



Quality Assurance vs. Quality Controls System in CONSTRUCTIONS

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Agenda

- The total system of Quality Policy
- Principal components of Quality System
- Project Management
- Quality Assurance vs Quality Control
- How to conduct the Quality Audit
- Quality Control Training
- Safety



Quality Assurance vs Quality Control System in Constructions

The total system of Quality Policy

- Management Responsibility
- Internal and External Control
- Testing and Quality Control
- Acceptance Criteria
- Corrective Action
- Documentation



Quality Assurance vs Quality Control System in Constructions

- The aspect of overall management functions that determines the Quality Policy and implements it by such means as Quality Planning , Quality Control and Quality Assurance within its Quality System which is referred to as “Quality Management”




Principal Components of Quality System

1. Supplier's Quality Policy :

Commitment of the management of Supplier to achieve and sustain Quality of the product or service to meet purchaser's needs

2. Purchaser's Quality Policy :

Commitment of the management of the Purchaser to obtain Quality product or service to meet purchaser's needs. This includes Quality Plan of the Purchaser to satisfy himself about the quality of end product.



Project Management in Constructions


Quality Assurance vs Quality Control

3. Internal Quality Systems :

Internal quality systems of all concerned organizations including Quality Plan , Quality Assurance , Control of non – conforming products , Quality Audits and corrective actions.

4. Inspection and Audit :

Inspection and audit of internal quality systems, Mutually conducted quality control tests or Independently conducted testing by third party.



Project Management in Constructions

Quality Assurance vs Quality Control

Requirements of Quality System which are aimed primarily at achieving owners satisfaction by preventing non-conformity.

- i) Management Responsibility
- ii) Quality System
- iii) Contract Review
- iv) Design Review
- v) Document and Data Control



Quality Assurance vs Quality Control in Constructions

- Purchasing
- Control of Customer Supplied Products
- Product Identification and Traceability
- Process Control
- Inspection and Testing
- Control of Inspection, Measuring and Testing
- Inspection and Test Status
- Control of Non-Conforming Products
- Corrective and Preventive Actions
- Handling, Storage, Packaging, Preservation and Delivery



Quality Assurance vs Quality Control in Constructions

- Project Management may content –
 - **Quality Control**
 - **Quality Assurance**
 - **Estimating**
 - **Design - Build**



Project Management in Constructions

Quality Assurance is process oriented and focuses on defect prevention while Quality Control is a product oriented and focuses on defect identification.



Project Management in Constructions

Differences between QA and QC –

QA refers to the process used to create the deliverables, which can be performed by a Manager, Client, Third Party Reviewer. Examples of Quality Assurance include Process Checklist , Project Audits, Methodology and Standards Development.

Quality Assurance is the Managerial Tool.

QA activities are determined before production work begins and these activities are continuously performed while the product is being developed.



Project Management in Constructions

- QC refers to quality related activities associated with the creation of project deliverables. QC is used to verify that deliverables are of acceptable quality and that they are complete and correct. Examples of QC activities include Inspection, Deliverable peer reviews and the testing process.
- Quality Control is a corrective tool.
- QC activities are performed after the product is developed.



Project Management in Constructions

Quality Assurance

- Providing Assurance that the Quality requested will be achieved.
- It is the technique of Managing Quality.
- It is involved during the development phase .
- It does not include the execution of the program.
- It is a Managerial Tool.
- The aim of Quality Assurance is to prevent Defects.

Quality Control

- Fulfilling the Quality requested.
- It is the technique to verify Quality.
- It is not included during the development phase.
- It always includes the execution of the program.
- It is a Corrective Tool.
- The aim of Quality Control is to identify and improve the Defects.



Project Management in Constructions

- Control of Quality Records
- Internal Quality Audits
- Training
- Servicing
- Statistical Techniques



Project Management in Constructions

- How to Conduct a Quality Audit
- Preliminary Quality Audit Steps
- The process starts by formulating a detailed Audit Plan that functions as a road map for conducting an on-site review.
- Develop a preliminary list of personal interviews to conduct during the on-site review.



