

Fall Rescue Plans & Dropped Object Prevention

What Every Safety Manager Should Know

By Shawn Cheri and Rick Argudin

Each year in the U.S., more than 200 construction workers are killed by falls and more than 10,000 are seriously injured. In fact, falls are the leading cause of death in the construction industry, accounting for 36.5% of the total deaths in 2013, according to OSHA.

Many employers avoid discussing fall protection rescue plans and dropped object prevention because these topics seem daunting, morbid or overwhelming. But, for employers or safety managers, OSHA and ANSI standards clearly indicate it is their responsibility to ensure a prompt rescue in the event of a fall, which means employers should have a rescue plan in place that protects both the company and employees when working at height.

Most companies do an excellent job of implementing managed fall protection programs that address the risk of falls, but many overlook the importance of having a comprehensive rescue plan. However, a rescue plan is equally important, as workers who fall and are not promptly rescued may suffer severe injuries or even death caused by medical complications resulting from prolonged suspension.

This article examines the importance of rescue plans and dropped object prevention, two serious, yet often overlooked fall protection topics.

Why Prompt Rescue Is Critical

While it may seem that the opposite is true, performing a rescue after a fall is actually a good problem to have. It means that a worker was wearing his/her harness properly, was attached to an anchor and was utilizing the gear correctly. The worker's arrested fall also demonstrates the success of the employer's fall protection plan.

However, when the fall protection gear arrests a worker's fall, it is too early to breathe a sigh of relief. The worker may have fallen because of a medical condition or because s/he was struck by a dropped object. S/he may have collided with a structure during the fall, or may suffer complications from suspension trauma after the fall while suspended in the harness. In

any event, without prompt rescue the worker is at risk of sustaining medical complications.

Suspension trauma, also known as harness-induced pathology, harness hang syndrome or orthostatic intolerance, occurs after a fallen worker is suspended for too long in a harness and the leg straps restrict blood flow causing blood to pool in the legs. In turn, this reduces the flow of oxygenated blood to the heart, brain and kidneys.

Although every individual reacts differently and not everyone will experience suspension trauma, research indicates that suspension of a worker in a fall arrest device may result in unconsciousness, followed by death.

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Many factors can affect the onset of suspension trauma:

1) The health of the individual and any preexisting medical conditions.

For example, if a worker has a cardiac condition, s/he could be at greater risk of a suspension trauma.

2) The harness type and fit. An ergonomically designed and properly fitted harness may help alleviate pressure on the femoral veins and arteries, whereas an unsuitable harness may exacerbate the risk of suspension trauma.

3) Immobility and gravity. A worker who cannot move his/her legs is at greater risk for suspension trauma.

4) Age. Older workers are most at risk due to less responsive arteries and veins, and a less robust heart.

5) Dehydration and exhaustion. These conditions increase the chance and speed of suspension trauma occurring.

In addition, many unknown factors exist, and it is impossible to predict exactly who will be affected by suspension trauma and under what circumstances. Therefore, every suspended worker should be rescued as if s/he will have complications. Employers should turn to ANSI/OSHA prompt rescue guidelines.

What is a prompt rescue? According to ANSI, the recommended goal for responding to a fall victim is less than 6 minutes. Although these standards and regulations have been in place for years, OSHA and ANSI are bringing this critical subject to the forefront now, and employers should take note.

What a Rescue Plan Should Include

Companies that have not recently reviewed or revised their rescue plans or that do not have one in place should take action now. To help expedite the process, free, downloadable rescue plan templates are available at www.capitalsafety.com/en-us/Pages/Fall-Protection-Plan.aspx.

All rescue plans should address what should happen immediately after a fall has occurred, and outline a strategy or procedure for safely retrieving a person who has fallen from an elevated work surface and is suspended in a full-body harness. Plans also should be individually tailored to each location where personnel are employed to work at height.

For situations in which a rescue can be planned and anticipated, such as at an employer's site, the best approach is usually the simplest. The four basics of rescue are:

- 1) Keep it simple.
- 2) Keep it safe.
- 3) Do not use knots.
- 4) Do not use knives.

When developing a rescue plan, first consider:

- If a fall occurs, where will the worker be located after the fall?
- Can a rescuer safely access the worker's anchor point?
- Are safe anchors available for the rescuer and the rescue system? (If horizontal lifelines are involved, the rescue can be more complicated.)
- What resources are already available? Is the site equipped with aerial lifts or cranes with personnel baskets?

Next, address the hierarchy of the rescue plan, which should be mapped out in the following order:

1) Self-rescue. The first and best approach to rescue is always self-rescue. Ideally, a suspended worker is uninjured and can climb down or up by grabbing onto an existing structure.

2) Assisted self-rescue. The second best approach is assisted self-rescue, which is an intermediary step used when a fall victim cannot reach a nearby structure. In this scenario, a worker deploys suspension tension straps or steps on a ladder to help reduce suspension trauma while others work to retrieve him/her.

3) Mechanically aided rescue. The next best approach is a mechanically aided rescue, which employs an aerial lift, crane with a personnel basket, or specialty rescue equipment such as a rescue-and-descent device or rescue-positioning device. The specialty equipment works by creating a mechanical advantage for lifting loads.

