

Employee Fall Protection

You can fall from any height and be seriously injured or killed. In the construction industry, as well as any other industry, when falls from heights happen, they're usually very serious. Some people have actually stated that falls from less than 10 feet can't hurt you. They are seriously mistaken because falls from almost any height can cause serious injury or death, that's why it's important to have fall protection and the knowledge to prevent these falls. What is fall protection?

Basically, it's something that keeps you from falling from a certain height. Whenever you're working six or more feet high, OSHA requires fall protection.

Right now, let's take a quick look at the different types of fall protection. First there are guard rails, which are made up of a top rail, mid rail, toe boards and posts.

Top rails should be between 39 and 45 inches above the walking level and mid rails should be located half way between the top edge of the rail and walking surface. The guard rail must be strong enough to withstand forces of up to 200 pounds applied within 2 inches of the top edge in any outward or downward position. There are a variety of guard rails, such as wood, pipe, steel, cable and others.

Another type of fall protection is safety nets. Safety nets are made from strong synthetic material, with holes no more than six inches at its greatest dimension.

When installing nets, they should be close to people who have the exposure of falling, but never more than 30 feet below their level.

With nets, you should check periodically to make sure they remain in good condition and that nothing has fallen onto the net that could create a hazard. Safety nets must be inspected at least weekly for wear, damage or other deterioration.

The third fall protection is a cover. Any gap two inches or more in floors or other walking surfaces must be covered. This can be a simple piece of sturdy plywood that will support twice the weight of any worker, equipment or materials.

If you need covers for vehicles, the cover should support twice the axle weight of the vehicle, however, this rule does not apply to cast iron manhole covers or steel grates on streets or roadways. When placing covers over open holes or gaps, write the word HOLE or COVER in large, easy to see letters and make sure the cover is securely in place.

Next, we have a personal fall arrest system that's specifically designed to protect you in a free fall situation. What's a free fall? It's just like paratroopers jumping out of airplanes, only they use parachutes and they plan for the jump. When you're free falling, you're going at a very rapid weight with the speed and distance of the free fall and when you stop.... it's this sudden impact that actually causes injury. The farther you fall without stopping, the greater the impact.

A personal fall arrest system, generally has five components. A FULL BODY HARNESS, A LANYARD, SNAPHOOKS, AN ANCHORAGE POINT AND the fifth component is knowledge of how the system works and how to take care of the equipment.

THE FULL BODY HARNESS reduces the impact caused by a fall, as it spreads pressure evenly over your thighs, chest, shoulders and pelvis. Body belts, used primarily as a positioning device, which means that if you're working at a height and you're not moving around, the body belt keeps you in this one position. Don't use body belts as a fall arrest system because if you fall and are strapped to a lanyard and a body belt... when the lanyard plays out and stops the fall, your body will be severely impacted around your waist, which could lead to serious injury from the impact around your waist.

The body harness is used for the fall arrest system and the body belt is basically a positioning device. Let's quickly review how to put on a body harness. First, hold the harness off the ground by the D ring. Check that all buckles are unbuckled and there are no twisted straps. Follow the

two straps coming out of the D ring, keeping in mind that one strap has a buckle, the other one doesn't.

Slide your left arm into the harness and pull the strap without the buckle over your head. These two straps now form an X on your chest, with one strap hanging loose. Take the loose hanging strap and buckle it to the waist strap. Straps on this type of harness always hook up yellow to black. Now, hook up your thigh straps and if you've done everything correctly, the D ring should be in the middle of your back. The next step would be to attach the shock absorbing end of the lanyard to the D ring and the other end of the lanyard to the anchor point.

Keep in mind that the body harness will stretch about one half foot during a fall. You need to consider all the stretching factors of the harness, lanyard and other components so you can judge your stopping distance if you fall.

Let's look at it this way. Let's say you are working on a bridge that's 12 feet from the ground. You have a lanyard that's 6 feet long, which means it will allow you to fall about six feet before the shock absorber comes into play. As the shock absorber opens up, it allows another 3 and half feet to play out.

