ZURICH
Resilience Solutions

RiskTopics

Reducing Slips, Trips and Falls in the Construction Industry

Zurich Resilience Solutions - Risk Engineering

For construction industry employees, injuries resulting from a slip, trip or fall (STF) are one of the most common exposures on any jobsite. STF related injuries are often the most frequent, most severe and have the greatest overall impact on workplace efficiency of any jobsite exposure – constantly chipping away at the bottom line. STF related injuries are the leading cause of worker compensation losses in construction.

Introduction

Experience in the construction industry shows that STF exposures are among the easiest yet most difficult to control. Many of the conditions that lead to accidents are observable and controllable, which makes it easy to address them. However, this awareness is only one-half of the equation since the industry has accepted those exposures as "trivial and part of the job" for many years. Reducing slip, trip, fall exposures requires a paradigm shift within the construction industry that would no longer accepts these exposures as "part of the job". A more systematic strategy can help reduce and control these STF related incidents and help improve the bottom line.

Discussion

According to Zurich's loss data, although falls from different levels tend to result in more severe injuries, STF on the same level are the most common cause of injury/loss on the jobsite. They are generally high frequency claims and often result in broken bones, soft tissue strains, or struck by, contusion type injuries.

Many STF injuries occur due to dangerous conditions on the jobsite. The site conditions on a jobsite are dynamic and constantly changing. Multiple stakeholders are often involved in various activities. Depending on the roles and responsibilities, the property owner, general contractor, and subcontractors could have a duty of reasonable care to identify the existence of dangerous or unsafe conditions and maintain the premises and jobsite in a safe condition.

Inadequate housekeeping, maintenance and site inspection procedures are major contributing factors to most STF accidents. Controlling the hazard means eliminating the hazard or reducing it to a level that protects workers, subcontractors, and the public. Fall exposures such as environmental, walking surfaces, stairways, ramps, floor openings, sidewalks, overhangs, lighting, machinery, equipment, etc. need to be controlled.

Common risk factors – There are many causes and contributing factors in STF accidents on a construction site. Understanding these causes and challenges will help develop effective mitigation strategies to address STF losses. These risk factors include:

- Condition of walking surface: Due to an ever-changing and dynamic nature of construction activities, this is a constant challenge to ensure safe walkways, with uneven surfaces, potholes, cracks, temporary bridges and walkways, changing elevations and changing routes and conditions, curbing and muddy soil conditions.
- Impact of environmental conditions: Water from rain and spills from other sources can result in slippery conditions. Winter conditions, snow, and ice can result in treacherous conditions. Soft soil conditions and truck traffic can add to the difficulties.
- Obstructions: A construction site can have many obstructions that increase the risk of tripping accidents. Many are temporary in nature and range from debris, materials and tools to portable equipment, cables, hoses, and power cords, etc.
- Site coordination issues: With multiple contractors working at a given time, daily site coordination can be critical to ensure proper access and egress routes, coordination/communication of changing conditions, signage, illumination, and a host of other items. Pre-task planning and daily inspection can help ensure safety of ladders, scaffolding and walkways.
- People issues: Many tasks on a construction site require workers to carry materials and tools. Carrying heavy and awkward objects can affect their balance and gait. Use of improper footwear or muddy shoes can also increase the potential for STF. The aging workforce and use of medication for chronic pain and other health issues can also have impact on balance.

Guidance

An effective strategy for managing STF losses at a construction site should consider the ever-changing and dynamic nature of a jobsite. This requires a formal pre-task planning program that anticipates and plans for access and egress routes, materials, debris removal, personal protection, visitor controls, etc. A daily inspection and audit program is essential to identify and correct jobsite hazards, maintenance, housekeeping and exposures to subcontractors and the public. Ensure formal documentation of corrective action by appointing a designated person responsible for it.

- Preplan:
  - Establish safe access and egress routes to and from, in and around construction sites
  - Mark access routes clearly and keep workers informed of changing routes or conditions
  - Designate individuals to regularly inspect and maintain access routes
  - Establish dedicated material lay down areas, debris, and snow removal plans
- Develop formal written maintenance, inspection, and training procedures to reduce STF accidents to the public, employees and non-employees at the jobsite, including but not limited to:
  - Housekeeping (e.g., spill cleanup, daily debris/scrap removal, spill cleanup) equipment maintenance
  - Stairs, ramps, handrails, and fencing
  - Walking surfaces, floor, and walls openings
  - Lighting
  - Visitor PPE
  - Signage
  - Routine inspections of ladders

Exposure control – Since STF accidents affect all employees on a jobsite, raising awareness of the impact of STF losses and involving employees in jobsite assessments are effective strategies. Here are some ideas to consider to help reduce and mitigate STF losses on a jobsite. This is not a comprehensive list of ideas but just a starting point to help you develop mitigation controls for your own jobsite. Since each jobsite is different and site conditions change daily, consider, and anticipate a variety of exposures during the life of a project.

