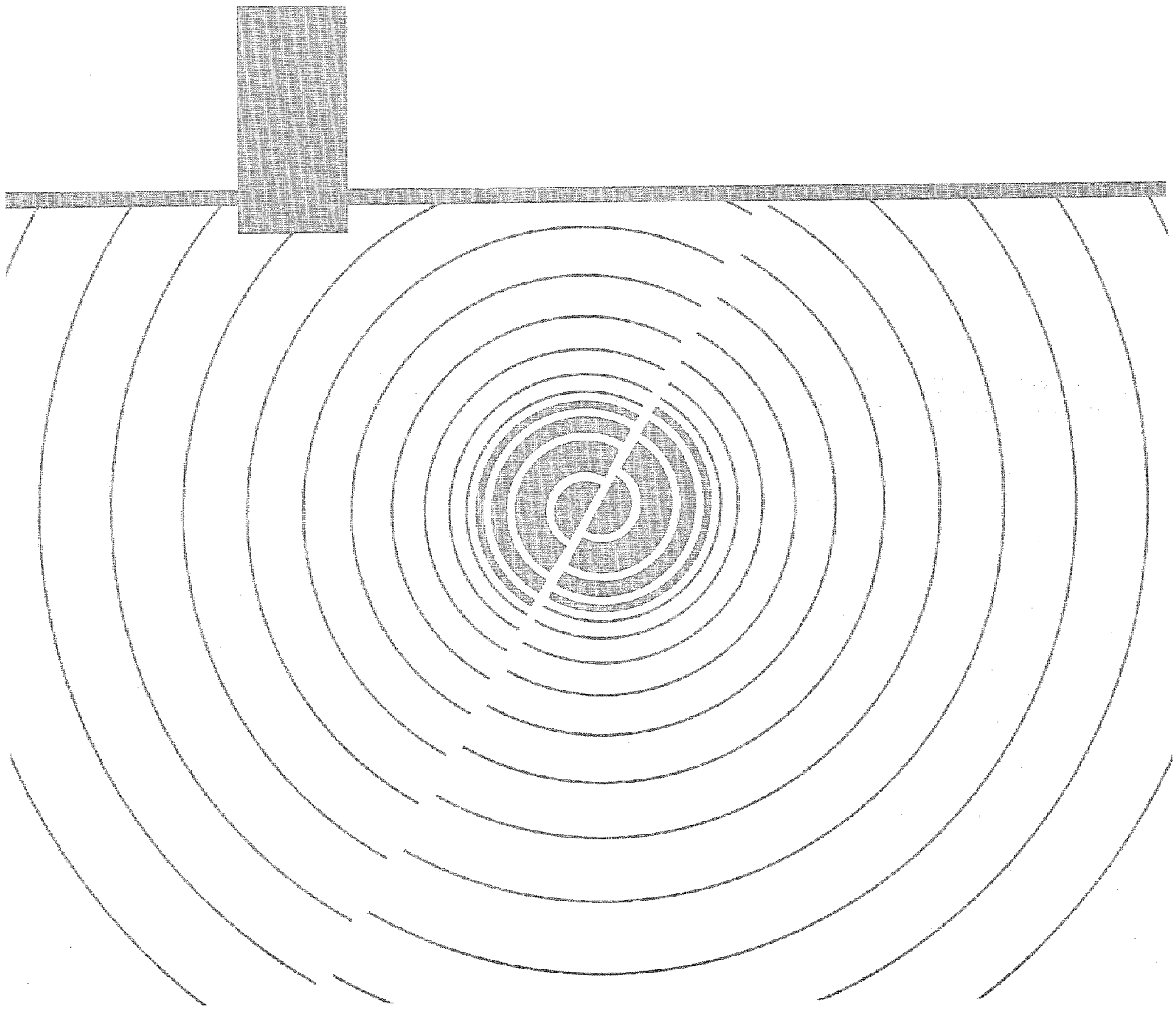
Appendix D: Model Code Organizations: Services and Resources Offered



Appendix D
Model Code Organizations: Services and Resources Offered

Building Officials and Code Administrators International, Inc. (BOCA)

History

Building Officials and Code Administrators International, Inc., was founded in 1915 to provide a forum for the exchange of knowledge and ideas concerning building safety and construction regulation. Their resulting code, the *BOCA National Building Code*, was first published in 1950. BOCA is a not-for-profit service organization dedicated to professional code administration and enforcement for the protection of public health, safety, and welfare. BOCA is the nation's oldest professional association for construction code officials and currently serves a membership that includes both public administrators and a wide variety of building and construction professionals.

Goals and Objectives

BOCA's primary activities are the publication of the national codes and the provision of technical, educational, and informational services relating to all specialty areas of code administration and enforcement.

Membership

Membership in BOCA is available to a wide variety of government officials and building industry professionals. There are thirteen classifications of members; however, the primary memberships pertain to governmental and individual units. Membership services include code interpretations and code change publications in addition to other services and publications.

Active membership (governmental) is open to governmental units, departments, or bureaus that administer, formulate, or enforce laws, ordinances, rules, or regulations relating to construction, fire safety, property maintenance, development, or land use. Dues for active members are: in communities with populations 50,000 and fewer, $120; 50,001 to 150,000, $180; and more than 150,000, $240.

Associate membership (individual) is open to an employee or representative of an active member or a student. Dues are $25.

Other membership categories for professionals, companies, and individuals range from dues of $20 to $400.

Seismic Code Education and Training

The three model code organizations offer publications, seminars, and videos on seismic codes and seismic design. For more information, contact the model code organizations listed in this appendix.

Seminars
- Earthquake Design Requirements, BOCA
- Earthquake Regulations, ICBO
- Design of Concrete Buildings for Earthquakes and Wind Forces, ICBO
- Seismic Training Program for Building Officials, SBCCI

Publications
- Commentary to the 1993 *BOCA National Building Code* provides an in-depth explanation of the seismic provisions, BOCA
- Design of Concrete Buildings for Earthquake and Wind Forces, ICBO
- Recommended Lateral Force Requirements and Commentary 1990 (SEAOC Blue Book), ICBO
- Commentary on Appendix Chapter 1 of the UBC-ICBO Training Manual, ICBO
- Seismic Training for Building Officials, SBCCI

Educational Services
- All three code organizations assist in conducting seminars, workshops, and short courses on code content, enforcement, and administration.

What Happens When One Joins BOCA?

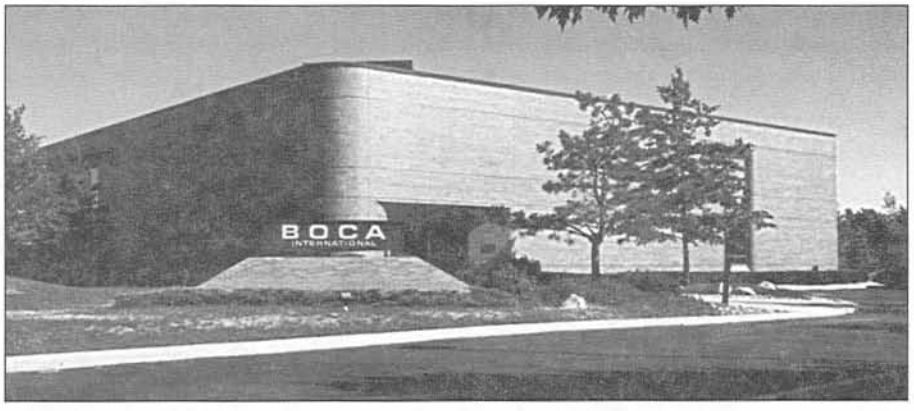
The first step in joining is to call and request a membership form. A new member adopting the code for the first time can request that a BOCA staff member visit his or her site and assist in establishing the program. Advice is offered on a limited basis. The additional costs for new member assistance in code adoption depends on the size of community of the new member, the member's jurisdiction, and the activities being conducted by BOCA staff. The new member may need to hire BOCA to evaluate and establish code formats and procedures if extensive help is needed. Many new members simply take the code book and follow its recommendations with limited assistance from BOCA. All *BOCA National Codes* have sample adoption ordinances printed in the front of the code book.

Code Development/Amendment Process

Each of the *BOCA National Codes* is updated and republished every three years. The *BOCA National Codes* are amended through a democratic public hearing and revision procedure that allows all interested parties the opportunity to both propose changes to code provisions and argue the change proposals. Change proposals are voted on at the organization's annual conference. This procedure guarantees the inclusion of technological advances and current knowledge in the codes.

Technical Services

BOCA's Technical Services Department offers a variety of technical services to BOCA members and to building industry firms and manufacturers. These services include plan examination, technical consultations, and special studies. Product and system evaluation assistance is available through cooperation with BOCA Evaluation Services, Inc. Code interpretations are available to BOCA members at no charge.



BOCA's headquarters office is located in Country Club Hills, Illinois (photo: BOCA)

Professional Development Services

BOCA seminars and correspondence courses are available at reduced member prices. Programs address building, mechanical, plumbing, and electrical inspection; fire prevention; plan review; and a wide variety of specialized seminar topics.

BOCA's Professional Development Services Department strives to promote effective code enforcement by fostering the education and professional development of code users. The department pursues ongoing development of a comprehensive curriculum based on the *BOCA National Codes* and related documents, emphasizing responsiveness to the needs of local, state, and federal agencies. BOCA educational programs address the technical, administrative, and legal areas of code enforcement and are available for individuals with entry-level through advanced skills. BOCA's training programs and products reflect modern instructional design concepts and are available in a variety of media formats.

BOCA annually conducts approximately 300 days of on-location

Building Officials and Code Administrators International, Inc. (BOCA)

Headquarters
4051 West Flossmoor Road
Country Club Hills, IL 60478-5795
tel: 708-799-2300
fax: 708-799-4981
email: member@bocai.org
http://www.bocai.org

Publications Order Department: ext. 242 or 248
Certification Secretary: ext. 334
Plan Review Fax: 708-799-0310

Regional Offices
BOCA has four regional offices that complement the organization's headquarters in making responsive model building code services available to all members across a far-reaching geographic area.

1245 S. Sunbury Rd., Suite 100
Westerville, OH 43081-9308
tel: 614-890-1064
fax: 614-890-9712

Towne Centre Complex
10830 East 45th Street, Suite 200
Tulsa, OK 74146-3809
tel: 918-664-4434
fax: 918-664-4435

One Neshaminy Interplex, Suite 201
Trevose, PA 19053-6338
tel: 215-638-0554
fax: 215-638-4438

6 Omega Terrace
Latham, NY 12110-1939
tel: 518-782-1708
fax: 518-783-0889

BOCA Certification Programs

Certification is achieved in twenty-four categories by successful completion of one or more examinations. These categories include:

- Building Inspector
- Building Plans Examiner
- Electrical Inspector
- Electrical Plans Examiner
- One- and Two-Family Dwelling Electrical Inspector
- Mechanical Inspector
- Mechanical Plans Examiner
- Plumbing Inspector
- Plumbing Plans Examiner
- One- and Two-Family Dwelling Combination Inspector
- One- and Two-Family Building Inspector
- One- and Two-Family Mechanical Inspector
- One- and Two-Family Plumbing Inspector
- Elevator Inspector
- Combination Commercial Inspector
- Building Code Official
- Electrical Code Official
- Mechanical Code Official
- Plumbing Code Official
- Master Code Official
- Fire Inspector I
- Fire Inspector II
- Property Maintenance and Housing Inspector

seminars on a wide variety of code-enforcement subject areas. Training products include video seminars, audio cassette courses, home study workbooks, seminar-related workbooks, and correspondence courses.

Seminars

BOCA seminars provide members with information on the latest in codes and code enforcement and assist in developing new strategies, skills, and knowledge. Seminars provide technical information as well as practice and application exercises on the most contemporary and critical topics in code enforcement.

BOCA offers a seminar titled *Earthquake Design Requirements*. The goal of this seminar is to learn how to identify and apply earthquake design requirements, and to help code officials and design professionals understand the impact of the requirements on their jobs. Fees for this seminar are $99 for BOCA members and $149 for nonmembers. These fees are representative of the seminar fees charged by BOCA.

