

# Quality Control and Management in Construction

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**Abstract:** The purpose of a research paper is to find out the knowledge of quality control and management and its impact. Construction has a wide role in the advancement in any area Project and manager will be responsible for the quality control. In the Quality control circle have been found a simple technique TQM and implemented in the industry. If there is no quality control, then there will be no benefit of economic. Quality management helps to pretend the safety accidents occur during the site, analysis of the quality, and improve the quality measure in the project.

**Keywords:** Quality control, Quality planning, Quality assurance

## 1. Introduction

Construction projects increase day by day and create interest in the public and private sectors. Construction plays the important role in the growth of the country it is the largest contribution to the GDP of the country. It provides employment and provides growth in the area. It also increases the growth in other sectors like cement, bitumen, steel, chemical, brick, etc. Although it is used in deferent sectors also so it is most important to all the sectors and increases the development of the area.

### A. Study on Quality

In the construction industry, many management organizations are being challenged. The clients are moving forward to the service quality, faster building & new technology these are the main factors affects and concentrate the clients and quality, cost and time also consider. For the project quality cost and time, these all are an important factor for the project.

In the project Quality tools are used like benchmarking, flowcharting cost and time analysis, quality cost, an inspection of project control chart, etc., these all are the tool which is used to control the project.

Factors used to improve the quality:

- Fulfill the condition of the contract
- Time of completions
- Follow the owner requirement
- Make the project economical

### B. Term Used

#### 1) Quality

Quality is the degree of excellence this performance will be

attained when the activity fulfills the requirement of the owner. Achieving quality in the construction industry is the main problem. If there is no quality, then it will affect the loss of time and cost in the project.

#### 2) Quality Assurance

In quality assurance, the evolution of the project is done on the regular basis to achieve the quality standard in the project.

#### 3) Quality control

It is the most important in the project to control the quality of the project. In this American national standard institute and ISO define quality control.

#### 4) Quality Management

Quality management refers to all the activities done by all the members of the organization. Quality management determines the quality policy objectives and the responsibility of all the members.

#### 5) Quality Planning

in quality planning, it is used which type of quality standard is relevant to the project and how it will satisfy the quality standard.

### C. Techniques Use to Improve the Quality

There are lots of techniques to improve the quality of the project.

- Histogram: it is the graphical representation of the individual measured data.
- Pareto chart: it is the graph that indicates the defects as well as impact. A Pareto chart is used to find the defects and observe the overall improvement.
- Scattered diagram: It is the relationship between two variables in the scatted diagram.
- PDCA: it is the 4 step method for the business to control and continuous improvement in the processes.

### D. Purpose of Work

- To determine the quality, quality control, and quality management in construction.
- To find out the quality control in the view of the engineers.
- To find out the impact of quality control in construction.

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## 2. Literature Review

1. Quality control circle and performance on the construction industry by OFILA IRHAMNA, suggest that quality is a key element that cannot be ignored in the construction industry. If the quality management policy is not implemented, then this will decrease the potential of a construction company. This paper aims to influence the construction industry and increase the performance in the industry.
2. Study of construction quality control of urban complex project based on BIM reported by Junying Lou suggests that BIM information will help lots of quality protection to ensure the quality standard.
3. Quality control and Quality assurance in the building construction by R Laxmi, the purpose of a thesis is to evaluate the use of quality function development as a management tool QFD was developed and improve the quality and lower the cost of the industry.
4. The necessity of quality control in the construction Industry reported by AMIT A MAHADIK suggest that Quality management is to use to increase the results in all the activities like engineering, manufacturing, etc. it aims to improve quality and satisfied the customer.

## 3. Methodology

Identifying the factors that to be considered in the quality control.

- Prepare the questions based on the literature study.
- Question survey and interview with engineer's contractors and laborers.
- Explain the practical suggestions for upgrading the construction.
- Conclusions were to be noted and future needs to be suggested.

Flowchart:

|                   |
|-------------------|
| Introduction      |
| Literature review |
| Methodology       |
| Site visit        |
| Data collection   |
| Analyzing data    |
| conclusion        |

## 4. Inspection and Quality Control

### A. Need for inspection and Quality control

Quality is most important to all projects. The quality of the project is to be maintained as per the project specifications

If the quality of the project is high, then it helps to the satisfaction of the owner. The construction sector demands high-quality engineers.

### B. Principle of Inspection

Inspection is most important in the project to increase the quality of the project. Inspection means checking material and products in all stages of construction. It is done to some pre-defined standard to detect the faulty product or material in the construction. If we got some fault, then learn from the

experience. Quality control is a very wide term that involves various stages.

