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STUDY ON SAFETY MANAGEMENT IMPLEMENTATION ON CONSTRUCTION SIGHT IN NASHIK REGION

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Abstract

The Indian construction industry is quite large and complex involving latest technology as well as man power. With the development of construction industry, drawbacks in terms of safety and health aspects are also witnessed. Construction projects engage large number of contractual workers. The workers in India come from diverse background especially from rural areas and agricultural background who do not have proper training in construction safety, also are not literate enough to forecast the unknown dangers. During execution at site, these workers are exposed to various risks involved in construction works and other occupational diseases and health hazards which cause injuries and illnesses. It is essential for any construction project to implement certain safety guidelines and procedure to be followed for site activities and to create awareness among the workers, site supervisor and engineers. To ensure that all safety factors are taken into account in design, construction, operation and maintenance process. Establish a procedure to identify hazards.Survey was conducted in Nashik region. Data is collected by questionnaire from Google form due to COVID-19 pandemic. The different architect's civil engineers, contractors, supervisors and owners have filled this form online.

The field data were obtained from a survey conducted among Engineers, contractors in Nashik Region, which resulted in a need for structuring and implementing a Proactive & Reactive Measures of Safety Management.The Awareness about Use of Personal Protective Equipment (PPE) found at satisfying level But, Need for More Focus towards the Implementation of Fundamental Principles of safety Management

Index term: construction management

Introduction

Construction in developing countries such as India is more labor-intensive work than that in the developed countries of the globe. In the present scenario, The Indian construction industry is quite large and complex involving latest technology as well as man power. With the development of construction industry, drawbacks in terms of safety and health aspects are also witnessed. As has been shown in different countries around the world, construction is among the most unsafe industries because of its unique nature. At present construction is the second largest activity, next to agriculture in India, which employes illiterate, semi-literate, migrant labors intensively. There is no established pragmatic method of screening workforce prior to deployment at construction sites. It makes unsafe Practice of Construction work and mistakes on sites resulting into accidents. Unfortunately, Accidents resulting into loss of life and limbs have been rampant. This makes construction safety management a herculean task.

In India, there is a significant difference between large and small contractors. Most of the large firms do have a safety policy on paper, but employees generally are not aware of it"s existence. Accidents as an unplanned and unexpected occurrence, which upsets a planned sequence of work ; are resulting to loss of production, injury to personnel, damage to plant and equipment And eventually interrupting production flow. Control measures as an act of limiting or making something to happen in a particular way, stop something from spreading, going out of hand or getting worse. Identify safety in construction as the process or way of protecting the health and life of those who build, operate, maintain and

demolish engineering works and others affected by those work. In the construction industry the possibility of a fatality is five times more likely than in a manufacturing industry, where as the risk of a major injury is two and a half times higher. Construction workers are not the only sufferers from accidents but also the public including children are affected. These accidents diminish the image of the construction industry.

Construction Industry in India is highly prone to hazards related to site activities .Construction projects engage large number of contractual workers

Objective of project

1. Assessing, the level of Safety Management Implementation on small as well as large construction Sites in Nashik Region.
2. Identifying and Analyzing, the most important factors that affects the safety performance in construction projects.
3. To Examine the frequency of usage of Preventive measures on Construction sites.
4. To Know the Causes of Accidents on Site. To propose suggestions to improve safety performance.

Literature review

Dheeraj Benny, D. Jaishree, (2017) [1] The aim of this work was to study the major safety provisions and also safety management procedures in construction sites. Different types of accidents occurring in construction sites and measures taken to control these accidents are also analyzed in this paper. Data was collected through various site visits, literature review and from various construction safety standards including BIS and OSHA (Occupational Safety and Health Administration). The paper was concluded after putting forward a set of recommendations for construction organizations to improve the occupational safety in the construction sites.

