* **Part Number:** 1926
* **Part Number Title:** Safety and Health Regulations for Construction
* **Subpart:** 1926 Subpart L
* **Subpart Title:** Scaffolds
* **Standard Number:** [1926.451](https://www.osha.gov/laws-regs/interlinking/standards/1926.451)
* **Title:** General requirements.
* **GPO Source:** [e-CFR](https://www.ecfr.gov/cgi-bin/text-idx?SID=65b279ee2e7530009034c1f152d451e5&tpl=/ecfrbrowse/Title29/29tab_02.tpl)

This section does not apply to aerial lifts, the criteria for which are set out exclusively in § 1926.453.

[1926.451(a)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28a%29)

***Capacity***.

[1926.451(a)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28a%29%281%29)

Except as provided in paragraphs (a)(2), (a)(3), (a)(4), (a)(5) and (g) of this section, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

[1926.451(a)(5)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28a%29%285%29)

The stall load of any scaffold hoist shall not exceed 3 times its rated load.

[1926.451(a)(6)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28a%29%286%29)

Scaffolds shall be designed by a qualified person and shall be constructed and loaded in accordance with that design. Non-mandatory appendix A to this subpart contains examples of criteria that will enable an employer to comply with paragraph (a) of this section.

[1926.451(b)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29)

***Scaffold platform construction***.

[1926.451(b)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%281%29)

Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:

[1926.451(b)(1)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%281%29%28i%29)

Each platform unit (e.g., scaffold plank, fabricated plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (2.5 cm) wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).

1926.451(b)(1)(ii)

Where the employer makes the demonstration provided for in paragraph (b)(1)(i) of this section, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9½ inches (24.1 cm).

Exception to paragraph (b)(1): The requirement in paragraph (b)(1) to provide full planking or decking does not apply to platforms used solely as walkways or solely by employees performing scaffold erection or dismantling. In these situations, only the planking that the employer establishes is necessary to provide safe working conditions is required.

[1926.451(b)(2)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%282%29)

Except as provided in paragraphs (b)(2)(i) and (b)(2)(ii) of this section, each scaffold platform and walkway shall be at least 18 inches (46 cm) wide.

[1926.451(b)(2)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%282%29%28i%29)

Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches (30 cm) wide. There is no minimum width requirement for boatswains' chairs.

Note to paragraph (b)(2)(i): Pursuant to an administrative stay effective November 29, 1996 and published in the Federal Register on November 25, 1996, the requirement in paragraph (b)(2)(i) that roof bracket scaffolds be at least 12 inches wide is stayed until November 25, 1997 or until rulemaking regarding the minimum width of roof bracket scaffolds has been completed, whichever is later.

[1926.451(b)(2)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%282%29%28ii%29)

Where scaffolds must be used in areas that the employer can demonstrate are so narrow that platforms and walkways cannot be at least 18 inches (46 cm) wide, such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.

[1926.451(b)(3)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%283%29)

Except as provided in paragraphs (b)(3) (i) and (ii) of this section, the front edge of all platforms shall not be more than 14 inches (36 cm) from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used in accordance with paragraph (g) of this section to protect employees from falling.

[1926.451(b)(3)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%283%29%28ii%29)

The maximum distance from the face for plastering and lathing operations shall be 18 inches (46 cm).

[1926.451(b)(4)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%284%29)

Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches (15 cm).

[1926.451(b)(5)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%285%29) [1926.451(b)(5)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%285%29%28i%29)

Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches (30 cm) unless the platform is designed and installed so that the cantilevered portion of the platform is able to support employees and/or materials without tipping or has guardrails which block employee access to the cantilevered end.

[1926.451(b)(5)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%285%29%28ii%29)

Each platform greater than 10 feet in length shall not extend over its support more than 18 inches (46 cm), unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping or has guardrails which block employee access to the cantilevered end.

[1926.451(b)(8)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28b%29%288%29)

At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform.

1926.451(b)(9)

Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

1926.451(b)(10)

Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.

1926.451(b)(11)

Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component to a level below that required by paragraph (a)(1) of this section.

