

On the innovation and development of civil engineering construction technology

Jue Wang¹, Zuozheng Xie², Bin Zhang³, Liqiang Tian⁴, Liang Xu⁵

¹ East China University of Political Science and Law, Shijiazhuang, Hebei Province, 050000

² Zhejiang University, Shijiazhuang, Hebei Province, 050000

³ Shijiazhuang Tiedao University, Shijiazhuang, Hebei Province, 050000

⁴ Agricultural University of Hebei Province, Shijiazhuang, Hebei Province, 050000

⁵ Wuhan University of Technology, Shijiazhuang, Hebei Province, 050000

Abstract: With the rapid development of China's market economy, to a certain extent, the market scale of building engineering has been widened. At the same time, it also brings convenience to people's work and life. Therefore, people put forward higher standards for the construction quality of building engineering. In building engineering construction, civil engineering construction technology is the core part, directly affecting the construction quality of building engineering.

Keywords: Civil Engineering; construction technology; innovation and development

Introduction

In the new situation, people's living standard and economic level are on the rise. At present, people are pursuing the quality of quality of life, and natural civil engineering construction technology has been paid more and more attention. As we all know, the framework of civil engineering is relatively complicated, and there are many types of civil engineering, [5]so civil engineering will use a lot of civil engineering construction technology in the process of construction. No matter which details exist, it will directly affect the construction quality of civil engineering. [4]Nowadays, according to the current construction situation, there are still many problems in the construction technology of civil engineering. Therefore, the construction enterprises should make reasonable solutions to deal with the problems encountered in the construction of civil engineering and ensure the rapid development of civil engineering construction.

1. The importance of technological innovation in civil engineering construction

In the course of construction, civil engineering applies the construction technology, which can help the construction team avoid the constraints of environmental factors, improve the quality of construction and reduce the construction progress. At present, the development process of civil engineering construction technology in China is relatively slow, and there are still a series of problems, whether using new technology or improving technology quality. For example, the operation process of the construction technology is not reasonable, the construction details are not strict enough and so on, these problems have greatly affected the development of the construction industry. In order to improve the construction technology of civil engineering in order to improve the construction technology of civil engineering, [2]we should actively introduce advanced technology and change the current situation of civil engineering con-

Copyright © 2018 Jue Wang *et al.*

doi: 10.18063/scr.v2i2.476

This is an open-access article distributed under the terms of the Creative Commons Attribution Unported License

(<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

struction technology from the aspects of manpower, material resources and management. In terms of construction enterprises, only strengthening the management of construction technology, innovating the construction technology and choosing the appropriate raw materials can improve their position in the market competition and improve the comprehensive strength of our country.

2. Traditional civil engineering construction technology

2.1 Concrete construction technology

If we want to improve the safety and stability of construction projects, we must control the quality of concrete technology. In actual construction, there will be some differences in construction technology due to the influence of construction units and standard requirements of each building project. However, no matter which concrete construction methods are chosen, the construction technology should be strictly observed in order to ensure the quality of the concrete construction and the construction project can be carried out smoothly.^[3]

2.2 Construction technology of steel structure

In the civil engineering construction process, the steel knot construction technology is an important part of it. In the early stage of the construction of steel structure, the staff of the construction site should first make clear whether the construction materials are complete, the construction equipment is intact, and the construction parts are sufficient. Secondly, we should strictly abide by the relevant operation process to carry out construction, grasp the issue of each detail, accurate installation is all the parts of the construction project, because the structure and size of the parts are different, and the progress of the project is affected. The processing and installation of parts are very important in the construction process of steel structure, so the related construction enterprises should innovate the construction technology, strengthen the production progress of new materials, actively introduce new foreign welding technology, and fundamentally improve the construction technology level of the steel structure.^[8]

2.3 Construction technology of pile foundation

In the process of civil engineering construction, pile foundation construction technology is one of its core contents. In the early stage of pile foundation construction, the construction personnel need to make plans for construction according to the actual situation of the construction site and surrounding environment. And strictly abide by the implementation of construction codes and standards, so as to avoid foundation deformation and building sinking during the construction process, and bring quality risks to buildings. Before starting construction, the staff should detect the bearing capacity of pile foundation in time and avoid unnecessary trouble in the construction process. Under different circumstances, the bearing capacity of pile foundation is different. Therefore, we should choose suitable construction materials to provide guarantee for safety and stability of pile foundations.

3. Innovation method of civil engineering construction technology

3.1 Innovation of perfusion technology

Before we innovate the perfusion technology, we should pay attention to the following points: The drilling technology is regarded as the key content of the technological innovation, and the environment around the construction is investigated in detail in the construction, so as to provide a safe and clean construction environment for the drilling technology. When determining the accuracy of the measurement method, confirm the location of the drill hole. In the early stage of construction, the staff should make reasonable adjustment for drilling machine, so as to avoid problems in the construction process and affect the progress of the project. Once the drill or accident occurs during the drilling process, it is necessary to stop the construction immediately, and put it to the root of the problem to study it, and make a reasonable solution to the problem. The technicians should optimize the technology regularly to ensure that the drilling mud can fill the whole hole and lay a solid foundation for the quality of the pile foundation.

