European Scholar Journal (ESJ)
Available Online at: https://www.scholarzest.com
Vol. 2 No. 5, MAY 2021,
ISSN: 2660-5562

RULES FOR INSPECTION OF THE TECHNICAL CONDITION OF THE BUILDING DURING RECONSTRUCTION

Melikov Zarshed Jamshedovich
Scientific researcher
Samarkand State Architectural and Civil Engineering Institute
Zarshedmelikov@gmail.com

Article history:

Received: 3rd April 2021
Accepted: 20th April 2021
Published: 10th May 2021

Abstract:

The article discusses the need to apply the rules of inspection and monitoring of the technical condition of real estate objects. The algorithm for the express analysis of the technical condition of the building to determine the possibility of reconstruction is described.

Keywords: Examination, reconstruction, defects, express analysis.

One of the important directions in our time is the reconstruction or re-profiling of a failed building. Reconstruction makes it possible to extend the life cycle, improve the quality of structural elements, equip housing with modern engineering equipment, improve the construction efficiency of buildings, and increase working safety and strength.

In order to start the reconstruction, due to the deterioration of the building or some of the essential, often non-essential structures that have become unusable, it is necessary to conduct an examination and diagnostics of the technical condition of this building. [1]

An important measure aimed at maintaining buildings and structures in a serviceable condition is the constant monitoring of changes in technical characteristics, load-bearing and enclosing building structures, as well as external and internal engineering networks and systems. As a rule, this is the responsibility of the maintenance service of the owner of the property. In addition, in the cases provided for by the regulatory documentation, it is necessary to carry out a specialized expert examination for buildings and structures, based on the results of which a conclusion is made on the compliance of their technical condition with the required parameters.

The level of a country's economy determines its rating on the world stage. The growth of economic indicators is determined by the chosen policy, the arrangement of priorities in financing a particular economic sphere. In recent years, there has been an acceleration of capital investments in the construction industry, which proves its importance throughout the country. The buildings to be erected must meet all the standards and requirements imposed on them, from the design stage to operation.

The term of operation means the duration of the functioning of the elements of the building, when the planned measures for repair and maintenance are carried out. Timely measures taken to eliminate malfunctions can maximize the operating time [2]. For example, roofs made of deposited materials on bituminous binders (Technonikol, Linokrom, etc.) must perform their enclosing functions for 10-15 years, provided the joints are tight and the work technology is observed. If the integrity of the coating is violated, moisture begins to penetrate and destroy the material from the inside, which reduces the service life by 2-3 times.

Determination of the bearing capacity of the main structural elements is the most important issue at the design stage. When carrying out calculations for limit states, it is mandatory to use safety factors that provide a margin of safety and guarantee the safety of structures throughout the entire service life.

Unfortunately, it is not uncommon for some buildings to become unsatisfactory before the standard service life assigned for the main materials of walls and ceilings - especially capital buildings, with brick walls and reinforced concrete floors, should last 150 years, while buildings with a predominance of wooden elements will last no more than 50 years. A reduction in the service life can occur for various reasons: an erroneously accepted design scheme, excessive loads (misuse), poor quality of building materials, etc. [3].

The restoration of the load-bearing frame of the building is possible through local repairs (a budget option applicable with a low percentage of physical wear and tear) or a complete reconstruction of the building. Reconstruction is a set of measures aimed at replacing the main structural elements of a building, which, as a result of operation, have ceased to meet the requirements of reliability and safety, accompanied by a change in the technical and economic indicators of the building. Currently, many solutions have been developed to strengthen structures. In most cases, rolled metal is used, from which a "clip" (shell) is created, which prevents further destruction without losing the usable area of the premises and with minimal labor and money costs. Scientific and technological progress has made it possible to expand the range of application of polymeric materials in this area. Modern carbon plastic fabrics in combination with epoxy glue firmly envelop reinforced concrete beams and columns,

preventing cracks from opening. The advantage of the latest technology is that the fiber is able to perceive tensile stresses, which makes it in demand in cases of strengthening beams, girders and trusses [3, p. 139].

Inspection of the technical condition of the building is carried out by specialized organizations that have passed state certification.

The purpose of the survey is to obtain a conclusion on the technical condition of the building, indicating the category of condition. Determination of the real technical state of the structure and its parts, obtaining a quantitative assessment of the practical characteristics of the quality of structures, to establish the composition and size of work for repair work or reconstruction.

