Effective Strategies for Quality Supervision and Management of Housing Construction Projects

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Abstract: Currently, with the continuous acceleration of urbanization in China, the scale of housing construction projects continues to expand. The quality of construction engineering is directly related to the safety of residents, the survival and development of construction enterprises, and social stability. At present, issues such as imperfect supervision mechanisms and inadequate implementation of quality responsibilities exist in the quality supervision and management of housing construction projects. To address these problems, this article proposes core strategies to enhance quality supervision and management from two aspects: establishing a systematic supervision system and strengthening whole-process quality control. This research aims to help improve the quality of housing construction projects, safeguard public interests, promote high-quality and sustainable development of the construction industry, and provide practical references for government regulatory departments and construction enterprises.

1. Introduction

In recent years, the number of housing construction projects in China has continued to increase. From public-oriented affordable housing to commercial complexes, from ordinary residences to super high-rise buildings, project types have become increasingly diverse, and quality requirements have gradually increased. The quality of housing construction projects is not only an important guarantee for the safety and property rights of homeowners but also a key factor for the survival and development of construction enterprises. Simultaneously, it is a necessary means for government regulatory departments to fulfill public management responsibilities and maintain social stability.

2. Importance of Strengthening Quality Supervision and Management in Housing Construction Projects

From the perspective of homeowners, strengthening quality supervision and management of housing construction projects directly safeguards their living safety and property rights. After purchasing or using a house, if the construction quality does not meet standards, problems such as wall cracking, water leakage, and structural instability may occur. These issues not only affect daily life but also pose threats to personal safety. Effective supervision and management can identify and resolve these quality issues in advance, allowing homeowners to live with peace of mind [1].

From the perspective of construction enterprises, strengthening supervision and management of housing construction projects is crucial for their survival and development. If a construction enterprise neglects quality, it will not only incur additional costs due to rework and repairs but also lose customer trust and damage its reputation. Through strict supervision and management, construction enterprises can standardize construction processes, improve construction standards,

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and deliver high-quality projects, thereby accumulating a good reputation, enhancing market competitiveness, and achieving long-term development.

For government regulatory departments, strengthening supervision and management of housing construction projects is an important manifestation of fulfilling public management responsibilities and protecting public interests [2]. Through supervision and management, government regulatory departments can ensure that housing construction complies with national quality standards and safety regulations, avoiding the occurrence of substandard projects. This not only maintains the normal order of the real estate market but also reduces complaints and disputes caused by quality issues, prevents the waste of public resources due to quality accidents, and ensures that social public interests are not compromised.

For society, strengthening supervision and management of housing construction projects is a powerful support for maintaining social stability and promoting healthy urban development. Housing construction is an important component of urban infrastructure and social security. A large number of qualified houses can meet the housing needs of residents and improve their quality of life. If quality problems occur frequently, it will not only cause public dissatisfaction but also lead to mass incidents, thereby affecting social harmony [3]. Standardized quality supervision and management can ensure the overall quality of urban construction, lay a solid foundation for urban development, and promote the orderly operation of society.

For the construction industry, strengthening supervision and management of housing construction projects is an inevitable requirement for promoting industry transformation and upgrading and achieving sustainable development. Currently, the construction industry is highly competitive, and some enterprises lower quality standards to pursue short-term benefits, resulting in uneven overall quality in the industry. By strengthening supervision and management, backward and non-compliant enterprises can be eliminated, forcing enterprises in the industry to focus on technological innovation and quality management, improving the overall professional level and service quality of the industry, and promoting the development of the construction industry toward high quality and standardization.

3. Core Strategies for Improving Quality Supervision and Management

3.1 Building a Systematic Supervision System

First, some current engineering quality acceptance standards have issues such as vague descriptions and ambiguous boundaries. For example, the qualified range for wall hollowing and floor thickness is not defined in detail, making it difficult to accurately judge during actual supervision. National legislative departments should revise and improve laws and regulations such as the "Regulations on the Quality Management of Construction Projects" based on the actual needs of the industry. Housing and construction departments need to further refine engineering quality acceptance standards and clarify quality requirements for each stage from foundation construction to finishing [4]. At the same time, penalties for illegal and non-compliant behaviors should be clearly defined. For example, if construction enterprises cut corners and cause quality hazards, the amount of fines, the duration of business suspension, and joint accountability measures for enterprise responsible persons should be specified, making laws and regulations a hard constraint for quality supervision.

