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Occupational Safety
and Health Administration

Residential Fall Protection Program Update

Directorate of Construction - Office of Construction Services

This presentation is intended to provide information about STD 03-11-002, Compliance Guidance for Residential Construction. The Occupational Safety and Health Act requires employers to comply with safety and health standards promulgated by OSHA or by a state with an OSHA-approved state plan. However, this presentation is not itself a standard or regulation, and it neither creates new legal obligations nor alters existing obligations created by OSHA standards or the Occupational Safety and Health Act.

The examples of fall protection shown in the photographs contained in this presentation do not represent all possible work methods that can be used in residential construction. Moreover, employers should be aware that the examples of fall protection shown in the photographs contained in this presentation may not be suitable in all situations. Employers are responsible for ensuring compliance with applicable OSHA requirements.

Residential Fall Protection Program Update

- STD 03-11-002, Compliance Guidance for Residential Construction was issued December 16, 2010.
- STD 03-11-002 rescinds STD 03-00-001, dated June 18, 1999, Interim Fall Protection Compliance Guidelines for Residential Construction.
  - All letters that reference the canceled directive will be revised or withdrawn, as appropriate.

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Residential Fall Protection Program Update

Effective June 16, 2011, employers utilizing alternative fall protection found in the rescinded 1999 Interim Fall Protection Compliance Guidelines for Residential Construction will be subject to OSHA citations if they fail to comply with 29 CFR 1926.501(b)(13).

Residential Fall Protection Program Update

- Why the rescission?
  - Never intended to be a permanent resolution.
  - Fall protection is safe and feasible for the vast majority of residential construction activities.
  - OSHA received recommendations to rescind the interim directive.
  - The residential fall protection requirements have always been established in Subpart M at 29 CFR 1926.501(b)(13). The new policy directive implements the standard as originally intended.

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Fatalities and Fatality Rates in Construction

	2005	2006	2007	2008	2009
Fatalities	**1186**	**1239**	**1204**	**969**	**816**
Employment	**10.7M**	**11.3M**	**11.4M**	**9.5M**	**8.3M**
Fatalities per 100,000 workers	**11.0**	**10.9**	**10.5**	**9.6**	**9.8**

Source: BLS CFOI Data

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Residential Fall Protection Program Update

"We cannot tolerate workers getting killed in residential construction when effective means are readily available to prevent those deaths."

"Fatalities from falls are the number one cause of workplace deaths in construction."

Dr. David Michaels, Assistant Secretary of Labor for OSHA

The BLS Released Statistics Showing the Leading Causes of Construction Fatalities

FATALITIES	2005	2006	2007	2008	2009
FALLS	394	433	447	332	277
STRUCK BY	130	120	106	108	79
ELECTROCUTIONS	107	126	108	89	88
CAUGHT IN/BETWEEN	111	96	98	92	34

Source: BLS CFOI Data

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The BLS Released Statistics Showing the Fall Fatalities in Residential Construction

FATALITIES	2005	2006	2007	2008	2009
TOTAL FALLS	71	62	55	40	42
FALLS FROM ROOFS	24	21	19	11	17

Source: BLS CFOI Data

Significant Changes in the Residential Fall Protection Policy

- Under the new directive employers must follow 1926.501(b)(13).

- 1926.501(b)(13) states … workers "engaged in residential construction activities 6 feet (1.8 m) or more above lower levels shall be protected by guardrail systems, safety net system, or personal fall arrest system."

- … or, by alternative fall protection measures allowed under 1926.501(b) for particular types of work.

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Other Methods Allowed Under 1926.501(b)

- 1926.501(b)(2)(ii) - **Controlled access zones and control lines** can be used for some leading edge applications.
- 1926.501(b)(4)(i) and (ii) - **Covers** can be used to prevent workers from falling through holes.
- 1926.501(b)(5) - **Positioning devices** can be used while working on the face of formwork or reinforcing steel.
- 1926.501(b)(7)(i) and (ii) - **Barricades, fences and covers** can be used to prevent workers from falling into excavations.

