Study of permissible deviations from the project of buildings acceptable for use

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Abstract The article discusses the determination of allowable deviations from the project of buildings acceptable for operation and from the current construction norms, both from the architectural and construction point of view. They are also analysed taking into account all the risks of errors. Unique results have been obtained, which are as follows: as a result of the research, new permissible threshold values from the current regulations for buildings acceptable for use, which differ from the numbers proposed by the current rules, have been determined. The results of the study are based on the deviations of the buildings commissioned under the amnesty law and the sustainability findings presented by the accredited inspection organization as the main argument.

Keywords: exploitation, operation, buildings, deviations from the project, permissible deviations.

1. Introduction

The note aims to determine the permissible limit values of deviations from the approved project and valid norms of the buildings that can be put into operation.

The research objects are the buildings in Tbilisi, according to the respective classes (II, III and IV).

The theoretical and practical basis of the research is the following methods and examples: analysis of applicable laws and regulations, within the amnesty law, analysis of commissioned buildings, architectural analysis of buildings, structural analysis, analysis of installation works, analysis of the arrangement of engineering networks, analysis of national accessibility standards, arrangement of fire systems Analysis.

The research is based on the study of the buildings in operation in Tbilisi. As part of the research, about three thousand buildings were inspected.

2. Main part

As you know, the commissioning of the completed construction means the final determination of the compliance of the completed construction with the permit conditions. There are several basic documents that the completed construction must comply with for the building to be put into operation.
These documents are:
- Law of Georgia - Code of Spatial Planning, Architectural and Construction Activities of Georgia
- Resolution of the Government of Georgia No. 255 (2019) - on the procedure and conditions for issuing a construction permit and putting the building into operation
- Resolution of the Government of Georgia No. 57 (2009) - on the procedure for issuing construction permits and permit conditions
- Regulations approved by the Resolution of the Government of Georgia No. 41- - Building safety rules

A change in the construction document does not require a new construction permit or notice when the implemented change meets the requirements of the detailed construction plan of the technical regulations or the conditions of using the land for construction; An expert opinion on compliance must be submitted.

Going through the mentioned procedure is not mandatory, in case of the following changes to the construction documentation:
a) Slight change of the main dimensions of the load-bearing structural elements of buildings, but not more than 0.1 meters (except for the horizontal section of the columns, the width of the supporting wall.
changes in the heights of the vertical section, the cross-section of inter-floor roofing tiles and consoles), which should not lead to the

weakening of the stability of the construction system defined by the building regulations according to the building construction implementation documents;

b) Changing the development area of each floor on objects belonging to classes I and II with an accuracy of 1.0 m 2 for every 100 m 2 of area, changing the area of development of each floor on objects belonging to classes III and IV with an accuracy of 1.0 m 2 for every 200 m 2 of area, which does not should lead to the weakening of the stability of the structural system determined by the construction documentation of the buildings according to the construction regulations;

c) change of floor height by a maximum of 0.2 meters (by a maximum of 0.3 meters for individual residential houses belonging to the II class), which should not lead to weakening of the stability of the structural system defined by the construction documentation according to the construction regulations, turning the maintenance floor into an incomplete floor and turning an incomplete floor into a full floor;

d) the change of the dimensions of the exterior no more than 0.4 meters, and the change of the dimensions of the building no more than 0.3 meters, if the cadastral boundaries and border zone are not violated and there are no changes that are not considered in the permissible changes;

e) moving/changing and/or adding/subtracting non-loading and self-loading structural elements of the interior;

f) Changing, adding or shortening the separate local engineering and communication network of buildings;

g) replacement of construction materials and products with other construction materials and products with appropriate technical and aesthetic characteristics;

h) moving/changing such parts of buildings that do not require a construction permit by this rule;

i) horizontal displacement of the ground edge and/or underground part of the building structure about the ground surface no more than 1.0 meters, provided that the borders of the cadastral unit are protected;

j) vertical change of the zero mark of the building about the absolute zero of no more than 0.4 meters (including any kind of change caused by this change), which should not lead to the transformation of the underground floor into a ground or above-ground floor;

k) depending on the properties of the soil, the additional charge of the foundation of the building (in the case of point, ribbon and monolithic slab) of no more than 0.5 meters;

m) Depending on the properties of the ground, additional or less deepening of the building's girder foundation to the solid part of the ground.