4) Pick-off rescue. The final approach to rescue, which should only be used by highly skilled rescue personnel, is a pick-off rescue. This is a technically challenging method that involves the rescuer rappelling down and hooking up to a fall victim then rappelling down together to pull him/her back to safety.

While firefighters, emergency response rescue personnel and other rescue professionals are trained in technical rescues and can provide a high level of safety support, the personnel and equipment they use are, in most cases, not the best option for meeting OSHA's requirements for a prompt rescue after fall arrest.

Instead of relying on outside rescue professionals, employees who are properly trained in simple rescue techniques specific to their job sites are often in the best position to quickly respond to a fall and perform a successful rescue. That said, although industrial rescue requiring only a limited level of expertise is the preferred method of using preengineered systems, a technical rescue may be required in some instances. Therefore, the preplanning process should include a thorough evaluation of the company's capabilities.

Rescue-specific training courses can help train personnel to become authorized rescuers and equip them with the skills needed to perform most fall rescues.

It is also important to note that OSHA considers suspension trauma a medical issue, which means that an employer's rescue plan should also ensure that medical aid is readily available to treat it.



Another often overlooked fall protection topic is dropped object prevention. A utility pole worker climbing a pole uses a tool lanyard for dropped object control.

CAPITAL SAFETY

Once a rescue plan is in place, companies sometimes fail to take one final step, which can cost them dearly: They do not test the plan to ensure that it works.

The planning and preparation required in the event of a fall should not only be documented, it should also be complemented with practical exercises. Simulated rescue scenarios at regular intervals can provide rescue teams with added confidence and the necessary skills to effectively deliver the desired results.

Similarly, it is one thing to have a hypothetical rescue plan in place and buy all the necessary equipment. It is another thing to demonstrate that it actually works. Employers should take the time to evaluate whether their rescue kit and equipment will actually work in specific locations and scenarios, and ensure that key personnel know how to use the kit and equipment properly.

Hazards of Dropped Objects

Another often overlooked fall protection topic is dropped object prevention, which employers and safety managers are legally obligated to address. OSHA 1926.759(a) says, "All materials, equipment and tools, which are not in use while aloft, shall be secured against accidental displacement."

Many people think of dropped objects as a hassle rather than as a safety issue that could cause a death or severe injury. On the contrary, according to

U.S. Bureau of Labor Statistics, 52,260 injuries occurred due to falling objects in 2012. This means that an injury caused by a dropped object occurs every 10 minutes in the U.S.

This number is steadily increasing year by year, as struck-by falling object or equipment fatalities are up 6% year over year, according to the most recent available data. This underscores the need for companies to focus on actions and procedures to prevent falling and/or dropped objects.

Hand tools and materials can become drop hazards in three ways:

1) During use: When vigorous use or other factors cause the user to lose control of the tool.

2) During transportation: When transporting tools to or from work locations, when collisions, lack of control or other factors can cause tools to be dropped.

3) After use: When tools can be unintentionally left behind or placed aside on the working surface where they are no longer secured or being controlled.

Dropped Object Prevention

Safety managers can focus on several areas to prevent dropped objects from causing injuries or deaths.

•**Housekeeping.** When at height, trash and waste should always be stored in tool buckets or pouches until the material can be properly stored in a waste bin. Employees should clean as they go and maintain an orderly

work area, which reduces the chance of dropped materials. Tools and other materials should also be kept in an organized, orderly fashion.

•**Tool and material storage.** Where tools or materials are stacked higher than the edge of the toe boards, screening or paneling should be constructed from the working surface to the top of the guardrail or midrail. This should be done for a sufficient distance to ensure that these objects will not turn into drop hazards. Unless guardrails with screening or paneling have been erected, materials should not be stored within 4 ft of the leading edge, and all stacked materials should be stable and self-supporting.

•**Tool and material handling.**

When transferring a tethered tool from one employee to another, employees should use a positive tool transfer and 100% tie-off. The tool should be tethered to the passing employee and, prior to handing it off to the receiving employee, s/he should connect his/her tether to the tool as well. After a positive connection has been completed, the passing employee may disconnect his/her tether from the tool. Employing this passing method eliminates the drop hazard.

In addition, several tools can help prevent dropped object injuries and deaths. Primary systems that hold objects in place include tool holsters and pouches, tool buckets and tool belts. Secondary systems that stop a dropped object from falling include lanyards, wristbands, safety netting, toe boards and guardrail systems.

In addition to their fall protection and rescue training, employees should receive training related to dropped and falling objects. This training should cover:

- the nature of drop hazards and dropped objects in the workplace;
- correct procedures and equipment to use for drop prevention;
- primary and secondary drop prevention systems;
- proper storage and handling of equipment and materials at height;
- reporting requirements for incidents and near-hits.

Conclusion

Safety is not something that can be bought. It is a culture that starts at

the top and must be ingrained in how employees work every day. If senior management demonstrates an earnest commitment to safety, employees will as well. Too often, companies only invest in safety after a tragic event.

Although most companies now recognize the hazards of working at height, they must also recognize that rescue plans and dropped object prevention are part of the same equa-

tion, and must be addressed before an incident, not after, so that workers are kept safe at all times while working at height.

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