

PRIMARY CONCERNS RELATED TO EROSION AND SEDIMENTATION

Soil erosion and resulting sedimentation are a leading cause of water quality problems in Texas. 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 five commonly used building site control practices, as well as suggested reference materials and sources of further assistance.

CONSEQUENCES OF CONSTRUCTION SITE EROSION

- **Water quality.** Sediment is the number one pollutant, by volume, of surface water in the state of Texas. 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, 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.

Erosion Control for the Home Builder and/or Contractor

Here are four basics to be followed when developing a building site:

- **Evaluate the site.** Inventory and evaluate the resources on the lot before building. Location of structures should be based, in large part, on the lot's natural features. Identify trees that you want to save and vegetation that will remain during construction. Also, identify areas where you want to limit construction traffic. Wherever possible, preserve existing vegetation to help control erosion and offsite 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, gravel drives, and runoff inlet protection.
- **Develop a practice maintenance program.** Maintenance of all practices is essential for them to function properly. They should be inspected twice a week and after each rainfall event. When a problem is identified, repair the practice immediately. 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.

Surface Drainage

- Position the structure a minimum of 18 inches above street level.
- Divert storm water 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 bales 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.

Subsurface Drainage

- Provide an outlet for foundation or footer drains and for general lot drainage by using storm sewers (where allowed), OR obtain drainage easements if you must cross adjoining properties.
- If you accidentally cut through an existing field tile, assume that it carries water even if currently dry; therefore, re-route it (using the same size tile) around the structure or septic field; then reconnect it.

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.

Protect Trees and Sensitive Areas.

- To prevent root damage, do not grade, burn, place soil piles, or park vehicles near trees or in areas marked for preservation.
- Place plastic mesh or snow fence barriers around the tree's drip line to protect the area below their branches.
- 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 perimeter 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

- On slopes of less than 6 percent, 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.
- Add the extenders as soon as the gutters and downspouts are installed.
- Be sure the extenders have a stable outlet, such as the street, sidewalk, or a well vegetated area.

With Silt Fence

- Use silt fencing along the perimeter of the lot's down slope side(s) to trap sediment.

Install Gravel Drive.

- Restrict all lot access to this drive to prevent vehicles from tracking mud onto roadways.

Protect Storm Sewer Inlets.

- Protect nearby storm sewer curb inlets with stone-filled or gravel filled geotextile bags or equivalent measures before disturbing soil.
- Protect on-site storm sewer drop inlets with silt fence material, 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.
- Locate the stockpiles away from any down-slope street, driveway, stream, lake, wetland, ditch, or drainage way.
- Immediately after stockpiling, temporary-seed the stockpiles with annual rye or winter wheat and/or place sediment barriers 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.
- Add the extenders as soon as the gutters and downspouts are installed.
- 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 twice 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 1½ to 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.

REFERENCE MATERIALS

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.
- Has a slope in excess of 6 percent.
- Receives runoff from adjacent areas.

This pamphlet provides installation instructions on five of the more commonly used building site erosion and sediment control practices.

It is the responsibility of property owners and contractors to see that they are in compliance with state laws and local and county ordinances regarding construction site erosion and sediment control.