Analysis of the impact of safety hazards in construction project management and defensive measures

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Abstract. A construction project has the characteristics of a long-period and complex process. Moreover, the construction industry is also a high-risk industry, and there are all kinds of safety hazards in the construction process of construction projects. Therefore, safety management is the top priority. The good or bad safety management in the construction process is related to the construction progress and construction quality of construction projects and closely related to the personal safety of construction personnel. If the construction enterprise cannot provide a reliable guarantee of the quality and safety of the construction project, it will cause a severe impact on the construction enterprise. Therefore, in the construction process of construction projects, it is necessary to uphold the construction safety management principle of "safety first," which emphasizes construction safety and lays the foundation for higher construction quality in construction projects under the premise of ensuring safety.

Keywords: construction project management, construction quality, safety control, defensive measures.

1. Introduction to safety management of construction projects

With the rapid development of China's social economy, the construction industry has developed into a pillar industry to promote the country's economic development and social progress and promote the rapid improvement of China's comprehensive national power. However, there are various safety problems in the construction stage of building projects. It has a severe impact on the quality of construction and construction safety. Therefore, we must pay attention to the quality and safety control of construction project management and ensure the quality and safety of construction projects through scientific and reasonable measures of construction quality and safety control. Increasing the strength of safety management is conducive to providing security for the safety of construction personnel and provides a great impetus to the sustainable development of enterprises, and promotes the stable and good development of the construction industry.

1.1 The main content of safety management of construction projects

There are many elements involved in the safety management of construction projects, and safety management can be integrated with dynamic management and static management. Construction safety management does not only exist in the construction process but also throughout the construction of the whole construction project. From different angles, construction safety management includes safety management of design, safety management of construction personnel, materials, machinery, equipment, etc. The construction unit must strengthen the attention to safety management, combine the development of the construction unit itself and the specific characteristics of construction engineering construction, develop practical goals of construction engineering safety management, strengthen the awareness of safety accident prevention, and minimize the possibility of safety accidents. Moreover, the construction unit should strengthen the organization of construction personnel to carry out safety education and training activities according to the content of each different construction process to do a good job of safety prevention, improve the overall level of construction safety management, to provide a guarantee for the sustainable development of enterprises.

1.2 The importance of safety management of construction projects

1.2.1. Provide security

Construction management in building construction contains many elements, and safety management is one of the main construction management content. The development of safety management can help the construction unit find the hidden danger of construction in time and provide a practical and reliable guarantee for the personal safety of the construction personnel and the quality of the building. With the continuous development of science and technology in China, various advanced construction technologies and machinery have been developed, and construction units should improve the level of application of advanced equipment and technologies. However, in actual construction, the irregular operation of many construction personnel increases the possibility of safety accidents and raises the probability of safety accidents. Therefore, the construction unit must take specific measures to continuously improve construction safety and provide security for the construction personnel.

1.2.2. Helps to improve the economic efficiency of enterprises

Once a safety accident occurs during the construction of a building project, it will disrupt the normal rhythm of construction and cause substantial economic losses to the construction enterprise. A large amount of research data is shown that if the construction enterprise has an efficient safety management program and the safety management work is done well enough. In the actual construction process, it can ensure the effective implementation of safety management work, ensure the enhanced cooperation between the organizations within the construction enterprise, make the construction project management mode sublimated, which is conducive to the construction enterprise to obtain higher economic benefits and Better social reputation. High-quality construction projects can not be separated from the guarantee of safety management, and efficient safety management can promote the better implementation of construction projects, which is conducive to the further improvement of the construction quality of construction projects.

1.2.3. Promoting the development of society

China's social development has always adhered to the basic principle of being people-oriented. Therefore, the development of safety management of construction projects should also improve the overall level of safety management from the human perspective. It protects the personal safety of construction personnel and provides for the interests of building users and t.

