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NATIONAL STANDARD



OF THE PEOPLE'S REPUBLIC OF CHINA

中华人民共和国国家标准

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GB 50011-2010

Code for Seismic Design of Buildings

建筑抗震设计规范

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Republic of China

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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.

Announcement of Ministry of Housing and Urban-Rural Development of the People's Republic of China

No. 609

Announcement on Publishing the National Standard “Code for Seismic Design of Buildings”

“Code for Seismic Design of Buildings” has been approved as a national standard with a serial number of GB 50011—2010 and shall be implemented from December 1, 2010. Herein, Articles 1.0.2, 1.0.4, 3.1.1, 3.3.1, 3.3.2, 3.4.1, 3.5.2, 3.7.1, 3.7.4, 3.9.1, 3.9.2, 3.9.4, 3.9.6, 4.1.6, 4.1.8, 4.1.9, 4.2.2, 4.3.2, 4.4.5, 5.1.1, 5.1.3, 5.1.4, 5.1.6, 5.2.5, 5.4.1, 5.4.2, 5.4.3, 6.1.2, 6.3.3, 6.3.7, 6.4.3, 7.1.2, 7.1.5, 7.1.8, 7.2.4, 7.2.6, 7.3.1, 7.3.3, 7.3.5, 7.3.6, 7.3.8, 7.4.1, 7.4.4, 7.5.7, 7.5.8, 8.1.3, 8.3.1, 8.3.6, 8.4.1, 8.5.1, 10.1.3, 10.1.12, 10.1.15, 12.1.5, 12.2.1 and 12.2.9 are compulsory ones and must be enforced strictly. The former standard “Code for Seismic Design of Buildings” GB 50011—2001 shall be abolished simultaneously.

Authorized by the Research Institute of Standard and Norms of the Ministry, this code is published and distributed by China Architecture & Building Press.

Ministry of Housing and Urban-Rural Development of the People's Republic of China

May 31, 2010

Foreword

The standard is revised from “Code for Seismic Design of Buildings” GB 50011–2001 by China Academy of Building Research (CABR) together with other institutions related to design, survey, research and education in according to the requirements of Document Jian Biao [2006] No. 77—“Notice on Printing and Distributing [Development and Revision Plan of Engineering Construction Standards and Codes in 2006 (Batch 1)]” issued by the former Ministry of Construction (MOC).

During the process of revision, the editorial team summarized the relief experiences accumulated in Wenchuan Earthquake in 2008; adjusted the seismic precautionary Intensity; added the compulsory provisions on sites in mountainous areas, framed structure filler seismic wall arrangement, staircase of masonry structure, seismic structure construction; and raised the requirements on fabricated floor framing and steel bar elongation. And the editorial team carried out studies on specific topics and some tests concerned. Experiences and lessons, learned from the damages resulted from the strong earthquakes having occurred in recent years home and abroad (including Wenchuan Earthquake), are summarized, new achievements of earthquake engineering research are involved, the economic condition and construction practices in China are taken into account, comments from the relevant design, survey, research and education institutions as well as seismic administration authorities are widely collected over the country. Through repeated discussion, revision, substantiation and pilot design, this version has been finalized.

This newly-revised version consists of 14 chapters and 12 appendixes. Besides remaining the partially-revised provisions in 2008, the main revisions at this edition are as: supplement the provisions in the aseismic measures against Intensity 7 (0.15g) and Intensity 8 (0.30 g), and adjust the design earthquake grouping in accordance with “the China Seismic Ground Motion Parameter Zonation Map”; modify the soil liquefaction discriminating formula; adjust the damping adjustment parameter in Seismic Influence Coefficient Curve, damping ratio and bearing force seismic adjustment coefficient of steel structure, and horizontal shock absorbing coefficient calculation, and supplement the calculation method for horizontal and vertical earthquake action of large-span building; raise the requirements in aseismic design of concrete-framed house, bottom-framed masonry house; propose the seismic Grade of steel structure house, and adjust the provisions in aseismic measures correspondingly; modify the aseismic measures of multi-story masonry house, concrete-seismic-seismic wall house, reinforced masonry house; expend the application scope of houses with seismic isolation, energy dissipation and shock absorption; add the design principles on performance-based seismic design, and the aseismic design provisions of large-span building, subterranean building, framed and trestled plant building, steel shotcrete-concrete frame and structure steel frame-reinforced concrete core-seismic wall. Cancel the contents involved with inner frame brickwork.

