

## **How to Apply the Latest Developments in Fall Protection to Your Site**

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### **Introduction**

The goal of a Fall Protection (FP) program is to avoid any foreseeable situation that may involve free fall of a worker on your site. The fact is that among occupational fatalities, 34% construction workers die from falls, and 14% overall in all industries.

Pre-planning of work projects is a strong element in effective FP programs; the key is to start early.

#### Identify Fall Hazards

You can identify fall hazards by evaluating proposed or traditional work methods. The three phases of a hazard are dormant, armed and active. This means that when workers are absent is the best time to put into effect FP procedures. It may be too late if exposures are occurring, especially if the worker is relied upon to do his own FP, usually with harness and lanyard, e.g., finding his own anchor point. If so chances are he may not be hooked up or hooked up adequately to protect himself.

#### Eliminate or Control Hazards

Those hazards can be eliminated through sequence, substitution, and safety engineering. This means that the safety influence must be on the design team to help detect improper design, especially when the maintenance to be done will likely expose workers to severe fall hazards. An example would be a 42" or higher parapet on all commercial buildings to reduce exposures. Another example would be to place screens over skylights while they are still on the drawing board.

You can control those hazards through PPE/engineered anchorages, training and maintaining

#### Pro-active vs. Reactive

Do you or others have to wait for a fall death before acting? Too many do. OSHA and NIOSH seem to study categories of work fall deaths exceeding 20 fatalities per year. Installing poster board fabric sections in a strong wind by a lone independent contractor might focus on the billboard owner for failure to provide anchorages, whereas similar wind conditions on a residential roof tear-off project might attract the attention of OSHA to foreman training and formalized regulations around conventional fall protection. The respect for the safety leader and his perseverant persuasion is critical.

## Development of New Standards

New Z359 standards development has been ongoing. There are 19 different, pending Z359 standards. To date, eight have been issued:

**Z359.0 Definitions.** This is a standard set of definitions for all Z359 fall standards that helps breed confidence.

**Z359.1 PFAS.** Equipment systems will soon disappear in favor of Z359 component standards; nevertheless, these are important at this time for systems development. Systems take too long to modify and upgrade, and the Z359.2 is intended to instruct on systems in future.

In 2007, a new part was added; the strength of Y-lanyards from hook to hook should be 5000 lbs at most and a snaphook gate strength should be 3600 lbs.

**Z359.2 Managed Fall Protection.** For the first time, there are rules for training hours, re-training, pre-planning, and anchorage requirements, as well as for the Program Administrator for program audit, the Competent Person Trainer and good equipment selection, inspection, and observation of the work.

**Z359.3 Work Positioning and Restraint.** Work at height involves access, body support and sometimes suspension.

**Z359.4 Self- and Assisted Retrieval.** This standard involves post arrest and who reacts to the incident, including what has been pre-planned.

**Z359.6 PFAS for Engineers.** The standard is an introduction of engineers to fall protection; if you are a structural engineer, you should learn this well. If you are the competent person, then this is what your program must refer to.

**Z359.12 Connectors.** This standard contains the rules for compatibility of component parts (e.g., anchorage connectors, SRLs/lanyards and harnesses). I recommend that hooks with eyes be subject to 3600 lbs in all directions for gate strength.

**Z359.13 Lanyards and Energy Absorbers for PFAS.** This standard caters to workers who are 310 lbs and as light as 130 lbs, including tools and clothing. It also addresses 12 ft free falls criteria. A new method of calculating force of arrest is done by averaging forces above 500 lbf. Test weights have been raised to 282 lbs from 220 lbs to be more equivalent to 310 human lbs.

The question is: What's the most important and how do these affect GI and construction worksites?

Z359 does not specifically cover trucks, railroads and trains, maritime shipping, rope access, ladders, scaffolds, or mining applications. These fields have stayed separate either through OSHA, MSHA, or association guidelines. Competent and Qualified Person terms are defined differently so that an aerial lift operator must be a qualified person according to the A92 Standard is certainly not an engineer as recognized in the Z359 area.