Second, housing and construction departments, market supervision departments, fire departments,

etc., need to jointly establish a multi-departmental collaborative supervision mechanism. In the past, various departments often carried out supervision work separately, with insufficient information sharing and overlapping responsibilities. For example, when housing and construction departments inspect construction processes, they may not simultaneously inform market supervision departments of material sampling results, leading to unqualified materials still being used on site. When fire departments accept fire protection facilities, they may not connect with the structural safety inspections of housing and construction departments, creating regulatory blind spots. Departments should build a unified information sharing platform, hold regular collaborative supervision meetings, and clarify divisions of labor. Housing and construction departments lead the overall quality supervision of projects, market supervision departments are responsible for quality sampling of building materials, and fire departments focus on compliance inspections of fire protection facilities. Through data exchange and mutual recognition of results, duplicate inspections and omissions can be avoided, ensuring supervision covers the entire project process.

Finally, in the past, some supervision work involved "advance notice" and "fixed-point inspections," which easily allowed enterprises to exploit loopholes and cover up quality problems in advance. Government regulatory departments should establish a project database and a supervision personnel database. Each time supervision is carried out, the inspection targets should be randomly selected through the system. Whether it is a large real estate project or a small-to-medium-sized livelihood project, they should have an equal probability of being inspected [5]. At the same time, supervision personnel should be randomly assigned to avoid fixed personnel long-term supervising the same project and forming interest relationships. After supervision is completed, regulatory departments need to publish inspection results on official websites, government service platforms, and other channels, including lists of qualified projects, details of problems with unqualified projects, and rectification requirements. This allows enterprises to accept social supervision and lets the public understand the quality status of projects, forcing enterprises to pay attention to daily quality control.

3.2 Strengthening Whole-Process Quality Control

First, to ensure good control measures before work begins, all relevant parties, including construction units, construction companies, supervision units, and housing and urban-rural development departments, need to collaborate. During the drawing review stage, the construction unit should entrust professional institutions to conduct preliminary reviews of construction drawings and then submit the drawings to the housing and urban-rural development department for re-review. Both parties should focus on verifying whether the drawings comply with national building standards, whether there are structural safety loopholes, and whether functional requirements are met. This ensures that quality risks are eliminated at the design level.

Second, during the material and equipment inspection stage, the construction unit should require suppliers to provide traceability certificates for materials, and the construction company should cooperate with the supervision unit to conduct sampling inspections of materials entering the site. Once any materials that do not meet standards are found, they must be immediately removed from the site and prohibited from being used in the construction project. During the construction plan demonstration stage, the construction company needs to develop detailed plans based on the actual project, and the supervision unit needs to review the feasibility and safety of the plan. For complex projects, industry experts need to be organized for demonstration. This ensures that the construction plan is scientific and reasonable.

Third, during the mid-term supervision process, the supervision unit and the housing and

urban-rural development department need to focus on controlling key links, and the construction company needs to actively cooperate. For key processes such as concrete pouring and steel structure welding, the supervision unit must assign dedicated personnel for on-site supervision, track the entire construction process, record construction data in real time, and immediately require the construction company to rectify any violations. For concealed works such as foundation treatment and pipeline embedding, the construction company needs to conduct self-inspection after construction is completed. After passing self-inspection, they should apply to the supervision unit and the housing and urban-rural development department for acceptance [6]. During the acceptance and quality inspection stage, the housing and urban-rural development department can conduct random inspections of project quality together with third-party testing agencies. At the same time, the construction company needs to use information technology means to record the construction process to ensure traceability of quality issues. This is absolutely not allowed to prevent construction companies from cutting corners during supervision gaps.

