FallPRO

CNA's seven-step process to identify, evaluate and control exposures when working at heights.

Risk Control

CNA

The U.S. Department of Labor lists falls as one of the leading causes of traumatic occupational death, accounting for 8 percent of all occupational fatalities from trauma.[1] Fall management can be a complicated process for an employer whose employees are working at elevated heights. In fact, failure to take proper precautions can be catastrophic. Fall-related losses can amount to millions of dollars, not only in lost productivity but also insurance premiums and liability claims.

1 U.S. Department of Labor; Occupational Safety and Health Administration, www.osha.gov; *Construction — Fall Protection; Hazards and Possible Solutions.*

Fall Management Plan

The ultimate responsibility and accountability for managing falls begins with the employer. The employer, in turn, extends this responsibility and accountability throughout the organization and to workers to ensure that appropriate controls are in place at all times.

As part of CNA's commitment to improving on-the-job safety, safeguarding of life and increased profit potential for our clients, this FallPRO guide includes key issues employers ought to take into consideration when designing their fall management plan.

- **Knowledge** — Understand and select the best fall protection systems appropriate for given situations.
- **Accountability** — Establish accountabilities at all levels to ensure fall protection is a condition of employment.
- **Safe Work Practices** — Use equipment properly for the right situation to maintain productivity and reduce exposures to loss.
- **Training and Education** — Ensure that whatever protective system is chosen, it is used properly to maximize efficiencies and productivity.

In 2004, the Bureau of Labor Statistics reported that 1,224 construction workers died on the job, with 36 percent of those fatalities resulting from falls.[1] Events surrounding these types of accidents often involve a number of factors, including unstable working surfaces, misuse of fall protection equipment and human error. Studies have shown that the use of guardrails, fall arrest systems, safety nets, covers and travel restriction systems can prevent many deaths and injuries resulting from falls.[1]

Even with knowledge about the hazards of a fall, there still remains a large amount of resistance among company management and employees to understanding, learning and using fall protection. Workers, the greatest beneficiaries of a fall protection program, can often be the most challenging group to change.

CNA's Statistics on Falls

Approximately 35 percent of costs incurred for workers' compensation for construction result from falls from elevations. CNA's average fall-related claim typically exceeds $100,000 (based on a review of claims over $5,000 incurred). Combined with the potential for third-party actions, the impact these accidents can have on a company's bottom line can threaten the future of the business.

Cost of a Fall-related Injury

A contractor experienced a fatality when an employee fell 4 feet from an improperly secured ladder. In addition to the tragic loss of life, the accident cost the contractor $1 million.

Although it takes time and effort, management and their workforce must realize that fall protection not only makes a job safer and easier but often increases productivity, job efficiencies and reduces risk factors.

1 U.S. Department of Labor; Occupational Safety and Health Administration, www.osha.gov; *Safety and Health Topics; Fall Protection*.

An employee was constructing the third level of a tubular welded frame scaffold while standing on the second level. The scaffold was constructed on a poured concrete floor and had been leveled. Each section of the framework measured 6 feet 5 inches high. The working surface was solidly planked.

When the employee tried to set the third level frame into the pins of the second level, the frame he was trying to position flipped to one side. The momentum of the frame thrust the employee backward off the second level. He fell to the ground, sustaining a fatal blow to his head.

Source: U.S. Department of Labor, OSHA Fatal Facts Accident Report, Accident Summary No. 12.

Economics of a Fall

In addition to the tragedy that can accompany falls that cause fractures, head injuries, paraplegia and death, considerable medical expenses can result due to the severity of such injuries. For those injuries that are not fatal, payout can extend over the remaining course of the worker's employment, which can be years after the fall. These direct costs, along with lost work days away from the job, can make up a significant part of the overall financial burden of fall hazards on the construction industry.

Third-party liability suits make up the largest portion of costs resulting from elevated falls. These days an award of $1 million seems small as we now see documented decisions of $3 to $5 million. As these issues become more serious, the legal emphasis in each state continues to shift from worker contributory negligence and assumption of risk to comparative negligence.

What Happens During a Fall?

Free fall is the distance traveled from the point where the worker starts falling to the point where the worker's fall arrest system begins to slow him/her down. The free fall distance determines the speed of the fall and the force exerted on the system. The greater the free fall, the greater the deceleration and total fall distances. It is important to minimize the free fall and keep it as small and as practical as possible. The location of the anchorage and the length of the lanyard will affect free fall. The higher the anchorage is and the shorter the lanyard, the better the system.

