

***SOIL EROSION AND SEDIMENTATION  
CONTROL MANUAL  
April 2006***



**CONSTRUCTION AND TECHNOLOGY  
SUPPORT AREA**

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## FOREWORD

This manual has been developed to aid Michigan Department of Transportation (MDOT) personnel in the selection and application of adequate and efficient soil erosion and sedimentation control measures during project development and delivery. The information provided by this manual is used in conjunction with the Standard Specifications for Construction; the project plans and proposal; and other Department publications. When considered as a whole, these documents satisfy the requirement for MDOT as an Authorized Public Agency under Part 91 of Public Act 451 of 1994, Natural Resources and Environmental Protection Act, as amended to develop, implement and enforce approved soil erosion and sedimentation control procedures.

This 2006 edition incorporates input from planning, design, construction, and maintenance staff in Lansing, region offices and the TSCs; new and revised legislation; and improved construction materials and processes. This document is formatted to allow revised pages to be easily substituted. It may be necessary to retain superseded pages for reference on projects which have been advertised prior to the date revisions are implemented (ref. Standard Specifications for Construction, subsection 101.01).

The information in this manual is subject to continuous review and evaluation. All revisions to this manual must be approved by the Michigan Department of Environmental Quality (MDEQ) prior to implementation. Comments and questions should be directed to the Operations Environmental Stewardship Engineer (OESE).

### AUTHORIZED PUBLIC AGENCY - POLICY STATEMENT

MDOT is aware of our responsibilities to preserve the natural resources of the State of Michigan when providing transportation services. MDOT's Mission Statement, and more specifically, the Vision Statement, recognizes this responsibility.

MDOT Mission Statement: Providing the highest quality integrated transportation services for economic benefit and improved quality of life.

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## TERMINOLOGY USED IN THIS MANUAL

In addition to the terms defined in subsection 101.02 of the *MDOT Standard Specifications for Construction* the terms defined here are used in this manual

Construction Project	Project that is administered and completed by Department construction staff or by a consultant on behalf of the Department. Construction projects may include a full set of plans or may be log jobs. Used to differentiate from a maintenance project.
Contract Agency	County or other local unit of government with which MDOT has entered into a contract for provision of specific functions generally related to the maintenance of state owned roadways.
Department	As used in this document, Department refers to the Michigan Department of Transportation.
Earth Change	A man-made change in the natural cover or topography of land including cut and fill which may result in or contribute to soil erosion or sedimentation of the waters of the state. The term includes, but is not limited to, clearing, grading, excavating and filling activities (a.k.a. earth disturbance).
Earth Change Plan	A document that meets all requirements of Part 17 rule R 323.1703. The elements of this plan may be incorporated throughout the construction contract documents or the plan may be a stand-alone document for projects that do not involve preparation of a full set of plans. (i.e. log job or maintenance projects/activities) (aka SESC Plan)
Limits of Earth Disturbance	Unless stated otherwise in the contract documents, the limits of earth disturbance will extend ten feet beyond the slope stake line except in areas adjacent to wetlands where the earth disturbance limits will be at the slope stake line. (ref. General Plan Notes)
Erosion Control Measure	Any of the specific measures described in this manual, section 208 of the Standard Specifications for Construction or other contract documents; designed, constructed, and maintained to reduce or control soil erosion or off-site sedimentation. Erosion control measures may be constructed devices or construction practices intended to minimize soil erosion and off- site sedimentation. (a.k.a. best management practices or BMP)
Floodplain	An area of land adjoining a river or stream that will be inundated by a 1 percent chance (100 year) flood. (ref: MDOT Drainage Manual, Section 2.9.10.3)
Log Job	Straightforward and uncomplicated construction or maintenance project for which a full set of plans is not prepared, relying instead on sketches, written narrative and other information, in the proposal. If an earth change plan is required for a log job, this will also be included in the

	proposal. The project log is a contract document. (ref. MDOT Road Design Manual, Section1.04)
Maintenance Project	Project that is administered and completed by Department maintenance staff or by a contract agency on behalf of the Department. Maintenance projects are typically limited in scope and impact and are often log jobs. Used to differentiate from a construction project.
Maintenance Activity	Routine work performed by MDOT direct forces or by a contract agency for the purpose of extending the useful life and ensuring the safe condition of the transportation infrastructure.
Part 91 Inspector	An individual with SESC certification whose responsibilities include ensuring that MDOT maintenance projects/activities and construction projects comply with Part 91 of Act 451.
Part 91 Rules	Terminology generally used in this manual when referring to applicable soil erosion and sedimentation control rules.
Part 31 Inspector	Certified storm water operator authorized to conduct inspections as required by Part 31 of Act 451.
Private Party	Permitted entity that is not a governmental agency and not a utility as defined by the Standard Specifications for Construction. Used in the context of permitted work on MDOT right-of-way. (aka third party)
Stabilization	The establishment of vegetation or the proper placement, grading, or covering of soil to ensure its resistance to soil erosion, sliding, or other earth movement.
Wetland	Land characterized by the presence of water at a frequency and duration sufficient to support and under normal circumstances does support wetland vegetation or aquatic life. Wetland area may be commonly referred to as a bog, swamp or marsh. Consult with Region/ Lansing central office staff, if necessary, for wetland designation.



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## 1. INTRODUCTION

The Michigan Department of Environmental Quality has designated the Michigan Department of Transportation as an Authorized Public Agency (APA) under Part 91, Soil Erosion and Sedimentation Control, of Public Act 451 of 1994, Natural Resources and Environmental Protection Act, as amended (hereinafter referred to as Act 451). This status is evaluated on a region-by-region basis through an audit process conducted by MDEQ. SESC program audits generally take place on a five-year cycle. As an APA, preparation and approval of individual project specific soil erosion and sedimentation control permits is not required. In return, MDOT accepts responsibility for enforcement of the Department's program and procedures related to soil erosion and sedimentation control. The mechanism for enforcement is through the implementation of this manual, the Standard Specifications for Construction and all other contract documents.

The information and direction provided in this manual satisfies the Part 91 requirement for MDOT to have a documented program and adequate procedures to comply with applicable soil erosion and sedimentation control regulations. To ensure continued APA status, earth change activities on MDOT right-of-way, regardless of size or location, will be conducted in accordance with Part 91, the rules promulgated thereunder, this manual, and all related MDOT manuals and guides.

It is important that all MDOT personnel support the Department's commitment to minimize soil erosion and off-site sedimentation as part of the overall environmental stewardship responsibility accepted by the Department. This is accomplished, in part, by compliance with and enforcement of all contract documents, performance guides and manuals.

### 1.1 Applicable Laws and Administrative Rules

Act 451 requires various environmental measures to be enacted throughout the life of state transportation projects and activities to ensure that issues related to a healthy environment are appropriately considered. Act 451 includes several parts, two of which (Part 31 and Part 91) govern the soil erosion and sedimentation control procedures described in this manual. The remaining parts of Act 451 involve project specific permits such as those related to floodplains; inland lakes and streams; wetlands; dam safety; shoreline protection; Great Lakes submerged lands; and sand dunes.

**1.1.1 Part 31, Water Resources Protection** - Part 31 of Act 451 addresses the protection and conservation of the water resources of the state. This includes prohibition of pollution of the waters of the state by storm water runoff carrying sediment from earth change activities.

Part 21 Wastewater Discharge Permit of the state administrative rules contains the administrative rules promulgated for Part 31 of Act 451. These rules were promulgated to implement amendments to Act 451 that authorized the state wastewater discharge permit system compatible with the National Pollutant Discharge Elimination System (NPDES). Whenever this document references NPDES regulations or rules this is construed to mean Part 31 and the rules promulgated thereunder.

NPDES rule R323.2190(2)(e) requires construction sites disturbing one or more acres of land to undergo NPDES inspections with documentation of these inspections kept on file by MDOT for a period of at least three years from the date of the inspection.

**1.1.2 Part 91, Soil Erosion and Sedimentation Control** - The primary intent of Part 91 of Act 451 is to protect the waters of the state by minimizing erosion and controlling sediment.

Part 17 Soil Erosion and Sedimentation Control of the state administrative rules contains the administrative rules promulgated for Part 91 of Act 451. Whenever this document references SESC regulations or rules this is construed to mean Part 91 and the rules promulgated thereunder. In general, the term “Part 91 rules” is used in this manual to refer to both the regulations and the rules governing soil erosion and sedimentation control.

SESC rule R323.1704(1) requires soil erosion and sedimentation control permits for earth change projects which disturb one or more acres of land, or which is within 500 feet from the water’s edge of a lake or stream. MDOT’s APA status supersedes the individual permit process provided that the Department enforces soil erosion and sedimentation control procedures approved by MDEQ.

**1.2 MDOT’s Soil Erosion and Sedimentation Control Program**

This manual represents one facet of MDOT’s overall soil erosion and sedimentation control program. The overall program consists of commitment to environmental stewardship responsibilities; appropriate staff training; specifications and project plans that address erosion control issues; and preparation and/or enforcement of earth change plans as required.

**1.2.1 Environmental Stewardship Commitment** - The commitment to fully support the activities necessary to maintain APA status is embodied in the MDOT mission statement and vision statement. MDOT is committed to complying with the procedures outlined in this manual and other MDEQ permit conditions throughout all phases of project development (planning and design) and delivery (construction and maintenance).

A proactive approach is necessary to effectively minimize erosion from disturbed areas thereby reducing resulting off-site sedimentation. Whenever practicable, stronger contract language; stronger enforcement of this contract language; and better inspection, documentation and follow-up will be implemented to reach this goal.

Project/activity specific inspection and maintenance of erosion and sedimentation controls are the responsibility of MDOT and the Contractor. If deficiencies are documented, MDOT will notify the Contractor of the deficiency and work to bring the site into compliance within five days from the date of the notice, or other time frame stated in the notice, or will submit a plan to MDEQ proposing appropriate measures.

