Safety Newsletter

RAMP Risk Assessment Management & Prevention

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The Hazards of Gravity

Over the past two months we have looked at complacency and driving as two of the three hazards which lead to the majority of injuries, we see at Berkley Industrial Comp. This month, we will look at the third hazard category: gravity. While gravity itself is not a hazard, it does lead to a number of hazards we face on our job sites. We will look at four categories of accidents that are caused by gravity: falls from heights, slips, trips, and mis-steps.

A fall is defined by Webster's dictionary as a "move downward, typically rapidly and without control, from a higher to a lower level." Falls continue to be the leading cause of fatalities in the workplace. In 2017 they represented one-third of all workplace fatalities. While the number of fatalities declined in every other major accident category, fatalities that were the result of falls increased 5% over the previous year.

Falls from Heights – These produce the most severe injuries. There is no single fall protection system that can be used when working at heights because every work situation is different. Choosing the correct fall protection system requires technical and engineering knowledge that is beyond the scope of this newsletter. However, there are some basics about working from heights and fall protection basics that everyone should know.

The first thing everyone should be aware of is the 6-foot rule. 6 is the magic number when working at heights. OSHA standards require that fall protection of some type is ALWAYS required when working at a height 6-feet or more above a lower level. Fall protection could also be required when working at heights of less than 6 feet if the work is near dangerous equipment or processes.

Guardrails/covers, safety nets, and personal fall arrest systems are the most common types of fall protection systems you most likely encounter on a job site. Of these three, guardrails/covers are the first choice in fall protection when they can be used. Second would be safety nets. Personal fall arrest systems would be the third choice if guardrails/covers or safety nets cannot be used.

You may think it odd that personal fall arrest systems are the third choice. Most people associate the use of harnesses and lifelines when they think of fall protection. Why is this the third choice? There are several reasons. First, the system has many components that must work for the system to be effective. Start with the body harness. The harness fabric cannot tear or break during a fall. This can be difficult because from the moment the harness is placed into service it begins to deteriorate. Also, almost everything to which the harness is exposed on our job sites causes it to become less effective: sunlight, the weather, sweat, chemicals, etc. Next, the fall arrester has to engage to stop the fall. Then there's the safety line. It cannot stretch or break when the fall arrester engages. Finally, every component attached to safety line, from the harness latch to the anchor point, has to hold and withstand the force of impact. Perfection is required. Anything less will result in, well, you know what will happen.

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Gravity: The Down and Dirty

Gravity is always present and affects almost every area of our lives. We are so comfortable with it that we can go months (or even years) without paying attention to it. But the constant pull of gravity is one of the main reasons our world works the way it does. It is a good thing.

However, gravity also has a dark side.

You've probably heard the phrase, "What goes up, must come down." It is a truth of life. However, when it comes to safety, things coming down is not always something good. Sometimes it's objects that come down, and when they come down on people, they can cause an accident. At other times it's the people themselves who come down, all the way down to the ground, and are injured.

This month we are going to look at falls and falling objects and think about was to defy gravity.

Why It's Important

- 65% of fall-related injuries occur as a result of falls from same-level walking surfaces.
- While same-level falls are more common, elevated falls are often the most serious and cause more severe injuries to a lesser number of people.
- Over 60% of all elevated falls are from a height of less than 10 feet.
- Over one million Americans suffer a slip, trip, and fall injury every year.
- An estimated 20 - 30% of people who experience a slip and fall will suffer moderate to severe injuries such as bruises, hip fractures, or head injuries.
- The most common fractures that occur from slip and fall accidents are fractures are of the spine, hip, forearm, leg, ankle, pelvis, upper arm, and hand.
- 1 in 6 of all lost-time work injuries result from slips, trips and falls.

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But stopping the fall that is just the beginning of the process. Once the fall is arrested the person will swing from side to side. What will they hit while they are swinging? And once the swinging stops, how do they get down? It may take a several minutes, or much longer, for them to be rescued.

While a personal fall arrest system is effective, guardrails/covers are much simpler both to install and maintain. When installed correctly, they limit or eliminate the exposure to the fall hazard. They also do not require constant inspection by the user to ensure they remain effective. This is why, whenever possible, installing guardrails/covers is always the best choice.

But accidents resulting from falls are not limited to working at heights. Falls also occur when people work on the ground. Three examples are slips, trips, and missteps.

Slips occur when a person's foot slides along a surface while walking causing them to lose balance. When walking, the first part of a persons foot that makes contact with the floor on each step is the heel. The last part of the foot to have contact with the floor on each step is the toe. Slips usually occur when starting contact or ending contact with the floor and are called "heel strike slips" or "toe-off slips." A slip at heel strike usually results in the person falling backwards and landing on their rear-end, back, shoulders, or even striking the back of their head. It also frequently involves impact with one or both hands trying to break the fall. A slip at toe-off often results in the person falling forward, either dropping to their knees or falling and twisting their legs beneath them. The list of things that could cause slips includes ice, spilled liquid, a sudden change in the walking surface (say from carpet to polished wood), a change in gradient, excessive speed for the situation (running, or turning sharply), and footwear that is not slip resistant on the walking surface in a given situation. Eliminating slippery condition and the use proper footwear are the best ways to prevent slips.

Trips happen when the movement of the foot is impeded, usually because an obstruction is in the path of travel. Most trips occur when moving in a forward direction. They can result in falls with possible injuries to hands, wrists, arms ,or knees. Head injuries are also possible. Good housekeeping is the best way to eliminate tripping hazards.

Missteps are the unintentional departure from a person's normal way of walking on a surface. They can occur when a depression, a step down, or change in gradient is suddenly encountered by the person walking. There are 4 common types of missteps:

- **Air Steps** occur when a depression, or a step down is not as expected and the person walking is left searching for the floor, leading to a loss of balance.
- **Heel Scuffs** occur on stairways. As the person raises their trailing foot to descend to the next step the heel of that foot catches under the front of the previous stair step, causing them to lose balance.
- **Over-Steps** also occur on stairways when the persons descending foot lands too close to, or even beyond, the front of the stair. The person is left without the expected level of support causing them to lose balance.
- **Unstable Footing** happens when there is a rapid change in a walking surface because it becomes uneven or unstable but the person walking on the surface is unaware of this. This typically results in the persons legs bending in or out to regain balance and can lead to rolling the ankle or straining the knee.

Finally, one hazard associated with gravity we have not mentioned is falling objects. While the number of accidents that occur from falling objects is not as high as other types of accidents, the results tend to be much more severe. Broken bones, becoming impaled, even death are all real possibilities when struck by a falling object. The fact is that even a small object can cause severe damage when dropped from height. Preventing injuries from falling objects requires good housekeeping and proper tool usage when working at heights. Also, toe boards should be used on all guardrail systems and working platforms.

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