

CODE

22.3.3.1 Provisions of 22.3.3 apply to members constructed in separate placements but connected so that all elements resist loads as a unit.

22.3.3.2 For calculation of M_n for composite slabs and beams, use of the entire composite section shall be permitted.

22.3.3.3 For calculation of M_n for composite slabs and beams, no distinction shall be made between shored and unshored members.

22.3.3.4 For calculation of M_n for composite members where the specified concrete compressive strength of different elements varies, properties of the individual elements shall be used in design. Alternatively, it shall be permitted to use the value of f'_c for the element that results in the most critical value of M_n .

22.4—Axial strength or combined flexural and axial strength

22.4.1 General

22.4.1.1 Nominal flexural and axial strength shall be calculated in accordance with the assumptions of 22.2.

22.4.2 Maximum axial compressive strength

22.4.2.1 Nominal axial compressive strength P_n shall not exceed $P_{n,max}$ in accordance with Table 22.4.2.1, where P_o is calculated by Eq. (22.4.2.2) for nonprestressed members and by Eq. (22.4.2.3) for prestressed members. The value of f_y shall be limited to a maximum of 550 MPa.

Table 22.4.2.1—Maximum axial strength

Member	Transverse reinforcement	$P_{n,max}$	
Nonprestressed	Ties conforming to 22.4.2.4	$0.80P_o$	(a)
	Spirals conforming to 22.4.2.5	$0.85P_o$	(b)
Prestressed	Ties	$0.80P_o$	(c)
	Spirals	$0.85P_o$	(d)
Deep foundation member	Ties conforming to Ch. 13	$0.80P_o$	(e)

22.4.2.2 For nonprestressed members, P_o shall be calculated by:

$$P_o = 0.85f'_c(A_g - A_{st}) + f_y A_{st} \quad (22.4.2.2)$$

COMMENTARY

R22.3.3.1 The scope of Chapter 22 is intended to include composite concrete flexural members. In some cases with cast-in-place concrete, separate placements of concrete may be designed to act as a unit. In these cases, the interface is designed for the loads that will be transferred across the interface. Composite structural steel-concrete beams are not covered in this chapter. Design provisions for these types of composite members are covered in [AISC 360](#).

R22.4—Axial strength or combined flexural and axial strength

R22.4.2 Maximum axial compressive strength

R22.4.2.1 To account for accidental eccentricity, the design axial strength of a section in pure compression is limited to 80 to 85 percent of the nominal axial strength. These percentage values approximate the axial strengths at eccentricity-to-depth ratios of 0.10 and 0.05 for tied and spirally reinforced members conforming to 22.4.2.4 and 22.4.2.5, respectively. The same axial load limitation applies to both cast-in-place and precast compression members. The value of f_y is limited to 550 MPa because the compression capacity of the concrete is likely to be reached before this stress is exceeded. The transverse reinforcement requirements for columns do not apply to deep foundation members. [Chapter 13](#) provides the detailing requirements for these members.