



Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

ROCK BARRIER

CODE 555

(ft)

DEFINITION

A rock retaining wall constructed across the slope to form and support a bench terrace that will control the flow of water and check erosion on sloping land.

PURPOSE

This practice is used to accomplish the following purpose—

- Stabilize steeply sloping land so that it can be farmed with minimal soil loss.

CONDITIONS WHERE PRACTICE APPLIES

Rock barriers are applicable to agricultural land that is steeply sloping with a soil depth adequate for benching and where the effectiveness of less intensive measures for soil and water conservation are inadequate. This standard applies to sites with land slopes up to 70 percent. Suitable, stable natural outlets or satisfactory sites for constructed outlets must be available.

CRITERIA

Work shall be planned, designed and installed in compliance with all federal, state, and local laws and regulations.

General Criteria Applicable to All Purposes

Grade

The top of the rock barrier may be level or have a grade toward the outlet. Maximum grade must not exceed 0.5 percent.

Bench cross section

The bench between barriers shall slope into the hillside. Design the bench with a grade, measured from the top of one barrier to the toe of the next barrier, of between 1.0 and 3.0 percent.

Surface drain

Provide surface drainage for the bench with a longitudinal ditch with a cross-sectional area not less than 0.5 square feet along the toe of the upslope barrier. Slope this ditch to a stable outlet with a grade of 0.5% or less.

Height

Maximum height of rock barriers shall not exceed 6 feet.

Base width

The minimum base width shall be 18 inches, plus 1.5 inches for each 0.5 feet of height in excess of 2.5 feet. Slope the exposed face of the barrier into the hillside 3 inches for each foot of height.

Vertical interval

Space the barriers and benches so that the vertical interval between adjacent benches does not exceed 5 feet.

Horizontal interval

Space the barriers and benches so that the horizontal interval between adjacent benches is not less than 5 feet.

Outlets

Each rock barrier must have a safe and stable outlet, either natural or constructed. The outlet must convey runoff to a point where outflow will not cause damage.

CONSIDERATIONS

When choosing the location and spacing of the rock barriers and the benches consider how much cut will need to take place. If the chosen location and spacing results in too much excavation there may not be enough soil left in place for good plant growth.

The location and spacing will also affect the balance of cut and fill needed to construct the benches behind the barriers. Choose the location and spacing to minimize the amount of earthmoving needed for construction.

A uniform and healthy soil helps ensure uniform crop growth. Stockpiling the upper six inches of top soil prior to any other construction activity and then using it to cover the cropping areas will help subsequent crop growth. Consider the vegetation response and effects on microhabitats for wildlife and pollinators.

Rock barriers alone may not be adequate to control storm runoff. Consider other conservation practices that may need to be installed to provide an adequate conservation system.

While the implementation of rock barriers should significantly reduce erosion resulting from the cultivation of steep slopes, runoff from these areas can still carry sediment, nutrients and pathogens. Consider where outlets will carry the runoff and make provisions for filter areas and buffers if necessary.

The construction of rock barriers is a significant ground disturbing activity. Ensure that all cultural resource policies are followed before undertaking this practice.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for the rock barriers that describe the requirements for applying the practice according to this standard. As a minimum the plans and specifications shall include:

1. A plan view of the layout of the rock barrier(s).
2. Typical cross sections of the rock barrier(s).
3. Details of the outlet system.
4. Site specific construction specifications that describe in writing the installation of the rock barrier(s). This information may be carried in the form of notes on the construction drawings in lieu of independent specifications.

OPERATION AND MAINTENANCE

Prepare an operation and maintenance plan for the operator. The minimum requirements to be addressed in a written operation and maintenance plan are:

1. Provide periodic inspections, especially immediately following runoff events.
2. Promptly repair or replace damaged components as necessary.
3. Remove sediment that has accumulated in the surface drain or outlet to maintain the designed

capacity.

4. Vegetation in the outlet, damaged by livestock, machinery, or erosion must be repaired promptly.
5. Vegetation, where specified, shall be maintained. Trees, brush, and undesirable vegetation shall be controlled by chemical or mechanical means following federal, state, and local regulations. Schedule vegetation maintenance and control outside of the primary nesting season for ground nesting birds.
6. Keep machinery away from steep slope rock barriers. Keep equipment operators informed of all potential hazards.

REFERENCES

None.