

Section 5

Erosion and Sediment Control Construction Phase Process

5.1 Overview of Erosion and Sediment Control Construction Process

The goal of the erosion and sediment control plan sheets and the SWPPP is to incorporate erosion and sediment control devices into the construction stage of transportation projects in order to prevent excessive erosion and sedimentation; thereby, protecting Montana's surface waters. This section identifies the required activities and individual's responsibilities to ensure that the project has the necessary erosion and sediment control measures in place during construction activities. Key MDT personnel, Contractors, and Regulatory Agencies are required in the construction stage of the project to properly integrate erosion and sediment control devices into the project. Following MDT chain-of-command procedures with all correspondence flowing through the project engineer is important to the success of erosion and sediment control during construction. The three major areas of responsibility for construction of erosion and sediment control BMPs are the Engineer/Inspector, Contractor, and the Regulatory Agencies.

5.1.1 MDT Responsibilities

MDT employees who oversee the construction phase of MDT projects hold the title of Engineer and/or Inspector. This manual will use "Engineer" for the project overseer (project engineer). Under some circumstances the Engineer may be a contracted third party brought in to aid MDT in construction oversight. The third party is not allowed to have an affiliation with the Contractor in order to avoid conflicts of interest.

The following are some key areas that the Engineer is responsible for during the construction phase of MDT projects. Other project specific responsibilities may be included depending on the overall project requirements.

- The Engineer shall coordinate all communications between MDT and the Contractor in a precise and timely manner.
- The Engineer shall oversee project construction and communicate any discrepancies and omissions to the Contractor and MDT in a precise, timely manner.
- The Engineer shall perform, collect, and/or observe all tests as required by the standard specifications and special provisions.
- The Engineer shall generate all documentation required, including field notes, photos, testing information, submittal processing, field changes, etc. The Engineer shall also compile information submitted by the Contractor.

As a part of the general requirements listed above, the Engineer is responsible for ensuring that the Contractor constructs all erosion and sediment control BMPs as specified on the

construction plans and in accordance with the SWPPP. In addition, the Engineer is responsible for monitoring the timeliness of the installation of each BMP following the construction timeline. BMPs shall be inspected at minimum once every fourteen calendar days (unless otherwise specified) and within 24 hours after any storm event of 0.5 inches or greater. The Engineer will notify the Contractor of any repairs, additions, or maintenance that are deemed necessary.

5.1.2 Contractor Responsibilities

The Contractor is the individual or legal entity contracted to perform the prescribed work. For purposes of consistency, the Contractor will encompass the prime contractor and any and/or all subcontractors used to complete the project.

Overall, the Contractor is responsible for ensuring that the project is constructed to the plans and specifications. The following are some general responsibilities required of the Contractor:

- The Contractor shall construct the project to meet or exceed the plans and specifications using safe and proven techniques.
- The Contractor shall communicate all discrepancies and/or omissions to the Engineer in a precise and timely fashion.
- The Contractor shall perform, collect, and/or observe all tests as required by the standard specifications and special provisions under the supervision of the Engineer.
- The Contractor shall generate all documentation required, including field notes, photos, testing information, submittals, field changes, etc. This information shall be provided to the Engineer.

As a part of the above tasks, the Contractor is responsible for installation and maintenance (and possibly the removal of) temporary BMPs on the construction site during the contract period. The Contractor shall work with the Engineer to ensure that all erosion and sediment control devices are working correctly. The Contractor shall inspect all BMPs at a minimum once every fourteen calendar days (unless otherwise specified) and within 24 hours after any storm event of 0.5 inches or greater. Upon routine maintenance, the Contractor shall adjust any BMPs that are not functioning correctly or install additional temporary BMPs as required to prevent erosion and contain sediment. Devices that are beyond adjustment shall be removed and replaced. Details of Contractor's responsibilities are provided in Section 5.2 - Erosion and Sediment Control Construction Process.

5.1.3 Regulatory Agencies Responsibilities

The primary regulatory agency that will be involved during the construction phase process is DEQ for non-Tribal lands and EPA for Tribal lands. DEQ/EPA is responsible for ensuring that all construction activities are in compliance with the General Permit. The following activities will be performed by DEQ/EPA:

- Check records that must be kept under the condition of the General Permit.

