

## Research on the Management Mode of Prefabricated Construction Project

Guo Yuguang<sup>1</sup>, Ran Wenjuan<sup>1,2</sup>, Zhang Yinfeng<sup>1</sup>, Zhai Honggang<sup>3</sup>, Liu Shouping<sup>3</sup>, Guo Xinyue<sup>4</sup>

<sup>1</sup>Xinlian College of Henan Normal University, Zhengzhou, Henan, China

<sup>2</sup>Lianyungang Shengfuda Construction Engineering Co., Ltd., Lianyungang, Jiangsu, China

<sup>3</sup>Department of Culture and Tourism of Henan Province, Zhengzhou University, Zhengzhou, Henan, China

<sup>4</sup>Central South University for Nationalities, Wuhan, Hubei, China

**Keywords:** Prefabricated building, Enterprise, Engineering, Management mode

**Abstract:** Traditional construction projects in the process of development, due to the long construction cycle, low industrial efficiency, increased the difficulty of management, there are a lot of safety risks and environmental problems in the project. Under the influence of China's green environmental protection and sustainable development strategy, construction projects are gradually advancing towards industrialization. In the construction project development process, the assembly building can replace the traditional construction form, not only to ensure the quality of the project, but also to shorten the construction period, in line with the green sustainable development strategy, can play a huge role in the factory assembly line production task. This paper discusses the application in the project management process of prefabricated construction engineering and provides reference for professionals.

### 1. Introduction

At present, the application of prefabricated buildings in the construction process is not extensive enough. Influenced by various external factors, the development of prefabricated buildings is in the initial stage. The management mode of engineering project is still in use of the traditional construction management mode. Therefore, the author has conducted an in-depth study on the application of prefabricated construction technology in the project management process of modern engineering industry, and analyzed the status quo of the management situation and the factors that affect the management mode, so as to provide theoretical basis for the extensive application of prefabricated construction.

### 2. Application Prospect of Prefabricated Construction Projects

In the development of China's economy, the construction industry has always been an important pillar industry of China's national economy, accounting for a large percentage of China's GDP. The rapid development of the construction industry promotes the overall improvement of China's national economy. However, the extensive engineering management mode of the construction industry hinders the overall progress of the construction industry. This mode cannot guarantee the quality of engineering projects, derailed from the development level of science and technology at the present stage, and cannot ensure the safe and stable development of engineering projects. <sup>[1]</sup> as a new construction method, the prefabricated construction technology is highly valued by the relevant personnel in the construction industry. The application of this technology can make the construction project assemble the building just like the assembly parts. This technology needs to prefabricate the construction parts before the construction project. The assembly construction technology can save the time of site construction, has a high technical content, for the construction project safety and stability to carry out escort.

Compared with cast-in-place construction engineering, prefabricated construction engineering can show great advantages and bring a new working mode for construction engineering projects. At

the present stage, the application and development of prefabricated buildings are encouraged in China, but in the actual project development process, the application of prefabricated buildings only accounts for about 10% of the total construction projects. Therefore, when actual engineering projects are carried out, it is still necessary to strengthen the promotion of prefabricated buildings. In the practice process, various external influences and obstacles are encountered to make targeted solutions.

### **3. Development of Prefabricated Construction Projects**

Influenced by the large population base of our country, the number of construction projects keeps increasing. But the cost of building a house is high and the quality of the project is difficult to guarantee due to the influence of weather conditions. Since the reform and opening, our country for the promotion of prefabricated type assembly building strength increasing, the period also appeared many for building the basic requirement of industrialization, but is limited by science and technology, prefabricated type building there are many defects in the process of practical application, provide convenience for people life cannot show, unable to meet the needs of social development at that time. Since the 20th century, precast concrete building schemes have been put forward, but there are deficiencies in the analysis of the overall structural performance of precast concrete and the construction management ability. However, China has not weakened the importance of prefabricated building research, through the improvement of various bills to promote the development of prefabricated building industrialization. Such as in 2015 launched “on further strengthening the construction of urban planning management work several opinions of the support policies, such as provide convenience for the steady advance of prefabricated construction conditions, improve the standardization of prefabricated construction norms, strengthen the prefabricated components can be accommodative and generality, make into a construction project and the decoration project, accelerate the pace of industrial buildings.”<sup>[2]</sup> the proposal and improvement of these systems reflect the importance that China attaches to the development of prefabricated architecture. When carrying out construction projects, we should unswervingly follow the new path of industrialization with Chinese characteristics, and combine informatization with industrialization to promote the coordinated development of both. At present, the promotion of prefabricated buildings in China is gradually increasing, and more and more cities have set up prefabricated design manufacturing enterprises. With the support of national policies, prefabricated buildings have gradually increased their inference on assembly structure, and the development of the market is under control. Prefabricated buildings have gradually increased their proportion in new construction projects.