**1.2.2 SESC (Part 91) Training** – Individuals responsible for administering and enforcing Part 91 through MDOT’s SESC program will complete the MDEQ-sponsored Comprehensive SESC examination. These individuals may prepare to take the examination through either a self-study course using materials available from the MDEQ or by completing a training program offered by MDEQ. Refer to section 1.2.4 for additional information on recertification.

The SESC Staff Engineer will work with TSCs and Region offices and the Construction & Technology Technical Training Coordinator to ensure all appropriate MDOT staff successfully complete SESC (Part 91) training as required by MDEQ.

Administering and enforcing the MDOT program consists of quality assurance oversight; preparation of standards and specifications related to SESC; and preparing and reviewing construction and maintenance project plans involving earth change activities.

At a minimum, SESC program administrators within MDOT include the following positions:

- SESC Staff in C&T;
- Region Resource Analysts/Specialists
- Region Soils Engineers
- Development (design) Engineers;
- Delivery Engineers (construction project engineers) and their assistants;
- Senior Construction Technicians (senior inspectors)
- Maintenance Supervisors/Coordinators; and
- Aeronautics Project Managers.

The MDEQ-sponsored comprehensive SESC examination for program administrators covers of the following topics:

- Storm Water Runoff, Soil Erosion and Sedimentation: Processes and Impacts
- Controlling Runoff, Erosion, and Sedimentation on Construction Sites
- Vegetative Stabilization
- Plan Development, Information Sources, Plan Review and Inspections
- Laws, Rules and Inspections
- [SESC] Statute and Administrative Rules
- Soils and Runoff
- Revised Universal Soil Loss Equation (RUSLE)
- Sedimentation Basins
- Diversions

**Exception for Inspectors:** Individuals responsible only for conducting SESC inspections, including enforcing MDOT standards and specifications to ensure continued site compliance during earth change operations, will complete the MDEQ-sponsored SESC/CSWO Inspector exam. SESC Inspectors are responsible for ensuring that SESC measures are implemented and maintained according to the plans, procedures and specification requirements and that the prescribed measures are effective in minimizing soil erosion and preventing off-site sedimentation. SESC Inspectors may order a contractor or in-house staff to install or maintain any control measures identified in the plans or in established Performance Guides in the case of Maintenance operations. If the prescribed SESC measures included in the plans or performance guides, are not effective, the SESC Inspector will seek the advice and assistance of an individual who has completed the comprehensive SESC exam.

At a minimum, SESC Inspectors include the following positions when an individual is designated as the inspector for earth change operations or when SESC inspection is part of work duties:

- Construction Technicians (journeyman level); and
- Transportation Maintenance Workers

The MDEQ-sponsored certification program for SESC inspectors consists of general instruction on sedimentation and erosion control issues including the following topics:

- Storm Water Runoff, Soil Erosion and Sedimentation: Processes and Impacts
- Controlling Runoff, Erosion, and Sedimentation on Construction Sites
- Vegetative Stabilization
- Plan Development, Information Sources, Plan Review and Inspections
- Laws, Rules and Inspections

**1.2.3 NPDES (Part 31 Storm Water) Training** – Effective May 1, 2009 the certified storm water operator training previously offered by the MDEQ is no longer provided as a separate training class. These individuals will instead complete the SESC/CSWO Inspector examination and will be qualified to perform both storm water and SESC inspections. Individuals responsible for conducting storm water inspections are required to inspect soil erosion and sedimentation control measures for compliance with the NPDES requirements. In addition, the storm water inspectors are responsible for ensuring that sediment and other pollutants and wastes originating from the site do not enter surface waters of the state.

In most cases, MDOT staff identified as SESC inspectors will conduct storm water inspections concurrently with SESC inspections for construction and maintenance operations. As the MDOT Storm Water Management Program expands, certain individuals may also be required to conduct inspections of structural, vegetative, and operational storm water best management practices not associated with active construction and maintenance operations.

**1.2.4 Recertification** - Certification under either the comprehensive SESC or the SESC/CSWO inspector program is valid for five years. Completing the recertification process, including passing the MDEQ exam for the level of recertification sought, is required for renewal.

**1.2.5 In-House Training** - Additional training related to environmental stewardship including erosion control and storm water management will be developed and conducted on an as-needed basis. This in-house training may be substituted as a refresher course for individuals who have previously completed the appropriate level of MDEQ-sponsored training and whose five-year certification must be renewed. Individuals taking the in-house training as a refresher course will be required to pass the MDEQ exam for the level of recertification sought.

**1.2.6 Earth Change Plan** - An earth change plan conforming to rule R323.1703 will be prepared by MDOT for projects and activities involving earth changes that are not covered by the approved procedures in this manual. The elements of this plan may be incorporated throughout the MDOT contract documents or may be a stand-alone document for projects and activities that do not involve preparation of a full set of plans. At this time, the only exception to this requirement is ditch clean-out (Activity 12300) when this activity is conducted according to MDOT-approved work methods.

The Contractor is required to develop an earth change plan for earth change activity undertaken outside the limits of earth disturbance but within the right-of-way. The Engineer will review all earth change plans submitted by the Contractor to determine if

all requirements of rule R323.1703 are addressed and that the plan is effective. This review and approval will be completed before the Contractor is allowed to begin any earth change activity in the area between the limits of earth disturbance and the right-of-way.

**NOTE:** The Contractor is required to develop an earth change plan unless the only earth change activity undertaken outside the limits of earth disturbance is within the clearing limits as specified by subsection 201 of the standard specifications and as shown on the plans. However, adequate measures must be implemented and maintained to effectively prevent or reduce erosion and subsequent off-site sedimentation that may result from this activity.

### **1.3 Key MDOT Organizational and Procedural Definitions**

This manual is organized to complement MDOT's Development and Delivery structure. The development organization consists of staff dedicated to planning, obtaining right-of-way, and designing construction projects. The delivery organization consists of staff overseeing or performing construction and maintenance of the highway system.

During a construction project, the construction unit is responsible for contract administration and oversight of private construction firms or vendors (hereinafter referred to as Contractors) performing highway/bridge projects. These projects are constructed in conformance with the MDOT Standard Specifications for Construction, which states: *"It is the responsibility of the Contractor to take such measures as may be necessary and comply with all federal, state and local laws and regulations for the protection of the public health, safety, welfare, and environment in the performance of the work."* The Contractor is further bound by contract language to comply with all such laws and regulations throughout the life of the project, including the installation and maintenance of temporary erosion control measures and the installation of permanent measures. (Ref. Standard Specifications for Construction subsections 107.01, 107.15 and 208.03).

This contractual obligation placed on the Contractor does not diminish MDOT's ultimate responsibility under Act 451 for minimizing soil erosion and reducing the subsequent off-site sedimentation to the maximum extent practicable during construction of our transportation system.

A maintenance project/activity may be completed by MDOT maintenance forces, contract agencies, or Contractors with oversight provided by the maintenance unit. This work includes the installation and maintenance of temporary erosion control measures on maintenance projects. The maintenance unit is also responsible for maintaining permanent erosion control measures along all state highways after a construction project or a maintenance project contract is closed out.

**1.3.1 Contract Documents** - For MDOT projects, the term 'contract documents' used throughout this manual is construed as, *"The written agreement between the Department and the Contractor setting forth the obligations of the parties for the performance of and payment for the prescribed work. The contract includes the advertisement for bids, bidding document, progress schedule, contract form, contract bonds, standard specifications, supplemental specifications, special details, standard plans, plans, proposal, addenda, notice of award, ... "* and other documents as applicable. (Ref. Standard Specifications for Construction, subsection 101.03)

This manual is included by reference in the standard specifications and is therefore a contract document. (Ref. Standard Specifications for Construction, page iii and Supplemental Specification for Errata to the 2003 Standard Specifications for Construction) The E&S Details in this manual may be modified within special details, plans, the proposal, or other contract documents to meet site-specific field conditions for a given project.

**1.3.2 Project Manager** - The 'Project Manager' referenced in this document is the person responsible for developing the contract documents. By signing the title page of the plans, the Project Manager and Delivery Engineer are recommending approval of the contract documents to the Director or designee of MDOT. All project managers responsible for developing construction or maintenance contract documents will complete the MDEQ-sponsored SESC (Part 91) Training.

**1.3.3 Engineer** - The 'Engineer' referenced in this document is defined in the Standard Specifications for Construction as: "*The Director of the Department or the Engineer designated by the Director, acting directly or through authorized representatives, who is responsible for engineering supervision of the construction...*" (Ref. Standard Specifications for Construction, subsection 101.03) The Engineer assigned responsibility for a specific project is the TSC Delivery Engineer for the geographic area in which the project is located. The Delivery Engineer assigns engineers and technicians as authorized representatives to perform inspection and testing on all projects.

**1.3.4 MDOT Construction Permits** - Non-MDOT work performed by others on MDOT right-of-way requires a permit from MDOT to occupy the right-of-way. In accordance with definitions contained in the Part 91 rules, an applicant for a utility or other governmental agencies engaged in construction in a public right-of-way is considered to be the landowner for purposes of obtaining and complying with a soil erosion permit, when applicable, from the appropriate enforcing agency (municipal or county). Information related to SESC and storm water management requirements is provided with each application package. (Ref. Construction Permit Manual and Act 368 )

Utility companies and private parties performing utility/driveway work under an MDOT permit to occupy the right-of-way must minimize soil erosion and off right-of-way sedimentation. It is the responsibility of the appropriate MEA or CEA to enforce compliance with Act 451 on those projects.

#### **1.4 Related MDOT Documents**

This manual includes the procedures for establishing soil erosion and sedimentation controls for earth change activities regulated under Part 31 and Part 91 of Act 451 resulting from the construction, maintenance and operation of the state transportation system. MDOT is committed to the careful consideration and implementation of these procedures during the planning, design and completion of all operations that involve earth change activities.

