

# Study and Implementation Risk Assessment at Construction Site

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**Abstract:** This project work aims to study the risk assessment at the construction site. In olden days, the buildings constructed with the help of bulls and human resources. Construction was carried out with irregular shaped stones wetted with lime stones. Now a day, Machines are being used in the constructions. But due to the poor knowledge on the usage of machineries, the construction is carried out with the human recourses .The personals are unable to follow the safety measures. Hence many fatal accidents are reported. This study focuses to follow the safety measures at the construction site to minimize the risks and hazards at the site.

This work also collects the data of the accidents happened at the site, the causes of the accidents both at urban area and rural places and provides remedial measures to overcome such unwanted happenings in future.

**Index Terms:** Irregular Shaped, Lime Stones, Machineries, Safety Measures, Hazards, Accidents, Urban Area, Rural Places.

## I. INTRODUCTION

Constructing a new building or modifying or reconstructing or renovating a commercial buildings, houses consist of high level of hazards and risk to the labours and employees who are all committed to there. This project sounds on PPE's of workers like masons, carpenters, electricians, floor installers, insulation workers, maintenance workers, painters, plasters, fitters, sheet metal workers, operating engineers etc...

Site consist of different contract based labours periodically team of members were changed on the completion of their works and set of new contract team entered to start their new work but all those different contract teams are coordinated and scheduled by general contractor who took responsibilities for the whole project site.

This project site is renovated and re-modified as per the need of customer for the long term period of work hence due to long term site and employees are worked under different climatic conditions. Mostly labours are un-educated but they are highly skilled in this site and every individual has the basic safety knowledge and used safety clothing's and personal protective equipments.

This project also says about the present risk methods for understanding occupational health and safety risks and project says a challenge to get out sound risk assessment and communication. This study therefore seeks to answers the question on how health and safety are managed on building construction sites in developing city of Tamil Nadu. Hence project shows and says about the rich management of occupational health and safety risks in the construction management and risk management areas.

Thus the results will be more informative for who are all working on project construction management such as project supervisors, designers, project managers, construction managers, the procurement system, project investments, project insurances/actuarial perception, project economics, institutional and regulatory bodies concerning the practice of health and safety risk management.

## II. SITE RISK AND HAZARDS

Generally in our site five major challenges were found such as occupational risk, project risk, contractual risk, financial risk, natural risk

### OCCUPATIONAL RISKS

Where different injuries like temporary permanent leads because of actions made by machinery and man.

### PROJECT RISKS

In Project risks we found some intermediate management were not performing good and it leads to improper communication and it reacts in lack of information to the workers.

### CONTRACTUAL RISKS

Contractual risks consist of dissatisfaction between customer and site management because of non-punctual work completion.

### FINANCIAL RISKS

Financial risks were found because of late completion of project on account of this day to day market values an increased in the cost of materials and equipment.

### NATURAL RISKS

Natural risks are because of natural calamities and climatic conditions due to this site work shutdowns are held.

## III. OCCUPATIONAL RISKS

In occupational risk harmfulness may lead all top level workers to bottom level workers and in effective safety management level of risk will be low because primary hazards only exposed to the workers.

In following table nature of workers and nature of primary hazards are listed bellow for easy understanding about construction project safety hazard and classification made are based on Indian common standard and classified in the basis of standard occupational classification system.

Table.1 hazards with nature of workers

Nature of workers	Hazards
Brick masons	Heavy loads
Drywall installers	Heavy loads, plaster dusts
Stonemasons	Heavy loads
Electricians	Heavy loads, dry bricks and cement dust
Painters	Solvent vapours, toxic metals in pigments, paint additives, Awkward postures, heavy loads, working at heights
Structural metal installers	Awkward postures, heavy loads, working at heights
Demolition workers	Lead, dust, noise
Hazardous waste workers	Heat, stress

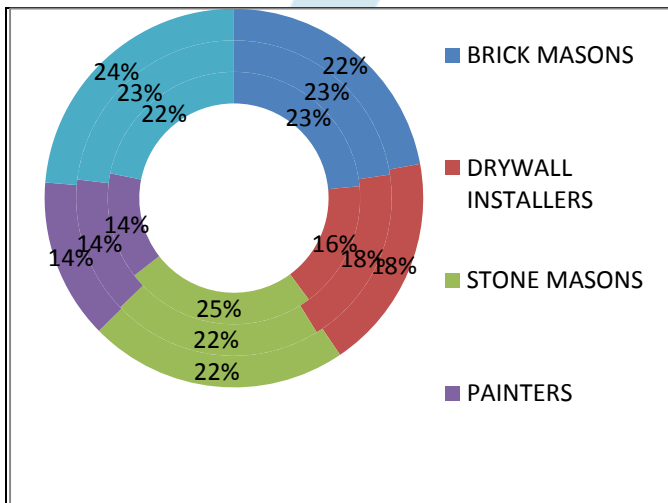


Chart.1 occupational risk of personals

Description	Event 1	Event2	Event 3
Brick Masons	4.3	4.5	4.2
Drywall Installers	3	3.7	3.5
Stone Masons	4.5	4.3	4.2
Painters	2.5	2.8	2.6
Structural Metal Installers	4	4.6	4.5

Table 2 Occupational Persons Vs Severity Rate

**IV.PROJECT RISKS**

All construction projects carry some level of risk. Being able to identify and manage risks requires skill, careful planning, and being able to make good decisions quickly. When risks become reality, they can be detrimental to the successful completion of your project. Properly managed risks can lead to higher profits, stronger relationships with clients, and the ability to grow and expand your business. Due to lack of proper subordinate level management staffs numerous problems are arising like improper plan of work execution, lack of strategy skills, communication gap between higher to lower management.

