Research on construction quality and improvement of assembly construction

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Abstract: Based on the acceleration of the urbanization process and the improvement of the quality of life of our residents, the demand for building construction has been increasing. In this context, the construction industry in order to promote the construction efficiency, quality improvement, to meet the needs of the development of the times to strengthen the new technology, the use of new technologies. At present, China's engineering construction units in the process of carrying out the project to strengthen the use of assembly-type construction technology, which thus achieved for the traditional construction work low-level, high time-consuming issues, and promote the steady improvement of production efficiency. Based on this, this paper focuses on the analysis of the connotation of the assembly structure and analyzes the quality problems in the construction process of the construction projects and puts forward the improvement measures to promote the improvement of the building quality and the construction of the building Construction speed. Based on this, this paper analyzes the structural system and design of prefabricated building.

1. Introduction

Based on the prosperity of China's social economy and the improvement of the living standards of social residents, China's construction industry has made great progress. In this context, in order to further promote the quality of our construction, the efficiency of the construction industry to strengthen the assembly of the building design, promotion, and thus promote the construction speed. At present, the technology is mainly used in high-rise buildings, small villa construction area. In fact, in order to further highlight its use efficiency, the construction team in the process of project construction needs to strengthen the construction of the construction quality of the grasp, and actively take improvement measures to solve, save the construction benefits.

2. Advantages and Disadvantages of Fabricated Construction

In the course of the development of the construction industry in China at this stage, the assembly of buildings is more used, the so-called assembly of buildings refers to the use of prefabricated components assembled at the construction site. On this way of construction, I believe that its advantages and disadvantages mainly for the following points.

2.1 Advantages of Fabricated Construction

The application of the assembly structure can effectively solve the wall cracks, leakage and other quality problems, and to maximize the building to improve the safety, fire resistance and durability. In addition, due to the construction mode, the prefabricated components are brought to the site for assembly, as it helps to shorten the duration, save costs and minimize environmental pollution and the manufacture of construction waste.

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2.2 Tthe construction of the shortcomings of construction

Of course, the assembly of the construction mode is also due to the limitations of the actual situation, and there have been many problems. For example, because the model is to prefabricated components to the construction site for equipment, which led to the actual construction progress by the manufacturers of component production efficiency, mode of transport and many other factors influence and constraints. In addition, since the associated construction parts are reserved for production, this leads to a change in the relevant program in the construction phase, which will lead to the need for the resumption of the previous component production, which leads to an increase in construction costs and duration The delay. In addition, in the actual installation process will appear wrong, missing, loss and other conditions of the situation. In addition, due to the lack of relevant professionals, resulting in the assembly of the production, installation links are lack of technical guidance and professionalism.

3. Analysis on the Quality of Assembled Buildings

As the assembly of the building in the construction process generally has a number of advantages, so get the favor of construction units, and in the process of construction projects have been widely used. But in fact, the construction project in the course of the development of a wide range of quality problems, which led to a significant reduction in construction efficiency. On the assembly of building quality problems, the author carried out a summary, the specific content is as follows.

3.1 The quality problems of bed mortar

At present, China's assembly of the building in the construction process, the main way to take the bed mortar to carry out construction operations. However, in the actual construction process, due to improper operation of the construction staff in the construction of the process often lead to a certain quality and safety risks.

On the one hand, due to the construction staff can not be effective management of construction machinery, quality inspection work, which led to the uneven thickness of the bed mortar, reducing the quality of the pump, is not conducive to the improvement of construction efficiency;On the other hand, the construction staff can not be able to scientifically arrange the bed mortar's material, and did not follow the "less mix" and "ground mixing" principle, which led to lower construction quality.

Not only that, the construction staff because of the lack of necessary skills training, which led to its can not be a reasonable control of the bed mortar's material，resulting in lower quality of the project. Moreover, due to the need for the construction unit to take the necessary bed mortar thickness detection equipment, resulting in the bed mortar layer in the latter part of the maintenance process of migration, gaps and other issues, is not conducive to the effective construction activities.