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Alternative Methods Allowed Under 1926.501(b)

- 1926.501(b)(8)(i) - **Equipment guards** can be used to prevent workers from falling into dangerous equipment.
- 1926.501(b)(10) - A combination of a **warning line system and safety monitoring system** can be used for roofing work on low-slope (4:12 or less) roofs. Or, on roofs 50-feet (15.25 m) or less in width, the use of a safety monitoring system without a warning line system is permitted.

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29 CFR 1926.501(b)(13)

- If the employer can demonstrate that it is infeasible or creates a greater hazard to use the required fall protection systems, the employer must instead develop and implement a written site specific fall protection plan in accordance with 29 CFR 1926.502(k).
  - The Agency does not consider "economic infeasibility" to be a basis for failing to provide conventional fall protection.
- Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the fall protection systems listed in 29 CFR 1926.501(b)(13).
  - OSHA expects that the fall protection methods listed in 1926.501(b)(13) can be used without significant safety or feasibility problems for the vast majority of residential construction activities.

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Significant Changes in the Residential Fall Protection Policy

OSHA did not define residential construction in 1926.501(b)(13). STD 03-11-002 includes an interpretation for the term “residential construction” for purposes of the standard.

Definition of Residential Construction

- In order to be classified as residential construction, two elements must be met:
  - The end-use of the structure being built must be as a home, i.e., a dwelling; and
  - The structure being built must be constructed using traditional wood frame construction materials and methods.
    - The limited use of steel I-beams to help support wood framing does not disqualify a structure from being considered residential construction.

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Residential Construction

Cold-formed metal studs will be considered within the bounds of traditional wood frame construction materials and methods.

Residential Construction

The use of masonry **brick or block** in exterior walls will be treated as falling within the scope of traditional wood frame construction materials and methods.

Non-Residential Construction

- These methods will not be considered “Residential Construction” as the term is interpreted in this directive.
  - Precast concrete
  - Steel I beams beyond the limited use of beams to support wood framing.

Training Requirements

Under 29 CFR 1926.503, workers exposed to fall hazards must be trained to recognize potential fall hazards and in the procedures to be followed to minimize those hazards.

Training Requirements 1926.503

- Training must cover among other subjects:
  - The nature of fall hazards in the work area.
  - How to erect, maintain, disassemble, and inspect the fall protection systems to be used.
  - How to use and operate the fall protection systems to be used.
  - Subpart M requirements
- Supplements 1926.21
- Prepare training certification.
  - Documentation of the latest training certification must be maintained.
- Retraining for:
  - Changes in the fall protection systems to be used or to the workplace.
  - Inadequacies in employee's knowledge or use of fall protection indicates that retraining is necessary

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Conventional Fall Protection Systems

- Guardrail Systems
- Safety Net Systems
- Personal Fall Arrest Systems

Conventional Fall Protection Systems

Guardrail Systems

1926.502(b)

Guardrail Systems 1926.502(b)

- Requirements for guardrail systems include:
  - Top rails 42” +/- 3”
    - Must withstand 200 pounds – 1926.502(b)(1) & 1926.502(b)(3)
  - Mid rails halfway
    - Must withstand 150 pounds – 1926.502(b)(2)(i) & 1926.502(b)(5)
  - Surface the guardrail to prevent punctures, lacerations and the snagging of clothing – 1926.502(b)(6)
  - No steel or plastic banding – 1926.502(b)(8)

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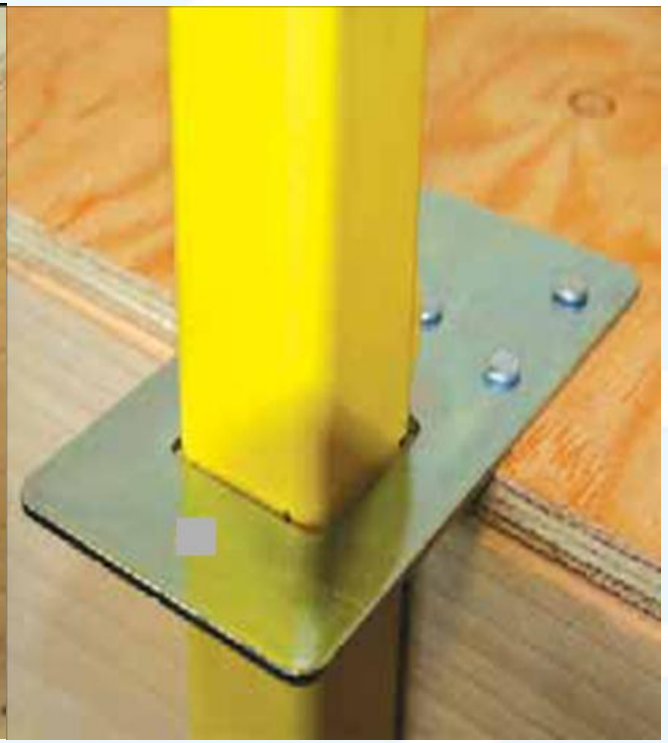
Guardrail Systems

