

CODE

performed in accordance with **ACI 355.2** or **ACI 355.4M** shall be permitted.

17.9.2 Unless determined in accordance with 17.9.3, minimum spacing parameters shall conform to Table 17.9.2(a).

Table 17.9.2(a)—Minimum spacing and edge distance requirements

Spacing parameter	Anchor type			
	Cast-in anchors		Post-installed expansion and undercut anchors	Post-installed screw anchors
	Not torqued	Torqued		
Minimum anchor spacing	$4d_a$	$6d_a$	$6d_a$	Greater of $0.6h_{ef}$ and $6d_a$
Minimum edge distance	Specified cover requirements for reinforcement according to 20.5.1.3	$6d_a$	Greatest of (a), (b), and (c): (a) Specified cover requirements for reinforcement according to 20.5.1.3 (b) Twice the maximum aggregate size (c) Minimum edge distance requirements according to ACI 355.2 or 355.4M, or Table 17.9.2(b) when product information is absent	

Table 17.9.2(b)—Minimum edge distance in absence of product-specific ACI 355.2 or ACI 355.4M test information

Post-installed anchor type	Minimum edge distance
Torque-controlled	$8d_a$
Displacement-controlled	$10d_a$
Screw	$6d_a$
Undercut	$6d_a$
Adhesive	$6d_a$

17.9.3 For anchors where installation does not produce a splitting force and that will not be torqued, if the edge distance or spacing is less than those given in 17.9.2, calculations shall be performed by substituting for d_a a lesser value d_a' that meets the requirements of 17.9.2. Calculated forces applied to the anchor shall be limited to the values corresponding to an anchor having a diameter of d_a' .

17.9.4 Value of h_{ef} for a post-installed expansion, screw, or undercut post-installed anchor shall not exceed the greater

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be produced in subsequent torquing during connection of attachments to anchors including cast-in anchors. The primary source of values for minimum spacings, edge distances, and thicknesses of post-installed anchors should be the product-specific tests of **ACI 355.2** and **ACI 355.4M**. In some cases, however, specific products are not known in the design stage. Approximate values are provided for use in design.

R17.9.2 Edge cover for anchors with deep embedments can have a significant effect on the side face blowout strength provided in 17.6.4. It is therefore advantageous to increase edge cover beyond that required in **20.5.1.3** to increase side-face blowout strength.

Drilling holes for post-installed anchors can cause microcracking. The requirement for edge distance to be at least twice the maximum aggregate size is to reduce effects of such microcracking.

R17.9.3 In some cases, it may be desirable to use a larger-diameter anchor than the requirements of 17.9.2 permit. In these cases, it is permissible to use a larger-diameter anchor, provided the design strength of the anchor is based on a smaller assumed anchor diameter d_a' .

R17.9.4 Splitting failures are caused by load transfer between the bolt and the concrete. The limitations on the