CODE

COMMENTARY

of curing and develop less shrinkage stress than comparable cast-in-place walls.

Table 11.6.1—Minimum reinforcement for walls with in-plane $V_u \le 0.04\phi\alpha_c\lambda\sqrt{f'_c}\,A_{cv}$

Wall type	Type of nonprestressed reinforcement	Bar/wire size	f_y, MPa	Minimum longitudinal[1], ρ_ℓ	Minimum transverse, ρ_t
Cast-in-place	Deformed bars	≤ No. 16	≥420	0.0012	0.0020
			<420	0.0015	0.0025
		> No. 16	Any	0.0015	0.0025
	Welded-wire reinforcement	≤ MW200 or MD200	Any	0.0012	0.0020
Precast[2]	Deformed bars or welded-wire reinforcement	Any	Any	0.0010	0.0010

[1]Prestressed walls with an average effective compressive stress of at least 1.6 MPa need not meet the requirement for minimum longitudinal reinforcement ρ_ℓ.

[2]In one-way precast, prestressed walls not wider than 3.6 m and not mechanically connected to cause restraint in the transverse direction, the minimum reinforcement requirement in the direction normal to the flexural reinforcement need not be satisfied.

11.6.2 If in-plane $V_u > 0.04\phi\alpha_c\lambda\sqrt{f'_c}\,A_{cv}$, (a) and (b) shall be satisfied:

(a) ρ_ℓ shall be at least the greater of the value calculated by Eq. (11.6.2) and 0.0025, but need not exceed ρ_t required for strength by 11.5.4.3.

$$\rho_\ell \ge 0.0025 + 0.5(2.5 - h_w/\ell_w)(\rho_t - 0.0025) \qquad (11.6.2)$$

(b) ρ_t shall be at least 0.0025

R11.6.2 For monotonically loaded walls with low height-to-length ratios, test data (Barda et al. 1977) indicate that horizontal shear reinforcement becomes less effective for shear resistance than vertical reinforcement. This change in effectiveness of the horizontal versus vertical reinforcement is recognized in Eq. (11.6.2); if h_w/ℓ_w is less than 0.5, the amount of vertical reinforcement is equal to the amount of horizontal reinforcement. If h_w/ℓ_w is greater than 2.5, only a minimum amount of vertical reinforcement is required ($0.0025sh$).

11.7—Reinforcement detailing

11.7.1 *General*

11.7.1.1 Concrete cover for reinforcement shall be in accordance with 20.5.1.

11.7.1.2 Development lengths of deformed and prestressed reinforcement shall be in accordance with 25.4.

11.7.1.3 Splice lengths of deformed reinforcement shall be in accordance with 25.5.

11.7.2 *Spacing of longitudinal reinforcement*

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

11.7.2.2 Spacing s of longitudinal 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 smallest of $3h$, 450 mm, and $\ell_w/3$.