

CODE

(d) Where rectilinear hoops or crossties are used, they shall provide lateral support to longitudinal reinforcement in accordance with 25.7.2.2 and 25.7.2.3.

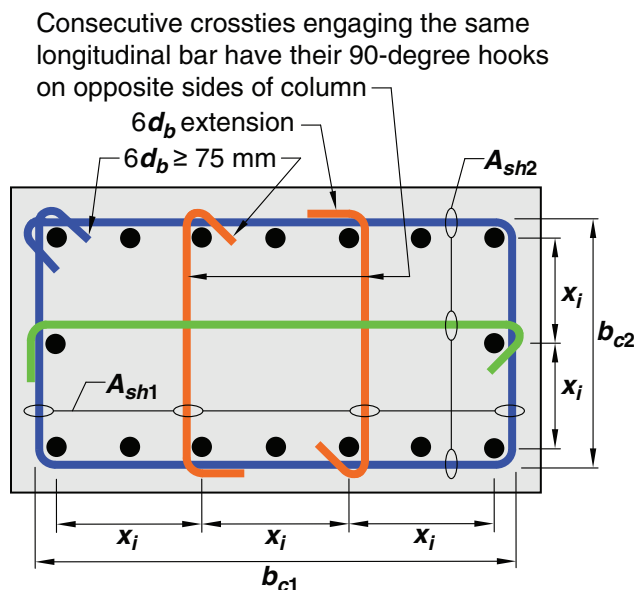
(e) Reinforcement shall be arranged such that the spacing h_x of longitudinal bars laterally supported by the corner of a crosstie or hoop leg shall not exceed 350 mm around the perimeter of the column.

(f) Where $P_u > 0.3A_g f'_c$ or $f'_c > 70 \text{ MPa}$ in columns with rectilinear hoops, every longitudinal bar or bundle of bars around the perimeter of the column core shall have lateral support provided by the corner of a hoop or by a seismic hook, and the value of h_x shall not exceed 200 mm. P_u shall be the largest value in compression consistent with factored load combinations including E .

COMMENTARY

dinal bars is important to achieving intended performance. Where these conditions apply, crossties with seismic hooks at both ends are required. The 200 mm limit on h_x is also intended to improve performance under these critical conditions. For bundled bars, bends or hooks of hoops and crossties need to enclose the bundle, and longer extensions on hooks should be considered. Column axial load P_u should reflect factored compressive demands from both earthquake and gravity loads.

In past editions of the Code, the requirements for transverse reinforcement in columns, walls, beam-column joints, and diagonally reinforced coupling beams referred to the same equations. In the 2014 edition of the Code, the equations and detailing requirements differ among the member types based on consideration of their loadings, deformations, and performance requirements. Additionally, h_x previously referred to the distance between legs of hoops or crossties. In the 2014 edition of the Code, h_x refers to the distance between longitudinal bars supported by those hoops or crossties.



The dimension x_i from centerline to centerline of laterally supported longitudinal bars is not to exceed 350 mm. The term h_x used in Eq. (18.7.5.3) is taken as the largest value of x_i .

Fig. R18.7.5.2—Example of transverse reinforcement in columns.

18.7.5.3 Spacing of transverse reinforcement shall not exceed the least of (a) through (d):

- (a) One-fourth of the minimum column dimension
- (b) For Grade 420, $6d_b$ of the smallest longitudinal bar
- (c) For Grade 550, $5d_b$ of the smallest longitudinal bar
- (d) s_o , as calculated by:

R18.7.5.3 The requirement that spacing not exceed one-fourth of the minimum member dimension or 150 mm is for concrete confinement. If the maximum spacing of crossties or legs of overlapping hoops within the section is less than 350 mm, then the 100 mm limit can be increased as permitted by Eq. (18.7.5.3). The spacing limit as a function of the longitudinal bar diameter is intended to provide adequate longitudinal bar restraint to control buckling after spalling.