

**City of Cleveland**  
**Guidance Document Erosion and Sediment Control**  
**Best Management Practices for Home Builders**  
MS4 Phase II Stormwater Management Program  
*“A partnership in community development”*



**Erosion is a costly problem.**

Eroding construction sites are a source of water quality problems. For every acre under construction, a dump truck and a half of soil washes into a nearby stream unless the contractor uses erosion controls. Construction site erosion and off site sedimentation directly impact water quality, which in turn increases flood frequencies resulting in unanticipated costs to local communities.

**Flooding** - Lost flood storage results from sediment filled streams. Lost reservoir storage is 1.4 to 1.5 million acre-feet per year.

**Local taxes** - Removing accumulated sediment from public drainage structures and ditches results in unanticipated operating costs to local tax payers.

**Federal taxes** - The government spends over \$500 million each year to remove sediment from lakes, harbors and navigation channels. (Source: Fifield, CPESC)

**Lower Property Values** - Neighboring property values are damaged when a lake or stream fills with sediment.

**Nuisance Growth of Weeds and Algae** - Sediment carries fertilizers that fuel algae and weed growth in stormwater conveyance channels.

**Controlling erosion**

**Erosion control is important for all construction sites.** The materials needed to minimize adverse water quality resulting from construction activity are readily available - straw bales, silt fence, rocks, slope drains, grass seed, mulch, or geo-textiles materials. The methods selected are site dependent based upon topography, concentrated flows, and the watershed size. To be effective the materials must be installed in accordance with specifications published by the Tennessee Department of Environment and Conservation, which are available online at <http://www.cityofclevelandtn.com/publicworks/stormwater.htm>.

Installing erosion control materials is a straight forward process. Only a few controls are generally needed on most one and two family building sites, but are only effective if maintained regularly.

- **Use of slope drains and sediment basins** on all vertical drops;
- **Use of riprap** at the outflow end of all storm drain, pipes, and to line sediment basins.
- **Construction entrance** consisting of course aggregate, typically 20 feet by 50 feet is recommended, dependent upon site specific conditions as a primary consideration.

**Soil Piles**

- **Locate** away from any down-slope street, driveway, stream, lake, wetland, ditch or drainage way.
- **Stabilize** with mulch and/or vegetation. Temporary seed such as annual rye or winter wheat is recommended for topsoil piles.

**Sediment Cleanup**

- **By the end of each workday, sweep and scrape up soil tracked into roadways.** Stabilize all areas at finish grade with mulch and/or vegetation while maintaining erosion controls.

**Preserving Existing Vegetation**

- Wherever possible, preserve existing trees, shrubs, or vegetation.
- To prevent root damage, do not grade, place soil piles, or park vehicles near trees marked for preservation.
- Place plastic mesh or snow fence barriers around trees to protect the area below their branches.

**Re-vegetation**

- Seed, mulch, or sod bare soil on all areas in conjunction with TDEC regulations. Vegetation is the most effective way to control erosion.  
Anchor straw or hay mulch immediately after application with one of the following methods:
  - ✓ Press into soil with a roller, packer disk, etc.
  - ✓ Apply synthetic binders
  - ✓ Add rye or wheat seed to fall and winter plantings
  - ✓ Install 1” x 1” mesh netting
  - ✓ Note: wood cellulose and wood fiber mulch is self-anchoring
- Exposed areas left undisturbed for **greater than two weeks must be vegetated in accordance with the State NPDES construction stormwater programs.**

**Proper Vegetation Practices**

Selecting Vegetation
1. Suitable for the site 2. Ease of establishment 3. Planting dates 4. Plant characteristics (height) 5. Maintenance requirements

Accurate Seeding Rates for a Quality Stand
<ul style="list-style-type: none"> <li>• Under-seeding <b>reduces</b> the potential stand.</li> <li>• Over seeding creates excessive demand on moisture, nutrients, light, and space.</li> <li>• More seed is not always better.</li> </ul>

NRCS Recommended Seeding Rates for Critical Areas			
Species	LB/AC <sup>1</sup>	Seed/LB	Seed/sq.ft.
Tall Fescue	50	227,000	260
Pensacola	60	166,000	230
Bahia			
Sericea	60	350,000	480
Lespedeza			

NRCS Recommended Seeding Rates for Critical Areas			
Species	LB/AC <sup>1</sup>	Seed/LB	Seed/sq.ft.
Common	10	1,800,000	410
Bermuda			
Weeping lovegrass	4	1,500,000	140

Companion Plants
Rye is the best winter annual because it grows well on cold, acidic, and infertile soils.

Companion Plants
Do <b>Not</b> use <u>Ryegrass</u> in seeding mixtures. Ryegrass is a sod-forming annual.

Companion Plants
Do <i>not</i> include them in the seeding mixtures if perennials are planted during optimum planting dates.

Suitable Plants for Temporary Cover
<ul style="list-style-type: none"> <li>•Common Bermuda</li> <li>•Millet</li> <li>•Rye</li> <li>•Tall Fescue</li> <li>•Weeping Lovegrass</li> </ul>

