

NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC BASIN AREA
CONSERVATION PRACTICE STANDARD

PRECISION LAND FORMING

(Hectare, Acre)
CODE 462

DEFINITION

Reshaping the surface of land to planned grades.

SCOPE

This standard applies to all precision land-forming operations for drainage and erosion control as well as other purposes such as moisture conservation, leaching, and improving water quality. All land-forming operations under this standard will be on the basis of a detailed engineering survey and layout. It does not include the Pacific Basin standards, Land Smoothing (466), or Recreation Land Grading and Shaping (566), or Irrigation Land Leveling (464).

PURPOSE

To improve surface drainage, provide more effective use of rainfall, facilitate installation of more workable drainage systems, reduce the incidence of mosquito infestation, control erosion, improve water quality, and prevent damage to land by water logging.

CONDITIONS WHERE PRACTICE APPLIES

On all land that is suitable for the purpose required and where precision land forming is practical. Soils shall be of sufficient depth and of suitable textures so that after precision land forming is completed an adequate root zone remains to permit the planned use of the land and application of proper conservation measure, soil amendments, and fertilizer.

All precision land forming shall be planned as an integral part of an overall system to facilitate the conservation use of soil and water resources.

PLANNING CONSIDERATIONS

This practice may adversely affect cultural resources. Planning, installation and

maintenance must comply with GM 420, Part 401.

WATER QUANTITY

Effects on the water budget, especially on volumes and rates of runoff, infiltration, deep percolation, and evaporation.

Potential for changes in plant growth and transpiration resulting from the changes in the volume of soil water.

WATER QUALITY

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

Effects from the use and management of nutrients and pesticides on surface and ground water quality.

Short-term and construction effects of installation on downstream water resources.

Potential for earth moving to uncover or redistribute toxic materials, such as saline soils, and make them available to water or plants.

Downstream temperature changes.

Effects on the visual quality of downstream water resources.

DESIGN CRITERIA

Design and installation shall be based on adequate engineering surveys and investigation. If the land is to be formed for more than one purpose, it must be formed to meet the requirements of the most restrictive purpose and crop.

All forming work must be designed within the slope limits required for the proposed use and provide for the removal of excess surface water. If other conservation practices such as grassed waterways, drainage field ditches,

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and filter strips are needed to accomplish the stated purpose, they shall be included in the plans for improvement.

Slope Requirements. Slope may be uniform in the direction of flow or may increase or decrease.

Reverse grades in the direction of planned water flow shall not be permitted. Short level sections are permissible to meet field conditions. Cross slopes must be designed so that "breakthroughs" from rainfall runoff are held to a minimum.

Slope to control erosion caused by runoff from rainfall. Design field grades shall be such that erosion caused by runoff from rainfall can be controlled within the limits permissible for conservation farming. When benching between land-formed plots exceeds 1 ft (304 mm) a permanent grassed area or border ridge must be left between the plots to reduce the possibility of gully erosion.

Surface Drainage. All precision land-forming systems shall include plans for removing or otherwise providing for control of excess water.

Designs must provide field elevation and field grades that will permit proper functioning of the planned drainage facilities.

Borrow Computations. Excavation and fill material required for or obtained from such structures as ditched, ditch pads, and roadways shall be considered part of the precision land-forming design, and the appropriate yardage shall be included when balancing cuts and fills and determining borrow requirements.

PLANS AND SPECIFICATIONS

Plans and specifications for precision land forming shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.