

QUALITY AUDIT FOR CONSTRUCTIONS

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Reasons to have Quality Audit

Anyone who pays tax has to go through a tax audit. Those who have maintained their accounts meticulously within the parameters of tax act need not worry, but others have to suffer the consequences like additional tax payments and penalties.

Just as tax managers are responsible for any lapses found during the tax audit of their client's returns, so also a contractor, who constructs a building for his client, or a builder, who constructs mass housing for the public, is similarly responsible for the quality of the structure he constructs. As mass construction activity increased and people became choosy of their dream homes, the builder became

more conscious of giving good quality construction. Similarly, as private enterprises increased and became competitive, the entrepreneurs also started demanding quality work from the contractors. Thus the need arose for 'Quality Audit For Constructions'.

Overview of Quality System for Construction

Quality Management has been sufficiently developed in manufacturing companies, but its progress in the construction industry is not significant. Reasons for this is multiple agencies involved and the ultimate product has to be provided with effective interaction / participation of persons.

Points to be considered for
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having Quality System for Construction Project are as under :

Aim - The main aim of the Quality System is to deliver sound, durable project to the user, which will be delightful for him to use, plus, which will be at a reasonable cost and during its usage, it will also have the least maintenance problems.

Bottlenecks - (i) The biggest hindrance in progressing the implementation of the Quality System, is the attitude of the persons participating in the construction process. Quality is achievable only when it becomes everybody's responsibility. The normal reaction to any quality control measure, is taken as a check on the work done by a person and

he develops a negative attitude towards any quality measures. It is for the management to create such an environment in which the participant accepts the system in the right spirit.

(ii) There is a misconception, that the implementation of quality measures, will increase the cost of construction. Rather, the reverse is true.

This misconception is due to the inadequate measurement systems. Many construction firms do not have an account of such inadvisable wastage, which can be reduced by implementing the Quality System.

Besides, the user-satisfaction, goodwill and status that the firm gets as a result of this implementation, cannot be measured in financial terms and for gains as these, using the Quality System would hardly cost a thing. This is because, it basically depends on the selection of proper material and their usage, in an effective manner.

Requisites of a Good Quality System

- (i) The Quality System has to be defined, documented, understood, implemented and maintained.
- (ii) The System must be applicable from the start of the project and should aim for a defect-free construction.
- (iii) Quality must be quantitatively defined and must be measured against predetermined standards.
- (iv) Job allocation for implementation of the system to various persons must be clearly defined.
- (v) Non-confirmation of any stage of construction must be detected as

early as possible and the cause identified and action taken to avoid the re-occurrence of the same.

(vi) Construction procedures must be defined and the system shall evolve steps to ensure that they are followed.

(vii) Inspection procedures must be evolved which will ensure, timely inspection, keeping records of implementation and suggesting corrective action.

(viii) Quality records must be kept reported in predefined formats, at the appropriate levels must be scrutinized and necessary action must be taken on them.

Present Status of Quality Control

The guidelines of quality control in construction, is available in India in numerous ISI codes for all items of construction and in numerous disciplines. The contractor has to motivate his staff to do quality work, by referring to all these different codes, at varying stages of construction. Each contractor has his own way of carrying out what he thinks is quality construction. Further, each contractor differs in his interpretation of the ISI codes and various other factors are needed to get quality construction.

Keeping the objective of Quality Systems slated in the preceding paragraphs, I therefore decided to compile a manual for quality construction, incorporating a step-by-step methodology for carrying out a Quality Audit. The manual, thus introduced uniformity in the audit, as well as a one-stop reference for all aspects of quality construction.

Part A of the Manual comprises of a set up, which a contractor

should have at each project site, for effective quality assurance.

Part B indicates lists and related functions for quality control to be done with documents such as, a study of specifications, contract schedule and technical conditions, resolving contradiction in drawings and Bill of Quantities. Use of in-house programs are available with us for feeding measurements in advance, before execution and preparing successive running bills, by use of such data already fed into the computer system.

Part C deals and evolves the system to ensure that manufactured materials of proper quality are used on work. This is very necessary, because the materials are not upto standard even with quality control, during execution.

It comprises of tests to be insisted upon materials before placing orders and criteria for selection of proper vendors. This selection also gives formats to keep details of material/labour/machinery utilisation, vis-a-vis norms, so that excessive wastage and misappropriation of the commodities, is prevented from the start of the project.

Part D deals with steps to be taken while executing each sub-head of the project. Each sub-head, like excavation, concrete work etc., is divided into two parts. The first part, deals with prerequisites which need to be compiled before start of that sub-head and the second part requirements, are to be fulfilled during the execution of that sub-head.

In order that, it is ensured that requirements are being compiled,

each part has a checklist which is to be screened by the quality control staff. These checklist are also further bifurcated into two parts, i.e. important and mandatory checkpoints. Mandatory checkpoints are to be cleared by the client's engineer, where as important checklists are seen by the in-house quality cell.

Formats for these checklists, provide for specific remarks, in which particular checkpoints are compiled or not compiled, but can be avoided in the future, or unless that with work, should proceed further.

These formats take care of all normal situations that occur during execution. It also involves the client's participation, right from the beginning of the sub-head, rather than his pointing out things not according to their requirements, after the particular work is executed.

In order that the quality of the work is measured against the standard test formats and test reports with each sub-head, list of relevant B.S. Codes are also attached with each sub-head.

Part E deals with a large number of projects being executed by the firm. If all reports are from each

project, their effectiveness is reduced due to the bulk of the information, which is also not needed at the management level. Hence, separate formats for reporting tests carried out and giving overall quality standards being achieved for various sub-heads, is given in this section. This enables the central management to see that regular testing is being done and to take corrective steps for projects at the right stage.

Above, is a broad outline of the manual, by use of which, it is anticipated that construction firms can deliver projects with quality, which will give lasting user-satisfaction.

Improvements called for, in present practices in the Building Industry

Howsoever, we attempt towards quality control unless output given by skilled and unskilled labour is of proper quality, overall, in the construction activity, availability of persons having real skill in trade, is reducing. Other aspect of their remuneration being on out-turn of work they do, there is a tendency for workers to ignore quality.

It will be worthwhile to have a mechanisation of various

operations as far as possible. Major construction firms have made sufficient progress in this direction, but when small contractors execute work independently or, as sub-contractors, they do not have such machinery and are largely dependent on manual labour.

Availability of firms that can give such machines on hire, needs to be thought of. Various fields in which mechanisation is possible is availability of vibrators, use of ready-mix concrete, pump sets suitable for use on curing of plaster, brickwork at height, use of steel scaffolding and formwork laying of floors with mechanical equipment, use of crane for laying concrete at height and pumps for pouring concrete.

These machinery/equipment having a high cost will be necessary for some association of Industries (that are in need of quality construction) to jointly fund the venture and arrange the supply of these equipments/machinery on hire to small contractors. With this activity, it can be made obligatory in contract with these contractors, to make the use of these equipments to give quality output.



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