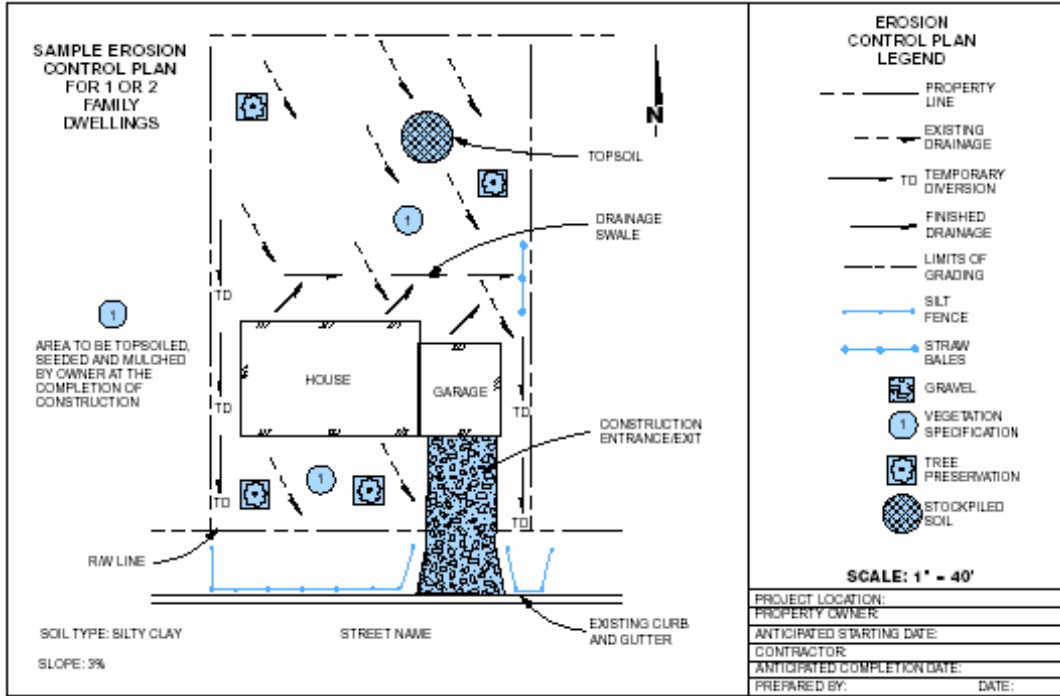
**Mulch is Very Important!**

Use straw/hay that is dry, not caked, and free of weed seed.

Straw - 2 tons/AC or  
Hay - 2½ tons/AC

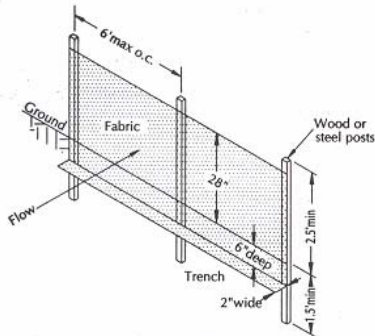
This will cover about 75%  
of the soil surface.

**Typical Best Management Practices for Home Builder**



**Silt Fence**

**Application**-Silt fence should be installed where sheet flow runoff can be stored behind the barrier. All silt fencing should be installed along the contour, never up or down a slope. The drainage area above a silt fence should not exceed ¼ acre for every 100 linear feet of silt fence.



Use Type "A" silt fence: 1) on developments where the life of the project is greater than six months, 2) where the slope gradient is steeper than 3:1.

**Criteria for Silt Fence Placement**

Land Slope (percent)	Maximum Slope Length Above Fence (feet)
<2	100
2 to 5	75
5 to 10	50
10 to 20	25
>20	15

- Type A Silt Fence- This 36-inch wide filter fabric should be used on developments where the life of the project is 6 months or greater.
- Type B Silt Fence- Though only 22-inches wide, this filter fabric allows the same flow rate as Type A. Type B should be limited to use on minor projects lasting less than 6 months.
- Type C Silt Fence- Type C is 36-inches wide with wire reinforcement and should be used where slopes exceed a vertical height of 10 feet, and satisfy the criteria listed above.

**Installation-** On slopes with grades greater than 7%, the silt fence should be located at least 5 to 7 feet beyond the base. Turn the ends of the silt fence upslope so that a certain depth of stormwater may be retained in front of the fence. The impounded depth should be at least 12 inches, but not more than the height of the fence. The bottom edge of the silt fence must be entrance and backfilled to be functional.

- Dig a small toe-in trench with a minimum depth of 6-inches. Place the excavated material on the front or upstream side of the trench to facilitate back filling later.
- Drive the fence posts into the back or downstream side of the trench. The posts should be driven so that at least 1/3 of the height of the post is in the ground. When installing a prefabricated Silt Fence with fabric attached to the posts, the posts should be driven so that at least 6 in. of fabric will be buried in the ground.
- Extend low fence ends enough up-slope forming a “J” hook to allow water to pond in the hook.
- Backfill the trench with the excavated material and tamp so that at least 6 inch of the fabric is securely toed into the ground to prevent under-mining.
- Maintain until vegetation is established.
- Along creeks and streams, two rows of Type C State approved Silt Fence shall be used with a minimum of 6 ft. between posts. Maintain 25-ft. buffer from stream bank on both sides.

**Sediment Logs**

Application- Sediment logs should be used in areas where there is high construction traffic, and do not need to be trenched. Sediment logs are limited to disturbed areas ranging from 0.1 to 0.2 acres only, typical to front yard areas of average home sites.

Installation- Sediment logs should be staked in every 4 to 6 feet, on the downhill side, through the netting only. Do not stake in through the center of the log.



**IMPORTANT!**

- In accordance with the stormwater regulations of the Tennessee Department of Environment and Conservation, adopted in 1992, proper erosion control measures must be installed and functioning prior to any land disturbance activity.
- Please contact the Engineering Division of the Department of Public Works, the Department of Community Development, or the Building Official to determine if your project requires a plan and permit in accordance with State and local regulations mandated under the federal MS4 Phase II Stormwater.

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Web Site Phase II Stormwater- [www.state.tn.us/environment/wpc/stormh2o/MS4II.php](http://www.state.tn.us/environment/wpc/stormh2o/MS4II.php)