

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 the City 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 the City'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.

Procedures: Site Inspection and Enforcement of Sediment and Erosion Control

Measures

The City staff 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 the City's Ordinance, the City staff 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. 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 City staff 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 the City in the City staff 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 City staff will document the occurrence and inform the site operator of the violation and the required corrective action. The City staff 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 30 days from the receipt of notice to perform the corrective action.

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 annually 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 City's Ordinance, the City's Department of Public Works has the authority to perform construction site plan review, inspection and enforcement.

The City 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 City staff for pre-construction review. Review will be conducted by the Director or Deputy Director of the Department of Public Works of the City of Haverhill (Director) or his/her authorized deputy or representative. The City staff will make the final decision to approve, reject, or request modifications to the site plan.
- Site plan review will be complete, taking into consideration the following standards with regard to water quality protection and Stormwater management:
 - General site design will include appropriate Stormwater drainage system details and calculations.
 - 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 City staff will require that the applicant review opportunities for the use of LID/GI.
- The City staff will make the site plans available for public review and comment. The City staff will review and consider all public comments prior to issuing or denying a permit.

- The City staff 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 City staff 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.
 - Print the approved NOI from the USEPA 2017 Construction General Permit website.
 - Inform the contractor of the planned site visit.
2. Meet with site contractor
 - 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.
 - Review the project's approved NOI and confirm that information shown continues to be accurate.
 - Get a general overview of the project from the contractor.
 - Review inspections done by the contractor.
 - Review the status of any issues or corrective actions noted in previous inspection reports.
 - Discuss any complaints or incidents since the last meeting.
3. Inspect perimeter controls
 - Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
 - 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
 - Determine if sediment and erosion controls are effective.
 - Look for slumps rills, and tracking of stockpiled materials around the site.
5. Compare BMPs in the site plan with the construction site conditions
 - Determine whether BMPs are in place as specified in the site plan, and if the BMPs have been adequately installed and maintained.
 - Note any areas where additional BMPs may be needed that are not specified in the site plans.
 - Inspect BMPs prior to and after construction.
6. Inspect site entrances/exits
 - Determine if there has been excessive tracking of sediment from the site.
 - Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
7. Inspect sediment basins
 - Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
8. Inspect pollution prevention and good housekeeping practices
 - 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.
 - 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.
 - 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
 - Discuss the effectiveness of current controls and whether modifications are needed.
 - 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.
 - 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 City staff will document the occurrence and inform the site operator of the violation and the required corrective action. The City staff 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 30 days from the receipt of notice to perform the corrective action. The City staff will revisit the site for inspection to verify that the corrective action was performed and that the site has achieved compliance.

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

Employee Training

- Employees who inspect applicable construction sites are trained on these 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