Application of BIM technology in construction bidding

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Abstract: bidding is a very important step of construction project. For the owners, bidding is the key link of selecting the best construction plan and saving the project cost to the maximum extent. For Construction Corporation, it is the key to show their construction technology which can improve the probability of winning the bid. this paper researches on the application of BIM technology in bidding process of construction project in detail, and discuss the application of BIM technology in construction field comprehensively.

1. introductions
With the continuous development of China's economic and technological, some related technologies in the construction industry are constantly being innovated, and the scale of construction projects is constantly expanding. With the application of new technology, the building structure becomes more complex. The construction industry is the transformation of fine chemical industry, but the problem is still very much, such as the cost of the construction unit is constantly increasing, the management of the construction process is also difficult. Faced with these problems, the modern technology management of project should be introduced, so the problem of the construction industry will be comprehensive solute. BIM technology has become an important technology of bidding management in China.

2. the situation and problems of construction bidding
The bidding system of engineering project is mainly used in China, which can select the best construction plan and the best material suppliers. Therefore, the basic principles of bidding in a fair, just and open, can fully promote the development of China's construction industry, the model of competition can promote the development of construction technology in China.

The bidding system has a very important significance in determining the project cost, control the construction progress and quality of the project, due to the scope of the project is too much, there is still a very big risk in controlling and management of engineering project. Because of the great risk, it also leads to many problems in the project under the bidding system. Because of the actual construction time of bidding project is relatively compact, workload is very large, even some of the projects at the same time to carry out investigation on the line construction, which leads to Substandard quality. Due to people's living standards continue to improve, for the functional requirements of construction are becoming more and more, the new technology are applied to the field of construction engineering, which leads to the engineering design becomes more and more complicate. Due to the relatively short time of the preparation stage of bidding project, the calculation of the bill of quantities has become more complex, but the manual calculation has been unable to ensure the accuracy of quantities requirement. Some problems have to be solved urgently in the bidding stage of construction project; otherwise, it will restrict the development of China's construction industry.
At present, the main problem faced in the bidding stage is that the management mode of construction project bidding is not perfect, and there is no way to ensure the rationality of bidding activities. In the process of bidding, there are some irregularities in the subject's behavior. The opening degree of bidding mode is relatively low, which has a very fatal impact on some small and medium-sized enterprises. The mechanism of the construction project cost system is not perfect, especially the fluctuation of material price is very large; the supervision and management mechanism for the construction market is not perfect, which resulted in the present construction market in China is too confused, the quality and prices of building materials is not under the effectively control; The bidding procedure is too complicated, the cost of bidding preparation phase is relatively large, it is also a serious waste of social resources. These problems are urgent need for us to be solved.

3. Application of BIM technologies in construction bidding

3.1 Overview of BIM technologies
The core technology of BIM is information, which uses model to express information. Through the BIM technology to establish 3D model, the details of the building can be more intuitive display to the owners and construction units. Compared with the traditional design drawings, BIM technology can be more clearly and accurately show the details of all the basic components of the construction project also can test of some related structure. This technology has attracted the attention of construction units, which are widely used in construction bidding. Many software companies at home and abroad are constantly developing BIM technology software, but this technology also provides a more reliable basis for the construction cycle.

Although the application of BIM technology has become increasingly mature, some application of BIM technology in architectural design and budget is very widely, but it appeared to connect the BIM software and the project bidding stage, there is no path to achieve data transfer. The combination of the date and BIM software is not good, which leads to the application of BIM software in the management stage of bidding requires a certain degree of buffer, although a short time is difficult to combine BIM and the construction project bidding management, the application of BIM technology in construction bidding management has become the future of development.

3.2 The significance of BIM technology in bidding
Through the application of BIM technology, the investigation, design and control of construction projects can be come true, which play a very important role in the management of bidding. The construction unit can effectively control the project cost and the whole process of every stage of the construction by using BIM technology, there is a convenient conditions to operation and maintenance. The BIM technology combined with bidding management can not only strengthen the operation and management work but also can effectively solve some problems of the construction bidding, it has important significance for the calculation of quantities bill.

The cost of the project and the construction of the whole process can be under the control through the using of BIM technology, the extraction of BIM model and analysis can gain effectively project cost of the various stages of the construction, which can reduces the cost. It plays a very important role to improve the enterprise's own competitiveness.

Through BIM technology, the construction corporation can show the design scheme of the project, which helps to avoid change of engineering, this method can reduce the cost caused by engineering change. BIM project will be integrated into the bidding management, which can fully enhance the profit of enterprises. The management of construction projects has become more reasonable, it can also promote the application of BIM technology in the management of the whole process of construction project.

3.3 Application status of BIM technology in bidding
The development of software application of China's construction engineering is very quickly, but there
are some problems in the application process. The different regions don’t have charge standard. Because of the emergence of BIM technology, these problems are fully solved. With the continuous development of BIM, it will be widely used in the construction industry and it will become the mainstream of technical software in the construction industry in the future. Although compared with some developed countries, China’s BIM technology started relatively late, but the development is very rapid, and has been unanimously praised by the industry. Because the BIM technology has attracted much attention, in order to better promote the application of BIM technology in the bidding process, the Chinese government has introduced many policies and mandatory requirements the application of BIM technology in the bidding process, which has very important significance for promoting the development of BIM technology.

4. Application analysis of BIM technology in project bidding stage

Compared with the traditional graphic design, BIM technology can better express the design intuitively, and can help each unit to correctly understand the construction drawings. Through the 3D model for architectural design function analysis, as a basis for comprehensive design optimization and design inspection. Through to establishment 3D model, it is possible to give the most intuitive expression of the detailed design of each component of the building; even the building curtain wall can be modeled and analyzed. Through to establishment three-dimensional model, the designing can be reflected intuitively. After establishing the model, the model can be analyzed, the designing of construction can be optimized in the bidding.

Bill of quantities is the most important part in the bidding documents for major construction projects, there is some errors in calculation. But after BIM has been used, the calculation can automatically carry out by BOQ; there are many differences in this list with the traditional engineering quantity, which reduce the engineering quantity list compiled by the task. Through the application of BIM software, the profit of both sides has reached the most reasonable situation.

Through the application of BIM technology, the bidding price can be optimized effectively. The using of BIM technology can simulate the construction, which has very important significance for optimizing the funds. BIM can also be integrated into the capital management by associating the cost of the project with the schedule. The construction model can be combined with the plan in various stages, it can reasonably control the construction schedule, and it can calculate the expenditure of the costs. There are also helpful to make measures of all construction aspects in the bidding stage, BIM can show the information of funds in various stages of the bidding and can help to enhance the competitive advantage of the tender bidding company.

5. Conclusions

BIM technology can comprehensively enhance the working efficiency of the construction bidding, the engineering quantity list can be calculated accurately, this method can comprehensively improve the rationality of bidding quotation and management level, which has a very important significance for the future of the bidding management.

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