

Construction's "Fatal Four"

Out of 4,251 worker fatalities in private industry in calendar year 2014, 874 or 20.5% were in construction-related work. The leading causes of worker deaths on construction sites were falls, followed by electrocution, struck by object, and caught-in/between hazards.

The Bureau of Labor Statistics reports that these four categories were responsible for more than half (58.1%) the construction worker deaths in 2014.

- Falls — 349 out of 874 total deaths in construction in CY 2014 (39.9%)
- Electrocutions — 74 (8.5%)
- Struck by Object — 73 (8.4%)
- Caught-in/between — 12 (1.4%)

This month we'll discuss falls and electrocution hazards.



FALL HAZARDS

On most construction sites, there is no greater chance of death or serious injury than when working at height. Fall hazards are present at most worksites and many workers are exposed on a daily basis. A fall hazard is any exposure condition at the worksite that could cause a worker to fall. Any walking or working surface can be a potential fall hazard.

OSHA requires that fall protection be provided for an employee working at a height of four feet in general industry and six feet in construction. However, regardless of the fall distance, fall protection must be provided when working over dangerous equipment and machinery. This includes impalement hazards (e.g. rebar). The importance of fall protection cannot be stressed enough.

There are two types of fall protection, **Fall Restraint** and **Fall Arrest**.

Fall Restraint includes such items as a guardrail or parapet wall. It can also consist of a personal fall restraint system which keeps you from reaching an unprotected "fall" point.

Guardrails (on scaffolds, aerial lifts and on the perimeter of buildings) are considered to be a Fall Restraint type of fall protection. They must have a top rail at least 39" to 45" above a working surface. The top rail must be able to withstand a force of 200 lbs. in any direction. Mid rails must be placed midway between the top rail and the working surface, and be able to withstand a minimum force of 150 lbs. Top and mid rails must be at least 1/4" in diameter so as to prevent cuts and or lacerations.

Fall Arrest stops you if you're falling.

A common type of fall protection equipment is the personal fall arrest system. The entire personal fall arrest system must be capable of withstanding the forces involved in a fall. A person without protection will free fall 4 feet in a 1/2 second and 16 feet in 1 second. A personal fall arrest system includes a full body harness, a shock absorbing lanyard or a rope grab and vertical lifeline and a sound anchorage able to support a load of 5,000 pounds.

The use of a personal fall arrest system requires training, provided by Safety and Compliance.



ELECTRICAL HAZARDS

The number of deaths by electrocution show that exposure to electricity is a major hazard. Electrocution results when a person is exposed to a lethal amount of electrical energy.

An average of 143 construction workers are killed each year by contact with electricity (based on government data for 12 years, 1992 through 2003). Electrical workers had the most electrocutions per year with the most serious concern being working “live” or near live wires. Proper protocol is using de-energizing and using lockout/tag-out procedures.

Among non-electricians (e.g. construction laborers, carpenters, supervisors of non-electrical workers and roofers), failure to avoid live overhead power lines and a lack of basic electrical safety knowledge are the major concerns.

The major types of electrocution incidents come from:

- Contact with overhead power lines;
- Contact with energized sources (e.g. live parts, damaged or bare wires, defective equipment or tools);
- Improper use of extension cords.

To better protect against shock and electrocution hazards:

- Be alert to electrical hazards when working with ladders, scaffolds or other platforms
 - Look for overhead powerlines when operating any equipment;
 - Maintain a safe distance away from power lines. The minimum safe approach distance for voltages of 50 kilovolts (kV) or less is 10 feet. Add 4 inches for every 10kV over 50kV;
- Watch for open junction boxes, missing knockouts and exposed wiring
- Locate and identify utilities before starting work;
- Do not operate portable electric tools unless they are grounded or double insulated;
- Use GFCI for protection.



Open junction box



Missing knockout