### **4. Research on Project Management of Prefabricated Construction Engineering**

Although prefabricated management has irreplaceable advantages in construction engineering projects, there are many problems in the practical application of construction, both in the design stage and in the storage and transportation stage. Through investigation and research, it is found that only a few people have conducted in-depth research on the concept design of assembly and assembly construction technology of assembly buildings. Due to the influence of site area, many assembled construction parts can only be placed in open and exposed sites. Under normal conditions, the volume of prefabricated modules is relatively large, and the safety of personnel should be ensured during assembly and transportation. The fixation of prefabricated modules in vertical transportation is an important safety problem, and even a small mistake in the transportation and assembly process will affect the quality of the assembly. Other experts have pointed out that using prefabricated parts is more time-consuming than traditional methods, which can prolong the time of concrete installation, because the transportation of prefabricated parts takes more time than conventional construction transportation. Moreover, the situation of the construction site is changeable, sometimes prefabricated construction cannot meet the needs of the construction site, labor retraining is a very serious problem, when the in-situ concrete structure is not consistent with

the prefabricated structure, the site staff need to readjust and operate, making the development of the project more troublesome. On the other hand, the cost of using predictive technology is higher than that of traditional construction projects, which is also an important factor hindering and inhibiting the development of the structure. However, this technology can save the amount of template materials on the construction site, which is in line with the green sustainable development strategy proposed by China<sup>[3]</sup>.

## **5. Solutions to Project Management Problems of Prefabricated Construction Engineering**

Under the call of China's political situation, more and more researchers have carried out in-depth research on the application of this new technology in construction projects. Through to the modern construction industry economic comparison with the traditional construction mode analysis results can be found, although know the cost of the concrete structure is much higher than that of traditional architecture, but we need to think deeply about the development situation of modern prefabricated construction, only through the efforts of the social people from all walks of life, to accelerate the development of prefabricated construction project.

### **5.1 Establish a Sound Regulatory System**

Management needs to implement all political systems and build a sound regulatory system. At present, the supervision of construction quality and construction safety in the process of assembly construction is not high enough. Combined with the development of China, the various systems specified by the Chinese government tend to operate poorly in the process of being handed down, and the construction industry and various enterprises pay little attention to it, which makes the development of prefabricated buildings fail to reach the expected effect. Therefore, the management mode of assembly building still needs to be continuously optimized to strengthen management so that the assembly building can meet relevant standards during construction<sup>[4]</sup>.

(1) Strengthen the management of general contracting projects. In to carry out the construction project, need to carry on the consummation to preliminary design drawings of the construction projects, industrial projects through the adoption of general contracting project management model to carry on the bidding work, participate in the bidding units must be in line with the construction of prefabricated construction experience of enterprises, and strengthen the auditing and supervision of the bid invitation unit, ensure that the bidding process fair and open.

(2) Improve the approval process of prefabricated buildings. Prefabricated construction projects have special channels in the approval process. Present architectural model when involved in the process is more complex, the importance of the regulatory process for relatively low, want to establish a relatively perfect prefabricated construction project, need to let the prefabricated construction towards the integration of the management mechanism, clear the responsibility of general contractor, to carry on strict quality management and monitoring to the project as a whole.

### **5.2 Increase Political Support**

Interests are always there, so is the development of the construction industry. In addition to formulating relevant standards and policies, the national government also needs to improve supporting policies and systems, strengthen support for the construction industry, and provide welfare assistance to construction enterprises, so that the construction industry can constantly integrate into cutting-edge science and technology, and reduce the cost of construction projects. For example, in some developed countries in Europe and America, the government will provide a number of preferential policies when carrying out prefabricated construction projects, which will have a huge impact on the development results of construction projects. Therefore, China also needs to comply with the boom in the development of prefabricated architecture. During the review of construction projects, priority should be given to the construction during assembly. More and more construction enterprises should develop in this direction through encouragement and support. By reducing the approval process of prefabricated projects, the Chinese government can open a green channel for them, so that construction enterprises can spend more energy and time on research and

optimization of technologies applied in prefabricated buildings.

