

WAYS TO IMPROVE QUALITY CONTROL OF CONSTRUCTION AND INSTALLATION WORKS

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ABSTRACT

This article is aimed at increasing the efficiency of the work of line specialists at a construction site. It discusses the issues of standardization of quality control of construction and installation works, frequency and labor intensity of control operations. The results of a survey of practitioners to determine labor costs associated with the input, operational and acceptance control of construction work and approaches to the standardization of control operations.

Key words: *quality, quality control, control operation, labor intensity.*

АННОТАЦИЯ

Данная статья направлена на повышение эффективности работы линейных специалистов на строительной площадке. Обсуждаются вопросы стандартизации контроля качества строительно-монтажных работ, периодичности и трудоемкости контрольных работ. Результаты анкетирования практикующих специалистов по определению трудозатрат, связанных с вводным, эксплуатационным и приемочным контролем строительных работ и подходов к стандартизации контрольных работ.

Ключевые слова: *качество, контроль качества, контрольная работа, трудоемкость.*

INTRODUCTION

The accelerated development of the construction industry in the Republic of Uzbekistan is due to the need to modernize all sectors of the country's economy, develop an unprecedented volume of foreign investment in recent years, increase the efficiency and competitiveness of social production. Recently, in order to solve these large-scale tasks and reorganize the management system in the construction sector, the President and the government of the country have made decisions that ensure the formation of a healthy competitive environment in the industry, accelerate the pace of

technical re-equipment of enterprises and organizations, improve the legal and regulatory framework for design. and construction. [1,2,3,4,5,6]

The inability of the organizational and staff structure of the State Committee for Architecture and Construction to mobilize available resources to ensure full support of construction and reconstruction processes, as well as effective control over the quality of construction and installation works, was one of the main reasons for the creation of the Ministry of Construction of the Republic of Uzbekistan and the Inspectorate for Control in the Construction Industry. At the same time, one of the main tasks of the Ministry was "... further improvement and updating of the regulatory framework for urban planning and urban planning activities, coordination of the development of departmental building codes and regulations, standardization work in the field of design, construction, production of building materials and products." [1] Each of the above documents indicates the need to radically improve the quality of design documentation and construction projects, and suggests mechanisms for state quality control in the construction sector.

At the same time, the basis for improving the quality of construction objects is the quality management systems of the business entities themselves in construction. It is these systems that are able to implement the assigned tasks at the level of specific construction organizations.

METHODS AND MATERIALS

Manufacturing quality control is considered one of the most effective methods of ensuring product quality during the manufacturing process. According to the widespread approach to quality management, quality control is defined as checking the conformity of the quantitative and qualitative characteristics of products to the established production and technical requirements. This assumes that quality control meets the requirements of reliability, objectivity, accuracy and cost-effectiveness. At one time, the theorists of quality management developed detailed methods of continuous, selective, statistical and general quality control at enterprises. [8,9,10,11,12] In our study, we used the individual results of these authors as a general methodology for quality control in construction. From the point of view of organizing quality control at a construction site, the recommendations of K. Ishikawa and F. Crosby on the organization of statistical quality control, as well as G. Taguchi's approaches to organizing process control are of the greatest interest. [13]

To substantiate certain provisions of the theoretical studies, the method of questionnaire survey of line specialists in the field of construction was also used.

RESULTS AND DISCUSSION

Ensuring the quality of construction and installation work is one of the most important problems in the construction industry. The individuality and uniqueness of construction products makes the construction process difficult from the point of view of guaranteeing the fulfillment of technological requirements at all stages of construction of the facility. The data of the inspection of the quality of construction objects by the Ministry of Construction indicate the presence of serious defects in the process of construction of construction objects. Over the seven months of 2021, following the results of more than 83,000 inspections, 43,683 orders were issued for regulatory violations, including 17,725 contractors, 18,418 customers and 7,540 design organizations. [7]

As can be seen from these data, the main number of violations (82.7%) is associated with non-fulfillment of design decisions. Therefore, quality control of construction and installation work is considered an integral part of this process. Particular attention is paid to the integrated use of all types of quality control, that is, incoming, operational and acceptance control. The quality of construction products is the focus of many scientists. The works of A. Belov, I. Lukmanova, S. Samoryadov, A. Bayburin and others are devoted to the improvement of the quality management system in the construction industry [14,15,16,17]. The relevance of improving quality control directly at the workplace is confirmed by the research of O. Kuznetsov, D. Topchiy and others [18, 19].

