

**Single Family  
Residential  
Construction Erosion/  
Sediment Control  
Standards**



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# **Single Family Residential Construction Erosion/ Sediment Control Standards**

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## Introduction

This booklet contains a brief overview of procedures and plans sufficient for typical residential building construction. It is not intended to address all circumstances.

It is important to keep soil on the lots, rather than tracked or eroded onto streets where they can enter the storm water system and contaminate waters.

The procedures outlined in this booklet are intended to eliminate or reduce the amount of sediments and other pollutants that leave a residential home construction site. The procedures to accomplish a reduction in sediment loss are known as Best Management Practices (BMP's). When used correctly, BMP's can be very effective in controlling sediment loss.

The subdivision in which you are building already has an overall Storm Water Pollution Prevention Plan (SWPPP) and a North Dakota Construction General Permit. That permit remains in effect until all the lots are developed. BMP's related to that permit and the plan should be in place and are not to be removed or compromised.

The building permit holder is responsible for ensuring that BMP's are in place on the individual lot and that they are functioning until the project is completed. A project is defined as complete when the lot has been re-vegetated over 70% of the lot area.

There will be situations where side or rear lot line protection may not be required. For example, two houses under construction on adjacent lots where the surface drainage runs away from the other lot. Given this scenario, it is not the intention to require perimeter protection between the two lots.

When reviewing the standards presented in this booklet and considering how to implement them on your construction project, keep in mind the intent of the standards is to prevent erosion and to minimize sediment loss. Failure to do so can result in damage to adjacent property, damage to the City's storm sewer system, and it can pollute receiving waters of the storm sewer system.

If you have any questions or concerns, feel free to contact our engineering department at (701) 857-4100. We are committed to helping all those involved with the implementation of erosion and sediment control procedures.

# DEFINITIONS

**Backfill and Rough Grading** — Take special care when backfilling the foundation and rough grading the lot to avoid disturbing the grass buffer strips.

**Best Management Practices (BMP's)** — Examples include, but are not limited to, temporary construction entrance, sediment (silt) fence, erosion control mat, straw mulch, sod, seed and fiber mulch.

**Final Grading** — BMP's may be removed to complete final lot grading. However, if the lot is to remain without vegetation for an extended period, the BMP's must remain in place and final grading should be delayed to coincide with seeding or sodding. During final grading, back dragging soil onto the street must be avoided. Any soil placed on the street must be removed and the street swept immediately.

**Grading/Excavating** — Install all BMP's prior to any grading or excavation.

- ◆ An exception is allowed for the temporary construction entrance. The future driveway may be excavated, then the temporary construction entrance installed.
- ◆ Take special care when stripping and stockpiling the topsoil from the lot to avoid disturbing the grass buffer strips (which should be fenced by this time).
- ◆ When excavating for sewer and water connections, the grass buffer strip may be unavoidably disturbed. The grass buffer strip must be restored or a BMP installed in the area disturbed.
- ◆ Sediment (silt) fence or wattles are acceptable.
- ◆ Dewatering of excavated trenches, basements or foundation walls must be done in a manner to protect the inlets from sediments. This can be accomplished by use of sediment or filter bags.

**Inlet Protection** — Ensure that the curb or rear yard inlets that receive runoff water from your lot have inlet protection. Contact the Engineering Department at 857-4100 if they do not have protection.

**Maintenance** — The grading/erosion control permit holder (also the building permit holder) is responsible for ensuring that adequate BMPs are in place and functioning until the project is completed.

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**Protection of Adjacent Lots** — Install BMP's along the common lot lines where the adjacent lot receives runoff water from your lot **and** the adjacent lot has been graded, sodded or seeded. Sediment (silt) fence, wattles or straw bales can be used as a perimeter BMP.

**Stabilize Soil Stockpiles** — Install BMP's to stabilize stockpiles to prevent erosion of sediments onto adjacent lots or into rear yard or curb line inlets. Use sediment (silt) fence, wattles or straw bales.

