

# SMALL SITE EROSION AND SEDIMENT CONTROL GUIDANCE

## *Sevier County Storm Water Program*

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Soil erosion and resulting sedimentation are a leading cause of water quality problems in Sevier County, although erosion has long been associated with farming activities, it is also a major concern at construction sites, if the disturbed land is left unprotected every phase of a construction project has the potential of contributing significant quantities of sediment-laden runoff. Therefore, as a site is developed, all who are associated with the project must do their part to control erosion.

This pamphlet deals with erosion/sediment control on an individual building lot. First it looks at some consequences of construction site erosion and presents four principles important for control. Next it addresses the issue of proper lot drainage. Then it presents the seven steps within a construction sequence that should result in effective erosion control. Also included are installation instructions for some commonly used building site control practices.

### **PRIMARY CONCERNS RELATED TO EROSION AND SEDIMENTATION**

**Water quality.** Sediment is the number one pollutant, by volume, of surface water in the state of Tennessee. It impacts water quality by degrading the habitat of aquatic organisms and fish, by decreasing recreational value, and by promoting the growth of nuisance weeds and algae.

**Local taxes.** Sediment that finds its way into streets, storm sewers, and ditches results in additional maintenance costs for local government.

**Flooding.** Sediment accumulation in streams, lakes, and rivers reduces their capacity, which can result in increased flooding.

**Property values.** Sediment deposits not only impair water quality but also damage property thus reducing its use and value.

### **PRINCIPLES FOR CONTROLLING BUILDING SITE EROSION AND SEDIMENTATION**

Erosion control is important on any building site regardless of its size. Usually, the principles and methods for controlling erosion and reducing off-site sedimentation are relatively simple and inexpensive. Here are four basics to be followed when developing a building site.

**Evaluate the site.**

Location of structures should be based in large part, on the lots natural features. Look at existing drainage patterns, what effect the project will have on adjacent streams, roads , and properties Also identify areas where you want to limit construction traffic. Wherever possible, preserve existing vegetation to help control erosion and off-site sedimentation.

**Select and install erosion/sediment control practices.** Determine the specific ones needed, and install them before clearing the site. Among the more commonly used practices are vegetative filter strips, silt fence, mulching, diversion, and runoff inlet protection.

**Develop a practice maintenance program.** Controls should be inspected once a week and after each rainfall event. When a problem is identified, repair immediately or before the next rain event. Also, any sediment that is tracked onto the street should be scraped and deposited in a stable area. *Do not flush sediment from the street with water.*

**Revegetate the site.** Do so as soon as possible. A well-maintained lot has a higher sale potential.

**BUILDING LOT DRAINAGE**

The best time to provide for adequate lot drainage is before construction begins. With proper planning, most drainage problems can be avoided. And that's important because correcting a problem after it occurs is usually much more difficult and costly. Here's what it takes to ensure good lot surface and subsurface drainage. *Remember the final drainage should be consistent with pre-construction outfall locations from the site.*

**Surface Drainage**

Position the structure a minimum of 18 inches above street level. ( when possible )

Divert stormwater runoff away from the structure by grading the lawn to provide at least 6 inches of vertical fall in the first 10 feet of horizontal distance.

Construct side and rear yard swales to take surface water away from the structure.

Avoid filling in existing drainage channels and roadside ditches, since that could result in wetness problems on someone else's property and/or damage to adjacent road surfaces.

On steeper sloped drainage swales and ditches it may be necessary to use additional control measures such as check dams and rip rap channels ( *see exhibit 6* ) to prevent scaring and erosion of drainage way

**Subsurface Drainage**

Provide an outlet for foundation or footer drains and gutters

It is very important to have the proper size culvert when required for driveways. Information about what size you will need can be obtained from the **Sevier County Highway Dept.**

## **STEP 1. EVALUATE THE SITE.**

Before construction, evaluate the entire site, marking for protection any important trees and associated rooting zones, unique areas to be preserved, on-site septic system absorption fields, and vegetation suitable for filter strips, especially in perimeter areas.

### **Identify Vegetation To Be Saved.**

Select and identify the trees, shrubs, and other vegetation that you want to save (*see "Vegetative Filter Strips" under Step 2 below*).

