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Analysis of Construction Engineering Quality Accidents Based on Enterprise Benefits

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Abstract: With the continuous development of China's construction industry, the quality and safety of buildings has become one of the hot topics in society, which has attracted more and more attention. The competition within the construction industry is more frequent and fierce. In order to improve the construction quality and expand the competitiveness of enterprises, construction enterprises must optimize the construction quality and project management. In the increasingly competitive market environment, construction enterprises must deeply understand the importance of construction project management and quality control. Based on the enterprise benefit, this paper discusses the optimization and control measures of architectural engineering construction, analyzes the management situation of architectural engineering, and describes the problems easily occurred in construction management and the optimization methods. High-quality construction projects can not only bring huge economic benefits to investors and society, but also make construction enterprises become direct beneficiaries.

1. Introduction

With the deepening of reform and opening up and the continuous advancement of China's urbanization process, the construction industry has received excellent development opportunities, and the internal competition in the construction industry is also increasing [1]. In construction engineering, daily management runs through the whole construction stage and comprehensively involves all links of engineering construction. Once quality accidents occur in construction projects, such as house collapse, house collapse, road subsidence, bridge inclination, etc., resulting in casualties, it will cause serious losses to the country and society [2]. In order to enhance their competitiveness, construction enterprises should start with controlling construction quality and optimizing project management, so as to improve their core competitiveness and realize the stable and sustainable development of the construction industry [3]. High quality projects not only bring potential benefits to investors and society, but also bring good reputation to construction enterprises, so as to enhance the competitiveness of enterprises. In order to improve the construction quality of construction engineering, the staff must clarify the importance of construction engineering management and construction quality control, improve the project management level through practical means, strictly control the construction quality, and create greater economic benefits for construction enterprises [4]. With the development of the national economy, the

construction industry has gradually become the pillar industry of China's national economy. However, due to the nonstandard construction market, imperfect construction laws and regulations, and chaotic internal management, the construction party's “return” and other project quality accidents [5]. This has not only seriously infringed upon the interests of the state, society and the people, but also caused huge losses to people's lives and property. Therefore, how to prevent engineering construction quality accidents is an important proposition in the research of engineering construction quality problems.

For contemporary construction projects, quality is the most important construction index, which is related to the development of enterprises and people's life safety. Based on this, enterprises should pay attention to the effective implementation of construction quality management. Therefore, effective measures must be taken to control quality problems in advance and deal with quality accidents in time. We should solve the problems of project quality in combination with the problems encountered in project construction, eliminate the hidden dangers of quality accidents, and put forward effective measures to control quality in advance [6]. High quality construction projects can not only bring huge economic benefits to investors and society, but also make construction enterprises become direct beneficiaries. Combined with the actual situation of the project, this paper comprehensively improves the quality control and management level by adopting practical engineering management and construction quality control strategies.

2. Importance of Construction Engineering Management and Construction Quality Control

Construction management refers to the effective management of the progress and quality of the construction site by managers in combination with the actual construction situation. Construction management and quality control are of great significance to promote the development of the construction industry. From the perspective of enterprise development, the effective implementation of construction quality control can help enterprises establish a good market image and maintain a stable development trend. From the perspective of the project itself, it can reduce the impact of various unfavorable factors on project construction and create a safe and stable living environment for people [7]. In the process of building project, efficient construction quality control is very important, which is related to the construction effect of the project itself and the development of the enterprise, and must be highly concerned by the enterprise management. Traditional construction management can no longer meet the needs of the future development of the construction industry. To fundamentally improve the management level of construction projects, it is necessary to innovate management methods and concepts and carry out better management work.

A large number of machines, facilities, materials and people are concentrated in the limited space of the construction site. At the same time, due to the complexity of construction projects, work conflicts between different types of work often occur in the same workspace, resulting in frequent safety accidents. For example, Table 1 shows the statistics of construction safety accidents from 2016 to 2020.

Table 1 Statistics on The Types of Construction Safety Accidents from 2016 to 2020 (%)

	2016	2017	2018	2019	2020
Falling from height	51.19	52.01	46.28	49.25	55.55
Collapse	17.64	18.20	21.35	20.54	13.62
Overweight	6.76	5.72	6.97	5.22	5.43
Electric shock	6.68	6.23	6.56	6.17	5.57
Other	17.73	17.84	18.87	18.82	19.83

The development of architecture is an important driving force for social and economic

development. In recent years, due to the needs of urban construction, China's construction field is extremely active, and the construction economy is developing rapidly, and its proportion in the social economy continues to rise. With the passage of time, the development trend of construction economy gradually slows down and enters a relatively stable development period. Under the background of this new economic normal, construction enterprises are facing great pressure to survive. If enterprises want to have a better foothold in the current construction field, they must adjust their development ideas and truly realize the importance of project management and construction quality control [8]. The construction involves many links, which is a complex and systematic project. The management level of each link is closely related to the construction quality. Therefore, managers must run through all aspects of construction. This can not only optimize the management mode, but also improve the management quality level, which is conducive to strengthening the construction quality control.