References are made in this manual to other MDOT publications as well as to specific parts of relevant environmental statutes. Due to the volume of information necessary for MDOT to carry out its mission and the need to stay current with changing laws, rules and engineering technology, no attempt is made to reproduce all related MDOT documents in this manual. Where reference is made in this manual to related MDOT procedures and publications, the

portions of those documents that address soil erosion and sedimentation control are considered to be included as if they were repeated here in their totality. Where practical, cross references are specifically listed in this manual. If information, direction, or procedures related to soil erosion and sedimentation control contained in related documents is less restrictive than Part 91, or this manual, then Part 91 and this manual will take precedence.

For projects let under the Standard Specifications for Construction, this manual is considered a contract document. The Contractor is obligated to conform to the information and guidance provided herein and all site specific soil erosion and sedimentation control measures included in the contract documents.

At a minimum, the following MDOT documents contain specifications, standards and/or practices related to soil erosion and sedimentation control and are referenced herein.

**1.4.1 MDOT Standard Specifications for Construction** - Contains the current written directions, provisions and requirements pertaining to performance of work on MDOT projects. It is the base document controlling a project. The standard specifications may be modified by supplemental specifications and special provisions contained in the contract documents.

- Section 107 Legal Relations and Responsibilities to the Public
- Section 108 Prosecution and Progress
- Section 109 Measurement and Payment
- Section 201 Clearing
- Section 205 Roadway Earthwork
- Section 208 Soil Erosion and Sedimentation Control
- Section 813 Slope Protection
- Section 816 Turf Establishment
- Section 916 Erosion Control Materials
- Section 917 Turf and Landscaping Materials

**1.4.2 Standard Plans** - Drawings approved for repetitive use, showing details to be used where appropriate for the construction of road and bridge appurtenances.

- R-96 Series - Soil Erosion and Sedimentation Control Measures
- R-100 Series - Sodding, Seeding and Tree Planting

**1.4.3 Road Design Manual** - Provides criteria for the design of roads and for the preparation of road plans.

- Subsection 2.02.03.F Erosion Control
- Subsection 10.04.04.B Drainage and NPDES Runoff Controls
- Subsection 10.04.04 C Soil Erosion and Sedimentation Control

**1.4.4 Drainage Manual** - Gives the design engineer a basic working knowledge of hydrology, hydraulics and storm water management.

- Subsection 9.1.2 Soil Erosion and Sedimentation Control

**1.4.5 Storm Water Management Plan** - The SESC program is directly related to the MDOT storm water management program as one of six minimum measures required for compliance with the statewide permit issued to MDOT under Part 31 of Act 451. Section 3.5 of the Storm Water Management Plan contains a discussion of the SESC program in

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the context of storm water control to minimize sediment load to the waters of the state during the construction and operation of MDOT facilities.

- 1.4.6 Program/Project Management System's Preconstruction Process Documentation Manual** - Documents the Department's preconstruction process as it pertains to construction project development. The preconstruction process begins with the preliminary planning for projects, and ends with the construction contract award.
- Task 3710 Develop Required Mitigation
  - Task 3720 Submit Environmental Permit Applications
  - Task 3730 Obtain Environmental Permits
- 1.4.7 Construction Manual** - Guide detailing the authority and responsibility for project administration. Provides instructions on project management, construction surveying, construction inspection and materials sampling.
- Section 103 Work Orders
  - Section 201 Clearing
  - Section 205 Roadway Earthwork
  - Section 208 Soil Erosion and Sedimentation Control
- 1.4.8 Construction Permit Manual** - Guidance on procedures for administering the permit process for public utility or private party work on, or use of, the trunkline right-of-way within the provisions of federal and state laws.
- 1.4.9 Maintenance Performance Guides** - These guides describe the equipment, materials and recommended work methods for various maintenance activities.
- 1.4.10 MDEQ Soil Erosion and Sedimentation Control Training Manual** - While not an MDOT publication, this training manual contains much useful information on the proper selection, design and construction of SESC measures. The training manual is available from the MDEQ web site.



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## 2. PROJECT DEVELOPMENT

Project Development involves the planning, design and acquisition of real estate, if required, for the project.

### 2.1 Planning Phase

Effective erosion control begins in the planning phase of a project. Areas with unstable or transportable soils, such as loess soils, alluvial fans, and some glacial deposits are potential problem areas for erosion during construction. Identification of these soil types is a necessary prerequisite to selecting erosion control measures for a project. If applicable, soil borings and reports will be reviewed and field investigations conducted during the planning phase of a project to identify these areas. Information on the potential for a given soil to erode can be found in county soil surveys and by contacting the local Conservation District office or the Construction and Technology Geotechnical Services Unit.

During the planning phase of a project, areas susceptible to damage from excessive sedimentation will also be identified. Some examples are rivers, impoundments, irrigation systems, lakes, streams, and wetlands. Cropland, home sites, and other developed areas will also be considered.

Each construction project is subject to one of three types of early preliminary engineering analysis during the planning phase depending on the nature of the project and the anticipated social, economic, and environmental impacts and necessary mitigation. These reviews establish the environmental clearances required from federal, state, and/or local resource agencies. Recommended erosion control measures will be incorporated into the contract documents during the design phase for implementation in the construction phase.

**2.1.1 Categorical Exclusion** - The basic review level is a Categorical Exclusion. This review considers actions that individually or cumulatively do not involve significant environmental impacts. They are actions that:

- Do not induce significant impacts to planned growth or land use;
- Do not require the relocation of significant numbers of people;
- Do not have a significant impact on any cultural, natural, recreational, historic, or other resources;
- Do not involve significant air, noise, or water quality impacts; and,
- Do not have a significant impact on travel patterns.

**2.1.2 Environmental Assessment** - The next level of review is an Environmental Assessment. This review is considered a decision document. The assessment is performed when there is uncertainty as to the significance of the impacts of a particular project. The assessment considers the project need, alternatives considered, impacts, and comments and coordination with the Federal Highway Administration (FHWA) and the public. If a Finding of No Significant Impact is received from FHWA, the project proceeds. If significant impacts are found, the project moves to the Environmental Impact Statement process.

**2.1.3 Environmental Impact Statement** - The highest, most comprehensive, level of review is an Environmental Impact Statement (EIS). This review considers multiple studies and analyses with extensive involvement of environmental resource agencies throughout the

review. The final EIS reports on the environmental impacts and mitigation necessary for the particular project. A Record of Decision is required from the FHWA for a project to proceed. The EIS process is a comprehensive environmental analysis of the purpose of and need for the project; the potential transportation solutions by considering corridors with various alignments, and a detailed environmental analysis of a recommended alternative.

For major new alignment projects undergoing the EIS environmental process the alignment and grade, especially at stream crossings, will be carefully considered in an attempt to minimize SESC and NPDES concerns. The alignment of a highway may be shifted to eliminate or minimize encroachment into a surface water environment. A change in grade may be made to avoid exposing highly erodible soils.

Proposed alignment and grade changes need to be consistent with highway safety criteria and should be made to blend and fit the highway to the natural landscape. This will minimize the extent of cut and fill during construction and reduce future erosion related maintenance problems. In designing the project's line and grade, it is important that ground water and surface water be allowed to pass through the highway right-of-way or be intercepted with minimal disturbance to streams and without causing erosion problems.

Whenever practical, stream crossings will be made at stable reaches of a stream where straight banks are evident and there are no meanders. The direction and amount of water flowing at various stages must be considered in locating hydraulic openings to avoid excessive scour and erosion problems. To reduce the potential for these problems, stream crossings and encroachments should be kept to a minimum.

## **2.2 Design Phase**

Projects are designed to minimize earth disturbances with emphasis placed on areas with highly erodible soils and areas adjacent to lakes, streams, and wetlands. The Program/Project Management System's Preconstruction Process Documentation Manual discusses specific responsibilities for development of soil erosion and sedimentation controls as they relate to recommended mitigation measures.

Each region has designated staff responsible for identifying locations and quantities for erosion control measures for projects in the region. Soil erosion and sedimentation control items of work must be practical, reasonable and effective during the construction phase of a project in order to prevent off-site sedimentation and ensure adequate protection of the waters of the state.

The project manager will review environmental mitigation commitments and MDEQ permits and will consult with appropriate staff to ensure that additional erosion control measures, pay items, or quantities are included to protect specific areas with highly erodible soils and areas adjacent to lakes, streams, and wetlands. Staff available to the project manager for this consultation includes region soils engineers, drainage engineers, and resource analyst along with Construction and Technology Geoenvironmental Unit staff including the Grading and Drainage Engineer. The project manager will refer to Chapter 9 of the MDOT Drainage Manual for additional design and placement considerations for the various temporary and permanent soil erosion and sedimentation control measures to be incorporated into a project. The contract documents will clearly indicate the location for all appropriate measures.

MDOT Standard Plan R-96 Series Soil Erosion and Sedimentation Control Measures serves as the key to the soil erosion and sedimentation control measures typically used by MDOT. The Soil Erosion and Sedimentation Control (E&S) Details include a brief discussion of appropriate use and application of the measures. The soil erosion and sedimentation control key numbers from Standard Plan R-96 Series will be shown on the plan sheets in the general location where the measure is to be placed in the field. Standard Plan R-96 Series and the E&S Details are included in Section 6 of this manual.

For a log job, the need for erosion control measures will be considered; appropriate erosion control pay items included as required; and an earth change plan prepared for those log jobs involving earth change activities.

The success of erosion control and sediment collection during construction is highly dependent on the measures specified in the contract documents and available for use in the field. By providing a sufficient quantity of erosion control measures with clearly written specifications for their use and payment, MDOT will more readily fulfill the commitment to prevent off right-of-way sedimentation.

