

# Research on Quality Management of Municipal Road and Bridge Engineering under the New Situation

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**Abstract:** *With the proposal of the goal of people-centered new urbanization construction at the Fifth Plenary Session of the 18th Central Committee, people are increasingly concerned about the quality and safety of urban construction. Municipal road and bridge engineering is related to the development of cities and specific people's livelihoods, so its quality management should be a top priority in urban development and construction under the new situation. There are still some problems in the quality control of municipal road and bridge engineering at present. This article briefly describes the main content of quality management of municipal road and bridge engineering, analyzes the problems in the construction quality management of municipal road and bridge engineering, and finally proposes corresponding improvement strategies for the relevant management of municipal road and bridge engineering quality, for reference.*

**Keywords:** roads and bridges; Construction quality; Improvement measures.

## 1. INTRODUCTION

With the rapid development of China's social and economic development, the process of urbanization is also constantly improving. Due to the rapid growth of population, the existing quality management of road and bridge construction is insufficient to meet the basic needs of municipal transportation. To reform the application of road and bridge engineering in construction quality management, comprehensive engineering improvements should be carried out around modern intelligent industrial technology, and green and environmentally friendly materials should be selected for construction, Improve the accuracy of construction work, use advanced construction techniques for construction, improve the project management system, and implement incentive policies to improve the comprehensive quality of the construction team and ensure the stable performance of road and bridge engineering. At the same time, the maintenance and inspection of the project during the investment period shall be strengthened to avoid the loss of project quality caused by long-term Weathering and material damage. Therefore, effective control of the quality of road and bridge construction is very important. It not only promotes the effective improvement of building quality, but also provides a solid guarantee for the safety of construction sites, thereby maximizing the social and economic benefits of construction enterprises.

## 2. THE MAIN CONTENT OF QUALITY MANAGEMENT FOR MUNICIPAL ROAD AND BRIDGE ENGINEERING

Municipal road and bridge engineering usually involves a large amount of work and a wide range of content, making it a highly comprehensive and complex project to manage. Municipal road and bridge engineering has the characteristics of large capital investment, diverse construction techniques, and complex construction environment, which makes its construction management difficult. It often requires sufficient coordination and cooperation between management personnel and personnel from various departments of the project to ensure the proper completion of the project. During the entire project, management personnel are responsible for reviewing drawings and purchasing materials in the early stages of construction, and should understand and analyze the cost control situation in conjunction with the budget department. During the construction process, management personnel also need to supervise and standardize the construction sequence and specific technical application processes of each link, in order to ensure that the construction progress is met while ensuring that the construction quality meets the project requirements. In the current municipal road and bridge engineering, there is a shortage of construction management personnel. The emphasis on pre construction preparation work and the lack of strict cost control due to government investment in benefiting the people project, coupled with insufficient management of the construction process, have led to a situation of low project quality, which urgently requires attention and reflection from relevant personnel.

### **3. PROBLEMS IN QUALITY MANAGEMENT OF MUNICIPAL ENGINEERING ROAD AND BRIDGE CONSTRUCTION**

#### **3.1 Settlement issues**

In road and bridge construction, roadbed settlement is a common quality issue. The quality and safety of the roadbed in road and bridge engineering will have an impact on the overall quality and safety of the project. This problem is generally caused by unreasonable treatment of soft soil foundation, especially if the strength of the roadbed is not fully improved, ultimately leading to settlement.

#### **3.2 Corrosion of steel bars**

Reinforced concrete material is one of the most basic materials in the construction process of road and bridge, and is the core element supporting such construction projects, carrying the stress of the road and bridge itself and external stress. However, the strength of steel bars is affected by external environmental factors, and roads and bridges that are put into use will inevitably be exposed to long-term sunlight and rain and snow erosion. During this process, the steel bars will be corroded and passivated, leading to a significant reduction in the compactness and service life of the steel bars, endangering the safety of bridges and roads [3]. During the long-term rolling of vehicles in road and bridge engineering, the pavement layer of the road foundation will continuously crack and damage, exposing some steel reinforcement pavement layers to the air. After long-term rain and snow erosion, the stability and durability of the road and bridge engineering will gradually decrease.

#### **3.3 Crack problem**

Construction cracks are a common quality issue in road and bridge construction, and they have a significant negative impact on the safe use of roads and bridges. In actual road and bridge construction, concrete is generally chosen for construction, and concrete itself is very susceptible to the influence of construction environment and temperature, resulting in increased internal stress. If the internal stress exceeds the maximum load bearing capacity of the concrete itself, it will inevitably lead to crack problems. Moreover, during the actual construction process, the construction personnel did not attach great importance to the concrete configuration, pouring, maintenance, and other aspects, and did not strictly follow the relevant procedures during the operation process. The implementation of regulations and procedures increases the probability of cracks in road and bridge engineering.

### **4. IMPROVING THE QUALITY OF MUNICIPAL ROAD AND BRIDGE ENGINEERING UNDER THE NEW SITUATION**

Firstly, to strengthen the training of government officials on big data, online big data course training can be provided, and offline big data expert seminars can be held to understand the latest technologies and application methods. Secondly, establish a big data cooperation platform to promote opportunities for collaboration between government officials and professionals, and promote knowledge sharing and technological innovation. Thirdly, encourage practical exchanges between universities, enterprises, and the government, promote the integration of industry, academia, and research, and cultivate local big data information technology professionals who are "sustainable" and "affordable"[6]. The tourism industry involves numerous entities and links, and there are certain regulatory and risk management challenges. Big data technology has the following advantages in practical applications: real-time monitoring: Big data technology can collect and analyze various types of tourism data in real time, such as scenic area evaluation, scenic area passenger flow, tourism transportation, hotel occupancy rate, etc. The government uses these data for real-time monitoring, timely identifying and solving problems in the tourism industry, and improving regulatory efficiency; Early warning mechanism: Big data technology helps the government predict problems and promotes the establishment of early warning mechanisms. For example, if the evaluation data of a scenic area is abnormal, there may be issues with attraction overcrowding or service quality; If the passenger flow data in the scenic area is overloaded, there may be problems with transportation and accommodation. The government can take timely measures to protect the rights and interests of tourists and the normal operation of the tourism industry. In summary, big data technology has the advantage of real-time monitoring and early warning mechanisms in practical applications, which can effectively improve the regulatory efficiency and risk management capabilities of the tourism industry.

