



WRONG



BETTER



Fall Protection

Susan Harwood Grant Training Program
2019

Wood Frame Construction



Learning Objectives

- Understand how OSHA defines residential construction
- Understand the proper use of guardrails during framing operations
- Identify best practices during roof truss installation
- Understand the proper use of personal fall arrest systems (PFAS) during roofing activities



Greater Hazard

- 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).
 - OSHA does not consider "economic infeasibility" to be a basis for failing to provide conventional fall protection. 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.
 - 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.



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.



Deck Protection

- All open edges and holes must be protected
- Guardrails or other forms of fall protection must be provided

Protect the Unprotected Edge



Protect the Unprotected Hole





Guardrails for Edges

- Make sure a floor perimeter is completely protected by a guardrail system.
- These guardrails were set in a way that the walls could be set without removing them.
- Fall protection must be used when guardrails are installed.
- Rails could be installed from the exterior on scaffolds or lifts.





Fall Hazard

- Stud walls with 24" OC studs for non-load bearing walls must have guardrails.
- Any opening over 19" wide must be guarded
- Stud walls on 16" centers are acceptable.





Other Work Methods

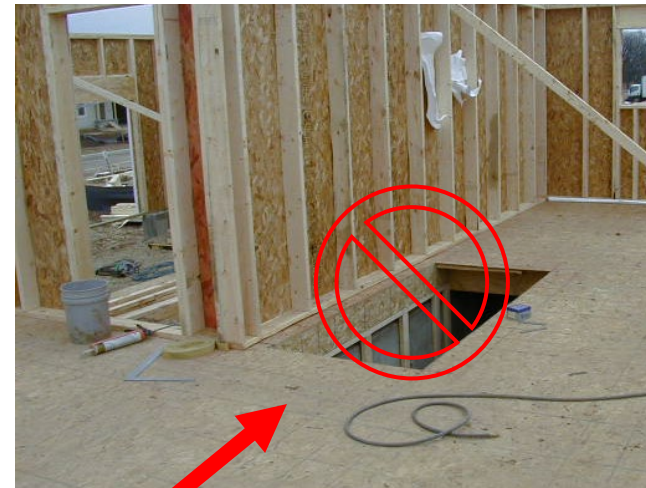


Here is a guardrail system still in place that allows installation of dry wall and painting before installing the permanent handrail and removing the guardrail.



Fall Hazards

- Stairways must have railings before they can be used.
- Floor holes must be protected immediately as decking is constructed around the hole.

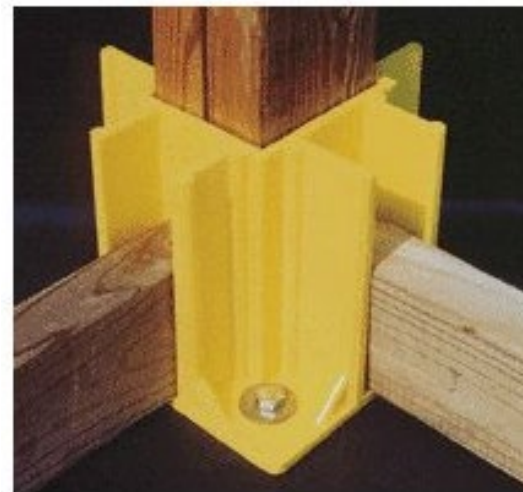
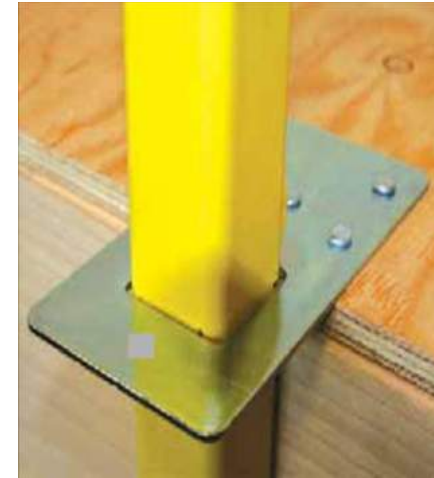


Not Good!!



Guardrail Systems

- Brackets and boots are available for guardrail systems that can either be side mounted or deck mounted.
- Employers should look to the manufacturer's instructions for proper installation.





Guardrail Systems





Stay Off Top Plates

- These workers are standing on the top plates of the walls to install trusses.
- Workers should instead work from scaffolds or ladders.





