

Construction Technology of Concrete Structure of Building Engineering Based on Anti-seismic Concept

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Abstract: At present, the urban population has increased significantly, and there are greater requirements for the number of buildings. This has caused a large number of high-rise buildings to be constructed, and higher requirements have been placed on the seismic structure of buildings. It is necessary for architectural designers to pay full attention to the design of seismic structures. . For construction projects, good quality and stability are directly related to people's daily work and life, and they need the full attention of design and construction personnel. Starting from the existing problems in the current seismic design of concrete buildings, this article scientifically analyzes the shortcomings and problems existing in the current seismic design of concrete buildings in my country based on a reasonable analysis of the necessity of the seismic structure design of concrete buildings, and aims at These problems put forward corresponding reasonable solutions and design optimization measures, so as to effectively explore effective means to improve the seismic performance of concrete buildings in my country.

1. Introduction

Since entering the 21st century, with the continuous development of my country's social economy, the construction demand for urban buildings, especially high-rise buildings in my country, has been rising day by day. The acceleration of urbanization has promoted the expansion of the scale of the city and the increase of the urban population, and there have also been certain changes in the seismic design of the same building structure [1]. For a long time, earthquakes have seriously threatened the personal and property safety of the people. According to the analysis of past natural disasters, earthquake disasters accounted for half of the total disasters [2]. Moreover, compared with western countries, our country's seismic capacity is weaker and the probability of earthquake disasters is gradually increasing, which severely restricts the rapid development of social economy. For construction engineering, good quality and stability are directly related to people's daily work and life, which requires the full attention of design and construction personnel [3]. The most important thing in construction engineering is to ensure the stability and safety of the building structure. The lives and property safety of the majority of people depend on the performance of the building structure [4].

At present, the urban population has increased significantly, and there are greater requirements for

the number of buildings. This has caused a large number of high-rise buildings to be constructed, and higher requirements have been placed on the seismic structure of buildings. It is necessary for architectural designers to pay full attention to the design of seismic structures. [5]. Because of its own characteristics of good overall performance, high plasticity and good fire resistance, concrete structure has become the most widely used and most frequently used building structure material in the infrastructure construction of contemporary construction industry in my country. The problems of current seismic design are mainly reflected in unnecessary economic expenditures, imperfect seismic design, and substandard quality standards [6]. The rational use of concrete structures in the construction of construction projects has outstanding advantages in terms of economy, durability, construction efficiency, and integrity. If the application of concrete in the design of seismic structure of buildings can be explored, the design content can be enriched, the use of seismic structure of buildings can be optimized, and the foundation for the expansion of the application range of concrete structures can be laid [7]. Relevant architectural designers must fully realize the importance of the seismic design of concrete structures, and actively adopt scientific and effective design concepts and methods to rationally design and improve the seismic performance of concrete structures, thereby scientifically improving architectural design Security and stability.

2. Design of concrete structure based on earthquake resistance

2.1 Problems in seismic design of concrete structure buildings

In architectural design, especially in high-rise building design, it is very necessary to do a good job in seismic structural design. Driven by the current economic development, China's urbanization process is accelerating, and the expansion of city scale and the increase of urban population make the contradiction between people and land in cities increasingly prominent. In the actual construction, we must grasp the rationality of the whole building structure and the rationality of the anti-seismic structure design. From the point of view of the building's own performance, the overall guarantee of the building can be improved by meeting the rigidity, stability and strength requirements of the building. From the current development situation, there are some deficiencies and problems in the seismic design of buildings in China, which need the full attention of relevant personnel.

The imperfect preparatory work is the most prominent problem in the seismic design of building concrete structures. It is precisely because of the insufficient preparatory work that some errors in judgment appear in the specific design process, which affects the effect of seismic design. According to the statistics of relevant investigation departments, in the annual seismic performance audit of concrete structure buildings in China, the seismic capacity of many concrete structure buildings does not meet the seismic capacity standards specified in relevant national laws and regulations, and a large part of this is caused by the imperfect preliminary preparation work at the beginning of design by some architectural design companies [8]. Before starting the construction of construction projects, some construction engineering enterprises did not carry out detailed geological exploration on the construction site, and lacked necessary understanding of the geological conditions of the construction site, which led to the architectural designers' inability to accurately grasp the construction foundation in the architectural design, In the absence of information, it is easy to design high-rise buildings with potential seismic hazards. Seismic structure design is the most critical and effective design and implementation method in the seismic performance design of modern concrete structure buildings. It includes the design of three main seismic structures: seismic layer, seismic joint and seismic support. These three seismic structures have a key impact on the seismic performance of the whole concrete structure, so it is very important. Figure 1 shows the construction process flow of concrete base.

