

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

SURFACE DRAINAGE, FIELD DITCH

(Ft.)

CODE 607

DEFINITION

A graded ditch for collecting excess water in a field.

PURPOSES

This practice is to:

- 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
- 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 the 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

CRITERIA

General Criteria Applicable To All Purposes

Laws, rules, and regulations. This practice shall conform to all federal, state, and local laws, rules, and regulations. Laws, rules, and regulations of particular concern include those involving water rights, land use, pollution control, property easements, wetlands, preservation of cultural resources, and endangered species.

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, 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 (if applicable)
4. Conduct flow without causing excessive erosion - Ditches shall be constructed to a

continuous bottom grade to the outlet.

Where there is no natural ground slope or a slope opposite to ditch flow, a graded ditch shall be used with a minimum slope of 0.05 percent. The outlet shall be constructed with an adequate cross section to prevent restriction of flow. The minimum depth of ditches shall be 0.5 foot. The minimum cross section shall be 6 square feet.

5. Provide stable side slopes based on soil characteristics - Side slopes shall not be steeper than the following:
 - When the ditch is parallel to farming operations and may be crossed by farm machinery - 4 horizontal :1 vertical (4:1)
 - Where farming operations are across the ditch or where drainage enters the ditch - 8:1
 - Where ditches are not crossed by farm equipment - 2:1
6. Permit crossing by field equipment if feasible
7. Permit construction and maintenance with available equipment

Excavation and spoil. Areas to be excavated and areas to be occupied by spoil shall be cleared of trees, brush, or other debris as required for construction and maintenance.

Spoil shall be placed or graded in such a manner that surface water may move freely into the ditch from any planned outlets.

Other. Where "W" or double ditches are used, the 2 ditches comprising the "W" should be parallel, if possible, and spaced far enough apart so that any spoil spread between them shall meet the side slopes requirement listed under Item 5 in "Design" above. Usually, except in special cases, the minimum spacing should be 100 feet. Care should be taken that surface drainage from between the ditches will flow to 1 ditch or the other without pocketing or ponding.

CONSIDERATIONS

- Potential impacts on downstream flows or aquifers that would affect other water uses or users
- Potential water quality impacts for soluble pollutants, sediments, and sediment-attached pollutants
- Potential for uncovering or redistributing toxic materials
- Impacts on cultural resources
- Effects on wetlands or water-related wildlife habitats
- Effects of water level control on soil water, downstream water temperature, or salinity of soils
- The need for riparian buffers, filter strips, and fencing
- Effects on water budget components, especially the relationships between runoff and infiltration

PLANS AND SPECIFICATIONS

Plans and specifications for constructing drainage field ditches shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be developed and reviewed with the landowner or individual responsible for operation and maintenance. The plan shall adequately guide in the routine maintenance and operational needs of the ditches. The plan shall also include guidance on periodic inspections and post-storm inspections to detect and minimize damage to the ditches.