

Configuration and Maintenance Management of Highway Engineering Machinery and Equipment

Hui Sun*

Xinjiang Junlong Municipal Engineering Co., Ltd. Changji City, Changji Prefecture, Xinjiang 831100

Abstract: Firstly, this paper analyzes the necessity of highway engineering construction machinery and equipment management, discusses the configuration management of highway engineering machinery and equipment, and then puts forward the problems existing in the management and maintenance of highway engineering machinery construction equipment. Finally, the management and maintenance measures of highway engineering machinery construction equipment are discussed in a targeted manner.

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***Corresponding author:** Hui Sun, Cherie0828@gmail.com

1 Necessity of highway engineering construction machinery and equipment management

The quality of highway construction is of positive significance for ensuring people's daily safe travel and promoting social harmony and stability. The necessity of highway engineering construction machinery and equipment management is mainly reflected in the following aspects.

First, the management of machinery and equipment will have a direct impact on the quality of construction and production. The application of mechanical equipment in highway engineering is gradually developing towards automation and intelligence. The proportion of mechanical equipment in the construction of highway engineering is increasing, which plays an important role in shortening the construction time, reducing the waste

of talents and improving the construction level of highway engineering. At the same time, the operation of mechanical equipment has higher requirements for the management and maintenance of construction enterprises. It is necessary for relevant leaders to strengthen their attention, further improve the management of machinery and equipment on the construction site, and regularly maintain mechanical equipment, and promote the better development of engineering construction.

Second, strengthening the management of mechanical equipment plays an important role in improving the overall construction efficiency of the project. With the continuous development of science and technology, the construction and maintenance of highway engineering has basically realized modernization and mechanization. Only by promoting the progress of mechanical equipment management can we ensure that highway engineering construction can lay a foundation for the safe and social development of our people. It is worth noting that to optimize the management of highway engineering machinery and equipment, it is necessary to actively introduce excellent management experience, theory and technology at home and abroad, and to achieve innovation in computer management methods.

Third, the capital cost of mechanical equipment plays an important role in the management of overall costs. Through scientific management and maintenance, it plays an important role in reducing capital costs and improving the efficiency of the use of machinery and equipment. Therefore, it is necessary to focus on these aspects.

2 Configuration management of highway engineering construction machinery and equipment

2.1 Configuring construction equipment according to the construction environment

When constructing a highway project, it is necessary to select appropriate mechanical equipment according to the construction environment. This is because various external factors (such as weather, environment, etc.) at the construction site will affect the operating efficiency of the equipment. At the same time, it is necessary to inspect the geological and hydrological conditions and weather factors of the construction site before construction to prevent the impact of storm, heavy rain and other factors during the construction process, thus affecting the construction efficiency. If the construction is carried out in inclement weather, the wheeled mechanical equipment can be replaced with tracked equipment to ensure the construction quality of the highway project.

2.2 Configuring mechanical equipment according to construction content

According to the specific content of highway engineering, it is important to choose the appropriate construction technology and mechanical equipment. Therefore, it is necessary to consider the actual situation and construction content of the project, consider it from multiple angles, and optimize all aspects such as excavation, filling, transportation and compaction to ensure that the quality of highway engineering meets relevant standards. In the procurement process of mechanical equipment, the type of mechanical equipment should be reasonably selected, and the mechanical equipment itself must have a high scientific and technological content, so as to ensure that the comprehensive performance of the mechanical equipment meets the construction requirements. Before purchasing machinery and equipment, it is necessary to fully carry out geological exploration and engineering accounting, and fully consider the economic strength of the construction enterprise, and select the cost-effective mechanical equipment on the premise of meeting the quality requirements and technical standards. At the same time, during the construction process, parts of mechanical equipment are likely to be worn out, and the degree of loss analysis should be fully analyzed, and the number of parts of the equipment should be guaranteed.

