

DuPage County Environmental, Safety, Health & Property Loss Control Program Fall Rescue Plan –Power Plant

Purpose: Establish a Fall Rescue Plan to meet OSHA/IDOL’s General Duty clause requiring “prompt rescue”.

Background: OSHA/IDOL requires fall protection at 4 feet or more. The configuration of the equipment and piping in the Power plant exceeds 4 feet. Working at or near ceiling level requires the employee to wear a fall protection harness connected to a Personal Fall Limiting device which restricts a fall to @ 3 to 6 feet. This will leave the employee hanging in the harness and probably unable to self-rescue. Left hanging in the harness can result in the worker suffering suspension trauma.

Note: OSHA/IDOL does not require Fall Protection when working on a portable ladder.

Falls can be caused by slipping off equipment / piping, diabetic reactions, heat exhaustion, cramping etc. Safety training for workers who use harnesses should include a response plan to address concerns about suspension trauma by quickly rescuing workers after falls. The risk of suspension trauma does not end with carefully lowering a worker to safety. After a prolonged period in an upright position, if the worker is laid supine for treatment, blood can rush back into the torso, causing reflow syndrome. In this condition, the rapid reperfusion of blood damages tissues inside the patient's body. This can be dangerous, especially if the worker was suspended for a long time.

Definitions:

Anchor: Secure point of attachment for connecting devices and must be capable of supporting 5,000lbs. per worker or meet OSHA requirements for a safety factor of 2 such as an I-beam or other supporting structure.

Anchor Connector: Refers to the component by which the connecting device is coupled to the anchorage.

Certified Anchor: is an anchor that has documentation that it meets the requirements of ANSI Z359 and was designed by a qualified person. (this refers to fixed fall protection anchoring equipment such as static lines running over head etc).

Deceleration Device: is a lanyard that attaches to the D ring of the harness and the Anchor. In event of a fall it acts to decelerate the descent and reduce the shock of stopping abruptly.

Non-certified anchor: is one that a competent person can judge to be capable of supporting the predetermined anchorage forces and that incorporates an energy absorbing device.

PFAS: Personal Fall Arrest System.

Suspension trauma: is a cluster of injuries caused by a fall in a safety harness.

Orthostatic intolerance: Safety harnesses are typically designed to allow a worker to fall in an upright position, feet facing down. Blood will start to pool in the legs, and the straps of the harness can cut off circulation, especially if it does not fit properly. This slows the return of blood to the heart and can be fatal within half an hour if the worker is not taken down.

DuPage County Environmental, Safety, Health & Property Loss Control Program Fall Rescue Plan –Power Plant

Policy: Before any work is conducted on equipment at or near ceiling level that requires the worker to be outside of a safety cage such as a Scissor Lift then the worker must:

1. Both the worker who will work at a height outside of a safety cage and the worker on the floor will review this policy before beginning work.
2. Preposition portable stairs/ scissor lift / ladders near the area but not directly beneath the area the worker above will be working. In event of a fall this positioning will prevent the worker falling from striking the rescue equipment-but yet close enough to be quickly moved into a rescue position.
3. Worker outside of a safety cage must wear a safety harness connected to a fall limiting safety lanyard to absorb the shock when a fall is stopped by a proper length of the deceleration device (safety lanyard).
4. Inspect safety harness completing and signing safety harness inspection form
5. Inspect Fall limiting device for proper operation and condition
6. Calculate fall clearance using information below to determine if proper gear to be worn will prevent hitting floor below.
7. Attach Fall limiting device to D ring of safety harness
8. Attach fall limiting device to a certified or non-certified anchor and that has been identified as being safe.
9. Worker at height must not work alone.
10. A worker must be on the floor in sight of the suspended worker at all times.
11. Worker on the floor must have access to a phone to call Fire Department.

1

Safety Precautions:

1. The worker on the floor must keep others from working or walking under the area where suspended work is being performed.
2. The worker on the floor must wear a hard hat
3. The worker on the floor must be able to call 911 Fire Dept. and explain a worker is suspended from a height and is wearing a safety harness and need help in getting worker down.

Calculating Fall Clearance:

Whether it's working from a boom lift, walking pipes, or any of the myriad other reasons you may be working at heights, "tying off" will do you no good if your personal fall arrest system allows you to strike the lower level before it stops your fall.

Many workers do not fully understand how a Personal Fall Arrest System (PFAS) works and therefore feel that simply "tying off" is their one-size-fits-all solution to safe, compliant work at heights.

Unfortunately, this is not true. In many instances, the length of the harness, lanyard, and anchor point, in addition to the length of the user's body is enough to strike a lower level.

So how do you prevent this? By making sure you understand the factors that go into calculating fall distance and ensuring you allow sufficient room for the fall to occur (clearance).

If this clearance is not available (from anchor point to lower level), then you must come up with an alternate fall protection or fall prevention solution.

Length of Lanyard and Harness

To an untrained worker, having a 6' lanyard may seem sufficient while working at a height of 10' or 12', but they often don't know, or forget, about the deceleration device. When a deceleration device is

DuPage County Environmental, Safety, Health & Property Loss Control Program
Fall Rescue Plan –Power Plant

deployed, it adds an additional 3.5' to the length of your lanyard. Whether it's a rip-stitch pack, a glue pack, or the bungee style lanyards, you must add this 3.5 feet to the initial 6'.

In addition, a harness could stretch so that the anchor point, while initially positioned properly between the shoulder blades, ends up a foot or more above the worker's head after a fall.

Total Length to Consider: 10.5'

Length of the User's Body:

This one is simple, but perhaps the most often forgotten when calculating fall distance. It is necessary to take into account the length of the user's body below the D-ring. A PFAS that stops the user at 12' is of no use when the lower level is 14' away, unless the user is less than 2' tall. On average, it is usually safe to consider approximately 5' feet for this distance. Remember, however, that people on more extreme sides of the height spectrum could warrant different consideration.

Total Length to Consider: 5' (on average)

Length of Anchorage Point Connector – Including Sag

A fixed, solid anchor point is easy to calculate because the only distance to add is the length of your snap hook. However, when dealing with an anchor like a horizontal lifeline, things get more complicated. Horizontal lifelines sag, both as part of initial design and additionally during a fall event. This sag needs to be taken into consideration.

Total Length to Consider: 3-15% of the length of line, depending on the system's design for a horizontal lifeline. Length of the snap hook for a fixed, solid anchor

Safety Factor:

This is exactly what it states: a safety factor. If the total length of my PFAS, including sag and body length is 16', don't want to use it in a situation where the clearance is 16'. You want to build in a safety factor in case something doesn't go exactly as calculated. The conventional wisdom on this safety factor is an additional 3', which brings the total length of PFAS including body length to 18.5' (without sag).

DuPage County Environmental, Safety, Health & Property Loss Control Program
 Fall Rescue Plan –Power Plant