- Inspect any facilities, equipment, measures, or operations regulated or required under the General Permit.
- Sample or monitor any substances or parameters at any location within the construction activity area to assure permit compliance.

The operator shall allow DEQ/EPA to enter upon the construction site at reasonable times to perform the activities described above. Questions regarding DEQ's role during the construction phase process may be directed to:

Montana Department of Environmental Quality
Water Protection Bureau
Storm Water Program
1520 East Sixth Avenue
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

Questions regarding EPA's role and permitting obligations should be directed to:

EPA – Notice of Intent Processing Center
Storm Water Notice of Intent (4203M)
USEPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(866) 352-7755

5.2 Erosion and Sediment Control Construction Process

Many critical activities are required throughout the project construction process to ensure that the SWPPP is properly implemented and adjusted as necessary in the field to meet the goal of minimizing erosion and sediment loss from the construction site. Several of these activities are completed before the contractor mobilizes equipment and begins construction of the project. Figure 5.2-1 outlines the major construction activities required in order to implement the SWPPP.

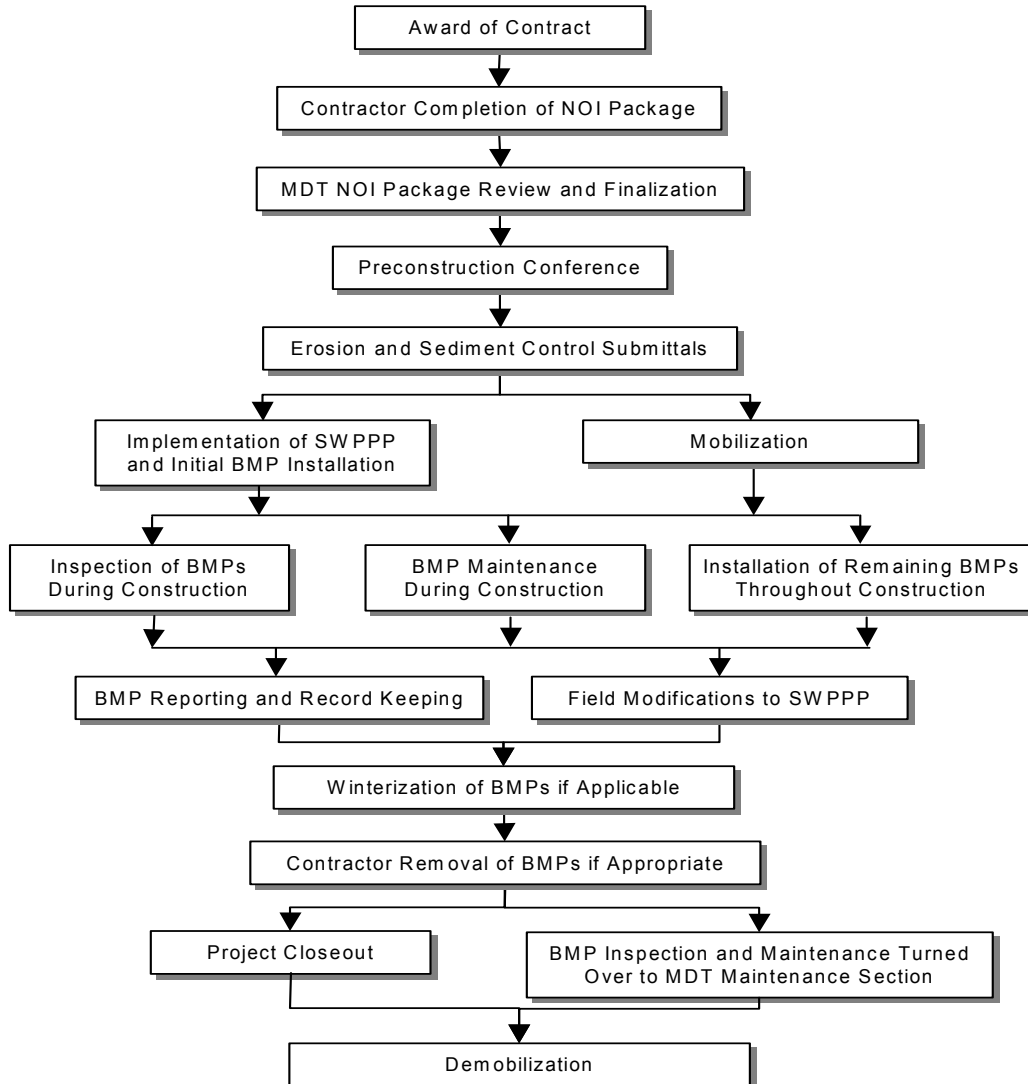
5.2.1 Contractor Completion of Draft NOI Package

