

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 1 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Subchapter 7. General Industry Safety Orders  
Group 1. General Physical Conditions and Structures  
Article 1. Definitions

**Amend Section 3207 to add the following definitions within the existing definitions in alphabetical order:**

§3207. Definitions.

(a) The following terms are defined for general use in these regulations; specialized definitions appear in individual articles. (See Definitions in the Index)

\*\*\*\*\*

Agricultural Building. *[No change in text]*

~~Alternating Tread Stairs. A stair on which the treads are approximately one half the width of the stair and alternate from right to left, consecutively, for the length of the stair.~~

Alternating Tread-Type Stair. A type of fixed industrial stairs that has a series of steps between 50 to 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time. [Definition from building code. Term used in §3234]

*[§1910.21(b)]*

*Alternating Tread-Type Stair. A type of stairway consisting of a series of treads that usually are attached to a center support in an alternating manner such that an employee typically does not have both feet on the same level while using the stairway]*

*[2022, Title 24, Part 2, Chapter 2]*

*Alternating tread device. A device that has a series of steps between 50 to 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time]*

ANSI. *[No change in text]*

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Certified Safety Professional or CSP. *[No change in text]*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 2 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Competent Person.** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Note: Competent person in fall protection, see Section 3210.1

**Court.** *[No change in text]*

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**Emergency Escape Route.** *[No change in text]*

**Equivalent.** ~~An alternate design, feature, device or protective action which provides an equal degree of safety.~~ Alternative designs, equipment, materials or methods, that the employer can demonstrate will provide an equal or greater degree of safety for employees compared to the designs, equipment, materials or methods specified in these Orders. [§1910.21(b), Used in §3209]

**Exit.** *[No change in text]*

**Exit Passageway.** *[No change in text]*

**Failure.** A load refusal, breakage or separation of component parts. A load refusal is the point at which the ultimate strength of a component or object is exceeded. [§1910.21(b), Used in §3209(c), (k), §3210.1(f)(1), Appendix A to §3210.1(c)(7), §3277(j)(6), §3283(e)(2), §3283(e)(3) (e)(B), §3295(e)(2)(M) and (N)]

**Fall Hazard.** Any condition on a walking-working surface that exposes an employee to the risk of harm from a fall on the same level or to a lower level. [§1910.21(b)]

**Fall Protection.** Any equipment, device or system that prevents an employee from falling from an elevation or mitigates the effect of such a fall. [§1910.21(b)]

**Fire Wall.** *[No change in text]*

**Floor Area.** *[No change in text]*

~~**Floor Hole.** Any opening in a floor or platform which is smaller than a floor opening.~~

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 3 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Floor Opening. An opening in any floor or platform, ~~42~~ 2 inches or more in the least horizontal dimension. It includes stairway floor openings, ladderway floor openings, hatchways and chute floor openings. [*§1910.21(b), Used in §3212*]

Flume. [*No change in text*]

\*\*\*\*\*

Guardrail. [*No change in text*]

Handrail. A ~~device~~ rail to be used as a handhold for support. [*§1910.21(b), Used in §3214*]

Hazard, Extra. [*No change in text*]

\*\*\*\*\*

Hazardous Substance. [*No change in text*]

Hoist Area. Any elevated access opening to a walking-working surface through which equipment or materials are loaded or received. [*§1910.21(b), Used in 3212(f)*]

Horizontal Exit. [*No change in text*]

Inaccessible Location. [*No change in text*]

Industrial Stairs. A series of steps leading from one level or floor to another or leading to platforms, pits, boiler rooms, crossovers or around machinery, tanks and other equipment. A series of steps and landings having ~~three~~ two or more risers constitutes an industrial stair or stairway. Ship, spiral, alternating type tread stairs are considered industrial stairs. [*§1910.21(b)*]

Installation. [*No change in text*]

\*\*\*\*

Live Load. [*No change in text*]

Loading/Unloading Rack. A fixed structure (such as a platform, gangway) is necessary for loading or unloading a tank truck or tank car. A loading/unloading rack includes a loading or unloading arm and may include any combination of the following: piping

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 4 of 70

TITLE 8, DIVISION 1, CHAPTER 4

assemblages, valves, pumps, shut-off devices, overfill sensors or personnel safety devices. [From 40 CFR §112.2 <https://www.law.cornell.edu/cfr/text/40/112.2>

*Used in §3210 and §3336, but no federal definition of loading rack]*

Loading Ramp. *[No change in text]*

Lower Level. A surface or area of a lesser elevation to which an employee could fall. Such surfaces or areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, equipment and similar surfaces and structures or portions thereof. *[This definition was the outcome of the fixed ladder AC, §1910.21(b), Used in definition of fall hazard, toeboard, §3210.1(e)(2), §3210.2(b)(2) and (b)(3), 3277(i) and (k)(3), §3336(c)(2), §3656(e)]*

Maximum Intended Load. The total load (weight and force) of all employees, equipment, vehicles, tools, materials and other loads to be applied to a walking-working surface at any one time. *[§1910.21(b), Used in §3209.1(a)(3) §3277(j)(4)(C), §6599(a)(1)]*

Mercantile Occupancy. *[No change in text]*

\*\*\*\*\*

Panic Hardware. *[No change in text]*

~~Personal Fall Arrest System. A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline or suitable combinations of the aforementioned components/devices. (See section 3210.1).~~

~~Personal Fall Protection System. A personal fall protection system includes personal fall arrest systems, positioning device systems, fall restraint systems, safety nets and guardrails. (See section 3210.1).~~

~~Personal Fall Restraint System. A system used to prevent an employee from falling. It consists of an anchorage, connectors and body belt/harness. It may include, lanyards, lifelines and rope grabs designed for that purpose. (See section 3210.1).~~

Platform. An elevated ~~working level~~ walking-working surface for persons. Storage platforms, balconies and open-sided floors are considered platforms for the purpose of these Orders. *[§1910.21(b)]*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 5 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~Positioning Device System. A body belt or body harness system rigged to allow an employee to be supported on an elevated surface, such as a wall and work with both hands free while leaning. (See Positioning System (Work-Positioning System) in section 3210.1).~~

Private Stairway. *[No change in text]*

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Qualified Person, Attendant or Operator. *[No change in text]*

~~Ramp. Inclined passageway connecting two levels and usually used for pedestrian traffic; does not include catwalks or stairs. An inclined walking-working surface used to access another level; does not include catwalks or stairs. [§1910.21(b), Used in §3210, §3270(a)]~~

Ramp, Industrial. *[No change in text]*

\*\*\*\*\*

Rise. *[No change in text]*

Riser. The upright member of a step situated at the back of a lower tread and near the leading edge of the next higher tread, platform or landing. *[§1910.21(b), Used in §3214]*

Rope Access. *[No change in text]*

Rope Access Equipment. *[No change in text]*

~~Runway. An elevated passageway~~ walking-working surface. Runways are sometimes referred to as catwalks, foot walks, elevated walkways, oilers' platforms or maintenance runways. *[§1910.21(b)]*

Shall. *[No change in text]*

Shear Point. *[No change in text]*

~~Ship Stair (Ship Ladder). A fixed ladder within the pitch range of 50 to 75 degrees with the horizontal, equipped with treads and stair rails. A type of fixed industrial stair that is equipped with treads, stair rails and open risers and has a slope that is between 50 and 70 degrees from the horizontal. [§1910.21(b) definition was modified by adding "fixed industrial stairs"]~~

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 6 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Should. *[No change in text]*

Skirt Guard. *[No change in text]*

~~Spiral stairway (Circular Stairway.) One with closed circular form, uniform sector-shaped treads and a supporting column.~~

Spiral Stairs. A series of treads attached to a vertical pole in a winding fashion, usually within a cylindrical space. [§1910.21(b), Used in §3234]

Stair Railing. *[No change in text]*

Stairs. A series of two or more steps. [From 2022, Title 24, Part 2, Chapter 2, §1910.21(b)]

~~Stairway. Two or more risers shall constitute a stairway. One or more flights of stairs, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another. [§1910.21(b), From 2022, T24, Part 2, Chapter 2, Used in §3214 and 3622(f)(8)]~~

Storage Access Aisle. *[No change in text]*

\*\*\*\*\*

Suitable. *[No change in text]*

~~Toeboard. A vertical barrier erected along the open edges of floor openings or floor holes, platforms and runways. A low protective barrier that is designed to prevent materials, tools and equipment from falling to a lower level and protect employees from falling. [§1910.21(b), Used in §3209, § 3212(g), §3622(f)(6)]~~

Toe Plate (deflector type). *[No change in text]*

Traffic Aisle. *[No change in text]*

\*\*\*\*\*

Tread Run. *[No change in text]*

Walking-Working Surface. Any surface on or through which an employee walks, works or gains access to a work area or workplace location. Walking-working surfaces include, but are not limited to, floors, stairways, steps, roofs, ramps, runways, aisles, scaffolds,

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 7 of 70

TITLE 8, DIVISION 1, CHAPTER 4

dock plates and step bolts. Walking-working surfaces include horizontal, vertical and inclined or angled surfaces, but do not include ladders. [See AC on fixed ladders as to why ladder as a WWS was removed, §1910.21(b), Term Used in §3209(c)(1), §3212(f)]

Wall Opening. *[No change in text]*

Water Heater. *[No change in text]*

~~Working Level or Working Area. A platform, walkway, runway, floor or similar area fixed with reference to the hazard and used by employees in the course of their employment. This does not include ladders or portable or temporary means used for access, repair or maintenance, provided such means are removed immediately upon completion of the work. (See Walking-Working Surface).~~

Yard. *[No change in text]*

\*\*\*\*\*

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 8 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Subchapter 7. General Industry Safety Orders  
Group 1. General Physical Conditions and Structures Orders

**Amend Article 2 title as follows:**

Article 2. Standard Specifications, Fall Protection and Falling Object Protection

**Amend Section 3209 as follows:**

§3209. Standard Guardrails ~~and Toeboards.~~ *[Section name will change if the toeboard requirements is relocated]*

(a) Wherever guardrail protection is required, the following standards shall be adhered to except that other types and arrangements of guardrail construction will be acceptable where the height, surface and end projection of the top rail complies with the standard specifications and the closure of the vertical area between the top rail and ~~floor, platform, runway or ramp~~ walking-working surface shall provides protection at least equivalent to that afforded by a mid-rail.

~~(a) (b)~~ A standard guardrail shall consist of top rail, midrail or equivalent protection and posts and shall have a vertical height ~~within the range of 42 inches to 45 inches~~ from the upper surface of the top rail to the ~~floor, platform, runway or ramp level~~ walking-working surface. ~~(Note: the permissible tolerance in height dimensions is one inch).~~ See Figure 3209-1. The top rail shall be smooth-surfaced throughout the length of the railing. The midrail shall be approximately halfway between the top rail and the ~~floor, platform, runway or ramp~~. The ends of the rails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard. ~~(Title 24, Part 2, Section 2-1716(a)).~~ *[Smoothness of the rail is addressed in (d) and midrail is moved to (b)(1)]*

*[Proposal to delete the Note. The 2022 Building Code, Section 1015.3 requires the guards to not be less than 42 inches. A height of 41 inches would not be acceptable under the 2022 Building Code. Height of 42-45 inches would be at least as effective as the federal standard and ANSI/ASSE A1264.1-2007]*

(1)The midrail shall be approximately halfway (within 1 inch tolerance) between the upper surface of the top rail and the walking-working surface; [§1910.29(b)(2)(i)]

*Top rails and midrails shall be installed so that the openings between them are not more than 21 inches*

*[Check with federal OSHA-no upper limit]*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 9 of 70

TITLE 8, DIVISION 1, CHAPTER 4

(2) Where screens, mesh, intermediate vertical members, solid panels, parapets or equivalent intermediate members are used as mid-rail protection, they shall meet the following requirements:

(A) Screens and mesh shall extend from the walking-working surface to the top rail and along the entire opening between top rail supports; [§1910.29(b)(2)(ii)]

(B) Intermediate vertical members (such as balusters) shall be installed so that openings are not more than 19 inches wide. [§1910.29(b)(2)(iii)]

(C) A parapet shall be at least 21 inches high.

(D) Other equivalent intermediate members (such as additional midrails and architectural panels) shall be installed so that the openings are not more than 19 inches in the least dimension. [§1910.29 (b)(2)(iv)]

Note to subsection (b)(1)(C) and (D): Local building regulations may require spacing substantially less than 19 inches wide.

Note: Local building regulations may require 9 inch spacing of midrails.

~~(b) All guardrails and other permissible types, including their connections and anchorage, shall be designed for a live load of 20 pounds per linear foot applied either horizontally or vertically downward at the top rail. Dimensional details of railing members of a few types of construction which comply with this strength requirement are given hereinafter in subsection (c). [Live load requirements are replaced by Subsection (c).]~~

(c) Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied in a downward or outward direction within 2 inches of the top edge, at any point along the top rail. [§1910.29(b)(3), Replaces (b)]

(1) When the 200-pound test load is applied in a downward direction, the top rail of the guardrail system shall not deflect to a height of less than 39 inches above the walking-working surface. [§1910.29(b)(4)]

(2) Midrails, screens, mesh, intermediate vertical members, solid panels and other equivalent intermediate members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the intermediate member without deflecting more than 2 inches. [§1910.29(b)(5)]

(3) Guardrails that rely on friction or ballasted weights shall be secured to the structure.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 10 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*[Board staff to review consensus standard to address ballasted guardrails and evaluate incorporating the standard by reference]*

(4) For operating conditions where railings are liable to receive heavy stresses from crowds, trucking, handling materials, etc., additional strength to the requirements of subsections (c)(1) and (c)(2) shall be provided by use of heavier stock, closer spacing of posts, bracing or other means to ensure the guardrails will withstand the imposed load.  
*[From Note]*

~~NOTE: It is recognized that the minimum value of railing strength here specified is inadequate for safety under operating conditions where railings are liable to receive heavy stresses from crowds, trucking, handling materials, etc. For such conditions, additional strength shall be provided by use of heavier stock, closer spacing of posts, bracing or otherwise.~~

(d) Guardrail systems shall be smooth surfaced to protect employees from injury, such as punctures or lacerations and to prevent catching or snagging of clothing.  
*[§1910.29(b)(6), replaces portion of 3209(a)]*

(e) The ends of the rails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard. *[§1910.29(b)(7), From 3209(a)]*

(f) Steel banding and plastic banding shall not be used for top rails or midrails.  
*[§1910.29(b)(8)]*

(g) Top rails and midrails shall be at least 0.25 inches in diameter or in thickness.  
*[§1910.29(b)(9)]*

(h) Railing members shall be framed in such a position that they will afford the greatest support and protection, for example, top rails of structural steel angles shall have the outside face of vertical leg located on the side adjacent to the side of normal contact by the employee. ~~(Title 24, Part 2, Section 2-1716(b).)~~

~~(e)~~(i) The following are some acceptable guardrail specifications: other combinations will be accepted as long as equivalent strength and protection are maintained. See Figure 3209-2

(1) In wooden construction, the posts to be of at least 2-inch by 4-inch nominal material spaced not to exceed 6 feet, the top rails to be smooth with corners rounded and not less than 2-inch by 4-inch nominal material. The posts may be spaced on 8-foot centers if the top rails consist of double 1-inch by 4-inch nominal boards, provided that 1 board

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 11 of 70

TITLE 8, DIVISION 1, CHAPTER 4

is fastened in a flat position on top of the posts and the other is fastened in an edge-up position to the inside of the posts and the side of the top board. Single midrails, where permitted, shall be not less than 2-inch by 4-inch nominal material and installed on the contact side of the guardrail.

