

Hazard and hazard management construction essay



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The construction industry is characterized by a relatively high injury and illness rate compared to other industries. In the past two decades more than 26, 000 U. S. construction workers have died at work. That equates to approximately five construction worker deaths every working day. Safe practices can help eliminate the hazards present in the construction industry, and reduce the number of on-the-job injuries and deaths. The techniques in the construction industry have been improved due to the rapid development of science and technology. However, the constructional hazards are not decreased as expected. To reduce or prevent occupational hazards in the construction industry, some methods were proposed to provide a prevention and improvement technique against occupational hazards. A method was developed to identify important hazard types and hazard causes. Additionally, especial analyses were performed to assess the risk value of the hazard.

2. Hazard and Hazard Management:

Hazards identification is the act of identifying the failure conditions or threats which could lead to undesirable events. It may be outlined as a condition, object, activity or event with the potential of inflicting injuries or sick health to personnel, injury to property, loss of fabric, or reduction of the ability to perform a prescribed operate or combination of those (DOSH, 2006). Paul Everitt and Anthony Price (2004) define hazard as "any source or situation with the potential to cause harm to the safety and health of people or damage the environment or to plant / equipment. Because the existence of a hazard is not always obvious, and increases with human interaction a

structured and systematic approach is essential in compiling a comprehensive list of hazards.

The hazard management means, the method of implementing counter measures to decrease the chance of hazard.

3. The project features and their relation to the construction hazard

To determine that how the project features contribute to construction hazard, it needs to categorize the project to the specific project features and breaking that down into a sequence of stages, and then, identifying all possible loss-of-control incident that may occur during the construction work.

3. 1. The project features and the sequence of stages:

Foundations:

Excavation

Pilling

Structural activities

Concrete Slabs

Cast-in-place concrete columns and walls

Erecting pre-cast slabs

Erecting pre-cast walls

Forming walls with stone cladding

Finishing activities:

Brick masonry

Stone cladding

Exterior plastering

Gypsum boards

Floor tiling

Roof insulation

Roof sealing

Glazing

Other activities

Electrical installation

Plumbing

HVAC installation

3. 2. Some sub-activities of the above stages are:

According to the above category there are some sub-activities that would be hazardous in construction sites such as:

Activity

Sub-activity

Hazard

Event

Foundation

Excavation

Cave- in

Collapse the excavation wall

Piling

Sequencing of piling work

Conflict with other parts of the project construction, creating unsafe working conditions

Piles located in positions in restricted working space

Personal injury from falling debris, crushing. Unsafe removal of guards or auger cleaners. Risk to third parties

Piling near to the top of slopes

Slope failure, rig overturning

Working in excavations

Access ramps and wall props can hold up working space

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Structural activities

Concrete Slabs

Slips, trips

Fall

Cast-in-place concrete walls with stone cladding

Pouring concrete using a crane bucket

Filling bucket

Concrete spatter

Exterior working

Preparing the wall area

Filling holes

Dropping an object

Casting lightweight concrete for drainage

Casting concrete

Pouring the concrete

Dropping an object

Concrete columns and walls

Fix steel rebar cage

Final ties

Collision with steel bars

Drywall construction

Erecting the framing

Attaching studs to exterior masonry or concrete walls

Spatter of debris from drilling or nailing

Exterior stucco

Manually applying an insulating layer

Curing and cutting protrusions

Struck by a tool

Cast-in-place concrete columns and walls

Installing forms

Cleaning and greasing forms in height

Fall from a ladder

Concrete columns and walls

Casting concrete with a crane

Lifting a bucket full of concrete

Crane collapse

A researcher argued that, according to the fatalities statistic, 40% of that involved incidents related to falls from height. Inadequate, removed, or inappropriate use of fall protection equipment contributed to more than 30% of the falls. As these statistics indicate, safety in construction remains a big problem. As good safety practices and records create a positive, hazard free, and productive work environment, planning for safety at the front-end of a project is not only the first but also a fundamental step for managing safety.

