Application of Construction Technology of Beam Transfer Floor in High-rise Buildings

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Abstract: Today, with the continuous development of the national economy, people's living standards have also been significantly improved, especially the change of living environment. With the vigorous development of civil engineering industry, more and more high-rise buildings appear around people, and provide people with more comfortable living space. When constructing high-rise buildings, construction companies should pay attention to the technical points of the beam-type conversion layer. This paper will discuss the application of beam conversion layer construction technology in high-rise buildings.

1. Introduction

China is currently in a period of rapid urbanization. With the acceleration of urbanization, high-rise buildings are no longer limited to meeting people's living needs, but are developing towards multi-functional and multi-purpose. Because of the different internal components, functions and requirements of high-rise buildings, construction enterprises should apply the construction technology of girder transfer floor to the construction of projects. Only in this way can the transition of structural forms be realized, so that high-rise buildings can play different roles [1]. At present, the beam conversion layer construction technology has been widely used in China's civil engineering industry, and plays an irreplaceable role in the construction of high-rise buildings. The beam type conversion layer construction technology can realize the vertical discontinuity of the upper and lower floors of the high-rise building, and make the overall structure of the building more harmonious and standardized. However, in practical work, although the application scope of the beam conversion layer construction technology is relatively broad, its application degree is not deep enough and relatively shallow. In order to be able to promote the application of beam-conversion layer construction technology, construction companies should deepen their research and continuously improve their problems in the application process. Only in this way can the beam conversion layer construction technology better exert its own value, thus helping the construction enterprises to smoothly carry out the construction work of the project [2].

2. Overview of beam conversion layer construction technology

In the construction of high-rise buildings, the pressure on the superstructure is not equal to the pressure on the substructure, which constitutes a certain obstacle to the construction work. Generally speaking, the lower structure of a high-rise building should have the characteristics of dense column nets and many walls, while the upper structure is characterized by sparse column nets and few walls. The actual construction of high-rise buildings is in contradiction with the conventional structure, so construction enterprises should try their best to realize the transformation of the upper and lower structures, only in this way can the construction of high-rise buildings be carried out smoothly. The construction technology of girder transfer floor is the technology emerged at the historic moment under this background. Construction enterprises should clarify the key points of the construction technology of girder transfer floor, only in this way can we promote the construction of the project [3].

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The construction technology of transfer floor can be divided into three categories according to the structural transformation. First of all, the conversion of upper and lower structure types, which is widely used in the upper shear wall structure, has the effect of converting the upper shear wall to the lower frame. So as to create internal free space for high-rise buildings and realize the construction of high-rise buildings [4]. In this way, the column network and axis of the upper and lower structures are changed, but the form of the upper and lower structures remains unchanged. However, construction enterprises can make the column network of the lower structure more sparse through the transfer floor, thus forming a larger column network. The upper shear wall structure, through the conversion layer, is capable of staggering the originally aligned axes to form an asymmetry of the upper and lower structures. In the actual work of China's construction enterprises, the structural forms of the conversion layer are various. In addition to the beam-type conversion layer structure, it also includes box type, open-air analysis type and plate type. From the difference in the number of spans, it can be divided into single span, double span and multiple spans. Construction enterprises should clarify their own construction needs and rationally select the conversion layer construction technology that needs to be applied, thereby improving their engineering efficiency and engineering efficiency, and providing guarantee for their own sustainable development.

3. Application reasons of beam conversion layer construction technology

Construction companies have applied beam-conversion layer construction technology to the construction of high-rise buildings, which has many advantages. First of all, the construction enterprise applies the beam conversion layer construction technology to the construction of high-rise buildings, which can realize the economics of engineering construction. Since the conversion plate of the beam conversion layer construction technology has a high thickness and increases the construction requirements of the lower structure, the construction enterprise should apply the beam conversion layer construction technology. Secondly, the application of beam transfer floor construction technology can also enhance the seismic function of high-rise buildings. Conversion boards are often subject to greater pressure, so when an earthquake occurs, the seismic response is stronger than that of normal buildings. Secondly, the construction technology of girder transfer floor is the inevitable requirement of Engineering construction. In order to ensure that the lower structure of the transfer floor meets the needs of the upper structure, the construction technology of the beam transfer floor should be applied to ensure the safety of the components of the transfer structure [5].

4. Technical Key Points of Construction Technology of Beam Transfer Floor

Transfer floor construction technology has strong characteristics, which is to distribute the pressure of the original upper structure to the lower structure through the transfer floor, so as to realize the transfer of pressure and make the structure of high-rise buildings more reasonable. In order to make the beam conversion layer construction technology better play its value, the construction enterprise should clarify the technical points of this technology, then strengthen the control of technical points and promote the improvement of engineering efficiency [6].

Construction companies must first pay attention to the construction of the formwork. Since the size of the cross section of the conversion layer beam is usually large and its weight is large, the technician should ensure the safety and stability of the construction work, and first consider the quality of the support system, and then take into account its bearing capacity [7]. Second, construction companies should also consider the ratio of steel bars. Generally speaking, if the construction enterprise applies the beam conversion layer construction technology, the requirements of the reinforcement ratio will be higher, so the construction enterprise should ensure the stability of the steel reinforcement and continuously improve its quality. Finally, construction enterprises should also consider concrete. Concrete is an important part of construction technology of girder transfer floor, and concrete is prone to cracks. Because of the dense reinforcement of beam-column joints, concrete cracks may occur in the ancient city where the temperature difference is large. Therefore,

construction enterprises should strengthen the control of concrete to ensure that cracks do not appear, and then affect the application of beam transfer floor construction technology.

