



**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

CHANNEL BED STABILIZATION

(Ft.)
Code 584



DEFINITION

Measure(s) used to stabilize the bed or bottom of a channel.

PURPOSE

This practice may support one or more of the following:

- Maintain or alter channel bed elevation or gradient
- Modify sediment transport or deposition
- Manage surface water and groundwater levels in floodplains, riparian areas, and wetlands

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to the beds of existing or newly constructed alluvial or threshold channels undergoing damaging aggradation or degradation that cannot be feasibly controlled by clearing or snagging, establishment of vegetative protection, installation of bank protection, or installation of upstream water control measures.

This practice also applies to channels where the removal of barriers to aquatic organism passage would result in destabilization of the channel bed.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

CRITERIA

Design and install measures according to a site-specific plan in accordance with all local, State, Tribal, and Federal laws and regulations. Apply measures that are compatible with improvements planned or being carried out by others.

Impact to cultural resources, wetlands and Federal and state protected species shall be evaluated and avoided or minimized to the extent practicable during planning, design and implementation of this conservation practice in accordance with established National and Florida policy, General Manual (GM) Title 420-Part 401; Title 450-Part 401, Title 190-Parts 410.22 and 410.26, National Planning Procedures Handbook (NPPH) Florida Supplements to Parts 600.1 and 600.6, National Cultural Resources Procedures Handbook (NCRPH), National Food Security Act Manual (NFSAM), and the National Environmental Compliance Handbook (NECH).

Evaluate effects of channel work on existing structures such as culverts, bridges, buried cables, pipelines, and irrigation flumes to determine impact on their intended functions. Analyze the quantity and character of sediments entering the channel reach under consideration on the basis of both present and projected conditions caused by changes in land use or land treatment and upstream improvements or structural measures. Select measures that are compatible with the bank or shoreline materials, water chemistry, channel hydraulics, and slope characteristics, both above and below the waterline.

Design measures to—

- Withstand flow duration, depth of inundation, buoyancy, uplift, scour, angle of attack, stream velocity, and higher-flow conditions, based on acceptable risk.
- Maintain sufficient depth to provide adequate outlets for subsurface drains, tributary streams, ditches, or other channels.

Maintain the appropriate sediment transport regime in order to avoid detrimental erosion or sedimentation upstream and downstream.

- Anticipate debris impact, and fluctuating water levels.
- Avoid adverse effects on endangered, threatened, proposed, and candidate species and their habitats.
- Avoid adverse effects on archaeological, historical, structural, and traditional cultural properties.
- Minimize safety hazards to boaters, swimmers, or people using the channel.

Measures must not—

- Impair the floodway or floodplain functions.
- Cause detrimental changes in water surface elevations when water surface elevations are a concern.
- Impede the upstream or downstream passage of aquatic organisms, unless the objective is to restrict invasive species access.

Dispose of spoil material from clearing, grubbing, and channel excavation in a manner that will not interfere with the function of the channel and in accordance with Florida NRCS conservation practice standard (CPS) Spoil Spreading, Code 572. Protect all disturbed areas around measures from erosion. Select vegetation or other measures that are best suited for the anticipated site conditions in accordance with Florida NRCS CPS Critical Area Planting, Code 342.

Clear the channel to remove stumps, fallen trees, debris, and sediment bars only when they are causing, or could cause, detrimental bank erosion, structural failure, or reduction of channel capacity that results in above-average overflows on adjacent floodplains. Retain or replace habitat-forming elements that provide cover, food, pools, and water turbulence to the extent possible.

CONSIDERATIONS

Assess channel stabilization needs in sufficient detail to identify the causes contributing to instability (e.g., watershed alterations resulting in significant modifications of discharge or sediment production). Due to the complexity of such an assessment, consider using an interdisciplinary team and watershed modeling.

When designing protective measures—

- Conduct area-wide planning efforts for proper design, function, and management of protective measures if the design reach involves multiple stakeholders.

Consider the changes that may occur in the watershed hydrology and sedimentation over the design life of the measure.

Use woody material removed during construction in the overall practice design.

- Maintain or improve the habitat value for fish and wildlife, which includes providing cover, lowering or moderating water temperature, and improving water quality.

Improve habitat for threatened, endangered, and other species of concern, where applicable.

Maximize adjacent wetland functions and values and minimize adverse effects to existing wetland functions and values.

Protect side channel inlets and outlets from erosion or sedimentation.

Plan for the type of human use and social and safety aspects when designing protective measures. Use construction materials, grading practices, vegetation, and other site - development elements that enhance aesthetics, recreational use, and maintain or complement existing landscape uses such as pedestrian paths, climate controls, and buffers. Avoid excessive disturbance and compaction of the site during installation.

PLANS AND SPECIFICATIONS

Keep plans and specifications for the channel bed stabilization with this standard and include a description of the requirements for properly installing the practice to achieve its intended purpose in the plans and specifications.

At the minimum, the plans and specifications shall include, but not limited to, the following items:

- Overall plan layout with location of any structures.
- Profiles and cross sections of finished channel bottom with grade and critical elevations shown.
- Cross section and details of all structures and appurtenances (pipes, headwalls, drains, etc.).
- Type quantity and quality of materials used to stabilize the channel bed.
- Location of borrow areas and spoil areas.
- Earthfill requirements
- Excavation requirements.
- Special foundation requirements.
- Disposal of unsuitable excavated material
- Geological borings with USCS soil classifications.
- Vegetative requirements.
- Location of utilities and notification requirements.

OPERATION AND MAINTENANCE

Prepare an Operation and Maintenance plan that provides specific instructions for operating and maintaining the system to ensure it functions properly. Provide for periodic inspections and promptly repair or replacement of damaged components.

At a minimum, include the following items in the O&M plan:

- Periodic inspections, especially after high flow events.
- Remove sediment deposits to maintain capacity of channel.
- Prompt repair or replacement of damaged areas.
- Maintain areas protected by vegetation in vigorous vegetation.

REFERENCES

USDA, NRCS, Conservation Engineering Division, National Engineering Handbook, Part 653, Stream Corridor Restoration.

USDA, NRCS, Conservation Engineering Division, National Engineering Handbook Part 654, Stream Restoration Design.

USDA, NRCS, Stream Restoration Planning and Design, Fluvial System Stabilization and Restoration Field Guide.

Florida NRCS Conservation Practice Standards:

Critical Area Planting, Code 342

Spoil Spreading, Code 572

General Manual

Title 420-Part 401

Title 450-Part 401

Title 190-Parts 410.22 and 410.26

National Cultural Resources Handbook

National Environmental Compliance Handbook

National Food Security Act Manual

National Planning Procedures Handbook

Florida Supplements to Parts 600.1 and 600.6