

SAFETY PERFORMANCE IN CONSTRUCTION INDUSTRIES

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Abstract -

The construction industry is one of the oldest and one of the most dangerous industries worldwide from the ancient. It is unskilled labor intensive and requires movement of materials and machinery within a confined area, leading to a high level of safety hazards. In our country, the construction industry is considered a major contributor to work related accidents. The present record of safety measures within the construction companies is leading to a high rate of accidents. The private companies of the construction industry is seems to be the primary source of these accidents, specifically in small- to large-sized projects. This study aims to investigate the safety performance of small- to medium-sized construction projects in the private sector of around white field in Bengalure. The research investigates a number of safety aspects under four groups: 1) general- site; 2) worker's personal protective equipment (PPE); 3) heights and fall protection; 4) and excavation. The findings suggest that there is an immediate need for the improvement of safety performance in the construction industry .Number of recommendations that can assist in the enhancement the industry are proposed.

Key Words:

Construction, Safety, Observation, MSDS,OSHA

1. INTRODUCTION

The construction industry has been highest-risk industries [1]. But, unfortunately this has not been changed in the society, where the construction workplace is still recognized as one of the highest-risk occupational locations [2]. In spite of substantial changes in safety through the years, the rate of accidents is in the highest el in the construction industry [3].the number of accidents in the construction industry is highest than any other industry. This is also the case in many Asian countries/ worldwide. In USA, efforts are made to reduce the risks of injuries and illness in the construction industry, still considered one of the most dangerous industries in the USA.

The construction industry is also considered a major economic force and one of the most hazardous industries.

The total number of work related accidents in 2014 was about 74,241 accidents. The construction industry accounted for more than 60% of these accidents [4]. This could be due to many factors related specifically to the

construction safety, e.g., At construction areas are known for being continuous with a constant changing working environment [1, 3, 8-10and also it is normal to have a different teams working in the same area of the construction site on a different areas and changing as the project proceeds [3]. This may fact that, the workers are not from the same background and working in the same place might be cause for hazards. Furthermore there will be different contractors and subcontractors in the same construction site will requires coordination with them; otherwise it may lead to increased risk of incidents [1]. One more major contributing factor could be the very low safety thinking on construction sites. Poor safety is the primary causes for the risk of workers facing work-related injuries or even permanent disability or fatality [11]. Most of the employees don't like safety rules as they think it makes their lives more complex and delay there works. [10], The numbers accidents are increasing due to the hazards at the workplace. A large number of activities that are carried throughout the day during the early stages of construction are potentially hazardous to the safety and health of workers [3]. The hazard might cause physical damage, long-term illnesses [6] or death

1. MANAGEMENT OF SAFETY IN ACCIDENTS

The most common factor for accidents to occur in work place is the hazards that are generated in the workplace area. The unsafe condition must be managed through proper implementation of safety rules and guidelines to avoid these hazard. The following terms are important to understand the bond between hazard, risk, and harm.A may occur due to unsafe Act or Unsafe condition. hazard can be stated as anything that may have the potential to harm people or property. [15-17]. Secondly, a risk can be is termed as the possible or likelihood that hazard may harm people or property. [15-17]. Thirdly, harm is the product of a hazard or risk that occurring and causing damage to person It is know that before occurrence of any incident of hazard that harms a person, many near miss events occur first then the incident. [15].When ever near miss occurs it must be analysed and the employees must inform to SHE department the sequence of events to control the risk of a hazard [15]. The most hazards in the construction site include: falls from height, safety horn not tied properly or not wearing, sliding of earth while excavation and causing injuries, tripping or slippery due to a wet condition, falling objects, road accident inside the site by movements of construction equipments or heavy loads, untrained and lack of knowledge employees

working confined spaces, using wrong hand tool, or commonly use grinding wheel for cutting and it may lead to very serious injury or even fatality, mask not using and dust inhalation, lack of knowledge on material handling, lack of training on handling of dangerous substances and radiation(MSDS not reading or not know), exposure to low frequency or high frequency of noise and vibration from machinery or hand drilling equipments. These are the some of the potential hazards must be taken care by HSE personnel at construction sites for the safety and welfare of workers and visitors.

Top management performance will be measured by HSE performance. Any failure in safety mainly due to project managers' lack safety awareness, lack of training, risk operations, and lack of safety resources and thinking additional project cost.[7]. Good assessment and planning must be made for activities before starting the work and the protection to affecting parties should be sought out well in advance before any dangerous work are anticipated or starting. Before start of work, hazard analysis must be done as safety planning. It will eliminate or reduce the chances of hazard occurrence.. Occupational health and safety methods are should be included in the Factories Act and Rules, guidelines for good practice consideration, incident investigation and inspections, Safety audits,OSHA systems, and personal behaviour analysis. Guidelines must be set by central and state governments that can legally enforce them to ensure penalties for none-compliance. [9]. The standards must be acceptable and followed as a whole [9]. Legislation must also be fair for the workers in the site so they can implement easily. Top management thinks not to considering safety measures at site is cost. Management people do not feel that it is one of the main criteria for the success of the project .

