SOP 22: Construction Site Stormwater Runoff Control

Introduction

Construction sites that lack adequate stormwater controls can contribute a significant amount of sediment to nearby bodies of water. This Standard Operating Procedure (SOP) describes procedures for evaluating compliance of stormwater controls at construction sites to minimize or eliminate erosion and sediment transport.

These procedures address Minimum Control Measure 4, Construction Site Stormwater Runoff Control, by documenting the processes that ##MUNICIPALITY will use for inspection and enforcement of sediment and erosion control measures and review, inspection and enforcement of site plans. These procedures are part of ##MUNICIPALITY's Construction Site Stormwater Runoff Control Program.

In addition to the inspection and enforcement procedures detailed in this program it is important to note that construction site operators within the MS4 jurisdiction are required to control construction wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. These wastes may not be discharged to the MS4.

Attached are erosion and sediment control inspection and construction site inspection forms.

<u>Instructions:</u> Describe the municipality's current construction site inspection procedures, as well as any applicable zoning codes or municipal regulations relating to this SOP.

Procedures: Site Inspection and Enforcement of Sediment and Erosion Control Measures

The ##AGENCY OR DEPARTMENT performs routine inspections of sediment and erosion control measures for construction activities that result in a land disturbance of greater than or equal to one acre within the regulated area and construction activities that disturb less than one acre when that disturbance is part of a larger common plan of development or sale that would disturb one or more acres. Under the ##MUNICIPALITY'S BYLAW, the ##AGENCY OR DEPARTMENT has the authority to enforce sediment and erosion control procedures and/or impose sanctions to ensure compliance when necessary.

Controlling Erosion and Sediment on Construction Sites

During the construction phase, it is important to inspect active sites regularly to ensure that practices are consistent with approved site plans and the site's Stormwater Pollution Prevention Plan (SWPPP) or other document, as required by the municipality's legal authority. The following guidelines apply:

- Active construction sites should be inspected bi-weekly or monthly to check the status of erosion and sedimentation controls. Inspections should also be conducted after incidents of heavy rainfall (0.25 inches or more in 24 hours).
- Erosion and sediment control features should be constructed before initiating activities that remove vegetated cover or otherwise disturb the site. These should be installed consistent with the approved site plans and with manufacturer's instructions.
- Erosion and sediment control devices should be inspected by the contractor regularly, and





maintained as needed to ensure function.

- In the SWPPP or other document, the contractor should clearly identify the party responsible for maintaining erosion and sediment control devices.
- Existing vegetation should be maintained on site as long as possible.
- Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed.
- Stockpiles should be stabilized by seeding or mulching if they are to remain for more than two weeks.
- Disturbed areas should be protected from stormwater runoff by using protective Best Management Practices (BMPs).
- Clean water should be diverted away from disturbed areas on construction sites to prevent erosion and sedimentation.
- Sediment traps and sediment barriers should be cleaned out regularly to reduce clogging and maintain design function.
- Vegetated and wooded buffers should be protected.
- Soils should be stabilized by mulching and/or seeding when they would be exposed for more than one week during the dry season, or more than two days during the rainy season.
- Vegetation should be allowed to establish before introducing flows to channels.
- Regular light watering should be used for dust control, as this is more effective than infrequent heavy watering.
- Excessive soil compaction with heavy machinery should be avoided, to the extent possible.
- Construction activities during months with higher runoff rates should be limited, to the extent possible.

Controlling Erosion and Sediment by Proper Maintenance of Permanent BMPs

Many construction phase BMPs can be integrated into the final site design, but ongoing inspection and maintenance are required to ensure long-term function of any permanent BMP. Refer to SOP 9: Inspection and Maintenance of Structural Stormwater Best Management Practices (BMPs) for more information. The following guidelines summarize the requirements for long-term maintenance of permanent BMPs:

- Responsibility for maintaining erosion and sediment control devices should be clearly identified.
- Erosion and sediment control devices should be inspected following heavy rainfall events to ensure they are working properly.
- Erosion control blankets should be utilized when seeding slopes.
- Vegetated and wooded buffers should be protected, and left undisturbed to the extent possible.
- Runoff should not be diverted into a sensitive area unless this has been specifically approved.
- Sedimentation basins should be cleaned out once sediment reaches 50% of the basin's design capacity.
- Snow should not be plowed into, or stored within, retention basins, rain gardens, or other BMPs.
- Easements and service routes should be maintained, to enable maintenance equipment to access BMPs for regular cleaning.





