

The Exploration of Construction Technology and Innovation in Civil Engineering Construction

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Abstract: The smooth development of a construction project is naturally inseparable from the overall construction of the civil engineering construction process. As people's performance, requirements for buildings are getting higher and higher, they put forward higher requirements for civil engineering construction units. This paper first gives an overview of China's civil engineering construction technology, and expounds the necessity of innovation in civil engineering construction technology. Finally, it analyzes and introduces the innovative measures for civil engineering construction technology.

1. Introduction

In the 21st century, advanced information technology and technology that is more scientific have penetrated into various industries, and the civil engineering construction industry has achieved great development prospects in today's social development. Whether it is from the technical field of civil engineering. In the field of architecture, the development of civil engineering is inseparable from advanced technology and innovative research. Nowadays, the demand for civil engineering construction is far higher than that of China's existing technology fields. Therefore, it is very important to strengthen the integration and utilization of contemporary resources, which will lay a certain foundation for the development of civil engineering construction [1]. At the same time, the development of the construction industry has made the competition of construction units increasingly fierce. If they want to survive in the increasingly fierce competition in the construction industry, they need to continuously improve their competitiveness and innovate in civil engineering construction technology.

2. Overview of traditional construction techniques of civil engineering

The traditional civil engineering construction technology has been fully improved and supplemented in the long-term practice process, and has already become a complete technical system. Its main content mainly reflect in the following aspects [1]:

1) Concrete. In the civil engineering construction technology, the concrete pouring technology is the main content of concrete. The main methods of pouring are cast-in-place method and prefabrication method.

2) Steel structure. With the continuous improvement of social productivity, steel structure has been widely applied to engineering construction. In the process of steel structure construction, hoisting is just enough to focus on construction technology, so it must be fully prepared in the early stage of construction. . The main contents include cleaning the construction site, transporting steel structural parts, renovating roads, inspecting equipment and improving infrastructure.

3) Foundational aspects. The foundation of the foundation is mainly based on the pile foundation. There are two main types of pile foundations, one is called end-bearing pile and the other is called friction pile. The technical personnel of the construction must have a full understanding and mastery of the technology of the pile foundation construction, and include various factors influencing factors, such as the quality of the single heel, the foundation of the pile group, etc. Avoid uneven settlement.

3. The characteristics and status of civil engineering construction technology

3.1 Characteristics of civil engineering construction technology.

From the professional civil engineering construction industry, civil engineering construction technology has many characteristics such as fixedness, fluidity, diversity, assistance and comprehensiveness. It should be noted that in actual work, each construction project is different. The specific environment does not only restrict it, but also according to the specific requirements and functional aspects of the project, so each project is said. They all have their own characteristics, and the requirements for technology are different. The quality and quality of the technology directly affect the quality of the project [2]. In actual work, once the construction project is confirmed, the construction project will not be easily changed unless it is in a very special situation. Engineering construction is a relatively complicated matter. It requires the coordinated participation of various departments and companies. The technical requirements for different stages are also different, and the capital investment is relatively high.

3.2 Status of civil engineering construction technology.

1) Theoretical research is out of touch with actual work. In actual work, if the innovation ability is seriously lacking, it will face the comprehensive application of various aspects of knowledge, such as nonlinear analysis, optimal control, feedback analysis and material analysis [2]. The work is seriously out of touch, and theoretical knowledge should not stay in the paper, more should be used in practice to produce its true value.

2) There are traditional limitations. In the traditional geotechnical research, basic theoretical research and practical theoretical research have always existed in two different fields, which led to different research directions, making basic theoretical research and practical [2]. Sexual theory research cannot combine well, which has caused many obstacles for technological innovation.

3) Lack of good technical innovation team and management team. Currently there are more or less management loopholes in the management of building construction projects. When there is a problem in construction management, the corresponding construction management responsible person cannot find, and multiple departments manage even many the project. The consequence of this is that all departments can shirk their responsibilities [2]. In the end, things will not be done. In the process of construction, they will not pay attention to quality management, which will inevitably affect the development of technological innovation.

