

# Best Practices for Highway Project Owners in Enhancing Construction Project Management

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**Abstract:** *In recent years, the rapid expansion of highway infrastructure projects has significantly advanced the domestic highway transportation system. Concurrently, public scrutiny regarding the construction quality of highway projects has intensified. In response, highway project owners are required to prioritize and systematically enhance construction project management practices. This entails rigorous supervision and oversight of on-site implementation, timely identification of issues arising during the construction management process, and the adoption of appropriate corrective actions followed by thorough outcome inspections. These measures collectively contribute to the continuous improvement and further development of highway project execution.*

**Keywords:** Highway project owners, Strengthen project construction management.

## 1. Introduction

Increase owners' research on the current status of highway project construction management, identify existing issues such as inadequate progress control, low construction fund utilization rate, and poor construction quality management, discuss the importance of strengthening project construction management, and propose reasonable and effective project construction management measures. While continuously enhancing the project construction management level of owner units, it is expected to provide important support for the sustainable development of the highway engineering industry.

## 2. Brief Overview of the Development Status of Project Construction Management

### 2.1 Highway Engineering Progress Management

With the rapid development of China's highway engineering industry, the scale of existing project construction continues to expand. Owner units have put forward higher requirements for project progress management, and the overall difficulty of project construction progress management has also increased accordingly. However, from the perspective of the actual project construction status, most projects currently fail to complete the project tasks as scheduled. The main factors affecting project progress management are as follows: First, the owners themselves lack strong progress management capabilities and cannot effectively manage the progress throughout the project, including prior investigation and analysis, formulation of progress management plans, and failure to effectively control the construction team's operation progress during the process, leading to repeated delays in project construction nodes; Second, owner units lack sufficient attention to project progress management, and the existing project progress management plans have defects in multiple aspects, subjectively reducing their own project progress management level.

### 2.2 Highway Engineering Fund Management

Funds are an important cornerstone for promoting the construction and development of highway projects. Inadequate project fund management will not only hinder the

progress of project construction but may even lead to the collapse of the entire project plan and damage the vital interests of relevant participants. From the perspective of owners, at this stage, the main defects and deficiencies in fund management of owner units include the following: First, most owners do not understand the source of project funds and 调度 the funds arbitrarily, which greatly reduces the level of project fund management; Second, fund management plans and related systems are important foundations for promoting the fund management process. However, the fund management plans formulated and used by most owner units are not perfect.

### 2.3 Quality Management of Highway Engineering

At the current stage, during the implementation of project quality management by highway engineering owners, there are still various deficiencies and flaws, which increase the possibility of project quality issues, delay the construction progress, and have a relatively adverse impact on the long-term development of highway engineering projects. Among them, the main quality management problems include the following aspects: First, the existing quality management system of the owner unit lacks completeness. The owner completed the formulation of the quality management system without conducting a thorough pre-project investigation, resulting in many system contents not being consistent with the actual project construction situation; Second, the quality inspection work carried out by the owner unit is too formalized. Quality supervision personnel do not participate seriously and strictly in the project construction quality inspection work, and the quality risks existing during project construction are not handled in a timely manner.

### 2.4 Safety and Environmental Protection Management of Highway Engineering

With the concept of green and sustainable economic development deeply rooted in people's minds, promoting the implementation of project safety and environmental protection management has gradually become an important part of the owner's project construction management content. From the owner's perspective, at the current stage, the main problems in project safety and environmental protection management include the following: First, the owner itself

lacks good environmental protection and safety awareness, and many management tasks cannot be carried out in place. For example, the random placement of traffic signs and the messy stacking of construction materials at the project construction site have largely increased the safety and environmental risks of the entire project; Second, the safety and environmental protection management measures adopted by the owner are single and relatively lagging. Most owner units still rely on the original safety and environmental protection strategies, do not pay attention to pre-prevention, only focus on problem handling, and fail to effectively play the corresponding preventive role, which greatly reduces the economic benefits of the entire project.

