

# Analysis of the innovation of construction technology in Civil Engineering

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**Abstract:** With the development of our country's economy and society, the level of science and technology is constantly improving, and the construction industry is also booming. The construction technology has greatly affected the quality of civil engineering. Due to the rapid development of social economy, people's economic level and living standards have greatly improved. Therefore, people's requirements for the quality of civil engineering are getting higher and higher. Therefore, the construction company must continuously improve and innovate the civil engineering construction technology, and improve the quality of the construction project to meet the social needs.

**Keywords:** Civil engineering; building construction; construction technology; innovation

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## 1. Introduction

As the pace of urbanization in China is accelerating, the demand for civil engineering is also rising. The construction quality of civil engineering is not only directly linked to the economic interests of the construction party, but also directly affects people's life safety. Therefore, the construction party must pay attention to the construction quality of the project, constantly seek the innovation of the construction technology, guarantee the quality of the civil engineering and make an important contribution to the development of the society<sup>[1]</sup>.

## 2. Technical characteristics of civil engineering construction

The two main characteristics of civil engineering construction technology are mobility and fixity. Liquidity mainly refers to the possibility of changing the standards and specific construction personnel in the construction process. The main reason is that the construction scale and construction requirements of civil engineering may be temporarily changed, so that the number of construction personnel and the construction standards must also be changed accordingly. In addition, civil engineering also has the characteristics of gradual change. This is because the completion of any civil engineering project is implemented step by step, and the development process has a certain time. At the same time, the civil engineering construction is a whole process, and every construction link is closely linked, so the construction technology of civil engineering is also integral. This requires that the construction party must select the construction technology according to the overall situation of civil engineering. Finally, the construction technology of the construction project is also characterized by complexity. In general, the construction scale of civil engineering is large, and different construction links and different construction angles require different construction techniques, it involves a wide

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variety of civil engineering construction technology, which leads to complexity in construction technology selection.

### **3. The importance of construction technology innovation**

#### **3.1 Demand for social development**

As the modern society is continuously developing and progressing, only by continuously developing and innovating on the basis of inheriting the original technology can we make an important role in advancing China's overall national strength. The continuous innovation of civil engineering construction technology not only can promote the development of China's construction industry, but also speed up the process of urbanization in China and promote the rapid economic development. The role of technological innovation in the development of construction enterprises is also not to be underestimated. Professional technology is the most representative and the core competitiveness of enterprises. Civil engineering enterprises have strengthened their exploration and innovation of construction technologies, which not only can improve work efficiency, but also can safely reduce construction costs on the premise of ensuring quality<sup>[2]</sup>.

#### **3.2 Demand for technological progress**

With the rapid development of China's national economy, China's scientific and technological level has also been continuously improved, and the gap between the level of science and technology in Western countries is getting smaller and smaller. But at present, China's civil engineering technology level in the international rankings is not high, compared with developed countries, there is still a gap. It is necessary for us to build up our technological level. And there will be a lot of accidents in the current construction, so in the construction of civil engineering, we should strengthen the research and analysis of technology, and constantly improve and update our construction technology.

### **4. The innovation direction of civil engineering construction technology**

#### **4.1 Innovative prestressing technology**

To improve various technologies in innovative civil engineering construction, we must first place the innovation of prestressed technology in front. The use of pre-stress protection combined with wrap around can further enhance the protection of concrete. The innovation of prestressed technology is mainly manifested in the use of related machinery and equipment. The accuracy and quality of prestressing technology can be improved by using related machine equipment. When using this technology, technical operators must ensure that the state of the equipment is at the limit, and at the same time make judgments based on the actual load data. In the practice of innovation of prestressed technology, it must be ensured that the civil structure is firm, and once it is deformed or damaged, the quality of the project will be damaged.

#### **4.2 Innovative deep foundation pit supporting technology**

Deep foundation pit supporting technology is an important part of civil engineering construction technology. To innovate deep foundation pit supporting technology and to improve the quality of deep foundation pit support are the premise guarantee for the quality of the building. Innovating deep foundation pit supporting technology, starting from the following aspects: Before starting, strengthen the investigation and analysis of data on the site, including soil quality, rock structure, underground water, surrounding cables and pipes, etc. Combined with the actual situation, take corresponding measures to ensure the smooth development of the project, such as prestressed anchor and cast-in-place pile technology. Specific analysis of the problems in the actual construction process, find the appropriate way to solve, sum up experience to avoid recidivism. In the design of support structure selection support method, considerate and practical results should be considered to ensure the quality of deep foundation pit support<sup>[3]</sup>.

#### **4.3 Innovative perfusion technology**

In the construction of civil engineering, it is often necessary to use perfusion technology to improve the perfusion

technology, which is also significant for the innovation of civil engineering technology. Perfusion technology is generally a general term for perfusion techniques and drilling techniques, because drilling techniques are generally pre-padding techniques. Innovative infusion technology first needs to start with lifting drilling technology and devote more attention to drilling work. To enhance drilling technology, we need to deal with the environment before drilling work, and provide a good environment for drilling work to meet the requirements of construction standards. Then use a high-precision measuring instrument to measure the specific location of the well. The position of the drill hole must not be shifted. At the same time, it is necessary to debug borehole instruments and equipment in advance so as to ensure their performance and ensure the drilling work can be carried out sequentially. Once a stall or hole collapse occurs in the drilling process, it is necessary to stop work immediately after power off, analyze the cause of the problem, and find a suitable solution. In the specific construction process of the infusion technology, it is necessary to ensure that the mud in the borehole is filled in time and in sufficient quantity to ensure the quality of the filling, thereby improving the stability of the pile<sup>[4]</sup>.