The body harness will stretch about a half foot. Add in the distance from the D ring to the worker's feet, which is generally about four feet. Adding all this up and you fall 14 feet, hitting the ground at twelve feet. There's more to it than just thinking a six foot lanyard will stop you at six feet. Many lanyards are only three feet because of the stopping distance required.

Now, let's review the lanyard. The lanyard is attached to the body harness between your shoulder blades and to an anchoring point. There are different kinds of lanyards, such as nylon webbing, rope and shock absorbing. The nylon webbing is strong, but it has no flexibility, in that it doesn't give when stretched. This means your body absorbs the full force of the fall.

Rope absorbs the force by stretching when impacted, so you can say it helps absorb some of the impact. Shock absorbing lanyards are designed to absorb most of the force

of a fall. Actually, they can be called a deceleration device because they slow..... then stop your fall. If the lanyard you're using has been subjected to a fall, tag out the lanyard because it can't be used again. You can tell if it has been used by inspecting the stitching on the tag. If it's been used, the stitching will be torn out. Make sure the lanyard is in good condition, without any defects, tears or cuts and the stitching is in place on the tag. Inspect the metal components for signs of corrosion, cracks, sharp edges or signs of excessive wear.

Make sure you know how long your lanyard is, when determining how far you will fall before you stop, including the stretch factor of the lanyard and harness. Never, under any circumstances use fall protection lanyards for anything but fall protection. Lanyards cannot be used to hoist equipment or for any other purpose. There are several types of lanyards, but it's not important to remember the different types. Your company will choose the type of lanyard that best fits your operations

.Snap hooks connect the lanyard to your body harness. Connecting is easy by just connecting the snap hooks to the D ring on your harness. The double locking snap hooks are recommended, however, you may find some non-locking snap hooks, which are being phased out by January 1998. One word of caution about snap hooks. Connect them only to the D rings or anchor point. They cannot be connected directly to the harness webbing or other points... only a D ring or anchor point. Never connect more than one snap hook to a D ring. One snap hook to one D ring only. You should always use the proper snap hooks and D rings of the same size and made by the same manufacturer and always double check the connection to make sure it's properly locked and in good condition.

AN ANCHORAGE POINT is the place where your lanyard is attached to a solid, unmovable object which can support up to 5,000 pounds. Keep in mind that you may weigh only 200 pounds, but once you begin to fall, that 200 pounds can turn into a couple thousands pounds of force, depending on how far you fall and the speed of the fall. Another factor in fall protection safety is the swing factor. When considering tie off or anchoring points, if you fall, how far will you swing from side to side?

This is a pendulum effect at the end of a fall, which could cause you to hit something, if you swing too far. Never anchor the lanyard to a guard rail or similar object. The anchor must be a solid, unmovable object that will support you in case of a fall. When anchored, you should be able to fall no more than 6 feet before you are slowed and stopped. If your lanyard is too short for the job, you must find another good anchorage point and not try to extend the length of the lanyard.

As we discussed earlier, the fifth component of a fall protection system is knowledge. Be sure to know how your equipment works, how to properly inspect all components if you find something wrong with your equipment... don't use it. Tag it defective and replace it before you continue. Your equipment will work properly, as it's designed to do.... only if it's in good condition and it's used properly. Another important factor in the knowledge component is to never take short cuts and never fail to use your equipment when your working at a level six feet or higher that requires fall protection.

Certainly, fall protection systems can be awkward to use and in some cases, your company may have to resort to other methods of fall protection. A WARNING LINE SYSTEM for a Controlled Access Zone may be put into effect. This controlled access zone could mean an area where certain work, such as overhand brick laying where fall protection may not be feasible. A restricted entrance to this area is implemented and there is a warning line system that uses rope, chains, or wires to keep anyone out of areas where they could fall.

Of course, these areas must be properly designated, with signs and lines marked with high visibility material that are easy to see. When control lines are used, they must be erected not less than six feet, but no more than twenty five feet from the unprotected or leading edge. There are exceptions to this rule when erecting precast concrete members. If you're using this system, make sure you follow the rules and warnings.