Here we see a 2nd floor perimeter completely protected by a guardrail system.

Guardrail Systems

- A pre-fabricated wall panel positioned for installation behind a fully protected area -- potential fall to the exterior of the structure has been eliminated.
- Stairwell is also protected by guardrails -- eliminating falls to the interior also.

Guardrail Systems



Brackets for engineered guardrail systems can either be side mounted or deck mounted. Either way, employers should look to the manufacturer instructions or the recommendations of a registered professional engineer for proper installation.

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Guardrail Systems

Guardrails in place during re-roofing activities.

Note: The picture on the right lacks protection for the rake edge so some means of protecting this worker (guardrail, safety nets or PFAS) must be used.

Guardrail Systems

Here we see a fully guardrailed roof ready to go.

Conventional Fall Protection Systems

Safety Net Systems

1926.502(c)

Safety Net Systems

- Requirements for safety net systems include:
  - As close as practicable, no more than 30’ below – 1926.502(c)(1)
  - Sufficient clearance to prevent contact with surface or structures below – 1926.502(c)(3)
  - Drop tested or certified – 1926.502(c)(4)

Safety Net Systems

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet
5 to 10 feet	10 feet
More than 10 feet	13 feet

From 1926.502(c)(2)

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Safety Net Systems

These nets have been positioned to prevent falls to the interior of the building. Employers should consult the manufacturer's instructions and/or a registered professional engineer to ensure proper installation of the net and bracing of the stud walls. Give due consideration to the potential impact load on the net and lateral load on the stud walls in the event of a fall.

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Conventional Fall Protection Systems

Personal Fall Arrest Systems

1926.502(d)

Personal Fall Arrest System

- A Personal Fall Arrest System (PFAS) must include the following components:
  - Anchorage
  - Body Harness
  - Connector/Lanyard
- A PFAS may also include a lanyard, deceleration device, or lifeline.

Personal Fall Arrest System Anchor Point

- 1926.502(d)(15): Anchorages used for attachment of Personal Fall Arrest equipment must be capable of supporting at least 5,000 pounds per employee attached, or must be designed and used as follows:
  - As part of a complete personal fall arrest system which maintains a safety factor of at least two.
  - Under the supervision of a qualified person.
- Employer should look to the manufacturer's instructions or the recommendations of a registered professional engineer for proper installation.

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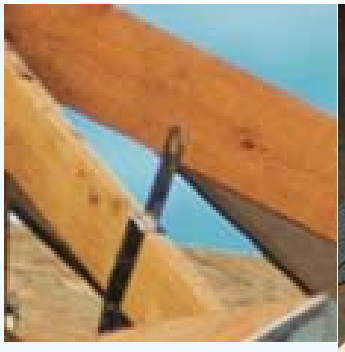
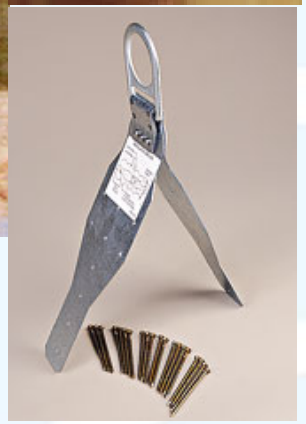
Personal Fall Arrest System Anchor Point







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Personal Fall Arrest System
Full Body Harness

PFAS in use during roofing and re-roofing activities.

