

# Management of Quality in Construction Projects

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# Overview of Quality

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*International Standardization Organization (ISO 9000)*

**“Degree to which a set of inherent characteristics fulfils requirements”**

**“The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”**

*American Society for Quality (ASQ)*

# Overview of Quality

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"Quality is conformance to requirement, not as "goodness" or "elegance."

*Philip B. Crosby*

"The Plan–Do–Check–Act (PDCA) Cycle"

*W. Edwards Deming*

"Quality does not happen by accident; it has to be planned."

*Joseph M. Juran*

# Overview of Quality

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**"Construction project quality is the fulfillment of the owner's needs per defined scope of works within a budget and specified schedule to satisfy the owner's/user's requirements".**

# Construction Project Quality

These factors reflect  
good quality of  
work done

Meet tech specs

Deliver on schedule

Costs within budget

Work without dispute

## Four pillars of Construction Quality Management

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# Interactions

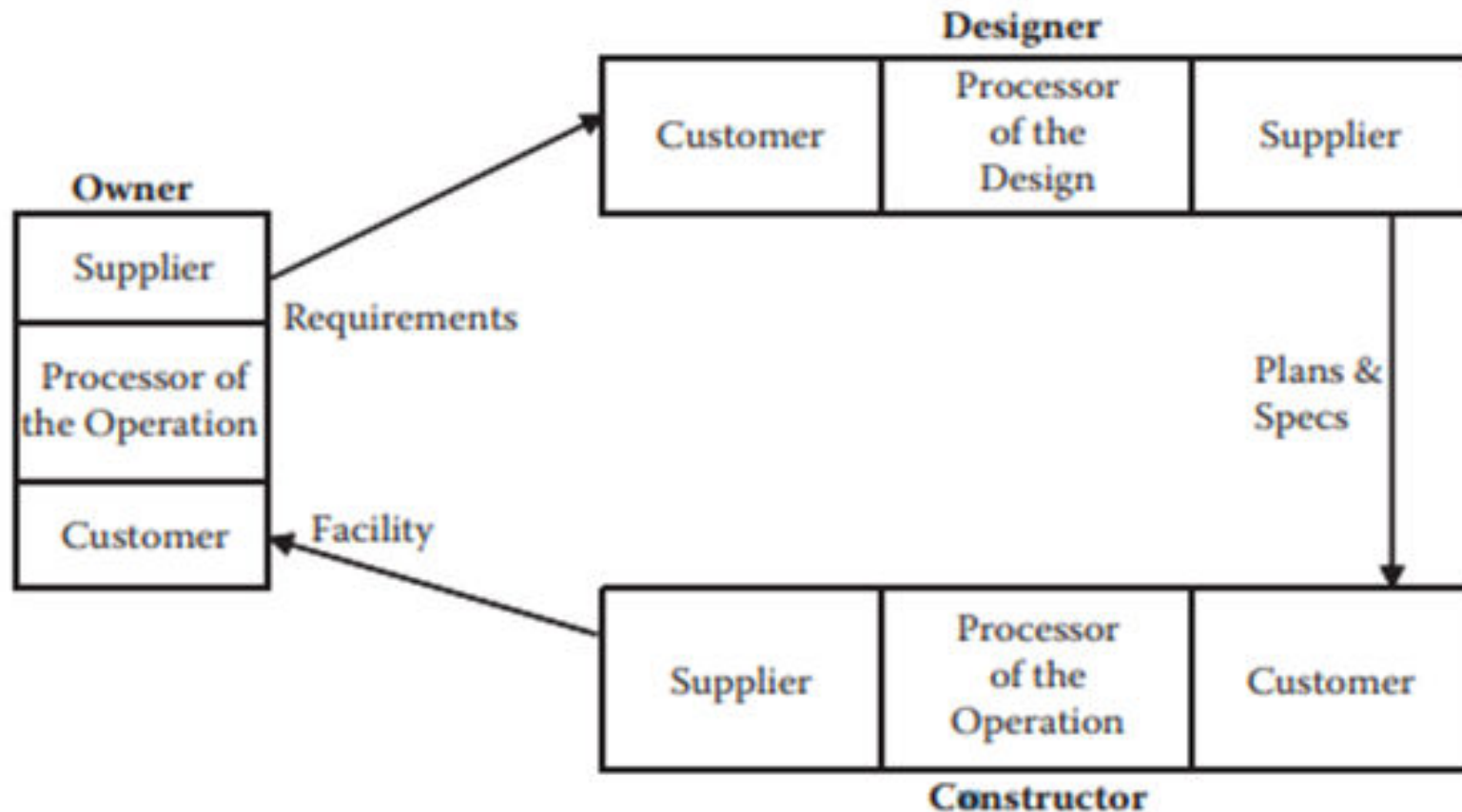
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**Quality** relates to all the knowledge areas of Project management