Any organization or institution, whether a member of BOCA or not, can contract a specific seminar to be administered at their specified site location. This is often done by regional BOCA chapters. No set number of participants is required. BOCA can also customize seminars on special topics. However, this service is expensive due to the cost of paying BOCA staff to develop a new topic.

Certification Programs

BOCA's Professional Development Services Department has promoted the recognition and certification of professional code officials, who by completion of proctored examinations demonstrate knowledge in the *BOCA National Codes*.

Evaluation Services

BOCA Evaluation Services, Inc. (BOCA-ES) distributes code compliance evaluation reports of proprietary construction materials, products, and systems. Each BOCA-ES report describes the product, its performance, and limitations of acceptance under the *BOCA National Codes*.

Publications

BOCA's Publication Development produces and distributes the *BOCA National Codes* and a variety of documents critical to the successful, knowledgeable code user. BOCA offers a wide variety of forms, permits, and enforcement aids; code commentaries, textbooks, and handbooks regarding code administration and enforcement; and numerous specialized workbooks to complement BOCA's many educational programs. BOCA's technical reference and educational materials include a publication on earthquake design requirements. In addition the commentary to the 1993 *BOCA National Building Code* provides an in-depth explanation of the seismic provisions. Substantial price discounts on all publications and services are offered to members.

Membership directory. A directory listing names, addresses, and phone numbers of all BOCA members by category is available. BOCA's articles of association and bylaws are also published in the directory.

Periodicals. *The Building Official and Code Administrator Magazine* is BOCA's bimonthly journal. Subjects include fire safety, construction methods, innovative technology, regulatory activity, construction efficiency and economy, code official professional development, and technical and administrative aspects of code enforcement. The magazine also publishes interpretation requests that have been reviewed by the Code Interpretation Committee.

The *BOCA Bulletin* is a bimonthly newsletter that provides members with news reports between regular issues of the BOCA magazine. It includes items of national interest regarding code enforcement as well as announcements and technical material pertaining to various meetings, seminar offerings, and model code revision activities.

Computer Products

BOCA offers the following products: Complete Building Department Software used to process permits, track new construction inspections, property maintenance inspections, and fire-incident inspections and reporting. There is an electronic product containing code test called CodeSearch. For automated plan review of the *BOCA National Building Code,* explore the Plan Review System Software. Additionally, BOCA's Property Maintenance Management System (PMMS) is an automated property maintenance complaint tracking system.

Discussion of the BOCA National Building Codes

BOCA's complete model building code services program is dedicated to the improvement of construction regulations, and the effective administration, organization, and enforcement of these regulations by professionally staffed state and local governmental units.

To accomplish this BOCA provides a complete and coordinated model building code services package, the backbone of which is the *BOCA National Code* series.

The 1993 *BOCA National Building Code* includes a modified version of the 1991 *NEHRP Recommended Provisions for the Development of Seismic Regulations for New Building.* BOCA uses the 1991 NEHRP Provisions as the technical basis for this section because of its use of nationwide input to develop design criteria. This code section represents state-of-the-art design criteria for seismic design. These provisions minimize the hazard to life for all buildings, increase the expected performance of higher-occupancy buildings as compared to ordinary buildings, and improve the capability of essential facilities to function during and after an earthquake.

The International Conference of Building Officials (ICBO)

History

The International Conference of Building Officials was founded in 1922. ICBO is a nonprofit service corporation owned and controlled by its member cities, counties, states, and federal agencies. The ICBO codes have been widely adopted throughout the United States and in many locations abroad. ICBO has ninety-six local, district, state, and student chapters that provide members with opportunities to meet regularly on a regional basis.

Goals and Objectives

ICBO Mission Statement: "The International Conference of Building Officials is dedicated to public safety in the built environment worldwide through development and promotion of uniform codes and standards, enhancement of professionalism in code administration, and facilitation of acceptance of innovative building products and systems." Goals include:

1. Publication, maintenance, and promotion of the Uniform Building Code (UBC) and related documents.

2. Investigation and research of principles underlying safety to life and property in the construction, use, and location of buildings and related structures.

3. Development and promulgation of uniformity in regulations pertaining to building construction.

The International Conference of Building Officials (ICBO)

Central Office
5360 South Workman Mill Road
Whittier, CA 90601-2298
tel: 562-699-0541
fax: 562-699-8031

ICBO Order Department:
800-284-4406 or
562-692-4226
fax: 562-692-3853
ICBO Computer Services:
562-699-0541 ext. 264
Plan Review Fax:
562-692-3425
ICBO ES, Inc.:
562-695-4694

Regional Offices
ICBO has five regional offices with full support services in evaluation, education, plan checking, code consultation, and code interpretation:

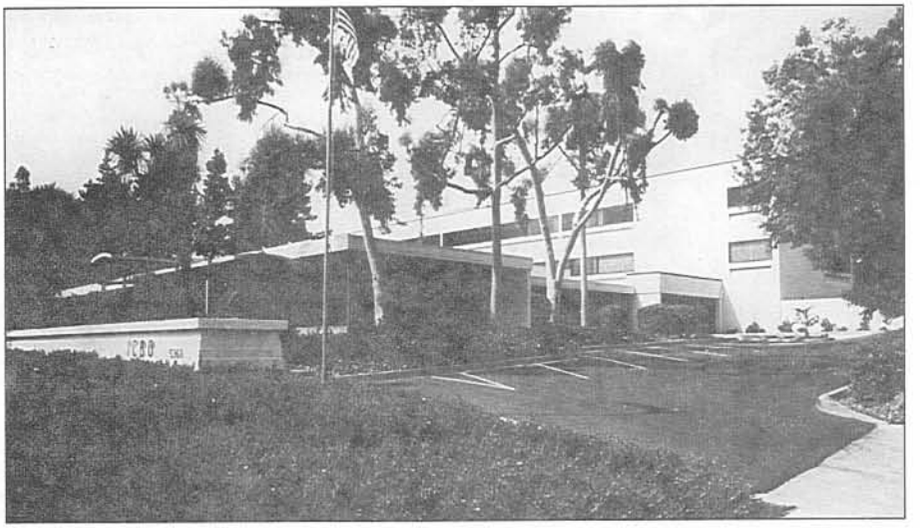
Northern California Regional Office
6130 Stoneridge Mall Road,
Suite 120
Pleasanton, CA 94588
tel: 800-336-1963 or 510-734-3080
fax: 510-463-3295

Austin Regional Office
9300 Jollyville Road, Suite 101
Austin, TX 78759-7455
tel: 512-794-8700
fax: 512-343-9116

Indianapolis Regional Office
7998 Georgetown Road, Suite 900
Indianapolis, IN 46268
tel: 317-879-1677
fax: 317-879-0966

Kansas City Regional Office
290 Northeast 60th St., Suite 206
Gladstone, MO 64119
tel: 816-455-3330
fax: 816-454-8887

Seattle Regional Office
2122 112th Avenue, Northeast,
Suite B-300
Bellevue, WA 98004
tel: 800-231-4776
fax: 425-637-8939



The Central Office of the International Conference of Building Officials is located in Whittier, California. (Photo: ICBO)

4. Advancement of professional skills of those engaged in the administration and enforcement of building laws.

5. Formulation of guidelines for the administration of building and safety departments.

Membership

Membership in ICBO is open to all governmental units as well as all other segments of the building construction industry. There are fifteen membership classifications. The primary memberships are governmental, of which there are two classes.

Class A is a governmental unit or agency engaged in the administration or formulation of laws and ordinances relating to building construction. The annual dues for a city with a population of 10,000 or less is $85. The annual dues for a city of population greater than 10,000 is $195.

Governmental individual is an individual responsible for the enforcement or administration of laws and ordinances relating to building construction. The annual dues are $60.

Both types of members receive a copy of each new edition of the UBC and annual supplements in the years between publication. Interpretations of the codes and plan examination services are also available to these members.

Other memberships are available to students, professionals, and certified individuals at costs that range from $20 to $95. Corporations and associations may join at rates ranging from $150 to $500.

What Happens When One Joins ICBO?

When a governmental unit joins ICBO, the organization sends a representative to orient the new member. The ICBO representative will present a packet with basic information on the organization and its services and procedures. If the new member has never before had a building code in place, ICBO asks that they schedule a meeting with architects and local professionals to meet with the ICBO representative. The representative explains the code information and policies to all affected parties and the city council. The new member can then use the conference services office, chapter, or another nearby ICBO member for assistance when questions or problems arise. These member organizations provide an interactive and helpful network. Once the code is implemented ICBO will review the department to ensure all is well. As long as the new member requests basic orientation information, ICBO will provide services free of charge. However, any assistance leaning more toward training, for example the updating of codes, requires payment.

Code Development/Amendment Process

ICBO's codes are published in a three-year cycle. This cycle, as developed by ICBO members, permits gradual adaptation while allowing inclusion of the latest technological advances. Anyone interested in maintaining or improving the codes may submit change proposals. Code change proposals are discussed in public hearings that

allow the concerns of the construction industry, design professionals, building officials, and other related segments of society to be heard. After ICBO's code staff of structural, civil, fire protection, and mechanical engineers analyze the proposals' impact on the code, the proposals are published as a separate part of *Building Standards* magazine. Thus, all members and subscribers to ICBO services are informed of the code change proposals. Proposed changes with committee recommendations are voted on at ICBO's annual conference. Approved changes become a part of the next edition of the code.

Educational Services

ICBO provides a variety of specialized programs through its Education Department to assist in developing and maintaining adequate training and continuing programs to keep pace with the changing construction industry.

Seminars

ICBO seminars are offered throughout the United States. All course instructors are ICBO technical staff personnel or other nationally recognized instructors. Some seminars are offered only to ICBO members. The cost for members averages about $95 for a one-day program; the average cost for nonmembers is $125 per day.

Participants in ICBO-sponsored seminars earn Continuing Education Units (CEUs). ICBO complies with the standards established by the International Association for Continuing Education and Training and maintains transcript records.

Several special-interest seminars are available to individuals seeking to expand their knowledge of the design or plan review and inspection provisions found in the UBC.

Videos

ICBO videos provide training and information without the expense of seminar participation. These videos are designed, developed, and produced by ICBO to provide basic training in the field of building construction or inspection. Some video subjects include light-frame construction, fire-resistant protection, a guide to revisions of the 1997 Uniform Building Code, and earthquake protection.

Certification Programs

The ICBO Voluntary Certification Program was initiated in 1973 as a means to encourage professionalism among inspection and plan check personnel through a comprehensive test of knowledge of codes, standards, and practices necessary for competent practice. Use of the certification program has greatly expanded in the private sector, with its need for qualified special inspectors, as well as in a number of states that are considering statewide mandatory ICBO certification of construction inspectors.

The program is administered by ICBO through its Certification Department. ICBO does not offer exam-preparation seminars. Knowledge for the exams is obtained through professional experience and professional development education. Prior to the exams ICBO provides all registered participants with a *Candidate Bulletin*, which describes each exam in detail (i.e., suggested reference materials, an outline of topics stressed on the exam, and sample questions).

Examinations are administered three times a year, and much more frequently through computer-based testing centers. Dates and test locations are listed in *Building Standards* magazine.

Assistance

ICBO offers management studies, operational reviews, and analyses to provide counsel in areas such as budgeting, staffing, work evaluation, and ordinance preparation.

ICBO Certification Categories

Certification is offered for:

Code Enforcement Inspectors

- Building Inspector
- Electrical Inspector
- Mechanical Inspector
- Combination Inspector
- Combination Dwelling Inspector
- CABO One- and Two-Family Dwelling Inspector
- Light Commercial Combination Inspector Elevator Inspector

Plan Examiners

Special Inspectors

- Reinforced Concrete Special Inspector
- Prestressed Concrete Special Inspector
- Structural Masonry Special Inspector
- Structural Steel/Welding Special Inspector
- Spray-Applied Fireproofing Special Inspector

Uniform Fire Code Inspectors

Company Officer Fire Code Inspectors

Underground Storage Tank Inspectors

- Installation/Retrofitting
- Decommisioning
- Tank Tightness Testing
- Cathodic Protection

Evaluation Service

The ICBO codes are designed to encourage the development of new building products and innovative building systems through the examination and evaluation of basic research and product testing. ICBO's evaluation service gives communities access to an expert staff of trained engineers at minimal cost and allows proponents of new building products or systems to gain recognition by building enforcement agencies.

