

## Construction Site Safety Management: Risk Assessment and Preventive Measures

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### ABSTRACT

Today, the issue of safety management is keenly required to handle on construction site as a prime requirement. Though, the accidents are going to happen in a large scale. it is observed that about 98% of accidents on site can avoided but remaining 2 % accidents are unavoidable.

### INDEX

Sr. no.	Contents	Page no.
1	Introduction	1
2	Need	2
3	Literature Review	3
4	Step 1-Preconstruction Stage	4
5	Stage 2- During Construction	5
6	Stage 3- Post Construction	7
7	Problem Statement	8
8	Methodology	9
9	Conclusion	10
10	References	11

### INTRODUCTION

Today, the issue of safety management is keenly required to handle on construction site as a prime requirement. Though, the accidents are going to happen in a large scale. it is observed that about 98% of accidents on site can avoided but remaining 2 % accidents are unavoidable.

As a matter of fact, the construction industry contributes in a significant proportion of economic and social aspects. However, it is also considered to be the most hazardous industry in terms of personnel safety and health. Large amount of pollution and at the same time death of workers on site during execution had demoted the construction industry. Therefore, it is very important to enhance the safety management on construction site.

A common approach should be planned for prevention of construction accident is to predict the upcoming event under given circumstances. The accuracy of such predictions is based on the knowledge about past accidents. It has been proved that the main reason for the accidents in the construction industry are resulted from the unique nature of the industry, human behavior, difficult work site conditions and poor safety management which results in unsafe work method.

Development of safety for personnel in construction environment is recognized as a major factor of tranquility of staff and should be adhere precisely in accordance with safety regulations. Despite the mechanization, the construction industry is still based on labor intensive, while working environments are often changing and include several different parties. The construction workers are one of the most vulnerable members in a project and are faced with a wide variety of hazardous during their work.

### NEED

#### Present Status

More than fifty million labors appointed on construction site every year, still workers are hired for work which shows their present social, economic, political status. In actual sense, workers are never offered permanency in an industry for work. They have to keep on searching for job after completion of a project. Worst situation is that in India, 20% of accidents are due to occupational benefits. There is no social security for their families left behind. This worst situation drags us to work for the enhancement of safety management of workers in construction industry

Nowadays, statistics of accidents in construction industry encourage researchers to find new way for improving or enhancing safety performance in construction industry. Furthermore, both of direct and indirect cost of accidents adds more expense to construction projects that are because of improper safety performance on construction site.

## LITERATURE REVIEW

*Enhancement of safety performance at construction site by (2012 ArifCharehzehi,AlirezaAhankoob)international journal of advances in Engineering and technology IJAET)*

In this paper, many factors are involved in the accident occurrence at construction site. Some important element that create a significant portion of accidents include: safety management error, poor training programs, human element, act of god, inevitable, but the occurrence of largest part can be prevented. therefore, for improving the safety in a project each of this items should be analyzed at a practical approach introduced.

*Improving construction efficiency and productivity with modular construction: the modular building institute 944 glen wood station lane, suite 240 Charlotte esville, VA22901USA*

In this paper, a modular technology is given which reduces the difficult task to perform causing accidents hence “Greater use of prefabrication, preassembly, modularization, and off site fabrication techniques and processes will help in safety management”. Maximum numbers of member are prepared off site locations and are assembled on site.

*technology and skills in the construction industry-clare vokesand jenifer brennan:pye Tait consulting*

In this paper, intelligence of workers is rated for using skills and safety performance. While performing as well as knowledge of laws for workers vary keenly. As a result, advance construction technology can also be proving beneficial for big projects only if they are treated well.

## STAGE 1- PRE-CONSTRUCTION

### Training strategy:

It is clear that training has exclusively contributing role in defining management practices to enhance safety performance. Providing regular training sessions increases the awareness of employees about hazardous tasks .On other hand, the safety training is very useful as it allows employees to predict future accidents.

In order to improve quality of safety and health in large scale, the management level should consider a stalemate and comprehensive safety approach at construction site .These approaches should be clearly explained by specific procedure for each hazardous activity which has been identified in design stage. The process should be clear and understandable foe every one.

Moreover, the organization should held safety and healthy training new employees. This strategy will put orientation of and organization in preventive process. Workers who are properly trained would make a correct decision in deal with incident associated with work place. With the aim of training the organization can prevent from accident and injuries as it informs there employees about adherence to safety regulations.

### personnel selection:

The concept of accident has roots in personal behavior. Some employees are more accident prone than others while some other employees has a preventive attitude towards accident. Certain variables have identified by researchers such as: personnel miss match, social deviances, and impulsive behavior, family stability, alcohol and drug test that should be examined and analyzed in finding perspective employees.

For many years safety professionals have been aware that the majority of work place accidents are triggered by unsafe behaviors, and that their control is one of the keys to successful accident prevention. However, many organizations even those companies with low accident rate have been frustrated by their inability to control unsafe acts.

