

DOI 10.15826/rjst.2019.1.003

УДК 658.562.012.7

*Vasilev A. V.<sup>1</sup>, Yamov V. I.<sup>2</sup>*<sup>1,2</sup> Ural Federal University,  
Ekaterinburg, Russia*E-mail: <sup>1</sup>a.vasilev@gydromix.ru*

## QUALITY CONTROL OF HIGHLY SPECIALIZED WORKS DURING CONSTRUCTION

**Abstract.** The article is devoted to the organization of quality control of highly specialized work on construction sites. Identified and justified the need to use new methods of quality control during construction. Special attention is paid to the shortcomings of the existing methods and tools of quality control. The main advantage of the new control method is the simplicity of organizing quality control of highly specialized works.

**Keywords:** quality control, highly specialized works, construction

*Васильев А. В.<sup>1</sup>, Ямов В. И.<sup>2</sup>*<sup>1,2</sup> Уральский федеральный университет,  
Екатеринбург, Россия*E-mail: <sup>1</sup>a.vasilev@gydromix.ru*

## КОНТРОЛЬ КАЧЕСТВА УЗКОСПЕЦИАЛИЗИРОВАННЫХ РАБОТ ПРИ СТРОИТЕЛЬСТВЕ

**Аннотация.** Статья посвящена организации контроля качества узкоспециализированных работ на строительных площадках. Выявлена и обоснована необходимость использования новых методов контроля качества при строительстве. Особое внимание уделено недостаткам существующих методов и средств контроля качества. Главным преимуществом нового метода контроля является простота организации контроля качества узкоспециализированных работ.

**Ключевые слова:** контроль качества, узкоспециализированные работы, строительство

© Vasilev A. V., Yamov V. I., 2019

### Introduction

The quality of construction is the result of many factors: staff training, quality of production organization, compliance with equipment and technology, skilled management. Control over the quality of construction provides for verification of conformity with regulatory documents of building materials and installation works.

The goal of construction control is to ensure a high level of quality, reliability and durability of capital construction projects at all stages of investment projects: from design to commissioning, by creating and implementing a system of control (verification) measures in the areas of quality design and working documentation, compliance performed the works, the requirements of the town-planning draft of the land plot, timely warning, detection and elimination of defects in construction and installation works and the functioning of the quality management system, verification of conformity and quality of used material and technical resources.

The main task of quality control will be prevention, elimination of causes, as well as deviations leading to defects in construction [1]. A defect which was discovered on time during the construction process is quite easily eliminated at the lowest cost in many cases. A defect which was uncovered after the end of construction is laborious in correction.

There is often a question about the quality of the following works:

- geodetic works;
- preparatory work;
- earthworks;
- pile work;
- the arrangement of concrete and reinforced concrete monolithic structures;
- installation of precast concrete and reinforced concrete structures;
- mounting of metal, wooden structures;
- roofing;
- facade work;
- the arrangement of internal engineering systems and equipment of buildings.

To date, there are various supervisors. For example, the federal executive bodies authorized to maintain the relevant types of control, the building control body, the corporate control bodies, the body of architectural supervision [2, 3]. During construction, the general contractor uses acceptance inspection: the stages of activity of its own branches and subcontractors for compliance with the requirements for their quality. Moreover there is the practice of attracting independent technical supervision, which is involved under an agreement with the customer is often carried out (the activity is called “third party inspection”).

Nevertheless, one should accept that during the construction there are many highly specialized works and control over them is much more difficult to implement than for other ones (reinforcement works, monolithic, etc.), for instance: waterproofing facility, injection.

It should be noted that occasionally a technical supervision checking the reinforcement cages does not notice improperly laid waterproofing, which leading to water penetration and, accordingly, to costly repairs. One must admit that a technical supervision cannot possess knowledge in all highly specialized works.

For example, designers apply waterstops in technological and expansion joint to protect against the penetration of water into the building. As time goes on, the supply department buys these materials. The following happens afterwards, namely the incorrect installation of these materials. Some conscious representatives of construction companies consult with the manufacturer of these materials, but some do not. It is clear from these observations that there are construction sites where installation of such materials takes place without appropriate knowledge. Therefore, from the above, the question arises: how to inspect such highly specialized works.

Imagine a situation: underground parking has leaked. In this case, the construction company immediately be-

gins to blame the material used for waterproofing — the quality does not meet the standards, as we did according to the technological regulations. However, the material meets the standards, but the work was not performed in accordance with the design of the production work.

One of the most striking features of this problem is that if the supplier of these materials indicates of installation faults to a foreman, the last may not change anything, since in fact such work remains invisible to the supervision of the customer, the contractor.

