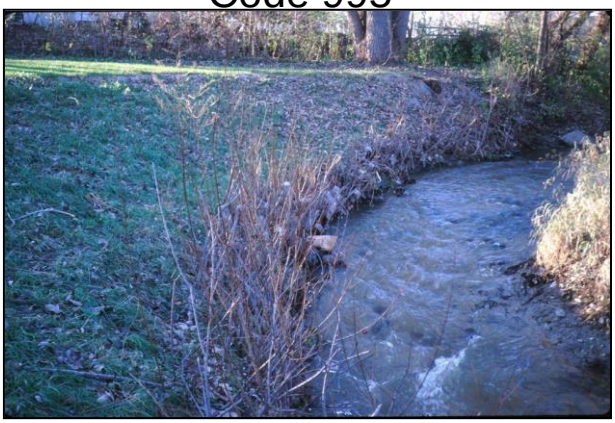
NATURAL RESOURCES CONSERVATION SERVICE
ILLINOIS URBAN MANUAL
PRACTICE STANDARD

Vegetative Streambank Stabilization

(feet)
Code 995



Source: USDA – Natural Resources Conservation Service – Illinois

Definition

The stabilization and protection of eroding streambanks with selected vegetation.

Purpose

The purpose of this standard is to protect streambanks from the erosive forces of flowing water and provide a natural, pleasing appearance.

Conditions Where Practice Applies

This practice applies to natural or excavated channels where the streambanks are susceptible to erosion from the action of water, ice or debris and the problem can be solved using vegetative measures.

Vegetative stabilization is generally applicable where bankfull flow velocity does not exceed 5 ft/sec. and soils are erosion resistant. Above 5 ft/sec, structural measures are generally required.

Criteria

The U.S. Army Corps of Engineers, Illinois Department of Natural Resources – Office of Water Resources, Illinois Environmental Protection Agency, and any appropriate local unit of government shall be consulted for determining permits that may be required.

Vegetative protective measures to be applied shall be compatible with improvements planned or being carried out by others.

Protective measures shall be started at a stabilized or controlled point on the stream and extended to a stabilized or controlled point downstream. The grade of the channel must be controlled, either by natural or artificial means, before any vegetative protective measures can be considered feasible unless the live dormant posts or stakes can be installed below the anticipated depth of bottom scour.

Cuttings, stakes and posts to be used as live dormant woody materials shall be obtained from moisture-loving species that will either root naturally or respond to treatment with rooting hormones as listed in Table 3. All woody plant materials will be dormant at the time of installation. Establishment dates and procedures shall conform to those listed in Construction Specification USE OF DORMANT WOODY PLANTINGS FOR STREAMBANK STABILIZATION 750 and Standard Drawing VEGETATIVE STREAMBANK STABILIZATION 695.

Establishment dates and procedures for vegetative streambank stabilization using selected grasses or grass mixtures shall conform to those listed in Table 1 and Table 2.

Bank reshaping and disturbance will be kept to a minimum except where necessary to adequately install the practice and meet any appropriate requirements. If deemed needed, banks will be shaped to result in a bank slope of 1:1 or flatter.

A temporary seeding shall be used on all sites using a mixture and seeding rates as listed in Table 1 to provide temporary protection while the permanent cover is becoming established. Planting dates shall be as shown in Table 2.

The use of an erosion blanket meeting requirements in Practice Standard EROSION CONTROL BLANKET 830 will provide additional protection during the establishment period.

Where necessary, structural measures shall be planned along with the vegetative measures to stabilize the streambanks using Practice Standard STRUCTURAL STREAMBANK STABILIZATION 940 and any applicable construction and material specifications and standard drawings.

Considerations

Special attention should be given to improving wildlife habitat as a secondary benefit by using woody plants and grasses that provide food and/or cover for native wildlife species.

The retention of a 30 feet riparian zone along stream channels that is established to trees, shrubs, and/or grasses may provide wildlife, landscaping and water quality benefits.

Streambanks to be protected using grasses may need to be shaped on a 2:1 or 3:1 slope to provide for adequate seedbed preparation. The use of sod, instead of seeding, should be evaluated where economically justified and technically feasible.

