Duty to Have Fall Protection

Employers are required to assess the workplace to determine if the walking/working surfaces on which employees are to work have the strength and structural integrity to safely support workers.

Employees are not permitted to work on those surfaces until it has been determined that the surfaces have the requisite strength and structural integrity to support the workers. Once employers have determined that the surface is safe for employees to work on, the employer must select one of the options listed for the work operation if a fall hazard is present.

For example, if an employee is exposed to falling 6 feet 6 inches (2 meters) or more from an unprotected side or edge, the employer must select either a guardrail system, safety net system, or personal fall arrest system to protect the workers. Similar requirements are prescribed for other fall hazards in the material that follows.

The Vital Need for Fall Protection

Each year, approximately 300,000 disabling injuries are attributable to work-related falls. Falls are the second highest cause of death in the work-place. In addition to the lost lives and injuries caused by falls, A comprehensive fall protection program not only saves lives and reduces injuries, but also saves money and makes good business sense.

Your company has developed this program with the safety of all employee in mind. We encourage all employees to take an active role in the continued development of a safe work-place.

Your suggestions and participation in the Fall Protection Program will be a benefit to all. If you see a potential hazard or would like to suggest an alternative method of performing a task at the site, contact a supervisor.

Who's Responsible?

Makes it quite clear that it is the employer's responsibility to develop a fall protection program that complies with regulations. The most effective programs are those in which employers work closely with their workers to identify fall hazards in the development of a comprehensive fall protection program that eliminated fall hazards or provides appropriate fall protection equipment.

As an employee of this company you will receive training in the code of safe practices for fall protection as well as the selection, care, and maintenance of fall protection equipment.

What is Fall Protection?

- **Warning Lines**
- **Barriers**
- **Guardrails**
- **Perimeter Cables**
- **Safety Nets**
- **Walls, Fences**
- **Floors**
- **Platforms, Buckets**
- **Scaffolds, Planking**
- **Personal Fall Protection Equipment**

"If it's not continuous protection...It's not fall protection."

Classifications and Standards

CHEST HARNESS ANSI CLASS 2,

Used where there are only limited fall hazards, (No vertical free falls), and for retrieval. Not for fall arrest.

BODY HARNESS ANSI CLASS 3,

Used for restraint of fall arrest where vertical free fall hazards exist. Body harnesses distribute the fall arresting forces throughout a larger area of the body. When used for fall arrest a 1/2 inch filament nylon lanyard, or an approved shock absorber must be used. The requirement on all fall arrest systems using a body harness, limits maximum forces on a worker to 1800 pounds.

SUSPENSION BELTS ANSI CLASS 4,

Used to suspend a worker in a work area where no other means of support is available. Not for fall arrest. To be used with an independent fall arrest system, lifeline, body belt or harness and rope grab.

ROPE LANYARDS

Used for position or restraint. Only 1/2 inch filament nylon rope lanyard will meet all requirement for fall arrest using a body harness. Rope lanyards shall not be used for fall arrest with a body belt.

SHOCK ABSORBING LANYARD

For fall arrest, a shock absorbing lanyard is recommended. The shock absorber meets the CE requirement for fall arrest using a body harness or body belt. The shock absorber can increase the decelerating distance by 42 inches. It is essential to determine before use whether the fall space permits the use of an energy absorber. MUST BE USED when wearing a body belt for fall arrest and D-ring must be positioned in the center of the wearer's back.

CONNECTING DEVICE REQUIREMENTS

Belts or harnesses with a webbing loop must have the lanyard or securing line permanently attached to the loop. Belts or harnesses with a D-ring should have the lanyard or securing line properly and permanently spliced to the D-ring to minimize the possibility of accidental disengagement from the D-ring. If the intended use prohibits permanent attachment of the lanyard or securing line of the D-ring, a lanyard or securing line with a double-locking snap hook should be used. If the use of a double-locking snap hook is not practical, a single-locking snap may be used. Snap hooks cannot be snapped to another snap hook or snapped to a D-ring if the throat opening is larger than 3/4 inch. If a snap hook is used with the safety lanyard, the lanyard should have a 5000 lb. Tensile strength.