### Control schemes

Technical supervision should pay close attention to such highly specialized work and involve specialists from this area to establish the correctness of the work. The technical supervision should invite highly specialized specialists to the construction site who supply these materials. If the installation was carried out correctly, they will sign documents confirming the quality of the work performed and will take on some of the responsibility, and this will secure the future building. Fig. 1 shows the scheme of acceptance control without the participation of experts from the manufacturer; Fig. 2 shows the scheme with the participation of experts from the material supplier. Fig. 3 looks at the quality control method, if the construction site is located outside the access area of highly specialized experts.

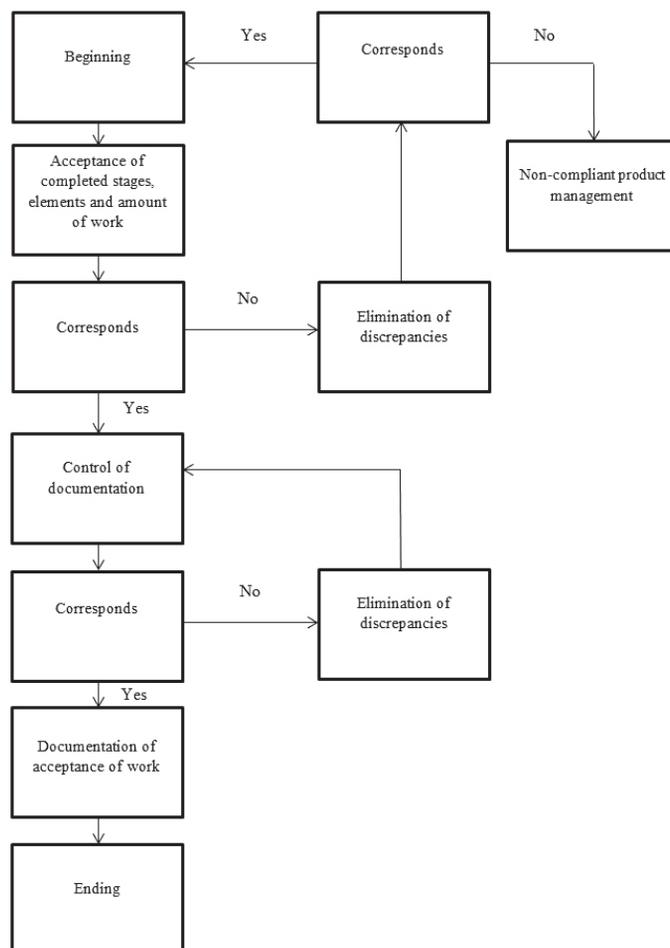


Fig. 1. Quality check

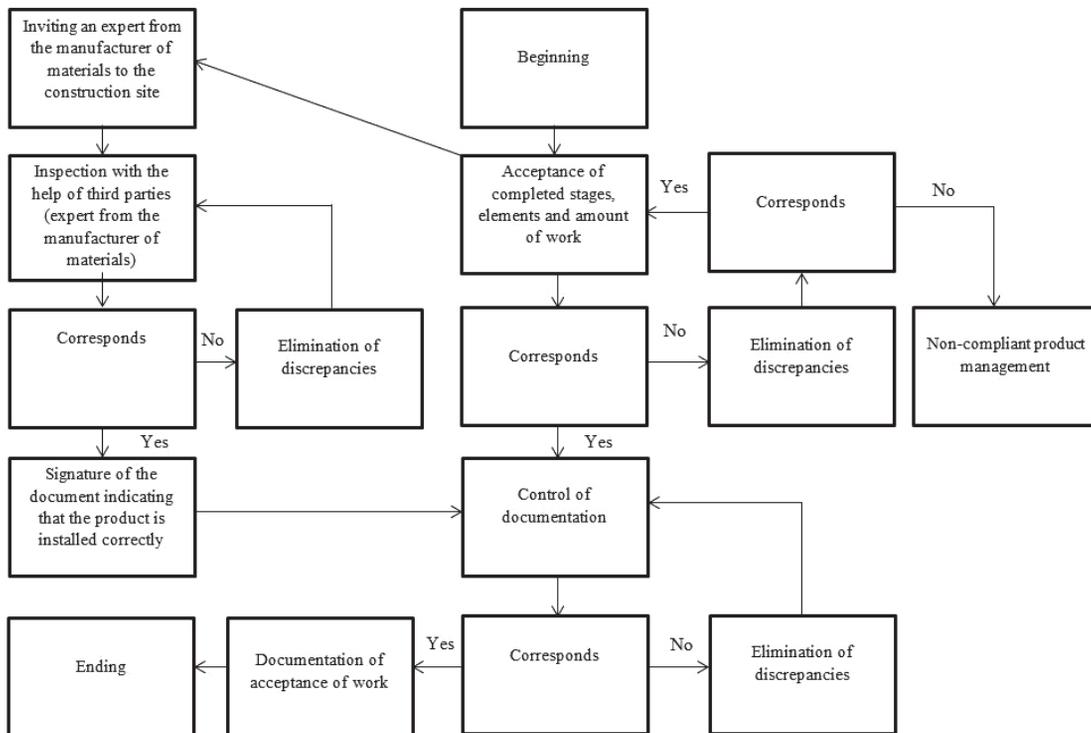


Fig. 2. Method of quality control of highly specialized works

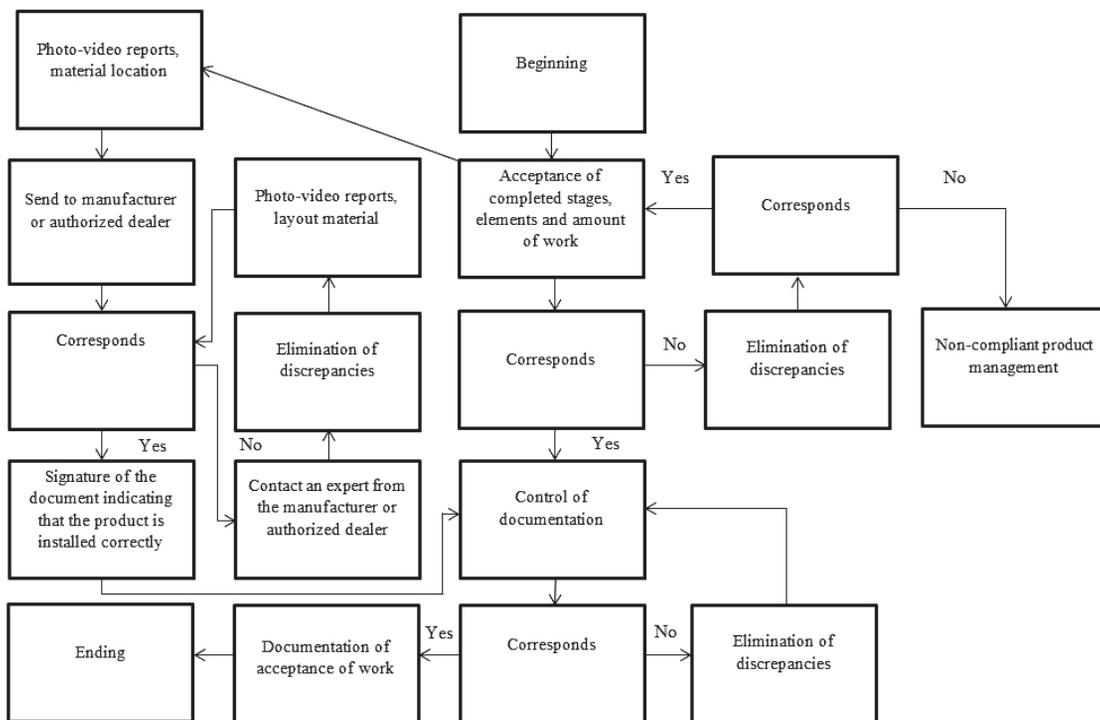


Fig. 3. Method of quality control of highly specialized works in remote areas

## Conclusion

To draw the conclusion, one can say that no supplier wants to impose additional responsibility for the materials. When drafting a contract with a supplier, it should be indicated that they are obliged to interact with builders and designers in order to prevent installation