The type of vegetative cover to be used should be based on the soil type, stream velocities, adjacent land use and anticipated level of maintenance to be performed.

Steep channel reaches, high erosive banks and sharp bends may require structural stabilization measures, such as riprap, while the remainder of the streambank may require vegetative measures,

only.

Plans and Specifications

Plans and specifications are to be developed for specific planting sites in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Installation of this practice shall meet the requirements as listed in Construction Specifications USE OF DORMANT WOODY PLANTS FOR STREAMBANK STABILIZATION 750 and USE OF GRASSES FOR STREAMBANK STABILIZATION 751, and Standard Drawing VEGETATIVE STREAMBANK STABILIZATION 695 which may be used as the planting plan for a specific site.

Operation and Maintenance

A maintenance program shall be established to provide sufficient moisture, fertility, replacement of dead or damaged plants and protection from damage by insects, diseases, machinery and human activities.

Streambanks stabilized using grasses will be evaluated as to whether an occasional or periodic mowing and fertilization are to be performed to maintain a healthy protective ground cover.

Table 1

Seeding Rates

Seeding Mixture	Rate (lb.) PLS/Acre	Rate (lb.) PLS/1000 ft^2	Suitable pH	Droughty	Site Suitability Well Drained	Wet
Permanent Seeding 1. Smooth Bromegrass Alfalfa	24 8	.55 .20	6.0 – 7.5	X	X	
2. Tall Fescue or Redtop	12 2.5	.30 .06			X	X
3. Redtop Ladino Clover	2.5 2.5	.06 .06		X	X	X
4. Creeping Red Fescue	15	.34		X	X	X
5. Switchgrass[1]	8	.20	5.5 – 7.0	X	X	X
Temporary Seedings[2] 1. Cereal Rye or Wheat	90	2.5		X	X	X
2. Oats	90	2.5				
3. Perennial Ryegrass	24	.55	5.5 – 7.5	X	X	X
Companion Crops[2] 1. Spring Oats	32			X	X	X
2. Cereal Rye or Wheat	90					

[1]Do not seed in the fall.

[2]Temporary seeding and companion crops can be planted anytime during the growing season.

Table 2
Seeding Dates

Spring	
Northern Illinois	Early Spring to June 1
Central Illinois	Early Spring to May 15
Southern Illinois	Early Spring to May 15
Fall	
Northern Illinois	August 1 to September 1
Central Illinois	August 1 to September 10
Southern Illinois	August 1 to September 20
Dormant	
Northern Illinois	November 1 to March 15
Central Illinois	November 15 to March 1
Southern Illinois	November 15 to March 1

Table 3
Woody Plant Materials

Plant Name	Common Name	Genus Species	Growth Form
1	Black Willow	Salix nigra	Tree
1	Bankers Willow	Salix cottettii	Shrub
1	Purple-Osier Willow	Salix purpurea	Shrub
1	Sandbar Willow	Salix interior	Tree
1	Carolina Willow	Salix caroliniana	Tree
1	Peach-Leaved Willow	Salix amycdaloides	Tree
1	Buttonbush	Cephalanthis occidentalis	Shrub
1, 2, 3	Red-Osier Dogwood	Cornus stolonifera	Shrub
2, 3	Silky Dogwood	Cornus amomum	Shrub
2, 3	Flowering Dogwood	Cornus florida	Tree
2, 3	Green Ash	Fraxinus pennsylvanica	Tree
2, 3	Sycamore	Platanus occidentalis	Tree
1, 2, 3	Bald Cypress	Taxodium distichum	Tree
1, 2	River Birch	Betula nigra	Tree
1, 2, 3	Eastern Cottonwood	Populus deltoides	Tree
1, 2, 3	Swamp Cottonwood	Populus heterphylla	Tree

Species selection shall consider the position of the plant in the bank profile (see figure 2 of standard drawing)

Zone 1 = Below normal waterline to upper limit of saturation area kept moist by capillary water movement. This zone includes the greatest potential for periodic inundations and the least moisture stress.

Zone 2 = Area from upper limit of Zone 1 to 2-3 feet from the top of the bank. This area may be subject to rapid drying and greater moisture stress.

Zone 3 = Area 2-3 feet below the top of the bank to a minimum of 30 feet into the floodplain (riparian area).