[1926.451(c)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29)

***Criteria for supported scaffolds***.

[1926.451(c)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%281%29)

Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

[1926.451(c)(1)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%281%29%28i%29)

Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

[1926.451(c)(1)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%281%29%28ii%29)

Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet (6.1 m) or less thereafter for scaffolds 3 feet (0.91 m) wide or less, and every 26 feet (7.9 m) or less thereafter for scaffolds greater than 3 feet (0.91 m) wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9.1 m) (measured from one end [not both] towards the other).

[1926.451(c)(1)(iii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%281%29%28iii%29)

Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

[1926.451(c)(2)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%282%29)

Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

[1926.451(c)(2)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%282%29%28i%29)

Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

1926.451(c)(2)(ii)

Unstable objects shall not be used to support scaffolds or platform units.

[1926.451(c)(2)(iii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%282%29%28iii%29)

Unstable objects shall not be used as working platforms.

[1926.451(c)(2)(iv)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%282%29%28iv%29)

Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

[1926.451(c)(2)(v)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%282%29%28v%29)

Fork-lifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the fork-lift is not moved horizontally while the platform is occupied.

[1926.451(c)(3)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28c%29%283%29)

Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

[1926.451(e)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29)

***Access***. This paragraph applies to scaffold access for all employees. Access requirements for employees erecting or dismantling supported scaffolds are specifically addressed in paragraph (e)(9) of this section.

[1926.451(e)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%281%29)

When scaffold platforms are more than 2 feet (0.6 m) above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Crossbraces shall not be used as a means of access.

[1926.451(e)(2)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29)

Portable, hook-on, and attachable ladders (Additional requirements for the proper construction and use of portable ladders are contained in subpart X of this part - Stairways and Ladders):

[1926.451(e)(2)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29%28i%29)

Portable, hook-on, and attachable ladders shall be positioned so as not to tip the scaffold;

[1926.451(e)(2)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29%28ii%29)

Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches (61 cm) above the scaffold supporting level;

[1926.451(e)(2)(iii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29%28iii%29)

When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they shall have rest platforms at 35-foot (10.7 m) maximum vertical intervals.

[1926.451(e)(2)(iv)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29%28iv%29)

Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold used;

[1926.451(e)(2)(v)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29%28v%29)

Hook-on and attachable ladders shall have a minimum rung length of 11½ inches (29 cm); and

[1926.451(e)(2)(vi)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%282%29%28vi%29)

Hook-on and attachable ladders shall have uniformly spaced rungs with a maximum spacing between rungs of 16¾ inches.

Ramps and walkways.

1926.451(e)(5)(i)

Ramps and walkways 6 feet (1.8 m) or more above lower levels shall have guardrail systems which comply with subpart M of this part - Fall Protection;

1926.451(e)(5)(ii)

No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).

1926.451(e)(5)(iii)

If the slope of a ramp or a walkway is steeper than one (1) vertical in eight (8) horizontal, the ramp or walkway shall have cleats not more than fourteen (14) inches (35 cm) apart which are securely fastened to the planks to provide footing.

[1926.451(e)(6)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%286%29)

Integral prefabricated scaffold access frames shall:

[1926.451(e)(6)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%286%29%28i%29)

Be specifically designed and constructed for use as ladder rungs;

[1926.451(e)(6)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%286%29%28ii%29)

Have a rung length of at least 8 inches (20 cm);

1926.451(e)(6)(iii)

Not be used as work platforms when rungs are less than 11½ inches in length, unless each affected employee uses fall protection, or a positioning device, which complies with § 1926.502;

[1926.451(e)(6)(iv)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%286%29%28iv%29)

Be uniformly spaced within each frame section;

1926.451(e)(6)(v)

Be provided with rest platforms at 35-foot (10.7 m) maximum vertical intervals on all supported scaffolds more than 35 feet (10.7 m) high; and

[1926.451(e)(6)(vi)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%286%29%28vi%29)

Have a maximum spacing between rungs of 16¾ inches (43 cm). Non-uniform rung spacing caused by joining end frames together is allowed, provided the resulting spacing does not exceed 16¾ inches (43 cm).

[1926.451(e)(7)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%287%29)

Steps and rungs of ladder and stairway type access shall line up vertically with each other between rest platforms.

1926.451(e)(8)

Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches (36 cm) horizontally and not more than 24 inches (61 cm) vertically from the other surface.