The provisions printed in bold type are compulsory ones and must be enforced strictly.

The Ministry of Housing and Urban-Rural Development is in charge of the administration of this code and the explanation of the compulsory provisions. China Academy of Building Research is responsible for the explanation of specific technical contents. All relevant organizations are kindly requested to sum up and accumulate your experiences in actual practices during the process of implementing this code. The relevant opinions and advice, whenever necessary, can be posted or passed on to the management group of the national standard “Code for Seismic Design of Buildings” of the China Academy of Building Research (Address: No. 30, Beisanhuan Donglu, Beijing, 100013;

E-mail: GB50011-cabr@163.com).

Chief Development Organization: China Academy of Building Research (CABR).

Participating Organization: Institute of Engineering Mechanics (IEM) of China Seismology Bureau; China Institute of Building Technology Research; China Institute of Building Standard Design & Research; Beijing Institute of Architectural Design; China Electronics Engineering Design Institute; China Northwest Institute of Building Design and Research; China Northwest Institute of Building Design and Research; China Northeast Institute of Building Design and Research; China East Institute of Building Design and Research; China Mid-south Institute of Building Design; Institute of Building Design and Research of Guangdong Province; Shanghai Institute of Architecture Design; Institute of Building Design and Research of Xinjiang Autonomous Region; Institute of Building Design and Research of Yunnan Province; Institute of Building Design and Research of Sichuan Province; Shenzhen Institute of Architecture Design; Beijing Geotechnical Institute, Shanghai Tunnel Engineering and Rail Traffic Design and Research Institute; China Construction (Shenzhen) Design international; Architecture Design General Institute of China Metallurgical Group Corporation; China National Machinery Industry Corporation; China IPPR International Engineering Corporation; Qinghua University; Tongji University; Harbin Building University; Zhejiang University; Chongqing University; Yunnan University; Guangzhou University; Dalian University of Technology; Beijing University of Technology

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1 General Provisions

1.0.1 This code is formulated for the purpose of carrying out the policies of giving priority to the prevention of earthquake disasters, as well as laws on building engineering and earthquake prevention and relief. So that, when the buildings are made earthquake-precautionary, the damages and loss to buildings, people and economy will be mitigated.

The basic seismic precautionary objectives of buildings whose aseismic designs comply with the requirements of this code are as follows: when the place is subject to frequent earthquake influence whose Intensity is lower than the local precautionary Intensity, the buildings can continue to serve free from damage or without repair required; when the place is subjected to local precautionary Intensity earthquake influence, the buildings with possible damage can continue to serve with common repair; when the place is subjected to rare earthquake influence which Intensity is higher than the local precautionary Intensity, the buildings have no collapse or severedamage that would endanger human lives. The building with special requirements in functions and other aspects, when the performance-based seismic design applies, shall have more specific or higher seismic protection target.

1.0.2 Every building, which is situated on zones of precautionary Intensity 6 or above, must be designed with seismic design.

1.0.3 This code is applicable to seismic design, shock isolation and absorption of buildings situated on the zone of precautionary Intensity 6, 7, 8 and 9.

When buildings are situated on zone where the precautionary Intensity is greater than 9, and/or industry buildings with specific professional requirements, the corresponding design of these buildings shall meet special provisions.

Note: For the purposes of this code, “precautionary Intensity 6, 7, 8 and 9” hereinafter refer to “Intensity 6, 7, 8 and 9”.

1.0.4 Precautionary Intensity of a region must be determined by documents (or drawings) approved and issued by the government.

1.0.5 Generally, the local precautionary Intensity may be adopted the seismic basic Intensity as provided in “the China Seismic Ground Motion Parameter Zonation Map” (or the Intensity values corresponding to the design basic seismic acceleration in this code).

1.0.6 Not only the requirements on seismic design of buildings stipulated in this code, but also those in the current relevant current standards of the nation shall be complied with.

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