iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** V **Month of publication:** May 2022

DOI: https://doi.org/10.22214/ijraset.2022.42682

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue V May 2022- Available at www.ijraset.com

Barriers to Safety Practices Adoption in Construction Projects

Vaibhav Khelwade[1], Ashish Ghadge[2], Amisha Parihar[3], Ritik Khobragde[4], Nikhil Rathod[5]
[1, 2, 3, 4]*UG Scholar, Department of Civil Engineering, G H Raisoni Institute of Engineering and Technology Nagpur, Maharashtra, India*
[5]*Asst, Professor, Department of Civil Engineering, G.H. Raisoni Institute of Engineering and Technology Nagpur, Maharashtra, India*

Abstract: ***Various factors affecting the construction and engineering industry for rising engineer's role in worker's safety. The practices regarding the safety of workers are identified and divided into five tasks that are used in current construction industries, reviewing their designs, creating design documents, assisting the owner in procuring construction, reviewing submittals, and inspecting work in progress. Over six hundred construction labour death occurred in the United States during the comprehensive years of 2004 to 2006 that were related to construction equipment and contact collisions.***
Keywords: Construction fatalities, Design Criteria, Five Task, Worker's death.

I. INTRODUCTION

The construction industry's safety has always been recorded poorly the industry remains one of the most dangerous to work in. Construction sites are generally defined as structured spaces consisting of multiple resources such as personnel, equipment, and materials that are involved in energetic work tasks.

"Engineers have an obligation for: Characterizing that safety and constructability are important considerations when qualifying construction plans and particular.

On November 3, 2003, ASCE's Construction Institute and OSHA signed a formal alliance that included the following text:

"OSHA and CI, therefore, agree to form an Alliance to use their collective expertise and share information and technical knowledge to promote safe and healthful working conditions for construction employees. Through this Alliance, OSHA and CI will work together to encourage employers to increase employee access to safety and health information and training resources, especially in the area of crane safety, and to incorporate safety and health issues into the construction/constructability process."

II. METHODOLOGY

A. Analysis of Barriers and Accident Causation.

When a barrier occurs, the barrier enters the triangle at its base and this is entitled a hazardous event. The hazardous events are represented by the interior area of the triangle; the severity of the event determines the "movement" up the triangle.

There are two facets to the control and management of construction hazards:

First, the prevention of hazardous events and, second, If the severity of hazards occurs limiting its potential. The second type is the precautionary control measure, which is depicted to restrict the movement of the hazardous event within the triangle.

B. Barriers to Improving Hazard Identification

A significant quantity of barriers to the projects investigated remained unidentified indicated by the above analysis. Based on the given assertion earlier in the paper that uncontrollable situations are provided by unidentified barriers concluding a substantial problem exists in the first step of the risk assessment process, entrenched on the above analysis, discussions, and also the Lengthened time spent on three construction projects with safety and construction management professionals.

Regarding the scope of this is that to improve the level of barrier identification the following exists:

1) Knowledge and Information Barriers

a) Lacking of information sharing across projects;
b) Lacking resources on smaller projects, e.g., industry publications, full-time safety department, etc.
c) Subjective nature of hazard identification and risk assessment.
d) Dependency upon implicit knowledge.

©IJRASET: All Rights are Reserved

2) Process and Procedures Barriers

a) Lack of standardized approach

b) Undefined structure for tasks and hazards.

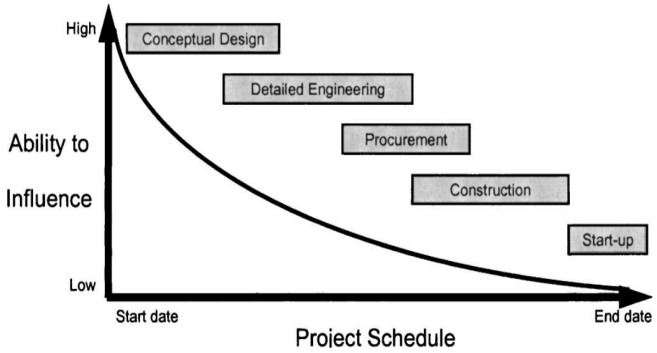


Fig Modified from szymberski [1]