CAUTIONS

Items subjected to FALL ARREST or IMPACT FORCES must be immediately removed from service and destroyed. Any item showing EXCESSIVE WEAR OR DETERIORATION should be destroyed. **Inspect all equipment before each use.** Failure to observe proper inspection and usage procedures could result in INJURY or DEATH. ENVIRONMENTAL HAZARDS must be considered in selecting the appropriate lifeline, belt and lanyard. Recommendations where chemicals, high temperature or other unusual conditions exist may be addressed to GEMTOR.

FREE FALL CONSIDERATIONS

Free fall distances should be kept to a minimum, in no case greater than 6 feet. To ensure compliance the tie off attachment point to the lifeline or anchor should be located at or above the connection point of the fall arrest equipment to belt, or harness.

INSPECTION

Users should establish formal routine inspection procedures according to prevailing conditions with a minimum of two formal inspections per year. Visual inspection is required before each use, for mildew, wear damage or other deterioration and defective components shall be removed from service.

1. Buckles, D-rings, snap hooks, thimbles, and wear pads shall not be distorted, or have any sharp edges, burrs, cracks, worn parts or corrosion. Make sure buckle works freely. The snap hook keeper spring shall provide tension to close the keeper in a locked position; it shall close flat against the snap hook and exhibit no sideways movement or play. Rivets and grommets shall be tightly embedded in the material with no distortion.

2. All webbing shall be free of frayed or broken fiber, pulled stitches, tears, abrasions, mold, burns or discoloration. Rope splices shall be tight with five tucks. Thimbles shall be held by the splice. Inspect rope by twisting. Inspect webbing by bending and/or pressing over a 1-1/2 inch diameter object.

3. Extension-type shock absorbing devices shall show no evidence of elongation.

Fall Hazard Analysis

- Breakdown of vertical/horizontal movements at the work site.
- Number of workers involved.
- How often the work is performed.
- Required work tools (including access).
- Determine obtainable anchor point strength.
- Set criteria for fall protection equipment and/or systems.
- A general description of the work site with attention to potential obstruction in the fall path. Calculate fall distance.
- Analysis to review expected self-recovery or possible need for retrieval/rescue.
- Identification of environmental conditions (icy/wet).

Fall Hazard Analysis Checklist

Date:	
Job site:	
Prepared by:	
Description of Job site: (obstacles, obstruction in fall path)	
Job site Tasks:	
Vertical and Horizontal movements to be performed at the job site:	
Number of workers on-site:	
Frequency of tasks:	
Established/Identified anchor points:	
Fall Protection Equipment to be used:	
Rescue Procedures:	
Identification of Environmental Conditions:	

Hazard Evaluation/Code of Safe Practices
for General Work Areas and Specific Job Safety Classes

General Area of Specific Job Safety Class:		Painters/Roofers/Steel Workers
Date Prepared:	Prepared by:	
Description of Job/Task	**Potential Safety/Health Hazards:**	**Code of Safe Practices**
Scaffold, Ladder, Boom Truck work during prep and application of paint	Falls due to improper fall protection equipment.	Employees will only use fall protection equipment that is compatible and approved for the task.
Roof Applications	Falls due to improper use of fall protection equipment	Employees will follow all safety rules/guidelines established by the company with respect to the use of fall protection equipment.
Steel Erections	Falls due to the use of fall protection equipment that is frayed, distorted, cracked, or cut. Falls due to the use of improper tie-off points. Injuries/falls as a result of slipping on wet surfaces. Injuries/falls due to slip/trip hazards. Injuries sustained as a result of falling objects.	Employees are to inspect all fall protection equipment for damage prior to each use. Employees using fall protection equipment must tie-off only at approved points. Employees will only wear approved footwear and use caution when working on wet surfaces. Employees will keep worksite clean and orderly. All equipment will be properly stored when not in use. Employee must wear Hard hats.

THE A-B-C RULE

A. Anchor Point -

Secure point of attachment that supports entire weight of the system.

