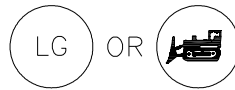


## Surface Roughening

### Plan Symbol



### Description

Surface roughening is the creation of horizontal grooves, depressions, or steps that run parallel to the contour of the land. The following surface roughening measures are approved for use:

- Tracking (driving a crawler tractor up and down a slope, leaving the cleat imprints parallel to the slope contour).
- Stair-step grading.
- Grooving (using disks, spring harrows, or teeth on the bucket of a front-end loader).

## Tracking

### Description

Tracking is defined as driving tracked machinery up and down slopes, leaving the cleat imprints parallel to the slope contour.

### When and Where to Use It

To slow erosion, perform tracking as soon as possible after the vegetation has been removed from the slope. Use tracking with temporary seeding and temporary mulching to stabilize an area. Perform tracking immediately after grading activities have ceased (temporarily or permanently) in an area.

### Installation

Avoid excessive compacting of the soil surface when tracking since ~~because~~ soil compaction inhibits vegetation growth and causes higher runoff rates. As few passes as possible should be made with the machinery in order to minimize compaction

Seed and mulch surface roughened areas by the means of tracking within 14 days.

### Inspection and Maintenance

- Inspect every 7 calendar days and within 24-hours after each rainfall event that produces ½-inches or more of precipitation.
- If rills (small watercourses that have steep sides and are usually only a few inches deep) appear, re-grade and re-seed immediately.

## Stair-Step Grading

### Description

Stair-Step Grading is defined as cutting stair-steps into slopes with each step having a maximum horizontal distance of 4-feet and a maximum vertical distance of 4-feet.

**When and Where to Use It**

To slow erosion, perform stair step grading within 7 days after the removal of vegetation from the slope. Stair step grading is applicable on cut slopes with a gradient steeper than 3H:1V but less than 2H:1V. Stair-step grading is applicable on any material soft enough to be moved with a bulldozer. Stair-step grading works well with soils containing large amounts of small rock. Prepare stairs wide enough to work with standard earth moving equipment. Stair-step grading is used with seeding to stabilize an area.

**Installation**

The ratio of vertical cut distance to horizontal distance is steeper than 1V:1H and the horizontal portion of the “step” slopes towards the vertical wall.

Seed and stabilize areas graded in this manner within 14 days.

**Inspection and Maintenance**

- Inspect every 7 calendar days and within 24-hours after each rainfall event that produces ½-inches or more of precipitation.
- If rills (small watercourses that have steep sides and are usually only a few inches deep) appear, re-grade and re-seed immediately.

**Grooving****Description**

Slope Grooving is defined as using machinery to create a series of ridges and depressions that run perpendicular to the slope on the contour.

**When and Where to Use It**

To slow erosion, perform slope grooving within 7 days after the removal of vegetation from the slope.

Groove cut and fill slopes with a gradient steeper than 3H:1V but less than 2H:1V. Grooving is done by any implement that is safely operated on the slope.

Slope Grooving is used with seeding and planting to stabilize an area.

**Installation**

Install slope grooving with any appropriate implement that is safely operated on the slope not causing undue compaction. Suggested implements include discs, chisel plows, and the teeth on a front-end loader bucket. Install grooves a minimum of three inches deep and no further than 15 inches apart.

Seed and stabilize areas that are graded in this manner within 14 days.

**Inspection and Maintenance**

- Inspect every 7 calendar days and within 24-hours after each rainfall event that produces ½-inches or more of precipitation.
- If rills (small watercourses that have steep sides and are usually only a few inches deep) appear, re-grade and re-seed immediately.



Surface Roughening (Tracking)



Surface Roughening (Tracking)

**Preventive Measures and Troubleshooting Guide**

Field Condition	Common Solutions
Rills appear.	Re-grade and re-seed area immediately.