A draft NOI form and preliminary SWPPP are prepared by MDT prior to bid letting for a project. The preliminary SWPPP will provide direction and convey specific BMP expectations to the Contractor. However, it shall not be considered a final SWPPP since the preliminary SWPPP is prepared assuming standard construction practices and may not reflect the Contractor's actual methods of construction. The Contractor shall use the preliminary SWPPP from MDT as a guide and reference tool to develop and submit the final SWPPP to MDT. MDT and the Contractor are co-permittees on the General Permit.

It is required that the Contractor implements the final SWPPP in order to minimize or eliminate sediment and pollutants from reaching surface waters. The SWPPP must be prepared in accordance with the format set forth in this manual and Part IV of the General Permit for Storm Water Discharges Associated with Construction Activity, which is regulated

by DEQ for Non Tribal lands. If the construction site is located on Tribal lands, the regulatory agency is the EPA.

Figure 5.2-1 Erosion and Sediment Control Construction Process



Section 4.5.2 provides detailed instructions and a template that Contractors shall use to finalize the preliminary SWPPP prepared by MDT. The Contractor shall complete the preliminary SWPPP and submit it to MDT for review and approval prior to final submittal to the appropriate regulatory agency. If revisions are required, the Contractor shall revise the SWPPP as noted. No construction activity having the potential to cause water pollution shall be performed until the SWPPP has been approved and the corresponding BMPs are in place.

5.2.2 MDT NOI Package Review and Finalization

The Contractor shall submit the revised preliminary SWPPP to MDT. MDT shall review the SWPPP and submit the Final SWPPP to regulatory agency. The SWPPP shall be submitted to regulatory agency at the same time as the NOI form. It is the responsibility of MDT and the Contractor to ensure that the SWPPP complies with the requirements stated in the General Permit. Incomplete SWPPPs are a violation of the General Permit and could result in fines.

If, through site inspections and reviews of the SWPPP of construction sites not on Tribal land, DEQ determines that the SWPPP is deficient, MDT and the Contractor will be notified and shall make changes to the SWPPP. MDT will submit a written certification to DEQ indicating that the necessary changes have been made. Unless otherwise provided by DEQ, MDT and the Contractor shall have seven calendar days after such notification to make the necessary changes to the SWPPP and to submit the revisions to DEQ.

Whenever there is a change in design, construction, operation, or maintenance during the construction activities, which has significant effect on the potential for the discharge of pollutants to surface waters, or if the SWPPP proves to be ineffective in achieving the general objectives of controlling pollutants in a storm water discharge associated with construction activity, the Contractor shall amend the SWPPP and submit the amendments to MDT. MDT shall then review the amendments and submit the revisions to DEQ.

5.2.3 Regulatory Agency Permit and Coordination

For non-Tribal lands the DEQ is the primary regulatory agency from which a permit will be required. MDT will be required to obtain a General Permit and for each construction activity thereafter the following shall be provided:

- NOI Package, including NOI form and SWPPP, and
- NOT Package.

The NOI form and SWPPP must be submitted prior to the commencement of any construction activity which could potentially cause pollutants to discharge to surface water in order to be in compliance with the General Permit. Timely submittal of the complete NOI package should ensure efficient processing by DEQ, prevent delay of construction activity, and minimize potential storm water discharge compliance problems.

5.2.4 Pre-Construction Conference

All MDT construction projects are kicked off with a pre-construction conference. This conference will focus on design components, erosion and sediment control issues, environmental issues, and other features of the design that warrant close interaction between the Contractor and MDT.