Inspection Procedures

Construction sites will be inspected to ensure that sediment and erosion control measures are in place consistent with approved site plans. Inspections will be conducted by the ##AGENCY OR DEPARTMENT or a qualified member of the site crew. Inspections will be conducted in accordance with the Massachusetts Stormwater Handbook. Inspections may include, but are not limited to:

- Inspection during or immediately following initial installation of sediment controls.
- Inspection following severe rainstorms to check for damage to controls.
- Inspection prior to seeding deadlines, particularly in fall.
- Final inspection of projects nearing completion to ensure that temporary controls have been removed, stabilization is complete, drainage ways are in proper condition, and the final contours agree with the proposed contours on the approved plan.

All inspections will be completed using the Sediment and Erosion Control Inspection form, included in the attachments. All completed inspection forms will be maintained on file by ##MUNICIPALITY in the ##AGENCY OR DEPARTMENT office. During inspection, the inspector will verify that sediment and erosion control measures are functioning as intended and are being maintained properly. Specific sediment and erosion control measures that will be assessed during inspection are detailed on the Inspection Form.

Enforcement Procedures

In the event that a non-compliance issue is discovered during pre-construction or routine inspection, the ##AGENCY OR DEPARTMENT will document the occurrence and inform the site operator of the violation and the required corrective action. The ##AGENCY OR DEPARTMENT will provide the site operator with a copy of the inspection form, noting the non-compliance and the required corrective action. The site operator will have ##NUMBER OF DAYS from the receipt of notice to perform the corrective action. The ##AGENCY OR DEPARTMENT will revisit the site for inspection after ##NUMBER OF DAYS to verify that the corrective action was performed and that the site has achieved compliance.

Reporting

The following information will be included in each annual report:

- Number of site inspections conducted
- Number of violations issued
- Record of enforcement actions

Employee Training

- Employees who inspect applicable construction sites are trained ##NUMBER times per year on these procedures.
- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.

Procedures: Site Plan Review, Inspection, and Enforcement

Under the authority of the ##MUNICIPALITY's BYLAW, the ##AGENCIES OR DEPARTMENTS have the authority to perform construction site plan review, inspection and enforcement. ##MUNICIPALITY will implement the following construction site plan review, inspection and enforcement procedures:





Controlling Erosion and Sediment through Design and Planning

Prevention of erosion and sedimentation is preferable to installing treatment devices. Consistent application and implementation of the following guidelines during the design and review phases can prevent erosion and sedimentation:

- Avoid sensitive areas, steep slopes, and highly erodible soils to the maximum extent possible when developing site plans.
- Identify potential problem areas before the site plan is finalized and approved.
- Plan to use sediment barriers along contour lines, with a focus on areas where short-circuiting (i.e., flow around the barrier) may occur.
- Use berms at the top of steep slopes to divert runoff away from the slope's edge.
- Design trapezoidal or parabolic vegetated drainage channels, not triangular.
- Use vegetated channels with rip rap check dams, instead of impervious pavement or concrete, to reduce the water velocity of the conveyance system.
- Design a check dam or sediment forebay with level spreader at the exit of outfalls to reduce water velocity of the discharge and collect sediment.
- Use turf reinforcement matting to stabilize vegetated channels, encourage vegetation establishment, and withstand flow velocities without scouring the base of the channel.
- Plan open channels to follow land contours so natural drainage is not disrupted.
- Use organic matting for temporary slope stabilization and synthetic matting for permanent stabilization.
- Provide a stable channel, flume, or slope drain where it is necessary to carry water down slopes.

Site Plan Review Procedure

- The applicant will submit site plans to the ##AGENCY OR DEPARTMENT for pre-construction review. Review will be conducted by ##LIST ALL INVOLVED AGENCIES OR DEPARTMENTS. The ##AGENCY OR DEPARTMENT will make the final decision to approve, reject, or request modifications to the site plan.
- Site plan review will be completed within ##NUMBER OF DAYS, taking into consideration the following standards with regard to water quality protection and stormwater management:
 - o General site design will include appropriate stormwater drainage system details and calculations.
 - o Planned construction operations will include adequate Best Management Practices (BMPs) and Sediment and Erosion Control Measures to reduce water quality impacts.
 - Planned BMPs must be designed to the standards found in the Massachusetts Stormwater Handbook. When possible BMPs should promote on-site infiltration of stormwater runoff from impervious surfaces.
 - For sites located in areas subject to Total Maximum Daily Load (TMDL) requirements,
 BMPs will be selected and prioritized to address the pollutant identified as the cause of the impairment.
 - When possible, low impact designs (LID) and/or Green Infrastructure (GI) should be included in site design. If LID/GI are not included in the site plan, the ##AGENCY OR DEPARTMENT will require that the applicant review opportunities for the use of LID/GI.
- Upon completion of Site Plan Review the ##AGENCY OR DEPARTMENT will make the site plans and review findings available for public review and comment for a period of ##NUMBER OF