(2) If constructed of standard metal pipe, the top rails and single midrail, where permitted, to be 1 1/2-inch outside diameter or larger. The posts to be 1 1/2-inch outside diameter or larger, the spacing not to exceed 8 feet.

(3) Guardrails installed on or before May 26, 2011. If constructed of structural metal, the top rails to be angle iron of at least 2-inch by 2-inch by 1/4-inch angles or other metal shapes of equivalent bending strength; and the single midrail, where permitted, to be iron or steel of at least 2-inch by 2-inch by 1/4-inch angles or other metal shapes of equivalent strength. The posts to be angle iron of at least 2-inch by 2-inch by 1/4-inch stock, the spacing not to exceed 8 feet.

(4) Guardrails installed after May 26, 2011. If constructed of structural metal, the top rails to be angle iron of at least 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent bending strength; and the single midrail, where permitted, to be iron or steel of at least 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent strength. The posts to be angle iron of at least 2-inch by 2-inch by 3/8-inch stock, the spacing not to exceed 8 feet.

~~(d) Where toeboards are required, they shall be constructed of wood, concrete, metal or other suitable material. Where constructed of metal grille, mesh shall not exceed 1-inch. The top of the toeboard shall be not less than 3 1/2 inches above the platform, walkway or other working level and the bottom clearance shall not exceed 1/4-inch. [Items separated and re-ordered in subsection (k)]~~

~~Note: Where materials are piled, higher toeboards or paneling from floor to intermediate rails or top rail shall be provided where necessary for safety. (Title 24, Part 2, Section 2-1753.)~~

~~**(i)(i) Toeboards shall meet the requirements of section 3210.2(b). [Should this be relocated to Section 3210.2 Falling Object Protection? Yes]**~~

~~**(1) Toeboards shall be erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.**  
**[§1910.29(k)(1)(i)]**~~

STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

Page 12 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~(2) Toeboards used for falling object protection shall be constructed of wood, concrete, metal or other suitable material. [From subsection (d), 1910.29(k)(1)(iv)]~~

~~(3) Where constructed of metal grille, mesh shall not exceed 1 inch at its greatest dimension. [From subsection (e)]~~

~~(4) The top of the toeboard shall be not less than 3.5 inches above the walking-working surface. [From subsection (d), §1910.29(k)(1)(ii)]~~

~~(5) Toeboards shall not have more than 2.5 0.25 inches clearance or opening above the walking-working surface. [From subsection (d), §1910.29(k)(2)(iii)]~~

~~(6) Toeboards shall have a minimum height of 2.5 inches when used around vehicle repair, service or assembly pits. Toeboards may be omitted around vehicle repair, service or assembly pits when the employer can demonstrate that a toeboard would prevent access to a vehicle that is over the pit. [§1910.29 (k)(1)(v)]~~

~~(7) Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard. [§1910.29 (k)(1)(vi)]~~

~~(8) Where materials are piled, higher toeboards or paneling from floor to intermediate rails or top rails shall be provided where necessary for safety. [§1910.29 (k)(2)(i)]~~

Figure SG-1

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 13 of 70

TITLE 8, DIVISION 1, CHAPTER 4

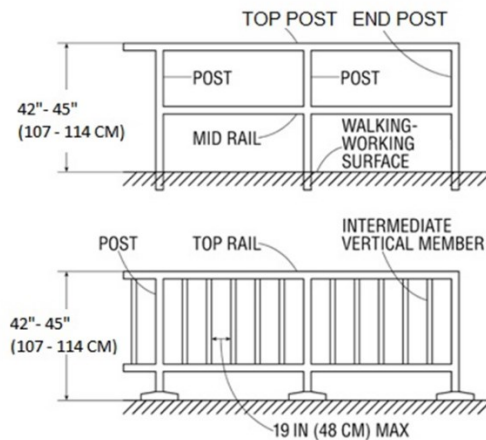


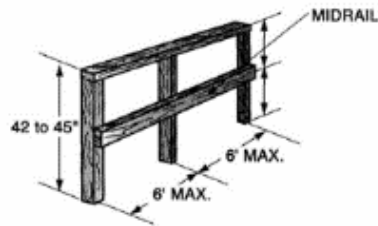
Figure 3209-1 Standard Guardrails

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

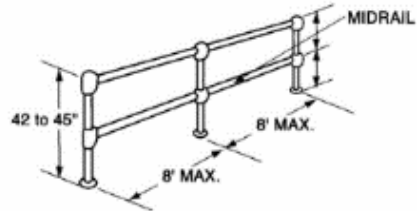
Page 14 of 70

TITLE 8, DIVISION 1, CHAPTER 4

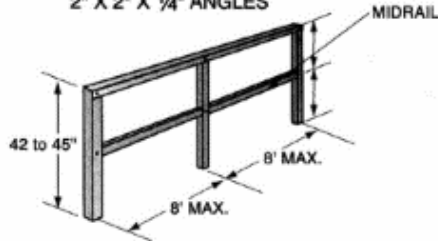
**WOOD POSTS & RAILS**  
2" X 4" NOMINAL OR LARGER



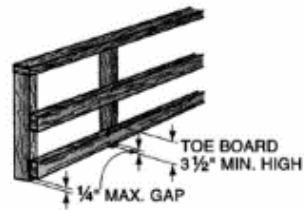
**METAL PIPE POSTS & RAILS**  
1½" O.D. OR LARGER



**STRUCTURAL STEEL POSTS & RAILS**  
2" X 2" X ¼" ANGLES



**TOEBOARD FOR  
ALL GUARDRAILS**



*[Revise the dimension on the wood rail drawing to agree with existing text]*

**SOME ACCEPTABLE INDUSTRIAL GUARDRAILS AND TOEBOARDS**

Figure 3209-2 Examples of Acceptable Industrial Guardrails and Toeboards

NOTE: For additional requirements, see California Building Code, Title 24, Part 2, Volume 2, Chapter 10 and Chapter 16.

Note: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code; and Section 18943(e), Health and Safety Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 15 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Add new Section 3209.1 as follows:**

§3209.1. Grab Handles.

(a) Handholds (Grab Handles). The employer shall ensure that each handhold (grab handle): [§1910.29(l)]

(1) Is not less than 12 inches long: [§1910.29(l)(1)]

(2) Is mounted to provide at least 3 inches of clearance from the framing or opening; and [§1910.29(l)(2)]

(3) Is capable of withstanding a maximum horizontal pull-out force equal to two times the maximum intended load or 200 pounds, whichever is greater. [§1910.29(l)(3)]

Note: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 16 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Amend Section 3210 as follows:

§3210. Guardrails and Fall Protection at Elevated Locations.

(a) Buildings. Guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps or working levels more than 30 inches above the floor, ground or other working areas of a building as defined in Section 3207 of the General Industry Safety Orders. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway or ramp is ~~6~~ 4 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material or equipment.

*[§1910.28(b)(5)(i), §1910.28(c)(1) & §1910.29(k)(1(i)-Toeboards]*

*California Building Code, Part 2, Chapter 10*

*Section 1015.2*

*Guards shall be located along open-sided walking surfaces, including mezzanines, equipment platforms, aisles, stairs ramps and landings that are located more than 30 inches (762mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Guards shall be adequate in strength and attachments in accordance with Section 1607.9*

NOTE: See additional requirements in section 3212.

EXCEPTIONS to subsection (a):

1. Runways used exclusively for oiling, adjusting or otherwise maintaining shafting or other machinery may have the guardrail on the side adjacent to the machinery omitted provided that additional guarding as required by Group 6 Power Transmission Equipment, Prime Movers, Machines and Machine Parts is complied with and each employee is provided with and uses a personal fall arrest system or fall restraint system.  
*[§1910.28(b)(5)(ii)(B), Register 72, No. 6, 2/05/72, Exception was under §3213 Guardrails, subsection (c) Platform and Runways, same language without the underline and referred to Group 4.*

*CA Register 75, No. 25, exception existed essentially same language, without the underline*

*CA Register 73, No 36, 9/4/76*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 17 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*CA Register 77, No 41, 10/8/77*

*CA Register 78, No 30, used guardrail instead of railing]*

2. Stationary elevated platforms secured to buildings or structures used exclusively for the service and maintenance of overhead bridge cranes and similar mobile equipment may be equipped with removable ~~railings in lieu of~~ guardrails on the side adjacent to the machinery provided such railings are secured against falling when they are not serving as a protective railing. In existing installations where clearance prohibits railings on the outside of the platform, railings will be permitted on the building side to serve as ~~handholds~~ grab handles. *[1910.28(a)(2)(iv), CA Register 72, No 6, 2/05/72, Exception existed under §3213 Guardrails, subsection(c), same language without the underline*

*CA Register 73, No 36, 9/4/76*

*CA Register 75, No 25, exception existed same language*

*CA Register no. 77, No 41, 10/8/77]*

3. Portions of loading or storage platforms which are used primarily for loading or unloading railroad cars or trucks or at waterside edges used for cargo handling in compliance with subsection 3336(c)(1). *[§1910.28(b)(1)(iii)]*

*[CA Register 72, No 6, 2/05/72, Exception existed, but were organized differently, same language but without or at waterside edges for cargo handling.*

*CA Register 75, No 25, 6/21/1975. Exception existed, but without “or at waterside edges” for cargo handling.*

*CA Register 76, No 36, 9/4/76*

*CA Register no. 77, No 41, 10/8/77 -still without “or at waterside edges”*

*2022 California Building Code, Part 2, Chapter 10*

*Section 1015.2*

*Guards shall be located along open-sided walking surfaces, including mezzanines, equipment platforms, aisles, stairs ramps and landings that are located more than 30 inches (762mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Guards shall be adequate in strength and attachments in accordance with Section 1607.9*

*Exception 1. On the loading side of loading docks or piers]*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 18 of 70

TITLE 8, DIVISION 1, CHAPTER 4

4. Open-sided platforms or floors used for storage of lumber or other materials may be guarded with movable single rails, sliding panels, gates or other barriers provided they are of strength and design equivalent to guardrails.

*[CA Register 72, No 6, 2/05/72, Exception existed under §3213 Guardrails, subsection(c), same language.*

*CA Register 75, No 25, 6/21/1975, same language as current text*

*CA Register 73, No 36, 9/4/76]*

5. Open sides of storage platforms less than four feet wide or portions thereof which are loaded and unloaded exclusively by means of stackers or lift trucks handling pallet supported loads.

*[CA Register 72, No. 6, 2/05/72, Exception existed under §3213 Guardrails, subsection(c), same language.*

*CA Register 75, No 25, 6/21/1975, same language, no exposure*

*CA Register No. 77, no 41, 10/8/77]*

6. Glazed sides that are in compliance with Section 3242.

*[CA Register 75, no 25, 6/21/1975, same language*

*Section 3242 is outdated*

*2022 Title 24, Section 1015.2.1. Where glass is used to provide a guard or a portion of the guard system. The guard shall comply with section 2407. Where the glazing provided does not meet the strength and attachment requirements of section 1607.9, complying guards shall be located along glazed side of open-sided walking surfaces.*

*2022 Title 24, Section 2407. Glass in Handrails and GuardsGlass used in handrail or a guard shall be laminated glass constructed of fully tempered or heat-strengthened and shall comply with Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1 Glazing in handrail or guard shall be of an approved safety glazing material that conforms with Section 2406.1.1. For all glazing types....*

*Propose to update section 3242. Glass and Glazing to state:*

*Specifications and requirements for glass and glazing installed on or after [OAL Effective Date] shall be in accordance with Title 24, Part 2, Chapter 24. Glass and Glazing]*

7. Open hearth and hot metal pouring platforms.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 19 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*[Register 72, No 6 Exception existed under §3213 Guardrails, subsection(c), same language.*

*Register 75, No 25, 6/21/1975, same language*

*Register 77, No 41, 10/8/77*

*Reached out to California Metals Coalition and American Foundry Society]*

8. Platforms, runways, ramps or other working levels less than 4 feet above floor, ground or other working level constructed prior to January 1, 1967. *[Register 72, no 6, 2/5/72.*

*Register no. 75, 6/21/1975, same language*

*Register 73, no 36, 9/4/76*

*Register no. 77, no 41, 10/8/77*

*Fed trigger height for GISO is 4 feet so this exception is at least as effective]*

9. Theatre galleries, balconies or other such elevated seating locations, where a 42-inch railing would obstruct the sight lines, may be protected by a guardrail or other barrier of not less than 34 inches in height provided that a horizontal concave safety ledge not less than 6 inches in depth and not less than 36 inches in effective width is installed beyond the railing at the balcony floor level. The safety ledge shall be designed to carry a live load of 100 pounds per square foot.

