

## QUALITY OF CONSTRUCTION ACTIVITY

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**ABSTRACT:** *The problem of the quality works of building has a different importance because, as opposed to another activities of material productions here are not admitted bear of the quality in respect resistances, stability, durability, safeties in exploitation. The responsibility concerning assurance quality is not summed up just to the level of builders or beneficiaries, they became a national problem and last recently, European and even global issues. Implications are considered factors contributing to the establishment and maintenance of quality construction objects and their obligations through legislation. The paper addresses the particular quality control organization and has, in short, needed to implement „Total quality management” in construction. After receiving detailed presentation of construction work analyzes quality costs and quality relationship - the overall cost. The paper concludes with details of quality control organization in the construction business.*

**KEY WORD:** *constraction; quality; quality management; cost*

**JEL CLASSIFICATION:** *M19*

### 1. QUALITY IN CONSTRUCTIONS. QUALITY IN DOMESTIC AND INTERNATIONAL LAW

Construction activity is recognized as one of the oldest human concerns and materializes and built environments which run the entire system of human pursuits and activities (productive, social, cultural, etc.). So the built environment affects all material and spiritual activities, which led, since antiquity, to guarantee the production quality of construction requiring. Thus, the code of Hammurabi, 1700 before Christ, manufacturer was responsible for the quality and strength of his work specifying: if the house collapses (construction), killing residents and master builder will be killed. Legislation and construction quality assurance organization in our country occurs first in „Statement about the work done by Public Works Department” published in Iasi in 1856 through which was created “Police on private building” which require that: „all construction workers should not be permitted to work until do not acquire awareness

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certificate”, „in the future all buildings should no longer build than brick wide, and those made with brick on edge to be transformed” etc. Construction quality must be addressed complex scientific because nonquality implications are much higher than for most other products.

Construction, as products of human activity has the following features: consumes a large capital, are subject to many random factors, unpredictable, following living high life; must meet the needs of two, three generations making it difficult to standardize and extends the period of accumulation of experience needed improvement products; with all technological developments works with nature to maintain quality artisan is given the qualifications and skill contractor; is difficult to predict an optimal ratio between the increase in implementation cost for quality improvements and reducing the cost of operating this way; not admit fault or scrap (especially related to stability, strength, durability and safety in operation). Construction quality is not just a matter of manufacturer, it is a national problem and, lately, European or even world. In this respect European Economic Community (EEC) mandated the European Committee for Standardization to set standards by which, between Member States, to recognize each other bodies and laboratories to confirm quality.

Romanian Institute for Standardization has joined the European Committee for Standardization and the International Network for Terminology, which led to the adoption of the International Organization for Standardization (ISO) including them in the classification of Romanian standards. To obtain an appropriate quality construction binding realization and maintaining, throughout the duration of the construction, the following requirements: strength and stability, operational safety, fire safety, hygiene, human health and environmental restoration, thermal insulation, waterproof and saving, protection against noise. These obligations incumbent upon stakeholders in the design, implementation and operation of buildings, and their postutilization namely: investors, researchers, designers, project verifiers, manufacturers and suppliers of construction products, the contractor, responsible for the technical implementation, owners, users, technical experts and members of public authority.

### **1.1. Construction Quality system**

Construction quality system consists of:

1. Construction Technical Regulations are set by regulations and proceedings which have as their object, design, calculation, composition, construction and building operation.
2. Quality products used in construction of buildings is certified by the manufacturer. Do not use products without certification.
3. Technical approvals for new products and processes determining fitness for use, conditions of production, transportation, storage, commissioning and maintenance of their work.
4. Verification projects, works and construction projects and expertise. Projects required by specialists check project verifiers accredited (other than those who were drafted). Implementation is verified by masters of specialized investors and

technical expertise and construction projects shall be authorized only by technical experts.

5. Construction Management and Quality Assurance is an obligation incumbent all the factors involved in the design, implementation and operation of buildings and materializes in a system specific to each factor.
6. Licensing and accreditation of laboratories for analysis and test construction is required by law.
7. Construction activity aims to ensure metrology, calibration, verifying and maintaining the working order of the instruments and controls needed.
8. The reception building is intended as documentation certifying their achievement of performance and construction in the technical data falling construction completion and operation. It is made by careful investor and owner surrenders in charge to complete the day.
9. Behaviour in operation and assistance while in the technical fall. Interventions (restoration, enhancement, transformation, expansion, repair) are only based on a project approved by the building's original designer or a technical expert care.
10. Postutilization construction refers to the act of decommissioning, removal and demolition of building , reconditioning and reuse of recoverable items and products and waste recycling to ensure environmental protection law.
11. State control of construction quality is exercised by „State Construction Inspection, Public Works, Urbanism and Planning”, seeking uniform application of legal provisions on construction quality throughout the country. Construction of quality components only construction management and quality assurance falls entirely in the manufacturer's care.

