



ICSSC RP 2.1

NISTIR 4635

Guidelines and Procedures for Implementation
of the Executive Order on Seismic Safety
of New Construction



U.S. Department of Commerce
National Institute of Standards and Technology
Building and Fire Research Laboratory
Gaithersburg, MD 20899



Prepared for:
Federal Emergency Management Agency
Office of Earthquakes
Washington, DC 20472

ICSSC RP 2.1

NISTIR 4635

Guidelines and Procedures for Implementation of the Executive Order on Seismic Safety of New Construction

Diana Todd, Editor

Interagency Committee on Seismic Safety in Construction
Recommended Practice 2.1—ICSSC RP-2.1

July 1991

U.S. Department of Commerce
Robert A. Mosbacher, *Secretary*
National Institute of Standards and Technology
John W. Lyons, *Director*
Building and Fire Research Laboratory
Gaithersburg, MD 20899

Prepared for:
Federal Emergency Management Agency
Office of Earthquakes
Washington, DC 20473

PROTECTED UNDER INTERNATIONAL COPYRIGHT
ALL RIGHTS RESERVED.
NATIONAL TECHNICAL INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE

Acknowledgements

This report was developed by the members of the Interagency Committee on Seismic Safety in Construction (ICSSC) Subcommittee 4 (on Federal Domestic Assistance, Leasing, and Regulatory Programs), under the chairmanship of Thomas J. Moran. The following people contributed to the subcommittee work on this project.

| | |
|----------------------------|--|
| Archie Cain | Department of Agriculture |
| Kathy Ermons | General Services Administration |
| G. Robert Fuller | Department of Housing and Urban Development |
| Bruce Hall | General Services Administration |
| Larry Hultengren | Department of State |
| Marco McElwain | Department of Education |
| Thomas J. Moran | Environmental Protection Agency |
| T. Patrick O'Connor | Tennessee Valley Authority |
| Arthur Zeizel | Federal Emergency Management Agency |

Abstract

Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction", was signed by the President to further the goals of Public Law 95-124, the "Earthquake Hazards Reduction Act of 1977", as amended. These guidelines and procedures for implementing the Order have been prepared and endorsed by consensus of the Interagency Committee on Seismic Safety in Construction.

The Executive Order applies only to new construction. All buildings owned, leased constructed, assisted (through such methods as loans, grants, or guarantees of loans), or regulated by the Federal government must conform to the requirements of the Order. Each Federal agency is independently responsible for ensuring that appropriate seismic design and construction standards are applied to new construction under its purview.

These guidelines recommend that each agency name an agency seismic safety coordinator to serve as a focal point for the agency's seismic safety program. Guidelines for determining the adequacy of local building codes are provided. Recommended implementation procedures include requiring written acknowledgement of agency seismic design and construction requirements from the building architect, engineer, contractor, and/or owner.

Key Words; agency seismic safety coordinator; buildings; earthquake hazard; earthquake; Executive Order on Seismic Safety; Federal agencies; guidelines; new construction; seismic safety.

RECOMMENDED PRACTICE 2.1
GUIDELINES AND PROCEDURES FOR IMPLEMENTATION OF
THE EXECUTIVE ORDER ON SEISMIC SAFETY
OF NEW CONSTRUCTION

TABLE OF CONTENTS

| | |
|--|-----------|
| 1.0 INTRODUCTION | 1 |
| 2.0 SCOPE | 2 |
| 3.0 AFFECTED AGENCIES | 2 |
| 4.0 AGENCY SEISMIC SAFETY COORDINATOR | 2 |
| 5.0 IDENTIFYING AFFECTED AGENCY PROGRAMS | 3 |
| 6.0 ESTABLISHING APPROPRIATE STANDARDS | 4 |
| 6.1 Minimum Acceptable Standards | 4 |
| 6.2 Evaluating Model and Local Codes | 4 |
| 6.3 Exemptions | 5 |
| 7.0 PROGRAM IMPLEMENTATION | 6 |
| APPENDIX A: Executive Order 12699 | 7 |
| APPENDIX B: Commentary on Executive Order 12699 | 11 |
| APPENDIX C: Model Agency Seismic Safety Program | 17 |

1.0 INTRODUCTION

The "Earthquake Hazards Reduction Act of 1977" (Public Law 95-124, as amended) was enacted by Congress to reduce risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. The National Earthquake Hazards Reduction Program (NEHRP) was created in response to this act. Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction" was prepared by the Interagency Committee on Seismic Safety in Construction (ICSSC) to implement certain provisions of the Earthquake Hazards Reduction Act. It was signed by the President on January 5, 1990.

The objectives of the Executive Order are given in Sections 1 and 2 of the order, and are as follows:

New Federal Buildings

"The purposes of these requirements are to reduce risks to the lives of occupants of buildings owned by the Federal Government and to persons who would be affected by the failures of Federal buildings in earthquakes, to improve the capability of essential Federal buildings to function during or after an earthquake, and to reduce earthquake losses of public buildings, all in a cost-effective manner."

