

# Analysis of Construction Technology in Concrete and Steel Structure Engineering

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**Abstract:** All walks of life in our country are in the stage of comprehensive development, which also drives the vigorous development of the construction engineering industry. The construction industry occupies a pivotal position in the development of the economy, making construction engineering attract many people's attention. The construction technology of concrete and steel structure used in construction engineering is also widely used, and the application of concrete and steel structure construction technology in the construction project occupies a very important position, and most construction projects adopt such technology. In order to complete high-quality projects in the construction process, this article elaborates on the construction technology of concrete and steel structure engineering and makes an analysis.

## 1. Introduction

The development of society is accelerating, and the construction industry is also accelerating its pace. Due to the special position of the construction engineering industry in economic development, higher requirements are put forward for construction engineering, especially in the construction of concrete and steel structures. Technology has attracted much attention, which is related to the quality of the project and the safety of people's lives and property. The definition of concrete structure is to take concrete as the main component and participate in the construction of the project. Steel structure is a construction project with steel as the main material. These two structures have their own advantages and disadvantages in construction, and the correct choice must be made according to the construction project.

## 2. Concrete construction technology

### 2.1 Factors affecting concrete construction quality

The quality of construction projects is determined by the quality of concrete. There are many factors that affect the quality of concrete, among which the most common are the following.

The first is the raw material of concrete. The quality of the raw materials of the concrete is not good enough for the subsequent projects to meet the quality requirements, which is equivalent to not controlling the source of the product well, and there is no quality development for the successor. This source quality is mainly reflected in the quality of the cement. Or fail to meet the construction standards, the influence of admixtures, the strength of steel bars, etc., will affect the quality of concrete at the source. Another phenomenon is that among the raw materials, the hazardous substances in the aggregate do not meet the prescribed standards and exceed the standards. Many people do not pay attention to it, which affects the quality of concrete at the source.<sup>[1]</sup> Secondly, in the raw materials, the matching ratio has not been scientifically calculated, or the calculation is wrong, which makes the raw materials not meet the construction standards, and such raw materials have a great impact on the quality of the project, whether it is excessive or low. It must not be used in the project. Then there are problems with the construction process. The raw materials during the transportation process cannot reach the construction site and put into use within the specified effective time during the transportation. The concrete will definitely affect the

construction of the construction project. Concrete has an effective process from leaving the factory to the construction site soil. It will not work if it is late, of course it will not work soon. This is reflected in the fast-pouring process. Pouring too fast will also make the concrete unable to perform its main solidification function. In the process of operation, attention should also be paid to the requirements of the formwork for construction projects. If the hardness of the formwork cannot meet the requirements of concrete pouring, it will collapse or crack the concrete during the concrete pouring process. What affects the quality of concrete construction is that when building the skeleton, there must be a scientific construction, that is to say, it must be constructed reasonably to avoid quality problems during pouring. The handover of the process must be carried out in an orderly manner under the quality assurance. When the previous process has not been accepted and passed, the next process is launched in a hurry. Obviously, the impact on the project quality is also very large. When this happens, rework must be taken. As a remedial measure, strict acceptance criteria should be adopted for the completed process, and the next process can only be carried out after it is qualified.

## **2.2 Concrete construction technology**

In the process of concrete construction, the most common and most important quality problem is the cracks during the construction process. There are many reasons for the cracks. Among them, the climate affects the most. The bad weather environment makes the concrete during the pouring process. There are many cracks. Of course, the cracks also include the source material of concrete, transportation, and construction<sup>[2]</sup> At the same time, temperature and humidity are the main causes of cracks during the construction process. If the temperature and humidity are not well controlled, it will cause cracks. Therefore, the temperature and humidity cannot be controlled during the concrete construction process. The main reason is that the concrete construction is Outdoor construction, it is impossible to control the natural temperature and humidity in outdoor construction. This kind of outdoor temperature and humidity changes very greatly, which will fundamentally change the brittleness of concrete itself. When purchasing concrete, the quality of concrete must meet relevant standards. When you cannot change the influence of the outside world, you must have a clear understanding of the deficiencies that you cannot resist, and try to delay the occurrence of unfavorable factors, so as to have a more stable quality and protect the lives and property of the people. It is safe. Under the high quality of the source material, it can effectively resist the probability of cracks and have a certain effect on crack control.

