



Safety Requirements for Scaffolding: OSHA Standard 1910.28¹

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The Impact of Safety on Florida Agriculture

Florida agriculture, including forestry and seafood, made an annual economic impact of \$53 billion in 1998. More than 81,000 people work on the 40,000 farms in the state, and more than 50,000 are employed in other activities related to agriculture. The state's agricultural enterprises range from large citrus, vegetable and cattle operations to small family-operated farms.

Over the past 10 years, there have been approximately 240 deaths related to agriculture in Florida, according to data compiled by the Deep South Center for Agricultural Health and Safety. In addition, agriculture has one of the highest injury and death rates among U.S. industries.

Safety in Florida agriculture is challenging because:

- the state's agricultural enterprises are diverse,

- safety knowledge among workers varies,
- manual labor is used extensively,
- the climate creates year-round heat stress.
- Therefore, it is vital to assist the public in learning about OSHA documents related to agriculture. More related information is available at the Florida AgSafe Web site and at the OSHA regulations Web site .

Overview

This is a condensation of Standard 1910.28 of the Occupational Safety and Health Act. This document is not intended to be totally inclusive but rather to highlight the information and requirements in the complete OSHA standard that owners and managers of agricultural businesses should understand.

Author's Comment: Erecting scaffolding is a common practice in construction, painting, brick laying, etc. It is less common in agriculture. However, there are times when an agricultural

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business may use scaffolding. The business may use its own employees to construct a building, replace a roof or perform some activity which may require scaffolding. The business may employ a construction or roofing crew to perform this task and put the employees on the business payroll for this period of time. The business may attempt to construct its own scaffolding or rent scaffolds. Under any of these conditions the agribusiness could be under the jurisdiction of OSHA standards and be subject to OSHA citations and fines.

An agribusiness would likely use a wood scaffold or rent a metal scaffold. In this document general rules for all scaffolds are followed by specific rules for wood scaffolds and metal scaffolds.

Definitions

Bearer. A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.

Boatswain's chair. A seat supported by slings attached to a suspended rope, designed to accommodate one worker in a sitting position.

Brace. A tie that holds one scaffold member in a fixed position with respect to another member.

Guardrail. A rail secured to uprights and erected along the exposed sides and ends of platforms.

Heavy duty scaffold. A scaffold designed and constructed to carry a working load not to exceed 75 pounds per square foot.

Ledger (stringer). A horizontal scaffold member which extends from post to post and which supports the putlogs or bearer framing a tie between the posts.

Light duty scaffold. A scaffold designed and constructed to carry a working load not to exceed 25 pounds per square foot.

Maximum intended load. The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.

Medium duty scaffold. A scaffold designed and constructed to carry a working load not to exceed 50 pounds per square foot.

Mid-rail. A rail approximately midway between the guardrail and platform, used when required, and secured to the uprights erected along the exposed sides and ends of platforms.

Putlog. A scaffold member upon which the platform rests.

Runner. The lengthwise horizontal bracing or bearing members or both.

Scaffold. Any temporary elevated platform and its supporting structure used for supporting workmen or materials or both.

Toeboard. A barrier secured along the sides and ends of a platform, to guard against the falling of material.

Tube and coupler scaffold. An assembly consisting of tubing which serves as posts, bearers, braces, ties, and runners, a base supporting the posts, and special couplers which serve to connect the uprights and to join the various members.

Tubular welded frame scaffold. A sectional, panel, or frame metal scaffold substantially built up of prefabricated welded sections which consist of posts and horizontal bearer with intermediate members. Panels or frames shall be braced with diagonal or cross braces.

Working load. Load imposed by persons, materials, and equipment.

General Requirements for All Scaffolds

- Scaffolds must be furnished and erected in accordance with this standard for persons engaged in work that cannot be done safely from the ground or from solid construction. (For information on ladders used for such work, see the documents "Portable Wood Ladders: OSHA Standard 1910.25," "Portable Metal Ladders: OSHA Standard 1910.26" and "Fixed Ladders: OSHA Standard 1910.27.")

Safety Requirements for Scaffolding: OSHA Standard 1910.28

3

- The footing or anchorage for scaffolds must be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks must not be used to support scaffolds or planks.
- Nails or bolts used in the construction of scaffolds must be of adequate size and in sufficient numbers at each connection to develop the designed strength of the scaffold. Nails must not be subjected to a straight pull and must be driven full length.
- All planking or platforms must be overlapped (minimum 12 inches) or secured from movement.
- An access ladder or equivalent safe access must be provided.
- Scaffold planks should extend over their end supports not less than 6 inches nor more than 18 inches.
- The poles, legs, or uprights of scaffolds must be plumb, and securely and rigidly braced to prevent swaying and displacement.
- Materials being hoisted onto a scaffold must have a tag line, a line from the load to the ground. The tag line must be held taut to prevent the load from swinging.
- Overhead protection must be provided for persons on a scaffold exposed to overhead hazards
- Scaffolds must be provided with a screen between the toeboard and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard Wire one-half-inch mesh or the equivalent, where persons are required to work or pass under the scaffolds.
- Employees must not work on scaffolds during storms or high winds. Employees must not work on scaffolds which are covered with ice or snow, unless all ice or snow is removed and planking sanded to prevent slipping.
- Tools, materials, and debris must not be allowed to accumulate in quantities to cause a hazard.
- Only treated or protected fiber rope may be used for or near any work involving the use of corrosive substances or chemicals
- Wire or fiber rope used for scaffold suspension must be capable of supporting at least six times the intended load.
- Scaffolds must be secured to permanent structures, through use of anchor bolts, reveal bolts, or other equivalent means. Window cleaners' anchor bolts may not be used.
- Special precautions must be taken to protect scaffold members, including any wire or fiber ropes, when using a heat-producing process.
- Lumber sizes (when used in this standard) refer to nominal sizes except where otherwise stated.