Federally Leased, Assisted or Regulated Buildings

"The purposes of these requirements are to reduce risks to the lives of persons who would be affected by earthquake failures of federally assisted or regulated buildings, and to protect public investments, all in a cost-effective manner."

The Executive Order applies to new building construction. Additions to existing buildings are considered new construction and should meet the requirements of the order.

These guidelines present issues that should be considered in developing an agency seismic safety program and recommend levels of agency response determined to be appropriate by the ICSSC. Appendix A includes the text of the Executive Order. A commentary on the Executive Order, developed by the ICSSC, is included in Appendix B. Appendix C presents a model seismic safety program which may be adopted by affected Federal agencies and modified as appropriate. The model program does not cover special seismic risks that are unique to any given agency.

2.0 SCOPE

Existing seismic safety programs meeting the requirements of the Executive Order are endorsed. The order does not allow a reduction in stringency of existing programs. The guidelines and procedures for implementation presented in this document are intended to assist Federal agencies with no seismic safety program, and those with an inadequate program, to comply with the Executive Order. Each affected Federal agency is given the responsibility for developing and implementing its own cost-effective seismic safety program commensurate with its specific program responsibilities. A seismic safety program may be considered cost-effective if it achieves the objectives of the Executive Order in a manner that is advantageous to the Federal government, cost and other factors considered. These guidelines represent recommendations formulated by consensus of the member agencies of the ICSSC.

3.0 AFFECTED AGENCIES

Executive Order 12699 applies to all Federal agencies that are responsible for the following:

- . designing and constructing new Federally-owned buildings,
- . constructing and leasing new buildings for Federal use,
- . assisting in the financing, through grants or loans, of newly constructed buildings,
- . guaranteeing the financing, through loan or mortgage insurance programs, of newly constructed buildings,
- . regulating structural safety of new buildings.

Agencies responsible for construction projects of the first two types listed must demonstrate compliance for all projects for which development of detailed plans and specifications is initiated subsequent to the date of the order. Agencies administering the other types of programs have three years from the date of the order to establish an appropriate seismic hazard reduction program by adoption and enforcement of appropriate regulations, policies, or procedures.

4.0 AGENCY SEISMIC SAFETY COORDINATOR

All affected agencies are encouraged to appoint an agency seismic safety coordinator. The coordinator could be an individual or group, preferably technically trained individuals with structural engineering experience and seismic background. The agency seismic safety coordinator would be assigned the responsibility for coordinating all aspects of the agency seismic safety program. The coordinator should:

- . be cognizant of all agency building programs falling under the scope of the Executive Order,
- . participate in developing agency seismic safety implementation plans, policies, procedures, and other necessary actions,
- . monitor the execution and results of the agency's efforts in upgrading seismic safety of its new construction activities,
- . recommend seismic safety programmatic changes, as required,
- . document the agency's rationale and/or results of any risk analysis, cost effectiveness studies, and other determinations which form the basis for the agency's seismic safety decisions,
- . act as a focal point for the agency in maintaining necessary seismic safety policies, procedures, records, documents, and reports, and
- . provide information requested by the Federal Emergency Management Agency, as required by Section 5 of the Executive Order.

As warranted, the agency seismic safety coordinator should also serve as the agency's representative to the ICSSC.

Some agencies already have a person, office, or unit serving as a responsible focal point for seismic concerns. Therefore, the responsibilities of agency seismic safety coordinator may be fulfilled via an existing technical position.

5.0 IDENTIFYING AFFECTED AGENCY PROGRAMS

In many Federal agencies some programs will be affected by the order and others will not. If a seismic safety program that meets the requirements of the Executive Order is not in place, then an agency should develop criteria and procedures to identify existing and future programs which should be included. It is recommended that all programs be considered affected until it has been suitably demonstrated that they are exempt. Agencies or programs which are involved with building construction only intermittently should not be considered exempt. A seismic safety program should be in place by the end of the three year lead-in period even if no construction projects are underway at that time.

6.0 ESTABLISHING APPROPRIATE STANDARDS

6.1 Minimum Acceptable Standards

Section 3 of the Executive Order requires that nationally recognized private sector standards and practices be used if possible. The **NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings** were developed as nationally applicable seismic safety guidelines suitable for use by model code agencies and by legislative bodies. For the purposes of implementing the Executive Order, the ICSSC recommends, as the minimum standard for all Federal agencies, the use of codes, regulations, and procedures which are substantially equivalent to the most recent or the immediately preceding edition of the **NEHRP Recommended Provisions**, as determined in the documents identified in Section 6.2 below.

Local building codes may be used if they have been determined by the responsible agency to provide adequately for seismic safety. Federal agencies may require the use of additions or alterations to local codes in order to achieve desirable levels of seismic safety using agency criteria or the recommendations of the documents described in Section 6.2 below.