YOUSIF S. SAEED (2017) [2] The aim of this work was to examine, identify and evaluate the safety management in construction projects in U.K. to minimize and control health and safety (H&S) of construction workers. Questionnaire was used to collect a wide range of opinions from experienced professionals working in different construction sites for comparison between them. The designed questionnaire was sent to construction-related professionals as a list of questions. A large size of information collected from people .After that they compared the data. Study suggested that the organizations should be more take care about H&S of their construction teams to minimize construction risks to an acceptable value. Companies should prepare employees before starting construction work and provide them with relevant information to identify risks to avert risks on their Health and Safety.

Chandan Mehra et.al (2016) [3] This research paper illustratration of the present scenario of the labors working in the construction firms with respect to health and safety issues was explained. It gives the information about safety principles compared to the construction field ground reality based on daily routines at site. Lucidly, the safety professionals are required at site to take responsibility of the safety and health rules, regulations, acts and principle. Simultaneously creating attention among each other is very necessary is explained.

S.Kanchana et .al (2015)[4] This research paper depicts that even after various labor safety laws are available, the numerous accidents taking place at construction sites are continuing.

Management commitment towards health and safety of the workers is also lagging. A detailed literature study was carried out to understand the causes of accidents, preventive measures, and development of safe work environment. They take questionnaire survey. Which was distributed among various categories of construction workers in Kerala region .They examines and discusses in detail the total working hours, work shifts, nativity of the workers, number of accidents, and type of injuries taking place in small and large construction sites. After proper analysis they found that rate of occurrence of accidents on small construction sites is comparatively more than the large construction sites.

K.Mohammed et.al (2015**)** [5] The aim of this work was to examine the critical success factors which are responsible for the implementation of safety management in construction projects. This study was carried out by conducting questionnaire survey among the contractors and clients of various construction projects, for testing their experience in safety management system. Questionnaire survey was analyzed using SPSS software. The results of the study revealed that there are many safety problems in the construction industry, such as lack of knowledge about the necessity of earth connection for power tools and lack of knowledge about cables protect from mechanical damages. Furthermore, the study also proposes some recommendations for safety in construction industry.

T.Subramani et.al (2014) [6] The aim of this work was to examine safety management in the construction industry. Work was based on contractor Point of view study. Data collected from general contractors, who were involved in major types of construction. Collected data include information regarding organizational safety policy, safety training, safety meetings, safety equipment, safety inspections, safety incentives and penalties, workers‟ attitude towards safety, labor turnover rates and compliance with safety legislation. They concluded that due to heavy equipment, dangerous tools, and hazardous materials, all of which increase the potential for serious accidents and injuries. It is better to influence and enhance the sense of safety and the quality of the work environment.

Material and Methodology

IntroductionThe Focus of this research is to identify major problems in implementation of safety policy and guidelines in construction sites of Nashik region. Investigation regarding contactor view towards safety, workers behavior and response in implementation of safety guidelines, employer‟s attitude towards safety etc.

3.2 Fundamental Concept: Research methodology is a way to systematically solve the research problem and it shall identify the research basis, research questions and research analysis. Further more, research methodology as “the theory of how inquiry should proceed” that “involves analysis of the principles and procedures in a particular field of inquiry.” This involves the researcher‟s assumptions about the data collection methods and analysis strategy. This research was conducted and inquiries were made to identifying major problems in construction safety management, and their effects on construction Sector in Nashik Region.

3.3 Survey Study: The survey method involves collecting information from the target population, which is selected based on systematic and representative sampling methods by means of a standardized questionnaire administered identically to all the target respondents in the sample population. In this study, the questionnaire survey was used to obtain information about the identification of major construction safety guidelines & Protocols implementation problems, its causes and effects among parties which were participating in Nashik Region. Both close and open-ended questions were included in the questionnaire. The close-ended questions had a number of choices of possible answers and the respondents selected whatever they feel was most appropriate. Open-ended questions were incorporated with closed ended questions in places where the response options were relatively wide and not included in the questionnaire to specify their answers in specified data measurement of rating scale. In this research, the response of the questionnaire data was prepared based on the scale of percentage rating scale measurement of the agreement towards each statement. The reason to adopting this simple scale is as to provide simplicity for the respondent to answer and to make evaluation of collected data easier to evaluate; and to rank major integration problems as the objective of this research

Questionary Design ?

