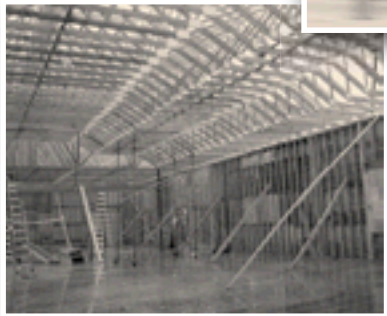


# Fall Protection

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## Options for specialty contractors



**Oregon Department of  
Consumer & Business Services,  
Occupational Safety & Health Division**

# About this publication

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**“Fall protection: Options for specialty contractors”** was produced by the OR-OSHA Standards and Technical Resources section and developed by OR-OSHA’s 502 Fall Protection Committee.

Thanks to the following individuals for offering their time, comments, and suggestions. Special thanks to Bob Harris and The Home Builders Association for the donuts and for providing us a place to meet and work on this guide.

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# Fall protection —

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## Problems for specialty contractors?

Most contractors know that *framers* and *roofers* need to be protected from falls, but what about other construction tradespeople who begin their work *after* the framing is done, the walls are up, and the floors are established? Consider these examples:

- ***Painters*** have to carry materials while climbing ladders and scaffolds but they must also use their hands to climb.
- ***Glaziers and skylight installers*** need to move heavy materials up sloped roofs but they also need to avoid falling when they are handling the materials.
- ***Insulation workers*** must avoid falling through ceiling joists while applying insulation in attics.
- ***Drywall installers*** need to take down guardrails to hang sheetrock but are exposed to fall hazards without them.

**What can you do to protect employees from falls?** In this guide, you'll learn that most fall protection problems can be solved by carefully planning the project, training employees to work safely, enforcing safe practices, and using fall-protection methods that are appropriate for the job.

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**Framers and roofers aren't the only construction tradespeople who need to be protected from falls. Other workers who must think about fall protection:**

- Carpet installers
- Communications workers
- Drywall installers
- Electricians
- Glaziers
- Gutter installers
- HVAC installers
- Insulation workers
- Landscapers
- Masons
- Painters
- Plumbers
- Satellite dish installers
- Sheet metal workers
- Siders
- Tile and stone workers

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## When must employees be protected from falls?

Generally, employees must be protected from falls of 10 feet or more to a lower level. The exceptions? Employees must be protected from falls of 6 feet or more if they're exposed to the following:

- Holes and skylights in walking/working surfaces
- Wall openings and windows where the sill height is less than 39 inches above the floor
- Established floors, mezzanines, balconies, and walkways that have unprotected sides and edges
- Excavations with edges that are not readily seen because of plant growth or other visual barriers
- Wells, pits, shafts, and similar excavations

**Employers:** Your duty to protect your employees goes beyond OR-OSHA's fall-protection requirements for the construction industry (in Subdivision 3/M of OR-OSHA's safety and health standards). If you can't protect your employees with one of the fall-protection systems or methods described in Subdivision 3/M, you must protect them with another method.

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## How to control fall hazards

A fall hazard is an unprotected, elevated walking/working surface. You can control most fall hazards by planning your job carefully, training employees how to work safely, and enforcing safe practices with on-the-job supervision.

### Plan the job carefully

Planning is the first step in controlling fall hazards. Think about hazards your employees will encounter and what you can do to keep them safe before you begin a project. You're more likely to use fall-protection methods that enhance the work rather than interfere with it when you identify fall hazards during the planning stage.

#### Examples of fall hazards

- An electrician trips and falls over the edge of an *unprotected balcony*.
- A satellite dish installer slips and falls over the *edge of a sloped roof*.
- A drywall installer carrying a drywall panel steps into an *unguarded floor opening*.

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## Consider factors such as the following to help you plan your job at the site:

- Which areas of the project are most likely to have fall hazards?
- What tasks could expose employees to fall hazards?
- Are walking/working surfaces structurally sound and stable?
- How many employees could be exposed to fall hazards?
- How often will employees do tasks that expose them to falls?
- How will employees access and move about the structure to do their jobs? Will they move horizontally, vertically, or in both directions?
- Do existing guardrails and covers for holes meet Subdivision 3/M requirements?
- Are there existing anchorages for personal fall arrest systems that meet Subdivision 3/M requirements?
- Do employees know how to use ladders properly?
- Will guardrails or other fall-protection systems be removed so that other contractors' employees can do their jobs? Who is responsible for ensuring that fall-protection equipment is replaced?