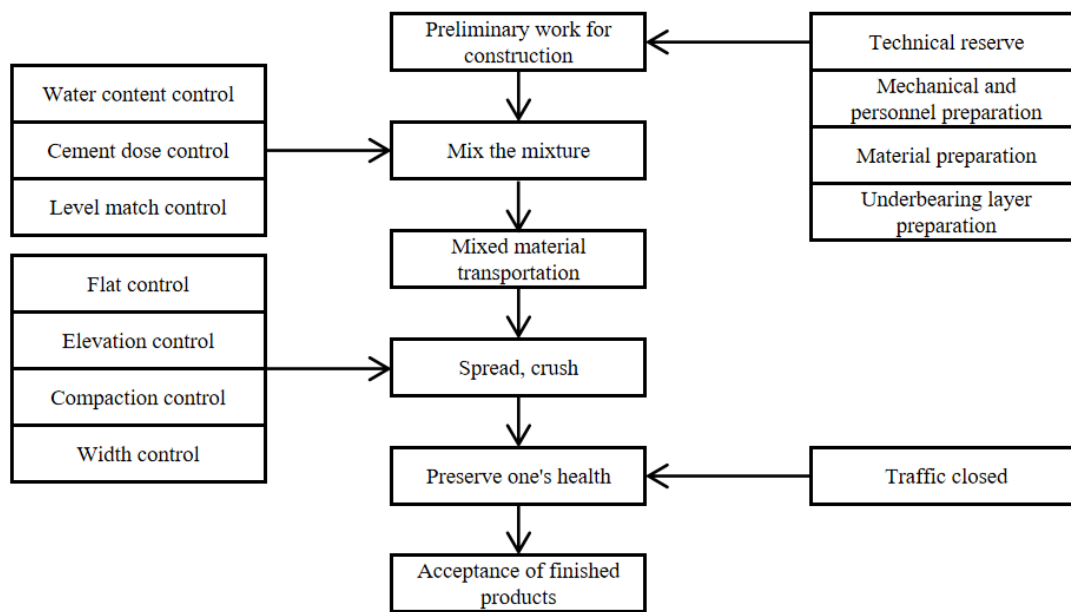


Figure 1: Construction process flow of concrete base

In the seismic design of concrete structures of specific construction projects, the appropriate selection of construction materials is also a very key aspect. If there are problems in this design link, it will inevitably affect the seismic effect of the whole construction project.

2.2 Discussion on the application value of concrete structure in building anti-seismic

The so-called concrete structure refers to a kind of structure formed with the support of raw materials such as cement and sand. It has the characteristics of high strength and good stability, and is widely used in modern architectural structure design. In the current industrialized big cities, most construction engineering enterprises design buildings as high-rise buildings to meet the requirements of the increasing population, and the requirements of high-rise buildings for building technology become higher accordingly. In this context, high-rise buildings have become the main aspect of the development of modern industrial city buildings. In construction projects, specific seismic design for concrete structures needs to meet certain basic needs. For the seismic design of concrete structure of construction project, the most core point is that it should be properly treated for its corresponding mechanical structure. Only by ensuring that the whole building reaches a better mechanical balance, can it ensure the realization of its seismic performance to a great extent. In practice, if we can pay attention to the reasonable setting of concrete structure and implement the corresponding structural design work, we can make the performance of building structure more reliable, reduce its application problems and avoid the unsafe application state of buildings.

Concrete structure has certain application value in seismic design of building structures. On the one hand, considering the application of concrete structure in the seismic structure design of buildings can make its structural design scheme more perfect, and with the support of concrete mixture with reliable performance, it can improve the stability of building structure and gradually improve its scientific design level. On the other hand, paying attention to the application of concrete structure in the design of building anti-seismic structure can realize the scientific response to earthquake influencing factors, continuously improve the application status of modern building structure and meet its optimization design requirements [9]. And through thinking about the application of concrete structure in building anti-seismic structure design, it can make its anti-seismic structure design work

more scientific, enrich the reference information needed by modern buildings in this aspect of design work, and continuously improve its anti-seismic structure design level.

