Small Scale Solutions for your Farm

Grade Stabilization

Do You Have Problems with:

- A gully or washout in your field
- An area that is continuing to erode
- Need for a place to run water into a stream or ditch from your field

What is a Grade Stabilization Structure?

Grade stabilization is installed to stop a gully at the edge of a field. It is usually installed with a grassed waterway that brings water to the structure.

Gullies (above) can be fixed with a grassed waterway (below) and a grade stabilization structure.

Purposes and Benefits of Grade Stabilization Structure

- Inexpensive way to stop gullying
- Stops soils from washing into a stream or creek
- Gets rid of gullies and makes your field easier to farm

Grassed waterway and a grade stabilization structure.

Maintenance for Grade Stabilization Structure

If the grade stabilization structure is built properly, very little maintenance should be needed. However, the structure should be checked regularly to repair any problems that do happen. A good time to check is after big rain event. Look for washouts around the ends of the structure and just downstream from the structure. Fix washed out areas by replacing the soil and reseeding it with grass. If riprap has washed out of place, put it back in place, adding any rock that is needed.

Different Types of Structures

Cattle Panel Structures

Cattle panel structures are usually cheap and simple to build, but they should only be used for small gullies.

Treated Wood Structures

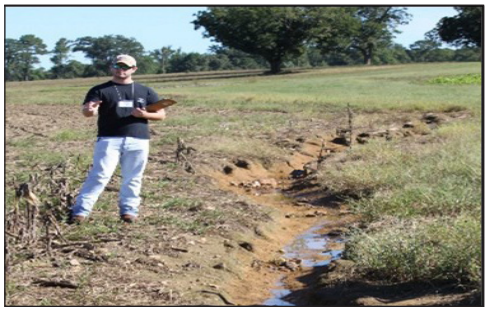
A little more expensive because you need treated wood, concrete and riprap rock but a lot of the work can be done by hand. These can be used on larger gullies that carry more water and are steeper.

Precast Concrete Block Structures

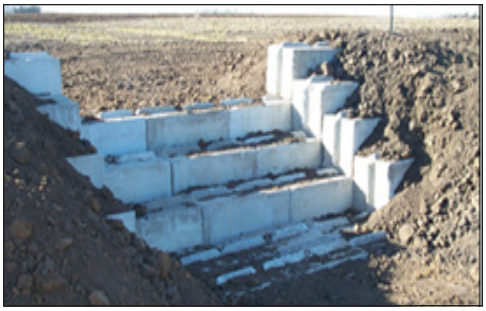
Usually the most expensive, but they can be put in large gullies with a large drop into the stream or ditch. The structures are made from precast concrete blocks which are made from waste concrete. They can usually be bought from concrete ready mix plants. These structures cost more because the blocks must be purchased and hauled to the site and placed with a piece of heavy equipment.

Geotextile Reinforced Grass

Usually cheap to build, but should be used for smaller gullies.



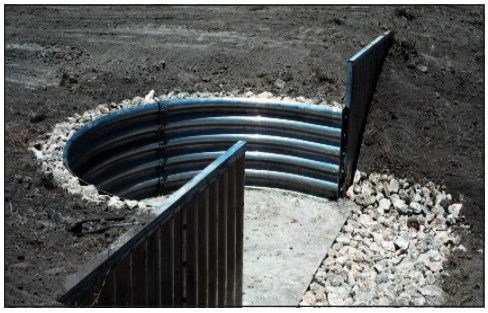
These structures address erosion due to changes in gradient.



