Research on the Application of Bim Technology in the Integrated Design of Green Public Buildings

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Abstract: with the Continuous Development of Domestic Social Economy, China's Construction Industry Also Presents a Trend of Rapid Growth. with the Continuous Progress of the Construction Industry, Bim Technology Has Become More and More Widely Used in Architectural Design, Especially in the Design of Green Public Buildings, Which Makes the Construction Quality of Construction Projects More Reliable. the Reason That Bim Technology Can Improve the Quality and Reliability of Green Public Building Design is That It Not Only Reduces the Overall Difficulty of Construction, But Also Makes the Process of Building Construction More Efficient. Therefore, This Paper Makes a Comprehensive Analysis of Bim Technology, Pointing out the Specific Application of Bim Technology in the Actual Construction Process, in Order to Provide Reference and Suggestions for the Relevant Industry.

1. Introduction

As We All Know, the Current Domestic Construction Field, Regardless of Building Scale or Building Height, Has Shown the Trend of Rapid Rise, and in This Construction Process, Many Advanced Measurement Technology and Modern Information Technology Have Been Widely Applied to the Specific Design Work[1]. in the Design of Green Public Buildings, Bim Technology Can Effectively Analyze and Study the Structure and Form of Buildings in an All-Round Way According to the Actual Situation of Green Public Buildings, and Make Data Modeling on the Computer Multimedia Software, So as to Present the Overall Form and Details of Green Public Buildings Scientifically and Intuitively, and Finally Provide Greater Construction for the Majority of Construction Enterprises Work Data Support.

2. Bim Technology in the Process of Green Public Building Design

Before the specific analysis, the majority of construction industry practitioners should have a clear understanding of the basic concepts of BIM Technology, because it is very helpful for the later analysis and understanding. From the macro point of view, BIM Technology should be clear that in essence, BIM Technology refers to the building information model, that is to say, the green building designed can show the actual shape of the building through various data models in the construction project. BIM Technology can use professional digital information to build and simulate a more simulated building engineering entity in detail, and the performance of the simulated building engineering entity can also be directly reflected[2]. In the design process of green public buildings, BIM Technology mainly shows five characteristics clearly, which are visibility, coordination, simulation, optimization and plotting. This also shows that BIM Technology can be widely used in green public building design, mainly because of these five characteristics. In the whole design process, we need to pay special attention to the BIM Technology Applied to the actual green public building design process, which is not only to integrate the collected digital information, but also to reflect a scientific application of digital information. When BIM Technology is applied in the design of green public buildings, the risk factors in the whole design process can be reduced in an all-round way, and then the actual construction efficiency of construction enterprises can be

improved effectively and scientifically[3]. By describing the basic concept of BIM Technology, we can clearly realize that it is necessary to apply BIM Technology scientifically if we want to improve the design quality of green public buildings.

3. Features of Bim Technology

3.1 Bim Technology Has Visibility in the Application Process

Green public building design staff should have a more clear understanding of the visibility characteristics of BIM Technology. BIM Technology is often to do the overall visual processing of the construction project, observe the traditional architectural design scheme, the general construction enterprises will carry out the architectural structure planning on the design drawings[4]. Although the development of architectural history to today, this traditional way has also designed a large number of excellent architectural projects, but it is undeniable that this simple drawing expression mode is difficult to express the actual construction situation and structural requirements clearly at some times. However, BIM Technology can solve this problem in an all-round way, because BIM Technology will carry out visual processing of green public building design, and present the whole building structure scientifically in a form of three-dimensional space. At the same time, according to the interaction and feedback of data information, it will fundamentally achieve the visual effect. The visualization of architectural design structure developed by BIM Technology is not only for one link, but throughout the whole design process, which shows that BIM Technology has very obvious visualization characteristics.