Plan Review Services

The ICBO offers its own plan review services to jurisdictions desiring access to ICBO staff expertise. ICBO charges a portion of the permit fee, allowing the jurisdiction to retain a percentage for administrative costs. Turnaround time is less than two to four weeks.

Publications

The Uniform Building Code. Publication of the UBC and its related volumes remains ICBO's primary function. In each of the two years between publication of the codes, a supplement is issued containing changes approved at the most recent annual conference. An analysis of these changes is published every three years along with the major new edition of the codes.

Membership roster. This publication contains a description of each category of membership and a complete listing of all ICBO members. Also included is an explanation of the history of the conference, the functions of the various departments, and available services. Other features include publications, information, a chapter directory, and the conference bylaws.

Technical reference and educational materials. ICBO develops texts and course materials for use in connection with community college curricula and higher-level courses in building construction technology and inspection. These materials have also proved to be valuable to building officials in the effective administration of their departments.

Periodicals. *Building Standards* is ICBO's official periodical. It is published bimonthly and contains articles of technical, educational, and administrative importance as well as code interpretations, current building valuation data, education offerings, job opportunities, a complete calendar, chapter news, and other features. It is published in newsletter form in alternate months. Code-change reports are published as magazine supplements, beginning with proposed changes and including the reports of the code development committees and action taken by the membership at the annual conference.

Automated/Computer Products

Products offered by ICBO are available in 3" and 5 1/4" disk format, PC and Macintosh versions. Manuals and handbooks are available in current WordPerfect, Microsoft Word, and ASCII file formats. Technical information and software products include:

- Uniform Codes on CD-ROM (Code Express)
- UBC Application/Interpretation Manual (electronic version)
- Handbook to the 1994 Uniform Building Code (electronic version)
- UBC Checklist
- Code Change Assistant
- Electronic Building Department Forms
- Product Information Retrieval System (PIRS)

Southern Building Code Congress International, Inc. (SBCCI)

History

The Southern Building Code Congress International, Inc. was founded in 1940 as a nonprofit, internationally recognized model building code organization. The organization is dedicated to serving state and local governments and the building industry through the promulgation and maintenance of the performance-based *Standard Codes* and by providing technical and educational support services. The first publication of the SBC was in 1945.

The original governmental membership of forty southern cities has grown to more than 2,300 city, county, state, and provincial governments and agencies in the United States and other countries. Additional membership in the organization includes more than 8,000 engineers, architects, home builders, contractors, trade associations, and manufacturers.

Goals and Objectives

The stated objectives of the SBCCI are:

1. To develop, maintain, and promote the adoption of the *Standard Codes* and other related documents.
2. To promote uniformity in building regulations through the adoption of the *Standard Codes* and to encourage uniformity in the application, interpretation, and enforcement of these codes.
3. To study, review, and advance the principal fundamentals of safety in building construction.
4. To advance the professional skills of those engaged in the administration and enforcement of building regulations.
5. To advise and assist in the administration of building codes and ordinances.
6. To research, develop, and publish educational materials, including but not limited to testing and certification of code enforcement personnel.
7. To perform other functions as deemed relevant to or desirable for the attainment of these objectives.

Membership

The membership categories of SBCCI are structured to allow participation by anyone interested in building code development and enforcement. There are fifteen individual classifications of members within six categories. However, the primary membership category is that of the active member.

An **active member** is a government unit or agency engaged in the administration, formulation, and enforcement of codes and ordinances relating to building construction. A single active membership provides all of a community's departments or divisions charged with code enforcement with access to a single source of services. The

The Southern Building Code Congress International, Inc., was founded in 1940. Its current headquarters are located in Birmingham, Alabama. (Photo: SBCCI)

Southern Building Code Congress International, Inc. (SBCCI)

Headquarters Office
900 Montclair Road
Birmingham, AL 35213-1206
tel: 205-591-1853
fax: 205-592-7001
TDD: 205-599-9742
email: info@sbcci.org
http://www.sbcci.org

Southwest Regional Office
9420 Research Boulevard
Echelon III, Suite 150
Austin, TX 78759
tel: 512-346-4150
fax: 512-346-4227

Southeast Regional Office
4303 Vineland Road, Suite F-7
Orlando, FL 32811
tel: 407-648-9632
fax: 407-648-9702

Eastern Regional Office
1200 Woodruff Road, Suite G-26
Greenville, SC 29607
tel: 864-281-1006
fax: 864-281-1030

following is a schedule of active member dues:

Population of Jurisdiction	Annual Fee
<5,000	$40
5,001-10,000	$55
10,001-25,000	$75
25,001-50,000	$100
50,001-100,000	$125
100,001-200,000	$150
200,001-300,000	$200
>300,000	$250

Other membership categories exist for corporations, colleges, individuals, students, etc. Dues for these membership categories range from $15 to $275.

What Happens When One Joins SBCCI?

The materials received by new members are discussed in the following text, as are the available services for assistance. SBCCI does offer initial assistance in establishing the code and enforcement guidelines for new members. At a certain point the new member contracts for services and is charged a fee. Regional chapters assist many new members and help distribute information needed at first.

Administration

General policy and major financial decisions for SBCCI are made by an elected board of directors consisting of a president, vice-president, immediate past president, and five directors. The implementation of board policy and the daily management of the organization are the responsibility of the chief executive officer. A full-time professional staff of more than 70 employees provides member services, publication work, and recordkeeping.

Code Development/Amendment Process

Proposed changes to the SBC and supplements are submitted in writing to the office of the chief executive officer together with supporting evidence by the first weekday of March of each year for consideration during that year. The board of directors schedules an open public meeting to receive comments from interested persons and to review the proposed code changes. The report and recommendations of the code committee are published by SBCCI and distributed prior to the opening of the annual conference. At the annual conference code changes are considered and acted upon.

Educational Services

SBCCI sponsors educational programs at various locations throughout its primary coverage area. Courses provide instruction on the technical aspects of the SBC and general knowledge required for effective code enforcement. There are also courses for building department management and the legal aspects of code administration. These educational programs are offered as home study courses, video programs, and classroom presentations.

In addition to the scheduled courses, the SBCCI's educational staff is available to assist in planning and conducting seminars, workshops, and short courses on the various code provisions as well as on code enforcement and department administration. This assistance is available to all membership categories.

Videos

SBCCI offers a series of videotapes designed to assist in using and understanding the SBC. Videos currently available include such topics as wind loads, electrical inspections, and software tutorials.

Certification Program

The SBCCI certification program for code enforcement and administration professionals is a voluntary program that permits these professionals to demonstrate their knowledge in various areas of code enforcement through a written, statistically validated examination. The examination fee for SBCCI members is $95 per examination; and for nonmembers, $135 per examination.

Objectives of the program are:

1. Give recognition to those who have achieved a level of knowledge in their profession.
2. Enhance the professionalism of the code enforcement and administration profession.
3. Assist in the evaluation of code enforcement personnel in their knowledge of the codes.

The program is graduated so that an individual can demonstrate professional growth through progressive levels of certification.

Contractor Testing Service

This relatively new service enables the Education Department to assist governing bodies by ensuring that building contractors of all varieties have passed minimum competency requirements before being licensed. The Contractor Testing Program offers a range of standard examinations for structural, plumbing, electrical, and mechanical contractors at both the master and journeyman levels.

Chapter Training

SBCCI encourages and recognizes the establishment of regional, state, and local chapter organizations of its members and offers training to these groups.

Administrative Services

Departmental analyses. The SBCCI professional staff will provide on-site analyses of existing building departments. The staff will also provide on-site assistance to jurisdictions wishing to establish a code-enforcement program and inspection department. These analyses include but are not limited to evaluations of workloads, permit processing techniques, inspection techniques, job descriptions, and/or computer needs.

Computer services. The SBCCI maintains a full-time staff of computer professionals to advise state, county, and local governments and design professionals on the use and application of computers in code enforcement and building construction. The SBCCI is continuing to develop generic software called Standard Soft, specifically designed for use by building departments and design professionals. Modules currently available include the permit, inspection and plan review modules.

Technical Services

Code interpretations. The SBCCI technical staff will provide consultation either in writing or by telephone on questions regarding the meaning and intent of the *Standard Codes* to all membership categories.

Engineering consulting services. SBCCI's professional engineering staff provides technical consulting services to members. Through consultation with SBCCI engineers, members can often solve code-related engineering problems. This service is particularly valuable to small- and medium-sized towns and cities that may have limited technical staffs.

Publications

The Standard Codes. Besides the *Standard Codes*, the SBCCI has developed a comprehensive set of model construction codes available to local governments. These codes, known as the Standard Codes, include the following:

SBCCI Certification Levels and Areas

Four levels and separate areas of certification are available as follows:

Level 1 Certification

- Housing Rehabilitation Inspector
- Zoning and Property Standards Inspector
- Residential Electrical Inspector
- Coastal Construction Inspector
- Building Inspector
- Mechanical Inspector
- Commercial Electrical Inspector
- Plumbing Inspector
- Fire Inspector I
- Fire Inspector II
- One- and Two-Family Dwelling Inspector
- Commercial Combination Inspector
- Electrical Inspector

Level 2 Certification

- Housing Rehabilitation Code Enforcement Officer
- Building Plan Examiner
- Electrical Plan Examiner
- Plumbing Plan Examiner
- Mechanical Plan Examiner
- Fire Safety Plan Examiner
- Electrical Inspector

Level 3 Certification

- Chief Building Code Analyst
- Chief Electrical Code Analyst
- Chief Plumbing Code Analyst
- Chief Mechanical Code Analyst
- Chief Fire Prevention Code Analyst

Level 4 Certification

- Code Enforcement and Administration Professional

Three Model Building Code Organizations: Sample Fee Schedules

All three of the model building code organizations provide suggested fee schedules for members. These are intended to be adopted and modified by member code enforcers to fit their individual circumstances. All schedules are much more complex than could fit here; each schedule is updated regularly and is available to organization members. The following information is current as to the date of this book and is presented to give readers an idea of the approximate fees involved.

BOCA Fee Schedule

Building permit fee. The *BOCA National Codes* do not include provisions that mandate a specific permit fee schedule. This is at the sole discretion of the adopting jurisdiction. However, BOCA has provided a mechanism whereby local jurisdictions can customize their fees based on their specific jurisdiction.

Plan review fee. The fee charged by local jurisdictions for their plan review services is tyically built into the permit fee.

The plan review fee is based on the estimated construction value calculated in accordance with the Permit Fee Schedule (construction value = gross area x gross area modifier x type of construction factor) published biannually in the *BOCA Magazine*. For buildings valued up to $1 million, the building plan review fee is 0.0015 of the building's valuation ($100 minimum). Thus, for a typical commercial structure with a total construction cost of $100,000, this fee structure would result in a plan review fee of $150.

Fee reductions may be given for buildings such as large warehouses or indoor recreational facilities because of their plan review simplicity. Reductions may also be given to buildings with repetitive floor plans (e.g., high-rise).

In addition, mechanical, plumbing, energy, and electrical plan review fees are each 25 percent of the building code plan review fee. The sprinkler review fee is based on the number of sprinkler heads (e.g., 1-100 heads costs $150).

ICBO Fee Schedule

Building permit fees. ICBO's permit fee is based on the total value of all construction work, finish work, painting, roofing, electrical, plumbing, heating, air conditioning, elevators, fire-extinguishing systems, and any other permanent equipment. A fee schedule or table is provided to ICBO members. For our example of a typical commercial structure with a total construction cost of $100,000, ICBO's permit fee is $580 for the first $50,000 and $6.25 for each additional $1,000. This results in a permit fee of $892.50. Any project that has not first secured a permit prior to beginning construction, will be charged an investigation fee.

Plan review fee. ICBO also suggests a plan review fee equal to 65 percent of the building permit fee. This would create a plan review fee of $580 for our typical commercial structure. Therefore, the total fee costs for this project would be $1,473.