B. Harness -

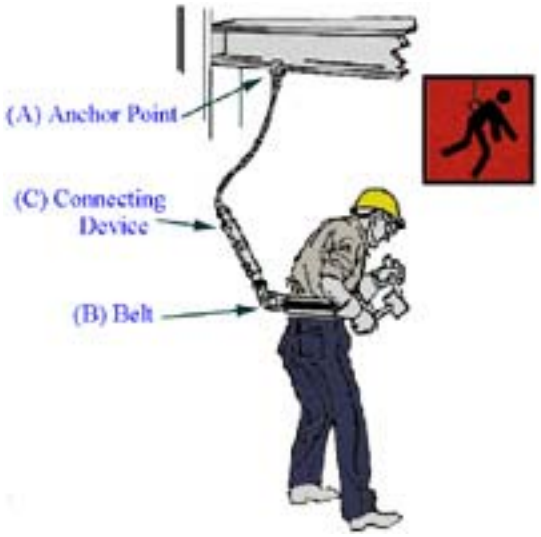
Personal protection worn by workers performing the job.

1. Fall Arrest
2. Positioning
3. Suspension
4. Retrieval

C. Connecting Device -

Attaches harness to anchor point.
Examples are lanyards, rope grabs and deceleration devices.

ASPECTS OF FALL PROTECTION



Fall Arrest

A fall arrest system is required if the risk of falling from an elevated level exists. The system will arrest a worker in a fall from a working level. It is designed to be passive, activated only if a fall occurs.
A fall arrest system includes:

A) Anchor Point - (must support 5,000 lbs.) Eye Bolt / Beam / Tag Line - The point which supports the total weight of the worker.

B) Personal Protective Gear - Full Body Harness - A full body harness distributes the forces throughout the body should a fall occur.

C) Connecting Device - Shock Absorbing Lanyard - the shock absorbing lanyard softens the impact on the worker, dramatically decreasing the total fall arresting forces.

ANCHORING PROCEDURES

1. Anchor point should be directly above the worker.
2. Anchor point should be easily accessible.
3. Anchor point should be capable of supporting 5,000 lbs. per worker.
4. Anchor point should be high enough so that no lower level is struck should a fall occur.
5. Structural beams and eye bolts are often used.

ANCHORING DEVICES

Carabiner - Used to connect retractable life lines, vertical drop lines to an overhead anchor point.
Cross-Arm Strap - Designed to wrap around beams to eliminate the dangerous practice of wrapping lanyards around sharp beams.
Horizontal Lifeline - Temporary anchoring device for beams.
Beam Trolley - Trolley used to freely move on overhead eye beams. This insures that the anchor point stays overhead.

POSITIONING

Positioning System

A personal positioning system is required if a worker must be held in place while his hands are free to work. The system is defined as a system of equipment or hardware which, when used with it's body belt or body harness, allows a worker to be supported on an elevated vertical surface and work with both hands free. A positioning system provides solid midriff support. Whenever a worker leans back, the system is activated, making this an "active" system.

A positioning system includes:

A) Anchor Point - Vertical Rods
B) Personal Protective Gear - Full Body Harness
C) Connecting Device - Rebar Chain Assembly

A positioning system must be used only for the positioning assistance for which it was designed. It must not be relied upon to provide fall arrest or any other kind of protection.

SUSPENSION

Personal Suspension System

A personal suspension system is required when it is necessary to position and support a worker from above. A typical system involves the use of a winch, cable, and either a boson's chair or a specially designed suspension harness. The system is designed to lower and support a worker while allowing a hands-free work environment.
A suspension system includes:

A) Anchor Point - Anchor Bolt/Carabiner

B) Personal Protective Gear - Boson's Chair/Harness

C) Connecting Device - Workline

A suspension system must be used only to lower and support a worker at an elevated work station. The connecting points of a suspension system are not designed to provide fall arrest or any kind of protection.