### **Protect Trees and Sensitive Areas.**

To prevent root damage, do no grade, burn, place soil piles, or park vehicles near trees or in areas marked for preservation.

Place a physical barrier, such as plastic fencing, around the area designated for a septic system absorption field (if applicable)

## **STEP 2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS.**

Identify the areas where sediment-laden runoff could leave the construction site, and install controls to minimize the potential for off-site sedimentation. It's important that perimeter controls are in place before any other earth-moving activities begin.

### **Protect Down-Slope Areas.**

#### ***With Vegetative Filter Strips***

Preserve a 20- to 30-foot wide vegetative buffer strip around the perimeter of the property, and use it as a filter strip for trapping sediment. Do not mow filter strip vegetation shorter than 4 inches.

#### ***With Silt Fence***

Use silt fencing along the perimeter of the lot's downslope side(s) to trap sediment (*see Exhibit #3*). Silt fence is not recommended as a control in a drainage ditch or stream

### **Install Gravel Driveway**

Restrict all lot access to this drive to prevent vehicles from tracking mud onto roadways (*see Exhibit #4*).

### **Protect Storm Sewer Inlets.**

Protect nearby storm sewer curb inlets with stone-filled or gravel-filled geotextile bags (*see Exhibit #1*) or equivalent measures before disturbing soil.

Protect on-site storm sewer drop inlets with silt fence material (*see Exhibit #2*), straw bales, or equivalent measures before disturbing soil.

## **Construction Sequence for Building Site Erosion Control Practices**

### **STEP 3. PREPARE THE SITE FOR CONSTRUCTION.**

Prepare the site for construction and for installation of utilities. Make sure all contractors (especially the excavating contractor) are aware of areas to be protected.

#### **Salvage and Stockpile the Topsoil/subsoil.**

Remove topsoil (typically the upper 4 to 6 inches of soil material) and stockpile. Remove subsoil and stockpile separately from the topsoil.

To the extent possible divert stormwater around the disturbed areas and stockpiles

Immediately after stockpiling, temporary-seed the stockpiles with annual rye or winter wheat and/or place sediment barriers or have vegetated strip around the perimeter of the piles.

### **STEP 4. BUILD THE STRUCTURE(S) AND INSTALL THE UTILITIES.**

Construct the home and install the utilities; also install the sewage disposal system and drill the water well (if applicable); then consider the following.

#### **Install Downspout Extenders.**

Although not required, downspout extenders are highly recommended as a means of preventing lot erosion from roof runoff while vegetation is being established.

Add the extenders as soon as the gutters and downspouts are installed (*see Exhibit #5*).

Be sure the extenders have a stable outlet, such as the street, sidewalk, or a well vegetated area.

## **STEP 5. MAINTAIN THE CONTROL PRACTICES.**

Maintain all erosion and sediment control practices until construction is completed and the lot is stabilized.

Inspect the control practices a minimum of once a week and after each storm event, making any needed repairs immediately.

Toward the end of each work day, sweep or scrape up any soil tracked onto roadways. *Do not flush area with water.*

By the end of the next work day after a storm event, clean up any soil washed off-site.

## **STEP 6. REVEGETATE THE BUILDING SITE**

Immediately after all outside construction activities are completed, stabilize the lot with sod, seed, and/or mulch

### **Redistribute the Stockpiled Subsoil and Topsoil.**

Spread the stockpiled subsoil to rough grade.

Spread the stockpiled topsoil to a depth of 4 to 6 inches over rough-graded areas.

Fertilize and lime according to soil test results or recommendations of a seed supplier or a professional landscaping contractor

### **Mulch Newly Seeded Areas.**

Spread straw mulch on newly seeded areas, using 2 bales of straw per 1,000 square feet.

On flat or gently sloping land, anchor the mulch by crimping it 2 to 4 inches into the soil. On steep slopes, anchor the mulch with netting or tackifiers. An alternative to anchored mulch would be the use of erosion control blankets

## **STEP 7. REMOVE REMAINING TEMPORARY CONTROL MEASURES**

Once the sod and/or vegetation is well established, remove any remaining temporary erosion and sediment control practices, such as

Downspout extenders. (Or shorten to outlet onto the vegetated areas, allowing for maximum infiltration).