OSHA summarizes a number of causes that influence safety (1) Lack of work knowledge and safety; (2) size of company; (3) lack of coordination; (4) cost-effectiveness and pressure; (5) lack of data; (6) poor communications; (7) workers' not involvement in safety matters; (8) constantly changing worksites; (9) workers' specializations; (10) workers are not provided protection at workplace; (11) Lack of training and worker fatigue; (12) unscientific equipment selection, use, or inspection; (13) lack safety awareness programme ; (14) nonavailability of prevention/protection equipments; (15) distance between construction jobs; and (16) workers face health risks and the fear of not having a regular pay check.

2. RESEARCH METHOD

The maximum accidents occur in construction industry than any industry in India and main cause is hazardous work involvement, triggering many work related injuries and partial or permanent disability and fatality. The main study OSHA performance. The causes for the high incident due to hazard existence in the construction industry. In this study, designed to know the understanding of safety in the building industry in an exploratory matter. Small, medium, large-size construction

sites in the private building sector are emphasized, where minimum measures of safety and its guidelines and procedures are followed. This study was focused on 1) management of safety in accidents 2) research method and 3) conclusions & recommendations. These steps were made to fulfil the objectives: 1. To know the status of safety performance in the construction sites 2. To the uplift of safety performance .For example, study was used for the data collection to determine the risk factors that affect scaffolding worker working in the construction sites. A total of 50 random samples at construction industries were visited by the team, for more than of three full month. The visits were done from February to April while construction was in full working hours. The observational were made as per OSHA guidelines.

Table - Safety aspects

Safety aspects			
Safety aspect	Sites	Frequency	%
Availability of safety signs and boards and emergency contacts	50	5	10
Good housekeeping	50	5	10
Sufficient working area	50	10	20
No loose electric cables on ground	50	20	40
Availability of fire extinguisher	50	5	10
Materials are safely stored and secured	50	5	10
B) Workers' PPE Workers wearing safety glasses	50	20	40
Workers wearing hand gloves	50	10	20
Workers wearing safety boots	50	40	80
Workers wearing safety helmets	50	20	40
Workers wearing appropriate clothing	50	5	2.5
C) Heights and fall protection Safety harness for workers fall protection	50	20	10
Openings on floors and roofs covered and protected	50	45	90
Availability of protection against falling objects	50	20	40
Stable and safely secured scaffoldings	50	10	20
E) Excavation Safe access / exists in excavations	50	5	10
Covered and fenced holes and piles in excavations	50	10	20
Safe distance of materials and equipment from excavation edge	50	10	20

3. CONCLUSIONS & RECOMMENDATIONS

The study OSHA performance of the construction industry focusing on small- to medium-sized construction sites in the private and software construction sector. The data were collected from 50 different construction sites. The industry has a poor safety performance due to the lack of knowledge and experience on existence of many dangerous hazards on the work site. Team was given to five groups of safety aspects. Very few positive safety aspects were also found at construction sites, but all other different safety aspect indicated low safety performance, with an urgent need for immediate improvement in safety practices. Out of the safety aspects in this study, six were not observed in any of the 50 construction sites studied: (1) emergency procedure plan; (2) availability of extinguisher; (3) workers wearing ear plugs, safety goggles and nose masks; (4) fall protection for workers and (5) availability of bank's men machinery. Some of these aspects were not considered in construction sites and they are most neglected by project managers and project directors. Many important safety aspects were had limited present in construction industry. For example, safety signs and boards not displaced and also contact numbers in case of emergency. Very important to avoid accidents is good housekeeping which was also not there. Access were not clear for door and working area was congested. There was no area earmarked for storage of materials and some of them are kept on floor without any planks. One more important thing was electric cables were having many joints, improper insulation and also over loaded at construction sites which causes very dangerous hazard on site. Protection or security at site was not maintained properly. Employees using of PPE was very less. At working in the heights guard rails or warning tapes were available only at few places. Lift ducts were left uncovered or no hard barricade was used. Very serious issues was scaffoldings erected were not checked by competent person and scaffolders were untrained in the profession. Many scaffold used were damaged and it was built unscientific with the potential to collapse. The cranes moving in site without banksman and boom were left open and moving in the public in many locations which leads to serious incident and even it may lead to toppling of cranes. Tripping hazard were common due to the bad house keeping and temporary stairs is only a limited number with no hard handrail. Drivers of moving equipments were not wearing seat. They are not knowing importance of seat belts. When ever cranes were in operation in many instances outriggers were used or open. The crane operators were under impression they are lifting small weight and opening & closing of outer riggers are time consuming. Further one more, machinery were left over at sites only in working area and there was no rules that they must park in a secure space when not in use. At the excavation site side slopes were not maintained and vertical cuts were done, road constructed for movement of vehicle was very steep and moment of

trucks were very difficult. Foundation opening were not secured by hard barricading. Workers were moving carrying long steel bars without any proper protection and also they were carrying excess load to long distance. This is also one more hazard to individuals, other employees or machinery. Finally, safety awareness implementation and good working condition can start from the government level. The author recommends the following for safety performance in the construction industry:

- Adhere OSHA guidelines for the construction industry by enforceable law,
- Dedicated Factory Inspectors or NGO's for inspecting and monitoring of construction sites and enforcing law,
- CII to conduct Contractors meetings and workshops involving different construction stakeholders to discuss safety issues related to construction,
- Promote the good manufacturing process throughout the lifecycle of buildings,
- Organise OSHA training courses by recognized institutions,
- Impose the OSHA certification to construction project,

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