**2.2.1 Earth Change Plan** - Projects/activities that involve an earth disturbance are required by rule R323.1703 to have a soil erosion and sedimentation control plan that includes the following information:

- Scaled drawing of the work site
- Legal description (town, range and section number)
- Site location sketch
- Proximity to lakes and streams
- Predominant land features (including wetlands)
- Slope descriptions or contour intervals
- General description of soil types
- Physical limits of each proposed earth change
- Drainage and/or dewatering features
- Timing and sequence of earth change
- Descriptions and location of temporary and permanent soil erosion control measures
- Maintenance plan for soil erosion control measures

This information is included as part of the plan set and other contract documents for construction projects. When there is no set of plans, as for log jobs and some maintenance projects/activities, this information will be included in the proposal (log jobs), or in the MDOT-approved work methods for a specific earth change activity (maintenance projects). In certain circumstances the earth change plan will be a stand-alone document prepared by MDOT or the Contractor. (Refer to chapter 3 of this manual)

An example of an earth change plan that complies with the SESC rules is included in the Appendix of this manual.

**2.2.2 Principles of Earth Change Plan Preparation** - Three general principles apply when developing the earth change plan for a project.

- Erosion prevention is generally more effective than sediment control.
- Sediment control is generally more effective and less costly than repairing damage caused by uncontrolled sediment.

- Specific erosion control measures and details are more effective than generalized procedures.

**2.2.3 Design Plan Preparation** - Guidelines for designing to minimize soil erosion and sedimentation control include the following:

- Design slopes consistent with soil properties.
- Limit the area of unprotected soil exposure.
- Minimize and control concentrated flow rates with temporary and permanent barriers, basins, or other measures.
- Minimize the duration of unprotected soil exposure.
- Protect soil with vegetative cover, mulch, or other erosion resistant material.
- Retard or redirect runoff with engineered devices such as, ditches, dikes, and diversions.
- Trap sediment with temporary or permanent barriers, basins, or other measures as close to the source as possible.

**2.2.4 Temporary Erosion Control Measures** - Temporary soil erosion and sedimentation control measures will be specified in the contract documents. Temporary measures are used during construction to control erosion and sediment until the disturbed area is stabilized. Temporary measures include those that:

- Provide direct protection of the soil surface (ground cover, turf establishment, and riprap).
- Direct the runoff to an area where concentrated flows will not cause erosion (diversion dikes and ditches).
- Remove sediment from the concentrated flow of waters by filtering or slowing the velocity of the sediment-laden water (gravel filter berms, check dams, and sediment traps).
- Remove sediment from the non-concentrated overland flow of waters by filtering or slowing the velocity of the sediment-laden water (silt fence)

**2.2.5 Permanent Erosion Control Measures** - Permanent soil erosion and sedimentation control measures will be specified in the contract documents. Permanent measures are placed during construction to minimize erosion and sedimentation in the project area during and after construction. Permanent measures remain in place after construction and may require periodic maintenance to remain effective until the area is stabilized.

**2.2.6 Notifications During the Design Phase**

- **NPDES Notification for Construction Projects** - For projects disturbing five acres or more and discharging to waters of the state, a Notice of Coverage (NOC) will be prepared by Project Development staff and submitted to the OESE for processing to MDEQ. Projects disturbing one to five acres do not require a NOC. Refer to Section 3.1.1 of this manual for notification requirements for these projects.
- **County Drain Commission Notification** - When work on an MDOT project involves activities within a designated county drain, the Michigan Drain Code requires that Project Development personnel send plans to the County Drain Commissioner.

### 3. PROJECT DELIVERY

As used in this section, MDOT right-of-way includes areas covered by grading permits where these permits are shown on the plans.

#### 3.1 Construction Projects

Soil erosion and sedimentation control measures selected during the development phase of a project are included in the contract documents. It is the responsibility of the Contractor as well as the Engineer to implement those measures. The Contractor must maintain temporary and permanent erosion control measures during construction until the disturbed area is stabilized or until the contract is closed out. If a disturbed area has not been stabilized at the time the contract is closed out, arrangements will be made for maintaining the erosion control measures until the area is stabilized and for their removal as necessary. As necessary, erosion control measures may be adapted, adjusted, and added to maintain the level of control required to comply with Act 451, and project specific permits.

##### 3.1.1 Notifications for Construction Projects

- **SESC Notification for Construction Projects** - As an APA, MDOT is exempt from obtaining individual SESC permits from the municipal enforcing agency (MEA) or county enforcing agency (CEA). However, MDOT must notify the MEA or CEA of all construction activities that involve earth disturbances within MDOT right-of-way. The complete list of MEA and CEA contacts is available on the MDEQ Web Site at [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on <Land>, then <SESC>, then <SESC Agencies>. Only those agencies listed as MEAs or CEAs will be notified. The APAs and Conservation Districts included on the Web Site do not need to be notified.

**NOTE:** *Notification to the enforcing agency of the proposed earth change activity on MDOT construction projects is documented by including the agency(s) in the distribution of the minutes of the preconstruction meeting.*

- **NPDES Notification for Construction Projects** - On projects for which a NOC is submitted during the design phase, MDOT will receive a letter of authorization from MDEQ. The Engineer will complete and submit the Notice of Termination (NOT) to the OESE for processing to the MDEQ upon project stabilization.

Projects disturbing one to five acres, and discharging to the waters of the state, do not require a NOC or NOT but must comply with the requirements of Part 31.

##### 3.1.2 Contractor's Operations

- **Off the Right-of-Way** - The Contractor is required to coordinate directly with the landowner to obtain all applicable federal, state, and local permits, including SESC and NPDES permits, when working outside of MDOT right-of-way. The Contractor is responsible for the design and implementation of erosion control measures and for site restoration in areas off MDOT right-of-way. Payment for this restoration will not be included in the contract.

Prior to disturbing any site off MDOT's right-of-way for borrow operations, waste or disposal areas, haul roads, storage sites, or any other earth change activity, the Contractor is responsible for ensuring that all required permits and property owner

agreements are obtained. The Contractor must provide the Engineer copies of these permits and agreements for the project file.

- **On the Right-of-Way but Outside the Limits of Earth Disturbance** - When a Contractor chooses to perform earth change activities within MDOT's right-of-way but outside the limits of earth disturbance the Contractor is responsible for preparing the earth change plan for this work. These activities include, but are not limited to, placement of a portable plant, stockpiling materials, or establishing a haul road. The plan must be submitted to, and approved by, the Engineer prior to the start of the earth change activities. The plan must include all details listed in Section 2.2.1 of this manual.

**NOTE:** *The Contractor is required to develop an earth change plan unless the only earth change activity undertaken outside the limits of earth disturbance is within the clearing limits as specified by subsection 201 of the standard specifications and as shown on the plans. However, adequate measures must be implemented and maintained to effectively prevent or reduce erosion and subsequent off-site sedimentation that may result from this activity.*

- 3.1.3 Soil Erosion and Sedimentation Control During Construction** - The Engineer will discuss the contract provisions related to soil erosion and sedimentation control with the Contractor prior to the start of related work. The Contractor must not disturb any land or water outside of the limits of earth disturbance but within the project right-of-way or acquired easements without prior authorization from the Engineer and approval of an earth change plan. The plan must include all details listed in section 2.2.1 of this manual. Restoration of any disturbed area beyond the approved limits must be performed by the Contractor - at the Contractor's expense. This work must be completed in accordance with MDOT restoration specifications and as directed by the Engineer.

Construction operations must be conducted in a manner that minimizes erosion and off-site sedimentation. Prior to commencing any construction operation, that constitutes an earth change activity, including clearing; appropriate temporary and permanent erosion and sedimentation control measures must be installed as specified on the plans. Temporary erosion and sedimentation control measures must be installed to minimize potential problems, to correct erosive conditions that develop during construction, and to stabilize inactive construction areas.

- 3.1.4 Time Limitations During Construction** - All grading sections must be brought to final grade as soon as possible. Permanent erosion and sedimentation control for slopes, channels, ditches and other disturbed areas must be completed within five calendar days after final grading or final earth change. Slopes and ditches within 150 feet of a stream, lake or wetland must be permanently restored within 24 hours of final grading or final earth change. A site is considered to be permanently stabilized when all permanent control structures have been installed, maintenance for the permanent controls has been arranged, vegetation is well established, and temporary controls have been removed.

If it is not possible to permanently stabilize a disturbed area after an earth change has been completed or if significant earth change activity ceases, then temporary soil erosion and sedimentation control measures must be maintained until permanent soil erosion and sedimentation control measures are in place and the area is stabilized.

Refer to subsection 208.03.B of the Standard Specifications for Construction for additional information on time limitations.

**3.1.5 Inspections During Construction** - SESC regulations require that temporary erosion control measures be maintained daily. SESC regulations do not explicitly call for regularly scheduled inspections. NPDES regulations require regular inspection and documentation of the condition and effectiveness of soil erosion and sedimentation control measures on earth change activities one or more acres in size and discharging to the waters of the state.

At a minimum, inspection of all soil erosion and sedimentation control measures and devices will be completed once per week and within 24 hours after every precipitation event that results in a discharge from the right-of-way. If an area is temporarily stabilized, as discussed in section 3.1.4 above, inspections will continue in the temporarily stabilized areas to ensure the adequacy of the temporary measures. These inspections will continue until the disturbed area is permanently stabilized.

The need for corrective actions will be documented and followed up on to ensure the actions are carried out. When needed, corrective action is required within 24 hours of the inspection if sediment is discharging to the waters of the state and within 5 days of the inspection in all other circumstances.

These inspections and corrective actions will be documented using the National Pollutant Discharge Elimination System and Soil Erosion and Sedimentation Control Inspection Report (Form 1126). Deficiencies, including a deadline for completing the corrective actions, will be brought to the attention of the Contractor. This notice may be made by providing a copy of Form 1126 to the Contractor with any corrective actions and related deadlines indicated under "Remarks". A log of the inspections and corrective actions will be placed in the project file and will be retained for a period of three years from the date of the inspection.

Completed corrective action will be documented in the project file with reference to the appropriate inspection report(s). If corrective actions are not completed within the specified timeframe, the steps outlined in Section 4 of this manual will be initiated. All resulting documentation placed in the file will also be referenced to the appropriate inspection report(s).

