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Original Paper

Discussion on Methods and Measures of Road and Bridge Construction Project Management

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Abstract

In the process of domestic economic construction, various road and bridge engineering projects have started construction, which is of great significance for the development of the domestic economy and is also the key to the national economy and people's livelihood. Therefore, it is necessary to pay attention to the construction and management of bridge projects. This article discusses the significance and importance of project management in road and bridge engineering construction, and explores its project management strategies. In recent years, the construction scope of road and bridge projects in many regions of China has expanded, putting forward more and higher requirements for road and bridge project management. This article explores the management methods and strategies for road and bridge construction projects, aiming to enhance project management efforts and strengthen project construction quality. This article combines its own construction experience and determines the importance of road and bridge project construction management based on reference method and case analysis method. From construction practice, it can be concluded that in the new era of road and bridge construction, it is necessary to focus on implementing the project manager responsibility system and strengthening the construction of project management teams. Properly manage materials and labor, reasonably apply mechanical equipment, formulate a comprehensive personnel reward and punishment system, summarize construction management experience, improve various project management systems, select targeted management methods, and improve the effectiveness of project construction.

Keywords

Road and bridge engineering, Construction projects, Management, Strategy

1. Introduction

With the continuous advancement of domestic infrastructure construction, various bridge engineering projects have started construction, making great contributions to promoting social and economic

development. This type of project can serve as a typical example of road and bridge construction in China, both in terms of representativeness and quantity. The various management projects implemented during the engineering construction process are combined with the basic theories in the project management system, thereby continuously enriching and deepening in the practical process, promoting the level of engineering construction project management, and promoting the scientific and systematic management of the project. In the process of road and bridge engineering construction, the construction party should ensure that the engineering construction is based and planned. Therefore, project management is essential, and it also plays a decisive role in the overall smooth implementation of the project. In modern socio-economic development, project management is a key influencing factor for enterprise development and the success or failure of engineering construction. In recent years, the road and bridge industry in China has undergone great development. With the development of the market economy, market competition has become increasingly fierce. In this context, in order for the road and bridge industry to develop and occupy a place in the fierce market competition, it is necessary to pay sufficient attention to project management in road and bridge engineering, continuously strengthen the management of construction projects, and ensure the steady development of road and bridge engineering. This article briefly explores the methods and countermeasures for project management of road and bridge engineering construction, for reference only.

2. Overview of the Importance of Road and Bridge Engineering Project Construction Management

In the current development of transportation projects in multiple regions of China, there are a large number of road and bridge projects, which are important representative projects of social modernization construction and development. In the construction of road and bridge projects, the main goal of project management implementation is to improve the quality of project construction. In the current stage of road and bridge project construction, multiple practical experiences in project management have been integrated, and scientific management theories have gradually emerged, which can effectively promote the systematic and scientific development of project management. Therefore, in terms of the development of engineering enterprises, project management is an effective foundation to ensure that projects are carried out according to the construction plan. In the construction of road and bridge projects in the new era, relevant construction enterprises should recognize the important role of project management in promoting the long-term development of projects. Road and bridge engineering is a relatively large number of construction projects in China's road traffic engineering, and has a certain representativeness in road traffic engineering projects. The main purpose of road and bridge engineering management is to ensure the construction quality of the project. In the long-term development of China's road traffic engineering, many experiences have been summarized and a set of theories have been formed. The combination of theory and experience promotes a more scientific and systematic management of road and bridge projects in China.

3. Measures to Strengthen Construction Management of Road and Bridge Construction Projects

3.1 Establish Sound Management Measures for Construction Safety

During the construction process, construction personnel may experience feelings of insecurity due to external environmental factors, their own psychological factors, and other factors. External factors mainly include social factors, environmental factors, labor management methods, and their own psychological factors mainly include personnel's psychological quality, psychological endurance, and so on. If personnel experience such negative emotions during the construction operation process, it is easy to lead to frequent errors in illegal operations, By analyzing the causes of negative emotions among construction personnel, improving the environment and management, we can effectively avoid errors and illegal operations.

Therefore, it is necessary to conduct a comprehensive analysis of the negative emotions generated by construction personnel in different environmental conditions, and to eliminate the negative psychological emotions of construction personnel. This requires grassroots management personnel to go deep into the surroundings of construction personnel in the daily construction process, observe and collect their information, timely detect their psychological changes, and reduce operational safety issues caused by emotional issues of construction personnel.

3.2 Strengthen the Management of Construction Processes

At present, China is in a stage of rapid information development, and the application of information technology in road and bridge construction projects can greatly improve the quality of road and bridge projects and ensure the stable development of society. The information management of bridge construction projects is not only to provide management and data materials for bridge construction, but also to achieve the goal of establishing a quality management information system for road and bridge construction. In summary, the reasonable utilization and integration of information related to bridge construction management can enhance project management capabilities from multiple aspects, which is of great significance. From a technical perspective, the control of construction quality is not just about the control of construction processes, as it is difficult to achieve high-quality development of the entire project only by focusing on details. Therefore, comprehensive control should also be achieved. The establishment of a quality inspection system can ensure that engineering projects are based on a certain level of quality. Therefore, construction enterprises of road and bridge engineering should regularly conduct project quality inspections to ensure the quality of road and bridge engineering.

