TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE Portland, Oregon SOIL CONSERVATION SERVICE

Plant Materials Technical Note No. 5 March 1989

WATTLING FOR HARD-TO-STABILIZE SLOPES

Steep, raveling slopes are often unsuccessfully revegetated and require more intensive techniques to control erosion. Wattling is such a technique and retains the benefits of a vegetated slope.

Wattling is a technique used over 40 years ago in California, currently reemphasized in erosion control work there, and popular in Europe. It essentially consists of tying bundles of flexible twigs together, laying bundles in trenches on the contour of cut or fill slopes, staking the bundles to the slope, and partially back-filling with soil. The installed rows of wattling trap sediment, slow water movement, provide micro-environments for establishment of grasses and legumes, and may sprout themselves to provide vegetative cover (depending on species used).

The following is excerpted from a paper[(2)] describing work carried out on highways in California. It provides guidance in installing wattling on difficult slopes:

Wattling Application

Preparation and placement of wattling can perhaps be best described by use of an illustration and a sample set of specifications. Figure 1 is a composite diagram of a bundle of wattling and the various steps in the proper placement of the wattling. These steps are shown as a progression and might well illustrate the various stages underway on a large wattling project. The installation should start at the bottom of either a cut or fill and progress toward the top. The specifications might read as follows:

1. Wattling bundles shall be prepared from live, shrubby material, preferably of species which will root, such as willow, snowberry, or redosier dogwood.

2. Wattling bundles may vary in length, depending on material available. Bundles shall taper at the ends and shall be 1-1½ ft. (max. 2 ft.) longer than the average length of stems to achieve this taper. Butts shall not be more than ±1½ inc. in diameter.

3. Stems shall be placed alternately (randomly) in each bundle so that approximately one-half the butt ends are at each end of the bundle.

4. When compressed firmly and tied, each bundle shall be ±8 in. in diameter (±2 in.).

5. Bundles shall be tied on not more than 15 in. centers with two wraps of binders twine or heavier tying material with a nonslipping knot.

6. Bundles shall be prepared not more than two days in advance of placement except that if kept covered and wet they may be prepared up to seven days in advance of placement.

7. Grade for the wattling trenches shall be staked with an Abney level, or similar device, and shall follow slope contours (horizontal).

8. Trenches shall be 3 ft. vertical spacing (or such other spacing specified. Economics may dictate wider placement.)

9. Bundles shall be laid in trenches dug to approximately one-half the diameter of the bundles, with ends of bundles overlapping at least 12 in. The overlap shall be as long as necessary to permit staking as specified below.

10. Bundles shall be staked firmly in place with vertical stakes on the downhill side of the wattling not more than 18 in. on center and diagonal stakes through the bundles on not more than 30 in. centers (see Fig. 1). Where bundle overlap occurs between previously set bottom or guide stakes, an additional bottom stake shall be used at the midpoint of the overlap. Bundle overlaps shall be "tied" with a diagonal stake through the ends of both bundles.

11. Stakes may be made of live wattling material greater than 1½ in. in diameter or they may be "Con" stakes (2" x 4" x 24" or 2" x 4" x 36", diagonal cut). Reinforcing bar may be substituted only as specified below.

12. All stakes shall be driven to a firm hold and a minimum of 18 in. deep. Where soils are soft and 24 in. stakes are not solid (i.e. if they can be moved by hand), 36 in. stakes shall be used. Where soils are so compacted that 24 in. stakes cannot be driven 18 in. deep, 3/8-1/2 in. steel reinforcing bar shall be used for staking.

13. Work shall progress from the bottom of the cut or fill toward the top, and each row shall be covered with soil and packed firmly behind and on the uphill side of the wattling by tamping or by walking on the wattling as the work progresses, or by a combination of these methods.

14. The downhill "lip" of the wattling bundle may be left exposed when staking and covering are completed. However, the preceding specification must be rigorously adhered to.

