

# Research on the Quality Supervision and Management of Housing Construction and Municipal Infrastructure Projects

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**Abstract:** With the continuous development of social economy and the continuous acceleration of the urbanization process, the construction industry has ushered in a great space for development. Housing construction and municipal infrastructure are closely related with people's production and life, and quality is related to the safety of people's life and property. Therefore, strengthening the quality supervision of housing construction and municipal infrastructure projects is the primary task at present. Based on this, this paper deeply analyzes some main problems existing in the quality supervision of the construction process of housing construction and municipal infrastructure engineering, and puts forward the corresponding optimization and improvement plan, in order to provide some reference and reference for the research and practical work in related fields.

## 1. Introduction

Housing construction and municipal infrastructure projects accompany every corner of the city development, which not only bring high quality, high quality and high convenience to ensure the normal operation of people's production and life, but also add luster to the colorful and beautiful portraits of the city, and lay a solid foundation for the continuous improvement of the quality of the city. Therefore, how to ensure the high quality and high quality development of housing construction and municipal engineering, and the full play of the supervision and management role of the construction process has become decisive. However, engineering quality, cost, profit and contradictory, with the rapid development of the construction industry, also brought unprecedented market competition pressure, combined with the influence of various factors, make the housing construction and municipal infrastructure project quality is still lack of quality control, regulators lack of ability, regulatory mode is relatively backward, makes some construction projects on the construction quality, after delivery in the long years, in terms of applicability, durability and stability will always appear some problems and flaws. It can be seen that the analysis of the main problems in the quality supervision of housing construction engineering and municipal infrastructure, and exploring targeted optimization and improvement measures have become an effective way to improve the overall quality of the construction industry and realize the high-quality and high-level development of the construction industry supervision.

## 2. Content and Importance of Housing Construction and Municipal Engineering Quality Supervision Work

Because most of the housing construction projects and municipal infrastructure projects are a systematic and complex construction work, so the related construction technical content involved is more<sup>[1]</sup>, There are also many quality supervision units, all project quality responsibility subjects and testing units and quality supervision stations under the local housing and construction bureau, each unit shall carry out their work according to their respective quality supervision responsibilities. Therefore, only by strengthening the process and supervision and management of the construction project, strengthen the specific supervision content, to ensure that the safety and stability of the whole housing construction and municipal engineering can be guaranteed. The specific contents

include:

(1) Supervise the project quality responsible parties and relevant departments to perform their quality responsibilities and obligations in the whole project construction process.

(2) random sampling inspection of construction engineering construction on the surface of engineering quality, the key parts, the legitimacy of stage acceptance procedure regulation, the entity inspection, supervision and inspection, data verification, and so on a variety of ways to carry out the supervision and inspection, according to the actual inspection results, make a fair and objective evaluation, scientific evaluation of the overall quality of the construction project.

(3) Supervise the entity quality, And to conduct sampling test and verification, Technical management records of its construction quality, Such as the quality of batch, points, points, sub, points (sub), points (sub), unit (sub) project quality evaluation data, And the acceptance records of the concealed works, Such as: to conduct on-site inspection of the main parts of the foundation and the main structure, And the masonry, concrete, steel and waterproof engineering site inspection; Of the water to the Works, Electric, warm, Through, intelligent and other on-site inspection; Check (test) the data of the key parts of this professional construction project; Project appearance and quality inspection data; Internal environmental quality test report of the construction project.

(4) Focus on the supervision and supervision agency, the work of the supervision agency, the implementation of the supervision agency, avoid the favoritism between the supervision agency and the construction unit, resulting in the “cutting corners”, in order to ensure the overall quality of the construction project. Conduct sampling inspection on the supervision unit, and supervise and inspect the verification and inspection conditions conducted before the materials, specimens, components and equipment are put into use or installation;

(5) Supervise and inspect quality evaluation data of batch, sub-items, division (sub-) and unit (sub-), as well as quality acceptance data of concealed works; conduct on-site inspection of foundation and main structure, and on-site inspection of masonry, concrete, steel, waterproof and other engineering; on-site inspection of water, electricity, heating, communication, intelligence, etc.; spot check of inspection (test) data of key parts of this professional construction project; appearance and quality inspection data of project; internal environmental quality test report of construction project.

(6) The equipment and materials used in the construction of housing construction and municipal infrastructure projects need to be strictly controlled, and the equipment and materials that do not meet the construction standards of the project should be eliminated in time and not allowed to enter the construction site.

