**PRECAST, PRESTRESSED COLUMNS**

**Figure 2.6.1**  Design strength interaction curves for precast, prestressed concrete columns

**CRITERIA**
1. MINIMUM PRESTRESS = 225 psi
2. ALL STRAND ASSUMED ½ in. DIAMETER, \( f_{ps} = 270 \) ksi
3. CURVES SHOWN FOR PARTIAL DEVELOPMENT OF STRAND NEAR MEMBER END WHERE \( f_{ps} = f_e \)
4. HORIZONTAL PORTION OF CURVE IS THE MAXIMUM FOR TIED COLUMNS = 0.80 \( f_{ps} \)
5. \( \phi \) VARIES LINEARLY FROM 0.9 FOR TENSION-CONTROLLED SECTIONS TO 0.7 FOR COMPRESSION-CONTROLLED SECTIONS IN ACCORDANCE WITH ACI 318-95 SECT. B.9.3.2.

**USE OF CURVES**
1. ENTER AT LEFT WITH APPLIED FACTORED AXIAL LOAD, \( P_a \)
2. ENTER AT BOTTOM WITH APPLIED MAGNIFIED FACTORED MOMENT, \( \delta M \)
3. INTERSECTION POINT MUST BE TO THE LEFT OF CURVE INDICATING REQUIRED CONCRETE STRENGTH.

**NOTATION**
\( \phi P_a \) = DESIGN AXIAL STRENGTH
\( \phi M_\delta \) = DESIGN FLEXURAL STRENGTH
\( \phi P_a \) = DESIGN AXIAL STRENGTH AT ZERO ECCENTRICITY
\( A_g \) = GROSS AREA OF THE COLUMN
\( \delta \) = MOMENT MAGNIFIER (SECT. 10.11-10.13 ACI 318-95)
Figure 2.6.1  Design strength interaction curves for precast, prestressed concrete columns (cont.)