3.2 Installation size deviation problem

In addition, in the process of installation and installation of stitching process, there will often be installed size deviation problem, thus reducing the quality of construction projects. In fact, this type of deviation is mainly manifested in the main manifestations of the cracks in the wall board splicing cracks are not smooth, uneven and so on.

The main causes of bias problems are divided into four categories:First, the lack of the necessary size measurement and control work, resulting in patchwork error is too large, is not conducive to the realization of the design goals, and such buildings in the hoisting of components often appear shaking, is not conducive to the installation of precision control. Second, because the assembly project less, so the relevant workers lack the necessary experience is not conducive to the quality of the installation operation to grasp. Third, the staff can not understand the size of the component error, resulting in excessive error accumulation, leading to the emergence of cracks. Fourth, the construction of the line is not accurate, resulting in elevation error.

3.3 Quality Problems of Post - pouring Concrete

In the process of pouring and using the post-pouring concrete, there is a widespread problem in the process of uneven pulp, root and unequal problems. Under normal circumstances, the construction team lacks the necessary template tool is often the main cause of such problems. In addition, due to the construction staff can not be scientific materials on the ratio, resulting in excessive coarse aggregate, to promote the emergence of rotten concrete problems. In addition, the construction staff lack of sense of responsibility, resulting in the work can not be completely in accordance with the design and construction standards to work, resulting in template, steel bar installation work deviation. In addition, the construction workers for the unreasonable vibrating concrete situation, but also further led to the leakage of pulp, rotten and other problems.

3.4 Finished product protection

At present, China's installation and construction of the building in the construction process often need to advance the processing of building parts, and in the latter part of the semi-finished product installation work. But in fact, the finished prefabricated components in the process of stacking tend to be varying degrees of damage, resulting in building durability is greatly affected.

There are three main reasons for this type of problem:First, the construction technology is not in place, and managers can follow the construction requirements to carry out re-inspection work. Second, non-load-bearing element of their own design strength is low, easy to lead to the emergence of thin thickness problems. Third, in the process of component transport, hoisting because of improper management measures led to the emergence of various quality problems.

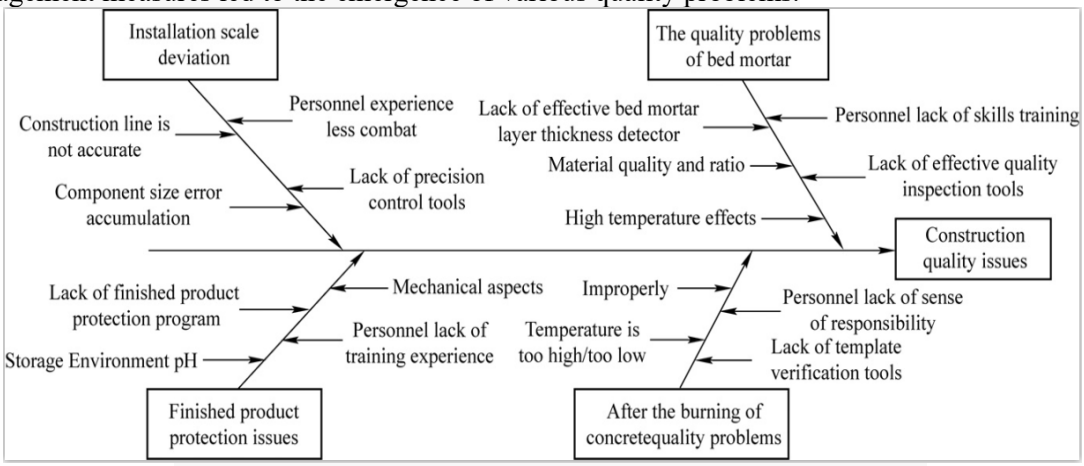


Fig. 1 fishbone diagram of assembled building quality problems

4. Measures to Improve Construction Quality of Fabricated Buildings

In order to further promote the further improvement of the construction quality of the assembly construction and promote the construction of the benefits, China's construction units in the process of building the project need to strengthen the adoption of various measures to promote the construction quality. On the promotion of assembly-building construction quality of the measures, the author made the following summary.

