

Research on Key Technology of Long-span Continuous Bridge Construction

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Abstract: The rapid development of economy and science and technology has promoted the vigorous development of China's construction industry. At present, many cities in China have begun to build bridge projects. The scale of bridge construction is also growing, and its technology is also innovating. As one of the most important carriers in urban transportation, bridge quality is directly related to people's life safety and property safety to a certain extent. For this reason, in the construction of large-span continuous bridges, the technology is innovated and analysis is very important. The construction difficulty of bridge engineering is more complicated and more difficult than other projects in the construction process. How to apply the technology in the construction of long-span continuous bridges to improve the quality of bridge engineering is very important.

1. Introduction

Long-span continuous bridges are the most important part of bridge engineering. This part of the project is very complicated during the construction process. Once a mistake occurs in the construction, it will cause serious safety hazards. For large-span continuous bridges, it must be guaranteed. The safety of the construction, the application of construction technology to effectively ensure the quality of construction standards. During the construction process, all staff members are required to master the construction technology, use the technology flexibly to improve the construction quality, and ensure the safety of the construction of large-span continuous bridges. At present, in the construction of large-span continuous bridges in China, there are some shortcomings in the application of technology. The main purpose of this paper is to analyze the technical aspects of the current construction of long-span continuous bridges.

2. Difficulties in construction technology

At present, the geographical location of large-span continuous bridge engineering is mostly in river valleys and other areas. Compared with cities, its cities are relatively complex and changeable, which will seriously affect the construction efficiency and construction quality throughout the construction process. In the face of this situation, the staff will encounter many difficulties in handling the base of the bracket in the long-span continuous bridge project. It is required that the drawing designer must go to the local site for site inspection before construction. Since many construction areas in the construction of large-span continuous bridges are mostly in landslide sections, the construction difficulty of the large-span continuous bridge project is once again increased. Not only that, but also in the face of this situation will affect the construction quality is also the local geological problems, the geological stability of many areas is not up to standard also brought a lot of trouble to the construction team, these problems make the construction difficult to carry out quickly. In the face of these problems, the workload and work intensity of the support base in the treatment are also one of the factors that must be considered in the construction design.

Long-span continuous bridge engineering has certain requirements for the height of the bridge during construction. One of the problems that must be considered in the design of long-span continuous bridge engineering is the height of the bridge, but the height design is affected by many factors, and Once an error occurs, it will not only lead to the failure of the quality of the long-span continuous bridge project, but also affect the property safety and life safety of the people. In many areas, large-span continuous bridge projects are faced with the problem that bridges need to cross

the river. If the bridge is to cross the river, the number of supports must be increased. This leads to a higher height of the long-span continuous bridge project. For the overall difficulty of construction, the method used in the construction of long-span continuous bridges is the support, but many construction sites are facing landslide phenomenon, which has caused great difficulties for the long-span continuous bridge project. At the same time, the long-span continuous bridge project will face the deeper problems of some river courses during the river crossing process, which makes the brackets very difficult in the erection process, whether the overall quality of the construction or the construction progress will be affected.

Due to the technical difficulties of the long-span continuous bridge project, it is required to prepare for the long-span continuous bridge project before construction, and at the same time do the judgment of pre-stress. However, due to the pre-stress itself, it is relatively complex, and it will change in the face of different situations and environments, which makes it difficult for construction personnel to control the linearity of the beam in the large-span continuous bridge project. The main reason for this problem is that there is no accurate change law of prestressing. It is difficult for the construction unit to control it during construction. The difficulty of controlling the deflection will lead to the impact of the quality of the entire long-span continuous bridge project.

The construction of large-span continuous bridges involves more projects than other projects, and the applied technical content is higher. Therefore, the staff responsible for the long-span continuous bridge project is required to master a variety of skills. Professional skills ensure the quality of long-span continuous bridge projects can be guaranteed during actual construction. In the long-span continuous bridge engineering, the prestressed system that must be used will change with the change of the environment, and it presents complexity. At the same time, the bridge span of the large-span continuous bridge engineering is relatively large, and the length is long. Longer, the pipelines required to be laid in the whole project are longer and have more curves, which leads to a significant increase in the difficulty of construction. The workload of the entire long-span continuous bridge project is increased, and this requires a large span. Cableway pipe needs to be installed in the construction of continuous bridge engineering. It must be accurately positioned during the installation process of cableway pipe. Once the positioning is inaccurate, it will directly affect the quality of construction and even safety accidents.

