

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

SURFACE DRAINAGE, FIELD DITCH

(feet)
CODE 607

DEFINITION

A graded ditch for collecting excess water in a field.

PURPOSE

1. Drain surface depressions.
2. Collect or intercept excess surface water such as sheet flow from natural and graded land surfaces or channel flow from furrows and carry it to an outlet.
3. Collect or intercept excess subsurface water and carry it to an outlet.

CONDITIONS WHERE PRACTICE APPLIES

Applicable sites are flat or nearly flat and:

1. Have soils that are slowly permeable (low permeability) or that are shallow over barriers, such as rock or clay, which hold or prevent ready percolation of water to a deep stratum.
2. Have surface depressions or barriers that trap rainfall.
3. Have insufficient land slope for ready movement of runoff across the surface.
4. Receive excess runoff or seepage from uplands.
5. Require removal of excess irrigation water.
6. Require control of the water table.
7. Have adequate outlets available for disposal of drainage water by gravity flow or pumping.

Scope

This standard applies to drainage ditches installed to collect water from a field. It does not apply to **Surface Drainage, Main or Lateral** (Code 608), or to **Grassed Waterways** (Code 412).

CRITERIA

Drainage field ditches shall be planned as integral parts of a drainage system for the field served and shall collect and intercept water and carry it to an outlet with continuity and without ponding.

Investigations. An adequate investigation shall be made of all sites.

Location. Ditches shall be established, insofar as topography and property boundaries permit, in straight or nearly straight courses. Random alignment may be used to follow depressions and isolated wet areas of irregular or undulating topography. Excessive cuts, and the creation of small irregular fields shall be avoided.

On extensive areas of uniform topography, collection or interception ditches shall be installed as required for effective drainage.

Design. The size, depth, spacing, side slopes, and cross section area shall:

1. Be adequate to provide the required drainage for the site.
2. Permit free entry of water from adjacent land surfaces without causing excessive erosion.

3. Provide effective disposal or reuse of excess irrigation water (where applicable).
4. Conduct flow without excessive erosion. Maximum channel velocities are listed in Table 1.
5. Provide stable side slopes based on soil characteristics.
6. Permit crossing by farm equipment, if feasible.
7. Permit construction and maintenance with available equipment.

PLANNING CONSIDERATIONS FOR WATER QUANTITY AND QUALITY

Water Quantity

1. Effects on water budget components, especially relationships between runoff and infiltration.
2. The effect of changes in the water table on the rooting depth for anticipated land uses.

Water Quality

1. Downstream effects of erosion and yields of sediment and sediment-attached substances.
2. Effects on the salinity of the soil in the drained field.
3. Effects on the loadings of dissolved substances downstream.
4. Potential changes in downstream water temperature.
5. Effects on wetlands or other water-related wildlife habitat.
6. Effects on the visual quality of downstream watercourses.

CONSTRUCTION PLANS

Plans for construction of drainage field ditches shall be in keeping with this standard and shall describe the requirements for proper installation of the practice to achieve its intended purpose.

Construction plans should include the location of each ditch in a field, or the spacing; cross section (depth, bottom width, and side slopes); length; and grade. The plans shall be incorporated into an engineering plan for a drainage system which contains other practices.

Table 1

Soil Erosion Resistance Group ^{1/}	Maximum Velocity (fps)
I	5.5
II	4.5
III	3.5
IV	2.5

^{1/} Soil erosion resistance groups for all Hawaii soils can be found in the EFM, Chapter 2.