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CONSEQUENCES OF NON-CORRELATION OF ACTIVITIES INCLUDED IN THE CONSTRUCTIONS REHABILITATION PROCESS

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Abstract. The paper presents the main problems appeared in a rehabilitation process for an administrative building. The causes who generate these problems and the abnormal cooperation between owner, designer and the expert are described. In theory, the Romanian prescriptions are clear enough but the practice shows some malfunctions with some negative influence on the structural safety.

Key words: rehabilitation; building; expert; designer; promoter; performer; non-correlation.

1. Introduction

Technical rehabilitation of an existing building which suffered significant degradation during exploitation or buildings operation, as a result of the change of destination/technological flow, requires the adoption of intervention measures involving rebuild, consolidation, conversion, extension, partial split-up or repairs.

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Mentioned operations shall be carried out only on the basis of the projects prepared by authorized person and checked according to the law or of some expertise reports prepared by certified technical experts.

Current legislation provides that experts respond for given solutions, having the obligation to follow the technical condition of the building during the performance of intervention works and to act effectively, when unpredictable situations appear, able to endanger the strength and stability of the rehabilitated objective.

In order to ensure an appropriate framework for fulfilling the unique responsibility that rests with the expert, taking into account the totality of the involved factors in the implementation of the building rehabilitation process, the current legislation makes the specification that intervention works projects must be verified by the experts who prepared the expertise report and intervention decision was established.

As a result the current legislation establishes the obligations of the factors that are involved in the building rehabilitation process, at the same time it defines the framework within the participants service relationships must be.

For various reasons, subjective nature largely, nowadays many malfunctions are manifesting, which have negative influence for the optimum of some activities, leading to the blocking of the entire process.

The causes that generate this situation are multiple and will be presented in terms of the effects it generates, according to the factor that influences the development of intervention measures.

Mainly, the irregularities found come, on the one hand, from not knowing and not applying in practice the legal and technical regulations in the field, but can be also generated by specialists' inadequate professional training who engages with too much enthusiasm in solving problems with high difficulty degree.

Not a few times, the temptation to obtain, as soon as possible, a social or material privileged situation, prints to actions undertaken by various vectors a hint of superficiality, and under pressure of time, do not give proper attention following the legislation and technical requirements, which are negatively reflected to quality of works performed.

Non synchronously in the buildings rehabilitation process appear, when involved factors exceed or accepts no liability to the extent tasks ascribed to them according to current legislation, thus violating the field of activity of the other participants or, on the contrary, when the areas of law remain uncovered.

Both trends are just as dangerous, as this can cause serious damage or impossible to recover, after the phenomenon has been consumed.

In the first instance will be presented shortcomings, mistakes and errors that may appear in the action undertaken separately by the expert, the designer and the beneficiary, so that in the end, on the basis of concrete situations

encountered in practice, to be examined how the reported irregularities generate malfunctions, in all building activities.

2. Shortcomings and Mistakes Manifested to Expertise

A. Analysis works are incomplete or incorrect, as a result of insufficient documentation on the buildings status, being caused by:

- a) lack of original project and other documents from the building book;
- b) the use of incomplete architecture and resistance survey;
- c) low interest for clarification of certain aspects of the building and exploitation history of the objective;
- d) neglecting importance it shows visual appearance of the building played by photos or movies, in certain circumstances.

