



Single Family Residential Construction Erosion/Sediment Control Standards

Introduction:

This booklet contains standard plans and procedures sufficient for typical building construction. It is not intended to address all circumstances that can occur during construction.

The goal of this booklet is to educate home builders so we can eliminate or reduce the amount of sediment that leaves construction sites and is deposited in the City's streets and storm sewers. Since our streets and storm sewer convey storm water to lakes and rivers, it is important that we keep these sediments and pollutants off our streets and out of our storm sewer system so they will stay out of our lakes and rivers.

For lots that are part of a larger subdivision which has a NPDES Storm Water Permit, the homeowner must complete the MPCA Subdivision Registration form. A copy should be submitted to the City before the building permit is granted. The SWPPP that is going to be used on the site should also be submitted and this must be adhered to.

All building construction must meet the requirements of the City's Erosion and Sediment Control Ordinance.

Best Management Practices:

Also known as BMP's, these include but are not limited to temporary construction entrances, silt fence, seeding, erosion control blankets, construction phasing or any other device or procedure that helps reduce erosion and sediment loss.

Installation Sequencing: The following is the order in which most BMP's must be utilized.

1. Grass Buffer Strips – Ensure that the existing grass buffer strip along the curb lines are not disturbed. If a grass buffer is not established, it should be completed immediately.
2. Inlet Protection – Ensure that all storm inlets that receive runoff from your lot have protection.
3. Perimeter Control – Devices such as silt fence, wattles, or straw bales must be installed on all areas where runoff leaves your site.
4. Temporary Construction Entrance – A stabilized entrance made of rock or gravel shall be installed for access to the property. All vehicles entering the site shall use the construction entrance.
5. Grading/Excavating – All BMP's should be installed prior to any grading or excavation. Dewatering for any trenching or excavation must be done in such a manner as not to deposit sediment downstream. Filter bags, sedimentation basins or some other means of removing sediment from dewatering water must be used prior to discharging water off site. Discharge water should be clear.
6. Stockpiles – Perimeter control should be installed around all stock piles. They should be stabilized if they are not actively being worked.
7. Backfill and rough grading – Care should be taken to avoid disturbing the grass buffer strips.
8. Maintenance – All BMP's should be maintained so the devices are functioning properly. All sediment should be removed from the streets, gutters and inlets within 24 hours of the rain event.
9. Final Grading – All BMP's should be left in place until the site has vegetation established.
10. Seeding or Sodding – The right of way along the curb (boulevard) must be sodded, seeded with erosion mat, seeded with sprayed fiber mulch or seeded with anchored straw mulch within 5 days of final grading completion. All other disturbed areas must be seeded within two weeks of completion.

Permit Holders Responsibility

1. If lot is part of a subdivision, permit holder must comply with NPDES permit and SWPPP for the lot.
2. Ensure that adequate BMP's are in place and functioning to until the project is complete.
3. Provide periodic inspection of BMP's at least once a week and after significant rainfalls.
4. Maintain all BMP's in working order. Remove sediment from inlet protection, perimeter control and other devices as needed.
5. Removes all sediment that is deposited on streets or adjacent lots within 24 hours of discovery.

Maintenance requirements:

1. Maintains the grass buffer behind the curb at all times.
2. All perimeter control that is collapsed, torn down, or ineffective, is replaced or repaired.
3. Remove sediment from perimeter control devices when sediment reaches 1/3 the height of the device.
4. Remove sediment from inlet protection when it accumulates.

Inspections – City

The City of Brainerd will conduct erosion and sediment control inspections in conjunction with routine building inspections to ensure that the appropriate erosion and sediment control measures are in place and properly secured. If the property is under an MPCA NPDES Permit (Subdivision Registration), the Crow Wing County Soil & Water Conservation District, working in conjunction with the MPCA, may also inspect the site for compliance.

The first inspection will occur during the footing inspection. It is expected that the grass buffer strip be maintained, inlet protection and perimeter control be installed, stockpiles protected, and construction entrance installed. BMP's that are not installed or installed improperly will result in the footing inspection to be denied. If sediment is found to be eroding off the construction site, a stop work order may be issued until the sediments are removed and the proper BMP's have been established.

At all subsequent inspections, the BMP's will be subject to inspection to make sure they are working properly. BMP's that are not installed or installed improperly will result in the inspection to be denied. If sediment is found to be eroding off the construction site, a stop work order may be issued until the sediments are removed and the proper BMP's have been established.

Upon final completion of the project the entire site must be stabilized. This can be done through sodding or seeding the site. Only when vegetation is established can the sediment control devices be removed.

Construction BMP's

The following few pages give a few examples of the type of BMP's that should be on every site. Additional BMP's may be required depending on the site, its topography, location, layout, etc. For additional information on BMP's visit the City of Brainerd's website at www.ci.brainerd.mn.us/engineering/stormwater. On the storm water page there is information and links to information on additional BMP's that can be used to prevent erosion and control sediment.

