

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

中华人民共和国国家标准 **GB**

**Structural design code for special structures of water  
supply and waste water engineering**

**给水排水工程构筑物结构设计规范**

**GB 50069-2002**

**Beijing 2002**

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GB50069-2002

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## **NOTICE**

**This code is written in Chinese and English. The Chinese text shall be taken as the ruling one in the event of any inconsistency between the Chinese text and the English text.**

**The Ministry of Construction of the People's Republic of  
China**

**Bulletin**

**No.91**

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**Bulletin of the Ministry of Construction on Issuing National Standard,  
Structural design code for special structures of water supply and waste  
water engineering**

We hereby approve Structural design code for special structures of water supply and waste water engineering as national standard (No.: GB 50069-2002) and this national standard will be practice by March 1, 2003. In this national standard, 3.0.1, 3.0.2, 3.0.5, 3.0.6, 3.0.7, 3.0.9, 4.3.3, 5.2.1, 5.2.3, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 6.1.3, 6.3.1, 6.3.4 are coercive provisions and shall be strictly carried through.. The corresponding contents of the former national standard, GBJ69-84, Structural Design Code of Water Supply and Drainage Projects will be repealed concurrently. This code is published by China Building Industry Publishing House under the organization of Standard and Ration Institute of the Ministry of Construction.

**The Ministry of Construction of the People's Republic of China**

November 26, 2002

## Foreword

This code, according to the requirements of (92) JIANBIAOZI No.16 document issued by the Ministry of Construction, is the revision of the former code, GBJ69-84, Structural design code for pipelines of water supply and waste water engineering. Beijing Municipal Planning Commission is the chief editing department and Beijing General Municipal Engineering Design & Research Institute is the chief editing organization. These two institutions, together with relevant design organizations, complete this revision. In the past 15 years starting from the promulgation of the former code, the former code was highly ratified in the engineering practice. This revision is based on the following two reasons:

(I) The theoretic mode and method of structural design have been improved materially GBJ 69-84 is a general design code, and the section design of all kinds of structures (concrete and masonry, etc.) should be compliant to the requirements of this code. After promulgating GBJ68-84 Uniform Standards for the Design of Building Structure (revised edition is GB500068-2001 Uniform Standard for the Design of Building Structure Reliability) in 1984, China promulgated another GB 50153-92 Uniform Standard for the Design of Engineering Structure Reliability in 1992. These two national standards stipulate that all the structural designs shall adopt probabilistic theory-based limit design methods, replacing the single safety coefficient limit design method before; accordingly, the structural design-related standards and specifications have been revised properly, including Design Code of Concrete Structure and Design Code of Masonry Structure. Therefore, GBJ 69-84 Structural Design Code of Water Supply and Drainage Projects has to be revised accordingly so as to be compliant to the relevant standards and specifications.

(II) The content of former standard GBJ69-84 is excessively integrated and is not good for promoting technical advancement For the purpose of meeting the demands at that time, GBJ 69-84, on the aspect of content, strove to generalize all kinds of water supply and drainage structures. The former code not only included structures like water ponds, open caissons and water towers, but also covered different kinds of pipeline structures. Even though such as disposal could meet the engineering applications at that time, but it runs against the development and technical advancement in the long run. Since the reform and opening-up, China has made huge progress in the fields of both science and technology through exchanging and introducing overseas advanced technologies, accordingly, the primary standards, specifications and codes are necessary to be continually amended or modified properly.

Due to the excessively integrated contents of the primary standard, the proven advanced technologies could not be reflected in the context of the primary standard in time, accordingly, its due instruction role was weakened.

In this revision of GBJ69-84, the integrity, in principles, shall be decreased as much as possible so as to be updated and consummated timely. Therefore, the former standard is separated into the following two parts, totally 10 national standards.