2. Standard principles of quality and safety control of construction project management

Quality management and safety control of construction projects are the measures and methods of management, testing, and control used to ensure the construction quality standards are strictly stipulated in the contract and guarantee construction personnel's safety. Therefore, project quality management and safety control should be carried out based on the following principles: adhering to the principle of "user first,"; the principle of "people-oriented,"; and the principle of "quality first." Market economy management principle. In the construction stage, we effectively play the key role of people, which effectively mobilizes and stimulates the enthusiasm and creativity of relevant personnel. It can strengthen the responsibility consciousness of safety management personnel and construction personnel, implement the ideology of "quality first" and the standard principle of prevention-oriented, in strict accordance with quality standards, and strictly audit all aspects of the construction process. Based on the quality standard, all aspects of the construction process are strictly audited to ensure that the project meets the quality standard. Construction projects involve open-air work, high-altitude work, etc. The cycle is relatively long, and there are various uncontrollable safety hidden factors in the construction stage, so the project has extremely strict standards for safety production. Overall, construction safety has an important impact on the construction production schedule and the quality

of buildings and is the key to the smooth construction of construction enterprises, ensuring economic benefits, personal safety of construction personnel, and the quality of buildings. Therefore, construction enterprises must pay great attention to the construction quality and safety control to ensure the overall quality of construction projects and the safety of construction personnel.

3. Safety management problems in the construction process of building engineering

3.1 Low awareness of personnel safety

The construction industry is a labor-intensive industry, and every link needs the participation of personnel when the construction of the building project advances. Therefore, it leads to the quality and safety of the project being affected by many personnel. Moreover, the personal safety of construction personnel is also threatened due to the existence of many safety hazards in the construction of the project. Nowadays, migrant workers in China's construction industry account for a relatively large proportion of construction workers, many of whom work on construction sites to earn a living, and their professionalism and safety awareness are relatively low. In addition, due to the large workload at construction sites and tight project schedules, construction units rarely provide professional construction training and safety education for migrant workers, which leads to irregularities in the work of construction personnel, which will primarily affect the quality and safety of the project. In addition, the construction personnel's safety awareness is relatively weak, and it is difficult to standardize the implementation of safety management regulations in place during construction. Helmets and other protective equipment are not worn, which increases the risk of engineering construction. During construction, the technical level and safety awareness of safety management personnel have a great influence on the safety of the construction site. Therefore, managers need to improve their safety awareness so that they can enhance their investment in safety protection and build a scientific safety management system, as well as develop effective prevention programs to provide security for construction safety. Thus, it can be seen that human factors are of great significance in construction safety. However, the lack of legal awareness, safety awareness, and scientific operation level of some managers and construction personnel has a great negative impact on the safety of the project.

3.2 Insufficient safety management system and management of enterprises

At the present stage, the frequency of safety accidents in the construction of building projects is still considerable, which has a lot to do with the inadequacy of the safety management system and management efforts. Although the relevant government departments have promulgated several important policies on construction safety management, many construction units in the specific construction process are unaware of the importance of construction safety management. It does not strictly implement the safety management rules and regulations, for the relevant government departments will often be perfunctory inspection, the lack of the necessary safety management awareness, some enterprises pursue the enterprise. To pursue the economic benefits of the enterprise, some enterprises significantly reduce the cost of improving security measures. If these construction enterprises remain in this way for a long time, engineering safety does not cause sufficient attention to the degree of severe consequences that may be unimaginable. In addition, some construction enterprises' supervision and management department supervision and management are not strong enough. It does not implement the department's work functions. The development of construction safety management work does not pay attention. Furthermore, it did not combine the actual situation of the current construction site to establish a construction project safety management system. The occurrence of safety accidents is not a comprehensive treatment and does a timely reflective summary, which increases the probability of safety accidents.

3.3 Construction materials and construction machinery do not meet the requirements

The safety of construction engineering and materials and construction machinery and equipment have a great relationship. If there is a problem with construction materials or machinery and equipment quality is not up to standard, it is likely to lead to safety accidents. On the one hand, the materials used in construction projects must strictly comply with the relevant quality standards. If the quality of materials does not meet the requirements is easy to lay hidden safety risks. For example, engineering construction personnel need scaffolding in construction buildings to support the work at height. The quality of scaffolding will largely affect the safety of construction personnel. In addition, once the quality of materials used in construction is not qualified, it will greatly reduce the overall safety of the building while causing a series of security risks. On the other hand, if the staff for the actual operation of construction machinery and equipment is not under the specific operating procedures, it is likely to cause excessive wear and tear of machinery and equipment, which increases the possibility of safety accidents.