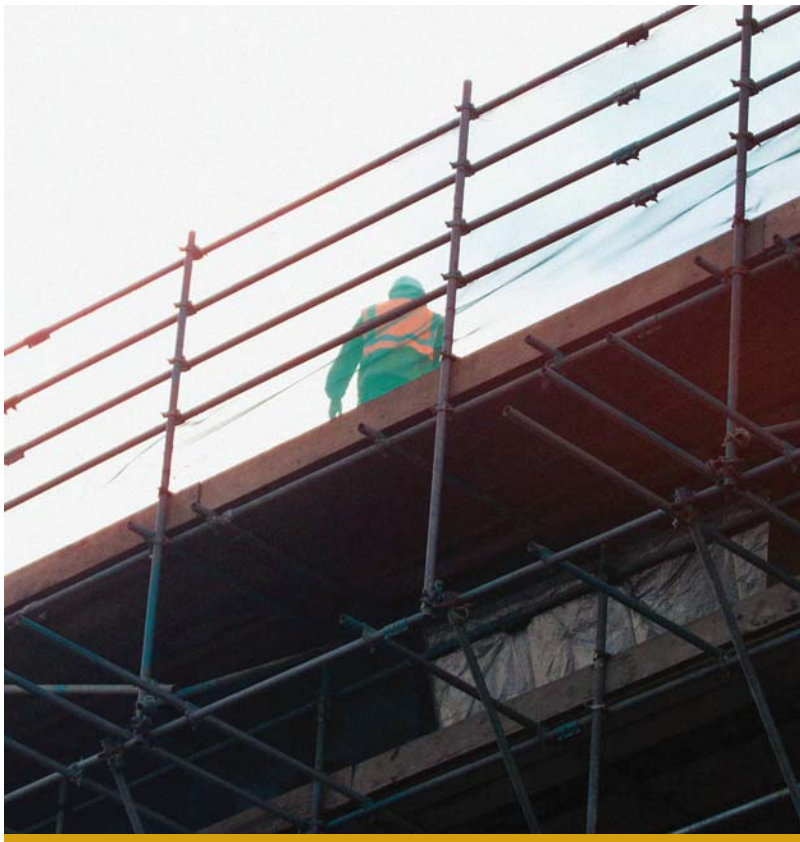
Any time a worker is at a height of 6 feet or more, the worker is at risk and needs to be protected. Falls from heights can often result in serious injury or death. For example, if an employee is working at a height in excess of 70 feet and began to fall, it would take that worker approximately 0.67 seconds to realize that he/she had accidentally begun to fall. During that time, the worker has already fallen approximately 7 feet vertically and attained a speed of 15 miles per hour. After an additional 1.3 seconds, that worker has fallen 65 feet and is traveling at approximately 44 miles per hour.

Making Accountability a Reality

The success of a business relies on the commitment of management and the ability to institute processes that foster safe work practices. These practices must cover all personnel, from hourly employees to management. Management's full commitment to the process is vital to building support among employees and to the program's overall success.

Field supervisors are the main mechanism through which loss prevention polices and procedures are implemented. The attitude of individual workers toward a company's loss prevention program is dependent upon the attitude of their supervisors. When directing work, the foreman's actions are a critical link in delivering success.

Businesses should create a culture in which all tasks are conducted safely and where safety has value. Project management teams should be given clear responsibilities for job site safety. Accountable project management teams can help reduce accidents, improve quality of work and productivity and reduce risk factors. For example, several CNA policyholders have saved money because of solid management accountability programs. One contractor decreased losses by 20 percent in the first year of the program. Another reduced the number of claims 36 percent, 50 percent and 41 percent in the first, second and third years of the program, respectively.



Two laborers were working on a motorized two-point suspension scaffold 70 feet above ground level without safety belts, lanyards or lifelines. Three wire rope clips forming an "eye" for connecting the wire rope to the C-hook failed and that end of the scaffold came down. One employee fell to the ground, and the second employee at the other end was catapulted through an open window where he was pulled to safety by office workers. Two of the rope clips were still attached to the end of the rope after the accident. The inside tread of the third clip, which fell, was found to be stripped.

Source: U.S. Department of Labor, OSHA Fatal Facts Accident Report, Accident Summary No. 12.

The Seven Steps to CNA's FallPRO

Step 1: Hazard Analysis

Hazard analysis means taking a proactive approach, identifying hazards and planning for the reduction or elimination of those hazards prior to a governmental inspection or a worker's trip to the emergency room.