Next, a safety monitoring system is another way to prevent falls. You must have a competent person designated as a safety monitor and that person's job is to actively patrol the

work area and warn others of any possible danger. This is a full time job and the monitor must be able to recognize fall hazards and cannot perform other work duties. The safety monitor is a full time job while employees are exposed.

Another option is a fall protection plan. This should be used only when all else fails, in situations where other options may not work. Your company will advise you when this option is used.

What type of training and documentation is required? The employer is required to provide a training program for each employee who might be exposed to fall hazards. The program allows each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize the hazard.

A competent person qualified in fall protection shall explain the nature of all hazards in the work area, the correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used and 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.

Employees must be trained in their specific roles when using the safety monitoring system and the limitations on the use of mechanical equipment during the performance of roofing work on low sloped roofs.

Employees must be trained in the correct procedures for the handling and storage of equipment and materials and the erection of overhead protection and the role of employees in fall protection plans and the OSHA standards pertaining to fall protection. A written certification record must be completed with the name or other identity of the employee trained, the date of the training and the signature of the person who conducted the training or the signature of the employer.

Retraining is 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, the employer must retrain that employee. Retraining is also

required when changes in the workplace render the previous training obsolete or changes in the types of all protection systems or equipment to be used render previous training obsolete.

In other words, employees must be kept aware of proper fall protection, OSHA standards, fall protection equipment and everything necessary to prevent falls.

It's an important responsibility and this training program has provided the majority of information you need to help prevent falls, however, more information will be provided by your trainer, supervisor or company to make sure all proper training has been conducted. This is only an awareness of fall protection, it's up to you to make sure you understand fall protection, proper equipment, signs, signals, rules and standards to prevent falls.

If you have any questions, be sure to ask your trainer or supervisor because your safety is much too important to leave any questions unanswered. As a review, let's take a look at when you need fall protection.

1. Fall protection is required on unprotected or leading edges where the height is six or more feet about the lower surface. You can choose to use a guard rail system, fall arrest systems, safety nets, safety monitoring systems or controlled access zones.
2. Where there are holes where people can fall through, guard rails and covers can be used.
3. On ramps, walkways and runways, guard rail fall protection should be used.
4. When working on reinforcing steel and other vertical surfaces, including form work, personal fall arrest systems, safety nets or position devices, such as a body belt should be used.
5. For hand brick laying, guard rails, safety nets or personal fall arrest systems should be used.
6. On low sloped or steep roofs, controlled access zones may offer proper fall protection.

7. Precast concrete erections, use guard rails, safety nets, personal fall arrest systems or a fall protection plan.
8. For excavation fall protection, you can use barricades, fences or guard rails.
9. Wall openings require guard rails, safety nets or personal fall arrest systems.

Fall protection means many things. How about people working overhead, where tools or materials can fall to people working below? Generally, that's why toe boards and hard hats are required on construction sites. The same applies for powered lifts.... toe boards and conscientious workers making an effort to not let anything fall below. What happens if someone does fall and injure themselves? Do you have a plan and understand your company's rescue plan. If a fall occurs, a fall arrest system will work, but how do you retrieve the person? You may need a crane or hoist, if the injured person is near a bridge, you may need traffic control and signals, as well as some method of attaching a rescue rope to the individual.

Quickly, let's retrieve a person who has fallen. First, determine the extent of any injuries and if required, get medical help before moving the victim. If there are no serious injuries requiring medical attention, let's use crane and recovery pole to rescue the worker. To use the recovery pole, attach one end of an anchor sling to a carabiner and attach that carabiner to the hoist line hook. Place a carabiner through the other end. Lower the hoist line with the recovery pole down to the fallen worker and hook the carabiner through the D ring of the body harness. It's easier to attach the line from an angle rather than from straight above. Twist the pole and pull to lock the carabiner onto the D ring.

After making sure the fallen worker is secure on the hoist, cut or disconnect the original lanyard. Now, raise the person to safety. Understanding the basics of a proper rescue and rescue equipment can reduce injuries. It's an important part of safety..