Analysis of key points of road and bridge foundation construction technology

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Abstract: In the process of road and bridge construction, basic construction technology is most important. Only when the basic construction technology is improved can the overall quality of the road and bridge be improved. Therefore, the relevant construction units must strengthen the research of basic construction technology and master the technical points to accelerate road and bridge construction. In view of this, this paper mainly analyzes the key points of road and bridge foundation construction technology.

1. Introduction
Economic development has driven the construction of national infrastructure. The number and scale of road and bridge construction in China have gradually increased, and the level of construction has also been gradually improved. The foundation construction quality of roads and bridges is the premise to ensure the safety and stability of the project. In actual construction, it is necessary to summarize and analyze the respective construction points in a targeted manner, actively overcome technical difficulties, explore effective new methods, and control the quality of foundation construction. Relevant staff should improve their safety awareness in engineering construction, fundamentally ensure qualified construction, reduce engineering accidents, and serve the development of Chinese economy and transportation industry.

2. Common problems of road and bridge foundation construction technology

2.1. Problem of cracks
Cracks in road and bridge foundation construction are mainly related to the construction concrete. As a type of construction material widely used in all aspects of road and bridge construction, it may appear concrete cracks whether it is of poor material quality or insufficient construction operation specifications. Cracks in the main body of the road and bridge will have an adverse effect on the force of the structure and cause problems in the overall construction quality of the project.

There are two main reasons for this: (1) The maintenance work after the construction is not good enough. To ensure the effect of concrete usage, it needs to be taken good care of after completion. If it is not carried out in a timely and reasonable manner, excessive water loss in the concrete may occur. The concrete itself is not set well and the strength fails to increase, so cracks will occur as a result. (2) Concrete construction is susceptible to the external environment, and drastic changes in temperature may cause concrete cracks. For example, when the external environment temperature is too low in winter, the moisture in the concrete is freezing, and then the volume expansion causes cracks.
surface.

2.2. Problem of corrosion
In the foundation construction of roads and bridges, the quality of the concrete in the bearing platform is one of the more common problems. The function of the bearing platform is to bear and disperse the load transmitted by the pier, and it needs to have a strong bearing capacity and strength. In actual engineering, the more likely problem is the corrosion of the concrete in the bearing platform, which seriously threatens the safety of roads and bridges. There are many factors that cause this problem, the most important factor is the impact of its environment. Due to the continuous change of the water level, the concrete of the cap is affected by the moisture of the loaded air, and it is prone to corrosion, which will cause hidden dangers for the overall project safety in the later stage. And it ultimately affects the life and safety of the project.

2.3. Technical points of road foundation construction

2.3.1. Part of subgrade
The subgrade is the basic part of road construction, and whether the foundation is solid is very important. The technical control points of roadbed mainly include the following aspects: (1) Do a good job in cleaning up the construction section. It is necessary to conduct on-site inspections of the construction road section and the surrounding environment, clean up debris in time, ensure the cleanliness of the road surface, and prepare for roadbed laying. (2) Subgrade filling materials need to be strictly checked according to standards. The filling material of the roadbed has a direct relationship with the strength of the roadbed. It is necessary to ensure that the specification and quality of the filling material can meet the road requirements. (3) Drainage of roadbeds should be greatly conducted. The subgrade construction site shall ensure good effect of drainage, and avoid the abnormal discharge of water caused by precipitation. (4) The roadbed shall be laid in different layers. To ensure its strength, the roadbed must be fully compacted. Laying and rolling layer by layer can increase its compactness and make it stronger.

2.3.2. Pavement of the project
(1) Construction of asphalt concrete pavement. Asphalt concrete pavement is very common in road construction in China, and it is also one of the most widely used construction techniques in China. Why it is widely used is because of its many advantages: First, it has high construction efficiency and saves time for engineering construction. Second, the pavement is smooth, and the road connection is neat, and the driving on the road is comfortable. Third, the maintenance is convenient with low costs. In the construction of asphalt concrete pavement, the main construction technology points include the following aspects: First, to ensure the quality of pavement construction materials. The mixing process is strictly supervised. Once abnormal situations are found, it should be dealt with in time until it meets the standard. Second, the road base layer is mainly made of concrete materials. During construction, the choice of base layer materials must be done well, and the size of sand and gravel particles, cement ratio, etc. must be strictly controlled to achieve the maximum strength of standard and to stabilize the road foundation.

