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Increasing the Quality of Control Operations During Construction and Assembly Works

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ABSTRACT

The complexity of the construction industry lies not only in the variety of processes, operations and technologies used, but also in the need for constant monitoring of the quality of work. In this regard, along with quality control of work, the quality of control operations is of great importance. This article is devoted to the study of approaches to assessing the quality of control operations. The authors propose to form calculation standards for quality control of construction work, which would ensure the objectivity, accuracy and validity of the time spent on control. These standards form the methodological basis for the development of maps of input, operational and acceptance quality control in the production of construction and installation works.

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Introduction. One of the main directions of modernization, accelerated and innovative development of the construction industry of the Republic of Uzbekistan is "improving the quality and safety of urban

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planning activities, as well as ensuring the efficiency, rationality and transparency of administrative procedures in the field of urban planning activities, as well as increasing the efficiency of construction industry organizations." As part of the implementation of this direction, such measures are envisaged as the introduction of "non-destructive testing" systems for structural elements of buildings and structures aimed at tracking the "behavior" of load-bearing structures, timely prevention of accidents and improving safety, development of regulatory documents in the field of technical regulation aimed at improving safety and energy efficiency of buildings and structures, development of a general technical regulation on the safety of buildings and structures, etc. [1]

For contracting construction organizations, the fulfillment of the tasks set requires the development of an effective mechanism for ensuring the quality of construction and installation works. Ensuring the quality of construction products during the construction of an object is directly related to an effective quality control system for incoming materials, technology for the production of work and labor of workers.

Materials and methods. The quality of construction work is a complex and multifaceted problem of industry management. This problem is not something new, that is, the problem of the quality of construction has always worried the country's leadership. In addition, the issues of construction quality management are in the focus of attention of scientists in many countries. For example, Peter G. Furst in his article “Construction Quality Management” notes the existence of objective reasons for the decline in the quality of construction work [2]. Another researcher, Eric Thomas, in his work “10 Factors That Affect Construction Quality Management–And How to Address Them” highlights the main factors that reduce the quality of construction [3]. OH. Baiburin in his work "Comprehensive assessment of the quality of construction and installation works" explores the issues of assessing defects in the production of construction and installation works [4]. The issues of assessing the quality of construction were also investigated by Lukmanova I.G. and Nezhnikova E.V. in the work "Comprehensive assessment of the quality management system in construction" [5]. It should be noted that most studies in the field of construction quality consider the problem in terms of quality control systems and procedures by supervisory authorities. At the same time, the essence of construction quality control involves the implementation of certain operations, including temporary resources, tools and methods that allow an objective assessment of the achieved level of product quality.

Results. Consequently, there is an urgent problem of regulating the working hours of line workers of a construction organization in order to allocate a temporary resource for the implementation of control operations.

In our opinion, there are several approaches to solving this problem, which include the approach of detailed rationing of control operations for each type of work, the approach of rationing the control function in general management activities, as well as the integrated approach of regulating the methods and labor costs of quality control at the construction site. Each of these approaches has its own characteristics. (Table 1)

Table 1.Comparison of approaches to labor rationing for quality control at the construction site*

№	An approach	Content	Advantages	disadvantages
1	Detailed regulation of control operations	Inclusion in the scheme of operational control of time spent on production control	Accuracy of time norms; Accounting for the stage of construction	Too much detail Difficulty of application in practice;

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			of the object; Accounting for the specifics of work.	The complexity of developing a standard
2	Rationing of the control function in management activities	Distribution of working time by management functions: planning, organization, management, control	Possibility of standardization of standards; Ease of use; Applicability in job descriptions.	Difficulty in identifying certain types of control; Lack of individual approach
3	Regulation of methods and labor costs of quality control	Allocation of labor costs for various types and methods of quality control, their rationing, taking into account the frequency.	Optimal level of control detail; Seizing the Opportunities of Digitalization management.	Based on qualitative standardization methods Organization-Level Application Limitations

Table developed by the authors.

The approach of detailed rationing of control operations for each type of work involves, in parallel with the schemes of operational quality control of work, to put into practice operational control cards, which should contain specific control operations, allowing the development of time standards for the implementation of these operations. Then, taking into account the shift volumes of work, the nature of construction work and the frequency of control operations, it is possible to determine the share of operational quality control of work production in the activities of line specialists. The systemic disadvantage of this approach is the lack of a methodology for accounting for the costs of incoming quality control and registration of acceptance documentation for structural elements.

The approach of normalizing the control function in general management activities is based on the theoretical premises of the functional school of management, which combine all management operations into the functions of planning, organization, leadership, motivation and control. The application of this approach involves the division of all working time into the performance of individual functions. Then you can allocate the necessary time for the control function and normalize its implementation. In this case, it is impossible to single out separate standards for the types of control or for the stage of construction of the construction object.

An integrated approach to regulating the methods and labor costs of quality control consists in identifying control operations by their types, determining average labor costs and developing time standards, taking into account the intensity of work at the construction site and the frequency of control. This approach allows integrating control operations into the total working time of line workers. In addition, the development of separate time standards makes it possible to distribute control functions among specialists, taking into account their complexity and labor intensity.

Discussion. The choice of the approach of rationing the labor intensity of control operations sets priorities for the use of quality control methods. Various factors influence the decision to apply any approach. In our opinion, one of the most significant factors is the assessment of the laboriousness of carrying out control operations on the part of engineering and technical workers. With a large volume and high intensity of work, high-quality input and operational control becomes problematic. The engineering and technical worker is forced to focus all his attention on the acceptance control of

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finished structural elements. As a representative of the Ministry of Construction and Housing and Communal Services notes at a briefing on February 9, 2023, as of this date, 16,576 applications were received from contractors to obtain permission to operate completed construction facilities. Of these, a negative decision was made on 11,162 objects due to deviations from urban planning norms. [6]. A responsible, disciplined worker exercises control in accordance with the requirements of regulatory documents, but ultimately holds back the pace of construction work. In addition, a very important factor can be called a front of work controlled by a technical worker.

Therefore, in order to ensure the quality of control operations, they must be standardized in the same way as the main construction work.

Conclusions. In order to improve the quality of products at the stage of construction and installation works, it is necessary to take comprehensive measures to improve the work of engineering and technical workers, in particular:

- increasing the technical equipment of control operations, including advanced tools and high-precision measuring instruments;
- development of a methodological base for conducting control operations at a construction site, including methods, modes and procedures for control;
- allocation in the total working time of labor costs for carrying out control operations and recording the results of control;
- improving the skills of monitoring and making adequate decisions to improve the quality of construction work.

The implementation of a set of measures will not only improve the efficiency of quality control, but also significantly reduce the burden on engineering and technical workers.

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