*Effects due to poor Quality Control:*

| Cause  | Precaution  |
|--|---|
| Ponding of water taking place in a slab                        | It affects due to insufficient slope in the slab.   |
| Cracks appearing in the structure                              | Cracks in the member should be sealed so that corrosion does not occur in the reinforcement.  |
| Peeling off of plaster   | Plastering of the surface should be done in peeling area.                                     |
| Rupture showing in the wall                                    | Providing with stones reinforcement bars going along the thickness of the wall.               |
| Leakage due to water tank                                      | Leakage of water from the tank should be arrested.  |
| Falling hazards due to parapet wall and water tanks at the top | Parapet wall should be repaired to give them added strength.                                  |
| Seepage from the water tank walls                              | The walls of water tanks should be repaired and provide reinforcement treatment on the walls. |
| Efflorescence in walls   | It is done due to seepage in the walls.   |
| Seepage at the top of the mummy slab                           | Mumty should be repaired to avoid ponding of water.   |

## 5. Quality and Safety Policy

### A. Quality Policy

- Leadership: It is important for the effectiveness of the process in the quality policy achievement of the quality objective.
- Customer focus: It must consider to enhance the satisfaction level of the customer by understanding and meeting their current and future needs.
- Planning and monitoring: It must commit operations with appropriate work with risk identifying and optimizing resources.
- Continuous improvement: It must ensure to enhance the quality of the performance of our deliverables. And identifying the improvement of the opportunities through learning.

### B. Safety Policy

- Regularly communicating educating or training on safety, health.
- Ensure high standards of health and safety at the site during construction.
- Check out the EHS performance and employees and contractors against the EHS requirement.
- Conducting audit and risk management by a competent team.

### 6. Data Analysis

#### A. Analysis by the Engineers

##### 1) Factors affecting quality

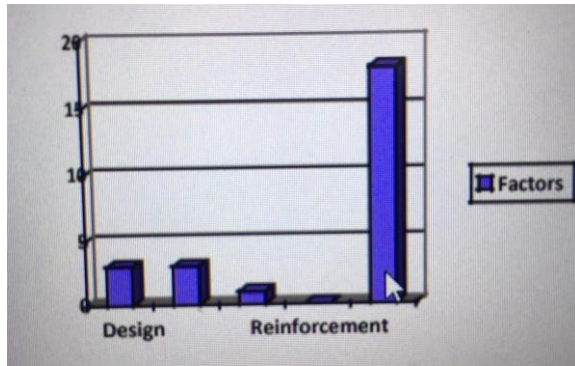


Fig. 1. Responds for factor

In the above graph, the factors represent the quality effects. The workmanship factor is one of the most affected the quality in the construction.

##### 2) Quality tools

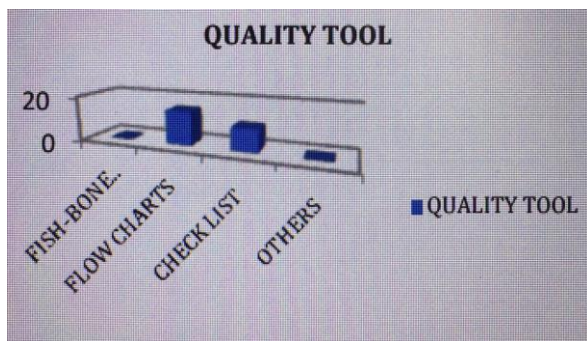


Fig. 2. Responds for quality tools

The above graph it is mentioned the purpose of the organization when the analysis is done they follow the flow charts for the procedure.

##### 3) Quality control measures

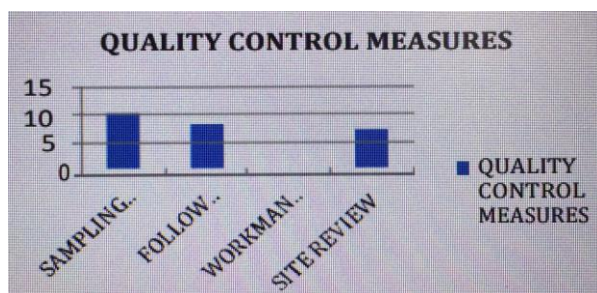


Fig. 3. Responds for quality control measure

In the above graph, the quality tools are mentioned most of the organizations follow the sampling and testing measure for the quality control measures.

##### 4) Construction Quality

In the graph of fig. 4, the construction quality is discussed in which all qualities like material equipment knowledge of project these all belong to the quality control.

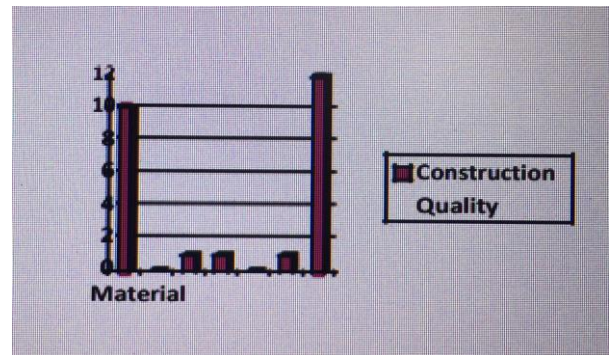


Fig. 4. Responds for construction quality

### 7. Conclusion

1. Impact of quality control, decision-making skills are developed in the engineers.
2. It reduces the problems of engineers in different ways.
3. It helps engineers to improve the qualities of the construction to make a project in a given time.
4. Engineers only have theoretical knowledge so they need experience in quality control.
5. Engineers should understand the laborers' knowledge of quality control.

### References

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