3. Construction Project Management and Construction Quality Control Measures

3.1 Construction Quality Control Measures

For construction projects, the most effective way to improve the construction quality is to apply the construction technology effectively and optimize the problems in time. Common building engineering technologies in actual construction include earthwork construction technology, foundation construction technology, scaffold technology, reinforced concrete construction technology, waterproof construction technology, roof construction technology, etc. In order to ensure the quality and stability of construction projects, construction enterprises should not only optimize and improve the construction expertise, but also pay attention to scientific and reasonable management of construction projects. Construction management includes construction progress management, site construction management and so on. Construction is a kind of enterprise with a certain risk, which has a large investment, a large number of participants and a long construction period. The risk runs through the whole project, and a slight mistake will lead to heavy casualties and economic losses, which will not only threaten the orderly progress of construction projects, but even cause the complete failure of construction projects. As the basic work for the smooth development of engineering projects, the construction quality management model must match the current overall situation in the construction field, so as to give full play to the important role of quality management.

Enterprises should pay attention to the innovation of construction management mode, introduce various advanced management technologies and management concepts, pay attention to the effective integration of information technology and management work, and promote the informatization process of construction quality management. The powerful spatial information processing ability of GIS can be used to express the construction process of architectural engineering. The structural design of the system is shown in Figure 1.

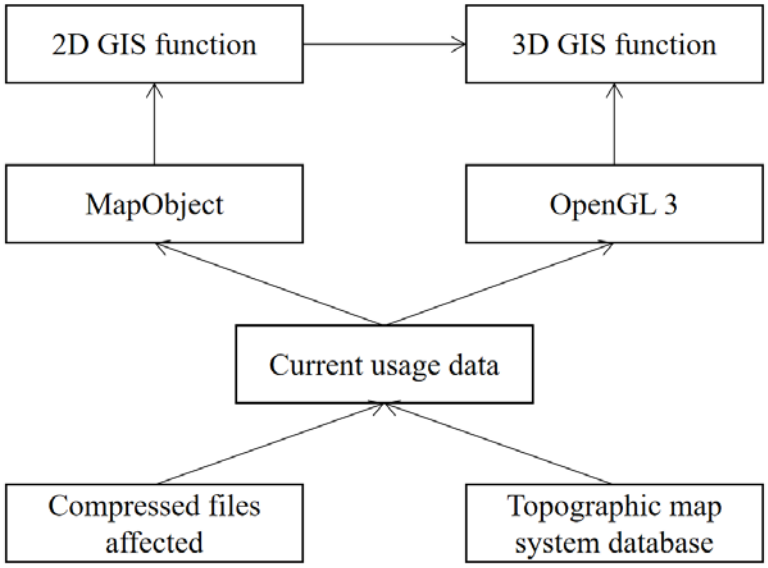

Fig.1 Structure Design of Geographic Information System Based on Big Data

Construction technicians are front-line personnel in engineering, and the quality of construction determines the quality of buildings, so improving the quality of construction technicians is inseparable from the quality of buildings. In order to improve the professional quality of construction technicians, the construction enterprises must first have and maintain a stable construction team with core technical force, and then carry out standardized management, frequently update professional technical knowledge, and constantly improve the technical level of construction personnel to adapt to the new construction market. On-site construction management is an important part of the construction management of the whole building project. As far as the current management situation is concerned, many projects are prone to problems such as insufficient standardization of management ideas during on-site construction management, which makes it difficult to fully implement the specific management methods, resulting in hidden dangers, which will seriously affect the progress of the whole project. During the development of the project, the actual construction progress deviates from the regulations and standards in the engineering design. By referring to the information management system, we can find out the links of illegal construction behavior and irregular operation, and then choose targeted measures to optimize the corresponding problems and ensure the smooth progress of the project, so as to further ensure the construction quality.

3.2 Optimization Measures for Construction Project Management

It is necessary to strengthen the organization of construction management, do a good job in construction investigation, arrange construction management through investigation results, reasonably organize the construction personnel, confirm the key points and difficulties of construction, and ensure that construction management can play its due role. When designing the construction plan, attention should be paid to detailing the construction plan, and different planning objectives should be specified according to the time period. The key construction contents of each stage should also be marked in detail, and detailed explanations should be given to all involved departments during the construction preparation period. In order to achieve this goal, construction enterprises need to learn from the mature information management experience in the industry, and at the same time refer to the actual situation of the project and make corresponding improvements. On-site construction management has not been given due attention, which is largely due to the fact

that construction personnel and even managers themselves have ignored the importance of on-site construction management. Many people think that their responsibility is only to complete the work at hand, and their work enthusiasm is not high. In order to improve this situation, management departments need to establish a reasonable performance mechanism and accountability mechanism, set up a performance appraisal system, and reward or spur construction personnel according to their actual performance and work quality.