*[Register 72, no. 6, 2/5/1972, exception existed, organized differently, different language*

*Existing platforms, balconies, or other elevated locations prior to 1967, where the prime exposure is to members of the public rather than to employees may be equipped with 36-inch-high railing equivalent strength*

*Register 75, no 25, 6/21/1975, same language as current exception*

*Register 77, no 41, 10/8/77*

*2022 T24, Part 2, Chapter 10. Section 1030 Assembly*

*1030.17.1 Perimeter guards*

*Perimeter guards shall be provided where the footboard or walking surface of seating facilities are more than 30 inches (762 mm) above the floor grade or grade below.*

*Where the seatboards are adjacent to the perimeter, guard height shall be 42 inches*

*(1067mm) high minimum, measured from the seatboard. Where the seats are self*

*rising, guard height shall be 42 inches (1067mm high minimum, measure from the floor*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 20 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*surface. Where there is an aisle between the seating and the perimeter, the guard height shall be measured in accordance with Section 1015.3*

*Exceptions:*

*Guards that impact sightlines shall be permitted to comply with Section 1030.17.3*

*1030.17.3*

*Unless subject to the requirements of Section 1030.17.4, a fascia or railing system in accordance with the guard requirements of Section 1015 and having a minimum height of 26 inches (660mm) shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and fascia or railing would otherwise interfere with sightlines of immediately adjacent seating]*

10. On outside plaza, patio and garden areas, alternate means of protection are acceptable if the same degree of safety is provided.

*[Register 75, 6/21/75, it states that the Division may permit alternate means of protection*

*Register 77, No 41, 10/8/77, same as register 75]*

11. Elevated locations used infrequently by employees if the employees using them are protected by a fall restraint/fall arrest system used in accordance with the requirements in ~~Article 24 of the Construction Safety Orders.~~ section 3210.1.

*[Register 77, No 41, new exception*

*Elevated locations used infrequently by employees if the employee using them are protected by approved safety belts and lanyards securely anchored to a solid structure in a manner which will prevent a free fall exceeding four feet.]*

12. On fire hose drying towers, the top rail may be omitted on the inboard or working side of the platform if the hose drying fingers or hangers are spaced not more than 6 inches apart and extend the full length of the platform along the open or working side to within 6 inches of the end rails. The ends of the fingers or hangers shall be positioned at the same height as prescribed for the top rail and within 5 inches from the vertical projection of the platform edge.

*[Register no. 78, no 30, 07/29/1978, Exception was added*

*Consulting with the Fire Departments]*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 21 of 70

TITLE 8, DIVISION 1, CHAPTER 4

13. On the auditorium side of a stage, raised platforms and other raised floor areas such as runways, ramps and side stages used for entertainment or presentation. At vertical openings in the performance area of stages.

*[2022 California Building Code, Part 2, Chapter 10*

*Section 1015.2*

*Guards shall be located along open-sided walking surfaces, including mezzanines, equipment platforms, aisles, stairs ramps and landings that are located more than 30 inches (762mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Guards shall be adequate in strength and attachments in accordance with Section 1607.9*

*Exceptions*

*2. On the audience sides of stages and raised platforms, including stairs leading up to the stage and raised platforms.*

*4. At vertical openings in the performance area of stages and platforms]*

(b) Other Elevated Locations. The unprotected sides of elevated work locations that are not buildings or building structures where an employee is exposed to a fall of 4 feet or more shall be provided with guardrails. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway or ramp is 6 4 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material or equipment.

**EXCEPTIONS:**

1. Runways used exclusively for oiling, adjusting or otherwise maintaining shafting or other machinery may have the guardrail on the side adjacent to the machinery omitted provided that additional guarding as required by Group 6 Power Transmission Equipment, Prime Movers, Machines and Machine Parts is complied with and each employee is provided with and uses a personal fall arrest system or fall restraint system in accordance with section 3210.1 of these Orders. [§1910.28(b)(5)(ii)(B)]

2. Portions of loading or storage platforms which are placed or located next to railroad cars or trucks and used primarily for loading or unloading railroad cars or trucks or at waterside edges used for cargo handling in compliance with section 3336(c)(1). [Same exception found in 3210(a) Buildings]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 22 of 70

TITLE 8, DIVISION 1, CHAPTER 4

3. Where the employer can demonstrate that the installation of guardrails on the working side of the loading racks, loading dock or teeming platforms is infeasible and the requirements of subsection 3336(c)(1) are met.

NOTE to Exception 3. of subsection (b): Use of dock plate is described in subsection 3336(c)(2). [§1910.28(b)(1), §1910.28(b)(4)(ii)]

~~3~~ 4. Open sides of storage platforms less than four feet wide or portions thereof which are loaded and unloaded exclusively by means of stackers or lift trucks handling pallet supported loads.

~~4~~ 5. Portable platforms, portable or fixed workstands, where used in close quarters which would make the installation of guardrails impracticable, may be provided with removable or hinged railings which can be either removed or swung out of the way during such work. Toeboards may not be required on portable or fixed platforms where the nature of the work requires the employees to sit on the edge of the platform.  
*[Register 76, no 36, 9/4/76, exception existed section 3210(a), because there was no distinction yet between building and other elevated work locations.*

*Register no. 77, no 41, 10/8/77]*

~~5~~ 6. Elevated locations used infrequently by employees if the employees using them are protected by a fall restraint/fall arrest system used in accordance with the requirements in Article 24 of the ~~Construction Safety Orders~~, section 3210.1.

~~6~~ 7. Flumes when they are accessed by an employee for the purpose of conducting a flume patrol (as defined in ~~§~~section 3207) and provided the employer implements either written administrative procedures or provides alternative means which will control the hazard of an employee fall off the flume.

*[PG&E]*

Flumes when they are accessed by a **qualified** employee for the purpose of conducting a flume patrol (as defined in Section 3207), **provided the employee remains on the existing walkway while conducting the patrol. In addition, the employer shall implement additional written administrative procedures or provide feasible alternative means to control the fall hazard. Inspections performed from a structure's leading edge (side and under flume structure inspections) are prohibited without the use of conventional fall arrest/fall restraint/positioning systems.**

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 23 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*[Edison]*

When flumes are accessed by an employee to conduct repairs or a flume patrol (as defined in Section 3207), and it is infeasible or impracticable to erect guardrails or don appropriate fall protection , then the employer must either:

Implement written administrative procedures; or  
Provide alternative means (i.e., cable railings, handrails, handholds, etc.) that will control the hazard of falling from the flume.

*[This will not be an exception, but a separate subsection]*

For new installation or major renovation after [6 months after OAL effective date], flumes shall be designed and constructed to provide guardrails or other means of fall protection.

*[Action Item: PG&E Edison will meet to consolidate their proposed text to amend exception no. 7. Mike Donlon will provide me contacts to water organizations so that the industry affected by flumes can meet.]*

~~7~~ 8. Belt loaders or conveyors designed and used for access/egress to aircraft shall be equipped with at least one handrail that will furnish a ~~handhold~~ grab handle for anyone grasping it to avoid falling.

~~8~~ 9. Working on or in aircraft wheel wells when the wheel well design does not permit the use of guardrails or other fall protection equipment/devices.

~~9~~ 10. On mobile vehicles/equipment, where the design or work processes make guardrails impracticable, the use of sufficient steps and attached handholds or structural members which allow the user to have a secure hand grasp shall be permitted. Work from the decks, permanent/stationary platforms, runways or walkways of mobile vehicles/equipment shall be excluded from the requirements of subsection (b) where it can be shown that guardrails or handholds are impracticable by the design or work processes.

~~10~~ 11. Where design or erection, dismantling, inspection, repair, maintenance and adjustment processes make installation of guardrails impracticable on portable amusement rides, employees shall be provided and shall install and use personal fall protection equipment in accordance with the requirements of ~~Section 1670 of the Construction Safety Orders~~ section 3210.1.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 24 of 70

TITLE 8, DIVISION 1, CHAPTER 4

12. Telecommunications work covered by section 8615 of the Telecommunication Safety Orders. [1910.28(a)(vi)]

13. Electric power generation, transmission and distribution work covered by sections 2320.8 and 2940.6 of the Electrical Safety Orders.

~~(c) Where the guardrail requirements of subsections (a) and (b) are impracticable due to machinery requirements or work processes, an alternate means of protecting employees from falling, such as personal fall protection systems, shall be used.~~

(c) Where the guardrail requirements of subsections (a) and (b) are infeasible due to machinery requirements or work processes and the exceptions to 3210(a) and 3210(b) do not apply, employees shall be protected from falls by covers, safety net systems or personal fall protection systems. [Comma was added before employees]

(d) Openings in guardrails for ladderway access shall be protected as required by ~~S~~subsection 3212(d). *[Double check the subsection after discussions on section 3212]*

*[Action Item: Side by side of Exceptions for the Feds and Title 8 to determine if any exceptions can be deleted or justified]*

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 25 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Add new Section 3210.1 as follows:**

§3210.1. Personal Fall Protection Systems.

*[The creation of a new Section in GISO would mean that there would be a personal fall protection standard in T8, CSO and GISO. Existing fall protection requirements in Article 6 were relocated to this section.]*

(a) Scope and application. This section establishes performance, care and use criteria for all personal fall protection systems. The employer shall ensure that each personal fall protection system used to comply with these Orders meets the requirements of this section. [§1910.140(a)]

(1) For additional requirements for ladder safety systems, see section 3277 for Fixed Ladders.

*[Add note or cross-reference to window washing]*

(b) Definitions.

Activation Distance. The distance traveled by a fall arrestor or the amount of line payed out by a self-retracting lanyard (SRD) from the point of onset of fall to the point where the arrestor or self-retracting lifeline begins to apply a braking or stopping force. [From ANSI Z359.0-2023]

Anchorage. A secure point of attachment for equipment such as lifelines, lanyards or deceleration devices. [§1910.140(b), deleted definition in §3281]

*[Action Item: Add definition from ANSI Z359.0-2023]*

Anchorage Connector. A component or subsystem that functions as an interface between the anchorage and a fall protection, work positioning, rope access or rescue system for the purpose of coupling the system to the anchorage.

Body Belt. A strap with means both for securing about the waist and for attaching to other components such as a lanyard used with positioning systems, travel restraint systems or ladder safety systems. [§1910.140(b), deleted definition in §3281]

Body Harness. Straps that secure about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders, with a means for attaching the harness to other components of a personal fall protection system. [§1910.140(b), deleted def from §3281]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 26 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Carabiner. A connector generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object and, when released, automatically closes to retain the object. [§1910.140(b)]

Competent Person (Fall Protection). A person who is capable of identifying existing and predictable hazards in any personal fall protection system or any component of it, as well as in their application and uses with related equipment and who has authorization to take prompt, corrective action to eliminate the identified hazards. [§1910.140(b)]

Connector. A device used to couple (connect) parts of the fall protection system together. [§1910.140(b), deleted definition in §3281]

D-ring (dee ring). A connector used: [§1910.140(b)]

(1) In a harness as an integral attachment element or fall arrest attachment;

(2) In a lanyard, energy absorber, lifeline or anchorage connector as an integral connector; or

(3) In a positioning or fall restraint system as an attachment element.

Deceleration Device. Any mechanism that serves to dissipate energy during a fall. [§3281 and §1910.140(b)]

Deceleration Distance. The vertical distance a falling employee travels from the point at which the deceleration device begins to operate, excluding lifeline elongation and free fall distance, until stopping. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall and the location of that attachment point after the employee comes to a full stop. [§1910.140(b)]

Free Fall. The act of falling before a personal fall arrest system begins to apply force to arrest the fall. [§1910.140(b)]

Free Fall Distance. The vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, lifeline and lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before the devices operate and fall arrest forces occur. [§3281 and §1910.140(b)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 27 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Lanyard. A flexible line of rope, wire rope or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline or anchorage. [§1910.21(b), deleting definition in §3281]

Lifeline. A component of a personal fall protection system consisting of a flexible line for connection to an anchorage at one end so as to hang vertically (vertical lifeline) or for connection to anchorages at both ends so as to stretch horizontally (horizontal lifeline) and serves as a means for connecting other components of the system to the anchorage. [§1910.140(b) and §3281]

Personal Fall Arrest System. A system used to arrest an employee in a fall from a walking-working surface. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline or suitable combinations of the aforementioned components/devices. [Moved from 3207 and 3281, §1910.21(b), §1910.140(b)]

Personal Fall Protection System. A system (including all components) an employer uses to provide protection from falling or to safely arrest an employee's fall if one occurs. Examples of personal fall protection systems include personal fall arrest systems, positioning systems and travel restraint systems. [§1910.140(b), deleted definition in §3207]

Personal Fall Restraint (Tether) Line. A line constituent used to transfer forces from a body support to an anchorage or anchorage connector in a fall restraint system. [§1910.140(b)-travel restraint (tether) line]

Personal Fall Restraint System. A combination of an anchorage, anchorage connector, lanyard (or other means of connection) and body support that an employer uses to eliminate the possibility of an employee going over the edge of a walking-working surface. [§1910.21(b)-travel restraint system]

Positioning System (Work-Positioning System). A system of equipment and connectors that, when used with a body harness or body belt, allows an employee to be supported on an elevated vertical surface, such as a wall or windowsill and work with both hands free. Positioning systems are also called "positioning system devices" and "work-positioning equipment." [Deleted definition in §3207, §1910.21(b)]

Rope Grab. A fall protection component which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking or both. [§1910.140(b)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 28 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Self-Retracting Device (SRD). A device that contains a drum wound line that automatically locks during the course of a fall to arrest the user, but that pays out from and automatically retracts onto the drum during normal movement of the person whom the line is attached. After onset of a fall, the device automatically locks the drum and arrests the fall when mounted overhead. Self-retracting devices include self-retracting lanyards (SRLs), self-retracting with integral rescue capability (SRL-Rs), self-retracting lanyards, personal (SRL-Ps) and hybrid combinations of these devices.