[1926.451(e)(9)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%289%29)

Effective September 2, 1997, access for employees erecting or dismantling supported scaffolds shall be in accordance with the following:

[1926.451(e)(9)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%289%29%28i%29)

The employer shall provide safe means of access for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

[1926.451(e)(9)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%289%29%28ii%29)

Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.

[1926.451(e)(9)(iii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%289%29%28iii%29)

When erecting or dismantling tubular welded frame scaffolds, (end) frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.

[1926.451(e)(9)(iv)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28e%29%289%29%28iv%29)

Cross braces on tubular welded frame scaffolds shall not be used as a means of access or egress.

[1926.451(f)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29)

***Use***.

[1926.451(f)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%281%29)

Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

1926.451(f)(2)

The use of shore or lean-to scaffolds is prohibited.

[1926.451(f)(3)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%283%29)

Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

[1926.451(f)(4)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%284%29)

Any part of a scaffold damaged or weakened such that its strength is less than that required by paragraph (a) of this section shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.

1926.451(f)(5)

Scaffolds shall not be moved horizontally while employees are on them, unless they have been designed by a registered professional engineer specifically for such movement or, for mobile scaffolds, where the provisions of § 1926.452(w) are followed.

[1926.451(f)(6)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%286%29)

The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than as follows:

| Handling of exposed and energized power lines - table 1 |
| --- |
| **Insulated lines voltage** | **Minimum distance** | **Alternatives** |
| Less than 300 volts | 3 feet (0.9 m) | - |
| 300 volts to 50 kv | 10 feet (3.1m) | - |
| More than 50 kv | 10 feet (3.1 m) plus 0.4 inches (1.0 cm) for each 1 kv over 50 kv | 2 times the length of the line insulator, but never less than 10 feet (3.1 m). |
| Handling of exposed and energized power lines - table 2 |
| **Uninsulated lines voltage** | **Minimum distance** | **Alternatives** |
| Less than 50 kv | 10 feet (3.1 m) | - |
| More than 50 kv | 10 feet (3.1 m) plus 0.4 inches (1.0 cm) for each 1 kv over 50 kv | 2 times the length of the line insulator, but never less than 10 feet (3.1 m). |

Exception to paragraph (f)(6): Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, and only after the utility company, or electrical system operator, has been notified of the need to work closer and the utility company, or electrical system operator, has deenergized the lines, relocated the lines, or installed protective coverings to prevent accidental contact with the lines.

[1926.451(f)(7)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%287%29)

Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.

1926.451(f)(8)

Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

1926.451(f)(9)

Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.

[1926.451(f)(12)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%2812%29)

Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

[1926.451(f)(13)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%2813%29)

Debris shall not be allowed to accumulate on platforms.

1926.451(f)(14)

Makeshift devices, such as but not limited to boxes and barrels, shall not be used on top of scaffold platforms to increase the working level height of employees.

[1926.451(f)(15)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%2815%29)

Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds where employers have satisfied the following criteria:

1926.451(f)(15)(i)

When the ladder is placed against a structure which is not a part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder;

1926.451(f)(15)(ii)

The platform units shall be secured to the scaffold to prevent their movement;

[1926.451(f)(15)(iii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%2815%29%28iii%29)

The ladder legs shall be on the same platform or other means shall be provided to stabilize the ladder against unequal platform deflection, and

1926.451(f)(15)(iv)

The ladder legs shall be secured to prevent them from slipping or being pushed off the platform.

[1926.451(f)(16)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28f%29%2816%29)

Platforms shall not deflect more than 1⁄60 of the span when loaded.

[1926.451(g)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29)

***Fall protection***.

[1926.451(g)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%281%29)

Each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level. Paragraphs (g)(1) (i) through (vii) of this section establish the types of fall protection to be provided to the employees on each type of scaffold. Paragraph (g)(2) of this section addresses fall protection for scaffold erectors and dismantlers.

[1926.451(g)(1)(iv)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%281%29%28iv%29)

Each employee on a self-contained adjustable scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by ropes;

[1926.451(g)(1)(v)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%281%29%28v%29)

Each employee on a walkway located within a scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) installed within 9½ inches (24.1 cm) of and along at least one side of the walkway.

[1926.451(g)(1)(vi)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%281%29%28vi%29)

Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by the use of a personal fall arrest system or guardrail system (with minimum 200 pound toprail capacity).