Boulevard Vegetation Examples

The City of Brainerd requires that during new home construction, the boulevard area (the right of way behind the curb to the beginning of the lot line) be vegetated or stabilized the entire time during construction. If the lot has already been graded and has turf established, then all that is required during construction is to leave a 10' grass strip behind the curb when the excavation for the house begins. If this area has not been seeded or if work is required in the boulevard, then this area should be seeded and covered with erosion mat, fiber mulch, anchored straw, or with sod within 5 days of finishing work in the boulevard. This boulevard vegetation acts as a buffer strip and helps prevent sediment from being discharged into the streets and storm sewer. The following methods can be used to maintain or develop the boulevard vegetation and can also be used to develop permanent vegetation on the entire site. The following examples meet the requirements of temporary cover on the site

Seed with Erosion Mat Erosion mats are typically 6 or 8 feet wide and 90 feet long. They are made of wood or straw fibers and are covered with a photodegradable net. The mat is held down by staples. The mat provides cover and erosion control until grass is established.

Seed with Anchored Straw is shown above in the photo. The straw helps stabilize the soil until grass begins to grow. The straw must be disked anchored to prevent the wind from blowing the straw off site.

Seed with Fiber Mulch The mulch provides cover to the soil until the grass grows.

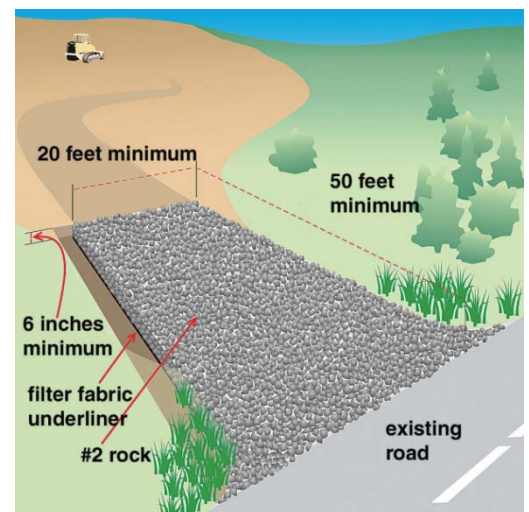
Seed with Sod This method provides instant cover to disturbed areas and is the best method for establishing permanent vegetation.

Temporary Construction Entrance

Each building site must have a designated construction entrance. The entrance shall be graveled or covered with crushed rock. All vehicles that access the site should use the construction entrance. A rock or graveled entrance prevents sediment from being tracked off site from vehicles. Any sediment that is tracked off site must be removed within 24 hours of discovery.

The entrance should be maintained by adding rock or gravel if large volumes of sediment accumulate.

The drawing on the right shows a typical plan of what a construction entrance should look like.



Source: MPCA Stormwater Construction Inspection Guide

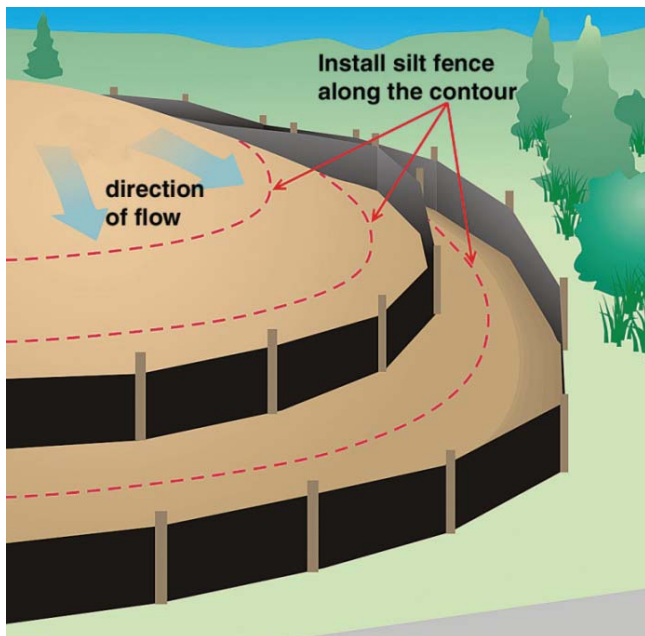
Perimeter Control

Perimeter control is required on all downstream areas on the site where runoff could leave the site. Items that can be used for perimeter control include silt fence, wattle (bio-rolls), seeded top soil berm, or straw bales.

