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# Standard Practice for Live Staking[1]

This standard is issued under the fixed designation D6765; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice covers the material, preparation and installation work required for live stake construction.

1.2 The values in this standard are in SI units and are to be regarded as the standard. The inch-pound units given in parentheses are for information only.

1.3 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace standard of care by which adequacy of a given professional service must be judged, nor should this document be applied without considerations of a project's many unique aspects. The word "standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Terminology

2.1 *Definitions:*

2.1.1 *live stake, n*—an individual live woody plant material cutting used in live staking.

2.1.2 *live staking, v*—the act of tamping live woody plant material cuttings into the ground.

2.1.3 *live woody plant material, n*—stem and branch cuttings of vegetatively self-propagating woody plant species.

## 3. Summary of Practice

3.1 Live stakes are stem or branch cuttings of vegetatively self-propagating woody plant species that are tamped into the ground. If correctly prepared and installed, the live stake will root and grow. Once the live stakes become established, they create top growth and a living root system. The root system stabilizes the shallow subsoil by reinforcing and binding together soil particles, and by extracting excess soil moisture. The vegetative top growth from the living live stakes provides cover for the soil surface against erosive forces. See Fig. 1, Fig. 2, and Fig. 3.

## 4. Significance and Use

4.1 Live staking is a soil bioengineering technique used to provide erosion and sedimentation control after plants have become fully established by increasing infiltration, slowing or redirecting runoff, and trapping seed and sediments. A successful live staking application provides mechanical surface slope stabilization, aesthetics, water quality and habitat enhancement. The ability of live staking to function properly depends on the quality and correctness of the materials utilized, the means and methods of installation, and proper consideration of site characteristics. It is imperative that the live staking develops root and top growth.

## 5. Materials

5.1 Fresh or well-preserved viable cuttings are used. The stems or branches are straight. Side branches are cleanly removed. Bark remains intact. The basal ends are cut at an angle for easy insertion into the soil. The top is cut square. Typically, plants are harvested near the project site within the same climate zone. Typical lengths for live stakes are from 600 to 900 mm (2 to 3 ft). The caliper (diameter) of cuttings generally ranges from 15 to 40 mm (½ to 1½ in.). Cut and install the live stakes in the dormant season.

5.2 *Brush Cutting Implements*—Cut live vegetation with such tools as pruning shears, loppers, clearing saws, chainsaws, and bush axes. The cuts must be made in a manner that allows the bark to remain intact and the stems or branches are not split or shredded.

## 6. Installation

6.1 Harvest live woody plant material using a sharp, clean brush-cutting implement. The cuttings may be temporarily stored outdoors in water or in a moist environment for a maximum of 2 days when the outdoor temperature remains

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FIG. 1 Individual Live Stake Prior to Installation

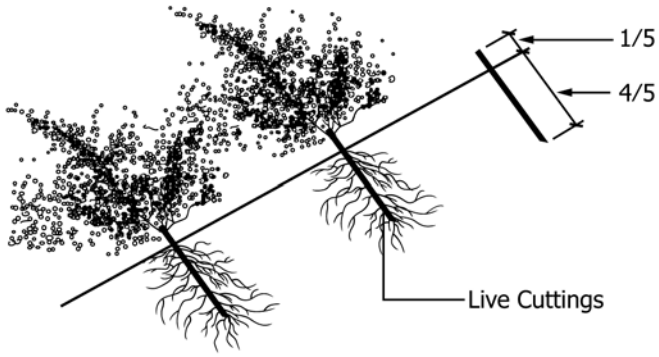


FIG. 2 Cross-Section of Live Stakes (Installed)

FIG. 3 Photograph of Growing Live Stakes

below 10°C (50°F), or refrigerated storage at 1 to 3°C (33 to 39°F) can be used for up to two (2) months, provided humidity levels are maintained above 90 %.

6.2 Tamp each live stake into the ground perpendicular to the soil surface with the buds oriented up. An iron bar or similar device can be used to make a pilot hole in firm soil. The outside diameter of the iron bar may be no larger than the smallest live stake.

6.3 Tamp live stake into the ground with a dead blow hammer until four-fifths of the live stake is buried.

6.4 Firmly pack soil around the live stake after it has been tamped into the ground.

6.5 Live stakes that split or are otherwise damaged during installation are removed and replaced.

6.6 The spacing and density of live stakes depend upon species selection and site conditions. Live stakes are commonly installed 600 to 900 mm (2 to 3 ft) on center using a triangular layout. The density of this configuration will range from 2 to 4 live stakes per square meter.

6.7 Live staking is frequently used in association with rolled erosion control products, riprap, or other technologies.

## 7. Keywords

7.1 erosion control; live stake; live staking; slope stabilization; soil bioengineering