

Construction Safety Criteria Framework for Surat City

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Abstract: This study is focus on construction safety performance. Safety performance is defined as quality of safety related work. In this paper, In this paper first to identify the factor which effect on construction site safety by pilot study and field visit. Safety here is not occupational safety but within the worker safety, public safety, environment safety, property safety and construction site safety. This study deals about the safety performance measurement of various construction sites around Surat city through method of questionnaire survey and safety performance index method. The results of the study will reveal the safety level of construction site and also the factors which are all the reason for non-safety performance factor which effect on construction site. Furthermore, the study also proposes some recommendations for safer construction.

Key words: Safety performance; Construction site; Safety level

I. INTRODUCTION

In recent years the concept of safety culture has attracted considerable attention especially in the dangerous industries, such as the nuclear industry and off-shore oil industry. Evidently, construction accidents and the associated damage caused to the employees, property, equipment and morale have generated negative effects on the industry profitability and, to some extent, the industry productivity. Responding to this increased safety requirement generated by technology advancement, the industry control environment in developed countries has incorporated safety as an integral part in the regulatory framework. In the U.S.A., for instance, the workers compensation rates are a function of the loss experience of a contractor, and each labour hour is affected through the reflection of those losses in the experience modification rating (EMR). On one hand, a safe contractor can create a substantial competitive advantage through superior safe experience while, on the other hand, an unsafe contractor can be liable to pay huge penalties in terms of insurance. Safety, therefore, and the effects of its absence – accidents – is now a key cost driver for construction firms in such countries. Safe work experience is also becoming a business survival issue for them, as more and more owners are reluctant to permit contractors to bid work without acceptable EMRs. Thus, the most important step in controlling costs for contractors in these countries is to run safe construction projects. Hence the contractors are compelled to implement safety as their business strategy, which has led to recent improvements in global construction safety records.

The growth in the construction industry evidently reflects the level of economic development but its higher injury and fatality rate is quite alarming. The construction industry of India is employing 45 million of total labor force but its accident rate is still increase. Percentage of injuries or death, number of fatal occurs in sector and type of fatality in the construction industry from 2001 to 2011. Thus, the construction industry has turned out to be the second most injury prone industry after agriculture. Majority of accidents are caused by fall from height, explosion, fire, suffocation, collapse and causes of these accidents include; inadequate availability and training of fall protection system, and non-availability of suitable anchorage system.

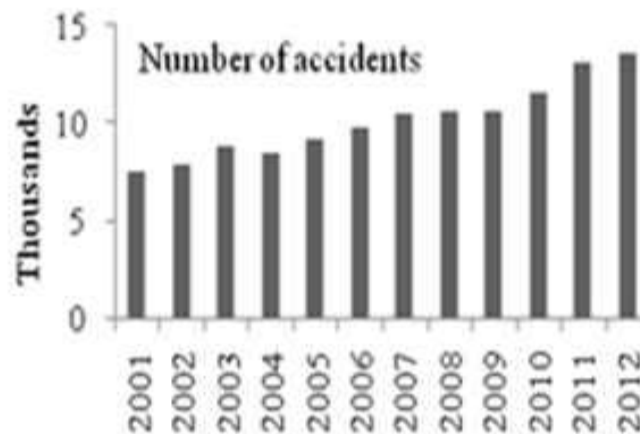


Fig.1. Number of fatal fall accidents in India (2001-2012) Source: Indian statistics year book 2001 to 2012

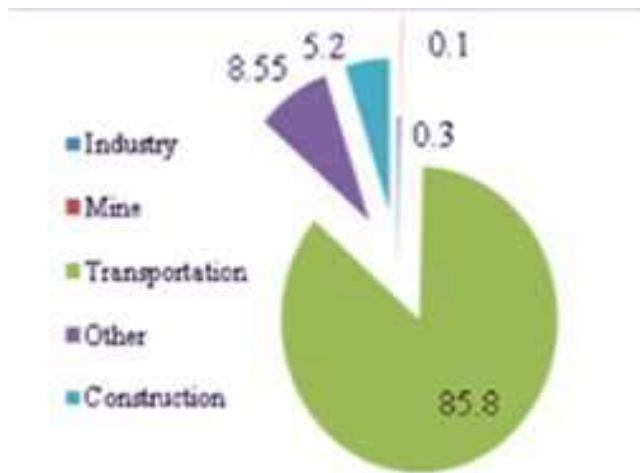


Fig.2. Number of fatal accidents based on sector (2012) Source: Indian statistics year book 2001 to 2012

Table.1 Types of accidents in construction industry

Type of construction accidents	Years	
	2011	2012
Fall from height	10483	11052
Explosion (Boiler, Gas cylinder, etc)	481	555
Fire	1401	1432
Electrocutions	8987	8839
Fall into Pit/Manhole, etc	2638	2480
Suffocations	3209	2063
Collapse	3284	3005
Total	30324	29185



Fig.3. Fatality Occurs During Construction

II. DEFINITIONS OF SAFETY

Safety has an indefinite number of definition depending upon their subjective evaluation and person using it. Safety is defined in a subjective and relative manner. It is a condition of being safe, freedom from danger or hazards, a keeping of oneself or others safe, especially from danger of accidents or disease.

- A definition that more concretely describes safety is “The surety that the environment that Personnel or items are subjected to, is free from inadvertent or unexpected events which may result in injury to personnel or damage to the items exposed”.

III. PILOT STUDY

After detail discussions and meetings with various experts of the field, we identify some of the criteria to improve safety performance of construction on-going projects. This criteria have relevant to the building and residential construction site as we know the huge amount of machinery, material and labor force is associated with the various construction project activities. These factors are been finalized with the help of some experts and their field exploration and knowledge.

- Management related factor
- Construction Site condition
- Worker safety
- Public safety
- Environment Safety
- Property Safety

IV. FACTOR IDENTIFY FOR SAFETY OF SITE

Table.2 FACTOR AFFECT CONSTRUCTION SAFETY

Sr.no	MANAGEMENT RELATED FACTOR
1	Safety engineer at site
2	Training program for the worker implement the job
3	Governmental Safety regulation
4	No enough rest time during the task
5	Correct tools/equipment provide for specific task
6	Safety Policy, Safety Meeting, Safety Inspection
7	Safety plan
WORKER SAFETY	
8	Use PPE
9	Safety tool
10	Limited working area
CONSTRUCTION SITE CONDITION	
11	Fence Protector And Safety Net
12	Housing Facility
13	First aid box
14	Fire Safety
15	Poor Illumination
16	Scaffolding, Ladder And Safety Tool
PUBLIC SAFETY	
17	Traffic problem
18	Provide barricade
19	Entry and exit at site
20	Security for visitor
21	Uncomfortable social life
22	Noise disturbance
23	Material transportation
24	Safety sign and Pedestrian detours
25	Cohesiveness among person
ENVIRONMENT SAFETY	
26	Noise pollution
27	Air pollution
28	Decrease surface water quality
29	Effect on soil and river
30	Eco system disturbance
PROPERTY SAFETY	
31	Provide warehouse
32	Check site, staircase, scaffolding
33	Placement of equipment
34	Placement of material
35	Transportation facility

V. CONCLUSION

The expected result of this study will reveal the factors which are the responsible for safety non- performance of construction firms and also the safety level of construction projects. To increase safety performance level of construction safety. This study will also create the safety management awareness to construction firms.

VI. REFERENCE

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