corrected immediately and both the problem and the corrective action are documented in an inspection report. General oversight and ultimate responsibility for inspections and compliance of all Agency operations resides with the Agency manager.

MAINTENANCE OF CONTROL MEASURES

Maintenance includes implementing necessary repairs or corrections to existing temporary or permanent SESC measures. Temporary SESC measures shall be maintained daily; permanent measures in need of repair shall be corrected within five (5) days of detection of the problem, unless the scope of the work or the season prevents such action. Implement temporary measures immediately to contain sediments from failed permanent measures and maintain temporary measures until the permanent measures are repaired.

Apply seed and mulch or plant other ground stabilizing vegetation immediately following final grading on all disturbed sites where the slopes are gentle enough to allow their effective use. Vegetative treatments shall follow guidelines published in the documents referenced elsewhere in this procedure. Use staked sod, geotextiles, riprap, or other suitable erosion control materials, as necessary, on steep slopes or other areas unsuitable for standard vegetative treatments. Length of slope, soil characteristics, and access for maintenance will influence the maximum slope suitable for standard vegetative treatments. Any slope steeper than 2H:1V should have structural treatments to reinforce or replace vegetation. Slopes steeper than 3H:1V *may* require structural treatments depending on site conditions. Use all products in accordance with the manufacturer's specifications.

MAINTENANCE CONSTRUCTION (HEAVY MAINTENANCE)

Plans are developed and SESC measures are implemented for maintenance construction and heavy maintenance in the same manner as for new construction. Plans shall meet the requirements set forth in Rule 323.1703. Inspect and document site conditions and maintain SESC measures on maintenance construction and heavy maintenance projects in the same manner as for new construction.

ROUTINE MAINTENANCE

Routine maintenance activities are subject to the same general SESC considerations as new construction or heavy maintenance. Typical routine maintenance tasks include, but are not limited to, the following:

- Road and shoulder grading
- Roadside ditch clean-out
- Cross drainage culvert, underdrain, bridge approach, and embankment repair or replacement
- Slope protection and washout repair

In lieu of developing formal SESC plans, the Agency will undertake the above listed activities in accordance with the following guidelines:

Road and Shoulder Grading

- a) For roads with ditches, grade to allow runoff to enter the ditch at points no closer than 100 feet from a lake or stream; this may require removal of berms formed between the road and the ditch.
- b) For roads without ditches, construct outlets to natural depressions or excavated sumps which allow runoff to leave the road at points no closer than 100 feet from a lake or stream.
- c) Conduct road grading operations adjacent to or crossing any watercourse in a manner which does not allow graded materials to enter directly or be carried by runoff into the watercourse. Direct road drainage to areas which allow runoff to filter through a vegetative buffer prior to entering any watercourse.

Roadside Ditch Clean-Out

- a) Conduct ditching operations in the dry or in periods of low water flow.
- b) Leave at least 50 feet of natural vegetation between the terminus of ditching and any lake or stream.
- c) If existing vegetation is inadequate to filter sediments from runoff, install temporary or permanent check dams, sediment traps, or both.
- d) If it is necessary to remove the vegetated filter described in (a), do so only after the remainder of the ditch is revegetated and stabilized.
- e) Protect ditches with long slopes by leaving 20-foot long natural vegetation filters or constructing check dams at intervals not exceeding 2-feet of vertical drop or at lesser intervals if conditions dictate.

- f) Where possible, salvage topsoil and replace immediately upon completion of the ditching project or within five (5) days of earth disturbance on any portion of the project, whichever is less. Seed and mulch ditches within five (5) days of final grade.

Cross-Drainage Culvert, Underdrain, Bridge Approach, and Embankment Repair

- a) Isolate all work from flowing water.
- b) Stabilize culvert ends and areas below annual high water levels with riprap over geotextile or other suitable erosion resistant materials.
- c) Stabilize all disturbed areas above the annual high water mark with sod, seed, mulch, or other suitable erosion resistant material within five (5) days of final grade.
- d) Acquire all applicable permits from the Department of Environmental Quality under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Slope Protection and Washout Repair

- a) Isolate all work from flowing water.
- b) Immediately stabilize all disturbed areas with sod, seed, mulch, or other erosion resistant materials.
- c) Divert water flow away from the top of the slope or convey water downslope with a properly designed downdrain with a stable outlet until the area is stabilized.
- d) Additional SESC measures may be required for work on steep slopes or slopes located near lakes or streams.

COMPLIANCE AND ENFORCEMENT

The Agency is ultimately responsible for SESC practices undertaken by contractors working under the authorized public agency designation. Therefore, all contractors shall comply with this operating procedure. The Agency shall ensure that contracts include clear language describing the responsibility of contractors to comply with the operating procedure, the authority of the Agency to enforce compliance with the operating procedure, and the consequences for noncompliance.

Contractor compliance can be assured with contract language including, but not limited to, the following:

- Include separate line item values for the construction, installation, maintenance, and removal of temporary and permanent SESC measures. Failure to implement SESC per the contract will result in withholding payment, stopping work, or using the line item value to pay another company to implement SESC.
- The acquisition of a bond or letter of credit and implementation of actions comparable to those authorized by section 9119 of Part 91.
- The ability of the Agency to impose fines and assess the cost of actual damage if the contractor does not comply with the SESC requirements of the contract or Part 91.

6/12/01

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
NON-COMPLIANCE WITH SOIL EROSION AND SEDIMENTATION CONTROL
REQUIREMENTS

C&T:DMG

1 of 2

C&T:APPR:JAR:TWK:08-02-06
FHWA:APPR:08-11-06

a. Description. This special provision establishes negative adjustments related to the failure to properly install and maintain soil erosion and sedimentation control (SESC) measures and the conditions under which these adjustments will be determined and applied. Nothing in this special provision modifies section 107 of the Standard Specifications for Construction,

Delays to the project as a result of the Contractor conducting corrective actions for SESC do not constitute a valid reason for an extension of time.