- DAYS. The ##AGENCY OR DEPARTMENT will review and consider all public comments prior to issuing or denying a permit.
- The ##AGENCY OR DEPARTMENT may require the applicant to revise the site plan as necessary before issuing or denying a permit.

Site Inspection Procedures

Inspections will be conducted, at a minimum, during BMP construction as well as after construction of BMPs to ensure they are working as described in the approved plans. Inspection will be completed by a Professional Engineer or other qualified person with sufficient training, experience, and/or education to be able to adequately read site plans and assess the installation, operation and maintenance of BMPs in accordance with approved plans. An inspection form will be filled out for each site inspection and stored in the ##AGENCY OR DEPARTMENT office. A copy of the Inspection Form is available in the attachments.

Inspection Guidelines

- The inspection should begin at a low point and work uphill, observing all discharge points and any off-site support activities.
- Written and photographic records should be maintained for each site visit.
- During the inspection, the inspector should ask questions to the contractor. Understanding the selection, implementation, and maintenance of BMPs is an important goal of the inspection process and require site-specific input.
- The inspector should not recommend or endorse solutions or products. The inspector may offer appropriate advice but all decisions must be made by the contractor.
- The inspector should always wear personal protective equipment (PPE) appropriate for the site.
- The inspector should abide by the contractor's site-specific safety requirements.
- The inspector has legal authority to enter the site. However, if denied permission to enter the site, the inspector should never force entry.

Prior to planning a site visit, the inspector should determine if the project is subject to USEPA's 2017 Construction General Permit, which replaces USEPA's 2012 Construction General Permit (for more information, visit: https://www.epa.gov/sites/production/files/2019-05/documents/final_2017_cgp.pdf). Operators of sites that required coverage under the USEPA's 2012 Construction General Permit that continue to be active should have submitted a new Notice of Intent (NOI) under the 2017 Permit.

If the site requires this coverage, the inspector should visit the USEPA Region 1 eNOI website to determine if the contractor filed for coverage under the 2017 and/or 2012 Construction General Permit. Print a copy of the project's NOI.

If the project disturbs one or more acres and is under construction but does not show up in the database, the project is in violation of the Construction General Permit. Call the contractor to determine if the NOI process has been started. If not, notify the contractor verbally of his requirement and the violation. Work cannot proceed on the site until a NOI for coverage under the 2017 Permit has been approved by the USEPA. The inspector may choose to print instructions on how to file an NOI and meet with the contractor to review these. Issue a written Stop Work Order until the NOI has been approved by the USEPA.





Once it has been determined that the site is in compliance with the 2017 Construction General Permit, site inspection can continue.

Inspection Process

- 1. Pre-inspection review
 - Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
 - o Print the approved NOI from the USEPA 2017 Construction General Permit website.
 - o Inform the contractor of the planned site visit.
- 2. Meet with site contractor
 - o Review the construction Stormwater Pollution Prevention Plan (SWPPP) (if the site includes over one acre of disturbance) or other documents, as required by the municipality's legal authority. Compare BMPs in the approved site plans with those shown in the SWPPP.
 - o Review the project's approved NOI and confirm that information shown continues to be accurate.
 - o Get a general overview of the project from the contractor.
 - o Review inspections done by the contactor.
 - o Review the status of any issues or corrective actions noted in previous inspection reports.
 - o Discuss any complaints or incidents since the last meeting.
- 3. Inspect perimeter controls
 - o Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
 - o For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.
- 4. Inspect slopes and temporary stockpiles
 - o Determine if sediment and erosion controls are effective.
 - o Look for slumps rills, and tracking of stockpiled materials around the site.
- 5. Compare BMPs in the site plan with the construction site conditions
 - O Determine whether BMPs are in place as specified in the site plan, and if the BMPs have been adequately installed and maintained.
 - O Note any areas where additional BMPs may be needed that are not specified in the site plans.
 - o Inspect BMPs prior to and after construction.
- 6. Inspect site entrances/exits
 - o Determine if there has been excessive tracking of sediment from the site.
 - O Look for evidence of additional entrances/exist which are not on the site plan and are not properly stabilized.
- 7. Inspect sediment basins
 - o Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
- 8. Inspect pollution prevention and good housekeeping practices
 - o Inspect trash areas and material storage/staging areas to ensure that materials are properly maintained and that pollutant sources are not exposed to rainfall or runoff.
 - o Inspect vehicles/equipment fueling and maintenance areas for the presence of spill control measure sand for evidence of leaks or spills.
- 9. Inspect discharge points and downstream, off-site areas





