Perimeter Control

NPDES/SDS Construction Stormwater Permit Requirements

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Perimeter control is a system of sediment control best management practices (BMPs) that acts as a barrier to retain sediment on a construction site. Sediment control BMPs are intended to retard flow, filter runoff, and promote the settling of sediment out of runoff via ponding behind the sediment control BMP.

Types of sediment control

Traditionally sediment control BMPs have been thought of as different types of silt fencing, however, other types of sediment controls exist that can be equally or even more effective depending on the construction circumstances. The following sediment control BMPs are commonly used on construction sites of all sizes.

- Ditch checks
- Rock logs
- Compost berms, logs, and rolls
- Biorolls
- Sand bags
- Perimeter soil berms
- Existing vegetation
- Silt Fence
    - Super duty
    - Heavy duty
    - Preassembled

What is required by the NPDES/SDS Construction Stormwater Permit?

The NPDES/SDS construction stormwater permit requires sediment control BMPs be utilized to minimize sediment from leaving a construction site and entering surface waters. All sediment control BMPs should be identified in the site's Stormwater Pollution Prevention Plan (SWPPP).

Image Courtesy of Emmons & Olivier Resources, Inc.

Bioroll used for perimeter control.

Sediment control BMPs must be established on all down gradient perimeters before any up gradient land disturbing activities begin. These BMPs shall remain in place until final stabilization has been established. If down gradient sediment controls are overloaded, additional up gradient controls may be necessary to prevent further overloading.

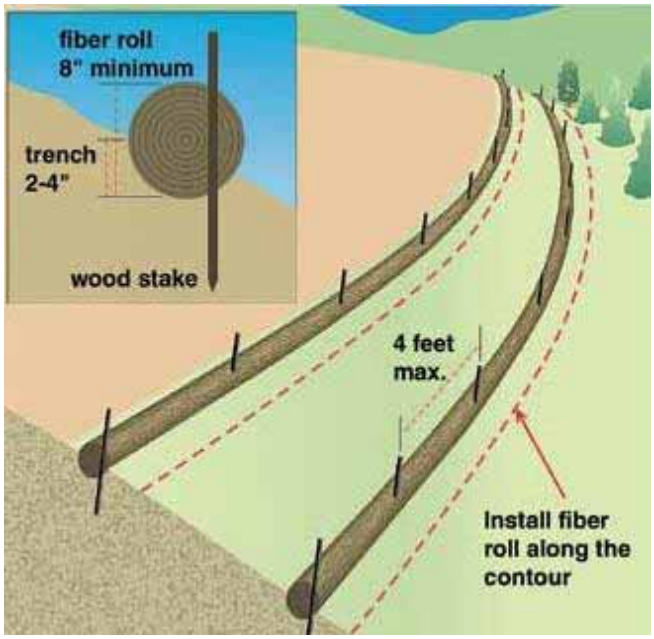
The timing of the sediment control installation may be adjusted to accommodate short term activities such as clearing and grubbing and passage of vehicles. These short term activities must be completed as quickly as possible and sediment control BMPs must be reinstalled immediately after the activity is finished. All sediment control BMPs, however, must be in place before the next precipitation event, even if the activity is not complete. For full details of the permit requirements, a copy of the NPDES/SDS construction stormwater permit is available online: www.pca.state.mn.us/water/stormwater/stormwater-c.html.

Planning sediment control

Sediment controls should be planned as a system, taking the entire site into consideration, and installed prior to any land disturbing activity. The design of a site's sediment control should anticipate ponding that will occur up gradient of the controls and provide sufficient storage and deposition areas and stabilized outlets to prevent flows from over topping the controls. Flows should be strategically directed to specified deposition areas through appropriate positioning of the sediment controls and site grading.

Curve the ends of silt fence and other sediment controls up slope to form a "J-hook".

Sediment controls serve no function along ridges or drainage divides where there is little movement of water. Sediment controls should be installed on the contour of slopes and the ends of the sediment controls should bend up slope forming a crescent shape or a "J- hook" rather than a straight line. This will prevent runoff from flowing around the ends of the controls.



Install biorolls and other sediment controls along the contour of the slope.

Maintenance considerations

The NPDES/SDS permit requires that sediment controls be inspected once every 7 days or within 24 hours of a rainfall event greater than 0.5 inches in 24 hours. All non-functioning sediment controls must be replaced, repaired or supplemented with functional BMPs within 24 hours of discovery or as soon as field conditions allow access. Generally, sediment controls must be repaired, replaced, or supplemented when they become nonfunctional, or sediment reaches 1/3 the height of the control.

After the contributing drainage area has been stabilized, all sediment controls and the associated sediment build up must be removed and disposed of properly. Care should be taken to dispose of sediment in a location that is not susceptible to additional erosion.

Cold weather considerations

It is important to consider winter conditions when planning a sediment control system. All construction sites must remain in compliance with the NPDES/SDS permit throughout the winter even if no construction is occurring. For this reason, regular inspection and maintenance of the sediment controls must continue throughout the winter months. It is also imperative that properly functioning sediment controls are in place during minor thaws throughout the winter and for the large

spring snowmelt to prevent transport of sediment from an exposed construction site.

The best way to ensure proper functioning of sediment controls through out the winter is to have all sediment controls installed prior to the first freeze. Stakes needed for some sediment control BMPs will be difficult, if not impossible to install into frozen ground. The site's SWPPP should clearly outline the strategy to prepare the site for the winter months.

If construction is going to continue during the winter and new areas will be disturbed requiring new sediment controls, materials such as compost berms, logs and rolls, fiber rolls, rock bags and rock filters can be installed over the snow cover. These installations will need extra care and frequent inspection to assure continued effectiveness.

Regular maintenance is needed to ensure that a site's perimeter control is functioning properly.

Resources

Metropolitan Council Urban Small Sites Best Management Practice Manual – Soil Erosion Control – Silt Fences. http://www.metrocouncil.org/environment/Watershed/bmp/CH3_RPPSedSiltFence.pdf

MPCA Protecting Water Quality in Urban Areas – Manual http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html

MPCA Stormwater Construction Inspection Guide http://www.pca.state.mn.us/publications/wq-strm2-10.pdf

USEPA National Pollutant Discharge Elimination System (NPDES) Menu of BMPs –Construction Site Sediment Control – Silt Fences http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=56&minmeasure=4