- Elevation changes in walking/working surfaces
  - Design walking/working surfaces to be level where possible
  - Identify uneven areas in walking/working surfaces with high-visibility paint, signage, etc.
  - Discuss uneven surfaces in pre-work safety briefings with crews
  - Smooth transitions through use of inclined wedges where possible
  - Tape joints of all temporary floor coverings
  - Repair damaged walking/working surfaces quickly
  - Use an employee reporting process to help identify problem areas
- Water on floors – frequent issue prior to dry-in
  - Barricade affected areas where possible
  - Place 'squeegees' near known problem areas with designated persons to remove the water after a rainfall, etc.
  - Assign work in alternate areas until the water can be removed
  - Be prepared for spill remediation, especially after dry-in
- Lighting – degrades as walls are put in place
  - Inspect for issues before assigning work
  - Use portable stand lights
  - Use high intensity temporary lighting in larger areas
  - Daily, continuous maintenance of temporary lighting
  - Establish a process for any subcontractor to contact request assistance with lighting – proactively
  - Ensure electrical subcontractor understands the importance of their role in STF prevention for the entire project
- Debris on floor – staged construction material, scrape and lunch trash, etc.
  - Require frequent trash/scrap removal
  - Include subcontractor housekeeping requirements in the contract and be sure to enforce
  - Designate trash/scrap collection points clear of walkways and work areas. Placing scrape in the center of a room where most work activities occur leaves walls clear
  - Do not stage piping or other rolling material in walkways
- Cords and hoses in walkways – trip hazards
  - Run overhead if possible – use 2"x4" 'trees' or archways when needed
  - Place to the side of the hall and tape down
  - Avoid running through stairways and ladders
- Scaffolding
  - Elevation changes on stairs and stairwell platforms critical – identify and mark if non-repairable
  - Maintain dust/dirt/debris free work platforms
  - Ensure handrails are available in stairwells and changes of elevation requiring a step or more
  - Provide boot cleaning stations at access points to scaffolding where mud is an issue
  - Ensure adequate lighting, especially at elevation change areas, stairwells and access points
  - Ensure workers are trained to recognize STF hazards
  - Consider using ladders on the internal area of scaffolds as opposed to exterior ladders

- Ladders
  - Use the correct size, type and capacity ladder for the intended work
  - Inspect ladders regularly to ensure they are in good physical condition
  - Ensure ladders are set up properly and anchored to prevent movement
  - Keep access points clear of scrap, debris, hoses, cords, etc.
  - Keep rungs clear of all tools, cords, etc.
  - Train workers to clean boots prior to ladder use, maintain 3-point contact and keep belt buckle between the rails
  - Platform or podium ladders should be considered as a safer alternative to step ladders.
- Snow and ice[1]
  - Wear footwear with good traction and insulation
  - Take short steps
  - Walk at a slower pace
  - Anticipate slippery conditions and a potential fall
  - Consider personal protective equipment to include ice cleats.
  - Avoid carrying heavy and awkward loads
  - Develop and implement a snow and ice removal plan
- Miscellaneous factors
  - Employee training to recognize, avoid and report STF exposures on the job site is critical
  - Employee training should also include a lesson in how to walk on wet or icy surfaces to minimize the risk of slipping
  - Management training stressing the importance, methods of exposure identification and control is critical to success
  - Executive management must set and enforce the STF prevention requirements
  - STF prevention must be embodied within a written plan, policy and/or procedure that is available for line management review
  - STF prevention should be part of every workers orientation to the project site
  - Boots that have soles with adequate traction should be required
  - Management should always lead by example setting and enforcing STF prevention requirements
  - Visitors should be required to follow all safety procedures and should always be escorted on project sites.

Conclusion

Where is the 'magic bullet' that will produce a gain in productivity, improve our bottom line, and help make our company more profitable? Reducing delays can produce improvements in productivity. Better productivity can come from workers that expend smarter efforts to accomplish their tasks and do it right the first time. Protecting workers and the public from hazards can reduce loss costs and administrative costs in handling these types of unnecessary claims. That approach usually comes from workers satisfied in the security of their work, assured they would not be penalized for taking time to do tasks right. So where is this "magic bullet"? Answer: it is on the floors and in our walkways. In many cases, we virtually "trip" over these opportunities to affect our bottom-line profits, but do not recognize them.

Imagine a construction workplace where walkways are clear and free of obstacles. You don't have to tread your way over and around extension cords, hoses, trash, scrap, materials, screws, nails, pieces of pipe or conduit and many other obstacles. Get the picture? Think of the cumulative savings that would result from the thousands of steps taken by the workforce daily. We can have that increase in productivity and decrease in the accidents and injuries that result from the slips, trips, and resultant falls. Raising awareness and

educating our workforce to control STF hazards such as spills, cords, scrap, and materials, in walkways, trashy scaffolding, etc. is part of a task well done and helps promote a safe and productive jobsite. Develop a plan for controlling slip, trip, and fall exposures, implement the plan, work through the bumps, and count the success on your bottom line.

For more information on Zurich's extensive Risk Engineering and Sustainability services, please contact your Risk Engineer or visit us at Risk Engineering and Sustainability Services | Zurich Insurance (zurichna.com).

References

[1] "UNITED STATES DEPARTMENT OF LABOR." Winter Weather | Occupational Safety and Health Administration, OSHA.gov/dts/weather/winter_weather.

Fatal and non-fatal injuries from falls in construction: Electronic Library of Construction Occupational Safety and Health (eLCOSH)

OSHA Safety and Health Topics: Walking/Working Surfaces

Best Practices Guide for Preventing Slips, Trips and Falls: Construction Employers Federation (Northern Ireland)

Watch Your Step in the Construction Industry - February 2006. Health & Safety Executive- UK

Other related Zurich RiskTopics

- Ladder safety on construction sites
- Hazard identification and risk register
- Job hazard analysis for construction
- Activity hazard analysis for construction
- Daily hazard analysis for construction

August 2023

The Zurich Services Corporation
Zurich Resilience Solutions I Risk Engineering
1299 Zurich Way, Schaumburg, IL 60196-1056
800.982.5964 www.zurichna.com

ZURICH®
Resilience Solutions