RETRIEVAL

Personal Retrieval System

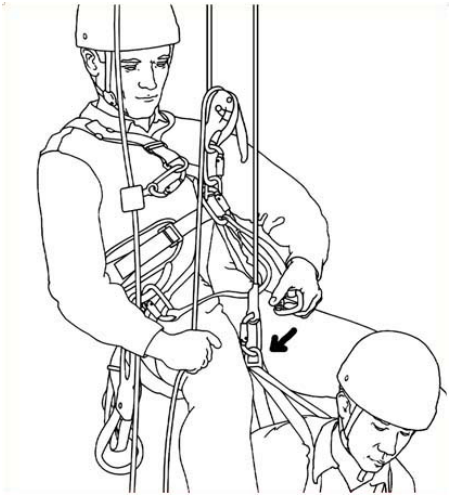
A personal retrieval system is required when a worker needs a quick means of being lifted out of a work environment. This system is primarily used in confined spaces where workers enter tanks, manholes, etc. and may require retrieval from above if an emergency occurs. A retrieval system is a passive system which becomes active when the worker needs to be removed from the work location.
A retrieval system includes:

A) Anchor Point - Tripod Eye Bolt

B) Personal Protective Gear - Full body Harness

C) Connecting Device - Retractable Lifeline/Rescue Unit

A personal retrieval system is designed to quickly remove a worker from a work location and may not provide fall arrest protection.



SHOCK-ABSORBING LANYARDS

- Significantly reduce fall arresting forces as much as 50-80% compared to traditional lanyards.
- Limit fall arresting forces to less than 900 lbs.
- Elongate up to 3-1/2 feet during activation and fall arresting process.

CONNECTING DEVICES

Free fall distance equals length of connecting device minus distance between anchor point and fall arrest D-ring.

A) Lanyard -

- Rope
- Web
- Cable

B) Shock Absorbers - Deceleration Units

C) Rebar Chain Assemblies

D) Web Rebar Assemblies

E) Retractable Lifelines

F) Vertical Lifelines and Rope Grabs

HARNESS

- A harness distributes the impact force of a fall to a greater area of the torso than does a belt.
- Fall-Arrest full body harness has a fall arrest D-ring attached to the upper middle of the back and a positioning D-ring attached to each side
- Fall-Arrest/Suspension full body harness has two suspension D-rings usually positioned in the lower front portion of the harness to provide stable, secure and comfortable support. It also has a fall arrest D-ring attached to the upper middle of the back for connection to a separate anchor point.
- Boson's chair is a type of fall arrest/suspension equipment. It has a suspension D-ring permanently attached to the top of the unit and has a built-in fall arrest belt with a D-ring attached to the center of the back.
- Fall Arrest/Retrieval full body harness has two retrieval D-rings permanently attached to the wearer's shoulders and a fall arrest D-ring permanently attached to the upper middle of the back.

Fall Protection

Equipment Inspection Form

Employee Name:

Equipment Inspected:

Date:

Inspected by:

Body Belt/Harness Inspection

1. Belts and Straps - Check for frayed edges, broken fibers, pulled stitches, cuts or chemical damage.
2. D-rings - Check D-ring and D-ring metal wear pad (if any) for distortion, cracks, breaks, and rough or sharp edges.
3. Attachments of Buckles - Note any unusual wear, frayed or cut fibers, or distortion of buckles/D-ring. Frayed or Broken Strands - Inspect for loose, distorted or broken grommets.
4. Tongue or Billet - Inspect for loose, distorted or broken grommets.
5. Tongue Buckle - Check for distortion or sharp edges.
6. Friction Buckle - Outer bars and center bars must be straight. Check corners and attachment points of the center bar.

Lanyard Inspection

1. Hardware
   - Snaps - Inspect for hook and eye distortions, cracks, corrosion or pitted surfaces. Inspect latch and keeper spring/lock.
   - Thimbles - Edges of thimble must be free of sharp edges, distortion or cracks.

2. Steel Lanyard - Check for cuts, frayed areas or unusual wear patterns.

3. Web Lanyards - Check for swelling, discoloration, cracks, and charring from heat/chemical damage.

4. Rope Lanyard - Check for fuzzy, worn, broken or cut fibers.

DO'S AND DON'TS OF FALL PROTECTION

1) A shock absorbing lanyard will stretch 3-1/2 feet to slow a fall. Bear this in mind when calculating fall distance.
2) The shorter the tie-off, the shorter the fall. Always use the shortest possible lanyard.
3) When you tie off above your head, you reduce the total fall distance. A six footer who ties off at his feet could fall as far as 12 feet before stopping.
4) You can avoid the pendulum effect by attaching directly over head. When you tie off to the side, you may swing into side surfaces or obstructions during a fall.
5) Look out for sharp beams. Wrapping lanyards around a beam or sharp edges could cut them because of the tremendous forces generated during a fall. Use a cross arm strap, carabiner or other attachment, instead of wraparounds.
6) Make sure the anchorage point is strong enough to withstand force generated during a fall and meets the 5,000 lb. anchor point requirement per employee.
7) What happens if there is a fall?