4. The necessity of innovating civil engineering construction technology

4.1 It is a guarantee to improve competitiveness.

Economic development is facing the trend of globalization, and civil engineering projects are increasingly experiencing cross-border cooperation. The advanced construction technology of the enterprise is an important capital for attracting investors. Therefore, if a company realizes the necessity of technological innovation, has the spirit of innovation and sharpness of innovation, grasps the key links of innovation, and continuously improves its innovative ability, it can optimize the civil engineering construction project and attract investment. The gaze of the business has won the top spot in the bidding [3]. It can enhance the competitiveness of enterprises and allow them to form their own competitive advantages in the increasingly fierce competition, not only attracting national and even global cooperation.

4.2 It is the guarantee for obtaining profits.

The ultimate goal of the construction unit is to obtain economic benefits. Only when it has obtained rich profits, can the enterprise invest large-scale for the cultivation of talents, the construction of professional teams, and the upgrading of machinery and equipment. In this way, the cost can be further reduced. Recycle and promote the healthy operation of the company [3]. Therefore, the continuous innovation of civil engineering construction technology is the re-creation of the technology that cannot meet the needs of the old technology. The re-creation of lower technology can

improve the efficiency of building construction, ensure the smooth progress of the construction, not rework, delay, and avoid unnecessary waste of building materials, saving costs from all links, and ultimately Achieve expected benefits.

4.3 It is the requirement of the development of the current era.

With the rapid development of the construction industry, with the establishment of the Chinese market economic system, competition in the domestic market, including the international market, is becoming increasingly fierce. Especially since the beginning of the 21st century, while global exchanges and cooperation have begun, competition has also begun. On the one hand, China's current construction technology is still slightly backward and lacks in stamina. It can only gradually integrate with the world and enhance its international influence [3]. On the other hand, China's independent innovation capability cannot be compared with domestic reality. Development needs to match, and we need to continue to innovate. Construction technician is necessary to provide construction companies with more scientific and reasonable construction techniques from the perspective of innovation, which is also the basic requirement for the development of the contemporary construction industry [3].

5. Innovative measures for civil engineering construction technology

5.1 Innovative concept.

The scientific concept of building construction that keeps pace with the times should infiltrate into all aspects of system engineering. Although in many aerospace, computer software development and other nationally supported projects, people have a strong sense of innovation [4]. However, in the large-scale production field that requires more technological innovation, the concept of architectural engineering innovation has not received well. Implementation and promotion. Most construction workers in China's construction are still basic on the principle of profit-oriented. Under the driving of interests, they only pay attention to the construction according to the contract, construction drawings and technical requirements. They do not realize that innovative technology is enhancing the competitiveness of their own enterprises. Great role [2]. Therefore, there is still a one-sided understanding and passive attitude towards the use of new processes, energy conservation, and efficiency in the construction process.

Innovation is the requirement of the era for civil engineering construction technology. How to complete the innovation of technology through effective and effective measures has become an urgent problem to be solved.

5.2 Emphasizing the concept of innovation.

With the advancement of globalization and the progress and development of society, architecture has more opportunities for development, but also faces greater challenges, such as increased competition within the industry and the renewal of social needs. In order to continue to develop under such a large environment, enterprises need to closely follow the footsteps of the times and raise the concept of innovation to the status of an important development strategy [4]. In the daily operation process, this concept needs to emphasize and given the greatest attention. From the high-level executives to implement the emphasis and application of innovative ideas, all members of the company can give the greatest attention to the concept of innovation, and in the daily work to reflect this concept in all aspects, help companies to better innovate and obtain more profit to make it better developed.

5.3 The establishment of an innovation system.

At present, construction companies do not pay much attention to the concept of innovation. Therefore, there is no corresponding innovation mechanism within them. Therefore, enterprises need to carry out innovation system first. A perfect innovation system can help enterprises to develop construction technology with their own characteristics, become the technical core of enterprise development, and provide the source of power for enterprise development [5]. In this process,

enterprises need to focus on cultivating professional talents, give full play to innovation consciousness and subjective initiative, increase research and development efforts and investment, and make great contributions to the establishment and operation of innovation institutions.

