sciendo Ovidius University Annals Series: Civil Engineering, Year 24, 2022
DOI: 10.2478/ouacsce-2022-0010

The Quality System in Construction - its Evolution and Development in Romania Compared to the Quality System in Construction in France

Gabriela Draghici, Ramona-Camelia Silvestru, Cosmin Filip and Alexandru Nicolae Bizu

***Abstract* – Construction is very complex and affects both the environment and people's lives and safety. At the same time, the construction sector is very dynamic and responds to the requirements and demands of customers, constantly adapting to engineering innovations and new technologies. In order to have safe buildings it is necessary to implement a quality system compatible with the quality system in force in the European Union. Thus, in accordance with the standards and regulations of the European Union, in Romania the activity in construction has continued, maintaining the tradition and the basic rules of the period before 1989, which have been updated and completed in order to meet the current legal requirements valid in the EU and the current challenges.**

Keywords – building code, quality France, quality Romania, quality system

1. INTRODUCTION

The building process, in all its complexity, has developed naturally and necessarily throughout human evolution to ensure survival and living conditions. Quality standards also emerged naturally, first as best practices which later crystallised into regulations and standards.

Quality in construction derives from the general notion of quality and is implemented in all subdomains of construction: production and supply of building materials, design activity and construction activity itself.

Quality and quality management in constructions have been approached at the level of the company [1] or at level of project [2], analyses have also focused on processes – quality planning, quality assurance, quality control and quality improvement [3, 4, 5, 6], [7] arguing for a holistic approach, focusing on the whole life cycle [3], [8].

Improvements in the quality system in relation to institutional reconfiguration has been determined to be influenced by the need for „policies that met the populations' everyday life needs" (Marginean, 2013), with more recent arguments for reconfiguration taking into account a Code for Constructions that would provide a systematic configuration of legislation in urban planning and constructions [10, 11]. Few cases of comparisons among countries that deal with quality-related issues in constructions [8, 12] could be identified, these comparisons suggest to policy makers „both an enhancement of the effectiveness of the quality controlprocedure as well as the commitment of builders to comply with the regulations" [12]. The present article refers to the general concept of quality and the derivative of quality in construction and presents its evolution in Romania.

ISSN 2392-6139 / ISSN-L 1584-599

The article also makes a comparison between the Romanian construction quality system and the French construction quality system, as a significant country in the European Union. It is structured in five parts with the bibliography attached at the end. The authors conducted desk research, focusing especially on regulatory aspects related to quality in construction, while also gathering information from journals for specialists in construction.

2. THE GENERAL CONCEPT OF QUALITY TRANSPOSED IN THE FIELD OF CONSTRUCTION

Quality is the measure of a well-thought-out, well-designed and well-executed project. By project we mean any set of unitary ideas converging towards the same end of a realized product.

First, in ancient times, people compared similar products, some better made, some less well made. The exchange of products became easier for quality products. This gave rise to good practices which, although not recognised and named as such, were passed on and perfected from generation to generation.

In the European Union the EN ISO 9001:2000 family of quality standards is implemented, with the Romanian version SR EN ISO 9001:2000. The standard regulates the requirements that a quality product must meet, with reference to the design and manufacture of the product as well as the inspection, testing and trials that are carried out on the product to be called a quality product.

The 9001:2000 standard has evolved to the 9001:2015 version, which modifies and redefines management at the organization level so that the manager has more flexible mechanisms for defining risks and risk mitigation measures (for the first time the standard defines risks) [13]. Together with them they have been developed in the EU and implemented in Romania through ASRO.

The principles of this standard, together with the Community documents it generated, concerning conformity and certification of products have been taken over and transposed into the quality system for the construction sector. The legislator thus regulated the quality system in construction in Romania by Law 10/1995, updated quality in construction together with the related regulatory system. [14]

By regulating the quality system in construction, the Romanian legislator mentions in Article 8: "system of organizational structures [...] procedures and means, which contribute to the achievement of the quality of constructions in all stages of their design, construction, operation and after-use...". [14]

The body that monitors compliance with the construction quality system is the State Building Inspectorate. According to the quality policy statement of the State Building Inspectorate, the institution is a member of the European Consortium for Building Control and of the Administrative Cooperation Group for Market Surveillance of Construction Products, which operates within the European Commission. [15]

3. THE HISTORY OF THE DEVELOPMENT OF THE CONSTRUCTION LIME SYSTEM

From documentation based on journals for specialists in constructions, we note the following data: [16]

- the first principles with reference to the construction of roads appear from 1832 - the period of the Organic Regulation - when the Road Service was founded.