errors and thereby improve the quality of construction work. Since the market is highly competitive, rare supplier will refuse such conditions. In the case of organization of work according to these principles, significantly increase the quality of work performed and as a result of the finished building.

### References

1. Kungurov Y.Y. *Upravlenie kachestvom v stroitel'stve* [Quality management in construction]. Omsk, SibADI Publ., 2003. 32 p. (In Russ.).
2. Polozhenie ob osushhestvlenii gosudarstvennogo stroitel'nogo nadzora v Rossijskoj Federacii [Regulations on the implementation of state construction supervision in the Russian Federation]. Approved by the Decree of the Government of the Russian Federation of 01.02.2006, no. 54. *Informacionnyj bjulleten' "Normirovanie, standartizacija i sertifikacija v stroitel'stve" — The Newsletter "Rationing, standardization and certification in construction"*, 2009, no. 3.
3. Polozhenie o porjadke organizacii i provedenija gosudarstvennoj jekspertizy proektnoj dokumentacii i rezul'tatov inzhenernyh izyskanij [Regulations on the organization and conduct of state examination of project documentation and the results of engineering surveys]. Approved by the Decree of the Government of the Russian Federation of 05.03.2007, no. 145, part 1. *Vestnik cenoobrazovanija i smetnogo normirovanija — Bulletin of pricing and estimated rationing*, 2007, no. 3 (72), pp. 6–25.