SBCCI Fee Schedule

Building permit fees. Permit fees are based on the total determined construction value of a project. A fee schedule or table is provided for SBCCI members. For a typical commercial structure with a construction cost of $100,000, the permit fee is $460.

If for any reason a permit is not obtained prior to beginning work on a project, a penalty fee will be assessed that is double the original permit fee amount. Full compliance with the code must also be met in addition to payment of the penalty fee. SBCCI has a set moving fee of $100 for any building or structure. Demolition fees are based on total cubic feet.

Plan-checking fees. SBCCI requires a plan-checking fee equal to half the permit fee for any proposed project that has total construction costs in excess of $1,000. This cost is in addition to the permit fee.

- Standard Plumbing Code
- Standard Mechanical Code
- Standard Gas Code
- Standard Fire Prevention Code
- Standard Existing Buildings Code
- Standard Housing Code
- Standard Swimming Pool Code
- Standard Amusement Device Code
- Standard Unsafe Building Abatement Code

Two codes that SBCCI has a part in developing and updating are:

- CABO One- and Two-Family Dwelling Code
- CABO Model Energy Code

Membership directory. A directory lists names, addresses, and phone numbers of all SBCCI members by category. SBCCI's bylaws are also published in the directory.

Technical reference and educational materials. Numerous workbooks and manuals provide technical and administrative assistance to members in understanding the use of the codes and in preparing for certification examinations.

Periodicals. Each month SBCCI members receive either an issue of *Southern Building* magazine or the organization's newsletter, *SBCCI Newsbriefs*. These publications are mailed six times a year on alternate months. Both publications keep the membership informed of developments in the fields of code enforcement and construction technology as well as the activities of SBCCI.

Other publications. SBCCI also produces instructional slides, microfiche, application and administration forms and labels.

Building Seismic Safety Council (BSSC)

The BSSC and its member organizations are valuable resources for increasing the use of seismic codes. The list of member organizations, below, shows the breadth of support for seismic safety issues nationwide and identifies potential sources of information and support in promoting the use of seismic codes.

General Information

The BSSC was established in 1979 under the auspices of the National Institute of Building Sciences to deal with the complex issues involved in promulgating seismic construction standards on a nationwide basis. It is an independent, voluntary membership body representing a wide variety of building community interests. It currently (1997) has sixty-three member organizations.

BSSC provides a national forum that fosters improved seismic safety provisions. It does this by:

- Promoting the development of seismic safety provisions suitable for the entire country;
- Promoting the adoption of seismic safety provisions in voluntary standards and model codes;
- Assessing progress in implementation of seismic provisions;
- Identifying opportunities for improving seismic safety regulations;
- Promoting training and educational courses for the building community (see Appendix E for address);
- Advising government bodies on research and implementation; and
- Reviewing research and practice and recommending changes to seismic design practice.

The BSSC plays an integral role in the periodic development of the *NEHRP Provisions*, which are used as a resource document by the model building code organizations. It has also been involved in the forthcoming *Guidelines for the Seismic Rehabilitation of Buildings* (FEMA #273 & #274), which deal with existing buildings.

Member Organizations

AFL-CIO Building and Construction Trades Department

AISC Marketing, Inc.

American Concrete Institute

American Consulting Engineers Council

American Forest and Paper Association

American Institute of Architects

American Institute of Steel Construction

American Insurance Services Group, Inc.

American Iron and Steel Institute

American Plywood Association

American Society of Civil Engineers

American Society of Civil Engineers–Kansas City Chapter

American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

American Society of Mechanical Engineers

American Welding Society

Applied Technology Council

Associated General Contractors of America

Association of Engineering Geologists

Association of Major City Building Officials

Bay Area Structural, Inc.*

Brick Institute of America

Building Officials and Code Administrators International, Inc.

Building Owners and Managers Association International

Building Technology, Incorporated*

California Geotechnical Engineers Association

Canadian National Committee on Earthquake Engineering

Concrete Masonry Association of California and Nevada

Concrete Reinforcing Steel Institute

Earthquake Engineering Research Institute

General Reinsurance Corporation*

Institute for Business and Home Safety (formerly Insurance Institute for Property Loss Reduction)

Insulating Concrete Form Association

Interagency Committee on Seismic Safety in Construction

International Conference of Building Officials

Masonry Institute of America

The Masonry Society

Metal Building Manufacturers Association

National Association of Home Builders

National Concrete Masonry Association

National Conference of States on Building Codes and Standards

National Council of Structural Engineers Association

National Elevator Industry, Inc.

National Fire Sprinkler Association

National Institute of Building Sciences

National Ready Mixed Concrete Association

Permanent Commission for Structural Safety of Buildings*

Portland Cement Association

Precast/Prestressed Concrete Institute

Rack Manufacturers Institute

Seismic Safety Commission (California)

Southern Building Code Congress International

Southern California Gas Company*

Steel Deck Institute, Inc.

Steel Joist Institute*

Steven Winter Associates, Inc.*

Structural Engineers Association of Arizona

Structural Engineers Association of California

Structural Engineers Association of Central California

Structural Engineers Association of Colorado

Structural Engineers Association of Illinois

Structural Engineers Association of Northern California

Structural Engineers Association of Oregon

Structural Engineers Association of San Diego

Structural Engineers Association of Southern California

Structural Engineers Association of Utah

Structural Engineers Association of Washington

U.S. Postal Service*

Western States Clay Products Association

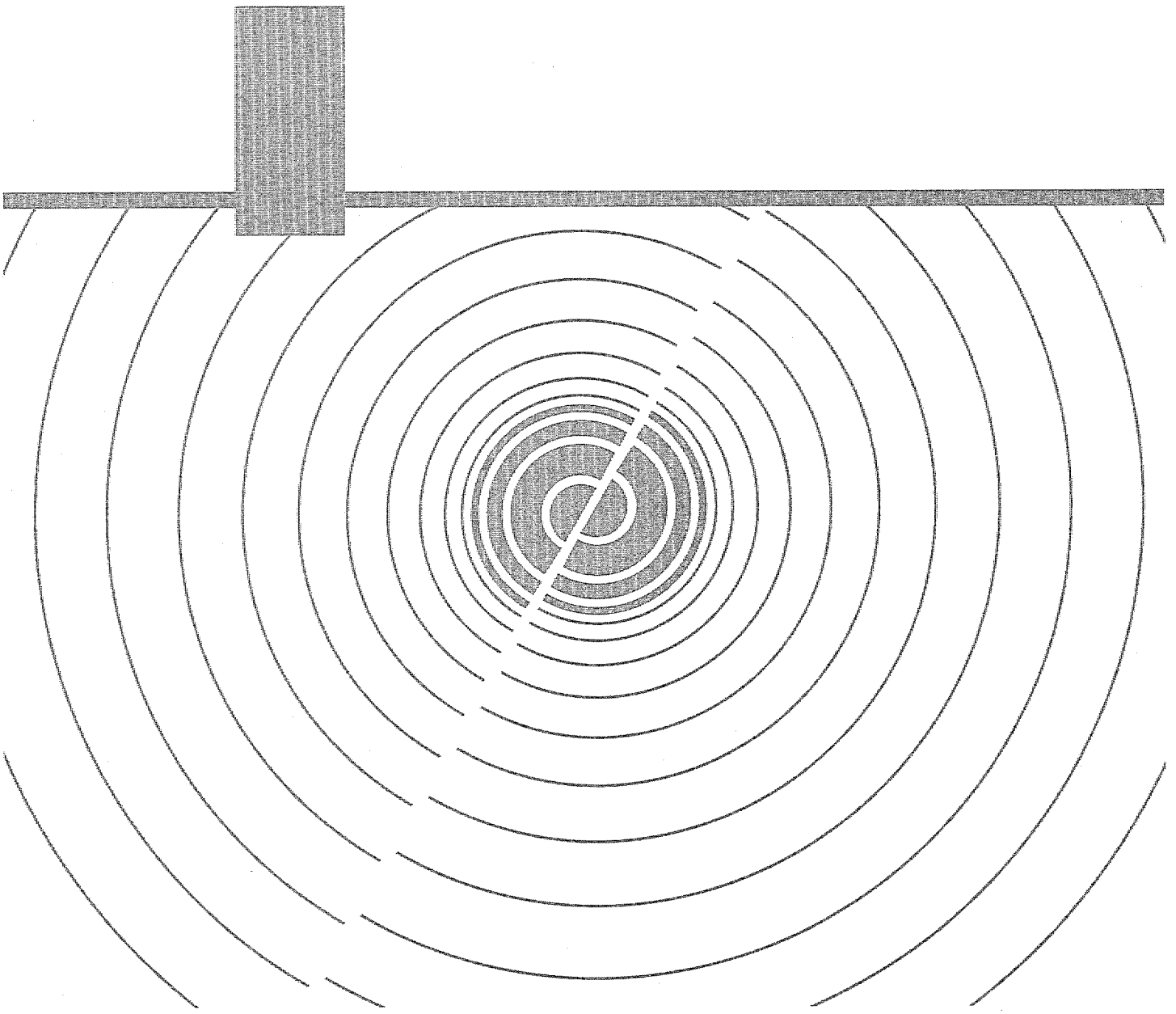
Western States Council Structural Engineers Association

Westinghouse Electric Corporation*

Wire Reinforcement Institute, Inc.

**Affiliate (nonvoting) members.*

Appendix E: Organizations Involved in Seismic Safety: Contact Information



Appendix E
Organizations Involved in Seismic Safety: Contact Information

Listed are several organizations that can provide further information on codes or seismic design. Most of them offer lists of publications (see Appendix F). In addition, the professional organizations have directories of members and local chapters.

Code Organizations

These are the publishers of the model building codes used in the United States. More complete information on these organizations and their services is included in Appendix D.

Building Officials and Code Administrators, International, Inc. (BOCA)
4051 West Flossmoor Road
Country Club Hills, IL 60478-5795
(708) 799-2300
fax: 708-799-4981
http://www.bocai.org

Council of American Building Officials (CABO)
5203 Leesburg Pike, Suite 708
Falls Church, VA 22041
(703) 931-4533
fax: (703) 379-1546
http://www.cabo.org

International Conference of Building Officials (ICBO)
5360 South Workman Mill Road
Whittier, CA 90601-2298
(562) 699-0541
fax: (562) 699-8031
Customer Service and Publications: (800) 284-4406
http://www.icbo.org

Southern Building Code Congress International (SBCCI)
900 Montclair Road
Birmingham, AL 35213-1206
(205) 591-1853
fax: (205) 592-7001
TDD: (205) 599-9742
email: info@sbcci.org
http://www.sbcci.org

Multi-State Earthquake Organizations

These organizations are consortia of officials from several states. Each one has a number of useful publications and, because they specialize in seismic safety issues, can help to put you in touch with key officials in your own state.

Central United States Earthquake Consortium (CUSEC)
2630 E. Holmes Rd.
Memphis, TN 38118
(901) 544-3570
fax: (901) 544-0544
email: cusec@ceri.memphis.edu
http://gandalf.ceri.memphis.edu/~cusec/index.html

Northeast States Emergency Consortium (NESEC)
607 North Ave., Suite 16
Wakefield, MA 01880
(617) 224-9876
fax: (617) 224-4350
email: NESEC@serve.com
http://www.serve.com/NESEC

Western States Seismic Policy Council (WSSPC)
121 Second Street, 4th Floor
San Francisco, CA 94105
(415) 974-6422
fax: (415) 974-1747
http://vishnu.glg.nau.edu/wsspc.html

Federal Agencies

All these agencies are excellent sources of publications, slides, and videos regarding earthquakes and seismic safety. Key publications are listed in Appendix F.