Personal Fall Arrest System
Full Body Harness

- A full body harness distributes the force of the fall over the thighs, pelvis, waist, chest and shoulders
- Body belts have not been allowed as part of an arrest system since January 1998.

Personal Fall Arrest System
Full Body Harness

- The attachment point on a full body harness is a D-ring in the center of your upper back.
- Be sure to use a size that fits properly.
- Use with compatible equipment.

Personal Fall Arrest System
Full Body Harness

Which worker is wearing the harness correctly?

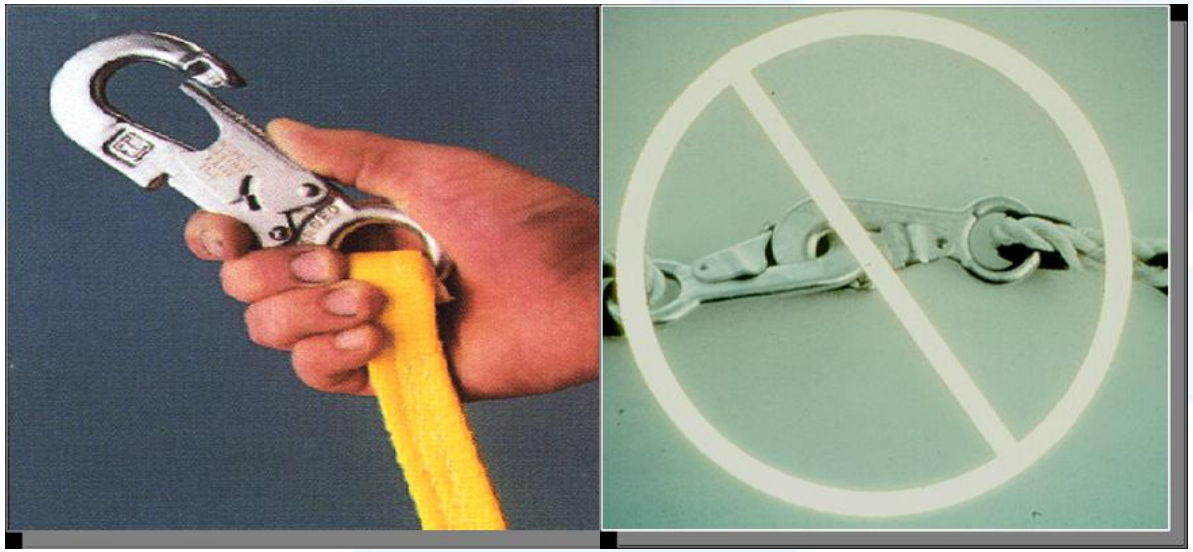
Personal Fall Arrest System
Full Body Harness

The worker on the right is wearing the harness correctly.

Personal Fall Arrest System Connector/Lanyard

Snaphooks must be locking type – 1926.502(d)(5).

Never hook two snaphooks together unless designed for that purpose – 1926.502(d)(6).



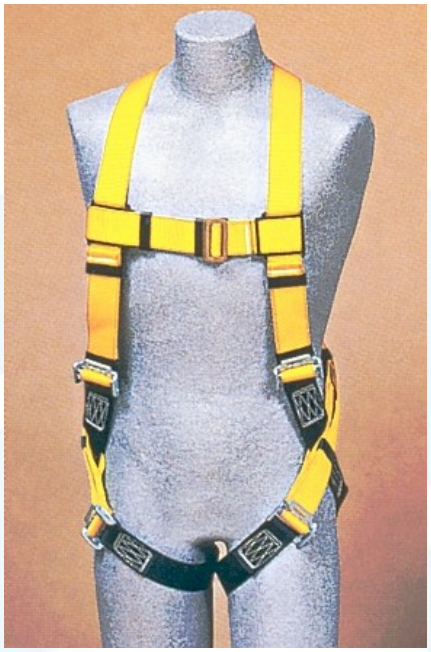
Personal Fall Arrest System Connector/Lanyard

Personal Fall Restraint System

Although the standard does not mention personal fall restraint systems, OSHA has previously stated that it accepts a properly utilized fall restraint system in lieu of a personal fall arrest system when the restraint system is rigged in such a way that prevents the worker from being exposed to the fall hazard.