5.4 Application of innovative technology.

The innovation and progress of civil engineering construction technology needs to verify through practice. In the actual construction process of civil engineering, innovative technology can verify its effect through reasonable application. Enterprises need to face up to the impact these innovative technologies can bring to enterprises, and commit to the practical application of these innovative technologies to provide improved means for the quality and efficiency of engineering construction [5]. The application of innovative technologies can save resources, increase profits, and contribute to the development of the construction industry and society.

5.5 The application of information technology innovation.

The development of modern civil engineering not only requires higher and higher requirements for construction technology itself, but also requires civil engineering technology to combine with modern information technology to improve construction quality and construction efficiency [6]. However, at present, the combination of civil engineering construction and information technology in China is far from meeting the expected requirements. Therefore, in order to change this situation, it is necessary to strengthen the professional cultural quality of construction workers so that they used in civil engineering. Play an important role in the construction.

6. The future development direction of civil engineering technology innovation

6.1 Green direction.

1) Technology for saving civil engineering materials. The civil engineering industry has special industrial attributes. In the process of development, it often consumes a large amount of energy and produces a certain amount of civil engineering waste, which has certain impact on energy and environmental protection. In the process of developing green and intelligent civil engineering, how to effectively save energy has become a key issue of many aspects. From the perspective of the development of civil engineering materials, many new energy-saving materials have begun to appear. For example, waste plant fibers are beginning to be used as raw materials and play an important role in the civil engineering industry [7]. Agriculture is an important industry in China. It produces a considerable amount of straw and other materials every year. Applying these materials to the civil engineering industry can turn waste into treasure and create more value. In addition to the use of new materials, energy-saving energy has also begun to be widely used in the modern civil engineering industry. For example, the air-conditioning system of the Bird's Nest Stadium fully uses energy-saving energy, which uses geothermal energy to achieve temperature regulation goals throughout the venue, saving a lot of energy.

2) Water conservation technology. Civil engineering construction is inseparable from water resources. While using a large amount of water resources, it also produces a certain amount of wastewater, which is contrary to the current concept of water conservation [6]. Therefore, how to reduce water consumption and enhance the utilization of water resources becomes the entire civil engineering project. The focus of the industry. In the design of residential areas and commercial areas, the wastewater that may be generated should be collected and treated as medium water, and reused for urban construction or greening and fire protection. This can circulate water resources and save water resources.

3) Land-saving technology. Land conservation is an important aspect of the development of modern green civil engineering industry [5]. At present, the technology in this area mainly refers to the expansion of the physical space of civil engineering through both underground and roof. In the underground area, it refers to the construction of garages or semi-basements according to the actual terrain to achieve the goal of increasing the utilization of underground areas; in the case of roofs, the

design of large-sloping roofs changed to small-sloping roofs, and under the premise of sufficient light, increase the top floor area of civil engineering.

6.2 Intelligent direction.

1) Intelligent doors and windows have many advantages and become the favored object of the current green intelligent civil engineering industry. Its appearance is more beautiful and generous, it has advantages in light transmission and heat preservation, and its comprehensive performance is much higher than ordinary doors and windows [7]. In addition, it is associated with the automatic alarm system. When it encounters external force damage, it can actively alarm and meet the user's requirements for safety.

2) The sunshine controller is a common device to utilize solar energy resources and is widely used in current civil engineering applications. The staff will input the corresponding latitude and longitude data according to the actual location of the civil engineering [7]. The equipment can control the entire civil engineering curtains, skylights, blinds and other parts according to the requirements. By controlling the daylighting time of the civil engineering, the temperature in the room effectively adjusted.

3) Lighting technology. This technology enables unified management of lighting equipment throughout the intelligent civil engineering. The staff can use the lighting system and related detectors to adjust the indoor lighting conditions to ensure the user's use needs and minimize waste [7]. When the room is well lit, the system can automatically reduce or turn off the luminaire, reducing energy consumption; when no one is indoors, the system can automatically turn off the luminaire to avoid unnecessary waste.

7. Summary

Through the above analysis of the innovation and development of civil engineering construction technology, in order to promote civil engineering to play a better role in urban construction, it should innovate its construction technology and analyze its development trend. In civil engineering, the economic benefits, ecological benefits, and quality benefits should be maximized. By this means, civil engineering and the natural environment are more closely linked together.

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