

New NIST publication series addresses design of earthquake-resistant structures

September 4 2008

Where can you find some of the latest insights in designing earthquake-resistant buildings joined together with current information on building codes? As part of its support for the National Earthquake Hazards Reduction Program (NEHRP), the National Institute of Standards and Technology (NIST) has released a publication that provides guidelines for designing a special type of structural frame used in regions with high seismic activity.*

The new NIST publication is the first of a special series of “techbriefs” intended to address topics of interest to earthquake professionals in the design and construction industries. NIST anticipates issuing one to three such briefs each year.

Technical Brief No. 1 describes the design of concrete-reinforced “special moment frames,” structural systems that consist of beams and columns with connections that transmit bending forces (moments) from the beams to columns and vice versa. The term “special” is used in the structural engineering community and model building codes to denote systems that are designed and detailed for use in geographic areas where seismic effects can be large.

The document provides design guidance by combining what is required by building codes with knowledge gained in recent research and design practice. The Applied Technology Council (ATC) and the Consortium of Universities for Research in Earthquake Engineering (CUREE) are partners in the joint venture, with which NIST has a five-year research

contract.

Technical Brief No. 1 is available in downloadable electronic form at the NEHRP Web site (www.nehrp.gov), as well as the Web sites for ATC (www.atc.org) and CUREE (www.curee.org).

The techbrief concept was originally proposed by a group of nationally recognized earthquake professionals in 2003 in ATC-57, The Missing Piece: Improving Seismic Design and Construction Practices. NIST anticipates producing a techbrief on seismic design of steel-based special moment frames in 2009.

* J.P. Moehle, J.D. Hooper and C.D. Lubke. Seismic Design of Reinforced Concrete Special Moment Frames: A Guide for Practicing Engineers. NIST GCR 8-917-1, NEHRP Seismic Design Technical Brief No.1. Available at www.nehrp.gov/pdf/nistgcr8-917-1.pdf .

Source: National Institute of Standards and Technology

Citation: New NIST publication series addresses design of earthquake-resistant structures (2008, September 4) retrieved 10 April 2024 from <https://phys.org/news/2008-09-nist-series-earthquake-resistant.html>

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