NOTE: Normally, an SRD pays out from and automatically retracts onto the drum during movement of the person to whom the line is attached. When mounted overhead, the device automatically locks the drum and arrests the fall after the onset of the fall. When not mounted overhead, the device likely will not lock until the device is vertically above the person for whom the line is attached. The arrest distance is a metric which measures the activation distance plus the deceleration distance. SRDs anchored overhead (Class 1 devices) will have a very short activation distance. SRDs anchored below the dorsal D-ring or to the walking-working surface will not activate until such time as the falling employee begins extracting the constituent line from the device.  
[Add Class II](#)

*[Definition of SRD different from the federal standard]*

Snaphook. A connector comprised of a hook-shaped body with a normally closed gate or similar arrangement that may be manually opened to permit the hook to receive an object. When released, the snaphook automatically closes to retain the object. Opening a snaphook requires two separate actions. Snaphooks are generally one of two types: [§1910.140(b), deleted definition in §3281]

(1) Automatic-locking type (permitted) with a self-closing and self-locking gate that remains closed and locked until intentionally unlocked and opened for connection or disconnection; and [§1910.140(b)]

(2) Non-locking type (prohibited) with a self-closing gate that remains closed, but not locked, until intentionally opened for connection or disconnection. [§1910.140(b)]

Travel Restraint System. See Personal Fall Restraint System.

(c) General Requirements. The employer shall ensure that personal fall protection systems meet the following requirements. Additional requirements for personal fall arrest systems and positioning systems are contained in subsections (d) and (e), respectively. [§1910.140(c)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 29 of 70

TITLE 8, DIVISION 1, CHAPTER 4

(1) Personal Fall protection components and/or systems shall be used in accordance with the manufacturer's instruction.

(2) Connectors shall be drop forged, pressed or formed steel or made of materials with equivalent strength. [From T8 Appendix C to Article 6, Section I (a)(1), §1910.140(c)(1)]

(3) Connectors shall have a corrosion resistant finish and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system. [From T8 Appendix C to Article 6, Section I (c)(2), §1910.140(c)(2), ANSI Z359.12-2019, Section 3.1.1]

(4) When vertical (single point) lifelines are used, each employee shall be attached to a separate lifeline. [From T8, Appendix C to Article 6, Section I (e)(5), §1910.140(c)(3)]

(5) Lanyards and vertical (single point) lifelines shall have a minimum breaking strength of 5,000 pounds. All ends of lifelines or lanyards shall be terminated as per the manufacturer's specifications. Knots shall not be permitted at ends or anywhere along the length of the lanyard or safety line. [From T8 Appendix C to Article 6, Section I (c)(3), §1910.140(c)(4), ANSI Z359.3-2019, Section 3.4.1, 3.3.3]

(6) All self-retracting lifelines and lanyards shall have components capable of sustaining a minimum tensile load of 3,600 pounds applied to the device with the lifeline or lanyard in the fully extended position. [From T8 Appendix C, Section I (c)(4), §1910.140(c)(5), technical correction, see 3.2 of ANSI Z359.14-2021]

(A) Webbing used as a line constituent shall have a minimum breaking strength of 4,500 pounds for Class 1 devices and 5,000 pounds for Class 2 devices. [ANSI Z359.14-2021, 3.1.6. 1]

(B) Class 1 self-retracting devices (SRDs) shall only be anchored above the dorsal attachment. [ANSI Z359.14-2021, 1.4.1 Class 1 and Appendix B, B4.1.1 Anchorage, moved from subsection (c)(8)]

(7) Lanyards that limit free fall distance to 2 feet or less shall have components capable of sustaining a minimum tensile load of 3,600 pounds applied to the device with the lifeline or lanyard in the fully extended position. [Separated from (c)(6)]

(8) D-rings, snaphooks, connectors and carabiners shall be capable of sustaining a minimum tensile load of 5,000 pounds. [From T8 Appendix C of Article 6, Section I (c)(6), §1910.140(c)(7), ANSI Z359.12-2019, Section 3.1.3.1, ANSI 359.0-2023, ANSI 359.12-2019].

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 30 of 70

TITLE 8, DIVISION 1, CHAPTER 4

(9) D-rings, snaphooks and carabiners shall be proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking or incurring permanent deformation. The gate strength of snaphooks and carabiners shall be capable of withstanding a minimum load of 3,600 pounds without the gate separating from the nose of the snaphook or carabiner body by more than 0.125 inches. [From T8 Appendix C to Article 6, Section I (c)(7), §1910.140(c)(8), ANSI Z359.12-2019, Sections 3.1.3.2, 3.1.3.3, 3.1.3.4, 3.1.3.5, 3.1.36, 3.1.6, 3.1.7]

(10) Snaphooks and carabiners shall be the automatic locking type that require at least two separate, consecutive movements to open. [From T8 Appendix C to Article 6, Section I (c)(8) §1910.140(c)(9), ANSI Z359.12-2019, Section 3.1.3]

(11) Snaphooks and carabiners shall not be connected to any of the following unless they are designed for such connections: [§1910.140(c)(10), No T8 equivalent, ANZI Z359.12, Section 7.1]

(A) Directly to webbing, rope or wire rope; [§1910.140(c)(10)(i)]

(B) To each other; [§1910.140(c)(10)(ii)]

(C) To a D-ring to which another snaphook, carabiner or connector is attached; [§1910.140(c)(10)(iii)]

G(D) To a horizontal lifeline; or [§1910.140(c)(10)(iv)]

(E) To any object that is incompatibly shaped or dimensioned in relation to the snaphook or carabiner such that unintentional disengagement could occur when the connected object depresses the snaphook or carabiner gate, allowing the components to separate. [§1910.140(c)(10)(v)]

(12) The employer shall ensure that each horizontal lifeline system: [From T8 Appendix C of Article 6, Section I (c)(9), §1910.140(c)(11), ANZI Z359.2, Section 9.3.5]

(A) Horizontal lifeline (HLL) systems shall be designed by a qualified professional engineer experienced in the design of horizontal lifelines as part of a complete personal fall protection system with a safety factor of at least two. The HLL system shall be installed by a qualified person and used under the supervision of a competent person.

(B) The forces used for horizontal lifeline designs shall be based on empirically determined test data shown in documentation associated with the manufacturer's instructions or forces that are determined using the analytical methods included in

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 31 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Section 8.3 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, which is hereby incorporated by reference.

(C) Drawings and specifications in accordance with Section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems applicable to each horizontal lifeline shall be maintained and readily-available when the HLL is in use

(D) As an alternative to (C), the employer shall have documentation from the manufacturer or other sources that provides at least the following:

1. Type of active systems being used (i.e., fall arrest or fall restraint)\*
2. Maximum number of users on the system and the corresponding maximum load capacity for each user, including clothing and tools\*
3. Maximum factored loads (design loads) on each type of anchorage of the horizontal lifeline
4. Maximum personal fall arrest loads permitted on the HLL

Clearances based on the span(s), number and weight of users, type of connecting device and other relevant variables

5. Required sag (if any) or required tension in the HLL
6. Specification for each component of the system\*
7. Any testing or inspection required prior to initial and daily use of the system\*
8. A drawing or written description detailing how and where the horizontal lifeline is to be supported

Note 1: Items in the above list noted by \* are often provided in the manufacturer's instructions.

Note 2: Additional requirements for horizontal lifelines used for building maintenance are included in title 8 section 3299.

(13) Anchorages used to attach to personal fall protection equipment shall be independent of any anchorage used to suspend employees or platforms on which

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 32 of 70

TITLE 8, DIVISION 1, CHAPTER 4

employees work. Anchorages used to attach to personal fall protection equipment on mobile work platforms on powered industrial trucks shall be attached to an overhead member of the platform, at a point located above and near the center of the platform. [§1910.140(c)(12)]

**(14) Anchorage and anchorage connectors shall be capable of supporting at least 5,000 pounds for each employee attached or designed, installed and used, under the supervision of qualified person, as part of a complete personal fall protection system that maintains a safety factor of at least two.**

Anchorage and anchorage connectors shall be capable of supporting at least 5,000 pounds for each employee attached, or designed and installed under the supervision of a qualified person as part of a complete personal fall protection system that maintains a factor of safety of at least two. Anchorage and anchorage connectors shall be used under the supervision of competent person.

*[From T8 Appendix C to Article 6, Section I (c)(10), §1910.140(c)(13), ANSI Z359.2-2017, 9.3.2 Text was revised to separate the responsibility of the qualified person and the competent person]*

EXCEPTION to subsection (c)(15): Window cleaners anchors and fittings covered by section 3283.

(15) Fall restraint lines shall be capable of sustaining a tensile load of at least 5,000 pounds.

*[From §1910.140(c)(14) T8, Appendix C to Article 6, Section I (c)(13)]*

(16) Lifelines shall not be made of natural fiber rope. Polypropylene rope shall contain an ultraviolet (UV) light inhibitor. [From T8 Appendix C to Article 6, Section I (c)(13), §1910.140(c)(15)]

(17) Personal fall protection systems and their components shall be used exclusively for employee fall protection and not for any other purpose, such as hoisting equipment or materials. [From T8 Appendix C to Article 6, Section (e)(6), §1910.140(c)(16), No CSO equivalent]

(18) A personal fall protection system or its components subjected to impact loading shall be removed from service immediately and not used again until a competent person inspects the system or components and determines that it is not damaged and safe for

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 33 of 70

TITLE 8, DIVISION 1, CHAPTER 4

use for employee personal fall protection. [From T8 Appendix C to Article 6, Section I (e)(7), §1910.140(c)(17), ANSI Z359.2-2017, Section 9.4.3]

(19) Personal fall arrest systems shall be inspected before initial use during each work shift for mildew, wear, damage and other deterioration and defective components shall be removed from service. [From T8 Appendix C to Article 6, Section I (f), §1910.140(c)(18), ANZI Z359.2-2017, Section 9.4.2]

(20) Ropes, belts, lanyards and harnesses used for personal fall protection shall be compatible with all connectors used. [From T8 Appendix C to Article 6, Section I (c)(8), §1910.140(c)(19), ANSI Z359.2-2017 Section 5.2.2.1, 5.3.2.1, 5.4.2.1, etc and 9.3.8.2, ANSI Z359.6-2016, Section 4.2.2]

(21) Ropes, belts, lanyards, lifelines and harnesses used for personal fall protection shall be protected from being cut, abraded, melted or otherwise damaged. [From T8 Appendix C to Article 6, Section III (Non-Mandatory) (a) and (h), §1910.140(c)(20), ANSI Z359.2-2017, Section 6.5]

(22) The employer shall provide for prompt rescue of each employee in the event of a fall. [From T8 Appendix C of Article 6, Section I (e)(8), §1910.140(c)(21), ANSI Z359.2-2017, Section 8.3]

(23) Personal fall protection systems shall be worn with the attachment point of the body harness located in the center of the employee's back near shoulder level. The attachment point may be located in the pre-sternal position if the free fall distance is limited to 2 feet or less. [From T8 Appendix C of Article 6 Section I (e)(4), §1910.140(c)(22)]

(d) Personal Fall Arrest Systems. [§1910.140(d)]

(1) System Performance Criteria. [§1910.140(d)(1)]

(A) In addition to the general requirements in subsection (c), personal fall arrest systems shall: [§1910.140(d)(1)]

1. Limit the maximum arresting force on the employee to 1,800 pounds; [From T8 Appendix C of Article 6, Section I (d)(1)(A), §1910.140(d)(1)(i), ANSI Z359.6-2016, Section 4.6.1]

2. Bring the employee to a complete stop and limit the maximum deceleration distance as listed in Table 1: Deceleration Distance or arrest, activate or fall a total distance as

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 34 of 70

TITLE 8, DIVISION 1, CHAPTER 4

listed in Table 2: Arrest, Activation or Total Fall Clearance. The deceleration distance pertains only to the deployment or operation of the deceleration device.

Table 1: Deceleration Distances

<u>Personal Fall Protection Equipment</u>	<u>Deceleration Distance</u>
<u>Energy absorbing lanyard with free fall limited to 6 feet</u>	<u>4 feet</u>
<u>Energy absorbing lanyard with free fall limited to 12 feet</u>	<u>5 feet</u>

Table 2: Arrest, Activation Distance or Total Fall Clearance

<u>Personal Fall Protection Equipment</u>	<u>Distances To Consider In Determining Fall Clearances</u>
<u>Overhead mounted Self-Retracting Devices (SRDs)</u>	<u>Arrest distance limit = 3.5 feet</u>
<u>A below dorsal D-ring mounted self-retracting device</u>	<u>Total fall clearance shall be clearly indicated by manufacturer graphically</u>
<u>Descent controllers</u>	<u>Activation distance limit = 4 feet</u>
<u>Fall arresters</u>	<u>Activation distance limit = 2 feet</u>

3. Have sufficient strength to withstand twice the potential impact force of the employee free falling a distance of 6 feet or the free fall distance permitted by the system; and [From T8 Appendix C of Article 6, Section 1 (d)(1)(C), §1910.140(d)(1)(iii)]

4. Sustain the employee within the system/strap configuration without making contact with the employee's neck and chin area. [§1910.140(d)(1)(iv), No T8 equivalent, ANSI Z359.2-2017, Section 9.2.4]

5. All personal fall arrest, personal fall restraint and positioning device systems purchased or placed in service after [6 months after OAL effective date], shall be labeled as meeting the requirements contained in:

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 35 of 70

TITLE 8, DIVISION 1, CHAPTER 4

[Table 3: List of Consensus Standards](#)

*[Action Item: Check to see if edition year can be deleted]*

Consensus Standard	Edition
ANSI/ASP Z359.3 Requirements for Lanyards and Positioning Lanyards	2019
ANSI/ASSP Z359.4 Safety Requirements for Assisted-Rescue & Self-Rescue Systems, Subsystems and Components	2013 (R2022)
ANSI/ASSP Z359.9 Personal Equipment for Protection Against Falls - Descent Controllers	2021
ANSI/ASSP Z359.11 Safety Requirements for Full Body Harness	2021
ANIS/ASSP Z359.12 Connecting Components for Fall Arrest Systems	2019
ANSI/ASSP Z359.13 Personal Energy Absorbers & Energy Absorbing Lanyards	2013 (R2022)
ANSI/ASSP Z359.14 Self-Retracting Devices for Personal Fall Arrest & Rescue Systems	2021
ANSI/ASSE 359.15 Single Requirements for Single Anchor Lifelines and Fall Arresters for Fall Arrest and Rescue Systems	2014
ANSI/ASP Z359.16 Safety Requirements for Climbing Ladder Fall Arrest Systems	2016
ANSI/ASSP Z359.18 Safety Requirements for Anchorage Connectors for Active Fall Protection	2017

[EXCEPTION: All personal fall arrest, personal fall restraint and positioning device systems that meet the applicable ANSI/ASSP Z359 edition in effect when the equipment was manufactured are deemed as meeting this subsection.](#)

All personal fall arrest, personal fall restraint and positioning devices are deemed as meeting this section if they meet the applicable ANSI/ASSP Z359 edition in effect when the equipment was manufactured.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 36 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*[E-mail was sent November 12, 2024 explaining the rationale for leaving the exception unchanged]*

6. For employees who are outside the user weight capacity range of ANSI/ASSP Z359, the employer shall provide and ensure employees use appropriately rated personal fall protection systems.

