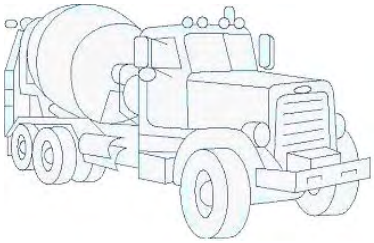
Protecting Water Quality-

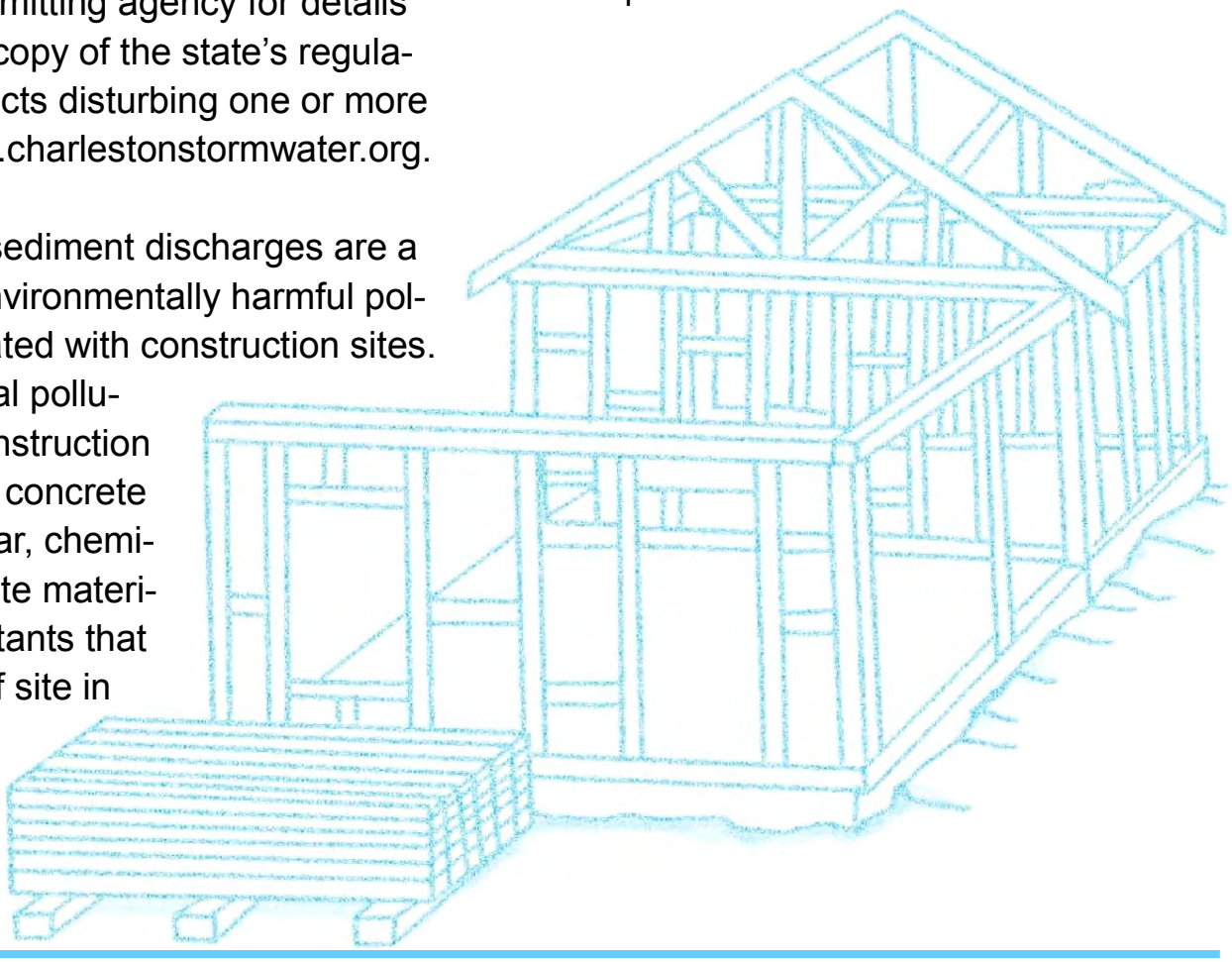
CONSTRUCTION OF SMALL BUILDING SITES

This pamphlet summarizes the regulations and provides guidelines for preventing stormwater pollution associated with construction activities on small building sites. It is primarily intended to help developers and property owners with projects that disturb less than one acre of land. If your site disturbs one acre or greater, more stringent requirements will apply. See your local permitting agency for details and obtain a copy of the state's regulations for projects disturbing one or more acres at www.charlestonstormwater.org.



Erosion and sediment discharges are a visible and environmentally harmful pollutant associated with construction sites. Other potential pollutants from construction include paint, concrete residue, mortar, chemicals, and waste materials. Any pollutants that are carried off site in runoff end up in our creeks and rivers.

It is illegal to discharge sediment-laden water and other construction-related pollutants to the local storm drainage system and waterways. The property owner is ultimately responsible for preventing water pollution resulting from construction activities, but all parties involved during construction have a role. Developers, contractors, and property owners are expected to use best management practices (BMPs) to control erosion and the release of sediments and other pollutants. This pamphlet describes various BMPs that can accomplish this.



PERTINENT REGULATIONS

Federal and State Regulations

State regulations make it illegal for anyone to discharge pollutants into our local creeks and rivers. State regulators will take enforcement action and issue fines to anyone caught polluting waterways. Additionally, the State requires all projects disturbing one acre or more to obtain coverage under the General Permit for Stormwater Discharges Associated with Construction Activity. (Previously, this permit applied just to projects disturbing five acres or more.) To find out if your site needs this permit, for information: Federal - USEPA at http://www.epa.gov/region03/index.htm; State - WVDEP Storm Water Team at http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/home.aspx.