6.2 Evaluating Model and Local Codes

The ICSSC has prepared two documents to aid in the evaluation of existing codes:

1. **Seismic Provisions of State and Local Building Codes and Their Enforcement** will identify and describe seismic and construction regulations adopted by some 1500 state and local governments. It will identify the model code (including date) that was the source of the seismic provisions in that code and describe the enforcement procedures used.
2. **Assessment of the Seismic Provisions of Model Building Codes** will evaluate and compare the seismic provisions of four nationally recognized model codes and the standards cited by them. The four model codes are the Uniform Building Code (UBC), the National Building Code (NBC), the Standard Building Code (SBC), and the One- and Two-Family Dwelling Code (CABO). Almost all local building codes in this country are based on one of these four documents. The four model codes will be compared to the 1988 **NEHRP Recommended Provisions**, and modifications needed for substantial equivalence will be recommended.

These two documents can be used by agencies in establishing adequacy of model codes, and for specifying changes or additions to local codes which are required to meet agency requirements. Where state or local agencies have modified the seismic provisions of the adopted model code, further evaluation will be necessary to determine if the changes result in less stringency. For a locality not included in the Status Report, an evaluation comparable to the that provided by these two documents is needed to demonstrate adequacy of the local code.

An agency may adopt a model code that is substantially equivalent to the most recent or the immediately preceding edition of the **NEHRP Recommended Provisions** as its minimum requirement, or the agency may choose to use substantially equivalent local codes. Each agency that decides to accept adequate local codes as part of its seismic safety program should institute a procedure for evaluating local codes. Evaluation criteria should be established at the department level to ensure uniformity within a program and among related or similar agency programs. Among the criteria for determining substantial equivalence with the **NEHRP Recommended Provisions** are the two documents cited above.

Special seismic standards and practices may be required for unique agency missions. Such missions could include, but are not limited to, programs involving new construction to house hazardous materials, valuable property, or special populations, such as persons with disabilities, persons requiring health care, or persons held against their will. These agencies should make appropriate efforts to establish and implement their seismic safety programs.

6.3 Exemptions

It is recommended that no buildings be considered exempt from the purview of the Order, except for those categories of buildings exempted by the latest edition of the **NEHRP Recommended Provisions**. Section 3(a) of the Executive Order specifies that seismicity shall be as shown in the most recent edition of the seismic zone map accompanying the American National Standards Institute Standard A58, **Minimum Design Loads for Buildings and Other Structures**, which has recently been revised as **American Society of Civil Engineers Standard 7**. The ICSSC recommends that one- and two-family dwellings in regions labeled Zones 0 and 1 in ASCE 7-88 be exempt from agency seismic safety programs.

7.0 PROGRAM IMPLEMENTATION

For purposes of uniformity, policy development should be at an agency level. Each agency should determine at what level evaluations and decisions are to be made and issue appropriate implementing rules or procedures.

It is recommended that no program affected by the Executive Order be allowed to self-exempt. Exemption criteria for such reasons as non-applicability or low regional seismicity should be uniform across each agency. Programs that identify themselves as exempt should have the exemption verified by legal counsel.

Agencies with unique missions requiring exceptional seismic safety requirements should establish and promulgate appropriate implementation and enforcement policies and procedures. Absent unique mission requirements, implementation should be cost-effective and enforcement efforts reasonable. Agencies with technically trained staffs are encouraged to include building plan reviews in their seismic safety programs. For agencies without technical staffs, reasonable implementation and enforcement would include notifying appropriate responsible parties of the required minimum standards, and requiring a written acknowledgement of awareness of the requirements and of intent to comply. Responsible parties may include the building owner, architect, engineer, or contractor. No contract or grant should be entered into without receipt of written acknowledgement. For Federally owned or leased buildings, a form of certification or statements of compliance may be required prior to acceptance of the building. Such statements of compliance may include the engineer's and architect's signed and stamped verification of seismic design codes, standards, and practices used in the design and construction of the building, construction observation reports, local or state building department plan review documents, or other documents deemed appropriate by the agency.

The agency seismic safety program should include provisions for review and revision of the program at least once every three years, as required by Section 4(b) of the Executive Order. Procedures for providing information to FEMA when requested, as required by Section 5 of the Executive Order, should also be established.

APPENDIX A

Text of
Executive Order 12699 of January 5, 1990

Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction

By the authority vested in me as President by the Constitution and laws of the United States of America, and in furtherance of the Earthquake Hazards Reduction Act of 1977, as amended (42 U.S.C. 7701 et seq.), which requires that Federal preparedness and mitigation activities are to include "development and promulgation of specifications, building standards, design criteria, and construction practices to achieve appropriate earthquake resistance for new ...structures," and "an examination of alternative provisions and requirements for reducing earthquake hazards through Federal and federally financed construction, loans, loan guarantees, and licenses..." (42 U.S.C. 7704 [f][3,4]), it is hereby ordered as follows:

Section 1. Requirements for Earthquake Safety of New Federal Buildings.

