

**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.

PURPOSE

To drain surface depressions; 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; and 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

Drainage field ditches shall be planned as integral parts of a drainage system for the field served and shall collect, intercept, and remove water to an outlet or outlet drainage system with continuity and without ponding. The design of the ditch system will comply with all Ohio drainage and water laws.

Investigations

Investigations and surveys required to determine site conditions should be made. Soils to be drained shall be suitable for agricultural use. Investigate the possible existence of wetlands and if the drains will have adverse effects on the wetlands. Local, state and/or federal regulations may require the protection of existing wetlands.

**Section IV, FOTG
Standard 607**

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 land cuts, excessive obstructions to farming operations, or creation of unnecessarily small and irregular fields shall be avoided.

For effective drainage of extensive areas of uniform topography, collecting or intercepting ditches shall be installed to drain furrows, beds, borders, or natural or graded land surfaces.

The spacing of drainage field ditches will be within the recommended limits of the Ohio Drainage Guide. Where ditches are located at the ends of fields in connection with bedding systems, a turn strip at least 30 feet wide will be provided between the ditch and field boundary.

The outlet for the drains shall be of adequate capacity to discharge the desired degree of drainage from the site. Also measures should be included if necessary to stabilize the outlet according to standard 410 - Grade Stabilization Structure.

Design

The capacity, size, depth, side slopes, and cross section area shall:

1. Be adequate to provide the degree of drainage for the site. The required capacity will be determined by applying Manning's formula. Charts and tables for sizing the ditch based on Manning's formula can be found in Chapter 14 of NRCS's Engineering Field Handbook. Appropriate "n" values should be used based on vegetated and nonvegetated conditions.

The minimum cross-sectional area shall be five square feet and the minimum depth shall be 0.75 feet.

2. Permit free entry of water from adjacent land surfaces without causing excessive erosion.
3. Provide effective disposal or reuse of excessive irrigation water (where applicable).
4. Conduct flow without excessive erosion.
5. Provide stable side slopes based on soil characteristics when ditch area will not be farmed (usually 2:1). Where farm operations will cross the ditch, the side slopes will be 8:1 or flatter. Where farm operations parallel the ditch, the side slopes will be 4:1 or flatter.
6. Permit crossing by farm equipment where feasible.
7. Permit construction and maintenance with available equipment.
8. The minimum grade shall be 0.0005 ft./ft.

CONSIDERATIONS

Potential impacts on wetlands need to be evaluated. Follow local policies on protection of cultural resources. Water quality impacts for soluble pollutants and attached sediment pollutants should be addressed.

The need for riparian buffers, filter strips, and fencing shall be considered.

Potential offsite impacts should be evaluated.

OPERATION AND MAINTENANCE

A site-specific operation and maintenance plan shall be provided to, and reviewed with, the landowner(s) before the practice is installed.

The plan shall adequately guide the landowner(s) in the routine maintenance and operational needs of the ditch(es) the plan shall also include guidance on periodic inspections and post-storm inspections to detect and minimize damage to the ditch(es).

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.

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION**

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Excavation

Areas to be excavated, and areas required for spoil or construction purposes will be cleared of all trees, brush and other debris, and removed from the construction area.

Ditches shall be excavated to the grades and cross-sections specified in the design. Finished sections will be uniform and smooth.

Spoil Placement

Spoil from the excavation operations will be deposited as specified in the design. Spoil banks will be located to permit operation of farming equipment and to permit free entry of surface water into the ditch. When specified in the design, spoil will be spread in depressions or other designated areas and smoothed in such a manner that will permit free entry of surface water into the ditch.

Maintenance

Provisions shall be made for maintaining the ditches and their outlets to permit effective drainage.