

CODE

COMMENTARY

11.7.2.3 For walls with thickness greater than 250 mm, except single story basement walls and cantilever retaining walls, distributed reinforcement in each direction shall be placed in at least two layers, one near each face.

11.7.2.4 Flexural tension reinforcement shall be well distributed and placed as close as practicable to the tension face.

11.7.3 Spacing of transverse reinforcement

11.7.3.1 Spacing s of transverse reinforcement in cast-in-place walls shall not exceed the lesser of $3h$ and 450 mm. If shear reinforcement is required for in-plane strength, s shall not exceed $\ell_w/5$.

11.7.3.2 Spacing s of transverse bars in precast walls shall not exceed the lesser of (a) and (b):

- (a) $5h$
- (b) 450 mm for exterior walls or 750 mm for interior walls

If shear reinforcement is required for in-plane strength, s shall not exceed the least of $3h$, 450 mm, and $\ell_w/5$.

11.7.4 Lateral support of longitudinal reinforcement

11.7.4.1 If longitudinal reinforcement is required for compression and if A_{st} exceeds $0.01A_g$, longitudinal reinforcement shall be laterally supported by transverse ties.

11.7.5 Reinforcement around openings

11.7.5.1 In addition to the minimum reinforcement required by 11.6, at least two No. 16 bars in walls having two layers of reinforcement in both directions and one No. 16 bar in walls having a single layer of reinforcement in both directions shall be provided around window, door, and similarly sized openings. Such bars shall be anchored to develop f_y in tension at the corners of the openings.

11.8—Alternative method for out-of-plane slender wall analysis

11.8.1 General

11.8.1.1 It shall be permitted to analyze out-of-plane slenderness effects in accordance with this section for walls satisfying (a) through (e):

- (a) Cross section is constant over the height of the wall
- (b) Wall is tension-controlled for out-of-plane moment effect
- (c) ϕM_n is at least M_{cr} , where M_{cr} is calculated using f_r as provided in 19.2.3
- (d) P_u at the midheight section does not exceed $0.06f_c'A_g$

R11.8—Alternative method for out-of-plane slender wall analysis

R11.8.1 General

R11.8.1.1 This procedure is presented as an alternative to the requirements of 11.5.2.1 for the out-of-plane design of slender wall panels, where the panels are restrained against rotation at the top.

Panels that have windows or other large openings are not considered to have constant cross section over the height of the panel. Such walls are to be designed taking into account the effects of openings.

Many aspects of the design of tilt-up walls and buildings are discussed in ACI 551.2R and Carter et al. (1993).