Erosion Control for Home Builders

This handout includes instructions and diagrams needed by builders on most construction sites to control erosion. Additional controls may especially be needed for sites that have steep slopes; are adjacent to lakes, streams, and marshlands; are larger than an acre; or are not owner-occupied. For more information within the jurisdictional area of the City of Tybee Island please contact the Community Development Department at (912) 472-5030.

The Erosion and Sedimentation Act of 1975 (O.C.G.A. § 12-7-1) regulates land disturbing activities in Georgia. Some projects require a Land Disturbing Activity (LDA) permit. Depending upon the scope of the project, a Shore Protection Act permit or a Coastal Marshland Protections Act permit from the Georgia Department of Natural Resources; or a buffer encroachment permit or variance from the City of Tybee Island may also be necessary. Even if the project does not require an LDA or a DNR permit, you must follow the best management practices (BMPs) as outlined in the *Manual for Erosion and Sediment Control in Georgia* (also known as the *"Green Book"*). The *Green Book* can be accessed here: https://gaswcc.georgia.gov/sites/gaswcc.georgia.gov/files/related_files/site_page/GSWCC-2016-Manual-Revised-10-26-15.pdf

The most common BMPs are explained in this handout. Your project may require additional BMPs or may require state or federal approval.

EROSION IS A COSTLY PROBLEM

Eroding construction sites are a leading cause of water quality problems in Georgia. Soil washes into nearby lakes, streams, estuaries, or marshlands unless the builder uses erosion controls. Problems caused by sediment include:

- ✓ **Taxes** - Cleaning up sediment in streets, sewers, and ditches adds extra costs to government budgets.
- ✓ **Dredging** - The expense of dredging sediment from lakes, harbors and navigation channels is a heavy burden for taxpayers.
- ✓ **Lower Property Values** - Property values are damaged when a lake, creek, stream, or marsh fills with sediment. Shallow areas encourage weed growth and create boating hazards.
- ✓ **Poor Fishing** - Muddy water drives away fish like spotted sea trout that rely on sight to feed. As it settles, sediment smothers fish eggs and shellfish such as clams and oysters. Sediments can also clog fish gills and kill the fish.
- ✓ **Nuisance Growth of Weeds and Algae** - Sediment carries fertilizers that fuel algae and weed growth. Growing algae uses oxygen from the water that fish need to survive.