Deficiencies with SESC measures must be corrected in the time frame stated herein. For those deficiencies not corrected within the stated time frame, the Engineer will make a negative adjustment to the contract as stated herein.

b. Construction. The Contractor must install all temporary erosion control measures identified on the plans and as directed by the Engineer for an impacted area of the project prior to the start of any earth disturbance including, but not limited to, clearing, grading and excavation in that area. The Engineer will inspect these measures every seven days and within 24 hours of precipitation events which result in off-site runoff. Deficiencies will be documented on the National Pollutant Discharge Elimination System (NPDES) Inspection Report (Form 1126).

If at any time during the project, including the time during the seasonal suspension, the Engineer documents deficient SESC measures, the Engineer will provide written notification with instructions for corrective action to the Contractor. The time frame for completion of these corrective actions will be specified in the notification and will be discussed with the Contractor as necessary.

Deficiencies are defined as one or more of the following:

1. failure to install or construct SESC measures shown on the plans or as directed by the Engineer;
2. failure to maintain the measures;
3. failure to conduct earth change activities in a manner consistent with all applicable environmental permit requirements;
4. failure to comply with the time limitations or the area limitations stated in subsections 208.03.B and 208.03.C, respectively, of the Standard Specifications for Construction.

SESC deficiencies are either emergency or non-emergency and the time frame for corrective action is determined accordingly. Sedimentation of a drainage structure or waters of the state or loss of support of the roadbed impacting public safety constitutes an emergency and corrective

actions must be completed within 24 hours of notification. Non-emergency deficiencies must be corrected within five calendar days of notification.

For those emergency corrective actions not completed within 24 hours of notification, the Contractor will be assessed \$100.00 per hour for every hour the deficiency remains uncorrected after the initial 24 hours of notification. For those non-emergency corrective actions not completed within five calendar days, the Contractor will be assessed \$500.00 per day for every day the deficiency remains uncorrected after the initial five days of notification.

If it is not practicable to complete the non-emergency corrective actions within five calendar days, the Contractor must document the reasons and propose a corrective action plan to the Engineer within five days of notification. The corrective action plan must contain the Contractor's course of action and a time frame for completion. If the reasons and the corrective action plan are acceptable to the Engineer, the Contractor will be allowed to proceed with the plan as proposed without incurring a negative adjustment. If the approved corrective action plan is not completed as proposed, the Contractor will be assessed \$1000.00 per calendar day for every day the deficiency remains uncorrected after the time frame is exceeded in the approved corrective action plan.

The Contractor is required to correct, in the timeframe stated herein, all other emergency or non-emergency SESC deficiencies documented anywhere else on the project during completion of the approved corrective action plan.

c. Measurement and Payment. The Engineer will make the necessary monetary adjustment to the contract amount based on the length of time the Contractor allows the deficiencies to remain uncorrected after the time allowance stated herein and as described to cover any costs incurred by the department as a result of SESC violations.

All costs associated with corrective actions required due to the Contractor's failure to properly install or maintain soil erosion and sedimentation control measures on this project will be borne by the Contractor.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TURF ESTABLISHMENT, PERFORMANCE

DES:JLB

1 of 5

C&T:APPR:DMG:LML:08-16-11

a. Description. Delete section 816 of the Standard Specifications for Construction and replace with this special provision. The Contractor is responsible for the performance and quality of turf growth in the areas indicated on the plans and as identified by the Engineer. Comply with all local, state and federal laws when completing this work.

Establish a durable, permanent, weed-free, mature, perennial turf. The work consists of fundamental turf work, including but not limited to topsoiling, seeding, mulching, erosion control, maintenance, watering and repair of turf as described herein during the life of the contract and during the life of any supplemental performance bond which may ensue.

Choose and implement proven turf establishment industry practices; provide all necessary labor and equipment; select and provide all turf establishment materials; and control erosion and any subsequent sedimentation at all times.

Perform a site analysis, interpret the results and implement a turf establishment program to ensure compliance with this specification. The site analysis must take into consideration topsoil needs, fertilizer and pH requirements, seed mix, existing and future soil moisture levels, slopes and grades, required erosion control items and devices, maintenance requirements, local highway snow removal and deicing practices, and any other characteristics that influence and affect turf establishment.

Subsection 107.11 of the Standard Specifications for Construction is revised relative to the Contractor's responsibility for the repair of turf establishment work as follows. The Contractor is responsible, at no additional cost to the contract, for the repair of turf establishment work occasioned by storm events up to 3 inches of rain in a 24 hour period as documented by local meteorological data submitted to the Engineer for review and approval. All other portions of Subsection 107.11 remain unchanged.

1. Contractor Turf Establishment Experience Requirements. Weed control must be done by a commercial herbicide applicator, licensed by the State of Michigan and certified by the Michigan Department of Agriculture (MDA) in the appropriate category to apply herbicides. Use application procedures and materials according to federal, state and local regulations. Use of restricted use chemicals is prohibited. The Contractor must provide appropriate documentation and secure approval from the Engineer before application of herbicides.

At least 10 work days prior to start of turf establishment, provide documentation to the Engineer, from the Contractor performing the turf establishment work, that they meet one or both of the following requirements.

A. At least one person employed by the Contractor performing the turf establishment work and assigned to the job site has a degree or certificate in Turf Management, Horticulture or related field.

B. At least one person employed by the Contractor performing the turf establishment work and assigned to the job site has at least 5 years of experience in roadside turf establishment.

b. Materials. Provide topsoil, seed, mulch, pesticide, herbicide, mulch blankets and any other unique erosion control materials as necessary to fulfill this specification, as detailed in the plans. Use additional materials, as necessary, to meet the standards set forth for turf establishment in this special provision. The use of sod on the project requires the prior approval of the Engineer and if approved, may be used at limited site locations only.

Selection of all materials is the responsibility of the Contractor with the following minimum conditions.

1. Soil. Provide furnished or salvaged topsoil, which may be blended compost, that will support vigorous growth. Topsoil must be humus bearing and placed at least 4 inches deep. It must be free of stones larger than 1/2 inch (2 inches on freeway projects) in diameter and other debris. Trim and grade the finished slope in accordance with subsection 205.03.N of the Standard Specifications for Construction.