The purposes of these requirements are to reduce risks to the lives of occupants of buildings owned by the Federal Government and to persons who would be affected by the failures of Federal buildings in earthquakes, to improve the capability of essential Federal buildings to function during or after an earthquake, and to reduce earthquake losses of public buildings, all in a cost-effective manner. A building means any structure, fully or partially enclosed, used or intended for sheltering persons or property.

Each Federal agency responsible for the design and construction of each new Federal building shall ensure that the building is designed and constructed in accord with appropriate seismic design and construction standards. This requirement pertains to all building projects for which development of detailed plans and specifications is initiated subsequent to the issuance of the order. Seismic design and construction standards shall be adopted for agency use in accord with sections 3(a) and 4(a) of this order.

Sec. 2. Federally Leased, Assisted, or Regulated Buildings.

The purposes of these requirements are to reduce risks to the lives of occupants of buildings leased for Federal uses or purchased or constructed with Federal assistance, to reduce risks to the lives of persons who would be affected by earthquake failures of federally assisted or regulated buildings, and to protect public investments, all in a cost-effective manner. The provisions of this order shall apply to all the new construction activities specified in the subsections below.

(a) **Space Leased for Federal Occupancy.** Each Federal agency responsible for the construction and lease of a new building for Federal use shall ensure that the building is designed and constructed in accord with appropriate seismic design and construction standards. This requirement pertains to all leased building projects for which the agreement covering development of detailed plans and specifications is effected subsequent to the issuance of this order. Local building codes shall be used in design and construction by those concerned with such activities in accord with section 3(a) and 3(c) of this order and augmented when necessary to achieve appropriate seismic design and construction standards.

(b) **Federal Domestic Assistance Programs.** Each Federal agency assisting in the financing, through Federal grants or loans, or guaranteeing the financing, through loan or mortgage insurance programs, of newly constructed buildings shall plan, and shall initiate no later than 3 years subsequent to the issuance of this order, measures consistent with section 3(a) of this order, to assure appropriate consideration of seismic safety.

(c) **Federally Regulated Buildings.** Each Federal agency with generic responsibility for regulating the structural safety of buildings shall plan to require use of appropriate seismic design and construction standards for new buildings within the agency's purview. Implementation of the plan shall be initiated no later than 3 years subsequent to the issuance of this order.

Sec. 3. Concurrent Requirements. (a) In accord with Office of Management and Budget Circular A-119 of January 17, 1980, entitled "Federal Participation in the Development and Use of Voluntary Standards," nationally recognized private sector standards and practices shall be used for the purposes identified in section 1 and 2 above unless the responsible agency finds that none is available that meets its requirements. The actions ordered herein shall consider the seismic hazards in various areas of the country to be as shown in the most recent edition of the American National Standards Institute Standards A58, **Minimum Design Loads for Buildings and Other Structures**, or subsequent maps adopted for Federal use in accord with this order. Local building codes

determined by the responsible agency or by the Interagency Committee for Seismic Safety in Construction to provide adequately for seismic safety, or special seismic standards and practices required by unique agency mission needs, may be used.

(b) All orders, regulations, circulars, or other directives issued, and all other actions taken prior to the date of this order that meet the requirements of this order, are hereby confirmed and ratified and shall be deemed to have been issued under this order.

(c) Federal agencies that are as of this date requiring seismic safety levels that are higher than those imposed by this order in their assigned new building construction programs shall continue to maintain in force such levels.

(d) Nothing in this order shall apply to assistance provided for emergency work essential to save lives and protect property and public health and safety, performed pursuant to Sections 402, 403, 502, and 503 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (42 U.S.C. 5170a 5170b, 5192, and 5193), or for temporary housing assistance programs and individual and family grants performed pursuant to Sections 408 and 411 of the Stafford Act (42 U.S.C. 5174 and 5178). However, this order shall apply to other provisions of the Stafford Act after a presidentially declared major disaster or emergency when assistance actions involve new construction or total replacement of a building. Grantees and subgrantees shall be encouraged to adopt the standards established in section 3(a) of this order for use when the construction does not involve Federal funding as well as when Federal Emergency Management Agency (FEMA) funding applies.

Sec. 4. Agency Responsibilities. (a) The Director of the Federal Emergency Management Agency shall be responsible for reporting to the President on the execution of this order and providing support for the secretariat of the Interagency Committee on Seismic Safety in Construction (ICSSC). The ICSSC, using consensus procedures, shall be responsible to FEMA for the recommendation for adoption of cost-effective seismic design and construction standards and practices required by sections 1 and 2 of this order. Participation in ICSSC shall be open to all agencies with programs affected by this order.