With adequate planning and the right equipment, a physical means of protecting employees from falls is usually possible. A physical means of fall protection will not allow an employee to fall or will prevent the employee from hitting the ground or a lower level if a fall occurs; examples include guardrails, personal fall-arrest and restraint systems, scaffolds, and aerial lifts.





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## Train employees to work safely

You can't assume your employees know how to protect themselves from falls. They may not be familiar with fall hazards at a new job site or know how to protect themselves until you train them. Regardless of the fall-protection system or method you use, you must ensure that they know how to recognize fall hazards and follow safe work practices. Employees must be trained before they begin tasks that could expose them to fall hazards and before they use fall-protection systems or methods.



*You must document in writing that employees have been trained and that they know what fall-protection systems or methods to use, how to use them, and when to use them regardless of their experience. Include their names, training dates, and the trainer's signature.*

### **Employees must be retrained for any of the following reasons:**

- They don't recognize fall hazards.
- They don't understand the procedures that control the hazards.
- Changes in the workplace or the fall-protection systems or methods make previous training obsolete.

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## **Enforce safe practices with on-the-job supervision**

Effective supervisors know how to motivate employees and, when discipline is necessary, they know how to apply it fairly.

### **Essential tasks for supervisors**

- Verify that employees have been trained and can perform their work safely.
- Review the safety performance of each employee periodically.
- Instruct, retrain, or discipline employees who work unsafely.
- Closely supervise new employees after they have been trained.
- Require employees to demonstrate they can work safely before permitting them to work independently.

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## Using alternative methods to prevent falls

Always plan to eliminate or control fall hazards with a physical means of fall protection — one that will not allow an employee to fall or will prevent the employee from hitting the ground or a lower level if a fall occurs. When a physical means of protecting employees from falls is infeasible or would create a greater hazard, you must develop alternative methods to minimize the risk of falling.

- A qualified person must determine the worksite-specific circumstances that prevent a physical means of protecting employees *and* develop the alternative methods that minimize the risk of a fall.
- A competent person must supervise employees who will use the alternative methods.
- Alternative methods must reduce the risk of falling.
- Alternative methods must be incorporated into the work process so that employees can do their jobs with minimum exposure to fall hazards.

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## When to use alternative methods

The bottom line: The alternative methods you use must reduce the risk of falling to the lowest extent possible. Use alternative methods only when a qualified person has determined that a physical means of protecting employees from falls is infeasible or would create a hazard greater than the existing hazard.

- Using alternative methods because of poor planning is not acceptable. If you plan your project carefully, you can protect employees from most fall hazards.
- You must be able to explain why your alternative methods are more appropriate for protecting employees than a physical means of fall protection.
- If you think that you can't provide a physical means of protecting employees from falls, call your local OR-OSHA office to determine if alternative methods are appropriate.

# Fall protection options for specialty contractors

## Working on the roof

Identify hazards before you begin the project. Will other trades-people be working on the roof? How



Photo credit: Level Rite LLC

steep is the roof? What's the composition of the roof material? How will employees get on the roof? Do they need to handle heavy materials? How long will they be working on the roof? How close to the roof edge will they be working?

## Fall protection options

- **Personal fall-arrest systems and fall-restraint systems:** Options when permanent anchors are available or temporary anchors can be installed.
- **Guardrail systems:** Can be attached to the edge or surface of the roof, or held in place by a weighted counter-balance system.

### Useful accessories

**Roof anchor devices:** There are manufacturers and distributors of devices that easily attach to the rungs of a ladder and secure the ladder to the apex of a roof. These devices make it easier to climb and work on a sloped roof.



Photo credit: Level Rite LLC

**Traction shoes:** Wear traction shoes to ensure a firm grip on sloped roofs. Shoes and strap-on soles are available for metal, shake, or shingle roofs.



Photo credit: Korkers Footwear Inc.

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- ***Scaffolding:*** Can be erected at the edge of the roof or as a “catch platform.” Catch platforms must have a standard guardrail and toeboard and extend at least 2 feet past the eave overhang; the guardrail must extend substantially above the slope plane of the roof and prevent a person from passing over or through the rails.
  - ***Aerial lifts:*** Useful on stable, level terrain. With appropriate training, a worker can use an aerial lift to access hard-to-reach areas near the eave of a roof.
  - ***Slide guards:*** Can be used only on roofs with slopes between 3:12 and 8:12 and ground-to-eave height of 25 feet or less. Roofs with slopes between 3:12 and 6:12 must have at least one slide guard below the work area, no closer than 6 inches from the eave. Roofs with slopes between 6:12 and 8:12 must have multiple slide guards no more than 8 feet apart vertically. The lowest slide guard must be no closer than 6 inches from the eave.

