

## ASCE/SEI 7-05 Chapter 13 Minimum Design Loads for Buildings and Other Structures

### 13.1 GENERAL

**13.1.3 Component Importance Factor.** All components shall be assigned a component importance factor as indicated in this section. The component importance factor,  $I_p$ , shall be taken as 1.5 if any of the following conditions apply:

1. The component is required to function for life-safety purposes after an earthquake, including fire protection sprinkler systems.
2. The component contains hazardous materials.
3. The component is in or attached to an Occupancy Category IV structure and it is needed for continued operation of the facility or its failure could impair the continued operation of the facility. All other components shall be assigned a component importance factor,  $I_p$ , equal to 1.0.

**13.1.4 Exemptions.** The following nonstructural components are exempt from the requirements of this section:

1. Architectural components in Seismic Design Category B other than parapets supported by bearing walls or shear walls provided that the component importance factor,  $I_p$ , is equal to 1.0.
2. Mechanical and electrical components in Seismic Design Category B.
3. Mechanical and electrical components in Seismic Design Category C provided that the component importance factor,  $I_p$ , is equal to 1.0.
4. Mechanical and electrical components in Seismic Design Categories D, E, or F where the component importance factor,  $I_p$ , is equal to 1.0 and both of the following conditions apply:
  - a. Flexible connections between the components and associated ductwork, piping, and conduit are provided and
  - b. Components are mounted at 4 ft (1.22 m) or less above a floor level and weigh 400 lb (1780 N) or less.
5. Mechanical and electrical components in Seismic Design Categories D, E, and F where the component importance factor,  $I_p$ , is equal to 1.0 and both of the following conditions apply:
  - a. Flexible connections between the components and associated ductwork, piping, and conduit are provided and
  - b. The components weigh 20 lb (89 N) or less or, for distribution systems, weighing 5 lb/ft (73 N/m) or less.

### 13.2 GENERAL DESIGN REQUIREMENTS

**13.2.1 Applicable Requirements for Architectural, Mechanical, and Electrical Components, Supports, and Attachments.** Architectural, mechanical, and electrical components, supports, and attachments shall comply with the sections referenced in Table 13.2-1. These requirements shall be satisfied by one of the following methods:

1. Project-specific design and documentation prepared and submitted by a registered design professional.
2. Submittal of the manufacturer's certification that the component is seismically qualified by
  - a. Analysis.
  - b. Testing in accordance with the alternative set forth in Section 13.2.5.
  - c. Experience data in accordance with the alternative set forth in Section 13.2.6.

**13.2.2 Special Certification Requirements for Designated Seismic Systems.** Certifications shall be provided for designated seismic systems assigned to Seismic Design Categories C through F as follows:

- a. Active mechanical and electrical equipment that must remain operable following the design earthquake shall be certified by the supplier as operable based on approved shake table testing in accordance with Section 13.2.5 or experience data in accordance with Section 13.2.6. Evidence demonstrating compliance of this requirement shall be submitted to the authority having jurisdiction after review and approval by the registered design professional.
- b. Components with hazardous contents shall be certified by the supplier as maintaining containment following the design earthquake by (1) analysis, (2) approved shake table testing in accordance with Section 13.2.5, or (3) experience data in accordance with Section 13.2.6. Evidence demonstrating compliance of this requirement shall be submitted to the authority having jurisdiction after review and approval by the registered design professional.

**13.2.5 Testing Alternative for Seismic Capacity Determination.** As an alternative to the analytical requirements of Sections 13.2 through 13.6, testing shall be deemed as an acceptable method to determine the seismic capacity of components and their supports and attachments. Seismic qualification by testing based upon a nationally recognized testing standard procedure such as ICC-ES AC 156, acceptable to the authority having jurisdiction shall be deemed to satisfy the design and evaluation requirements provided that the substantiated seismic capacities equal or exceed the seismic demands determined in accordance with Sections 13.3.1 and 13.3.2.

**13.2.6 Experience Data Alternative for Seismic Capacity Determination.** As an alternative to the analytical requirements of Sections 13.2 through 13.6, use of experience data shall be deemed as an acceptable method to determine the seismic capacity of components and their supports and attachments. Seismic qualification by experience data based upon nationally recognized procedures acceptable to the authority having jurisdiction shall be deemed to satisfy the design and evaluation requirements provided that the substantiated seismic capacities equal or exceed the seismic demands determined in accordance with Sections 13.3.1 and 13.3.2.