B. Site studies quantitatively speaking incomplete or inconclusive in terms of quality, aspects which come from:

- a) neglecting influence exercised by special notes on relief and climate in the area and, in particular, by the level of groundwater from the site;
- b) topometric studies waiver or acceptance of works with questionable quality;
- c) assimilating superficial geotechnical studies, based on information provided by previous works, made for nearby objectives or located near the expertised building;
- d) the acceptance of incomplete geotechnical studies, whose conclusions result in connection with the carrying out of an insufficient number of drillings and laboratory tests or whose depth is not justified by site features;
- e) non performing site or laboratory tests, in order to assess the quality of the building material, operation required for the determination of their residual mechanical characteristics and the use of inconclusive studies, which, by reduced tests number, is not suited for statistical interpretation; the reasons invoked in such situations being, to a large majority short-term, could be qualified as objective and attributable to the following: short time affected implementation expertise; difficulties or even an inability to carry out unveiling in certain areas; impediments in purchase materials and human resources means; increasingly higher costs for prevailing and testing of samples, as well as for the processing of results according to the requirements imposed by current legislation;
- f) making a superficial research, concerning the method of drawing up of infrastructure and of the technical condition of the material components, meeting quite a few situations when do not give due attention to this issue, and estimates on aspects referred to making it in the light of the extent to which behaved superstructure;
- g) neglecting negative consequences which an improperly system of collection and disposal of pluvial waters may exert, by which is favoured stand

for a very long time of the water from the surface of the site, in the buildings nearby.

C. Technical analysis condition relying only on quality evaluation, without use analytical methods of investigation.

This way of acting, recommended only in specific situations, justified and substantiated by the expert, tends, unfortunately, to expand, being encountered, ever more frequent, in the analysis carried out in recent years.

A possible explanation of the referred situation consists, surely, in the fact that, in the new drafting of Chapter 12 of P100-92 Norm, from 1996, it was pursued decrease of importance granted until then to the notion of a „nominal degree of insurance to seismic actions” ($R = S_{cap}/S_{nec}$), it becomes a criterion for guidance only and is not decisive (as he had been designed initially), in order to estimate buildings vulnerability and to determine the intervention decision.

The lack of material resources made that in such situations, technical documents (expertise, SF, PT, DE) should become parts of archive, unusable in time as a result of the amendment of the design rules, which justifies the full realism of surrender of the concepts of „emergency category” and „duration of time for intervention measures”.

These important steps, built for the purpose of simplifying operations of analysis of the technical condition of existing buildings, do not justify, in any form, complete surrender, without discernment, to the quantitative evaluation, by one of the methods on which the expert is obliged to apply in the light of the situation encountered on site.

D. The indication, in the expertises, of incomplete intervention measures, ineffective or contra-indicated, such as the followings:

- a) no strengthening of infrastructure, where this operation is imposed;
- b) neglecting aspects of thermal and sound insulation of walls, floor or an accompanying set, in such a way as to be secured comfort conditions laid down by the current legislation;
- c) non-existent required number of parts designated (floors, drawings, details), showing mainly rehabilitation solutions proposed, including those for the recovery of architectural elements or disused temporarily, on duration of the application of intervention measures;
- d) provision for the consolidation components of some brick masonry walls, in the form of mortar triangles of a few centimeters, reinforced with welded STNB, instead of concrete shirts, poured or sprayed concrete applied on both sides of the affected walls reinforced with ductile steel bars;
- e) consolidation on both sides of foundations, continue under walls, in situations which do not impose such a radical measure, such as those applied to objectives located on geotechnical stable soils, in cases where the groundwater is lowered or when superstructure, does not have any dislocations or cracks, generated by lease of infrastructure.

3. Errors and Mistakes Made by Design

I. The project reflects the truncated recommended solutions in the expertise, these being founded only in part in the documentation, as a result of the fact that the author of project gives up on his own initiative to some components of the solution provided by the expert; such an attitude, contrary to legal provisions, it is difficult to understand and, regardless of the reasons that determines it, may not be, neither accepted nor justified.

A situation like this is encountered frequently when is omitted execution of the works of infrastructure consolidation, although in the expertise, these had been laid down, without any equivocation.

II. The designer develops his own rehabilitation versions different of the solutions proposed by expert, some of these are non-approved or unknown in current practice, the author considering that, when drafting the documentation on the basis of personal inspirations, contributes to the continual improvement of solutions recommended by the expert.