# Triple Concept applied to Construction



**FIGURE 4.2**

Triple role concept applied to construction. (From CII Publication 10-3. Reprinted with permission of CII, University of Texas.)

# Quality of construction projects can be evolved as follows:

1. Properly defined scope of work
2. Owner, project manager, design team leader, consultant, and constructor's manager are responsible to implement quality

# Quality of construction projects can be evolved as follows:

3. Continuous improvement can be achieved at different levels as follows:

**a. Owner** - Specify the latest needs

**b. Designer** - Specification should include the latest quality materials, products, and equipment

**c. Constructor** - Use the latest construction equipment to build the facility

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# Quality of construction projects can be evolved as follows:

## 4. Establishment of performance measures

### a. **Owner**

- To review and ensure that designer has prepared the contract documents that satisfy his needs
- To check the progress of work to ensure compliance with the contract documents

# Quality of construction projects can be evolved as follows:

## 4. Establishment of performance measures

### **b. Consultant**

- As a consultant designer, to include the owner's requirements explicitly and clearly define them in the contract documents
  - As a supervision consultant, supervise contractor's work per contract documents and the specified standards
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# Quality of construction projects can be evolved as follows:

## 4. Establishment of performance measures

### **c. Contractor**

- To construct the facility as specified and use the materials, products, and equipment that satisfy the specified requirements

## Quality of construction projects can be evolved as follows:

5. Team approach - Every member of the project team should know that TQM is a collaborative effort, and everybody should participate in all the functional areas to improve the quality of the project work. They should know that it is a collective effort by all the participants.