*Add a Note for explanation [Thomas Kramer will e-mail me the ANSI criteria]*

NOTE to (d)(A)6.:

1. User capacity range from 130 to 330 lbs are outside the user weight capacity range of ANSI....

2.

(e) System Use Criteria. [§1910.140(d)(2)]

(1) On any horizontal lifeline that may become a vertical lifeline, the device used to connect to the horizontal lifeline shall be capable of locking in both directions on the lifeline.

*[From §1910.140(d)(2)(i), Appendix C of Article 6, Section (e)(2), CSO only applied to suspended scaffolds or similar work platforms.]*

(2) Personal fall arrest systems shall be rigged in such a manner that the employee cannot free fall more than 6 feet or contact a lower level or lower level obstacle.

Exception: When it is not feasible or it creates a greater hazard to limit a free fall to 6 feet, a free fall may be a maximum of 12 feet provided the employer can demonstrate the manufacturer designed the system for the additional free fall distance, tested the system to ensure a maximum arresting force of 1,800 pounds is not exceeded, and that the employee will not contact a lower level or lower level obstacle.

*[From T8 Appendix C of Article 6, Section I (e)(3), §1910.140(d)(2)(ii)]*

(3) Body belts. Body belts shall not be used as part of a personal fall arrest system.  
*[From T8 Appendix C of Article 6, Section (e)(1), [§1910.140(d)(3)]*

(f) Positioning Systems. [§1910.140(e)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 37 of 70

TITLE 8, DIVISION 1, CHAPTER 4

(1) System Performance. All positioning systems shall be capable of withstanding, without failure, a drop test consisting of a 4-foot drop of a 310-pound weight;  
*[§1910.140(e)(1)(i). ANSI Z.359.3, Section 4.2.4, Test weight is 282 pounds, Appendix to 3210.1 calls for 300 pounds weight, where did this test weight come from?]*

EXCEPTION to subsection (f)(1): Window cleaner's positioning system, subsection 3283 (b)(1). [§1910.140(e)(1)(ii)]

~~(2) Positioning systems, including window cleaners' positioning systems, that meet the test methods and procedures in Appendix A to section 3210.1 are considered to be in compliance with subsection (f)(1).~~ *[§1910.140(e)(1)(iii) Do not delete, need to address in the window cleaning section]*

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 38 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Appendix A to Section 3210.1

Non-Mandatory Guidance for Estimating Fall Clearance

*[Unfinished – Work in Progress- ANSI is drafting a technical report]*

Appendix A is intended to provide information to assist employers in complying with Section 3210.1(e)(2)

(e) Systems Use Criteria

(2) Personal fall arrest systems shall be rigged in such a manner that the employee cannot free fall more than 6 feet or contact a lower level or lower level obstacle.

Exception: When it is not feasible or it creates a greater hazard to limit a free fall to 6 feet, a free fall may be a maximum of 12 feet provided the employer can demonstrate the manufacturer designed the system for the additional free fall distance, tested the system to ensure a maximum arresting force of 1,800 pounds is not exceeded, and that the employee will not contact a lower level or lower level obstacle.

Clearance is defined in ANSI/ASSP Z359.0-2018 as “The distance from a specified reference point, such as the working platform or anchorage of a fall arrest system, to the lower level that a worker might encounter during a fall.” Clearance Requirement is defined in ANSI/ASSP Z359.0-2018 as “The distance below an authorized person that must remain clear of obstructions in order to ensure that the authorized person does not make contact with any objects that cause injury in the event of a fall.”

For workers at height utilizing personal fall arrest systems, it is essential to ensure that there is sufficient clearance to prevent contact with a lower level, any object in the worker’s fall path and any object or structure in the worker’s potential swing path.

Accomplishing this objective requires some understanding of the components of clearance so that clearance requirements can be estimated or established. Ideally, when utilizing a personal fall arrest system, the worker’s anchorage should be at the same level or higher than the dorsal D-ring on the worker’s full body harness.

1. The clearance requirement will be the sum of the free fall distance, the deceleration distance or arrest distance and the safety margin.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 39 of 70

TITLE 8, DIVISION 1, CHAPTER 4

- a. The free fall distance is the vertical distance traveled during a fall, measured from the onset of a fall from a walking-working surface to the point at which the personal fall arrest system begins to arrest the fall. Note: The free fall distance is the change in elevation from the worker's starting height to the point at which their personal fall arrest system begins to engage.
  - b. The deceleration distance is the vertical distance between the user's fall arrest attachment at the onset of fall arrest forces during a fall and after the fall arrest attachment comes to a complete stop. Note: The deceleration distance is the additional distance traveled from the point that the personal fall arrest system begins to engage until the falling user/worker is brought to a complete stop and is suspended by their personal fall arrest system at the conclusion of the fall.
  - c. The arrest distance is the total vertical distance required to arrest a fall. The arrest distance includes the activation distance and the deceleration distance. Note: Activation distance is a term most often used with self-retracting devices and fall arresters (rope grabs) and is the distance traveled from the point of the onset of a fall to the point where the self-retracting device or fall arrester (rope grab) begins to apply a braking or stopping force.
  - d. The safety margin is a clearance factor of safety defined as the distance between the lowest extremity of the worker's body at fall arrest and the highest obstruction the worker might otherwise make contact with during a fall. The safety margin is added to the clearance requirement as a buffer to prevent contact with a lower level or an object in the fall path at the conclusion of the fall. Values of 1.5 — 3 feet are most commonly used as a safety margin when calculating clearance.
2. Determining clearance requirements for personal fall arrest systems requires the consideration of many different variables:
- a. Type of equipment in use. Different connecting devices or connecting subsystems (self-retracting devices, energy absorbing lanyards, vertical lifelines and fall arresters (rope grabs) or ladder climbing fall arrest systems) all have different attributes, limitations and performance characteristics.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 40 of 70

TITLE 8, DIVISION 1, CHAPTER 4

- b. Free fall distance. The free fall distance will be determined by the elevation of the anchorage above the walking-working surface and the lateral distance of the anchorage from the fall hazard. The length of the connecting device or connecting subsystem also plays a part in determining free fall distance. Connecting devices or connecting subsystems that have variable length (such as self-retracting devices, vertical lifelines and fall arresters, etc.) can also have an effect on the free fall distance.
- c. Deceleration distance and arrest distance. The deceleration distance and arrest distance will increase with a greater free fall distance and will decrease with a shorter free fall distance.
- d. Activation distance. The activation distance generally decreases with a greater free fall distance and increases with a shorter free fall distance. This does not generally have a tremendous effect on the clearance requirement as it is a component of the arrest distance and is factored into the overall number.
- e. Safety margin. The safety margin is generally a static value dictated by the manufacturer usually between 1.5 and 3 feet. It is important to read and follow manufacturer's instructions.
- f. Other factors. There are a variety of other factors that can have an effect on clearance requirements such as harness fit and adjustment, stretch or elasticity in harnesses and vertical lifelines, deforming anchorages, horizontal lifeline sag and even environmental and weather conditions (hot, cold and wet conditions). It is important to read and follow the manufacturer's instructions for all elements of the personal fall arrest system and to rely on Qualified and Competent Person supervision to ensure that all factors are considered to adequately determine clearance requirements.
- 3. Determining clearance requirements for self-retracting devices. Clearance requirements for self-retracting devices are generally calculated from the height of the walking-working surface.

  - a. Review and adhere to the manufacturer's instructions for use.
  - b. Class 1 self-retracting devices:

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 41 of 70

TITLE 8, DIVISION 1, CHAPTER 4

- i. ~~When anchored above the dorsal D-ring connection, the clearance requirement will be the arrest distance plus the safety margin (42" AD + 24" SM = 66" or 5' 6" Clearance Requirement – see manufacturer's instructions).~~
- ~~AD-Arrest Distance~~
- ~~SM-Safety Margin~~
- ii. ~~When anchored at the level of the dorsal D-ring connection, the clearance requirement will be the free fall distance plus the arrest distance plus the safety margin (24" FF + 42" AD + 24" SM = 90" or 7' 5" Clearance Requirement – see manufacturer's instructions).~~
- ~~FF-Free fall Distance~~
- ~~AD-Arrest Distance~~
- ~~SM-Safety Margin~~
- c. ~~Class 2 self-retracting devices:~~
- i. ~~Class 2 self-retracting devices cannot safely be used without consulting and adhering to manufacturer's instructions.~~
- ii. ~~When anchored at or above the dorsal D-ring connection, the clearance requirements should be similar to those for Class 1 devices in section b. i. and b. ii. above.~~
- iii. ~~When anchored below the dorsal D-ring connection, the clearance requirement will be the free fall distance plus the arrest distance plus the height of the worker plus the safety margin (72" FF + 72" AD + 72" HoW + 24" SM = 240" or 20' Clearance Requirement – see manufacturer's instructions). Note, the arrest distance for Class 2 self-retracting devices can vary widely from one product to another and 16 to 20 feet of clearance is typically required when these devices are anchored at the level of the walking-working surface.~~

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 42 of 70

TITLE 8, DIVISION 1, CHAPTER 4

FF-Free Fall Distance

AD-Arrest Distance

HoW-Height of the Worker

SM-Safety Margin

4. Determining clearance requirements for energy-absorbing lanyards. Clearance requirements for energy-absorbing lanyards are generally calculated from the height of the anchorage connection.
- a. Review and adhere to manufacturer's instructions for use.
  - b. Energy-absorbing lanyards are classified in the ANSI/ASSP Z359 Code based on the amount of free fall distance they can be subjected to (either 6 feet or 12 feet). These are designated as 6FF or 12FF on the product label. It is important to read and adhere to manufacturer's instructions.
  - c. 6FF Energy-absorbing lanyards must be anchored at or above the height of the dorsal D-ring connection to ensure that the free fall does not exceed 6 feet.
    - i. When using a 6FF energy-absorbing lanyard anchored at or above the dorsal D-ring connection, the clearance requirement will be the free fall distance plus the deceleration distance plus the height of the worker plus the safety margin (72" FF + 48" DD + 72" HoW + 24" SM = 216" or 18 feet)

FF-Free Fall Distance

DD-Deceleration Distance

HoW-Height of the Worker

SM-Safety Margin

- ii. When using a 12 FF energy-absorbing lanyard anchored below the dorsal D-ring, it is generally assumed that the anchorage will be affixed to the walking-working surface. The clearance requirement will be the

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 43 of 70

TITLE 8, DIVISION 1, CHAPTER 4

lanyard length plus the deceleration distance plus the height of the worker plus the safety margin (72" FF + 60" DD + 72" HoW + 24" SM = 228" or 19 feet).

- iii. Note that the clearance requirements only differ by one foot in c i and c ii above, but that the anchorage elevation in c i for the 6FF energy-absorbing lanyard is at the dorsal D-ring height, approximately 5 feet above the walking working surface, whereas the anchorage elevation in c ii for the 12 FF energy-absorbing lanyard is at the level of the waking working surface, an elevation of zero feet. The clearance requirement below the waking working surface is only 13 feet for the 6FF energy-absorbing lanyard, but is 19 feet for the 12 FF energy absorbing lanyard.
- iv. Manufacturer's instructions will include guidance, charts and/or other materials to assist with determining clearance requirements.
- 5. Determining clearance requirements for vertical lifelines and fall arresters (rope grabs). Clearance requirements for vertical lifelines and fall arresters are generally calculated from the height of the anchorage connection.
  - a. Review and adhere to manufacturer's instructions for use.
  - b. Vertical lifelines and fall arresters must be anchored at or above the height of the dorsal D-ring connection to ensure that the free fall is minimized to the extent possible and does not exceed 6 feet. Note: Minimizing free fall distance requires anchorage elevation and use of the shortest possible connecting sub-system. A longer lanyard will produce greater free fall and will increase clearance requirements.
    - i. When using a vertical lifeline and fall arrester anchored at or above the dorsal D-ring connection, the clearance requirement will be the free fall distance plus the arrest distance plus the height of the worker plus the safety margin (72" FF + 60" DD + 72" HoW + 24" SM = 228" or 19 feet).

FF-Free Fall Distance

DD-Deceleration Distance

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 44 of 70

TITLE 8, DIVISION 1, CHAPTER 4

HoW Height of the Worker

SM Safety Margin

- ii. The values in this calculation assume that a 6FF energy absorbing lanyard with a length of 6 feet is used as the connecting sub-system and that the maximum free fall of 6 feet is allowed by the manufacturer. Better results can be achieved by using a shorter connecting sub-system.
  - iii. If the anchorage connection and/or the location of the fall arrester on the vertical lifeline is below the user's dorsal D-ring connection, the clearance requirements may be considerably greater than 19 feet.
  - iv. Manufacturer's instructions will include guidance, charts and/or other materials to assist with determining clearance requirements. Users of these systems shall consult with manufacturer's instructions to understand clearance requirements and to get information on allowable or recommended connecting sub-systems.
  - v. It is not unusual for the fall arrester to lock on to the vertical lifeline if ascending or descending rapidly. For best performance, ascend and descend or change positions at a steady and deliberate pace. Do not attempt to manipulate the fall arrester by hand if it locks or snags. Changing direction of travel will usually relieve these conditions. If necessary, use the connecting sub-system if a reset is required by hand — see manufacturer's instructions for guidance and restrictions.
6. Determining clearance requirements for ladder climbing fall arrest systems. Clearance requirements for ladder climbing fall arrest systems are calculated from the initial height of the carrier sleeve (often referred to as a cable grab or trolley) on the carrier (the cable or rail which is affixed to the ladder to facilitate the fall arrest connection while ascending or descending). For climbing ladder systems which employ self-retracting devices, see Section 3 of this document/regulation.
- a. Review and adhere to manufacturer's instructions for use.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 45 of 70

TITLE 8, DIVISION 1, CHAPTER 4

b. Carrier sleeves or cable grabs shall be affixed to the carrier (cable or rail) and connected by the connecting linkage to the user's sternal or chest D-ring on their full body harness. Note: The carrier will trail a climbing user and will precede a descending user by a distance roughly equivalent to the length of the connecting linkage, which shall not exceed 9".

i. When using a climbing ladder fall arrest system, the clearance requirement will be the arrest distance plus the height of the worker plus the safety margin (39" DD + 72" HoW + 24" SM = 135" or 11.25 feet). Note: Due to the short connecting linkage, the user's proximity to the carrier and the variety of executions for carrier sleeve operation and construction, the arrest distance, in this case, includes the values for free fall, activation and deceleration distance.