[1926.451(g)(4)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28i%29)

Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crews.

[1926.451(g)(4)(ii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28ii%29)

The top edge height of toprails or equivalent member on supported scaffolds manufactured or placed in service after January 1, 2000 shall be installed between 38 inches (0.97 m) and 45 inches (1.2 m) above the platform surface. The top edge height on supported scaffolds manufactured and placed in service before January 1, 2000, and on all suspended scaffolds where both a guardrail and a personal fall arrest system are required shall be between 36 inches (0.9 m) and 45 inches (1.2 m). When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of paragraph (g)(4).

1926.451(g)(4)(iii)

When midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.

1926.451(g)(4)(iv)

When midrails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface.

[1926.451(g)(4)(v)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28v%29)

When screens and mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.

[1926.451(g)(4)(vi)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28vi%29)

When intermediate members (such as balusters or additional rails) are used, they shall not be more than 19 inches (48 cm) apart.

[1926.451(g)(4)(vii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28vii%29)

Each toprail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least 100 pounds (445 n) for guardrail systems installed on single-point adjustable suspension scaffolds or two-point adjustable suspension scaffolds, and at least 200 pounds (890 n) for guardrail systems installed on all other scaffolds.

[1926.451(g)(4)(viii)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28viii%29)

When the loads specified in paragraph (g)(4)(vii) of this section are applied in a downward direction, the top edge shall not drop below the height above the platform surface that is prescribed in paragraph (g)(4)(ii) of this section.

[1926.451(g)(4)(ix)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28g%29%284%29%28ix%29)

Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the midrail or other member of at least 75 pounds (333 n) for guardrail systems with a minimum 100 pound toprail capacity, and at least 150 pounds (666 n) for guardrail systems with a minimum 200 pound toprail capacity.

1926.451(g)(4)(xi)

Guardrails shall be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

1926.451(g)(4)(xii)

The ends of all rails shall not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.

1926.451(g)(4)(xiii)

Steel or plastic banding shall not be used as a toprail or midrail.

1926.451(g)(4)(xiv)

Manila or plastic (or other synthetic) rope being used for toprails or midrails shall be inspected by a competent person as frequently as necessary to ensure that it continues to meet the strength requirements of paragraph (g) of this section.

1926.451(g)(4)(xv)

Crossbracing is acceptable in place of a midrail when the crossing point of two braces is between 20 inches (0.5 m) and 30 inches (0.8 m) above the work platform or as a toprail when the crossing point of two braces is between 38 inches (0.97 m) and 48 inches (1.3 m) above the work platform. The end points at each upright shall be no more than 48 inches (1.3 m) apart.

[1926.451(h)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28h%29)

***Falling object protection***.

[1926.451(h)(1)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28h%29%281%29)

In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

[1926.451(h)(2)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28h%29%282%29)

Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

1926.451(h)(2)(i)

The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area; or

1926.451(h)(2)(ii)

A toeboard shall be erected along the edge of platforms more than 10 feet (3.1 m) above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of ¾ × 1½ inch (2 × 4 cm) wood or equivalent may be used in lieu of toeboards;

1926.451(h)(2)(iii)

Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below; or

1926.451(h)(2)(iv)

A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or

1926.451(h)(2)(v)

A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

1926.451(h)(3)

Canopies, when used for falling object protection, shall comply with the following criteria:

1926.451(h)(3)(i)

Canopies shall be installed between the falling object hazard and the employees.

1926.451(h)(3)(ii)

When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension

[1926.451(h)(4)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28h%29%284%29)

Where used, toeboards shall be:

[1926.451(h)(4)(i)](https://www.osha.gov/laws-regs/interlinking/standards/1926.451%28h%29%284%29%28i%29)

Capable of withstanding, without failure, a force of at least 50 pounds (222 n) applied in any downward or horizontal direction at any point along the toeboard (toeboards built in accordance with appendix A to this subpart will be deemed to meet this requirement); and

1926.451(h)(4)(ii)

At least three and one-half inches (9 cm) high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be securely fastened in place at the outermost edge of the platform and have not more than ¼ inch (0.7 cm) clearance above the walking/working surface. Toeboards shall be solid or with openings not over one inch (2.5 cm) in the greatest dimension.