

QUALITY AND SAFETY MANAGEMENT IN CONSTRUCTION

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Abstract: *It requires tremendous care and vigilance in adherence to quality and safety management. This has to be throughout construction period of building or bridges, to insure complete safety with regard to users private or in public sector such responsibility is highly expected of a constructions' company. In special view to this important matter i.e. quality and safety programmes especially in construction endeavour several researches have been done. Nevertheless, total 49 articles were presented in which 18 articles were devoted to safety, and 26 articles were presented were focused on quality. It was totally a comprehensive presentation in support of integrated safety and quality management in construction. The research papers brought out most striking three obstacles to success with reference to the quality management in construction undertaking (project), viz: 'shoddy' implementation, the nature of construction assignment and the industry. A survey of construction quality and safety presents a good number of similarities in these two management systems. For instance, many factors are common in improving quality and safety.*

There is a close relationship between and safety references as it is given below:

- 1. Consolidation of the safety and quality functions.**
- 2. Addition of quality concept to safety measures.**
- 3. Improvement of safety management principal.**
- 4. Application of the results to safety aspects to quality.**

I. INTRODUCTION

It is a moral obligation on the part of engineers, constructors and facility providers for the public interest and use to be fully aware of the construction safety so that no accident or collapse of building etc. may occur. Because negligence may result catastrophic, such situations can be possible due to structural failures, cheaper building materials in this direction the whole responsibility comes to the project managers safety of project solely depend upon one factor i.e. efficiency of the entire project team besides adequate professionalism. The human resource must be deeply and sincerely devoted to its conscience. "There ought to have harmonious relationship between safety, quality and productivity in the competition of construction with regard to two essential factor i.e. time and money involved in the project eventually safety and quality can be ascertained. The presentation of paper especially designed for right and workable information concerning safety of constructed facilities which requires highly professional know how viz quality management. This in return ensures safety of the project in addition to quality and productivity. Quality control and safety are internal part of any project and project managers are most important personnel in this direction. Should there be any fault the

whole project will turn the project be retaken up a lot of in convince will occur and unbearable cost and delay. In order to avoid all these unpleasant situations, only the good or apt project manager is the appropriate person to materialize and maintain the two most important points i.e. quality and security or safety produce considered result for which material quality and conformity to original design and planning: There could be exception to this rule but in rare cases e.g. faulty design alterations desired by an owner. In other case, decision of suitable transfers of location or site of project another situation of re designing. but options may incur more cost. In such a predicament the right choice awaits the professional judgment of project managers. But the quality construction must be mandatory for any agreement or if quality requirements to be supreme all concerned persons of the project must be well explained and satisfied. The most important issue in this paper refers to quality requirements for construction as well as insuring conformance.

II. QUALITY ASSURANCE

In this situation the American society for quality is not authenticated and reliable there for this purpose some striking points for assurance and quality are suggested by ASQ:

1. Assurance: defined as the act of giving confidence.
 2. Quality assurance: Planned and systematic activities to cause on quality requirements for any product or service rendered.
 3. Control: The act of guiding a specific process in which variability is most expected.
 4. Quality control: The observation techniques and activities are fundamental to maintain quality.
- The statement of constructs

The good of quality management is the symbol of variance in a system. As for safety management, variance is the form of workplace hazards, unsafe attitude and results due to human errors.

Here, OSHA (1996) emphasizes on successful safety management schedule subject to management commitments, taken employees into confidence, hazard identification and control, training and accident investigation. Smith (1978) has also given his remarks quite similar conclusion with reference to safety issues, on the other hand Dean & Bowen (1994) Hand Hackman Wage man (1995) stressed on customer satisfaction, team work, incessant movement, training and education, employee empowerment and organizational culture, considered as most important areas to a successful quality management system.

The above citations from learned writers distinctly in form

about the salient features related to management systems. They are competent guide lines to the goal of quality management. Even non-constructional research literature is in full conformity with quality and safety management some experts are here to mention : Krause 1994 Curtis, 1995 and Rantanen 1999 some others proved quality and safety can be integrated for example: Falkon 1999 Wilkinson & Date 1999 witman, 1999, Herrero et al 2002.

It is worth mentioning here that most research investigating the integration of quality and safety management. It mentions improvement methods minimize the variability in product quality well to workers.

Material Testing : One RMC plant there is hold material testing regularly and outcome of such help proper material.

The following are some tests:

- ✓ Crushed sand
- ✓ Sieve Analysis
- ✓ Silt Content
- ✓ Moisture correction
- ✓ Coarse/fine aggregate and
- ✓ Sieve Analysis

Concrete Mix : It is considered as one of the most essential elements as for solid and lasting construction is concerned. It is prepared in RMC plant, and is completely computerized. Some of the features of this plant are: The capacity weight that is aggregate is 2500 kg; the maximum weight used for calibration of cement fly ash is 500 kg. And if the concrete trial mix is satisfactory by result evaluation; then only the mix is approved for construction use.