This meeting is intended as an open discussion of the project to discuss critical issues posed by either MDT or the Contractor. The attendees for this meeting should include personnel from the following:

- MDT Construction Bureau,

- MDT District Construction,
- MDT District Maintenance,
- MDT Environmental Services Bureau,
- MDT Erosion and Sediment Control Section,
- MDT Pre-Construction (If unique items or special requirements are present in the design),
- Contractor,
- Sub-Contractors, and
- MDT's Consultants (If project is designed through Consultant Design).

The conference attendees shall review the construction project phases, the design drawings and specifications, and the SWPPP and/or other erosion and sediment control documents. A detailed schedule for accomplishing all required erosion and sediment control work shall be submitted by the Contractor for discussion at this pre-construction conference.

The responsibilities of the Erosion and Sediment Control Supervisor (ESCS) that was listed in the SWPPP shall be reviewed during the pre-construction conference. The ESCS, who is experienced in all aspects of construction and shall be present at the job site as needed, has the following responsibilities:

- Be aware of, and ensure compliance with the General Permit including the SWPPP during the construction activities.
- Directly supervise the installation, construction, and maintenance of all erosion control measures specified in the contract and coordinate the construction of erosion control measures with all other construction operations.
- Direct the implementation of suitable temporary erosion and sediment control features as necessary to correct unforeseen conditions or emergencies. Direct the dismantling of those features when their purpose has been fulfilled unless the Engineer directs that the features be left in place. If removed, the area in which these features were constructed shall be returned to a condition reasonably similar to that which existed prior to its disturbance.
- Inspect all erosion and sediment control and waste management features implemented for the project on a bi-weekly basis (unless otherwise specified) and within 24 hours after any storm event of 0.5 inches or greater. A report shall be submitted to the Engineer after every inspection and shall become part of the project records.
- Attend all project scheduling meetings.
- Upon the Engineer's request, direct the implementation of necessary actions to reduce anticipated or presently existing water quality or erosion problems resulting from construction activities.

- Make immediately available, upon the Engineer's request, all labor, material, and equipment judged appropriate by the Engineer to maintain suitable erosion and sediment control features. These actions requested by the Engineer take precedence over all other aspects of project construction that have need of the same labor, material, and equipment, except those aspects required to prevent loss of life, personal injury, or significant property damage.

Upon completion of the pre-construction meeting, the Contractor will submit a formal letter to MDT stating the relevant information discussed during the pre-construction conference. This letter will discuss all changes made during the pre-construction meeting and the impacts to cost, design, and overall project success. In addition, this letter will state any options presented that were not viable and the reason why they were not viable. Finally, this letter will have attached to it any additional information required by MDT to clarify cost, schedule, or other items that may be affected due to the decisions made during the pre-construction conference.

5.2.5 Erosion and Sediment Control Submittals

Submittals are essential for quality control on construction projects. Erosion and sediment control submittals have been created to adhere to quality standards listed in the Standard Specifications for Roads and Bridges and the Detailed Drawings. Additional submittal standards may be found on a project-by-project basis in the Special Provisions. The Contractor shall supply the Engineer with the submittals listed below.

Quality Products List

A submittal shall be provided to MDT prior to placement of any material, stating the quality of products to be used during construction activities. The submittal shall follow the standard specification, and special provisions were applicable, and shall verify that all products used on the project meet or exceed specified minimums. No materials shall be accepted by the Engineer without an approved quality products list submittal.

Certified Seed Tags

A submittal shall be provided to MDT prior to seeding for any seed mix that will be required on the project. The submittal shall follow the standard specification, and special provisions where applicable, and shall verify that the seeds have the specified germination rate and appropriate seed percentage. No seeding shall be accepted by the Engineer without an approved certified seed tag submittal.

Weed Free Straw/Straw Bales

A submittal shall be provided to MDT prior to placement for any straw that will be required on the project. The submittal shall follow the standard specification and special provisions where applicable, and shall verify that the straw is weed free. No straw shall be accepted by the Engineer without an approved weed free straw submittal.

5.2.6 Mobilization

Following the pre-construction conference, the Contractor can begin to mobilize equipment and staff in preparation of construction activities. Prior to the start of construction activities, the Contractor must have all the required permits and a finalized NOI form and finalized

SWPPP in place. The Contractor is required to follow the erosion and sediment control plans and must place BMPs prior to any disturbance on the construction site.