Allowed changes in the construction documentation should not violate other permit conditions, or requirements of technical regulations and should not violate the rights of third parties.

It is forbidden to build one or more floors on the agreed object, to change the development area of the object by more than 20%, and to change the defined function of this object. In such a case, the procedure for obtaining a construction permit starts again by the applicable legislation.

Permissible deviations during construction-installation work Quality control of construction-installation works (CEM) is carried out to determine and ensure compliance of the performed works and used materials, products and structures with the requirements of the project, building rules and other applicable regulatory documents.

This goal is achieved by solving the following tasks:

• timely detection, elimination and prevention of defects, grievances and violations of work rules, as well as their causes;

• by establishing the compliance of the quality indicators of construction materials and the performed construction-installation works with the established requirements;

• by improving the quality of construction and installation works, reducing non-productive costs of processing defective materials;

• By increasing production and technological discipline, workers are responsible for ensuring the quality of construction and installation works.

Quality control of construction materials, products, constructions and the work performed is carried out by their continuous or

selective inspection, if necessary, by opening previously completed hidden works and constructions, as well as by testing existing constructions (by non-destructive methods, loads and other methods) for strength and stability, settlement, impermeability of sediment, sound and for thermal insulation and to compare other physical, mechanical and technical properties with the requirements of the project and regulatory documents.

Quality control is carried out by:

• Representatives of state control and supervision bodies (state architectural and construction supervision, technical supervision, energy supervision, state sanitary and epidemiological supervision, fire supervision, etc.);

• Representatives of the customer's superior organizations and the contractor, who inspect the construction;

• representatives of project organizations (author supervision);

• complex commissions consisting of representatives of the customer and contractors;

• Customer representatives (technical supervision of construction);

• Personnel of contractor construction organizations (engineering and technical workers who directly carry out work production, foremen and ring leaders, construction laboratory, geodetic service), as well as internal control commissions appointed by the head of the contractor organization.

Quality control of construction projects is carried out in the following terms:

• by the personnel of the contractor construction organizations and representatives of the customer - daily;

• representatives of design organizations - within the terms specified by the designer's supervision agreement;

• State supervision bodies - periodically.

Construction sites must have:

• general log of works, special logs for certain types of works (log of installation of construction structures, log of welding works, log of anti-corrosion protection of welded seams, log of installation edges and joints, etc.), the list of which is drawn up by the user in agreement with the general contractor and subcontractors, Journal of copyright supervision of project organizations (if any);

• inspection reports of hidden works, interim acceptance of load-bearing structures, testing of equipment, systems, networks and devices;

• Other production documentation for certain types of works provided for by construction norms, SNDTS and as executive documentation - working drawings with a note on the compliance of the work performed with these drawings or included in them

• With changes. Agreement with the design organization, concluded by the persons responsible for the production of construction and installation works.

During control and acceptance of work, the following are checked:

• Conformity of the used materials, products and structures with the requirements of the project;

• compliance with the composition and scope of the work performed with the project;

• compliance with controlled physical-mechanical, geometric and other indicators with project requirements;

• Timely execution and correctness of production documentation;

• Eliminating the deficiencies mentioned in the work logs during the control and supervision of the construction and installation works.

3. Conclusion

As a result of the research, new permissible threshold values were determined from the valid norms of buildings acceptable for operation, which differ from the numbers proposed by the current regulations. The results of the study are based on the deviations of the buildings commissioned under the amnesty law and the sustainability findings presented by the accredited inspection organization as the main argument.

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