C. Application of Practices

An intervention is supported by the hierarchy of controls common to the safety and health professions as designed construction safety which identifies designing to eliminate or avoid hazards as the preferable means for reducing risk. Recognizing the importance of construction safety. Compared to the efforts and resources necessary for its implementation The concept in practice will likely depend on the benefits received from designing for safety. An effort is aimed at linking the design for safety concept to Construction site injuries and fatalities.

D. Background on Camera Technology in Construction Management

The planning, monitoring, and control of all aspects of a construction project and the motivation to achieve the project objectives to the specified cost, schedule, quality, and safety is defined as Construction project management.

The project plan and project performance baseline defined at the project or work task initiation is against Monitoring and controlling including measuring the variables of ongoing project activities. To take corrective actions for Identifying and addressing the risks and issues requires project oversight and the approval of changes. In any construction project, measurable changes during execution require adjustment in planning or design of execution.

E. Framework for Managing Construction Safety

A framework is proposed for managing construction safety by project managers. The four main factors (policy, process, personnel, and incentive) and attendant factors are shown in this framework. The framework provides a holistic view of safety management and the project managers can use it to achieve and hence is different from other previous safety-related studies. As there is no such tool currently to help project managers manage safety on site this kind of framework is mainly useful for the construction industry. By ensuring that their construction sites comply with the core factors and variables identified in the framework Project managers can use this framework to improve construction safety.

F. Statistics of Injuries in the USA Construction Industry

The passing of the Occupational Safety and Health Act in 1970 has largely revised the performance development in construction safety. It has been assumed to be a direct response to the enforcement of the OSHA regulations for a few decades following the act. In recent years, however, the construction industry still continues a excessively high rate of work-related fatalities in comparison to other industries. The Centre for Construction Research and Training (CPWR) has disclosed the leading hazards that cause worker deaths in construction. As shown in Figure, 868 workers died from falls, which accounts for over one-third (35%) accidents in construction. The second, the third, and Fourth-leading hazards for construction accidents were transportation incidents (29%), contact with objects (17%), and risk to electric power (13%). Out of all fall related incidents in construction, 616 (or 71%) were laborers, roofers, foremen, carpenters, painters, among which roofers had the highest risk.



Fig. 2 Distribution of leading hazards that causes construction Fatalities.[2]

G. Factors Responsible for Construction fatal Injuries.

It is well known that the high incidence rate of accidents results from the inherent values of construction (Choudhry, & Fang, 2008). Given the hazardous nature of construction sites, studies have analysed various factors affecting the occurrence of construction accidents, which can be basically, grouped into worker factors. According to Moraru, Băbuț, & Cioca (2013), prevention of the unexpected accidents through understanding interdependencies of these variables is almost not possible, therefore many studies tried to clarify the accident causation models in terms of safety ability and workers' risk-taking behavior. Safety culture is the atmosphere created by shared beliefs, practices, and attitudes among workers towards safety in an organization and thus disturb characteristics of individual workers (Dedobbeleer, & Béland, 1998). It is a subset of, and clearly changed by, organizational culture (Center for Construction Research and Training, 2016). In contrast, the worker's risk-taking behaviors are behaviors with potentially negative out comes.

H. Safety Efforts By OSHA and NIOSH

As per the knowledge from the research works. understanding reasons of the accidents occurred in the construction site. The further promotion about the safety and techniques for construction site workers. The federal safety and health agency like a OSHA are popularized for safety measures.

The OSHA administration stands for the safety and health. an agency of the USA Department of Labour. And its responsible for improving the safety and health protection for the worker. On December 29, 1970, the (OSH) Act signed by the President Nixon for Occupational Safety and Health. This Act created by OSHA, in April 28, 1971. The mission of OSHA is to encourage for safe and healthy working conditions for working men and women including construction taskforce by setting up and enforcing standards and by providing training, outreach, education and assistance.