For this, it is necessary to conduct a comprehensive examination of the technical condition.

The purpose of the preliminary survey is the collection of information, collection and analysis of design and technical documentation, analysis of the selected material to create a technical task.

The purpose of the visual examination is considered to be the initial assessment of the technical condition by external signs, determining the need for a detailed examination.

A transition to a detailed examination is necessary if, during a visual examination, deficiencies and defects are found that reduce the strength, stability and rigidity of the supporting structures of a building or structure.

The purpose of a detailed survey is considered to be the analysis of all collected data, measuring, computational property, fruitful decisions, drawing up a conclusion.

With a comprehensive survey of the technical condition of the structure, the information obtained must be necessary for the design of the reconstruction of the facility.

Then a conclusion is issued, which indicates the category of the technical condition of the building (Fig. 1).

BUILDING CONDITION CATEGORIES			
normative technical condition	**working condition**	**limited workable state**	**emergency condition**

Figure 1 - Categories of technical condition of the building

Reconstruction is associated with strengthening the load-bearing parts of buildings, restoring operational characteristics, increasing the life cycle, increasing the usable area, reformatting the building for other needs and much, much more. These works are considered on an individual basis, and do not have common design solutions with new construction.

Building systems consist of structural parts that are joined together by means of butt joints. Deformations appear in the constructive ones, due to the influence of the external environment, internal technological and operational actions, which contribute to the destruction processes. [1]

In fig. 2 shows the stages of destruction, by which it is possible to determine the state of the given structure, and with what intensity the defects will lead to the critical stage. On the vertical line there is a scale from 0 to 45, this is an assessment of the stage of destruction, on the horizontal scale the period during which defects will render the building unusable is displayed. Destruction goes through three stages. The appearance of cracks in places of stress and the formation of various defects. The stage of their unhurried formation. The stage of sharp, irreversible, critical destruction.

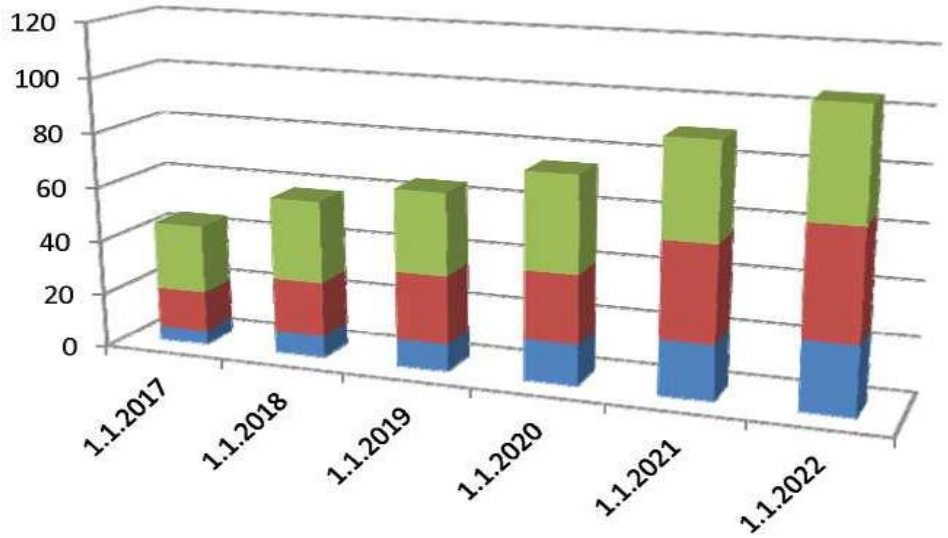

Figure 2 - Stages of destruction of buildings

In order for us to determine the stage of destruction, we must investigate the defects and categories given in table. one.

Table 1 - Assessment of defects by category

Stage evaluation	Defect assessment	General characteristics of the state	Category
0-25	Satisfactory	Structural parts are serviceable but require repair	3
25-40	Unsatisfactory	Operation of structures is possible subject to restoration work	2
40-45	Bad	The state of structural parts is emergency. Safety engineering and complete replacement of structures are required	3

Defects fall into three categories. The third category is defects that do not reduce the intrinsic ability of structures and are easily eliminated during repair. The second category is the occurrence of damage that reduces the bearing capacity and operational reliability of buildings; The first category is the one leading to the emergency state of the structure.