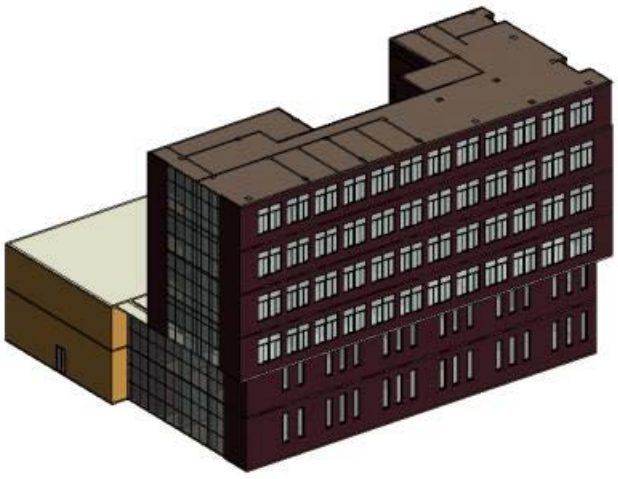

Fig.1 Single 3d Drawing of the Project

3.2 Bim Technology Has Structural Coordination in the Process of Architectural Structure Design

In the actual architectural design process, the most prominent feature of BIM Technology is structural coordination, which is the most important content of the whole green public building design work[5]. During the actual design process, BIM Technology can enable the construction unit and the owner to fully coordinate and cooperate, so as to develop the most suitable way for the construction of the project. BIM Technology can directly coordinate the overall shape of the building, so as to provide more coordinated services for the collision of opinions in various professional fields. At the same time, BIM Technology can make the construction opinions and design opinions perfectly integrated, and finally directly and effectively generate a scientific coordination data, and select the optimal design path for the design staff. From this aspect, it can be clearly perceived that BIM Technology not only improves the quality of architectural design, but also improves the fundamental effect of architectural design Rate.

3.3 Bim Technology is Optimized in the Process of Architectural Design

When BIM Technology is applied to the design of green public buildings, the majority of designers can clearly find that this technology optimizes the whole structure of green public buildings[6]. This optimization mainly uses the digital modeling function of BIM Technology to predict the possible problems in the construction process in advance, and intuitively build a reasonable building model. After that, the design can also carry out a detailed inspection of the generated virtual model. When the design is found to have problems, targeted measures should be taken immediately to solve them, and eventually it will be improved Overall quality of design and construction. The most critical point is that the virtual model of building built by BIM Technology is basically consistent with the actual building form, which also avoids the error problems.

4. The Application of Bim Technology in Green Public Buildings

In recent years, the construction of green public buildings is the inevitable demand of sustainable development in China[7]. Sustainable development requires that the domestic urban construction must have a more advanced direction of environmental construction, and at the same time, it puts forward corresponding requirements for the functions of construction projects, energy-saving design, green environmental protection and other aspects, which can not only provide a better development premise for the later living environment, but also in the subsequent urban economy and architectural style design process, Build a more solid foundation. Therefore, in the work of green public buildings, the use of BIM Technology will play a more stable role in promoting the perfection of engineering buildings. In the actual design process, the construction of 3D three-dimensional model of BIM Technology can intuitively present the design form, facilitate the audit and inspection work of design staff, and the utilization efficiency of innovative energy of computer software owned by BIM Technology can also run green energy into the actual design work as a whole. These advantages make BIM Technology widely used in green public buildings.