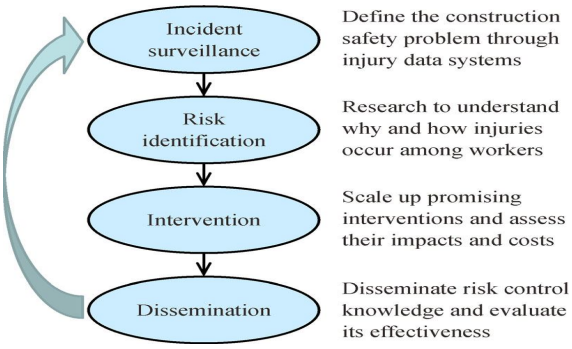


Fig. 3 NIOSH research focuses on construction safety .[10]

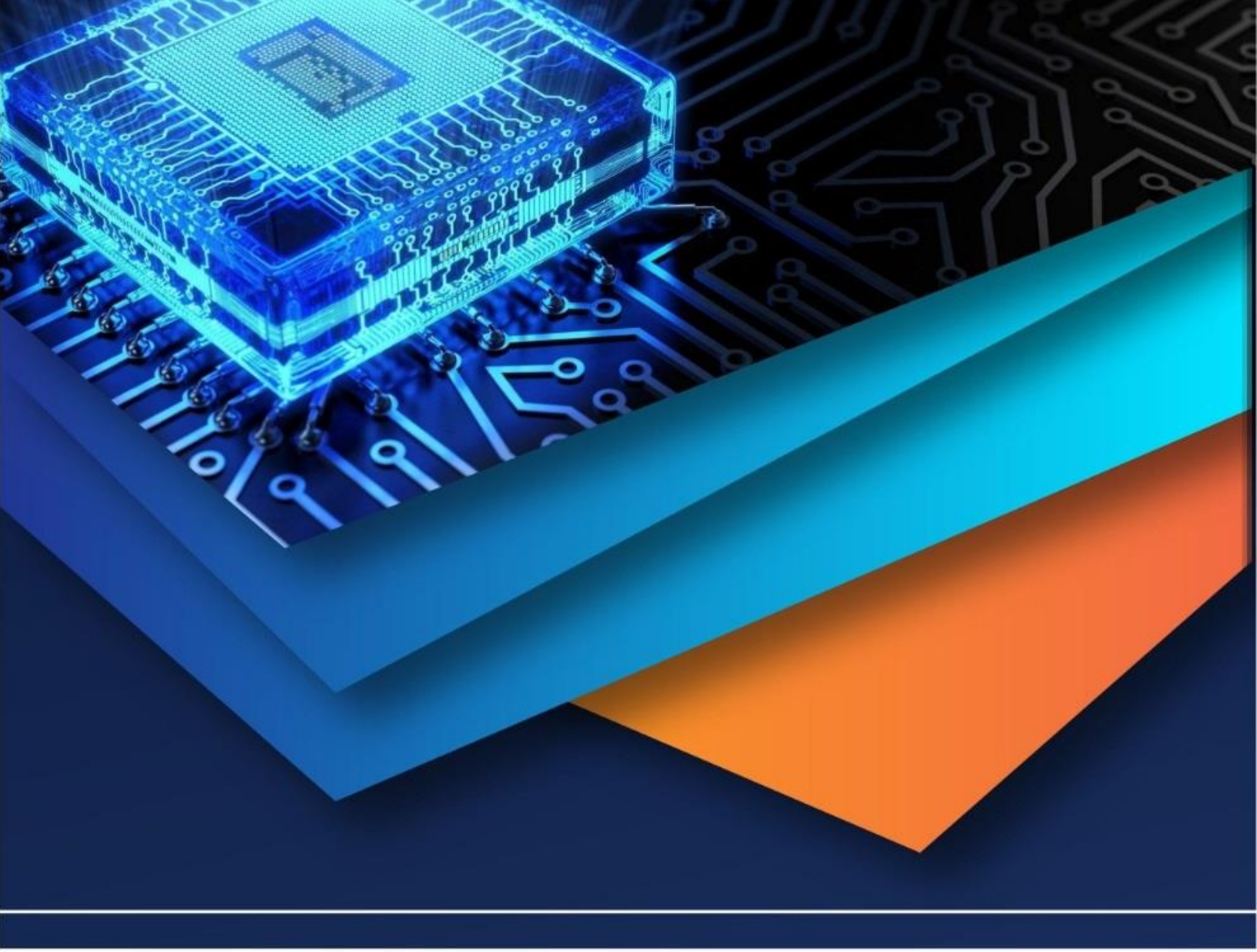
The OSH act of 1970 established the NIOSH, NIOSH are the part of USA Centers for Controlling the disease, in the department of health and human services. NIOSH is sole federal government organization charged with conducting occupational safety and health research. Its mission is to grow a new knowledge in the field of occupational safety and health and to transfer that knowledge into practice.

