



General Industry Fall Protection Safety Training Employer Supplement



General Industry Fall Protection Safety Training Employer Supplement

This supplement serves as a guide to provide extra information and presentation leads for any trainers that will be conducting an in person presentation. This training was developed from the human factors approach. A key element to making this training successful and relevant for the trainee is to incorporate real world examples into the presentation. These real examples will allow the trainee to connect with the materials and better retain the information after they have completed the training.

The end of the training will present the trainees with case studies to illustrate the concepts of the training. Each case study will have one slide that explains the situation, then will be followed by a slide with questions for the group. These case studies serve as one of the human factors reinforcers for this learning experience. Feel free to include any extra questions to the case studies, or to modify the case studies to fit the needs of your organization.

Modification of PowerPoint Presentation

Many of the images that are used in this presentation are just basic examples. It is encouraged for you to replace any image examples with ones that are more related to your workplace to help illustrate the concepts.

About the PowerPoint

The PowerPoint version of this training was developed with the idea that the instructor would supplement the basic information. The slides and topics have been organized in sections to create a basic learning flow for the trainees. Most of the slides contain basic information for the topic, like a definition or standard, and it is up to the trainer to add another level of explanation to the topic. You as the trainer can augment the experience for the trainees by including real life experiences (stories) and application explanations to your presentation. Many trainers, over time, will take stories from trainees that illustrate the concepts well and incorporate them as their own into future presentation. The more relevant “stories” or examples that you can incorporate into the training, the better that the trainee will internalize the content and concepts.

Initiating discussion with the trainees will help to increase the effectiveness of the training. A number of the slides in this supplement include some example discussion questions. Feel free to use any that are appropriate for your audience and to use any that you have of your own. The earlier in the training that you can start initiating discussion with the audience the more that interaction will continue through the rest of the training. Be sure to incorporate as much interaction as you can.

In the PowerPoint there are certain slides that have multiple items that will appear on each slide. While this does not happen on all slides, there are a few. To make the flow of the presentation smooth, so the extra slide items are not a surprise, a star graphic has been included in the bottom left hand corner of the slide as a reminder that there are multiple items on this slide. See the example below as an illustration.





General Industry Fall Protection



Title Slide: General Industry Fall Protection

Slide 1 of 60

Introduction:

This training will focus on teaching the employee the necessary skills for arresting and restraining falls in the workplace. They will learn how to identify possible fall situations, the proper use of engineered and other types of fall restraint strategies, the purpose and use of the Personal Fall Arrest System (PFAS), and the proper methods to inspect and maintain fall protection equipment.

Part I is dedicated to teaching the basics of Fall Protection.

Part II of this training is dedicated to the Personal Fall Arrest System. A video is included in the training that demonstrates how to don a harness. If you have access to a full body harness feel free to substitute a live demonstration of donning the harness instead of the video. As well, if you have access to the other parts of the PFAS (i.e. lanyard, self-retracting lifeline, etc...), you can bring those in to present in person to further the experience for the trainees.

Part III of the training is dedicated to illustrating many potential fall hazards that are common to various workplaces. It is encouraged to incorporate any fall hazards that are specific to your workplace into this section.

Note: There will be some instances of repetition of concepts within the presentation. This was done to increase the repetition of some of the concepts and for organization of broader concepts within the training.

Training Objectives

Part I – Fall Protection Basics

- What is Fall Arrest and Fall Restraint
- Types of Fall Protection
- Fall Safety Equipment

Part II – Fall Arrest Systems

- Parts of the Fall Arrest System (ABC's)
- Using a Personal Fall Arrest System
- Inspecting, Maintaining and Storing Equipment
- After the Fall

Part III – Fall Situations in the Work Place

- Identifying Fall Hazards Associated with the Work Place
- Common Worker Errors
- Specific Examples of Fall Hazards

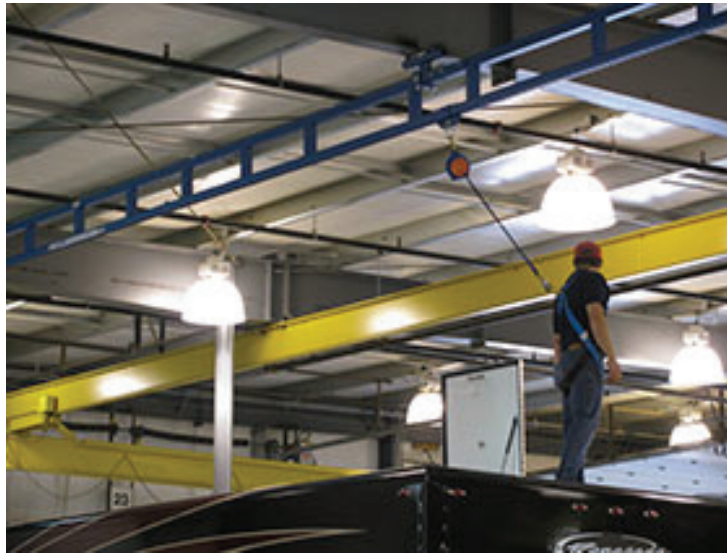


Training Objectives

Slide 2 of 60

Notes:

This training is split into three parts. In the first part, Fall Protection Basics, the training will define and explain fall protection and its parts. The second section is devoted to Fall Arrest Systems, including the PFAS. The third and final section of this training will illustrate the different situations where fall hazards occur in the workplace.



Part I Basics of Fall Protection

Part I: Basics of Fall Protection

Slide 3 of 60

Notes:

Part I is dedicated to teaching the basics of Fall Protection. Slide topics include definitions of Fall Protection, requirements for Fall Protection, Employer and Employee Responsibilities, Types of Fall Protection, and Fall Safety equipment.

What is Fall Protection?

Fall Protection: A group of measures, techniques and equipment used to provide employees a safe working environment by preventing or arresting the fall.



Three types of Fall Protection:

1. Fall Arrest Systems
2. Fall Restraint Systems
3. Positioning Device Systems

What is Fall Protection?

Slide 4 of 60

Notes:

Definitions of Fall Protection and the three types of Fall Protection. Emphasize that if these systems are not rigged correctly they will not properly restrain or arrest a fall.

Fall Protection: A group of measures, techniques and equipment used to provide employees a safe working environment by preventing or arresting the fall.

Fall Arrest Systems: A system that will arrest a fall from elevation and includes catch platforms, safety nets and personal fall arrest systems that are worn by the user.

Fall Restraint System: A system in which all necessary components function together to restrain/prevent an employee from falling to a lower level.

Positioning Device System: A full body harness or a positioning harness that is worn by an employee and is rigged to allow an employee to be supported on an elevated vertical or inclined surface.

DISCUSSION:

The following statistics can be used to initiate discussion with the trainees. This is an excellent place to insert an experience of your own, or one you are familiar with, regarding fall protection and prevention.

- Statistic #1: 14% of fatal workplace injuries are caused by falls
- Statistic #2: In 2013 there were a total of 794 deaths in all industries in the US related to falling in the workplace.

Fall Arrest Systems



Fall Arrest Systems: A system that will arrest a fall from elevation and includes catch platforms, safety nets and personal fall arrest systems that are worn by the user.

Fall Arrest Systems

Slide 5 of 60

Notes:

Definitions of Fall Protection and the three types of Fall Protection. Emphasize that if these systems are not rigged correctly they will not properly restrain or arrest a fall.

Fall Protection: A group of measures, techniques and equipment used to provide employees a safe working environment by preventing or arresting the fall.

Fall Arrest Systems: A system that will arrest a fall from elevation and includes catch platforms, safety nets and personal fall arrest systems that are worn by the user.

Fall Restraint System: A system in which all necessary components function together to restrain/prevent an employee from falling to a lower level.

Positioning Device System: A full body harness or a positioning harness that is worn by an employee and is rigged to allow an employee to be supported on an elevated vertical or inclined surface.

Fall Restraint Systems



Fall Restraint System: A system in which all necessary components function together to restrain/prevent an employee from falling to a lower level.

Fall Restraint Systems

Slide 6 of 60

Notes:

Definitions of Fall Protection and the three types of Fall Protection. Emphasize that if these systems are not rigged correctly they will not properly restrain or arrest a fall.

Fall Protection: A group of measures, techniques and equipment used to provide employees a safe working environment by preventing or arresting the fall.

Fall Arrest Systems: A system that will arrest a fall from elevation and includes catch platforms, safety nets and personal fall arrest systems that are worn by the user.

Fall Restraint System: A system in which all necessary components function together to restrain/prevent an employee from falling to a lower level.

Positioning Device System: A full body harness or a positioning harness that is worn by an employee and is rigged to allow an employee to be supported on an elevated vertical or inclined surface.

Positioning Device Systems



Positioning Device System: A full body harness or positioning harness that is worn by an employee and is rigged to allow an employee to be supported on an elevated vertical or inclined surface.

Positioning Device Systems

Slide 7 of 60

Notes:

Definitions of Fall Protection and the three types of Fall Protection. Emphasize that if these systems are not rigged correctly they will not properly restrain or arrest a fall.