According to the rules on construction management and quality assurance participating units (research, design, implementation, use and construction postutilizare) are required to: develop and implement management systems and quality assurance in the premises, compartments establish quality control and technical quality, prepare and qualify personnel. Construction Quality Law stipulates the following duties and responsibilities for participants to the objectives of building:

a. investor

- sets the quality to be achieved in design and execution;
- obtain approvals and law;
- masters of the implementation by specialty or consultants;
- resolve nonconformities, defects in service, design deficiencies;
- ensure completion of the work and reception at the end of warranty;
- aims to compile a technical construction and owner surrenders;
- proposed construction expertise to carry out interventions.

b. Designer:

- states, by project, category of constructions;
- ensure the projects and details of implementation, the quality of construction;
- projects have specialists certified auditors, established by the investor and resolves conflicts raised;
- prepare specifications, technical instructions for execution, operation, maintenance, repair and monitoring performance over time;

- determine stages of completion, participating in their quality control;
  - eliminates quality defects in design;
  - participate in the technical preparation of construction and acceptance of work performed.
- c. Contractor:
- notify the investor of the project inconsistencies;
  - begin construction only for construction projects audited and approved;
  - the system achieves its quality management and quality assurance in construction;
  - convene the stakeholders to verify the physical state set;
  - closure of the designer resolved based solutions;
  - notify the Construction State Inspectorate on technical accidents during construction;
  - fixes its own expense, defects of execution;
  - restore the land used to organize the site to its original state;
  - establishes responsibilities for quality failure.
- d. Verifier projects and technical experts:
- same designer responsible projects supported;
  - responsible for database solutions.
- e. Building owners:
- made timely maintenance and repairs according to the technical manual;
  - make and keep, to date, the technical construction;
  - implement changes to the building only on verified and approved projects;
  - postutilization out work for stage.
- f. Administrators and the users:
- construction using operating instructions (the technical);
  - maintenance and repair works are under contract;
  - follow the behavior in service;
  - notify the State Construction Inspection on technical accidents recorded.

Participants in the creation and use of buildings are 10 years responsible for hidden defects and duration of existence for structural defects ( design or execution).

## 1.2. Quality control organization

Quality assurance work is made possible by: raising the skill levels of workers, observance of technological discipline, exigency in strengthening enforcement, application forms technical quality control operations in all phases of implementation, namely.

Pre-implementation phase of construction are: examining and verifying the technical and economic documentation, quality control and prefabricated construction materials, quality control equipment leased, verification capability subcontractors. To increase the quality of construction should proceed in the directions: improving the quality of design documents, improve the quality of materials, supplies and prefabricated, introduction of new materials (plastics, steel, aluminum, glass etc.), improvement and bringing constructive solutions to technical progress, increase

technical and degree of specialization of construction equipment and vehicles, improving methods of organization, higher motivation of staff.

A new theory on the construction quality is Total Quality Management (TQM). Total quality management system covering all aspects of the company and appoint quality as a strategic element. TQM strategy is focused on integrated efforts of all company levels to increase customer satisfaction through the practical implementation of continuous improvement. TQM is necessary because construction known for poor quality construction, there is a lack of concern for the deadlines, projected costs not met by the client, record low performance in the company. With the TQM system each other is client. Private construction is that the owner is only nonexpert and yet it is he who should make the most important. The owner has no experience because he leads a project once or, at best, at intervals of time. This is the main cause that lead to conflict among participants (related to materials, machinery, construction solutions, relationships between people, money, etc.). TQM peculiarities are the irrepeatability construction projects discussed what makes the physical and human resources employed in project be made available to the conclusion. Quality in construction it is primarily an issue of social responsibility. Security and comfort for beneficiaries construction is a moral and contractual obligation for construction companies.

### **1.3. Quality costs. Quality - the overall cost**

Although factors affecting quality are readily identifiable factors affecting the cost of quality are more difficult to identify. International standards of data quality costs are: the market study cost quality requirements, cost of research related to quality improvement, design costs related to quality assurance requirements, cost of quality assurance resources to implementation, cost of organizing the site in relation to achieving quality assurance, operating costs related to quality assurance, cost of quality system audits, etc. object construction, cost of training in quality, nonquality prevention cost, eliminating the cost of quality nonconformities, cost of quality assessment. The higher the quality of construction the higher the cost of execution works but decreases proportionally, the high quality, cost of construction operation. Duration of use of building objects is very large and therefore, additional cost recovery implementation is easy.

## **2. ORGANISATION OF QUALITY CONTROL AT CONSTRUCTION FIRM**

In most construction companies organization and implementation quality control work is provided by: general manager, responsible for implementing and evaluating the quality system; technical manager, responsible for compartment activity control, quality, reception, for qualification of staff, quality assurance program implementation, approval of job descriptions for heads of subordinate departments, commercial manager, responsible for purchasing departments and storage and monitor the quality provided in the project, department head control, quality, reception, which is subordinate to the general manager and has the following responsibilities: designing organizational structure designed to ensure quality functioning developed, sites

responsible for training staff, quality inspection for all phases of implementation, analyze the causes leading to non-compliance and initiates corrective action, stop work order when deviations from the quality requirements; coordinate non-destructive tests, prepare quarterly and annual summary samples and forward them to the State Inspectorate construction, public works, urban and regional planning; chief supervisor responsible for: conditions necessary for the commencement and conduct of work, quality of materials put into opera, identifying nonconformities and implementing corrective actions; group leader, responsible for quality of work performed and shall: hold jobs; control the quality of work performed by teams, seeks compliance projects; team leader, responsible for compliance with the requirements of project and technology files. It is responsible for the quality of subordinate workers; workers responsible for quality of work performed.

After running way beyond control body position towards the company can control: Internal control, which aims to certify the quality of its production and is achieved by: internal control, comprising; self-control; hierarchical control; external review, conducted by sampling at all stages of execution by the personnel department of quality control, receptions, in order to validate the operation of internal control; external control, made by the beneficiary or his representative and internal control aims to validate the contractor; state control, which is done by State Construction Inspection, Public Works, Urbanism and Planning.

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