

## CODE

**8.3.1.2.1** At discontinuous edges of slabs conforming to 8.3.1.2, an edge beam with  $\alpha_f \geq 0.80$  shall be provided, or the minimum thickness required by (b) or (d) of Table 8.3.1.2 shall be increased by at least 10 percent in the panel with a discontinuous edge.

**8.3.1.3** The thickness of a concrete floor finish shall be permitted to be included in  $h$  if it is placed monolithically with the floor slab, or if the floor finish is designed to be composite with the floor slab in accordance with 16.4.

**8.3.1.4** If single- or multiple-leg stirrups are used as shear reinforcement, the slab thickness shall be sufficient to satisfy the requirements for  $d$  in 22.6.7.1.

### 8.3.2 Calculated deflection limits

**8.3.2.1** Immediate and time-dependent deflections shall be calculated in accordance with 24.2 and shall not exceed the limits in 24.2.2 for two-way slabs given in (a) through (c):

- (a) Nonprestressed slabs not satisfying 8.3.1
- (b) Nonprestressed slabs without interior beams spanning between the supports on all sides and having a ratio of long-to-short span exceeding 2.0
- (c) Prestressed slabs

**8.3.2.2** For nonprestressed composite concrete slabs satisfying 8.3.1.1 or 8.3.1.2, deflections occurring after the member becomes composite need not be calculated. Deflections occurring before the member becomes composite shall be investigated, unless the precomposite thickness also satisfies 8.3.1.1 or 8.3.1.2.

### 8.3.3 Reinforcement strain limit in nonprestressed slabs

**8.3.3.1** Nonprestressed slabs shall be tension-controlled in accordance with Table 21.2.2.

### 8.3.4 Stress limits in prestressed slabs

**8.3.4.1** Prestressed slabs shall be designed as Class U with  $f_t \leq 0.5\sqrt{f'_c}$ . Other stresses in prestressed slabs immedi-

## COMMENTARY

**R8.3.1.3** The Code does not specify an additional thickness for wearing surfaces subjected to unusual conditions of wear. The need for added thickness for unusual wear is left to the discretion of the licensed design professional.

A concrete floor finish may be considered for strength purposes only if it is cast monolithically with the slab. A separate concrete finish is permitted to be included in the structural thickness if composite action is provided in accordance with 16.4.

### R8.3.2 Calculated deflection limits

**R8.3.2.1** For prestressed flat slabs continuous over two or more spans in each direction, the span-thickness ratio generally should not exceed 42 for floors and 48 for roofs; these limits may be increased to 48 and 52, respectively, if calculations verify that both short- and long-term deflection, camber, and vibration frequency and amplitude are not objectionable.

Short- and long-term deflection and camber should be calculated and checked against serviceability requirements of the structure.

**R8.3.2.2** If any portion of a composite member is prestressed, or if the member is prestressed after the components have been cast, the provisions of 8.3.2.1 apply and deflections are to be calculated. For nonprestressed composite members, deflections need to be calculated and compared with the limiting values in Table 24.2.2, only when the thickness of the member or the precast part of the member is less than the minimum thickness given in Table 8.3.1.1. In unshored construction, the thickness of concern depends on whether the deflection before or after the attainment of effective composite action is being considered.

### R8.3.3 Reinforcement strain limit in nonprestressed slabs

**R8.3.3.1** The basis for a reinforcement strain limit for two-way slabs is the same as that for beams. Refer to R9.3.3 for additional information.