Local Regulations

The City of Charleston regulations state that all development and redevelopment proposals that exceed 5,000 square feet (sf) of disturbance or increases impervious area by 1,000 sf. are subject to the requirements of the City of Charleston Stormwater Guidance Manual. Requirements will include management of erosion and sediment control related to stormwater during the construction process and installation of permanent stormwater management for the complete project. Development projects have been divided into four (4) categories. Each category has a unique set of review requirements and permitting based on the proposed land use, design and location.

The four primary review categories include:

1. Residential Minor Construction- Individual residential construction or renovation exceeding 5,000 sf. but less than 1 acre of land disturbance and does not increase impervious area over 1,000 sf.
2. Residential Major Construction- Individual residential construction or renovation equal to or exceeding 1 acre of disturbance; and any residential construction; and/or increase impervious area over 1,000 sf.
3. Commercial and Industrial Construction - exceeding 5,000 sf. but less than one acre of land disturbance; and/or increase of impervious area greater than 1,000 sf.
4. Subdivision - as defined in section 3 of the City of Charleston's Subdivision and Land Development Ordinance.

Residential or Commercial construction of less than 5,000 sf. is not required to obtain a stormwater permit as long as they do not increase the overall impervious area of the site by 1,000 sf. Residential or commercial construction that does increase the impervious area of a site by 1,000 sf. must complete a drainage plan according to the requirements in Chapter 2 of the Charleston Stormwater Management Guideline Manual (downloadable at charlestonstormwater.org).

Why dirt is a problem

Poor Water Quality

Sediment is one of the largest contributors of pollutants to surface waters in the City of Charleston. It harms water quality by degrading the habitat of aquatic organisms and fish, decreasing recreational uses, and promoting growth of nuisance weeds and algae. It can also reduce the quality of our drinking water.

Increased Flooding

Sediment accumulation in storm drains, as well as in streams, lakes and rivers, reduces their capacity to contain stormwater which can result in increased flooding during heavy rains.

Higher Maintenance Cost

Sediment that finds its way into streets, storm drains, and roadside ditches results in additional maintenance costs for the city.

Take Steps to Protect Water Quality

Drawing 1 below illustrates an example of the proper placement of some BMP's that can be used to protect water quality from construction activities on a typical small building site.

1. Evaluate the Site and Protect Natural Features

Locate Water Features and Other Environmentally Sensitive Areas

Determine if there are any existing natural drainage features (e.g., creeks, channels, wetlands, vernal pools) on the site or nearby. Avoid disturbing these areas and designate them with some type of markings, or secure the proper permits if you want to alter or otherwise disturb these features.

Determine Site Discharge Point(s)

Find out where the site discharges to the local storm drainage system or waterway and contact the responsible agency (listed on the back page) to familiarize yourself with any additional requirements for discharges into that system.

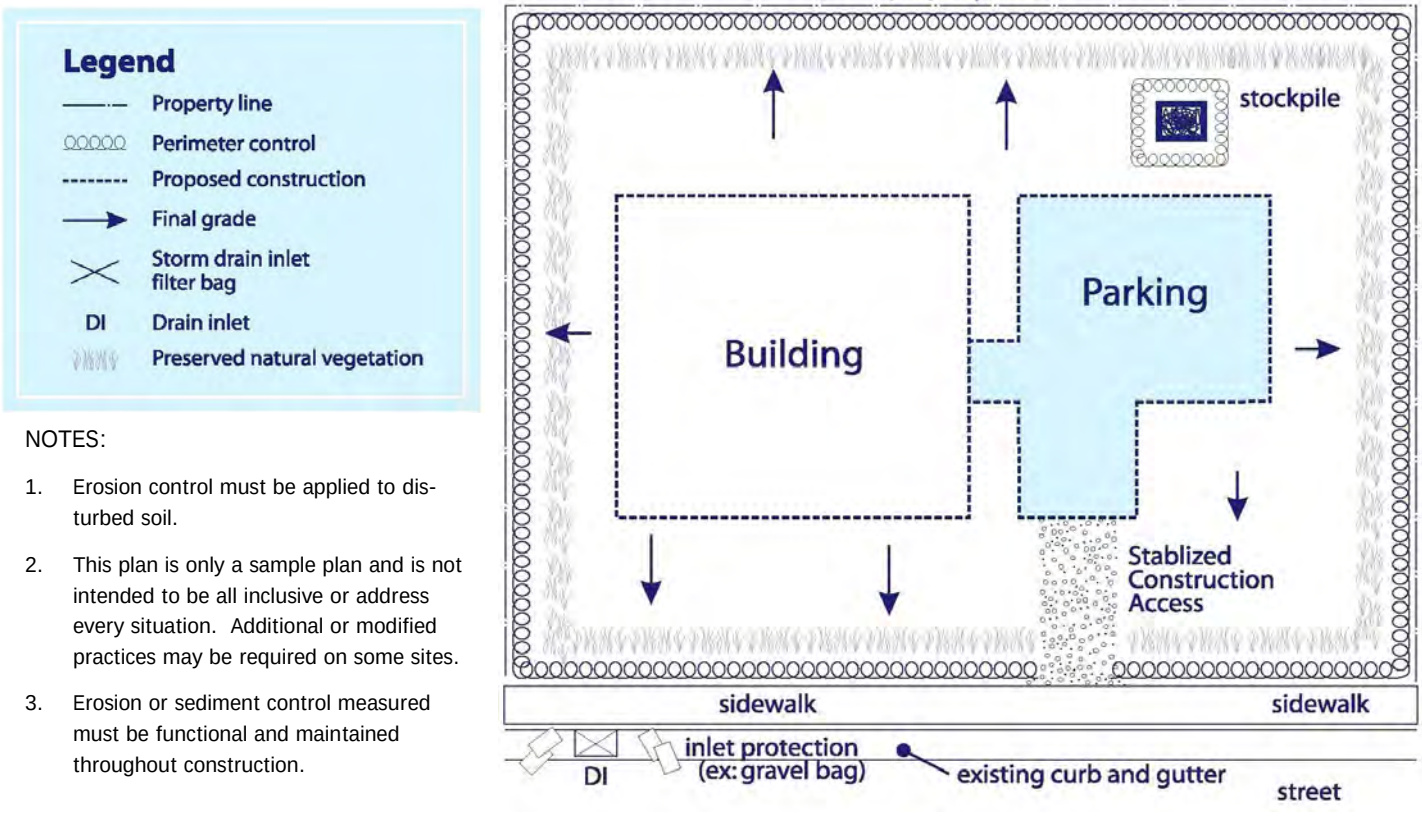
Preserve Natural Vegetation When Possible

