

STANDARD AND SPECIFICATIONS FOR VEGETATING WATERWAYS



Definition

Waterways are a natural or constructed outlet, shaped or graded. They are vegetated as needed for safe transport of runoff water.

Purpose

To provide for the safe transport of excess surface water from construction sites and urban areas without damage from erosion.

Conditions Where Practice Applies

This standard applies to vegetating waterways and similar water carrying structures.

Supplemental measures may be required with this practice. These may include: subsurface drainage to permit the growth of suitable vegetation and to eliminate wet spots; a section stabilized with asphalt, stone, or other suitable means; or additional storm drains to handle snowmelt or storm runoff.

Retardance factors for determining waterway dimensions are shown in Table 5B.1 and "Maximum Permissible Velocities for Selected Grass and Legume Mixtures," are shown in Table 3.6.

Design Criteria

Waterways or outlets shall be protected against erosion by vegetative means as soon after construction as practical. Vegetation must be well established before diversions or other channels are outletted into them. Consideration should be given to the use of synthetic products, jute or excelsior matting, other rolled erosion control products, or sodding of channels to provide erosion protection as soon after construction as possible. It is strongly recommended that the center line of the waterway be protected with one of the above materials to avoid center gullies.

1. Liming, fertilizing, and seedbed preparation.
 - A. Lime to pH 6.5.
 - B. **The soil should be tested to determine the amounts of amendments needed.** If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 1.0 lbs/1,000 sq. ft. of N, P₂O₅, and K₂O.
 - C. Lime and fertilizer shall be mixed thoroughly into the seedbed during preparation.
 - D. Channels, except for paved section, shall have at least 4 inches of topsoil.
 - E. Remove stones and other obstructions that will hinder maintenance.
2. Timing of Seeding.
 - A. Early spring and late August are best.
 - B. Temporary cover to protect from erosion is recommended during periods when seedings may fail.
3. Seed Mixtures:

<u>Mixtures</u>	<u>Rate per Acre (lbs)</u>	<u>Rate per 1,000 sq. ft. (lbs)</u>
A. Birdsfoot trefoil or ladino clover ¹	8	0.20
Tall fescue or smooth bromegrass	20	0.45
Redtop ²	2	0.05
	30	0.70
OR		
B. Kentucky bluegrass ³	25	0.60
Creeping red fescue	20	0.50
Perennial ryegrass	10	0.20
	55	1.30

¹ Inoculate with appropriate inoculum immediately prior to seeding. Ladino or common white clover may be substituted for birdsfoot trefoil and seeded at the same rate.

² Perennial ryegrass may be substituted for the redtop but increase seeding rate to 5 lbs/acre (0.1 lb/1,000 sq. ft.).

³ Use this mixture in areas which are mowed frequently. Common white clover may be added if desired and seeded at 8 lbs/acre (0.2 lb/1,000 sq. ft.).

4. Seeding

Select the appropriate seed mixture and apply uniformly over the area. Rolling or cultipacking across the waterway is desirable.

Waterway centers or crucial areas may be sodded. Refer to the standard and specification for Stabilization with Sod. Be sure sod is securely anchored using staples or stakes.

5. Mulching.

All seeded areas will be mulched. Channels more than 300 feet long, and/or where the slope is 5 percent or more, must have the mulch securely anchored. Refer to the standard and specifications for Mulching for details.

6. Maintenance

Fertilize, lime, and mow as needed to maintain dense protective vegetative cover.

Waterways shall not be used for roadways.

If rills develop in the centerline of a waterway, prompt attention is required to avoid the formation of gullies. Either stone and/or compacted soil fill with excelsior or filter fabric as necessary may be used during the establishment phase. See Figure 3.2, Rill Maintenance Measures. Spacing between rill maintenance barriers shall not exceed 100 feet.

Table 3.6
Maximum Permissible Velocities for Selected Seed Mixtures

Cover	Slope Range ² (%)	Permissible Velocity ¹	
		Erosion-resistant Soils (ft. per sec.) K=0.10 - 0.35 ³	Easily Eroded Soils (ft. per sec.) K=0.36 - 0.80
Kentucky Bluegrass	0-5	7	5
Smooth Brome	5-10	6	4
Tall Fescue	Over 10	5	3
Grass Mixtures	² 0-5	5	4
Reed Canarygrass	5-10	4	3
Redtop Alfalfa Red Fescue	⁴ 0-5	3.5	2.5

¹ Use velocities exceeding 5 feet per second only where good covers and proper maintenance can be obtained.

² Do not use on slopes steeper than 10 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.

³ K is the soil erodibility factor used in the Revised Universal Soil Loss Equation. Visit Appendix A or consult the appropriate USDA-NRCS technical guide for K values for New York State soils.

⁴ Do not use on slopes steeper than 5 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.

⁵ Annuals - use on mild slopes or as temporary protection until permanent covers are established.

⁶ Use on slopes steeper than 5 percent is not recommended.

Figure 3.2
Rill Maintenance Measures