III. SAFETY DURING THE CONSTRUCTION

This stage of strategy is primarily the through result of earlier decision and planning. This process is vitally important to minimize probable chances to take safety measures so that accidents can be avoided, especially, to separate traffic movement from construction zone. To ensure safety, adequate education in this context is supreme; secondly strict vigilance and needed cooperation is highly expected. Project workers alertness in this matter is considered very essential aspect, In no way unnecessary chances are allowed, this important to avoid risks.

IV. ORGANIZING FOR QUALITY AND SAFETY

In order to achieve these two important goals there are different organizations role possible one of them is a group held responsible for maintaining quality assurance and equally responsible group can be for safety.

For the two important groups in an organization, - quality and safety; separate individuals are to be assigned to be fully responsible for the risk free construction if a project is smaller sized, the project manager can take up this responsibility or if necessary an assistant be appointed; whatever the case may be ultimately project manager is responsible for quality and safety of the project. There are others personnel to look after other issues of the project after all it is absolutely a team oriented task e.g. safety inspectors, owner, the engineer architect and his associates, and contractors. Inspectors have special education from quality assurance organizations. On construction site there is a

special inspector to inspect quality materials, dully tested by specialized laboratories to insure compliance. Especially for local government's construction, there are inspectors to see the building materials are in compliance with regulatory requirements. Along with these personnel environment agencies and occupational health and safety agencies are also work hand in hand to make sure quality and safety be intact.

V. WORK AND MATERIAL SPECIFICATIONS

Particularization or numeration of work and its nature or specifications are vital as quality is closely related with it, and its designs are correlative, because as for as precise quality and other necessities attached with it they help design to its documentation. Actually documentation is most important part of quality presentation, because it attaches special endorsements required of the facility design in the due course of construction. Specifications are available in various publications. Here one of the most reliable organization is needed to mention i.e. American National standards institute (ANSI) in addition to this American society for Testing and materials (ASTM) or The construction specifications institute (CSI). There are distinct specifications that provide specified construction necessities.

VI. TOTAL QUALITY CONTROL

Quality control in construction especially inseparably linked to material and expertise in the spheres of technology, professional skill to ascertain the completion of the project based on prepared design. Such minimum standards guarantee with compliance, random samplings and statistical methods it is obviously necessary to explain quality control procedures. There is an inherent presumption at work in the traditional quality control practice, in which a fraction of defective items are taken for acceptance. In such practice building materials are duly inspected and approved although these may have some defective percentage after receiving such supplies are corrected. On the contrary to traditional method, is the total quality control approach, in which no defective goods used in the project are acceptable, although absolute quality of goods are not all the way possible, yet it attempts a set standard goal to achieve in the following years. But implicit quality control is very strict about quality control in Japan and Europe. Now this concept of approach is available in many construction companies all around the globe. Here it is important to mention the best names as international organization for standardization ISO 9000 standard. It stresses mainly on good documentation quality goals, planning implementation and review. They set almost perfect quality and safety for others to adopt.

VII. CONCLUSION

Undoubtedly in modern age method of construction is rapidly approaching quality results, this is mainly due to developing technology and constant research programmes such attitude also proves such steps to provide people such service, the quality management is highly essential through which it is expected of top management to provide improved technology with complete devoted commitment to the cause of constructional projects.

In order to achieve company's objective there are too most striking points to other to i.e. company's infrastructure and improve constantly company operating procedures. It is very true that

AQA cannot solve all problems on a construction site, it is erroneous proposition. The only secret of success is following all procedures wise by and carefully, mistakes can be minimized by conducting extra or additional documentation and planning by this all potential problems can be well understood and before they happen, can be solved.

It is highly advisable to follow quality assurance it should be given priority while designing the project and ought to be continued throughout the period of completion. It is also important that quality assurance is only workable all concerned personnel for instance client, designer, contract administrator, contractor, subcontractors are all cooperatively worked together realizing that partners. Safety point must not be ignored it must be central.

The lesson for the safety is oriented from good education and safety is learnt being vigilant, it must not be neglected throughout the period of the project because accidents are most probable at any juncture.

So all the people connected with project work must realize that unexpected mishaps are likely to happen should any negligence or carelessness happen. It is aptly said that don't take any chance with risks. Risk is avoidable to a great extent with careful handling and awareness mind. It must not be overlooked that total quality depends upon total devoted professionalism, because there is no compromise with total submission to human safety total quality management is the result of project's success and professional satisfaction and it is the right attitude of public service and justice to their money.

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