- In 1841, in Moldavia, the "Department of the Interior of Moldavia - Engineering Section" appeared, which elaborated the regulation " Designing the face of road works in Moldova "; in this document appears the concept " for the construction of the road section " which referred to the technology of road construction, compaction possibilities, data on materials, in fact the forerunner of the technological sheet and the technological project of today. - in 1847, the "Ministry from within" in the Romanian Country also establishes the "Directorate of Public Works" with the engineering section, roads and bridges, architecture and public works.
- In 1849, in order to improve the quality of construction, the Department of Public Works of Moldova establishes the "Organic Office "; it establishes rules for the contractor's activity and draws up instructions for the execution of construction works by taking over good practices from other countries - "bringing rules and laws established in other countries".
- In 1850, documents appear that talk about rules concerning the execution of masonry and "compulsory certification of works", meaning the approval of their execution; they also record the first rules by which brick manufacturers, in order to be allowed to sell it, had first to check its quality.

Records on the evolution of the quality system in construction appear after 1959 - the Union of the Romanian Principalities, permanently improved until today. Thus, on August 10, 1862, the Minister of Public Works formed the Technical Committee of Works, and in November of the same year, he established the appointment of heads of district material tests in order to verify the PHYSICAL-MECHANICAL CHARACTERISTICS.

Another important moment to note was the earthquake of 10 November 1940, about which the emeritus university professor, engineer Panaite Mazilu [17] writes: "On the initiative of the Ministry of Public Works, a commission drew up "provisional instructions for the prevention of damage to buildings due to earthquakes and the repair of damaged ones", material submitted to the M.L.P. in December 1941 (thus, only one year after the earthquake) and subsequently published in the Official Gazette No. 15 of 19 January 1943.

These "Provisional Instructions" were the first normative act for the anti-seismic design of buildings. Unfortunately it appeared in the middle of the war and went unnoticed even among construction engineers, who had other tasks at that time."

The established rules have been improved and developed for several segments of the building industry, up to the present day. The landmark for the modern period was the earthquake of 4 March 1977, which resulted in the "Law 8/1977 on the Strength, Stability and Durability of Buildings". [18] later transformed into law “Law 10/1995, on Quality in Construction.

Law 10/1995 Compared to law 8/1977, we can say that it preserves the state's control attributions regarding the quality of the construction works designed and executed/performed. In addition, it regulates in more detail the conditions for placing construction products on the construction market.

In France, the Building and Housing Code and the Urban Planning Code are regulated. [19]. Town planning has existed and has been passed down since the Roman civilization in France. Then in the Middle Ages, towns in fortified enclosures are mentioned.

Since ancient times, housing has been considered a right in France [20] and was a very important concept for the government. Moreover, since the 1890s the law of social housing was legislated. In parallel with the development of this concept, it was necessary to regulate the approvals needed to build.

Quality in construction has evolved with the development of cities as urban planning. The way it was built was very important to the government. [21]

4. COMPARISON BETWEEN THE QUALITY SYSTEMS IN CONSTRUCTIONS FROM ROMANIA AND FROM FRANCE

In order to maintain and improve the quality system from constructions from Romania, this needs to be continuously correlated with the changes in EU regulations. In this sense, Romania is member of the European Consortium for control of constructions and of the Group for administrative cooperation in surveillance of construction products market [15] and cooperates with other Member States.

A possible approach to inducing improvements in the quality systems in constructions and reducing various risks that may occur is by use of comparison with other quality systems from other EU Member States with similar quality systems implemented. In the present article, France is the country of choice for comparing quality system in construction.

Pedro et al. (2010) state the similarity among building control systems in European countries, which are key to ensuring quality in constructions. Control is key in ensuring compliance, conformity in constructions. Thus, in these systems, the designs prepared with taking into account both compulsory legal stipulations and the voluntary requirements of the client must be submitted to an authority for approval, checking whether the respective designs respect building regulations and urban planning zoning constraints and requirements. In the stage of execution of works, there are site inspections, with the role of ensuring that the structure is built in accordance with the approved construction design, while also respecting building regulations. When the execution of works is finalised, there is a final check, which results in the issuing of a document proving completion of works.

Given the above-mentioned aspects, the authors considered important to look more in detail to aspects related to regulatory framework and its enforcement, and on processes from design to finalisation of works.

