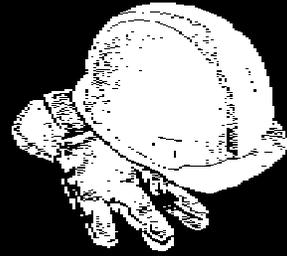


# TRAINING GUIDE

## FALL PROTECTION



2001

*Before you begin the meeting...*

- Does this topic relate to the work the crew is doing? If not, choose another topic.*
- Did you read this Training Guide and fill in the blanks where the  appears? (To find the information you need, look over the Safety Walkaround Checklist for this topic.)*

*Begin:* How many times have you heard people make excuses for not tying off or using safety nets? Maybe you've heard comments like this: "Tying off is dangerous, because you can't move out from under an incoming load."

Falls are the leading cause of death in construction. Fall protection may have its problems, but think of the alternative—a fall without protection. It's not a risk worth taking.

*You or a crew member may want to add a personal story about fall protection.*

### ASK THE CREW THESE QUESTIONS:

*After each question, give the crew time to suggest possible answers. Use the information following each question to add points that no one mentions.*

- 1. What are the two basic types of fall protection?**
  - Fall restraint systems, like guardrails. These keep you from falling.
  - Fall arrest systems, like safety nets. These break your fall.
  - **Never** use any type of fall protection unless you have been trained.
- 2. If there are no guardrails, when and where should you tie off with a harness and lines?**
  - Cal/OSHA's main rule is that you should tie off when the drop is 7½ feet or more.
  - There are exceptions to the 7½ foot rule for some trades, like roofers and ironworkers.
- 3. When and where should safety nets be used?**
  - Safety nets should be used if it is not practical to tie off.
  - Safety nets should be placed no more than 30 feet below the work area.
  - Nets should extend from 8 to 13 feet beyond the structure you're working on.
  - No work can proceed unless the net is in place.

**4. If you use fall protection equipment, what do you need to check?**

- Be sure all equipment is safety-approved. Look for a label showing that it meets American National Standards Institute (ANSI) safety requirements.
- Be sure the equipment is installed and used according to the manufacturer's instructions.
- Be sure everything is in good condition. Remove from service any lanyard or drop line that has broken someone's fall, or is frayed or worn.
- Be sure you have the right equipment for the job. For example, safety belts are not allowed in fall arrest systems.

**5. Where should you place the anchor end of a lanyard?**

- Anchor it at a level no lower than your waist. That way, you limit any fall to a maximum of four feet.
- Anchor it to a substantial structural member, or to a securely rigged catenary or pendant line.
- Don't anchor it to a pipe.

**6. What are some of the requirements for a drop line?**

- A drop line (and its anchorage) must be able to support at least 5000 lbs.
- Drop lines should be made of synthetic fibers (except near heat or flame).
- If a drop line is subject to fraying or rock damage, it must have a wire rope center.

**7. What if it's not practical to tie off or use a safety net?**

- If the usual fall protection measures are impractical or create a greater hazard than they prevent, Cal/OSHA allows an employer to develop a fall protection plan.
- The plan allows work to be done in a designated area without the normal fall protection. Alternate measures must be used to reduce fall hazards in that area. These include special training for workers, and constant observation of the work by a safety monitor.
- The plan must be drawn up by a qualified person, and a copy of the plan must be available on the site.
- The areas without fall protection are called "controlled access zones." Only certain trained workers can enter these areas.

**8. What are some of the requirements for controlled access zones?**

- There should be a barrier (ropes, wires, or caution tape) to restrict access to the zone.
- Warning signs should be posted around the zone.
- In many cases, there must be a designated safety monitor for the zone, who is in communication with anyone working in the zone at all times.

## **CAL/OSHA REGULATIONS**

*Explain:* Most of the safety measures we've talked about are required by Cal/OSHA. We have to take these precautions—it's the law. I have a Checklist of the Cal/OSHA regulations on fall protection. If you'd like to know more, see me after the meeting.

## **COMPANY RULES**

*(Only if applicable.)* Besides the Cal/OSHA regulations, we have some additional company rules about fall protection.

*Discuss company rules:* \_\_\_\_\_



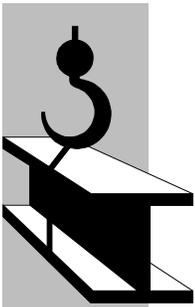
## **COMMENTS FROM THE CREW**

*Ask:* Do you have any other concerns about fall protection? Do you see any problems on our job? *(Let the steward answer first, if there is one.)*

What about other jobs you've worked on? Have you had any experience with fall protection that might help us work safer on this job?