- Walk down the street and/or in other directions of-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
- o Inspect down-slope catch basins to determine if they are protected, and identify whether sediment buildup has occurred.
- 10. Meet with the contactor again prior to leaving
 - o Discuss the effectiveness of current controls and whether modifications are needed.
 - O Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, and/or the implementation of stormwater controls.
 - o Agree on a schedule for addressing all discrepancies and schedule a follow-up inspection.
- 11. Provide a written copy of the inspection report to the contractor.
- 12. Follow up, as determined, and provide copies of subsequent inspections to the contractor.
- 13. Use Stop Work orders, as needed, until compliance with the 2017 General Construction Permit can be achieved.

Enforcement Procedure

In the event that a non-compliance issue is discovered during inspections, the ##AGENCY OR DEPARTMENT will document the occurrence and inform the site operator of the violation and the required corrective action. The ##AGENCY OR DEPARTMENT will provide the site operator with a copy of the inspection form, noting the non-compliance and the required corrective action. The site operator will have ##NUMBER OF DAYS from the receipt of notice to perform the corrective action. The ##AGENCY OR DEPARTMENT will revisit the site for inspection to verify that the corrective action was performed and that the site has achieved

The number of site reviews, inspections and enforcement actions will be tracked ##ELECTRONICALLY/ON PAPER. Records will be maintained and included in the annual report.

Employee Training

- Employees who inspect applicable construction sites are trained ##NUMBER times per year on these procedures.
- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.

Reporting

The following information will be included in each annual report:

- Number of site reviews conducted
- Number of site inspections conducted
- Number of violations issued
- Record of enforcement actions

Attachments

- 1. Erosion and Sedimentation Control Inspection Report
- 2. Construction Site Stormwater Inspection Report

Related Standard Operating Procedures

1. SOP 9: Inspection and Maintenance of Structural Stormwater Best Management Practices (BMPs)





EROSION AND SEDIMENTATION CONTROL INSPECTION REPORT

General Information

Project Name				
Project Location				
Inspector's Name				
Site Operator				
Date of Inspection		Date of Last Inspection		
Start Time		End Time		
Subject to USEPA Construc	ction General Permit? Yes	□ No □		
If yes, has NOI been approv	ved? Yes	□ No □		
If yes, attach approved NOI	to this report.			
If no, contact contractor immediately to determine status of NOI.				
Type of Inspection:				
Regular Pre-Storm Event During Storm Event Post-Storm Event Post-Storm Event				
Describe the weather conditions at time of inspection				
Describe the current phase of construction				





Erosion and Sediment Control (ESC) on Construction Sites

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Have all ESC features been constructed before initiating other construction activities?	Yes No	
Is the contractor inspecting and maintaining ESC devices regularly?	Yes No No	
Is existing vegetation maintained on the site as long as possible?	Yes No No	
Is construction staged so as to minimize exposed soil and disturbed areas?	Yes No No	
Are disturbed areas restored as soon as possible after work is completed?	Yes No No	
Is clean water being diverted away from the construction site?	Yes No No	
Are sediment traps and sediment barriers cleaned regularly?	Yes No No	
Are vegetated and wooded buffers protected and left undisturbed?	Yes No No	
Are soils stabilized by mulching and/or seeding when they are exposed for a long time?	Yes No	
Has vegetation been allowed to establish itself before flows are introduced to channels?	Yes No	
Is regular, light watering used for dust control?	Yes No No	
Is excessive soil compaction with heavy machinery avoided, to the extent possible?	Yes No No	





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Issue	Status	Corrective Action Needed
Are erosion control blankets used when seeding slopes?	Yes No No	
Are trees and vegetation that are to be retained during construction adequately protected?	Yes No	
Are areas designated as off-limits to construction equipment flagged or easily distinguishable?	Yes No	
If excavated topsoil has been salvaged and stockpiled for later use on the project, are stockpiles adequately protected?	Yes No	
Are temporary slope drains or chutes used to transport water down steep slopes?	Yes No	
Do all entrances to the storm sewer system have adequate protection?	Yes No No	

Non-Compliance Actions

The municipality shall provide the site operator with a copy of this report, and notice of the corrective action(s) to be taken. The site operator shall have thirty days from the receipt of the notice to commence curative action of the violation.





