City of Cleveland
Erosion and Sediment Control
Best Management Practices for Home Builders

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.

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 in the ***"Tennessee Erosion and Sediment Control Handbook"***, and can be found on the City's website at *www.clevelandtn.gov*.

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 piles 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

- Vegetation is the most effective way to control erosion. Seed, mulch, or sod bare soil on all areas. Please refer to the Tennessee Erosion and Sediment Control Handbook
  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 **14 days** must be vegetated in accordance with the City of Cleveland Stormwater Ordinance.

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

- Under-seeding **reduces** the potential stand.
- Over seeding creates excessive demand on moisture, nutrients, light, and space.
- More seed is not always better.

NRCS Recommended Seeding Rates for Critical Areas

Species	LB/AC[1]	Seed/LB	Seed/ sq.ft.
Tall Fescue	50	227,000	260
Pensacola Bahia	60	166,000	230
Sericea Lespedeza	60	350,000	480

NRCS Recommended Seeding Rates for Critical Areas

Species	LB/AC[1]	Seed/LB	Seed/ sq.ft.
Common Bermuda	10	1,800,000	410
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 Not use Ryegrass in seeding mixtures.
Ryegrass is a sod-forming annual.

Companion Plants

Do *not* include them in the seeding mixtures if perennials are planted during optimum planting dates.

Suitable Plants for Temporary Cover

- Common Bermuda
- Millet
- Rye
- Tall Fescue
- Weeping Lovegrass

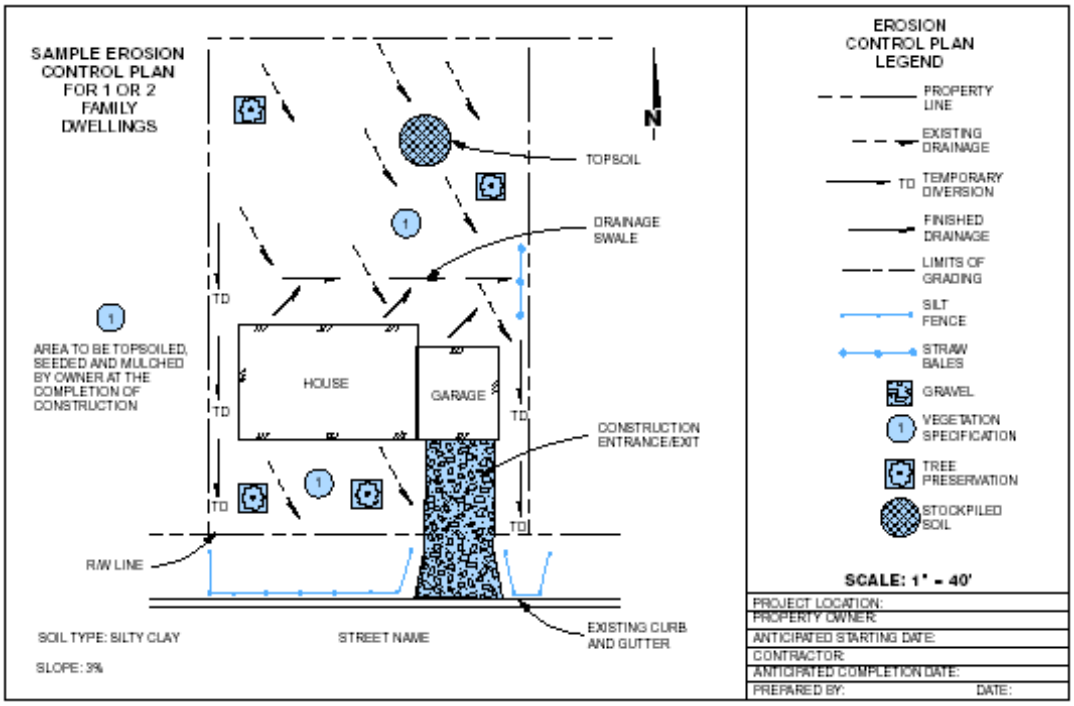
Mulch is Very Important!

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

Straw - 2 tons/AC or
Hay - 2½ tons/AC

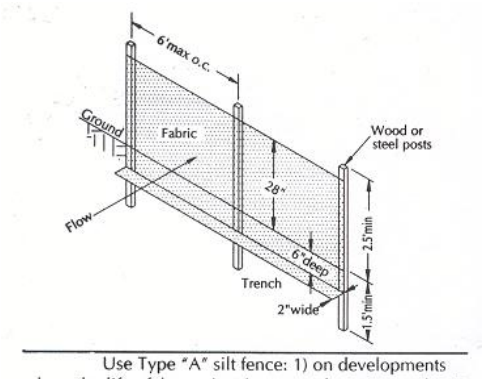
This will cover about 75% of the soil surface.

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-inces 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 lease 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.

Erosion Control Logs

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

Installation- Erosion control 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 City of Cleveland Development & Engineering Services Department to determine if your project requires a plan and permit in accordance with State and local regulations mandated under the MS4 Phase II Stormwater Permit.

Stormwater Contacts:

Christopher Broom
Stormwater Coordinator
185 2nd Street, NE
Cleveland, TN 37311
Phone: (423) 479-1913
Fax: (423) 559-3373
cbroom@clevelandtn.gov

Mary Baier
Chief Building Official
185 2nd Street, NE
Cleveland, TN 37311
Phone: (423) 479-1913
Fax: (423) 559-3373
mbaier@clevelandtn.gov