Therefore, if the defects are of the first category, then their school grade is from 40 to 45 and the stage of destruction will be critical, that is, the third stage of destruction, which carries irreversible consequences. From which we can conclude about the need for reconstruction.

And also, if the defects are of the third category with an assessment from 0 to 25, then the stage of destruction will be the first. Which tells us that there will be enough major repairs, which must be carried out within 12 months, so that the destruction does not proceed to the next stage.

To assess defects, it is also possible to use a questionnaire on the object, see table. 2.

Table 2 - Questionnaire on the object of research

No.	**Question**	**Answer**
1	Location of the object	
2	Year of construction	
3	Building structure	
4	Number of floors, building area	
5	Project documentation	
6	Information about early repairs	
7	The amount of physical deterioration	
8	Etc.	

To reduce the time range and money costs for the survey and monitoring of a building that has fallen into disrepair and is subject to reconstruction. It is necessary to pay attention only to those structural elements, the destruction of which leads to inevitable reconstruction. That is, to carry out selective diagnostics, which should consist of two stages.

The first stage is a questionnaire survey, where the necessary data will be indicated for an express analysis of the building to be reconstructed

Table 3 - Conclusion (act) on the presence of defects

No.	**Defects**	**Stage**	**Category**	**Notes (edit)**
1	Soils, foundations, grillages	3	1	Foundation (act No. 1)
2	Walls, columns, pillars	3	1	Walls (act number 2)
3	Slabs, covers, trusses, purlins	3	1	Overlappings (act No. 3)
4	Etc.			

The second stage, the conclusion (act) on the presence of at least one defect of the first category (see Table 3), in each of the objects under study, such as:

1) base soils, foundations, grillages and foundation beams;
2) walls, columns, pillars;
3) floors and coverings (including beams, arches, trusses, trusses and underframes, slabs, purlins), etc.;
4) balconies, bay windows, stairs, crane girders and trusses;
5) tie structures, stiffening components; joints and sections, conjugation of structures among themselves, the technology of their connection and the cross-sectional area of the support areas.

This information is already sufficient to make a conclusion with a decision on reconstruction, since even one of the bearing defects can no longer be ignored.

After that, you can do a more detailed analysis for the design and preparation of estimate documentation.

BIBLIOGRAPHY

1. Expertise and inspection of the investment and construction process: study guide: at 3 o'clock. Part 1. Technical expertise / R.G. Abakumov. - Belgorod: Publishing house of BSTU, 2015 .-- 312 p.
2. Shchenyatskaya M.A., Naumov A.E. Improving Comparative Assessment Methodology the effectiveness of alternative investment projects in housing construction // Bulletin Belgorod State Technological University named after V.G. Shukhov. 2015.№ 6. S. 264268.
3. Avilova I.P., Zharikov I.S. Methodology for assessing the economic efficiency of reconstruction an operating production enterprise located within the city, through its conversion into a commercial building // Belgorod State Bulletin Technological University named after V.G. Shukhov. 2015.Number 3. S. 138-141
4. Shchenyatskaya M.A., Avilova I.P., Naumov A.E. Assessment of financial and economic risks of an investment and construction project with a shortage of initial data. Bulletin of the Belgorod State Technological University. V.G. Shukhov. 2016. No. 1. P. 185-189
5. Chizhova E.N., Ursu I.V., Arkatov A.Ya. Innovative development: the problem of the unity of understanding // Bulletin of the Belgorod State Technological University. V.G. Shukhov. 2012. No. 2. S. 85-88.
6. Abakumov R.G., Oberemok M.I. An analytical review of the methodological tools used in the method of comparing sales when adjusting the prices of analogs. Bulletin of the Belgorod State Technological University. V.G. Shukhov. 2017. No. 3. S. 182-191.
7. Tulakov Elmurod Salamovich, Matyokubov Bobur Pulatovich "Thermal Insulation Of The Foundation Walls Of Buildings And Calculation Of Its Thickness" / TE Salomovich, MB Pulatovich - The American Journal of …, 2021 - usajournalshub.com
8. If the surface temperature of any building material drops sharply without changing the humidity and the surface temperature is lower than the dew point temperature, dew-like water droplets are formed on the surface of this material. This condition is called condensing.
9. Shodiyev, K. (2021). Contribution of ict to the tourism sector development in Uzbekistan. ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL, 11(2), 457-461.
10. https://repo.journalnx.com/index.php/nx/article/view/2928