Surface Roughening (609)
Conservation Practice Job Sheet

Colorado

Cooperator: _____ Date: _____

Tract/Field No(s).: _____ Planner/Location: _____

Purpose for Planning and Applying this Practice (check all that apply)

- ☐ Reduce wind erosion
- ☐ Reduce dust emissions to the air
- ☐ Protect plants from abrasion by wind-blown particles

Specifications

	Field _____	Field _____	Field _____	Field _____
Soil Survey Area:				
Map Unit:				
Soil "I" Factor:				
Acres:				
Irrigated (Y/N):				
Previous Crop:				
Planned Crop:				
Planned Tillage Operation(s):				
Planned timing of tillage operation(s):				
Planned Random Roughness (RR in.):				
Planned random roughness (Krr):				
Management Period:				

Additional Requirements/Information

Operation and Maintenance

1) Perform this practice as soon as possible when there is inadequate cover to protect the soil from potential wind erosion events, or when a crusted soil condition occurs as a sensitive crop is emerging and inadequate crop residues are present.

Certification

I have reviewed this plan including the Operation and Maintenance requirements and agree to implement as designed.		
Cooperator		*Date*
I certify that this application meets practice planning criteria and complies with applicable laws and regulations.		
Conservationist	*Title*	*Date*

Table 1. Krr from Random Roughness (RR) and "I" Factor Values †

RR (in)	I = 104	I = 86	I ≤ 56
0.2"	1	1	1
0.4"	0.95	0.86	0.70
0.6"	0.88	0.76	0.51
0.8"	0.82	0.68	0.40
1.0"	0.78	0.62	0.34
1.2"	0.74	0.57	0.30
1.4"	0.72	0.54	0.27
1.6"	0.69	0.51	0.24

† "I" factor values >134 have a Krr = 1.0, & the "I" of 134 soil will not reach a 25% reduction at any RR.

(Source: NHCP Surface Roughening 609, Conservation Practice Standard, Sept. 2009)

Table 502-7. Random Roughness (standard deviation) Core Values

This information on core values is from Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE), 1997, Agriculture Handbook 703.

Parameter values of core cropland field operations may be used in the Wind Erosion Equation for random roughness. However, the use of the random roughness photos in Agriculture Handbook 703, in appendix C, may be preferable, especially where roughness is caused by residual sod material such as the crowns of plants that has attached roots and soil.

The following core values are typical and representative for field operations in medium textured soils tilled at optimum moisture conditions. Many of the machines may differ by cropping region, farming practice, soil texture, or other conditions. Refer to the random roughness photos in Agriculture Handdbook 703 and adjust to values that seem most appropriate. The photos and associated random roughness (standard deviation) values in Agriculture Handbook 703 can be downloaded at:

http://www.nrcs.usda.gov/technical/ECS/agronomy/roughness.html

Field operations	Random roughness (standard deviation in inches)
Chisel, sweeps	1.2
Chisel, straight point	1.5
Chisel, twisted shovels	1.9
Cultivator, field	0.7
Cultivator, row	0.7
Cultivator, ridge till	0.7
Disk, 1-way	1.2
Disk, heavy plowing	1.9
Disk, tandem	0.8
Drill, double disk	0.4
Drill, deep furrow	0.5
Drill, no-till	0.4
Drill, no-till into sod	0.3
Fertilizer applicator, anhyd knife	0.6
Harrow, spike	0.4
Harrow, tine	0.4
Lister	0.8
Manure injector	1.5
Moldboard plow	1.9
Mulch treader	0.4
Planter, no-till	0.4
Planter, row	0.4
Rodweeder	0.4
Rotary hoe	0.4
Vee ripper	1.2

(Source: 190-V-NAM, 3rd Ed., October 2002, Part 502, p 502-48)