Fall Protection: A group of measures, techniques and equipment used to provide employees a safe working environment by preventing or arresting the fall.

Fall Arrest Systems: A system that will arrest a fall from elevation and includes catch platforms, safety nets and personal fall arrest systems that are worn by the user.

Fall Restraint System: A system in which all necessary components function together to restrain/prevent an employee from falling to a lower level.

Positioning Device System: A full body harness or a positioning harness that is worn by an employee and is rigged to allow an employee to be supported on an elevated vertical or inclined surface.

Fall Protection Requirements

System for protecting employees from falls.

Guard open-sided floors, walkways and platforms above or adjacent to dangerous equipment regardless of height with a railing and toeboard.



Guard open-sided floors and platforms four feet or more above adjacent floor or ground level by a railing.

In general industry if a hazard is not specifically addressed in the standards employers must conduct and document a PPE hazard assessment which includes which PPE is to be used for the job in question.

Fall Protection Requirements

Slide 8 of 60

Notes:

System for protecting employees from falls.

Guard open-sided floors and platforms.

- Guard open-sided floors and platforms four feet or more above adjacent floor or ground level by a railing. The entrance to a ramp, stairway, or fixed ladder does not need a railing.
- Guard open-sided floors, walkways and platforms above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and other similar hazards, regardless of height with a railing and toeboard.

Fall Protection Responsibilities

Employer Responsibilities:

- Provide a safe work environment by ensuring that all working and walking surfaces are structurally safe and sound.
- Provide proper fall protection training.
- Provide all personal protective equipment as part of fall prevention training.
- Employers need to establish written safety policies with respect to fall protection.
- General industry must conduct and document a PPE hazard assessment for basically each work activity.
- Employers must ensure that employees are using their PPE.

Employee Responsibilities:

- To use fall protection equipment in accordance with employer policies and the manufacturer's recommendations.
- To properly inspect all personal fall restraint systems prior to each use.
- To report all defective components to your employer and remove them from service if necessary.
- Do your part to encourage a safety culture at your workplace that takes the necessary steps for a safe work environment.



Fall Protection Responsibilities

Slide 9 of 60

Notes:

Employer and Employee Responsibilities are taken from the OSHA standards.

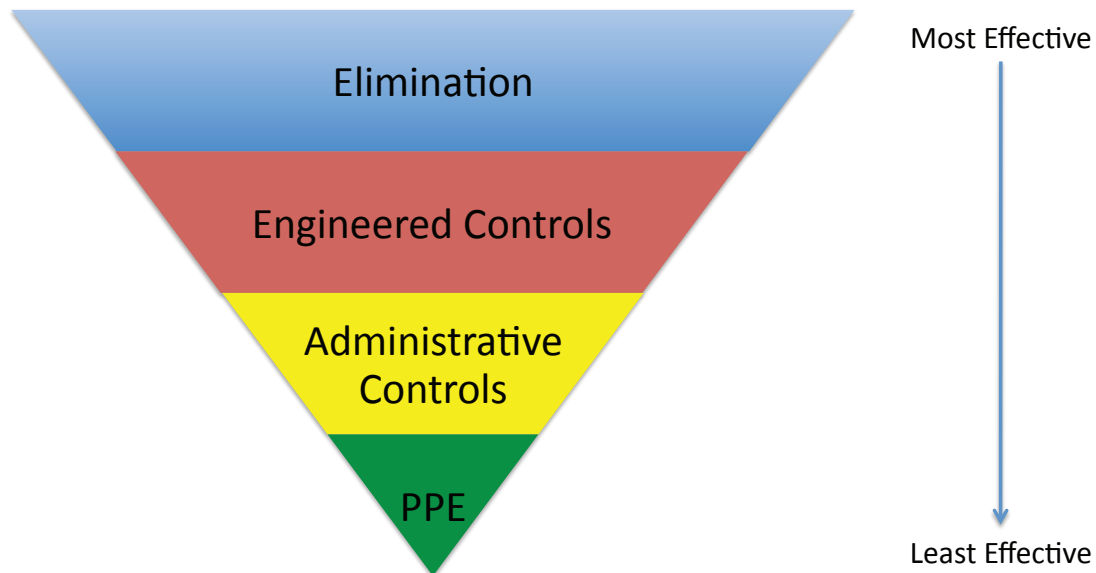
Employer Responsibilities:

- Provide a safe work environment by ensuring that all working and walking surfaces are structurally safe and sound.
- Provide proper fall protection training.
- Provide all personal protective equipment as part of fall prevention training.
- Employers need to establish written safety policies with respect to fall protection.
- General industry must conduct and document a PPE hazard assessment for basically each work activity.
- Employers must ensure that employees are using their PPE.

Employee Responsibilities:

- To use fall protection equipment in accordance with employer and the manufacturer's policies.
- To properly inspect all personal fall restraint systems prior to each use.
- To report all defective components to your employer and remove them from service if necessary.
- Do your part to encourage a safety culture at your workplace that takes the necessary steps for a safe work environment.

Types of Fall Protection



Types of Fall Prevention

Slide 10 of 60

Notes:

The chart on this slide lists the most desirable solution when employees are exposed to falls at the top and the least desirable solution at the bottom. The PFAS is regarded as fall arrest and defined under PPE in this example (PFAS is explained in detail in another section in this training).

This chart is taken from the Occupational Safety and Health Administration website. Their chart also includes “substitution” as one of their preventions, but that was incorporated into the engineered controls for this training.

Each section of this chart is explained on the next slides.

Types of Fall Protection

Elimination

Elimination consists of taking steps to completely remove the fall hazard.



Example:

When constructing a scaffold, rather than raising each piece up to be constructed, the fall hazard can be eliminated by constructing sections of the scaffold on the ground and raising the sections by crane.



Types of Fall Prevention: Elimination

Slide 11 of 60

Notes:

Elimination consists of taking steps to completely remove the fall hazard. The focus of the example on this slide is to emphasize changing the work situation to minimize, or eliminate, the exposure to the fall hazard.

DISCUSSION:

Does anyone have any examples that they have been a part of where a fall hazard has been eliminated by changing the work process?

While assembling the scaffold on the ground and lifting it into position using a crane eliminated a fall exposure it may have introduced other risks.

Types of Fall Protection

Engineered Controls

With an engineered control, the concept is to:

- Engineer a solution
- Change the environment
- Vastly reduce the exposure to a hazard

Fall Restraint System:

Any system that will allow the worker to approach a fall hazard and work, but will not allow the worker to fall to a lower level.

Ex:

- Guard Rails
- Personal fall restraint systems
- Floor Coverings



Types of Fall Protection: Engineered Controls

Slide 12 of 60

Notes:

With an engineered control, the concept is to:

- Engineer a solution
- Change the environment
- Vastly reduce the exposure to a hazard

Fall Restraint System: Any system that will allow the worker to approach a fall hazard and work, but will not allow the worker to fall to a lower level.

Examples:

- Guard Rails
- Personal fall restraint systems
- Floor Coverings

Types of Fall Protection

Administrative Controls

Steps taken to change the way that people work.

Many Administrative Controls revolve around policies and procedures in the workplace.

Ex:

- Blocking access to a fall hazard
- Worker Management
- Safety Signs
- Employee Training
- Alarms



Types of Fall Protection: Administrative Controls

Slide 13 of 60

Notes:

Administrative controls are steps taken to change the way that people work. Many Administrative Controls revolve around policies and procedures in the workplace.

Examples:

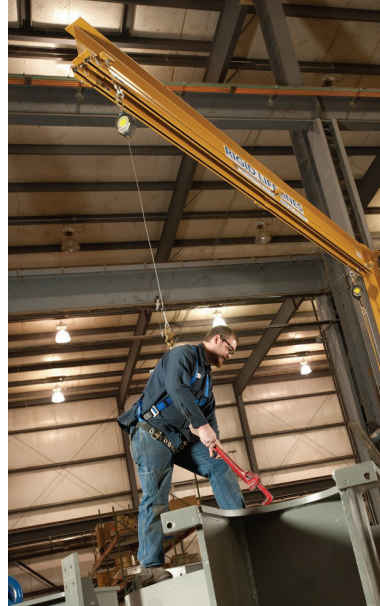
- Blocking access to a fall hazard.
- Worker Management
- Safety Signs
- Employee Training
- Alarms

Types of Fall Protection

Personal Protective Equipment (PPE)

Personal Protective Equipment is the last line of defense and the least desirable fall prevention strategy.

The Personal Fall Arrest System, or PFAS, is a fall arrest system that is worn by the employee to arrest the employee in a fall from elevation.



Types of Fall Protection: Personal Protective Equipment (PPE)

Slide 14 of 60

Notes:

Personal Protective Equipment is the last line of defense and the least desirable fall prevention strategy.

The Personal Fall Arrest System, or PFAS, is a fall arrest system that is worn by the employee to arrest the employee in a fall from elevation.

The PFAS consists of an anchor point, connectors, a full body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Note: Part II of this training is completely dedicated to the PFAS.

Fall Safety Equipment

Fall Restraint vs. Fall Arrest

Fall Restraint:

Intended to prevent a fall from occurring.