III. CONCLUSIONS

To help engineers produce method statements with higher levels of hazard identification is the purpose of this module. This is attained using a central safety database containing knowledge related to safety that exists within the organization altogether, that is construction tasks, hazards, and the relationships between them. When an engineer creates a construction method Total Safety will return all possible hazards associated with those tasks within that method. Based on the best available knowledge the engineer can then perform a risk assessment instead of existing procedures that rely upon implicit knowledge, subjective opinions, limited safety documentation, etc. To improve hazard identification there are two main types of barriers: Knowledge and information barriers, and process and procedure barriers. By utilizing the central safety database Total Safety overcomes the first barrier capable of containing the combined knowledge and experience of all personnel within the company, together with safety data from industry publications, project safety files, etc. By allowing the user to develop a construction method and perform a risk assessment in a structured and comprehensive manner The method statement development A module within Total-Safety by overcoming the second barrier with improved levels of hazard identification, method statements are the end result.

REFERENCES

[1] Szymberski, R. ~1997!. “Construction project planning.” TAPPI J.,80~11!, 69–74.
[2] Center for Construction Research and Training. (2013). The Construction Chart Book: The U.S. Construction Industry and Its Workers (5thed.). Silver Spring, MD: CPWR Center for Construction Research and Training. (2016). Third Quarter-fatal and nonfatal injuries among construction trades between2003 and 2014.
[3] Gambatese JA, Behm M, Rajendran S. Design’s role in construction accident causality and prevention: perspectives from an expert panel. Saf Sci. 2008;46(4):675–91.
[4] Finneran, A. and Gibb, A., W099 - Safety and Health in Construction Research Roadmap -Report for Consultation, CIB Publication 376, CIB General Secretariat, 2013.
[5] Gambatese, J. A. ~2003a!. “Pilot study of the viability of designing for construction worker safety.” Designing for Safety and Health in Construction: Proc. from a Research and Practice Symp., S. Hecker, J.
[6] Gambatese, and M. Weinstein, eds., University of Oregon Press, Eu-gene, Ore.
[7] Moore, J. R., & Wagner, J. P. (2014). Fatal events in residential roofing.Safety Science, 70, 262–269.
[8] Center for Construction Research and Training. (2016). Third Quarterz Fatal and nonfatal injuries among construction trades between2003 and 2014.
[9] Alarcón, L. F., Acuña, D., Diethelm, S., & Pellicer, E. (2016). Strategiesfor improving safety performance in construction firms. AccidentAnalysis and Prevention.
[10] NIOSH FACE Reports. (2015). Fatality Assessment and Control Evaluation (FACE) program reports. Retrieved from https://www.cdc.gov/niosh/face/inhouse.html
[11] Occupational Safety and Health Administration. (2010). OSHA at Forty:New challenges and new directions. Retrieved from https://www.osha.gov/as/opa/Michaels_vision.html
[12] Toellner, J. (2001). Improving safety and health performance: identifyingand measuring leading indicators. Professional Safety, 46, 42–47.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)