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, \( f_{pu} = 270 \text{ ksi} \)
3. Curves shown for partial development of strand near member end where \( f_{pc} = f_{pe} \)
4. Horizontal portion of curve is the maximum for tied columns = 0.80\( \phi P_o \).
5. \( \phi = 0.9 \) for \( \phi P_o = 0 \)
   \[ 0.7 \text{ for } \phi P_o \geq 0.10 f'c A_g \]
   Varies from 0.9 to 0.7 for points between

Use of curves
1. Enter at left with applied factored axial load, \( P_o \)
2. Enter at bottom with applied magnified factored moment, \( \delta M_c \)
3. Intersection point must be to the left of curve indicating required concrete strength.

Notation
\( \phi P_o = \) Design axial strength
\( \phi M_c = \) 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)
Fig. 2.6.1 Design strength interaction curves for precast, prestressed concrete columns (continued)