Fall Arrest:

Intended to arrest or stop the fall after a fall has occurred and prevent the worker from striking a lower level.



Fall Safety Equipment:
Fall Restraint vs. Fall Arrest

Slide 15 of 60

Notes:

This slide is intended to re-emphasize, and clarify if needed, the difference between Fall Restraint and Fall Arrest.

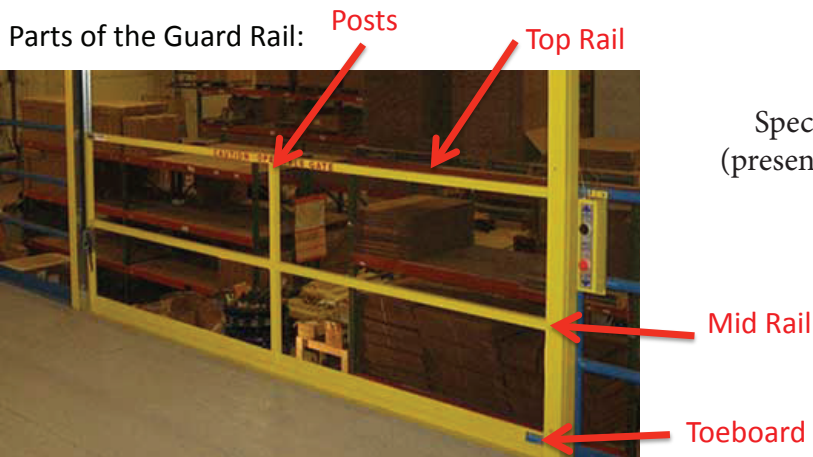
Fall Restraint: Intended to prevent a fall from occurring.

Fall Arrest: Intended to arrest or stop the fall after a fall has occurred and prevent the worker from striking a lower level.

Fall Restraint

Guard Rails

Railings that are installed along all open sides of a low slope where there is a fall of 4 feet or more to protect the person from the fall hazard. Guard rails are the primary means for fall protection.



Fall Restraint: Guard Rails

Slide 16 of 60

Notes:

Considered the primary means of fall protection.

Railings that are installed along all open sides of a low slope where there is a fall of 4 feet or more to protect the person from the fall hazard.

Parts of the Guard Rail (with specifications):

[Note: terms presented in a carousel on the slide]

Top Rail: The top rail should be located between 39 and 45 inches from floor.

Mid Rail: The mid rail is placed between the top rail and the surface.

Toeboard: The toeboard is at least 4 inches in vertical height with no more than a ¼ inch gap between the bottom of the toeboard and the surface below.

Posts: The posts must not be spaced at a distance that is greater than 8 feet.

The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail.

Fall Arrest

Personal Fall Arrest System (PFAS)

The Personal Fall Arrest System, or PFAS, is a fall arrest system that is worn by the employee to arrest the employee in a fall from elevation.

PFAS is comprised of multiple parts:

- Anchor Point
- Connectors
- Full Body Harness

May also include:

- Lanyard
- Deceleration Device
- Lifeline
- Other suitable combination of these



Fall Arrest: Personal Fall Arrest System (PFAS)

Slide 17 of 60

Notes:

The purpose of this slide is to introduce the Personal Fall Arrest System. There will be an opportunity to go in depth on this subject in Part II of this training.

Personal Fall Arrest System (PFAS): The Personal Fall Arrest System, or PFAS, is a fall arrest system that is worn by the employee to arrest the employee in a fall from elevation.

PFAS is comprised of multiple parts:

- Anchor Point
- Connectors
- Full Body Harness

May also include:

- Lanyard
- Deceleration Device
- Lifeline
- Other suitable combination of these



Part II Personal Fall Arrest System

Part II: Personal Fall Arrest System

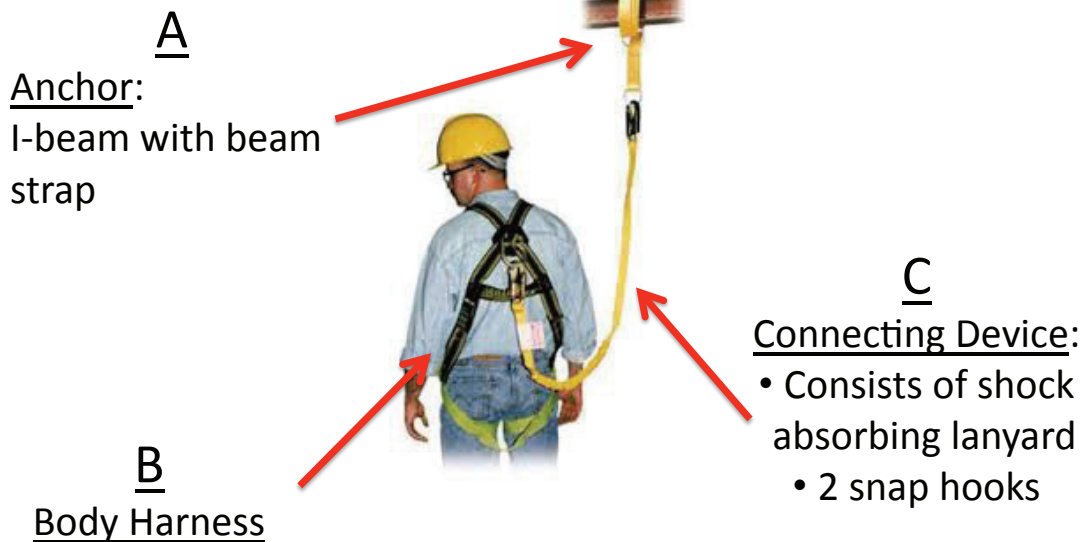
Slide 18 of 60

Notes:

Part II of this training is dedicated to the Personal Fall Arrest System. Each part of the system will be explained to include how to safely use the equipment. This section will also include the proper procedure for calculating the required fall clearance distance, how to inspect parts of the Personal Fall Arrest Systems, how to maintain the equipment, and finally, the proper procedure to rescue someone after a fall has been arrested.

Personal fall arrest systems, personal fall restraint system, positioning device systems, and their components shall be used only for employee protection and not to hoist materials.

Parts of the Personal Fall Arrest System (ABC's)



★
Parts of the Personal Fall Arrest System (ABC's)

Slide 19 of 60

Notes:

ABC serves as an acronym for the Personal Fall Arrest System and an easy way to remember it's individual components:

A is for Anchor. In this example the anchor consists of an I-Beam with a beam strap.

B is for Body Harness. Full body harnesses must be used, a safety belt in lieu of a full body harness is never allowed.

C is for Connecting Device. Connecting devices technically refer to a device which is used to connect parts of the personal fall arrest system together such as snap hooks, D-rings or carabiners. To help students remember the parts of a PFAS, present them as the ABC's of fall protection. Many manufacturers describe any component that connects the harness to the anchor point, such as shock absorbing lanyards, self retracting lifelines or positioning devices as connecting devices.

Personal Fall Arrest System

Anchor Points/Anchorage



The point of attachment for the lanyard, or lifeline, to a strong solid structure.

- Must be able to support 3,000 lbs (per employee) when used in conjunction with a self retracting lifeline or shock absorbing lanyard.
- Must be able to support 5,000 lbs (per employee) for all other personal fall arrest system applications that maintain a safety factor of at least two.

Personnel Fall Arrest System: Anchor Points/Anchorage

Slide 20 of 60

Notes:

Anchor Points/Anchorage: The point of attachment for the lanyard, or lifeline, to a strong solid structure.

- Must be able to support 3,000 lbs (per employee) when used in conjunction with a self retracting lifeline or shock absorbing lanyard.
- Must be able to support 5,000 lbs (per employee) for all other personal fall arrest system applications that maintain a safety factor of at least two.

The picture on the left shows a beam strap and the picture on the right shows a beam clamp.

Note: Be sure to emphasize the importance of where one ties off for the PFAS (i.e. structural vs. a guard rail).

Personal Fall Arrest System

Horizontal Lifeline



A horizontal lifeline is a flexible line between two horizontal fixed anchorages to which a fall arrest device is connected. Allows a worker to move horizontally over a span while still being safely anchored.

Personnel Fall Arrest System: Horizontal Lifeline

Slide 21 of 60

Notes:

A horizontal lifeline is a flexible line between two horizontal fixed anchorages to which a fall arrest device is connected. Allows a worker to move horizontally over a span while still being safely anchored.

Personal Fall Arrest System

Connecting Device

A component or element used to couple parts of the system together, such as a harness to a shock absorbing lanyard to an anchorage point.

Some of the components that make up a Connecting Device:

Double Locking
Snap-hook



Shock-Absorbing
Lanyard



Self-Retracting
Lifeline



Personnel Fall Arrest System: Connecting Device

Slide 22 of 60

Notes:

A component or element used to couple parts of the system together, such as a harness to a shock absorbing lanyard to an anchorage point.

Some of the components that make up a connecting device include:

- Shock-Absorbing Lanyard
- Self-Retracting Lifeline
- Locking snap-hook, carabiner or D-ring

Stress again to students that technically the WAC refers to connecting devices as the hooks, carabiners and D-rings themselves. For learning and remembering purposes we present the entire lanyard or lifeline as a connecting device which aligns with the equipment manufacturer's terminology.