**Temporary Construction Entrance** — The temporary construction entrance must be used by all trades and delivery personnel entering the property. Acceptable materials for the entrance will be crushed rock or gravel.

## BUILDING PERMIT HOLDER EROSION CONTROL RESPONSIBILITIES

The building permit holder is responsible for ensuring that adequate BMPs are in place before any ground disturbing activities begin and until the project is completed.

The building permit holder shall perform periodic inspections at least once every seven days or more frequently following rainfalls to ensure that erosion and sediment control measures are functioning as designed. Inspections shall also be performed after every rain event of 0.5 inches or more within a 24 hour period. Any problems noted during these inspections should be corrected immediately.

Once construction has commenced, the permit holder is responsible for maintenance of erosion and sediment control measures protecting area inlets on their lots, as well as curb inlets along the street frontage. It is critical that sediment not be allowed to enter the storm sewer system.

The temporary construction entrance provides a place for entering and leaving the construction site. The intent of the requirement is to provide a stable surface for vehicles entering and leaving the lot where mud is not likely to be tracked onto the street. The contractor is responsible for ensuring that all employee and delivery vehicles use this entrance and do not disturb the protected grass buffer strips along the curb line. Proper maintenance of the temporary construction entrance is required until such time as a permanent driveway can be put in place.

**During the entire construction period, the permit holder is responsible for ensuring that mud, dirt, rocks and other debris are not allowed to erode or be blown onto City streets or sidewalks, nor to be tracked onto streets by vehicles leaving the construction site.** Should any mud or other debris be tracked or eroded onto the street, the contractor shall take immediate steps to have it removed.

### **Maintenance (sediment fence and wattles)**

Inspect sediment fences and wattles at least once every seven days and after every 0.5 inch or greater rainfall. Make needed repairs immediately.

Promptly replace any collapsed, torn, decomposed or ineffective sediment fence or wattles.

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Remove the sediments accumulated against sediment (silt) fences and wattles when those sediments reach 1/3 the height of the fence or wattle (NDDH requirement). Take care to avoid damaging or undermining the fence or wattle during cleanout.

If utilities are installed after construction commences, the permit holder is responsible for control of erosion and sediment during the process. The contractor is responsible for ensuring that all BMP devices are reinstalled per the original design.

### **Maintenance (temporary fencing around grass buffer strips)**

Inspect temporary fences daily to ensure they have not been compromised. Make needed repairs immediately. Promptly repair any damage to the grass buffer strip or install BMPs (silt fence or wattles) if the area is beyond repair.

Promptly replace any collapsed, torn, decomposed or ineffective temporary fence.

On a regular basis reinforce the need to use the construction entrance and to preserve the grass buffer strips with employees and delivery personnel.

# INSPECTIONS — CITY

City inspectors will normally inspect erosion and sediment control measures in conjunction with routine inspections. Inspections will ensure that appropriate erosion and sediment control measures are in place and properly installed.

The first inspection will typically occur at the time of the footing inspection. This inspection will include the following:

- \*Inlet Protection
- \*Protection of Adjacent Lots
- \*Grading/Excavating
- \*Stabilize Soil Stockpiles
- \*Temporary Construction Entrance

If BMP's are not installed, or are improperly installed, the footing inspection as well as the erosion and sediment control inspection may be denied. If sediments are found to be eroding off the construction site, the inspector may issue a stop work order until the sediments have been removed and proper BMP's are established.

If at any time BMP's are not installed, are improperly installed, or if sediments are found to be eroding off the construction site, the inspector may issue a stop work order until the sediments have been removed and proper BMP's are established.

There will be instances that fall outside the norms. City staff will be available to discuss erosion and sediment control measures for any lot and the sequencing for installation. If you have questions or concerns call 857-4100 to speak with the Engineering Department.