Avoid clearing and grubbing the entire site. Preserving vegetation on the site, especially along the perimeter and adjacent to natural water bodies, will help filter and cleanse runoff. Trees, grasses, and shrubs all play a role in improving water quality. To ensure that vegetation is not disturbed or damaged by the contractor, take the following steps:

- Clearly identify all vegetation to be preserved on the plans.
- Fence or flag vegetation to be preserved in the field.
- Place barriers around the drip line of trees to be preserved (I.e. around the area below the branches); if that area is disturbed, the tree is likely to die.
- Do not grade, burn, place soil piles, or park vehicles near trees or in areas marked for preservation.

Drawing 1: Example site plans showing certain BMP locations

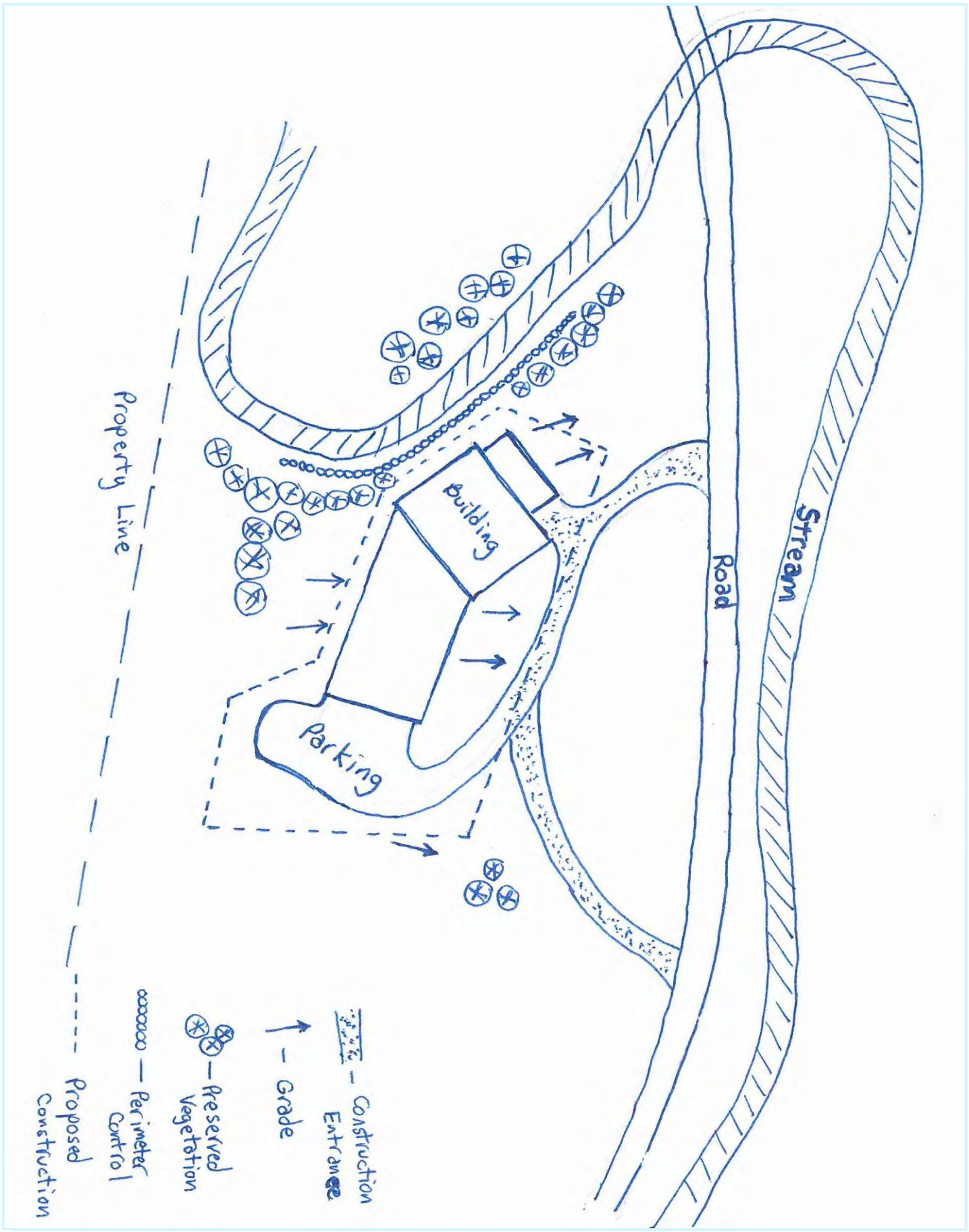
Every building site is unique and poses its own potential erosion hazards. Additional or alternative control methods are necessary if the lot is adjacent to a creek, river, wetland, or receives run-on from an adjacent area.



