CODE

$k_{cp} = 1.0$ for $h_{ef} < 65$ mm
$k_{cp} = 2.0$ for $h_{ef} \geq 65$ mm

17.7.3.1.1 For cast-in anchors and post-installed expansion, screw, and undercut anchors, N_{cp} shall be taken as N_{cb} calculated by Eq. (17.6.2.1a), and for adhesive anchors, N_{cp} shall be the lesser of N_a calculated by Eq. (17.6.5.1a) and N_{cb} calculated by Eq. (17.6.2.1a).

17.7.3.1.2 For cast-in anchors and post-installed expansion, screw, and undercut anchors, N_{cpg} shall be taken as N_{cbg} calculated by Eq. (17.6.2.1b), and for adhesive anchors, N_{cpg} shall be the lesser of N_{ag} calculated by Eq. (17.6.5.1b) and N_{cbg} calculated by Eq. (17.6.2.1b).

17.8—Tension and shear interaction

17.8.1 Unless tension and shear interaction effects are considered in accordance with 17.5.2.3, anchors or anchor groups that resist both tension and shear shall satisfy 17.8.2 and 17.8.3. The values of ϕN_n and ϕV_n shall be in accordance with 17.5.2 or 17.10.

17.8.2 It shall be permitted to neglect the interaction between tension and shear if (a) or (b) is satisfied.

(a) $N_{ua}/(\phi N_n) \leq 0.2$ (17.8.2a)
(b) $V_{ua}/(\phi V_n) \leq 0.2$ (17.8.2b)

17.8.3 If $N_{ua}/(\phi N_n) > 0.2$ for the governing strength in tension and $V_{ua}/(\phi V_n) > 0.2$ for the governing strength in shear, then Eq. (17.8.3) shall be satisfied.

$$\frac{N_{ua}}{\phi N_n} + \frac{V_{ua}}{\phi V_n} \leq 1.2 \qquad (17.8.3)$$

17.9—Edge distances, spacings, and thicknesses to preclude splitting failure

17.9.1 Minimum spacings and edge distances for anchors and minimum thicknesses of members shall conform to this section, unless supplementary reinforcement is provided to control splitting. Lesser values from product-specific tests

COMMENTARY

R17.8—Tension and shear interaction

The tension-shear interaction expression has traditionally been expressed as

$$\left(\frac{N_{ua}}{N_n}\right)^{\varsigma} + \left(\frac{V_{ua}}{V_n}\right)^{\varsigma} \leq 1.0$$

where ς varies from 1 to 2. The current trilinear recommendation is a simplification of the expression where $\varsigma = 5/3$ (Fig. R17.8). The limits were chosen to eliminate the requirement for calculation of interaction effects where very small values of the second force are present. Any other interaction expression that is verified by test data, however, can be used to satisfy 17.5.2.3.
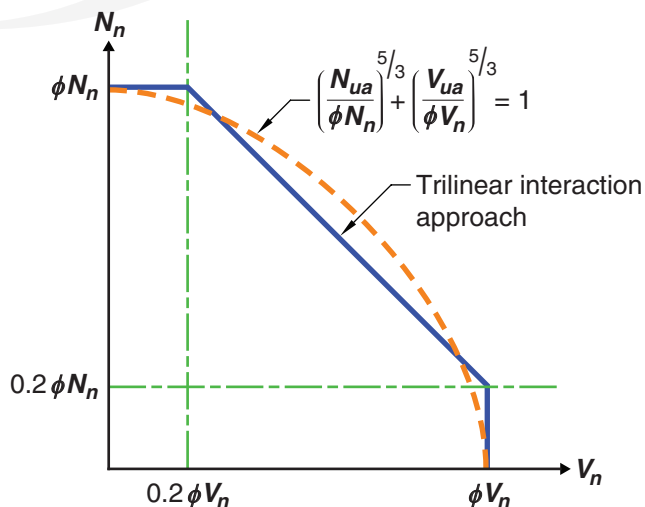

Fig. R17.8—Shear and tensile load interaction equation.

R17.9—Edge distances, spacings, and thicknesses to preclude splitting failure

R17.9.1 Minimum spacings, edge distances, and thicknesses are dependent on the anchor characteristics. Installation forces and torques in post-installed anchors can cause splitting of the surrounding concrete. Such splitting also can