5.2.7 Implementation of SWPPP

Erosion and sediment control BMPs are often implemented prior to mobilization of equipment onto the construction site. Depending on the project, the erosion and sedimentation plans might require that the existing vegetation be protected, streams, or other sensitive areas be fenced prior to completion of mobilization activities. Once the BMPs are properly installed and construction activities begin, modifications to the SWPPP and/or the BMPs may be required due to unforeseen field conditions or observed failure of the designed BMPs. It is the Contractor's responsibility to protect the environment from excess erosion and the associated sedimentation from the construction activities, regardless of the approved SWPPP and construction plans, specifications, and special provisions. If the specified BMPs are not effective, the Contractor can make minor modifications in the field without prior MDT notification but approval of the Engineer. Major revisions to the SWPPP or BMPs must be approved by following the proper submittal procedures. All changes must be documented and must prove effective in controlling erosion and sedimentation.

5.2.8 Field Modifications to SWPPP

If the Contractor believes that the SWPPP should be modified for portions of the construction site, the Contractor shall suggest modifications to the SWPPP, which need to be approved by the Engineer. The SWPPP should be modified if the specified BMPs are not stabilizing soils to prevent erosion or are not preventing sediment from leaving the site.

The Contractor's revised SWPPP will be reviewed and stamped by a Professional Engineer (P.E.) licensed in Montana and a P.E. employed by MDT. On sensitive sites, MDT can specify that the Contractor's revised SWPPP be reviewed and stamped by a Certified Professional in Erosion and Sediment Control (CPESC) at no additional cost to MDT. All revised plans shall be submitted to MDT for review and approval prior to construction of the BMPs. No construction activities shall be performed that will impact the area(s) under review by MDT until approval has been given and the proper BMPs have been placed. The Contractor may make minor modifications to BMPs in the field and can add or modify BMPs as needed in emergency situations such as prior to, during, or immediately after storm events in order to prevent erosion and sedimentation.

Notification of any modifications to the SWPPP made after the pre-construction conference and prior to construction shall be submitted in writing to MDT prior to the installation of any erosion and sediment control devices. The written modification proposal shall include the following minimum information:

- Reasons for changing the erosion control measures.
- Diagrams showing details and locations of all proposed changes.
- List of appropriate pay items indicating new and revised quantities.
- Effects on schedules for accomplishing all erosion and sediment control work.

- Effects on permits or certifications caused by the proposed changes.

If applicable, MDT will review the written proposal and may suggest additional control measures. The Contractor shall be responsible to address any amendment to the SWPPP.

5.2.9 Site BMP Monitoring

During construction, the Contractor will inspect all BMPs on a minimum on a bi-weekly basis and within 24 hours after any storm event of 0.5 inches or greater. The Contractor's ESCS shall notify the Engineer prior to weekly or storm related inspections. The ESCS should be readily accessible to the Engineer at all times. The inspections prior to forecasted storm events and after storm events may have to be conducted during non-regular working hours, which may require the Contractor and/or Engineer to be available for such cases. In addition, the Contractor is required to visually monitor the BMP effectiveness and make necessary modifications if required.

The inspections are used to determine the effectiveness of the erosion and sediment control system and its proper installation and maintenance. Documentation of all inspections shall be submitted to the Engineer and remain onsite or at a nearby location at all times for review by the Engineer, other MDT personnel, or local, State or Federal government inspectors.

The Engineer and the Contractor shall complete the BMP Monitoring/Maintenance checklist attached in Section 5.3.4.1 during monitoring of all BMPs installed on site. In addition, Section 3 should be consulted for specific inspection criteria for each BMP. A copy of all BMP Monitoring checklists shall be sent to the Erosion and Sediment Control Section to be incorporated into a BMP database.

All BMPs that fail inspection must be repaired in accordance to Section 5.2.10 - BMP Maintenance During Construction. Following any BMP maintenance or repair, the Engineer and/or the Contractor shall re-inspect the BMP and record the type of failure, the performed repairs and/or modifications, and the effectiveness of the repairs and/or modifications.