2. Seed. Use a seeding mixture that is composed of four or more species of perennial grass. Use only species and their cultivars or varieties which are guaranteed hardy for Michigan.

Recommended species of perennial grasses include: Kentucky Bluegrass, Perennial Ryegrass, Hard Fescue, Creeping Red Fescue, Chewings Fescue, Turf-type Tall Fescue, Buffalo grass, and Alkaligrass-Fults Puccinellia distans. Select cultivars or varieties of grasses that are disease and insect resistant and of good color. Ensure that no one species in the mix is less than 5 percent, or more than 25 percent, of the mixture by weight. Do not select grass species considered noxious or objectionable, such as Quack Grass, Smooth Brome, Orchard Grass, Reed Canary Grass and others.

A. The seed must be legally saleable in Michigan. The seed product must not contain more than 10 percent inert materials. The seed source must be from an MDOT approved certified vender.

B. The species and varieties of seed must be adapted to the site conditions, to the site use, and to the soils, moisture and local climate. Site use may include, but is not limited to, detention pond, wildlife habitat, playground, wetlands, forested wetland, rural roadside, urban roadside and highly maintained front yard.

C. At least two of the species in the mixture proposed to be planted within 15 feet behind the curb or the shoulder must be salt tolerant.

3. Mulch. Mulch seeded areas with the appropriate materials for the site conditions to promote germination and growth of seed and to mitigate soil erosion and sedimentation.

4. Herbicides. Comply with all federal, state and local laws. As part of the MDA weed control application, the Contractor is required to make proper notifications and/or postings as per label and MDA requirements for all locations that will be sprayed. Notify the Engineer 48 hours prior to any applications being made. Furnish and apply herbicide(s) as needed. It is the Contractor's responsibility to select the herbicide(s) and the rate at which it is used. Obtain the Engineer's approval of work methods and herbicide(s) selected prior to the application of the

herbicide(s). Complete a spray log and submit to the Engineer each day an application is made.

Do not draw water from any waterway (i.e. river, ditch, creek, lake etc.) located on state, county or municipal right-of-way, for mixing with herbicides.

5. Fertilizers. Furnish and apply fertilizer(s) as needed. It is the Contractor's responsibility to select the fertilizer(s) and the rate at which it is used. Phosphorus is allowed for use only at the time of planting and when required by soil conditions. Obtain the Engineer's approval of work methods and fertilizer(s) prior to the application of the fertilizer(s).

6. Water. Furnish and apply water from an approved source at a rate to promote healthy growth.

c. Construction. The Contractor is responsible for all work and all construction methods used in completing this work. Implementation of any part of MDOT standard specifications or standard plans by the Contractor does not relieve the Contractor of responsibility for acceptability of the construction methods or for the quality of the work.

1. Inspection of the Work. The Contractor is responsible for all inspection of turf establishment work.

Use a Contractor's Daily Report, approved by the Engineer, to report inspections made and to document turf establishment work performed on this project. Complete and submit a Contractor's Daily Report to the Engineer when any work performed under this special provision is in progress.

Include all necessary materials documentation including tests slips, certifications, etc. with the associated Contractor's Daily Report.

The Engineer will determine the acceptability of the Contractor's Daily Report in terms of their completeness and accuracy. The Engineer reserves the right to verify all submitted measurements and computations. Failure by the Contractor to submit acceptable and timely reports to the Engineer may result in withholding of progress pay estimates on turf-related items until such time as reports are submitted and deemed acceptable.

The Engineer reserves the right to inspect the project for any reason in accordance with subsection 104.01 of the Standard Specifications for Construction, including the fulfillment of other inspection requirements such as Soil Erosion and Sedimentation Control, NPDES, etc. Inspections made by the Engineer do not relieve the Contractor of the responsibility for inspections required by this special provision or the Contractor's responsibilities for erosion control and turf establishment.

2. Erosion Control. Erosion must be controlled at all times according to section 208 of the Standard Specifications for Construction. Control of soil erosion is the responsibility of the Contractor. However, sedimentation controls must be placed as indicated on the plans or as directed by the Engineer. The site must be continuously monitored by the Contractor for needed erosion repair from any cause as addressed in the contract documents. All eroded areas must be returned to original grade as detailed in the contract documents.

If sedimentation occurs in drainage structures or any watercourse or water containment area, corrective action must be taken immediately and all disturbed areas contributing to this

sedimentation must be stabilized within 24 hours after the erosion occurrence. Sediment deposited as a result of the Contractor's inability to control the soil erosion must be removed at the Contractor's expense.

The Contractor must reimburse the Department for any costs levied against the Department, such as fines, environmental costs, costs for remedies required, or any other costs as a result of the Contractor's failure to comply with this special provision and with federal, state and local laws.

3. Erosion Repair. The Contractor is responsible for all repairs and liable for all consequences (legal, monetary or other) associated with erosion or sedimentation damage to finished or unfinished work.

All erosion occurrences and the repairs made by the Contractor must be reported to the Engineer in the format and at the frequency required by the Engineer. Any erosion, displacement or disturbance to ongoing or completed work by any cause must be repaired by the Contractor at no additional cost to the contract unless otherwise noted herein.

The Contractor is responsible and liable for all traffic control and safety measures required to repair and protect damaged turf areas. Any eroded area that may affect the support of the roadbed or safety of the public must be repaired within 24 hours of the erosion occurrence.

Protective devices such as barriers, directional signs/signals, temporary fence, or any other safety measures must be placed by the Contractor immediately after any erosion damage occurs that has the potential of endangering the public. In these instances, the Contractor must, within 24 hours of the occurrence of the damage, provide the Engineer with a written summary of the immediate action taken describing the repairs made and the safety measures taken.

4. Mowing and Weeding. Turf must be maintained to a visually appealing level, and not more than 8 inches in height at any time, prior to acceptance. Weeds must be controlled to less than 10 percent of the Turf Establishment area at all times during construction.