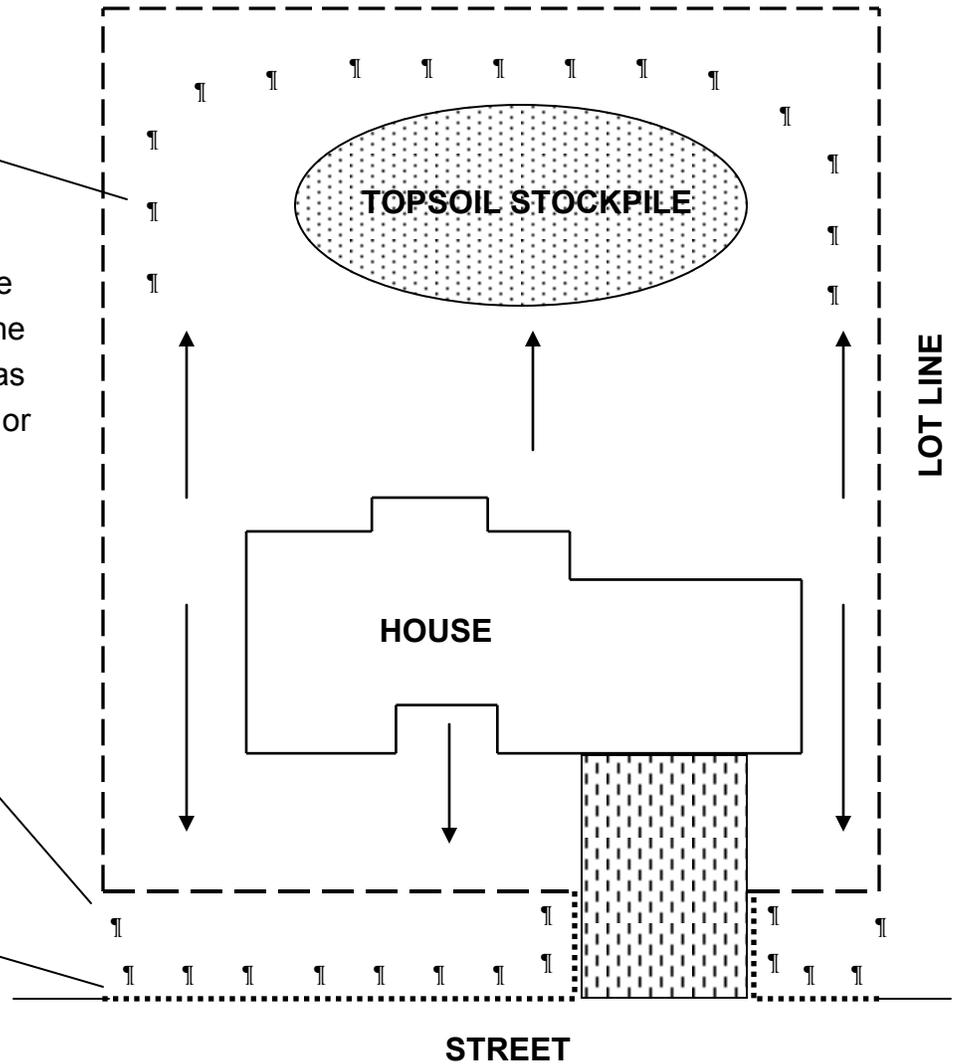
## SINGLE FAMILY LOT EROSION CONTROL EXAMPLE

SEDIMENT (SILT)  
FENCE OR WATTLE

Note: Sediment (Silt) fence or wattles will be required only where the adjacent area or lot has been graded, sodden or seeded.