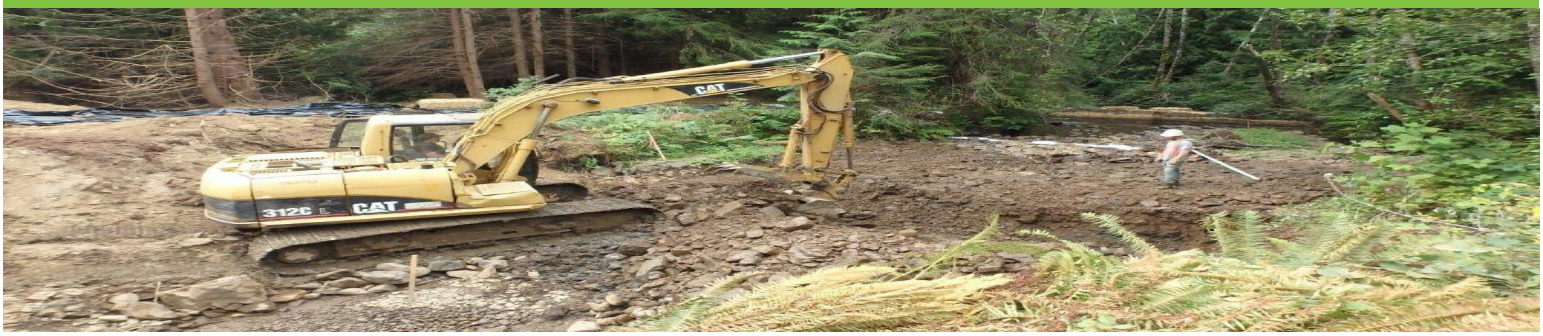
Precast concrete blocks.

How to Install a Grade Stabilization Structure

Cattle panel structures require the least amount of work. Three-inch steel posts are driven into the ground two feet apart. Wire panels known as “cattle panels” are fastened to the posts on the upstream side and riprap (4 to 6-inch diameter rocks) is dumped on the upstream side and in the channel on the downstream side. Some backhoe work may be needed to place the riprap and to grade around the finished structure.



Grade stabilization structures can combine different materials.

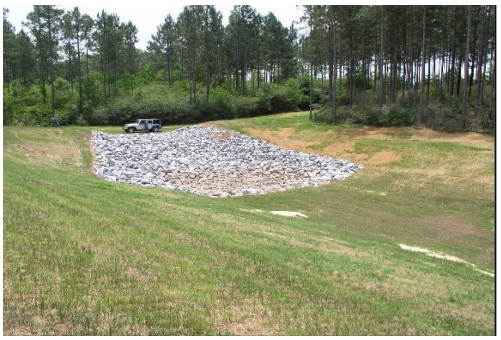


Treated wood structures can be built by hand. The walls of the structure are made out of 4 x 6 treated wood timbers nailed and bolted together. Concrete is poured to make the floor and riprap is put in the ditch downstream from the structure. A backhoe will be needed to dig out a foundation for the structure and to grade around it when it is finished.

Precast concrete block structures are made by stacking large concrete blocks (2' x 2' x 4') like stair steps. The blocks are made out of leftover concrete and can be bought at a ready mix concrete plant. You will need equipment, such as a backhoe or excavator, to dig out the foundation for the structure. A large backhoe or excavator will also be needed to put the concrete blocks in place.

Geotextile reinforced grass structures are made by shaping the bank to the right size and slope. The soil should be raked smooth before placing the geotextile. The geotextile is laid on the slope with the top and bottom anchored in a trench. Seed is then spread on the geotextile and covered with an erosion control blanket.

The erosion control blanket is stapled down through the geotextile. The grass will put down roots through the geotextile making a strong, stable erosion resistant outlet.



Rock Chute at end of waterway.

Proper rock size is critical for success of structure.

Associated Costs

The cost to construct a Grade Stabilization Structure depends on what you use to build it and how much of the work you do yourself. Some of the things you will need to consider are:

- Digging with a backhoe
- Grading with a tractor blade or small dozer
- Materials, such as precast concrete blocks, riprap, treated wood, metal posts, cattle panels
- Vegetative reseeding

Technical and Financial Help Is Available

Whether you measure your farm in terms of feet or acres, your local Natural Resources Conservation Service (NRCS) office has experienced conservationists that can help you develop a Conservation Plan to conserve, maintain, and restore the natural resources on your land and improve the long-term health of your operation.

There is no charge for our assistance. Simply contact your local office to set up an appointment. You may also be eligible to receive financial assistance. Your NRCS office will explain any programs that are available so you can make the best decision for your operation. All NRCS programs and services are voluntary.

NRCS conservationist assisting small scale farmer with developing a customized conservation plan.

For More Information

Visit the Natural Resources Conservation Service or visit farmers.gov/service-locator to find your local NRCS office. You can also check with your local USDA Service Center, then make an appointment to determine next steps for your conservation goals.

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