

PROCEDURE FOR TECHNICAL SURVEY OF BEARING STRUCTURES OF MULTISTORY BUILDINGS CONSTRUCTED TAKEN INTO ACCOUNT OF THEIR EARTHQUAKE RESISTANCE

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Abstract

This article describes in detail the procedure and sequence of survey the technical condition of frame buildings made of multi-storey reinforced concrete structures.

Keywords Frame, reinforced concrete, reconstruction, reinforcement, defect, damage, deformation, method, survey, wear, assessment of technical condition.

INTRODUCTION

The main component of the safety system of buildings and structures is technical inspection. During operation, buildings are constantly exposed to negative external influences. As a result, even the most durable building objects wear out, which leads to a decrease in the load-bearing capacity of the constituent elements. To determine the condition of structures, prevent emergency situations and extend the service life of buildings, it is necessary to conduct special studies.

Technical inspection of buildings and structures is a complex of multi-level studies, including control and analysis of building structures for their actual technical condition. Based on the results of the technical inspection, the possibility of further safe operation of the buildings, the feasibility of reconstruction or major repairs, or making other decisions on the facility are determined.

The main task of the inspection is to identify

damage that has occurred during the operation of the building, determine the reasons for its occurrence and search for effective options for eliminating defects.

Main part

The procedure and frequency of inspection is clearly regulated by GOST 31937-2011 "Buildings and structures. Rules for inspection and monitoring of technical condition."

In the process of carrying out maintenance of construction projects, priority is given to the technical condition of the elements that are the most important for the trouble-free operation of the structure.

These elements include:

- soil base;
- foundation;
- roofing structures (trusses);

- columns and walls;
- floors;
- loggias and balconies;
- bay windows, staircases;
- nodes and joints of load-bearing structures.

It is necessary to conduct an inspection both for industrial and public facilities, and for residential buildings. At the same time, structures under construction, regularly operated facilities and buildings whose construction has been stopped for 3 years or more are subject to technical inspection.

The most common reasons for research include:

- determination of the actual state of structures;
- assessment of technical condition after fire, flood and other man-made and atmospheric impacts;
- before commissioning or demolition of a building;
- before reconstruction, redevelopment or major repairs; when defects are detected;
- when identifying deviations from design solutions;
- before purchase and sale and in a number of other cases.

In each situation, maintenance requires a special approach and attention to various nuances, so its implementation must be trusted to professionals.

Why is a building structure survey carried out?

The main goal of a technical inspection is to determine the compliance of the actual condition of real estate with current technical regulations and standards. In this case, both the constituent elements of the building itself and the engineering systems and communications operating in it are subject to examination.

During the technical inspection of load-bearing structures of operated facilities, the following are subject to identification:

- damage resulting from deviations from the design or due to design errors;
- defects in the construction of buildings, installation of prefabricated structures;
- damage that occurred due to violations of the

rules of operation of structures;

- damage caused by dynamic and static impacts;
- destruction of individual parts or the building as a whole after earthquakes, floods, fires and other natural disasters.
- The technical inspection system consists of several stages, each of which involves the performance of certain types of work depending on the period of operation of the building, the goals and objectives of its examination.

Preparation for maintenance is carried out in order to study the problem and includes:

- collection and analysis of design estimates, as-built and other documentation available for the facility;
- thorough analysis of the results of previously conducted studies;
- analysis of the customer's initial data.

At this stage, Terms of Reference for the survey and a program for carrying out research work are drawn up.

Visual stage

It is carried out to obtain a preliminary assessment of the technical condition of the object as a whole, as well as its individual parts.

Visual work includes:

- general inspection of the structure and identification of visible defects;
- drawing up defect reports;
- determination of the design features of the structure;
- taking measurements to draw up sketches and diagrams;
- performing verification calculations.

After all the work has been completed, the experts draw up a conclusion with relevant conclusions and recommendations.

Instrumental stage.

Instrumental studies are carried out in the presence of significant damage (distortions, cracks, wall breaks, etc.) and include:

- carrying out measurements using specialized equipment and tools;
- testing the physical properties of materials using non-destructive and destructive testing methods;
- sampling and performing laboratory tests;
- determination of properties and dimensions of foundations;
- verification calculations to determine the load-bearing capacity of the building and its individual structures.

CONCLUSION

For each object, the list of works is determined individually. After completing the research, specialists draw up a defect report and a conclusion.

A competently conducted study allows you to timely detect damage and defects that have arisen during the construction or operation of a building, and prevent the destruction of structures and emergency situations.

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