5. Application of Construction Technology of Beam Transfer Floor

When applying the construction technology of girder transfer floor, the construction enterprises should take the quality and load of concrete into consideration, and then the load capacity of the floor under the girder into consideration. Only in this way can the effective application of technology be guaranteed. Construction companies should also manage the pouring method to promote engineering efficiency.

5.1 Formwork construction

Formwork engineering technology is an indispensable part of concrete beam transfer floor construction technology, which directly affects the follow-up work of construction enterprises. If construction enterprises want to ensure the high effect of beam transfer floor construction technology, they should pay attention to this technology. Template erection has detailed steps, specifically, the erection of brackets, installation fixtures and templates, binding reinforcement, installation bolts, etc. Construction enterprises should clarify the above steps to ensure the improvement of template engineering. Construction enterprises should ensure that the angle of diagonal brace is less than or equal to 45 degrees when setting up diagonal brace card. Especially the brace of diagonal brace at the bottom of beam should be set up at the same time as the bent as far as possible, so as to guarantee the integrity and stability of diagonal brace bracket. Construction enterprises should also ensure that the upper end of the pole can be buckled with the inner and outer corrugates at the bottom of the beam, that is, the outer corrugates are close to the bottom of the inner corrugates. Only in this way can slip be prevented, thus increasing stability and reliability. The lower end of the pole shall be supported on the steel cushion block. In order to ensure that the bent has a strong spatial stiffness, construction enterprises should also set up sweeping poles under the bent, and set two crossbars in the middle, and set horizontal inclined poles on both sides of the bent, and finally connect the bent with the full hall rack [8].

5.2 Reinforcement construction

Construction companies should also pay attention to the construction of steel bars. In general, steel bar construction can be divided into two aspects, namely the process of tying steel bars and the processing of steel bars. Among them, the lashing of steel bars is a more important content. It is usually the work carried out after the end of the beam support work. In this work, the construction enterprise should clarify the work steps [9]. First of all, the construction enterprise should set up a support frame for the steel bars. After the support frame is set up, the enterprise should clean the lashing surface to ensure that the lashing surface is clean and tidy, and then fix the longitudinal positioning of the main steel bars. Then set the position of the negative rib of the plate to the bottom of the template to unfold the lashing work. Construction enterprises should also pay attention to the reasonable spacing and ensure the balance between spacing when binding steel bars. Only in this way can the smooth progress of the project be ensured. In addition, construction enterprises should also pay attention to the processing of steel bars. Reinforcement plays an important role in the construction of girder transfer floor, so its quality is also very important. If the quality of reinforcement does not meet the needs of the project, it will have an inestimable impact on high-rise buildings. Therefore, construction enterprises should pay attention to steel bar processing technology, and constantly improve the processing technology of steel bar, so as to promote the effective application of steel bar. Because stirrups are also needed in beam and column centers, construction enterprises should determine the number of stirrups, which puts forward higher requirements for technicians. Technical personnel should carefully inspect the architectural design drawings before launching their work, and calculate the number of stirrups with their professional ability. At the same time, the construction personnel should also ensure the reasonable distribution of steel bars on the

transfer beam, so the construction personnel should also take the spacing into consideration. Finally, construction enterprises should also pay attention to the selection of reinforcing bars. Because the weight of reinforcing bar is large inside the transfer beam, technicians should choose shorter reinforcing bar instead of longer reinforcing bar when choosing cushion block. Only in this way can the space of tamping work be guaranteed.

6. Concrete construction

As concrete is an important part of the construction of girder transfer storey, construction enterprises should ensure the quality of concrete through various ways. When mixing concrete, construction enterprises should mix other materials, including fly ash and aggregate, in the mixing process on the premise of ensuring design standards. Because there are many aggregates, construction enterprises should try their best to choose crushed stone as the main coarse aggregate, and add expansion agent and water reducing agent. All these can effectively improve the quality of concrete, so that concrete can better play its own role. Construction enterprises should also pay attention to pouring links. In order to ensure the stability and reliability of the beam, construction enterprises should pour from the middle to both sides, and when necessary, inclined pipes can be set in the beam first. Then, fixed-point pouring is carried out, which can effectively solidify the concrete and ensure the effective development of the concrete pouring work. When constructing concrete in the slab, the construction enterprise should also pay attention to the reasonable application of the insert vibrator and the flat vibrator. Specifically, the insert vibrator is used at the beam. The other parts are all made of flat vibrators, which can effectively prevent the concrete from leaking and increase the compactness of the building. In addition, construction companies should also pay attention to construction joints. The treatment of construction joints is an important content, and construction enterprises should attach great importance to it. Specifically, the reinforcement and cement on the surface should be cleaned up. High-pressure water should be used to clean up at the first pouring and filled at the second pouring.

7. Conclusion

In summary, beam transfer floor technology is an indispensable technology for current construction enterprises in China. Construction enterprises should clarify its value and constantly strengthen their ability to apply beam transfer floor technology. So as to promote the improvement of engineering quality and efficiency. Construction enterprises should conduct in-depth research and discussion on technology in light of engineering needs, and ensure that they can have advanced technologies that keep pace with the times. Construction companies should combine engineering to enable them to gain a place in the increasingly competitive construction market, thereby promoting their own development.

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