(b) To the extent permitted by law, each agency shall issue or amend existing regulations or procedures to comply with this order within 3 years of its issuance and plan for their implementation through the usual budget process. Thereafter, each agency shall review, within a period not to exceed 3 years, its regulations or procedures to assess the need to incorporate new or revised standards and practices.

Sec. 5. Reporting. The Federal Emergency Management Agency shall request, from each agency affected by this order, information on the status of its procedures, progress in its implementation plan, and the impact of this order on its operations. The FEMA shall include an assessment of the execution of this order in its annual report to the Congress on the National Earthquake Hazards Reduction Program.

Sect. 6. Judicial Review. Nothing in this order is intended to create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person.

/s/ George Bush

**The White House,
January 5, 1990**

APPENDIX B

COMMENTARY ON EXECUTIVE ORDER 12699

Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction

This commentary to the Executive Order was produced by the Interagency Committee on Seismic Safety in Construction (ICSSC), which also drafted the Executive Order.

The title is chosen to describe the objectives and scope of the proposed executive order, but to leave its legislative history to the preamble.

The legislative background for the order and its objectives are presented. The order defines actions to meet the specified requirements of the National Earthquake Hazards Reduction Act of 1977. The only new responsibility is to develop and begin systematic efforts immediately for Federally-owned buildings being newly constructed, and within three years for other specified buildings. Each agency alone is responsible for its actions in response to the order. It is not the intent of the order to place new requirements on agencies that have already acted to meet the requirements of the National Earthquake Hazards Reduction Program (NEHRP). In addition to the stated goal of protecting lives and property in Federal buildings, one hoped-for side effect of the order is the accelerated adoption of improved earthquake hazard reduction practices by state and local governments and by the private sector.

Section 1. Requirements for Earthquake Safety of New Federal Buildings

A general definition is given for buildings. "New building" is not defined. However, it is commonly accepted construction practice in this country, as expressed in the model codes (UBC, NBC, SBC), to treat additions as new buildings. The **NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings** also require additions to meet the requirements for new buildings, and further require that they do not decrease the seismic resistance of the existing building. Therefore, this order should be interpreted to apply to additions to existing buildings as well as to new buildings.

Because the order does not limit applicability based on geography, the order affects all Federally related new construction worldwide.

Cost-effectiveness is cited as a criterion for earthquake safety practices and programs. Inherent in all existing seismic design guidelines is the acknowledgement that it is not economically or technically feasible to provide complete safety for all buildings. The objectives of the order, as specified in Section 1 for Federally owned buildings and Section 2 for other affected buildings, reflect this philosophy. For Federally owned buildings, the intent is to reduce risks to lives, to improve the capability of essential buildings to continue to function, and to reduce earthquake losses of public buildings. For other affected buildings, the intent is to reduce risks to lives and to protect public investments. Meeting these objectives should be attempted in a manner consistent with current building design standards; seismic safety should be consistent among various building types, materials, and locations and consistent with safety from other hazards to life and property. Appropriate design and construction standards are to be established in accord with Sections 3(a) and 4(a), which require use of nationally recognized private sector standards whenever possible.

Section 2. Federally Leased, Assisted, or Regulated Buildings

The goal of reducing risks in a cost-effective manner is restated for this class of buildings.

2(a) Space Leased for Federal Occupancy

The order applies to each agency responsible for "the construction and lease of a new building for Federal use". Application to lease of limited space in a building is not clear. In cases of multiple use of a single building, the 1988 **NEHRP Recommended Provisions** require that the entire building meet the most stringent requirements of any use that occupies 15 percent or more of the total building area. It is therefore reasonable to require agency seismic safety provisions for buildings in which 15 percent or more of the total space will be leased for Federal use.

Buildings not owned by the Federal government must conform to local building codes. In the interests of cost-effectiveness, the order specifies that local building codes may be used if they are determined to provide adequately for seismic safety. For Federal leasing projects as defined, the Federal agency may require that the local building code be augmented with additional requirements for seismic safety. By augmenting the existing code rather than requiring conformance with a separate national code, design and possibly construction cost increases are minimized.

2(b) Federal Domestic Assistance Programs

Agencies which assist in the financing or guarantee the financing of new buildings must develop and implement an appropriate seismic safety program. The degree of assistance required to trigger this requirement is not specified. By precedent of other Federal programs, it may be assumed that any assistance, no matter how small, may be considered sufficient to require agency consideration of seismic safety. Thus programs which allocate grants for multiple purposes, of which one is construction-related, must develop an earthquake hazard reduction program. Loan and mortgage insurance programs are specifically identified as being included in this requirement. Note that the seismic safety program is to be "appropriate", and cost-effectiveness is still among the required criteria. These non-Federally owned buildings will be required to meet local codes, so the use of augmented local codes is recommended for these buildings as well.

2(c) Federally Regulated Buildings

Programs which regulate structural safety are affected by the order. Other regulatory programs need not comply unless they are involved in new building construction as defined in the other sections of the order. These non-Federally owned buildings should be permitted to use augmented local codes whenever possible.