(7) After the completion of the construction project, the quality acceptance of the project in the later period shall be strengthened. If any quality problems are found in the process of acceptance, it shall check with the relevant construction units in the first time and require the rectification of the problems.

Secondly, whether it is housing construction or municipal infrastructure construction projects, people's life, work and travel are closely related, so the quality of the project is related to the safety and comfort of people's life, which has become one of the index parameters to judge the level of urban construction and development [2]. The quality supervision of housing construction and municipal infrastructure construction projects is through the effective supervision of the quality and safety of housing construction and municipal infrastructure projects, so as to make the quality of the project meet the target requirements. Because of quality problems, eventually cause the overall quality level is low, the construction cost beyond the prescribed range, even period infinite spin, is bound to cause the waste of construction resources, the same is lax regulatory phenomenon, also can affect the safety and quality of the construction project and even may cause damage to people's life and property.

### **3. Housing Construction and Municipal Engineering Quality Supervision Work Existing Problems**

#### **3.1 Regulatory Work is Not Normative**

In the process of the quality supervision of housing construction and municipal infrastructure projects, if we want to ensure that the supervision role can be effectively played, a scientific and reasonable supervision system should be formulated to provide the standard basis and guidance for the standardized development of the daily supervision work of the supervisors. However the reality is that most of the construction project quality supervision and management station has established the corresponding supervision system, but there are still related problems cannot find the reality to solve the basis, leading to solve problems effectively, slow the construction construction into the same time, also shows that the supervision and management institutions in the absence of supervision system<sup>[3]</sup>. In addition, the current construction project quality supervision work is still not standardized, leading to the aggravation of the imbalance between supply and demand, so the quality supervision strength has decreased.

#### **3.2 The Quality of Supervisors Needs to Be Improved**

Supervisors are the main participants in the quality supervision and management of housing construction and municipal infrastructure construction projects, so they have a direct role in the familiarity degree, professional level, professional operation and personal quality of the supervision work. In the process of construction, the overall quality of the supervisors should be continuously strengthened, because the cost control and management quality of the construction project will be affected by the professional skills of the supervisors themselves<sup>[4]</sup>. Due to building construction and municipal infrastructure construction projects in housing construction, road construction, bridge construction, involving the construction content and scope of more extensive, then the reality is that the personal quality and ability of the vast majority of supervisors can not meet the requirements, which will not only restrict the smooth development of the supervision work, but also affect the overall progress of the construction project, making it difficult to guarantee the quality of the construction project.

#### **3.3 The Supervisory Talent Team Needs to Be Strengthened**

Regulators are a fundamental and important part of the supervision work. However, in view of the current development status of the municipal construction engineering supervision industry, there is a widespread problem of the lack of supervision talents. Specifically in the following areas. Firstly, the professional level of the existing supervisors does not meet the expected target. Especially in the field of construction, the knowledge reserve and practical operation level is low. Secondly, the stability of the supervision talent team is low and the brain drain phenomenon is serious. This also means that the management of the entire supervisory talent cannot be effectively executed and implemented. Thirdly, the existing supervisors' subjective willingness for self-improvement is relatively low. Their limited self-improvement ability restricts the development potential of the entire supervision team.

#### **3.4 Lack of Innovation in the Regulatory Mode**

The lack of innovation in the project quality supervision mode is also one of the main factors restricting the quality supervision of housing construction and municipal engineering, and also hinders the further improvement of the level of project quality supervision. Because construction engineering is a long-term project that evolves with the times, the current construction engineering quality supervision and internal personnel lack innovation consciousness in regulatory modes. They still adhere to outdated regulatory practices without embracing new engineering quality supervision approaches to address persistent regulatory issues. Thus, the quality supervision of housing and municipal engineering also needs continuous innovation.