3. Analysis on Construction Technology of Large Span Continuous Bridges

In the construction of large-span continuous bridges, if the design drawings involve the application of cantilever baskets, the first consideration is how to prepare the hanging baskets. After ensuring that the quality of the basket preparation meets the engineering requirements, it is hoisted. It is required that during the preparation process of the long-span continuous bridge construction hanging basket, the relevant preparation personnel must have excellent professional quality to ensure that the contents of the design drawings can be skillfully analyzed in the actual preparation, and the requirements in the equipment drawings can be understood. In the production, it is strictly in accordance with China's requirements for the production of hanging basket equipment in the construction of large-span continuous bridges. After the completion of the production of the hanging basket equipment, it is necessary to repeatedly and strictly check to ensure the stability of all components in the hanging basket equipment and the safety of the components. Next, to ensure that the hanging basket equipment in the large-span continuous bridge project is in line with the design specifications and practical applications. Before installing the hanging basket hoisting in the long-span continuous bridge project, the relevant construction personnel are required to carefully prepare for the installation, and strictly examine all aspects of the entire construction site to ensure the performance and safety of all machinery, the most important of which is to check the configuration of the construction personnel to ensure that all construction personnel have certain experience and understanding of the installation of the hanging basket equipment. The performance of the lifting machinery, the lifting plan and the natural environment of the construction site need to be checked one by one to ensure that all controllable factors are in line with the hanging basket equipment. The requirements for lifting and arranging, as far as the environment permits, prohibit

pedestrians and vehicles from passing through the hanging basket during the hanging process. The construction site personnel need to monitor the safety of the lifting operation in real time to ensure the safety of the surrounding work of the hanging basket.

In the construction process of long-span continuous bridges, the construction of reinforced concrete is a very important part. At this stage, all the personnel in the construction site are required to pay attention to all the details in the whole construction process, which must be strict and serious. Control each detail of the construction, in the hanging basket reinforced concrete pouring link details directly determine the success or failure, to ensure that the details of the hanging basket reinforced concrete pouring is to ensure the success of the hanging basket reinforced concrete pouring. The application of cantilever hanging baskets in the construction of long-span continuous bridges can facilitate the construction of the whole project. Because the cantilever hanging basket itself has very strong supporting force, both the transportation of building materials and the application of cantilever hanging baskets for reinforced concrete pouring work are relatively flexible and flexible, for which the cantilever basket is an integral part of the construction of the entire long-span continuous bridge. When applying the hanging basket reinforced concrete pouring, the pouring work will be completed on the operation platform. However, in order to ensure the safety of the whole construction, it is necessary to make a reasonable and reasonable according to the actual conditions of the construction site before the hanging reinforced concrete pouring work. For the scientific construction plan, all construction personnel must strictly inspect the quality of the steel bars, anchor heads and various construction materials in the construction site. After the inspection is completed, it is determined that there is no problem before the hanging basket reinforced concrete pouring can be used to complete the pouring work. In the process of hanging reinforced concrete pouring, it is necessary to take into account the environmental factors at the construction site. Since the temperature during the whole construction has a great influence on the reinforced concrete pouring work of the hanging basket, it is necessary to fully consider the environmental factors at the construction site to ensure the construction site. The temperature can ensure the smooth completion of the reinforced concrete pouring of the hanging basket. If the environment and temperature of the construction site change greatly, it needs to be adjusted according to the working conditions and work schedule in real time to ensure the successful completion of the reinforced concrete pouring of the hanging basket and ensure the large span. The quality of continuous bridge construction.