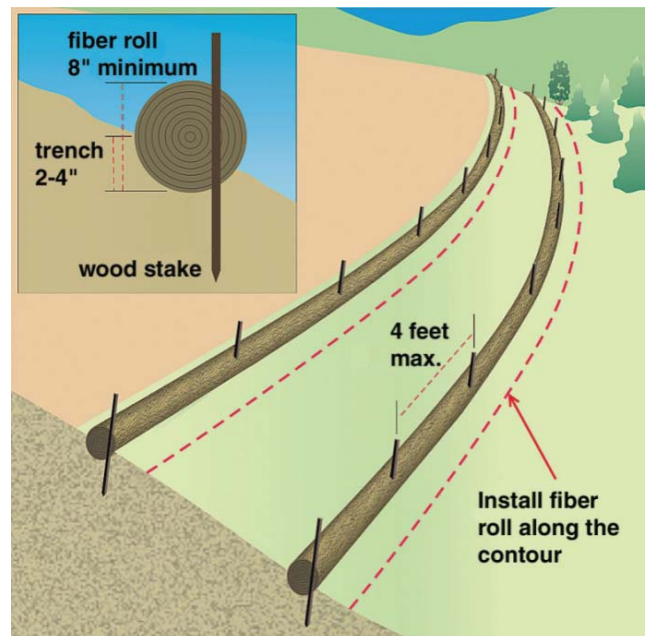
Silt Fence is the most common type of perimeter control used. To be effective the silt fence must be installed properly. To install correctly, the bottom of the fence must be installed in a 6 inch deep trench and anchored with soil as shown in the detail.

Wattles, also known as biorolls or sediment logs, are made of straw or wood fiber bound by a net to form a shape of a tube. They are typically 6 to 12 inches in diameter and usually 8 to 10 feet long. The wattles are held in place by placing a stake. The wattles are easy to install and work great for providing perimeter control next to sidewalks or curb and gutter.

Straw bales work as excellent perimeter control to prevent sediment from running into wetlands or low areas.



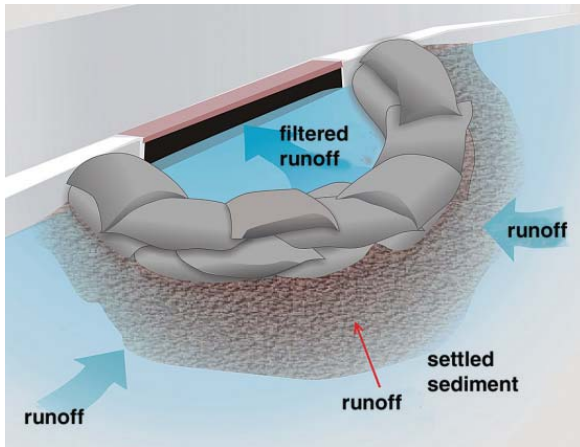
Source: MPCA Stormwater Construction Inspection Guide



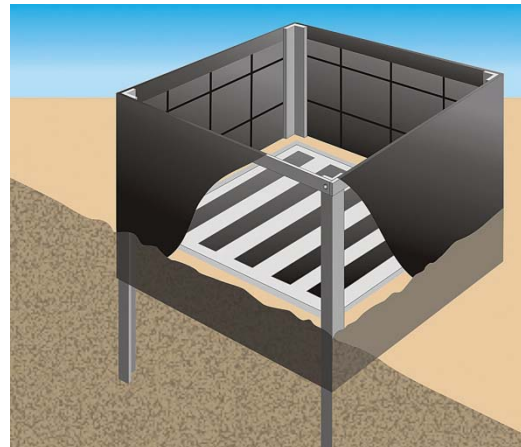
Source: MPCA Stormwater Construction Inspection Guide

Inlet Protection

Inlet protection is required on all storm sewer inlets located downstream of the construction site where runoff from the site may enter. The inlet protection must be installed prior to disturbing the ground, and only removed when vegetation on the lot is established.



Source: MPCA Stormwater Construction Inspection Guide



Source: MPCA Stormwater Construction Inspection Guide

Miscellaneous Items

Other pollution control items that need to be addresses during construction include site waste control, concrete washout, and dewatering.

During construction, all construction waste on the site should be put in an approved container. Care should be taken to prevent debris and garbage from being blown off site. Hazardous materials such as gas, oils, paints and solvents should be stored in proper containers to prevent leaks and should be disposed of properly.

Concrete washout on the site should be at a location which will not discharge off site. Washing concrete out into the street or into storm water inlets is considered an illegal discharge.

Dewatering is another area construction item that needs to be addressed. All water from dewatering practices must be clear before it is discharged off site. If the water is turbid or sediment laden it must be treated with appropriate BMP's before discharging offsite. This may include using a filter bag, dewatering into a sedimentation basin or into a grass swale where the water can infiltrate into the ground. And sediment laden water that is discharged off site is considered an illegal discharge.

Questions:

If you have any question regarding erosion and sediment control on you site or on the City's requirements please contact the Engineering Department at 218-828-2309.