The quality system regulatory framework in constructions is detailed in building regulations, control system for constructions and specific rules for enforcement, which are set both in Romania and in France at central level.

The regulatory framework in constructions from France combines public and private influences, with authorization provided by public entities and control by third parties from the private sector. Specific regulations related to accessibility, thermal insulation, acoustics and safety are defined in the Housing and Building Code, while also enabling the setting of level of performance to technical standards through contracts. In addition, local urban planning approaches sustainability aspects in its sets of rules. Moreover, there is the need for a compulsory insurance of decennial guarantee, which requires a technical verification for conformity of works in relation to technical standards, conducted by a controller contracted by the insurance company.

In Romania there are several main legal regulations stipulated in several laws and government decisions:

- Law on Bulding permits no 50/1991, with further changes and additions;
- Government decision on General Urban Regulation (525/1996), with further changes and additions;
- Law on urban planning together with various other general and local regulations and plans (350/2001), with further changes and additions;
- Law on Construction Quality (10/1995), with further changes and additions;
- Government Decision no. 273/1994 for the approval of the regulation regarding the reception of construction works and the corresponding installation, with further changes and additions.

In addition, contracts related to works take into account regulations set in the Civil Code (2011), Changes and additions in legislation, which may occur yearly, require specific stipulations for additional changes, correlations in related legislation, which might lead to potential inconsistencies.

Similar to the situation in France, authorisation of works is done by public authorities.

In order to obtain a building permit, both in Romania and in France it is necessary to obtain a certificate of urban planning and the building permit, for which the application may be the owner of the property, or a person with right to build on the specific property (without owning it), or a person authorized by the owner to complete the building permit procedure on his behalf. The documentation annexed to the administrative form for obtaining the building permit includes the design of the project proposed for approval. The building design must be conducted by a qualified professional, who needs to ensure compliance of the design with building regulations and planning requirements and constraints (set the the urban planning certificate).

Both in Romania and in France, it is the responsibility of public authorities to verify that the proposed design is in compliance with urban planning requirements and constraints; in most cases such verifications are conducted at local level.

While in Romania, a design auditor must be appointed by the applicant for the building permit for all buildings that require building permit, in France, a design auditor must be appointed only for certain categories of construction works, not for all, with requirement for having design audit for insurance-related purposes.

Another aspect of interest for comparison is related to site inspections, needed to ensure control of the works of construction and compliance with project approved and with legal regulations. Both in Romania and in France the site inspections are conducted by a building surveyor that is appointed by the applicant, with taking into account in the case of France that site inspections are compulsory to be conducted for the categories of construction works that require building permit. Nevertheless, as pointed out by Pedro et al. (2010), in France there are cases for voluntary submission of constrution works for control that includes site inspections because of facility to obtain lower amount for the mandatory decennial insurance.

Both in Romania and in France, as result of observations during site inspections related to failure to comply with the building permit and legal regulations, the building authorities have the power to stop the construction works.

Similar situations can be identified also in the case of supervision of works, which both in France and in Romania is conducted by public central or regional government institutions. Such supervision encompasses oversight and audit of entities responsible with approval and site inspection.

5. CONCLUSIONS

The quality system in construction applies both to buildings in the design and/or execution stages and to the existing built environment.

From this point of view, it can be seen that the quality system in construction shows continuity in ensuring a high level of quality, taken over from the pre-1989 legislation and implemented in the current legislation after 1989.

Also the current quality system in construction in Romania has taken over the requirements and is in line with the new European regulations and standards, being applicable and implemented in construction projects.

There is also in our country a draft of the Construction Code posted in public inquiry by the ministry that manages these regulations but to which many amendments have already been made.

The legal system in Romania has many similarities with legal systems in European countries such as France. Implicitly the quality systems implemented in these countries also show these similarities.

In France, the Building Code is separate from the Urban Planning Code, but they are related to each other. This article presents in general the comparison between the two quality systems but this analysis can be carried out in more detail. The construction quality system regulated in France can be chosen as a model for the improvement and development of the construction quality system in Romania.