A detailed questionary is prepared and it will be asked to managers, site engineers, contractors and workers to collect the information.

Table 3.1- Questionary Survey

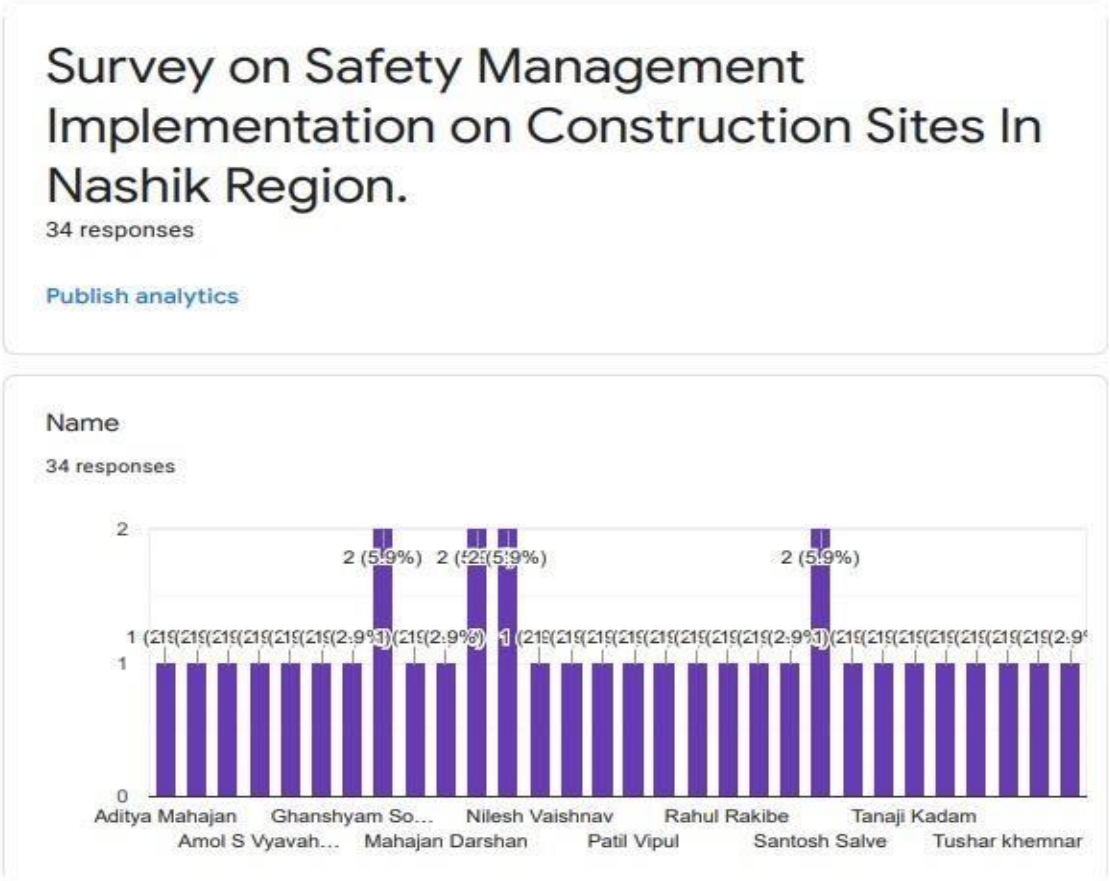
1. Safety policy?
2. Everyone aware of the contents of the safety policy?
3. Safety plans and safety procedures?
4. Safety organization?
5. Competent safety professional available at site?
6. Safety committee?
7. Employees given safety orientation?
8. Employees given specialized training where Needed?
9. Tool box talks regularly conducted?
10. Safety material displayed on the site?
11. Site safety instructions to various trades?
12. Method statements made for critical activities?
13. First aid center at site?
14. First Aid Centre equipped with the required medicines and accessories?
15. Qualified doctor/nurse available on site?
16. Any arrangement with hospital for emergency Treatment?
17. Team trained in emergency response procedures?
18. Workers aware of the emergency procedures?
19. Emergency telephone numbers displayed?
20. Emergency vehicle/ ambulance available on site?
21. Assembly points available?
22. Mock drills conducted at regular intervals?
23. Perimeter fencing arranged?
24. Access at the site entrances clearly visible?
25. Access wide enough to allow plant and personnel?
26. Sufficient lighting at the entrance?
27. Scrap dumps areas?
28. Special storage areas for petrol, flammable Materials, explosives etc…?
29. Access roads suitable for the movement of plant and vehicles?
30. Ambulance room/ emergency vehicle suitable Located?
31. Site kept neat and tidy?
32. Proper arrangement for regular collection and disposal of waste materials?
33. Walkways clearly defined and unobstructed?
34. Materials and equipments stored properly?
35. Local scrap yard provided?
36. Adequate lightings provided for work areas and Passages?
37. Toilets regularly cleaned?
38. Adequate water supply for sanitation?
39. An easy access to Electrical control panels, Fire Extinguishers, First Aid boxes etc…?
40. Everyone wearing safety shoes while on site?
41. Workers wearing suitable hand gloves while Handling rough objects, chemicals etc..?
42. Workers wearing full body safety harness while Working at heights?
43. Workers anchoring their safety harnesses?
44. Workers using suitable PPE as per the hazards?
45. PPE regularly inspected for their good condition?
46. Proper lifting accessories for manual handling provided?
47. Personnel using body mechanics when lifting and Carrying?
48. Porkers lifting proper weights?
49. Workmen trained in material handling?
50. Lifting and carrying accessories provided for Manual handling?
51. Materials stored in an orderly manner?
52. Proper flooring done with adequate load bearing capacity?
53. Adequate place for bulk storage of construction materials?