The pouring technology in the concrete construction technology also has an important impact on the quality of the project. In order to ensure that no quality problems occur during the pouring process, something must be done before pouring. The first is to check the components and have a very accurate value. Comparing one by one, no omissions are allowed. Secondly, there must be no errors in the measured values. A thorough understanding of the pouring objects is required to make the pouring process smooth and not to rework, avoid the loss of economic benefits, and increase Expenditure costs to avoid rising financial risks. For the construction personnel, it is very necessary to understand the internal structure of the pouring object. The flatness of the template should meet the standard, and the template with cracks should be smoothed or repaired in time. During the pouring process, it is necessary to go step by step according to the relevant process. You must not be impatient or act on your own experience, otherwise it will affect the quality of the pouring. During the pouring process, there must be a reasonable supervision and strengthen the management. It should be emphasized that during the pouring process, there are many uncertain factors. It is necessary to adapt measures to local conditions, use emergency plans at any time, or report upward to take other measures to improve the quality of the project during the pouring process.

## **3. Steel structure construction technology**

### **3.1 Bolt assembly and hoisting technology**

In engineering construction, steel structure construction is also welcomed by many construction

units. In steel structure construction, attention should be paid to the connection problem. This is the most basic factor affecting the quality of steel structure construction. At the same time, it is also the most important factor affecting the quality of steel structure construction. One of the main factors. When the connection in the steel structure is unstable, the main consideration is the bolt assembly. In the process of bolt assembly and pre-embedding, the error value of the bolt must be considered. When it is symmetrical, it will have an impact on the construction of the steel structure. Even if the error value is small, it should not be underestimated. It is found and adjusted in time.<sup>[3]</sup> The hoisting technology in the steel structure consists of two parts, one is beaming hoisting and the other is column hoisting. During the hoisting process, the bolts are installed on the base and cannot have a destructive effect on the original structure. There are certain risks and high technical requirements when carrying out the steel structure hoisting technology. Therefore, during the hoisting process, we must strictly implement the steel structure hoisting requirements, make careful arrangements, implement the construction plan in the plan, and report to the supervision unit.

### **3.2 Welding technology**

The biggest difference between steel structure construction and concrete construction is that the steel structure uses welding to achieve the structural integrity of the project, which makes the application of welding technology in steel structure engineering very demanding and very important. Before welding, clean the welding part to prevent impurities from mixing in it, which will affect the firmness and sealing of the welding. At the same time, use a preheat gun to preheat the welding part to make the temperature close to the welding temperature. Use professional Process review. The welding surface should be smooth, and the surface caused by unprofessional welding should be uneven. Rework measures should be taken. The number should not be used indiscriminately, and local problems should not affect the quality of the entire project. In the welding process, there are many uncertain factors. Because it is an open-air operation, it is greatly affected by the weather. When encountering bad weather, the welding work must be stopped. When welding has to be stopped due to uncontrollable factors other than weather, it is necessary to use the method of heat preservation and preheat when re-welding, so as to ensure the reliability and stability of the welding quality.

### **4. Conclusion**

At present, the most important thing in engineering construction is concrete and steel structure engineering. The two structures have to adopt different construction methods according to different engineering projects. In the concrete structure, the active materials that affect its quality are controlled, as well as the raw materials. The rationality of the ratio, the process problems in the construction, the temperature and humidity problems are one of the factors that affect the quality of concrete pouring. In the construction of concrete structures, crack control technology must be adopted to effectively change the crack phenomenon. The construction technology of steel structure includes bolt assembly and hoisting technology, as well as a welding technology. Only by mastering the above technology can the quality of engineering construction be better guaranteed, so that engineering construction can play its due role in economic development. The sustainable development of the economy provides impetus.

### **References**

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