5. Final Acceptance and Supplemental Performance Bond.

A. Final Acceptance Parameters. Before final acceptance of the turf establishment work, all of the following minimum parameters must be met throughout all exposed areas of the project designated on the plans or identified by the Engineer as turf establishment areas: there must be no exposed bare soil and the turf must be fully germinated, erosion free, weed free, disease free, dark green in color and in a vigorous growing condition.

The Engineer will notify the Contractor of the dates and times of all acceptance inspections. The Contractor may accompany the Engineer during these inspections. If the Contractor does not agree with the decision made by the Engineer, the Contractor may request an inspection by a mutually agreed upon third party (Michigan State University Extension service or other). A joint inspection, to include the Engineer, the Contractor, and the third party, will be scheduled by the Engineer. All expert fees and expenses charged by the third party must be paid by the Contractor.

B. Supplemental Performance Bond. In the event that all contract items of work are completed, including the placement of all turf establishment items of work, and the final acceptance of the project is delayed because the final acceptance parameters for the turf

establishment work have not been fully met; the Contractor may propose to the Engineer the use of a supplemental performance bond.

The bond serves to secure the successful completion of turf establishment work and fulfillment of all final acceptance parameters for the turf establishment work. The supplemental performance bond must be in all respects satisfactory and acceptable to MDOT and executed by a surety company authorized to do business with the State of Michigan.

The bond must be in an amount equal to 50 percent of the turf establishment work items covered by this special provision. The bond must remain in place for two growing seasons. At the discretion of the Engineer, the bond may be reduced on a prorated basis as portions of the areas designated for turf establishment on the project meet the final acceptance parameters.

Prior to commencement of any work necessary to meet the acceptance parameters during the bonded period, the Contractor must apply for a permit to work within MDOT right-of-way using Form 2205. The permit fee and an individual permit performance bond will not be required. The permit insurance requirements, however, will be required.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Turf Establishment, Performance.....	Square Yard

1. **Turf Establishment, Performance** will be measured in place by area in square yards. All materials, labor and equipment required or selected by the Contractor to install, maintain, inspect, repair and meet the acceptance parameters for turf establishment specified in this special provision, including preparation, updating and submittal of the Contractor's Daily Reports, are included in the contract unit price bid for **Turf Establishment, Performance**.

Repairs made to damaged turf establishment areas as a result of a documented storm by local meteorological data resulting in rainfall amounts of more than 3 inches in a 24 hour period will be paid for as an increase to original quantities in accordance with subsection 109.05 of the Standard Specifications for Construction.

The following schedule of payment applies to work performed according to this special provision. Upon completion of topsoil surfacing stage, 50 percent of the authorized amount for **Turf Establishment, Performance** will be paid to the Contractor. The remaining 50 percent of the authorized amount will be paid upon completion of all other work necessary to comply with this special provision and to meet all final acceptance parameters for **Turf Establishment, Performance** or at such time as the supplemental performance bond is accepted by the Department.

The supplemental performance bond and all costs associated with turf establishment work performed during the duration of the performance bond, will not be paid for separately. These costs which may include, but are not limited to, mobilization, traffic control devices, and the required permit insurance are included in the unit price bid for **Turf Establishment, Performance**.

SOIL EROSION & SEDIMENTATION CONTROL/CONSTRUCTION STORM WATER INSPECTION LOG

Project Name or Description: _____ NPDES Number (if applicable): _____ Page ____ of ____

Date: _____ Time: _____ Reason for Inspection: Weekly Inspection Inspection **within 24 hrs. of Storm Water Runoff**

Current extent of the project work: _____

SESC measures installed since the last inspection and their location: _____

Are SESC measures installed according to the SESC Plan? **Y** **N** Are there other potential areas of concern? **Y** **N**
If **NO**, identify measures, locations, and actions needed below.

Are the SESC measures: Properly installed? **Y** **N** Maintained? **Y** **N** Appropriate for site conditions? **Y** **N**
Failed? **Y** **N**
If **NO**, identify measure locations and actions needed below.

Are additional SESC measures recommended? **Y** **N** Are there other concerns or improvements noted for the site? **Y** **N**
If **YES**, identify locations and recommendations below.

Corrective Actions Taken/Needed to repair or improve the prescribed control measures:

Certified Operator Signature: _____ **Operator Number:** _____

Print Name: _____

The details included in this report were provided to: _____ Date: _____ By method of delivery: _____