Storm sewer inlet protection measures and silt fences

**Every building site is unique and poses its own restraints and potential erosion hazards. In many instances, additional or alternative methods are necessary if your lot is:**

Adjacent to a creek, lake, or wetland.

Receives runoff from adjacent areas.

Has more than one acre of disturbed ground

( NOTE) any site with a disturbance of more than one (1) acre.  
may require a State T DEC permit

This pamphlet provides installation instruction on some of the more commonly used building site erosion and sediment control practices. For information on other related practices, contact your County or City Stormwater program director

### **REMEMBER GOOD HOUSEKEEPING**

Construction sites often are a source of other types of stormwater pollution, discarded material can be washed or blown into streams or storm drains. Paint and other chemicals if not properly disposed of can mix with stormwater run off.

#### **Take the time to**

Pickup or store excess or used material at the end of the work day. Require subcontractors to clean up after themselves.

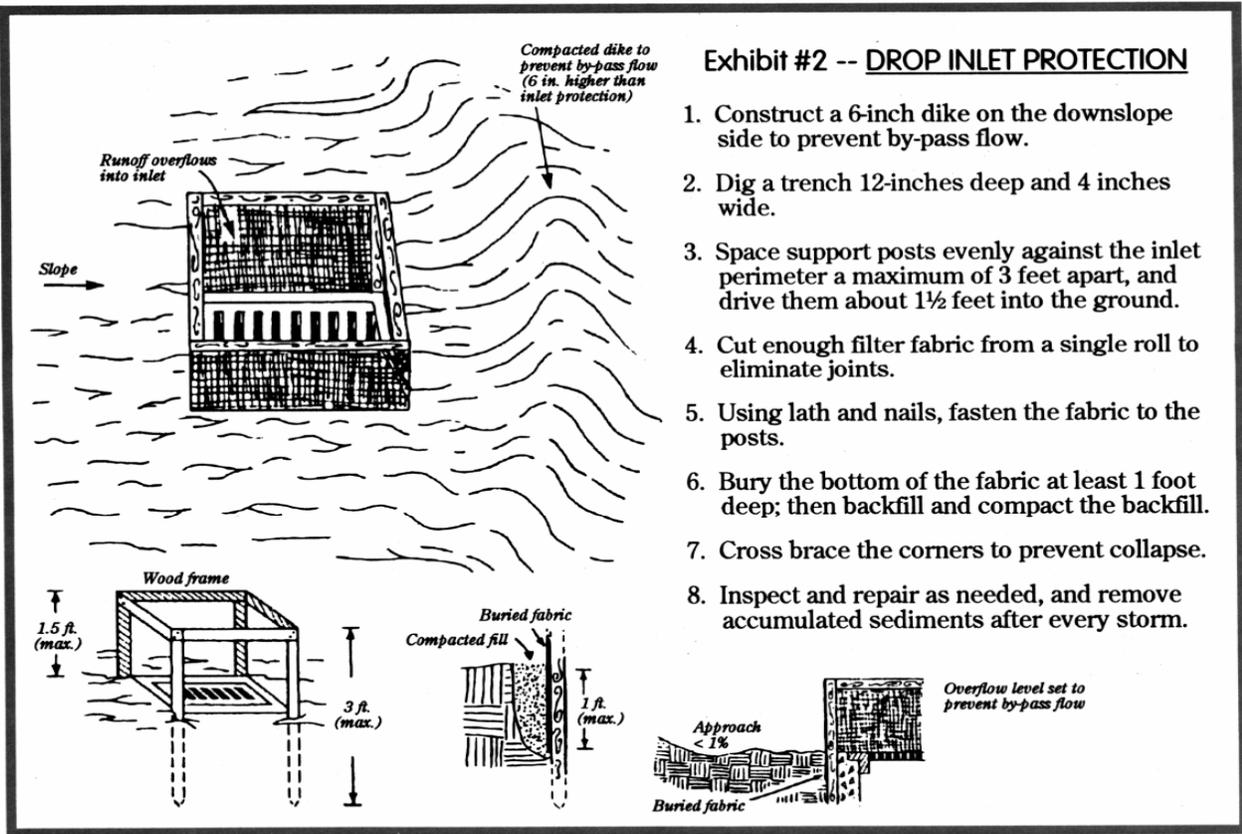
Have a dumpster or other means of storage for materials or trash and keep hauled off regularly