#### **4.1 Effectively control the settlement of roadbed and pavement**

In the actual process of road and bridge construction, if we want to effectively avoid settlement of the roadbed and pavement, we should strictly control the post construction settlement of the transition section roadbed. For example, in the transition section between the road and bridge, staggered settlement should be adopted, and continuous slope settlement should be used to replace it. For the backfill soil on the back of the abutment, if the construction conditions cannot meet the requirements of the same body construction, the method of inverted steps should be applied, and the operation of layer by layer widening should be implemented to promote the width to reach more than 10 centimeters [4]. At the same time, reasonable drainage methods should be selected based on rainfall, seepage volume, and type of backfill material, in order to drain as much water as possible from the backfill material. In addition, it is necessary to strengthen the effectiveness of foundation treatment work, comprehensively analyze different process technologies in the treatment work, fully consider the actual requirements of the project and the actual situation of the foundation, and appropriately improve the low-level performance and foundation, in order to reduce the settlement difference between the bridge abutment and the small embankment.

#### **4.2 Use modern technology to strengthen the protection of steel bars**

The problem of reinforcement corrosion has always been a major maintenance problem puzzling engineering projects. When long-term rain and snow erosion and strong Weathering occur, reinforcement materials will rust, resulting in a gradual reduction in the load capacity of reinforced concrete materials. If it is not solved in time, it will become a huge hidden danger, endangering personal and property safety. Therefore, it is necessary to strengthen the manufacturing and testing of steel reinforcement materials before pouring them. By evenly applying anti-corrosion resin on the surface of the steel reinforcement materials, it can improve the corrosion resistance of the steel reinforcement materials and increase the solidity of the steel reinforcement, prevent the compression fracture of the steel reinforcement concrete materials caused by long-term corrosion, and improve the safety and durability of road and bridge engineering. During the investment and use of roads and bridges, it is necessary to strengthen the monitoring and maintenance of the strength of steel reinforcement materials, use modern information technology to inspect the internal structure of steel reinforcement materials, and carry out painting and rust removal work, thereby extending the service life of the project and greatly reducing its safety hazards.

#### **4.3 Optimize and improve concrete construction technology**

To improve the concrete construction process, it is first necessary to distinguish the strength grade of concrete, and develop various solutions and improvement measures for the problems that are prone to occur in concrete materials. During the mixing of asphalt concrete and the heating and pouring of reinforced concrete, attention should be paid to temperature changes to make the temperature expansion coefficient of the steel and concrete closest to each other. The produced reinforced concrete achieves the best results in uniformity and density, in order to improve its strength and bearing capacity. Therefore, using insulation methods for the processing and manufacturing of concrete materials to prevent internal cracking of concrete due to temperature, and to maximize the service life of concrete.

#### **4.5 Conduct good supervision and management**

In engineering construction, supervision and management are important tasks within quality management. Under the premise of doing a good job in supervision and management, cracks and material issues in construction can be addressed. The probability of problems occurring will decrease, and the quality of the project can also be fully guaranteed. Firstly, it is necessary to enhance management awareness during construction, and based on the construction situation, develop a detailed management plan to fully implement the safety responsibility system. Management should be carried out in accordance with the construction process, and the person in charge of management should be arranged to ensure that the upper level manages their subordinates well. Regular inspections should be conducted on the work of subordinates during construction, and attention should be paid to summarizing the problems that may occur in construction technology and other aspects. Professional personnel should be organized to handle each problem set to ensure that the impact of each problem can be reduced, and safety hazards can be fully reduced during construction, so that the construction can ensure progress Ensure the completion of quality assurance. Secondly, in management activities, management is not the management of a certain link or project. To ensure the quality of construction, it is necessary to manage the entire life cycle of the project. From selecting construction materials and techniques to training various personnel and implementing different construction stages, control work should be carried out according to specific needs and construction processes. For example, when selecting construction technology, it is necessary to understand the engineering

requirements and conditions and select according to needs. In the application of technology, it is necessary to supervise the technical disclosure and inspection of construction equipment. If violations are found during supervision, they should be punished in a timely manner, and the improved regulatory system should be fully implemented. Finally, supervision and inspection are not the responsibility of any management personnel. Everyone is the main body of construction and should have a sense of participation in construction management. They should solve small problems encountered during construction, gradually solving construction problems, and ensuring construction quality with the joint efforts of all personnel. For example, in the actual construction process, supervision and management of the allowable deviation of prefabricated pile positions in road and bridge engineering should be emphasized to ensure the quality and safety of the overall construction of prefabricated piles.

## 5. CONCLUSION

In summary, in the actual process of road and bridge construction, there will inevitably be some quality problems, such as cracks, settlement, etc. All quality problems will have a negative impact on the service life and performance of road and bridge. In this way, it is necessary to comprehensively consider the actual situation of road and bridge construction, conduct in-depth analysis of specific problems, and take effective measures to solve these problems, so as to ensure the smooth progress of road and bridge construction while improving the overall quality and efficiency of construction.

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