By understanding not only the hazard but how workers must do their jobs, a solution can normally be provided that doesn't impede workers. Subsequently, fall protection becomes a tool like any other in the worker's toolbox, valued for its potential life-saving qualities and appropriateness to the worker's needs.

One way to deal with hazard analysis is to use a standard checklist, to gather the necessary information about the physical hazards, job requirements and perceived hazards of the workers. Hazard analysis must be an interactive process and should involve not only supervisory staff but also the workers who will eventually use the systems and be exposed to the hazards. Remember not only to look at the obvious hazard but also what hazards may be peripheral to the immediate job at hand.

Step 2: Engineer Out the Hazard

Whenever practical and feasible, engineering out the hazard should be the first option implemented. This may include the redesign of equipment or implementation of work methods that make it unnecessary for workers to climb or be exposed to fall hazards.

Fall protection systems and associated equipment are used when fall hazards cannot be engineered out of the workplace. One example of an engineered solution would be installing a remote, floor-level readout so that workers don't have to climb equipment to gather data.

Fast Facts about Fall Hazards

Statistics on Death Caused by Falls in 2003

- 696 employees died from falls in the workplace. Of these:
  - 604 employees died from falling to a lower level versus to the same level.

Statistics on Injuries Caused by Falls in 2003

- 257,100 employees suffered injuries from falls in the work environment. Of these:
  - 174,500 employees suffered injuries falling to the same level.
  - 82,600 employees suffered injuries falling to a lower level.

Source: U.S. Department of Labor, OSHA Fatal Facts Accident Report, Accident Summary No. 12.

Step 3: Pre-plan for Success

Addressing fall protection from the early design stages of a project is the most effective, efficient and productive means of eliminating or controlling the fall exposure. Where possible, owners and contractors should spend significant time with designers and architects to evaluate potential fall exposures during all phases of the construction project.

Another process that should be in place to effectively address and control the fall exposure is prebid job meetings. All bidding contractors should attend these meetings to understand the fall protection process and requirements expected to be in place during the project. This helps to reduce future difficulties and compliance problems.

Selecting a Fall Prevention System

There are two major categories of fall protection systems.

- Passive fall protection systems.
- Active fall protection systems.

Passive Fall Protection Systems

Passive fall protection systems are designed to provide fall protection without any action by the employees. Common passive fall protection systems include: guardrails, toe boards, fences, barricades, safety nets and floor or roof opening covers.

- **Guardrails** are the most common form of passive fall protection. Guardrails are used to protect employees from stepping off higher walking/working surfaces. In addition to providing barriers, guardrails also help alert employees to the presence of a fall hazard.
- **Toe boards** are attached at the walking level to help keep employees from slipping over the edge. Toe boards also help prevent tools and material from falling on employees working at lower levels.
- **Fences and barricades** constructed of wood or metal can be used to protect employees from falling into excavations, wells, pits and shafts, and from being hit by falling objects.
- **Safety nets** are suspended below walking or working surfaces to catch employees, tools or materials that could fall to lower levels. Safety nets are made from strong synthetic materials and have openings no larger than 6 inches at their greatest dimension.
- **Covers** are used to protect employees from falling through or in holes, excavations and other openings in floors, roofs and other walking or working surfaces. It is recommended that any gap or void 2 inches or more in dimension be covered and firmly secured with the word "cover" or "hole" written on the cover in large letters.

Active Fall Protection Systems

Active fall protection systems, also known as personal fall arrest systems (PFAS), include components and systems that must be connected or otherwise activated by employees to provide fall protection. Personal fall arrest systems are designed to:

- Protect workers from free falling more than 6 feet.
- Prevent workers from contacting the next level during arrest of a fall.
- Limit the maximum arresting force on a worker to 900 pounds.
- Bring a worker to a complete stop and limit the deceleration distance that a worker travels to 3 feet 5 inches.
- Have sufficient strength to withstand twice the potential impact energy of a worker who free falls a distance of 6 feet or the free fall distance permitted by the system, whichever is greater.

Step 4: Assess All Rescue Contingencies

Consideration should be given to all emergency situations that may occur. When developing a site-specific rescue plan, consider including the following:

- Methods of communicating the emergency, e.g., cell phones and two-way radios.
- Contact information for emergency medical assistance.
- Chain of command for emergency notification and reporting protocol.
- Information on self-rescue devices that could be used, e.g., scissor lifts, boom lifts, man basket, or block or tackle rope grab systems.

