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

中华人民共和国国家标准 **GB**

**Code for Seismic Design of Outdoor  
Water Supply, Sewerage, Gas  
and Heating Engineering  
室外给水排水和燃气热力工程  
抗震设计规范  
GB 50032-2003**

**2003 Bei jing**

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2003 Bei jing

## 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.

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

**No.145**

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**Notice on Promulgation for the National Standard "Code for Seismic  
Design of Outdoor Water Supply, Sewage, Gas and Heating Engineering"  
from Ministry of Construction of the People's Republic of China**

Now "Code for Seismic Design of Outdoor Water Supply, Sewage, Gas and Heating Engineering" is approved to be the national standard, its number is GB 50032-2003, it is implemented from September 1, 2003. In it, the items of 1.0.3, 3.4.4, 3.4.5, 3.6.2, 3.6.3, 4.1.1, 4.1.4, 4.2.2, 4.2.5, 5.1.1, 5.1.4, 5.1.10, 5.1.11, 5.4.1, 5.4.2, 5.5.2, 5.5.3, 5.5.4, 6.1.2, 6.1.5, 7.2.8, 9.1.5 and 10.1.2 are the obligatory items, and must be executed strictly. The former "Code for Seismic Design of Outdoor Water Supply, Sewage, Gas and Heating Engineering", TJ 32-78 is superseded.

This code is chiefly issued by China Construction Industrial Publisher, under the organization of Ration Research Institute of Ministry of Construction of the People's Republic of China.

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

**April 25, 2003**

## Preface

According to the requirement of Ministry of Construction of the People's Republic of China, "Code for Seismic Design of Outdoor Water Supply, Sewage, Gas and Heating Engineering" TJ 32-78 was revised together by the Beijing General Municipal Engineering Design & Research Institute and Beijing Gas and Heating Engineering Design Institute organized by the Beijing Municipal Commission of Urban Planning. It was renamed into "Code for Seismic Design of Outdoor Water Supply, Sewage, Gas and Heating engineering" GB 50032-2003 after the joint checkup of the relative specialists and was approved into the national standard.

Along with the development of the seismic engineering subject and the accumulation of new earthquake disaster reflection, TJ 32-78 has presented obvious shortages in the contents and levels of technology, and needed to be revised. Besides, in the system of design standard of the engineering structures, the method of single safety coefficient has been changed into the limit states design method on the basis of probability statistics, so the seismic design was needed to be corresponded and matched; the former code was needed to be revised.

There are 10 chapters and 3 appendixes in this code, the contents include general, terms, the basic requirements of the seismic design, sites, subgrades and foundations, seismic actions, seismic check calculations of structures, water holding structures, gas storage structures, pumping rooms, water towers, pipes, etc.

The items with bold face in this code are the obligatory items and must be executed strictly. This code may be locally revised in the future. Information and contents of the items in the local revision will be published in the magazine of "Standardization of Engineering Construction".

This code is under the management of Ministry of Construction of the People's Republic of China and the obligatory items are under the explanation of it. The daily organization is under Beijing Municipal Commission of Urban Planning, the detail technical contents are under the explanation of Beijing General Municipal Engineering Design & Research Institute.

In order to increase the quality of this code, the users of this Code are kindly required to summarize experience and collect materials, and send any suggestion or comment in this regard to Beijing General Municipal Engineering Design & Research Institute (No. Yi 2 Tian Tan South Street, West District, Beijing. Post Code: 100045) at any time for reference in future revision.

Chief editorial units: Beijing General Municipal Engineering Design & Research Institute

Participating editorial units: Beijing Gas and Heating Engineering Design Institute

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# 1 General

**1.0.1** This code was established under the purpose of carrying out “Building Code of the People’s Republic of China” and “Anti-seismic and Disaster Reduction Code of the People’s Republic of China”, and executing the policy of prevention first, making the outdoor water supply, sewage, gas and heating engineering reduce the earthquake damage, avoid the loss of people and economic after the seismic fortification.

**1.0.2** When encountering the influence of earthquake which is met often lower than the seismic fortification intensity in the local region, usually the structures and pipe networks under the seismic design according to this code will not be damaged or needed to be repaired; when encountering the influence of earthquake which is the seismic fortification intensity in the local region, usually the structures need no repairing or can continue to be used after repairing, the seismic disaster of the pipe networks can be controlled in the local range and avoid the redeposit disaster; when encountering the influence of earthquake which is rarely met and the seismic fortification intensity is higher than the one in the local region, the structures will not be damaged seriously and endanger the life or result to heavy economic loss; the pipe networks will not raise serious redeposit disaster and convenient to rush to repair and resume usage quickly.

**1.0.3** Outdoor water supply, sewage, gas and heating engineering in the region with the seismic fortification intensity of 6 degree or higher than 6 degree must do the seismic design.

**1.0.4** The seismic fortification intensity shall be determined according to the files (drawings) examined, proved and issued by the permission determined by the nation.

**1.0.5** This code is fit for the seismic design of the outdoor water supply, sewage, gas and heating engineering with the seismic fortification intensity from 6 degree to 9 degree.

For the seismic design of the engineering with the seismic fortification intensity higher than 9 degree or has special seismic requirements, the design shall be done according to the special research.

Note: In the following items in this code, usually the described sample of “Seismic fortification intensity” is omitted, “Seismic fortification intensity 6 degree, 7 degree, 8 degree and 9 degree” called “6 degree, 7 degree, 8 degree and 9 degree” for short.

**1.0.6** The seismic fortification intensity may adopt the basic seismic fortification intensity according to the current division map of the ground motion parameters in China (or the value of the fortification intensity corresponding to the design basic earthquake acceleration in this code). For the regions that have compiled the seismic fortification divisions, the seismic design can be done according to the one or the ground motion parameter in the seismic design confirmed by the approved seismic fortification division.

**1.0.7** In the following buildings or structures in the outdoor water supply, sewage, gas and heating engineering systems (building or structure that is hard to be repaired or results in heavy redeposit disaster), the seismic fortification measures shall better be adopted according to 1 degree higher than the local seismic fortification intensity (not calculated according to 1 degree higher), when the seismic fortification intensity is 9 degree, the seismic fortification measures can be properly strengthened.

**1** The water intake structures and water delivery pipes in the water supply engineering, main water treatment structures, transformer and substations, distribution wells, water carriage pumping



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