For example, in the widespread schemes of operational quality control of construction, repair and construction and installation works, quality control of operations is perceived as a means of effective control at all stages of the creation of construction products. Standardization of quality control through the implementation of operational quality control schemes for all types of work is considered the only condition for achieving the required quality. [20]

Based on this, they clearly define the composition of operations and means of control, that is, the list of controlled operations, the method and scope of control, who exercises control. This very important provision distinguishes between construction work and production control of their quality.

At the same time, despite the methodological provision of quality control, the problem of poor construction quality remains unsolved, as indicated by a large number of defects and a stable negative attitude towards quality among consumers of construction products. Our theoretical studies have shown that in the presence of a large regulatory and technical base in the field of quality assurance, the answer to one

question has not been found: how much time will a line specialist (foreman and work manager) spend on carrying out all control operations?

This is a very important aspect of labor activity, since the job description of the work manufacturer does not include such a concept as “conducting input, operational and acceptance control in the construction process”. In addition, he is entrusted with many other duties, including those related to material responsibility, which takes up a significant part of the working time. Likewise, the variety of job duties of a construction foreman does not allow him to ensure quality control of work in full compliance with technological requirements. Practical research carried out at construction sites showed that over 80% of line specialists do not consider quality control to be a priority activity, about 30% consider it the responsibility of a foreman.

We believe that the main reason for the insufficient efficiency of quality control of construction and installation works is the lack of information on the labor intensity of control operations in the current regulatory and technical documents for construction. The so-called irregular working day does not mean that each line worker independently distributes his working day. There should be certain boundaries within which line workers could effectively use their time to perform their functions or delegate them to a foreman.

Consequently, there is an urgent problem of regulating the working time of line workers in a construction organization in order to allocate a time 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 an integrated approach to 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 the standardization of labor costs for quality control at a construction site

o.	Approach	Content	Advantages	Disadvantages
	Detailed regulation of control operations	Inclusion in the operational control scheme of time spent on	Accuracy of time norms; Accounting for the construction	Excessive detail; Complexity of application in practice;

		production control	stage of the object; Taking into account the specifics of the work.	Difficulty developing a standard
	Rationing of the control function in management activities	Allocation of working time by management functions: planning, organization, management, control	Possibility of standardization of standards; The convenience of use; Applicability in job descriptions.	Difficulty in identifying certain types of control; Lack of individual approach
	Regulation of methods and labor costs of quality control	Allocation of labor costs for various types and methods of quality control, their regulation, taking into account the frequency	Optimal level of control detail; Harnessing the power of digitalization management.	Based on qualitative rationing methods Application restrictions at the organization level

The approach of detailed standardization of control operations for each type of work assumes, in parallel to the operational quality control schemes, to introduce operational control cards into practice, which should contain specific control operations that allow developing time norms for these operations. Then, taking into account the changing volumes of work, the nature of construction work and the frequency of control operations, it is possible to determine the proportion of operational control of the quality of work in the activities of line specialists. A systemic drawback of this approach is the lack of a methodology for accounting for the costs of incoming quality control and preparation of acceptance documentation for structural elements.

The approach to standardizing the control function in general management activity is based on the theoretical premises of the functional school of management, which unite all management operations in 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 separate functions. Then you can allocate the necessary time for the control function and normalize its performance. 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 the average labor costs and developing time standards, taking into account the intensity of work on the construction site and the frequency of control. This approach allows you to integrate control operations into the total working time of line workers. In addition, the development of separate norms of time makes it possible to distribute control functions between specialists, taking into account their complexity and labor intensity.

