

Research on Process Quality Problems and Improvement Measures of Prefabricated Building

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Abstract: With the vigorous development of economy and technology in our country today, the construction field has made great progress and development under the influence of this, and various forms of construction have been introduced to meet people's higher-level living requirements. Prefabricated building is a new type of building form, and good construction of this form will greatly improve the quality and efficiency of building production and construction. However, as far as the current construction of prefabricated buildings is concerned, there are many problems with the quality of production and construction, which shows that the development of prefabricated buildings is not yet mature. In this regard, this article focuses on the analysis of the production and construction quality problems of prefabricated buildings, and explores practical and feasible improvement measures. It is hoped that the production and construction quality of prefabricated buildings can be improved and their sound development can be promoted.

1. Introduction

Prefabricated building refers to a high-efficiency production that adopts standardized design, factory production, assembly construction, integrated decoration, information management, and intelligent application to achieve “four sections and one environmental protection” and full life cycle operation and maintenance. the way. Based on this, it can be determined that the construction of prefabricated buildings will promote the efficient, intelligent and modern development of my country's construction industry. However, from the perspective of the development status of prefabricated buildings in my country, the research on determining prefabricated buildings pays too much attention to quality issues and ignores quality management. This is not the correct way to ensure the quality of prefabricated buildings.

2. Process Operation Process and Existing Problems of Prefabricated Building Construction

At present, the technological operation process of prefabricated building construction can be divided into three aspects, namely, basic engineering, main structural engineering and decoration engineering. Among them, the basic engineering and decoration and the types of cast-in-place buildings are completely different; while the transportation and hoisting of the theme structure engineering, the support and fixation of the construction, the connection of the steel bar, the sleeve, the grouting, the binding of the steel bar at the post-pouring position, the support form The installation of a pre-embedded part, and then the pouring and curing of the concrete at the post-pouring site. It can be seen that the construction process of prefabricated buildings determines the overall quality of prefabricated buildings.

In the construction of prefabricated buildings, the quality problems that often occur mainly include three problems: plate production and installation, construction and connection, and pipeline and construction burying. Among them, different types of problems have different problems, and the reasons for the problems analyzed.

The corner board is easy to break; the corner board is the main component used to ensure the stability of the overall frame of the prefabricated building, and it has a very important role. However, the corner plate itself is thin and relatively large, so it is easier to break, so it is easy to be damaged during the transportation or hoisting of the component. The main reason for the damage is

that the two ends of the corner plate fold back inward during the hoisting process. There has been damage; perhaps the unreasonable operation in daily maintenance has changed the angle of the corner; during the construction period, part of the cast-in-place is needed to increase the integrity of the prefabricated building, and the cast-in-place cannot be well and Combining other parts, there will be phenomena such as mold expansion and false vibration from time to time.

External wallboard insulation often breaks; the insulation layer of external wallboard often falls off or breaks under normal circumstances. The main reason is that the materials used during the processing of the external wallboard are made of sandwich construction, that is to say, they are Composed of exterior decorative surface, thermal insulation layer and structural layer, the inconsistency of the three-layer materials often causes the exterior wall panels of thermal insulation materials to fall off and break.

The grout is not full enough. When the wall panels are connected longitudinally, the fullness of the grouting cannot be accurately determined, and the grouting holes of the components are prone to blockage. Under normal circumstances, the poured concrete can only be considered as completed grouting when it flows from the top hole of the slab, but in essence, the situation inside the grouting slab cannot be known, and the saturation of the grouting is at a loss. In addition, when the manufacturer is producing components, the error caused by the operation is too large, and some reasons such as the incomplete cleaning of the grouting hole by the construction personnel will cause the grouting hole to be blocked. 2.2.2 The sleeve connection is easy to be misplaced. When constructing the sleeve connection, the positions of the steel bar and the sleeve are prone to offset. Generally, there are two kinds of deviation phenomena: first, partial deviation, at this time the steel bar can only barely be inserted into the hole; second, complete deviation, so that the components can only be reworked. However, no matter what method the constructor adopts, it will have some deviations from the previous design, which will bring certain safety hazards to the quality of prefabricated construction projects.

The problems often encountered in pipe fittings and components are the blockage and fall off of the embedded pipelines of the components, the position of the embedded components is offset, and the construction site will encounter obstacles when threading. The main reason for this phenomenon is that the pre-embedded pipeline connection of the component during the production process is unreasonable, and some concrete falls into the pre-embedded pipe during vibrating, and the pipeline is blocked; or the pipeline and the component are not fixed well. , There is a shift during vibrating.

3. Improvement Measures

Prefabricated building is a change in the building system and operation mode, with a wider content and greater technical difficulty. It is an upgrade of the industry from multiple angles and an update of traditional technology.

