

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

ROCK BARRIER
(feet)
CODE 555

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

Stabilize steeply sloping land so that it can be farmed with a minimum of soil loss.

CONDITIONS WHERE PRACTICE APPLIES

Rock barriers are applicable to land suitable for cultivation where soil depth is adequate for benching and where the effectiveness of less intensive measures for soil and water conservation would be questionable. This standard applies to all rock barriers 6 feet or less in height on land slopes as much as 70 percent. Suitable natural outlets or satisfactory sites for constructing outlets must be available.

CRITERIA

Grade - The top of the rock barrier may be level or have a grade toward the outlet. Maximum grade shall be 0.5 percent.

Cross slope - The bench between barriers shall have a negative slope from the top of one barrier to the toe of the upslope barrier. Cross slopes shall have a grade of 1.0 to 3.0 percent.

Surface drain - Surface drainage shall be provided by a longitudinal ditch with a cross-sectional area not less than 0.5 square feet along the toe of the upslope barrier.

Height - The height of the rock barrier shall not exceed 6 feet.

Base width - The minimum base width shall be 18 inches, plus 1.5 inch for each 0.5 feet of height in

excess of 2.5 feet. The exposed face of the barrier shall have a batter of 3 inches/foot of height.

Vertical interval - Vertical interval between adjacent benches shall not exceed 5 feet.

Horizontal interval - The minimum horizontal distance between barriers shall be 5 feet.

CONSIDERATIONS

Consider the depth of cut or excavation levels, and the resulting available plant rooting depths.

Consider other measures needed for adequate management of storm runoff.

Consider the excavation and fill material necessary for balancing cuts and fills.

Cultural Resources Considerations

NRCS's objective is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice will have any effect on any cultural resources.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

GM 420, Part 401, the California Environmental Handbook and the California Environmental Assessment Worksheet provide guidance on how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Endangered Species Considerations

Determine if installation of this practice, along with any others proposed, will have an effect on any

federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern, or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates that the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Potential for change in plant growth and transpiration because of changes in the volume of soil water.
3. Effects on downstream flows or aquifers that would affect other water users.
4. Effects on the volume of downstream flow to prohibit undesirable environmental, social or economic effects.
5. The effect on the water table of the field to ensure that it will provide a suitable rooting depth for anticipated land uses.

Water Quality

1. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.

2. Effects of the use and management of nutrients and pesticides on surface and ground water quality.
3. Effects on the visual quality of downstream water resources.
4. Short-term and construction-related effects on this practice on the quality of downstream water.
5. Potential for development of saline seeps or other salinity problems resulting from increased infiltration near restrictive soil layers.
6. Potential for earth moving equipment to uncover or redistribute toxic materials, or low productive soils.
7. Effects on the movement of dissolved substances

PLANS AND SPECIFICATIONS

Plans and specifications for constructing rock barriers shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be prepared for the operator.

Items to be addressed in the 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 surface drain and outlet to maintain 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.

6. Keep machinery away from steep slope rock barriers. Keep equipment operators informed of all potential hazards.