CHAPTER 5—LOADS

CODE

5.1—Scope

5.1.1 This chapter shall apply to selection of load factors and combinations used in design, except as permitted in Chapter 27.

5.2—General

5.2.1 Loads shall include self-weight; applied loads; and effects of prestressing, earthquakes, restraint of volume change, and differential settlement.

5.2.2 Loads and Seismic Design Categories (SDCs) shall be in accordance with the general building code, or determined by the building official.

COMMENTARY

R5.2—General

R5.2.1 Provisions in the Code are associated with dead, live, wind, and earthquake loads such as those recommended in ASCE/SEI 7. The commentary to Appendix C of ASCE/SEI 7 provides service-level wind loads W_a for serviceability checks; however, these loads are not appropriate for strength design.

If the service loads specified by the general building code differ from those of ASCE/SEI 7, the general building code governs. However, if the nature of the loads contained in a general building code differs considerably from ASCE/SEI 7 loads, some provisions of this Code may need modification to reflect the difference.

R5.2.2 Seismic Design Categories (SDCs) in this Code are adopted directly from ASCE/SEI 7. Similar designations are used by the International Building Code (2018 IBC) and the National Fire Protection Association (NFPA 5000 2012). The BOCA National Building Code (BOCA 1999) and "The Standard Building Code" (SBC 1999) used seismic performance categories. The "Uniform Building Code" (IBCO 1997) relates seismic design requirements to seismic zones, whereas editions of ACI 318 prior to 2008 related seismic design requirements to seismic risk levels. Table R5.2.2 correlates SDC to seismic risk terminology used in ACI 318 for several editions before the 2008 edition, and to the various methods of assigning design requirements used in the United States under the various model building codes, the ASCE/SEI 7 standard, and the National Earthquake Hazard Reduction Program (NEHRP 1994).

Design requirements for earthquake-resistant structures in this Code are determined by the SDC to which the structure is assigned. In general, the SDC relates to seismic hazard level, soil type, occupancy, and building use. Assignment of a building to an SDC is under the jurisdiction of the general building code rather than this Code.

In the absence of a general building code that prescribes earthquake effects and seismic zoning, it is the intent of Committee 318 that application of provisions for earthquake-resistant design be consistent with national standards or model building codes such as ASCE/SEI 7, 2012 IBC, and NFPA 5000. The model building codes also specify overstrength factors Ω_o that are related to the seismic-force-resisting system used for the structure and design of certain elements.