Figure 1.Reasons of Project Risk

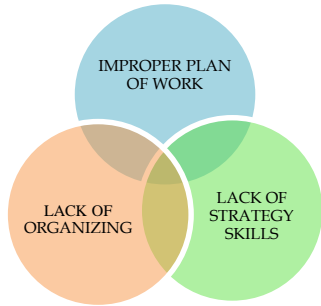


Figure 2. Improper Plan of Work Vs Lack of Strategy Skills



Figure 3. Improper Plan of Work Vs Lack of Organizing Skills



Figure 4. Lack of strategy skills vs. lack of organizing skills

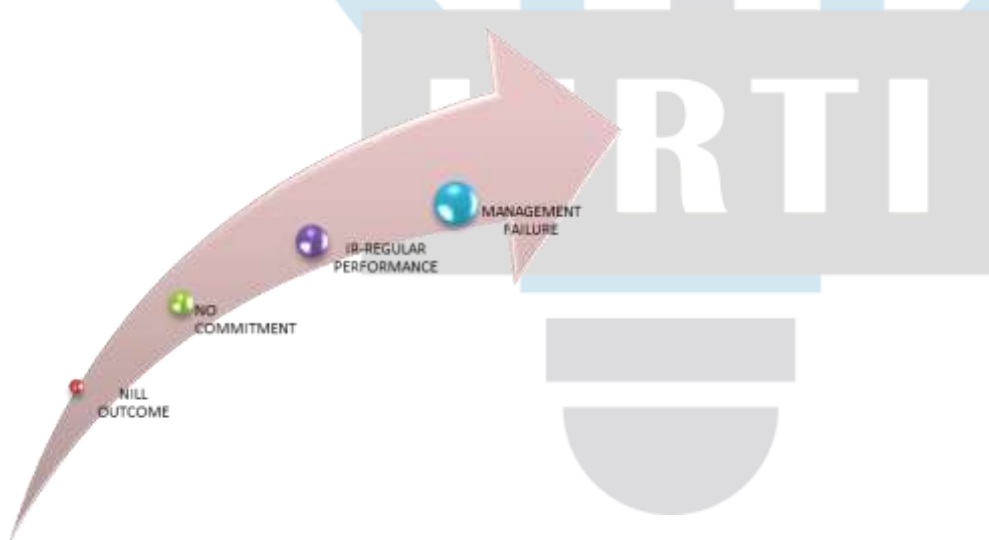


Figure 5 cause of management failure

**V. CONTRACTUAL RISKS**

Most commonly in site project for now a day's construction without contract is very rare to see, most probably project are carried out by contract and sub contract subordinates.

In common contract organization were classified by following methods



Figure.6 Contract Organization

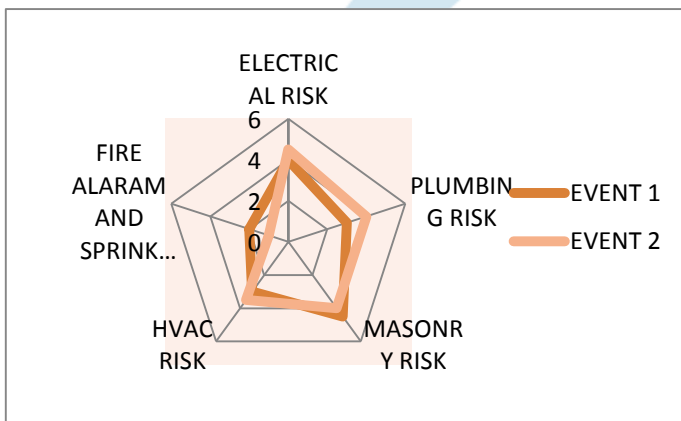


Chart.2 Contractual Risk Plotting

Risk	Event 1	Event 2
Electrical risk	4	4.5
Plumbing risk	3	4
Masonry risk	4.5	4
Hvac risk	3	3.5
Fire alarm and sprinkler risk	2	1

Table.3 Occupational Persons Vs Severity Rate

**VI.FINANCIAL RISKS**

Main cause of financial risk is due to change of market value like cement, bricks, and steels, paint, carpentry items etc.,



Figure.7 Causes of Financial Risk

**VII CONCLUSION**

From detail analysis and from collected data, two major risks were founded one is contractual risk and another is project risk and some minor risks were also founded like financial risks, Natural risks and occupational risk. For each risk needed data's were collected and analyzed based on those data's risk were separated major and minor once the reference of severity rate.

By safety management system (SMS) some remedies and actions were taken to overcome accidents and risk to ensure 100% safety of the site and personals employed there.

Due to the COVID-19 period some extra safety precautions were also carried throughout the working period.

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