Project Management in Constructions

- Each Audit team member should have an Audit checklist as well as forms or a tape recorder.
- Each member should have Reference Documents such as copies of standard operating procedures.
- The on-site review focuses to Quality Control Standards and following established Quality Control procedures. This phase consists of action steps, including observation, testing and conducting personal interviews.



Project Management in Constructions

- The “Real” work starts once the active phase of the audit is completed.
- The Final Phase of a Quality Audit starts with a meeting to review, address and determine the steps needed to correct Quality Issues and problematic areas.
- Create a management report detailing this information.
- Once the owner and managers have finished reviewing the audit findings, a strategy meeting should be held.
- To incorporate solutions for Quality Improvements presented by the Audit Team.



Project Management in Constructions

Quality Control Training

- In order to bring awareness in the officers of Department
- To update their knowledge of Testing Methods
- Regular workshops on Quality Control should be held to make the participants aware Standards and Specifications, Required Test Acceptance Criteria, Frequency of Testing and Tests Methods.
- To understand the Quality Control System and Operation of Regional / Field Laboratories



Project Management in Constructions

Recording of Test Results

- The tests shall be carried out in accordance with the standard procedures.
- It is desirable that of the total tests.
- 70% of tests are carried out by Laboratory Technicians and 20% of tests by the Material Engineer and 10% by the Senior CSC Engineer.
- The test result record registers shall be maintained regularly linked with the assured Quality of Work.



Project Management in Constructions

Quality Review :-

Review by Specialists

- the Conformity of the approved Drawings, Specifications and other design submittals with the contract.
- Assurance that all Materials, Equipment and elements of the work meet the contract.
- Have been designed to perform satisfactory.
- Verification that all such documents are signed by the Specialists
- Assurance that such documents fully provide suitable evidence for constructability, compatibility of materials and conformity to acceptance criteria for inspections and tests as provided in the contract.



Project Management in Constructions

Methods Statement –

- Contractor's Work/Activity Plan
- Major Earthwork Operations
- Pavement Works
- Environmental & Social Safeguards
- Temporary Traffic Diversions and Traffic Crossings
- Structures
- Storage of materials
- Proposed set-up for the production and transport of Asphaltic and bitumen paving products



Project Management in Constructions

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Project Management in Constructions

Quality Assurance Implementation

- The quality of the completed works is dependent on the quality of the design, materials used and workmanship.
- Design of the works
- Drawings
- Bills of Quantities (BOQ)
- Bidding Documents



Project Management in Constructions

- Quality Control in Construction
- General
- The main principles for performing tests for Quality Control



Project Management in Constructions

Quality Assurance Approach

- General
- Checking and Monitoring of On-Site Quality
- Storage of Equipment and Material on site including Environmental concerns



Project Management in Constructions

Quality Control Tests

QC Tests fall under three categories :

- Tests on materials prior to and during construction
- Tests on the quality of workmanship during construction
- Tests on the Finished Works after construction



Project Management in Constructions

Safety

- General
- Safety considerations on the Project Areas are:
 - (a) Increased risk to the public and to construction workers from pedestrian and vehicular traffic passing through or adjacent to the construction works.
 - (b) Risks to construction workers arising directly from the method of construction



Project Management in Constructions

Safety

- The requirement for the management of Safety to be given greater priority on construction sites in under developed countries.
- It can be reduced of Risks and injuries sustained on and adjacent to construction sites.
- The aim of the Health and Safety Policy must be to minimize the danger to construction staff, road users and neighbors throughout the construction



Project Management in Constructions

Safety (continued from previous slide)

Safety considerations on the project areas are:

- Increased risk to the public and to construction workers from pedestrian and vehicular traffic passing through or adjacent to the construction works
- Risks to construction workers arising directly from the method of construction.



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