CODE

25.7.2 *Ties*

25.7.2.1 Ties shall consist of a closed loop of deformed bar with spacing in accordance with (a) and (b):

(a) Clear spacing of at least $\mathbf{(4/3)}d_{agg}$
(b) Center-to-center spacing shall not exceed the least of $\mathbf{16}d_b$ of longitudinal bar, $\mathbf{48}d_b$ of tie bar, and smallest dimension of member

25.7.2.2 Diameter of tie bar shall be at least (a) or (b):

(a) No. 10 enclosing No. 32 or smaller longitudinal bars
(b) No. 13 enclosing No. 36 or larger longitudinal bars or bundled longitudinal bars

25.7.2.2.1 As an alternative to deformed bars, deformed wire or welded wire reinforcement of equivalent area to that required in 25.7.2.1 shall be permitted subject to the requirements of Table 20.2.2.4(a).

25.7.2.3 Rectilinear ties shall be arranged to satisfy (a) and (b):

(a) Every corner and alternate longitudinal bar shall have lateral support provided by the corner of a tie with an included angle of not more than 135 degrees
(b) No unsupported bar shall be farther than 150 mm clear on each side along the tie from a laterally supported bar

COMMENTARY

R25.7.2 *Ties*

R25.7.2.2 These provisions apply to crossties as well as ties.

R25.7.2.3 The maximum permissible included angle of 135 degrees and the exemption of bars located within 150 mm clear on each side along the tie from adequately tied bars are illustrated in Fig. R25.7.2.3a. Limited tests (Pfister 1964) on full-size, axially-loaded, tied columns containing full-length bars (without splices) showed that ties on alternate longitudinal bars within 150 mm clear of a laterally supported longitudinal bar are adequate in columns subjected to axial force.

Continuously wound bars or wires can be considered as ties, provided their pitch and area are at least equivalent to the area and spacing of separate ties. Anchorage at the end of a continuously wound bar or wire should be by a standard hook as for separate bars or by one additional turn of the tie pattern (refer to Fig. R25.7.2.3b). A circular, continuously wound bar or wire is considered a spiral if it conforms to 25.7.3; otherwise, it is considered a tie.