

Construction of Safety Monitoring System for Construction Site Based on BIM Technology

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0 Introduction

The emergence of security incidents in the construction sector will not only affect the progress of construction projects, but also lead to significant loss of property and even related to human life, so the safety aspects of the construction area cannot be overlooked. At present, with the continuous emergence and updating of new technologies in the building, the methods used to prevent safety hazards in the field of construction have become more diversified, for example, through the camera to monitor this to a certain extent not only can reduce the safety accident of the occurrence, but also to avoid a lot of financial and material loss. But for now, for the construction of the safety of the construction process monitoring, although with a certain technical means, but most of the construction staff or rich work experience to make their own subjective judgments, once found that there are signs of problems, timely to stop or re-adjust the work to avoid accidents and accidents occurred.

BIM is widely used in the field of construction technology, it is easy to operate, but also has information sharing, cooperation projects, visualization and other advantages, so through the use of BIM technology can solve a lot of security problems in the field of construction. BIM technology can be used to talk about the construction of the two drawings gradually converted into a three-dimensional dynamic model, you can further care-

ful analysis of the model, once the security problems, should be promptly stopped taking the appropriate solution strategy. In this paper, through the development of BIM technology, this paper further analyzes its application and research in the construction safety monitoring. In view of the high incidence of safety accidents, the imperfect detection system and the slow construction efficiency in the construction process, monitoring the lessons learned, and further build the construction process of the safety monitoring system.

1 Construction of Site Safety Monitoring System Based on BIM Technology

1.1 System principle

In the construction site safety monitoring process, you can use the BIM technology visualization function, further to the structure of the building frame to detect, to further reduce the occurrence of building safety accidents, so as to ensure the personal safety of the relevant staff. For the construction of the security precautions, the use of BIM 4D technology on the basis of further analysis of the causes of the problem can be resolved in a timely manner.

The system principle used in the construction process is mainly through the monitoring of video on which the object labeled with the corresponding label, and through the corresponding software spread to the computer, and through the BIM3D/4D technology to produce a three-di-

Abstract: In recent years, with the development of society and the progress of technology, construction enterprises pay more and more attention to the safety problems in the construction process. BIM technology is an indispensable technical means in the construction monitoring process. It integrates various stages of construction of the relevant staff of the information technology. In the construction process involved in the construction unit, participants, related staff, etc., for the construction site environmental factors dynamic complex, a large number of people on the scene, large workload and other issues, making the construction site security risks and monitoring more difficult. In this paper, from the current situation of the development of construction projects, the construction of the field of security and defense measures are imperfect, the participants side of the construction side communication is not smooth, low construction efficiency, safety accidents often occur and other issues, the corresponding coping strategies, continue to draw lessons from the excellent experience at home and abroad, in the BIM technology on the basis of continuous improvement of construction safety monitoring system.

Key words: security monitoring; BIM; real-time visualization; information automation

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mensional model, the use of BIM technology visualization function to further the construction process of the security status presented in front of the relevant personnel. And in the field command of the relevant personnel can command to mobilize other personnel to cooperate with the co-processing.

1.2 System structure

(1) Information collection layer

Information collection is mainly through the relevant software technology to collect the construction process data, to further understand the progress of construction and related security details. It is divided into three steps: design tags, preparation tools and implementation.

(2) Information processing layer

Through the information collected in the last stage, the information processing is further processed, mainly through scanning RFID tags into the computer BIM model, according to the specific circumstances of the construction process, such as the surrounding environment changes, parameter settings, and construction progress aspect. In the construction project management process, the relevant responsible personnel on the site construction of each angle, every detail should be carefully checked, so as not to leave a security risk, in the inspection process, once found a security risk, BIM model will be issued security alerts, the relevant staff will promptly find the reasons, while in the vicinity of dangerous areas set up a yellow warning signs, to remind others not to close to avoid personal safety is threatened. The site should be managers to maintain order, and timely response to measures to be resolved.

(3) Information application layer

The last stage of processing and finishing information, and gradually into the information application level, while this is the construction process of a more critical stage. This stage begins before the implementation of the project, mainly in the in-

formation processing stage, its main operation is: through the relevant staff communication, for the construction of the safety issues in all directions, many aspects of careful inspection and investigation, to avoid the occurrence of major security incidents. The next is the construction of the BIM model, through the relevant technology to simulate the construction process of the building to further analyze the possible security problems; the third is the use of BIM technology model of the overall structure of the building frame to ensure that the entire construction project work Personnel safety. In the construction process of the process is the most important monitoring stage, and at this stage first to design a good label, through the BIM technology visualization function, and ultimately the formation of a systematic and scientific security protection system.

2 System of safety monitoring system function analysis

2.1 Positioning tracking visualization, information transmission, storage automation

RFID reader by scanning the construction project in the process of design of the label and the implementation of positioning functions, the project can be the basic information, parameter settings, construction environment and other factors through the Internet to the BIM technology model, while the use of BIM technology visualization To simulate the construction process, to strengthen the staff to understand the model. In the construction process, found that the security risks should be adjusted in time to solve, should be isolated from the danger zone, to avoid some irrelevant people strayed, and thus hurt their own lives. RFID reader function is diversified, such as storing information, sending file information and increasing the number of times to read information, once the security risks, can quickly find out the reasons for the timely development of measures to avoid great security Accident, resulting in a lot

of financial and material loss.

2.2 Through the whole thing after the whole process, to achieve the dynamic monitoring of the point line

The most critical part of the construction process is to control the construction site, in advance to do all aspects of the preparatory work, although the control of the construction site can reduce the probability of security incidents, but cannot be completely prevented. The construction process of the security risks to a minimum can only be resolved from the source, as much as possible to find the cause of the cause of the accident and the development of relevant coping strategies, but also the construction process of all-round real-time monitoring, to the maximum extent to ensure the safety of the staff. Through the use of BIM technology, with the investment side and the construction side of the various aspects of communication, the handling of security risks to achieve the dynamic monitoring of the point line, and then continue to improve the security system.

2.3 Multi-party participation, communication in a timely manner, co-processing

In the past, the construction of the security system is simple, not so perfect, mainly responsible for the safety control of the relevant responsible person for management and implementation, there is no scientific basis at all, but by virtue of the previous experience of the person to deal with, Large subjectivity and one-sidedness, which is not conducive to the development of security in the construction sector. You can use the BIM platform to share resources and construction units to communicate in a timely manner to further understand the progress of the construction and construction of the relevant matters. From the construction project construction should be unified personnel and allow multi-party participation for easy to communicate in a timely manner when encountered a sudden security incident to facilitate processing.

2.4 Information dynamic update to form BIM security information database

With the continuous development of information dynamic, BIM technology applications are also expanding, especially BIM technology itself is constantly updated, and gradually form their own data database. In the construction of the project to the completion of the project, you can use this information database for the back of the work to provide relevant information as a supplement, but also for other enterprises to do a reference to the construction of the project, so as to further promote the prosperity of the enterprise and improve the safety information database of the construction industry.

3 Conclusion

In the field of construction, through the continuous use of BIM technology, and constantly improve the construction site safety protection system, which is committed to maintaining the management of the construction site, subject to the construction unit management and leadership, and gradually overcome the traditional construction projects in the unilateral participation, exchange communication is not timely, imperfect monitoring system and other defects, and gradually become a multi-party participation, scientific management and smooth communication of the construction process, and gradually achieve a scientific, systematic and efficient monitoring process. By analyzing the BIM information database in the construction project, we will further understand the safety monitoring system of the construction project and improve the safety protection level of the construction industry and the whole country.

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