

Application of Mass Concrete Structure Construction Technology in Civil Engineering Construction

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Abstract. In the construction of modern civil engineering construction, the application of mass concrete structure has become more and more common. The crack phenomenon is a more common problem in the construction of mass concrete structure, and it is also an important factor affecting the quality and stability of mass concrete structure. Therefore, the prevention and treatment of cracks in large volume coagulation structure is the main point of construction technology of mass concrete structure. This paper will be cut into this, the civil engineering construction of mass concrete structure of the construction technology analysis.

Introduction

Industrial and civil construction, concrete, reinforced concrete is the main building material in the building structure. With the development of urban construction and large industrial and mining enterprises, high-rise, high-rise, special features of the structure and large equipment base and so on with large volume of concrete structure. Mass concrete has been used extensively in industrial and civil construction. Civil engineering refers to the use of a variety of materials, equipment and carried out by the survey, design and construction, maintenance, maintenance of technical activities. Civil engineering includes three basic attributes, namely, comprehensive, social and practical. With the progress of science and technology and the development of society, the connotation of civil engineering is becoming more and more extensive, and the structure is becoming more and more complicated. It is a comprehensive discipline integrating exploration, design and construction. As civil engineering is accompanied by the development of society and the emergence of different periods of civil engineering construction reflects the different periods of socio-economic, cultural level and science and technology, therefore, civil engineering is social. At the same time, due to civil engineering in practice continue to accumulate experience and development, so civil engineering also has a strong practicality.

What we call concrete usually refers to a composite material that is cemented together through cementitious materials for the construction of a composite material. The concrete is also referred to as concrete. The main material of concrete is gravel, sand and water will be mixed in a certain proportion, after mixing and forming the cement concrete. Concrete is widely used in civil engineering construction, is one of the most important materials of modern civil engineering. Concrete raw materials rich at the same time, the concrete production process is relatively simple, the price is relatively low. The concrete has the advantages of good compressive strength and durability.

Common Cracks in Construction of Massive Concrete Structures in Civil Engineering Construction

Due to the characteristics of mass concrete structure, the mass concrete structure is in the construction of civil engineering construction, prone to cracks, affects the quality of mass concrete structure, but also affects the overall quality of civil engineering construction. The problem of mass concrete cracks can be divided into three types: surface cracks and deep cracks according to the different forms and degrees of cracks. The effect of surface cracks on the quality of buildings is relatively small, but it may be developed if it is not processed in time. For the penetration of cracks,

and then the quality and structure of buildings have a greater impact, such as any of its continued development, when the formation of deep cracks, it may cut off the concrete structure section, serious damage to the stability of the building. The main factors that lead to the common cracks in the construction of mass concrete structures in civil engineering buildings include the following aspects.

The deformation of the foundation is a major factor in the formation of cracks in mass concrete structures. As the foundation is subjected to different forces after the construction of the concrete structure, the uneven settlement may occur or the lateral displacement may occur. The stress inside the concrete structure, when the stress exceeds the tensile strength range of concrete, it leads to the emergence of concrete cracks.

Large volume concrete structure due to the larger volume, the construction process of internal water heat generated by the reaction of a large amount of heat, difficult to timely conduction to the concrete surface and discharge, easily lead to the accumulation of heat within the concrete structure, resulting in deformation of the concrete structure, resulting in cracks. In addition, when the external temperature changes, the concrete structure will be affected by the thermal expansion and contraction of the impact of deformation, and large volume of concrete structure due to the larger structure of thick, in the external temperature changes, the concrete structure surface and internal temperature changes. The speed of the differences will lead to different degrees of deformation, resulting in internal binding, when the internal binding force beyond the scope of concrete structures, it will cause the emergence of cracks.

In the civil engineering construction, the construction of large volume concrete structure is reasonable, the process design is rigorous, the construction level of the construction staff and the level of mastery of the technology are also important factors affecting the construction quality of the mass concrete structure. Such as the construction process design loopholes% construction operation is not standardized, it will lead to mass concrete structure construction quality decline, the stability of concrete structure will be affected, easily lead to the emergence of cracks.

In the construction of mass concrete for the protection and treatment of steel is of great significance in the construction, if not in accordance with the requirements of the full protection of steel bars, the protection of the steel layer is not in place, the lack of practical measures to protect the normative, is likely to lead to the use of reinforced materials in the latter part of the process, the emergence of corrosion problems, which led to the corrosion near the location of the concrete structure crack, and then lead to cracks.

