Analysis of Key Points in Safety Supervision and Management of Construction Site

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Abstract—Construction projects must be carried out efficiently while ensuring the safety of the construction site. The safety management of the construction site is the key to the advancement of construction projects and is a manifestation of the good development of the construction engineering industry. Therefore, the construction unit must reasonably control the safety supervision of the construction site. At present, the government and other relevant departments also attach importance to the rights and interests of migrant workers at construction sites. The construction industry needs to take relevant measures to explore safety management measures at construction sites in terms of factors affecting construction safety and legal regulations. This can provide a construction foundation for the smooth implementation of building construction.

1. INTRODUCTION
The large-scale development of the construction industry has gradually revealed the safety issues of construction, which requires construction companies to pay close attention to the safety issues of construction sites while developing their own economic strength. Enterprises should promptly propose corresponding management strategies for existing construction safety issues. In addition, companies also need to implement safety construction awareness into the company's development strategy, arouse employees' attention to safe production, and promote the safe construction of corporate construction projects. Based on this, the construction industry needs to continuously improve the overall safety management strategy from the actual construction site. The construction industry should promote construction site management through the application of management methods and management techniques, provide strong assistance to the implementation of the project, and promote the construction of project safety management.

2. THE CURRENT SITUATION AND CHARACTERISTICS OF SAFETY SUPERVISION AND MANAGEMENT ON CONSTRUCTION SITE

2.1 Current Situation of Safety Supervision on Construction Site
In recent years, China's economy has continued to rise and the construction and construction industry has gradually grown, which has led to a gradual increase in construction site workers. Nowadays, China has put forward requirements for safe production in various industries. Due to the difficulty of construction in the construction industry, the large number of engineering staff, and the difficulty of work coefficients, this requires construction companies to actively pay attention to the safety supervision and management of project site construction and fully improve their comprehensive management level. However, judging from the occurrence of accidents in recent years, the safety management of construction enterprises has not yet reached the standard, the sense of responsibility in
the enterprise is not in place, and the safety management implemented by the enterprise engineering construction is not strong enough. The implementation of project safety in construction enterprises affects the safe development of the society as a whole, and is related to social stability and the acquisition of people's life benefits. The construction difficulty coefficient is relatively high, and the construction sites are generally high-altitude operations. Moreover, the environment of the construction site is complex and changeable, which is inevitably a challenge for construction workers. In addition, the conditions of the construction site are relatively harsh, and the safety performance of the project construction is poor. This requires construction companies to conduct safety training for construction personnel while pursuing economic benefits. Enterprises need to ensure that construction workers can safely carry out the construction process, and construction units need to actively strengthen their own safety awareness to enhance the safety awareness of construction workers. The construction unit needs to supervise the construction process of the construction staff reasonably, and ensure that the staff carry out the construction after taking the safety measures, so as to promote the stable development of the society.

Nowadays, construction accidents still occur, and the safety problems of construction workers have a wide range, and they are all fatal factors. The construction unit should actively reflect on its own safety measure management level based on different data, and improve the safety supervision and management of the enterprise project site construction according to its own shortcomings. For example, Table 1 is the integrated data of the accident in June 2019. From the chart, we can see that there were 43 accidents and 46 deaths in June 2019. Among them, falling from height accounted for the largest proportion, and other factors such as collapse accidents and object strikes also caused serious harm. Based on this, construction companies can avoid the formation of safety accidents in time according to the annual accidents. This helps to ensure the safety of every construction worker, and to find corresponding solutions to the causes of the accident. This can actively improve the current construction site safety management issues and promote the effective completion of the project.

| Serial Number | Reason          | Deaths/person | Number of Accidents/Time |
|---------------|-----------------|---------------|-------------------------|
| 1             | Fall from Height| 22            | 22                      |
| 2             | Collapse Accident| 9             | 6                       |
| 3             | Other Accidents | 3             | 4                       |
| 4             | Object Strike   | 8             | 8                       |
| 5             | Mechanical Damage| 1             | 1                       |
| 6             | Lifting Injury  | 2             | 2                       |
| Total         |                 | 46            | 43                      |

2.2 Characteristics of Safety Supervision and Management on Construction Site

2.2.1 The Construction Scale of the Project is Growing Rapidly, and the Construction is More Difficult

At present, the scope of the construction site is limited, and the number of construction personnel is large. The construction process requires more equipment and the construction period is long. Moreover, large-scale installation equipment that needs to be used on site. This leads to lower safety at the construction site, and the potential safety hazards at the construction site are gradually increasing.

