Figure 2.7.2  Design strength interaction curves for precast, reinforced concrete columns

CRITERIA
1. Concrete $f'_c = 5000$ psi
2. Reinforcement $f_y = 60,000$ psi
3. Curves shown for full development of reinforcement
4. Horizontal portion of curve is the maximum for tied columns $= 0.80P_c$
5. Varies linearly from 0.9 for tension-controlled sections 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 reinforcement.

NOTATION
\[ \phi P_n = \text{Design axial strength} \]
\[ \phi M_n = \text{Design flexural strength} \]
\[ \phi P_c = \text{Design axial strength at zero eccentricity} \]
\[ A_g = \text{Gross area of the column} \]
\[ \delta = \text{Moment magnifier (Section 10.11–10.13 ACI 318-02)} \]

The interaction curves have been smoothed for plotting purposes. Exact calculated values may be slightly different.
Figure 2.7.2  Design strength interaction curves for precast, reinforced concrete columns (cont.)