4.1 The rational use of High-tech

In order to further promote the quality of assembly construction production to enhance the construction workers in the course of the relevant operations need to strengthen the rational use of high-tech applications. At present, construction workers can use BIM technology and RFID technology for construction operations.

In fact, the use of BIM technology in the construction of assembly buildings has three

characteristics: one is to gather the components of the information set to form a database; the second is to achieve the project information of the building elements of the building; Is to ensure that the model information of the interrelated, dynamic changes. In fact, the promotion and application of the technology is often able to achieve the construction site management, visualization technology to carry out the work carried out.

The RFID technology in the use of the process, to the assembly of the production, transportation, storage, hoisting and other aspects of scientific control. The technology uses the technical means such as chip and so on, thus thus realizing the rationalization setting for the assembly road transportation route, and reduces the transportation time and the cost. In addition, the use of this technology can help the construction staff to carry out timely understanding of the components of the assembly structure, which thus promote the optimization of the lifting process, and further improve the efficiency of lifting work, and then to maximize the optimization of the assembly Construction management and application.

4.2 To strengthen the Construction Workers Training

Through the analysis of the factors that have caused the quality of the assembly building, it can be found that the quality and capacity of the construction personnel have a great impact on the construction of the project, and it is necessary for the construction enterprises to actively carry out the construction project during the construction of the project Training work.

In this process, the assembly of construction enterprises need to carry out construction workers training, to ensure that the construction staff to advanced construction technology, technology to effectively grasp and promote the smooth development of the work to avoid the emergence of the scene construction errors, Promote the construction efficiency.

In addition, the construction enterprises also need to cultivate the professional quality of construction workers to ensure that the construction process in accordance with the construction requirements, design programs for construction operations, thus driving the prefabricated construction quality and safety benefits.

4.3Establish the Retrofit Mechanism of Assembly Quality

In fact, the problems encountered in the construction of the assembly building are often caused by improper construction operations, which can have different levels of architectural design problems in the process of project design, resulting in a further reduction in construction quality. In order to avoid this problem and promote the improvement of construction efficiency, enterprises need to strengthen the construction of the retrofit mechanism for the quality of the assembly structure, thus ensuring that the quality of the problem in the emergence of the root causes of the timely detection, driven prefabricated Improve the quality of building products.

4.4Establish a Quality Management Platform

The so-called assembly of building quality collaborative management platform, in the course of the operation can often with the help of automation equipment, equipment for the construction site of various types of quality data collection and analysis work. In this process, the construction workers need to transfer such data to the BIM management platform, and thus carry out model construction, analysis work, to promote the acquisition of various benefits, improve quality management efficiency, quality and steadily.

In order to further promote the upgrading of the quality of assembly-type construction, construction units need to achieve the optimization of assembly-style building design to promote its operational efficiency. In the process of prefabricated frame construction system design, the designer needs to ensure that the surface of the formation of the rules, and to ensure that the beam and column center line in the same plane. In addition, the designers need to deal with the beam and column of the work of the junction, to achieve the stability of building base to enhance the structure, and scientific control of the framework of the solid level.

In the design of the shear wall structure system, the designers need to analyze the internal forces for the internal and external walls of the impact, and scientific prefabricated load-bearing wall layout work.

5. Concluding remarks

In order to further meet the needs of China's social residents for the construction project, China's construction units in the process of building the project to strengthen the construction of the assembly, and actively carry out the production and construction quality analysis and processing. Based on this, this paper focuses on the analysis of the advantages and disadvantages of the construction of the assembly and analyzes the quality problems of the assembly quality (The quality problems of bed mortar, the problem of the installation size deviation, the quality of the concrete after the pouring, the protection of the finished product) Construction of construction quality measures (the rational use of high technology, to strengthen the construction workers training, establish the retrofit mechanism of assembly quality, the establishment of quality management platform, optimize the design of assembly-style buildings) to discuss. I believe that with the implementation of relevant measures in place and technological development, China's assembly-style construction will be developed by leaps and bounds to promote the sustainable development of the construction industry.

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