3.4 Safety inspection is not detailed enough

Some construction units, although in the ideological awareness of the importance of construction safety management. However, the specific implementation of safety management can not be implemented under the relevant requirements and standards, or a particular discount, such as the power of some mechanical equipment more than the maximum power can provide, the electrical box is not equipped with anti-leakage equipment, not strictly high power electrical equipment and water and other conductive body strictly distinguished, in the use of electricity is unreasonable, does not implement the provisions of the three-level power distribution, two levels of protection, fire escape piled with debris, etc., and these will lead to frequent safety problems in the construction process of building engineering. The fundamental reason is that the safety inspection work in the construction process of the building project is not done. Because the safety inspection work is not done properly, it is difficult to ensure that the safety management program of the construction enterprise is fully implemented, and it is also challenging to find the safety hazards in the construction process the first time, which increases the safety risks faced in the construction process. Therefore, construction units need to pay sufficient attention to this aspect of the work.

4. Effective methods of safety management of construction projects

4.1 Improve and optimize the safety management system

To ensure that the safety management work in the construction process of building construction is done better, first of all, there is a need to have a perfect safety management system as the basis and premise in the process of safety management if there is a scientific, reasonable and perfect safety management system as a guide. The whole construction safety management work will be more convenient, and the effectiveness of the whole safety management will be more obvious. In modern construction, safety management is carried out, on the one hand, to be closely integrated with the relevant laws and regulations. On the other hand, to the actual production of the construction site as the basis, in line with the relevant national laws and regulations, the existing safety management system to optimize and improved. In addition, it also needs to ensure that each person in the construction project can effectively perform their work safety responsibilities. Meanwhile, the relevant personnel should also strengthen the implementation of safety management and strictly implement the relevant systems, which are beneficial to the strict management of engineering personnel and can effectively avoid the occurrence of safety accidents. In addition, we must pay attention to the quality accident reporting and processing system because it has a key role in accurately and specifically analyzing the causes of construction safety accidents, discovering potential safety hazards, etc., and it is also the cornerstone of accurate identification and scientific assessment of safety accidents.

4.2 Improve the quality of relevant personnel

In the construction process, safe and effective construction always follows the purpose. Construction units should always adhere to the "people-oriented," "prevention-oriented," and "safety first" policy. In construction safety management, safety management personnel and construction personnel play a vital role in improving construction safety. Therefore, construction enterprises can regularly organize relevant staff training to enhance employees' safety awareness. On the one hand, managers are more able to strictly implement the rules and regulations of safety management on the construction site and constantly regulate the construction behavior of construction personnel. On the other hand, even if the relevant safety regulations are omitted, and the safety management personnel are negligent, the construction personnel can carry out their work independently and safely and deal with the possible safety hazards in their respective engineering tasks in a timely and scientific manner. In addition, construction enterprises must pay attention to the relevant personnel's qualifications for strict audits. Safety management personnel and the comprehensive quality of construction personnel should meet the standards of the relevant engineering specifications, especially the construction personnel of particular types of work should be licensed to work.

4.3 Further increase the control of construction materials and construction machinery and equipment

Engineering managers should strictly monitor construction building materials from multiple aspects such as purchase channels, transportation, storage, and use to strictly ensure the quality of engineering materials and lay a good foundation for improving the quality of construction. In addition, before the construction of the project, the construction unit needs to select the materials according to the quality standard of the construction project and the actual situation of the construction site. Meanwhile, the construction unit needs to train the construction personnel in the correct operation of machinery and equipment. In this way, the possibility of safety accidents can be effectively reduced.

4.4 Full implementation of construction safety responsibilities

According to the research, implementing the related safety management content and requirements for individuals can maximize the quality and efficiency of the construction safety management of construction work. Therefore, in the construction project process, the construction unit should implement the safety production responsibility system, which coordinates the work content of each process of a construction project. It does a good job of distributing construction safety responsibilities to ensure that once a safety accident occurs in the construction process, the corresponding management personnel and construction personnel can be held responsible and punished according to the cause of the problem. Before formally carrying out the construction of the project, it is necessary to sign the relevant construction responsibility letter or contract with all the relevant personnel involved in safety work management, which can provide the safety management personnel have a clearer understanding of their responsibilities and missions so that they can be dedicated to their work. In this way, the efficiency, quality, and safety of construction works can be maximized, and the stability and safety of the whole construction works can be better guaranteed.