## **3.2 Maintenance Projects and Maintenance Activities**

Some maintenance operations have potential for impact on lakes, streams, and wetlands. MDOT will conduct maintenance projects and activities in a manner that minimizes potential for soil erosion and off right-of-way sedimentation and will incorporate applicable soil erosion and sedimentation control measures included in this manual.

Appropriate SESC measures and NPDES requirements will be included when planning, designing, and completing maintenance projects and activities involving earth disturbances, regardless of size and location. An earth change plan, as described in section 2.2.1 of this manual, will be prepared for all maintenance projects and activities involving earth disturbances unless an alternate process has been approved by the MDEQ for a specific maintenance activity.



**NOTE:** *The environmental procedures for ditch clean-out (Activity #12300), included in the Appendix of this manual, is the only MDOT- approved work method for a specific earth change activity at this time.*

Permits are necessary for activities related to draining, dredging or filling a wetland, floodplain, lake or stream. Other MDEQ and/or U.S. Army Corp of Engineer permits may be necessary. Contact appropriate MDOT staff to determine the need for additional permits prior to the start of a maintenance project or activity.

### **3.2.1 Notifications for Maintenance Projects and Activities**

- **SESC Notification for Maintenance Projects and Activities** - As an APA, MDOT is exempt from obtaining individual SESC permits from the MEA or CEA. However, MDOT must notify the MEA or CEA prior to the start of maintenance projects and activities involving earth change activities. The complete list of MEA and CEA contacts is available on the MDEQ Web Site at [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on <Land>, then <SESC>, then <SESC Agencies>. Only those agencies listed as an MEA or CEA need to be notified. The APAs and Conservation Districts included on the Web Site do not need to be notified.

**NOTE:** *An annual notice can be provided to the MEA/CEA to cover projects and activities planned for the coming year. An individual notice will be required for projects and activities added to the program after the annual notice.*

- **County Drain Commission Notification for Maintenance Projects** - When a MDOT maintenance project or activity involves work within a designated county drain, the Michigan Drain Code requires notification of the County Drain Commissioner prior to the start of work.
- **NPDES Notice of Coverage for Maintenance Projects** - For projects and activities disturbing five acres or more and discharging to the waters of the state, a Notice of Coverage (NOC) will be prepared and submitted to the OESE for processing to MDEQ.

On projects and activities for which a NOC is submitted, MDOT will receive a letter of authorization from MDEQ. The TSC maintenance supervisor/coordinator, or designee, will complete and submit the Notice of Termination (NOT) upon stabilization of the affected area.

Projects and activities disturbing one to five acres, and discharging to the waters of the state, do not require a NOC or NOT but must comply with the requirements of Part 31.

### **3.2.2 Soil Erosion and Sedimentation Control for Maintenance Projects and Activities -**

Maintenance projects and activities that involve earth changes will be conducted in a manner that minimizes soil erosion and off-site sedimentation. Before starting any maintenance project or activity involving earth changes, appropriate erosion and sedimentation control measures will be installed. Temporary soil erosion and sedimentation control measures will be installed to minimize potential problems, to correct erosive conditions that develop during the maintenance operation, and to stabilize inactive work areas. All necessary erosion control measures will be maintained until disturbed areas are stabilized.

**3.2.3 Time Limitations for Maintenance Projects and Activities** - Permanent soil erosion and sedimentation control measures for all slopes, channels, ditches, or any disturbed land area will be complete within five calendar days after final grading or the final earth change is complete. If it is not possible to permanently stabilize a disturbed area after an earth change is complete or if significant earth change activity ceases, temporary soil erosion and sedimentation control measures will be maintained until permanent soil erosion and sedimentation control measures are in place and the area is stabilized.

**3.2.4 Inspections for Maintenance Projects and Activities** - SESC regulations require that temporary erosion control measures be maintained daily. SESC regulations do not explicitly call for regularly scheduled inspections. NPDES regulations require regular inspection and documentation of the condition and effectiveness of soil erosion and sedimentation control measures on earth change activities one or more acres in size and discharging to the waters of the state.

At a minimum, inspection of all soil erosion and sedimentation control measures and devices will be completed once per week and within 24 hours after every precipitation event that results in a discharge from the right-of-way. If an area is temporarily stabilized, as discussed in section 3.2.2 above, inspections will continue in the temporarily stabilized areas to ensure the adequacy of the temporary measures. These inspections will continue until the disturbed area is permanently stabilized.

The need for corrective actions will be documented and followed up on to ensure the actions are carried out. When needed, corrective action is required within 24 hours of the inspection if sediment is discharging to the waters of the state and within 5 days of the inspection in all other circumstances.

This inspection may be documented using the National Pollutant Discharge Elimination System and Soil Erosion and Sedimentation Control Inspection Report (Form 1126) and the notice may be made by providing the Contractor or appropriate Maintenance staff with a copy of Form 1126 with any corrective actions and related deadlines indicated under "Remarks." A log of the inspections and corrective actions will be maintained on file at the TSC for review and will be retained for a period of three years from the date of the inspection.

Alternate methods of documenting inspections must be approved by the maintenance supervisor/coordinator or other individual designated by the TSC Manager or Region Engineer. Regardless of the form or format used, all documentation of erosion and sedimentation control inspections must be retained for a period of three years from the date of the inspection.

**3.2.4 Maintenance Performance Guides** - Operational guidelines for maintenance activities are described in the performance guides found on MDOT's Maintenance Activity Reporting System (MARS) Web Site. The ditch clean-out activity has been identified as the most common maintenance activity subject to SESC and NPDES regulations and therefore is included in the Appendix for reference. The procedures for minimizing soil erosion and sedimentation described in the ditch clean-out performance guide will be followed in lieu of preparation of individual earth change plans.

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## 4. COMPLIANCE AND ENFORCEMENT

During the course of construction and maintenance of transportation facilities, even well designed and properly placed erosion control measures can fail to perform as originally expected. Compliance and enforcement actions may be necessary to ensure that erosion control measures are implemented or improved to preserve the natural resources of the State of Michigan and to prevent off-site sedimentation.

Subsections 4.1 and 4.2 identify options available to MDOT when progressive enforcement of the contract becomes necessary to correct and/or prevent soil erosion and sedimentation control problems. Current Department specifications, procedures, and guidance documents will be followed when implementing any of the actions listed in subsections 4.1 and 4.2. Subsection 4.3 identifies coordination efforts with MDEQ to resolve on-going soil erosion and sedimentation control issues.

The Department's goal is not to wait until MDEQ has to get involved before taking steps to bring the project into compliance with the approved MDOT SESC program. A successful and effective APA program is one in which MDEQ is not relied upon to provide the level of enforcement needed to ensure compliance with our program. All compliance and enforcement actions will be documented carefully so that in the event that a Contractor claim results, the Department will have the necessary information to determine the validity of the claim. This documentation will also be used to support the Contractor Performance Evaluation for the environmental category.

### 4.1 Construction Projects

MDOT contracts will be enforced to ensure the Contractor installs, inspects, and maintains appropriate soil erosion and sedimentation control measures in the field. Depending on the site and contract specific issues, the Engineer will determine the appropriate and progressive compliance and enforcement actions, including but not limited to the following. (Ref. Standard Specifications for Construction sections 108 and 109; MDOT Construction Manual section 103 and 208).

The first action is always to conduct adequate inspections throughout the project. If necessary, communicate deficiencies to the Contractor with specific actions that must be taken to repair, replace or modify SESC measures.

#### 4.1.1 Minor Deficiencies

- Conditions of SESC measures observed by any Department employee can be noted on the IDR and brought to the Contractor's attention (project staff) or brought to the attention of the project Engineer (non-project staff).
- Use Form 1126 to document the condition, effectiveness and need for additional SESC measures during required inspections.
- Contact region or Lansing staff with responsibility for SESC activities to discuss methods to improve site specific soil erosion and sedimentation control.
- If a MDEQ field inspector visits the site, use this opportunity to get their input on methods to effectively minimize erosion and reduce off-site sedimentation.

**4.1.2 Moderate and Continuing Problems** When taking any of the following actions, provide as much detail as necessary to convey the scope of the problem and the required action to bring the site into compliance.

- Issue a Work Order (Form 1137) directing the Contractor to correct deficiencies in a specified time frame.
- Issue Notice of Non-Compliance with Contract Requirements (Form 1165)
- Withhold payment for erosion control devices, erosion control maintenance and/or related items of work.
- Report deficiencies using interim and final Contractor Performance Evaluations (Form 1182) Refer to the rating guidance included in the MDOT Construction Manual for this item. The guidance current at the time of approval of this manual is included here for reference. Always refer to the most current Department guidance on this subject when completing Form 1182.

**14. To what degree does the Contractor meet the environmental requirements of the contract?**

Rating of 10: The Contractor exceeds the environmental requirements and provides required documentation without prompting by the Engineer.

Rating of 8: The Contractor meets the environmental requirements and provides required documentation without prompting by the Engineer.

Rating of 5: The Contractor meets the environmental requirements and provides required documentation only after notification by the Engineer.

Rating of 1: The Contractor meets environmental requirements only after repeated notification from the Engineer. The Engineer may issue orders to stop work, hold up payments, or have work completed by others.

**4.1.3 Severe and Non-Responsive** - These steps require advice and consent from one or more of the following: TSC Manager, Region Associate Engineer for Delivery, Region Engineer and the Assistant Attorney General – Transportation.

- Arrange for others to perform the work.
- Involve the performance bond company.
- Place the contract in default.

## **4.2 Maintenance Projects and Activities**

Maintenance work involving earth change activities performed by direct forces, contract agencies, or Contractors will incorporate appropriate soil erosion and sedimentation control measures. The Part 91 Inspector is responsible for compliance and enforcement on these projects. In the event that progressive compliance and enforcement is necessary, the Part 91 Inspector will work with Maintenance Supervisors/Coordinators and Maintenance Superintendents, and, if necessary, TSC Managers to seek appropriate action as follows:

### **4.2.1 Direct Forces Work - Minor to Moderate**

- Issue directions to staff to correct deficiencies in a specified time frame; follow up to ensure corrective action has been completed.
- Arrange additional staff training on proper work methods and the importance of soil erosion and sedimentation control.
- Arrange for others to perform the work.

