Design Aid 3.13.2. Design Strength Interaction Curves for Precast, Reinforced Concrete Columns

**CRITERIA**
1. Concrete $f'_c = 5000$ psi, normalweight
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 $= 0.80 \phi P_0$
5. $\phi$ varies linearly from 0.9 for tension-controlled sections to 0.65 for compression-controlled sections in accordance with ACI 318-14 Section 21.2.

**USE OF CURVES**
1. Enter at left with applied factored axial load $P_n$
2. Enter at bottom with applied magnified factored moment $M_n$
3. Intersection point must be to the left of curve indicating reinforcement used

The interaction curves have been smoothed for plotting purposes. Exact calculated values may be slightly different.

**NOTATION**
- $\phi P_n =$ design axial strength
- $\phi M_n =$ design flexural strength
- $\phi P_0 =$ design axial strength at zero eccentricity
- $A_g =$ gross area of the column
- $\delta =$ moment magnifier (ACI 318-14 Section 6.6.4)
Design Aid 3.13.2. Design Strength Interaction Curves for Precast, Reinforced Concrete Columns (cont.)