

## **Analysis of Construction Temperature Stress of Civil Engineering Building Concrete and Thinking of Maintenance**

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**Abstract:** With the continuous expansion of the scope of urbanization in China, the demand for concrete buildings in our country has gradually increased. At present, China's engineering buildings are mainly based on concrete structures, which require higher concrete technology in the actual construction process. The impact of environmental and some technical factors, the concrete can not meet the requirements of the project during the preparation and use process. In order to further improve the construction efficiency of concrete projects, relevant technical personnel need to pay more attention to the temperature stress of concrete construction and strengthen its In order to ensure the quality of engineering projects, this article analyzes the formation process of concrete temperature stress, and proposes measures to strengthen the efficiency of temperature control and methods of curing concrete. Concrete building is one of the main building structures at this stage. The structure has a strong load-bearing capacity and a relatively strong wall, which meets the requirements of current building construction. However, the construction of concrete structures is affected by some external factors. The body is prone to cracks. This will not only affect the aesthetics of the building wall, but also threaten the stability of the building. This is mainly because the temperature change has a large effect on the stress of the concrete, and the late-stage curing effect of the concrete building is low. In order to further to improve the quality of concrete buildings, technicians should strengthen the analysis of temperature stress in concrete construction and improve the maintenance technology of concrete buildings. This article will analyze the causes of cracks in concrete buildings and analyze their maintenance measures.

### **1. Analysis of the formation of concrete thermal stress**

At present, the formation of thermal stress in concrete construction is mainly divided into three stages: early, middle and late stages:

#### **1.1. Initial pouring stage**

Concrete will generate a certain amount of heat during the pouring process, and the external environment will generate a certain amount of external stress, and the concrete itself will have a certain amount of internal stress. Therefore, when the external temperature is consistent with the internal temperature of the concrete It can promote the fusion of concrete materials, thereby enhancing the stability and solidity of the concrete. However, when the external temperature is greater than the internal temperature of the concrete, due to the influence of the internal and external temperature differences, some of the internal properties of the concrete will appear disordered, reducing the stability of the concrete It makes the concrete building surface cracks.

#### **1.2. Mid-term cooling stage**

The intermediate cooling stage is one of the main stages of crack formation on the surface of concrete buildings. In this stage, the heat generated during the concrete pouring process is mixed with the outside temperature, so that the concrete is cooled to a proper temperature. Due to the magnitude of the change in the temperature of the inside and outside of this stage Larger, if there is no certain manual intervention, the thermal stress of concrete may be exacerbated, and coupled with the initial temperature stress, it is not conducive to maintaining the quality of the concrete building. However, due to the temperature elasticity of concrete in the initial period, there is a certain amount

of space. Surplus, the temperature elasticity of concrete does not change much during this stage [1].

### **1.3. Late solidification stage**

The temperature stress of the concrete during the solidification stage is mainly affected by changes in the external environment. The concrete stress at this stage is mainly composed of the internal stress of the concrete structure and the stimulus of external environmental factors, of which the main factor is the external environmental stimulus. It is because the contact surface between the concrete and the external environment is different, and the stress generated in each part is greatly different. The internal stress cannot balance the external stress. At the same time, the concrete stress elasticity at this stage is large, and the influencing factors are variable. Therefore, this stage is also to prevent One of the important stages of surface cracks in concrete buildings.

## **2. Measures to enhance temperature control efficiency and building maintenance**

### **2.1 Temperature control measures**

In order to reduce the cracks on the surface of the building caused by the temperature stress of the concrete, the relevant technical personnel need to formulate a suitable temperature control scheme in accordance with the environment in which the building is located, so as to improve the construction quality of the concrete building. At present, the main temperature control methods used in construction projects have interventions. Material ratio, increase blend, control pouring thickness, etc. The intervening material ratio is mainly to adjust the proportion of each substance in the original concrete, and add appropriate air-entraining agent or plasticizer to reduce the internal stress of the concrete. Increased blending mainly exists in the material mixing ratio and the concrete mixing process. Generally, cold water can be appropriately added to cool the concrete during the concrete mixing process. Since concrete buildings are greatly affected by changes in outside air temperature, technicians should also Adjust the demolding time in time according to the temperature changes to reduce the temperature difference as much as possible, and at the same time, keep warm in winter. In addition to the preparation of the relevant temperature control plan during the preparation of the concrete, the corresponding should be made during the initial pouring process. Temperature control scheme to reduce internal stress of concrete and stabilize concreteSex change, reduce interference internal adverse factors [2].

### **2.2. Concrete building maintenance measures**

#### **2.2.1. Natural conservation**

Natural conservation is a method of curing concrete buildings with a high frequency of use. This method has lower input costs, lower requirements for the construction unit, and meets the construction conditions of current construction projects. In general, natural conservation is mainly through watering, Insulation and other methods are used to maintain concrete buildings. In order to reduce the influence of external factors, the temperature of the above two maintenance measures should be controlled as much as 5 degrees and above [3]. In this maintenance plan, it can be periodically poured. Water, covering hay and other objects ensure the humidity of the concrete and prevent the concrete from cracking. In order to improve the conservation efficiency, the frequency and amount of watering need to be adjusted appropriately in accordance with the external temperature changes and seasonal changes during the watering process. Sprinkle water evenly in all directions. In addition, in order to ensure the quality of the concrete, it is also necessary to ensure that the concrete is at a suitable temperature while completing the sprinkler moisturizing work.

#### **2.2.2. Steam curing**

Steam curing is also one of the important methods of artificial curing. In addition to steam curing, it also includes hot water curing and electric heating curing. This method is mainly based on the relevant principles of concrete pouring to the cooling and solidification process. A certain amount of heat is generated in the concrete, which easily causes the internal stress of the concrete, and the

temperature of the concrete decreases during the solidification stage, and a greater degree of temperature stress will occur in the process of contact with the outside world. When using steam curing, you can use related instruments. Control the temperature of the concrete in various periods, and use the steam to complete the moisturizing and thermal insulation of the concrete. This method has strong controllability and can effectively reduce the surface cracks of the concrete. However, due to the high requirements of equipment and technology, so, The technology is used less frequently and the number of professionals is small [4].

### **3. Conclusion**

The thermal stress of concrete and the maintenance of concrete buildings are one of the key factors to ensure the long-term use of concrete buildings. Increasing the attention to these two projects during the construction and subsequent maintenance stages and improving related building technologies can not only reduce the cost of construction projects. It can also ensure the strength of concrete buildings and reduce the incidence of cracks on the wall of the building. Because seasonal temperature and environmental changes have a greater impact on the temperature stress of concrete construction, relevant technical workers also need to appropriately calculate the relevant index of environmental factors. Adjust the implementation plan and later maintenance plan of enhanced concrete quality technology to ensure the quality of concrete buildings.

### **References**

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