Such a "specialist", should find out, if in his knowledge base there is no such information, that does not allow such initiatives, whereas his status was and remains the simple performer and not innovative, without quality to change or modify what is provided in the expertise.

In both cases, designer unauthorized operations are deeply harmful, because the overall design of rehabilitation works envisaged by the expert, for which he is responsible is altered (in some cases, even total dismembered).

A serious gravity presents that designer, doing so, does not assume any responsibility for involvement in other people's affairs, his gesture having many opportunities to pass unnoticed, until the appearance of extreme stress.

Disturbing aspects of such statements come from the fact that they do not occur by chance, not caused by ignorance or overzealous, but often are deliberately produce, whereas involves much lower production costs and are able to decrease the time of the execution result.

It should not be neglected that the mentioned parameters are particularly important, when it comes to assessing the technical-economical performances, which virtual winners of auctions must prove, to award the construction works.

III. Execution documentation bears no expert visa as evidence that the designer fully appropriated, not only the design of consolidation as a whole, but also details on which the expert has been taken into account and for who he assumes sole responsibility.

Naturally, non-existent certification by the expert on the quality of the project, should notify those entitled uncertainties what are hanging around work and do not allow the competent authorities to grant favourable approval documentation and permission to start work execution.

IV. The designer avoids or refuses to cooperate with other factors involved in the rehabilitation of buildings, to quick identification of the solutions that are required when, during the course of the consolidation, on site arise unexpected situations which are difficult or impossible to assess in the office.

4. Consequences of Negligence of the Decision-Makers

Failures caused by the wrong way that obligations of expert and designer are interpreted and enforced, worsens when some decision-making factors do not report issues contrary to the rules or regulations or when, decision-makers, for various reasons, do not intervene in the right time to stop the negative effects that may occur in the process of implementing the intervention measures.

The ease with which, some incomplete documentation or deviate from the letter of the law, are obtaining the necessary approvals, is part of this category of irregularities, the most common of them being no expert visa applied for a project, situation which should raise questions regarding the reasons which have obstructed the expert to exercise control over the manner in which its recommendations were followed by the designer.

Such issues, minor in appearance that could be considered the result of negligence, should not be tolerated, as they can promote the production of other irregularities, some of them with very serious effects.

In such cases is given the possibility that, starting from a documentation in which are not found the solutions indicated by the expert, to obtain easily the authorization and, in the end, it shall be carried out consolidation, based on a different design than the one on which it has relied.

It shall also meet in current practice, situations when performing operations of total or partial settlement of the work undertaken, without exerting a thorough inspection on the quality requirements that must be satisfied by activities carried out. With a few exceptions, injury suffered is difficult or impossible to recover.

Sometimes, under the pressure of time or due to operation of interested persons, are promoted questionable quality work, it is declared received hidden work unexecuted or only found partly in the field.

There were times, in the course of the rehabilitation process of the buildings, that may have been damaged, shall meet situations contrary to the law and which consist of the resigning of expert or designer to tracking execution quality operations.

Failure to comply with the duties of participants (expert, designer, beneficiary, executor, approval authority and control) to the buildings rehabilitation and infringement, unwittingly or knowingly, areas of competence

of responsible factors, may create a series of malfunctions, able to influence proper conduct of activities, up to blocking them.

Admitting the possibility of committing individual mistakes, such as those mentioned above, and the emergence of various non-synchronization between involved factors, by summation of effects product, which reinforce each other in certain circumstances, can lead to special circumstances, by resulted nature and consequences.

The aspects are not elements of a hypothetical scenario, but are inspired from a real situation, registered within a building of historical and emotional significance for the local community, showing, in addition, a history of about 200 years.