Federal Emergency Management Agency Mitigation Directorate (FEMA)
500 C. Street, SW
Washington, DC 20472
(202) 646-4622
http://www.fema.gov

FEMA Publications Center
(800) 480-2520

FEMA Region I
442 J. W. McCormack Post Office and Courthouse Building
Boston, MA 02109-4595
(617) 223-9540
Mitigation Directorate: (617) 223-9559

FEMA Region II
Mitigation Division
26 Federal Plaza, Room 1351
New York, NY 10278-0002
(212) 225-7200
fax: (212) 225-7262

FEMA Region III
Liberty Square Building, 2nd Floor
105 South 7th Street
Philadelphia, PA 19106-3316
(215) 931-5528
fax: (215) 931-5501

FEMA Region IV
Mitigation Division
Koger Center–Rutgers Building
3003 Chamblee-Tucker Road
Atlanta, GA 30341
(770) 220-5400
fax: (770) 220-5440

FEMA Region V
175 West Jackson Blvd., 4th Floor
Chicago, IL 60604-2698
(312) 408-5500
fax: (312) 408-5551

FEMA Region VI
Federal Regional Center
800 North Loop 288
Denton, TX 76201-3698
(940) 898-5123
Mitigation Directorate: (940) 898-5165

FEMA Region VII
2323 Grand Blvd., Suite 900
Kansas City, MO 64108-2670
(816) 283-7002
fax: (816) 283-7018

FEMA Region VIII
Denver Federal Center, Building 710
Box 25267
Denver, CO 80225-0267
(303) 235-4800

FEMA Region IX
Building #105
P.O. Box 29998
Presidio of San Francisco
San Francisco, CA 94129
(415) 923-7100
fax: (415) 923-7112

FEMA Region X
Federal Regional Center
130 228th Street, SW
Bothell, WA 98021-9796
(206) 487-4600
Mitigation Directorate: (207) 487-4682

National Geophysical Data Center
National Oceanic & Atmospheric Administration
325 Broadway, Mail Code EIGC
Boulder, CO 80303-3328
(303) 497-6826
http://www.ngdc.noaa.gov

National Institute of Standards and Technology (NIST)
Buildings and Fire Research Laboratory
Building 226, Room B216
Gaithersburg, MD 20899
(301) 975-5900
http://www.nist.gov

U.S. Geological Survey, Information Services (Publications)
Box 25286
Denver, CO 80225
(800) 435-7627

USGS Office of Earthquakes, Volanoes & Engineering
12201 Sunrise Valley Drive
M.S. 905
Reston, VA 20192
(703) 648-4000
http://www.usgs.gov

345 Middlefield Road
M.S. 870
Menlo Park, CA 94025
(415) 853-8300

USGS National Earthquake Information Center
Denver Federal Center
M.S. 967, Box 25046
Denver, CO 80225
(303) 273-8500
fax: (303) 273-8450
http://wwwneic.cr.usgs.gov or http://earthquake.usgs.gov

State Seismic Safety Advisory Committees

Several states have created seismic safety advisory boards. If your state, or a neighboring state, has one, they can be good sources of basic seismic safety information about your region.

Arizona
Arizona Council for Earthquake Safety
Arizona Dept. of Emergency & Military Affairs
Div. of Emergency Services
5636 E. McDowell Rd.
Phoenix, AZ 85008
(602) 231-6238
fax: (602) 231-6263

Arkansas
Arkansas Earthquake Advisory Council
Arkansas Office of Emergency Services
P.O. Box 758
Conway, AR 72033
(501) 329-5601
fax: (501) 730-9754

California
Seismic Safety Commission
1900 K St., Suite 100
Sacramento, CA 95814
(916) 322-4917
fax: (916) 322-9476

Hawaii
Hawaii State Earthquake Advisory Board
Office of the Director of Civil Defense
3949 Diamond Head Road
Honolulu, HI 96816-4495
(808) 733-4300
fax: (808) 733-4287

Illinois
Illinois Earthquake Advisory Board
Illinois Emergency Management Agency
110 E. Adams Street
Springfield, IL 62701-1109
(217) 782-4448
fax: (217) 785-6043

Indiana
Indiana Seismic Safety Advisory Board
Indiana State Emergency Management Agency
IN GOVT CTR South/302 W. Washington St., Room E208
Indianapolis, IN 46204
(317) 232-3986
fax: (317) 232-3895

Kentucky
Governor's Earthquake Hazards & Safety Technical Advisory Panel
Kentucky Div. of Disaster & Emergency Services
EOC Building, Boone Center
Frankfort, KY 40601-6169
(502) 564-8611
fax: (502) 564-8614

Mississippi
Mississippi Seismic Advisory Panel
Mississippi Emergency Management Agency
P.O. Box 4501, Fondren Station
Jackson, MS 39216
(601) 352-9100
fax: (601) 352-8314

Missouri
Missouri Seismic Safety Commission
Missouri Emergency Management Agency
P.O. Box 116
Jefferson City, MO 65102
(573) 526-9101
fax: (573) 634-7966
http://eas.slu.edu/seismic safety/

Nevada
Nevada Earthquake Safety Council
Div. of Emergency Management
2525 S. Carson Street
Carson City, NV 89711
(702) 687-4240
fax: (702) 687-6788

Oregon
Oregon Seismic Safety Policy Advisory Committee
595 Cottage St., NE
Salem, OR 97310
(503) 378-2903
fax: (503) 588-1378

Puerto Rico
Comision de Seguridad Contra Terremotos
State Civil Defense
P.O. Box 9066597
San Juan, PR 00906-6597
(787) 724-0124

Tennessee
Tennessee Seismic Safety Advisory Panel
Tennessee Emergency Management Agency
Tennessee EOC
3041 Sidco Dr.
Nashville, TN 37204-1502
(615) 741-0001
fax: (615) 242-9635

Utah
Utah Earthquake Advisory Board
University of Utah Seismograph Stations
University of Utah
135 South, 1460 East
Room 705
Salt Lake City, UT 84112
(801) 581-6274
fax: (801) 585-5585

Washington
Washington State Seismic Safety Advisory Committee
Washington State Dept. of Natural Resources
Geology & Earth Resources Division
P.O. Box 47007
Olympia, WA 98504-7007
(360) 902-1000
fax: (360) 902-1785

Libraries

All the references cited in Appendix F can be located at at least one of these libraries. The libraries are set up to respond to public requests for information. They can lend materials through interlibrary loan or, for a fee, can photocopy excerpts from documents. In some cases, you can search their collections online through their internet web sites.

Center for Earthquake Research & Information
University of Memphis
Campus Box 526590
Memphis, TN 38152-6590
(901) 678-2007
fax: (901) 678-4734
http://www.ceri.memphis.edu

Earthquake Engineering Research Center
University of California at Berkeley
1301 S. 46th Street
Richmond, CA 94804-4698
(510) 231-9403
fax: (510) 231-9461
email: eerclib@nisee.ce.berkeley.edu
http://nisee.ce.berkeley.edu

Earthquake Engineering Research Library
California Institute of Technology
Mail Code 104-44
Pasadena, CA 91125
(818) 395-4227
fax: (818) 568-2719
email: eerlib@cco.caltech.edu
http://www.eerl.caltech.edu/library/library.html

National Center for Earthquake Engineering Research
c/o Science and Engineering Library
SUNY–Buffalo
304 Copen Hall
Buffalo, NY 14260-2200
(716) 645-3377
fax: (716) 645-3379
http://nceer.eng.buffalo.edu

Natural Hazards Research & Applications Information Center
University of Colorado
Campus Box 482
Boulder, CO 80309-0482
(303) 492-6818
fax: (303) 492-2151
email: hazctr@colorado.edu
http://www.colorado.edu/hazards/

Resource Organizations for Developing Code-Adoption Strategies

These professional and trade organizations represent key groups whose support you will need in trying to promote the adoption of seismic building codes. These national offices can refer you to the local or regional affiliate nearest you.

American Institute of Architects (AIA)
1735 New York Avenue, NW
Washington, DC 20006
(202) 626-7300
http://www.aia.org

American Planning Association
1776 Massachusetts Ave., NW
Suite 400
Washington, DC 20036-1997
(202) 872-0611
fax: (202) 872-0643
http://www.planning.org

American Society of Civil Engineers (ASCE)
1801 Alexander Bell Drive
Reston, VA 20191-4400
(800) 548-2723
http://www.asce.org

Associated General Contractors of America
1957 E Street, NW
Washington, DC 20006
(202) 393-2040
fax: (202) 347-4004
http://www.agc.org

International City/County Management Association (ICMA)
777 North Capitol Street, NE
Suite 500
Washington, DC 20002-4201
(202) 289-4262
fax: (202) 962-3500
http://www.icma.org

National Association of Home Builders
1201 15th Street, NW
Washington, DC 20005
(202) 822-0200
fax: (202) 822-0559
http://www.nahb.com

National Society of Professional Engineers (NSPE)
1420 King Street
Alexandria, VA 22314
(703) 684-2800
fax: (703) 836-4875
http://www.nspe.org

National League of Cities (NLC)
1301 Pennsylvania Avenue, NW
Suite 550
Washington, DC 20004
(202) 626-3000
fax: (202) 626-3043
http://www.cais.com/nlc/

Structural Engineers Association of California
555 University Avenue, Suite 126
Sacramento, CA 95825
(916) 427-3647
fax: (916) 568-0677
http://www.seaoc.org

The United States Conference of Mayors
1620 I Street, NW
Washington, DC 20006
(202) 293-7330
fax: (202) 293-2352
http://www.usmayors.org/uscm

Additional Organizations

These university, nonprofit, and trade organizations all have publications related to building codes or seismic safety. Some of them are instrumental in promoting the adoption of seismic building codes, and could provide valuable support to your efforts.

American Association of State Highway & Transportation Officials
444 N. Capitol Street, NW, Suite 249
Washington, DC 20001
(202) 624-5800
fax: (202) 624-5806

American Institute of Architects (AIA)
1735 New York Avenue, NW
Washington, DC 20006
(202) 626-7300
http://www.aia.org

American Society of Civil Engineers (ASCE)
1801 Alexander Bell Drive
Reston, VA 20191-4400
(800) 548-2723
http://www.asce.org

Applied Technology Council (ATC)
555 Twin Dolphin Drive, Suite 550
Redwood City, CA 94065
(415) 595-1542
fax: (650) 593-2320
http://www.atcouncil.org

Building Seismic Safety Council (BSSC)
1090 Vermont, NW, Suite 700
Washington, DC 20005
(202) 289-7800
fax: (202) 289-1092
http://www.nibs.org

Earthquake Engineering Research Institute (EERI)
499 14th Street, Suite 320
Oakland, CA 94612-1934
(510) 451-0905
fax: (510) 451-5411
email: eeri@eeri.org
http://www.eeri.org

Institute for Business and Home Saftey (formerly Insurance Institute for Property Loss Reduction)
73 Tremont Street, Suite 510
Boston, MA 02108-3910
(617) 722-0200
fax: (617) 722-0202