In addition, factors such as the performance, integrity, maintenance and management effects of mechanical equipment will affect the operating efficiency of mechanical equipment. Therefore, the comprehensive performance and integrity of mechanical equipment must be checked before purchase, and choose the stability by comparing the goods. The high operating efficiency and environmentally friendly equipment provide guarantee for the quality of highway engineering construction.

2.3 Selecting construction equipment according to mechanical properties

Highway engineering construction needs to take certain measures to solve problems and failures during the construction process, in order to effectively avoid the construction progress due to engineering interruption. Therefore, the mechanical performance and operating status of the equipment should be understood and properly selected to ensure construction efficiency and construction progress, and to prevent adverse effects on the environment. The mechanical equipment should be configured to ensure its safety performance as much as possible, and to avoid construction safety accidents caused by improper mechanical adaptation and mismanagement. In addition, it should also ensure that the configuration of mechanical equipment is economical. If a large-scale mechanical equipment is selected during the accident, although it will be invested in a large proportion, it can be reasonably distributed to other projects, so that it will not have much impact on the overall economy of the highway project. Therefore, it is necessary to consider the proportion and quality of construction machinery equipment, and analyze the advancement and reliability of mechanical equipment to ensure the quality of the overall project construction.

3 Current problems in the management and maintenance of highway engineering machinery construction equipment

3.1 Influence of traditional construction management system

The construction of highway engineering in China has gradually improved with the continuous development of China's economy and science and technology. This process can be embodied by the large-scale mechanical equipment with advanced and high-tech content used in highway engineering construction. The wide application

of these mechanical equipment effectively promotes the leap of highway engineering construction. However, the traditional construction management system mainly focuses on construction technology management and construction schedule management, and lacks attention to the management of mechanical equipment. As a result, the renewal, management and maintenance of machinery and equipment on the construction site are not timely, resulting in chaotic management of machinery and equipment on the construction site. And there is no perfect equipment management system to regulate the use, management and storage of construction site equipment, which is not conducive to ensuring the quality of highway engineering construction. Therefore, the traditional construction management system should be innovated in time, and a series of mechanical equipment management standards and specifications should be established to lay the foundation for the management and maintenance of highway engineering machinery equipment.

3.2 Inability to implement mechanical equipment management system

The mechanical equipment management system is uniformly regulated by the government, and it has been continuously improved to make the highway engineering machinery and equipment management system and related laws and regulations more mature^[1]. However, in the actual construction process of highway engineering, there are often mismanagements and equipment data cannot be properly verified. And the management personnel usually only check the operation of the equipment in the form of irregular inspections, and sometimes just passing through the site and just staying on the ground, which leads to a lack of constraints on the construction management system, which makes the management of mechanical equipment work. Due to the inability to implement, the laws and regulations governing mechanical equipment cannot be effectively implemented in practice, and it is difficult to ensure the standardization of the operation of mechanical equipment in highway engineering construction.

3.3 Lack of professional management talents

The construction unit itself lacks attention to the management of mechanical equipment, which leads to the lack of work enthusiasm for mechanical equipment management personnel to work, which is a major factor neglecting mechanical equipment management. At

the same time, the professional quality of mechanical equipment management personnel is also an important factor affecting management efficiency. The mechanical operators of some highway engineering construction sites have low academic qualifications, lack of systematic theoretical knowledge learning and professional technical training. Only relying on work experience to operate mechanical equipment can easily lead to violations of regulations, and wear and tear on mechanical equipment. As a result, the equipment gradually ages, and in the worst case, it may cause a safety accident. Therefore, it is necessary to improve the quality of professional management personnel at the construction site to reduce the occurrence of the above phenomenon. In addition, some construction companies pay too much attention to short-term interests and do not fully consider the long-term development of the company. Therefore, the construction site management personnel and the mechanical equipment operation and maintenance personnel are not trained, resulting in the daily maintenance and maintenance of mechanical equipment not in place, it is difficult to fully exert its value.