Section 3. Concurrent Requirements

3(a) - The cited OMB circular (A-119) recognizes the inefficiency of developing standards for Federal use when appropriate standards exist in the private sector, and thus encourages the use of existing nationally recognized private sector seismic safety standards whenever possible. The **NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings** was developed to provide guidance for model codes and legislative bodies in establishing such standards. Use of a national standard is required unless the agency finds that "none is available that meets its requirements". In most instances, this will be a situation where national standards are not stringent enough for special agency missions. However, the wording of the order does allow agencies to reject national standards as overly stringent for their agency needs.

The seismic hazards as mapped in the American National Standards Institute Standard A58, **Minimum Design Loads for Buildings and Other Structures** (recently revised and published as the **American Society of Civil Engineers Standard A-7**), are to be considered the minimum acceptable by Federal agencies. The maps presented in the **NEHRP Recommended Provisions** may be

deemed equivalent, as may the Uniform Building Code's seismic hazard map in those areas in which the Uniform Building Code is in use. In most large regions of the country, the level of seismicity is not in dispute. However, in some smaller areas the construction community is reluctant to accept the most current findings of seismologists when those findings indicate that the level of seismicity is greater than previously suspected. Where discrepancies exist between local and national code seismicity levels, the nationally recognized hazard level should be used by Federal agencies.

Use of local building codes is approved if such codes are determined to provide adequately for seismic safety. For buildings that are not Federally owned, use of adequate local codes for seismic safety is the most cost-effective approach. These buildings must comply to local building regulations; compliance to a separate Federally mandated code would add to design and possibly to construction costs. Agencies may evaluate, augment, and accept or reject local codes using their own criteria, or they may adopt the recommendations of the Interagency Committee on Seismic Safety in Construction (ICSSC). Two ICSSC documents may be used to evaluate existing building codes: **Seismic Provisions of State and Local Building Codes and Their Enforcement**, and **Assessment of the Seismic Provisions of Model Building Codes**. The first document will identify the model code forming the basis of all state and many local codes, and will present information on adoption and enforcement procedures used in those jurisdictions. The second document will compare the four most commonly used model building codes to the **1988 NEHRP Recommended Provisions**, and will provide guidelines for modifying model codes to achieve nationally uniform seismic safety. Section 3(a) also permits agencies to develop special seismic safety standards and practices appropriate to unique agency missions.

3(b) This section specifically accepts all seismic hazard reduction efforts initiated prior to the issuance of the order, as long as those efforts meet the minimum requirements of the order as written. The intent of the order is not to require replacement or revision of existing seismic safety programs if they are adequate as specified by the Executive Order, but rather to require agencies without programs to act, and those with less stringent programs to initiate improvements.

3(c) The order may not be construed as permitting a reduction in established levels of seismic safety.

3(d) Emergency work or assistance in compliance with the Stafford Act, as defined in the order, is not required to meet the requirements of an agency seismic safety program. Such emergency work is assumed to be temporary.

Section 4. Agency Responsibilities

4(a) The Federal Emergency Management Agency (FEMA) is responsible for reporting on the execution of the order. The ICSSC is called upon to recommend cost-effective design and construction standards. Although these recommendations will not be binding on any agency, they will represent a community standard because they will have been approved by consensus. All agencies affected by the order may participate in the ICSSC, and can thereby influence the recommendations.

4(b) Affected agencies have three years to develop and implement a seismic safety program. No funding is granted for this purpose; the usual budget process is to be followed. Assessment of each agency program is required at intervals of at most three years. The NEHRP Recommended Provisions and the model codes are all revised on a three year cycle. Changes in recommended practice as represented by these codes should be adopted into agency programs.

Section 5. Reporting

FEMA's report to Congress on the National Earthquake Hazard Reduction Program shall include a report on the execution of the Executive Order. Agencies must provide FEMA with information on the status of their program when requested.

Page Intentionally Left Blank

APPENDIX C

MODEL AGENCY SEISMIC SAFETY PROGRAM FOR NEW BUILDINGS

This model seismic safety program is a suggested format that may be used by affected Federal agencies. It is intended to be tailored by the using organization to meet specific agency needs.

1.0 INTRODUCTION

In order to comply with Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction", the following requirements and procedures are established:

2.0 AGENCY SEISMIC SAFETY COORDINATOR

The office of agency seismic safety coordinator is established to:

- . be cognizant of all agency building programs falling under the scope of the Executive Order,
- . maintain necessary documentation on exempt and non-affected programs,
- . participate in developing agency seismic safety implementation plans, policies, regulations, procedures, and other requirements,
- . evaluate and accept appropriate state and local codes, augmented as necessary, as adequate for agency use, and conduct studies (or have studies conducted), where necessary, to determine adequacy of state and local codes,
- . document the agency's rationale and/or results of any risk analysis, cost effectiveness studies, or other determinations which form the basis for the agency's seismic safety decisions,
- . monitor the execution and results of the agency's efforts in upgrading seismic safety of its new construction activities,
- . recommend seismic safety programmatic changes, as required,

- . act as a focal point for the agency in maintaining necessary seismic safety policies, procedures, records, documents, and reports,
- . provide information requested by the Federal Emergency Management Agency, as required by Section 5 of the Executive Order, and
- . serve as the agency's representative or alternate to the ICSSC.

