

Chapter 10

COMPOSITE STEEL AND CONCRETE STRUCTURE DESIGN REQUIREMENTS

10.1 REFERENCE DOCUMENTS: The design, construction, and quality of composite steel and concrete *components* that resist *seismic forces* shall conform to the relevant requirements of the following references except as modified by the provisions of this chapter.

ACI 318	American Concrete Institute (ACI), <i>Building Code Requirements for Structural Concrete</i> , 1999, excluding Appendix A (Alternate Design Method) and Chapter 22 (Structural Plain Concrete) and making Appendix C (Alternative Load and Strength Reduction Factors) mandatory
AISC/LRFD	American Institute of Steel Construction (AISC), <i>Load and Resistance Factor Design Specification for Structural Steel Buildings (LRFD)</i> , 1999
AISC Seismic	American Institute of Steel Construction (AISC), <i>Seismic Provisions for Structural Steel Buildings</i> , including Supplement No. 1, July 1997, Parts I and II
AISI	American Iron and Steel Institute (AISI), <i>Specification for the Design of Cold-Formed Steel Structural Members</i> , 1996, including Supplement 2000, excluding ASD provisions

10.1.1: When using ACI 318, Appendix A and Chapter 22 are excluded and Appendix C is mandatory.

10.2 REQUIREMENTS: An *R* factor as set forth in Table 5.2.2 for the appropriate composite steel and concrete system is permitted when the *structure* is designed and detailed in accordance with the provisions of AISC Seismic, Part II.

In *Seismic Design Categories* B and above, the design of such systems shall conform to the requirements of AISC Seismic, Part II. Composite *structures* are permitted in *Seismic Design Categories* D and above, subject to the limitations in Table 5.2.2, when substantiating evidence is provided to demonstrate that the proposed system will perform as intended by AISC Seismic Part II.. The substantiating evidence shall be subject to the approval of the authority having jurisdiction. Where composite elements or connections are required to sustain inelastic deformations, the substantiating evidence shall be based upon cyclic testing.