The events unfolding in this real "case study" led to a predictable end (although efforts have been made by some stakeholders to reach another settlement) succeeding steps taken in the order shown namely

a) The building consolidation project is drawn up, with structural frame made of brick bearing walls and foundations continue as soleplates under the walls, consisting of carved stone masonry, solidarity with clay mortar. Due to improper directing demolition works, caused by modernization and systematization of the urban area, the natural ground level has risen by about 0.60 m, so that the base of rock and several brick rows belonging to the contour walls, is, currently, below ground level. In these conditions, due to moisture from the soil, between the foundation and the superstructure of the building is a layer of brittle material, which rests on the outside the building and which should be removed as a matter of urgency. However, it is necessary to achieve a waterproof, at the connection between the infrastructure and the superstructure, without which will increase the tendency of migration of the water in the soil, which became obvious in several portions.

b) After ownership of the consolidation project and honouring the contract by the customer, it was found that the documentation does not comply, in many respects, the recommendations made in technical expertise. Thus, there have been taken into account only some of the intervention measures proposed (typically those that have a low level of technical skills and, therefore, require low costs). Measures relating to the consolidation of the foundations and rehabilitation of the contact area between them and superstructure were totally ignored. Instead, they adopted for superstructure rehabilitation solutions greatly simplified compared to those provided in the expertise.

It also have been promoted "original" solutions, adopting for the rehabilitation of the walls a much more simplified solution under materials and labor consumption aspect (elbows of reinforced mortar at the intersection of walls, instead of full face work of the walls on both sides).

c) Although it was obvious the incompatibility between the expertise and the draft, it is submitted for approval of a licensed supervisor, which returns signed and stamped material, perhaps with attached verification report.

d) At this stage, according to current legislation, it was necessary, for the project, to be sent to expert, in order to to analyse the way in which it fulfills the requirements expressed in the expertise. Although the involved factors, ought to know and apply the legal procedure, the project is not targeted to expert approval, he has no knowledge of the content of the documentation, thus being deprived of the opportunity to intervene and correct irregularities committed.

e) Economic documentation drawn up on the basis of solutions proposed in the project, naturally led to reduced values than those reported in the feasibility study, drawn up at all by the expert. This situation has caused confusion to those concerned to take over execution of objective, which, on the basis of professional experience, have been entitled to estimate higher costs for completion of the work.

f) The project, although incomplete and unadvised by the expert, is appropriated and promoted by policymakers, with their agreement is developed tender documents and award menus operations.

g) As a result of the fact that the feasibility study drawn up by the expert is not taken into account in drawing up the tender documentation and assuming that there has been a leak of information to a virtual participant, he has all the chances to win the competition whereas he knows and can outrun without risk his competitors, both cost, as well as the duration of execution.

h) Works being started, in the short-term may be permitted that it has been released the building authorization, although, under the conditions outlined above, when documentation was not approved by the expert had to be clarified, in advance, the causes that have led to this situation.

i) The funds provided for in the build-out prepared by the designer, totally insufficient, they are consumed soon, being absorbed by the stripping works of the walls and floor and the restoration of the roof (framing repairing and carrying out a new cover), situation that determines the performer and the promoter to be concerned with the identification of additional funding sources, in order to continue work.

j) In this phase is requested expert assistance for the re-updating of expertise, as a result of highlighting actual status of building degradation, after removing the plaster on all inside surfaces.

k) The expert becomes aware of the site situation and considers that it is required additional intervention measures, solution recommended to the original one, especially in terms of wooden floor whose resistance main elements presents a more advanced state of degradation than that expected before stripping performing.

l) The expert agrees to carry out additions imposed by the site situation, but shall require the designer to review the execution documentation, so that it conforms to recommended solutions in expertise. The most important aspect consists of the infrastructure rehabilitation and the contact area between this and superstructure, operations that the designer did not take into account. Also, the expert insists for entry into legality of the execution documentation which, in complete form, should have been submitted and approved to the author of consolidation solution.

m) Towards the repeated interventions, not only of the expert, but also of the promoter and the performer, the author of project refuses to take the action requested to bring additions and to submit the new form of the work to expert approval.