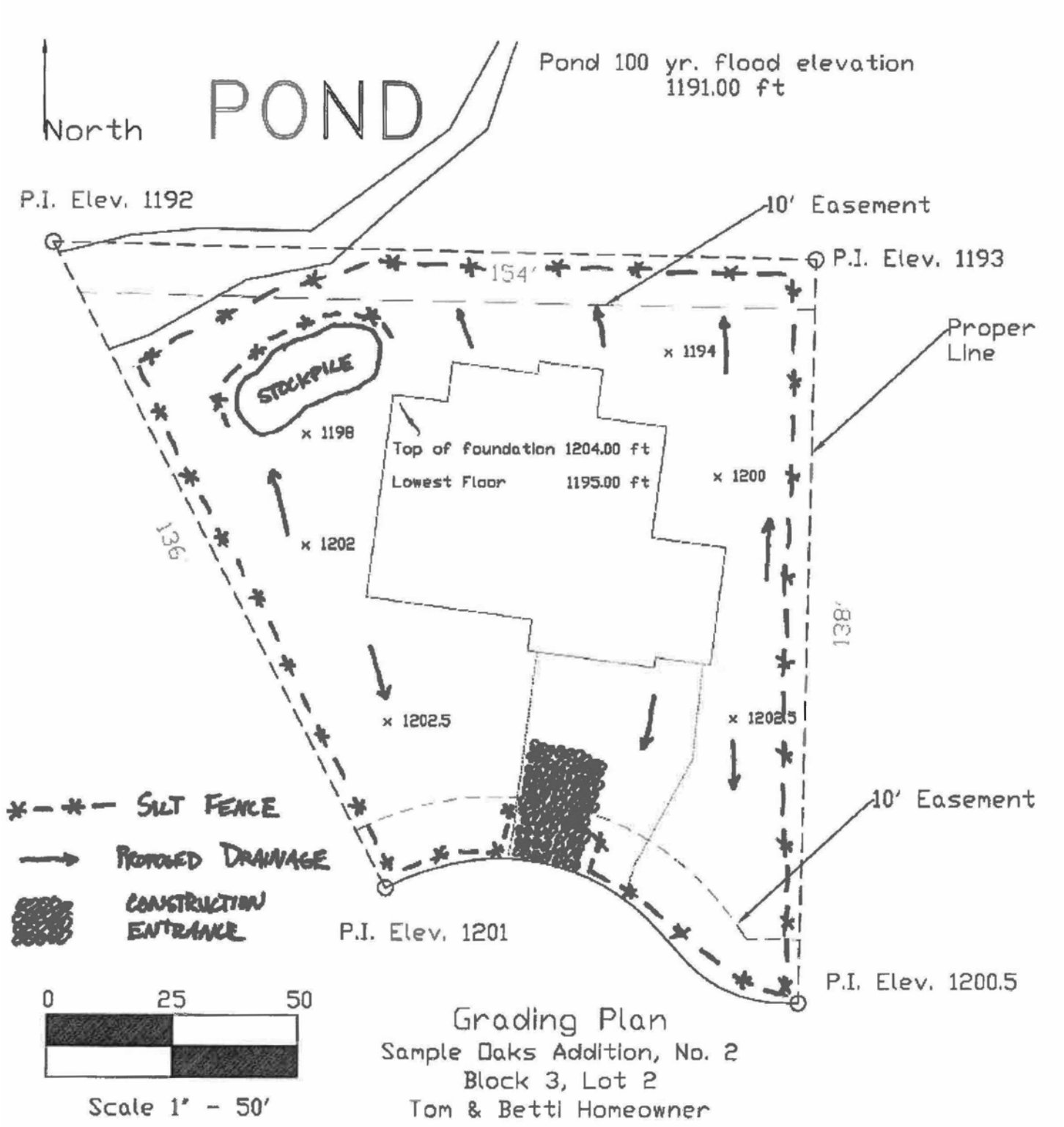
NOTES:

1. Erosion control must be applied to disturbed soil.
2. This plan is only a sample plan and is not intended to be all inclusive or address every situation. Additional or modified practices may be required on some sites.
3. Erosion or sediment control measured must be functional and maintained throughout construction.