### **4.2.2 Contract Agency Work - Minor to Moderate**

- Issue work orders (Form 1137) to correct deficiencies in a specified time frame; follow up to ensure corrective action has been completed.
- Arrange additional agency training on proper work methods and the importance of soil erosion and sedimentation control.

**4.2.3 Contract Agency Work – Severe** - These steps require advice and consent from one or more of the following: Maintenance Superintendent, TSC Manager, Region Associate Engineer for Delivery, Region Engineer and possibly the Assistant Attorney General – Transportation.

- Withhold payment.
- Issue stop work notices.
- Arrange for others to perform the work.
- Terminate the agency's maintenance contract.

**4.2.4 Contractor Work** - Use actions described above for construction projects experiencing minor to moderate SESC problems. Follow the Department's Vendor Performance process to document unsatisfactory performance of the work. This process is similar to the Contractor Evaluation for Construction projects. If the Contractor is non-responsive and the problem is severe, take steps necessary to terminate the contract and arrange for others to perform the work.

### **4.3 MDEQ Progressive Compliance (Escalation) Process**

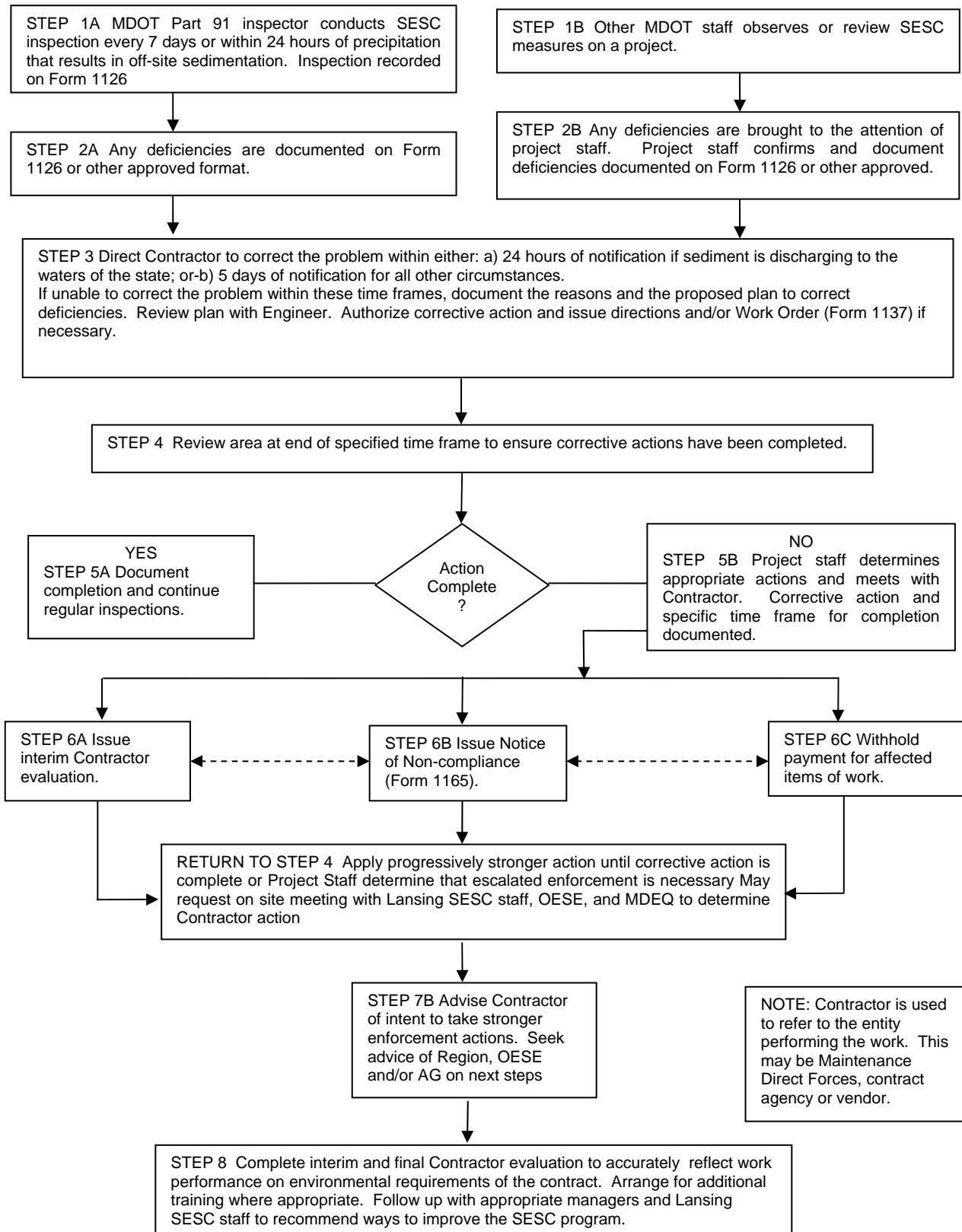
Every effort will be made to resolve soil erosion and sedimentation control issues as quickly as possible rather than wait for MDEQ to issue a Notice Letter.

If progressive compliance involving MDEQ becomes necessary, the process shown in the flow chart at the end of this section will be followed by MDEQ and MDOT. It may not be necessary to follow each step in the order shown provided the appropriate actions are taken in order to minimize the impacts to the environment and to bring the work area into compliance.

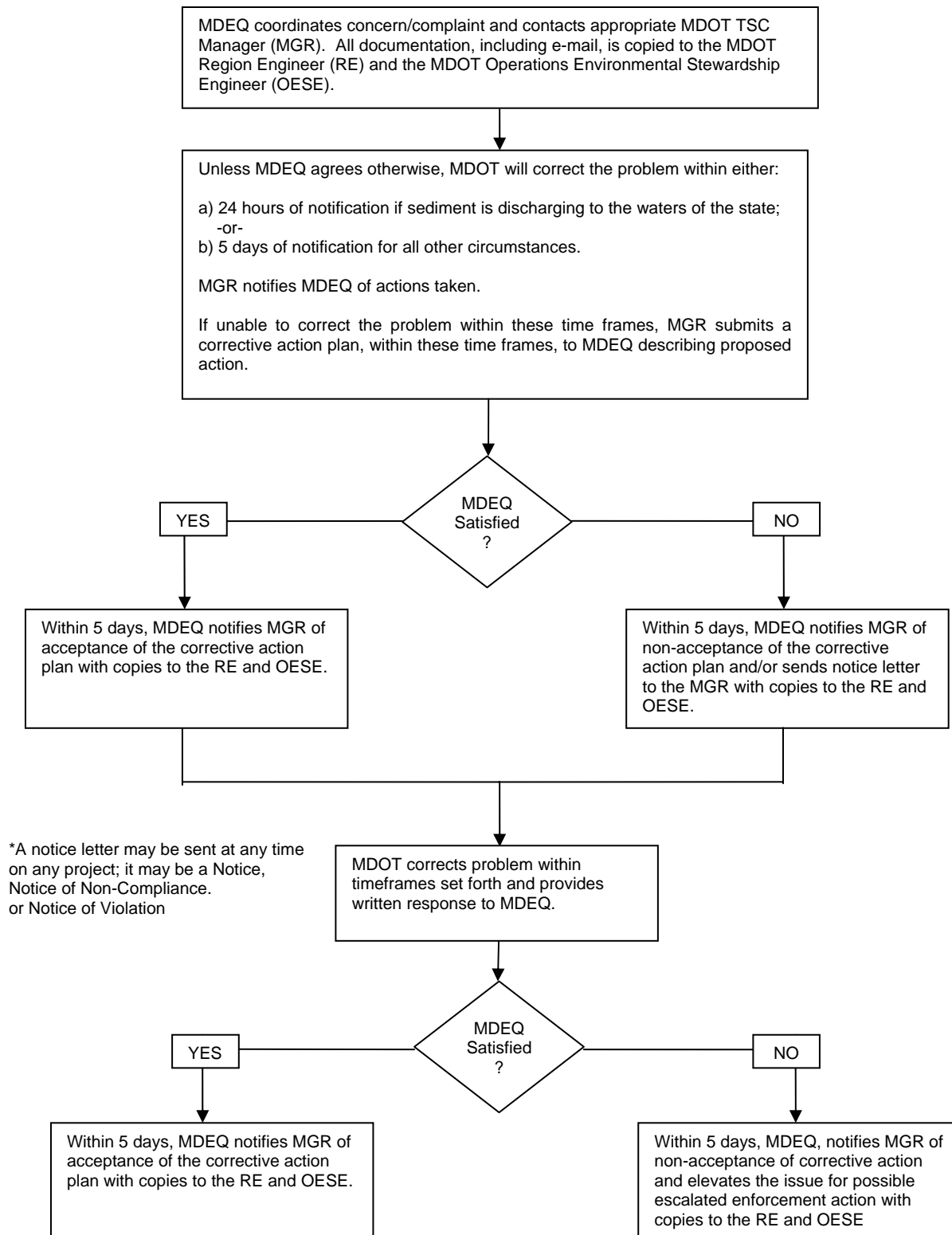
The TSC Manager will work to resolve the concerns as expeditiously as possible and in a time frame that is mutually agreed upon by MDEQ and the TSC Manager. TSC staff may work with designated region and Lansing central office staff to make the best decisions possible to improve deficient erosion control measures. If additional information is required, MDEQ may arrange a site meeting with the TSC staff. TSC staff will invite region resource staff and, if necessary, Lansing central office staff to this meeting.

When written correspondence is advised or required, e-mail or formal letters are acceptable. When formal correspondence is necessary, this correspondence may be sent electronically to save time but must be followed up with a signed hard copy. All correspondence will be copied to the appropriate Region Engineer and the Operations Environmental Stewardship Engineer at Construction & Technology.