Personal Fall Arrest System

Connecting Device: Shock-Absorbing Lanyard

A shock-absorbing lanyard is a specific type of safety lanyard that has a built-in woven inner core that expands during the fall to ensure that the fall arrest force is significantly reduced.



All shock absorbing lanyards have a rating. This rating is based on the weight of the user and deceleration distance.

Personnel Fall Arrest System: Connecting Device: Shock-Absorbing Lanyard

Slide 23 of 60

Notes:

A shock-absorbing lanyard is a specific type of safety lanyard that has a built-in woven inner core that expands during the fall to ensure that the fall arrest force is significantly reduced.

All shock absorbing lanyards have a rating. This rating is based on the weight of the user and deceleration distance.

The following are some requirements for Shock-Absorbing Lanyards to reinforce in the presentation:

- The shock absorbing lanyard should limit the maximum arresting force on an employee to one thousand eight hundred pounds (8 kN).
- The shock absorbing lanyard should bring an employee to a complete stop and limit maximum deceleration distance an employee travels to three and one-half feet (1.07 m).
- The shock absorbing lanyard should have sufficient strength to withstand twice the potential impact energy of an employee free falling a maximum distance of six feet (1.8 m).

Personal Fall Arrest System

Connecting Device: Self-Retracting Lifeline



A self-retracting lifeline is a deceleration device containing a drum-wound line which can be slowly extracted from under slight tension, but will automatically lock when a fall happens.

One of the advantages of a self-retracting lifeline is that a fall is arrested almost immediately. It takes less than 2 feet to stop the fall.

Personnel Fall Arrest System: Connecting Device: Self-Retracting Lifeline

Slide 24 of 60

Notes:

A self-retracting lifeline is a deceleration device containing a drum-wound line which can be slowly extracted from under slight tension, but will automatically lock when a fall happens.

One of the advantages of a self-retracting lifeline is that a fall is arrested almost immediately. It takes less than 2 feet to stop the fall.

Another advantage of self-retracting lifelines is that they allow a worker to move freely.

Connect the self retracting lifeline directly to the D-ring on the back of the full body harness. Using a shock absorbing lanyard in conjunction with a self retracting lifeline may expose employees to greater fall distances than using a self retracting lifeline alone. Always follow manufacturer's recommendations.

Personal Fall Arrest System (PFAS)

Full Body Harness



The full body harness is a combination of straps that distribute the force of the fall over the chest, thighs, waist, pelvis and shoulders. Harnesses have buckles and adjustable straps for proper fitting.

Another type of harness known as a body belt is not an authorized part of the PFAS. They can cause serious injury, and even death, if used in a PFAS.

Personal Fall Arrest System (PFAS): Full Body Harness

Slide 25 of 60

Notes:

The full body harness is a combination of straps that distribute the force of the fall over the chest, thighs, waist, pelvis and shoulders. Harnesses have buckles and adjustable straps for proper fitting.

Another type of harness known as a body belt is not an authorized part of the PFAS. They can cause serious injury, and even death, if used in a PFAS.

Donning a Harness



Click to begin video.



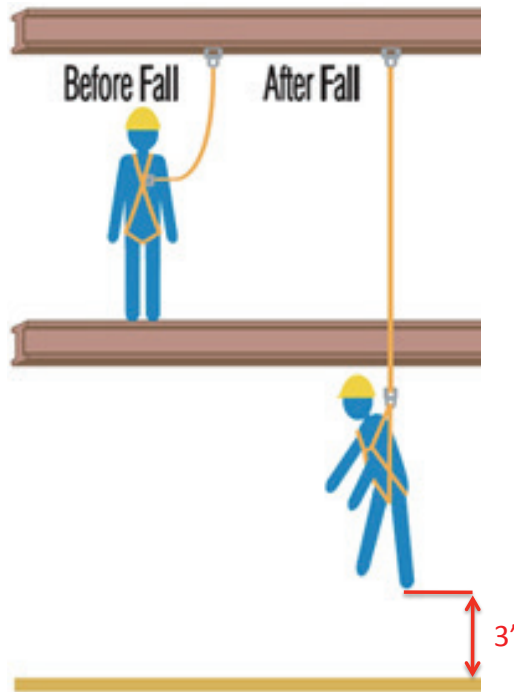
**Donning a Harness
(VIDEO)**

Slide 26 of 60

Notes:

This slide contains a video that will demonstrate donning a harness. If you would like to substitute a live demonstration of donning a harness, it is recommended that you delete the video from the slide and replace it with text such as “Live Demonstration.” Removing the video will reduce the size of the PowerPoint file and will help with presentation performance.

Required Fall Clearance Distance Calculations



Required Fall Clearance Distance:

The distance from your anchor point to the next lower level that will ensure proper arrest after a fall before hitting an obstruction.

In this example the worker fell from a platform and the Required Fall Clearance Distance allowed him to stop 3' before hitting the ground.

Required Fall Clearance Distance Calculations

Slide 27 of 60

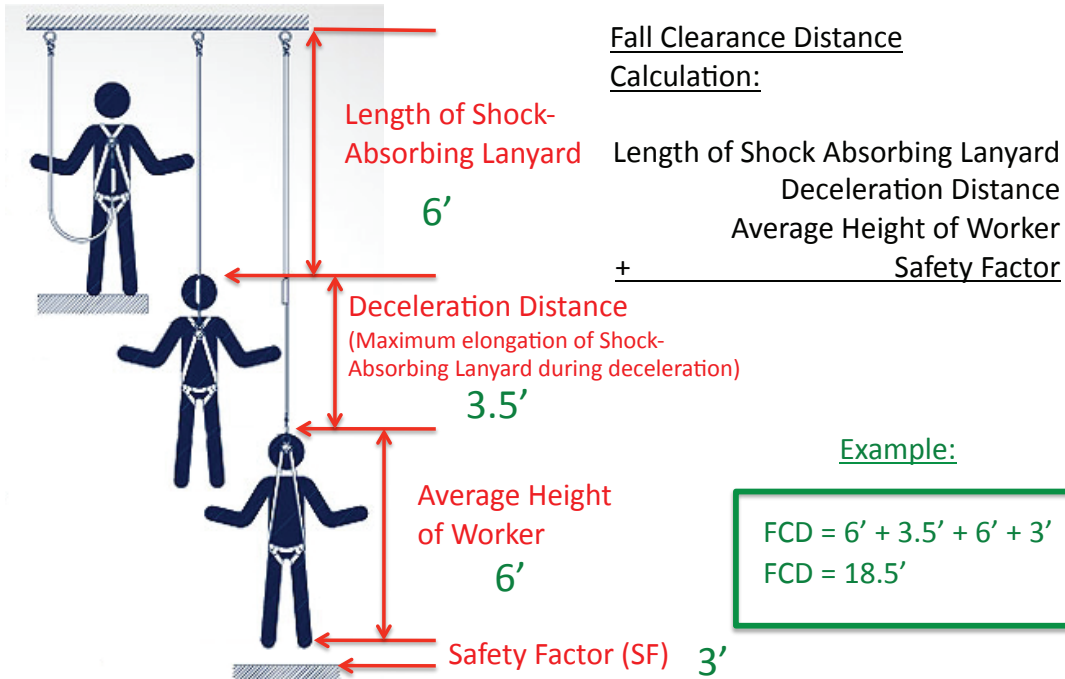
Notes:

This section will explain how to calculate the Required Fall Clearance Distance.

Required Fall Clearance Distance: The distance from your anchor point to the next lower level that will ensure proper arrest after a fall before hitting an obstruction.

In this example the worker fell from a platform and the Required Fall Clearance Distance allowed him to stop 3' before hitting the ground.

Fall Clearance Distance (FCD) Calculations



Fall Clearance Distance (FCD) Calculations

Slide 28 of 60

Notes:

Fall Clearance Distance (FCD) Calculation Formula:

Length of Shock-Absorbing Lanyard + Deceleration Distance + Average Height of Worker (6') + Safety Factor 3' = Fall Clearance Distance

Note: 6' should be used in all calculations as the average height of worker, and 3' should be used for the safety factor

Note: Be sure to emphasize the following two WAC guidelines that should also be incorporated into calculated the Fall Clearance Distance:

- 1. The employee must be rigged to allow a maximum free fall distance of six feet so an employee will not contact any lower level.*
- 2. The PFAS must have sufficient strength to withstand twice the potential impact energy of an employee free falling a maximum distance of six feet.*

Inspecting the Equipment

Each piece of the fall arrest, fall restraint, and positioning device systems should be inspected visually prior to each use and extensively after each instance of a fall arrest. Damage to equipment can happen which can easily compromise worker safety.

The following pieces of equipment should be a part of your inspection process:

- Full Body Harness
- Lanyard
- Snap hook
- Self retracting lifeline



Inspecting the Equipment

Slide 29 of 60

Notes:

Each piece of PFAS should be inspected visually prior to each use and extensively after each instance of a fall arrest. Damage to equipment can happen which can easily compromise worker safety.