Make sure equipment is not leaking fluids oil, gas or antifreeze;

Have proper storage and disposal of paints and other chemicals

**A clean and well managed job site is safer, better for the environment ,and presents your project in a positive way to the neighborhood**

***Everyone should do their part to help improve the water quality in Sevier County.You can help with proper stormwater management of your job site***



**Exhibit #2 -- DROP INLET PROTECTION**

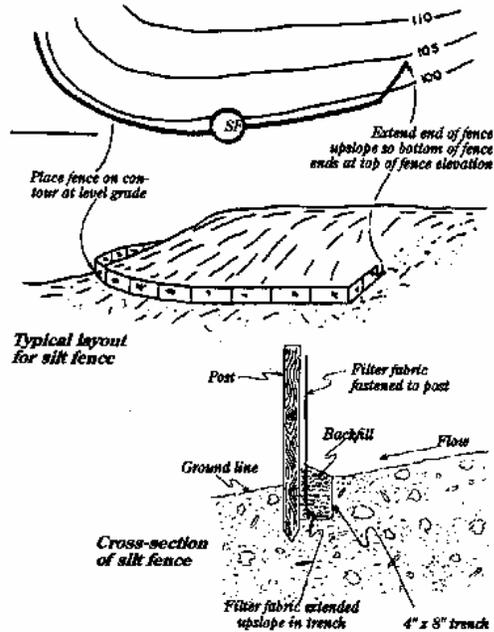
1. Construct a 6-inch dike on the downslope side to prevent by-pass flow.
2. Dig a trench 12-inches deep and 4 inches wide.
3. Space support posts evenly against the inlet perimeter a maximum of 3 feet apart, and drive them about 1½ feet into the ground.
4. Cut enough filter fabric from a single roll to eliminate joints.
5. Using lath and nails, fasten the fabric to the posts.
6. Bury the bottom of the fabric at least 1 foot deep; then backfill and compact the backfill.
7. Cross brace the corners to prevent collapse.
8. Inspect and repair as needed, and remove accumulated sediments after every storm.



### Exhibit #3 -- SILT FENCE

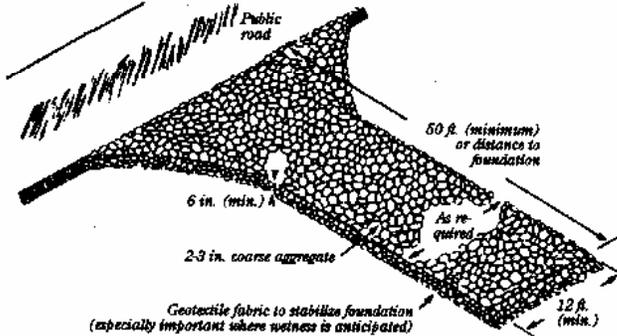
1. Install parallel to the contour of the land.
2. Extend ends upslope enough to allow water to pond behind the fence.
3. Excavate a trench 8 inches deep and 4 inches wide.
4. Install fence with stakes on the downslope side.
5. Bury 12 inches of fabric in the trench, extending the bottom 4 inches toward the upslope side.
6. Backfill trench with soil material, and compact.
7. Join silt fence sections by overlapping sections and nailing with lath to the nearest post.
8. Inspect twice a week and after each storm event. Repair as needed, and remove sediment deposits when they reach one-half the fence height.

(NOTE: Silt fence has a life expectancy of 6 months to 1 year, whereas straw bale barriers have a limited life of 3 months or less.)



### Exhibit #4 -- GRAVEL ENTRANCE

1. Place 6 inches of coarse aggregate (IN-DOT CA No. 2) over a stable subgrade.
2. Construct the drive at least 12 feet wide and 50 feet long or the distance to the foundation.
3. Add stone as needed to maintain 6 inches of clean depth.
4. To improve stability or if wet conditions are anticipated, place geotextile fabric on the graded foundation.



### Exhibit #5 -- DOWNSPOUT EXTENDERS

1. Install extenders as soon as gutters and downspouts are installed to prevent erosion from roof runoff.
2. Use non-perforated (unslotted) drainage tile.
3. Route water to a stable grassed or paved area or to the storm sewer.

