nehrp SeismicWaves
October 2008
How the National Earthquake Hazards Reduction Program Is Advancing Earthquake Safety

Getting the Word Out to Save Lives and Property

The FEMA-NEHRP Publications Program

Through its participation in the National Earthquake Hazards Reduction Program (NEHRP), the Federal Emergency Management Agency (FEMA) promotes the dissemination and use of the latest advances in earthquake hazard mitigation and risk reduction. These advances are brought about through basic and applied research and through consensus-building efforts undertaken or supported by the NEHRP agencies and their many partners in the public and private sectors.

The FEMA-NEHRP publications program is a key element of FEMA's dissemination and implementation activities. Over the past 30 years, this program has produced and distributed, in cooperation with a number of publishing partners, more than 170 authoritative publications aimed at reducing earthquake casualties and losses in the United States.

Strategies and Audiences

The varied subjects addressed in FEMA-NEHRP publications reflect the multiple strategies used to achieve seismic risk reduction. These complementary approaches include educating individuals about earthquakes and their effects and about how to lessen risks to life and property before, during, and after earthquakes. They also include developing and disseminating the knowledge and practices needed to design and construct buildings and infrastructure that are more resistant to seismic forces; and formulating and promoting the policies, programs, and tools required to implement improved design and construction methods.

The intended audiences for FEMA-NEHRP publications also reflect these strategies (see audience box). The approximately 80 publications that are currently available are grouped under four audience categories in the *Catalog of FEMA Earthquake Publications* and on the FEMA website (see Access to Publications, below). These categories are individuals and homeowners, teachers and kids, community planners and public policy makers, and building professionals and engineers.

Topical Trends

Many topics have been addressed by FEMA through the FEMA-NEHRP publications program. One series of publications deals with the risks posed by the vast stock of existing buildings constructed under earlier, less-stringent building codes in seismically active areas. Some of these documents present methodologies for identifying and evaluating buildings that may be vulnerable to earthquake hazards, and describe techniques for mitigating seismic risks in such structures. Two of the seismic rehabilitation guidelines developed by FEMA have become national consensus standards that are now referenced in model building codes. Several other documents present policy and program considerations for local governments and others interested in mitigating seismic risk among existing buildings.

Target Audiences for FEMA-NEHRP Publications

- Architects, engineers, and other building professionals
- Building owners, managers, and tenants
- Earthquake engineering researchers, practitioners, graduate students, and young professionals
- Home builders, contractors, and other building or lifeline construction and maintenance personnel
- Individual homeowners and renters
- Lifeline owners, operators, regulators, manufacturers, and suppliers
- Organizations involved in developing building codes and associated design and construction standards
- School teachers, students, and administrators
- State and local government planners, policy makers, building regulators, emergency managers, and hazard mitigation officials
- The financial and insurance industries

Acknowledging that new buildings may be only as earthquake resistant as building codes require, another series of publications focuses on improving the seismic provisions of the Nation's building codes and standards and on promoting the adoption and enforcement of these provisions at State and local levels. Since the early 1980s, FEMA has supported the development of successive editions of the *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures* and its companion publications. The *NEHRP Recommended Provisions* serves as NEHRP's primary vehicle for disseminating new technologies and research results, such as the U.S. Geological Survey's latest seismic hazard mapping

data and new structural systems for strengthening seismic resistance. This seminal document is the primary source of the seismic provisions that are ultimately incorporated into the Nation's model building codes and design standards. Under a contract with FEMA, the Building Seismic Safety Council is currently completing the 2009 edition of this publication with emphases on new technologies and education.

A number of FEMA-NEHRP publications focus on the mitigation of earthquake damage to nonstructural building components (e.g., partitions, pipes, ducts, equipment, furnishings) and on earthquake preparedness and safety information for schoolchildren, homeowners, and others living in areas at risk. Special attention has been given to preparedness education for schools in high-risk communities. FEMA-NEHRP publications offer a wide range of tools, including posters, checklists, activities, and curricula, that can be used to help raise awareness of seismic safety in such localities. Other FEMA-NEHRP documents examine the seismic vulnerability of the Nation's lifelines—power lines, pipelines, highways, railroads, ports, airports, and other infrastructure—including the potential impacts of lifeline disruptions and protective design and retrofitting practices.

FEMA has also been responsive to information needs that have emerged within the earthquake engineering community, including issues that have arisen following major seismic events. For example, in 1994 and 1995, in the wake of earthquakes in Northridge, CA, and Kobe, Japan, unexpected and potentially serious structural damage was discovered in steel moment-resisting frame buildings, a type of structure common in earthquake-prone regions and thought to be one of the best seismic performers. FEMA sponsored a 6-year, $12 million research and development effort to investigate and determine how to mitigate the risks of such damage, and in 2000, the resulting recommendations were disseminated through a series of publications funded by the FEMA-NEHRP program. These recommendations were eventually incorporated into the consensus design standards of the American Institute of Steel Construction and associated training programs.

FEMA continues to update and add to its publications on a variety of topics, including seismic upgrade of existing buildings, mitigation of nonstructural damage, and earthquake preparedness and safety. Several outreach documents are now offered in multiple languages, and new subjects are being addressed, as well. Some recent publications have focused on the development of performance-based seismic design and on communicating and promoting seismic-safety concerns, while others have consolidated seismic design and construction guidance for particular audiences (e.g., architects, home builders) or on particular types of buildings (e.g., schools, hospitals).

Access to Publications

The FEMA-NEHRP publications program is harnessing advancements in information technology to make its products more readily accessible to their intended users. Although the program will continue to offer many publications in print, FEMA is also embracing the convenience and efficiency afforded by electronic publishing. Many program publications are now available as downloadable files or on compact disc.

In addition to making information available electronically, the program is packaging materials specifically for different segments of its target audience. Three new compilations of FEMA-NEHRP publications, for example, will soon be released on compact disc:

- *Earthquake Publications for Teachers and Kids* (FEMA P-710CD), which contains earthquake-safety posters, checklists, activities, and curricula for grades K–12;
- *Earthquake Publications for Individuals and Homeowners* (FEMA P-711CD), which includes seismic safety and preparedness information for adults and children, as well as publications on earthquake-resistant home construction and on reducing nonstructural damage in homes; and
- *Earthquake Publications for Community Planners and Public Policy Makers* (FEMA P-712CD), which provides guidance for communities on assessing and mitigating the risks posed by seismic (and other) hazards.

Publications are available free of charge in print or on CD from the FEMA Publications Warehouse (800-480-2520 or P.O. Box 2012, Jessup, MD 20794-2012). Most of them can also be downloaded from the FEMA website. To find out what documents are available in which forms and how to obtain them, go to the Earthquake Publications and Resources page at http://www.fema.gov/plan/prevent/earthquake/publications.shtm or download a copy of the *Catalog of FEMA Earthquake Publications* at http://www.fema.gov/library/viewRecord.do?id=2754.