DD-Deceleration Distance

HoW-Height of the Worker

SM-Safety Margin

ii. Manufacturer's instructions will include guidance, charts and/or other materials to assist with determining clearance requirements. Users of these systems shall consult with manufacturer's instructions to understand clearance requirements and to get information on allowable or recommended connecting sub-systems.

iii. It is not unusual for the carrier sleeve to lock on to the carrier if descending rapidly or to get caught or jammed on a bypass when ascending quickly. For best performance, ascend and descend at a steady and deliberate pace. Do not attempt to manipulate the carrier by hand if it locks or snags. Changing direction of travel will usually relieve these conditions. If necessary, use the connecting linkage if a reset is required by hand – see manufacturer's instructions for guidance and restrictions.

7. Compatibility of systems and components. It is the responsibility of the competent or qualified person to determine if system components are compatible with one another. Be sure to consult manufacturer's instructions with respect to compatibility concerns and use and limitations criteria.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 46 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Add new Section 3210.2 as follows:**

§3210.2. Falling Object Protection. [Replaces §3273(e) & (f), §1910.28(c)]

(a) The employer shall protect employees where there is a hazard from falling objects by implementing one or more of the following: **[1621b]**

(1) Erecting toeboards, screens or paneling on guardrail systems to prevent objects from falling from higher levels.

(A) Where tools, equipment or materials are piled higher than the top of the toeboard and pose a hazard of falling, paneling or screening shall be installed from the toeboard to the midrail of the guardrail system for a length that is sufficient to protect employees below. If the items are piled higher than the midrail, the employer also shall install paneling or screening from the midrail to the top rail for a length that is sufficient to protect employees below; and [§1910.29(k)(2)(i)] [§1910.29(k)(1)(i)]

(B) All openings of paneling or screens on guardrail systems shall ~~be small enough~~ not exceed 1-inch. [§1910.29(k)(2)(ii)]

~~(C) Where toeboards are required, they shall be constructed of wood, concrete, metal, or other suitable material. Where constructed of metal grille, mesh shall not exceed 1-inch. The top of the toeboard shall be not less than 3 1/2 inches above the platform, walkway, or other working level and the bottom clearance shall not exceed 1/4 inch. [Moved from 3209(d)]~~

*[This subsection will need to be revised if toeboard specifications will be moved to subsection (b). Locate all cross reference to toeboard and update to new location]*

(2) Erecting canopy structures. [§1910.28(c)(2)], §3273(e)(1)(A) and (B)]

(A) Canopies used for falling object protection shall be strong enough to prevent collapse and to prevent penetration by falling objects. [§1910.29(k)(3), §1910.28(c)(2), §3273(e)(2)]

(3) Providing a physical barrier such as, but not limited to, fencing, barricades or other equivalent means or methods, to prevent entry into the area to which objects could fall or prohibit employees from entering the barricaded area. [§1910.28(c)(3), 3273(e)(1)(C)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 47 of 70

TITLE 8, DIVISION 1, CHAPTER 4

(4) Where the type of process or operation, exclusive of repair and maintenance, is such that there are hazards to employees from materials falling through platform or runway openings, the openings shall be limited to a size that prevents materials falling through the openings. [§3273(e)(1)(C)(2)]

(5) Where platform or runway gratings are used as work areas during repair or maintenance, there shall be provided at such areas suitable safeguards to prevent tools or materials falling on employees below. Such safeguards may be netting suspended below the work area, canvas, planking on the surface of the grating or barricaded or sheltered areas below the work area. [§3273(e)(1)(C)(3)]

(b) Toeboards. [Relocated from section 3209]

(1) Toeboards shall be erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below. [§1910.29(k)(1)(i)]

(2) Toeboards used for falling object protection shall be constructed of wood, concrete, metal or other suitable material. [From subsection (d)]

(3) Where constructed of metal grille, mesh shall not exceed 1 inch. [From subsection (e)]

(4) The top of the toeboard shall be not less than 3.5 inches above the walking-working surface. [From subsection (d), §1910.29(k)(1)(ii)]

(5) Toeboards shall not have more than ¼ (0.25) inch clearance or opening above the walking-working surface. [From subsection 3209(d), §1910.29(k)(2)(iii)]

(6) Toeboards shall have a minimum height of 2.5 inches when used around vehicle repair, service or assembly pits. Toeboards may be omitted around vehicle repair, service or assembly pits when the employer can demonstrate that a toeboard would prevent access to a vehicle that is over the pit. [§1910.29 (k)(1)(v)]

(7) Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard. [§1910.29 (k)(1)(vi)]

(8) Where materials are piled, higher toeboards or paneling from floor to intermediate rails or top rails shall be provided where necessary for safety. [§1910.29 (k)(2)(i)] **[Move to subsection(b) if relocating toeboards to subsection(b)]**

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 48 of 70

TITLE 8, DIVISION 1, CHAPTER 4

Note: Requirements on toeboards of powered platforms are located in section 3295.

(c) Head Protection.

Employees working in locations where there is a risk of receiving head injuries from flying or falling objects and/or electric shock and burns shall wear approved head protection in accordance with section 3381.

(d) Lowering objects: [§3273(f)]

(1) Where there is employee exposure below an elevated work area, all objects, including materials, equipment and tools shall be lowered in a controlled manner, such as but not limited to using enclosed chutes, material handling equipment or hand lines; or [§3273(f)(1)]

(2) When controlled lowering is not practical or would subject employees to a greater risk of injury, protection from falling objects shall be provided by the use of effective physical barriers, such as but not limited to canopies, fencing, barricades or barrier tape when the barrier tape is attended by a spotter who is authorized to effectively restrict entry into the area and who is on the same level as the area of the exposure or other equivalent means or methods. [§3273(f)(2)]

(A) Signs in accordance with section 3340 shall be posted at the perimeter of the affected work area to warn employees of the hazard. [ §3273(f)(2)(A)]

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

Page 49 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Add new Section 3210.3 as follows:**

§3210.3. Fall Protection Training Requirements. [§1910.30]

(a) ~~Fall hazards.~~ [§1910.30(a)]

(1) ~~Before any employee is exposed to a fall hazard, the employer shall in accordance with section 3203, provide training for each employee who uses personal fall protection systems or who is required to be trained as specified elsewhere in these Orders. Employers shall ensure employees are trained in the requirements of this subsection on or before~~ **six months after OAL effective date**. [§1910.30(a)(1)] Consider extending OAL effective date to 1 year

(a) The employer shall ensure that each employee is trained by a qualified person. [§1910.30(a)(2)]

*[Proposing to delete (3)(A)(B)(C) to be replaced with subsection (c)]*

*Feedback from AC members: Not every employee will install, disassemble, repair fall protection systems. Action Item: Accept or reword the text. Mike Donlon will send wording from a fall protection program and training program (completed)]*

*[Action Item: The committee recommended that the training topics for competent persons be separated from user training]*

(c) The employer shall ensure that the competent person (fall protection) is knowledgeable on the following topics:

(1) The nature of the fall hazards in the work area and how to recognize them; [1910.30(a)(3)(i) Fall hazard identification]

4.4.2 The competent person shall conduct a fall hazard survey to identify all potential fall hazards before the authorized persons are exposed to those hazards

(2) Applicable general industry regulations regarding fall protection;

4.4.8 The competent person shall verify that fall protection systems have been installed and inspected in compliance with this standard, manufacturer's instructions and applicable federal, state and local regulations

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 50 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**(3) Worksite procedures for installing, inspecting, operating, using, maintaining, storage, and disassembling fall protection systems that the employee uses;[1910.30(a)(iii)]**

4.4.1 The competent person shall be responsible for the immediate supervision, implementation and monitoring of the fall protection program

4.4.5 The competent person shall prepare, update, review and approved written fall protection procedures as directed by the program administrator. The competent person shall review these procedures as workplace activities change to determine if additional practices, procedures or training need to be implemented before workplace activities continue. The competent person shall ensure a written rescue plan has been developed for all fall arrest systems

4.4.13 The competent person shall immediately remove from service all personal fall protection systems and components that are damaged or impacted. 4.4.15 The competent person shall, at a minimum, inspect and document all fall protection equipment annually and as required by the manufacturer and applicable regulations.

4.4.14 The competent person shall inspect or ensure inspection occurs for damaged equipment in accordance with manufacturer's instructions.

**(4) If applicable, administrative controls used in specific workplace situations;**

**(5) Fall protection systems and the hierarchy of controls;**

*[ISOR elaborate on active and passive fall protection systems]*

4.4.6 The competent person shall specify in written fall protection procedures the selected fall protection systems, including anchorage locations, connecting means, body supports and other fall protection equipment that authorized persons are required to use when they are exposed to fall hazards

4.4.3 The competent person shall identify, evaluate and impose limits on the workplace activities to control fall hazard exposures including swing falls. These limitations shall be communicated to all employees who are authorized to utilize the fall protection systems.

4.4.10 The competent person shall verify that available fall clearance is adequate before authorized persons work at height in the workplace.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 51 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**(6) Rescue procedures and:**

4.4.9 Prior to working at height, the competent person shall verify authorized person training is complete and applicable fall protection and rescue procedures have been reviewed

4.4.11 The competent person shall ensure that prompt rescue of authorized persons can be performed by implementing and monitoring rescue procedures.

**(7) Fall protection planning for non-routine work or one-time projects.**

4.4.12 The competent person shall participate in the investigation of all incidents related to falls from heights.

**(d) Before any employee is exposed to a fall hazard, the employer shall provide training for each employee who uses personal fall protection systems or who is required to be trained as specified elsewhere in this subpart—the General Industry Safety Orders, Articles 2, 3, 4, 5..... Employers shall ensure employees are trained in the requirements of this subsection on or before [6 months OAL effective date].**

*[Narrow down the Articles]*

**(1) The nature of the fall hazards in the work area and how to recognize them; ↓**

4.5.2 The authorized person shall be trained on how and when to bring to the competent person's attention all unsafe or hazardous conditions, actions or unsafe work practices that may cause injury to either themselves or others before proceeding with the workplace activities.

4.5.3 The authorized person shall properly use, inspect all fall protection equipment for defects or damage; shall notify the competent person of any defect or damage; and shall avoid using such equipment

**(2) The correct use of personal fall protection systems and equipment and methods of equipment inspection and storage at the workplace**

*[1910.130(a)(3)(iv)]*

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 52 of 70

TITLE 8, DIVISION 1, CHAPTER 4

4.5.1 Where fall protection is required, the authorized person shall be trained to follow the employer's policy and procedures and the instructions of the competent person regarding the use of fall protection and rescue systems and equipment used.

**(3) Rescue Procedures.**

~~(1) The employer shall train each employee who uses a controlled descent apparatus (CDA) in proper rigging and use of the equipment in accordance with section 3286. [§1910.30(b)(3).]~~

*AC Recommendation: think of relocating this to CDA. Proposed section 3286 includes a cross reference to personal fall protection*

**(e) Retraining. The employer shall retrain an employee when the employer has reason to believe the employee does not have the understanding and skills required by subsections (c) and (d). Situations requiring retraining include, but are not limited to, the following: [§1910.30(c)]**

**(1) When changes in the workplace render previous training obsolete or inadequate; [§1910.30(c)(1)]**

**(2) When changes in the types of fall protection systems or equipment to be used render previous training obsolete or inadequate. [§1910.30(c)(2)]**

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 53 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Add new Section 3210.4 as follows:**

§3210.4. Safety Net Systems.

(a) Safety net systems and their use shall comply with the following provisions: [From CSO §1671, §1910.29(c) 1926 subpart M which means §1926.502(c)]

(1) Safety nets shall be installed as close as practicable under the walking-working surface on which employees are working, but in no case more than 25 feet below such level. When nets are used on bridges, the potential fall area from the walking-working surface to the net shall be unobstructed. [§1926.502(c)(1)]

(2) Safety nets shall extend outward from the outermost projection of the work surface as follows: [§1926.502(c)(2)]

<u>Vertical distance from working level to horizontal plane of net</u>	<u>Minimum required horizontal distance of outer edge of net from the edge of working surface</u>
<u>Up to 5 feet</u>	<u>8 feet</u>
<u>More than 5 feet up to 10 feet</u>	<u>10 feet</u>
<u>More than 10 feet but not to exceed 30 feet</u>	<u>13 feet</u>

(3) Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified in subsection (a)(4). [§1926.502(c)(3)]

(4) Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test specified in subsection (a)(4)(A). [§1926.502(c)(4)]

(A) Except as provided in subsection (a)(4)(B), safety nets and safety net installations shall be drop-tested at the jobsite after initial installation and before being used as a fall protection system, whenever relocated, after major repair and at 6-month intervals if left in one place. The drop-test shall consist of a 400 pound bag of sand 30 inches plus or minus 2 inches, in diameter dropped into the net from the highest walking-working

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 54 of 70

TITLE 8, DIVISION 1, CHAPTER 4

surface at which employees are exposed to fall hazards, but not from less than 42 inches above that level. [§1926.502(c)(4)(i)]

(B) When the employer can demonstrate that it is unreasonable to perform the drop-test required by subsection (a)(4)(A), the employer (or a designated competent person) shall certify that the net and net installation is in compliance with the provisions of subsections (a)(3) and (a)(4)(A) by preparing a certification record prior to the net being used as a fall protection system. The certification record shall include an identification of the net and net installation for which the certification record is being prepared; the date that it was determined that the identified net and net installation were in compliance with subsection (a)(3) and the signature of the person making the determination and certification. The most recent certification record for each net and net installation shall be available at the jobsite for inspection. [§1926.502(c)(4)(ii)]

(5) Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage and other deterioration. Defective components shall be removed from service. Safety nets shall also be inspected after any occurrence which could affect the integrity of the safety net system. [§1926.502(c)(5)]

(6) Materials, scrap pieces, equipment and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift. [§1926.502(c)(6)]

(7) The maximum size of each safety net mesh opening shall not exceed 36 square inches nor be longer than 6 inches on any side and the opening, measured center-to-center of mesh ropes or webbing, shall not be longer than 6 inches. All mesh crossings shall be secured to prevent enlargement of the mesh opening. [§1926.502(c)(7)]

(8) Each safety net (or section of it) shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds. [§1926.502(c)(8)]

(9) Connections between safety net panels shall be as strong as integral net components and shall be spaced not more than 6 inches apart. [§1926.502(c)(9)]

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 55 of 70

TITLE 8, DIVISION 1, CHAPTER 4

**Amend Section 3212 as follows:**

§3212. Fall Protection or Fall Hazards at Floor Openings, ~~Floor Holes~~, Skylights and Roofs.

