



**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

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**Code for construction of mass concrete**

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### **1.0.1 This standard is formulated in order to implement national technical and economic**

policies in mass concrete construction, ensure project quality, achieve advanced technology, reasonable process, resource saving, environment protection.

### **1.0.2 This standard applies to mass concrete construction in concrete structures. It is**

not applicable to the construction of roller compacted concrete and hydraulic mass concrete.

### **1.0.3 In addition to complying with this standard, mass concrete construction shall also**

comply with the relevant current national standards.

### **2.1.1 Mass concrete**

A large volume concrete which has a minimum physical dimension of not less than 1 m, OR concrete which is expected to cause harmful cracks due to temperature changes and shrinkage caused by hydration of the cementitious materials in the concrete.

### **2.1.2 Cementitious material**

A general term for Portland cement and active mineral admixtures used to prepare concrete.

### **2.1.5 Vertical construction seam**

The vertical reserved joint which is left in appropriate positions, when the pouring pause time may exceed the initial setting time of concrete, during the noncontinuous placing of concrete.

### **2.1.6 Horizontal construction seam**

The horizontal reserved joint which is left in appropriate positions, when the pouring pause time may exceed the initial setting time of concrete, during the noncontinuous placing of concrete.

### **2.1.7 Thermal stress**

The stress generated inside the concrete, when the temperature deformation of the concrete is restrained.

### **2.1.8 Shrinkage stress**

The stress generated inside the concrete, when the shrinkage deformation of the concrete is restrained.

### **2.1.9 Peak value of rising temperature**

The maximum temperature rise inside the concrete cast block.

### **2.1.10 Temperature difference of core and surface**

The difference -- between the maximum temperature inside the concrete block and the temperature 50 mm inside the outer surface.

## **2.2.1 Temperature and material properties**

a - Thermal diffusivity of concrete;

C - Specific heat capacity of concrete;

## **3.0.1 Mass concrete construction shall prepare a construction program or construction**

technical plan, which shall include technical measures for environmental protection and

safe construction.

### **3.0.4 The temperature control indicators for mass concrete construction shall comply**

with the following requirements.

### **3.0.6 Mass concrete construction shall adopt energy-saving, material-saving, water-**

saving, land-saving, environmental protection measures. It shall comply with the relevant provisions of the current national standard "Code for green construction of building" GB/T 50905.

## **4.1 General requirements**

4.1.1 In addition to meeting the design requirements for strength grade, durability, impermeability, volume stability, the mass concrete's mix proportion design shall also meet the requirements for mass concrete construction technology; it shall use materials rationally and reduce the adiabatic temperature rise of concrete.

### **4.2.2 When cement used for mass concrete enters the site, it shall check the cement**

variety, code, strength grade, packaging or bulk number, date of exit-factory, etc.;

it shall inspect the strength, stability, setting time, heat of hydration of the cement.

The inspection results shall comply with the relevant provisions of the current national standard "Common Portland cement" GB 175.

### **4.3.2 Before preparing concrete, it should conduct tests on technical parameters such as**

adiabatic temperature rise, bleeding rate, pumpability, etc. that have an impact on the control of cracks in mass concrete. If necessary, the mix proportioning design shall be verified through trial pumping.

### **4.3.3 When determining the concrete mix proportioning, it shall propose the technical**

measures for coarse and fine aggregate and mixing water during concrete preparation and control of temperature of mixture placing to mold, based on the requirements of the concrete adiabatic temperature rise and temperature control construction plan.

**4.4.4 The number of mixer trucks shall meet the requirements of concrete pouring**

technology; the calculation method can be determined according to Appendix A of this standard.

**5.1.1 The construction program of mass concrete construction shall include the following main contents.**

**5.1.3 The thickness of the thermal insulation covering layer can be determined based**

on Appendix C of this standard, according to the requirements of the temperature control indicators.

**5.1.4 Mass concrete construction should adopt overall layered or push-type continuous**

pouring construction.

**5.2.1 Before the construction of mass concrete, it shall carry out joint review of the**

drawings; propose comprehensive anti-cracking measures during the construction stage; formulate the construction work instructions for key locations.

**5.2.2 Mass concrete construction shall be carried out on the basis that the concrete**

formwork and brackets, steel bar engineering, embedded pipe fittings and other work have been completed and accepted.

**5.3.1 It shall check the bearing capacity, stiffness, overall stability of mass concrete**

formwork and brackets; it shall design the thermal insulation structure based on the maintenance methods used for mass concrete.

**5.3.2 Safety and stability measures must be taken, during the installation, use, removal**

of formwork and support systems.