

Natural Resources Conservation Service (NRCS)  
Des Moines, Iowa

Iowa Conservation Practice 412  
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### What is a grassed waterway?

Grassed waterways are constructed graded channels that are seeded to grass or other suitable vegetation. The vegetation slows the water and the grassed waterway conveys the water to a stable outlet at a non-erosive velocity.

### How it helps the land

Grass or permanent vegetation established in waterways protects the soil from concentrated flows. **Grassed waterways significantly reduce gully erosion.**

### Where the practice applies

Grassed waterways should be used where gully erosion is a problem. The most common areas are in draws between hills, and other low-lying areas on slopes where water concentrates as it runs off a field.

Grassed waterways may also be used to convey runoff from terraces, diversions, or other sources of water concentrations to a stable outlet.



### Where to get help

Conservationists can provide assistance in the planning and design of grassed waterways. However, for small waterways with drainage areas up to 30 acres, design charts are available online from the Natural Resources Conservation Service (NRCS) at [www.ia.nrcs.usda.gov/technical](http://www.ia.nrcs.usda.gov/technical). Click eFOTG on the left border, and then click on the Iowa map.

To access the design charts from the menu tree on the left side of the screen, click:

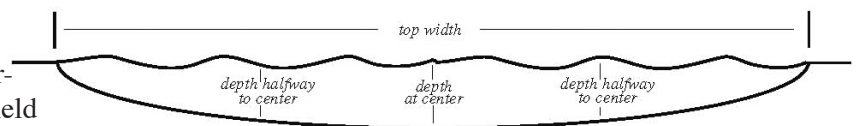
- » Section I
- » Reference List
- » 1. Engineering References
- » c) Iowa Amendments to the National Engineering Handbook (NEH) Part 650 Engineering Field Handbook (EFH)
- » NEH Chapter 7. Grassed Waterways and Outlets
- » NEH Chapter 7 with Iowa Amendments Inserted

For more job sheets and conservation information, visit the Iowa NRCS website at [www.ia.nrcs.usda.gov](http://www.ia.nrcs.usda.gov).

### Construction Specifications

Remove all trees, brush, stumps, and other objectionable material from the site. In areas of the waterway where a deep gully will call for earth fill, trees and stumps may be sawed off within 12 inches of the ground surface if the final surface is three or more feet above the top of the stumps.

Construct the waterway to the designed dimensions. The sketch below shows the relative dimensions for a parabolic shaped waterway. Fill material should be free of frozen earth, brush, roots, and other materials which will make it difficult to achieved the desired compaction.



*Shape a parabolic waterway so that the depth halfway to the center is 3/4 of the depth at the center. Example—if center depth is 1 ft., depth halfway to center is .75 ft.*

### Construction Specifications Cont...

Place all earth fill in layers of nine inches or less, with each layer compacted by the wheels and/or tracks of the construction equipment. Spread or dispose of excess excavated material so it will not interfere with the function of the waterway.

If infertile subsoil will be exposed by construction operations, strip and stockpile topsoil. When excavation is complete, spread the topsoil over the exposed infertile soil.

Grade and shape the soil so that the area to be seeded is reasonably smooth, free of rills and gullies, and has the designed cross section. After the seedbed is prepared, seed and fertilize according to the following instructions.

### Seeding and Fertilizing

After shaping and smoothing a waterway, it's important to get a protective seeding established before heavy rains form new rills or gullies.

In areas where grass is difficult to establish, divert water from the waterway during the seeding establishment period. Follow these guidelines:

1. A firm seedbed will greatly increase the chance of a good grass stand. So before you plant, be sure the seedbed is firm. A good way to check is to step on the seedbed. If your footprint is less than 1/2" deep, you've got a firm seedbed. You may need to use a roller or cultipacker to get a firm seedbed.
2. Apply fertilizer and seeding at rates recommended by your local NRCS office. Plant grass seed 1/4" to 1/2" deep. The best row direction is across the area; the next best is a figure-8. If you broadcast, cover the seed lightly with a harrow. Seeding may be completed during the spring seeding period, March 1 to May 15; during the late summer seeding period, August 1 to September 15; or during the dormant seeding period, November 15 - freeze up. Warm season grasses should be seeded between April 1 and June 1.
3. If construction is completed at any time other than the above seeding periods, seed 1-2 bushels of wheat or rye, or 2-3 bushels of oats per acre as a temporary cover. Then seed permanent species during the next seeding period.

4. Oats may be seeded as a nurse crop for introduced grasses at the rate of one bushel per acre during the spring or late summer. Mow oats before they head out.
5. Mulch the area with straw, if possible, to protect the area until a seeding is established. Anchor the mulch using a straight disk. Make only one trip over the mulch.

### Maintaining the practice

Proper maintenance will protect your investment in a grassed waterway. The following tips will help ensure longevity of the waterway:

- » Lift implements out of the ground before crossing the waterway.
- » Bring row crop patterns into the waterway nearly level, or use it as the turn area. Don't plant end rows along the side of the waterway, as they contribute to failure.
- » Fertilize periodically.
- » Inspect the area frequently for places needing reseeding and eroding areas. Repair minor rills or gullies by reshaping and reseeding.
- » Maintain the width of the grass area when tilling and planting surrounding fields.
- » Don't let herbicide spray continue into the waterway.
- » Don't use the waterway as a road. Vehicle tire tracks can lead to the formation of a gully.
- » Don't mow the grass until a good sod is established. Once it is established, the waterway should be mowed. To benefit wildlife nesting, delay mowing until August 1.
- » Maintain outlets to prevent new gullies from forming at the outlet. This may include reshaping and reseeding the outlet, or repairing or replacing components of structural outlets.