

# Introduction of JCI Guidelines: 2016 Guidelines for Control of Cracking of Mass Concrete

## マスコンクリートのひび割れ制御指針2016

### Scope

(1) This document provides standard guidelines for design, construction and inspection necessary to control thermal cracking due to heat of hydration of cement as well as autogenous shrinkage in concrete structures.

(2) This document provides standard guidelines for design, construction and inspection necessary to prevent DEF cracking in consideration of environmental conditions as well as types of cement and mixture proportions in concrete structures for which the risk of thermal cracking due to hydration heat of cement is verified.

(3) Items not covered in the Guidelines shall be

in accordance with “Standard Specifications for Concrete Structures 2012” (Design, and Materials and Construction) published by the Japan Society of Civil Engineers or “Japanese Architectural Standard Specification for Reinforced Concrete Work (JASS 5)” published by the Architectural Institute of Japan.

Only printed volume is available (Price: 8,640JPY).

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### Contents

#### Chapter 1 General

##### 1.1 Scope

##### 1.2 Definitions

##### 1.3 Notation

#### Chapter 2 Basis of Control and Prevention of Cracking Due to Heat of Hydration of Cement

##### 2.1 Basic Principle

##### 2.2 Target and Index of Thermal Crack Control

##### 2.3 Index of DEF Crack Prevention

##### 2.4 Control and Prevention Procedures

#### Chapter 3 Planning for Control and Prevention of Cracking Due to Heat of Hydration of Cement

##### 3.1 General

##### 3.2 Limit Values for Control Target

##### 3.3 Methods of Controlling Thermal Cracks

##### 3.4 Methods for Preventing DEF Cracking

#### Chapter 4 Verification of Cracking Due to Heat of Hydration of Cement

##### 4.1 General

##### 4.2 Design Values of Material Properties

##### 4.3 Verification of Thermal Cracking Based on Three-Dimensional FEM

##### 4.4 Verification of Thermal Cracking Based on Simple Evaluation Method

##### 4.5 Verification for Preventing DEF Cracking

#### Chapter 5 Construction Works

##### 5.1 General

##### 5.2 Execution Plan and Quality Control Plan

##### 5.3 Materials

##### 5.4 Mixture Proportions

##### 5.5 Production of Concrete

##### 5.6 Ready-Mixed Concrete

##### 5.7 Execution

##### 5.8 Quality Control

#### Chapter 6 Inspection of Cracks Due to Heat of Hydration of Cement

##### 6.1 General

##### 6.2 Inspection Methods

##### 6.3 Judgement of Achievement of Target and Countermeasures

##### 6.4 Recording of Inspection Results

## Appendices

A Investigation on Maximum Temperature of Concrete Members Relating to Combination of Unit Cement Content and Placing Concrete Temperature for Experience Based DEF Verification

B Summaries of Cementitious Material Standards in Japan, USA and EU, and Quality of Typical Cement Applied to Concretes Provided in the 2016 Guidelines

### Reference Materials of 2016 Guidelines

- 1 Mechanism of Delayed Etringite Formation
- 2 Examples of Deteriorated Structures Due to DEF around the World
- 3 Present State of Methods to Judge Concrete Cracks Due to DEF
- 4 Limit Values of Concrete Temperature for Verification of DEF Cracking
- 5 Literature Survey on Water Penetration Depth into Concrete
- 7 Extension of Applicable Scope of Adiabatic Temperature Rise
- 8 Compressive Strength of Concretes with Moderate Heat Portland Cement and Low Heat Portland Cement
- 9 Autogenous Shrinkage of Concrete Using Moderate Heat Portland Cement
- 11 Design Value of Expansion Strain of Expansive Concrete
- 14 Proposal of New Simple Evaluation Equation for Thermal Cracking Index
- 16 Proposal of Simple Equations for Estimating Maximum Temperature of Concrete Member
- 19 Estimation of Adiabatic Temperature Rise by Back Analysis Using Simple Insulating Container
- 20 Estimation of Adiabatic Temperature Rise Curve with Mass-Block Test Specimen
- 21 Provision of Crack Control Methods Based on Actual Temperature Monitoring Record
- 22 Control of Thermal Cracking Based on Mock-up Construction
- 23 Case Study of Control Plan for Thermal Cracking of Mass Concrete without Requirements
- 24 Pipe Cooling Method
- 25 Revision of Estimation Equation of Thermal Crack Width

Note: Material reference 6, 10, 12, 13, 15, 17 and 18 are included in the Japanese version of the 2016 Guidelines, however these are not translated into English.

### Reference Materials of 2008 Guidelines published in 2011

- 1 Derivation of Relationship between Thermal Cracking Index and Thermal Cracking Probability by Three-Dimensional Finite Element Method
- 3 Thermal Crack Control Tests of Reinforced Concrete Wall Structures Subjected to Continuous Restraint at the Bottom
- 4 Relationship between Thermal Cracking Index and Maximum Crack Width
- 8 Estimation of Representative Values for Adiabatic Temperature Rise

Note: Material reference 2, 5, 6 and 7 are included in the 2008 Guidelines published in 2011, however these are not printed.

### Reference Materials of 2008 Guidelines (in Japanese)

- 10 Pre-Cooling Methods

Note: Material reference 10 is translated into English and printed because this is the useful information.

### Case Studies

- 1 Verification of Thermal Cracking—Box Culvert Structure
- 2 Verification of Thermal Cracking—Pier