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Seismic safety standards
for existing federal buildings

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Work by the Interagency Committee on Seismic Safety in Construction is expected to lead to the eventual development of a systematic program of seismic upgrading for federally owned or leased buildings. Executive Order 12941, signed on 1 December 1994, implements a modest program of upgrading the seismic safety of federally owned buildings and lays the groundwork for developing a more aggressive program, by requiring agencies to develop a seismic inventory of their existing buildings and an estimate of the cost of achieving adequate seismic safety in their buildings.

Technical standards

In February 1994, the Interagency Committee on Seismic Safety in Construction issued Standards of Seismic Safety for Existing Federally Owned or Leased Buildings (RP4). In addition to specifying appropriate seismic evaluation methodologies, the standard includes specific items that ‘trigger’ (necessitate) a seismic evaluation:

- significant remodeling;
- repair of structural damage;
- change of function;
- designation by the owning agency as an ‘exceptionally high risk’; and
- newly added to the federal inventory, such as by purchase of donation.

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Section 1 of Executive Order 12941 adopts the RP4 standards as the minimum technical criteria that all Executive Branch agencies and departments must meet in future seismic evaluation and mitigation projects. By adopting the RP4 standards, the ‘triggers’ become mandatory, thus initiating a modest program of seismic evaluation and rehabilitation in all federal agencies. Because the triggers are generally tied to significant changes to a building, the required seismic work takes place during an economically advantageous phase of the building's existence.

The RP4 standards specify life safety as the minimum level of seismic performance to be achieved in ‘triggered’ buildings. Historic buildings are to be held to the same standard. The Secretary of the Department of the Interior's Standards on Historic Preservation are to be followed in achieving adequate seismic safety.

Collecting information to develop a more active program

Section 2 of Executive Order 12941 requires that all agencies and departments owning or leasing buildings develop a seismic inventory and estimate the costs of mitigating unacceptable seismic risks. The order directs the Interagency Committee on Seismic Safety in Construction to issue, by 1 December 1995, guidance on performing these tasks. The Interagency Committee on Seismic Safety in Construction guidance is expected to call for the inventory to screen buildings into exempt (as defined by RP4) and non-exempt buildings. For non-exempt buildings, information on location (seismicity), occupancy (use), date of construction, model building type, size and number of stories is to be collected. In addition, agencies are asked to indicate whether each building is historic and whether it is considered ‘essential’ (requires performance above the minimum RP4 life safety level).

The Interagency Committee on Seismic Safety in Construction guidance is expected to recommend that agencies evaluate the seismic safety of all buildings they identify as posing an exceptionally high risk (based on expected frequency and intensity of earthquake occurrence and expected consequences of the event, considering number of occupants, criticality of building function and vulnerability of the structural system). Agencies are asked to evaluate the safety of a representative sample of the remaining non-exempt buildings. For buildings found to be seismically deficient, an estimate of the cost of achieving adequate safety will be required. One source that agencies may use in developing these estimates is Typical Costs For Seismic Rehabilitation, second edition (FEMA 156). That study of over 2,000 seismically rehabilitated buildings found that average costs for rehabilitating historic buildings were nearly three times the average costs for non-historic buildings.

The inventory and cost information is to be forwarded to FEMA by 1 December 1998. FEMA will use the data to examine the costs and benefits of a wide variety of potential programs to upgrade the seismic safety of existing federal buildings. By 1 December 2000, FEMA will submit to Congress the results of their findings. It is hoped that this effort will lead to the adoption of a proactive program of systematic upgrading of the seismic safety of federal buildings.