CONCLUSIONS

The carried out theoretical and practical studies make it possible to conclude that one of the factors in reducing the quality of construction and installation work at a construction site is the lack of labor standards for quality control on the part of line employees of the organization. We believe that improving the efficiency of quality control in construction requires the allocation of separate working time for control operations and taking it into account when developing job descriptions for a work manufacturer and a construction foreman. The basis can be the proposed by us approaches to determining the labor intensity of control operations at the construction site.

REFERENCES

1. Decree of the President of the Republic of Uzbekistan No. UP-5392 "On measures to radically improve the system of public administration in the construction sector" dated April 2, 2018.
2. Decree of the President of the Republic of Uzbekistan No. UP-5577 "On additional measures to improve state regulation in the field of construction" dated November 14, 2018.
3. Decree of the President of the Republic of Uzbekistan No. PP-4464 "On measures for the widespread introduction of information and communication technologies in the construction sector" dated September 20, 2019.

4. Decree of the President of the Republic of Uzbekistan No. PP-4586 "On measures to radically improve the quality of construction and installation works and improve the control system in construction" February 5, 2020
5. Decree of the President of the Republic of Uzbekistan No. UP-5963 "On additional measures to deepen reforms in the construction industry of the Republic of Uzbekistan" dated March 13, 2020.
6. Decree of the President of the Republic of Uzbekistan No. UP-6119 "On approval of the strategy of modernization, accelerated and innovative development of the construction industry of the Republic of Uzbekistan for 2021-2025" dated November 27, 2020.
7. Official site of the Ministry of Construction of the Republic of Uzbekistan / control in the construction industry. <https://mc.uz/kontrol-v-stroitelnoy-otrasli/#1635162615665-67dc0454-6407>
8. Deming E. Way out of the crisis. A new paradigm for managing people, systems and processes. Out of the Crisis. M.: "Alpina Publisher", 2011
9. Juran on Leadership for Quality: An Executive Handbook. Free Press, 1989 – 376.
10. Feigenbaum A. Product quality control. M.: Economics, 1986. -- 471 p.
11. Ishikawa K. Japanese methods of quality management. - M: "Economics", 1988 - 199 p.
12. Crosby, Philip. Quality is Free. New York: McGraw-Hill 1979.
13. Taguchi Methods: Design of Experiments (Taguchi Methods Series) by Genichi Taguchi, Yoshiko Yokoyama. Spiral-bound – November 1, 1993
14. Belov A.V. Quality assurance objectives for construction processes. Bulletin of the Saratov State Social and Economic University. <https://cyberleninka.ru/article/n/zadachi-obespecheniya-kachestva-protsesov-stroitelstva>.
15. Lukmanova I. G., Nezhnikova E. V. Comprehensive assessment of the quality management system in construction. Fundamental research, No. 10 - 2013 - p. 1791
16. Samoryadov S.V., Shreiber A.A., Manokhin E.M. Reliability of construction products. MITU-MASI Bulletin, No. 2 - 2018, - p.5
17. Bayburin A.Kh. Ensuring the reliability of construction and installation works in terms of product quality parameters. - Prevention of accidents in buildings and structures. Electronic journal, 2009, q2.

18. Kuznetsov O.F., Mironov N.A., Kuznetsova A.O. Assessment of the quality of construction and installation works using modern technologies - Privolzhsky Scientific Bulletin No. 5 (33) - 2014, - p. 33
19. Topchiy D.V., Tokarskiy A.Ya. The concept of quality control of the organization of construction processes during construction supervision based on the use of information technologies // Bulletin of Eurasian Science, 2019 No. 3, <https://esj.today/PDF/52SAVN319.pdf>
20. Schemes of operational quality control of construction, repair and construction and installation works. St. Petersburg branch of the All-Russian public fund "Center for the quality of construction" St. Petersburg, 2007. - 316 p. <https://standartgost.ru/g/pkey-14293832988>