CODE

Table 13.4.5.6(b)—Maximum transverse reinforcement spacing

Reinforcement location in the pile	Maximum center-to-center spacing, mm
First five ties or spirals at each end of pile	25
600 mm from each end of pile	100
Remainder of pile	150

13.4.6 *Pile caps*

13.4.6.1 Overall depth of pile cap shall be selected such that the effective depth of bottom reinforcement is at least 300 mm.

13.4.6.2 Factored moments and shears shall be permitted to be calculated with the reaction from any pile assumed to be concentrated at the centroid of the pile section.

13.4.6.3 Except for pile caps designed in accordance with 13.2.6.5, the pile cap shall be designed such that (a) is satisfied for one-way foundations and (a) and (b) are satisfied for two-way foundations.

(a) $\phi V_n \geq V_u$, where V_n shall be calculated in accordance with 22.5 for one-way shear, V_u shall be calculated in accordance with 13.4.2.7, and ϕ shall be in accordance with 21.2
(b) $\phi v_n \geq v_u$, where v_n shall be calculated in accordance with 22.6 for two-way shear, v_u shall be calculated in accordance with 13.4.2.7, and ϕ shall be in accordance with 21.2

13.4.6.4 If the pile cap is designed in accordance with the strut-and-tie method as permitted in 13.2.6.5, the effective concrete compressive strength of the struts, f_{ce}, shall be calculated in accordance with 23.4.3, where $\beta_s = 0.60\lambda$, and λ is in accordance with 19.2.4.

13.4.6.5 Calculation of factored shear on any section through a pile cap shall be in accordance with (a) through (c):

(a) Entire reaction from any pile with its center located $d_{pile}/2$ or more outside the section shall be considered as producing shear on that section.
(b) Reaction from any pile with its center located $d_{pile}/2$ or more inside the section shall be considered as producing no shear on that section.
(c) For intermediate positions of pile center, the portion of the pile reaction to be considered as producing shear on the section shall be based on a linear interpolation between full value at $d_{pile}/2$ outside the section and zero value at $d_{pile}/2$ inside the section.

COMMENTARY

R13.4.6 *Pile caps*

R13.4.6.4 It is typically necessary to take the effective concrete compressive strength from expression (d) or (f) in Table 23.4.3(a) because it is generally not practical to provide confining reinforcement satisfying 23.5 in a pile cap.

R13.4.6.5 If piles are located inside the critical sections d or $d/2$ from face of column, for one-way or two-way shear, respectively, an upper limit on the shear strength at a section adjacent to the face of the column should be considered. The *CRSI Handbook* (1984) offers guidance for this situation.