4.5 Construction of a safety construction reward and punishment system

The construction of a safety construction reward and punishment system is an effective way to ensure construction safety and an essential measure for construction units to improve the efficiency of engineering construction. The practical implementation and execution of the reward and punishment system should give certain rewards to the construction personnel with outstanding performance to improve the work enthusiasm of the construction personnel. Furthermore, they should be encouraged to sum up the experience of safe production to help other construction personnel to optimize and improve the safety production of their respective positions accordingly. Moreover, construction personnel who have serious safety problems during the construction stage should be punished accordingly and ordered to deal with them within the specified period. The construction of

a safe construction reward and punishment system can provide a reliable guarantee for construction safety.

4.6 Increase the cost of construction site safety measures

To comprehensively promote the safe and stable construction of construction projects, the construction unit should increase the cost of construction site security measures. The first and foremost is to do a good job of regular inspection and maintenance of construction machinery and equipment, which must be combined with the actual use of machinery and equipment, scientific and reasonable maintenance and repair work of machinery and equipment to ensure that the performance of machinery and equipment in good condition. Avoid potential safety hazards caused by the problems of construction machinery and the equipment itself. Secondly, construction enterprises need to prepare sufficient protective gear so that the construction personnel to do a good job of safety protection. The construction site staff must use the "three treasures." For construction projects, construction personnel should pay attention to developing relevant safety protection work. In the reserved holes, pits, pits around balconies, elevator shafts, stairways, set up safety warning signs, and correspondingly equipped with safety nets, protective fences, the night should also set up red lights to show the alarm. In addition, the construction staff at height should be multiple protection to maximize construction safety. Again, construction companies need to configure complete rescue equipment at the construction site and do a good job of emergency rescue work of sudden safety accidents. In addition, the construction unit should set up safety warning signs in the dangerous places of the construction site. Both management and construction personnel should seriously implement safety guidelines to ensure the safety of individuals and property and minimize the occurrence of safety accidents. Finally, the construction unit should do its best to create a safe and stable construction environment, set up a special safety management team, and improve the safety management mechanism.

4.7 Make good fire safety measures

Safety plugs and emergency channels should be set up at the construction site and ensure that the safety plugs can be used commonly and that the emergency channels are clean and free of debris. Relevant personnel should have fire prevention awareness and fire prevention responsibility, and the relevant requirements should be written on the safety signage and set in a conspicuous place. The construction site must be equipped with necessary fire safety equipment and be managed by a person who regularly checks and updates the safety equipment. In addition, warning signs should be set next to flammable and explosive items. On the construction site of all kinds of machinery and equipment, their power should be within the rated standard requirements, and electric equipment should have a commissioner to its management registration after use of electric equipment. It needs to be returned promptly and should not be placed at will. Electricity should not be connected to wires at will, construction electricity should be equipped with lighting tools at night, and the electric box should be equipped with anti-leakage equipment, away from water and other conductive bodies, and strictly implement a three-level power distribution and two-level protection. Construction personnel in the dormitory should not use electrical appliances that exceed the specified power for cooking and heating.

5. Conclusion

Safety management of construction is a very complex and comprehensive management work. Construction safety and quality become important issues in engineering construction management during the construction stage. Safety management in construction projects contains many links, and many factors affect the management work. Therefore, in the process of engineering construction, the safety management of the project is of great significance to the healthy development of China's construction industry. Safety is not a trivial matter. Building construction enterprises need to invest

human and material resources in engineering safety construction issues to ensure the safety and efficiency of the construction process. In the process of construction, on the one hand, to ensure the personal safety of construction personnel, on the other hand, to protect the assets of society, to ensure that each process of construction can be quality, safe, and smooth, to ensure the quality of construction projects. In this way, it protects people's safety, safeguards people's interests, and ensures the quality of construction projects, thus promoting the healthy, stable, and good development of the construction industry.

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