### **3. Actively Exploring Effective Project Construction Management Measures**

At present, in order to promote the active and effective development of highway engineering project construction, paying attention to and improving the project construction management level of the owner unit has extremely important practical value. The main measures are as follows:

#### **3.1 Analysis of Project Schedule Management Measures**

Schedule management should be included as an important part of highway engineering project construction management. When organizing and carrying out this project construction management work, the owner first needs to consult relevant data and documents, understand the highway engineering construction situation, and based on this, continuously improve the existing project schedule management plan. During the process of compiling and improving the plan content, the owner unit should always adhere to the relevant concept, that is, on the basis of ensuring the project construction quality, shorten the project construction period as much as possible. Secondly, the owner unit should carry out project schedule management in a proper way, regularly organize personnel to go to the project construction site to observe the construction status, record the on-site construction work content and material usage, strengthen the communication between all project participants, discover problems in a timely manner and handle them accordingly, so as to strengthen and improve the efficiency of the entire project schedule management.

#### **3.2 Analysis of Project Fund Management Measures**

Before the owner unit organizes and conducts project fund management work, it first needs to clarify specific and relatively effective fund management objectives, conduct a comprehensive and extremely effective investigation and analysis of the project's fund sources, and at the same time, should keep records of the specific use of funds throughout the project process to provide important support for improving the utilization rate of project funds. At the same time, in order to further improve the level of project fund management, in addition to carrying out fund management work based on immediate fund management needs, the owner unit should also have a developmental perspective, actively learn the project fund management concepts and plans of other units, and improve the existing internal fund management system on the basis of learning from others'

strengths to make up for its own weaknesses, so as to minimize the probability of fund waste.

#### **3.3 Analysis of Project Quality Management Measures**

Strengthening and improving the quality management level is an effective measure to ensure the overall construction quality of engineering projects. According to the actual situation, at the current stage, in order to further improve the quality management level of the owner unit, the commonly adopted project quality management measures are: First, based on the current status of the engineering project, improve the corresponding project quality management system, including but not limited to clarifying quality management objectives and quality management responsibilities, and promoting the active and effective development of project quality management work based on written work guidelines; Second, do a good job in quality control of construction materials. During the project construction period, the quality of materials will be a factor affecting the construction quality of the engineering project. It is necessary to do a good job in material procurement and entry inspection, and if necessary, hire professionals to test the safety and professionalism of construction machinery and equipment to meet the needs of project construction; Third, with the continuous expansion of the construction scale of highway engineering projects, the phenomenon of increasing difficulty in project quality management certainly exists. The owner unit should have a clear understanding of this, and at the same time, based on the importance principle of project quality management, carry out quality management work as much as possible to timely discover problems in project quality management.

#### **3.4 Analysis of Project Safety and Environmental Protection Management Measures**

Safety and environmental protection management is a point that most owner units tend to ignore at present, but it is the key to the long-term development of engineering projects. In order to further improve the level of project safety and environmental protection management, it is necessary to increase the training of on-site construction personnel on safety and environmental protection awareness, so that every participant during the project construction is aware of the importance of protecting the safety of the on-site working environment and the safety of themselves and others, understand and apply effective environmental protection measures, and make continuous efforts to create a green construction site. In addition, the owner unit should also actively learn advanced project safety and environmental protection management concepts and measures at home and abroad, appropriately apply them to project safety and environmental protection management activities, and with the help of strong theoretical support, promote the further development of management work.

### **4. Conclusion**

It can be seen from this that effectively carrying out the construction management of highway engineering projects is an effective way to promote the sustainable development of highway engineering projects. According to the actual situation, at the current stage, most owners of highway

engineering projects have more or less problems in project construction management. The existence of these problems hinders the development of project construction management. To promote the long-term development of the project, putting forward targeted project construction management measures is an effective measure to improve the project construction management level of the owner unit.

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