Description

Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion. Depending on the technique used, surface roughening may also help establish conditions favorable to establishment of vegetation.

Appropriate Uses

Surface roughening can be used to provide temporary stabilization of disturbed areas, such as when revegetation cannot be immediately established due to seasonal planting limitations. Surface roughening is not a stand-alone BMP, and should be used in conjunction with other erosion and sediment controls.

Surface roughening is often implemented in conjunction with grading and is typically performed using heavy construction equipment to track the surface. Be aware that tracking with heavy equipment will also compact soils, which is not desirable in areas that will be revegetated. Scarifying, tilling, or ripping are better surface roughening techniques in locations where revegetation is planned. Roughening is not effective in very sandy soils and cannot be effectively performed in rocky soil.

Design and Installation

Typical design details for surfacing roughening on steep and mild slopes are provided in Details SR-1 and SR-2, respectively.

Surface roughening should be performed either after final grading or to temporarily stabilize an area during active construction that may be inactive for a short time period. Surface roughening should create depressions 2 to 6 inches deep and approximately 6 inches apart. The surface of exposed soil can be roughened by a number of techniques and equipment. Horizontal grooves (running parallel to the contours of the land) can be made using tracks from equipment treads, stair-step grading, ripping, or tilling.

Fill slopes can be constructed with a roughened surface. Cut slopes that have been smooth graded can be roughened as a subsequent operation. Roughening should follow along the contours of the slope. The tracks left by truck mounted equipment working perpendicular to the contour can leave acceptable horizontal depressions; however, the equipment will also compact the soil.

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Maintenance and Removal

Care should be taken not to drive vehicles or equipment over areas that have been surface roughened. Tire tracks will smooth the roughened surface and may cause runoff to collect into rills and gullies.

Because surface roughening is only a temporary control, additional treatments may be necessary to maintain the soil surface in a roughened condition.

Areas should be inspected for signs of erosion. Surface roughening is a temporary measure, and will not provide long-term erosion control.
SR-1. SURFACE ROUGHENING
FOR STEEP SLOPES (3:1 OR STEEPER)

2" TO 4" DEEP

FURROWS 2" TO 4" DEEP
WITH 6" MAXIMUM SPACING
PARALLEL TO CONTOURS

SR-2. SURFACE ROUGHENING
FOR LOW SLOPES (LESS THAN 3:1)

4" TO 6" DEEP

ROUGHENED ROWS SHALL BE 4" TO 6"
DEEP WITH 6" MAXIMUM SPACING PARALLEL
TO CONTOURS
SURFACE ROUGHENING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -LOCATION(S) OF SURFACE ROUGHENING.

2. SURFACE ROUGHENING SHALL BE PROVIDED PROMPTLY AFTER COMPLETION OF FINISHED
   GRADING (FOR AREAS NOT RECEIVING TOPSOIL) OR PRIOR TO TOPSOIL PLACEMENT OR ANY
   FORECASTED RAIN EVENT.

3. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SGD WILL BE PLACED WITHOUT
   DELAY IN THE CONSTRUCTION SEQUENCE, SURFACE ROUGHENING IS NOT REQUIRED.

4. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPI NG OR TILLING EQUIPMENT ON
   THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

5. A FARMING DISK SHALL NOT BE USED FOR SURFACE ROUGHENING.

SURFACE ROUGHENING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION.
   MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS
   POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE
   EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN
   EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE
   DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACE UPON DISCOVERY OF THE FAILURE.

4. VEHICLES AND EQUIPMENT SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE
   ROUGHENED.

5. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE
   DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.

6. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE
   RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER RILL
   EROSION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS.
CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN
DIFFERENCES ARE NOTED.