In addition to on-site trained personnel, coordination with local off-site emergency medical services is very important. Several educational or practice sessions should be conducted with the trained personnel.

Step 5: Training and Education for the Entire Staff

Orientation should be held for all employees entering the job site to bring awareness to the unique hazards that may be present. This initial training of personnel needs to be accomplished by an individual qualified to perform hazard analysis and address the issues that are critical to employees. At minimum, this orientation should include:

- Information on what the fall hazards are for the job.
- When and where personal fall arrest equipment is required.
- What the enforcement and disciplinary policies are, along with the proper use, maintenance and inspection of all fall protection systems currently in use.

Minimum Training Requirements

The employer should provide a training program for each employee who might be exposed to fall hazards. The program should enable each employee to recognize the hazards of falling and train each employee in the procedures to be followed in order to minimize these hazards. The employer should ensure that each employee has been trained, as necessary, by a competent person qualified in the following areas:

- Nature of fall hazards in the work area.
- Correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used.
- 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.
- Role of each employee in the safety monitoring system.
- Limitation on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.
- Correct procedures for the handling and storage of equipment and materials and the erection of overhead protections.
- Role of employees in fall protection plans.
- Retraining when the employer has reason to believe that any affected employee who has already been trained does not have the skill required or understand the hazard or corrective measures.

Circumstances where retraining should be required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete.
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete.
- Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Step 6: Establish a Plan that Includes Emphasis on Accountabilities

There are five key stages to establishing a comprehensive fall protection program.

- **Accountabilities** — Establishment of accountabilities at all levels to ensure fall protection as a condition of employment.
- **Identification** — Identification of hazards, job requirements and barriers to implementation that may affect the workers on-site.
- **Design** — Proper design of a program that will reduce or eliminate the hazards associated with a job or task.
- **Implementation** — Actions taken to put the program design into place.
- **Maintenance** — Process of ensuring those systems and equipment, hazards and training continue to meet the needs of the site and the personnel using them.

A fall protection program includes more than just the purchase of equipment. Training is a critical component to implementation, as is a well-prepared rescue plan.

Step 7: Monitor

Inspect and monitor job sites and the program to ensure continuous improvement. Metrics and measures for key facets of the program are ways to continuously monitor whether the desired output is achieved. Several ways to monitor the program include:

- Conduct periodic inspections of the job site to ensure that employees are properly using fall protection.
- Take immediate corrective action, including the use of disciplinary action, if appropriate, any time fall protection is not being used properly.
- Conduct annual formal audits of the entire fall program.
- Conduct periodic inspections of equipment storage areas.
- Require employees to notify their supervisor if they experience problems with the use, care or maintenance of fall equipment.
- Hold managers and supervisors accountable for the proper use and maintenance of fall protection equipment by their employees.

Employees were working on structural steel, hoisting pipes from ground level to higher levels for storage. While guiding a pipe to be stored on the floor above, one employee walked backward off the end of a stored pipe. He fell about 12 feet to a concrete deck, suffering a fatal head injury.

Source: U.S. Department of Labor, OSHA Fatal Facts Accident Report, Accident Summary No. 16.

Promote the Fall Protection Program

Effectiveness of a fall protection program begins with managers, supervisors and other field personnel. All must actively promote the proper use of fall protection equipment and encourage employee involvement and support of the program. Following are suggestions to facilitate promoting the fall protection program.

- Provide positive feedback to employees who use fall protection.
- Display posters and distribute information sheets to all employees to reinforce the importance of fall protection.
- Conduct safety meetings with employees about fall protection.
- Respond in a timely manner to suggestions and requests for improving the program and/or equipment.
- Collect and distribute success stories about injuries prevented by the use of fall protection.

What Do You Need to Do to Create and Implement an Effective Fall Protection Program?

Develop a written fall protection plan that includes:

- Management's commitment, as well as leadership and employee involvement.
- Worksite analysis.
- Hazard prevention and control.
- Safety and health training.
- Accident and incident investigation.
- Measurements and accountabilities that enforce the program.

Ultimately, the goal of a fall protection program is to identify, manage and control fall hazards by eliminating them with fall prevention methods. Should you have additional questions or concerns regarding your fall protection program, please contact your CNA Risk Control Consultant.

Please see our attached CD for more detailed information.

Let us help you create a safer environment today.

To learn more about how CNA Risk Control can help you manage risk, keep your organization safe and be more productive, visit the CNA Risk Control page at **www.cna.com** or call us toll-free at 866-262-0540.

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EG FP 110106