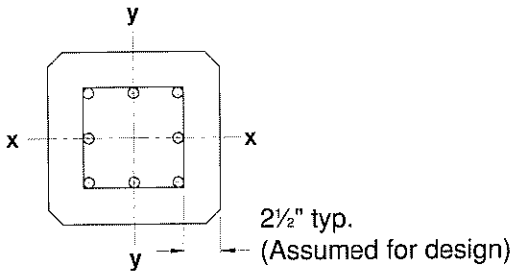


# PRECAST, PRESTRESSED COLUMNS

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  $\phi P_n \geq 0.10 f'_c A_g$   
Varies from 0.9 to 0.7 for points between

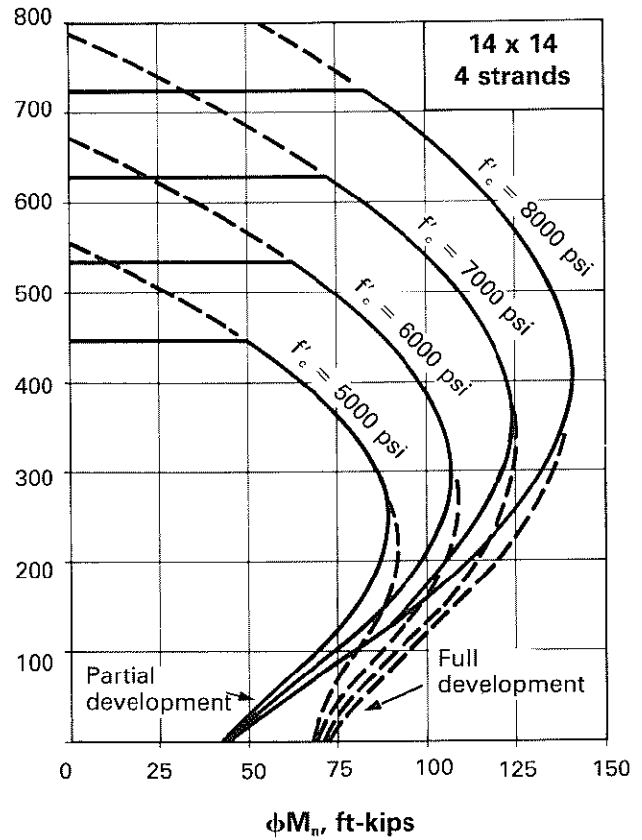
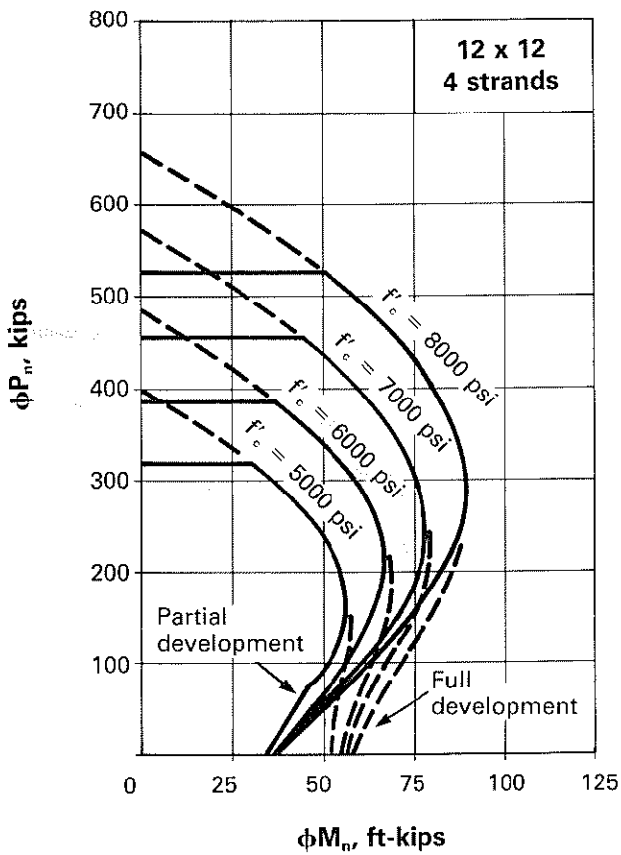


### Notation

- $\phi P_n$  = Design axial strength
- $\phi M_n$  = Design flexural strength
- $\phi P_o$  = Design axial strength at zero eccentricity
- $A_g$  = Gross area of the column
- $\delta$  = Moment magnifier (Sect. 10.11, ACI 318-89)

### Use of curves

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



# PRECAST, PRESTRESSED COLUMNS

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