2.2.2 Complex Building Components and Difficult Management

Due to the large scale of the construction project, it requires the cooperation of multiple investors to complete the construction of the project. This makes the subject of project construction unclear, and most of the subjects of construction are private enterprises. In order to avoid government-level management, some construction units did not comply with regulations. As a result, the interests of
construction workers cannot be fully protected. Coupled with the large amount of project construction, the difficulty of project construction management is correspondingly increased, and the relevant departments cannot manage the project construction in time.

2.2.3 High Mobility of Construction Personnel
The increase in the scale of construction has led to a gradual increase in the demand for construction personnel. However, most of the construction workers are migrant workers, and the work stability of migrant workers is low. In the process of project implementation, their professionalism is low, and some construction personnel have substandard skills and low work awareness. However, due to the large number of workers on the construction site and the high mobility, construction units cannot implement targeted training. Part of the safety management work still has formalism, and there is no real implementation of safety supervision and management. This has led to the gradual expansion of hidden dangers in construction sites.

3. PROBLEMS IN SAFETY SUPERVISION AND MANAGEMENT OF CONSTRUCTION SITE

3.1 The Overall Construction Management Level is Low and the Sense of Responsibility is Weak
With the increasing number of construction projects nowadays, the difficulty of engineering construction management is gradually increasing. Some construction units are still not aware of the problem of witnessing the safety supervision and management of the construction site, the safety management of the engineering construction is still not in place, and there are many hidden dangers at the construction site. Moreover, there are various forms of on-site safety hazards of things, the level of on-site supervision and management is low, and the safety awareness of on-site workers is relatively weak. Whether it is construction personnel or on-site management personnel, pay little attention to safety issues and do not pay attention to the prevention and control of potential safety hazards. There are still improper operations and irregular construction at the construction site. This affects the safety of project construction, and the safety of staff is not fully guaranteed. At present, in order to avoid government supervision, some construction companies have not carried out construction projects in strict accordance with genetic regulations. There are also insufficient funds for safety production and wage arrears for migrant workers. This has led to hidden safety hazards not being addressed from the root cause, and the inadequate safety protection measures for on-site construction personnel have led to safety accidents.

3.2 Incomplete Corporate Management Coverage
Nowadays, the work style of construction enterprises has undergone tremendous changes, which makes the construction management of enterprises also change with the change of construction forms. Due to the use of various new technologies at the accident site, the potential safety hazards that have occurred have also changed. Enterprises are not paying enough attention to new types of potential safety hazards, or even without corresponding safety management measures, thereby expanding the scale of risk management. If the construction unit still adopts the traditional safety management method, it will lead to insufficient coverage of the safety management scope of the construction site, and the goal of zero accident safety will be difficult to achieve. This makes workers' safety protection without corresponding measures to rely on, and the economic benefits of enterprises are also difficult to obtain. Therefore, the construction unit must reasonably arrange safety management methods according to the actual construction conditions at different stages and different construction characteristics to ensure the safe implementation of the project. Besides, when accidents occur in some enterprises, management personnel are less effective in resolving safety incidents, and no one is responsible for safety incidents, which leads to the failure to legally obtain workers' rights.
3.3 Enterprise Safety Awareness is Relatively Weak

At present, the safety awareness foundation of most construction companies is relatively weak. Moreover, most of the current engineering construction uses new materials, new techniques and other forms of construction. However, most of the construction workers are migrant workers, and the safety education and training of enterprises cannot be carried out in time. The construction approval process is relatively slow. The unit had improper emergency response to safety accidents, poor implementation of fire protection and accident prevention at the construction site, and did not conduct safety training for construction personnel or organize corresponding safety drills. This leads to the fact that workers cannot avoid the injury caused by the accident in time if the story suddenly happens. Moreover, some companies did not plan a reasonable emergency plan before the construction, and the safety protection equipment did not conduct the inspection in accordance with the established specifications, resulting in unqualified safety protection equipment. In addition, in order to maximize the economic benefits of the enterprise, some companies tend to reduce the cost of security work and reduce the cost of security work. This violates the standards for the use of protective equipment, which in turn will lead to the formation of security risks. The safety factors that cause accidents at the construction site are mainly composed of the factors in Table 2. Among them, falling from height accounted for up to 50%, object strikes accounted for 22%, collapse accounted for 10%, mechanical damage accounted for 11% and drowning accounted for 5%. Therefore, the construction unit must adopt corresponding solutions according to the factors of its own engineering project accidents to reduce the occurrence of engineering accidents. This can ensure that workers can complete the construction within a safe range, thereby promoting the further development of the factory implementation.

