Research on Concrete Construction Technology and Innovation Management in Civil Construction

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Abstract. With the continuous progress of society, the continuous development of economy and the acceleration of urbanization, the construction industry has also developed vigorously. In the civil building foundation structure, it is inseparable from the use of mass concrete. Only by ensuring that the structural strength, crack resistance and bearing capacity of mass concrete meet the requirements, can we improve the quality of civil engineering buildings. The construction technology of mass concrete structure in civil engineering buildings is analyzed. The society has put forward more and more stringent requirements for the construction technology of civil engineering, and civil engineering construction technology is the core technology in engineering construction. In recent years, although civil engineering construction technology has developed rapidly and achieved certain achievements and results, most of the technologies are imported or referenced by western technologies, which are lack of innovation, and some of them are relatively backward, wasting a lot of manpower, material and financial resources, resulting in waste of resources, unqualified construction quality and other phenomena. Therefore, in order to better apply civil engineering and improve its construction effect and quality, it is necessary to innovate the construction technology. In the actual construction process, it is necessary to innovate the civil engineering construction technology, so that the engineering construction industry can improve productivity and meet the needs of the development of social construction. Promote the good development of society. This paper will discuss and study the civil engineering construction technology, in order to improve the building quality and economic benefits of the construction industry, and bring some enlightenment to the innovation of civil engineering construction technology.

Keywords: Civil engineering, concrete, Building construction, Innovation research.

1. Introduction
With the advancement of urbanization in China, urban construction is accelerating, people’s requirements for living quality are constantly improving, and the requirements for building construction technology are also getting higher and higher. Civil engineering construction technology is the basic technical guarantee of modern architecture. Its quality is not only related to the vital interests of construction units, but also affects people’s life safety [1]. The construction technology of civil
Engineering should be innovated and improved constantly, which should not only meet the living requirements of people, but also meet the pursuit of economic benefits of enterprises. Through the innovation of civil engineering construction technology, the construction quality can be improved, the waste of materials can be reduced, the labor cost can be reduced, and the technical content can be improved. If the construction technology of the enterprise is unchanged, it will widen the gap with the same industry, cannot meet the requirements of social progress, and will be gradually eliminated by the society.

2. The necessity of innovating construction technology of civil engineering
With the continuous development of the society, people have higher and higher requirements on the living environment, not only to meet the need for safety, but also to meet the need for comfort. At the same time, modern residents also pay more and more attention to environmental protection, the environmental protection degree of the building is more and more important. The national level also attaches importance to the scientific development of the construction industry, which requires the construction enterprises to have the scientific development concept and be able to achieve sustainable development. It not only requires construction enterprises to build high-quality buildings, but also requires construction enterprises to save resources and pay attention to environmental protection. Therefore, the construction industry needs to innovate the construction technology of civil engineering. Civil engineering construction technology is an important part of modernization construction and a key part of innovation and development. At present, the construction industry is an important part of the second largest industry in China and a pillar industry in the development of China's national economy. It is particularly necessary to innovate the construction technology of civil engineering, which is beneficial to the development of the whole construction industry, promote the improvement of productivity, and improve the scientific and technological content in the construction process, which is in line with the strategy of rejuvenating the country by science and technology put forward by China. At the same time, personalized building demand is increasing, innovative construction technology can meet the construction requirements of various projects, improve production efficiency, to ensure the quality of project construction.

3. Concrete construction principle
The concrete-filled steel tube (CFST) special-shaped column can avoid the protruding wall of the building structure column and improve the indoor usable area, which has been applied in some projects in Guangdong province and Sichuan Province [2]. The traditional steel tube without ribbed concrete filled tube (CFST) special-shaped column is prone to local buckling in the process of stress, so it is difficult to exert material effect and has little constraint effect on core concrete. Therefore, ribbed and multi-chamber forms can be adopted.

Referring to the above soil conditions and the structural deformation of reinforced concrete, the maximum shape variable of the structure is calculated as follows:

\[
s_1(T_{\text{max}}) = \frac{\varepsilon_{T_{\text{max}}}c_n(1-e^{-at})}{n} \times \frac{p_3}{p_1+p_2}
\]

\[
s_2(T_{\text{min}}) = \frac{\varepsilon_{T_{\text{min}}}c_n(1-e^{-at})}{n} \times \frac{p_3}{p_1+p_2}
\]

The stress characteristics of concrete structures are analyzed to set up connecting nodes [3]. Strain function is used to calculate the compressive stress of the structure:

\[
y_1 = \begin{cases} \frac{x}{\beta(x-1)^2+x^2} & x > 1 \\ \frac{Q_1x-x^2}{1+(Q_1-1)x} & x \leq 1 \end{cases}
\]
According to the changing trend of the stress curve, the connecting nodes of the reinforced concrete structure are set to ensure that the combined structure can withstand the forces exerted on the structure by the bridge itself and social and environmental factors.