## Definitions

*Competent Person(s)*: The person who is capable of selecting FP systems, training authorized workers, monitoring work, inspecting equipment, and calling on QP for engineering. OSHA and A10 standards use different definitions for competent person(s).

*Qualified Person*: An engineer with a history of resolving problems, who has a close working relationship with the competent person. A qualified person needs training as a competent person and commitment to the success of the system over time. Outside services give a good grounding in engineering against fall hazards including elimination, guarding, and user expectations. It helps if the engineer enjoys human factors engineering, the science of what people will really do in the field and anticipating the major sources of possible misuse. In aerial lift standards a qualified person is an authorized operator but not an engineer.

*Authorized Rescuers*: They are appointed by the competent rescuer; rescue pre-planning allows for practice drills at likely rescue points in the structure.

*Program Administrator*: **According to Z359**, this is “[a] person authorized by their employer to be responsible for managing the employer’s fall protection program.” This position has become the senior safety position of responsibility whereas the competent person is typically a field person in charge of a crew.

Every site should have a training facility to help with site-specific planning. Competent persons should be retrained every two years.

## Building a FP Program around the Z359 Standard

The responsibility for maintenance of FP safety systems lies with the safety department for regular inspections of guardrails, platforms, loading cage/ramps, and certainly way further than fall equipment inspection. The safety department is also responsible for documenting bad design in buildings and structures, such as lamps that are out of reach for easy bulb replacement, ladders that are placed next to guardrails, or lighting in stairwells that cannot be reached without a fall hazard. Outside resources, especially in engineering, help to provide anchorage and anchorage connector support with structural designs that meet standards.

The following are responsibilities of the safety department for maintaining FP safety:

- Drawings
- Specs
- Sources of supply
- Duty of Safety Department to inspect

Examples include loading facility for tank trucks, cage railing systems, spring action that may be used to prevent truck to cage interaction which requires emergency welding.

## Administration of the FP Program

The Program Administrator is the auditor of the FP Program, and is charged with reporting the results of an evaluation using Section 8 of Z359.2:

- 8.2.1 Written policy statement and its application
- 8.2.2 Duties/responsibilities properly assigned
- 8.2.3 Training of personnel is adequate to perform duties
- 8.2.4 Training programs meet Z490.1 and current regs
- 8.2.5 Surveys have captured actual fall hazard exposures
- 8.2.6 Inspection of all fall equipment in use sometimes requires barcoding or electronic registration with a few manufacturers
- 8.2.7 Review of anchorage systems to check compatibility
- 8.2.8 Review that purchased fall equipment meets Z359 equipment requirements
- 8.2.9 Review of inspection, maintenance, storage of fall equipment is adequate
- 8.2.10 Review of FP procedures including rescue procedures for emergency use
- 8.2.11 Review of insurance claims, workplace activities or equipment that could be improved
- 8.2.11 Evaluation of authorized persons by observation and review of training record
- 8.2.13 Rescue drills scheduled and records maintained of date and names
- 8.2.14 Fall Protection considerations for new facilities (the Design Team)
- 8.2.15 review incident investigations and procedures applied

## Summary

Train or retrain authorized persons every two years. Review the strengths and deficiencies of the Fall Protection Program and make recommendations for improvements. Develop a plan of action, identifying who is responsible for each change; provide dates for completion. Retain a report on file for a minimum of five years. The authority provided by the Z359 standards builds support for a comprehensive FP program. Solutions that are feasible come out of the many options available for FP. Involving engineers provides a means of communication with engineers through the Z359.6 Standard. System planning guidance helps avoid missing items in a survey; for example, it is best with early planning

*Note:* The Z359 Fall Protection Code provides guidance for documenting progress in Fall Protection and is now available.