Application Analysis of Bim Technology in the Architectural Design Stage

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Keywords: Bim technology, Architectural design, Application analysis

Abstract: With the development of advanced science and technology in China, the sustainable development of the economy has been promoted. At the same time, more and more people are pursuing a higher quality of life. Therefore, people's requirements for the living environment and buildings have gradually increased and become more specific. In the architectural design stage, the use of BIM technology is becoming more and more common. It can not only help the color matching of the building in the design stage, but also present the structure and model of the building more intuitively, helping designers in Make better improvements in the architectural design stage. Therefore, this article analyzes and explores the specific application methods of BIM technology in the architectural design stage by explaining the meaning of BIM and its role in the architectural design stage.

1. Introduction

With the development of science and technology in my country, BIM technology is gradually applied to all walks of life, especially the architectural design industry. In the construction industry, the application of BIM technology is relatively more complicated, but it can effectively solve various difficulties encountered in the architectural design stage. With the improvement of my country's comprehensive national strength, the development prospects of my country's construction industry are getting better and better, and the architectural design work has also achieved certain results. However, in today's society that continues to develop and change, the existing BIM technology has gradually been unable to meet the needs of current architectural design. Therefore, relevant designers are required to update their concepts and innovate BIM technology to enable continuous improvement of my country's architectural design work.

2. The Importance of Bim Technology Concept and Its Application in the Architectural Design Stage

2.1 Bim Technology Concept

BIM, building information modeling, generally speaking, BIM technology is a kind of data-based tool, this technology has strong practical value, especially for the architectural design industry. The application of BIM technology can promptly discover potential safety hazards and various problems in the architectural design stage, and can effectively improve the work efficiency of building construction. BIM technology can clearly show people the various aspects of architectural design through a three-dimensional visualization model. These parameters can further improve the accuracy of architectural design work, and at the same time play a huge role in saving construction costs and improving work efficiency [1]. For example, in architectural design work, it is completely impossible for designers to rely on their own imagination when constructing buildings. Therefore, the visualization features of BIM technology can be fully utilized at this time, and the effects of related 3D special effects software can be visualized, and BIM Technology can be used not only in this stage of building a building, but also in the whole process of building construction. BIM technology can pay attention to all aspects of construction engineering, play a good role in

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coordinating the work between various departments, and can optimize the architectural design plan in real time.

2.2 The Importance of Using Bim Technology in the Architectural Design Stage

It is very important to apply BIM technology to construction projects. BIM technology can establish a complete building structure model through information and data. It can not only clearly show the appearance of the building, but also the overall structure and layout of the building. Presented in 3D stereoscopic way. Therefore, the use of BIM technology in architectural design can truly restore the building structure designed by the designer as much as possible. For the current architectural design stage of our country, when some designers are working on the construction of the architectural model, because they have not done all aspects, the architectural design work lacks a certain depth. At this time, if BIM technology can be used to scientifically and effectively control the scope of the operation interface, it can help designers to analyze the building structure in depth. At the same time, the use of BIM technology in architectural design work can also achieve collaboration effects. At this time, relevant designers only need a platform to complete their work, which not only enhances the work efficiency of designers, but also increases the staff's work in architectural design. Communication, open information sharing channels [2]. In addition, the use of BIM technology can also enable architectural designers to make different modifications to the same location in the design drawings, and can also change the content of the central file in real time to achieve the effect of information synchronization and improve the efficiency of communication. Therefore, through BIM technology, designers can quickly obtain information about data changes in architectural design, effectively shorten the time of information transmission, and fundamentally improve the work level and quality of architectural design.