Personal Fall Restraint System

Fall restraint can be a body belt or full body harness.



Must be tied off so that the worker cannot go past the unprotected side or edge, no matter where the work is on the walking/working surface.

Lanyards should be adjustable to take up slack when workers move about.

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Residential Fall Protection Program

Other Work Methods

Other Work Methods

Employers also have the option of having workers work from scaffolds (in compliance with Subpart L), ladders (in compliance with Subpart X) or aerial lifts (in compliance with 29 CFR 1926.453) instead of complying with 1926.501(b)(13).

Other Work Methods

Platform Ladders

Step Ladder

Other Work Methods

Bakers / Perry Scaffolds

Other Work Methods

Here is an example of a wall bracket, or top plate, scaffold system. Some contractors are using these systems for rolling trusses, cutting rafter tails and hanging fascia.

Other Work Methods

This contractor is working with trusses from this wall bracket/top plate scaffold system.

Other Work Methods

The positioning of an engineered guardrail system allows easy access for sheathing, roofing and utility installation. Multiple trades can be protected by these kinds of systems.

Other Work Methods

Scaffold System

Other Work Methods

Pump-jack Scaffold

Other Work Methods

Extensible Boom Aerial Lift

All-terrain Forklift with basket attachment

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Other Work Methods

- Extensible Boom Aerial Lift
  - Alternative for reaching heights if properly used.
  - PFAS or fall restraint must be worn and lanyard attached to boom or basket when working from an aerial lift - 1926.453(b)(2)(v).

Other Work Methods

Here are properly installed guard/hand rails using a “safety boot” system to position the uprights installed during framing.

Other Work Methods

Here is the same system still in place through MEP installation and dry wall. Priming and painting can be done before installing the permanent handrail and removing the guardrail.

Other Work Methods

Working at heights cannot be eliminated, but there are ways to minimize exposure to falls. Assemble as many parts of the building as possible on the ground.

Properly assembled and braced IAW the manufacturer's instruction and the BCSI guide

Other Work Methods

Flying pre-assembled structures into place will minimize worker exposure to fall hazards.

Properly assembled and braced IAW the manufacturer's instruction and the BCSI guide

Other Work Methods

Do as many things on the ground as possible. Here a contractor installed the building wrap prior to flying this section into place.

Properly assembled and braced IAW the manufacturer's instruction and the BCSI guide

Other Work Methods

Some contractors are even pre-positioning portions of the guardrail system on the ground.