## **6. Take Advantage of Prefabricated Buildings**

Compared with traditional construction projects, prefabricated buildings can save a lot of manpower and material resources, save the cost of materials, and comply with the development requirements of the green pattern proposed in China. The application of prefabricated buildings can make the construction industry develop towards the direction of green and low-carbon, which is an important means to adjust the construction structure and promote the reform of the construction industry. Shortening the construction period of a construction project accelerates the pace of urbanization, which has a far-reaching impact on the development of construction projects.

### **6.1 Improve the Construction Speed of the Project and Guarantee the Quality of the Project**

Prefabricated construction of manufacturing technology in the large-scale engineering production can embody the unique advantages, is the social organization and management ability and the combination of modern information technology application product, make traditional engineering project management process towards industrialization, assembly manufacturing process changes, help the production efficiency and the technical level of ascension, to the quality of the prefabricated construction safety guarantee, speed up the pace of our modernization construction forward.

### **6.2 Reduce Construction Pollution and Protect the Surrounding Environment**

Although the traditional construction method has a low utilization rate of resources, it will produce a lot of energy waste and construction noise, which will seriously affect the daily life and rest of the surrounding residents. The equipment is consistent with the green international development strategy, and the construction site conditions are adjusted to make the construction environment more orderly. Through the application of prefabricated construction, air pollution and the production of construction waste are significantly reduced, and the construction of ecological civilization city is accelerated <sup>[5]</sup>.

### **6.3 Improve Resource Utilization and Reduce Energy Consumption**

By prefabricated buildings can efficient use of energy resources, low carbon and environmental protection in line with the sustainable development strategy, when to carry out the construction project, can reduce the use of precast concrete building materials, steel at the end of the project will be able to get a reasonable recovery and utilization of the construction site of steel cutting work significantly reduced, by precast can complete the cycle of water use for many times, reducing the use of water and electricity.

### **6.4 We Will Ease Overcapacity**

The construction and development of prefabricated buildings can improve the industrial structure and industrial use efficiency. At the same time build prefabricated industrial chain and important branch of multiple industry together, build an open production enterprises in a prefabricated building, for a variety of equipment manufacturing and production, adjustment of industry structure model, speed up the economic development of new industries, make construction enterprises towards specialization integrated direction.

## **7. Conclusion**

At present, the development of prefabricated buildings in China is at a primary level. With the support of national policies, relevant standards and laws and regulations are constantly improved, and the market environment is getting better and better, the development speed of prefabricated buildings will be improved. In order to make the prefabricated construction project management stability, prevent the blind track events, the concept of prefabricated construction design idea and

management mode is still need further perfect, strengthen the support of various theoretical basis, the prefabricated buildings more and more researchers in continuous optimization and improvement on the management pattern, in the prefabricated construction engineering project management mode of study, is also a very strong practical significance. This paper analyzes the advantages of prefabricated architecture in project management. The application prospect of prefabricated construction technology is very broad. Prefabricated engineering is a complex and large-scale construction project system. Researchers also need to divide the project interior carefully and analyze the management of prefabricated construction projects from different perspectives.

## References

- [1] Jiang Foxing (2017). On data progress management of BIM technology in prefabricated buildings [J]. Residence, (19):157-158.
- [2] Jia Hongjun (2018), Zhang shuyi. Study on improvement of EPC project general contracting mode for prefabricated buildings [J]. Journal of engineering management,32(06):12-16.
- [3] Xu Hongguo (2019). Analysis of project management and development problems of prefabricated buildings [J]. Building materials and decoration, (02):166-167.
- [4] Feng Weiqiang (2019). Research on influencing factors and countermeasures of the management of prefabricated construction project [J]. Development of construction technology,46(12):81-82.
- [5] Wang Qihang (2019). Research on the management mode of prefabricated construction project [J]. Henan building materials, (05):111-112.