Dovgopol S.V.-Master's student of the KSTU (gr. SM-19-2)
Scientific hands-Candidate of Technical Sciences, Senior lecturer. Ryabkova M. P.

INFLUENCE OF THE QUALITY OF THE SURVEY ON THE EFFECTIVENESS OF THE REPAIR OF BUILDING STRUCTURES

Inspection of the technical condition of buildings and structures is an important area of construction activity. The volume and importance of surveys of buildings and structures increases every year, which is the result of a number of factors: physical and moral wear and tear, re-equipment and reconstruction of industrial buildings of industrial enterprises, reconstruction of old buildings, changes in ownership, etc. It is especially important to conduct a survey of buildings, in cases of changes in the current loads, changes in design schemes and the need to take into account the new standards of building design. To develop measures to restore the operational qualities of structures, it is necessary to conduct a survey to identify the causes of wear and reduce their load-bearing capacity.

The quality of the results of the survey of reinforced concrete buildings and structures affects the effectiveness of subsequent repairs and operation. The main problem is the discrepancy between the tasks of the survey to determine the technical condition of the structure from the point of view of mechanical safety and from the point of view of its repair. This is the reason for non-optimal engineering solutions for repairs or reconstruction and, as a result, a significant increase in the cost of buildings and structures.

Annual losses from corrosion reach 10-15% of the cost of fixed assets, which is a very significant amount on the scale of a country or even a large enterprise.

The reasons for the increase in losses from corrosion of building structures from the planned indicators are errors in the construction process. The main errors occur in the following stages:

- design (including survey) - 35%;
- construction - 45%;
- operation - 15%;
- force majeure - 5%.

The first and most important stage of reducing corrosion losses in building and construction repair projects is a qualitative survey of the building structure to collect the necessary initial data.

The completeness and adequacy of the assessment of these initial data directly affects the optimality of the subsequent engineering solution and its technological implementation. With the right approach to all stages of repair of buildings and structures, it is possible to reduce corrosion losses by 3-7 times compared to poor-quality practices (including in the field of inspection). [2].

Today, in the domestic practice of research, there is an imbalance, which is expressed in an uneven orientation to the load-bearing capacity (mechanical safety) of the structure, while little consideration is given to the issue of strength and corrosion protection. And the current building codes and regulations for the survey, general construction and industrial regulate this approach.

This concept is understandable, since the significance and consequences of "shortcomings" in the field of mechanical safety of building structures are much more serious than in the field of corrosion protection.

However, improvements in control to ensure long-term structural strength without compromising assessment requirements and measures related to load-bearing capacity are possible and necessary [1].

It is necessary to adhere to the principle of separation of surveys to assess the serviceability of the structure and collect initial data for repairs. In practice, this is extremely difficult to ensure, primarily due to the lack of understanding by customers of the impact of the survey results on the collection of initial data on the cost of repair and maintenance of buildings and structures. Insufficient or incorrect amount of initial data leads to an increase in the cost of restoring the structure by 30%.

Given that the survey most often occurs when a building or structure is already in need of repair, combining the objectives of the survey is advisable while ensuring the quality of data collection for repair and corrosion protection purposes.

In some cases, it is necessary to take into account the requirements of the repair technology (for example, the tear strength of the concrete surface). In practice, they often encounter situations where the lack of such data led to a significant increase in the cost and increase in the time required to complete repairs (up to 30%).

Higher requirements for the scope and quality of the survey require additional funding, but as a result, a significant reduction in losses from corrosion of building structures is provided.

References

1. Amanbayev A. A. Forecasting the durability of reinforced concrete bridges. - St. Petersburg: Dorozhnaya derzhava, 2014. 2. p. 3.

2. Ivanov Yu. V. Reconstruction of buildings and structures: strengthening, restoration, repair: textbook for universities. - M.: Publishing House of the DIA, 2013 – - 312 p.