SEDIMENT (SILT)  
FENCE OR WATTLE

TEMPORARY FENCE



⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ Sediment (Silt) Fence or Wattle

 Gravel Construction Entrance

—————> Direction of Surface Water Runoff

..... Temporary Fence

- - - - - Lot Line

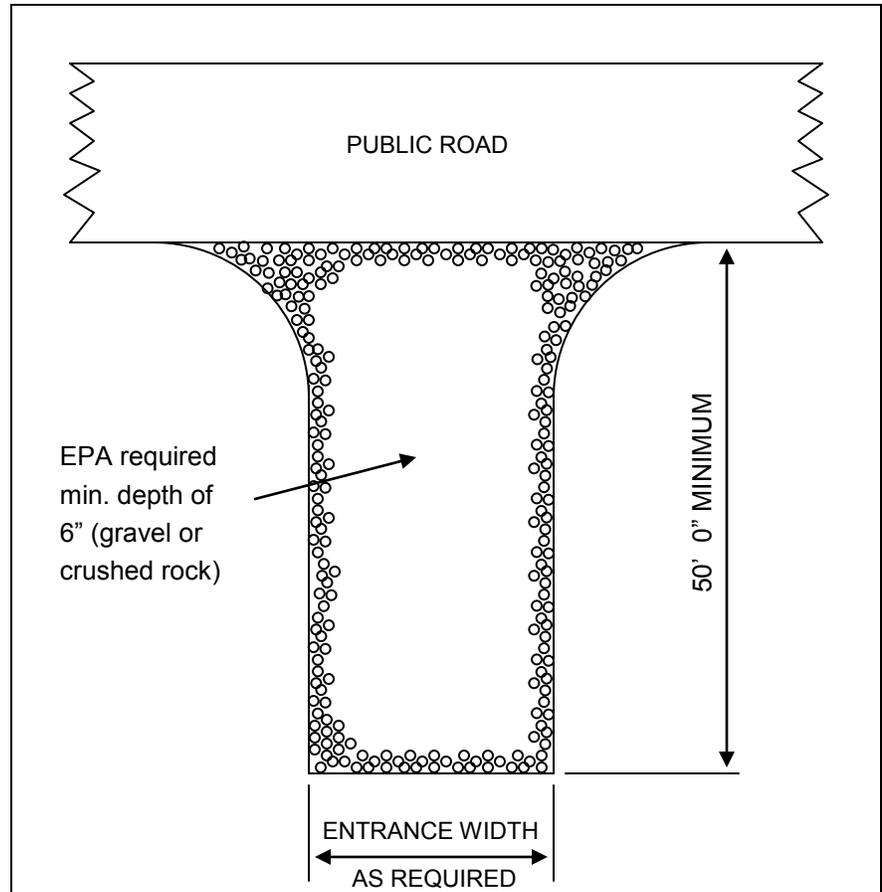
## TEMPORARY CONSTRUCTION ENTRANCE

Each building site should consider a stabilized construction entrance if continuous traffic enters and exits the site.

The construction entrance should be graveled or covered with crushed rock.

The future driveway is a good place for the entrance.

Insist that all trades, delivery and supply companies only use the approved entrance.

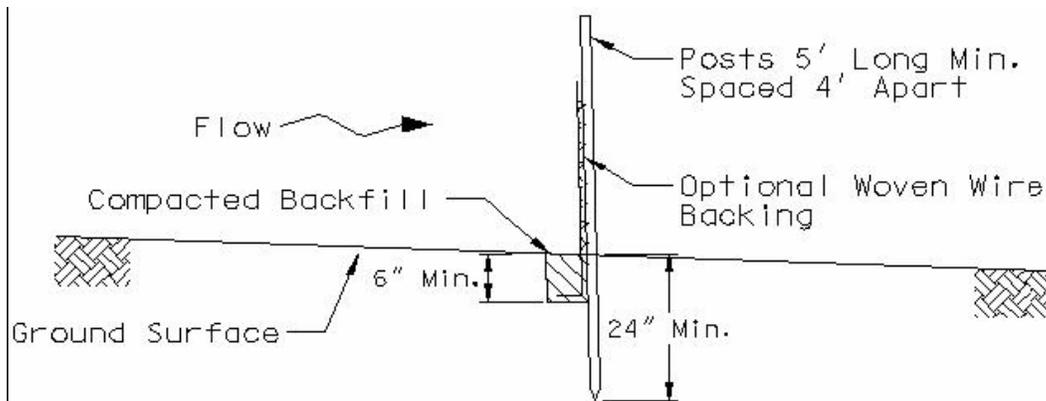


This is not acceptable. The lack of a construction entrance has resulted in mud tracked onto the street and the curb line is totally full of sediments.