6. REFERENCES

[1] Niculiță Lidia, Matache Georgiana (2013), "*Study on the requirements of a quality management system in construction*", Revista Română de Inginerie Civilă, Vol. 4 , pp. 327-339

[2] Deac Vasile, Vrîncuţ Mihai (2013), "*Tehnici calitative în managementul de proiect IV.b. Demonstrarea viabilităţii planificării prin lanţ critic în mediul proiectelor de construcţii din România*", in Calitatea: Acces la Success; Vol. 14, Iss. 134

[3] Simion-Melinte Cezar (2013a), "*Managementul calităţii în construcţii I. Direcţii către o nouă abordare a calităţii*", in Calitatea: Acces la Success, vol. 14, iss. 132

[4]Simion-Melinte Cezar (2013b), "*Managementul calitatii în constructii: II. Calitatea proiectarii*", in Calitatea: Acces la Success, vol. 14, iss. 133, pp. 29-34

[5] Simion-Melinte Cezar (2013c), "*Managementul calităţii în construcţii III. Calitatea materialelor şi a produselor pentru construcţii*", Vol. 14, Iss. 134

[6] Simion-Melinte, Cezar (2013d), "*Managementul calitatii în constructii: IV. Calitatea executiei*", in Calitatea: Acces la Success; Vol. 14, Iss. 135, pp: 20-25

[7] Stela Mihai, (2013) "*Comercializarea produselor pentru construcţii. O nouă reglementare europeană de la 1 iulie 2013*", in Calitatea: Acces la Success; Vol. 14, Iss. 132

[8] Pedro João Branco, Frits Meijer, Henk Visscher, "*Comparison of tasks and responsibilities in the building control systems of European Union countries*" International Journal of Law in the Built Environment 2(1), 2010, DOI: 10.1108/17561451011036513

[9] Mărginean Mara (2013) "*Înfiinţarea Comitetului de Stat pentru Arhitectură şi Construcţii în noiembrie 1952. Premise politice şi economice*", in Revista Transilvania, Iss. 8, p77-84

[10] Soare Cosmin (2018), Codification of the Urban Planning in Romania, in Revista de Drept Public (n.s.) 92 (2018)
https://heinonline.org/HOL/LandingPage?handle=hein.journals/pblwview2018&div=12&id=&page=

[11] Balaban-Grajdan Constantin Adrian (2016) *The Coding of Legislation in the Fields of Country Planning, City Planning and Construction*, in Conf. Int'l Dr. 139 -

https://heinonline.org/HOL/LandingPage?handle=hein.journals/cidstue2016&div=23&id=&page=

[12] Meijer Frits and Visscher Henk (2017), „*Quality control of constructions: European trends and developments*", in International Journal of Law in the Built Environment 9(2):143-161, DOI: 10.1108/IJLBE-02-2017-0003

[13] https://www.asro.ro/standardizare/

[14] L10/1995 on quality in construction, as amended http://legislatie.just.ro/Public/DetaliiDocument/5729

[15] https://isc.gov.ro/managementul%20calitatii.html

[16] https://www.revistaconstructiilor.eu/index.php/2015/11/01/

[17] https://www.revistaconstructiilor.eu/index.php/2016/05/01

[18] https://l gislatie.just.ro/Public/DetaliiDocumentAfis/443

[19] http://www.legifrance.gouv.fr/

[20] Chicos Alina et al „*Social housing in France – Features and financing*", pg 13 – pg 22, https://www.ceeol.com/

[21] https://www.haut-rhin.gouv.fr/Politiques-publiques/Amenagement-du-territoire-construction-habitat/Qualite-de-la-construction/1-La-reglementation-de-la-construction/1.1-Les-regles-de-construction

[22] Vermande, H., Van Der Heijden, J. (2011, February 14). *The lead market initiative and sustainable construction: LOT 1*, Screening National Building regulations in France - PRC country report. Y0602.01.01. Delft, the Netherlands. Link: http://ec.europa.eu/docsroom/documents/5091/attachments/1/translations/en/renditions/native

Note:

Gabriela Draghici - Ovidius University of Constanta, Bd. Mamaia nr. 124, 900356-Constanta, Romania (corresponding author to provide phone: +40-241-619040; fax: +40-241-618372; e-mail: draghici.gabriela@univ-ovidius.ro)

Ramona Camelia Silvestru - Technical University of Civil Engineering Bucharest, Romania (e-mail: ramona.silvestru@gmail.com)

Cosmin Filip - Ovidius University of Constanta, Bd. Mamaia nr. 124, 900356-Constanta, Romania (e-mail: filip.cosmin@univ-ovidius.ro)

Alexandru Nicolae Bizu– PhD, Gh. Asachi Technical University of Iasi, Str. Prof. dr. docent Dimitrie Mangeron , nr. 67, corp T, Romania (e-mail: bizu.alexandru@gmail.com)