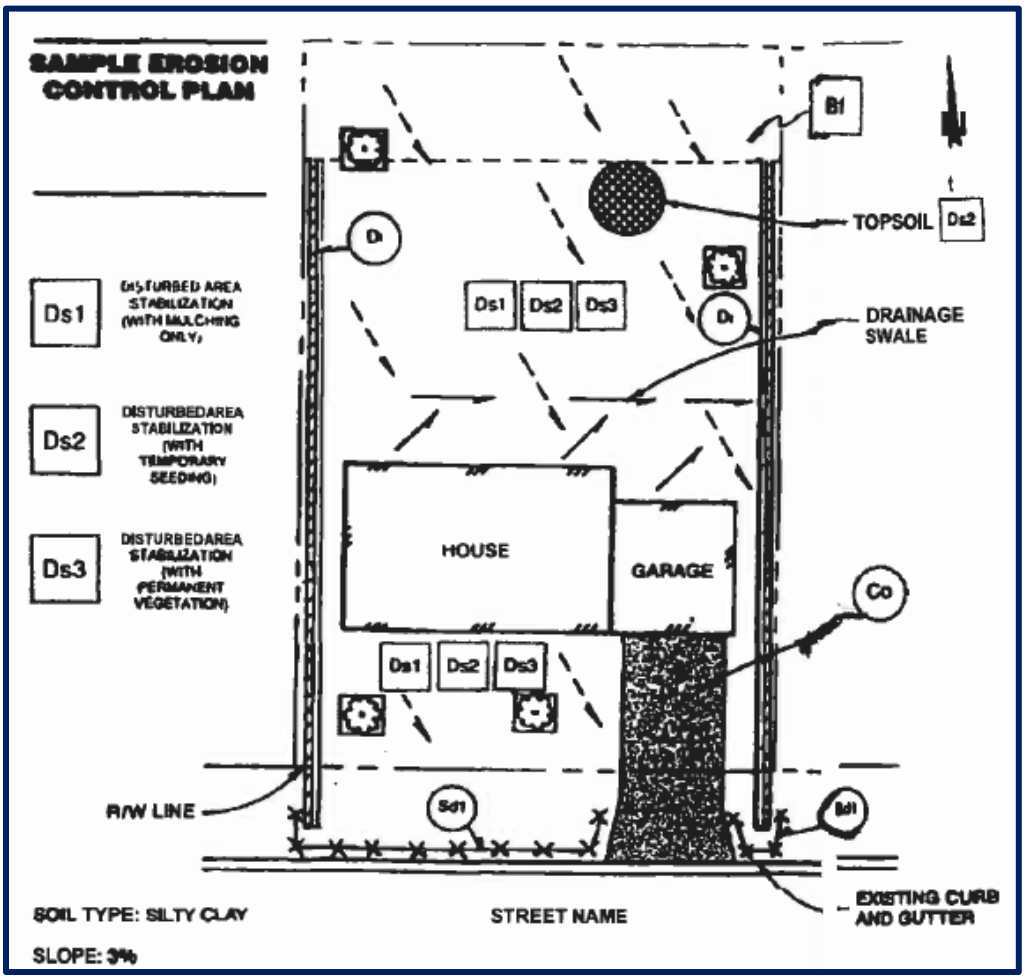
CONTROLLING EROSION IS EASY

Erosion control is important even for sites of an acre or less. The materials needed are easy to find and relatively inexpensive - straw bales or silt fence, stakes, rock, plastic tubes, and grass seed. Only a few controls are needed on most sites:

- ✓ **Preserving** existing trees and grass where possible to prevent erosion.
- ✓ **Re-vegetating** the site as soon as possible.
- ✓ **Installing silt fence and/or straw bales** to trap sediment on the downslope sides of the lot.
- ✓ **Locating soil piles** away from roads or waterways.
- ✓ **Installing a construction exit** used by all vehicles to limit tracking of soil onto streets.
- ✓ **Removing** sediment carried off-site by vehicles or storms.
- ✓ **Installing downspout** extenders to prevent erosion from roof runoff.

This handout was adapted from "Erosion Control for Home Builders" which was produced in part with funds from NOAA NA87OZ0115 through the Georgia Coastal Management Program.

Sample Erosion Control Plan



Erosion Control Practices

Sd - SEDIMENT BARRIERS

- Slows the velocity of runoff to filter out sediments.
- Install within 24 hours of land disturbance.
- Install on downslope sides of the site parallel to the contour of the land.
- Bury 8-inches of fabric in the trench with flap toward the runoff flow. Double rows of silt fencing may be required.
- Stake on the opposite side of the sediment barrier from the runoff flow. If using straw bales, use 2 stakes per bale.
- Extend ends upslope enough to allow water to pond behind fence or bales.
- Leave no gaps. Overlap sections of silt fence or stuff straw between bales. Two layers may be required.
- Inspect and repair once a week and after every 1/2-inch rain. Remove sediment if deposits reach 8-inches.
- Replace bales every 3 months at a minimum.
- Maintain until a lawn is established.

Co - CONSTRUCTION EXIT

- Reduces or eliminates the transport of soil from the construction area.
- Install construction exit using 1-1/2 to 3-1/2 inch aggregate prior to placing first floor decking on foundation.
- Install a geotextile liner under the entire pad in clay soils.
- Lay stones 6-inches deep and at least 20-feet wide from the foundation to the street, or a minimum of 50-feet.
- Maintain throughout construction.

Erosion Control for Home Builders

Di - TEMPORARY DIVERSIONS

- Intercepts and diverts storm runoff to keep sediments onsite.
- Excavate 8- to 12-inch channels along the downsloping perimeter of the site. Mound up excavated soil to form a berm 3- to 6-feet wide depending on slope.
- Direct the downslope ends of the diverters into sediment barriers.