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	

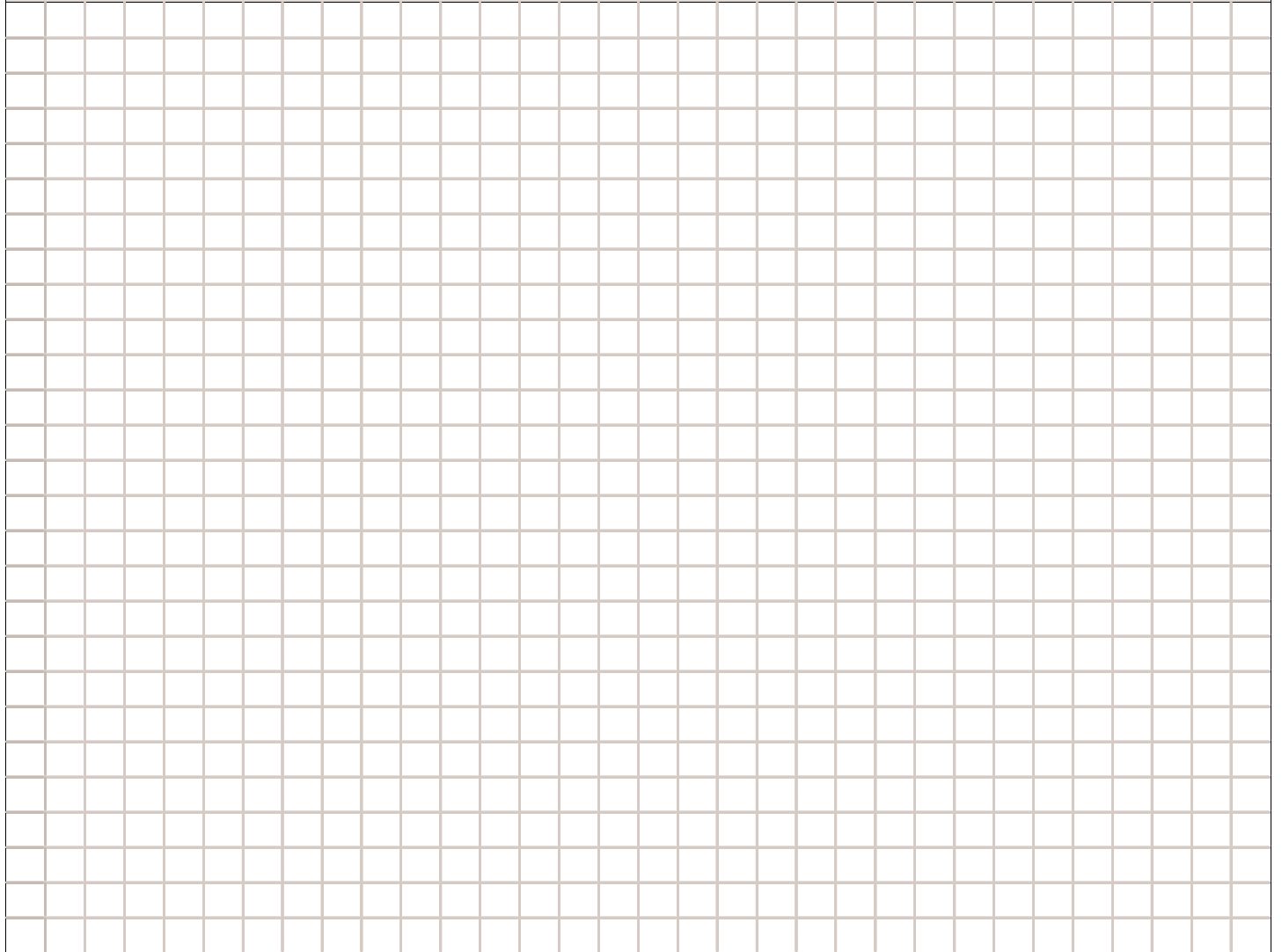
LOCATION/ STATION	TYPE OF CONTROL	INSTALLATION DATE	CORRECTIVE ACTION REQUIRED (See Note 5)	NOTIFICATION DATE	COMPLETION DATE

- 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

SKETCHES





MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 WATER RESOURCES DIVISION
NOTICE OF TERMINATION
 FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
 Storm Water Discharges from Construction Activities
By Authority of R 323.2190 of Act 451, PA 1994, as amended

PERMIT INFORMATION		NPDES PERMIT NUMBER:
REASON FOR TERMINATION: (check all that apply) list month, day and year for all dates		
<input type="checkbox"/> The Soil Erosion and Sediment Control (Act 451, Part 91) permit will expire on:		
<input type="checkbox"/> The Soil Erosion and Sediment Control (Act 451, Part 91) permit was revoked/terminated on:		
<input type="checkbox"/> The project was completed by stabilization of the earth change activities on:		
<input type="checkbox"/> Other: Explain:		
CONSTRUCTION PERMITTEE INFORMATION		
NAME		
MAILING ADDRESS		
STREET		
CITY	STATE	ZIP CODE
CONSTRUCTION SITE INFORMATION		
PROJECT NAME		
MAILING ADDRESS		
STREET		
CITY	STATE	ZIP CODE
DESCRIPTION		

CERTIFICATION

Michigan regulations require this form be signed as follows:

Corporation: a principal executive officer of at least the level of vice president, or his designated representative, if the representative is responsible for the overall operation of the facility from which the discharge described in this form originates.

Partnership: a general partner.


Sole Proprietorship: the proprietor.

Municipal, State, or other public facility: either a principal executive officer, the mayor, village president, city or village manager, or other duly authorized employee.

I certify that all information submitted in this Notice of Termination is, to the best of my knowledge and belief, true, accurate, and complete, and that all storm water discharges associated with construction activities from the site identified above that were authorized by R 323.2190 have been eliminated because of the reason(s) indicated above. I understand, by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with construction activities at this site and that discharging pollutants in storm water associated with construction activities without authorization is unlawful. I also understand that submittal of this Notice of Termination does not release the permittee from liability for any prior violations of R 323.2190.

SIGNATURE	DATE	TELEPHONE
PRINTED NAME	TITLE	

PLEASE MAIL OR EMAIL THE COMPLETED FORM TO THE APPROPRIATE DISTRICT OFFICE USING THE FOLLOWING LINK:
http://www.michigan.gov/deq/0,1607,7-135-3306_28610---,00.html AND CLICK ON WRD DISTRICT OFFICES OR CONTACT YOUR LOCAL COMPLIANCE PERSON AT: http://www.michigan.gov/documents/deq/wrd-sesc-const-sw-staff_344830_7.pdf

	WATER RESOURCES DIVISION POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: March 6, 2013 Revised Date: Reformatted Date:	Subject: Winter Construction Storm Water Inspection Policy Under Michigan's Permit-by-Rule		Category: <input type="checkbox"/> Internal/Administrative <input type="checkbox"/> External/Non-Interpretive <input checked="" type="checkbox"/> External/Interpretive
Program Name: Surface Water Quality Program	Page: 1 of 5		
Number: WRD-017	Page: 1 of 5		

A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION, PURPOSE, OR ISSUE:

Michigan's Permit-by-Rule R 323.2190(2)(e) requires that construction activities on sites 1 acre, or greater, in size with a point source discharge to waters of the state be inspected once per week and within 24 hours after every precipitation even that results in a discharge from the site.

