



Gravity Doesn't Play Favorites

Protecting Workers from Fall Hazards on the Job

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An ounce of prevention is worth a pound of cure. – Benjamin Franklin

Prevention Trumps Protection

Actually, the cure IS prevention when it comes to fall protection. Just as in healthcare, prevention is the key to reducing injuries and deaths from falls on the job. When it comes to the force of gravity, no one is immune. Trips, slips and falls are out there waiting to find us. Working a job that entails heights means the result of these pose even greater consequence and each company and worker needs to be prepared to safely perform his/her duties by using the hierarchy of fall protection.

Fall-Related Fatalities

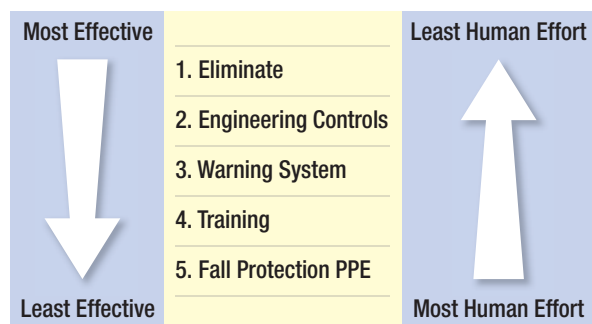
Not surprisingly, the majority of fall-related fatalities happen in the construction industry. “Circumstances associated with fall incidents in the work environment frequently involve slippery, cluttered, or unstable walking/working surfaces; unprotected edges; floor holes and wall openings; unsafely positioned ladders; and misused fall protection. Federal regulations and industry consensus standards provide specific measures and performance-based recommendations for fall prevention and protection. However, persistent unsafe practices and low safety culture across many industries define steady fall injury rates year after year.” These falls also create additional expenses for the employer, including workers’ compensation and medical costs, which add up to about \$70 billion per year in the United States alone.¹

Fall Protection Hierarchy

The Fall Protection Hierarchy is also called Z359 and

sometimes the “preferred order of control”. It’s an industry touchstone that was created to protect workers from hazards on the job. The hierarchy was authored by two entities – The American National Standards Institute (ANSI) and The American Society of Safety Engineers (ASSE). The ANSI coordinates the development and use of standards in the workplace as opposed to a government law-making group such as OSHA. ANSI is a consensus group that serves as a guide to aid the manufacturer, consumer and the public. ANSI Standards are reviewed and updated periodically. ASSE “organizes the committees that develop and maintain standards, ensures that the revision process is timely and in accordance with ANSI procedures and publishes the final product of the consensus process.”²

The Fall Protection Hierarchy should be considered when designing fall protection solutions for existing and new facilities. Please note: this is not meant to be a complete copy of Z359. To view the document interpretation visit: <http://www.msanet.com/msafallprotection/standards/EngHierReqDesign.htm#FPHierarchy>. The hierarchy starts with the ideal scenario and works its way down to least appealing solution.



Elimination or Substitution

This is by far the best solution for safety. Remove the hazard or replace it with a safer option like moving to ground level. As an example, if a flatbed driver has cargo that must be protected by tarping, the most dangerous way to perform the job is by climbing on top of the load. The reason is that the load can shift or may not be level. A fall from this height could result in injury or death, costing the company for hospital bills, workman's comp and causing the driver a lot of pain. A better solution would be a passive approach, such as a platform with guardrails that positions the driver above the load so tarping can be done without falling. Guardrails surround the workspace and do not hamper the worker in any way. He/she is able to move about freely to perform the tasks required for the job.³ However, the best solution would be to engineer the hazard out by designing a solution that keeps the driver's feet on the ground and doesn't even force him/her to lift the weight of the tarp. An automated overhead tarping system creates the best and safest solution to tarp a flatbed.



Passive Fall Protection

If there is no possible way to eliminate the fall danger, then passive fall protection is the optimum approach. Isolate or separate the hazard practice from employees. Passive systems do not require training so much as

awareness on the part of the worker. Passive fall protection can take on several forms: handrails, guardrails, safety gates and rooftop railings all qualify. Sometimes warning lines are used as an additional measure to mark a perimeter.⁴



Fall Restraint

Fall restraint is just like it sounds. It restrains workers with a tether short enough to prevent him/her from reaching the fall hazard in the first place. According to Z359.3, "fall restraint systems only can be used in areas with a slope between 0 and 18.4 degrees."

Fall restraint allows a worker to perform a job easily without allowing him/her to move far enough to get their center of gravity over an unprotected edge. For fall restraint, workers don a harness, and attach a fixed length strap to the harness D ring(s) and then to an anchorage. Fall restraints are used in jobs such as utilities, repair and maintenance, real estate and more.⁵



Fall Arrest

Fall arrest is a system used as the primary form of fall protection and protects the user in the event of a fall by allowing them to come to a controlled stop. Obviously this is not the ideal scenario, but for workers in construction, utilities and other businesses there may be jobs that do not allow for safer solutions.

There are two types of fall arrest – general and personal. General often consists of safety nets, whereas personal implements lifelines or Personal Fall Arrest Systems which have a series of components designed to safely arrest a worker's fall without injury. Each personal fall arrest system must include the four essentials of Fall Arrest, also known as the ABC's of Fall Arrest:

- Anchorage, or fixed structure, with a coordinating connector. The anchorage must be engineered to withstand forces at least two times the maximum arrest force per person attached or a minimum of 5000 pound static load per worker.
- Full body harness provides the necessary body support to distribute the forces in the event of a fall.
- A connector such as a shock-absorbing lanyard or self retracting lifeline to link the user's body harness to the anchorage.
- A descent/rescue device to retrieve or lower a fallen worker to the ground safely in the event of a fall.

Without a proper energy absorption device the fall creates a much greater force on the worker and anchor, which may result in injury or death. ⁷

Administrative Controls

Changes in work procedures, with the goal of reducing the duration, frequency, and severity of exposure to hazardous situations, is how administrative controls can be used to make tasks safer. Written rules, safety policies, schedules, supervision and training can all help reduce the risk of an authorized worker encountering a fall hazard. ⁸

To be the most effective, every fall protection safety plan should have several parts to cover all aspects of the job. Worker safety should be of the utmost importance in every company. Take time to evaluate all tasks around the workplace and determine if there is any way to make hazardous jobs safer for employees. Where fall protection is needed, purchase the correct protection for the job and ensure that all workers know how to use it properly. Follow up with proper inspections, storage and maintenance.

ENDNOTES

- 1 NSC [2002]. Report on Injuries in America 2002. Itasca, IL: National Safety Council.
- 2 "About ASSE" www.asse.org/about
- 3 "Fall Protection Hierarchy" www.msanet.com/msafallprotection/standards/EngHierReqDesign.htm#FPHierarchy
- 4 "Passive Fall Protection" simplifiedsafety.com/store/fall-protection/passive.html
- 5 "Fall Restraint Systems" www.rigidlifelines.com/fall-restraint.html
- 6 OSHA Standard 1926.760 www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12751&p_table=STANDARDS
- 7 Fall Arrest en.wikipedia.org/wiki/Fall_arrest
- 8 "Administrative Controls" ilpi.com/msds/ref/administrative-controls.html