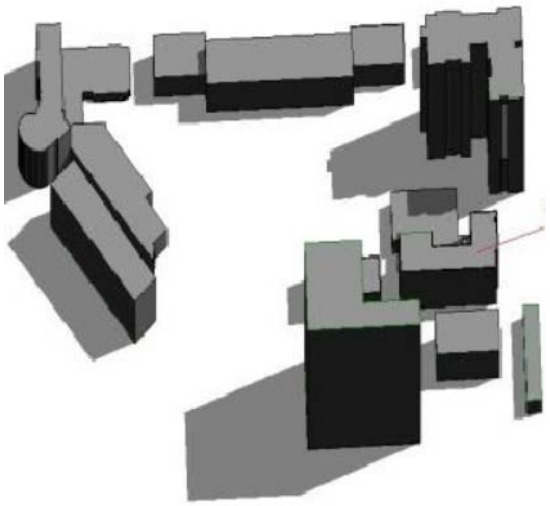

Fig.2 Project Layout 3d

4.1 The Application of Bim Technology in the Interior Environment of Green Public Buildings

Green public building has interior part, so interior environment is also a link that green public building design should pay attention to[8]. Its interior environment specifically refers to wind, light and sound. In the actual design process, the application of BIM Technology can comprehensively build a three-dimensional model of interior environment, and the software model of BIM Technology can be used to build the interior self However, the comprehensive analysis of ventilation can further determine the indoor air quality and pollutant distribution of green public buildings, so as to provide more reliable data for the design of building doors and windows. For example, the design staff can scientifically and effectively improve the indoor air quality and

ventilation conditions according to the data provided by BIM Technology. BIM Technology can also accurately predict and analyze the indoor noise index in advance, scientifically design the building sound insulation materials according to the size of noise data and noise index, and visually present the sound field uniformity, sound propagation direction and refraction rule in the building, and then simulate the building structure more thoroughly combined with the pollution of surrounding noise environment Construct internal sound performance. Finally, it makes the anti noise design of green public buildings have the characteristics of high quality, to minimize the indoor noise.

4.2 The Application of Bim Technology in the Structural System of Green Public Buildings

For the construction of the green public building structure system, the ultimate important design joint is the control of the natural environment, because in the actual design process, it is always necessary to scientifically coordinate the structural design and environment of the green public building. BIM Technology just has a very perfect natural environment control ability. It can comprehensively carry out the building function calculation in the data modeling stage, and provide the most effective theoretical basis for the subsequent actual construction design[9]. Therefore, in the process of building function design, BIM Technology is able to build a three-dimensional model, carry out specific and hierarchical analysis, form a scientific data report through wall heat conduction, indoor lighting and fiber refraction of curtain wall, and carry out relevant design work more effectively. Secondly, the application of BIM Technology in the architectural structure design system can provide an excellent data information sharing platform for the actual design work, at the same time, it can also solve the space problems that are difficult to coordinate in the current professional design process, so as to provide reliable data for the later architectural structure detail design work, and ultimately ensure that the whole green public building has a scientific transformation and can be sustained The basic conditions of sustainable development.

4.3 Application of Bim Technology in Construction Management Guidance

Through long-term research, it is found that when BIM Technology is applied to green public building design, not only the weight of construction materials can be calculated very accurately, but also the actual construction materials can be scientifically managed according to the final results of calculation. The information management ability of BIM Technology can fundamentally distribute the existing building resources reasonably, so that the whole project construction can be carried out more smoothly. From another aspect, it can be seen that green public building design work can be designed around BIM Technology in all aspects from the beginning of design to the actual construction process, and BIM Technology itself has the characteristics that can not be changed, which can prevent the design and construction process, and the behavior of unauthorized design modification may occur, so that in the most To a large extent, the role of construction supervision will be fully played. Finally, BIM Technology can present the form of each link of the project by means of data information mode when analyzing the green public building design work comprehensively, and store the generated data into the computer system scientifically, so as to realize the remote supervision of the whole project, which not only reduces the labor cost investment of the engineering design and construction supervision, but also ensures the data Under the premise of information resource sharing, the fundamental quality of construction design is guaranteed, which ultimately improves the reliability, quality and safety of green public building design.

5. Conclusion

Through the detailed analysis of this paper, we can see that in the process of green public building design, scientific and effective application of BIM Technology can improve the final quality of building design, so the majority of architectural design enterprises should pay absolute attention to BIM Technology. The reason why BIM Technology can be widely used is mainly because it has many advantages and features, which not only ensure the stability of architectural

design, but also improve the efficiency of architectural design. I believe that with the continuous development of the times, BIM Technology will present a more perfect state in the application process of green public building design.

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