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Analysis of Technical Key Points in Road and Bridge Construction Management

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Abstract

With the rapid development of the country, the overall strength of the country is also increasing. With the rapid development of various industries in the country, more new technologies have been introduced and more new materials have been adopted in highway and bridge construction. At the same time, improving the quality of road and bridge construction and prolonging the service life of road and bridge engineering are also the primary tasks of construction enterprises. Therefore, in order to improve the quality of road and bridge engineering and extend its service life, it is necessary to improve the quality of road and bridge engineering on the premise of ensuring the construction focus. In the process of construction, the construction unit must effectively and reasonably choose the bridge construction technology, technological process and construction points that conform to itself, and only in this way can the quality of bridge engineering be guaranteed. In the process of road and bridge construction, the construction unit must comprehensively consider all aspects, carefully and conscientiously do every procedure, and take effective measures against various problems to ensure the construction quality, save costs and promote the development of road and bridge undertakings in China.

Keywords

Roads and bridges, Road construction, Main points

1. Introduction

In recent years, the overall economic construction in China has developed very rapidly, which has accelerated the rapid development of various industries in China, especially the development of road construction. At present, with the rapid changes, all aspects of China's construction are in full swing. Road and bridge engineering construction links are complicated and tedious. As an important part of China's infrastructure construction, the level of construction technology and construction technicians

have an important impact on the quality of the project during the construction process. The rapid development of road construction has promoted the continuous progress of China's transportation industry and improved people's travel level and quality. With the continuous improvement of China's overall economic level, it has created favorable conditions for the development of China's transportation industry, thus gradually expanding the scale of China's bridge construction. As an important part of China's traffic development, bridge construction will have a great impact on China's traffic development. Strengthen the key points of road and bridge construction and speed up the development process of road and bridge. Road and bridge engineering plays an important role in people's normal travel. Nowadays, people pay more and more attention to road and bridge engineering. Under the background of the new era, road and bridge has become the focus of attention. In the process of road and bridge construction, it takes a long time, involves many links and requires high safety. Because the road and bridge engineering is very complicated in the construction process, the construction enterprises need to pay attention to the construction points, and at the same time, make corresponding measures in advance in the construction process, and each link needs to be implemented according to the corresponding standards, so as to ensure the quality of the road and bridge engineering. In this paper, the key points of road bridge construction are analyzed in detail, and it is hoped that this paper can make some reference for the future development of road bridge engineering.

2. The Importance of Key Management Points in Road Bridge and Road Construction

Road bridges are an important component of highway construction. The construction quality of roads and bridges is related to the construction quality of the road itself. Compared to highway construction, the issues and management matters that need to be considered in road and bridge construction are more complex and diverse, involving various unique road and bridge construction technologies. Therefore, it is particularly necessary to focus on management of road and bridge construction. Once the key management of road and bridge construction is ignored, it will exacerbate the possibility of quality and safety hazards in road and bridge construction. The quality control of road and bridge projects can also control project costs, improve construction efficiency while ensuring quality, and comprehensively improve the overall construction level of road and bridge projects.

3. Shortcomings in Highway Bridge Construction Management

3.1 Insufficient Control over Project Progress

The construction process of road and bridge engineering is very complex, and its difficulty is also very high. During the construction process, it is often affected by some uncontrollable factors. For example, due to climate reasons, construction cannot continue during the construction period. In addition, due to geological, environmental and other factors, the work of construction workers has been greatly disrupted. Furthermore, if good management is not carried out in the construction of roads and bridges, various problems will arise, which not only affect the quality of the project, but also affect the progress

of the project, thereby affecting the construction and use of roads and bridges.

3.2 Unreasonable Allocation of Construction Resources

To maximize the construction achievements, it is necessary to scientifically and reasonably allocate construction resources. Only by ensuring the optimal allocation of construction resources can the construction of construction projects be carried out and put into operation at the fastest speed. At the same time, this method can not only reflect the construction achievements of road and bridge engineering, but also achieve the maximum economic benefits. However, in terms of the current domestic road and bridge project construction, the allocation of construction resources is not entirely reasonable, resulting in both resource waste and increased construction costs for the construction unit. Such waste is not only a resource, but also a waste of capital.