Other Work Methods

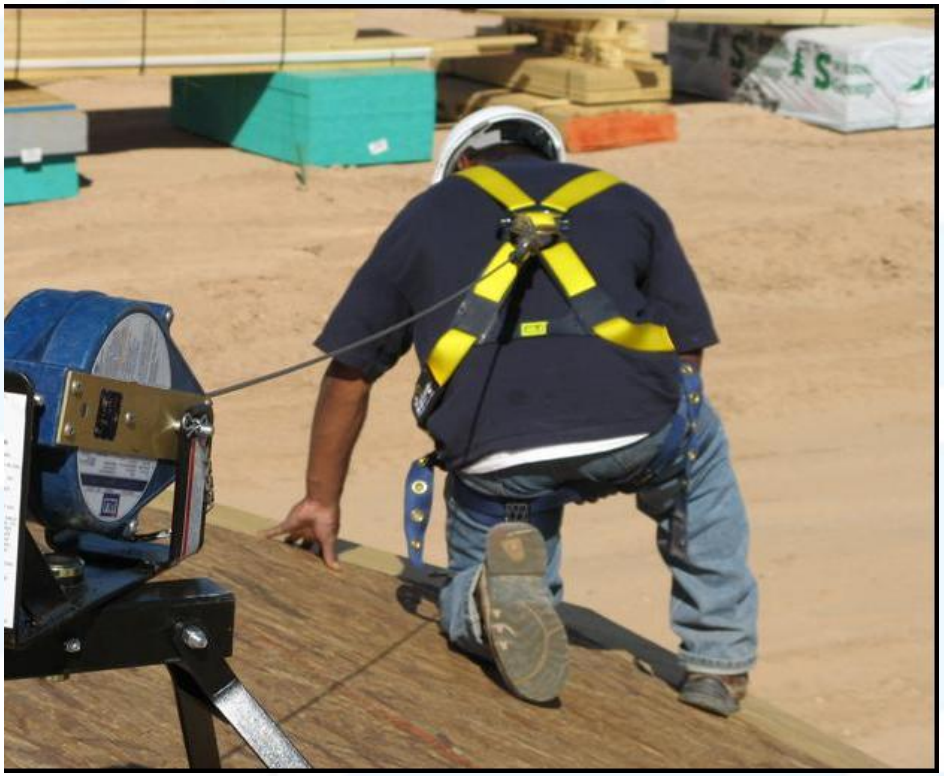
Pre-installed fall protection

Properly assembled and braced IAW the manufacturer's instruction and the BCSI guide

FALL HAZARDS

All sites have unprotected sides and edges, wall openings, or floor holes at some point during construction.
If these sides and openings are not protected, injuries from falls can happen.
There's no reason to work like this …

PFAS



… when at minimum, you can work like this.
If this worker should slip and fall, he will not hit the ground. PFAS works!

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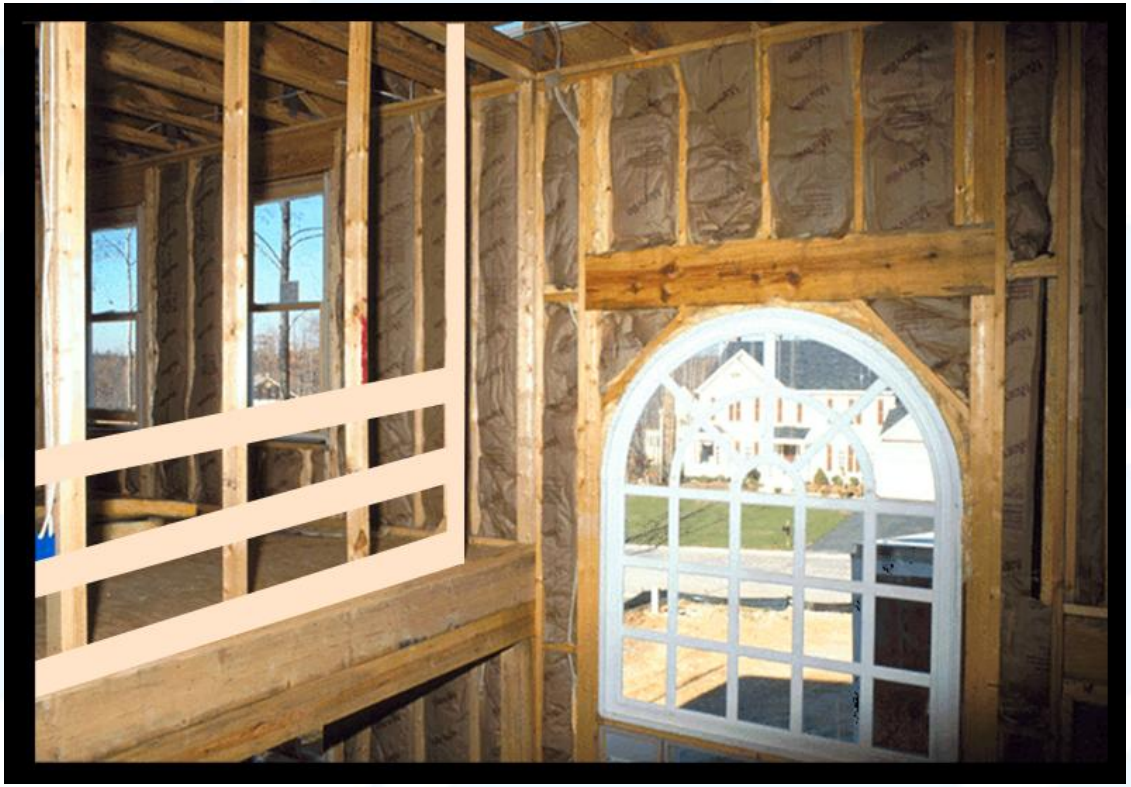
Fall Hazard

Some builders use 24” OC studs for non-load bearing walls. Prior to installation of drywall, temporary guardrail systems must be installed to prevent workers from falling through the studs.