5.2.10 BMP Maintenance During Construction

For proper operation of the installed BMPs, BMP maintenance is critical. With the implementation of a monitoring and maintenance program non-compliance issues can usually be avoided. The bi-weekly monitoring and storm event inspections are designed to reveal those BMPs that may require maintenance and/or replacement before they may become a compliance issue.

BMPs that fail inspections should be evaluated by the Engineer and the Contractor to determine if the BMP should be repaired or replaced with a different BMP. For new and/or replacement of BMPs, refer to Section 4.4.1 - BMP Selection Guidelines, and the BMP fact sheets in Section 3. Unless otherwise specified, the Contractor shall correct minor maintenance problems during or before daily construction activities. When possible, major maintenance issues shall be corrected within 24-hours of detection or immediately if pending storm conditions are apparent.

The Engineer and/or the Contractor shall record any maintenance procedures conducted on BMPs on a BMP monitoring report. The monitoring report will be beneficial to determine future maintenance procedures as well as to track BMP maintenance performance.

5.2.11 Non-Compliance Mitigation

Reserved

5.2.11.1 Illegal Actions

Reserved

5.2.11.2 Notice of Non-Compliance

Reserved

5.2.11.3 Remedial Action

Reserved

5.2.11.4 Agency Notification

Reserved

5.2.11.5 Reporting, Certifications, and Record Keeping

During construction activities, any spills and releases shall be reported as required by the General Permit. The following language is from the General Permit.

Reporting

- **Spill/Release Notification** – Written notification to the DEQ Storm Water Program shall be mailed within two business days of the detection of any unregulated significant spill or release in any area(s), which has the potential to introduce pollutants into storm water runoff other than sediment. This notification must provide: the Notice of Intent number; the name of the construction activity project; the operator(s) as identified on the Notice of Intent form; a description of the time and duration of the spill/release; the specific location and contaminant fate of the spill/release; a description of the quantity and type of material spilled/released; measures being taken to investigate and/or remediate the spill/release; any known or potential impacts to storm water discharges due to the spill/release; and any BMPs to be implemented to minimize and/or prevent similar spills/releases in the future.
- **Noncompliance Reporting** – If, for any reason, the operator(s) does not comply with, or will be unable to comply with, any condition specified in the General Permit, the operator(s) shall notify DEQ as soon as possible by phone and provide DEQ with the following information, in writing, within five calendar days of becoming aware of such condition:
 - A description of the discharge or other cause of noncompliance;
 - The period of noncompliance, including exact dates and times or, if not identified, the anticipated time the noncompliance is expected to continue; and,
 - Additional measures being taken to reduce, eliminate, and prevent recurrences of the non-complying discharge or other cause of noncompliance.

- All reports, notification, and inquiries regarding the conditions of the General Permit must be provided to DEQ at:

Montana Department of Environmental Quality
Water Protection Bureau
Storm Water Program
1520 East Sixth Avenue
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

Record Keeping

- **Permit Retention Requirements** – The operator shall retain a copy of the General Permit, a copy of the completed and signed Notice of Intent form, a DEQ’s Confirmation Letter for receipt of the Notice on Intent package, and a completed and signed SWPPP at the construction activity project site at all times during the active coverage period provided under the General Permit. If no permanent offices/buildings are located at the facility site, copies of these documents must be retained at the office of the operator’s contact person identified on the Notice of Intent form and at the office of the primary operator(s) responsible for the implementation of the SWPPP and must be brought to the site at all times with these identified operator(s). If the person(s) designated as responsible contact/individual is replaced during the active coverage period provided under the General Permit, the operator(s) shall ensure measures are in place to transfer and familiarize replacement personnel with the requirements pertaining to these documents.
- **Inspection and Uncontrolled Release Records** – The operator(s) shall keep a record of inspection, the date and time inspected, and the name of the person performing the inspection. Uncontrolled releases of mud or muddy water or “significant sediment” found off the site or entering into surface waters must be recorded with a brief explanation as to the measures taken to prevent future releases as well as any measured taken to clean up the sediment that has left the site. This inspection record must be made available to DEQ upon request.
- **Required Period of Record Retention** – All records and information resulting from the monitoring activities required by the General Permit, a copy of the completed and signed NOI form, a DEQ NOI Package Receipt Confirmation Letter, and completed and signed SWPPP shall be retained by the operator(s) for a minimum of three (3) years from the date the site is finally stabilized, or longer if requested by DEQ.

