



Grade Stabilizers

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NOTE

After a fire many trees are weakened from burning around the base of the trunk. The trees can fall over or blow down without warning. Shallow rooted trees can also fall. Therefore be extremely alert when around burned trees.

What are grade stabilizers?

Channels in burnt watersheds may be reinforced to remain stable under increased flows by constructing very low and frequently spaced “V” shaped weirs using logs or rock across swales and drainage ways.

When are grade stabilizers used?

Grade Stabilizers are used on small drainage ways in burned areas where the natural erosion protection from vegetation and woody debris has been lost. It is used where sufficient numbers of logs are available, or rock can be substituted for the logs. Grade Stabilizers increase infiltration, add roughness, reduce erosion, and help retain small amounts of sediment within the channel. Grade Stabilizers should be effective for a period of one to three years, providing short term protection in areas where permanent vegetation will eventually return to provide long term erosion control.

Grade Stabilizers should not be used on channels with drainage areas greater than 50 acres. Straw wattles or similar light weight material should not be used for Grade Stabilizers where the area drained by the channel exceeds 1 acre. This treatment will have limited effectiveness for channels that were unstable and eroding prior to the wildfire event.

How are grade stabilizers installed?

Using Logs. 6” to 12” diameter logs are cut to a length approximately equal to the channel width, up to about 30 feet. (longer logs are too hard to handle). Limbs are removed to the extent necessary for the log to lie flat on the ground. Beginning from each side of the channel, a shallow trench (about 3 to 5 inches deep) is dug at a 70 degree angle upstream towards the center of the channel, creating a “V” configuration as shown in Figure 1. A log is placed in each side of the trench with its butt end towards the side of the channel, and seated with tamped backfill such that water flowing down the channel will not run under it. Where the soil in the channel is deep enough, the logs should be braced with wooden stakes. 2” x 2” x 24” long wooden stakes spaced four feet apart should be driven on the downstream side of the logs, until the top of the stake is even with the top of the log. When complete, the upstream point of the “V” must be the lowest point along the constructed weir, the top of the weir should be no more than 6 to 9 inches above the channel at the center, and the weir must extend the full width of the channel on either side.

Using Rock Riprap. Graded angular rocks ranging in size from 4 inches to 16 inches can be substituted for logs. The trench is constructed in the same configuration as before, except that the trench must be at least 12 inches deep and twice as wide as the largest rock. The trench is filled with the rock such that the upstream point of the “V” is the lowest point along the constructed weir, the top of the weir should be no more than 6 to 9 inches above the channel at the center, and it must extend the full width of the channel on either side.

How many channel stabilizers are required?

The log or rock weirs used for grade stabilizers should be uniformly spaced along the channel beginning near the upper end of the drainage way. The recommended spacing between "V" shaped weirs is shown in Table 1.

Table 1. Maximum Spacing of Channel Stabilizers

Channel Slope (%)	"V" Weir Spacing (feet)
< 2	200
2 - 5	100
5 - 10	50
10 - 20	25
>20	Not recommended

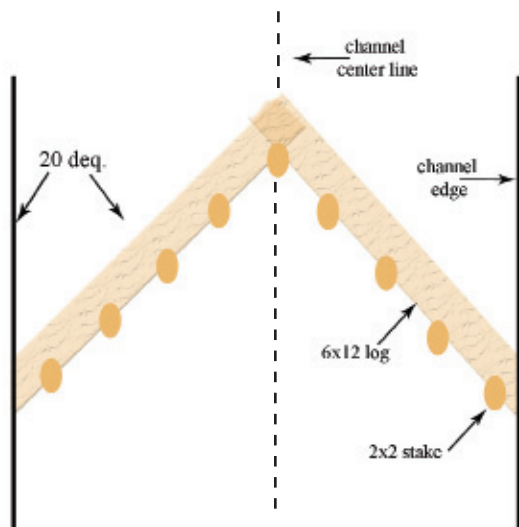


Figure 1 - LOG "V" weir for channel roughening

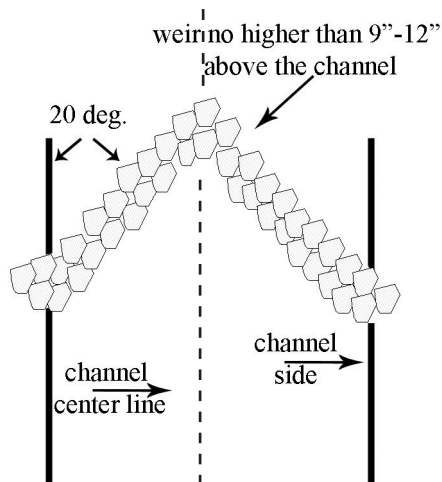
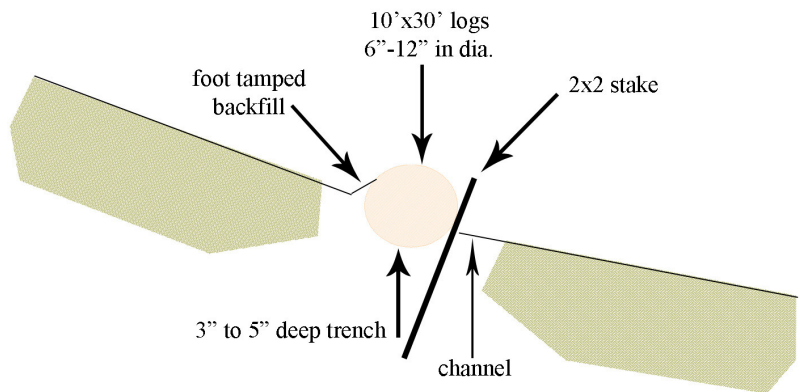


Figure 2 - ROCK "V" weir for channel roughening