### MDOT SESC COMPLIANCE PROCESS



### MDEQ SESC PROGRESSIVE COMPLIANCE PROCESS





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## 5. PERMIT REQUIREMENTS, ACTS AND RULES

This section contains information on additional permits that may be required on MDOT construction or maintenance projects. Always consult with designated staff in the region, TSC or Lansing central office on project specific permit requirements.

The full text of Parts 31 and 91 of act 451 and the related administrative rules, Parts 21 and 17, respectively, are found on the MDEQ web site.

Part 91 and Part 17 (SESC)

[http://www.michigan.gov/deq/0,1607,7-135-3311\\_4113---,00.html](http://www.michigan.gov/deq/0,1607,7-135-3311_4113---,00.html)

Part 31 and Part 21 (NPDES)

[http://www.michigan.gov/deq/0,1607,7-135-3313\\_4117-9765--,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_4117-9765--,00.html)

### 5.1 MDOT Permit Coordinators

When an activity conducted by MDOT requires a permit from MDEQ under state and/or federal statutes it will be coordinated in the following manner.

Permit acquisition for projects located in the Grand Region will be coordinated by the Environmental Permit Coordinator of the MDOT Grand Region Office at 1420 Front Ave. N.W., Grand Rapids, MI 49504, Phone: 616-451-3091.

Permit acquisition for projects located in the University and North Regions will be coordinated by the Environmental Permit Coordinator of the MDOT University Region Office at 4701 W. Michigan Ave., Jackson, MI 49201, Phone: 517-750-0401.

Permit acquisition for projects located in the Bay and Metro Regions will be coordinated by the Environmental Permit Coordinator of the MDOT Bay Region Office at 55 Morley Drive Saginaw, MI 48601, Phone: 989-754-7443.

Permit acquisition for projects located in the Southwest Region will be coordinated by the Environmental Permit Coordinator of the MDOT Southwest Region Office at 1501 E. Kilgore Road, Kalamazoo, MI 49009, Phone: 269-337-3900.

Permit acquisition for projects located in the Superior Region will be coordinated by the Environmental Permit Coordinator of the MDOT Superior Region Office at 1818 Third Avenue North, Escanaba, MI 49829, Phone: 906-786-1800.

This coordinated approach will ensure compliance with the current state and federal permit requirements and allow for efficient processing of MDOT applications by MDEQ.

### 5.2 Permit Requirements

One or more of the following permits may be required for a construction project, maintenance project or maintenance activity.

**5.2.1 Floodplain and Floodways** - Part 31 of Act 451 requires a Floodplain Permit from MDEQ for construction in a floodplain of any river or stream having a contributing

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drainage area of two square miles or more upstream of the crossing. In addition, MDOT must comply with the Governor's State Executive Order 1977-4, "State Flood Hazard Management Plan" which establishes flood standards and design requirements.

- 5.2.2 Inland Lakes and Streams** - Part 301 of Act 451 requires an Inland Lakes and Streams Permit from MDEQ for construction in, over or adjacent to inland lakes or streams.
- 5.2.3 Wetland Protection** - Part 303 of Act 451 requires a state wetland permit from MDEQ for construction in wetland areas. Any unavoidable wetland impacts resulting from construction activities in a regulated wetland must be properly mitigated based on specific ratios. Wetland mitigation plans must be developed and coordinated with MDEQ during the project development stage.
- 5.2.4 Dam Safety** - Part 315 of Act 451 requires a Dam Safety permit from MDEQ for construction, enlargement, repair, reconstruction, alteration, removal or abandonment of any dam in the State of Michigan.
- 5.2.5 Shorelines Protection and Management** - Part 323 of Act 451 may require a permit for work in MDEQ designated high-risk erosion areas, environmental areas, and flood risk areas. Such work includes erection of permanent structures in designated high-risk erosion areas or flood plain areas, or grading, dredging and filling in designated environmental areas.
- 5.2.6 Great Lakes Submerged Lands** - Part 325 of Act 451 requires a Great Lakes Submerged Land permit from MDEQ for any dredging, filling or related construction activities in, over, or adjacent to any of the Great Lakes.
- 5.2.7 Sand Dunes Protection and Management** - Part 353 of Act 451 may require MDEQ permits for uses in critical dunes areas, as designated by the MDEQ, which would include grading, filling or excavating activity.
- 5.2.8 Section 404C (Federal)** - The Federal 404 Permit Program of the Clean Water Act authorizes coordination of federal permits under the joint permit system with the U.S. Army Corps of Engineers (USACE). MDEQ is the responsible agency for this coordination of permits. A separate permit from the USACE is required for navigable watercourses.

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## 6. SESC MEASURES (E & S DETAILS)

This section contains the current MDOT soil erosion and sedimentation control measures for use on construction and maintenance projects. All measures shown reflect MDOT's experience with soil erosion and sedimentation control for road and bridge construction and, as such, are considered best management practices. Additional design and placement considerations for these measures are found in Chapter 9 of the MDOT Drainage Manual.

Refer to Standard Plan R-96 Series for the key numbers to be shown on plan sheets and information on when to use various control measures. Discussion of measurement and payment is included on the E&S details for information only. In the case of conflict between the contract items shown on these details and contract items included in the contract documents for a specific project, the contract documents will prevail.

Dimensions on E&S Details not shown as maximum or minimum dimensions may be modified to fit existing field conditions or to improve the effectiveness of the soil erosion or sedimentation control of the device. Dimensions shown as maximum or minimum dimensions must be adhered to unless modifications are discussed with region or Lansing SESC staff and approved changes are noted in the inspection reports. The designer and project engineer will determine the need for all items shown as optional on the E&S Details. Refer to the contract documents for additional information on the materials, construction or placement of these devices.

Individual erosion control devices will be constructed to provide the most effective and efficient soil erosion and sedimentation control for a specific construction or maintenance site. Based on site conditions, the Engineer or the Part 91 Inspector may authorize minor adjustments to the E&S Details. Any major deviations, especially in areas of concentrated flows, will be discussed with the appropriate staff and approved changes must be noted in the inspection reports. Prior review and approval is not required if the changes are needed to mitigate the effects of a pending sediment release.

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**APPENDIX**  
**REFERENCE INFORMATION**

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<b>Activity Name: Ditch Clean-Out</b>		<b>Activity #: 12300</b>																																					
<b>Description/Purpose:</b> Roadside ditch clean-out includes the removal and disposal of debris to ensure proper drainage																																							
<p><b><u>Recommended Crew Size</u></b> 5 (2 traffic regulators included)</p> <p><b><u>Material</u></b> As required for soil erosion procedures and/or sedimentation control</p> <p><b><u>Average Daily Production</u></b> 400-800 lineal feet (excavator) 300-500 lineal feet (tractor/backhoe) 400-800 lineal feet (grader/dozer)</p>	<table border="1"> <thead> <tr> <th><u>Qty</u></th> <th><u>Code</u></th> <th><u>Equipment Description</u></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>02/03</td> <td>Pickup</td> </tr> <tr> <td>3</td> <td>04</td> <td>Trucks (see Table below)</td> </tr> <tr> <td>1</td> <td>12</td> <td>Flashing arrow</td> </tr> <tr> <td>1</td> <td>26</td> <td>Gradall (if available) or</td> </tr> <tr> <td>1</td> <td>05</td> <td>Tractor/backhoe/extendahoe (alternate)</td> </tr> <tr> <td colspan="3"><b><u>Optional</u></b></td> </tr> <tr> <td>1</td> <td>32</td> <td>Grader</td> </tr> <tr> <td>1</td> <td>05</td> <td>Bulldozer</td> </tr> <tr> <td>1</td> <td>12</td> <td>Flashing Arrow</td> </tr> <tr> <td>1</td> <td>38</td> <td>Loader</td> </tr> <tr> <td>1</td> <td>67</td> <td>Trailer</td> </tr> </tbody> </table>	<u>Qty</u>	<u>Code</u>	<u>Equipment Description</u>	1	02/03	Pickup	3	04	Trucks (see Table below)	1	12	Flashing arrow	1	26	Gradall (if available) or	1	05	Tractor/backhoe/extendahoe (alternate)	<b><u>Optional</u></b>			1	32	Grader	1	05	Bulldozer	1	12	Flashing Arrow	1	38	Loader	1	67	Trailer		
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<p><b>Caution : Check with utility companies for buried gas lines, telephone or electric cables, etc. Call MISS DIG</b></p> <p>Contact your resource staff or appointed region representative if questions arise regarding storm water or soil erosion control and to determine if any permits are required. (Act 451, specifically, disturbing land area of one acre or more or within 500 feet of a lake or stream.) NOTE: When performing this operation, follow the procedure in the appendix of the Soil Erosion and Sedimentation Control (SESC) Manual.</p> <p>Complete <u>MDOT forms</u> 1126 (National Pollutant Discharge Elimination System Inspection Report) and 0408 (Work Schedule) when performing this operation.</p> <ol style="list-style-type: none"> <li>1. Review <u>environmental training and safety precautions</u>.</li> <li>2. Establish the ditch flow line (use appropriate measuring device).</li> <li>3. Determine the location the water will outlet to.</li> <li>4. If spoils will be taken off-site, provide a dump site for the spoils to be removed to. (i.e. use spoils to flatten slopes behind guardrails that will be removed in the future.)</li> <li>5. If spoils are left on site, remove all debris, grade properly, and prepare spoils for seeding.</li> <li>6. Remove spoils and load into trucks with minimum interference with traffic.</li> <li>7. Avoid creating a "V" bottom ditch; a 2-foot round-bottom ditch is the minimum requirement. 3 feet or wider ditches are desirable for drainage and snow storage.</li> <li>8. As required, dress, mulch, seed and/or sod slopes to prevent erosion. See sections 816 and 917 of the standard specifications.</li> </ol>																																							
<b>Equipment Requirements</b>																																							
<b>Crew Size</b>	<b>Round Trip Distance Stockpile to Dumpsite</b>	<b>Number of 04 Trucks Needed</b>																																					
4	0-5 miles	2																																					
5	6- 10 miles	3																																					
6	11-15 miles	4																																					



## DITCH CLEAN OUT (Activity #12300)

**1. Notifications:** If the operation disturbs more than one acre of earth and is to restore the ditch to original ditch grades (match inlet and outlet grades) a National Pollutant Discharge Elimination System (NPDES) Notice of Coverage (NOC) is not required. If the project disturbs five acres or more of earth and is to alter the original ditch grade (new outlet or inlet grade) an NOC and notification of the municipal enforcing agency (MEA) or county enforcing agency (CEA) is required.

