

Fall Protection in Construction

Falls are among the most common reasons for workplace injuries and fatalities in California. Falls generally occur when employees are working at an elevated height and are not adequately protected. Some examples include employees working on elevated work surfaces, ladders, stairs, scaffolds, aerial devices, roofs, bridges, trusses, beams, purlins, plates, suspended staging, catwalks and walkways.

Falls in construction frequently involve slippery, cluttered, or unstable walking/working surfaces, unprotected edges, floor holes or wall openings, unsafely positioned ladders, and misuse of fall protection devices.

Key Cal/OSHA Requirements

Title 8 of California Code of Regulations ([T8 CCR](#)) specifies many requirements for fall protection in construction. Below are selected regulations that contain fall protection requirements. Refer to T8 CCR for the complete set of requirements.

Selected T8 CCR Sections

1541	Fall protection in excavation work
1610.7	Fall protection in cranes and derricks in construction
1620	Design and construction of guard rails
1669	General fall protection
1670	Personal fall arrest systems, personal fall restraint systems and positioning devices
1671	Safety nets
1671.1	Fall protection plan
1671.2	Controlled access zones and safety monitoring systems
1710	Fall protection for erection of steel structures
1711	Fall protection for reinforcing steel operations in concrete construction
1712	Fall protection for impalement hazards
1716.1	Fall protection in structural wood framing systems
1716.2	Fall protection in wood and light gage steel frame construction in residential/light commercial work
1724	Fall protection in general roofing operations
1730	Fall protection in roofing operations
1731	Fall protection for roofing work on new tract homes with roof slopes 3:12 or greater


In addition, fall protection is addressed in other regulations that are not limited to construction activities, such as the [T8 CCR](#) regulations highlighted below:

- [3648](#) - fall protection while working with aerial device
- [3642](#) - fall protection while working on elevated platform
- [3209](#), [3210](#) - fall protection with guardrails
- [3212](#) - fall protection while working around floor openings, roof openings, and skylights
- [3299](#) - fall protection while working on powered platforms

Helpful Safety Information

- Fall protection trigger heights must be observed at all times:

- 2 stories or 30' whichever is less:** Connecting structural steel (Iron workers)
- 20':** Most roofing work
- 15':** Panelized roof systems, residential framing and roofing activities, work on 4" nominal or wider structural members and other than connecting steel (iron workers)
- 7 ½':** Work on unprotected platforms, scaffolds, or edges of structures (within 6')
- 6':** Work with rebar/ or similar projections (rod busters)

- Structural wood framing workers working near a leading edge must be protected from falls of 15' or more by one or more of these:
 - Guardrails; Safety Nets; Personal Fall Protection System; Parapets at least 24" high; Fall Protection Plan
- Most roofing work requires fall protection over 20'.
- Work on residential tract homes requires fall protection over 15'.
- 100% tie-off (protection from falls at all times, even when moving from point to point) must be provided while using personal fall protection. Sometimes this may require using two lanyards.
 
- Note:** Point to point travel on rebar is allowed without fall protection for heights up to 24 feet.
- In steel erection work, iron workers must use personal fall protection where fall distance exceeds:
 - 30', while performing structural steel connecting work
 - 15', while performing work other than connecting
- In metal decking work, workers must be protected from falls of 15' or more by one or more of these:
 - Guardrails; Safety Nets; Personal Fall Protection; Fall Protection Plan
- Workplace must be kept in good housekeeping order and free of debris and tripping hazards.
- Knots should never be tied in lanyards or rope grabs.

Fall Protection Systems

There are 2 basic fall protection systems:

- **Passive Systems - Fall Prevention** - Guardrails, safety nets, floor covers, catch platforms, etc.
- **Active Systems - Personal Fall Protection** - Safety belts and body harnesses.

Passive systems, such as guardrails, are the preferred system of fall protection. If passive systems cannot be utilized, then personal fall protection is required.

Common Passive Systems

Guardrails are required at 7½' high on open:

- Edges of floors and roofs
- Scaffolds
- Runways, ramps
- Elevated platforms



Major design specifications:

- Constructed of wood or equivalent material.
- Top rail at 42" to 45" and a midrail.
- Wooden posts must be no more than 8' apart.
- Top rail must withstand 200 lbs load in any direction.

Safety nets are good for high entry ways and cathedral ceiling areas of residential homes. They must be installed according to manufacturer's instructions.



Floor covers need to be provided for all floor openings, hatchways, floor holes, and skylight openings regardless of the fall heights. Floor openings can be alternatively guarded by guardrails.



Wall openings that are greater than 30" high and 18" wide need to be protected with guardrails when the bottom of the opening is less than 36" above the working surface and the fall is more than 4'.



Ladder openings need to be guarded with off-set guardrails or swinging gate must be provided.



Common Active Systems

Components of an active personal fall protection system:

- Anchorage point must support adequate loads.
- Harness (or body belt for fall restraint or positioning) must be worn as per manufacturer instructions.
- Connector (lanyard) must be adjusted so worker will not reach the ground below.
- Free fall distance must never exceed 6 feet.



Types of active personal fall protection systems:

1. Personal Fall Arrest System
2. Personal Fall Restraint System
3. Positioning Devices

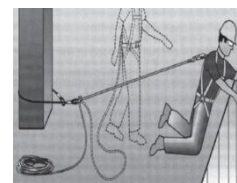
Personal Fall Arrest System

- Use harnesses, not body belts
- Use shock absorbing lanyard with 2 locking snap hooks.
- Anchorage point must support 5,000 lbs.
- Inspect before use.
- Inspect & document each system at least twice a year.
- Plan for a prompt rescue.



Personal Fall Restraint System

- The fall restraint equipments should be set and adjusted so there is no free fall over the edge.
- A harness or body belt may be used
- The anchorage point must support 4 times the intended load.



Positioning Devices

- A harness or body belt may be used
- The device must be set and adjusted so there is no more than 2' free fall.
- The anchorage point must support 2 times the intended load or 3,000 lbs, whichever is greater.



Contacting Cal/OSHA Consultation Services

Publications: www.dir.ca.gov/dosh/PubOrder.asp

Consultation Programs: www.dir.ca.gov/dosh/consultation.html

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The information is not neither a substitute for nor legal interpretation of the occupational safety and health regulations. Readers need to refer directly to Title 8 of the California Code of Regulations for detailed information regarding the regulation's scope, specifications, exceptions, and for other requirements that may be applicable to their operations.