

UNIT II**STRENGTH AND DURABILITY OF CONCRETE****2.1 QUALITY ASSURANCE FOR CONCRETE CONSTRUCTION**

Quality management ensures that every component of the structure keeps performing throughout its life span. In fact, quality is a measure of the degree of excellence and is indeed related to fulfillment enjoyed by the user. In concrete construction, even if rigid quality is not followed, the material performs for a short while without loss of strength.

On account of this forgiving property of concrete, many in the construction industry have been operating under the illusion that rigid quality management, which is essential for mechanical industries, is not so important for concrete manufacture. This is not correct. The quality management in the current day context is based on the fact that the probability of failure of structure must be as low as possible and definitely lower than a prefixed accepted limit. Hence, quality management in essence is the management of uncertainties inherent in the construction industry.

Need for Quality Assurance

All involved with the construction and use of a concrete structure are concerned that the quality is necessary to give good performance and appearance throughout its intended life.

The client requires it in promoting his next engineering scheme.

The designer depends on it for his reputation and professional satisfaction. The material producer is influenced by the quality of work in his future sales.

The building contractor also relies on it to promote his organization in procuring future contracts, but his task is often considerably complicated by the problems of time scheduling and costs. Finally the user is rewarded by a functionally efficient structure of good appearance. It would seem to follow therefore that since all responsible parties gain by quality it should be automatically achieved.

Yet this is not so, and a considerable positive effort must be employed to achieve it.

This effort can best be expanded by instituting a quality assurance scheme which involves each of the above parties.

The quality management system in a true sense should have the following three components

- 1) Quality assurance plan(QAP)
- 2) Quality control process(QC)
- 3) Quality Audit(QA)

Quality assurance plan

The following aspects should be addressed by any QAP:

- Organizational Set-up
- Responsibilities of personnel
- Coordinating personnel
- Quality control measure
- Control norms and limit
- Acceptance/rejection criteria
- Inspection program
- Sampling, testing and documentation
- Material specification and qualification
- Corrective measure for noncompliance
- Resolution of disputed/difficulties
- Preparation of maintenance record

The quality assurance plan starts right from the planning and design stage itself, and it can be defined as a procedure for selecting a level of quality required for a project.

Quality Control Plan

It is a system of procedures and standards by which the contractor, the product manufacture and the engineer monitor the properties of the product.

Generally the contracting agency is responsible for the QC process

A contractor responsible for quality control incurs a cost for it, which is less than the uncontrolled cost for correcting the defective workmanship or replacing the defective material.

Hence it is prudent to introduce effective quality control.

Quality Audit

This is the system of tracing and documentation of quality assurance and quality control program. It is the responsibility of the process owner.

Both design and construction processes comes under this process. The concept of QA encompasses the project as a whole.