54. Stacks protected from collapse? Material protected from weather and rain?
55. Adequate ventilation?
56. Fire precautions taken where flammable materials Stored?
57. waste accumulating in hoist shafts, corners etc…?
58. Safe ash trays provided where smoking is allowed?
59. Electrical circuits free from overloaded?
60. Fire extinguishers available on site?
61. Flame cutting and welding taking place with proper fire precautions?
62. Site entrance always clear for fire engines to get In?
63. Trained persons to fight fire?
64. Method statement made for excavation?
65. Excavation permit taken where needed?
66. Excavations sloped/ step back or shored properly?
67. Safe access provided for vehicles in excavation area?
68. Excavated material kept 1m away from the edge of excavation?
69. Excavation edge free from falling material?
70. Excavations properly barricaded?
71. Dewatering done where needed in the pits?
72. Precautions taken against material falling on the persons working in the pits?
73. Adequate precautions taken against electrical hazards in the pits?
74. Adequate lighting in case of night work in the pits?
75. Excavations frequently inspected for cracks particularly after rains?
76. Entry of water into the pits checked and controlled?
77. Adequate precautions taken while removing the timber, supports etc..in side of pits?
78. Confined space free from toxic gases and oxygen deficiency?
79. Proper access for entry and exit confined space?
80. Gas test conducted in confined space ?
81. Confined space entry procedures followed?
82. Workmen trained to work inside confined space?
83. Register maintained to enter the names while entering and leaving the confined space?
84. Proper communication system for the person working inside the confined space?
85. Electrical installation made as per the load requirement?
86. Installation certified by a licensed supervisor?
87. ELCBs/ MCBs provided in the circuit?
88. Distribution boards protected from rain and water?
89. Cables protected from mechanical damages?
90. Insulations regularly inspected and records maintained?
91. Required fire extinguishers provided near the electrical panels?
92. Any artificial resuscitation charts displayed near electrical panels?
93. Execution and Controlling Stage (Level-2) Scaffolds designed as per the load requirement?
94. Scaffolds erected under the supervision of a trained person?
95. Scaffolds erected on level ground with proper sole boards and base plates?
96. Platform boards inspected and are in good condition?
97. Handrails, mid rails and toe boards fixed for the platforms?
98. Proper access to reach the platforms?
99. Scaffolds base to height ratio maintained at 1:4?
100. Scaffold permits taken before using?
101. Red / Green tags attached as per the conditions of the scaffolds?
102. Castor wheels of mobile scaffolds properly locked?
103. Good condition of welding cables ?
104. Lugs used for cable connection?
105. Welding transformers properly earthed?
106. Power cables and welding cables protected from mechanical damage?
107. Welders using welding hoods attached to safety helmets?
108. Welders using required PPE?
109. Temporary screens provided to protect others from welding rays, grinding sparks?
110. Fire precautions taken against the falling of welding sparks?
111. Gas cylinders stored properly in vertical position and secured?