Construction Scheme and Construction Technology of Large Volume Concrete

In the cast-in-place reinforced concrete structure, only temporary construction joints retained during construction are called "after pouring" or "after pouring". The construction of the seam according to the specific conditions, to retain a certain period of time, and then filled with closed, after pouring into a continuous overall non-expansion joints. Because this slit exists only during construction, it is a special construction seam. However, because it is aimed at eliminating the permanent deformation of the structure in the structure, and the structure of the temperature shrinkage stress and differential settlement, so it is a design of the expansion joints and settlement joints, temporary deformation of the seam. It is both construction measures, but also design means.

Analysis of many actual cracks in the process and basically can be divided into three active period. Reinforced concrete structure should bear the temperature difference between temperature, hydration heat temperature difference and the production of heat temperature difference. Concrete into the warehouse, after 2 to 3 days up to the maximum temperature, the highest hydration heat caused by the temperature than the mold temperature of about 50 ~ 60 °C, after the different speed according to different temperature, after 10 to 30 days to the ambient temperature, this. During the period of about 15% to 25% of the contraction, and some structures during this period of cracks, this stage is called "early crack activity." Back to 3 to 6 months, the completion of 60% to 80% contraction, there may be "medium-term cracks." To about a year, the completion of 95%

contraction, there may be "late cracks." Therefore, the structure of cracks and cooling and contraction are directly related.

Application of Construction Technology in Preventing Cracks in Construction of Mass Concrete Structures

The technique of improving the crack resistance of mass concrete structures is mainly from three aspects. First of all, to optimize the ratio of raw materials for concrete, which requires civil engineering construction technical staff through different concrete ratio for repeated experiments and comparison, analysis of its crack resistance differences, to determine the best anti-cracking performance of raw materials. Then the program, it will be applied to the construction of civil engineering construction, at the same time, the site construction staff should be in strict accordance with the approved ratio of concrete preparation plan to ensure the standardization of the preparation process, thereby enhancing the crack resistance of concrete. Secondly, through the reasonable reinforcement of the reinforcement, to strengthen the effective control of the weak part of the concrete structure, enhance the structural strength of mass concrete, thereby enhancing its crack resistance. In addition, the use of additives can be used to increase the crack resistance of concrete, the main role of additives is to control the autotrophic characteristics of mass concrete, so that the degree of expansion and contraction to maintain a reasonable range, and thus the overall volume of concrete structure. Crack resistance is enhanced.

The control of the temperature stress in the construction of mass concrete structure can also reduce the chance of concrete cracks and improve the quality of concrete construction. The technical application of controlling the temperature stress can control the pouring temperature from three aspects. Due to changes in ambient temperature will also have a certain impact on the temperature of concrete pouring, pouring temperature increase for the concrete temperature stress will bring a very serious impact, so that in the construction of civil engineering construction, must be avoided in the hot summer. Large volume of concrete pouring work, if you can not avoid the construction time will be arranged at noon, must be supplemented by the material cooling measures, through the cooling control pouring temperature, control the amount of cement. The hydration process of cement is the main factor that produces the temperature stress, which can be controlled by reducing the amount of cement in the construction. The decrease of the cement quantity will affect the strength of the concrete structure to a certain extent, which requires the use of other materials. Such as the addition of water reducing agent and the application of mixed materials, so that the concrete ratio to balance, and the application of low heat cement, but also to control the water heat of cement, reduce the impact of temperature stress on the concrete structure of the effective measures, mandatory cooling treatment. When a more special situation is encountered, the temperature control of the concrete must be achieved by a mandatory countermeasure, such as the use of a method of embedding water pipes inside the concrete, to promote the discharge of cold water into the pipe, the effect of internal temperature.

The control of binding should proceed from both external binding control and internal constraint control. In the control of external binding, the binding force of the foundation to the mass concrete structure can be reduced by setting the sliding layer, so that the concrete has certain flexibility and control the generation of the crack. The setting of the sliding layer is mainly sand cushion and asphalt felt. Internal control of the constraints, mainly from the control of the temperature stress to start, you can through the greenhouse method to reduce the temperature of the water temperature, etc., to improve the internal and external temperature difference between concrete structure.

Conclusion

Mass concrete construction technology involves the economy, technology, design, management, construction and many other aspects. To ensure the quality of the construction of mass concrete, the need to build units, design units, construction units, materials suppliers and other units of the integrated management, scientific organization, reasonable arrangements, strict implementation. In

this paper, through the construction of mass concrete construction technology research, to find out the impact of mass concrete prone to the quality of common problems for the structural cracks, through the analysis of large concrete structure cracks, to find the main cause of cracks is due to cement hydration heat Raising the temperature stress caused by changes in the temperature of the concrete causes large volumes of concrete to produce cracks.

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