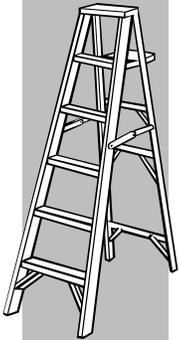


### ***Laborer Killed in Fall Through Roof***

A 40-year-old laborer/helper died when he fell through an opening in a warehouse roof. He fell approximately 27 feet to the floor below.



The employer was demolishing the roof of the warehouse portion of a commercial building. Work was done at night because the coal tar on the roof would release hazardous gases if disturbed in the heat of the day. The site had adequate halogen lighting. None of the workers on the job were using fall protection.



After the roofing material was removed, 4x8 foot sheets of plywood were exposed. Any damaged sheets needed to be replaced. The helper's job was to follow the workers who were replacing the plywood, and to pick up the damaged sheets of plywood they had removed. He disposed of them in a chute.

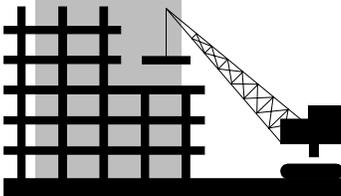
On this evening, one worker had removed a sheet of damaged plywood, but had run out of nails to attach the replacement plywood. He walked away to get more nails. The opening where the damaged plywood had been was left unguarded. The crew was not informed that it was temporarily unguarded. The opening was covered by silver-colored insulation inside the roof.

The helper came along, picked up the sheet of damaged plywood, and headed for the chute. He stepped into the opening, ripped through the insulation, and fell.

April 20, 1998



What should have been done to prevent this accident?



## ***Preventive Measures***

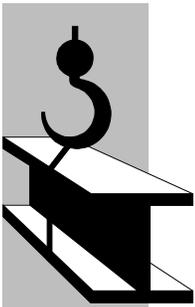
Cal/OSHA investigated this accident and made the following recommendations.

Employers should:

- Have Site Safety Plans addressing potential hazards which could lead to injury or death.
- Ensure that roof openings are not left unprotected, unguarded, or uncovered.
- Equip all workers on the roof with fall protection (such as harnesses and lanyards). A retractable lanyard would allow the helper to do his job and still have fall protection.
- Require that all hazards on the site be communicated on an ongoing basis to all workers in the area.

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*This Case Study is based on an actual California incident. For details, refer to California Dept. of Health Services, Occupational Health Branch, Fatality Assessment and Control Evaluation (FACE) Report #98CA005.*



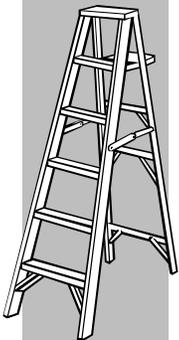
### ***Ironworker Dies After Falling Off Beam***

A 42-year-old structural ironworker foreman died when he fell off a steel beam in an incomplete warehouse roof. He fell about 38 feet to the floor below.



The employer was installing the final structural steel beam (bar joist) in the roof of a new cold storage warehouse under construction. After a crane lifted the beam into place, it was not quite straight and the ironworker foreman wanted to use a hammer to straighten it.

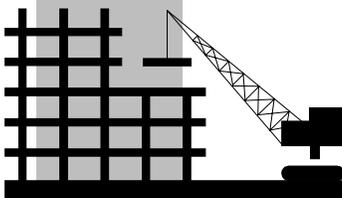
The area where the foreman needed to work had been barricaded with wire rope safety lines on all four sides, but he removed these lines to gain access. He was not using fall protection equipment.



The foreman was standing on a portion of roof decking that had already been completed. To get to the beam, he reached his left foot out over an open, undecked area of the roof. He rested his left foot on the nearest joist girder. As he was preparing to strike a blow with the hammer, his foot slipped off the girder. His hands caught the bar joist, but he couldn't hold on and fell.

June 29, 1998

What should have been done to prevent this accident?



## ***Preventive Measures***

Cal/OSHA investigated this accident and made the following recommendations.

Employers should:

- Require everyone working at heights to wear fall protection equipment.
- Make sure openings are properly covered or otherwise protected.
- If possible, provide alternate means of access to the work, such as an aerial lift (zoom boom).

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*This Case Study is based on an actual California incident. For details, refer to California Dept. of Health Services, Occupational Health Branch, Fatality Assessment and Control Evaluation (FACE) Report #98CA010.*