3.3 Poor Construction Supervision

At present, the management of highway bridge construction has attracted high attention from construction units, and its management field is gradually expanding. However, although construction enterprises have strengthened their attention to construction projects, there are still many problems in the construction management of construction projects. At present, some problems in highway construction in China are mainly manifested in: there are some imperfect construction organizations during the construction process, construction costs are constantly increasing, and the technical level of construction personnel is not high. But there is also a part due to lax management of construction projects. Many construction units have not paid enough attention during the construction process, so not only have they not conducted effective monitoring, but there are also some phenomena of cutting corners and materials during the construction process. This phenomenon is very serious and greatly affects the development of highway bridges.

3.4 Low Level of Construction Technology

In previous urban road and bridge construction, relatively outdated technologies were still used, but various tasks could be better carried out. However, with the development of society, people’s demands for engineering quality have become increasingly high, and at the same time, they have higher requirements for sustainable development of the environment. This has resulted in many original construction technologies no longer being able to match the actual needs of the current society. To truly improve the construction quality of roads and bridges, it is necessary to have corresponding staff. In the process of completing the work, it is necessary to continuously improve one’s own quality, and use innovative thinking methods to solve various problems that have appeared before. Moreover, various technologies and processes should be combined to fundamentally improve the actual quality of the project, so that it can have a longer lifespan after being put into use. However, currently, the implementation of road and bridge engineering still adopts the original technology, which cannot meet the current practical needs. There are many problems in the development of project engineering.

4. Key Points of Road and Bridge Structure Design

4.1 Controlling Concrete Cracks

The key to the design of road and bridge structures is to strengthen structural reinforcement. In the process of road and bridge construction, concrete technology is one of the most important technologies. If there are problems with concrete structures, the first is cracks in road and bridge engineering. The appearance of cracks will enhance the permeability of concrete, which not only enhances the destructive power of adverse factors on concrete, but also reduces its durability. In addition, once the concrete cracks, the erosion strength will continue to increase, which will lead to a deterioration of the durability of the concrete structure. Therefore, if you want to improve this issue, professionals should follow relevant rules and standards, and pay attention to the proportion of concrete structures. When using concrete, its temperature should be well controlled. Concrete is very susceptible to the influence of temperature and has high requirements for temperature. Once the control is not good, it is easy to encounter various problems. In addition, concrete construction should also follow the steps to avoid many problems and save a lot of time and effort while ensuring good construction quality. At the same time, construction personnel should also take structural measures. At this point, it is necessary to utilize the load-bearing shear force of the stirrups to play an important role in reinforced concrete components. At the same time, it is necessary to use horizontal anti shrinkage steel bars to improve the overall technical level and minimize the occurrence of cracks. Therefore, it is of great practical significance to ensure the durability of concrete structures through concrete cracks.

4.2 Durability Issues of Structures

In recent years, bridge workers in China have achieved good results in structural design. These designs not only effectively solve the problems in structural design in China, but also greatly improve the quality of road and bridge engineering. However, there are still some issues with the durability of road and bridge engineering structures. Road and bridge engineering needs to extend their service life, therefore durability must be considered. For a long time, designers of road and bridge engineering in China have focused on structural design, calculation, construction, and other aspects, but have neglected the details of road and bridge structures. There are many factors that affect the durability of bridge structures, including the structure itself and external loads. For the structure itself, designers should consider the geological and environmental factors of bridge construction. The durability of road and bridge engineering directly affects later maintenance. If durability issues cannot be resolved in a timely manner, it not only requires a lot of time, energy, and funds to maintain, but also threatens the safety of people’s lives and property. Therefore, designers of road and bridge engineering should pay attention to durability. In addition, the durability of road and bridge engineering is also related to building construction materials and will not cause problems in the short term. Therefore, suitable materials should be selected during the construction process of roads and bridges, and problems should be promptly resolved when the project is put into use.