| Safety Factors | Fall from Height | Object Strike | Collapse Accident | Mechanical Damage | Drown |
|----------------|------------------|---------------|-------------------|-------------------|-------|
| Occupy Ratio   | 50%              | 22%           | 12%               | 11%               | 5%    |

4. IMPLEMENTATION MEASURES FOR SAFETY SUPERVISION AND MANAGEMENT OF CONSTRUCTION SITES

4.1 Improve Relevant Laws and Regulations and Strengthen the Internal Supervision System of the Enterprise

If the construction unit wants to strengthen the safety supervision and management of the construction site, it must promptly establish and improve relevant laws and regulations, strengthen the internal supervision and management system of the enterprise, and ensure that there are regulations for safety management. This can actively complete the on-site safety management work and pave the way for the long-term development of the enterprise. The government should establish and improve relevant laws and regulations, promulgate relevant laws in a timely manner based on the construction safety situation, and build a bridge of communication with enterprises in a timely manner. First of all, the government should punish the construction unit for violations in a timely manner, thereby enhancing the authority of the relevant legal content. However, Chinese laws are now less targeted. Therefore, when formulating relevant regulations, companies must strengthen the governance of violations of construction units based on the current construction site construction process, so as to restrict the company's construction behavior and provide security for safety management. Secondly, government departments need to impose corresponding penalties according to different violations of the enterprise, and impose penalties based on the timing of the violation of the enterprise. Moreover, the government should refine the corresponding violations and narrow the scope of relevant penalties to ensure the fairness and justice of the punishment system. Third, the government needs to establish relevant credibility for construction companies and improve corporate management files. The government and relevant departments must actively establish relevant information platforms to record corporate violations and outstanding behaviors in this information database. This is conducive to the formation of
the credibility of the company, and the use of information-based management methods to regulate corporate behavior. In this way, construction units that fail to meet safety management standards can be punished in a timely manner, and corporate actions can be recorded in the corporate reputation file in a timely manner. This will help correct the behavior of weak awareness of safety management in the construction market, so as to ensure the implementation of safety management measures for construction units.

In the meantime, enterprises must strengthen their internal supervision system in a timely manner to ensure that there are corresponding supervisory and management personnel within the enterprise to implement corresponding management for the construction site. First of all, what an enterprise needs to do is to cultivate a team of supervisory and management personnel to ensure that the supervisory and management staff have a detailed grasp of the work content of the construction site. This is conducive to the enterprise to understand the status of the project construction site, so as to combine the actual situation to complete the safety management of the project construction site. Secondly, enterprises can learn from the safety management system that has been initially successful by government departments, and promptly restrict the overlap of internal management systems and waste of supervision and management resources. Enterprises can assign relevant supervisory staff according to different work content on the construction site, so that the responsibilities of enterprise safety supervision work can be clearly divided. Otherwise, companies need to grant relevant rights to various supervisory staff to enhance their authority. This can not only improve the efficiency of supervision, but also effectively reduce the cost of corporate supervision.

4.2 Improve the Construction Process to Ensure the Safety of the Construction Site

If the construction unit wants to fully realize the goal of completing the content of the enterprise's safety management work, it must improve the internal work flow of the enterprise in time. The construction unit should improve the relevant systems according to the construction process at all levels of the enterprise, so that the safety management system can penetrate into each level of the construction project, enhance the efficiency of the internal safety construction management of the enterprise, and then protect the life safety of the construction personnel. The improvement of the construction process can help the construction unit formulate the corresponding safety management system and improve the corresponding management system according to the needs of different departments. Moreover, according to the different work content at different stages, the enterprise formulates corresponding management methods, implements corresponding countermeasures, and clarifies the work responsibilities between various departments. This is conducive to the company's coordination and unification of various departments, and provides a strong construction foundation for project construction. Meanwhile, enterprises must ensure that all tasks can be completed with high quality to ensure the economic benefits of the construction unit. Enterprises can implement a series of targeted measures to realize the safety supervision and management of the construction site.

