PRECAST, PRESTRESSED COLUMNS

Figure 2.7.1  Design strength interaction curves for precast, prestressed concrete columns

CRITERIA
1. Minimum prestress = 225 psi
2. All strand assumed ½ in. diameter, $f_{pu} = 270$ ksi
3. Curves shown for partial development of strand near member end where $f_{pu} \approx f_{se}$
4. Horizontal portion of curve is the maximum for tied columns = 0.80$P_o$
5. Varies linearly from 0.9 for tension-controlled section to 0.65 for compression-controlled sections in accordance with ACI 318-02
Section 9.3.2

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.

NOTATION
$\phi P_n$ = Design axial strength
$\phi M_n$ = Design flexural strength
$\phi P_c$ = Design axial strength at zero eccentricity
$A_g$ = Gross area of column
$\delta$ = Moment magnifier (Section 10.11–10.13 ACI 318-02)
Figure 2.7.1  Design strength interaction curves for precast, prestressed concrete columns (cont.)