

Making Fall Protection Work at Your Site

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The new standards in fall protection, the ANSI Z359 Fall Protection Code, have become the preferred way to conduct a fall protection program. However, the need to conduct surveys and assessments has never been greater, not just because the Z359.2 requires it but because even if the code is met, the chances of workers complying must be factored into the plan.

For example, 70% or more of the fatal falls are from ladder, roof and scaffold incidents. When looking at portable ladder use, the 3.5 ft extension above the dismount level is long-known to be the proper way to set up a ladder in addition to the ¼ slope. But if you ask workers and watch what they do, the 3.5 ft extension is rarely to be seen, especially in residential construction and maintenance. Instead the extension is more likely to be six inches and maximum two feet. The reason for this is based on various access alternatives where the steepest roofs are typically reached with ladders but the transfer from ladder to roof gets very difficult. The sudden shift in center of gravity to the steeper roof support becomes destabilizing to the ladder and a dangerous maneuver. When the extension is short, the worker can make the transition over the top of the ladder more easily. Thus a major program training issue becomes the other means of access to a sloped roof and fall protection when leaving the aerial lift or scissor platform.

Another thing to consider is the prevalence of holes in a roof, such as for a roof hatch or fan replacement. The idea that holes in walking surfaces should be covered is well understood part of the program, but far less understood is the way in which they are fastened down so that they are not easily removed and require a subcontractor huddle when the need arises to think of replacement of cover fall protection when torchdown work is being conducted by waterproofers, for example. Here is where the need for two methods of fall protection overlapping comes into play. A net attached to the underside of the deck is preferred in many instances and also to protect the carpenter for hatch installation or HVAC unit duct installation. A net system for laying over skylights has recently become available to recognize the danger of skylights when workers pass by and occasionally fall.

Carpenters are inventive constructors and will come up with new and perhaps untested methods. Here is an example of a carpenter who installed an eight foot railing in window openings in a concrete building and which was wedged in place to hold vertical 2x4's backed up by a secondary 2x4" top rail and a mid-rail. It is foreseeable that another worker in a different trade who was working kneeling at the edge would get up and use the railing to pull himself up, at which point the railing fell into the building and he fell out. The railing was probably safe falling outwards but not pulling inwards. The regulation says 200 lbs outward and downward.

Scaffolds are a frequent source of injury and death. One cause of falls for supported scaffolds is the need to ascend or descend, which in many parts of the USA requires climbing over the rails and then climbing the scaffold ladder. The transition can result in poor footing and then crossing to a ladder at a variety of angles, which can result in unbalanced transfer. If holding the side rails when footing is lost, the fall proceeds to the ground or lower level. An answer for this would be to mandate the use of swing gates on each level and use an SRL mounted at the top of the scaffold with a tag line for access.

The other thing that needs to be watched is the scaffold ladder design with a lipped C-channel with fittings for a male part. Attachment to the scaffold itself is at bearers where the clamp locks by twisting into the C-channel, but cannot do so if the male part is in the way. Instead it jams for partial support and then pulls away when body force is applied. Tubular rail designs for the ladder and clamp have been popular alternatives.

Stock answers may not work because everything we have discussed so far meets the literal OSHA requirements yet still produces fatal injuries. Can you start to get a movement going for eliminating the hazard instead of disguising it?

Cranes are another source of injury, as we all know, and mobile cranes are no different. Here an inspector for the nuclear plant had to check the cable diameter while the crane was paused during a trial at a swiveled angle with outriggers deployed. The front ladder was chosen to get up and come down. Everyone should know the process going up and coming down is different. On the way down his foot moved violently sideways and he was left grasping for a hole in the deck that substituted for a vertical handrail. He fell to the ground and could not work again. The ANSI B30.5 standard did not properly reference the SAE J185, the world standard for off-the-road equipment access, and the manufacturer did not make a sensible safe solution especially in the light of a low counterweight clearance. Their response was “we have not had sufficient injuries to make a change”.

Where that crane was used at the Stennis Space Center Test Stand A-3, there was an ironworker crew that used cheater cables to go around the iron at 250 ft elevation. Their project manager knew with precise detail the length of each cheater cable to go around a particular beam and no other size and installed from an aerial lift. This picture shown was an ironworker who used one size for all. But that extra fall distance in the cheater did not kill him. It was shown that the new and the subject lanyards were similar length, so on this occasion he was not attached and therefore fell 80 feet to the ground.

To reduce the complexity of the safety position, a new tool emerged 1-2 years ago called the Hazard Grid. This is supposed to help you determine the entire hazard arena on a plant site or construction site. It consists of the hazards arranged vertically and the solutions possible are horizontal. Name the hazard and name the solution is the key to this grid. We choose natural hazards because the hazard of gravity is a natural hazard.

The flatbed truck is a frequent visitor to plants and construction sites. The hazard is often the tarping or untarping of the load. Here the worker works with no protection, yet the plant shipping policy is to tarp before receiving the bill of lading.

When we do the analysis of hazards, we find a number of hazards with a number of solutions. We should put some of those to use for long-term safety to employees and visitors, including drivers.

When the rail is installed and the driver trained through a short DVD session with minimal supervision, especially for repeat driver visitors, the system works. Sometimes the fork lift or crane operator can help raise the tarp and sometimes one or both sides can be netted. We are moving to a process of fall protection where maybe two or three modes of fall protection may be applied. In this case ,edge softeners are applied and the tie-down tension checked, so railings or nets may help.

There are thousands of tarping applications that need to be thought out. Here a shipment of excess garbage is transported a few hundred miles but before rolling the tarp. Plastic garbage needs to be cleaned from the sides. Employers were 5-year veterans of the OSHA Sharp program, but had never given a moment's thought to the drivers in their midst because they were not employees. As we strengthen the tarping procedure fall protection at many shipper locations, this highlights how little is being done for truckers who deliver. Therefore the need to apply carry-on-board fall protection is now beginning to take hold in various parts of the world. This sketch gives a glimpse of what is coming to America this year for driver fall protection wherever he goes.

Let's get back on theme that fall protection is not just a matter of following regulations and standards. Here is a case in the past year which illustrates the false confidence of a lifeline system that has not been checked by an independent inspector. The federal government is presently rightfully upset with its latest museum track system for bird pollution clearance and window cleaning when it allowed an experienced contractor to use a system where the slide fell out of the track due to mis-sizing that was never caught. Even though he attached his load line and lifeline to the same single anchor, having two anchors would have produced the same result. in my opinion. He died after falling 40 ft to the ground.

Before, during and after the fall we summarize as follows:

Pre-plan the anchorages. Train authorized persons to do the work with two or more methods of protection. Investigate the slightest incident to progress the fall protection program under the new Program Administrator's watch (Z359.2).

Your Fall Protection Program can work at your site too!