3.2 Innovation of civil engineering construction materials

With the steady development of the construction industry, to a large extent, the innovation and progress of building materials manufacturing technology have been greatly promoted. At present, in the construction of civil engineering, new raw materials are widely applied, which has brought high benefits for the construction market. [7]Combining the performance of materials, new types of civil engineering materials include energy-saving and environmentally friendly materials and functional materials. Energy saving and environmental protection materials include clay bricks, building blocks, clay hollow bricks, aerated concrete and other new wall materials, as well as aluminum alloy wood composite, glass steel, aluminum alloy plastic composite materials and other energy saving doors and windows materials. Such energy-saving and environmental-friendly materials are characterized by eco-environmental protection and energy-saving loss, and at the same time, they have the characteristics of low investment cost and light weight, such as composite materials. Functional materials include natural diatom mud and other thermal insulation materials, asphalt felt, building waterproof coating and polymer waterproofing membrane and other closed materials. Applying these new materials can greatly improve the quality of the project.[6]

3.3 Reasonable application of support technology for deep foundation pit

The deep foundation pit support technology refers to a strong reinforcement support method based on the environmental conditions outside the deep foundation pit, so as to provide security for the foundation and the surrounding construction environment. With the continuous development and innovation of China's economic construction and science and technology, the rise of high-rise buildings, so people have put forward more stringent requirements on civil engineering technology.

3.4 Establish and perfect the innovation system of civil engineering construction technology

Combined with the current development of construction enterprises, enterprises need to establish a sound civil engineering construction technology innovation system in daily work. By adding our own project team and research team, we can create a core technology R & D team. The updating frequency of civil engineering construction technology is very fast. There are many construction enterprises' technical personnel's own comprehensive quality is very poor, especially the lack of professional technical functions. At this time, the enterprises should pay special attention to the quality of the candidates in the recruitment process. Enterprises should regularly train staff, or invite professionals in the field of architecture to give lectures, so as to enhance the overall quality of staff. In addition, enterprises should create a reasonable reward and punishment system, reward motivated employees and punish lazy employees.

3.5 Use of high performance structural materials

High performance structural material is the key factor to decide whether the construction industry can achieve the goal of sustainable development. Innovation is the essence of high-performance structural department. In the later stage of development, the practical principles of high performance must combine economy, durability and aesthetics together. For example, when building modern bridges, we should gradually develop towards high quality, so how to deal with them in the process of development. At this time, we must abandon the traditional construction technology, develop and utilize the new technology, so as to solve the problem effectively. Besides, designers should first adjust their structural framework to promote the rapid development of architectural innovation design if they are in the design work. Designers should not blindly pursue visual stimulation, but also have a comprehensive consideration of the rationality of the structural framework, so as to improve the quality of engineering design.

4. The innovation and development of civil engineering construction technology

4.1 Ecological technology

For civil engineering, engineering construction technology is very important. With the rapid development of economy, people pay more and more attention to environmental problems. Before the implementation of the civil engineering, we should further study the ecological technology, which is also the key situation of the development of the construction industry. In the early stage of the implementation of civil engineering projects, we must strengthen the protection of the ecological environment and reduce the pollution rate of the construction environment. The integration of the construction industry and the ecological environment will fundamentally improve the economic benefits of the construction industry.

4.2 Science and technology technology

The development goal of the construction industry is to improve the economic efficiency of the enterprise while ensuring the quality of the project. In order to achieve this goal, the construction enterprises need to actively introduce innovative science and technology and civil engineering construction technology, which can not only improve the efficiency of construction, but also reduce the investment of capital cost. So developing technology is very important.^[9]

4.3 Automation technology

The rapid development of the construction industry has greatly promoted the development of automation technology, which not only changed the development mode of the traditional construction industry, but also had the function of improving the production mode and improved the quality of construction. In the process of construction, civil engineering should be carried out according to the building frame and scaffold, so as to enhance the overall efficiency of construction and promote the innovation and development of engineering technology.

Conclusion

In summary, in the course of civil engineering construction, despite the fact that the traditional construction technology has promoted the rapid development of civil engineering construction to a certain extent, in the face of new development situation, the traditional engineering construction technology can no longer meet the development trend of the times, and gradually A series of problems have arisen. In this regard, enterprises should increase the innovation of construction technology, change it as a whole, improve the current development status of civil engineering, and solve difficult problems. ^[10]In the later stage of development, China should further research on technology innovation and application, promote the development of civil engineering and create greater value for the country.

References

1. Yonghui Li. On the innovation and development of civil engineering construction technology[J]. Engineering Technology 2017; (1): 170-171.
2. Tianjie Liu, Yan Wang. Study on construction technology of Yan in Engineering Construction -- a review of "construction technology innovation practice"[J]. Contemporary Education Science 2015; (14): 3-4.
3. Zhenhua Huang. Application of mass concrete structure construction technology in civil engineering construction[J]. Jiangxi Building Materials 2017; (7): 118-121.
4. Wenxue Ma. The development and quality influence factors of civil engineering onstruction technology[J]. Building materials in Sichuan 2016; (6): 142-144.
5. Congmei Zhang. Discussion on the characteristics and development trend of Construction Engineering Technology. Jiangxi building materials 2015; (8): 74-75.
6. Zailiang Ma, Hongbin Lu. Research on the construction technology of concrete structure in civil engineering buildings[J]. Science and technology innovation 2016; (19): 252-253.
7. Na Yu. On construction technology points of concrete structure in civil engineering buildings[J]. Engineering Technology 2016; (9): 316-317.
8. Hongxing Xie. Preliminary study on steel structure technology in civil engineering construction[J]. Success 2017; (2): 209-210.
9. Haowen Zhang. On the innovation and development of civil engineering construction technology in China at present[J]. Residential facilities in China 2017; (10): 92-93.
10. Lei Shi. Construction management of civil engineering construction[J]. Science and technology innovation 2016; (5): 236-237.