3.0 IDENTIFYING AFFECTED PROGRAMS

The agency seismic safety coordinator, or other official appointed by the agency, shall review agency programs to determine which of the following categories, if any, apply to each agency program.

- Category 1. Design and construction of new Federally-owned buildings,
- Category 2. Construction and lease of new buildings for Federal use,
- Category 3. Assisting in the financing, through grants or loans, of newly constructed buildings,
- Category 4. Guaranteeing the financing, through loan or mortgage insurance programs, of newly constructed buildings,
- Category 5. Regulation of structural safety of new buildings.

The agency seismic safety coordinator shall maintain records of the appropriate categories for each agency program. Programs which fall into none of the above categories may be ruled Exempt-Not Affected. The agency seismic safety coordinator shall create and maintain a list of all affected programs. The list shall include a brief description of each affected program, indicating the new building construction category or categories into which the various program elements fall.

4.0 MINIMUM REQUIRED DESIGN AND CONSTRUCTION STANDARDS

For Category 1 programs as defined above, the minimum acceptable design and construction standards shall be the most recent edition of either the **Uniform Building Code (UBC)**, the **National Building Code (NBC)**, the **Standard Building Code (SBC)**, or the **Council of American Building Officials One- and Two-Family Dwelling Code (CABO)**, modified as recommended by **Assessment of the Seismic Provisions of Model Building Codes** to achieve substantial equivalence

with the most recent or immediately preceding edition of the **NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings**.

For all other categories, the minimum requirement shall be as specified above unless state or local building codes are approved as adequate by the agency. Evaluation of state and local codes and establishment of minimum acceptable standards shall be as specified below. The two support documents used in this evaluation procedure are **Seismic Provisions of State and Local Building Codes and Their Enforcement ("Status Report")** and **Assessment of the Seismic Provisions of Model Building Codes ("Assessment Report")**. The Assessment Report compares the UBC, the NBC, the SBC, and CABO to the 1988 edition of the **NEHRP Recommended Provisions**, and recommends, where appropriate, changes needed in order for the model codes to attain substantial equivalence with that document.

1. The Status Report shall be used to determine the source of seismic design and construction regulations adopted and enforced in the locality under consideration.
2. If the source is evaluated in the Assessment Report, the alterations or additions, if any, recommended by the Assessment Report for that particular model code must be used in conjunction with the local code. Note that if the source is an earlier edition of the codes reviewed in the Assessment Report, further studies must be performed as described in step 5 below.
3. If significant deviations from the source document in the direction of less stringency have been made, such deviations must be reversed. Deviations shall be evaluated by a structural engineer with significant seismic design experience. Such significant deviations include, but are not limited to, reduction in the level of seismicity (Zone, A_s , or A_v), exemption of certain classes of buildings from seismic requirements, reduction of required load combinations, and increase in allowable stress.
4. A state or local code may be deemed adequate for agency use only when used in conjunction with the alterations, additions, and changes identified in steps 2 and 3 above.
5. State or local codes based on a source document not included in the Assessment Report shall not be deemed adequate for agency use without a study showing substantial equivalence or better to the most recent or

the immediately preceding edition of the **NEHRP Recommended Provisions**. The studies in the guidance documents identified in items 1 and 2 above shall serve as a model for equivalency studies. Where substantial equivalency is lacking, the UBC, NBC, SBC, or CABO, modified as recommended by the Assessment Report, shall be established as the required seismic standard.

The agency seismic safety coordinator shall identify the state and local codes that require evaluation for the implementation of agency programs.

5.0 EXEMPTIONS

5.1 Regional Program Exemptions

Programs or branches of programs that deal solely with one- and two-family dwellings and that are administered totally within regions of low seismicity shall be exempt from the agency seismic safety program. Regions of low seismicity shall be defined as those areas identified as Zone 0 and 1 in the most recent edition of **American Society of Civil Engineers Standard 7**. The agency seismic safety coordinator must verify exempt status.

5.2 Other Exemptions

No buildings shall be considered exempt from the agency seismic safety program, except for those categories of buildings exempted by the latest edition of the **NEHRP Recommended Provisions**.

Specific programs or portions of a program may be exempted from the agency seismic safety program only if legal counsel confirms that the program activities do not fall within the scope of the Executive Order. Rationale and basis for the exemption shall be submitted to the agency seismic safety coordinator. The agency seismic safety coordinator shall maintain documentation justifying all exemptions.