5.2.12 Winterization

Winterization activities are critical to projects that carry over more than one construction season. In some areas, winterization can even be needed on projects of one season or less in length, due to adverse weather conditions.

Prior to seasonal shutdown or downtime of one month or longer, place winterization devices or other applicable BMPs to prevent or minimize site disturbance. See Section 3 - Best Management Practices and more specifically Section 3.4 - Snow Accumulation and Snowmelt BMPs for devices to prevent or minimize disturbances during seasonal shutdown.

Winterization BMPs shall be placed prior to season or extended shutdowns. The Engineer and Contractor shall inspect all winterization BMPs prior to approval. Any BMPs that do not meet requirements shall be removed and replaced with adequate BMPs. Following shutdown, the Contractor will inspect BMPs on a weekly or monthly basis as specified the Engineer. Any BMPs not passing inspection shall be maintained in accordance to Section 5.2.10 - BMP Maintenance During Construction.

5.2.13 Demobilization

During project completion or project winterization, equipment should be demobilized from the site. During equipment demobilization, make sure that all BMPs are in place and functioning correctly. Ensure that all waste management BMPs are used during the demobilization activities. The contractor shall coordinate all demobilization activities with the Engineer.

5.2.14 Project Close-Out

The project close-out is intended to wrap up construction activities on the site. During project close-out, the Contractor shall demobilize all equipment, including any temporary products brought on site that are not part of the final design, remove all construction BMPs, install any post-construction BMPs, and ensure that the site meets MDT's requirements.

As part of the project close-out, MDT may require a project close-out conference. The project close-out conference shall discuss issues involving overall project success and determine if completed construction meets MDT standards. The project should be reviewed to make sure that the project was constructed as designed and that all post-construction items be in place, as required by the Engineer. Personnel from the following areas shall attend the project closeout meeting:

- MDT Construction Bureau,
- MDT District Construction,
- MDT District Maintenance,
- MDT Environmental Services Bureau,
- MDT Erosion and Sediment Control Section,
- MDT Preconstruction Bureau,
- Contractor, and
- Sub-Contractors.

5.2.14.1 Engineers Responsibilities

The Engineer is responsible for ensuring that the Contractor has completed all tasks required within the project design. The project design includes design drawings, specifications, change orders, and other contractual items signed between the Contractor and MDT. At project close-out the Engineer shall have documentation stating that the completed project was build as

designed or have documentation of changes made to during construction that were authorized by MDT.

In addition to the overall project responsibilities of the Engineer addressed at close-out, the Engineer is also responsible for bringing specialized MDT personnel together at the project close-out conference to verify that 100% of the project has been constructed.

5.2.14.2 Maintenance Review

MDT's Maintenance Division is solely responsible for the project following project close-out and thus their review is critical. At least one individual from the Maintenance Division shall be at the project close-out conference to ensure that the project meets their standards and maintenance requirements before the Contractor is released of construction responsibilities.

Maintenance will look to make sure that the following areas are completed with regards to erosion and sediment control:

- All post-construction BMPs are inspected for proper implementation. On some projects, MDT may place post-construction BMPs and thus the Contractor will not be responsible for this task.
- All earthen surfaces have appropriate final seeding/fertilizer/mulching mixture for maximum reestablishment.
- All channels have appropriate protection (i.e. riprap and concrete spillways).

If the Maintenance Division does not feel that the final construction meets their requirements as specified in the contract, they may require the Contractor to perform additional work.

5.2.14.3 Environmental Review

The Environmental Services Bureau shall inspect the site prior to project close-out to ensure that the Contractor has fulfilled all of the permit requirements. If the Contractor has not fulfilled all of its responsibilities to meet environmental standards, the Environmental Services Bureau may require the Contractor to perform additional work.

5.2.14.4 Record Retention

Erosion and sediment control records will be kept in accordance with guidelines established by MDT.

5.3 Erosion and Sediment Control Construction Phase Tools

This section of the manual is designed to provide information and references that the Contractor and Engineer can use to construct the erosion and sediment control devices and implement the SWPPP.

