

# STANDARD AND SPECIFICATIONS FOR SURFACE ROUGHENING



## **Definition**

Roughening a bare soil surface whether through creating horizontal grooves across a slope, stair-stepping, or tracking with construction equipment.

## **Purpose**

To aid the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion and provide for trapping of sediment.

## **Conditions Where Practice Applies**

All construction slopes require surface roughening to facilitate stabilization with vegetation, particularly slopes steeper than 3:1.

## **Design Criteria**

There are many different methods to achieve a roughened soil surface on a slope. No specific design criteria is required. However, the selection of the appropriate method depends on the type of slope. Methods include tracking, grooving, and stair-stepping. Steepness, mowing requirements, and/or a cut or fill slope operation are all factors considered in choosing a roughening method.

## **Construction Specifications**

### A. Cut Slope, No mowing.

1. Stair-step grade or groove cut slopes with a gradient steeper than 3:1 (Figure 5B.25).
2. Use stair-step grading on any erodible material soft

enough to be ripped with a bulldozer. Slopes of soft rock with some soil are particularly suited to stair-step grading.

3. Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the “step” to the vertical wall.
4. Do not make vertical cuts more than 2 feet in soft materials or 3 feet in rocky materials.

Grooving uses machinery to create a series of ridges and depressions that run perpendicular to the slope following the contour. Groove using any appropriate implement that can be safely operated on the slope, such as disks, tillers, spring harrows, or the teeth of a front-end loader bucket. Do not make the grooves less than 3 inches deep or more than 15 inches apart.

### B. Fill Slope, No mowing

1. Place fill to create slopes with a gradient steeper than 3:1 in lifts 9 inches or less and properly compacted. Ensure the face of the slope consists of loose, uncompacted fill 4 to 6 inches deep. Use grooving as described above to roughen the slope, if necessary.
2. Do not blade or scrape the final slope face.

### C. Cuts/Fills, Mowed Maintenance

1. Make mowed slopes no steeper than 3:1.
2. Roughen these areas to shallow grooves by normal tilling, disking, harrowing, or use of cultipacker-seeder. Make the final pass of such tillage equipment on the contour.
3. Make grooves at least 1 inch deep and a maximum of 10 inches apart.
4. Excessive roughness is undesirable where mowing is planned.

Tracking should be used primarily in sandy soils to avoid undue compaction of the soil surface. Tracking is generally not as effective as the other roughening methods described. (It has been used as a method to track down mulch.) Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back-blade during the final grading operation.

**Figure 5B.25**  
**Surface Roughening**