Bf - BUFFER ZONES

- Filters sediments, chemicals, and nutrients before reaching State waters; reduces runoff velocities; stabilizes streambanks; improves aesthetics; improves fish and wildlife habitat; reduces construction noise; and increases flood protection.
- A 25-foot natural vegetative buffer area must be left undisturbed near a stream bank, lake, or marshland.
- Consult the Georgia Department of Natural Resources Coastal Resource Division at (912) 264-7218 for information on buffer variances.
- No soil may be disturbed in the buffer area, but landscaping and overseeding is permitted.

PRESERVE VEGETATION

- Preserve existing trees, shrubs, and other vegetation wherever possible.
- To prevent root damage, do not grade, place soil piles, or park vehicles near trees marked for preservation.
- Place plastic mesh or snowfence barriers around trees to protect the area below the branches.

Ds1 Ds2 Ds3 - REVEGETATION

- Vegetation is the most effective way to control erosion.
- Seed, sod, plug, or mulch bare soil as soon as possible.
- Locate soil piles away from any downslope street, driveway, stream, lake, creek, marshland, ditch, or drainageway.
- Temporarily seed stockpiled soil as soon as possible.

Ds1 Ds2 - SEEDING AND MULCHING

- Spread 4- to 6-inches of topsoil.
- Fertilize according to soil test or apply 25 pounds of 6-12-12 per 1,000 square feet.
- Lime according to soil test or apply 15 pounds per 1,000 square feet. Seed with appropriate mix for the site.
- Rake lightly to cover seed with 1/4-inch of soil. Roll lightly.
- Mulch with straw (one bale per 1,000 square feet).
- Anchor mulch by punching into the soil, watering or using netting or other measures on steep slopes.
- Water gently every day or two to keep soil moist. Less watering is needed once grass is 2-inches tall.

Ds2 - Temporary Vegetation		
Species	**Seeding Rates per 1,000 sq. ft.**	**Planting Dates**
Rye and Annual Lespedeza	0.6 lb	2/1 – 3/1
Weeping Lovegrass	0.1 lb	3/1 – 6/1
Sudangrass	1.0 lb	4/1 – 8/1
Browntop Millet	1.1 lbs	4/15 – 7/1
Ryegrass	0.9 lb	9/15 – 1/1
Wheat	4.1 lbs	10/15 – 1/1
Rye (grain)	3.9 lbs	10/1 – 11/1

Ds3 - SODDING

- Spread topsoil, fertilize and lime the same as if seeding.
- Lightly water the soil.
- Lay sod. Tamp or roll lightly.
- On slopes, lay sod starting at the bottom and work toward the top, laying a brickwork pattern. Pat each piece down in several places.
- Initial watering should wet soil 6-inches deep (or until water stands 1-inch deep in a straight sided container).

Ds3 - Permanent Vegetation		
Species	**Seeding Rates per 1,000 sq. ft.**	**Planting Dates**
Maidencane sprigs	650 sprigs	2/1 – 3/31
Bahia, Pensacola	1.4 lbs	3/1 – 5/31
Lespedeza (scarified)	1.4 lbs	3/1 – 5/15
Weeping Lovegrass	0.1 lb	3/1 – 5/31
Panicgrass	0.5 lb	3/1 – 4/30
Bermuda (hulled)	0.2 lb	3/15 – 5/31
Bermuda sprigs	585 sprigs	4/1 – 5/3
Sunflower	0.2 lb	4/1 – 5/31
Lespedeza (unscarified)	1.7 lbs	9/1 – 2/28
Bermuda (unhulled)	0.2 lb	11/1 – 1/31

Permanent vegetation in coastal marshland areas typically involve planting native, salt-tolerant species via vegetative plugs rather than seeds, due to the need for specific adaptations to highly dynamic and saline environments. Dune and coastal areas' permanent vegetation should focus on native, salt-tolerant species with deep fibrius root systems.

DOWNSPOUT EXTENDERS

- Not required, but highly recommended.
- Install as soon as gutters and downspouts are completed to prevent erosion from roof runoff.
- Use plastic drainage pipe to route water to a grassed or paved area.
- Maintain until a lawn is established.