The following pieces of equipment should be a part of your daily inspection process:

- Full Body Harness
- Lanyard
- Snap hook
- Self retracting lifeline

Detailed inspection requirements listed on the following slides.

Inspecting the Equipment

Inspecting the Full Body Harness



When inspecting a full body harness, be sure to examine the following:

- Closely examine all nylon webbing for burn marks, tears, wear points, mildew, etc..
- Ensure no torn, frayed, broken fibers, pulled stitches, or frayed edges are found anywhere on the harness.
- Examine D-Ring to ensure no pits, deterioration, cracks, or excessive wear.

- Ensure all grommets, if present, are secure and not deformed from fall or abuse.
- Ensure all rivets are tight and not deformed.
- Harness should be stored hanging in enclosed cabinet to protect from damage.
- Harnesses damaged and involved in falls must be removed from service.
- Inspections should be in accordance with manufacturer's recommendations.

Inspecting the Equipment: Inspecting the Full Body Harness

Slide 30 of 60

Notes:

When inspecting a full body harness, be sure to examine the following:

- Closely examine all nylon webbing for burn marks, tears, wear points, mildew, etc..
- Ensure no torn, frayed, broken fibers, pulled stitches, or frayed edges are found anywhere on the harness.
- Examine D-Ring to ensure no pits, deterioration, cracks, or excessive wear.
- Ensure all grommets, if present, are secure and not deformed from fall or abuse.
- Ensure all rivets are tight and not deformed.
- Harness should be stored hanging in enclosed cabinet to protect from damage.
- Harnesses damaged and involved in falls must be removed from service.
- Inspections should be in accordance with manufacturer's recommendations.

Personal fall arrest systems, personal fall restraint system, positioning device systems, and their components shall be used only for employee protection and not to hoist materials.

Inspecting the Equipment

Inspecting the Lanyard

When inspecting a lanyard, be sure to examine the following:

- Check lanyard material for burns, cuts, rips, abrasions, kinks, knots, broken stitches, mildew and excessive wear.
- Ensure snap hooks are not distorted.
- Check carabiner for excessive wear, distortion, and lock operation.
- Ensure all locking mechanisms seat and lock properly.
- Once locked, locking mechanism should prevent hook from opening.
- Visually inspect shock absorber for signs of deployment or damage.
- Ensure points where lanyard attaches to snap hooks are free of defects.
- Include all manufacturer's recommendations regarding inspections for the lanyard.



Inspecting the Equipment: Inspecting the Lanyard

Slide 31 of 60

Notes:

When inspecting a lanyard, be sure to examine the following:

- Check lanyard material for burns, cuts, rips, abrasions, kinks, knots, broken stitches, mildew and excessive wear.
- Ensure snap hooks are not distorted.
- Check carabiner for excessive wear, distortion, and lock operation.
- Ensure all locking mechanisms seat and lock properly.
- Once locked, locking mechanism should prevent hook from opening.
- Visually inspect shock absorber for signs of deployment or damage.
- Ensure points where lanyard attaches to snap hooks are free of defects.
- Include all manufacturer's recommendations regarding inspections for the lanyard.

Inspecting the Equipment

Inspecting the Double Locking Snap Hook

When inspecting the snap hook, be sure to examine the following:

- Look for hook and eye distortions.
- Verify that there are no cracks, eye distortions, or pitted surfaces.
- Ensure keeper latch is not bent, distorted, or obstructed.
- Ensure keeper latch “seats” into the “nose” without binding.
- Ensure keeper spring securely closes keeper latch.
- Test locking mechanism to verify it’s working properly.



Inspecting the Equipment: Inspecting the Double Locking Snap Hook

Slide 32 of 60

Notes:

When inspecting the snap hook, be sure to examine the following:

- Look for hook and eye distortions.
- Verify that there are no cracks, eye distortions, or pitted surfaces.
- Ensure keeper latch is not bent, distorted, or obstructed.
- Ensure keeper latch “seats” into the “nose” without binding.
- Ensure keeper spring securely closes keeper latch.
- Test locking mechanism to verify it’s working properly.

Inspecting the Equipment

Inspecting the Self-Retracting Lifeline



When inspecting a self-retracting lifeline, be sure to examine the following:

- Visually inspect body to ensure no damage.
- Make sure all nuts or rivets are tight.
- Inspect the entire length of the wire rope for unusual wear patterns and broken strands or wires.
- Test unit by pulling sharply on lifeline to verify locking mechanism is working properly.
- Inspections should also be in accordance with manufacturer's recommendations.

Inspecting the Equipment: Inspecting the Self-Retracting Lifeline

Slide 33 of 60

Notes:

When inspecting a self-retracting lifeline, be sure to examine the following:

- Visually inspect body to ensure no damage.
- Make sure all nuts or rivets are tight.
- Inspect the entire length of the wire rope for unusual wear patterns and broken strands or wires.
- Test unit by pulling sharply on lifeline to verify locking mechanism is working properly.
- Inspections should also be in accordance with manufacturer's recommendations.

To avoid hand injury employees should wear protective gloves when inspecting a wire rope lanyard.

Some SRLs may have a load indicator built into the double locking snap hook to indicate that the equipment has been exposed to a significant load, usually from a fall.

Storage & Maintenance of Fall Protection Equipment



- Always hang equipment in a cool, dry place.
- Never store equipment in the bottom of a tool box.
- Avoid dirt build-up on equipment.
- Never "Force dry."
- Never store in an area where exposure to fumes or corrosive elements may exist.
- Never use equipment for any purpose other than employee protection.
- Be sure to follow all manufacturer's recommendations for storing, inspecting, and maintaining all equipment.

Storage & Maintenance of Fall Protection Equipment

Slide 34 of 60

Notes:

Storage & Maintenance of Fall Prevention Equipment Points of Emphasis:

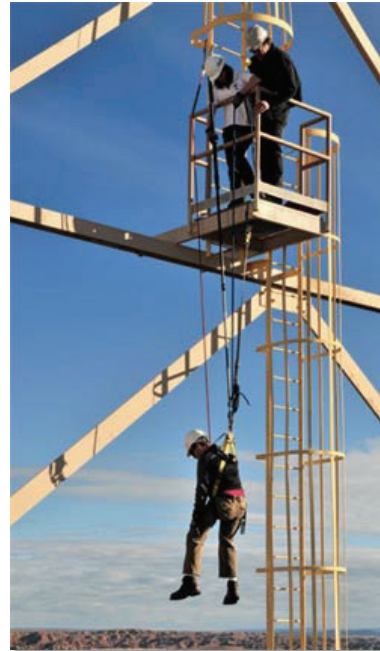
- Always hang equipment in a cool, dry place.
- Never store equipment in the bottom of a tool box.
- Avoid dirt build-up on equipment.
- Never "Force dry."
- Never store in an area where exposure to fumes or corrosive elements may exist.
- Never use equipment for any purpose other than employee protection.
- Be sure to follow all manufacturer's recommendations for storing, inspecting, and maintaining all equipment.

Personal fall arrest systems, personal fall restraint systems, positioning device systems, and their components shall be used only for employee protection and not to hoist materials.

After a Fall

Important Factors After a Fall Has Been Arrested:

- It is required that every employer have a written rescue plan to respond to falls.
- Suspension Trauma can set in in a matter of minutes. It is important to attend to the worker immediately.
- Be sure that you are familiar with your company's rescue plan so that you can jump to action immediately.



After a Fall

Slide 35 of 60

Notes:

Important Factors After a Fall Has Been Arrested:

- It is required that every employer have a written rescue plan ready for any falls.
- Suspension Trauma can set in in a matter of minutes. It is important to attend to the worker immediately.
- Be sure that you are familiar with your company's rescue plan so that you can jump to action immediately.

Definition:

Suspension Trauma: Suspension trauma (also known as “harness-induced pathology” or “orthostatic shock while suspended”) is the development of presyncopal symptoms and loss of consciousness if the human body is held motionless in a vertical position for a period of time.

After a Fall

Rescue Procedures: Self Rescue

Some workers will have access to a Personal Rescue Device (PRD) that will allow them to rescue themselves after a fall.

A PRD can allow a person to manually climb back up, automatically raise themselves back up, or automatically lower themselves down after a fall.



After a Fall: Rescue Procedures: Self Rescue

Slide 36 of 60

Notes:

Rescue Procedures: Self Rescue:

Some workers will have access to a Personal Rescue Device (PRD) that will allow them to rescue themselves after a fall.

A PRD can allow a person to manually climb back up, automatically raise themselves back up, or automatically lower themselves down after a fall.

There are many commercially available self rescue devices on the market. It is important to relieve the harness pressure. The foot wrap in the picture is a technique that will relieve the pressure and allow you to climb up or down for short distance.

After a Fall

Rescue Procedures: Aided Rescue



If a fallen person cannot rescue themselves, use ladders, aerial lifts, maintenance stands, or any other available equipment to rescue the person.

- It is preferred to lower the person to the ground when possible.
- A suspended person may experience shock, faintness, or loss of circulation to the legs due to the fall.
- Assume the person has lost consciousness.
- Ask the person to move their arms and legs as if they are riding a bike to help maintain circulation.