Because reinforced concrete is the most commonly used main structure of modern buildings, the reinforcement technology and concrete technology are generally inseparable, and they are basically carried out at the same time, thus ensuring the overall stability of buildings. When applying reinforcement technology, the technology should be selected according to the building construction design scheme and the actual engineering situation, so as to ensure that the joint can bear the stress at different positions. Managers can use BIM technology to optimize the original management methods. In the design and construction stages of the project, the BIM model can be combined to realize the prior control of quality problems, and in the scheme formulation process, various hidden dangers in the project construction can be eliminated, and the advanced construction quality management mode can promote the stable development of enterprises and realize the construction of high-quality projects. Figure 2 shows the application of building information model in building practice.

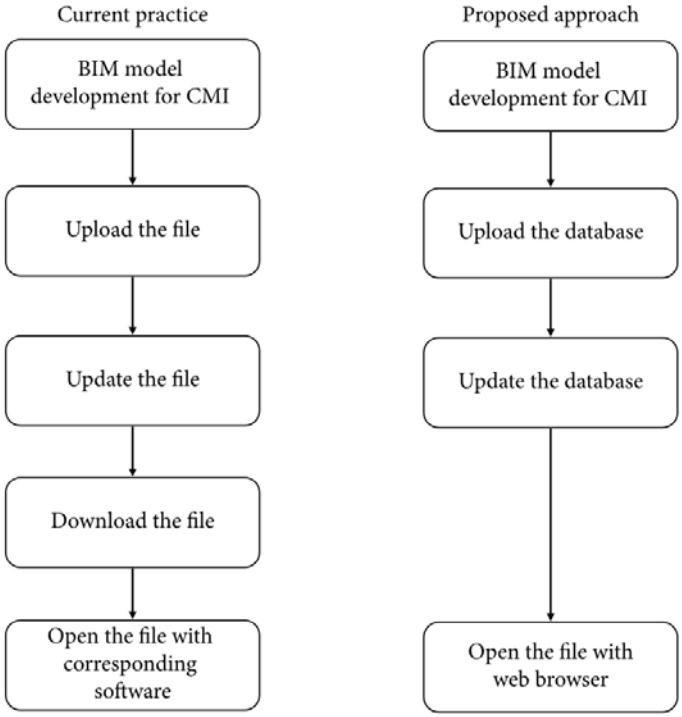

Fig.2 Application of Building Information Model in Architectural Practice

If you want to improve the information management ability of construction projects, as a construction enterprise, you should predict all kinds of problems that may suddenly encounter in the practice of information management, and be aware of the benefits of creating an information management system, so as to reduce the possibility of all kinds of quality and safety problems. The construction unit is in charge of all the investment costs of the construction project, and is also the biggest beneficiary of the project investment. In China's current construction market, the construction unit not only has the initiative in bidding for design, construction and supervision, but also has the right to refuse to pay the project funds. Therefore, the construction unit should bear the

corresponding responsibilities while enjoying so many rights. Before officially starting the construction activities of the project, the construction enterprise should conduct a comprehensive investigation on the project, and at the same time, combine with the corresponding laws and regulations, create the corresponding mechanism, and then explore the enforceability of the management and control mechanism. Only in this way, the information management will naturally follow.

4. Conclusions

With the progress of the times, information technology is born in time, and is widely used in various industries, as is the construction industry. In the construction project, the application of information technology can implement information management at the start-up stage of the project, thereby reducing the workload of project supervisors and improving office efficiency, and at the same time, accurately grasping the project information. The sustainable development of the construction industry has brought development opportunities for construction enterprises, and at the same time, it has made the competition within the construction industry more intense. Enterprises must ensure the construction quality, improve the application efficiency and scientificity of construction technology, and carry out reasonable project management. When implementing quality control in construction projects, it is necessary to pay attention to strengthening the quality control in construction links. On the one hand, it ensures that the construction quality of the building project meets the relevant regulations, so that the personal safety of the relevant staff is effectively guaranteed. On the other hand, it reduces the economic cost of the project and avoids the waste of resources. From the project manager to each construction personnel, they should have a high degree of quality awareness. During construction, relevant specifications and acceptance standards should be strictly implemented, and each working procedure should be controlled layer by layer. Only in this way can quality accidents be prevented and high-quality projects be achieved.

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