## **4. Housing Construction and Municipal Infrastructure Engineering Quality Supervision and Management Optimization Measures**

### **4.1 Building a Comprehensive Regulatory Model**

In view of the characteristics of strict quality requirements and strong supervision in the quality of housing construction and municipal engineering, as the relevant administrative department, we should establish a comprehensive supervision mode that can effectively meet the supervision standards. Comprehensive supervision mode is unified and management of existing construction resources, synchronous construction contractor, construction units and quality supervision and management departments, participate in building project design, project implementation and other stages of comprehensive supervision and management system, which can make the construction engineering in construction safety, engineering quality, construction schedule, project cost to scientific and comprehensive regulatory control. In addition, the adoption of a comprehensive supervision mode can effectively enhance the responsibility awareness of supervisors, so that they can clarify their rights and responsibilities, so as to standardize the supervision work and ensure the smooth development of the whole supervision work. Through this mode, not only the supervision work can be carried out scientifically and reasonably, but also can effectively improve the supervision scheduling problems, so as to effectively improve the coherence and coordination of each link of supervision, avoid the phenomenon of duplication and cross management, and realize the improvement of the quality and level of supervision work. At the same time, the use of comprehensive supervision mode, also can timely smooth communication channels between construction personnel and supervision personnel, to ensure that the problems existing in the construction site can be reported and dealt with in time, to ensure that the construction project can be completed on time.

### **4.2 Update the Supervision and Management Procedures**

In addition, strengthening the scientific and normative nature of the supervision work is also the focus. The adoption of standardized supervision procedures is a strong guarantee to ensure that supervisors can carry out supervision work in accordance with the scientific process. For some construction units that do not meet the construction standards should be strictly screened and controlled, and at the same time, the unqualified enterprises should be excluded from the project construction list to ensure the overall quality level of housing construction and municipal infrastructure construction. In addition, it is also necessary to continuously innovate and optimize the regulatory procedures. Due to the rapid development of the construction industry recently, the corresponding quality supervision work also needs to keep pace with The Times. Therefore, the continuous innovation of the existing regulatory methods, methods and regulatory procedures, and the application of the video regulatory system can effectively ensure the synchronous innovation and development of the regulatory work.

### **4.3 Strengthen the Training of Supervisory Personnel**

Since supervisors are the main participants in the quality supervision of housing construction and municipal infrastructure construction projects, the relevant supervision enterprises and departments should clarify the influence relationship between the comprehensive ability level of supervisors and the supervision effect. In the process of carrying out the business training of the supervisors, it is also necessary to strengthen the coordination and communication ability between the supervisors and the construction personnel, to ensure that they can quickly feedback the problems existing in the construction process to the construction unit, and rectify the existing problems in time, so that the quality of the construction project can be guaranteed.

### **4.4 Introduce Intelligent Supervision Means**

At present, the housing construction and municipal infrastructure construction industry has gradually shifted from the traditional to the intelligent development. In the Internet era, the continuous introduction of digital and intelligent supervision technology, has become the

development of the current construction engineering quality supervision and management work needs. For the supervision work of the whole construction project, it is necessary to ensure that the whole intelligent supervision technology can play the best role. Through the adoption of advanced uav technology, the intelligent supervision of the quality of construction projects can be realized, and the level of supervision information, fine management and control can be improved. Because of its small and light, multi-angle shooting characteristics, it is widely used in the site supervision. Using drones patrol technology, to 24 hours timing to inspect the construction site, at the same time the intelligent terminal acquisition machinery, personnel and the surrounding environment information combined with real 3 d model, can 100% restore the construction site actual situation, so as to achieve the construction personnel behavior effective monitoring at the same time, also can adjust regulatory strategy according to the construction situation, so as to realize the panoramic visual management.

In addition, the mixed station and quality station installed video network monitoring and remote remote monitoring, can real-time inspection uploaded to the quality station monitoring center background information data, and use large data technology comparative analysis, if the data anomalies, will automatically warning and feedback abnormal results, to improve the regulation of dynamic and integration, help regulators integrate the construction site layout, material resources and other related information, so as to realize the construction status of construction period of collaborative management. It can be seen that the application of technology in the construction engineering quality supervision work can effectively strengthen the coordination and unity of the construction engineering quality supervision work.

## 5. Conclusion

To sum up, due to the special nature of housing construction projects and urban infrastructure projects, the quality supervision and safety work need to be focused on. With the acceleration of the urbanization process, the quality supervision and management of housing construction and municipal infrastructure projects in China has also ushered in new challenges. To effectively improve the overall quality level of the construction project, the relevant regulatory departments and regulators shall adopt scientific and standardized regulatory procedures, effectively carry out the relevant supervision work at the same time, also need to clear their own regulatory authority and responsibility, through continuously strengthening supervision team construction, regulatory task training, consummate the regulatory system, to realize the high level development of regulatory work.

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