## STAGE 2: DURING CONSTRUCTION

The significance of the construction industry to the economic and social life of the country is noteworthy. The industry needs many investments and involves various types of stake holders and participants. From the point of view of safety the conditions normally encountered in the construction industry does not lend themselves to the degree of control, possible in other industries where more stable conditions are generally obtained. The construction industry is very large, complex and different from other industries and hence it is prone to numerous health hazards.

**providing safe equipment and tools:**

Use of safe machinery and facilities is essential to maintain the health and safety of site personnel. By the advent of technology in the construction industry, the design of machinery and plans has been improved. Technological interventions have resulted in automation and comprehensive facility redesign.

Although, this approach has reduced the large number of accidents, but at the same time it causes new type of accidents. For instants, new workers who are not familiar very well with the technology of the plans and facilities cause accident in construction projects. To overcome this problem new control techniques has been immersed in the form of emergency switch operated by workers to control the operation.

**prefabrication preassembly and modular construction:**

Construction workers typically are exposed to high levels of noise, dust and air borne particles, adverse weather conditions and other factors that can cause fatigue injuries and thereby reduce efficiency and productivity. New types of equipment’s can make an activity physically easier to perform, easier to control, more precise and safer from construction workers. Similarly, changes in materials can reduce the weight of construction components, which in turn can make them to easier to handle, move and install. Manufacturing building components offsite provides for more control conditions and allows more improved quality and precision in the fabrication of the component.

Prefabrication, preassembly, modularization, and off-site fabrication involves the assembly or fabrication of building system or components at off-site locations and plants. Once completed the system or components are shipped to a construction job site for installation at the appropriate time. One study that examined the relationship between changes in the material technology and construction productivity based on 100 construction related tasks found the following:

- 1) Labor productivity for the same activity increased by 30 percent where lighter materials are used
- 2) Labor productivity also improved when construction activities were performed using materials that were easier to install or were prefabricated.

**STAGE 3- AFTER CONSTRUCTION**

**reward policy**

To improve the safety culture in construction work place creating of reward system is necessary which runs parallel to safety education and training. On the other hand, the safety based on initiative program reinforces the reporting of accidents or any unsafe act that leads to an accident.

The policy within an organization should be based on the prevention of accident, not punishment after any accident take place. The rewarding system can be monetary (economic type) or job promotion.

**Job continuity policy:**

Most of the time, workers are left where they were before the project. Due to which workers remains jobless and this is major problem from civil Engineering construction industry. So the new workers are required to appoint on new project.

**CHAPTER 7) PROBLEM**

Sr. No.	Cause of accident	percentage
1	Fall of person	45
2	Fall of object	12
3	Carelessness during execution	10
4	Electrocution	9
5	Collapse of structure	3.5
6	Technical understanding	19.5

Construction in developing countries such as, India is more labor-intensive than that in in the developed areas of the globe. IN numerous developing countries such as India there is a significant difference between large and small contractors.

**CHAPTER 8) METHODOLOGY:**

The percentage of safety investment that was made by the companies is less and not defined clearly. The general types of accidents that commonly occur at construction site as observed by the respondents are sated below:

- 1) falling from height
- 2) failure of temporary structures
- 3) fall of objects
- 4) hit by object
- 5) electrocution
- 6) slippage
- 7) caught in between
- 8) collapse

Fallowing things are considered in method of reducing accidents in construction industry:

- 1) Using more prefabricated members for construction i.e. modularization which will promote the skills of work force avoiding accidental chances.
- 2) Advance construction techniques which provide outstanding labor market labor intelligence which helps business and people make the best choices from them.
- 3) Applying modern method of construction (MMC) which further promotes off-site fabrication which facilitates the easier construction process. In this method, modern techniques which encourage intelligence of workforce with respect to skills and safety performance.
- 4) Rating the workers talent with respect to skills and neatness in sense safe execution.
- 5) Using safety measures on site during construction. Prohibiting the child labors and drunken workers to perform on site

## CONCLUSION

To improve the safety performance, construction contractors are advised to:

- 1) Have an organizational safety policy for the proper administration of safety.
- 2) Provide formal safety training for their workers
- 3) conduct daily “tool box “ safety talks
- 4) Conduct weekly formal safety meetings at the project level
- 5) Always secure safety protection measures at the job site
- 6) always provide PPE to their workers
- 7) Always post safety signs and posters at the job site
- 8) Conduct weekly safety inspections
- 9) Reward workers foe their safe behavior
- 10) Panelize workers for their unsafe behavior
- 11) Encourage workers to make use of safety equipment’s
- 12) Reduce labor turnover rates to less than 25% Comply with article 85 of the 1996 labor law that sets the requirement of safety committees and minimum number of safety personnel

## REFERANCES

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