ADITION SAMPLE OF SITE PLAN



ADITION SAMPLE OF SITE PLAN



Example of Grading/Erosion & Sediment Control (ESC) Plan

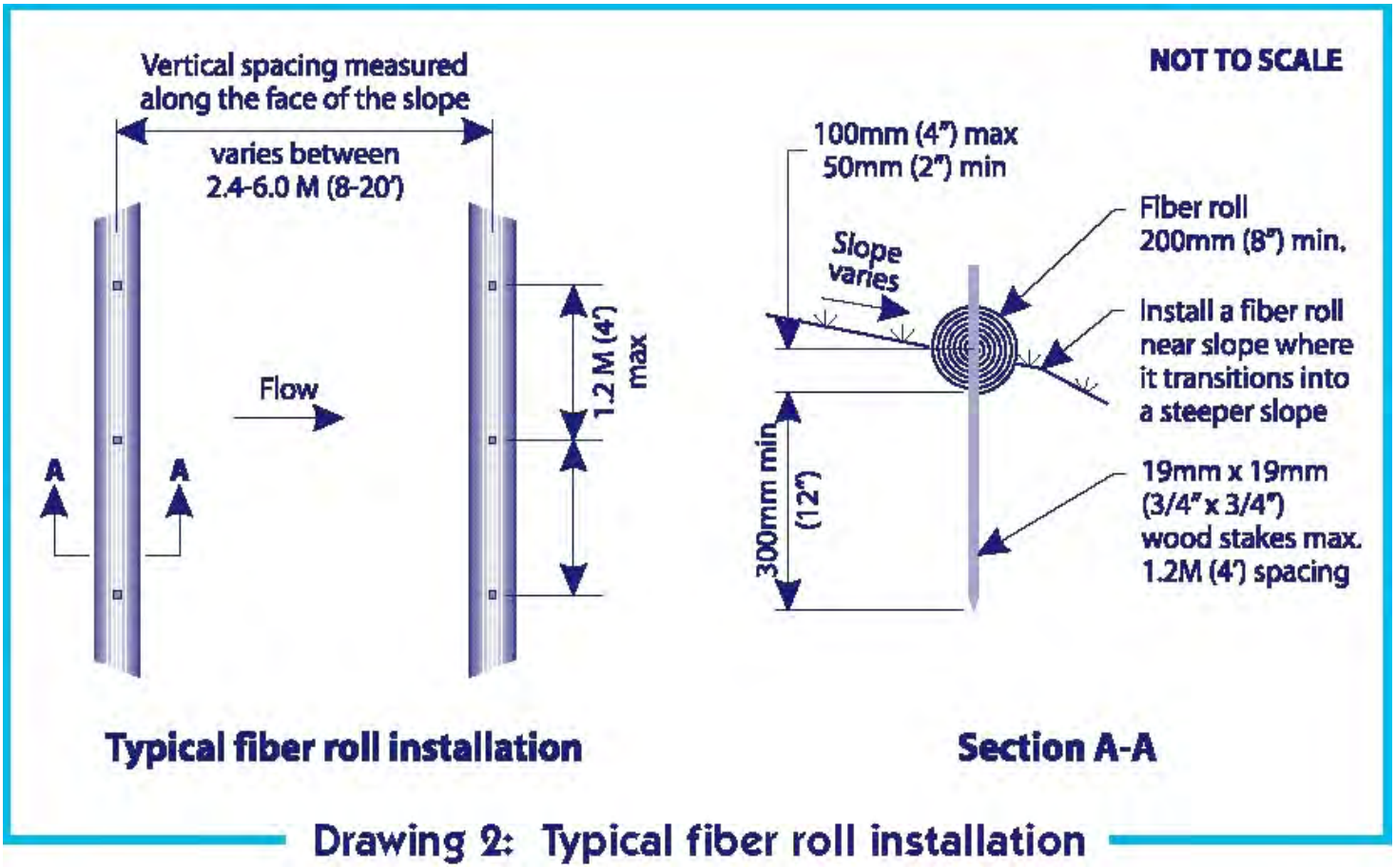
2. Schedule Work to Minimize Problems

- When possible, schedule construction activity— especially grading and erosion control construction (i.e., drainage ditches, sentiment ponds) to minimize disturbed area.
- **Sediment Control BMPs,** such as drain inlet protection, are required year round.
- **Erosion control BMPs** are required at all sites that disturbed soil.

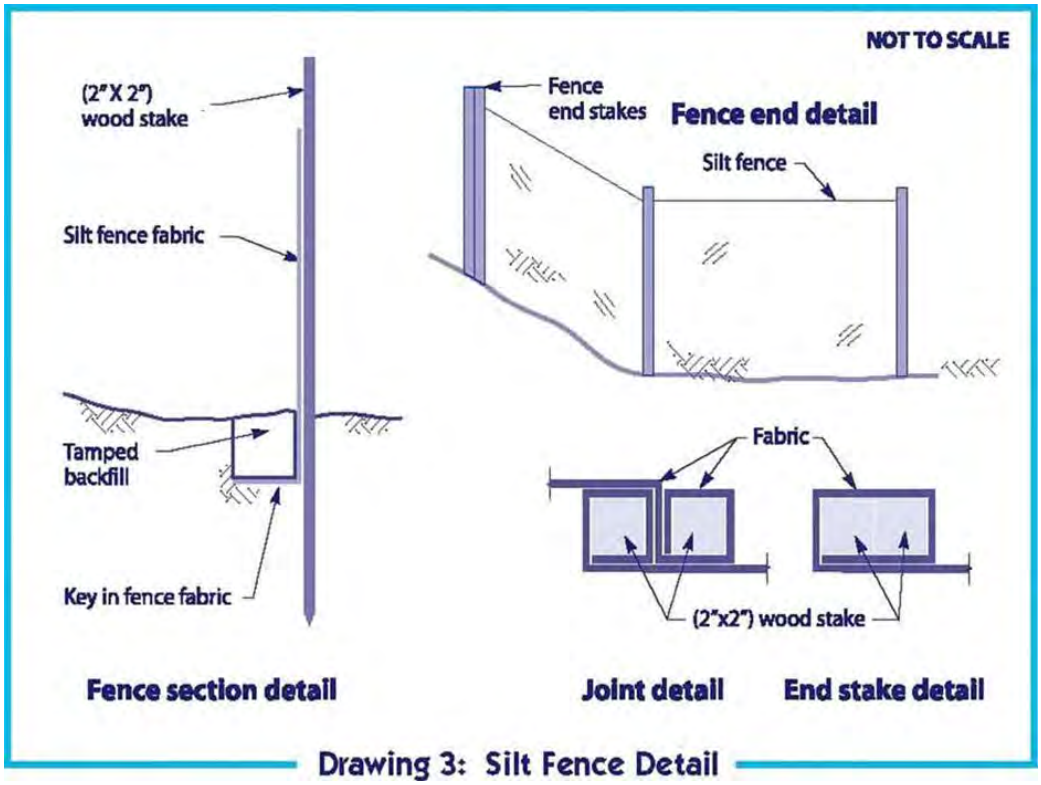
3. Install Perimeter Controls

Determine the BMPs needed to keep sediment from leaving the site, and install them along the site's perimeter before any clearing occurs.

Silt fences, and fiber rolls are examples of sediment control BMPs that can be used along the perimeter of the site. These devices also work below the toe of exposed and erodible slopes and around temporary soil stockpiles. As with all BMPs, they must be installed correctly and inspected and maintained frequently in order to work properly, See **Drawings 2 & 3** for proper installation techniques.



