

# Construction Technology of Frame Structure in Building Engineering

Yong Yang

Jinan Engineering Polytechnic, Jinan, Shandong Province, 250200

**Abstract:** With the rapid development of China's national economy, urban construction is also developing gradually, and all sectors of society pay more and more attention to the construction quality and efficiency of construction projects. Among a variety of construction technologies, frame structure construction technology has strong safety and reliability, so it is widely used. Based on this, this paper briefly analyzes the technical points of construction technology of frame structure in construction engineering, and analyzes the problems existing in construction.

**Keywords:** Construction Engineering; Frame structure construction technology; Analysis and discussion

## Introduction:

With the rapid development of China's construction industry, construction engineering technology has also made a major breakthrough, and the technical level is constantly improving. At present, in the construction of building engineering, the application of frame structure construction technology is more common. Frame structure has strong safety and stability. It is the mainstream construction technology at present. However, after in-depth research, it will be found that there are still some deficiencies in this technology. Under the new social situation, we must actively innovate and apply, and effectively solve the technical problems in construction, so as to ensure the quality of construction frame structure and further promote the steady development of China's construction industry.

## 1. Technical characteristics of frame structure construction in building engineering

The construction technology of frame structure in construction engineering is a convenient and economical construction scheme. During construction, the technology will construct the structure according to the beam and column points, and use reinforcement or concrete building materials for construction. The reinforcement and concrete materials have high strength, high hardness and strong seismic level. At the same time, the price is relatively low, which can improve the construction efficiency and reduce the capital investment while ensuring the construction project quality. During the construction of the frame structure, the reasonable mechanical distribution will be carried out according to the design of the building, so as to further improve the bearing capacity and stability of the building and ensure the engineering quality of the building.<sup>[1]</sup>

## 2. Key points of construction technology for frame structure of building engineering

### 2.1 Construction technology of reinforcement engineering

The technical points of reinforcement engineering construction technology can be divided into three parts. First, the preparation of materials. Generally speaking, reinforcement materials need to be stored in a fixed position. The storage area should be in a safe area of the construction site, which is convenient for constructors to take materials and ensure the safety of the surrounding area when taking materials. Before construction, relevant personnel shall conduct standardized inspection on the materials used, check and record the specification, quantity, model and other data of the materials in detail, so as to ensure that the materials are qualified and sufficient in quantity. In case of any problems, the detailed recorded data can also be used as a reference. Secondly, welding construction. When the reinforcement materials enter the welding site, the construction personnel need to check again to ensure that the transported reinforcement meets the needs of engineering construction. Before welding, welding test and mechanical test are necessary in construction. If there is a problem during the welding test, the direct cause shall be found according to the problem, and corresponding treatment measures shall be taken to ensure that all data are qualified during construction. Finally, blanking construction. Generally speaking, many construction sites will prepare additional reinforcement for standby during construction. After the completion of reinforcement welding, linear shrinkage will occur at the gap of reinforcement welding, and some components will also be arched and deformed. Therefore, the corresponding reinforcement must be saved for standby according to the situation.

### 2.2 Formwork construction technology

The technical points of the benefit technology of formwork engineering are also divided into three parts. Firstly, the construction process and detailed data of setting out and height setting shall be accurately recorded. After completion, the technicians shall carry

out re survey according to the situation and further check the re survey results. During the installation of foundation formwork, the verticality must be accurately controlled, and the error should be controlled within 3mm. Select and fine watertight mortar to carefully fill the gap at the joint of cushion and formwork, so as to avoid slurry leakage. Secondly, the formwork support system needs to have strong stability and reliability, so that it can bear the weight of poured concrete. In addition, the formwork shall be easy to disassemble for later maintenance and replacement. In general, the formwork support system should be safe and reliable, and easy to install and disassemble. In the formwork support system, the most critical part is the main column, which bears most of the weight. Therefore, the main column needs to take the steel pipe material as the main part, and then install the support to disperse the gravity. In the general construction process, the shear brace connection mode will be selected at the transverse connection, and three groups of structures are used to determine the overall stability of the support system. In order to further fill the gap, the base plate can be added between the column, column bottom, bracket and formwork, so as to strengthen the friction between various components. Finally, remove the formwork. After the concrete curing is completed, the function of the formwork is completed. At this time, the formwork needs to be removed. Generally, the formwork built last should be removed first. This order is the most scientific and safe.<sup>[2]</sup>