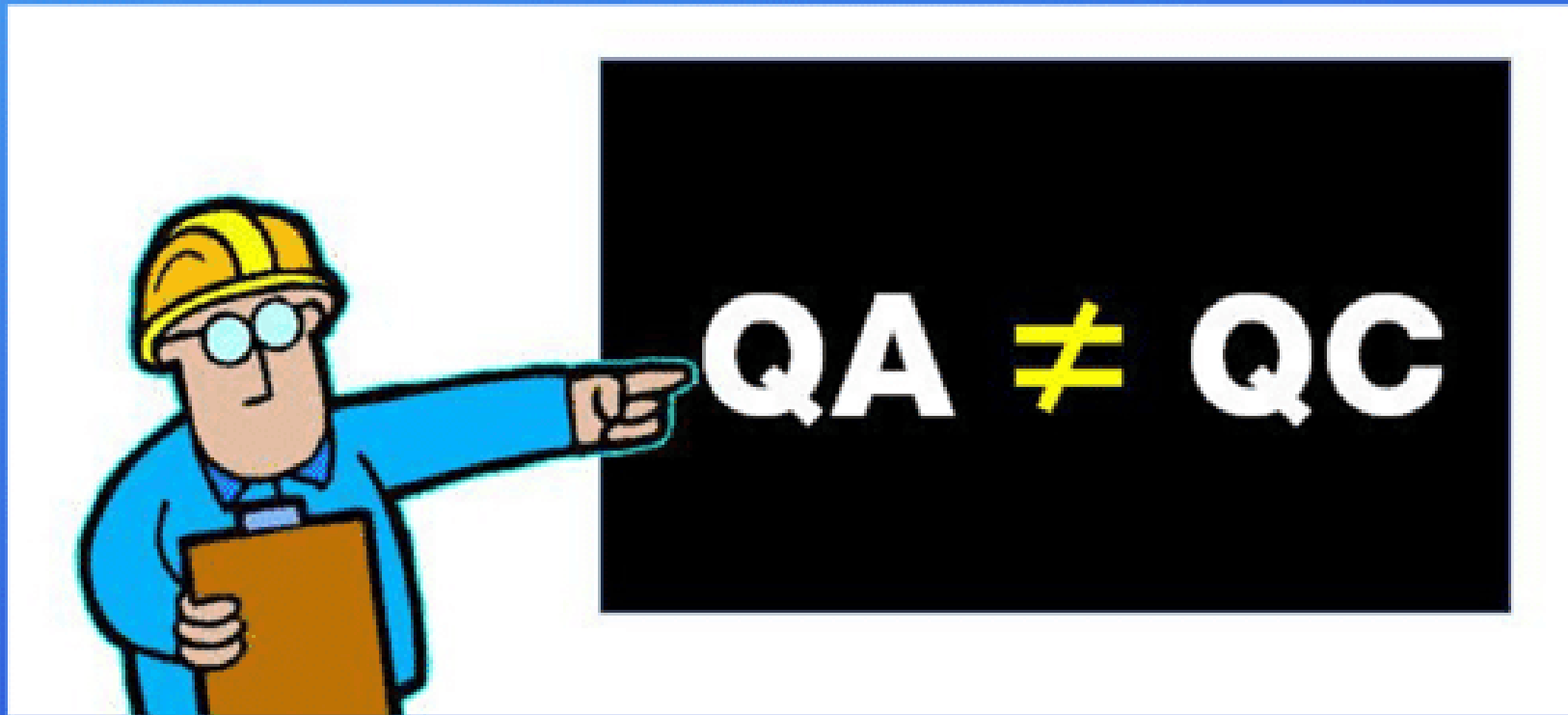
# Quality of construction projects can be evolved as follows:

6. Training and education - Both consultant and contractor should have customized training plans for their management, engineers, supervisors, office staff, technicians, and laborers.

# Quality of construction projects can be evolved as follows:

7. Establish leadership - Organizational leadership should be established to achieve the specified quality. Encourage and help the staff and laborers to understand the quality to be achieved for the project.

# DIFFERENCE BETWEEN QUALITY ASSURANCE AND QUALITY CONTROL



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# Quality Assurance VS Quality Control

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## Quality Assurance

planned and systematic activities implemented within a quality system that can be demonstrated to provide confidence a product or service will fulfill requirements for quality

## Quality Control

observation techniques and activities used to fulfill requirement for quality.

## Quality Assurance

Seeks to measure the processes and systems in order to reduce defective products

Often used by management to make decisions on process improvement

Focuses on preventing defects

Managerial tool

Process Oriented

Defines Standards

Sets methodologies

Validation

Everybody's responsibility

Audit

## Quality Control

Seeks to measure the number of quality of the final products.

It is often used to accept or reject products, or for payment.

Focuses on identifying defects

Corrective tool

Product oriented

Ensures Standards are followed

Ensure methods are followed

Verification

Specific Teams responsibility

Inspection

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The survey of Quality of Construction by *FIDIC (Federation Internationale des Ingenieurs-Conseils, the International Association of Consulting Engineers)* confirmed that failure to achieve appropriate quality of construction is a problem worldwide. Lack of quality in construction is manifested in poor or non-sustainable workmanship, unsafe structure, delays, cost overruns, and disputes in construction contracts.

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