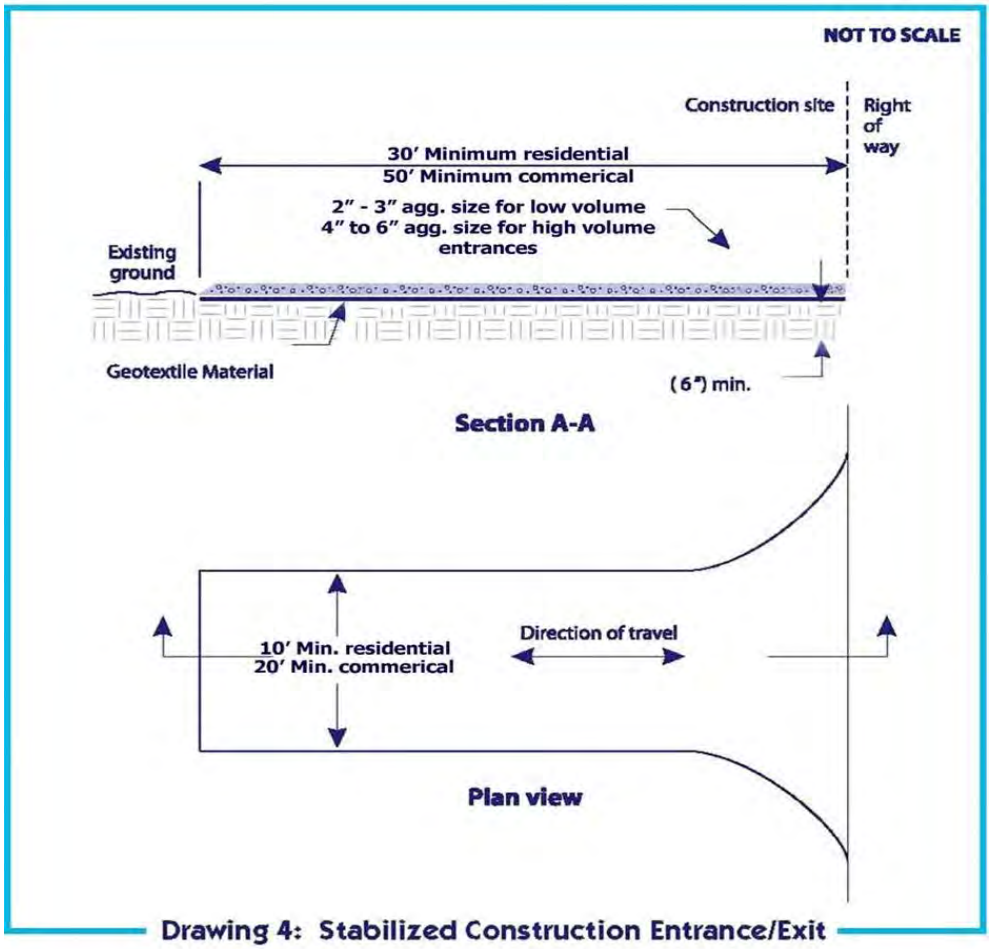
Drawing 2: Typical fiber roll installation



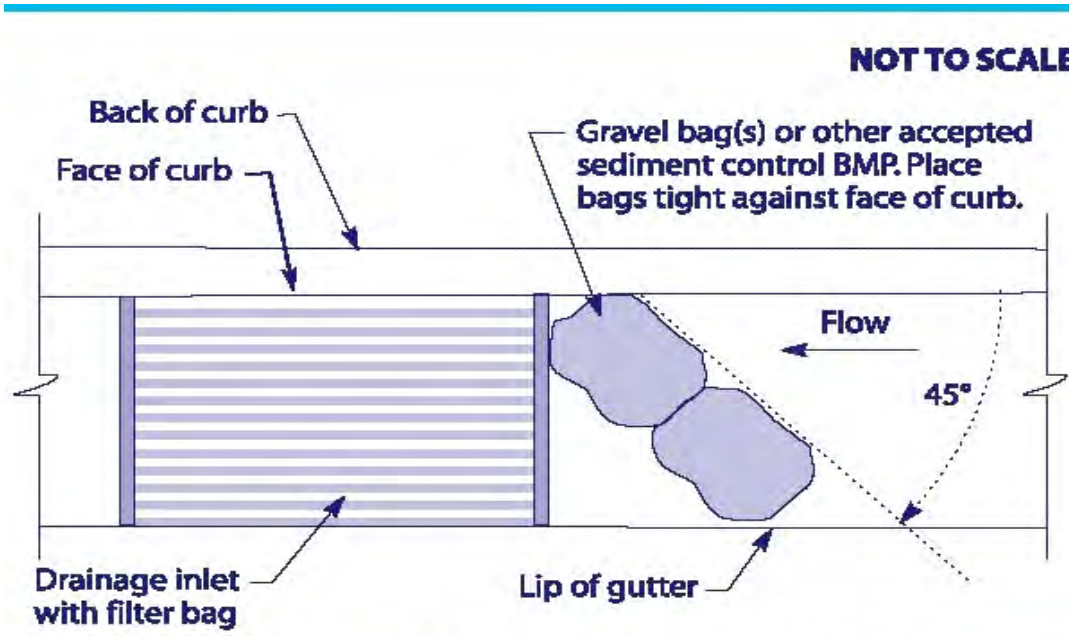
Drawing 3: Silt Fence Detail

4. Construction Entrance

Require all construction vehicles and equipment to use one designated entrance / exit to prevent vehicles from tracking silt onto roadways. When possible, prohibit vehicle equipment from parking on unpaved or non-stabilized areas. Drawing 4 illustrates a proper stabilized construction access.