### **2.3 Concrete construction technology**

Compared with other construction technologies, the operation of coagulation and construction technology is simpler and standardized. First, select the appropriate materials. Before construction, the specifications of concrete materials to be used shall be determined and transported to the construction site according to the specified standards. Due to the diversity of concrete materials, the strength and type of concrete shall be determined according to the actual needs during construction. If mistakes occur, the quality of concrete will be affected. Therefore, it is necessary to ensure that the quality of raw materials is qualified and have a professional quality guarantee. Secondly, reasonable matching method. There are a variety of concrete proportioning methods. Only a scientific and reasonable proportioning method can reduce the waste of materials and improve the service performance of concrete. Finally, concrete pouring construction. This link is the most important part of concrete construction technology. Before pouring, relevant personnel need to approve the pouring construction first, then determine the pouring scheme, check the position and size of the formwork, and take countermeasures for possible problems in construction in advance to ensure that the concrete pouring can be carried out smoothly according to the design scheme.

## **3. Problems in construction technology of frame structure in building engineering**

### **3.1 Improper material selection**

The materials used in the construction of frame structure are generally concrete and reinforcement. For these two materials, two problems are easy to occur. On the one hand, the material size and specification do not meet the construction requirements. During the construction of the construction project, Huiyu needs to make a detailed plan for the specifications and of the reinforcement to be used. If the size does not meet the expectation, it is easy to have problems such as welding errors or the quality of the reinforcement frame structure does not meet the standard. The occurrence of this situation, to a certain extent, leads to the construction can not be carried out smoothly, resulting in huge economic losses to the construction unit. On the other hand, the concrete quality is not up to standard. The quality of concrete determines the quality of the whole frame structure. For the selection of concrete raw materials, relevant personnel need to select according to the actual situation. There are many kinds of concrete raw materials, so it is easy to be confused. This needs to further strengthen management and communication. In addition, in the process of many building construction, there are strict requirements for the proportion of concrete. If the proportion is wrong, it will lead to the decline of concrete quality and affect the construction progress of the whole project. It can be seen that the allocation and maintenance of concrete is particularly important.

### **3.2 Lack of safety awareness**

In the construction process of construction projects, although ensuring the construction quality is the top priority, it is also very important for the personal safety of construction personnel. Many workers tend to ignore safety issues in order to catch up with the work schedule. For example, in order to improve work efficiency and flexibility of action, failure to wear safety equipment according to regulations leads to great safety risks in work. In addition, sometimes the connection between the two jobs is tense. If workers fail to fully handle the previous job, they will directly start the next job, which often has some potential safety hazards. The lack of careful verification of material inspection, safety supervision of on-site facilities and safety training for construction personnel have increased the risk of dangerous accidents to a certain extent.

## **4. Conclusion**

In the construction of building engineering, the construction technology of frame structure plays a vital role. If the frame quality of the construction project can be effectively guaranteed, the overall stability of the construction project can be ensured. Although there are still some subjective problems in the process, they can be successfully solved through the supervision of relevant institutions. Therefore, relevant technical construction units should pay full attention to the frame structure construction technology, use the frame structure construction technology of construction engineering to further improve the construction quality of construction engineering and promote the development of China's construction industry.

## **References:**

- 
- [1] Wang Jinhong Research on construction technology of frame structure of multi-storey building [J] Brick and tile world, 2020000 (010): 94  
[2] Han Zhenguo Frame structure construction of modern construction project [J] Research on building technology, 2021,4 (3): 19-20

**About the author:** Yong Yang, date of birth: April 1965, gender: male, professional title: associate professor, nationality: Han, native place: Jinan, Shandong Province, degree: bachelor degree, unit: Jinan Engineering Polytechnic, Research direction: Construction engineering