Design is the basis of prefabricated buildings and requires in-depth process design. The prefabricated building is to split the building into parts and install the parts according to the rules during construction to build a building that meets the quality requirements. The design determines the process and cost of the entire project, and the follow-up links are all operated according to the design plan. If the design is not scientific enough, the error rate may increase and the cost may increase. At present, there is still a lack of professional process designers in the process drawing design, and the design scheme has the phenomenon of high construction difficulty or high cost. The current deepening design of PC components in my country still has the following problems.

Individual design institutes do not have the content of PC in-depth design, and there are not many PC professional design institutes, which leads to the concentration of PC in-depth design and the design is not detailed. In the prefabrication stage of the component, it is necessary to modify the drawings many times, but some problems can only be discovered during the installation, which is difficult to modify, which will affect the construction period and cause losses.

Prefabricated buildings have almost no opportunities for on-site coordination. The problems must be solved in the design stage, and the manufacturing, transportation and construction must be comprehensively considered during the design to find the best design plan. Prefabricated

components are not allowed to be perforated, and all pipeline reservations must be implemented on the prefabricated component drawings, which requires the design to be meticulous, in-depth, and coordinated.

There is a shortage of PC deepening designers, a large amount of work for deepening drawings, and a lot of manpower and material resources. Often in the component processing stage, the original deepening designer is not present, and it is not clear with the technical personnel of the PC component processing plant and on-site installation, and problems cannot be solved in time.

Factory production and processing technology and concrete component production technology cover a wide range, but the quality of PC component processing plants in my country is uneven. The processing technology mainly has the following problems: weak technical force, low skills of professional and technical workers, lack of excellent technical management personnel, The skilled workers are mainly migrant workers, and industrial workers lack the talents for mold development and manufacturing; the processing cost of entrusting professional companies is high; the degree of mechanization and automatic intelligent production is low, and the product quality does not meet the requirements; the factory has many open-air operations, and the construction period, The quality is not up to expectations.

The on-site installation of prefabricated components is quite different from the traditional construction industry. Mainly reflected in the following points.

Information technology support is just primary and inefficient industrialization. Building Information Modeling (BIM) technology can realize information sharing in the whole process of prefabricated concrete structures and realize integrated collaborative work. However, due to the lack of technical platforms and technical personnel in actual use, the design BIM model failed to directly connect with production and construction. In a certain period, the technical standards for prefabricated concrete buildings are only advocated for use, and there are no mandatory requirements. Many processing plants and installation construction units often do not have the guidance of BIM technology due to cost issues.

It is difficult to realize the whole process management, and it is more difficult to grasp. The management of the traditional construction industry is relatively passive. The construction unit performs construction according to the drawings of the contracting unit, and the technical management is not difficult. However, prefabricated buildings must focus on the overall situation, and work hard at each link. Industrialized production must be managed lean. As long as there is a little error in the design, it cannot be installed. The production link of the factory must be managed according to timing and piece counting, rather than the traditional contracting method of the construction industry. It is necessary to carefully analyze and consider the production line, workstation, time, and materials, otherwise it will cause waste of materials and labor.

4. Improvement Measures for the Production and Construction of Prefabricated Buildings

In view of the above analysis of the production and construction quality problems of prefabricated buildings, it is determined that multiple production and construction links will be affected by mechanical factors and human factors. In order to avoid the continuous occurrence of this situation, science and technology should be used to establish an information collection system through which to collect information related to prefabricated buildings, such as mechanical equipment information, parameters of main components, etc., and then sort and analyze the information data, To determine the existence of abnormal information data, so that it can be judged that the mechanical equipment has hidden troubles, and the production of those components requires special attention, which is helpful for the subsequent reasonable construction of prefabricated buildings.

According to the relevant national standards and specifications, the use of advanced information technology, network technology, computer technology and other science and technology to construct the detection system, then the detection system will be subject to the relevant national standards and specifications to test all aspects of prefabricated buildings. Furthermore, the components with deviations can be determined and returned to the factory for disposal in time,

which can ensure the applicability of the components and lay the foundation for better construction of prefabricated buildings.

The management statistics system includes production problem statistics, transportation problem statistics, construction problem statistics, work efficiency statistics, construction progress statistics, and employee training systems. Reasonably involving the management statistics system can automatically collect and track the responsibility of relevant stakeholders and reduce interface management disputes.

5. Conclusion

However, from the perspective of the development status of prefabricated buildings in my country, the research on determining prefabricated buildings pays too much attention to quality issues and ignores quality management. This is not the correct way to ensure the quality of prefabricated buildings. In order to change this situation, this article focuses on the production and construction quality problems of prefabricated buildings, that is, grouting quality problems, post-pouring tape quality problems, quality problems on the production line, etc., and then proposes measures to improve the production and construction of prefabricated buildings, namely, the establishment of The new collection system, detection system, management statistics system, through the implementation of the above systems, intelligently and rationally control the production and construction of prefabricated buildings, avoid quality problems, and finally build prefabricated buildings with high quality and efficiency. ,

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