It is concluded that the edge of the stress changes in the diagram is stated as some numerical value is tensile stress, compressive stress, negative said, according to the value is set hoisting points, can ensure that concrete structure under the steady state, slowly put in to the pit foundation, ensure that the bridge is smooth, the framework of high degree of fit, at this point in the construction of bridge construction, the implementation of reinforced concrete structure construction

4. Research on construction technology innovation

4.1. Improve the innovation mechanism
Construction units need to improve the innovation mechanism, so as to stimulate the construction team's innovative ideas, increase the atmosphere, good atmosphere is very important to increase the innovative consciousness of workers. At present, most civil engineering construction units have not established and improved the relevant innovation mechanism, so that the innovation enthusiasm of staff is not high, the ability is not strong, the technical innovation of staff does not help, unable to build an innovative team with the intention and concept of innovation. Civil engineering construction units in Our country still lack in this aspect, leading to a certain gap compared with developed countries. Therefore, it is suggested that construction enterprises and construction units do the following: Establish and improve the construction technology innovation system. For innovative talents service, the establishment of a special innovation system, innovative talents to provide direction guidance and innovation atmosphere. Construction enterprises should introduce the advanced system experience of China and the West, combine their own actual situation, and develop a reasonable and applicable innovation system. (2) pay attention to the construction and optimization of the innovation team. It lays the foundation for the improvement of innovation mechanism. Construction units should pay attention to the introduction and training of talents, improve team quality and professional quality, and promote the progress of technological innovation. (3) Establish a sound incentive mechanism.

4.2. Leakage protection technology
Leakage is a common and easy problem in the construction industry. Once it happens, it will not only have a negative impact on the lives of residents, causing trouble and inconvenience, but also pose a certain threat to the whole building. Therefore, the construction unit needs to innovate the waterproof and leakproof technology to solve the leakage problem of the building. Construction personnel can make use of waterproof construction materials with good performance, such as PVC and APP modified asphalt, or improve the construction process or technology, to carry out waterproof and leak-proof construction of construction projects and improve the waterproof and leak-proof performance of buildings [4].
Fig. 2 Schematic diagram of waterproof construction of brick inlay

In the construction of the outer wall, considering the overall anti-seepage requirements, it is necessary to select the appropriate technology from the actual situation. At the present stage, there are many construction techniques suitable for the decorative surface of the outer wall, and the brick inlaying method is adopted according to the basic characteristics of the project.

4.3. Deep foundation pit technique

In modern society, the scale of architecture is growing higher and higher. This trend of development, the foundation of the stability of the engineering requirements are increasingly high. For a building, the foundation is the most basic part, especially in high-rise building construction, the importance of deep foundation pit is self-evident, it is to ensure the overall stability of the building and engineering quality of the foundation, is the beginning of an engineering project. In the actual application of deep foundation pit construction technology, construction personnel should pay attention to this technology, improve and innovate, to achieve the improvement of the stability of the building. In the construction site, the soil layer structure and the depth of the underground water level should be investigated and measured first, and the appropriate environment and technology should be selected to pay attention to the penetration of innovative technology, so as to make the overall building more stable.

Fig. 3 BIM model of foundation pit support

4.4. Environmental protection technology

Nowadays, people are attaching more and more importance to environmental protection, vigorously advocating green building, and the environmental protection requirements for building projects are increasing day by day. The scientific outlook on Development put forward at the national level has been continuously deepened in the field of civil engineering. Many construction enterprises, by reforming traditional construction technology, innovate green development and attach importance to energy conservation and environmental protection. In the innovation of civil engineering construction technology, the innovation of construction technology, change the traditional construction concept, add the concept of environmental protection, the application of advanced science and technology in the construction process, the formulation and implementation of green environmental protection scheme, to achieve the purpose of energy conservation and environmental protection. Reducing the use of traditional energy and resource consumption technology is the premise of green transformation. In civil engineering construction, the use of renewable energy and resources is the key. Through the application of green transformation technology, the air quality of building space can be effectively improved, energy
saving, consumption reduction, low carbon environmental protection, in line with the requirements of green projects, to give the masses a healthy, quality, environmental protection living environment.

4.5. Reinforced concrete technology
In order to control the crack of mass concrete effectively and reduce the occurrence of safety accidents, relevant work should be done in practical application. It is mainly carried out in the following aspects: first, professional skill training should be carried out regularly, performance salary should be implemented, appropriate reward and punishment system should be formulated, and existing personnel should be encouraged to give full play to their abilities and constantly improve their comprehensive qualities. Second, continuously improve the evaluation level of seamless technology in mass concrete construction, optimize the seamless operation technology in the project, make it more perfect, and constantly improve the level of building construction. Third, the introduction of advanced scientific and automatic management technology, so that the concrete construction data and information more perfect, more accurate access to resources, and constantly improve the construction efficiency of the enterprise.

5. Conclusions
The further innovation of civil engineering construction construction is the key to realize the long-term and stable development of the current construction industry, and also the key to promote the steady development of the society. In order to ensure higher construction efficiency and better quality, it is necessary to keep up with the pace of The Times, apply modern science and technology, carry out innovative development of construction technology, realize the stable operation of enterprises, and better adapt to the high requirements of social development on civil engineering construction.

In order to give full play to the application advantages of high support formwork construction technology, the construction personnel must start from the template design, processing, installation and other links in order, take a variety of effective and positive measures, and strive to ensure the construction quality of each link.

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