After a Fall: Rescue Procedures: Aided Rescue

Slide 37 of 60

Notes:

Rescue Procedures: Assisted Rescue:

If a fallen person cannot rescue themselves, use ladders, aerial lifts, maintenance stands, or any other available equipment to rescue the person.

Points of Emphasis:

- It is preferred to lower the person to the ground when possible.
- A suspended person may experience shock, faintness, or loss of circulation to the legs due to the fall.
- Assume the person has lost consciousness.
- Ask the person to move their arms and legs as if they are riding a bike to help maintain circulation.

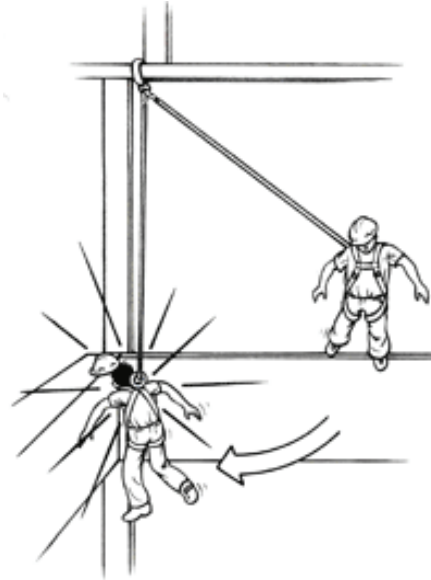
If possible, use on-site equipment such as extension ladders, forklifts, or elevating platforms for aided rescues. Only if this equipment isn't available, or isn't appropriate, should you consider using technical rescue equipment. Technical equipment appropriate for aided rescues include pulley systems, brake-tube systems, and winch systems. Each has advantages and disadvantages.

After a Fall

Swing Fall Hazards

A condition that exists when a worker's anchorage point is not directly above the worker when they fall.

- The farther you move sideways from your anchor point, the greater the chance of swinging if you fall.
- The more you swing, the greater the force will be if you strike an object.



After a Fall: Swing Fall Hazards

Slide 38 of 60

Notes:

Swing Fall Hazards:

- A condition that exists when a worker's anchorage point is not directly above the worker when they fall.
- The farther you move sideways from your anchor point, the greater the chance of swinging if you fall.
- The more you swing, the greater the force will be if you strike an object.



Part III

Potential Fall Situations in the Work Place

Part III: **Potential Fall Situations in the Work Place**

Slide 39 of 60

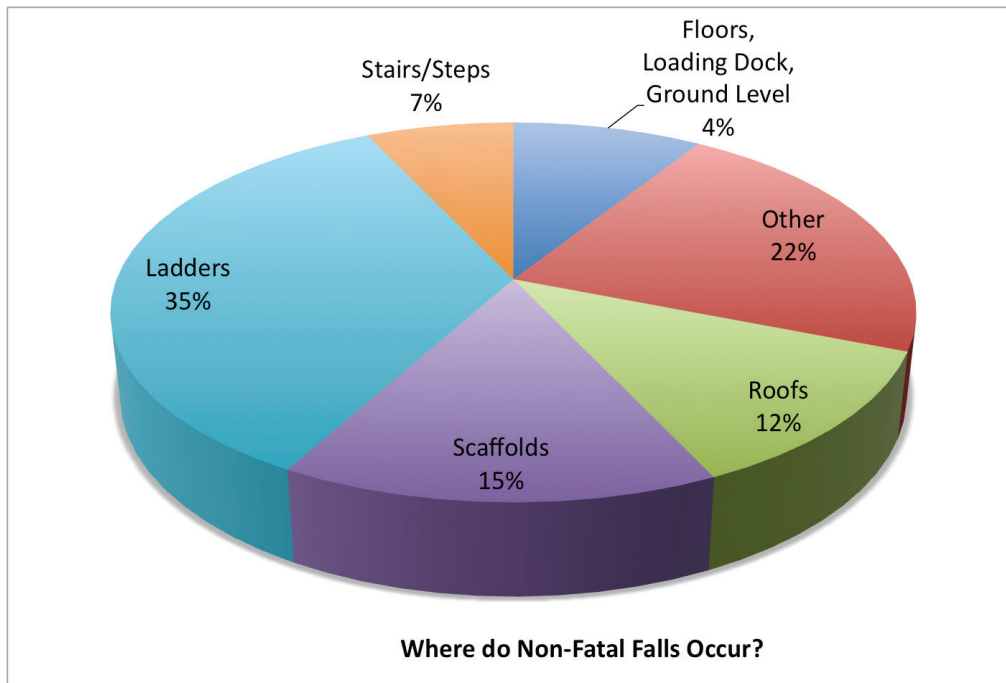
Notes:

This following section will outline a number of different situations where fall hazards occur in the work place. The situations outlined include:

- Open sided floors, walkways and platforms
- Floor openings and holes
- Ladders
- Mobile ladder platforms (scaffolding)
- Man and aerial lifts (lifts, stands and booms)
- On top of machinery

Many specific situations have been grouped into broader terms for brevity.

Identifying Fall Hazards Associated with the Work Place



Identifying Fall Hazards Associated with the Work Place (Non-Fatal)

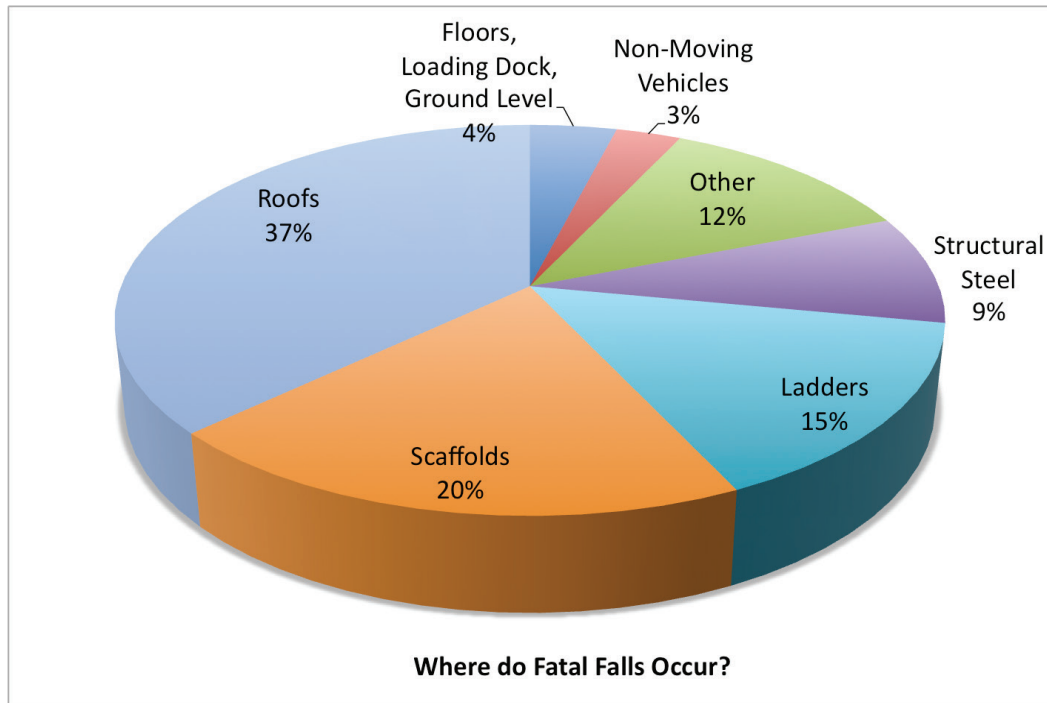
Slide 40 of 60

Notes:

This chart details non-fatal falls in the work place. This chart is a great discussion piece to illustrate the various instances where fall hazards are present in the work place.

The next slide is a similar chart that illustrates where fatal falls occur in the work place.

Identifying Fall Hazards Associated with the Work Place



Identifying Fall Hazards Associated with the Work Place (Fatal)

Slide 41 of 60

Notes:

This chart identifies where fatal falls occur in the work place.

Why Even Good Workers Ignore Fall Protection

The following are some characteristics that have been identified in employees that have been involved in a fall:

- They are in a hurry
- They don't think a situation is dangerous enough to require fall protection.
- They think they're experienced enough to avoid injury.
- It's easy to forget where you are in the press of work.



Why Even Good Workers Ignore Fall Protection

Slide 42 of 60

Notes:

The following are some characteristics that have been identified in employees that have been involved in a fall:

- They are in a hurry
- They don't think a situation is dangerous enough to require fall protection.
- They think they're experienced enough to avoid injury.
- It's easy to forget where you are in the press of work.

Open-Sided Floors, Walkways, and Platforms

Guard open-sided floors and platforms four feet or more above adjacent floor or ground level with a railing.

Open-sided floors, walkways, and platforms that are above dangerous equipment and hazards should be guarded regardless of height with a railing and toeboard.



The entrances to ramps, stairways, or fixed ladders do not need a railing.

Open-Sided Floors, Walkways, and Platforms

Slide 43 of 60

Notes:

Guard open-sided floors and platforms four feet or more above adjacent floor or ground level with a railing.