A good example of a construction entrance using gravel.

## SEDIMENT (SILT) FENCE AND WATTLES



The top photo shows silt fence installed to stop erosion of sediments from the topsoil stockpile in the background. Silt fence, as shown in the detail drawings above, must be installed properly to be effective. That means the bottom of the fence must be installed in a 6 inch deep trench and anchored with soil.



Wattles (also called bio-rolls or sediment logs) are made of straw or wood fiber bound within a net to form a tube. They typically come in 10 foot lengths and are 9-20 inches in diameter.

They are available locally and are simple to install. Because they are easier to install than silt fence, the overall cost per foot for wattles should compare favorably with silt fence, when the cost of labor is included.

## CURB AND INLET PROTECTION

The grading/erosion control permit holder is responsible for keeping sediments from leaving the construction site.

The photos on the right show unacceptable curb & inlet protection.

The top two photos show pumping unfiltered, sediment-laden water into curb lines resulting in pollution of the storm water system inlets.

The photo on the lower right shows a lack of silt fence, allowing soil into the curb line.

The solution for instances where construction site water must be pumped is to use filter bags or socks (as shown in the photos below).

The filters eliminate nearly all sediments from their discharge.



They are inexpensive and can be reused many times before they need to be replaced.



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## CURB AND INLET PROTECTION

The grading/erosion control permit holder is responsible for keeping sediments from leaving the construction site. This includes the actions of sub-contractors, suppliers and delivery firms visiting the site.

The top two photos on the right show a concrete pumper truck being cleaned on the street. The photo lower right shows concrete sediment left on the street after truck cleanout. This practice is no longer acceptable.

In most new subdivisions a truck cleanout location has been designated (as shown in the photo below).

In the instance of a mechanical breakdown, where a truck must be cleaned on the street, all spilled material shall be shoveled off the street. Simply spraying the spill with water will send the pollutants into the storm inlet.

To prevent the potential need for cleanout on the street, whenever possible, the truck should setup on the lot rather than the street.



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## CURB AND INLET PROTECTION

The photos on this page show things that are not supposed to happen. The purpose of the grass filter strip has been compromised in each instance.

If the grass filter strip becomes damaged or is removed by such activity, then a replacement silt fence or wattles must be installed to serve the purpose of filtering sediments before they reach the curb line.

Park vehicles on the street or on the private lot. Do not park trailers, cars and trucks on the grass filter strips.

Building materials including sand, clay, black dirt and gravel should never be stored in the grass filter strips. Building material storage belongs on the private lot, not in the right-of-way.

When unloading and loading equipment use the construction entrance.



## **GOOD HOUSEKEEPING**

### **Potential Sources of Storm Water Contamination**

The purpose of this section is to identify pollutants that could impact storm water during and after construction of this project. Pollutants can be in many forms including liquids, powders, dust granules, soil or other sediments, building materials and debris leaving the worksite.

Good housekeeping measures can eliminate or significantly reduce these pollutants from contaminating the storm sewer system. The following are some measures that should be implemented on every worksite.

- Every worksite should be clean.
- Each worksite should be inspected regularly to discover and remove potential sources of pollutants.
- Building supplies and waste material should be appropriately contained so that nothing can be blown off-site by wind.
- Potential pollutants should be stored to protect against accidental release during storm events.
- Spills and mechanical breakdowns should be anticipated by having a plan in place, and materials on hand, to properly address such incidents.

### **Significant Materials Inventory**

The more common pollutants that result from clearing, grading, excavation, road and home construction, which have the potential to be present in storm water runoff, are listed in the table on the following page.

The table includes information regarding material type, chemical and physical description and specific regulated storm water pollutants associated with each material.

Good housekeeping measures should be concentrated on keeping these pollutants out of the storm water system.