CONSTRUCTION SITE STORMWATER INSPECTION REPORT

General Information

Project Name			
Project Location			
Site Operator			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Subject to USEPA Construc	ction General Permit? Yes	□ No □	
If yes, has NOI been approved? Yes No			
If yes, attach approved NOI to this report.			
If no, contact site operator immediately to determine status of NOI.			
Type of Inspection: Regular			
Describe the weather conditions at time of inspection			
Describe the current phase of construction			





Site-Specific BMPs

Customize the following BMPs to be consistent with the SWPPP for the site being inspected.

	BMP Description	Installed and Operating Properly?	Corrective Action Needed
1		Yes No No	
2		Yes No No	
3		Yes No	
4		Yes No	
5		Yes No	
6		Yes No	
7		Yes No	
8		Yes No No	
9		Yes No No	
10		Yes No No	
11		Yes No No	
12		Yes No No	
13		Yes No	
14		Yes No	
15		Yes No	
16		Yes No	
17		Yes No	
18		Yes No	
19		Yes No	
20		Yes No No	





Erosion and Sedimentation Control

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status		Corrective Action Needed	
Have all ESC features been constructed before initiating other construction activities?	Yes 🗌 1	No 🗌		
Is the contractor inspecting and maintaining ESC devices regularly?	Yes	No 🗌		
Is existing vegetation maintained on the site as long as possible?	Yes	No 🗌		
Is construction staged so as to minimize exposed soil and disturbed areas?	Yes	No 🗌		
Are disturbed areas restored as soon as possible after work is completed?	Yes 🗌 🗈	No 🗌		
Is clean water being diverted away from the construction site?	Yes 🗌 🗈	No 🗌		
Are sediment traps and sediment barriers cleaned regularly?	Yes	No 🗌		
Are vegetated and wooded buffers protected and left undisturbed?	Yes 🗌 🗈	No 🗌		
Are soils stabilized by mulching and/or seeding when they are exposed for a long time?	Yes 🗌 N	No 🗌		
Has vegetation been allowed to establish itself before flows are introduced to channels?	Yes 🗌 N	No 🗌		
Is regular, light watering used for dust control?	Yes	No 🗌		
Is excessive soil compaction with heavy machinery avoided, to the extent possible?	Yes	No 🗌		





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Issue	Status	Corrective Action Needed
Are erosion control blankets used when seeding slopes?	Yes No	
Are trees and vegetation that are to be retained during construction adequately protected?	Yes No No	
Are areas designated as off-limits to construction equipment flagged or easily distinguishable?	Yes No	
If excavated topsoil has been salvaged and stockpiled for later use on the project, are stockpiles adequately protected?	Yes No	
Are temporary slope drains or chutes used to transport water down steep slopes?	Yes No	
Do all entrances to the storm sewer system have adequate protection?	Yes No No	





Overall Site Conditions

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Are slopes and disturbed areas not being actively worked properly stabilized?	Yes No	
Are material stockpiles covered or protected when not in use?	Yes No	
Are natural resource areas protected with sediment barriers or other BMPs?	Yes No	
Are perimeter controls and sediment barriers installed and maintained?	Yes No	
Are discharge points and receiving waters free of sediment deposits and turbidity?	Yes No [
Are storm drain inlets properly protected?	Yes No	
Is there evidence of sediment being tracked into streets?	Yes No	
Is trash/litter from the construction site collected and placed in dumpsters?	Yes No	
Are vehicle/equipment fueling and maintenance areas free of spills and leaks?	Yes No [
Are potential stormwater contaminants protected inside or under cover?	Yes No	
Is dewatering from site properly controlled?	Yes No	
Are portable restroom facilities properly sited and maintained?	Yes No [
Are all hazardous materials and wastes stored in accordance with local regulations?	Yes No	





Non-Compliance Actions

The municipality shall provide the site operator with a copy of this report, and notice of the corrective action(s) to be taken. The site operator shall have thirty days from the receipt of the notice to commence curative action of the violation.