Open-sided floors, walkways, and platforms that are above dangerous equipment and hazards should be guarded regardless of height with a railing and toeboard.

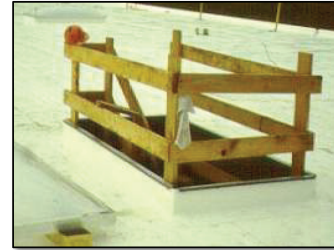
The entrances to ramps, stairways, or fixed ladders do not need a railing.

Make sure tools and loose materials are not left on overhead platforms and scaffolds.

Floor Openings and Holes

A **floor opening** is an opening in any floor, platform, pavement, or yard that measures at least twelve inches in its smallest dimension and through which a person can fall.

Employees must be protected from falls through floor openings by installing either a standard guardrail system along all exposed sides except the stairway entrance side, or a cover that is strong enough to hold up to four times the intended load.



A **floor hole** is an opening in any floor, platform, pavement, or yard that measures at least one inch, but less than twelve inches at its smallest dimension and through which materials and tools, but not people, can fall.



Floor Openings and Holes

Slide 44 of 60

Notes:

A **floor opening** is an opening in any floor, platform, pavement, or yard that measures at least twelve inches in its smallest dimension and through which a person can fall.

Employees must be protected from falls through floor openings by installing either a standard guardrail system along all exposed sides except the stairway entrance side, or a cover that is strong enough to hold up to four times the intended load. Covers that do not project more than one inch above the floor level may be used providing all edges are beveled (slanted) to prevent tripping. All hinges, handles, bolts, or other parts of a cover must set flush with the floor or cover surface.

A **floor hole** is an opening in any floor, platform, pavement, or yard that measures at least one inch, but less than twelve inches at its smallest dimension and through which materials and tools, but not people, can fall.

Ladders

Ladders have the highest rate of non-fatal falls in the workplace.

Two Types:

- Portable Ladders
- Fixed Ladders

** Portable ladders also includes self-supporting ladders.*

Climbing and descending:

- (1) Have both hands free to hold on to the ladder.
- (2) Face the ladder when climbing or descending.
- (3) Keep ladders free of oil, grease, or other slippery materials.
- (4) Keep the area around the top and bottom of ladders clear.
- (5) Three point rule



Ladders

Slide 45 of 60

Notes:

Ladders have the highest rate of non-fatal falls in the work place.

Two Types:

- Portable Ladders
- Fixed Ladders

** Portable ladders also includes self-supporting ladders.*

Climbing and descending:

1. Have both hands free to hold on to the ladder.
2. Face the ladder when climbing or descending.
3. Keep ladders free of oil, grease, or other slippery materials.
4. Keep the area around the top and bottom of ladders clear.
5. Always maintain a 3-point (two hands and a foot, or two feet and a hand) contact on the ladder when climbing.

Portable Ladders

A portable ladder is defined as any ladder that can readily be moved or carried.

Portable Ladder Requirements:

- Use ladders only for their intended purpose.
- Make sure not to overload ladders.
- Do not exceed either the maximum intended load, or the manufacturer's rated capacity.
- Protect ladders that are set up in a location where they could be displaced by work place activities or traffic.



Portable Ladders

Slide 46 of 60

Notes:

Portable Ladders

A portable ladder is defined as any ladder that can readily be moved or carried.

Portable Ladder Requirements:

- Use ladders only for their intended purpose
- Make sure not to overload ladders.
- Do not exceed either the maximum intended load, or the manufacturer's rated capacity.
- Protect ladders that are set up in a location where they could be displaced by work place activities or traffic.

Note: You must set up non self-supporting ladders at a safe angle. The ladder is set at the proper angle when the horizontal distance from the top support to the foot of the ladder is approximately one-quarter the working length of the ladder.

Self-Supporting Ladders

A self-supporting ladder is a type of portable ladder that can fold out and stand on its own.

Self-Supporting Ladder Requirements:

- Make sure self-supporting ladders are not used as single ladders or in the partially closed position.
- Make sure stepladders are fully opened with the spreaders locked.
- Make sure not to climb on the rear braces of a self-supporting ladder unless they are designed and recommended for that purpose by the manufacturer.
- Prohibit standing or stepping on the top cap and top step of a step or trestle ladder, and standing or stepping on the bucket or pail shelf of a self-supporting ladder.



Self-Supporting Ladders

Slide 47 of 60

Notes:

Self-Supporting Ladders

A self-supporting ladder is a type of portable ladder that can fold out and stand on its own.

Self-Supporting Ladder Requirements:

- Make sure self-supporting ladders are not used as single ladders or in the partially closed position.
- Make sure stepladders are fully opened with the spreaders locked.
- Make sure not to climb on the rear braces of a self-supporting ladder unless they are designed and recommended for that purpose by the manufacturer.
- Prohibit standing or stepping on the top cap and top step of a step or trestle ladder, and standing or stepping on the bucket or pail shelf of a self-supporting ladder.

Fixed Ladders

A fixed ladder is a vertical ladder mounted permanently to a structure. These ladders are primarily used to access roofs or other structures for industrial purposes.

Fixed Ladder Requirements:

- 1) Do not exceed either the maximum intended load or manufacturer's rated capacity.
- 2) Make sure a cage, well, or ladder safety system is provided if the length of the climb is less than twenty-four feet and the top of the ladder is more than twenty-four feet above the ground, floor, or roof.
- 3) Make sure a ladder with a single length of climb that is equal to or greater than twenty-four feet is either equipped with a ladder safety device or uses multiple ladder sections.
- 4) If the fixed ladder consists of multiple ladder sections, each section must meet these requirements:
 - Be provided with a cage or well
 - Have a length of climb of any ladder section is not greater than fifty feet
 - Each ladder section is offset from adjacent sections
 - Landing platforms are provided at maximum intervals of fifty feet



Fixed Ladders

Slide 48 of 60

Notes:

A fixed ladder is a vertical ladder mounted permanently to a structure. These ladders are primarily used to access roofs or other structures for industrial purposes.

Fixed Ladder Requirements:

- (1) Do not exceed either the maximum intended load or manufacturer's rated capacity.
- (2) Make sure a cage, well, or ladder safety system is provided if the length of the climb is less than twenty-four feet and the top of the ladder is more than twenty-four feet above the ground, floor, or roof.
- (3) Make sure a ladder with a single length of climb that is equal to or greater than twenty-four feet is either equipped with a ladder safety device or uses multiple ladder sections.
- (4) If the fixed ladder consists of multiple ladder sections, each section must meet these requirements:
 - Be provided with a cage or well
 - The length of climb of any ladder section is not greater than fifty feet
 - Each ladder section is offset from adjacent sections
 - Landing platforms are provided at maximum intervals of fifty feet

Note: Take a minute out of the presentation to talk briefly about ladder safety devices. (Listed on next supplement page)

Slide Notes Continued from Previous Page

Fixed Ladders (Continued)

Notes (Continued):

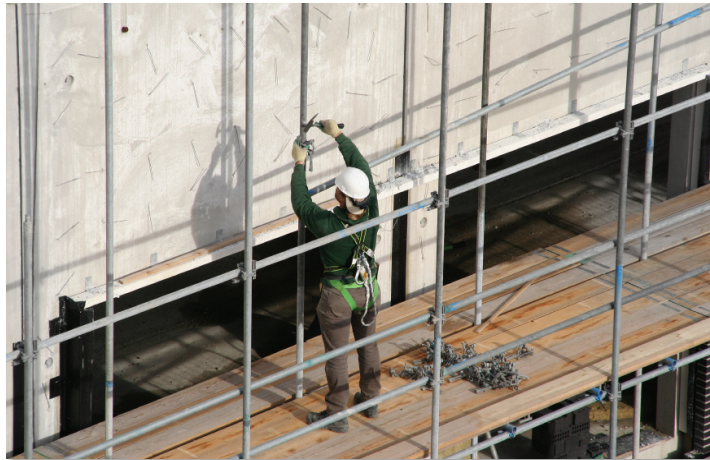
Ladder safety devices:

You must make sure ladder safety devices and related support systems meet all of the following:

- (a) Are capable of withstanding, without failure, the test drop of a five-hundred-pound weight for a free-fall distance of eighteen inches.
- (b) The device does not require a person to continually hold, push, or pull any part of the device and allows them to have both hands free to grip the ladder.
- (c) In the event of a fall, the device:
 - (i) Is activated within two feet; and
 - (i) Limits the fall velocity to seven feet per second or less.
- (d) Uses a connection between the carrier or lifeline and the point of attachment on the full body harness that is not longer than nine inches.

Mobile Ladder Platforms (Scaffolding)

Protect each employee on a scaffold more than ten feet above a lower level from falling to the lower level, by providing either a personal fall arrest system or guardrails.



Make sure personal fall arrest systems are attached by a lanyard to one of the following:

- *Vertical lifeline*
- *Horizontal lifeline*
- *Appropriate structural member of the scaffold.*

Mobile Ladder Platforms (Scaffolding)

Slide 49 of 60

Notes:

Protect each employee on a scaffold more than ten feet above a lower level from falling to the lower level, by providing either a personal fall arrest system or guardrails.