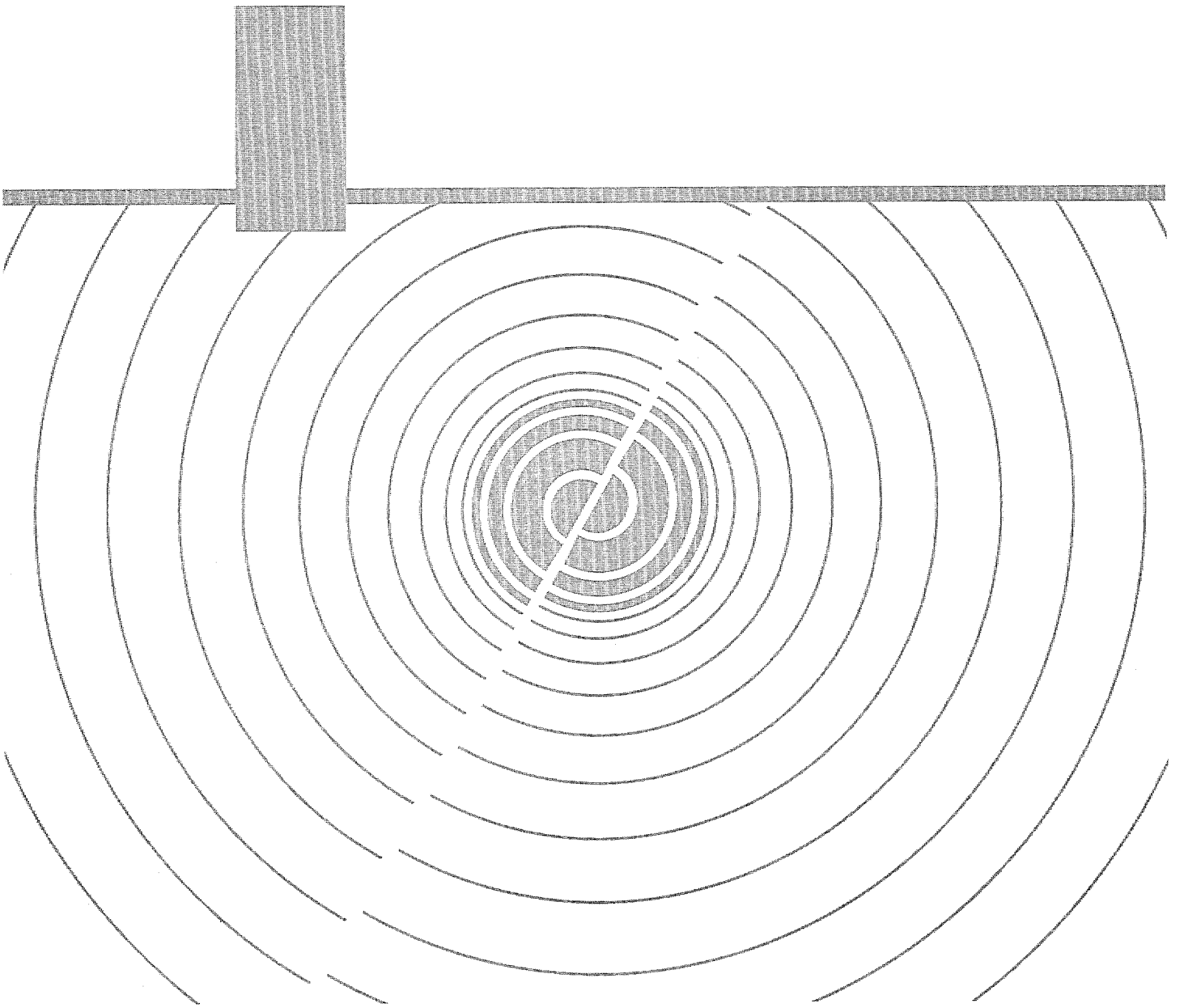
National Conference of States on Building Codes and Standards, Inc. (NCSBS)
505 Huntmar Park Drive, Suite 210
Herndon, VA 20170
(703) 437-0100
fax: (703) 481-3596

National Institute of Building Sciences
1090 Vermont, NW, Suite 700
Washington, DC 20005
(202) 289-7800
fax: (202) 289-1092
http://www.nibs.org

Seismological Society of America
201 Plaza Professional Building
El Cerrito, CA 94530
(510) 525-5474
fax: (510) 525-7204

Southern California Earthquake Center
University of Southern California
University Park
Los Angeles, CA 90089-0742
(213) 740-5843
fax: (213) 740-0011
email: SCECinfo@usc.edu
http://www.scec.org

Appendix F
Recommended Readings and Resources



Appendix F
Recommended Readings and Resources

References Cited

Listed below are all the references cited in this report as sources of information. All the documents produced by agencies and organizations may be ordered directly from the organizations (see Appendix E). Many of the Building Seismic Safety Council's publications are available at no charge from FEMA. All FEMA publications are available at no charge and may be ordered through FEMA's Publication Center (call 800-480-2520).

Beavers, James E. "Perspectives on Seismic Risk Maps and the Building Code Process," in *A Review of Earthquake Research Applications in the National Earthquake Hazards Reduction Program: 1977–1987*, Walter Hays, ed., U.S. Geological Survey Open-File Report 88-13-A, 1988, 407-432

Bruce A. Bolt. *Earthquakes*, W.H. Freeman and Company (NY), 1993.

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Building Seismic Safety Council. *Nontechnical Explanation of the NEHRP Recommended Provisions*. FEMA #99, September 1995.

Building Seismic Safety Council. *Seismic Considerations for Communities at Risk*, FEMA #83, September 1995.

Building Seismic Safety Council. *Societal Implications: Selected Readings*, FEMA #84, June 1985.

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Mushkatel, A.H., and Nigg, J.M. "Opinion Congruence and the Formation of Seismic Safely Policies," *Policy Studies Review*, Vol. 6, No. 4, May 1987.

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U.S. Department of the Interior, Geological Survey. *USGS Spectral Response Maps and Their Relationship with Seismic Design Forces in Building Codes*, Open-File Report 95-595, 1995.

U.S. National Commission on Urban Problems. *Building the American City*, report to the Congress and the President, House Document No. 91-34, December 1968.

Whitman, R.V., and Algermissen, S.T.. "Seismic Zonation in Eastern United States," *Proceedings, Fourth International Conference on Seismic Zonation*, Vol. I, Earthquake Engineering Research Institute, 1991, 845-869

Wyllie, Loring A., Jr., and Filson, John R., eds. *Armenia Earthquake Reconnaissance Report, Special Supplement to Earthquake Spectra*, Earthquake Engineering Research Institute (Oakland, CA), August 1989.

Wyner, A.J., and Mann, D.E. *Preparing for California's Earthquakes: Local Government and Seismic Safety*, Institute of Governmental Studies, University of California at Berkeley, 1986.

Recommended Readings

These readings are particularly recommended to help you understand about earthquakes, how ground-shaking affects buildings, and how seismic building codes work.

American Institute of Architects. *Buildings at Risk: Seismic Design Basics for Practicing Architects*, AIA/ACSA Council on Architectural Research, February 1992.

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Sources of Earthquake Slides and Videos

The following organizations have extensive collections of slides, photos, and videos of the effects of earthquakes. They can be valuable resources for your public presentations. In some cases, the images may be accessed online or by CD-ROM.

Earthquake Engineering Research Center (EERC)
University of California at Berkeley
1301 S. 46th Street
Richmond, CA 94804-4698
(510) 231-9403
eerclib@berkeley.edu

Earthquake Engineering Research Institute (EERI)
499 14th Street, Suite 320
Oakland, CA 94612-1934
(510) 451-0905

National Geophysical Data Center
National Oceanic & Atmospheric Administration
325 Broadway, Mail Code EIGC
Boulder, CO 80303-3328
(303) 497-6826

September 1996

EARTHQUAKE HAZARDS REDUCTION SERIES

PUBLICATION NUMBER	TITLE
46	Earthquake Safety Checklist
48	Coping with Children's Reactions to Earthquakes
74	Reducing the Risk of Nonstructural Earthquake Damage: A Practical Guide
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76	Preparedness in High-Rise Buildings (Brochure)
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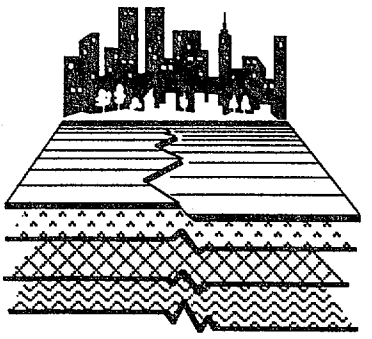
88	Guidebook for Developing a School Earthquake Safety Program
88A	Earthquake Safety—Activities for Children (Teacher's Package)
99	Improving Seismic Safety of New Buildings: A Non-Technical Explanation of NEHRP Provisions
113	Family Earthquake Safety Home Hazard Hunt and Drill
140	Guide to Application of the NEHRP Recommended Provisions in Earthquake-Resistant Building Design
149	Seismic Considerations: Elementary and Secondary Schools
150	Seismic Considerations: Health Care Facilities
151	Seismic Considerations: Hotels and Motels
152	Seismic Considerations: Apartment Buildings
153	Seismic Considerations: Office Buildings
154	Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook
155	Rapid Visual Screening of Buildings for Potential Seismic Hazards: Supporting Documentation
156	Typical Costs for Seismic Rehabilitation of Existing Buildings, Second Edition, Volume I - Summary
157	Typical Costs for Seismic Rehabilitation of Existing Buildings, Second Edition, Volume II - Supporting Documentation
159	Earthquake—A Teacher's Package for K-6
172	NEHRP Handbook of Techniques for the Seismic Rehabilitation of Existing Buildings
173	Establishing Programs and Priorities for the Seismic Rehabilitation of Buildings, Supporting Report
174	Establishing Programs and Priorities for the Seismic Rehabilitation of Buildings, A Handbook
176	Estimating Losses from Future Earthquakes—Panel Report (A Non-Technical Summary)
177	Estimating Losses from Future Earthquakes (Panel Report and Technical Background)
178	NEHRP Handbook for Seismic Evaluation of Existing Buildings
182	Landslide Loss Reduction: Guide to State and Local Governments
192	Estimated Future Losses, St. Louis, MO
192A	Estimated Future Losses, St. Louis, MO—Executive Summary
200	Loss Reduction Provisions of a Federal Earthquake Insurance Program - A Final Report
201	Loss Reduction Provisions of a Federal Earthquake Insurance Program - Summary Report
202	Earthquake Resistant Construction of Electric Transmission and Telecommunication Facilities Serving the Federal Government
212	Utah Multihazard Planning Demonstration Project—A Case Study Report
216	Financial Incentives for Seismic Rehabilitation of Buildings—An Agenda for Action - Volume 3 - Application Workshop Report
219	How to Help Children After a Disaster—A Guidebook for Teachers
220	School Intervention Following a Critical Incident—Project COPE
222	NEHRP Recommended Provisions for the Development of Regulations for New Buildings, Part I - Provisions, 1991 Edition
222	NEHRP Maps
223	NEHRP Recommended Provisions Commentary, Part II, 1991 Edition
222.A	NEHRP Recommended Provisions for the Development of Regulations for New Buildings, Part I, Provision, 1994 Edition

222.A NEHRP Maps
223.A NEHRP Recommended Provisions Commentary, Part II, 1994 Edition
224 Seismic Vulnerability and Impact of Disruption of Lifelines in the United States
225 Inventory of Lifelines in the Cajon Pass, California
226 Collocation Impacts on the Vulnerability of Lifelines During Earthquakes with Applications to the Cajon Pass, California
227 A Benefit-Cost Model for Seismic Rehabilitation of Buildings, Volume I: A User's Manual
228 A Benefit-Cost Model for the Seismic Rehabilitation of Buildings, Volume II: Supporting Documentation
232 Home Builders Guide for Earthquake Design
233 Earthquake Resistant Construction of Gas and Liquid Fuel Pipeline Systems Serving, or Regulated by, the Federal Government
237 Seismic Rehabilitation of Buildings, Phase I: Issues, Identification and Resolution
238 Seismic Safety: Of Federally and Federally Assisted Leased or Regulated New Building Construction - Volume 1
239 Seismic Safety: Of Federally and Federally Assisted Leased or Regulated New Building Construction - Volume 2
240 Earthquake Preparedness—What Every Child Care Provider Should Know
241 Identification and Reduction of Nonstructural Earthquake Hazards (For Schools)
249 Assessment of the State-of-the-Art Earthquake Loss Estimation Methodologies
253 Seismic Sleuths—Earthquake Curriculum for 7-12 Grades
254 Seismic Retrofit Incentive Programs—A Handbook for Local Governments
255 Seismic Rehabilitation of Federal Buildings: A Benefit/Cost Model, Volume 1 - A User's Manual
256 Seismic Rehabilitation of Federal Buildings: A Benefit/Cost Model, Volume 2 - Supporting Documentation
260 Seismic Safety of New Federal Buildings
266 Creating a Seismic Safety Advisory Board
267 Interim Guidelines: Evaluation, Repair, Modification, and Design of Welded Steel Moment Frame Structures
280 Strategy for National Earthquake Loss Reduction
L-111 Safety Tips for Earthquakes
L-143 Preparedness in Apartments and Mobile Homes
L-193 Tsunami, The Great Waves in Alaska
L-194 Tsunami, The Great Waves on the West Coast
Benefit/Cost Model for Federal Buildings—Supporting Documentation
Brochure: Seismic Safety of Federal and Federally Leased Assisted or Regulated New Building Construction
Earthquake Safety, Poster 14
E.O. 12699 Brochure
Poster #6 Blueprint for Earthquake Survival

The publications are free of charge. Copies may be requested by writing to the following address:

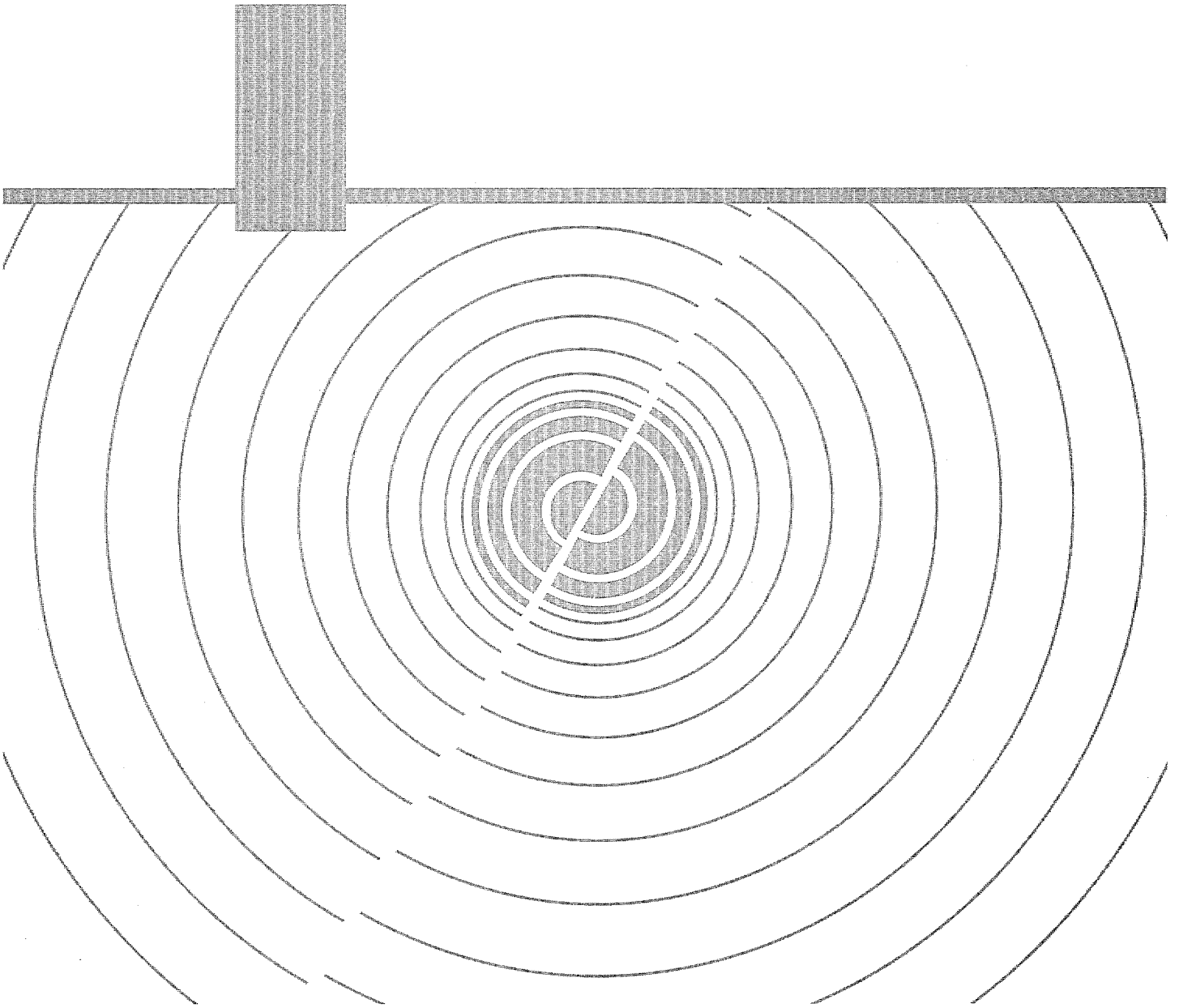
Federal Emergency Management Agency
P.O. Box 2012
Jessup, MD 20794-2012

Or Call 1-800-480-2520



EARTHQUAKE HAZARDS REDUCTION SERIES

Appendix G
Sample Workshop Presentations



Appendix G
Sample Workshop Presentations

Planning Your Presentation

There is a great deal of material to cover in the half-day workshop. It is important that you establish control and keep your presentation on track in order to cover all the material. At the same time, allow enough flexibility to respond to specific local concerns. Remember that you can follow up with individuals after the workshop or at a later date.

Assigning groups. It will save time and minimize confusion if you prepare an efficient method of dividing participants into groups for the group exercises. One method is to have people count off numbers and then divide into groups according to their number. Alternatively, you might assign groups on a geographic basis or try to create interdisciplinary groups. The best group size is generally 3-7 people.

Sign-in sheets. For follow-up you will want the attendees' names, addresses, and telephone numbers. Providing a sign-in sheet at the beginning of the workshop is a simple way to obtain this information.

Information For Workshop Leader

This Appendix includes material to help you present workshops on adopting and enforcing seismic building codes. It includes outlines for a sample half-day workshop and a one-hour workshop. The half-day workshop is best suited for gatherings of professionals, either at a conference or at a specialty seminar that you organize. The audience would have some initial concerns about seismic safety but little knowledge about how to adopt or enforce seismic building codes. The one-hour workshop is best suited for audiences who need to be introduced to these ideas and convinced of the need for addressing seismic safety.

Target Audience

Candidate participants for these workshops include (a) municipal officials (e.g., planning, building, engineering, emergency services, city council); (b) potential allies in the fields of architecture and engineering; and (c) community leaders whose influence and support can assist in adopting improved seismic safety provisions.

Purpose

The purposes of these workshops are to (a) introduce the community's risk for earthquake damage, (b) demonstrate the effectiveness, ease, and low cost of seismic codes, and (c) outline the critical elements of effective code enforcement.

Goals

Participants should leave the workshop with a clearer understanding of why they need seismic codes in their community, how they can adopt and improve enforcement, and where they can go for assistance. The group exercises (half-day workshop) are designed so that participants begin developing strategies to introduce or enhance seismic protection in their community.

When and Where to Present the Workshops

These workshops can be conducted as part of a systematic campaign to improve adoption and enforcement of seismic codes. You can announce them with press releases (using Appendix H), and workshop participants can help distribute the brochures in Appendix I to their colleagues.

A survey of code practices (see end of Appendix C) can help you to identify specific areas of weakness in various parts of your state. This can help you to determine appropriate topics and locations for the workshops.

Workshops, particularly the one-hour ones, could also be used to build on the increased awareness that often follows an earthquake, either a small earthquake nearby or a large newsworthy one elsewhere in the world. A combination of workshops and press releases could emphasize the value of seismic building codes to mitigate losses from future earthquakes.

Half-day workshops might be given for:

- A gathering of officials from several neighboring communities. This could be in a region with code adoption or compliance problems. You should also invite officials from communities with good code practices.

- A session at a conference of municipal officials.
- A session at a conference of local code officials (but delete the section on the purpose of building codes).

One-hour workshop presentations might be given to:

- A conference of municipal officials, architects, or engineers.
- City Council study sessions.
- Civic groups, such as Rotary, Kiwanis, or League of Women Voters.

Support Materials

Materials in this Appendix include an outline of topics for two workshop presentations (half-day and one-hour), along with suggested timing, directions for when to use the provided handouts and overheads, and key information points to make. The additional pages provided include visual aids that may be copied onto transparency sheets and used with an overhead projector. Transparencies are a quick and inexpensive way to visually enhance your presentation.

Some of the overheads also may be photocopied and distributed as handouts. A number of topical handouts, which summarize key concepts from the workshop and from the text of this book, are also included.

Color images can provide additional impact to the workshop presentation. A selection of images is available at various web sites, such as FEMA and the Earthquake Engineering Research Center (see Appendix E); you may download these without charge and use a vendor to transfer the images from your disk to color slides or transparencies. The National Geophysical Data Center and EERI also have sets of color slides that are available for purchase. Additional factual support for all these visual materials can be found in the body of this book.

This Appendix also includes a list of selected notable earthquakes from 36 states (see Handout b). This list is a good starting point for identifying historic earthquakes from your region. These tangible examples can enhance your presentation.

Equipment

Check to make sure that an overhead projector is available at the workshop site. If you are providing your own overhead projector, it's wise to bring an extra light bulb. Always plan to bring a extension cord and an outlet adapter. A projection screen is not essential, as you can project your overhead onto any blank, light-colored wall.

If you are using slides, it is best to provide your own slide carousel with the slides arranged in presentation sequence. You may also need to provide your own slide projector.

Follow-up

The group exercises will provide a record of the community's thinking and plans about seismic safety. Collect the handouts completed in the group exercises. You may want to summarize the main points and later send a copy to the workshop participants or other municipal officials. The material can also form the basis of any local efforts stemming from the workshop.

If possible, you should try to follow up with a tour of local building stock designed with seismic provisions. A comparison to unsafe buildings would also be useful. A knowledgeable building official, engineer, or architect should lead this tour.

Presentation Tips

- Check to make sure that an overhead projector is available at the workshop site.
- If you are providing your own overhead projector, it's wise to bring an extra light bulb.
- Always plan to bring a extension cord and an outlet adapter.
- If using a computer projection system, bring back-up overheads in case you have equipment problems.
- If you are using slides, it is best to provide your own slide carousel with the slides arranged in presentation sequence.

Half-Day Workshop

® **8:00 Introduction** (15 mins.)

DEFINE PURPOSE: Today we're going to talk about earthquakes and how they can affect communities. Very few parts of the United States are completely free of potential earthquake damage.

This morning's presentation will cover three main areas: SHOW OVERHEAD 1.

1. Community risk for damage from earthquake activity.
2. Purpose of building codes, and how they help to protect the community from seismic risk.
3. Importance of following through by enforcing the building code, and how this too can benefit the community.

ASK: How many damaging U.S. earthquakes can they name?

SHOW OVERHEAD 2: Known historic earthquakes in 47 states with MMIs of VI-VIII.

USE HANDOUTS: A) Seismic hazard map; B) Historic earthquakes in 36 states.

SHOW OVERHEAD 3: Seismic hazard map. This map shows the seismic hazards for the entire United States.

LOCATE COMMUNITY ON MAP AND EXPLAIN THE LOCAL SEISMIC RISK.

POINTS TO MAKE: Many times, if a community hasn't recently experienced any kind of ground-shaking, people tend to think an earthquake just isn't going to happen. It seems like it takes a good earthquake to shake people up. Unfortunately, it's a little late to prepare after the earthquake. And this map, using the best scientific information available, says this community could be made safer and more secure by preparing now for future earthquake hazards.

® **8:15 Part 1: Community Risk** (15 mins.)

USE HANDOUT C: MMI scale explanation, descriptions of effects of various MMIs.

GOAL: Explain what it is that earthquakes do and how they can damage and destroy buildings.

- Explain the idea of lateral forces, ductility, and drift. SHOW OVERHEAD 4.
- Explain the Modified Mercalli Intensity Scale (describes effects, not magnitude). SHOW OVERHEADS: 5) MMI scale explanation; 6) MMI chart.
- Describe effects on buildings of MMI VI, VII, VIII, IX. SHOW OVERHEADS 7-15: Effects and images of typical damage associated with each MMI.
- Focus on *local* MMI potential and show additional damage images. SHOW maps and images of historic local earthquakes, and, if maps are available, anticipated earthquakes. A good source of information is USGS Professional Paper 1527; Handout B is a list, taken from that publication, of example earthquakes from 36 states.

® **8:30 Group Exercise** (20 mins.)

USE HANDOUT D: Group Exercise #1 – Community Earthquake Risk

DIRECTIONS FOR GROUPS: We've seen the MMI potential for this community. I'd like you to divide into groups and think about how this community might be affected by an earthquake of that scale.

- Describe handout. Ask groups to:

  Imagine the MMI shaking appropriate to this community

  Rate community buildings for seismic safety

  Identify whether buildings were built to seismic codes (see Hints below)

  Decide where would you most like to be during an earthquake

  Decide where would you least like to be during an earthquake

- Ask each group to report their results.
- Summarize results.
- Collect completed handouts for later follow-up.