3. Effective countermeasures for seismic design of concrete buildings

3.1 Effective measures for seismic structure design

Improve the preparatory work. The preparatory work in the early stage of design and construction has a very key impact on the seismic design of the whole concrete structure. Therefore, for the seismic performance design of concrete structures, the perfection of the preparatory work is very important. When carrying out seismic structure design, designers need to clearly realize that different structural design will directly affect the specific seismic performance and project cost, and the change of each small link will cause chain impact. The main purpose of seismic performance design of concrete structure building is to resist earthquake. Therefore, in order to ensure that the seismic performance of the designed concrete building structure can meet the actual needs, the relevant architectural designers must understand the actual geological disasters of the project location. Building seismic scheme is not only the key of seismic design, but also a necessary link in the preparation stage before construction. Scientific building seismic scheme can guide the overall construction, improve the seismic capacity of the building, and ensure the safety of the building in the face of earthquake.

Seismic story is the most basic seismic form, which mainly reduces the impact on the main building when an earthquake occurs. When setting the seismic layer, it is required to keep a certain distance between the top of the seismic layer and the building foundation. On the basis of satisfying the seismic performance, we can further pursue the aesthetics of the seismic structure, ensure that the seismic structure is neat and symmetrical, and try not to make the aesthetics of the building suffer a great negative impact. At present, the design of seismic joint is also very common, and its seismic effect has been proved by practice. However, compared with various problems in the current design of seismic joint, in the future design of seismic joint, we should try our best to ensure the standardization and scientificity of its design, so as to enhance the effectiveness of its design to a greater extent and promote it to achieve the best seismic effect. In the process of optimizing the design scheme, it is necessary to focus on the improvement of the anti-seismic and anti-collapse ability of the building structure. Designers need to consider the influence of earthquakes of different grades on the building structure, and carry out continuous calculation in this process, so as to ensure that the final calculation results can be consistent with the actual situation, ensure that all anti-seismic structures can maintain a certain balance in this contact, and focus on the relationship between the building structure and longitudinal gravity.

3.2 Enhancing the application level of concrete structures in the design of building anti-seismic structures

As we all know, for the current construction of construction projects in our country, the building structure is the most important construction point. Only by ensuring the reliability and safety of the entire building structure can it be made for the stability of the entire construction project. A certain guarantee. In order to gradually improve the application level of concrete structures in the design of seismic structures of buildings and better reflect their application value, relevant measures need to be taken to deal with them. In order to make the effect of concrete structure more obvious during the design work of building anti-seismic structure, it is necessary to strictly control its application process, and with the support of effective control mechanism, provide for the development of control work in the application of this type of structure. Scientifically guide, deal with the details of concrete structure application, and continuously improve its application level in building seismic structure design.

The design of anti-seismic structure needs to have a certain sense of organization and hierarchy, and the selection of anti-seismic measures needs to be combined with inheritance and development. In the actual design, designers need to start with the actual needs of the people, fully experience the local customs, and do a good job in the investigation and investigation of historical development, so as to make good urban planning and deployment through the rational use of major events of urban development. Combined with the requirements of sustainable development in the construction field and the functional characteristics of building seismic structures, in order to improve the application level of concrete structure in its seismic structure design, we need to pay necessary attention to the seismic design of the structure. It is necessary to actively carry out the seismic design of building concrete structures, and reduce the impact of mechanical load vibration in the application of building structures through the rational use of shock absorbers and the scientific setting of seismic layers, so as to lay a foundation for the improvement of the application level of concrete structures in the design of building seismic structures. Through the use of historical celebrity resources, relevant cultural content design can be carried out to facilitate the successful use of advantageous resources to drive the urban economic development. For example, taking advantage of Confucius' cultural status in China, the hometown of Confucius has added a large number of Confucius culture and Confucian culture to urban planning, forming a characteristic cultural card.

4. Conclusions

The rapid development of urbanization has prompted the emergence of a large number of high-rise buildings, which also put forward higher requirements for the seismic performance of buildings. It is very important for high-rise buildings to do a good job in seismic structural design. Concrete structure is the most widely used and frequently used building structural material in the infrastructure construction of contemporary building industry in China. The quality of its structural seismic performance design has a very important impact on the safety and stability of the whole building structure. Under the requirements of the new era, relevant architects must fully realize the importance of anti-seismic structural design of concrete structures, and actively adopt scientific and effective design concepts and methods, starting from the actual environment of buildings, and applying advanced and scientific design concepts and anti-seismic technologies, so as to effectively improve the anti-earthquake and anti-collapse capabilities of buildings, improve the comprehensive performance, safety and stability of buildings, and minimize the damage caused by earthquake phenomena to buildings.

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