



Fig. R17.6.2.3.1—Definition of e'_N for an anchor group.

17.6.2.3.2 If the loading on an anchor group is such that only some of the anchors in the group are in tension, only those anchors that are in tension shall be considered for determining eccentricity e'_N in Eq. (17.6.2.3.1) and for the calculation of N_{cbg} according to Eq. (17.6.2.1b).

17.6.2.3.3 If the loading is eccentric with respect to two orthogonal axes, $\psi_{ec,N}$ shall be calculated for each axis individually, and the product of these factors shall be used as $\psi_{ec,N}$ in Eq. (17.6.2.1b).

17.6.2.4 Breakout edge effect factor, $\psi_{ed,N}$

17.6.2.4.1 Modification factor for edge effects for single anchors or anchor groups loaded in tension, $\psi_{ed,N}$, shall be determined by (a) or (b).

(a) If $c_{a,min} \geq 1.5h_{ef}$, then $\psi_{ed,N} = 1.0$ (17.6.2.4.1a)

(b) If $c_{a,min} < 1.5h_{ef}$, then $\psi_{ed,N} = 0.7 + 0.3 \frac{c_{a,min}}{1.5h_{ef}}$ (17.6.2.4.1b)

17.6.2.5 Breakout cracking factor, $\psi_{c,N}$

17.6.2.5.1 Modification factor for the influence of cracking in anchor regions at service load levels, $\psi_{c,N}$, shall be determined by (a) or (b):

(a) For anchors located in a region of a concrete member where analysis indicates no cracking at service load levels, $\psi_{c,N}$ shall be permitted to be:

R17.6.2.4 Breakout edge effect factor, $\psi_{ed,N}$

R17.6.2.4.1 If anchors are located close to an edge such that there is insufficient space for a complete breakout volume to develop, the strength of the anchor is further reduced beyond that reflected in A_{Nc}/A_{Nco} . If the smallest side cover distance is at least $1.5h_{ef}$, the design model assumes a complete breakout volume can form, and there is no reduction ($\psi_{ed,N} = 1$). If the side cover is less than $1.5h_{ef}$, the factor $\psi_{ed,N}$ is required to adjust for the edge effect (Fuchs et al. 1995).

R17.6.2.5 Breakout cracking factor, $\psi_{c,N}$

R17.6.2.5.1 Post-installed anchors that do not meet the requirements for use in cracked concrete according to ACI 355.2 or ACI 355.4M should be used only in regions that will remain uncracked. The analysis for the determination of crack formation should include the effects of restrained shrinkage (refer to 24.4.2). The anchor qualification tests of ACI 355.2 or ACI 355.4M require that anchors in cracked