Guardrail System



Like this!

Fall Hazard

Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet (1.8 m) above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes (1926.501(b)(4)).

This open-sided stairwell opening can be protected by a guardrail system (and handrail system – 1926.1052(c)).

Guardrail System

Like this!

Fall Protection Plan 1926.502(k)

- If an employer can demonstrate that conventional fall protection is infeasible or presents a greater hazard, the employer shall develop and implement a fall protection plan that complies with 1926.502(k).
- The employer bears the burden of establishing that it is appropriate to implement a fall protection plan for a particular workplace situation.

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Significant Changes in the Residential Fall Protection Policy

- Under 1926.502(k) the fall protection plan:
  - Must be written.
  - Must be site-specific.
    - A written fall protection plan developed for repetitive use, e.g., for a particular style or model of home, will be considered site-specific with respect to a particular site only if it fully addresses all issues related to fall protection at that site. Therefore, a standardized plan will have to be reviewed, and revised as necessary, on a site by site basis.

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Fall Protection Plan
1926.502(k)

- The plan must be prepared by a “qualified person” - 1926.502(k)(1).
  - "Qualified” means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project - 1926.32(m). (This could be the owner, supervisor, etc.).
- Be developed specifically for the site where the residential construction work is being performed – 1926.502(k)(1).
- Must be maintained up to date – 1926.502(k)(1).
- All changes shall be approved by a qualified person – 1926.502(k)(2).

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Fall Protection Plan 1926.502(k)

- Shall be maintained on the site – 1926.502(k)(3).
- Shall be implemented under the supervision of a competent person – 1926.502(k)(4).
  - "Competent Person" means 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 – 1926.32(f). (This could be the owner, supervisor, etc.).
- Shall include documentation of reasons why conventional fall protection systems are infeasible or create a greater hazard – 1926.502(k)(5).
- Shall include a written discussion of the alternative work practices to be used that will eliminate or reduce the possibility of a fall – 1926.502(k)(6).

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Fall Protection Plan 1926.502(k)

- Shall identify each location where conventional fall protection systems cannot be used and designate them Controlled Access Zones (CAZ) – 1926.502(k)(7).
- Implement a safety monitoring system in conformance with 1926.502(h) where no other alternative measure has been implemented – 1926.502(k)(8).
- Shall identify all workers designated to work in the CAZ – 1926.502(k)(9).
- Shall be reviewed and updated as appropriate if a fall, or near miss, occurs – 1926.502(k)(10).

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Fall Protection Plan
Safety Monitor Duties

- For a safety monitoring system under 1926.502(h) the monitor must:
  - Be a competent person.
  - Warn workers of fall dangers.
  - Be on same working level and within visual sighting.
  - Be close enough to communicate orally.
  - Not have responsibilities which take attention away from monitoring.

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Fall Protection Plan 1926.502(k)

A sample plan is in Appendix E to Subpart M and can be reviewed @

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10927

In Closing

- All workers should return safely home to their families every day.
- Employers must provide workers a place of employment free from recognized hazards.
- Visit the OSHA Construction webpage for additional residential fall protection compliance assistance and guidance materials:

  www.osha.gov/doc/residential_fall_protection.html
- For Fall Protection Standards for States with OSHA-approved State Plans, please visit:

  http://www.osha.gov/dcsp/osp/statestandards.html
- The enforcement date for the new directive is June 16, 2011.

QUESTIONS

- On-site Consultation
  - http://www.osha.gov/dcsp/smallbusiness/consult.html
- To submit an information inquiry by Electronic Mail Form:
  - http://www.osha.gov/ecor_form.html
- By Phone
  - 1-800-321-OSHA (6742) Toll Free U.S.
- Write To:
  - U.S. Department of Labor
    Occupational Safety & Health Administration
    Directorate of Construction – Room N-3468
    200 Constitution Avenue
    Washington, D.C. 20210

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