

Subpart M



Fall Protection



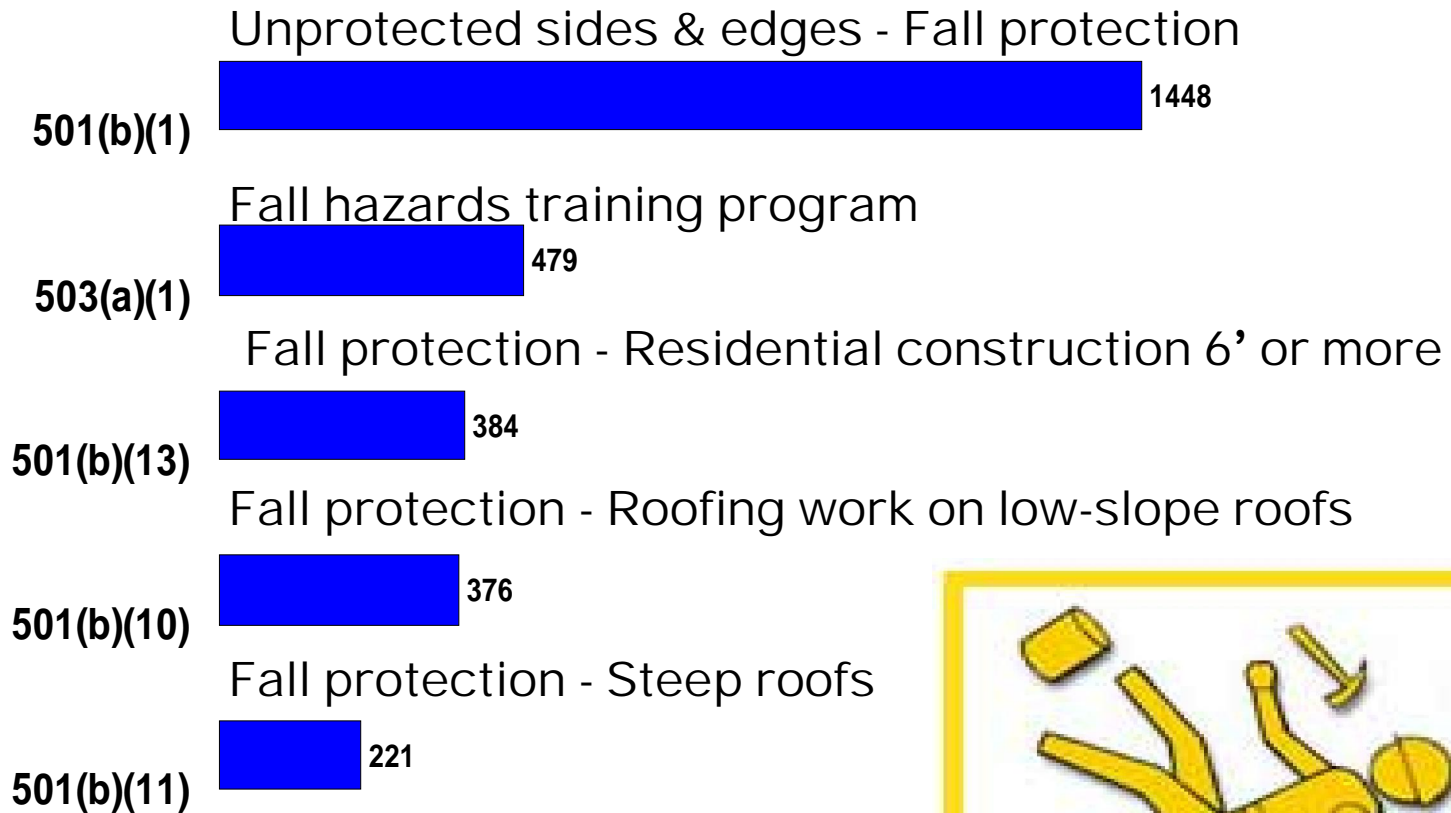
Diane Kelly (dkelly@intecweb.com)

Joe O'Connor (joconnor@intecweb.com)

800.745.4818

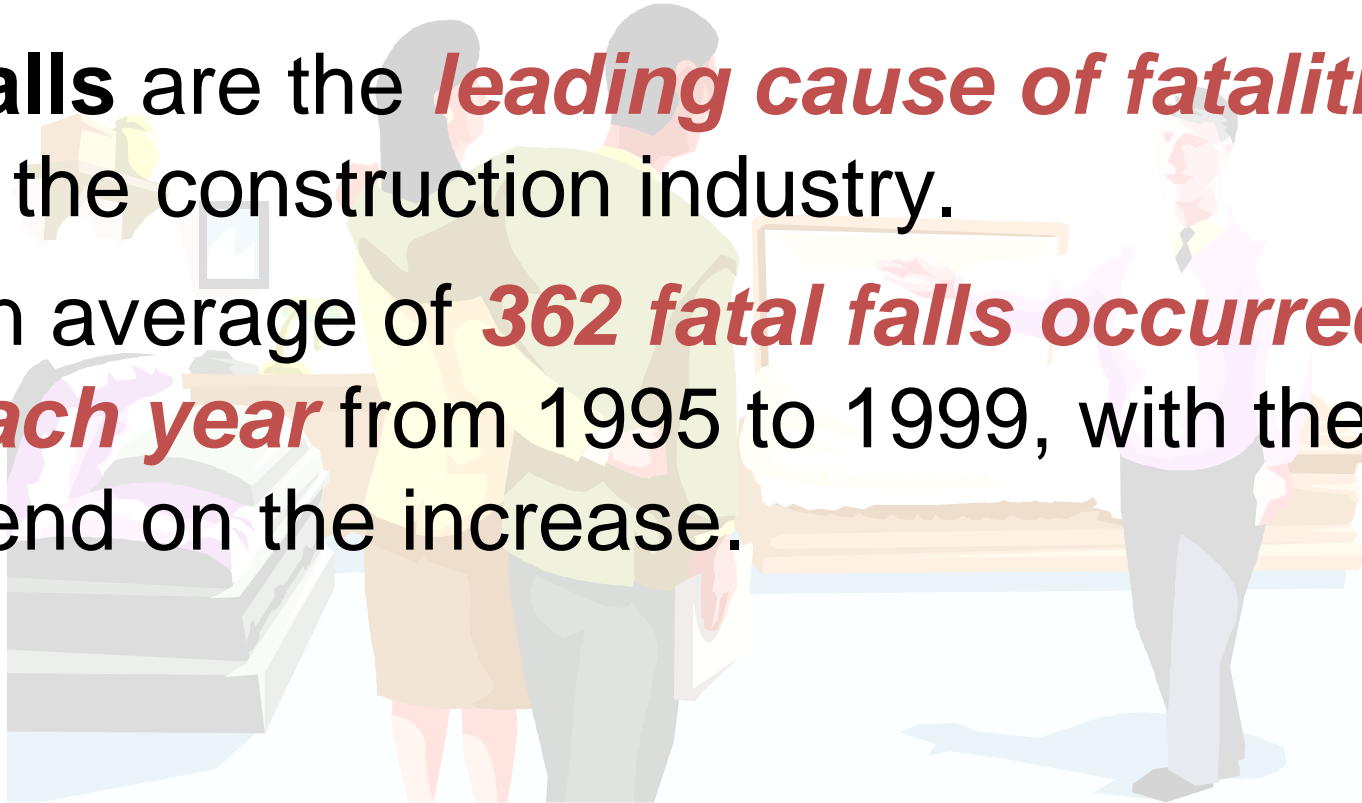


Subpart M - Fall Protection (1926.500 - 503)



Falls

- **Falls** are the *leading cause of fatalities* in the construction industry.
- An average of *362 fatal falls occurred each year* from 1995 to 1999, with the trend on the increase.



Acceleration = 32 ft/sec²



Subpart M applies to:

- (1) "Unprotected sides and edges."
- (2) "Leading edges."
- (3) "Hoist areas."
- (4) "Holes."
- (5) "Formwork and reinforcing steel."
- (6) "Ramps, runways, and other walkways."
- (7) "Excavations."
- (8) "Dangerous equipment."
- (9) "Overhand bricklaying and related work."


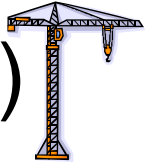

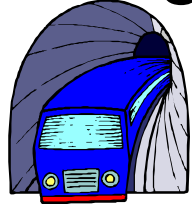




Subpart M applies to:

- (10) "Roofing work on Low-slope roofs."
- (11) "Steep roofs."
- (12) "Precast concrete erection."
- (13) "Residential construction."
- (14) "Wall openings."
- (15) "Walking/working surfaces not otherwise addressed."



Subpart M does not apply to:

- Scaffolds (See Subpart L) 
- Certain derricks and cranes (See Subpart N) 
- Steel Erection (See Subpart R) 
- Certain tunneling operations (See Subpart S) 
- Electric distribution lines (Subpart V) 
- Ladders and stairs (Subpart X) 

Duty to Have Fall Protection

- Walking/working surfaces on which employees are to work have the strength and structural integrity to support them safely.



Duty to Have Fall Protection

- "Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is **6 feet** (1.8 m) or more above a lower level shall be protected from falling by the use of *guardrail systems, safety net systems, or personal fall arrest systems.*

Leading Edge Work

- Employees protected by fall protection system(s)- such as Controlled Access Zones
- If infeasible, or creates a *greater hazard* must implement a **Fall Protection Plan**



Definition

- "Controlled access zone (CAZ)" means an area in which certain work (e.g., overhead bricklaying) may take place **without** the use of guardrail systems, personal fall arrest systems, or safety net systems and ***access to the zone is controlled.***

Hoist Areas

- Hoist areas must be protected by an FPS
- If guardrail section(s) are removed and worker must lean into opening, a PFAS is required.



Holes and Skylights

- Protect from: falling through, tripping or stepping into, and objects falling thorough



Ramps, Runways, Walkways

- Must protect workers with guardrail systems



Excavations

- Use guardrails, fences or barricades if excavation is not readily seen



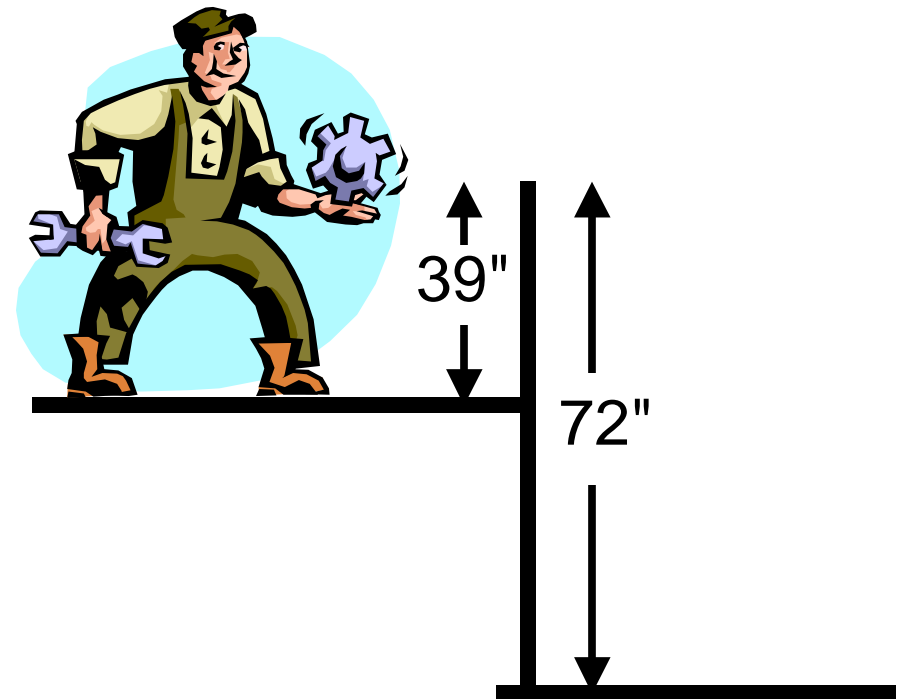
Dangerous Equipment

- **Below six feet** must protect workers with guardrail systems or by equipment guards.



Wall openings

- Wall opening is 6 feet (1.8 m) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface protect with FPS



Falling Objects

- Must wear hardhats **and** use:
 - Toeboards, screens or guardrails; or
 - Canopy; or
 - Barricades



Fall Protection

systems

1926.502

Guardrail Systems

- Top rail, mid-rail, and toeboard
- Top rail 42" (plus or minus 3 inches)
- Toeboard minimum 3 1/2 inches high



Midrails

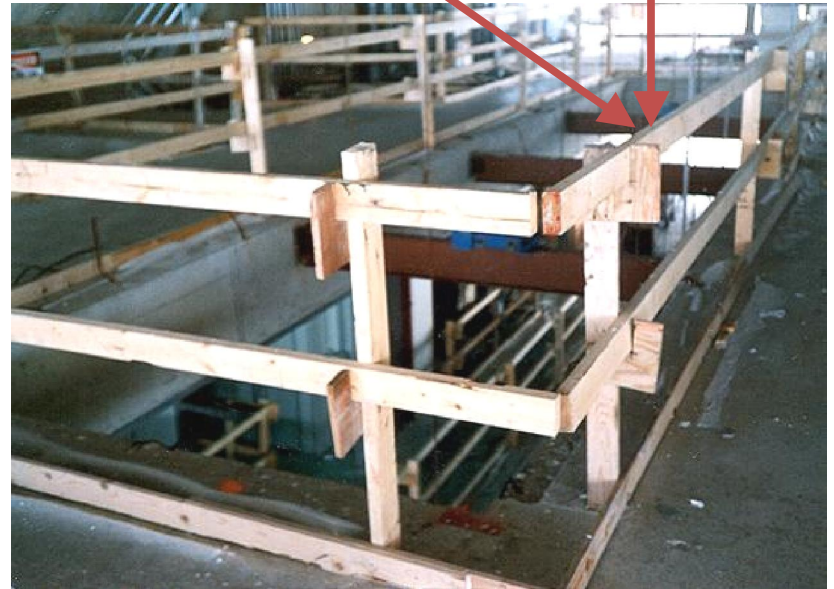
- Required if no wall or parapet at least 21" high
- Installed midway between top rail and working level
- Screens & mesh run all along entire opening
- Balusters, when used, not more than 19" apart

Guardrail Systems

- Must withstand 200 pound force
- Appendix B of the standard provides guidance

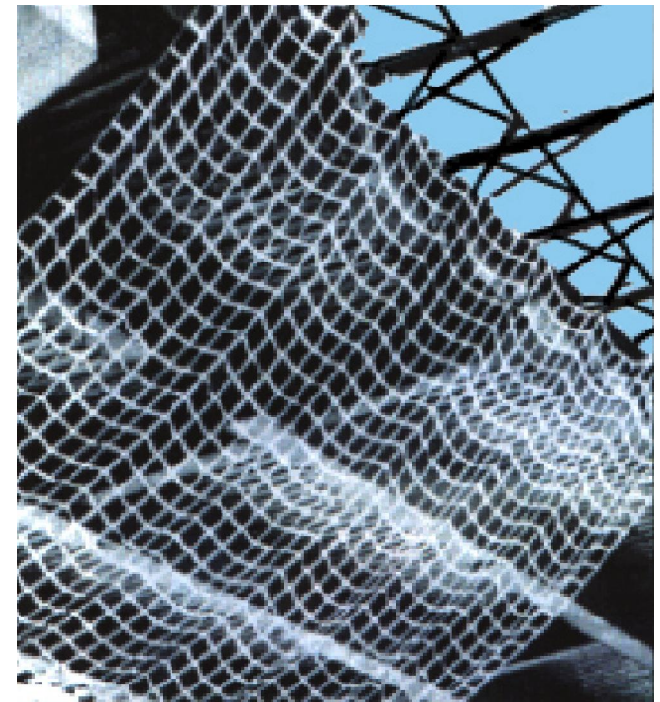
200 lb. force, from 2" in downward or outward direction

- **Surfaced to prevent injury**
- **No projection hazard at rail ends**
- **All rails at least 1/4" thick**



Safety Nets

- Installed a maximum of 30' below working level
- 400 pound drop test or ***certified*** by employer or CP
- Extends sufficiently from outer edge
- Inspected weekly
- Objects removed within shift
- Border rope strength of 5000 pounds



Personal Fall Arrest Systems PFAS

- No body belts for fall arrest!
- Body belts for positioning systems only

PFAS



Snaphooks

- Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:
 - Directly to webbing, rope, or wire rope
 - To each other
 - To a dee-ring to which another snaphook or other connector is attached
 - To a horizontal lifeline



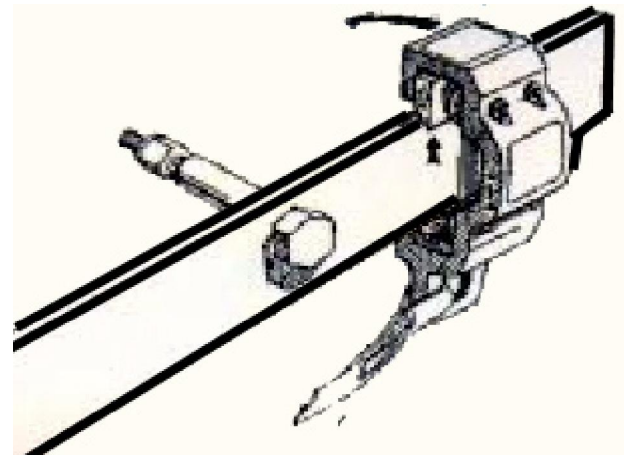
Anchorage

- "Anchorage" means a secure point of attachment for lifelines, lanyards or deceleration devices.



Anchorage

- Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kn.) per employee attached



Anchorage

- As part of a complete personal fall arrest system which maintains a safety factor of at least two; and
- Under the supervision of a qualified person.



Horizontal Lifelines

- Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.



Horizontal Lifelines

- Devices used to connect to a horizontal lifeline which could become vertical must be capable of locking in both directions on the lifeline.



Connector

- Used to couple (connect) parts of the personal fall arrest system



Connector

- Buckle or dee-ring
sewn into a body belt
or body harness



Deceleration Device

- Limits the energy imposed on an employee during fall arrest.

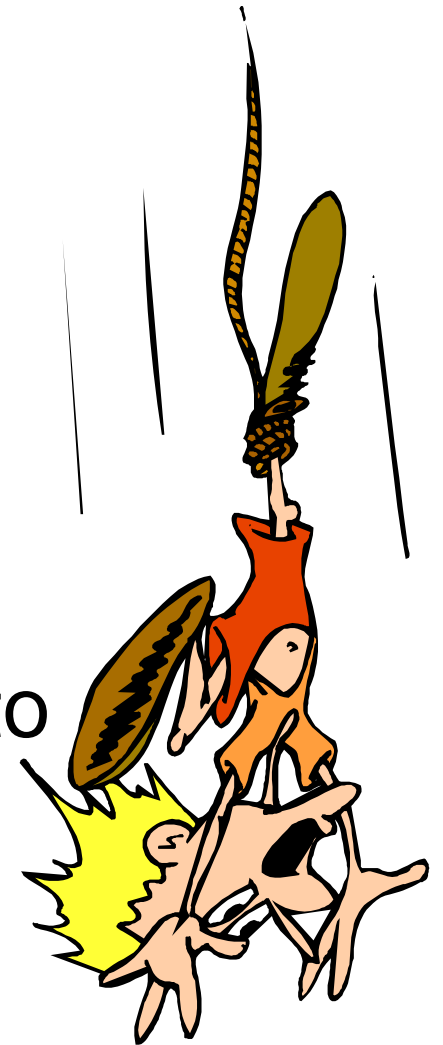


Deceleration Distance

- "Deceleration distance" means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate.

Free fall Distance

- "Free fall distance" means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall.



Lanyard

- Cannot be made of natural fiber rope
- Must be protected against damage by cuts or abrasions
- Each employee must be provided a separate lanyard
- Lanyards must have a minimum breaking strength of 5000 pounds



PFAS

- Personal Fall Arrest Systems must:
 - limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
 - be rigged such that an employee can neither free fall more than 6 feet (1.8 m), nor contact any lower level;
 - bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet

Calculation of Total Fall Distance

- Freefall = 6 feet maximum
- Deceleration Distance = 3.5 feet maximum
- Lifeline elongation = 2 feet maximum
- Total fall before stopping = 11.5 feet
- Portion of body landing below attachment point approximately 5 feet
- Total clearance below required to avoid contacting lower level may be as great as 16.5 feet or more!



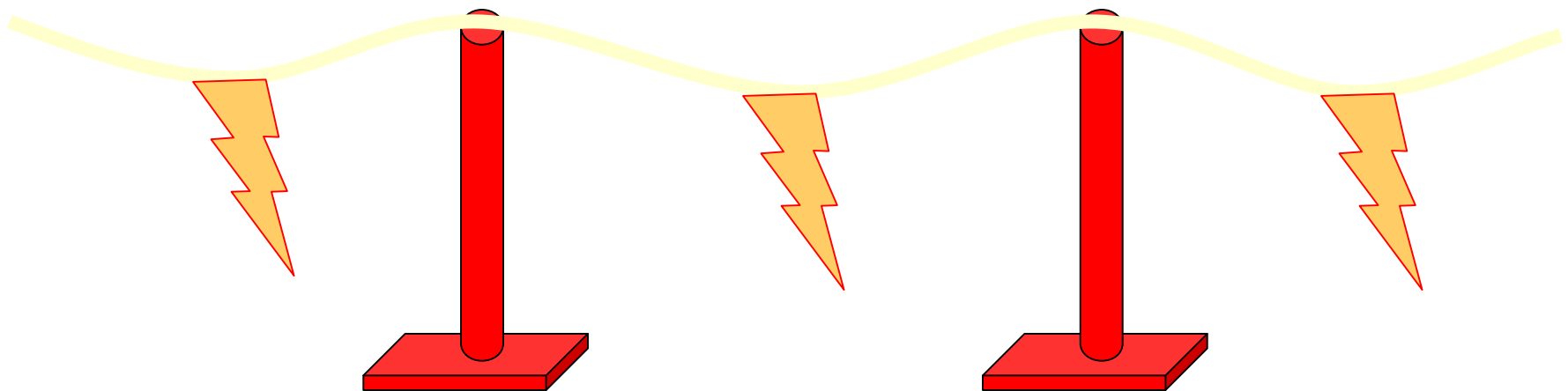
Attachment Point

- Center of wearers back or above head



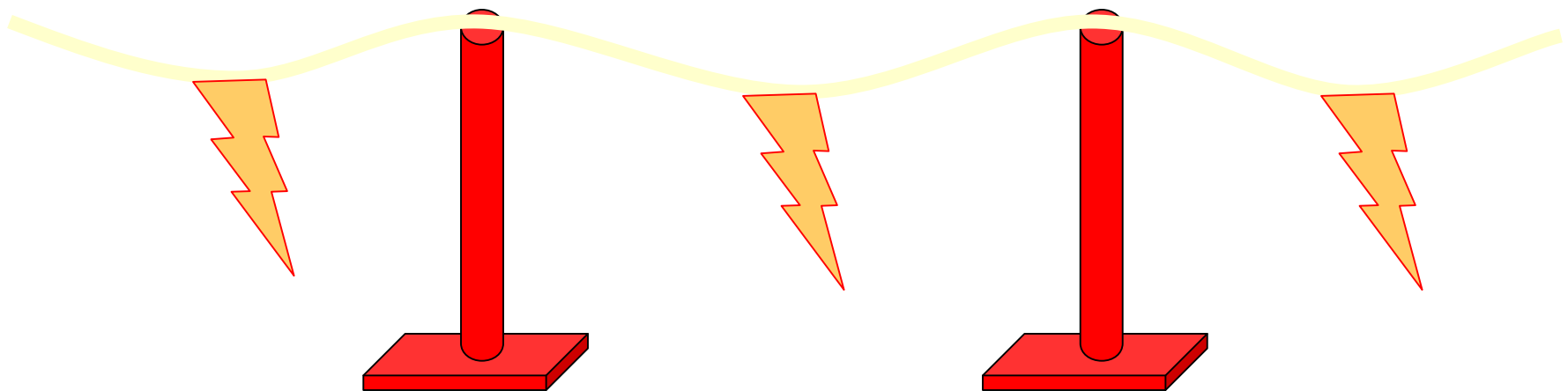
Controlled Access Zones

- Where leading edge and other operations are taking place the controlled access zone shall be defined by a ***control line***
- At least six feet from leading edge
- Not more than 25 feet from leading edge



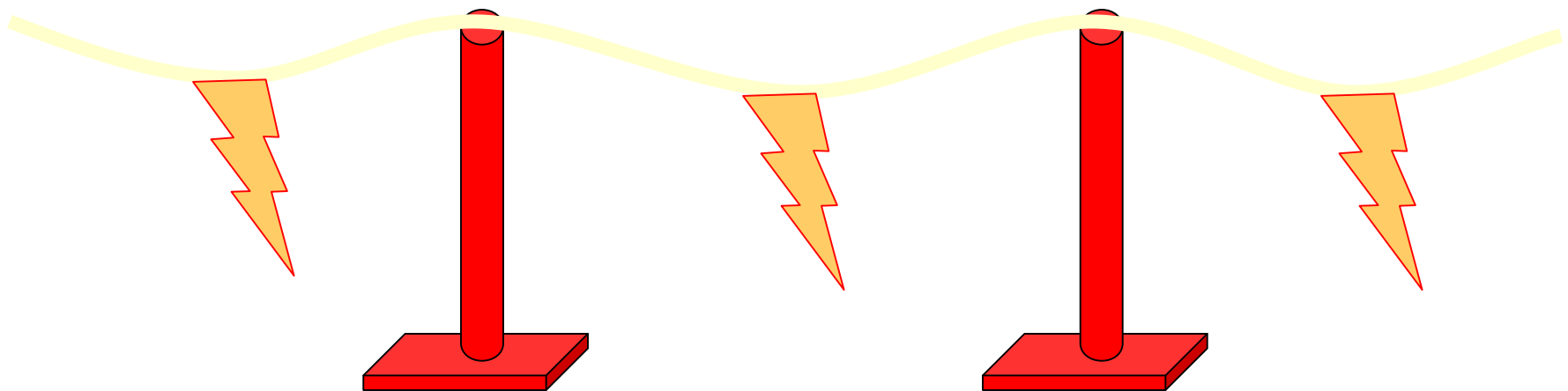
Controlled Access Zones

- Flagged or marked at least every six feet
- 39 to 45 inches high
- 200 pound breaking strength



Controlled Access Zones

- Control line can be used instead of guardrail system along leading edge to protect non-leading edge workers



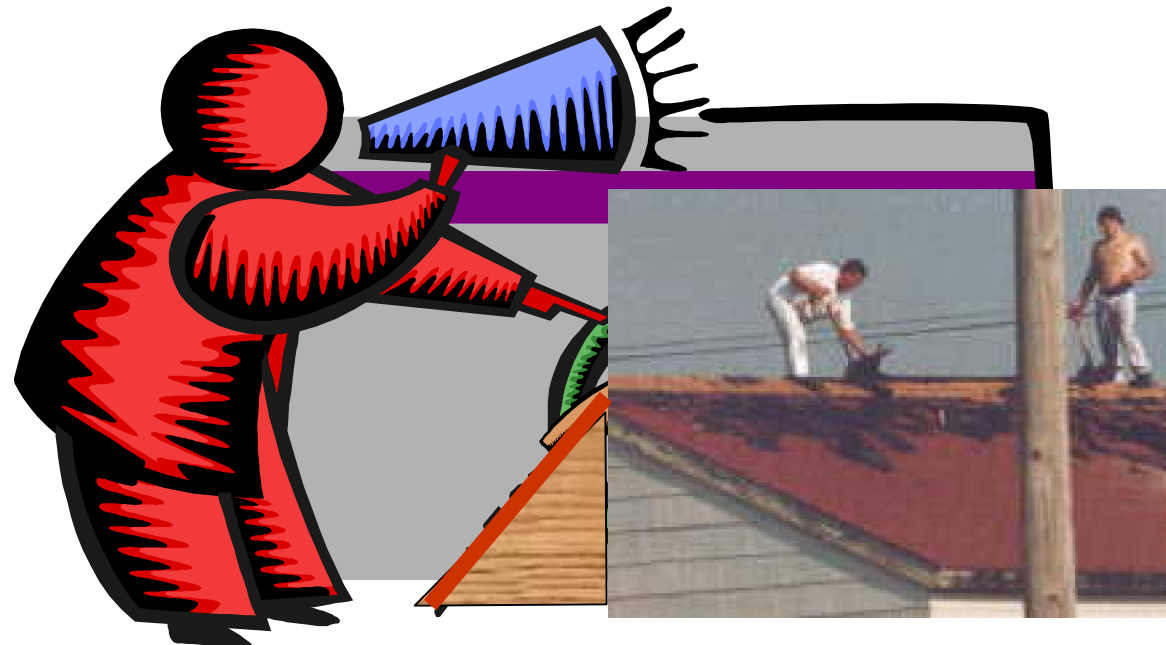
Safety Monitors

- Must be CP to recognize fall hazards
- Warns employees when:
 - Unaware of hazards
 - Acting in unsafe manner
- Same surface and within sight
- Close enough to be heard
- No other responsibilities



Safety Monitors

- Mechanical equipment not used where safety monitoring system being used.
- Only authorized workers allowed in area
- Employees must comply with warnings



Covers

- Withstand twice expected load
- Secured
- Marked with **'HOLE'** or **'COVER'**



Falling Objects

- Enough toeboard to protect those below
- 50 pounds strong downward & outward
- At least 3 1/2 inches high

Falling Objects

- Tools & equipment piled higher than toeboard? Use a panel or screen to extend upward to eliminate falling object hazard.

Fall

Protection Plans

Prevention

- Select fall protection systems appropriate for given situations.
- Use proper construction and installation of safety systems.
- Supervise employees properly.
- Use safe work procedures.
- Train workers in the proper selection, use, and maintenance of fall protection systems.

Fall Protection Plan

- Prepared by qualified person
- Specific to site
- Changes made by qualified person
- Plan kept at site

Fall Protection Plan

- Implemented by competent person
- Documents why conventional fall protection is infeasible
- Discuss measures used to protect workers



Fall Protection Plan

- Identifies all controlled access zones
- Where no other measures are used a safety monitor must be used
- Identify all CAZ employees
- If an employee falls, review plan to prevent reoccurrence

Fall

Protection Training

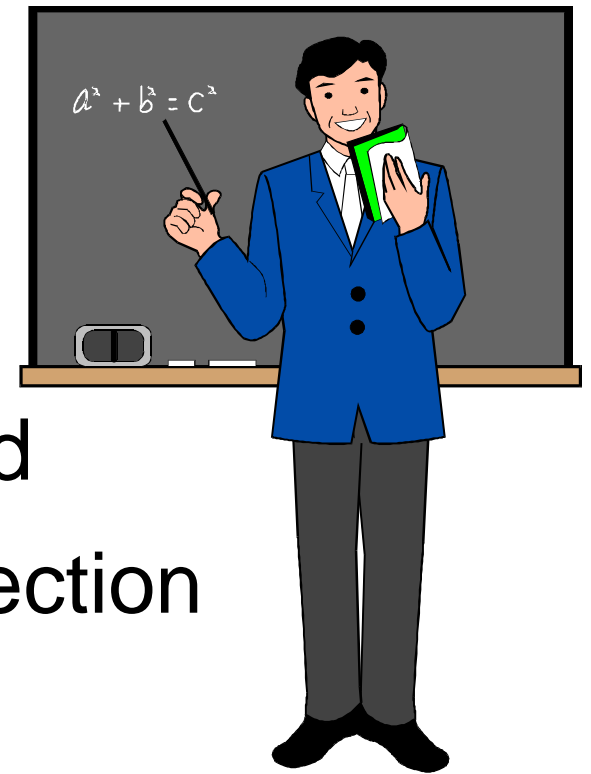
Training

- For each employee who might be exposed to falls
- Trained by competent person
- Covers fall hazards in work area
- Covers procedures for FPS to be used



Training

- The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used;



Certification

- Training must be certified
- Latest training certification maintained and available!
- Retraining required when the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required





- Home
- Access Records
- Accident Reporting
- Back Injury Prevention
- Basic Safety Program
- Bloodborne Pathogens
- Chemical Safety
- Confined Space
- Electrical Safety
- Ergonomics
- Fall Protection**
- Fire Prevention
- Hazardous Energy
- Injury Response
- Machines and Tools
- Protective Equipment



Welcome to eSafetyLine

Create a safer and more productive workplace through effective OSHA compliance. Call 800-745-4818 with any questions you may have.

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Using The Website

Click on the grey buttons to access a safety module. Each module contains relative compliance and training material.

Compliance Guides

The Compliance Guides in each module provide a step-by-step action plan. The actions are linked to documents and applications required for compliance.



Print Binders

Select the buttons below to print a comprehensive compliance or training binder.

- > [Compliance Binder](#)
- > [Training Binder](#)

Latest Updates

Listed below are updates to online documents as well as changes in OSHA regulations and/or enforcement policy.



- Home
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Fall Protection

Compliance Materials

The compliance materials in this module will assist you in developing and maintaining your fall protection program.

Compliance guide W

This guide provides instructions for using the compliance materials contained in this module.

Checklist

Written Program

Procedures



Reference Information

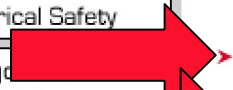


Training Materials

The training materials in this module will assist you in conducting foundation training that addresses fall protection.

Training guide W

This guide provides instructions for using the training Materials contained in this module. The safety talks, activities and tests will assist you in





- Home
- Access Records
- Accident Reporting
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- Bloodborne Pathogens
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eSafetyline Injury, Illness and Training Records Login

For enhanced security please re-enter your user name and password

Username:

Password:

Remember Me:

Login



Injury, Illness and Training Records

- Home
- My Establishments
- My Incidents
- My Training**
- My Events/Actions
- Logout



- View Training Topics
- Create New Training Topic
- View Training Records
- Create New Training Record
- Training Reports



Injury, Illness and Training Records

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- Logout



Add New Training Topic

Drag a column header here to group by that column

Description	Recurring	Days Btwn	Days to Notification	Wildcard	Establishment	Edit	Delete
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company Orientation	<input type="checkbox"/>	0	0	Card	XYZ Electric	Edit	Delete
CPR/AED	<input checked="" type="checkbox"/>	365	30	EEI List	ABC Electric	Edit	Delete
Defensive Driving	<input type="checkbox"/>	0	0	None	ABC Electric	Edit	Delete
First Aid	<input checked="" type="checkbox"/>	1095	30	EEI List	ABC Electric	Edit	Delete
Grounding Techniques	<input type="checkbox"/>	0	0	EEI List	ABC Electric	Edit	Delete
Hot Sticking	<input checked="" type="checkbox"/>	365	30	EEI List	ABC Electric	Edit	Delete
Jobsite Inspection	<input checked="" type="checkbox"/>	7	0	Card	ABC Electric	Edit	Delete
respiratory protection	<input checked="" type="checkbox"/>	0	3	card2	Senechal Project	Edit	Delete



Injury, Illness and Training Records

- Home
- My Establishments
- My Incidents
- My Training
- My Events/Actions
- Logout

Training Topic

Training Topic
Description*
Recurring?
Wildcard
Establishment

Personal Fall Arrest System

ABC Electric

Rich text editor toolbar with options: Bold, Italic, Underline, ABC, x₂, x², Cut, Copy, Paste, Undo, Redo, Bulleted List, Numbered List, Decrease Indent, Increase Indent, Link, Unlink, Table, Table Border, Spell Check, Insert Image, Insert Table, Insert Video, Insert Audio, Insert Link, Insert Unlink, Insert Page Break, Insert Horizontal Line, Insert Table of Contents, Insert Table of Figures, Insert Table of Equations, Insert Table of Contents, Insert Table of Figures, Insert Table of Equations, Insert Table of Contents, Insert Table of Figures, Insert Table of Equations.

Font Size Formatting Style Insert

Basic training on when PFAS needs to be used, includes components of the PFAS.

Design HTML



Save Cancel & Return to List



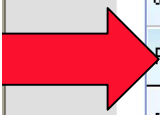
Injury, Illness and Training Records

Home My Establishments My Incidents My Training My Events/Actions Logout

Add New Training Topic

Drag a column header here to group by that column

Description	Recurring	Days Btwn	Days to Notification	Wildcard	Establishment	Edit	Delete
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Company Orientation	<input type="checkbox"/>	0	0	Card	XYZ Electric	Edit	Delete
CPR/AED	<input checked="" type="checkbox"/>	365	30	EEl List	ABC Electric	Edit	Delete
Defensive Driving	<input type="checkbox"/>	0	0	None	ABC Electric	Edit	Delete
First Aid	<input checked="" type="checkbox"/>	1095	30	EEl List	ABC Electric	Edit	Delete
Grounding Techniques	<input type="checkbox"/>	0	0	EEl List	ABC Electric	Edit	Delete
Hot Sticking	<input checked="" type="checkbox"/>	365	30	EEl List	ABC Electric	Edit	Delete
Jobsite Inspection	<input checked="" type="checkbox"/>	7	0	Card	ABC Electric	Edit	Delete
Personal Fall Arrest System	<input type="checkbox"/>	0	0		ABC Electric	Edit	Delete
respiratory protection	<input checked="" type="checkbox"/>	0	3	card2	Senechal Project	Edit	Delete





Injury, Illness and Training Records

- Home
- My Establishments
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- My Training
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- Logout

Training Topic

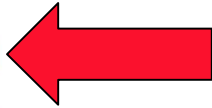
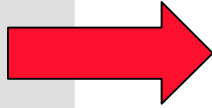
Training Topic Description*
Recurring?
Days between Training*
Days to Notification*
Wildcard
Establishment

Personal Fall Arrest System

0

0

ABC Electric



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Font Size Formatting Style Insert

Basic training on when PFAS needs to be used, includes components of the PFAS.

Topic Memo



Injury, Illness and Training Records

- Home
- My Establishments
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- My Events/Actions
- Logout

My Training Sessions

Add Training Session

Drag a column header here to group by that column

Establishment	Employee	Topic	Date	Wildcard	Edit	Delete
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ABC Electric	Demetros, Mark	Personal Fall Arrest Syste	03/10/2009		Edit	Delete
ABC Electric	Kelly, Bobby	Personal Fall Arrest Syste	03/10/2009		Edit	Delete
ABC Electric	Kelly, Chuck	Grounding Techniques	06/29/2007	EEL List	Edit	Delete
ABC Electric	Kelly, Chuck	Hot Sticking	06/29/2007	EEL List	Edit	Delete
ABC Electric	Kelly, Chuck	Defensive Driving	07/05/2007		Edit	Delete
ABC Electric	Kelly, Chuck	Jobsite Inspection	08/03/2007	Card	Edit	Delete
ABC Electric	Kelly, Chuck	CPR/AED	06/01/2008		Edit	Delete
ABC Electric	Kelly, Chuck	Personal Fall Arrest Syste	03/10/2009		Edit	Delete
ABC Electric	Mattiford, William	CPR/AED	01/01/2006		Edit	Delete





Injury, Illness and Training Records

Home My Establishments My Incidents **My Training** My Events/Actions Logout

Add New Training Topic

- View Training Topics
- Create New Training Topic
- View Training Records
- Create New Training Record
- Training Reports



Drag a column header here to group by that column

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CPR/AED	<input checked="" type="checkbox"/>	365	30	EEL List	ABC Electric	Edit	Delete
Defensive Driving	<input type="checkbox"/>	0	0	None	ABC Electric	Edit	Delete
First Aid	<input checked="" type="checkbox"/>	1095	30	EEL List	ABC Electric	Edit	Delete
Grounding Techniques	<input type="checkbox"/>	0	0	EEL List	ABC Electric	Edit	Delete
Hot Sticking	<input checked="" type="checkbox"/>	365	30	EEL List	ABC Electric	Edit	Delete
Jobsite Inspection	<input checked="" type="checkbox"/>	7	0	Card	ABC Electric	Edit	Delete
Personal Fall Arrest System	<input type="checkbox"/>	0	0		ABC Electric	Edit	Delete
respiratory protection	<input checked="" type="checkbox"/>	0	3	card2	Senechal Project	Edit	Delete



- Home
- My Establishments
- My Incidents
- My Training
- My Events/Actions
- Logout

Training Session

Establishment*

- Employee*
- Demetros, Mark
 - Kelly, Bobby
 - Kelly, Chuck
 - OConnor, Joseph

Use Shift-Click or Ctrl-Click to select multiple employees (new session only)

Topic*

Date / Time*

Wildcard

Trainer

Rich text editor toolbar with icons for Bold, Italic, Underline, Bulleted List, Numbered List, Indent, Outdent, Undo, Redo, Link, Unlink, Image, Table, Font, Size, Formatting, Style, and Insert.

Training Notes



Injury, Illness and Training Records

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- Logout

Training Reports

Report

- Training Report - Detail
- Training Report - Summary
- Training Due
- Training Topic List
- Training Completed Card

Establishment

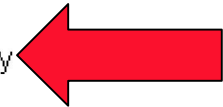
Employee

Topic

Date Range to

Wildcard

Output Format PDF Excel RTF (Word compatible)



File Edit View Document Tools Window Help

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Select Text Select Image eBooks

Training Report - Summary

Establishment: ABC Electric

Employee (ID)	Dept / Job Title	Training Topic	Session Wildcard	Training Date
Chuck Kelly (083)		Grounding Techniques	EEI List	06/29/2007
Chuck Kelly (083)		Hot Sticking	EEI List	06/29/2007
Chuck Kelly (083)		Defensive Driving		07/05/2007
Chuck Kelly (083)		Jobsite Inspection	Card	08/03/2007
Joseph OConnor (080)		CPR/AED		10/10/2007
Chuck Kelly (083)		CPR/AED		06/01/2008
Joseph OConnor (080)		CPR/AED		06/01/2008
Bob Smith (086)		CPR/AED		06/01/2008
Mark Demetros		Personal Fall Arrest System		03/10/2009
Bobby Kelly		Personal Fall Arrest System		03/10/2009
Chuck Kelly (083)		Personal Fall Arrest System		03/10/2009
Joseph OConnor (080)		Personal Fall Arrest System		03/10/2009
Bob Smith (086)		Personal Fall Arrest System		03/10/2009
Keith Williams		Personal Fall Arrest System		03/10/2009

End of Session For Help Contact

NECA
301.657.3110

Mike Johnston, Executive Director, Standards and Safety
mj@necanet.org

Jerry Rivera, Director, Safety
jr@necanet.org

Intec, Inc.
800.745.4818

Joe O'Connor, President
joconnor@intecweb.com