During the construction process of construction projects, there are often severe weather such as high temperature and thunderstorms. Severe weather can easily lead to safety accidents during the construction of the project and affect the safe construction of the project. As a result, companies must implement corresponding regulations for inclement weather in light of the current actual conditions. This can ensure that the work is carried out in a safe condition. According to different weather conditions in different seasons, the current work progress is regularly checked, and reasonable response measures are designed to ensure the safety of the construction site. Simultaneously, for engineering projects with frequent accidents, the relevant departments should pay attention to the causes of the frequent accidents and impose corresponding penalties to ensure the safety of the construction site.

4.3 Clarify the Safety Management Mode of the Construction Site

The construction unit shall actively respond to relevant national policies to ensure the safety of workers in construction, and achieve the goal of comprehensive management of on-site management personnel and safe work of construction personnel. If construction companies want to enhance their economic
strength and ensure their long-term development, they must actively respond to the call of national policies and guidelines. Construction companies should ensure the safety of construction personnel, and reasonably arrange safety management measures according to the construction conditions of construction personnel to ensure that construction can be carried out effectively. Firstly, companies need to improve their own safety supervision and management measures in accordance with national laws and regulations. Currently, China has promulgated laws and regulations related to production safety. Among them, it contains content related to actively protecting the legitimate rights and interests of people's lives and construction safety. Therefore, enterprises must follow the pace of the country, actively respond to relevant management strategies, and continuously strengthen the management and supervision of safety issues at construction sites. Secondly, enterprises should strictly abide by the relevant regulations on production safety, improve the internal safety management system of construction enterprises, and carry out corresponding reforms along with the innovation of construction technology, fully increase the importance of enterprises on construction safety management, and ensure the effective construction of enterprises. Thirdly, companies need to enhance the supervision awareness of construction site management staff. In the process of on-site construction, enterprises should use construction resources rationally to ensure that construction equipment can fully play its role. Moreover, enterprises must ensure the safe operability of engineering equipment and provide protection for the life safety of construction workers. Compared with the current management content of construction enterprises, enterprises should actively verify whether on-site safety management measures are in place before construction, so as to prepare for the next construction work. At the same time, the company should check whether the safety management system at the construction site is implemented to every manager, whether relevant supervision and management and staff are in place, and whether the mechanical equipment required for construction is complete. These are the work content that must be prepared before construction, and these can provide a strong foundation for the next safety management of construction enterprises. During the construction process, the company must not only increase the awareness of construction staff, but also pay attention to the update of construction technology, and timely improve the internal safety management system of the enterprise. In the entire construction site, companies should strengthen site management and safety protection, timely inspection and maintenance of large mechanical equipment, to ensure that every work can be carried out reasonably. Fourth, companies need to regularly enhance the safety awareness of construction personnel during the construction process, strengthen the awareness of responsibility of on-site construction management personnel, and provide protection for the life safety of construction personnel. At the end of the construction process, the project management department should integrate the overall implementation of the project, actively save the current file content, and positively evaluate the relevant construction situation. Furthermore, companies should review the occurrence of accidents during the construction process to avoid similar situations next time. Finally, the enterprise must actively pay attention to the maintenance work after the completion of the project, and the construction unit shall supervise the maintenance work to the end. This helps to immediately improve the problems that occur in the building and ensure that the high-quality construction of the project is put into use.

5. CONCLUSION
In order to ensure that the safety supervision and management of construction projects can be done well, enterprises must actively pay attention to the safety management of construction sites, because they provide guarantee for the construction of engineering projects. Firstly, the construction unit must establish and improve the corresponding management system, strengthen the internal supervision system, and then improve the construction process. Secondly, companies need to ensure the safety of the construction site. Furthermore, companies should clarify the management mode of the construction site and follow the national pace to complete the accident site management work. This will help enterprises to ensure the effective completion of engineering projects and promote the active development of construction enterprises.
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