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## Working in attics

The problem: Trying to move through a cramped attic to do a job while avoiding falling through the joists. Tight spaces can make it difficult to use a physical means of fall protection. Consider alternative methods only when a physical means of protecting employees from falls is infeasible or would create a greater hazard than other options.



### Fall protection options

- **Safety nets:** May be an option for some applications.
- **Scaffolds:** Erect stationary or mobile scaffold platforms under the work area.
- **Aerial lifts:** May be an option when there is a stable surface for the lift and adequate clearance below the attic.
- **Fall-arrest/restraint systems:** Use only if appropriate anchorages are available

## Working on established floors

Employees must be protected from uncovered floor holes and the unprotected edges of mezzanines, balconies, and walkways. Floor holes and edges can pose unexpected hazards for others when existing covers or guardrails are removed and not replaced.



Remember that employees must be protected from these hazards when they are 6 feet or more above a lower level. The prime contractor is generally responsible for maintaining guardrail systems. All employers are responsible for ensuring that their employees are protected from falls.

Use guardrails or covers to prevent workers from falling through floor holes.

### Fall protection options

**Guardrail systems:** Guardrails are the most effective method for protecting employees. Use temporary guardrails until permanent guardrails can be installed. Reusable, temporary guardrail systems make it easy to construct freestanding railings for

Temporary guardrail systems make it easy to protect workers.



Photo credit: Scott Collins, Time Frame Inc.



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stairways, ramps, walkways, and balconies. When workers need to remove guardrails temporarily, they must use another fall-protection system or method until the guardrails are replaced.

## Access to work areas

Workers often use access ramps, runways, and ladders without thinking about them, but they account for a large proportion of fall-related injuries at job sites. For example, falls from ladders account for nearly 30 percent of disabling injuries among construction workers, the highest percentage of fall-related injuries in the industry.

***Ramps and walkways:*** Ramps and walkways must be at least 18 inches wide and support at least four times the maximum intended load. The maximum slope cannot exceed 1 vertical foot for every 3 horizontal feet. Ramps and walkways that exceed 1 vertical foot for every 8 horizontal feet must have cleats not more than 14 inches apart. Access ramps 6 feet or more above a lower level must have guardrails.

***Ladders:*** Most ladder accidents happen because workers don't set them up correctly. Make sure the ladder is stable and set up at the proper angle. Place straight ladders so the working length of the ladder is four times the horizontal distance from the ladder's base to the structure. Never use a stepladder that is folded and leaning against a structure.

Avoid using ladders to position heavy objects. Standing on a ladder while pulling or pushing a sheet of plywood or floor beam can cause the ladder to slide and become unstable. Employees must also be trained to recognize ladder hazards and minimize them.

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***Stairways:*** Stairways that have four or more risers or that rise more than 30 inches, whichever is less, must have at least one handrail and one *stairrail system* along each unprotected side or edge.

A “stairrail system” is a vertical barrier erected along the unprotected sides and edges of a stairway to prevent employees from falling. The top surface of a stairrail system may also be a handrail.



Photo credit: Safety Maker Inc.

Temporary railings are easy to install and remove.

# Frequent questions

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## **How close to the edge of a deck or floor can employees work before fall protection is required?**

The distance must eliminate the potential for an employee to stumble and fall over the unprotected edge. Consider factors such as the following: Is the walking/working surface sloped, uneven, or slippery? Are there tripping hazards? Is there wind, ice, snow, or rain? Could pulling, pushing, or carrying material cause employees to lose their balance? Are employees working from ladders placed next to the edge? Will employees be walking parallel or perpendicular to an unprotected edge? Could they stumble and fall over the edge? Employers need to evaluate all relevant factors to determine a safe working distance.

## **Can tradespeople other than roofers use colored ribbon or flagged rope to identify safe work areas when they're working on a roof?**

Other tradespeople can use colored ribbon or flagged rope to identify a safe work area but it must be far enough away from the edge of the roof so that it is physically impossible for a worker to trip or stumble over an unprotected edge.