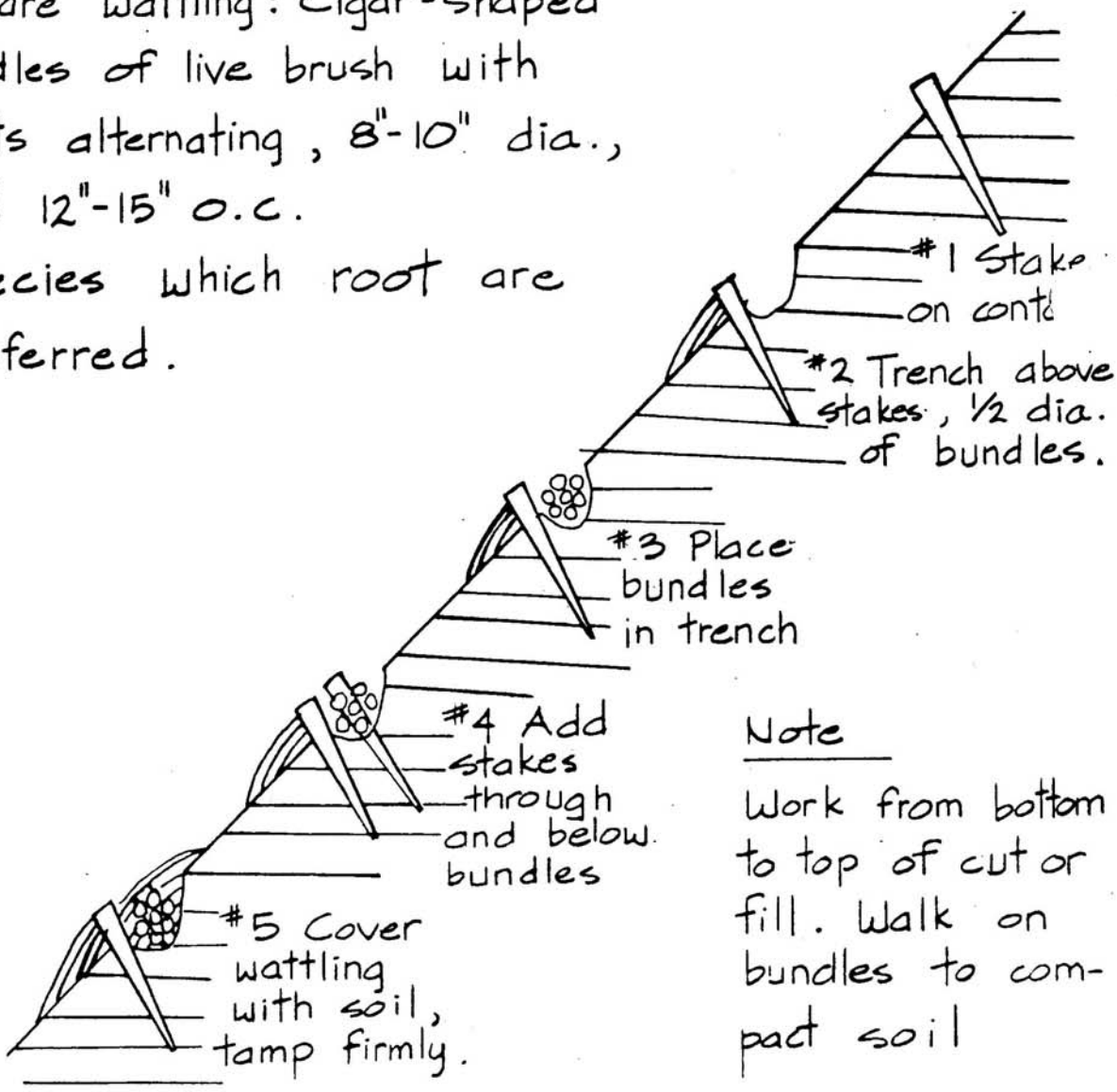
References:

1. Kraebel, Charles J. 1936. Erosion control on mountain roads. USDA Circular No. 380.

2. Leiser, Andrew T., and James J. Nussbaum. 1974. Wattling as an erosion control method. Proc. Erosion Control Symposium. June 11-12, 1974. Agronomy and Range Science Extension, Univ. of Calif., Davis. pp 67-74.

FIG. 1: WATTLING INSTALLATION SCHEMATIC DIAGRAM

Prepare wattling: Cigar-shaped bundles of live brush with butts alternating, 8"-10" dia., tied 12"-15" o.c.
Species which root are preferred.



Note

Work from bottom to top of cut or fill. Walk on bundles to compact soil