

7. Outside of the ductile pile region, the spiral or hoop reinforcement with a volumetric ratio not less than one-half of that required for transverse confinement reinforcement shall be provided.

14.3 COMPOSITE STEEL AND CONCRETE STRUCTURES

Structures, including foundations, constructed of composite steel and concrete to resist seismic loads shall be designed and detailed in accordance with this standard, including the reference documents and additional requirements provided in this section.

14.3.1 Reference Documents

The design, construction, and quality of composite steel and concrete members that resist seismic forces shall conform to the applicable requirements of the following:

1. AISC 341
2. AISC 360
3. ACI 318, excluding Chapter 22

14.3.2 General

Systems of structural steel acting compositely with reinforced concrete shall be designed in accordance with AISC 360 and ACI 318, excluding Chapter 22. Where required, the seismic design of composite steel and concrete systems shall be in accordance with the additional provisions of Section 14.3.3.

14.3.3 Seismic Requirements for Composite Steel and Concrete Structures

Where a response modification coefficient, R , in accordance with Table 12.2-1 is used for the design of systems of structural steel acting compositely with reinforced concrete, the structures shall be designed and detailed in accordance with the requirements of AISC 341.

14.3.4 Metal-Cased Concrete Piles

Metal-cased concrete piles shall be designed and detailed in accordance with Section 14.2.3.2.4.

14.4 MASONRY

Structures, including foundations, constructed of masonry to resist seismic loads shall be designed and detailed in accordance with this standard, including

the references and additional requirements provided in this section.

14.4.1 Reference Documents

The design, construction, and quality assurance of masonry members that resist seismic forces shall conform to the requirements of TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6, except as modified by Section 14.4.

14.4.2 R factors

To qualify for the response modification coefficients, R , set forth in this standard, the requirements of TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6, as amended in subsequent sections, shall be satisfied.

Intermediate and special reinforced masonry shear walls designed in accordance with Section 2.3 of TMS 402/ACI 530/ASCE 5 shall also comply with the additional requirements contained in Section 14.4.4.

14.4.3 Modifications to Chapter 1 of TMS 402/ACI 530/ASCE 5

14.4.3.1 Separation Joints

Add the following new Section 1.19.3 to TMS 402/ACI 530/ASCE 5:

1.19.3 Separation Joints. *Where concrete abuts structural masonry and the joint between the materials is not designed as a separation joint, the concrete shall be roughened so that the average height of aggregate exposure is 1/8 in. (3 mm) and shall be bonded to the masonry in accordance with these requirements as if it were masonry. Vertical joints not intended to act as separation joints shall be crossed by horizontal reinforcement as required by Section 1.9.4.2.*

14.4.4 Modifications to Chapter 2 of TMS 402/ACI 530/ASCE 5

14.4.4.1 Stress Increase

If the increase in stress given in Section 2.1.2.3 of TMS 402/ACI 530/ASCE 5 is used, the restriction on load reduction in Section 2.4.1 of this standard shall be observed.

14.4.4.2 Reinforcement Requirements and Details

14.4.4.2.1 Reinforcing Bar Size Limitations Reinforcing bars used in masonry shall not be larger than No. 9 (M#29). The nominal bar diameter shall not exceed