There are some hazard identification tools, such as:

Text Brainstorming

Checklist

Structured What-if (SWIFT)

4. Some Common Construction Hazard Issues:

4. 1. Construction Hazards:

Construction hazards may include falls, extreme heights, falling from rooftops, machinery failure, unguarded machinery, being struck by heavy construction equipment, electrocutions, silica dust, asbestos, lead, welding emissions, accidents, structure collapse, roofing and pavement tar, engine exhaust fumes, and other hazards. Construction sites include residential construction, bridge erection, roadway paving, excavations, demolitions, and big painting jobs.

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4. 2. Construction Hazard Statistics According to OSHA :

Figure 1 shows that falls from elevation generally represent the leading cause of a death due to construction related activity, representing about 33% of all construction fatalities. Getting struck by some object, caught in-between two objects, and electrical shock is also leading factors of construction fatalities. Together, these make up about 90% of all construction fatalities. It is important to note that over the last few years, these numbers have statistically declined or increased in a linear, proportion fashion. The occupational Safety and Health Administration (OSHA) Statistics show that about 90% of the fatalities occur from four types of injuries. These injuries may be from falls from height such as scaffolding or ladders, being struck by objects, being caught between objects, and electrocution. There are other common hazards in construction sites that may include power tools and equipment, Heavy machinery, excavations, and confined.

4. 3. Is the Engineers and Safety Staff are blame?

Failures in hazard identification are often due to the limited expertise or oversight of engineers or safety staff when planning or executing safety practices, or poor training of construction staff. Examples are tasks in design for safety, safety inspection, and monitoring safety. Failure in any of these can result in increased risk of exposing workers to hazards in the construction environment. Safety planning in construction is generally done separately from project execution planning and involves different actors. This separation and the resulting lack of communication create difficulties for safety engineers to analyze what, when, why, and where the hazards located for preventing accidents.

5. Fall Hazards Identification and Preventive Measures:

As mentioned above, 40% of involved incidents are related to falls from height, due to that here will focus on Identifying and assessing the hazards and risks as an essential step in safety management. The potential fall hazards regarding to construction features are, holes in slabs, leading or unbounded edges of the floor slab, and openings in walls.

According to OSHA a “ slab hole” means a gap or void of 2 in. (5. 1 cm) or more in its least dimension. A hole can exist at several heights, for example, on a floor (e. g., concrete slab), a roof (e. g., skylight), or any other walking/working surface. Similar rules exist for openings in walls, for example, unprotected windows. Regardless of the size of the hole or opening, if the location of the object is elevated more than 1. 8 m (6 ft), it would be hazardous.

The preventive measure for falls include, always using appropriate fall protection, installing and maintaining perimeter protection when working from heights, covering and securing all floor openings, and following safe practices when using ladders and scaffolds.

6. Conclusion:

The construction industry has been considered an accident prone industry. Alarming statistics indicate that the construction industry accounts for 55, 000 fatal injuries each year. That is because construction sites are often filled with potential hazards that can lead to serious injury or death. Safety planning can be considered in the scheduling stage for early detection, including identification of a hazardous location, and schedule for

implementation of protective safety equipment. Construction sites, unlike other production facilities, undergo changes in topography, topology and work conditions throughout the duration of the projects. These features make managing construction site-safety more difficult than managing safety in manufacturing plants. Mostly in construction, a different approach is needed to identify hazards and risks, increase safety and prevent accidents. The employee is responsible for reporting any defects in the workplace or on any of the equipment that is being used. A workplace inspection is a critical part of a comprehensive safety and health program in which the workplace is examined closely on a regular basis for the purpose of:

Identifying and recording potential and actual hazards associated with buildings, equipment, environment, and processes.

Identifying hazards which require immediate attention.

Ensuring that existing hazard controls are functioning and recommending corrective action.