The DEQ, Water Resources Division (WRD), recognizes that during inactive periods when the construction site has been stabilized for the winter and below freezing temperatures predominate, runoff and subsequent erosion will not occur. Therefore, in such cases, on-site inspections may not be necessary to ensure adequate protection of the receiving waters.

AUTHORITY:

"Michigan's Permit-by-Rule" - R 323.2190 of the Part 21, Wastewater Discharge Permits Administrative Rules, promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.3101 *et seq.*

STAKEHOLDER INVOLVEMENT: [required for External/Interpretive]

Stakeholders:

- Michigan Association of Home Builders
- Michigan Department of Transportation (MDOT)
- County Road Association of Michigan (CRAM)
- Michigan Association of County Drain Commissioners (MACDC)
- Michigan Environmental Council
- Joint Agency Transportation Committee

The WRD e-mailed the draft procedure to the aforementioned stakeholder groups on November 8, 2012, and provided an opportunity for comment.

Stakeholder involvement took place in late November 2012 through early December 2012. Responses were due December 10, 2012.

The Soil Erosion/Construction Storm Water Program Chair reviewed the comments and has incorporated the comments. This summary document and the final policy and procedure will be e-mailed to all stakeholders identified above.

DEFINITIONS:

As used in this document, the following definitions, consistent with those of Michigan's Permit-by-Rule shall apply:

- "Authorized public agency" means a state, local, or county agency that is designated pursuant to the provisions of Section 9110 of Part 91, Soil Erosion and Sedimentation Control, of the NREPA, to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by the agency.
- "Certified storm water operator" means an individual who has been certified by the DEQ pursuant to the provisions of Section 3110 of Part 31 as properly qualified to operate treatment or control facilities for storm water discharges.
- "Construction activity" means a man-made earth change or disturbance in the existing cover or topography of land for which a national permit is required pursuant to the provisions of Title 40 of the Code of Federal Regulations (CFR) §122.26(a) (2000) and which is any of the following:
 - I. Five acres or more in size and defined as a small construction activity pursuant to the provisions of 40 CFR §122.26(b)(14)(x) (2000).
 - II. One acre or more in size and defined as a small construction activity pursuant to the provisions of 40 CFR §122.26(b)(15) (2000).
 - III. Less than 1 acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb 1 acre or more.

The term includes clearing, grading, and excavating activities. The term does not include the practices of clearing, plowing, and tilling soil and harvesting for the purpose of crop production.

- "Construction permittee" means a person who is deemed to have a national permit pursuant to the provisions of R 323.2190 and who owns or holds a recorded easement on the property where a construction activity is located, is constructing in a public right-of-way in accordance with the provisions of Sections 13, 14, 15, and 16 of Highway Obstructions and Encroachments; Use of Highway by Public Utilities; 1925 PA 368, as amended; MCL 247.183, 247.184, 247.185, and 247.186; or is the authorized public agency if a construction activity is carried out by the authorized public agency.

- “Discharge” means any direct or indirect discharge of any waste, waste effluent, wastewater, pollutant, or any combination thereof into any of the waters of the state or upon the ground.
- “General permit” means a national permit issued authorizing a category of similar discharges.
- “Michigan’s Permit-by-Rule” means administrative rules (R 323.2190) promulgated under Part 31.
- “National permit” means a National Pollutant Discharge Elimination System (NPDES) permit, or equivalent document or requirements, issued by the DEQ to a discharger pursuant to Sections 3106 and 3112 of Part 31 for discharges into surface waters.
- “NPDES” means the national pollutant discharge elimination system established by the federal Clean Water Act.
- “Point source discharge” means a discharge that is released to the waters of the state by a discernible, confined, and discrete conveyance, including any of the following from which wastewater is or may be discharged:
 - I. A pipe.
 - II. A ditch.
 - III. A channel.
 - IV. A tunnel.
 - V. A conduit.
 - VI. A well.
 - VII. A discrete fissure.
 - VIII. A container.
 - IX. A concentrated animal feeding operation.
 - X. A vessel or other floating craft.

The term does not include a legally established county or intercounty drain, except for a county or intercounty drain that has a Publicly Owned Treatment Works designated as part of the drain or a discharge otherwise required to be authorized by a national permit.

- “Site” means the area where a construction activity is physically located or conducted, including adjacent land that is used in connection with the construction activity.
- “Soil erosion and sedimentation control permit” means a permit that is issued pursuant to the provisions of Part 91 by a Part 91 permitting entity.
- “Soil erosion control measures” means the measures or procedures to prevent or reduce the pollution of waters of the state that are required in the soil erosion and sedimentation control permit for the site or the selected control measures from the approved control plan that are applicable to the site.

- “Stabilization of earth change activity” means the proper placement, grading, or covering of soil or rock at a construction activity to ensure subsequent resistance to soil erosion, sliding, or other earth movement.
- “Storm water” means storm water runoff, snowmelt runoff, and surface runoff and drainage.

POLICY:

During inactive periods when a construction site has been temporarily stabilized and below freezing temperatures predominate; the Certified Storm Water Operator, without performing an on-site inspection, may certify in an inspection report as part of the construction log that weather and inactive conditions are such that runoff from the site will not occur. Because of the stabilized nature of the site and the inactivity, the WRD will consider the requirement for inspection of the construction met by this evaluation of weather conditions and statement in active status of the earth change activities at the site.

On-site inspections shall be resumed within 24 hours of any change in conditions that may allow runoff to occur such as earth change activity resuming, rainfall, or warming conditions that will cause snowmelt.

The requirements outlined in Michigan’s Permit-by-Rule still exist whether the construction site earth change is active or not. Failure of soil erosion and sedimentation control measures on-site to protect water quality could lead to enforcement action against the permit holder.