112. False work has been designed by a competent person?
113. False work design been rechecked by the engineer concerned?
114. Any additional load on the false work due to plant and storage of materials?
115. Proper electrical connection for the vibrators?
116. Workers using PPE at the time of concreting?
117. Using Gum boots while working on wet concrete?
118. Proper walkway provided over the reinforcement bars?
119. Open edges properly barricaded wile false work?
120. Site specific fall protection plan in place?
121. Workers trained in the fall protection procedures?
122. Open edges and floor cut outs properly barricaded?
123. Staircases provided with temporary railings?
124. Workers using full body harness?
125. Workers anchored safety harness to a strong anchoring point?
126. Lifelines provided where anchoring points?
127. Fall arresters provided while climbing rope ladders?
128. Safety nets fixed where needed?
129. Hand tools in good working condition?
130. Tools stored in a proper manner?
131. Damaged tools removed from use?
132. Appropriate tools available for the job?
133. Grinding machines provided with guards over the wheels?
134. Are the power tools provided with earth connection?
135. Power tools handled properly?
136. Handles of the tools free from splits and cracks?
137. Vehicles inspected and the license is current?
138. Seat belts provided and are in use by the users?
139. All operators and drivers have valid licenses?
140. Speed limit boards displayed on the site?
141. Movements of vehicles controlled?
142. Parking brakes applied when vehicles not in use?
143. Vehicles properly covered while carrying loose materials Adequate precautions taken while removing damaged wheels and detachable flanges etc…?
144. Tyres pressure maintained at manufacturers recommendations?
145. Bench mounted drilling machines firmly secured to a strong and stable bench?
146. Drilling area bench firmly fixed to the floor?
147. The correct chuck key used and not left in the chuck of drilling machines?
148. The small work piece held in a vice or clamp?
149. Operators wearing fit clothing and gloves, etc.. While operating the machine?
150. Grinding machines wheels adequately guarded?
151. Precautions taken against flying fragments of disintegrated wheel?
152. Grinding machines wheels fitted as per the designed speed and correctly fitted on the spring wheel?
153. RPM clearly marked on the grinding machine?
154. Grinding machines surrounding area kept neat and tidy and free of obstructions?
155. Operators using PPE to protect against flying particles of grinding machines?
156. Guard over the circular saw?
157. Guard in place while working?
158. Riving knife provided to prevent kick back?
159. Area around the machine neat and tidy?
160. Wood shavings, dust and chips regularly cleared?
161. Good ventilation in wood working area?
162. An operator using required PPE wile wood working?

Result

This chapter is structured according to research objective and presents the findings. The analysis was carried out using graphical method, focusing on: construction Safety planning and management problems, causes of the problem and the effects .



Conclusion

This dissertation presented the relevance of Safety management as a process from the Initial Stage to execution of Work Stage.

The field data were obtained from a survey conducted among Engineers, contractors in Nashik Region, which resulted in a need for structuring and implementing a Proactive & Reactive Measures of Safety Management.

The Awareness about Use Of Personal Protective Equipments (PPE) found at satisfying level

But ,Need for More Focus towards the Implementation of Fundamental Principles of safety Management should be Given .

Maximum numbers of workers were native workers but migrant workers are ready to work for low wages & extra hours and at abnormal conditions.

Conversion should be done to get the workers away from addiction Safety management is implemented at Satisfying level in Midscale Organizations or MNC"S but focus towards the Small Scale organizations Should be Given.

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