(a) Floor and Roof Openings

(1) Requirement to guard floor and roof openings

Exception 2. Stairway entrance

(2) Covers

(3) Guardrails

(4) Toeboards

(b) Ladderways and Stairway Openings

(c) Hatchways and Chute Openings

(d) Hoist areas

(e) Foundry pits

(f) Roofs

(g) Skylights

(h) Glazed Surfaces

(a) **Floor and Roof Openings** *[Action Item: Review federal conditions regarding openings]*

(1) Every floor and roof opening shall be guarded by a cover, a guardrail or equivalent on all open sides. ~~While the cover is not in place, the openings shall be constantly attended by someone or shall be protected by guardrails. Toeboards shall be installed around the edges at openings where persons may pass below the opening. [Separated and itemized in (a)(2) & (b)(3) below, [§1910.29(b)(11)]~~

EXCEPTION to subsection (a)(1):

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 56 of 70

TITLE 8, DIVISION 1, CHAPTER 4

1. ~~Stairway entrances~~ Ladderways and Stairway Openings that meet subsection(b)
2. Floor openings that are used to feed machines or receptacles containing hot or toxic, or corrosive materials, these opening shall be guarded by hoppers, guardrails, or grates having opening not exceeding 1-inch by 5 inch. Floor openings through which transmission equipment passes may be guarded by toe boards. [From subsection (a)(5)]
3. Ladderway access that meet subsection(b)
  - (b)(2) Covers.
    - (1)(A) Floor and roof opening covers shall be designed by a qualified person and be capable of safely supporting the greater of 400 pounds or at least twice the maximum load that may be imposed on any one square foot area of the cover at any time. [Existing (b), §1910.29(e)(1)- used the term maximum intended load]
    - (2)(B) Covers shall be secured in place to prevent accidental removal or displacement and shall bear durable marking with legible letters not less than one inch high, stating: "Opening - Do Not Remove;" or equivalent language. [Relocated from existing subsection (b) and removed "keel" and replaced with crayon, replaced pressure sensitized adhesive decal, painted or stenciled sign with durable marking]

*[Action Item: Add cross reference to skylights]*

Note: See subsection (g) for skylights as covers for roof openings
    - (3)(C) While the cover is not in place, the openings shall be protected by guardrails or shall be constantly attended by someone **to warn a person from approaching the opening.** [From subsection (a)(1)]
    - (4)(D) ~~Permanent or fixed~~ Covers shall not project more than one inch above the floor level and all edges shall be chamfered to an angle with the horizontal of not over 30 degrees. All hinges, handles, bolts or other parts shall set flush with the floor or cover surface. [Moved from (c) without the reference to Title 24. Action Item: Double check with the building code: Did not find the building code reference, verified that this was existing requirement from 1975]

*[Action Item: Review Reference skylights]*

Note: Skylight covers are in subsection ()

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 57 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~(c)~~(3) Openings protected by guardrails: *[§1910.29(b)(12)]*

~~(1)~~(A) When materials are being passed through the opening, not more than two sides of the guardrail system shall be removed; and *[§1910.29(b)(12)(i)]*

~~(2)~~(B) When materials are not being passed through the opening, the opening shall be guarded by a guardrail system along all unprotected sides or edges or closed over with a cover. *[§1910.29(b)(12)(ii)]*

~~(2)~~(4) Toeboards shall be installed **on guardrail systems** around the edges at openings where ~~persons~~ **people** may pass below the opening. *[From (a)(1)]*

*[Are there situations wherein you have a toeboard, but no guardrails?]*

EXCEPTION to subsection (a): Stairway entrances.

~~(2)(A) Every ladderway floor opening or platform with access provided by ladderway, including ship stairs (ship ladders), shall be protected by guardrails with toeboards meeting the requirements of General Industry Safety Orders, Section 3209, on all exposed sides except at entrance to the opening. The opening through the railing shall have either a swinging gate or equivalent protection or the passageway to the opening shall be so offset that a person cannot walk directly into the opening. [Moved to (d)(b)(1), new subsection (b)(2) was created for new ladderways built after [OAL effective date]]~~

EXCEPTION: Ladder openings for entrance/access at perimeter roof edges where guardrail protection is not required by subsection (d) of this section. *[Moved to (d)(b)(1)]*

~~(B)1. The uppermost surface or railing member of the swinging gate or other equivalent protection required by subsection (a)(2)(A) shall have a vertical height from the platform or floor level of between 42 to 45 inches plus or minus one inch and; [Moved to (d)(1)(b)(1)(A)]~~

~~2. The swinging gate or other equivalent protection shall be capable of withstanding a force of at least 200 pounds applied vertically downward to the uppermost surface or railing member and horizontally outward at any point on the exit side of the ladder opening. [Moved to (d)(2)(b)(1)(B)]~~

~~(3) Hatchways and chute floor openings shall be guarded by guardrails or by hinged or removable covers or by removable railings provided such covers or railings will afford protection equivalent to that provided by a guardrail. [Moved to (d)(3)(c) and required both guardrails and cover]~~

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 58 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~This does not apply to chute openings which are effectively covered or protected by machine or equipment during operation. However, such chute shall be covered during repair or maintenance or when otherwise exposing employees to the hazards of unguarded floor openings. [Moved to (d)(3) to (c) as an exception but deleted redundant text]~~

~~(4) Foundry pits and similar sunken locations in which employees are required to work may be left unprotected during such times as the necessary handling of materials or other work prohibits the use of guardrails or equivalent; but when such pits are not in use they shall be either covered, filled in or protected with guardrails or equivalent. [Moved to (h)(e)]~~

~~(5) Floor holes through which materials or tools may fall and create a hazard or through which parts of a person's body may contact dangerous moving parts, shall be completely covered except when in use unless these floor holes are used to feed machines or receptacles containing hot, toxic or corrosive materials, then these openings shall be guarded by hoppers, guardrails or grates having openings not exceeding 1 inch by 5 inches. Floor holes through which transmission equipment passes may be guarded by toeboards. [Moved to (g)(a)(1) Exception 2]~~

~~(b) Floor and roof opening covers shall be designed by a qualified person and be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement and shall bear a pressure sensitized, painted or stenciled sign with legible letters not less than one inch high, stating: "Opening - Do Not Remove." Markings of chalk or keel shall not be used. [Reorganized, separated into (b)(1) and (b)(2), Relocated it to subsection (a)(1)(A)]~~

~~(c) Covers shall not project more than one inch above the floor level and all edges shall be chamfered to an angle with the horizontal of not over 30 degrees. All hinges, handles, bolts or other parts shall set flush with the floor or cover surface. (Title 24, part 2, section 2-1721(c).) [Relocated to subsection (a)(1)(A)]~~

*Register 77, no 41, 10/8/77 – shows that subsection (c) applies to all covers*

*(5) Floor covers may be of any material that meets the following strength requirements:*

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**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 59 of 70

TITLE 8, DIVISION 1, CHAPTER 4

*(C) The construction of floor opening covers may be of any material that meets strength requirements. Covers projecting not more than 1-inch above the floor level may be used provided all edges are chamfered to an angle with the horizontal of not over 30 degrees. All handles, bolts, or other parts shall be set flush with the floor or cover surface.*

**(d)(b) Ladderway and Stairway Floor Opening.**

*[Action Item: Review Fixed ladder standard and federal standard, check on self-closing swinging gate, create an effective date on new buildings review ANSI 1264.1]*

*The building code does not have a specific requirement for a self-closing gate. T24 (2022), Mechanical Code 304.0 Accessibility for Service*

*Should the swinging gate or self-closing gate be a guardrail type gate? Answer: Yes for new installation*

*What to do about existing swinging gate that are not self-closing? Answer: grandfather proposal*

*1910.29(b)(13) requires self-closing gate.*

*1910.29(b)(13)*

*When guardrail systems are used around holes that serve as points of access (such as ladderways), the guardrail system opening:*

*1910.29(b)(13)(i)*

*Has a self-closing gate that slides or swings away from the hole, and is equipped with a top rail and midrail or equivalent intermediate member that meets the requirements in paragraph (b) of this section; or*

*1910.29(b)(13)(ii)*

*Is offset to prevent an employee from walking or falling into the hole;*

*Address existing swinging gates]*

*[Action Item: Review proposed text in red and revise]*

**(1) Every ladderway and stairway floor opening or platform with access provided by ladderway, including ship stairs (ship ladders), shall be protected by guardrails with toeboards meeting the requirements of section 3209, on all exposed sides except at the entrance to the stairway or ladderway. The opening through the railing shall have either a swinging gate or equivalent protection or**

STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

Page 60 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~the passageway to the opening shall be so offset that a person cannot walk directly into the opening.~~ *[From (a)(2)(A) with modifications, §1910.29(b)(3)(iv), §1910.29(b)(13)(i) and (ii)]*

**EXCEPTIONS to subsection (d)(1):**

~~1. Ladder openings for entrance/access at perimeter roof edges where guardrail protection is not required by subsection (i).~~ *[Moved from (a)(2)(A)]*

~~2. For any stairway used less than once per day where traffic across the stairway floor opening prevents the use of a fixed guardrail system (e.g., openings located in aisle spaces), the employer may protect employees from falling into the opening by using a hinged floor cover that meets the criteria in subsection (b) and a removable guardrail system on all exposed sides, except at the entrance to the stairway.~~ *[1910.28(b)(3)(ii) Look at Fixed ladder standard and federal standard, check on self-closing swinging gate, create an effective date on new buildings, review ANSI 1264.1]*

~~(1)(2) The swinging gate shall be non-latching self closing gate that slides and or swings away from the unprotected edge, and is equipped with a top rail and midrail or equivalent intermediate member or is offset to prevent an employee from walking or falling into the hole;~~

~~(2)(A) The uppermost surface or railing member of the swinging gate or other equivalent protection shall have a vertical height from the platform or floor level of between 42 to 45 inches plus or minus one inch and;~~ *[Moved from (a)(2)(B)1.]*

~~(3)(B) The swinging gate or other equivalent protection shall be capable of withstanding a force of at least 200 pounds applied vertically downward to the uppermost surface or railing member and horizontally outward at any point on the exit side of the ladder opening.~~ *[Moved from (a)(2)(B)2.]*

*[Action Items: Consider text to grandfather existing stairway and ladderways with swing gates. Text is from existing (a)(2)(A)]*

~~(1) Prior to [OAL effective date] every ladderway floor opening or platform with access provided by ladderway, including ship stairs (ship ladders), shall be protected by guardrails with toeboards meeting the requirements of General Industry Safety Orders, Section 3209, on all exposed sides except at entrance to the opening. The opening through the railing shall have either a swinging gate or equivalent protection, or the~~

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 61 of 70

TITLE 8, DIVISION 1, CHAPTER 4

passageway to the opening shall be so offset that a person cannot walk directly into the opening. [From existing subsection (a)(2)(A), Allows for swinging gate]

- (A) The uppermost surface or railing member of the swinging gate or other equivalent protection required by subsection (a)(2)(A) shall have a vertical height from the platform or floor level of between 42 to 45 inches plus or minus one inch and; [From (a)(2)(B)1.]
- (B) The swinging gate or other equivalent protection shall be capable of withstanding a force of at least 200 pounds applied vertically downward to the uppermost surface or railing member and horizontally outward at any point on the exit side of the ladder opening. [From subsection (a)(2)(B)2.]

EXCEPTIONS to subsection (b)(1):

1. Ladder openings for entrance/access at perimeter roof edges where guardrail protection is not required by subsection(f). [From (a)(2)(A)]

(2) Effective [OAL effective date], every ladderway and stairway floor opening or platform with access provided by ladderway, including ship stairs (ship ladders), shall be protected by guardrails with toeboards meeting the requirements of section 3209, on all exposed sides except at the entrance to the stairway or ladderway with a self-closing gate or the passage way shall be off-set to prevent an employee from walking or falling into the opening. The self-closing gate with guardrails shall swing or slide away from the opening, or the passageway shall be offset to prevent an employee from walking or falling into the opening. [1910.28(b)(3)(iii) Action Item: Evaluate requiring changing from swinging gate to self-closing gate and revise text.]

