

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

SURFACE ROUGHENING

1. Scope

The work shall consist of roughening the soil surface by ridge or clod-forming tillage to offset adverse wind erosion effects. This practice will also serve as a guide when the planned erosion control system fails to control erosion during a high wind event.

2. Field Layout

Tillage operations shall be aligned across the field at an angle from 65 to 90 degrees to the direction of the prevailing erosive winds as shown on the drawing and specified on the Form KS-ECS-609, Surface Roughening.

The height of the ridges shall not be less than the height specified on the Form KS-ECS-609.

The spacing between ridges shall be within the range specified on the Form KS-ECS-609.

Tillage equipment depth and speed will be adjusted to produce the maximum surface cloddiness.

3. Control Measures

Emergency control measures will increase surface roughness of the field by ridges or clods (see Table 1 for soil conditions and compatible operations). All operations will be performed perpendicular to the wind.

- Chiseling for a cloddy surface shall be done at right angles to the wind. Chisel spacing will be 2 to 4 feet for sandy or pulverized soils and 2 to 6 feet on loam or clay soils. When applying practice in a growing crop, chisel spacing should be 5 to 6 feet. Always remove any harrow attachments.
- Using a lister or conventional shovels on a cultivator (place washers between the shovel and shank at the top bolt, so the shovel points downward) will create a ridged, cloddy surface by bringing up firmer subsoil. Ridges should be 4 to 8 inches high and 16 to 32 inches wide. If drifting soil fills in the furrows, create new furrows in the same manner.
- Subsoil rippers will produce cloddy ridges. Till deep enough to create a ridge at least 4 inches high. Spacing between ridges should be 6 to 30 feet.
- Creating large ridges may require the use of a road grader with the blade placed at a steep angle to create ridges 14 inches high and furrows about 18 inches deep, and should be spaced 10 to 30 feet.

4. Maintenance

Ridges shall be established and maintained during the period specified on the Form KS-ECS-609 when wind erosion is expected to occur.

Alternating strips left untilled will be treated at a later date if prolonged effectiveness is needed.

If ridges become ineffective due to erosion, they shall be reestablished unless doing so would damage a growing crop.

5. Other Requirements

The owner, operator, contractor, and other persons shall conduct all work and operations in accordance with proper safety codes for the type of equipment and operations being performed with due regard to the safety of all persons and their property.

Table 1

Soil Condition	Listing	Chisel Points	Ripping	Large Ridges
Soil blowing at focal points only				
Unfrozen Soil	X	?	~	X
Frozen Soil	~	X	X	~
Sandy Soils, unfrozen				
Thin surface layer is drifting but soil is firm and moist underneath	X	?	~	~
Normal tillage layer is dry and loose	X	~	~	X
Sandy Soils, frozen				
	~	X	X	~
Loam to Clay soils, unfrozen				
Thin surface layer is drifting but soil is firm and moist underneath	~	X	~	~
Normal tillage layer is dry, loose and cloddy	X	~	~	~
Normal tillage layer is dry, loose and pulverized	X	~	~	~
Loam to Clay soils, frozen				
	~	X	X	~
Crop emerged, spring seeded				
Only focal points are drifting	X	?	~	~
Most of field is drifting	~	?	~	~
Crop emerged, winter cereals on frozen soil				
Only focal points are drifting	~	X	X	~
Most of field is drifting	~	X	X	~

X recommended ~ not recommended ? only used if a cloddy surface is produced