**2. Inspections:** For earth disturbances greater than one acre, a certified storm water operator (SWO) will inspect the project once per week and within 24-hours after each precipitation event, that results in a discharge from the right-of-way. NPDES Inspection Report (Form 1126) will be used to document these inspections. Any deficiencies or corrective actions will be recorded on the form and will be brought to the attention of the Contractor or maintenance staff performing the work. The SWO is responsible for ensuring that corrective actions are completed within the time allotted. A log of the inspections will be maintained on file for review and retained for a period of three years from the date of the inspection or the date corrective actions were complete, whichever is longer.

Non-emergency corrective actions will be completed by those doing the ditch clean out, or by others if necessary, within five calendar days. If the Maintenance Coordinator determines that an emergency condition exists, corrective actions will be completed by those doing the work within 24 hours of the inspection. Emergency conditions include sediment entering drainage structures or the waters of the state and erosion that affects the support of the roadbed or the safety of the public. Emergency action will be documented as such on Form 1126.

**3. SESC Plan:** The following soil erosion and sedimentation control (SESC) procedure has been reviewed by MDEQ and is approved for this activity. This procedure is intended to minimize soil erosion and off right-of-way sedimentation during ditch clean out activities. If this procedure is not followed, a site-specific SESC plan meeting the requirements of rule R323.1703, promulgated in accordance with Part 91 of Act 451, is required.

If spoils are taken to an off right-of-way location, the Standard Specifications for Construction controls the disposal of the surplus material. The property owner or easement holder where the material is to be placed must obtain a SESC permit from the appropriate enforcing agency if the placement covers one acre or more or if the material is placed within 500 feet of the waters of the state. If excess materials will be transported off the right-of-way for disposal, notify the maintenance coordinator or region resource staff prior to beginning the ditch clean out operation and request that they contact the enforcing agency to determine if a permit is required. If a permit is required, the permit must be obtained prior to beginning this work.

- If the ditch slope is one percent or more, install sediment traps (E&S-20) in the ditch bottom, spaced approximately 300 feet apart ( $\pm$  50 feet).
- Maintain a vegetative buffer (E&S-6) between the lower limit of the ditch clean out operation and the outfall to the watercourse. If the vegetative buffer cannot be left in place while the disturbed area upstream stabilizes, place high velocity mulch blanket (E&S-33) on the ditch bottom a minimum of 150 feet upstream from the lower limit of the ditch clean out operation.
- If the ditch carries water continuously, install a check dam (E&S-37) and sediment trap (E&S - 20) at the downstream end of the ditch.
- Begin ditching operation at the highest elevation and progress downstream.
- Remove the vegetative buffer only after the disturbed area has been stabilized. After removing the vegetative buffer, stabilize that area with high velocity mulch blanket.
- Within five days of completing the work, seed and mulch (E&S-3) all exposed areas resulting from the ditch cleanout activities. If the work is completed outside of the seasonal limitations for seeding, place high velocity mulch blanket over the entire disturbed area. Contact appropriate region resource staff for alternative restoration recommendations.



MDOT 1125 (10/05)

SKETCHES				

REMARKS				

CONTROL SECTION 00001	JOB NUMBER 12345A	ROUTE M-300	REPORT NUMBER 6	DATE 06-08-06
RESIDENT/DELIVERY ENGINEER OR MAINTENANCE COORDINATOR N. Charge		SESC CERTIFICATE NO. 001122		NPDES CERTIFIED STORM WATER OPERATOR NO. 123456
INSPECTOR NAME (Please print) I. M. Certified		INSPECTOR (Signature) signed copy in project file		

# SAMPLE SESC Plan (Rule 1703)

(may be hand drawn)

Example: Placement of a concrete plant between Ramp C slope stake line and Ramp C right of way

Soils: Sandy loam ★<sub>G</sub>      Gradient: 0.6% ★<sub>F</sub>      **XXXXXX** Limits of earth change covered by this Plan ★<sub>H</sub>

**Notes:**

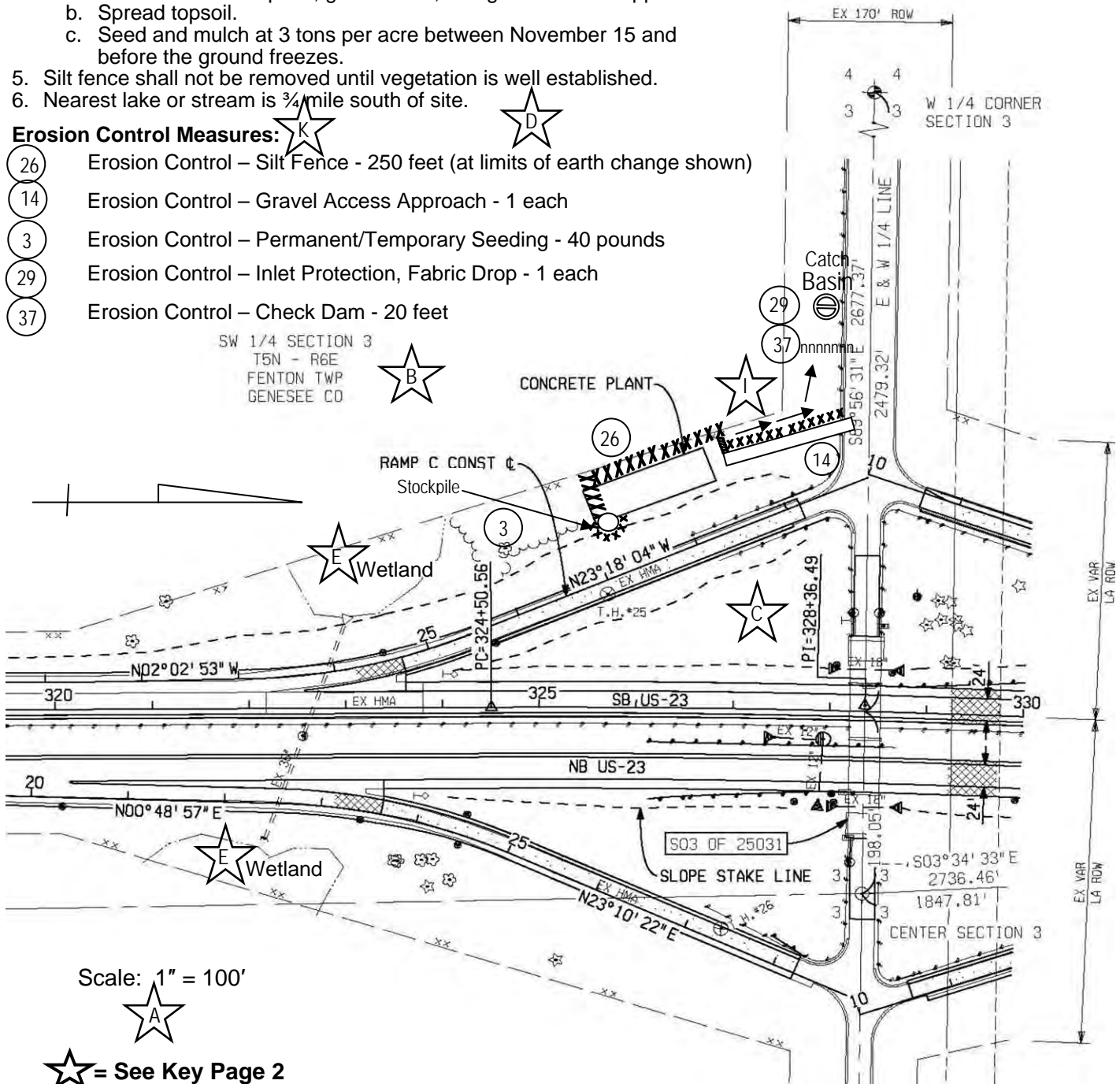
1. Install SESC measures prior to grading the site.
2. Strip sod and topsoil and stockpile as directed by the engineer.
3. Grade and spread gravel base on the site.
4. When project is complete:
  - a. Remove concrete plant, gravel base, and gravel access approach.
  - b. Spread topsoil.
  - c. Seed and mulch at 3 tons per acre between November 15 and before the ground freezes.
5. Silt fence shall not be removed until vegetation is well established.
6. Nearest lake or stream is 3/4 mile south of site.

★<sub>J</sub>      Start: May 15, 2005  
Finish: October 20, 2005

**Erosion Control Measures:**

- 26 Erosion Control – Silt Fence - 250 feet (at limits of earth change shown)
- 14 Erosion Control – Gravel Access Approach - 1 each
- 3 Erosion Control – Permanent/Temporary Seeding - 40 pounds
- 29 Erosion Control – Inlet Protection, Fabric Drop - 1 each
- 37 Erosion Control – Check Dam - 20 feet

SW 1/4 SECTION 3  
T5N - R6E  
FENTON TWP  
GENESEE CO



Scale: 1" = 100'

★<sub>A</sub> = See Key Page 2

## Key to SESC Plan Components

-  Scaled drawing.
-  Legal description.
-  Site location sketch.
-  Proximity to lakes and streams.
-  Predominant land features.
-  Contour intervals or slope descriptions.
-  Description of soil types.
-  Physical limits of the earth change.
-  Drainage and dewatering facilities.
-  Timing and sequence of earth change.
-  Description and location of control measures.
-  Maintenance plan (temporary and permanent).