Wood Pole Scaffolds

- Scaffold poles must bear on a foundation of sufficient size and strength to spread the load from the poles over a sufficient area to prevent settlement. All poles must be set plumb.
- Where wood poles are spliced, the ends must be squared and the upper section must rest squarely on the lower section. Wood splice plates must be provided on at least two adjacent sides and must not be less than 4 feet 0 inches in length, overlapping the abutted ends equally, and have the same width and not less than the cross-sectional area of the pole. Splice plates of other materials of equivalent strength may be used.
- Independent pole scaffolds must be set as near to the wall of the building as practicable.
- All pole scaffolds must be securely guyed or tied to the building or structure. Where the height or length exceeds 25 feet, the scaffold must be secured at intervals not greater than 25 feet vertically and horizontally.

Safety Requirements for Scaffolding: OSHA Standard 1910.28

- Putlogs or bearers must be set with their greater dimensions vertical, long enough to project over the ledgers of the inner and outer rows of poles at least 3 inches for proper support.
- Every wooden putlog on single pole scaffolds must be reinforced with a 3/16 x 2-inch steel strip or equivalent secured to its lower edge throughout its entire length.
- Ledgers must be long enough to extend over two pole spaces. Ledgers must not be spliced between the poles. Ledgers must be reinforced by bearing blocks securely nailed to the side of the pole to form a support for the ledger.
- Diagonal bracing must be provided to prevent the poles from moving in a direction parallel with the wall of the building, or from buckling.
- Cross bracing must be provided between the inner and outer sets of poles in independent pole scaffolds. The free ends of pole scaffolds must be cross braced.
- Full diagonal face bracing must be erected across the entire face of pole scaffolds in both directions. The braces must be spliced at the poles.
- Platform planks must be laid with their edges close together so the platform will be tight with no spaces through which tools or fragments of material can fall.
- Where planking is lapped, each plank must lap its end supports at least 12 inches. Where the ends of planks abut each other to form a flush floor, the butt joint must be at the centerline of a pole. The abutted ends must rest on separate bearers. Intermediate beams must be provided where necessary to prevent dislodgment of planks due to deflection, and the ends must be nailed or cleated to prevent their dislodgment.
- When a scaffold turns a corner, the platform planks must be laid to prevent tipping. The planks that meet the corner putlog at an angle must be laid first, extending over the diagonally placed putlog far enough to have a good safe bearing, but not far enough to involve any danger from tipping. The planking running in the

opposite direction at right angles must be laid so as to extend over and rest on the first layer of planking.

- When moving platforms to the next level, the old platform must be left undisturbed until the new putlogs or bearers have been set in place, ready to receive the platform planks.
- Guardrails not less than 2 x 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1 x 4-inch lumber or equivalent, and toeboards, must be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards must be a minimum of 4 inches in height. Wire mesh must be installed as indicated under the section "General Requirements for All Scaffolds."

Metal Scaffold

- Tube and coupler scaffolds are limited in heights and working levels and must be constructed and erected to support four times the maximum intended loads.
- All tube and coupler scaffolds must be erected by competent and experienced personnel.
- Posts must be accurately spaced, erected on suitable bases, and maintained plumb.
- Runners must be erected along the length of the scaffold located on both the inside and the outside posts at even height. Runners must be interlocked to form continuous lengths and coupled to each post. The bottom runners must be located as close to the base as possible. Runners must be placed not more than 6 feet 6 inches on centers.
- Bearers must be installed transversely between posts and must be securely coupled to the posts bearing on the runner coupler. When coupled directly to the runners, the coupler must be kept as close to the posts as possible.
- Bearers must be at least 4 inches but not more than 12 inches longer than the post spacing or runner spacing. Bearers may be cantilevered for

Safety Requirements for Scaffolding: OSHA Standard 1910.28

use as brackets to carry not more than two planks.

- Cross bracing must be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically. Such bracing must extend diagonally from the inner and outer runners upward to the next outer and inner runners.
- Longitudinal diagonal bracing must be installed at approximately a 45-degree angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing must be duplicated beginning at every fifth post. In a similar manner longitudinal diagonal bracing must also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of this bracing to the posts, it may be attached to the runners.
- The entire scaffold must be tied to and securely braced against the building at intervals not to exceed 30 feet horizontally and 26 feet vertically.
- Guardrails not less than 2 x 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1 x 4-inch lumber or equivalent, and toeboards, must be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards must be a minimum of 4 inches in height. Wire mesh must be installed as indicated under the section "General Requirements for All Scaffolds."

Other Scaffolds

Author's Comment: There are other types of scaffolding (outrigger scaffolds, suspension scaffolds, bracket scaffolds, etc.); however, their use is less common in agriculture.