Fourth, during the project completion acceptance and warranty stage, the construction unit needs to simultaneously invite the construction company, supervision unit, housing and urban-rural development department, and homeowner representatives to participate to ensure the delivery quality of the project and the rights and interests of homeowners. During the completion acceptance stage, the construction unit needs to organize the construction, supervision, and design units to conduct joint acceptance according to national acceptance standards. The housing and urban-rural development department needs to be present to supervise the standardization of the acceptance process and review the acceptance results. If non-compliances are found during the acceptance process, the construction company must make rectifications within the specified time; otherwise, the project cannot be delivered to homeowners. During the quality guarantee stage, the construction unit needs to establish a complete quality guarantee file, which should clearly define the warranty scope, warranty period, and responsible parties.

3.3 Enhancing the Professional Competence of Personnel

First, construction enterprises, housing and urban-rural development departments, and industry associations should collaborate to conduct stratified training for different positions. For front-line construction personnel, construction enterprises should regularly organize skills training, and the training content should be aligned with actual operations. For example, bricklayers need to learn the control standards for wall flatness; steel workers need to master the precise requirements for binding spacing; concrete workers need to be familiar with the vibration time and intensity during pouring. For prefabricated construction projects, construction enterprises should arrange specialized practical teaching for component installation to ensure that construction personnel can construct according to quality standards [7]. For supervision personnel, housing and urban-rural development departments should jointly conduct professional training with industry associations, focusing on specific standards for quality inspection, such as inspection points for pipeline embedding in concealed works and testing methods for waterproof materials. Management personnel should also learn how to record and track problem rectifications in a standardized manner. After training is completed, they must pass assessments to participate in project supervision work.

Second, housing and urban-rural development departments and regulatory agencies should jointly establish strict qualification certification and exit mechanisms to control the quality level of personnel throughout the entire process from entry to departure. For key positions such as quality management personnel of construction units and project responsible persons of supervision units, housing and urban-rural development departments should implement an on-the-job certification

system. Applicants must first pass a professional knowledge exam covering engineering mechanics, quality standards, and safety regulations, and also pass a practical ability assessment, such as on-site judgment of whether concrete strength meets standards. In addition, qualification certificates must be reviewed annually. During the review process, the work records of personnel during their tenure will be checked, such as whether there were quality supervision errors or violations of construction regulations. Those who fail the review will have their qualifications suspended and must retake training and assessment. If personnel have serious violations, regulatory agencies should directly revoke their qualification certificates and prohibit them from reapplying for three years, aiming to completely eliminate the impact of unqualified personnel on project quality.

Third, construction enterprises and regulatory agencies should simultaneously strengthen the construction of employees' professional ethics and integrate the concept of "quality first." Construction enterprises should carry out quality awareness education activities monthly, not just empty theoretical lectures, but by showing real videos of quality accidents to let employees intuitively see the harm of quality problems. In addition, quality model sharing sessions should be regularly organized, inviting experienced workers or managers to share how to adhere to quality bottom lines in daily work, helping everyone abandon the wrong concept of prioritizing progress over quality [8]. Regulatory agencies should issue detailed regulations on professional ethics supervision, clearly prohibiting supervision personnel and project responsible persons from accepting banquets or gifts from construction units, and prohibiting lowering quality standards for familiar projects. Once violations of professional ethics are discovered, public criticism and condemnation should be given, and the annual assessment scores of relevant personnel should be deducted. For serious cases, they should be directly transferred from their original positions.

4. Conclusion

In summary, quality supervision and management of housing construction projects is a systematic task that requires the collaborative efforts of multiple entities, including government regulatory departments, construction enterprises, supervision units, and practitioners. Doing a good job in quality supervision and management of housing construction projects can not only directly guarantee the living safety and rights of homeowners, allowing them to live with peace of mind, but also help construction enterprises establish a good reputation, enhance their market competitiveness, and achieve long-term development. It can also maintain the order of the real estate market, reduce social conflicts caused by quality accidents, and lay a solid foundation for urban construction and social stability.

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