Installing Roof Trusses

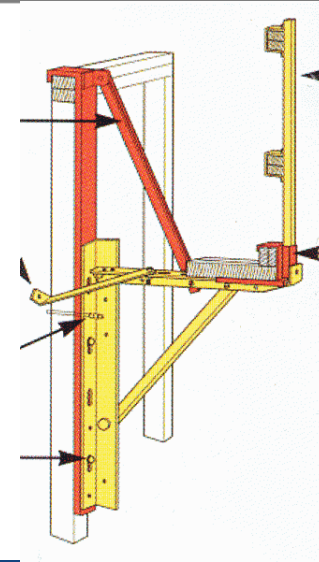
- Workers installing roof trusses from interior bracket scaffolds or ladders.





Wall or Bracket Scaffolds

- Here are examples of a wall bracket or top plate, scaffold systems.





Other Work Methods



These workers are working from bracket/top plate scaffold systems.

Guardrails must be able to support 200 pounds in all directions.



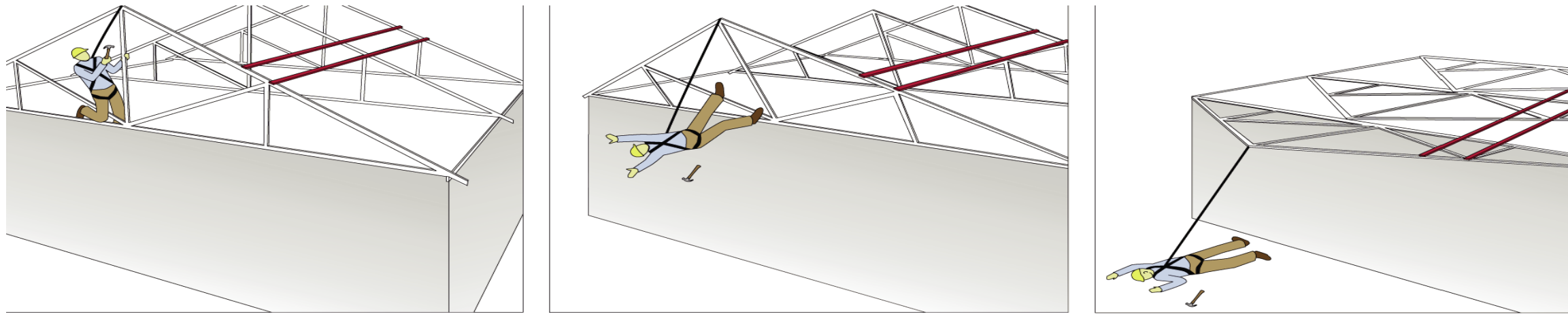
Climbing on Trusses

- Workers installing trusses should not stand on truss cords, especially while the truss is still supported on a crane.
- Employees should work from ladders or scaffolds or work platforms installed in the trusses.





Trusses as Fall Arrest Anchors



- Single Trusses **CANNOT** be used as fall arrest anchors unless the anchorage is approved by a qualified person.
- **NOTE:** Most single trusses **CANNOT** support a fall arrest load



Truss Collapse

- Collapses can occur from failure to adequately brace or from an overload in a fall arrest catch.
- Collapse of the truss system can result in serious injuries or death





Use of Guardrails

- Engineered guardrail systems allow easy access for sheathing, roofing and utility installation.
- Multiple trades can be protected by these kinds of systems.





Fall Arrest System Anchors For Wood Frame



- Wood members must be evaluated to assure that can support the forces imposed by fall arrest anchors



Anchors



- An example of a spreader attached to roof trusses.
- Manufacturer's requirements must be met.
- NOTE:
 - Truss systems and individual members must be evaluated to assure that they can support the forces imposed by fall arrest anchors



Pre-Assembly of Truss Sections



- Flying pre-assembled structures into place can minimize worker exposure to fall hazards.
- But proper engineering and crane issues must be addressed.



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



Personal Fall Arrest System Anchor Point

- Anchors must be capable of supporting at least 5,000 pounds per employee attached for fall arrest, or must be designed and used:
 - As part of a complete personal fall arrest system which maintains a safety factor of at least two.
 - Or under the supervision of a qualified person.
- Employers should look to the manufacturer's instructions or the recommendations of a properly qualified person for proper installation.



This is a 900 lb. Anchor



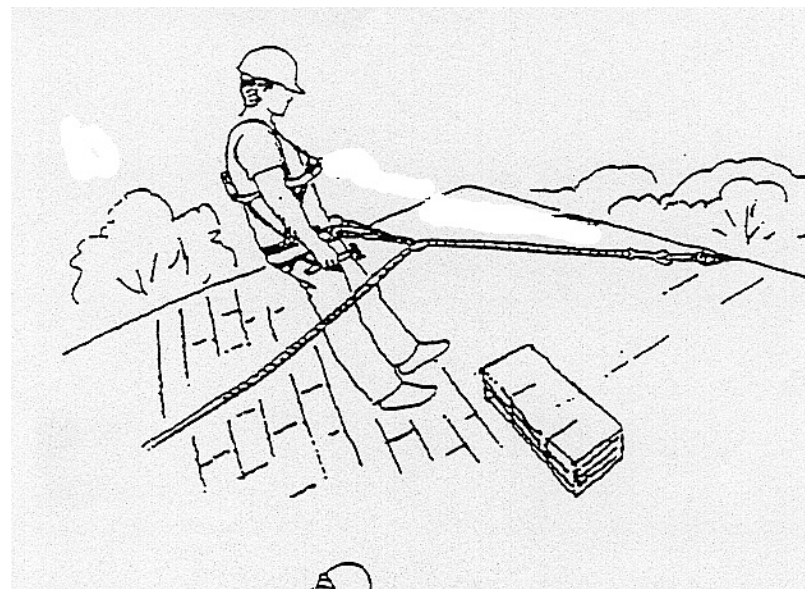
Roof Anchors





Roof Fall Restraint

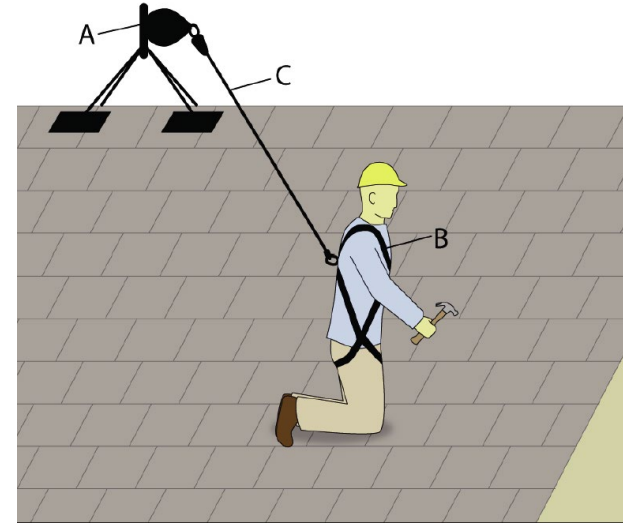
- Workers are restrained from reaching the edge.
- If they can reach the edge, full fall arrest must be implemented





Use of Retractables

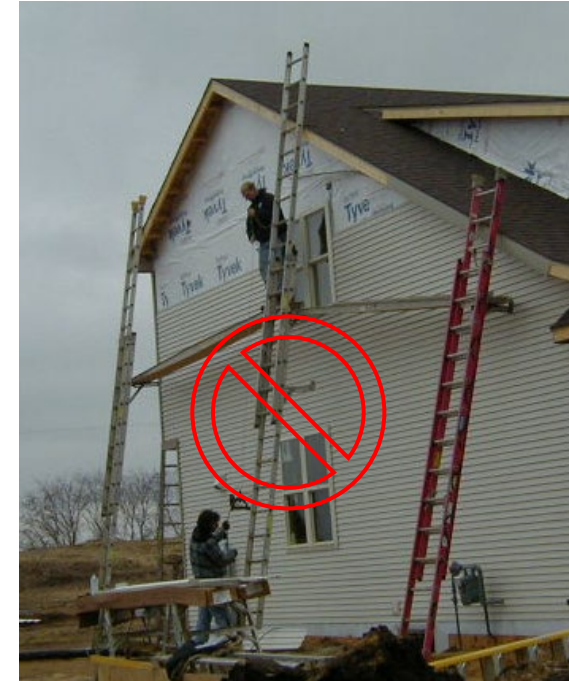
- Anchorage must be able to support at least 3,000 lbs.
- Retractables **CANNOT** be used in a restraint set.





Ladder Jack Scaffolds

- Platforms shall not exceed a height of 20 feet.
- Workers on ladder jacks must use a PFAS.
- Fall arrest must be tied-off above.
- Ladders used to support ladder jacks shall be placed, fastened and equipped with devices to prevent slipping.





Pump-jack Scaffolds



- Pump jacks are safer than ladder jacks.
- There are fall issues when anchoring pump jack poles.