In the construction of cantilever hanging baskets for long-span continuous bridge construction, tensioning construction is the most critical process for completing the cantilever hanging basket. In order to ensure that the cantilever hanging basket can successfully complete the required construction work for the construction workers, Carefully inspect all construction machinery and equipment in the construction site to ensure that all construction equipment is used without problems. All instruments and dials have perfect performance and will not cause accidents during tension construction. Different from other links in the construction of long-span continuous bridges, tension construction has certain time limit. If you want to complete the tension construction in the construction of long-span continuous bridge, you need the concrete at the construction site to reach the strength specified by the tension construction in China. Only after the tension can be completed. Jacks are often used in tension construction. This is the most frequently problematic equipment in the whole tension construction. In many long-span continuous bridge construction, construction management personnel do not check the jacks before using them, resulting in the use. The jack itself has an abnormality, which has a very bad influence on the effect of the tension construction. When carrying out tension construction, it is necessary to strictly follow the relevant regulations of China. If there is no specified method for tensioning construction during the whole design process, then the tension is generally selected by tensioning the upper and lower sides, and the construction is required. In the construction of tension, the unit must strictly monitor the deformation of the anchor and the beam body to ensure the smooth completion of the tension construction, and the quality of the long-span continuous bridge construction is also guaranteed.

In the construction of long-span continuous bridges, grouting mainly occurs in the construction

process of using cantilever beams for hanging baskets. The following points must be achieved when grouting is completed: First, it is necessary to ensure the application of the construction site before grouting. The cement slurry's own strength can reach the design of the construction drawings. Only when the strength of the cement slurry reaches the standard can the cement slurry be used for grouting. Once the strength of the cement slurry used does not meet the specified requirements, the quality of the long-span continuous bridge construction will have a bad impact. In most cases, the strength of the grouting cement used in the construction of long-span continuous bridges is required. More than 40 MPa. If the cross-sectional area of the long-span continuous bridge construction is relatively large, the construction personnel need to incorporate a certain amount of fine sand into the cement mortar to ensure the strength of the cement slurry itself, and at the same time, according to different construction areas. The actual temperature strictly controls the overall time from the start of preparation to the press-in of the cement mortar. Second, in the overall process of pressing the cement mortar into the tunnel, the construction personnel are required to continuously stir the cement mortar. Third, in the entire grouting operation, it is necessary to grout from the lowest point to the highest point. After the completion of the grouting process, the construction personnel need to remove the formwork and remove the hanging basket. The construction personnel must control the position of the hanging basket during the process of removing the hanging basket to ensure that the hanging basket will not be in place. The phenomenon of offset occurs to ensure the quality of each link in the construction of long-span continuous bridges.

In the construction of long-span continuous bridges, many construction units will replace or update the hanging basket before applying the cantilever hanging basket. Once the hanging basket is replaced or updated, the new hanging basket must be subjected to load-bearing test. The purpose is to ensure the updated the load-bearing capacity of the hanging basket is in full compliance with the current load-bearing value of the basket. The load-bearing test of the hanging basket not only ensures the quality of the long-span continuous bridge construction, but also ensures the safety of the construction workers in the construction operation and the safe development of the entire construction operation. For the replacement or update of the hanging basket, it needs itself. The most detected items are the load-bearing capacity of the hanging basket. The load-bearing capacity of the newly-used hanging basket is 1.0-1.5 times that of the original hanging basket. Only when this requirement is met can the construction be carried out. The safety of the construction is ensured, and the efficiency of the new hanging basket construction is improved compared with the previous hanging basket. The inspection data of the hanging basket should be properly preserved. The purpose is to facilitate the future hanging basket. Maintain construction work. To ensure the safety and scientificity of all technical construction points in the project can directly improve the quality of the entire project, and promote the development of long-span continuous bridge engineering.

4. Conclusion

In summary, the construction technology of long-span continuous bridges is constantly improving with the development of science and technology. At present, the level of construction technology has been greatly improved. In China, the construction of large-span continuous bridges has also been relatively Good results, but with the development of transportation industry, more and more cities need to increase the construction of long-span continuous bridges. Only the in-depth study of long-span continuous bridge construction technology can make the technology play the biggest role. Current construction needs. At the same time, as a technical researcher, it is necessary to innovate the construction technology of long-span continuous bridges, improve the technical level of construction, and ensure that the requirements of urban traffic can be met in the construction of long-span continuous bridges.

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