

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

**HILLSIDE DITCH
(feet)
CODE 423**

DEFINITION

A channel that has a supporting ridge on the lower side constructed across the slope at defined vertical interval and gradient, with or without a vegetative barrier.

PURPOSE

To safely control the flow of water by diverting runoff into a protected outlet.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to sloping sites where surface flow is damaging sloping upland, and there is sufficient soil depth for constructing a hillside ditch system.

CRITERIA

Location. Hillside ditch systems shall be designed to fit land conditions such as soil texture, and field slope. They shall drain from the ridge to a stable outlet.

Outlets. Adequate outlets with enough capacity to dispose of discharge water without creating an erosion hazard shall be provided before beginning construction. Such outlets may be a natural or constructed waterway, a stable watercourse, or a stable disposal area, such as well-established pasture. Criteria for a grassed waterway shall be that in Conservation Practice Standard 412 - Grassed Waterway.

Length. Maximum length draining in one direction should be 400 feet. This length

may be extended if necessary to reach a stable outlet. In no case shall the maximum length exceed 500 feet.

Permissible velocities. Velocity in the channel shall be compatible with the soil and shall not exceed the limits shown in Table 1.

TABLE 1: MAXIMUM HILLSIDE DITCH VELOCITIES (fps)

Type of Cover	Soil Erosion Resistance Group			
	I	II	III	IV
Grass (0% to 3% slopes)	10.0	9.0	8.0	6.0
Non-vegetated	5.5	4.5	3.5	2.5

Grade. The ditch grade may be either constant or variable. Grade shall not exceed three percent.

Side Slopes. Side slopes shall be stable for the soil in which the ditch is constructed.

Horizontal spacing and cross-section area. The maximum horizontal spacing and minimum cross-sectional area per 100 ft of ditch shall be as specified in Table 2.

Table 2

Average Slope (percent)	Maximum Spacing (feet)	Minimum cross-sectional area per 100-ft length (square feet)
12 or less	40	0.35
13-25	35	0.3
26-40	25	0.2

Establishment of vegetative barriers will be required in areas where average slopes exceed 25%. Follow guidance of vegetative barrier installation found in Conservation Practice Standard 601 - Vegetative Barrier.

CONSIDERATIONS

When planning this practice, consider the following as applicable:

Effects upon components of the water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

Filtering effects of vegetation on movement of sediment and dissolved and sediment-attached substances.

Short-term and construction-related effects of this practice on the quality of downstream water.

Potential for development of saline seeps or other salinity problems resulting from increased infiltration in the presence of restrictive layers.

Potential to affect significant cultural resources.

PLANS AND SPECIFICATIONS

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

Plans (design drawings) should include:

- a. Location in the field*
- b. Land slopes*
- c. Horizontal spacing*
- d. length,*
- e. cross section width, depth, and side slopes, and*
- f. channel slope*
- g. type of outlet*

OPERATION AND MAINTENANCE

The operation and maintenance guide for hillside ditch shall be provided to and reviewed with the landowner.