

CODE

14.3 — Minimum reinforcement

14.3.1 — Minimum vertical and horizontal reinforcement shall be in accordance with 14.3.2 and 14.3.3 unless a greater amount is required for shear by 11.9.8 and 11.9.9.

14.3.2 — Minimum ratio of vertical reinforcement area to gross concrete area, ρ_v , shall be:

- (a) 0.0012 for deformed bars not larger than No. 16 with f_y not less than 420 MPa; or
- (b) 0.0015 for other deformed bars; or
- (c) 0.0012 for welded wire reinforcement not larger than MW200 or MD200.

14.3.3 — Minimum ratio of horizontal reinforcement area to gross concrete area, ρ_t , shall be:

- (a) 0.0020 for deformed bars not larger than No. 16 with f_y not less than 420 MPa; or
- (b) 0.0025 for other deformed bars; or
- (c) 0.0020 for welded wire reinforcement not larger than MW200 or MD200.

14.3.4 — Walls more than 250 mm thick, except basement walls, shall have reinforcement for each direction placed in two layers parallel with faces of wall in accordance with the following:

- (a) One layer consisting of not less than one-half and not more than two-thirds of total reinforcement required for each direction shall be placed not less than 50 mm nor more than one-third the thickness of wall from the exterior surface;
- (b) The other layer, consisting of the balance of required reinforcement in that direction, shall be placed not less than 20 mm nor more than one-third the thickness of wall from the interior surface.

14.3.5 — Vertical and horizontal reinforcement shall not be spaced farther apart than three times the wall thickness, nor farther apart than 450 mm.

14.3.6 — Vertical reinforcement need not be enclosed by lateral ties if vertical reinforcement area is not greater than 0.01 times gross concrete area, or where vertical reinforcement is not required as compression reinforcement.

14.3.7 — In addition to the minimum reinforcement required by 14.3.1, not less than two No. 16 bars in walls having two layers of reinforcement in both directions

COMMENTARY

R14.3 — Minimum reinforcement

The requirements of 14.3 are similar to those in previous codes. These apply to walls designed according to 14.4, 14.5, or 14.8. For walls resisting horizontal shear forces in the plane of the wall, reinforcement designed according to 11.9.9.2 and 11.9.9.4 may exceed the minimum reinforcement in 14.3.

The notation used to identify the direction of the distributed reinforcement in walls was updated in 2005 to eliminate conflicts between the notation used for ordinary structural walls in Chapters 11 and 14 and the notation used for special structural walls in Chapter 21. The distributed reinforcement is now identified as being oriented parallel to either the longitudinal or transverse axis of the wall. Therefore, for vertical wall segments, the notation used to describe the horizontal distributed reinforcement ratio is ρ_t , and the notation used to describe the vertical distributed reinforcement ratio is ρ_v .