## Frequent questions (continued)

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### **Which trigger height for fall protection applies when tradespeople other than roofers are working on a roof? Six feet or 10 feet?**

The 10-foot trigger height for fall protection applies to elevated surfaces not designed for regular use as walking/working surfaces, such as roofs. The 6-foot trigger height applies when there is exposure to:

- Holes in floors or roofs
- Wall openings
- Unprotected edges of established floors, mezzanines, balconies, and walkways
- The edges of an excavation 6 feet or more in depth

# Important rules

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## **Fall protection:** Subdivision 3/M

- 1926.501, Duty to have fall protection
- 437-003-1501, General fall protection
- 1926.502, Fall protection systems criteria and practices
- 437-003-0503, Training requirements

## **Scaffolding:** Subdivision 3/L

- 1926.451, General requirements
- 1926.452, Requirements applicable to specific types of scaffolds
- 1926.453, Aerial lifts
- 437-003-0071, Manually propelled elevating aerial platforms
- 437-003-0073, Boom supported elevating work platforms
- 437-003-0074, Scissor Lifts — Self-propelled elevating work platforms
- 1926.454, Training requirements

## **Stairways and ladders:** Subdivision 3/X

- 1926.1051, General requirements
- 1926.1052, Stairways
- 1926.1053, Ladders
- 437-003-0065, Extension ladders
- 1926.1060, Training requirements

# Important terms

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**Alternative methods** — Methods developed by a qualified person that minimize the risk of falling. All procedures, tasks, and positioning of employees must ensure that the work is done with minimum exposure to fall hazards. Alternative methods can only be used after a qualified person has determined that providing a physical means of fall protection is infeasible or would create a greater hazard.

**Competent person** — One who is capable of identifying existing and predictable hazards in employees' surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate the hazards.

**Established floor** — Any floor in a building on which exterior walls have been erected.

**Fall hazard** — An unprotected, elevated walking/working surface. Fall hazards are foreseeable. You can identify them and eliminate or control them before they cause injuries.

**Hole** — A gap or void 2 inches or more in its smallest dimension in a floor, roof, or other walking/working surface.

**Greater hazard** — When the installation or use of a physical means of fall protection creates a more severe hazard than that to which employees performing the work would otherwise be exposed.

**Infeasible** — Technologically impossible to provide a physical means of protecting employees from falls or when doing so would prevent the performance of the work.

**Opening** — A gap or void 30 or more inches high and 18 or more inches wide in a wall or partition.

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**Physical means of fall protection** — A fall-protection system or method that will not allow an employee to fall or will prevent the employee from hitting the ground or lower level.

**Qualified person** — One who has successfully demonstrated his or her ability to solve or resolve problems relating to the subject matter, work, or project by earning a recognized degree, certificate, or professional standing, or having extensive knowledge, training, and experience.

# Notes

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# Notes

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# Oregon OSHA Services

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**OR-OSHA offers a wide variety of safety and health services to employers and employees:**

## **Consultative Services**

- Offers no-cost, on-site safety and health assistance to help Oregon employers recognize and correct safety and health problems in their workplaces.
- Provides consultations in the areas of safety, industrial hygiene, ergonomics, occupational safety and health programs, new-business assistance, the Safety and Health Achievement Recognition Program (SHARP), and the Voluntary Protection Program (VPP).

## **Enforcement**

- Offers pre-job conferences for mobile employers in industries such as logging and construction.
- Provides abatement assistance to employers who have received citations and provides compliance and technical assistance by phone.
- Inspects places of employment for occupational safety and health hazards and investigates workplace safety and health complaints and accidents.

## **Appeals, Informal Conferences**

- Provides the opportunity for employers to hold informal meetings with OR-OSHA on workplace safety and health concerns.
- Discusses OR-OSHA's requirements and clarifies workplace safety or health violations.
- Discusses abatement dates and negotiates settlement agreements to resolve disputed citations.

## **Standards & Technical Resources**

- Develops, interprets, and provides technical advice on safety and health standards.
  - Provides copies of all OR-OSHA occupational safety and health standards.
  - Publishes booklets, pamphlets, and other materials to assist in the implementation of safety and health standards and programs.
  - Operates a Resource Center containing books, topical files, technical periodicals, a video and film lending library, and more than 200 databases.
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## Public Education & Conferences

- Conducts conferences, seminars, workshops, and rule forums.
- Coordinates and provides technical training on topics such as confined space, ergonomics, lock-out/tagout, and excavations.
- Provides workshops covering basic safety and health program management, safety committees, accident investigation, and job-safety analysis.
- Manages the Safety and Health Education and Training Grant Program, which awards grants to industrial and labor groups to develop occupational safety and health training materials for Oregon workers.