1. National Standards
  - (1) Structural Design Code of Water Supply and Drainage Structures
  - (2) Structural Design Code of Water Supply and Drainage Pipelines
2. Standards of China Association for Engineering Construction Standardization
  - (1) Structural Design Regulations of Reinforced Concrete Pond in Water Supply and Drainage Projects
  - (2) Structural Design Regulations of Water Tower in Water Supply and Drainage Projects
  - (3) Structural Design Regulations of Reinforced Concrete Open Caisson in Water Supply and Drainage Projects
  - (4) Structural Design Regulations on Buried Steel Pipelines in Water Supply and Drainage Projects
  - (5) Structural Design Regulations on Buried Cast Iron Pipelines in Water Supply and Drainage Projects
  - (6) Structural Design Regulations on Buried Pre-cast Concrete Round Pipelines in Water Supply and Drainage Projects
  - (7) Structural Design Regulations on Buried Entwisted-core Pre-stressed Concrete Pipeline and Pre-stressed Steel-cylinder Concrete Pipelines in Water Supply and Drainage Projects;
  - (8) Structural Design Regulations on Buried Rectangular Pipelines in Water Supply and Drainage Projects

These specifications mainly works out provisions on the common requirements of the structural designs of water supply and drainage structures, including application scope, major symbols, material property requirements, normal value of actions, sub-item coefficient and combination coefficient of actions, bearing capacity and normal use limit state as well as structural requirements, etc. These common provisions will be carried through and practiced in the standards of the association.

The coercive provisions of this code are under jurisdiction of and interpreted by the Ministry of Construction, and the technical contents are interpreted by Beijing General Municipal Engineering Design & Research Institute. The users, during the implementation period of this code, shall pay attention to sum up experience and accumulate materials, and post the discovered problems and opinions to Beijing General Municipal Engineering Design & Research Institute (100045) for reference in the future revision.

#### **Compilation organization and drafter list**

Main compilation organization:

Beijing General Municipal Engineering Design & Research Institute

Subsidiary compilation organizations:

China Central South Municipal Engineering Design & Research Institute, China Northwest Municipal Engineering Design & Research Institute, China Southwest Municipal Engineering Design & Research Institute, China Northwest Municipal Engineering Design & Research Institute, Shanghai Municipal Engineering Design & Research Institute, Tianjin Municipal Engineering Design & Research Institute, Hunan University and Design

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## Contents

1	General rules .....	1
2	Major symbols .....	2
3	Materials .....	4
4	Action on Structures .....	7
4.1	Action Classifications and Representative Values .....	7
4.2	Permanent Action Standard Value .....	8
4.3	Variable Action Standard Value and Quasi-permanent Value Coefficient ...	10
5	Basic Design Provisions .....	15
5.1	General Provisions .....	15
5.2	Rules on Calculation of Limit State of Bearing Capacity .....	16
5.3	Rules on Calculation of Limit State under Regular Services .....	17
6	Basic Structural Requirements.....	20
6.1	General Provisions .....	20
6.2	Deformation Joint and Construction Joint.....	21
6.3	Steel Reinforcement and Buried Parts.....	22
6.4	Strengthening of Holes.....	23
Annex A The calculation of maximum fracture width of reinforced concrete rectangular section when it's under bending, large eccentric tension states .....		24
Annex B Explanation of wording in this standard.....		26



## 1 General rules

**1.0.1** In order to carry out national technical and economic policies in the structural design for water supply and drainage structures, and to realize technical advancement, economic feasibility, safety and quality, this code is formulated.

**1.0.2** This code is applicable to the structural design of general water supply and drainage structures for the municipal utilities and industrial enterprises, but is inapplicable to the structural design of special-purpose water supply and drainage structures for the industrial enterprises.

**1.0.3** The structures and underground structures designed to store water or treat water generally adopt reinforced concrete structure; when the capacity is relatively smaller and the safety class is lower than second class, brick masonry structure can be adopted.

In the region where the mean monthly air temperature is less than  $-3^{\circ}\text{C}$  in the coldest month, the exposed water storage or water treatment structure can not be made under brick masonry.

**1.0.4** This code is formulated on the base of national standards GB 50068-2001 Uniform Standard for the Design of Building Structure Reliability and GB50153-1992 Uniform Standard for the Design of Engineering Structure Reliability.

**1.0.5** When designing according to this code, the determination of general load, element section calculation and foundation design shall be carried out according to the current national standards. The structural design of water supply and drainage structures built in earthquake area, collapsible loess area or dilative soil area shall be compliant to the provisions of relevant national standards.

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