PROCEDURES:

Who	Does What
Certified Storm Water Operator	1) In order to cease on-site weekly inspections during periods of inactive earth change on-site during periods of time where discharges from the earth change activity are unlikely, each of the following must occur: <ul style="list-style-type: none"> a) Ensure that earth change activity has ceased. Document this condition in the construction log. b) Confirm with an on-site inspection that the site has had temporary soil erosion and sedimentation control measures implemented to ensure that a discharge of sediment from the site shall not occur. Document this condition in the construction log. c) Document weather conditions. Weather conditions must be consistently below freezing and unlikely to result in runoff from the site. Document this condition in the construction log. 2) Once conditions a, b, and c above are met, subsequent weekly inspection documentation may be completed without a site visit by

WATER RESOURCES DIVISION
POLICY AND PROCEDURE

Subject: Winter Construction Storm Water Inspection Policy
Under Michigan's Permit-by-Rule

Number: WRD-017

Page 5 of 5

Who	Does What
	<p><u>documenting weather conditions for the site location in the construction log</u> until any of the following occur:</p> <ul style="list-style-type: none">a) Weather conditions are no longer consistently below freezingb) Weather conditions are such that runoff from the site is likely to occurc) Earth change activity resumesd) The site becomes unstabilized <p>3) Once any of the conditions identified in 2a-2d occur, on-site inspections shall resume within 24 hours. On-site inspections shall be performed weekly and within 24 hours of precipitation events that result in a discharge to waters of the state.</p> <p>4) The Certified Operator may start the process over at step 1 at any time, if conditions warrant.</p>

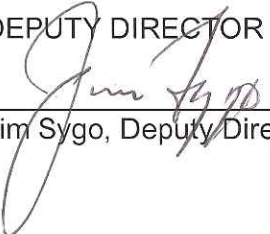
DIVISION CHIEF APPROVAL:



William Creal, Chief
Water Resources Division

3/6/2013
Date

DEPUTY DIRECTOR APPROVAL:



Jim Sygo, Deputy Director

3/6/2013
Date

Michigan Department of Environmental Quality
Water Resources Division

Technical Guidance for the Use of Polyacrylamide Products for Soil Erosion and Surface Water
Sedimentation Control (SESC)

Introduction

Polyacrylamide products (PAMs) are comprised of heavy, long-chain molecules with multiple binding sites that have an affinity for soils. As a result, PAMs are very effective for flocculating and settling out soils from water, preventing transport of soils and resulting excessive sedimentation and turbidity in surface waters.

PAMs are an important component of SESC efforts to reduce soil erosion and sediment pollution of lakes and streams. There are two primary PAM uses for SESC: land application and water treatment.

PAM land applications decrease soil sealing by reducing soil compaction, which reduces runoff by increasing infiltration. PAM land application also binds soil particles, especially clays, to hold them on site. A prime land use example is the application of PAM to disturbed soil on a construction site to minimize the amount of fine silts and clays suspended in runoff during rain events.

PAM water treatments are used to flocculate and settle solids before discharge to surface waters. A prime water treatment example is PAM applications to construction site detention basin waters for solids settling prior to discharge.

Acceptable PAMs for the SESC Program

Although PAMs are effective for SESC, discharge of PAMs to surface water can cause problems. A review of scientific literature and field demonstrations have identified several forms of PAMs that are harmful to the aquatic environment, and therefore are not suitable for use in Michigan SESC. These harmful forms include:

1. Non-food grade PAMs. These PAMs contain residual monomer (acrylamide) in concentrations that may be harmful. To address this concern, only food grade (National Sanitary Foundation/American National Standards Institute) products, or products containing less than 0.05 percent residual monomer by volume, should be used.
2. Any cationic PAM, or a form other than an anionic polymer. Only anionic PAMs are currently known to be of sufficiently low toxicity for SESC.
3. Emulsion-based PAMs, or any polymer that is pre-mixed in a substance other than pure water. The emulsion-based PAMs may contain surfactants and petroleum distillates that can be very toxic to aquatic life.

In summary, PAMs used for SESC should be food grade (or contain <0.05 % residual monomer), anionic, and water-based.

PAM Land and Water Application Guidance

1.

PAM land application performance is optimized by matching formulation to soil type. Using the wrong form of a PAM on a soil will result in some degree of performance failure, increasing the potential for the PAM to enter surface waters. Therefore, *identification of on-site soil characteristics is essential to determine the correct product for application.*

PAMs are generally land-applied at a rate of up to 10 pounds/acre. Exceeding maximum application rates does not increase the effectiveness of the product. In addition, applying these materials at rates beyond 10 pounds/acre may result in a violation of Michigan's Water Quality Standards as described by Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451).

Under most circumstances, when non-emulsion anionic PAMs are used correctly and in concert with existing erosion control best management practices (BMPs), land applied PAMs should not enter surface waters of the state in toxic amounts.

Please describe any use of PAMs for soil erosion control with all other BMPs in your soil erosion control plan.

Regulatory Approvals

Some PAM application types are pre-approved provided this Technical Guidance is followed. Other application types require specific regulatory approvals. The need for approvals for the different types of applications is as follows:

1. PAM applied to land at construction site less than one (1) acre in size: no other approval needed provided the Technical Guidance is followed.
2. PAM applied to land or stormwater retention ponds (i.e. the pond does not have an outlet other than an emergency overflow) under [Permit-by-Rule](#): no other approval needed; provided the Technical Guidance is followed.
3. PAM applied to land by Authorized Public Agency (APA): no other approval needed; provided the Technical Guidance is followed; AND a description of the PAM application has been included in the APA's Approved Procedures
4. PAM discharged to surface water of state (stream, river, drain, lake, etc.) under NPDES permit, except Permit-by-Rule: Water Treatment Additive approval is needed (http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-11385--,00.html)
5. PAM discharged or applied to surface water, no NPDES permit in place: Individual Rule 97 Certification of Approval is needed (http://www.michigan.gov/deq/0,4561,7-135-3313_46123-165911--,00.html)

If you have any questions, please feel free to contact Ms. Sarah Ehinger, MDEQ, WB, at (269) 567-3515.