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**For more information, call the OR-OSHA office nearest you. (All phone numbers are voice and TTY.)**

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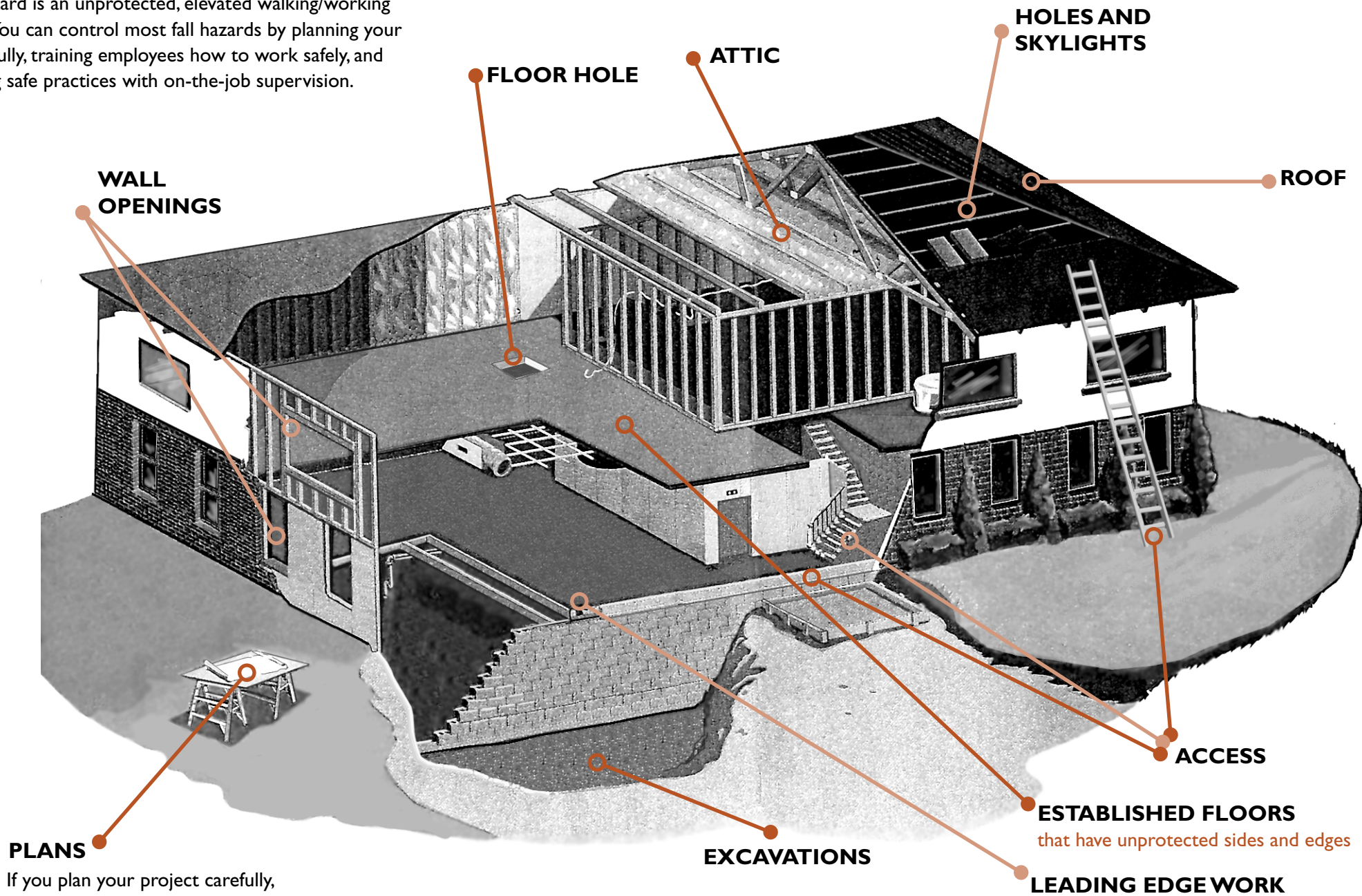
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*Oregon*  
**OSHA**

## BE AWARE OF FALL HAZARDS!

A fall hazard is an unprotected, elevated walking/working surface. You can control most fall hazards by planning your job carefully, training employees how to work safely, and enforcing safe practices with on-the-job supervision.



If you plan your project carefully, you can protect employees from most fall hazards.