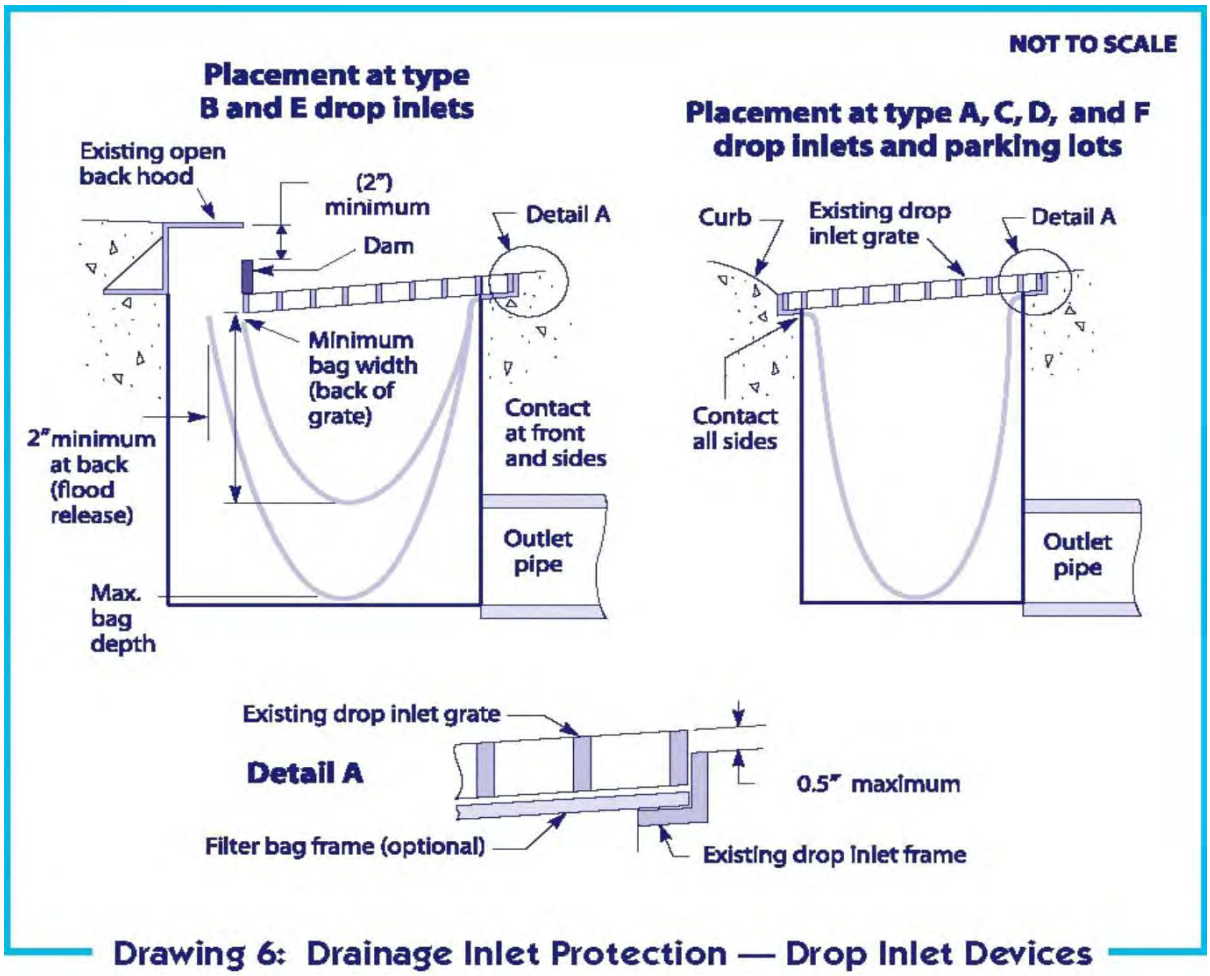
Drawing 4: Stabilized Construction Entrance/Exit



Drawing 5: Drainage Inlet Protection

5. Protect Storm Drain Inlets

Keep sediment from entering storm drains by installing inlet protection devices such as gravel bags and filters on storm drain inlets. These devices are not designed to trap large amounts of sediment and require frequent maintenance to remain effective. They are not a substitute for perimeter controls. See Drawing 5 and 6 inlet protection devices.



Drawing 6: Drainage Inlet Protection — Drop Inlet Devices

6. Use Other Pollution Control Practices As Needed

Apply Rainy— Cold Weather Erosion Controls

As mentioned earlier, erosion controls are needed in addition to sediment control during wet and cold weather. Examples include tackified straw mulch, fiber matrices, and soil binders. Hydroseed should be applied early enough to ensure that vegetation is established before the end of the growing season.

Protect Portable Toilets

Upon delivery, make sure portable toilet(s) are placed on a level surface behind the sidewalk and located at least 50 feet from any storm drain inlet or drainage ditch. Anchor portable toilets in areas not subject to vandalism or strong winds.

Manage Stockpiles Properly

Designate areas of the site for stockpiles and for the storage of segregated construction waste materials. Locate the materials away from any storm drain inlet, gutter, driveway, stream, wetland, ditch or drainage way. Cover stockpiles and surround with sediment barriers in order to prevent leaching of the material in runoff. Seed soil stockpiles and disturbed areas that are inactive (within 21 days) and place silt fence around stockpiles of soils.

Dewater Without Polluting

It is illegal to dewater entrances and other areas with sediment-laden water to storm drainage system, sanitary sewer, or waterways.

Use one of the following options when dewatering:

- Pump water into a portable containment device, and haul it to an approved disposal area.
- Pump water onto a vegetated area of the site for infiltration and filtration.
- Pump water through a filtering device which lowers sediment levels to below 100 mg/l prior to discharging into the storm drainage systems.

If you consider discharging to a sanitary sewer, you must contact the Charleston Sanitary Board at (304) 348-6875. Approval to discharge to a sanitary sewer may include limitations and requirements for treatment, discharge locations, and discharge times.

Manage and Dispose of All Waste Properly

Determine the proper disposal methods for liquid and solid waste. If waste bins are used, they should be covered and located away from drainage inlets and gutters.

Don’t Pollute When Painting

Paint, solvents, thinners, and paint-preparation waste may contaminate soil and groundwater if disposed of on the ground or in a septic tank. These chemicals never belong down a storm drain. Take the following steps when using paint:

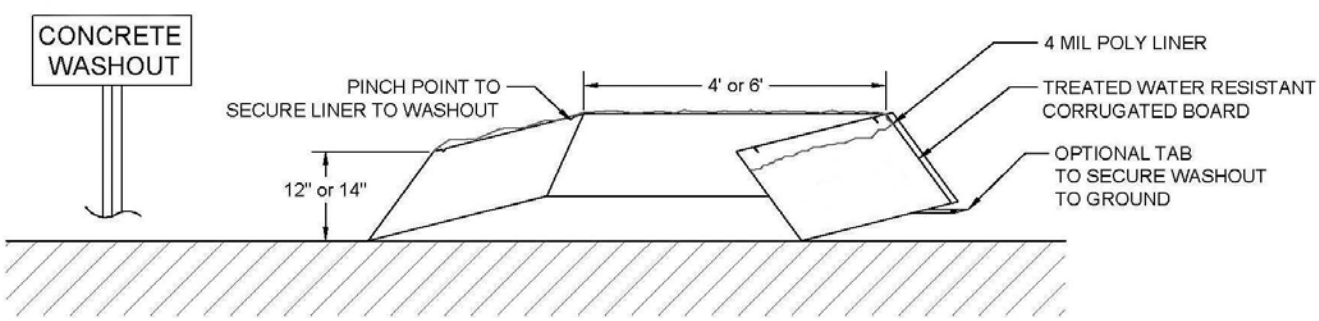
- Before cleaning brushes, brush out as much paint as possible. Wash water from cleanup of latex paint ONLY may be discharged to the sanitary sewer.
- Never pour excess paint into the storm drain, sanitary sewer, septic tank or on the ground.
- Minimize or avoid the use of oil-based paints and thinners.

Properly Handled Concrete Residue

One of the most common prohibited discharges from construction sites is from cleanout operations associated with concrete installation (residue from washing down equipment such as trucks, mixers, chutes, pumps, hand tools, and wheelbarrows).

Keep concrete residue from entering storm drains. For example:

- Obtain permission from the property owner to wash out equipment in a soil area so that the wash water can infiltrate into the ground.
- Place a berm or other barriers to capture water runoff from exposed aggregate, sawing, coring, or mortaring before it reaches the storm drain.
- If necessary, collect washwater into a portable containment device, then haul it to an approved disposal facility. Never wash out wheel barrows, tools, or associated containers near the street. Discharges of these materials to the storm drain are never allowed.



Courtesy of Outpak Solutions

7. Maintain BMPs

Maintain all BMPs until construction is completed and the lot is stabilized.

- Inspect the BMPs regularly — before and after each rain event, and as necessary to maintain functionality.
- Make any needed repairs immediately. If frequent repairs are needed, consider installing a different or additional BMP.
- Toward the end of each work day, sweep or scrape up any soil tracked onto the street(s). Do not flush streets and gutters with water.

Make sure everyone knows the rules

Educate all employees, contractors, subcontractors and delivery/supply companies about stormwater requirements and the steps they can take to avoid stormwater pollution problems on the project.

8. Perform Final Steps

Immediately after all outside construction activities are completed, spread the stockpiled soil and stabilize all bare areas with sod, seed, and/or mulch.

- Contact local seed suppliers or professional landscaping contractors for recommended seeding mixtures and rates.
- Follow recommendations of a professional landscaping contractor, your supplier, or a professional for installation of sod.
- When watering newly seeded or sodded areas, water only enough to keep the soil moist. Less watering is needed once grass is two inches tall.
- When applying fertilizers or pesticides, read and follow manufacturer's directions and use recommended amounts. Make sure fertilizers and pesticides are not broadcast to impervious surfaces, such as sidewalks or driveways.
- Never apply fertilizers or pesticides if rain is predicted within 48 hours, or as recommended by the manufacturer. Eliminate runoff from too much irrigation after application. Fertilizers and pesticides are considered pollutants and may end up in our local creeks and rivers.

Remove All Temporary Construction BMPs

- Once the sod and/or vegetation are well established, remove all remaining temporary erosion and sediment control BMPs.

ADDITIONAL REFERENCES

Charleston Stormwater Program Brochures

The following brochures are available free by contacting the City of Charleston Stormwater Department or download at www.charlestonstomwater.org:

- Residential Stormwater Brochure
- Commercial Stormwater Brochure
- Home Repair, Stormwater & You
- Backyard Composting
- Washing Your Car
- Recycling Your Oil
- How to Paint a Rain Barrel
- Teaching an Old dog an new trick?
- River Proud
- Charleston Homeowners' Guide to Clean Water

Contacts

City of Charleston Stormwater Management

114 Dickinson Street
Charleston, WV 25301
304-348-8106 304-348-8044 fax
WEBSITE: www.charlestonstormwater.org
EMAIL: swm@cityofcharleston.org
FACEBOOK: CharlestonStormwater

Charleston Sanitary Board (CSB)

208 26th Street W
Charleston, WV 25312
304-348-6875
304-348-1808
EMAIL: info@csbwv.com

Charleston Building Department

City Service Center
915 Quarrier St Suite 5
Charleston WV 25301-2607
304-348-6833
304-348-6836 fax

Charleston Planning Department

City Service Center
915 Quarrier Street, Suite 1
Charleston, WV 25301
304-348-8105
304-348-8042 FAX

West Virginia Department of Environment Protection WVDEP

Stormwater Permit Team

601 57th Street SE
Charleston, WV 25304
304-926-0499
Website: http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/home.aspx

United States Environmental Protection Agency EPA Region 3 Stormwater Division
Water Protection Division (3WP00)

1650 Arch Street
Philadelphia, PA 19103-2029
215-814-2300
Website: http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Pollution-Prevention-Plans-for-Construction-Activities.cfm

West Virginia Department of Natural Resources WVDNR
Office of Land & Streams

Building 74 – Room 200
324 Fourth Avenue
South Charleston, WV 25303
304-558-3225 304-558-6048 fax
http://www.dep.wv.gov/WWE/Programs/stormwater/Pages/sw_home.aspx

It's the Law?

The Clean Water Act administrated by the WVDEP and the US EPA establishes permit requirement for municipal discharges.

The City of Charleston is a designated MS4 (Municipal Separate Storm Sewer System) and is required to have a water discharge (NPDES) permit issued and administered by the WVDEP under the guidelines of the US EPA.

The US EPA requires six minimum control measures to improve stormwater quality:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post Construction Storm Water Management
6. Pollution Prevention and Good Housekeeping For Municipal Operations and Maintenance

For more information about the Clean Water Act, MS4, and NPDES— go to www.wvdep.org or www.epa.gov.

This Brochure has been distributed to you by the City of Charleston, West Virginia in an effort to increase your knowledge of our stormwater management program and educational efforts.