4.3 Abutment Structure Design

Abutment is a building that supports the upper structure of a bridge and is connected to the embankment at both ends of the bridge. The main function of the bridge abutment is not only to transfer the load from the upper structure of the bridge to the foundation, but also to resist the filling pressure behind the abutment, stabilize the roadbed at the bridge head, and ensure a reliable and smooth connection between the bridge head line and the line on the bridge. There are various forms of bridge abutments, mainly including gravity type, light type, frame type, combination type, tension type, etc. Abutments are very important for bridge construction, so in the actual construction process, designers need to choose appropriate structural designs based on the actual situation of the project.

4.4 Strengthening the Informatization Requirements in Quality Management of Road and Bridge Construction

Informatization, automation, and digitization are also new working methods that the road and bridge transportation industry needs to gradually change and adapt to. For these points, the highway transportation industry, especially the road and bridge construction industry, should not only reflect them in their work, but also be valued by management personnel to achieve scientific management. To establish an information platform suitable for the enterprise itself, relevant engineering standards and technical parameters should be integrated into the platform. Information related to the highway transportation industry, such as weather, cutting-edge technology, policies and regulations, can also be introduced. Continuously improve the professional level of road and bridge construction through efficient information technology methods.

4.5 Comprehensively Improving the Comprehensive Quality of Bridge Engineering Staff

During the construction process of road and bridge engineering, experienced personnel must be selected as management personnel. Only managers with rich management experience can smoothly carry out road and bridge engineering management. Highway bridge construction personnel must possess good qualities and continuously enhance their quality control awareness, so that they can deeply understand the importance of quality management in highway bridge engineering, strictly obey management work, master the correct technical methods, have proficient work experience, and be able to standardize their operations in the actual construction process. In addition, the construction unit also needs to create favorable conditions to improve the quality of construction personnel, organize them to participate in training and learning, ensure that they update their knowledge in a timely manner, and have a rich and solid knowledge foundation.

4.6 Drainage Construction Technology

In the process of road and bridge construction, in order to avoid problems with drainage pipelines, relevant personnel must strictly follow the design drawings of drainage pipelines for operation. For drainage pipes that penetrate the external structure, construction personnel should pay attention to whether the casing material used is suitable for the dark and humid environment of the external structure, check whether the external structure is sturdy or whether the wall material is uniform, and

also strengthen the quality inspection of the masonry mortar around the external structure to do a good job in preventing leakage of the external pipes of the structure. After the completion of the operation of penetrating the external structure pipeline, it is necessary to use materials with water stopping or waterproofing functions to fill the gaps between the pipeline and the external structure reasonably. In addition, it is also very important to handle the structural details and pipeline connection issues. On the one hand, it is necessary to consider the height of the pipeline from the ground and make appropriate adjustments. In order to ensure the correctness of the drainage direction of the drainage pipeline, a water stop ring can be added at the connection between the pipeline and the structural plate. When installing detailed drainage management, it is necessary to follow the slope requirements set for the installation of drainage joints. For the convenience of maintenance, a certain distance can be reserved at the connection between the road surface and the maintenance port.

5. Conclusion

In summary, roads and bridges are the fundamental construction of the entire national economy, and they play a huge role in the entire society. To improve the quality of road and bridge engineering, it is not only necessary for builders to attach great importance to it, but also to do a good job in various key construction points during construction, fully leverage the joint efforts of project participants, and enhance their sense of responsibility. Strictly implement relevant national standards and specifications, promote modern construction methods, take corresponding measures based on the actual construction situation, improve project quality, and do a good job in the construction of roadbed engineering, pavement engineering, and bridge and tunnel engineering. In recent years, the demand for road and bridge engineering in China has been increasing, but at the same time, there are more and more safety accidents caused by the quality of road and bridge engineering. Although the structural design concept and system of road and bridge engineering in China have become increasingly mature, there is still a certain gap compared to other countries. Road and bridge engineering not only requires advanced technology and complete equipment, but also rich experience, so that when faced with complex construction work, construction can be better carried out. Moreover, only by constantly innovating and improving in the face of road and bridge construction can the development of road and bridge engineering be promoted. In the new situation, China has strengthened the construction of highway bridges. Construction technicians shall conduct specific analysis based on actual engineering and work conditions. At the same time, in order to ensure the quality of the project, it is necessary to strengthen and improve certain aspects to improve the overall construction level of the project, ensure the smooth development of road and bridge engineering, and promote the comprehensive development of road and bridge engineering.

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