5.3.1 Reference Literature

The reference literature listed below can be used to assist the Contractor and Engineer in erosion and sediment control construction. The attempt of this section is to give an overview of each of the reference instead of laying out the information within each reference. These references are ever changing and in an attempt to provide the construction staff with the most current information; each reference should be reviewed prior to beginning the construction process.

5.3.1.1 MDT Detail Drawings

The MDT Detail Drawings consist of an English and Metric version. These drawings should be referenced to ensure that all construction activities are completed within the Department's standards. The Detail Drawings coincide with the MDT Standard Specifications for Roads and Bridges. The Detail Drawings provide the construction staff with dimensions and materials to be used for a multitude of different items and procedures.

5.3.1.2 MDT Standard Specifications for Roads and Bridges

The MDT Standard Specifications for Roads and Bridges is a compilation of construction standards used on MDT projects. The standard specifications should be referenced to ensure that BMPs are integrated into the design following the correct guidelines. Special provisions should also be followed where required.

5.3.1.3 AASHTO Highway Drainage Guidelines

With its Final Rule, the FHWA committed to ensuring that all highway construction projects are located, designed, constructed, and maintained according to standards that will minimize erosion and control associated sedimentation. Volume III of the AASHTO Highway Drainage Guidelines provides excellent guidance concerning these factors.

5.3.2 SWPPP Tools

Section 4.3.3 of this manual contains instructions and forms that shall be used during the development and preparation of the SWPPP.

5.3.3 Construction Permitting Tools

Permitting tools can be found in Section 4.3.4.

5.3.4 Erosion and Sediment Control Construction Tools

The following are construction tools that should be used when constructing the erosion and sediment control plans.

5.3.4.1 BMP Monitoring/Maintenance Checklist

On-site monitoring is necessary to assure the proper functioning of soil erosion, sedimentation, and storm water control measures. To meet the General Permit requirements, all erosion and sediment control measures must be monitored at least once every fourteen calendar days and within 24 hours after any storm event of 13 mm (0.5 inches) or greater. MDT requires monitoring of BMPs once a week, prior to forecasted storm events, and after storm events.

The Contractor and Engineer may want to use the following example inspection form to inspect the site.

BMP Monitoring / Maintenance Checklist

Yes No

Are BMPs accessible for monitoring and maintenance activities?

Is there evidence of excessive sediment loss or pollution from site?

Are slope stabilization BMPs effective in preventing excess erosion?

Are rills/gullies present on reclaimed slopes?

Do slope stabilization BMPs require maintenance to remove sediment?

Are additional or different BMPs required for slope stabilization?

Are sediment control BMPs effective in preventing excessive soil loss from site?

Is sediment laden water undercutting or bypassing BMPs?

Do sediment control BMPs require maintenance to remove sediment?

Are any off-site conditions or activities negatively affecting on-site BMPs?

Is winterization of BMPs required?

Are wind control BMPs effective in reducing off-site dust?

Are there BMPs that can be removed?

Do sediment traps and desilting basins require sediment removal?

Have BMP monitoring report and maintenance forms been completed for each BMP?

Have maintenance follow-up action items been recorded?

5.3.4.3 Winterization Checklist

BMP Winterization Checklist

Limit fall-time disturbance of surface area to only that which can be properly protected for snowmelt runoff?

Schedule temporary or erosion seeding prior to ground freezing?

Determine applicability of snow management BMPs and apply as appropriate?

Evaluate wintertime access to maintain BMPs?

Make sure all BMPs are in place and able to withstand spring thawing and snow melt conditions?

5.3.4.4 Project Close-out Checklist

Project closeout is the culmination of the construction activities. As construction ends, the Contractor and MDT work together to ensure that the project is constructed as designed. The activities listed below will assist the Contractor and the Engineer in assessing the completion of the project.

Are all temporary BMPs in place that are scheduled to remain after construction completion?

Are BMPs in proper working order and constructed in accordance to the plans, specifications details?

Are BMPs free of sediment accumulation?

Have BMPs that are no longer necessary been removed?

Is proper access provided to all BMPs requiring post-construction maintenance?

Have all outstanding items from the last BMP monitoring been corrected?

Is a representative of the MDT Maintenance Division present for close-out inspection?