

Seismic Design Category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7 1/2 inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 22.6.6.5.

- (b) Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

Exception: In detached one- and two-family dwellings three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.

- (c) Plain concrete footings supporting walls are permitted, provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. For footings that exceed 8 inches (203 mm) in thickness, a minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exceptions:

1. In detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, plain concrete footings without longitudinal reinforcement supporting walls are permitted.
2. For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, a minimum of one bar shall be provided at the top of the stemwall and at the bottom of the footing.
3. Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.

1908.1.16 ACI 318, Section D.3.3. Modify ACI 318, Sections D.3.3.2 through D.3.3.5, to read as follows:

D.3.3.2—In structures assigned to Seismic Design Category C, D, E or F, post-installed anchors for use under D.2.3 shall have passed the Simulated Seismic Tests of ACI 355.2.

D.3.3.3—In structures assigned to Seismic Design Category C, D, E or F, the design strength of anchors shall be taken as 0.75φN_n and 0.75φV_n, where φ is given in D.4.4 or D.4.5, and N_n and V_n are determined in accordance with D.4.1.

D.3.3.4—In structures assigned to Seismic Design Category C, D, E or F, anchors shall be designed to be governed by tensile or shear strength of a ductile steel element, unless D.3.3.5 is satisfied.

D.3.3.5—Instead of D.3.3.4, the attachment that the anchor is connecting to the structure shall be designed so that the attachment will undergo ductile yielding at a load level corresponding to anchor forces no greater than the design strength of anchors specified in D.3.3.3, or the minimum design strength of the anchors shall be at least 2.5 times the factored forces transmitted by the attachment.

1908.1.17 Equation 14-7 of Sections 14.8.3 and 14.8.4 of ACI 318. Sections 14.8.3 and 14.8.4 of ACI 318 are modified as follows:

Section 14.8.3 of ACI 318: I_{cr} shall be calculated by Equation (14-7), and M_a shall be obtained by iteration of deflections.

$$I_{cr} = \frac{E_s}{E_c} \left(A_s + \frac{P_u}{f_y} \frac{h}{2d} \right) (d - c)^2 + \left(\frac{l_w c^3}{3} \right)$$

(Formula 14-7)

and the value E_s/E_c shall not be taken less than six.

Section 14.8.4 of ACI 318: Maximum out-of-plane deflection, Δ_s, due to service loads, including PΔ effects, shall not exceed l_c/150.

If M_a, maximum moment at mid-height of wall due to service lateral and eccentric loads, including PΔ effects, exceed (2/3)M_{cr}Δ_s shall be calculated by Equation (14-8):

$$\Delta_s = \frac{2}{3} \Delta_{cr} + \frac{M_a - \frac{2}{3} M_{cr}}{M_n - \frac{2}{3} M_{cr}} \left(\Delta_n - \frac{2}{3} \Delta_{cr} \right)$$

(Formula 14-8)

If M_a does not exceed (2/3)M_{cr}, Δ_s shall be calculated by Equation (14-9):

$$\Delta_s = \left(\frac{M_a}{M_{cr}} \right) \Delta_{cr}$$

(Formula 14-9)

where:

$$\Delta_{cr} = \frac{5M_{cr}l_c^2}{48E_cI_{cr}}$$

$$\Delta_n = \frac{5M_n l_c^2}{48E_cI_{cr}}$$

I_{cr} shall be calculated by Equation (14-7), and M_a shall be obtained by iteration of deflections.

**SECTION 1909
STRUCTURAL PLAIN CONCRETE**

1909.1 Scope. The design and construction of structural plain concrete, both cast-in-place and precast, shall comply with the minimum requirements of Section 1909 and ACI 318, Chapter 22, as modified in Section 1908.

1909.1.1 Special structures. For special structures, such as arches, underground utility structures, gravity walls and