3.3 Do a Good Job in Engineering Quality Management

According to the progress of project management in road and bridge engineering construction, it is particularly important to do a good job in engineering quality management. During the quality management process, management personnel are required to clarify the construction quality objectives of road and bridge engineering, and adjust the engineering quality management objectives based on relevant industry standards and the specific situation of road and bridge engineering. In addition, comprehensive control is carried out for the construction quality of road and bridge engineering, and

regular inspections are conducted on the operation status of various construction machinery and equipment, including the execution of construction plans. Daily supervision and management efforts are strengthened to continuously improve the construction quality of road and bridge engineering projects.

3.4 Establish an Efficient Responsibility System, Prepare Technical Reserves, and Establish an Engineering Quality Inspection System

In project construction, attention should be paid to establishing a sound responsibility system, which is an important measure to comprehensively strengthen the effectiveness of construction management. In the current construction of road and bridge projects, attention should be paid to managing project quality and economic issues, as well as integrating project construction management priorities. In the construction of road and bridge projects, it is necessary to ensure the effective implementation of the responsibility system and a clearer division of labor among various departments. Secondly, we should pay attention to doing a good job in technical reserves, that is, strengthening technical management and conducting construction technical disclosure at all stages. Cultivating more technical management talents with higher comprehensive qualities can improve the effectiveness of project construction. We also need to focus on developing targeted training techniques, which can enhance our understanding of construction technology and materials application, and help improve the quality of project construction. Finally, in construction, not only should construction process control be strengthened, but also attention should be paid to formulating a comprehensive quality inspection system, conducting centralized inspection of construction quality in all stages of the project construction, and improving the overall quality of construction.

4. Key Management Points for Road and Bridge Engineering Construction Projects

4.1 Implement the Project Manager Responsibility System

In the process of road and bridge engineering construction, project management responsibility system is a widely used form of project management worldwide, and it is also the most important management form in domestic project management. However, the project manager responsibility system is implemented with engineering contractors as the target. Engineering project managers should first participate in professional qualification exams, pass the assessment before registering and then participate in competitive recruitment. In this case, the contractor should promote and implement the project manager responsibility system as much as possible. The management of engineering projects and the selection of project managers should be emphasized throughout the entire construction process, and the relevant management systems for project managers should be continuously improved. Job responsibilities should be clarified and assessment measures should be standardized, and supervision should be strengthened to ensure the smooth progress of project management.

4.2 Project Management Team Building

The project manager plays a leading role in engineering construction and requires the support of the

management team. In other words, the project manager's ability to carry out work smoothly and effectively is not only due to their own efforts, but also requires the support of the engineering project management team. For the construction of road and bridge engineering, a high-quality project management team is essential to complete the construction work with high quality. The project manager leads the project management team to jointly carry out project management work, and coordinates and communicates during this process to ensure management efficiency.

4.3 Construction Site Management.

Large scale engineering construction has extremely strict requirements for labor, mechanical equipment, and construction materials. Therefore, strict control should be exercised in the management of construction personnel, selection of construction machinery and equipment, and construction materials. For construction personnel with low personal and professional abilities, management should be strengthened and training intensity should be increased to avoid causing construction quality problems and affecting the image and reputation of the construction enterprise; When selecting construction materials, the principle of no bidding bottom line should be followed, and the material with the highest cost-effectiveness should be selected. In addition, mechanical equipment directly affects the construction progress and quality of the project, so the quality of mechanical equipment cannot be ignored. The selection of mechanical equipment and daily maintenance work should be strictly supervised to ensure that the mechanical equipment is in a ready state at all times.

4.4 Construction and Improvement of Incentive and Constraint Systems

Among various engineering construction projects, road and bridge construction is the most typical one. All parties involved in the construction process should develop detailed plan objectives and effective implementation plans, and require management to regulate them, let alone the participation and implementation of employees. Therefore, in the process of project management, attention should be paid to stimulating employee enthusiasm, constructing a reasonable incentive and constraint system, and continuously improving it.

4.5 Strengthen the Management of Construction Materials, Mechanical Equipment, and Labor Force

Road and bridge work is largely the result of the mutual influence of construction materials, mechanical devices, and labor of workers. Therefore, in the management of road and bridge engineering projects, it is crucial to supervise the construction materials, mechanical devices, and labor of these three parts. For construction materials, only high-quality construction materials can ensure the engineering quality of roads and bridges. Therefore, it is necessary to strictly control construction materials and prohibit construction materials that do not meet the standards from entering the construction site. For mechanical devices, they also play a crucial role in the construction of road and bridge engineering. So it is necessary to pay attention to the selection and use of mechanical devices, and choose equipment that is suitable for the actual construction atmosphere and has high-quality performance. In addition, detailed regulations have been made for the subsequent maintenance based on the operation and use of the equipment, in order to ensure the safety and comprehensive use of the

equipment. For labor, it also greatly affects the quality of the project. So when carrying out construction, it is necessary to screen out certain choices of construction workers and prohibit personnel with low quality and professional ethics from being hired.

5. Conclusion

The quality of project management directly determines the quality of engineering construction, so analyzing and researching project management is the responsibility that all road and bridge workers need to bear. The system of project management should be continuously improved to effectively coordinate all aspects of project management, ultimately achieving sustainable development of road and bridge construction infrastructure. In the process of road and bridge engineering construction, project management requires construction companies to control construction costs through advantages such as skills, tools, and knowledge, in order to maximize profits and explore a balance between project quality, safety, economic benefits, and construction cycle. For project management, improving project management level is the key. Therefore, for road and bridge management units, they should fully play the role of functional departments, actively carry out project management work, and promote the vigorous development of road and bridge engineering construction.

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