(2) the Construction of cement concrete pavement. Cement concrete pavement is also a commonly used technology in road construction. The strength of cement concrete is high and it is also in line with road standards. When carrying out this technology, the following construction technical points need to be paid attention to: First, the ratio of raw materials of cement should be strictly done. The cement types and ratio requirements of different projects will be scientifically selected and formulated to meet the requirements of the project. If there is an excessive error, it will affect the strength of the cement. Second, the moisture content of the aggregate should be under control. Before the application, it is necessary to do a good job of testing, and the water-cement ratio can only be officially used after it meets the standard. Third, the proportion of additives should be well control. The quantity of additives
in the composition of the concrete should also be added in strict accordance with the proportion to increase the overall workability. Fourth, it should be ensured that the cement concrete has a more suitable slump that meets the specified value. Whether the value is too high or too low is not conducive to the construction of the project. If the slump is low, the proportion of cement should be appropriately increased. If the slump is too high, a reasonable sand rate should be considered.

3. Technical points of bridge foundation construction

3.1. Expanding the rigid structure of the bridge. Under normal circumstances, the bridge adopts solid piers, so the rigid foundation needs to be expanded. In this process, the extension length of the foundation and the height of the piers must meet the requirements of the material rigidity tan to ensure that the rigidity of the bridge foundation meets the technical requirements of construction. However, the rigid expansion operation is more convenient and plays a very important role in the stability of the entire bridge, so it must be paid attention to.

3.2. Excavated bridge subgrade. When dealing with bridge foundations, there are two types which are deep foundation and shallow foundation. The most commonly used one is shallow foundation, namely open-cut foundations. However, the load-bearing level is mainly increased by layering, using mechanical or manual excavation to achieve the purpose. The deep foundation is generally a foundation with a large buried depth. Based on the hard soil layer and rock layer at the bottom as a supporting layer, the bottom layer of the foundation can effectively distribute the load to the shallow area of the roadbed.

3.3. Treatment of pile foundation. The pile foundation is also one of the foundation modes of the bridge, and the pile foundation plays a greater role in the construction of the bridge structure. The key point is that multiple root piles and bearing platform are connected to each other, all piles must be inserted into the soil, and the hoop can play a common role. However, the pile bearing pressure mainly comes from soil and friction, and the pile foundation must have a large bearing capacity to ensure its good stability and continuously reduce settlement.

4. Analysis of technical points of road and bridge infrastructure construction

4.1. Bracket erection control. In road and bridge engineering, it is very common for the project to erect brackets. The erection of brackets can provide convenience for construction, improve construction efficiency, and increase construction quality. When erecting the scaffold, the scaffold made of steel pipe is generally used. The erection of scaffolding seems to be relatively simple to operate, but once there is a problem, it will bring great troubles to the construction and even life safety problems. Therefore, during the erection process, the erection must be carried out in accordance with the design standards, and the value of each connection should always be highlighted to ensure its erection quality.

4.2. Technical focus of steel structure. In the construction of roads and bridges, steel bars play a very critical role. If concrete is the flesh and blood of road and bridge projects, steel bars are the skeleton of road and bridge projects. Therefore, the construction unit should pay attention to the construction of steel reinforcement projects in the road and bridge foundation treatment. To a certain extent, the construction level of the reinforced structure is directly related to the quality of the entire road and bridge project. Under normal circumstances, the steel structure is processed in the construction site, and the installation work will start directly after the processing is completed. Finally, the construction unit must weld the steel bars, and must not pay too much attention to the welding rate but ensure the level of steel welding. It can also use multiple simultaneous welding methods based on the actual situation, so that the construction period can be continuously reduced without disturbing the construction quality.

4.3. Improving the construction level of reinforcing steel materials. When using steel bar materials in bridge engineering, we should first complete the production and installation of steel bars. When installing, we need to refer to the current standard in China for equipment installation. As for construction workers, it is also necessary to strengthen the supervision measures during the construction process to improve the overall quality of steel materials during the construction process.
Reinforcing steel materials need to be ensured that there is no bending or deformation during usage, and at the same time the cleanliness of the surface should be checked to avoid material corrosion problems.

5. Conclusion
In the process of road and bridge construction, the application of basic construction technology is very important. Therefore, the technical points of basic construction must be clarified, combined with scientific construction technology and technology, in order to ensure the rapid and stable development of road and bridge construction technology in China.

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