CODE

$1.0A_{cv}\sqrt{f'_{ce}}$. For any individual vertical wall segments, V_{ne} shall not be taken greater than $1.25A_{cv}\sqrt{f'_{ce}}$.

A.11.3.2.2 For structural wall panel zones, V_{ne} shall be calculated in accordance with A.11.3. 2.1(a). V_{ne} shall not be taken greater than $2.1A_{cv}\sqrt{f'_{ce}}$.

A.12—Enhanced detailing requirements

A.12.1 If the mean maximum deformation from the set of response history analyses exceeds $0.5D_u$ of confined concrete, members shall be subject to the added detailing requirements of this section.

A.12.2 *Special moment frames*

A.12.2.1 For beams of special moment frames, the spacing of transversely supported flexural reinforcing bars as required by 18.6.4.2 shall not exceed 200 mm.

A.12.2.2 The sum of the column strengths at any joint as required by 18.7.3.2 shall be at least 1.4 times the sum of the beam strengths at the joint.

A.12.2.3 For tied columns of special moment frames, every longitudinal bar shall have lateral support by a corner of a hoop or a seismic hook as required in 18.7.5.2(f) regardless of axial load or concrete strength.

A.12.2.4 When deformations of beams of special moment frames exceed $0.5D_u$, the column dimension parallel to the beam longitudinal reinforcement required in 18.8.2.3 shall be increased by 20 percent.

A.12.3 *Special structural walls*

A.12.3.1 Boundary elements shall be provided in accordance with 18.10.6 with transverse reinforcement conforming with A.12.2.3.

COMMENTARY

RA.12—Enhanced detailing requirements

RA.12.1 The requirements for earthquake-resisting systems and detailing have been developed over many years using actual earthquake damage observations, research, and engineering judgment. These requirements are codified in ASCE/SEI 7, IBC, and ACI 318. In recent years, enhanced computational abilities allow engineers to model and calculate seismic response in great detail.

Designs that exceed the prescriptive limits of the general building code are sometimes prepared, verified, and justified. In some instances, these new designs have not been tested in strong ground shaking, and there is some concern that these designs may be extrapolating beyond the collective knowledge. Therefore, these enhanced details are provided to improve inelastic response ductility and are appropriate when using Appendix A for designs beyond prescriptive code limits.

RA.12.2 *Special moment frames*

RA.12.2.3 This code has allowed crossties in compression members with a seismic hook at only one end and with crossties alternated recognizing their ease in construction. However, recent earthquakes and research tests have shown that 90-degree hooks do not always provide adequate support (Moehle and Cavanagh 1985).

A.12.3 *Special structural walls*