4 Highway engineering machinery construction equipment management and maintenance measures

4.1 Establish a professional mechanical equipment maintenance team

In order to ensure the normal operation of mechanical equipment and improve the quality of highway engineering construction, construction enterprises should establish a professional mechanical equipment maintenance team, which is responsible for the regular maintenance of mechanical equipment, as well as daily management and distribution. When the mechanical equipment fails, the maintenance team should analyze the cause of the fault in time. If necessary, the equipment should be moved out of the site for maintenance, and the internal configuration of the mechanical equipment should be updated to effectively ensure the effective operation of the mechanical equipment. When the project is completed, it should be fully checked whether the mechanical equipment is faulty, and take measures to repair in time to prepare for the next use. If the technical status of the mechanical equipment is poor and difficult for the maintenance team to meet the maintenance requirements, the mechanical equipment should be transferred to a professional maintenance department or repair shop for maintenance. In general,

the purpose of establishing a professional mechanical equipment maintenance team is to ensure the smooth development and completion of the project.

4.2 Strengthen mechanical equipment maintenance

The maintenance of mechanical equipment is of great significance for ensuring the safety and quality of engineering construction. Therefore, it is necessary to improve the management awareness of the personnel and implement management responsibility to individuals to improve management efficiency and effectiveness.

First of all, the operation of the mechanical equipment should be guaranteed to be performed by professional technicians. The level of operation of technicians will affect the performance and age of mechanical equipment. Therefore, construction companies must strengthen the skills training of operators and improve their safety awareness and related theoretical knowledge, thereby reducing safety accidents caused by human-made operational factors and ensuring the smooth development of the highway engineering construction.

Second, there should be rational planning and management of machinery and equipment. The management personnel of highway engineering construction enterprises need to cooperate with the operators and maintenance personnel of mechanical equipment, and ensure that relevant personnel have an understanding of the construction, performance, operation procedures and maintenance knowledge of mechanical equipment, and use mechanical equipment in accordance with the operating procedures of mechanical equipment. The equipment, on a regular or irregular basis, detects and repairs the operating status of the mechanical equipment, so as to facilitate the timely discharge of potential safety hazards and ensure the safe operation of the mechanical equipment to the greatest extent. Once again, improve the data and establish an archive. Strictly control the purchase procedures of mechanical equipment, and establish a special approval system to control mechanical equipment to ensure that mechanical equipment in the course of operation failure can be resolved through consultation with the manufacturer. In addition, in order to strengthen the responsibility of the mechanical equipment operators, the operator's salary and various indicators of mechanical equipment operation can be combined to consider, thus effectively improving the work enthusiasm of the personnel and changing the working attitude of the operators^[2].

4.3 Improve the mechanical management mechanism

The perfect mechanical equipment management mechanism is of great value for ensuring the management and maintenance of mechanical equipment and improving the enthusiasm of the personnel. At the same time, the mechanical equipment management organization should also have higher efficiency, so as to ensure the timely use of mechanical equipment, speed up the progress of highway engineering construction, and improve the quality of highway engineering construction. For example, after the highway project is awarded, the construction enterprise needs to plan and organize the construction plan and personnel in time, and formulate the number and type of mechanical equipment, and install mechanical equipment according to the construction planning process, so as to effectively avoid the procurement of mechanical equipment that fails to meet the project standards or cause excessive economic waste^[3].

5 Conclusion

In summary, the construction of highway engineering is inseparable from good construction management and the configuration and maintenance management of mechanical equipment plays an important role in construction management, which will have certain impact on the development of engineering projects. Therefore, the management personnel of the construction unit should be required to pay more attention to the mechanical equipment configuration and maintenance management, and fully consider the selection and configuration of mechanical equipment in combination with the actual situation, and continuously improve the maintenance and management of mechanical equipment, and reduce the potential safety hazards of mechanical equipment. Therefore, it is effective to ensure that the quality of highway engineering construction is not problematic.

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