Chapter C1
GENERAL

C1.1 SCOPE

The minimum load requirements contained in this standard are derived from research and service performance of buildings and other structures. The user of this standard, however, must exercise judgment when applying the requirements to "other structures." Loads for some structures other than buildings may be found in this standard, and additional guidance may be found in the commentary.

Both loads and load combinations are set forth in this document with the intent that they be used together. If one were to use loads from some other source with the load combinations set forth herein or vice versa, the reliability of the resulting design may be affected.

Earthquake loads contained herein are developed for structures that possess certain qualities of ductility and postelastic energy dissipation capability. For this reason, provisions for design, detailing, and construction are provided in Chapter 14. In some cases, these provisions modify or add to provisions contained in design specifications.

C1.3 BASIC REQUIREMENTS

C1.3.1 Strength and Stiffness

Buildings and other structures must satisfy strength limit states in which members and components are proportioned to safely carry the design loads specified in this Standard to resist buckling, yielding, fracture, and other unacceptable performance. This requirement applies not only to structural components but also to nonstructural elements, the failure of which could pose a substantial safety or other risk. Chapter 6 of this Standard specifies wind loads that must be considered in the design of cladding. Chapter 13 of this Standard specifies earthquake loads and deformations that must be considered in the design of nonstructural components and systems designated in that chapter.

Although strength is a primary concern of this section, strength cannot be considered independent of stiffness. In addition to considerations of serviceability, for which stiffness is a primary consideration, structures must have adequate stiffness to ensure stability. In addition, the magnitude of load imposed on a structure for some loading conditions, including earthquake, wind, and ponding, is a direct function of the structure's stiffness.

Another important consideration related to stiffness is damage to nonstructural components resulting from structural deformations. Acceptable performance of nonstructural components requires either that the structural stiffness be sufficient to prevent excessive deformations or that the components can accommodate the anticipated deformations.

Standards produced under consensus procedures and intended for use in connection with building code requirements contain recommendations for resistance factors for use with the strength design procedures of Section 1.3.1.1 or allowable stresses (or safety factors) for the allowable stress design procedures of Section 1.3.1.2. The resistances contained in any such standards have been prepared using procedures compatible with those used to form the load combinations contained in Sections 2.3 and 2.4. When used together, these load combinations and the companion resistances are intended to provide reliabilities approximately similar to those indicated in Tables C.1.3.1a and C1.3.1b. Some standards known to have been prepared in this manner include:

ACI
American Concrete Institute
38800 Country Club Drive
Farmington Hills, MI 48331

ACI 318 Building Code Requirements for Concrete

AISC
American Institute of Steel Construction
One East Wacker Drive
Chicago, IL 60601

AISC 341 Seismic Provisions for Steel Buildings
AISC 358 Prequalified Connections for Buildings and Other Structures
AISC 360 Specification for Structural Steel Buildings

AISI
American Iron and Steel Institute
1140 Connecticut Avenue, NW, Suite 705
Washington, DC 20036