SEDIMENT CLEANUP

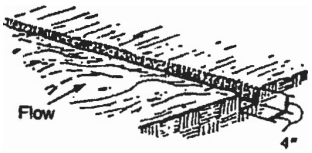
- By the end of each work day, scrape or sweep the soil tracked onto the road, sidewalk, and other common areas..
- By the end of the next work day after a storm, scrape or sweep the soil washed off-site.

DUMPSTER

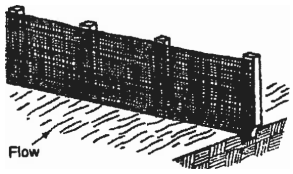
- Cover the dumpster at the end of every work day.

Commonly Used Erosion Controls

How to Install a Silt Fence

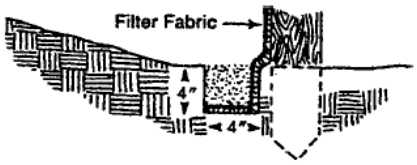


Excavate a 4-inch by 4-inch trench along the contour.



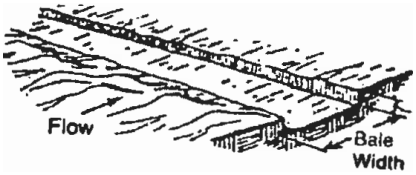
Stake the silt fence on the downslope side of the trench. Extend 8-inches of fabric into the trench. Overlap sections 3-feet when joining rolls.

Cross section of trench:



Backfill and compact excavated soil.

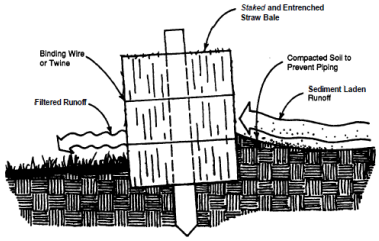
How to Install a Straw Bale Fence



Excavate a 4-inch deep trench along the contour.

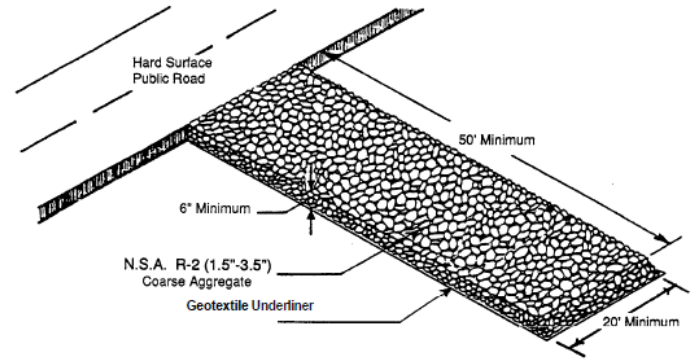
Place bales in trench with bindings around sides away from the ground. Anchor with two steel rebars or 2-inch by 2-inch wood stakes per bale. Drive stakes 8-inches into the ground.

Cross section of straw bale:



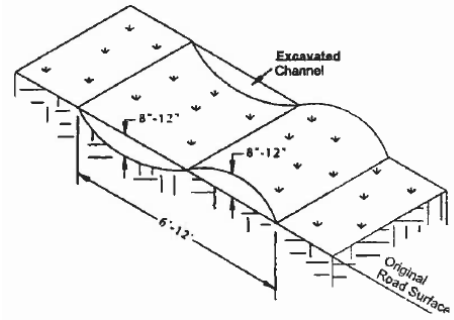
Backfill and compact excavated soil.

How to Install a Construction Exit



Install as soon as possible after start of grading. Use geotextile liner on clay soils. Use 1-1/2 inch to 3-1/2 inch aggregate stone. Drive must be at least 50-feet long or the distance to the foundation. Replace as needed to maintain a 6-inch depth.

How to Construct a Temporary Diversion



Excavate a 3-foot to 6-foot wide by 8-inch to 12-inch deep channel to divert runoff onto/off of site. Use narrow, deep channels on steep slopes and broad, shallow channels on gentle slopes. Stabilize with vegetation.