## CODE

### 8.5—Design strength

#### 8.5.1 *General*

**8.5.1.1** For each applicable factored load combination, design strength shall satisfy $\phi S_n \geq U$, including (a) through (d). Interaction between load effects shall be considered.

(a) $\phi M_n \geq M_u$ at all sections along the span in each direction
(b) $\phi M_n \geq \gamma_f M_{sc}$ within $b_{slab}$ as defined in 8.4.2.2.3
(c) $\phi V_n \geq V_u$ at all sections along the span in each direction for one-way shear
(d) $\phi v_n \geq v_u$ at the critical sections defined in 8.4.4.1 for two-way shear

**8.5.1.2** $\phi$ shall be in accordance with 21.2.

#### 8.5.2 *Moment*

**8.5.2.1** $M_n$ shall be calculated in accordance with 22.3.

**8.5.2.2** In calculating $M_n$ for nonprestressed slabs with a drop panel, the thickness of the drop panel below the slab shall not be assumed to be greater than one-fourth the distance from the edge of drop panel to the face of column or column capital.

**8.5.2.3** In calculating $M_n$ for prestressed slabs, external tendons shall be considered as unbonded unless the external tendons are effectively bonded to the slab along its entire length.

#### 8.5.3 *Shear*

**8.5.3.1** Design shear strength of slabs in the vicinity of columns, concentrated loads, or reaction areas shall be the more severe of 8.5.3.1.1 and 8.5.3.1.2.

**8.5.3.1.1** For one-way shear, where each critical section to be investigated extends in a plane across the entire slab width, $V_n$ shall be calculated in accordance with 22.5.

**8.5.3.1.2** For two-way shear, $v_n$ shall be calculated in accordance with 22.6.

**8.5.3.2** For composite concrete slabs, horizontal shear strength $V_{nh}$ shall be calculated in accordance with 16.4.

#### 8.5.4 *Openings in slab systems*

**8.5.4.1** Openings of any size shall be permitted in slab systems if shown by analysis that all strength and serviceability requirements, including the limits on deflections, are satisfied.

## COMMENTARY

### R8.5—Design strength

#### R8.5.1 *General*

**R8.5.1.1** Refer to R9.5.1.1.

#### R8.5.3 *Shear*

**R8.5.3.1** Differentiation should be made between a long and narrow slab acting as a beam, and a slab subject to two-way action where failure may occur by punching along a truncated cone or pyramid around a concentrated load or reaction area.