What to Consider When Assessing Your Fall Protection Needs

Do you have employees working at height? Our expert breaks down what you need to know to effectively keep workers safe.

By Kevin Duhamel

Working at height poses the risk of falls in many industries. While fall protection is available, it is not always quickly implemented as plant and facility managers often (and understandably) feel overwhelmed by all the factors to consider. Getting a good handle on what exactly fall protection is, how it can help, and

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which system is right for which environment is the first step to creating a safer workplace. The five points that follow can help assess the need for fall protection and aid in picking the best fall protection system for virtually any environment.

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#1: The 4-Foot Rule, aka "Do I Need Fall Protection?"

Employers have a duty to provide their workers with a place of employment free from recognized safety and health hazards. The Occupational Safety and Health Administration (OSHA) enforces Regulation 1926, Subpart M, for construction, and Regulation 1910, Subparts D and F, for general industry. These regulations require fall protection be provided at:

- 4 feet in general industry;
- 5 feet in shipyards;
- 6 feet in the construction industry;
- 8 feet in longshoring operations; *and*
- Any height, when working over dangerous equipment and machinery, regardless of the fall distance.

If you identify that your operations fall within any of these parameters, you are legally required to implement a suitable fall protection system.

#2: Elimination or Protection?

Once a fall hazard has been identified, there are essentially two options—eliminate the hazard or protect against it. In some cases, it is possible to eliminate a fall hazard. This is typically known as "engineering out the hazard," and can be done by changing the working environment, processes, and procedures. If this is not easily doable, fall prevention must be the next consideration. Common fall prevention methods include installing guardrails, handrails, or barriers. When passive fall protection solutions such as elimination or prevention are not practical, personal fall protection equipment, such as harnesses, lanyards, and retractable lifelines, can be used. Personal fall protection may consist of a restraint system to keep the worker from reaching an area where a fall hazard exists, or a personal fall arrest system that enables a worker to perform their duties from the height required while tied off to the system.

A restraint system prevents the worker from falling at all by fitting workers in a harness with a tether attached. A fixed-length lanyard is then attached to the D-ring on the harness and then attached to a code-compliant anchorage system. While avoiding a fall completely is favorable, very often the work environment does not allow for it. Restraint systems don't tend to be very flexible once they're in place, rarely handle multiple workers well, and are often limited in length. At this point, many companies find success in fall arrest systems that allow the worker to fall only a short, controlled distance. These systems are professionally engineered and ideally custom designed for the specific work environment.

#3: The ABCs of a Fall Arrest System

An easy way to remember the components of a proper fall arrest is with the ABCs—**A**nchorage, **B**ody support, and **C**onnectors.

Anchorage is a secure point at which to attach a lifeline, lanyard, deceleration device, or any other fall arrest or rescue system. Examples of such secure points include structural steel members, precast concrete beams, and wooden trusses. An anchorage connector (or an anchor) is a piece of equipment used as a safe means of attachment for the lanyard or lifeline to the anchorage. Examples of anchors are cable and synthetic anchors, roof anchors, and beam clamps.

Proper body support in a fall arrest system is a body harness. A full-body harness provides a connection point on the worker (i.e., a center back attachment for a connecting device) and distributes fall arrest forces evenly across the shoulders, thighs, and pelvis.

Connectors include lanyards, snap-hooks, carabiners, deceleration devices such as Self-Retracting Lanyards (SRLs), vertical and horizontal lifelines, ladder climbing systems, and rope grabs. SRLs have developed into an excellent technology—they contain a drum-wound line that may be slowly extracted from or retracted onto the drum under slight tension during normal movement. After the onset of a fall, the drum automatically locks and arrests the fall within 3.5 feet, which meets both OSHA and American National Standards Institute (ANSI) standards. SRLs work much like a car seat belt, anchored directly above the worker and reducing both the free fall of the worker as well as the swing fall (the distance the worker swings from side to side).

#4: Wire Rope vs. Rigid Rail

There are two types of fall arrest systems: those that use a wire rope to anchor a worker and those that use a rigid rail. Rigid rail systems, while slightly more expensive in the initial installation, are a superior choice for several reasons.

Wire rope systems require additional fall clearance due to the initial sag of the wire. The dynamic sag, or

the stretch of the rope during a fall, adds to this distance. Rigid rail fall arrest systems eliminate any sag, stopping the fall in a much shorter distance. Injuries occurring after the fall, such as from swinging into obstacles, are also a consideration that differentiates the two systems. When a worker falls on a wire rope system, the wire's sag will make the trolley slide to the center of the nearest two supports, creating a risk of the worker colliding with nearby obstacles. This risk is mitigated with a rigid rail fall arrest system, which stays firm and minimizes the total fall distance.

A rigid rail fall arrest system also allows for longer distances between supports without sag, reducing both material and installation costs, and it provides uninterrupted protection for additional workers on the same system. On a wire rope system, any slack on the wire is eliminated when a worker falls, resulting in a sudden pull on the rope that can cause a jarring effect on other workers tethered to the same system.

Lastly, in the event of one worker's fall, the rigid rail system will not bend or deflect like a wire rope system, allowing additional workers to continue to move freely and safely. The worker can then continue use of a rigid rail fall arrest system after a visual inspection, while a wire rope system must be completely replaced and then recertified by a qualified engineer before work is resumed.

AN EASY WAY TO REMEMBER THE COMPONENTS OF A PROPER FALL ARREST IS WITH THE ABCS—ANCHORAGE, BODY SUPPORT, AND CONNECTORS.

#5: Rigid Flexibility—The Oxymoron

While the name might imply otherwise, rigid rail systems are the most flexible forms of fall arrest. Ideal for environments where there is limited clearance between the working level and a lower level or other obstruction, these systems provide a shorter fall distance and a reduced risk of secondary injury due to impacts caused by free fall or sudden deceleration. Rigid rail fall arrest systems are the perfect solution for permanent applications and can easily be customized to fit every situation.

Information in Action

Fall arrest systems are now available in multiple configurations, including various track profiles and support center distances, and fall protection systems can be easily customized to fit every budget and application. If you have determined a fall protection need, add fall protection to the company's overall health and safety plan. A written site-specific program should be developed, including detailed work procedures to protect your employees. The fall protection portion of your plan should state what fall protection measures are to be used, how they are to be used, a rescue plan, and who is responsible for overall supervision and training.

Remember these key points and you're on your way to a safer workplace. SD

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