3. Application of Bim Technology in the Architectural Design Stage

3.1 Preliminary Simulation Design of Architectural Design

Because BIM technology is mainly used in design-related industries, it is a kind of virtual model, so after the initial completion of architectural design work, BIM technology can accurately simulate the construction process and methods of the building, so that it can discover some of the architectural design stages in time No shortcomings and hidden safety hazards have been discovered, and effective measures shall be taken to deal with and remedy them in time. Before the building officially starts construction work, the BIM technology can be used to modify the construction plan in real time to ensure the perfect construction process. Secondly, the use of BIM technology can also effectively simulate the specific bidding schemes of construction projects, such as the on-site construction of construction projects and other specific processes. Through the simulation of BIM technology, the shortcomings of construction work can be discovered in time, and the cost of construction projects can be effectively controlled. And safety issues to further optimize the architectural design plan.

3.2 Analyze All Parts of the Building

BIM technology can not only make the three-dimensional presentation of the building body, but also further analyze the simulated three-dimensional model, and process the model of the building body in more detail. By using BIM technology to analyze the building body, the work of the designer can be enabled. The accuracy is improved, and more detailed processing is carried out in the architectural design to deepen the relevant personnel's understanding of the structure of the building. By using BIM technology for detailed processing work, it is possible to provide more guiding construction suggestions in the design work of the mechanical and electrical installation of the building, and reduce the cost and work errors required in the specific construction process to

lowest. No matter what kind of mistakes and difficulties occur in work, BIM technology can be used to improve the efficiency and cause of problems.

3.3 Analysis of Seismic Factors

In the work of architectural design, people usually have high requirements for the seismic strength of the building. Therefore, whether it is in the architectural design stage or the construction process, the seismic strength of the building is very important, and in the analysis of seismic factors Among them, BIM technology has a very important status influence. When completing the construction of the building model, the use of BIM technology can accurately analyze the impact of the external force on the building body, and it is difficult to use the previous two-dimensional graphic design to complete this link [3]. Moreover, in the architectural design stage, the traditional calculation method for the amount of various production materials required in the construction project is not only slow, but also not accurate. The structure of the building is presented in 3D using BIM technology., And then calculate the amount of engineering materials, which can effectively improve the efficiency and quality of work.

3.4 Sustainable Design

In addition to the above-mentioned applications in the architectural design stage, BIM technology can also be used for sustainable architectural design. Specifically, BIM technology can be used to analyze the actual soil environment and weather environment of construction projects in detail, to accurately grasp the soil quality and vegetation distribution of construction projects, and to carry out detailed analysis and processing. BIM technology can also analyze some unpredictable weather factors, such as fog, rain, etc., and can also simulate the impact of the surrounding environment after the building is completed. For example, noise and sunlight can be simulated by BIM technology. In the process, we can also add some factors with local humanistic feelings. In this way, in the work of architectural design and planning, the scenes simulated by BIM technology can be used to select coordinated work to mediate the contradictions between the owners and residents.

3.5 Building Structure Design

When carrying out the structural design of the building, the designer must fully think about the structure of the building. In the structural design, if the designer only designs or modifies a certain part of the building, it will make the subsequent construction phases chaotic and disorderly. Sex. Because in a construction project, investors need to invest more costs, and there is not only one architectural designer. Therefore, in order to ensure the benefits of the construction project, the architectural designer must conduct a detailed analysis and analysis of the structure of the building. Reasonable design, at this time, give full play to the advantages of BIM technology, designers can accurately grasp the structure of the building, and then input various effective information and data into the terminal system to correct the defects in the structural design.

4. Conclusion

In summary, although BIM technology originated in the machinery manufacturing industry, it has also achieved a series of results in its use in the construction industry. For my country's rapidly developing construction industry, the application of BIM technology has effectively improved the efficiency of building design, as well as the utilization rate of resources during the construction process, and reduced the hazards caused by potential safety hazards. However, in actual work, we have to choose different technologies according to the specific architectural design work. BIM technology cannot completely replace the previous technology, so it has certain limitations. Therefore, it is necessary to continuously improve the research level of BIM technology and

integrate BIM technology with other emerging technologies in order to give full play to the technical advantages of BIM technology in architectural design.

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