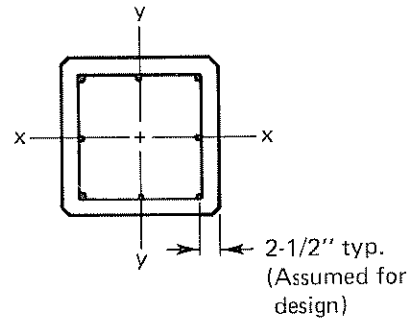


PRECAST, PRESTRESSED COLUMNS

Fig. 2.6.1 Design strength interaction curves for precast, prestressed concrete columns

Criteria

1. Minimum prestress = 225 psi
2. All strand assumed 1/2 in. diameter,
 $f_{pu} = 270$ ksi
3. Curves shown for partial development of strand near member end, where $f_{ps} \approx f_{se}$
4. Horizontal portion of curve is the maximum for tied columns = $0.80\phi P_o$
5. $\phi = 0.9$ for $\phi P_n = 0$
= 0.7 for $\phi P_n \geq 0.10f'_c A_g$
Varies from 0.9 to 0.7 for points between



Use of curves

1. Enter at left with applied factored axial load, P_u
2. Enter at bottom with applied magnified factored moment, δM_u
3. Intersection point must be to the left of curve indicating required concrete strength.

Notation

- ϕP_n = Design axial strength
- ϕM_n = Design flexural strength
- ϕP_o = Design axial strength at zero ecentricity
- A_g = Gross area of the column
- δ = Moment magnifier (Sect. 10.11, ACI 318-77)

