



**Activity: Surface Roughening****Installation Procedures*****Cut Slope Roughening***

- Use stair-step grading or furrows (groove cuts) on slopes that are steeper than 3:1 (H:V).
- Use stair-step grading on erodible material that is soft enough to be ripped by a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-step grading.
- Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the step in towards the slope.
- Do not make individual vertical cuts more than 600 mm (24 in.) high in soft materials or more than 1 m (3 ft.) high in rocky materials.
- Groove the slope using machinery to create a series of ridges and depressions that run across the slope and on the contour.

***Fill Slope Roughening***

- Place fill slopes with a gradient steeper than 3:1 (H:V) in lifts not to exceed 8 in. (200 mm), and make sure each lift is properly compacted.
- The face of the slope should consist of loose, uncompacted fill 4 in. (100 mm) to 6 in. (150 mm) deep.
- Use grooving or tracking to roughen the face of the slopes, if necessary.
- Apply seed, fertilizer and mulch then track or punch in the mulch. See Permanent Grass, Vines and Other Vegetation, Temporary Seeding, and Mulching BMPs.
- Do not blade or scrape the final slope face.

***Cuts, Fills, and Graded Areas***

- Slopes that will be maintained by mowing should be no steeper than 3:1 (H:V).
- To roughen these areas, create shallow grooves by normal tilling, disking, harrowing, or use a cultipacker-seeder. Make the final pass of any such tillage on the contour.
- Make grooves formed by such implements close together, less than 10 in. (250 mm) apart and not less than 1 in. (25 mm) deep.
- Excessive roughness is undesirable where mowing is planned.

***Roughening with Tracked Machinery***

- Limit roughening with tracked machinery to soils with a sandy textural component to avoid undue compaction of the soil surface.
- Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back blade during the final grading operation.
- Seed and mulch roughened areas to obtain optimum seed germination and growth.

**Maintenance**

- Periodically check the seeded or planted slopes for rills and washes, particularly after significant storm events, greater than 0.5 in. (1.2 mm).
- Fill these areas slightly above the original grade, then reseed and mulch as soon as possible.

**Inspection Checklist**

- Surface roughened are inspected after recent wet weather events.
- Rills and washed have been re-roughened and re-seeded.