6.0 IMPLEMENTATION

Agency programs shall be reviewed and categorized by the agency seismic safety coordinator as specified in Section 3.0 of this model seismic safety program. All agency programs will be considered affected unless and until the agency seismic safety coordinator confirms requested exempt status. The most recent edition of the Uniform Building Code, the National Building Code, or the Standard Building Code, modified as recommended by **Assessment of the Seismic Provisions of Model Building Codes** to achieve substantial equivalence

with the most recent or the immediately preceding edition of the **NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings**, shall be the required minimum seismic design and construction standard for all programs unless and until a state or local code is judged to be substantially equivalent and adequate for use.

Responsible parties, as appropriate for each program and project type, shall be notified of the required minimum seismic standards. The responsible parties may be the building owner, architect, engineer, and/or contractor. Written statements acknowledging awareness of the seismic safety requirements and intent to comply shall be required from the identified responsible parties before any contract or grant is entered into. When deemed appropriate, additional written statements shall be required from the responsible parties upon building completion stating that the specified seismic safety requirements have been met. Such statements of compliance may include the engineer's and architect's signed and stamped verification of seismic design codes, standards, and practices used in the design and construction of the building, construction observation reports, local or state building department plan review documents, or other pertinent documents.

7.0 REPORTING

The agency seismic safety coordinator shall maintain information on the status of each program's seismic safety procedures, the progress in implementing the procedures, and the impact of the seismic safety procedures on program operation.

The agency seismic safety coordinator shall, at the request of the Federal Emergency Management Agency, submit information on the status of the agency's seismic safety program.

8.0 UPDATING

The agency seismic safety program shall be reviewed every three years by the agency seismic safety coordinator and other appropriate parties to assess the need to incorporate new or revised standards and practices. Revised practices and/or regulations shall be promulgated as needed.



PB93-228674

NIST-114A
(REV. 3-90)

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

1. PUBLICATION OR REPORT NUMBER
NISTIR 4635

2. PERFORMING ORGANIZATION REPORT NUMBER

3. PUBLICATION DATE
JULY 1991

BIBLIOGRAPHIC DATA SHEET

4. TITLE AND SUBTITLE

Guidelines and Procedures for Implementation of the Executive Order on Seismic Safety

5. AUTHOR(S)

Diana Todd

6. PERFORMING ORGANIZATION (IF JOINT OR OTHER THAN NIST, SEE INSTRUCTIONS)

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
GAITHERSBURG, MD 20899

7. CONTRACT/GRANT NUMBER

8. TYPE OF REPORT AND PERIOD COVERED

9. SPONSORING ORGANIZATION NAME AND COMPLETE ADDRESS (STREET, CITY, STATE, ZIP)

Federal Emergency Management Agency
Washington, DC 20472

10. SUPPLEMENTARY NOTES

*NIST Category
NIST-140*

11. ABSTRACT (A 200-WORD OR LESS FACTUAL SUMMARY OF MOST SIGNIFICANT INFORMATION. IF DOCUMENT INCLUDES A SIGNIFICANT BIBLIOGRAPHY OR LITERATURE SURVEY, MENTION IT HERE.)

Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction", was signed by the President to further the goals of Public Law 95-124, the "Earthquake Hazards Reduction Act of 1977", as amended. These guidelines and procedures for implementing the Order have been prepared and endorsed by consensus of the Interagency Committee on Seismic Safety in Construction.

The Executive Order applies only to new construction. All buildings owned, leased constructed, assisted (through such methods as loans, grants, or guarantees of loans), or regulated by the Federal government must conform to the requirements of the Order. Each Federal agency is independently responsible for ensuring appropriate seismic design and construction standards are applied to new construction under its purview.

These guidelines recommend that each agency name an agency seismic safety coordinator to serve as a focal point for the agency's seismic safety program. Guidelines for determining the adequacy of local building codes are provided. Recommended implementation procedures include requiring written acknowledgement of agency seismic design and construction requirements from the building architect, engineer, contractor, and/or owner.

12. KEY WORDS (6 TO 12 ENTRIES; ALPHABETICAL ORDER; CAPITALIZE ONLY PROPER NAMES; AND SEPARATE KEY WORDS BY SEMICOLONS)

agency seismic safety coordinator; building; earthquake hazard; earthquake; Executive Order on Seismic Safety; Federal agencies; guidelines; new construction; seismic safety

13. AVAILABILITY

UNLIMITED

FOR OFFICIAL DISTRIBUTION. DO NOT RELEASE TO NATIONAL TECHNICAL INFORMATION SERVICE (NTIS).

ORDER FROM SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE,
WASHINGTON, DC 20540.

ORDER FROM NATIONAL TECHNICAL INFORMATION SERVICE (NTIS), SPRINGFIELD, VA 22161.

14. NUMBER OF PRINTED PAGES

27

15. PRICE

A03

ELECTRONIC FORM