EXCEPTIONS to subsection ~~(d)~~(b)(2):

1. Ladder openings for entrance/access at perimeter roof edges where guardrail protection is not required by subsection(f). [Moved from (a)(2)(A) Proposing to delete in to order to be as effective as the federal standard]

2. For any stairway used less than once per day where traffic across the stairway floor opening prevents the use of a fixed guardrail system (e.g., openings located in aisle spaces), the employer may protect employees from falling into the opening by using a hinged floor cover that meets the criteria in subsection ~~(b)~~ (a)(2) and a removable guardrail system on all exposed sides, except at the entrance to the stairway. [1910.28(b)(3)(iii)]

STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

Page 62 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~(e)(c) Hatchways and chute floor openings shall be guarded by guardrails or **and** by hinged covers provided such covers will afford protection equivalent to that provided by a guardrail.~~

~~[From (a)(3), §1910.28(b)(3)(v) and §1910.28 (b)(3)(v)(A), *Fed std states that both guardrails and cover are required*]~~

~~Hatchways and chute openings shall be guarded by hinged covers and fixed guardrails that leaves only one exposed side. When the hole is not in use, the employer shall ensure that the cover is closed or guarded by guardrails on all sides.~~

~~(1) A guardrail system or a fall restraint system shall be used when a work operation necessitates passing material through a hatchway or chute floor opening.  
[§1910.28(b)(3)(v)(C)]~~

EXCEPTION to subsection (c):

This does not apply to chute openings which are effectively covered or protected by machine or equipment during operation. However, such chute openings shall be covered during repair or maintenance or when otherwise exposing employees to the hazards of unguarded floor openings. ~~[From (a)(3), *Struck out language not necessary, redundant*]~~

~~[Reviewed 10/3/24 and decided to change the proposal]~~

(c) Each employee shall be protected from falling through a hatchway and chute-floor hole by: [1910.28(b)(3)(v)]

(1) A hinged floor-hole cover and a fixed guardrail system that leaves only one exposed side. When the hole is not in use, the employer must ensure the cover is closed or a removable guardrail system is provided on the exposed sides; [1910.28(b)(3)(v)(A)]

(2) A removable guardrail system and toeboards on not more than two sides of the hole and a fixed guardrail system on all other exposed sides. The employer must ensure the removable guardrail system is kept in place when the hole is not in use; or [1910.28(b)(3)(v)(B)]

(3) A guardrail system or a travel restraint system when a work operation necessitates passing material through a hatchway or chute floor hole. [1910.28(b)(3)(v)(C)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 63 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~(f)~~(d) Hoist areas.

(1) The employer shall ensure each employee in a hoist area, which is any elevated access opening to a walking-working surface through which equipment or materials are loaded and received, is protected from falling by: [§1910.28(b)(2)]

(A) A guardrail system; [§1910.28(b)(2)(i)(A)]

(B) A personal fall arrest system; or [§1910.28(b)(2)(i)(B)]

(C) A personal fall restraint system (travel restraint system). [§1910.28(b)(2)(i)(C)]

(2) When any portion of a guardrail system, gate or chains is removed and an employee must lean through or over the edge of the access opening to facilitate hoisting, the employee shall be protected from falling by a personal fall arrest system. [§1910.28(b)(2)(ii)]

(3) When guardrail systems are used at hoist areas, a removable guardrail section, consisting of a top rail and midrail, shall be placed across the access opening between guardrail sections when employees are not performing hoisting operations. The employer may use chains or gates instead of a removable guardrail section at hoist areas if the employer demonstrates the chains or gates provide a level of safety equivalent to guardrails. [§1910.29(b)(10)]

(4) If grab handles are installed at hoist areas, they shall comply with subsection 3209(I). [§1910.29(b)(2)(iii)]

~~(g) Floor openings through which materials or tools may fall and create a hazard or through which parts of a person's body may contact dangerous moving parts, shall be completely covered except when in use unless these openings are used to feed machines or receptacles containing hot, toxic or corrosive materials, then these openings shall be guarded by hoppers, guardrails or grates having openings not exceeding 1 inch by 5 inches. Floor openings through which transmission equipment passes may be guarded by toeboards. [From (a)(5), replaces holes with openings, Moved to make it into an exception, see section subsection(a)(1), Exception 2.]~~

~~(h)~~(e) Foundry pits and similar sunken locations in which employees are required to work may be left unprotected during such times as the necessary handling of materials or other work prohibits the use of guardrails or equivalent; but when such pits are not in use, they shall be either covered, filled in or protected with guardrails or equivalent. [From (a)(4)]

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 64 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~(f)~~(f) Work on Roofs.

*[Action Item from March 2024: Unsettled, Revise text - wait for additional information from Jason, review prior rulemaking, define location- per roof, per building or per work location]*

*Intermittent was unclear, and a suggestion to use infrequent was not used because of frequent is defined in section 3207]*

~~(d)~~(1) Guardrails as specified in section 3209 shall be required at locations where there is a routine need for any employee to approach within 6 feet of the edge of the roof. When ~~intermittent~~ **infrequent approaches to the unprotected edge occur less than five times a year**, work is being done, **safety belts and lanyards** or an approved fall protection system in accordance with section 3210.1 may be provided in lieu of guardrails. *[Relocated from (d)(1)]*

For the purpose of this requirement, routine need means more than four times a year and ~~intermittent~~ **infrequent** work means work not exceeding four times a year.

Guardrails as specified in section 3209 shall be required at locations where there is a routine need for any employee to approach within 6 feet of the edge of the roof. When intermittent work is being done, an approved fall protection system may be provided in lieu of guardrails.

For the purpose of this requirement, "routine need" means that the total number of individual approaches within 6 feet of the edge(s) of any roof is more than four times per year. "Intermittent work" means that the total number of such approaches within 6 feet of the edge of the roof does not exceed four times a year.

EXCEPTION to (f)(1): On roofs of buildings originally constructed as residential roofs where the employer can demonstrate that guardrail requirements, personal fall protection, covers, or safety net systems are infeasible or creates a greater hazard, the employer shall develop and implement a fall protection plan in accordance with section 1671.1 and section 3210.3.

*[Action Item: PG&E, SCE and other industries will meet and collaborate with the Division to create the definition of residential roofs or define what type of buildings will be included in the Exception]*

Note: There is a presumption that it is feasible and will not create a greater hazard to use at least one of the above-listed fall protection systems specified in subsection(f)(1)

STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

Page 65 of 70

TITLE 8, DIVISION 1, CHAPTER 4

of this section. Accordingly, the employer has the burden of establishing that it is not feasible or creates a greater hazard to provide the fall protection systems specified in section 3210.1 and that it is necessary to implement a fall protection plan that complies with section 1671.1 in the particular work operation, in lieu of implementing any of those systems.

(2) Guardrails required by subsection ~~(d)~~ (i)(f)(1) shall be provided along at least 6 feet beyond the areas occupied by persons accessing, servicing or repairing permanently-mounted machinery and/or equipment. *[Relocated from (d)(2)]*

(3) Where fall protection systems are used, safety lines and/or lanyards shall be attached to roof tie-backs meeting the requirements of section 3291(f) or equivalent anchorage. A safe and unobstructed access shall be provided to all roof tie-back locations. ~~(Title 24, part 2, section 1711(h).)~~ *[Relocated from (d)(3)]*

**(4) ~~In On roofs of buildings originally constructed as residential roofs where the employer can demonstrate that guardrail requirements, personal fall protection, cover, or safety net systems are infeasible or creates a greater hazard, the employer shall develop and implement a fall protection plan in accordance with sections 1671.1 and section 3210.3.~~ [1910.28(b)(1)(ii)]**

*[Federal note needs to be added]*

Note: There is a presumption that it is feasible and will not create a greater hazard to use at least a guardrail system, safety net system, or personal fall protection system. Accordingly, the employer has the burden of establishing that it is not feasible or creates a greater hazard to provide the fall protection systems and that it is necessary to implement a fall protection plan that complies with §1671.1 in the particular work operation, in lieu of implementing any of fall protection systems.

*[(f)(4) was relocated as an exception to (f)(1)]*

~~(e)(i)~~ (g) Skylights. Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

*[Consider moving the text closer to cover. Chair decided not to, but reorganized 3212]*

(1) Skylight screens installed above the skylight. The design, construction and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection ~~(b)~~ (a)(2)(A) above. They shall also be of such design,

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 66 of 70

TITLE 8, DIVISION 1, CHAPTER 4

construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slatwork with openings not more than 2 inches wide with length unrestricted or of other material of equal strength and similar configuration.

(2) Skylight screens installed below the skylight. Existing screens (i.e. burglar bars) shall meet the following requirements if they will be relied upon for fall protection:

(A) Screens installed at the same level or higher than the ~~walking/working~~ walking-working surface shall meet the strength requirements of subsection ~~(b)~~(a)(2)(A).

(B) Screens installed within 2 feet of the ~~walking/working~~ walking-working surface shall meet the strength requirements of subsection ~~(b)~~(a)(2)(A) with increased strength based on the fall distance below the ~~walking/working~~ walking-working surface as determined by a qualified person. In no case shall the strength of the screen below the skylight be less than the strength requirements of subsection ~~(b)~~(a)(2)(A). A screen more than 2 feet below the ~~walking/working~~ walking-working surface shall not serve as fall protection.

(C) A screen shall not be used for fall protection in accordance with subsection ~~(e)(i)(g)(2)(A)~~ or ~~(e)(i)(g)(2)(B)~~ if the broken skylight glazing will pose an impalement hazard to a worker who has fallen through the skylight and is lying on top of the screen. Skylights containing tempered, laminated or plastic glazing or similar materials shall not be considered to impose an impalement hazard.

(D) The screen construction shall be of grillwork, with openings less than 12 inches in the least horizontal dimension.

(3) Guardrails meeting the requirements of ~~S~~section 3209.

(4) The use of a personal fall protection system meeting the requirements of ~~S~~section 1670 of the ~~Construction Safety Orders~~. 3210.1.

(5) Covers, including the skylight itself, meeting the requirements of subsection ~~(b)~~(a)(2) installed over the skylights or skylight openings. Where the skylight itself serves as a cover, the skylight shall be required to meet only the strength requirements of subsection ~~(b)~~(a)(2)(A). Further, for skylights serving as covers, the employer shall obtain documentation from the manufacturer that the skylight will meet the strength requirements of subsection (b) for the dates that work will be performed in the vicinity of

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 67 of 70

TITLE 8, DIVISION 1, CHAPTER 4

the skylight. Such documentation shall be obtained prior to the start of work and shall be made available upon request.

(6) Skylight nets.

(A) Materials. Materials used for skylight nets shall be of natural or synthetic fiber of sufficient size, strength and number to absorb a 400 pound load dropped from 42 inches above the surface of the net. The net hardware shall be drop-forged, pressed or formed steel or material of equal or better quality. The maximum size of mesh shall not exceed 36 square inches or be longer than 6 inches on any side, measured center-to-center of mesh ropes or webbing. No mesh member shall exceed 6 inches in length measured center-to-center of mesh crossings. All mesh crossings shall be anchored to eliminate frictional wear and prevent enlargement of mesh openings. Nets shall not be larger than 12 feet by 12 feet.

(B) Inspection.

1. Skylight nets shall be inspected weekly by a competent person utilizing the inspection procedures supplied by the manufacturer.

2. Visual inspections shall be performed daily by an authorized person trained on the manufacturer's inspection procedures before the net is relied upon for fall protection.

(C) Training. Employees shall be trained to recognize the hazards of falling into nets and on the procedures to be followed in order to limit the potential injury from such falls. The training program shall include, at a minimum:

1. The tested limits of the net
2. Avoiding falls;
3. Location of weekly inspection records and the person responsible;
4. Procedures for retrieving a worker who has fallen into the net;
5. Manufacturer's instructions on the use and limitations of the skylight net;
6. Manufacturer's inspection requirements;
7. Factors affecting net life, including, but not limited to, sunlight, abrasion, dirt/sand, rust and airborne contaminants.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 68 of 70

TITLE 8, DIVISION 1, CHAPTER 4

(D) Care, Maintenance and Storage. The care, maintenance and storage of nets shall be in accordance with the net manufacturer's recommendations. Nets shall be protected from sparks, hot slag or other materials which could compromise the strength of the net.

(E) Nets shall be removed from service under any of the following conditions:

1. The frame becomes warped, bent or distorted.
2. The netting becomes torn, unraveled, cut or has excessive slippage of the mesh crossings.
3. The net has been modified from the original manufacturer's design or specification.
4. The recommended service life of the net as provided by the manufacturer has expired. Nets without a manufacturer supplied expiration date shall not be used for fall protection in accordance with this section.

EXCEPTION: to subsection ~~(e)(j)(6)~~(E)4.: If the employer effectively records and documents the date that the net was first placed in service, the service life of the net shall begin on the date placed into service instead of the date of manufacture.

5. Other removal criteria specified by the manufacturer.

(F) Nets shall not be left on the skylight for longer than the duration of the job or one year, whichever is less.

(G) Nets shall be used with sufficient clearance to prevent user's contact with the surfaces or structures below the skylight.

(7) A fall protection plan as prescribed in ~~§~~Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections ~~(e)(j)(1) through (j)(6)~~ of this Section is impractical infeasible or creates a greater hazard.

EXCEPTION: to subsection ~~(e)(j)~~: When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc. and the time involved in rigging and installing the safety devices required in subsections ~~(e)(j)(1) through (e)(j)(6)~~ equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc., these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 69 of 70

TITLE 8, DIVISION 1, CHAPTER 4

~~(f)(k)(h)~~ Glazed Surfaces.

(1) Glazed surfaces installed [OAL effective date] shall bear the manufacturer's mark designating the type and thickness of the glass or glazing material. The identification shall not be omitted unless approved and an affidavit is furnished by the glazing contractor certifying that each light is glazed in accordance with approved construction documents that comply with Title 24, Chapter 24. Safety glazing shall be identified in accordance to title 24, section 2406 Safety Glazing.

Each pane of tempered glass, except tempered spandrel glass, shall be permanently identified by the manufacturer. The identification mark shall be acid etched, sand blasted, ceramic laser etched, embossed or a type that once applied, cannot be removed without being destroyed.

Exception: Tempered spandrel glass is permitted to be identified by the manufacturer with a removable paper designation.

Note: Source: Title 24, California Building Code, Chapter 24 Glass and Glazing, Section 2403 General Requirements For Glass.  
[https://codes.iccsafe.org/content/CABC2022P1/chapter-24-glass-and-glazing#CABC2022P1\\_Ch24\\_Sec2403](https://codes.iccsafe.org/content/CABC2022P1/chapter-24-glass-and-glazing#CABC2022P1_Ch24_Sec2403)

[https://codes.iccsafe.org/content/CABC2022P1/chapter-24-glass-and-glazing#CABC2022P1\\_Ch24\\_Sec2406](https://codes.iccsafe.org/content/CABC2022P1/chapter-24-glass-and-glazing#CABC2022P1_Ch24_Sec2406)

~~(1)(2)~~ Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders. Section 3210.1.

~~(g)(A)~~ When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection ~~(f)(k)(h)~~(2), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

Page 70 of 70

TITLE 8, DIVISION 1, CHAPTER 4

if any; otherwise, they shall be designed to carry a truck rear-axle load of at least 20,000 pounds.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

DRAFT