

Analysis of Quality Influencing Factors and Coping Strategies in Site Construction Stage of Prefabricated Building

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Abstract: Limited to the current industry, the personnel, knowledge, and technology reserves of prefabricated buildings are not sufficient, which directly affects the engineering quality of prefabricated buildings. In particular, the quality control of the prefabricated building site construction stage is the most critical. In view of the on-site construction stage of prefabricated buildings, this paper sorts out the influencing factors of project quality from three aspects of personnel, technology and management, and from the three aspects of personnel quality, construction technology and whole process management, the coping strategies of engineering quality problems are put forward. It can effectively improve the detailed management and control of quality problems in the construction stage of the prefabricated building, and help the rapid development of the prefabricated building industry.

Keywords: Prefabricated Building; On-Site Construction; Engineering Quality; Influencing Factors; Coping Strategies

Preface

There are many factors affecting the quality of prefabricated construction projects. There are quality control problems in all stages of design, component production and transportation, on-site construction, operation and maintenance, especially in the most important on-site construction link. The combined installation effect of prefabricated components will directly determine the overall performance of the building, and is the key to quality control. It is of great significance to excavate and refine the quality influencing factors of prefabricated buildings on-site construction, and it is also the significance of this paper. This paper will sort out the influencing factors of project quality from the three main aspects of personnel, technology and management for on-site construction links, and propose specific countermeasures, so as to effectively improve the detailed management and control of prefabricated building quality problems.

1. Analysis of Quality Influencing Factors

1.1 Human Factors

According to the analysis of the current situation of my country's construction industry, the overall quality of the construction technology management team is not high. The construction technology management team of prefabricated construction projects has very few people who have systematically mastered the theoretical knowledge of prefabricated buildings, and some construction technical management personnel have poor professional quality, technical quality and professional quality. It cannot meet the development requirements of prefabricated buildings. At the same time, the training of on-site assembly workers are not in place, and the lack of technical guidance directly affects the construction progress and construction quality^[1]. On the other hand, prefabricated buildings also have high technical requirements for construction personnel. They should be skilled workers with certain professional knowledge and have certain knowledge of prefabricated component installation. However, at present, most of the construction personnel in our country lack the knowledge and experience in the installation of prefabricated components, and have little understanding of the construction technology and specifications of prefabricated construction projects.

1.2 Technical factors

In the assembly process of prefabricated buildings, how to scientifically handle the details of the structure and key points requires corresponding professional technology, and the level of technology directly affects the quality of the project. For example, in the construction process of prefabricated concrete structures, problems such as the quality control of connection node pouring and connection, post-pouring belt construction, and joints is not in place, to a certain extent, it affects the quality of the project. Prefabricated buildings require personnel to arrange construction procedures on the construction site. They must fully grasp the construction requirements of prefabricated buildings, and plan the construction procedures reasonably according to the specifications and performance of different buildings and prefabricated components used. If the lifting span of the component is too large, the lifting point design is unreasonable, and the coordination during lifting is not enough, the lifting process is not properly arranged, and the support frame and other processes are arranged unreasonably, which may damage the quality of the components and cause quality risks^[2]. As a new building model, prefabricated buildings lack the knowledge and experience of new technologies and new materials, and it is impossible to know the specific operation of new technologies and the performance of new materials when using them, leaving hidden dangers for the construction process.

1.3 Management factors

Prefabricated buildings have higher requirements for organizational construction management, and need to formulate targeted overall construction plans, special construction plans and emergency plans according to the specifications and performance of different buildings and prefabricated components used. At present, my country's construction industry still arranges work according to past experience in the construction process, and does not really implement institutionalized and process-based management. From the arrival of the prefabricated components at the construction site to the installation process, there is a lack of implementation plans for important links such as storage, protection, hoisting, installation, connection, and formwork removal. Construction organization and technical guidance documents are just formalities. The storage of prefabricated components on site has high requirements on flatness, temperature, humidity, etc. Insufficient flatness, unsuitable temperature and humidity will affect the quality of the components. In the process quality supervision and inspection work, there are still some situations where rules are not followed or there are no rules to follow. The quality acceptance specification of prefabricated building projects is not perfect, the quality acceptance standards are inconsistent in various places, the acceptance process is not clear, a complete prefabricated building quality acceptance specification system has not been established, the quality acceptance work is chaotic, and it is difficult to make a reasonable judgment on whether the quality of the building is compliant, the quality of the project cannot be guaranteed.

2. Quality problem coping strategy

2.1 Improve the professional quality of personnel

In order to effectively improve the engineering quality of prefabricated buildings, the professional level of engineering management personnel must be improved. First, according to the engineering characteristics of prefabricated buildings, the corresponding training of basic knowledge of engineering management, construction technology and operation points should be carried out regularly, so as to improve the working ability and professional quality of engineering management personnel, technicians and construction personnel. Second, strengthen cooperation with colleges and universities, regularly send project management personnel and technical personnel to colleges and universities for further studies, learn advanced management theories and skills, and achieve an effective combination of theory and practice. Third, strengthen the professional quality, sense of responsibility, and quality of personnel in the industry to ensure the standardized operation of each link. Fourth, enhance the innovative awareness of project management personnel, encourage them to continuously innovate management models and management methods, and comprehensively improve the level of project management.

2.2 Optimizing and perfecting the construction process

Improve the process management mechanism. After the prefabricated components enter the site, they are effectively stored and kept, and various parts and components are stored on soft rubber pads to prevent damage to the prefabricated components and affect their use effect. Before using prefabricated components, the dimensions and specifications of the

prefabricated components should be fully tested to ensure that their qualifications and conditions meet the construction requirements. During the construction process, different types of hoisting equipment are selected according to the specifications of the prefabricated components. The construction personnel must hoist in strict accordance with the requirements of the relevant standards to ensure that each hoisting point has sufficient strength to prevent problems such as one side inclination during the hoisting process. Once there are various problems such as junction box collision and slurry leakage, the construction should be stopped immediately, and the project designer and responsible person should be communicated to propose a targeted modification plan^[3].

2.3 Strengthen the construction process management

The construction unit should fully understand the technical indicators of the project through the joint review of drawings before construction, formulate scientific and reasonable construction plans, emergency plans and construction quality supervision and management methods; rationally allocate resources, and clarify the division of tasks and responsibilities between different majors and departments, and strengthen communication and cooperation between departments; train construction participants, and ensure adequate preparations for personnel and equipment. During the construction process, a joint review mechanism for engineering drawings was established, and a joint review of engineering drawings was carried out on a regular basis, and various hidden problems and defects in the drawings were carefully analyzed. In case of problems and defects, designers should be invited to quickly correct and confirm the correction. Strengthen the quality management of node connections, do a good job in the supervision of the construction process of the nodes, and check the quality after construction^[4].

3. Conclusion

Quality is the lifeline of construction, and the quality of prefabricated buildings directly determines the speed of its development. As the most important on-site construction link of prefabricated buildings, it is the key to quality control. Therefore, prefabricated building construction enterprises should improve the professional quality and technical level of construction and management personnel, continuously improve the construction technology, and strengthen the management of the construction process. On this basis, further analyze the influencing factors of the project quality in the construction stage of the site, and take quality control measures, actively promote the healthy and rapid development of prefabricated buildings.

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