The lack of any intention to correct the effects of made mistakes, occurring on the background of total refuse from the designer to collaborate with the other factors involved, even to discuss on the subject which has caused so much controversy.

This kind of attitude, somewhat strange, to say the least, is not motivated in any way by the one who obstructs good progress of things. As a matter of fact, there is no need to give explanations, whereas the situation is clear; completing the execution documentation according to requirements imposed by normative acts, would mean recognition of irregularities undertaken and assuming, by default, of their responsibilities assigned to it. The designer does not want to make this gesture, his intention being only to procure new funds on account any additions that would have to be made to initial expertise.

If this "subtle" would have passed unnoticed, would have obtained the required amount of work undertaken, omitted in the first phase, even for paying those who will develop a new form of project, although this activity had consumed other funds.

The fact that the designer claimed such unconfessed intentions is supported by the initiative to draw up a new feasibility study, which assess investment financing, at a level close to that provided for in the build-out which had been taken into account to tender for the award of execution. In this way is made a new step toward irregularities already taken, as feasibility study, precedes the design and not the other way around.

Feasibility study is always regarded as a document on the basis of which it is established, not only an opportunity, but also the level at which it falls to range the expenses necessary to carry out an investment, so the technical project too.

In addition to the carrying out of unpermitted movements such as: premeditated own initiatives to achieve a specific purpose, infringements of powers, skip some phases in process of rehabilitation or inverting them, the development of the feasibility study carried out safely subsequently the tender,

by the action, there is a noticeable designer's intention to make use of expert authority to determine a level of additional financing.

Reliance on naivety or lack of experience of some of the participants, was intended distraction from the real motivation of the situation and in the confusion created, it was intended to induce belief that expertise is not complete because it does not provide a complete assessment of the early stage degradation.

The expert has remained consistently to the attitude of helping the designer to make the necessary additions to his developed documentation, by refusing to take the series of irregularities committed by others and to participate in a game that concerns foreign interests, and then, to review the findings of the expert inspection, according to the new issues arising after stripping walls and floors.

He also asked to explain circumstances which have led to the drawing up of the new feasibility study, although it had been drawn up such a documentation in two years ago, according to indicated consolidation solutions.

The lack of receptivity and cooperation of other participants in the building rehabilitation process with the entitled attitude of the expert, led to the temporary blocking of activities on site, as a result of drawing up a incomplete project. The future of the building becomes more uncertain from day to day, as a result of stripping carried out, which substantially reduced the strength reserve of the building, in the absence of the intervention measures recommended in expertise.

5. Conclusions

In this paper are presented and discussed a number of irregularities that occur in the structures of technical rehabilitation of existing buildings.

Although the provisions in force rigorously establish the obligations and the responsibilities of the factors participating in the rehabilitation work (expert, designer, promoter, performer) and the nature of employment relationships that must exist between them for various reasons, largely subjective, currently, there is a series of trouble between activities, which negatively influence the implementation of intervention measures envisaged, leading, in certain situations, to block the process of production.

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CONSECINȚE ALE NECORELĂRII ACTIVITĂȚILOR INCLUSE ÎN PROCESUL
DE REABILITARE A CONSTRUCȚIILOR

(Rezumat)

Sunt prezentate și discutate o serie de nereguli ce se manifestă în cadrul structurilor de reabilitare tehnică a construcțiilor existente.

Deși prevederile în vigoare stabilesc, în mod riguros, obligațiile și răspunderile factorilor ce participă la realizarea lucrărilor de reabilitare (expert, proiectant, beneficiar, executant), precum și natura relațiilor de serviciu ce trebuie să existe între aceștia, din diverse motive, în mare măsură subiective, în prezent se constată o serie de nesincronizări între activitățile desfășurate, care influențează negativ derularea măsurilor de intervenție preconizate, ajungându-se, în anumite situații, până la blocarea procesului de producție.