Hints for Exercise #1

HINT 1: The main purpose of this exercise is to raise participants' level of concern, and make them want to find out the answers to these questions. Participants will not be sure how to decide which buildings are most dangerous.

You should give them some hints: SHOW OVERHEAD 16.

- Brick or stone buildings.
- Older buildings (especially large, multistory older buildings).
- Buildings with irregular shapes.
- Buildings that appear to be top-heavy or with open first floors (carports, all windows).
- "Tilt-up" low-rise light industrial buildings (one-story warehouse-like buildings common in industrial or office parks since the 1960s).

HINT 2: Participants will not know which buildings were built to seismic codes. They may be able to make educated guesses, based on the age of buildings, if they know the status of the community's code.

HINT 3: Once they identify potentially unsafe buildings, they should also pay attention to building *function*. Some buildings—**critical structures**—would seriously affect the community if they collapsed or were severely damaged: SHOW OVERHEAD 17.

Structures are deemed critical if they (a) are needed immediately after an earthquake (fire and police stations), (b) house needy populations (schools, hospitals, nursing homes), or (c) can have off-site effects (structures with flammable or toxic materials).

® **8:50 Part 2: Purpose and History of Building Codes** (15 mins.)

USE HANDOUTS: E) Purpose and history of building codes; F) Model building codes

POINTS TO MAKE: The safest and most cost-effective way to guard against earthquake damage is to construct buildings that are designed to withstand seismic events. These building specifications are contained in the model building codes.

- Cover purpose and history of building codes: SHOW OVERHEAD 18.

Suggested HANDOUT: Consider handing out photocopies of Appendix D.

- Outline the model building codes: SHOW OVERHEAD 19.
  - Easy to adopt
  - Easy to update
  - Documentation is provided
  - Technical support is provided
- General cost information.
- Explain current code situation in state.

® **9:05 Break** (15 mins.)

® **9:20 Part 2 continued: Purpose and History of Seismic Code Provisions** (15 mins.)

USE HANDOUTS: G) Purpose of seismic codes provisions; H) Seismic codes are effective; I) Seismic codes are inexpensive.

Discuss seismic provisions in the building codes:

- Purpose of seismic codes provisions: SHOW OVERHEAD 20.
- History of seismic codes (becoming the national norm): SHOW OVERHEAD 21.
- Executive Order 12699.
- Seismic codes are effective: SHOW OVERHEAD 22.
- Seismic codes are inexpensive: SHOW OVERHEAD 23.
- Benefits outweigh the costs: SHOW OVERHEAD 24.
- All model codes contain seismic provisions appropriate to the community's level of risk.

® **9:35 Group Exercise** (15 mins.)

USE HANDOUT J: Group Exercise #2 – Responding to Arguments Against Seismic Codes

DIRECTIONS FOR GROUPS: We've seen how new construction built to seismic standards can help protect the community from earthquake damage. I'd like you to divide into groups again. This time, I want you to discuss the arguments against introducing seismic codes in this community and think about how you might respond.

- Describe handout:
  - List the local arguments against seismic codes
  - How might you respond to these arguments?
  - Consider who is likely to oppose having seismic codes
  - Consider who is likely to support having seismic codes?
- Ask each group to report their results.
- Summarize results.
- Collect completed handouts for later follow-up.

® **9:50 Arguments in Favor of Seismic Codes** (5 mins.)

USE HANDOUT K: Arguments in favor of seismic codes

- Present arguments in favor of seismic codes: SHOW OVERHEAD 25.

® **9:55 Break** (15 mins.)

® **10:10 Part 3: Importance of Enforcement, Following Through** (30 mins.)

USE HANDOUTS: L) Enforcing the seismic code: a critical link; M) Five elements of effective code enforcement

POINT TO MAKE: Having a building code with current seismic provisions is the first part of a two-part process. The second part is following through and making sure the code is enforced.

- Explain how poor enforcement results in deficient buildings. SHOW OVERHEAD 26.
- Give incentives for enforcement (code effectiveness grading schedule).
- Five elements of effective code enforcement: SHOW OVERHEAD 27.
  - Code provisions must be up to date
  - Builders must apply for permits
  - A qualified reviewer must review building plans
  - Construction should proceed according to approved plans
  - A qualified inspector must inspect the construction
- Discuss an example of plan review and inspection fees (see box in Appendix D, page 112).

- Enforcement example: Use one or two of the case examples in Appendix C (page 85) to explain how enforcement could be done in this community.

® **10:40 Group Exercise** (20 mins.)

NOTE: Workshop leader selects topic for group exercise.

USE HANDOUT N or O: Group Exercise #3a OR 3b – Action Plan for Adoption OR Enforcement

DIRECTIONS FOR GROUPS: I'd like you to divide into groups again. This time, I want you to develop action plans to: (a) adopt a building code with current seismic provisions for this community
OR (b) improve enforcement of the building code in this community.

- Describe handout for subject A (adoption):

  Develop a ten-point action plan that will result in a building code for this community
- OR describe handout for subject B (enforcement):

  Develop a ten-point action plan that will result in improved code enforcement for this community

- Ask each group to report their results.
- Summarize results.
- Collect completed group handouts for later follow-up.

® **11:00 Part 3 continued: Steps for Adoption or Enforcement of Seismic Codes** (10 mins.)

USE HANDOUT P or Q: Steps for Adoption OR Enforcement of Seismic Codes

- Discuss how these steps relate to the 10-point action plans they developed. SHOW OVERHEAD 28 or 29.

® **11:10 Recap** (30 mins.)

- Review the three group exercises:

  Community Earthquake Risk

  Responding to Arguments Against Seismic Codes

  Action Plan for Adoption/Enforcement
- Describe follow-up actions: The next step.
- Questions/feedback:

  Any questions?

  Reaction to the workshop presentation? Is the information relevant to them?

  What additional help would they like from the state?

NOTE: You may want to develop a short questionnaire to solicit participant feedback.

Finally, be sure to have copies of the brochures available for participants to help deliver.

One-Hour Workshop

® **1:00 Introduction** (5 mins.)

DEFINE PURPOSE: Today we're going to talk about earthquakes and how they can affect communities. Very few parts of the United States are completely free of potential earthquake damage.

This morning's presentation will cover three main areas: SHOW OVERHEAD 1.

1. Community risk for damage from earthquake activity.
2. Purpose of building codes, and how they help to protect the community from seismic risk.
3. Importance of following through by enforcing the building code, and how this too can benefit the community.

® **1:05 Community Risk** (10 mins.)

ASK: How many damaging U.S. earthquakes can they name?

USE HANDOUTS: A) Seismic hazard map; B) Historic earthquakes in 36 states

SHOW OVERHEAD 3: seismic hazard map. This map shows the seismic hazards for the entire United States.

USE HANDOUT C: MMI scale explanation, descriptions of effects of various MMIs:

- Explain Modified Mercalli Intensity Scale (describes effects, not magnitude). SHOW OVERHEAD 5.
- Focus on *local* MMI potential and show additional damage images. SHOW: maps and images of historic local earthquakes, and, if maps are available, anticipated earthquakes. A good source of information is USGS Professional Paper 1527; HANDOUT B is a list, taken from that publication, of example earthquakes from 36 states.

® **1:15 Purpose and History of Building Codes** (5 mins.)

USE HANDOUTS: E) Purpose and history of building codes; F) Model building codes

POINT TO MAKE: The safest and most cost-effective way to guard against earthquake damage is to construct buildings that are designed to withstand seismic events. These building specifications are contained in the model building codes.

- Purpose and history of building codes: SHOW OVERHEAD 18.

® **1:20 Seismic Code Provisions** (10 mins.)

USE HANDOUTS: G) Purpose of seismic code provisions; H) Seismic codes are effective; I) Seismic codes are inexpensive

DISCUSS: seismic provisions in the building codes.

- Purpose of seismic codes provisions: SHOW OVERHEAD 20.
- History and of seismic codes (becoming the national norm: Executive Order 12699): SHOW OVERHEAD 21.
- Seismic codes are inexpensive: SHOW OVERHEAD 23.
- Benefits outweigh the costs: SHOW OVERHEAD 24.
- All model codes contain seismic provisions appropriate to the community's level of risk.

® **1:30 Code Adoption** (10 mins.)

USE HANDOUT P: Steps for adoption of seismic codes

- Steps for adoption of seismic codes: SHOW OVERHEAD 28.
- Current code situation for this locality and nearby areas.
- How the community can adopt a code.

® **1:40 Group Response** (10 mins.)

ASK: What is their reaction so far? Do they have any specific concerns or questions? Any objections?

USE HANDOUT K: Arguments in favor of seismic codes

- Present arguments in favor of seismic codes: SHOW OVERHEAD 25.

® **1:50 Code Enforcement** (5 mins.)

USE HANDOUTS: L) Enforcing the seismic code: a critical link; M) Five elements of effective code enforcement; Q) Steps for enforcement of seismic codes

POINT TO MAKE: Having a building code with current seismic provisions is the first part of a two-part process. The second part is following through and making sure the code is enforced.

- Five elements of effective code enforcement: SHOW OVERHEAD 27.
  - Code provisions must be up to date
  - Builders must apply for permits
  - A qualified reviewer must review building plans
  - Construction should proceed according to approved plans
  - A qualified inspector must inspect the construction
- Discuss steps for enforcement: SHOW OVERHEAD 29.

® **1:55 Questions and Challenges** (5 mins.)

- Questions/feedback:
  - Any questions?
  - Reaction to the workshop presentation? Is the information relevant to them?
  - What other groups do they think could benefit from this presentation?

NOTE: You may want to develop a short questionnaire to solicit participant feedback.

Finally, be sure to have copies of the brochures available for participants to help deliver.

List of workshop handouts and overheads

Use this list to organize your presentation materials:

OVERHEADS:

1. Three Main Areas Covered
2. Known Historic Earthquakes in 47 States
3. U.S. Seismic Hazard Map
4. Seismic Design Concepts (lateral forces, ductility, and drift)
5. Modified Mercalli Intensity Scale (explanation with MMI maps)
6. Modified Mercalli Intensity Scale (chart)
7. MMI VI* Effects
   Photo Caption: Paint store affected by the San Fernando earthquake, 1971.
8. MMI VII* Effects
   Photo Caption: Sidewalk in downtown, Oakland, California, 1989. Loma Prieta earthquake. (Photo: Rob Olshansky)
9. MMI VIII* Effects
   Photo Caption: Downtown, Oakland, California, 1989. Loma Prieta earthquake. (Photo: Rob Olshansky)
10. MMI VIII* Damage
    Photo Caption: Bakery, Watsonville, California, 1989. Loma Prieta earthquake. (Photo: Rob Olshansky)
11. MMI VIII* Damage
    Photo Caption: Classroom, Coalinga, California, 1983. (Photo: EERI)
12. MMI VIII* Damage
    Photo Caption: House damaged in the Loma Prieta earthquake, 1989 (Photo: EERI)
13. MMI IX* Effects
    Photo Caption: Collapse of I-880, Oakland California, 1989. Loma Prieta earthquake. (Photo: J. David Rogers)
14. MMI IX* Damage
    Photo Caption: Strip mall, Northridge, California, 1994. (Photo: Rob Olshansky)
15. MMI IX* Damage
    Photo Caption: Northridge, California, 1994. (Photo: Rob Olshansky)
16. Characteristics of Dangerous Buildings
17. Identifying Critical Structures
18. Purpose and History of Building Codes
19. Model Building Codes
20. Purpose of Seismic Code Provisions
21. Seismic Building Code Timeline
22. Seismic Codes are Effective
23. Seismic Codes are Inexpensive
24. Studies Indicate That the Benefits of Seismic Codes Outweigh the Costs
25. Arguments in Favor of Seismic Codes
26. Poor Code Enforcement Results in Deficient Buildings (Hurricane Andrew)
27. Five Elements of Effective Code Enforcement
28. Adopting Seismic Code Provisions
29. Establishing an Effective Building Code Enforcement Program