October 8, 2014



PERMITTING REQUIREMENTS FOR ROAD IMPROVEMENT ACTIVITIES

This document addresses the permitting requirements for both Part 91, Soil Erosion and Sedimentation Control (SESC), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) and construction storm water pursuant to Part 31, Water Resources Protection, of the NREPA; specifically Permit by Rule (R 323.2190) because construction storm water coverage is dependent upon first having SESC coverage. This document does not address the need for other permits required under the NREPA.

Part 91 Permit Requirements:

Permits, with a few exceptions, are required for earth changes that disturb one or more acres or are located within 500 feet of a lake or stream (regardless of size). The landowner must secure the SESC permits from the county (or easement holder) enforcing agency.

Part 91 allows for state, county, and municipal agencies to request designation as an authorized public agency (APA). Once an agency is designated an APA, it no longer has to apply for SESC permits; the agency must undertake all earth change activities in accordance with the approved SESC procedures and the site-specific SESC plan developed for the project. The Michigan Department of Transportation and most of the State's county road commissions are APAs and thus do not have to obtain SESC permits for their projects; however, they must comply with the requirements of their approved SESC procedures and site specific SESC plans.

Storm Water Requirements:

Storm water coverage is obtained through Permit-by-Rule and is required for any construction activity disturbing one or more acres that has a discharge to the surface waters of the state. Projects disturbing from one acre to less than five acres receive **automatic** coverage if a landowner or easement holder has developed a site specific SESC plan and has obtained Part 91 permit coverage or is designated an APA under Part 91. For a construction activity disturbing five acres or larger, the landowner or easement holder must submit a Notice of Coverage (NOC), \$400 fee, site location map, and a copy of the site specific SESC plan to the MDEQ, WRD.

Construction activity "means a man-made earth change or disturbance in the existing cover or topography of land for which a national permit is required pursuant to the provisions of 40 C.F.R. Section 122.26(a)...."

Regardless if the landowner or easement holder receives automatic coverage or submits an NOC, the landowner or easement holder must follow all requirements of Permit-by-Rule including, but not limited to having a certified storm water operator conduct weekly inspections and inspections within 24 hours after a rain event that results in a discharge.

Storm Water Requirements - Exception: Maintenance activities that are limited to the restoration of roadside ditches to the original grade or hydraulic capacity disturbing one to five acres are exempt from Permit-by-Rule requirements.

General Road Improvement Categories:

1. **Milling:** This is a process where the existing hot mix asphalt (HMA) is ground off to a specified depth and replaced with a new layer of HMA. The road base course is not disturbed and generally there is no shoulder work associated with milling. No storm water coverage is necessary. However, if additional earth work is done in conjunction with the milling project, such as working on the shoulders, side slopes, or intersections, storm water coverage may be required depending upon the amount of disturbed area (see storm water requirements).
2. **Crush and Shape:** (Milling may occur prior to crushing and shaping). This operation involves crushing/grinding the existing HMA including the top 1-2 inches of aggregate base into pieces less than 1.5 inches. Occasionally, this process results in excess material that must be hauled away or used elsewhere on the project. Typically associated with this activity is raising the roadbed, changing the alignment, or correcting the superelevation. The crush and shape operation may result in the disturbance of the shoulders and fore slopes.

Storm water coverage is required if the projects disturbs one or more acres and there is a discharge to surface waters. The area of disturbance is calculated by adding the disturbance of the road bed (see exception below) along with the area of disturbed shoulders and fore slopes. The project will be considered stable once the new layer of HMA is placed and all other earth disturbance associated with the project are vegetated or covered with erosion resistant material.

Crush and Shape - Exception: If the roadbed is graded and compacted the same day that the crushing and shaping occurs, the area of the compacted areas (shoulder point to shoulder point) of the roadbed does not have to be included in the area of disturbance calculations as long as there is no substantial change in elevation (such as vertical realignment or grade lifts associated with changing the road foot print that would require ditches to be relocated, etc.). Those areas of the roadbed that have been substantially raised, lowered, or realigned must be included in the area of disturbance calculations regardless of when the roadbed will be graded and compacted.

3. **Concrete Rubblizing:** This process involves breaking down the existing concrete pavement into pieces less than 6 inches in size to be used as a base course for HMA. If HMA is over the concrete, the HMA must be milled or removed by other means prior to rubblizing. The rubblized area has to be adequately compacted prior to placing the HMA.
 - a) If only rubblizing is done and there is no additional earth work on the shoulders, fore slopes, and intersections, no storm water coverage is required.
 - b) If the grade is raised after rubblizing, storm water coverage is required if it meets the permit triggers described under Storm Water Requirements. The size of the disturbance is calculated by adding up the area of the raised surface and the associated disturbed shoulders and fore slopes.
4. **Trenching:** This process involves removing a rectangular-shaped (usually 4 feet wide) area of shoulder (which is loaded on a truck via conveyer) and replaced with compacted shoulder aggregate all within the same day. No storm water coverage is required.

5. **Converting Paved Roads to Gravel:** This operation involves crushing/grinding the existing HMA including the top 1-2 inches of aggregate base into pieces less than 1.5 inches, road surface shaping, and possible placement of a new wearing course of gravel. Occasionally, this process results in excess material that must be hauled away or used elsewhere on the project. The crush and shape portion of the operation may result in the disturbance of the shoulders and fore slopes. Storm water coverage is required if the projects disturbs one or more acres and there is a direct discharge to surface waters. The area of disturbance is calculated by adding the disturbance of the road bed (see exception below) along with the area of disturbed shoulders and fore slopes. The project will be considered stable once the final course of gravel is placed, shaped, and compacted and all other earth disturbance associated with the project are vegetated or covered with erosion resistant material.

Converting Paved Roads to Gravel - Exception: If the roadbed is graded and compacted the same day that the crushing and shaping occurs, the compacted area (shoulder point to shoulder point) of the roadbed does not have to be included in the area of disturbance calculations as long as there is no substantial change in elevation (such as vertical realignment or grade lifts associated with changing the road foot print that would require ditches to be relocated, etc.). Those areas of the roadbed that have been substantially raised, lowered, or realigned must be included in the area of disturbance calculations regardless of when the roadbed will be graded and compacted.