## **5. Suggestions on construction technology of civil engineering construction**

### **5.1 Create and optimize innovative mechanisms**

The construction enterprises should establish the corresponding system of construction technology innovation mechanism, optimize and improve the system constantly, promote the innovation of various construction technologies, and provide guidance and basis for the technical operation of the relevant staff. At present, most civil engineering construction enterprises in China have not set up a scientific technological innovation system. There is no attention to the innovation of the related construction technology, and the researchers are also very short of the technology renewal researchers, and the innovation of technology is difficult to keep up with the progress and development of the times. Therefore, the innovation of civil construction technology in China is not ideal at the present stage, and there is still a considerable gap between the construction technology and the advanced civil construction enterprises in the advanced countries. To make up for gaps and keep pace with development, it is necessary to create and optimize innovation mechanisms: First, formulate innovative research mechanisms for construction technology and continuously improve it, and use it as a central guide to guide innovation. When formulating an innovation mechanism, enterprises should contact the reality and understand their specific situations, and fully integrate advanced experience of other enterprises or industries. Second, set up an excellent innovation team and attach importance to the training of team members, and reserve outstanding talents for technological innovation. The importance of talent does not need to be said. The quality level of talent is the quality level of a company. Enterprises should attract more excellent talents and focus on training, and promote technological progress through the progress of talents and should pay enough attention to the talents and give care and care. A performance appraisal incentive mechanism can be set up to evaluate innovative employees and provide relevant rewards or promotion rewards to outstanding performers, inspiring their work enthusiasm and innovative ideas<sup>[5]</sup>.

### **5.2 Strengthening the innovative understanding of the construction concept**

The construction concept is also a very important thing for a construction company. The construction concept runs through the entire construction process. If the construction concept is not correct, the quality of the entire construction project cannot be guaranteed. In order to keep up with the development of the times and meet the needs of the society, the construction enterprises must renew their own construction ideas and let the construction concept help the development of their own enterprises<sup>[6]</sup>. The new look of the national economy has enabled construction enterprises to enter a new chapter of development. With the deepening of market economy reform, competition among all trades and professions is becoming more and more brutal. At this stage, only by renewing its own construction concept and constantly reforming and innovating, can the building enterprise maintain its vitality and maintain sufficient competitiveness in the market. Strengthen understanding of construction concepts, update and improve their own

construction concepts, and provide incentives for the company's innovation and development.

## **5.3 Construction technology innovation**

### **5.3.1 Technology of reinforced concrete**

Concrete and steel are the foundation of civil engineering. It can be said that almost all the buildings are organically combined out of the two. The use of concrete and steel can be said to be the core of the construction engineering. Improving and optimizing the use technology of concrete reinforcement is to fundamentally improve the construction quality of the project. The use of thread bite technology and pressure sleeve technology to occlusally connect steel bars is a new type of two kinds of new steel bar connection technologies that are widely used in civil engineering. Using these new technologies can enhance the connection quality and stability of reinforcing bars, and enhance the stability of buildings. There are also new technologies for concrete. The adoption of new technologies can enhance the bond between the concrete and enhance its strength, thereby improving the quality of the building<sup>[7]</sup>.

### **5.3.2 Waterproof and seepage prevention technology**

Civil engineering is often disturbed by seepage problems. Waterproof and seepage control works are a necessary process in civil engineering construction. If the quality of the water-proof and seepage-proof project is not in place, the resulting infiltration problems may seriously damage the quality of the building and cause serious danger. The waterproof performance of civil engineering must be guaranteed, and the waterproof and seepage-proof construction technology of innovative projects is very necessary. Upgrading this technology can start with the quality of waterproof materials. Strictly control the process of selecting and storing waterproof materials, and select high-performance waterproof materials to ensure the waterproof and seepage resistance of the project<sup>[8]</sup>.

### **5.3.3 Deep foundation pit supporting technology**

With the deepening of the process of urban modernization, more and more high-rise buildings are appearing in cities. The higher the floor, the higher the foundation quality of the building, the higher the requirement of deep foundation pit supporting technology. Therefore, the construction enterprises want to strengthen the safety and stability of the foundation, and deep foundation pit support technology must be updated and improved. The technical personnel should fully inspect the actual conditions on the construction site, understand the status of soil water levels, and then scientifically select appropriate supporting measures to support deep foundation pits, so as to lay a solid foundation for the development of high-rise buildings<sup>[9]</sup>.

## **6. Conclusion**

With the development of the times and the economy, the living standards of our people have become higher and higher, and so the quality of life has become higher and higher. Civil engineering is a project closely related to people's lives. People pay more and more attention to it, and demand increases. In order to further improve the quality of civil engineering and meet the requirements of the people, it is necessary to innovate construction technology. Civil engineering enterprises should strengthen the innovation of construction technology and provide powerful impetus for the sustainable development of enterprises<sup>[10]</sup>.

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