

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD AND SPECIFICATION**

STREAMBANK AND SHORELINE PROTECTION

(feet)
CODE 580

DEFINITION

Using vegetation or structures to stabilize and protect banks of streams, lakes, estuaries, or excavated channels against scour and erosion.

PURPOSE

Stabilize or protect banks of streams, lakes, estuaries, or excavated channels for one or more of the following purposes:

- To prevent the loss of land or damage to utilities, roads, buildings, or other facilities adjacent to the banks,
- To maintain the capacity of the channel,
- To control channel meander that would adversely affect downstream facilities,
- To reduce sediment loads causing downstream damages and pollution or,
- To improve the stream for recreation or as a habitat for fish and wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to natural or excavated channels and shorelines that are susceptible to erosion from the action of water, ice, or debris or to damage from livestock or vehicular traffic. It is applicable where the problem can be solved with relatively simple structural measures, vegetation, or upland erosion control practices and where failure of structural measures will not create a hazard to life or result in serious damage to property.

CRITERIA

Because each reach of a channel, lake, or estuary is unique, measures for streambank and shore protection must be installed according to a plan and adapted to the specific site.

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

The grade must be controlled, either by natural or artificial means, before any permanent type of bank protection can be considered feasible, unless the protection can be safely and economically constructed to a depth well below the anticipated lowest depth of bottom scour. Artificial grade control must be planned using approved engineering criteria.

Streambank protection shall be started at a stabilized or controlled point and ended at a stabilized or controlled point on the stream.

Needed channel clearing to remove or reposition stumps, fallen trees, debris, and bars that force the streamflow into the streambank shall be an initial element of the work.

Changes in channel alignment that eliminate oxbows and shorten the length of streams are not recommended. Minor changes in channel alignment work, such as removal of sandbars shall be made only after an evaluation of the affect on the land use, interdependent water disposal systems, hydraulic characteristics, and existing structures.

Structural measures must be effective for the design flow and be able to withstand greater floods without serious damage. They shall also be designed to avoid an increase in erosion downstream of planned measures.

Vegetative protection shall be considered on the eroding banks. For vegetation establishment, see Forestry Technical Note No. 13.

Streambank protection shall be integrated with total stream corridor management. See Conservation Practice Standard and Specification Riparian Forest Buffer (391).

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Corps of Engineers will be consulted for a 404 permit determination. If a 404 permit is required the landowner will be required to apply for a 404 permit and receive approval before application begins.

Streambank Protection Measures

The following is a partial list of elements that may be included in a plan for streambank protection.

- Removal of fallen trees, stumps, debris, minor ledge outcroppings, and sand and gravel bars that may cause local current turbulence and deflection. Only minor adjustments to sand and gravel bars that do not significantly change alignment are acceptable.
- Removal of trees and brush that adversely affect bank stability.
- Reduction of the slope of streambanks to provide a suitable condition for vegetative protection and/or for installation of structural bank protection.
- Placed rip rap or dumped heavy stone, properly underlaid with a filter blanket, if necessary, to provide armor protection for streambanks.
- Deflectors constructed of posts, piling, fencing, rock, brush, or other materials that project into the stream to protect banks at curves and reaches subjected to impingement by high velocity currents.
- Pervious or impervious structures built on or parallel to the stream to prevent scouring streamflow velocities adjacent to the streambank.
- Artificial obstructions, such as fences, deflectors or revetments to protect vegetation needed for streambank protection or to protect critical areas from damage from stock trails or vehicular traffic.

Treatment depends on soil type and the slope characteristics both above and below the waterline. Slope characteristics below the waterline shall be representative of the slope

for a minimum on 50 feet (50m) distance from the shore.

End sections shall be adequately bonded to existing measures or terminated in stable areas.

Design water surface shall be the mean high water.

Control of surface runoff and internal drainage shall be considered in the design and installation of all shore protection measures.

Area Engineers shall be consulted on all mechanical practices associated with this standard.

Shoreline Protection Measures

The following is a partial list of protection measures that may be used.

- Bulkheads (timber, concrete, concrete block).
- Revetments (prefabricated slope protection blocks, rip rap, soil cement).
- Groynes or jetties systems (timber or concrete).
- Vegetation of the type that will grow across or along the waterline.

FISH AND WILDLIFE

Special attention shall be given to maintaining or improving habitat for fish and wildlife.

LANDSCAPE RESOURCES

Considerations shall be given to the use of construction materials, grading practices, vegetation and other site development elements that minimize visual impacts and maintain or compliment existing landscape uses such as; pedestrian paths, climate controls, buffers, etc.

PLANS AND SPECIFICATIONS

Plans and specifications for streambank and shoreline protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

Streambanks or shorelines shall be inspected annually or after every major storm. Needed repairs will be planned or preventive maintenance performed where potential problems may develop.

DEFINITIONS

Bulkheads (also called Retaining Gabion Walls) - A masonry or timber partition constructed to retain earth.

Revetments - Facing of stone or other material, either permanent or temporary, placed along the edge of a stream to stabilize the bank and to protect it from the erosion action of the stream.

Groynes (also called Jetties) - Barrier walls formed of piling fascine work or rubble built out from the river banks at right angles to the flow, in order to reduce the channel and keep the scour of the eater within definite bounds.

REFERENCES

"Design of Open Channels" Technical Release No. 25, US Department of Agriculture, Soil Conservation Service, Engineering Division, Washington, DC 20250

"Engineering Field Manual for Conservation Practices" US Department of Agriculture, Soil Conservation Service 1969.