A) Provide immediate assistance and rescue.

B) Have the worker checked medically.

C) Remove equipment from service.

D) Investigate fall.

E) Evaluate how the system worked and make any needed changes to procedures.

8) Wear a full body harness whenever possible.

A) Harness should be snug, but it shouldn't bind.

B) Your belt should fit so the center grommets are used most often.

Do not punch additional holes to increase the size.

C) The chest strap should be in your mid-chest area, under the shoulder buckle.

D) Make sure all the leg snaps are attached.

9) Attach connecting devices to back D-ring of harness.
10) Side and front D-rings are for positionin

GLOSSARY

Anchorage - a secure point of attachment for lifelines, lanyards, or deceleration devices.
Arresting Force - the force generated by arresting the test weight that is transmitted through the fall arresting system components to the anchorage or load cell.
Belt Terminal - an end attachment of a window cleaner's positioning system used for securing the belt or harness to single or double-headed anchors.
Body Belt - (safety belt) a strap with means both for securing about the waist and for attaching to a lanyard, lifeline or deceleration device.
Body Harness - a design of straps which is secured about the wearer in a manner to distribute the arresting forces over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.
Competent Person - one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are hazardous, or dangerous to workers, and who has authorization to take prompt corrective measures to eliminate them.
Deceleration Device - any mechanism which serves to dissipate energy during a fall.
Deceleration Distance - the additional vertical distance a falling worker travels excluding lifeline elongation before stopping from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an workers body belt or body-harness attachment point just prior to activation of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
Free Fall - the act of falling, before the personal fall protection system begins to arrest the fall.
Free Fall Distance - the vertical distance an worker falls before the fall arrest system is activated.
Hardware - buckles, D-rings, snap-hooks and associated hardware which are used to attach the components of the system together.
Ladder Belt - a belt which may be attached to a fixed ladder or a secured portable ladder while the worker is performing work from the ladder.
Ladder Safety Device - a device other than a cage or well, designed to help prevent accidental falls from ladders or to limit the length of such falls. A ladder safety device usually consists of a carrier, safety sleeve and body belt or harness.
Lanyard - a flexible line used to secure a body belt or body harness to a lifeline or directly to a point of anchorage.
Lifeline - a line provided for direct or indirect attachment to a worker's body belt, body harness, lanyard, or deceleration device. Such lifelines may be horizontal or vertical in application.
Retracting Line - an automatic tensioning system that extends out and retracts a line at a certain speed and locks or brakes when the speed is exceeded.

Rope Grab - a device which attaches to a lifeline as an anchoring point that provides a means of arresting a fall.
Safety Sleeve - the moving component with locking mechanism of a ladder safety device which travels on the carrier and connects the carrier to the body belt or harness.
Saddle Belt - a body belt which usually has additional straps for supporting a worker in a sitting position at a work station. An example would be a tree trimmer's saddle.
Self-Retracting Lifeline/Lanyard - a deceleration device which contains a drum-wound line which may be slowly extracted from or retracted onto the drum under slight tension during normal worker movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.
Shock Absorber - a component of a system which allows dissipation of energy by extending the deceleration distance.
Snap-Hook - A self closing device with a keeper, latch or other similar mechanism which will remain closed until manually opened.
Suspension Belts - simple or compound straps that may be secured about the wearer's body as an independent work support. Examples include saddle belts or tree trimmer's belts.
Tie-Off - the act of a user wearing personal fall protection equipment connecting directly or indirectly to an anchorage. Also means the condition of an worker being connected to an anchorage.
Total Fall Distance - the maximum vertical distance between the wearer's body belt or body harness attachment points before and after the fall is arrested including lanyard extension and/or deceleration distance.
Window Cleaner's Belt - a belt which consists of a waist belt, an integral terminal runner or strap, and belt terminals.
Window Cleaner's Positioning System - a system which consists of a window cleaner's belt secured to window anchors.