Make sure personal fall arrest systems are attached by a lanyard to one of the following:

- Vertical lifeline
- Horizontal lifeline
- Appropriate structural member of the scaffold

DISCUSSION:

Ask students if they notice any safety concerns in this photo? (Harness may be loose, D ring too low and items at workers feet are tripping hazard).

Elevating Work Platforms



Safety Considerations:

- Only use appropriate machines for lifting.
- Make sure all persons on boom-supported platforms wear a full body harness with a lanyard attached to either the manufacturer's recommended attachment point, or to the boom, or platform, if there is no specified point by the manufacturer.
- Do not anchor to an adjacent pole, structure, or equipment while working from an aerial lift.

Types of Elevated Work Platforms:

- Scissor Lifts
- Boom Lifts
- Forklift Baskets

Elevating Work Platforms

Slide 50 of 60

Notes:

Types of Man and Aerial Lifts:

- Scissor Lifts
- Boom Lifts
- Forklift Baskets

Safety Considerations:

- Only use appropriate machines for lifting.
- Make sure all persons on boom-supported platforms wear a full body harness with a lanyard attached to either the manufacturer's recommended attachment point, or to the boom, or platform, if there is no specified point by the manufacturer.
- Do not anchor to an adjacent pole, structure, or equipment while working from an aerial lift.

Discuss dangers of boom lifts and being catapulted out of the basket if driven on uneven surfaces. There are many videos available online that can be incorporated into the training and effectively demonstrate the danger.

Note: Guardrails are the primary means of fall protection for manually propelled elevating work platforms.

Forklift Basket

A forklift basket is a type of elevated platform that can be attached to a forklift and allow a worker to be elevated safely.



Safety Considerations:

Forklift baskets must be equipped with either standard guardrails on all sides, or a safety harness and lanyard that are connected to a tie off point that has been approved by the manufacturer.

Forklift Basket

Slide 51 of 60

Notes:

A forklift basket is a type of elevated platform that can be attached to a forklift and allow a worker to be elevated safely. Forklift baskets must be compatible with the forklift.

Safety Considerations:

- Forklift baskets must be equipped with either standard guardrails on all sides, or a safety harness and lanyard that are connected to a tie off point that has been approved by the manufacturer.
- As seen in the photo the basket is higher in the rear to protect workers from coming in to contact with the mast.

On Top of Machinery



Instances when employees have to climb on large machines can create a fall hazard and should be protected against. Many times this happens when inspecting and performing maintenance on a machine. Be sure to know the proper tie-off places on machinery that can be a fall hazard.

On Top of Machinery

Slide 52 of 60

Notes:

Instances when employees have to climb on large machines can create a fall hazard and should be protected against. Many times this happens when inspecting and performing maintenance on a machine. Be sure to know the proper tie-off places on machinery that can be a fall hazard.

It is always best to connect to the anchor point prior to getting on top of a machine.

Refer to company policy and PPE hazard assessments to ensure employees use the correct fall protection system.

Discuss photo's on the slide, which option is better? Can a platform with guard rails be installed and used instead?



Part IV Case Studies

Part IV: Case Studies

Slide 53 of 60

Notes:

The following is the final section of the training. Three case studies will be used to help add a human factors approach to helping the trainees reinforce and retain the information in this training. Each case study will be presented, then followed with some discussion questions on the next slide. The answers to the questions should appear with a mouse click in the order of the questions.

Case Study #1

An employee was asked to move a motorized boom-supported platform from one building to another. The employee decided to take a short cut over an un-improved area of ground so he raised the basket approximately 12 feet in the air so he could see better. The left front wheel dropped into a hole that had been covered by a thin piece of plywood. The employee was catapulted out of the basket and sustained serious injuries that required hospitalization.

Case Study #1

Slide 54 of 60

Notes:

Case Study #1

An employee was asked to move a motorized boom-supported platform from one building to another. The employee decided to take a short cut over an un-improved area of ground so he raised the basket approximately 12 feet in the air so he could see better. The left front wheel dropped into a hole that had been covered by a thin piece of plywood. The employee was catapulted out of the basket and sustained serious injuries that required hospitalization.

Case Study #1 - Questions

1. What should the operator have done prior to driving over an un-improved surface?

The operator should have surveyed the area for drop-offs or holes or any other possible unsafe conditions or hazards.

2. What should the employee have done if he had difficulty seeing rather than raising the basket?

Use a spotter

3. What safety equipment is required when operating a motorized boom-supported platform and would most likely have kept the employee from being ejected from the basket?

A full body harness with a lanyard attached to the manufacturer's recommended attachment point.



Case Study #1 Questions

Slide 55 of 60

Notes:

1. What should the operator have done prior to driving over an un-improved surface?

The operator should have surveyed the area for drop-offs or holes or any other possible unsafe conditions or hazards.

2. What should the employee have done if he had difficulty seeing rather than raising the basket?

Use a spotter

3. What safety equipment is required when operating a motorized boom-supported platform and would most likely have kept the employee from being ejected from the basket?

A full body harness with a lanyard attached to the manufacturer's recommended attachment point.

Case Study #2

The maintenance technician at a manufacturing company was tasked with performing normal preventative maintenance and lubrication on the shop's equipment. The employee did not receive any fall protection training and climbed on top of the equipment daily to complete his work. While working on top of an industrial dryer the employee slipped in some grease and fell 13 feet to the ground where he was mortally wounded.

Case Study #2

Slide 56 of 60

Notes:

Case Study #2

The maintenance technician at a manufacturing company was tasked with performing normal preventative maintenance and lubrication on the shop's equipment. The employee did not receive any fall protection training and climbed on top of the equipment daily to complete his work. While working on top of an industrial dryer the employee slipped in some grease and fell 13 feet to the ground where he was mortally wounded.

Case Study #2 - Questions

1. What did the employer fail to do?

Provide a safe working environment, provide proper training, conduct a PPE hazard assessment and ensure their employees are using their PPE.

2. If the maintenance worker had been wearing a full body harness connected to the top of the machine by a 6 foot shock absorbing lanyard with a 3 ½ foot deceleration device, would the fall have been arrested prior to hitting the ground?

No. A 6' worker + 6' lanyard + 3 ½' deceleration device + 3' safety factor requires an anchor point at least 18 ½ feet above the next lower level.

3. What should the employer do to ensure the safety of their employees based on the frequency required to access the top of the equipment?

Engineer a fall restraint system to minimize the hazard by installing permanent ladders and platforms protected by guardrails.



Case Study #2 Questions

Slide 57 of 60

Notes:

1. What did the employer fail to do?

Provide a safe working environment, provide proper training, conduct a PPE hazard assessment and ensure their employees are using their PPE.

2. If the maintenance worker had been wearing a full body harness connected to the top of the machine by a 6 foot shock absorbing lanyard with a 3 ½ foot deceleration device, would the fall have been arrested prior to hitting the ground?

No. A 6' worker + 6' lanyard + 3 ½' deceleration device + 3' safety factor requires an anchor point at least 18 ½ feet above the next lower level.

3. What should the employer do to ensure the safety of their employees based on the frequency required to access the top of the equipment?

Engineer a fall restraint system to minimize the hazard by installing permanent ladders and platforms protected by guardrails.

Case Study #3

A steel worker at a small Fabrication shop was sent to retrieve some raw material for a machinist to start the next job. The material he needed was located on the top shelf of a storage rack that was 14' from the ground. The steel worker used an 8 foot self-supporting ladder which required him to stand on the top cap to reach the material. When he lifted the heavy piece of steel it caused him to become unbalanced and the ladder tipped over causing him to fall. The worker was permanently disabled.

Case Study #3

Slide 58 of 60

Notes:

Case Study #3

A steel worker at a small Fabrication shop was sent to retrieve some raw material for a machinist to start the next job. The material he needed was located on the top shelf of a storage rack that was 14' from the ground. The steel worker used an 8 foot self-supporting ladder which required him to stand on the top cap to reach the material. When he lifted the heavy piece of steel it caused him to become unbalanced and the ladder tipped over causing him to fall. The worker was permanently disabled.

Case Study #3 - Questions

1. Did the employee properly use the ladder?

No. He stood on the top cap.

2. What would be the most desirable way to prevent future falls?

Eliminate the exposure to a fall hazard. Use a crane to retrieve the material or don't store commonly used items at high elevations.

3. If the worker had no other choice but to use a ladder, what could he have done better?

Find an appropriately sized ladder that does not require him to stand on the top cap or top step.



Case Study #3 Questions

Slide 59 of 60

Notes:

1. Did the employee properly use the ladder?

No. He stood on the top cap.

2. What would be the most desirable way to prevent future falls?

Eliminate the exposure to a fall hazard. Use a crane to retrieve the material or don't store commonly used items at high elevations.

3. If the worker had no other choice but to use a ladder, what could he have done better?

Find an appropriately sized ladder that does not require him to stand on the top cap or top step.

This brings an end to this training.
Does anyone have any last questions
or comments to wrap up?



End of Training

Slide 60 of 60

Notes: