

End-plate thickness (ANSI/AISC 358-10, 6.10)

Step 6. Select an end-plate thickness, t_p , not less than the required value.

$$t_p \geq t_{p, req'd}$$

25.4 mm ³ 24 mm ✓

Step 5. Determine the required end-plate thickness, $t_{p, req'd}$.

$$t_{p, req'd} = \sqrt{\frac{1.11 M_f}{\phi_d F_{yp} Y_p}}$$

$t_{p, req'd}$: 24 mm

where:

M_f : Moment at the face of the column.

M_f : 1771.00 kN·m

ϕ_d : Resistance factor for ductile limit states.

ϕ_d : 1.00

F_{yp} : Specified minimum yield stress of the end-plate material.

F_{yp} : 413.00 MPa

Y_p : End-plate yield line mechanism parameter from AISC 358-10 Tables 6.2, 6.3 or 6.4

Y_p : 8233.5 mm

Case 1 ($d_e \leq s$)

$$Y_p = \frac{b_p}{2} \left[h_1 \left(\frac{1}{2d_e} \right) + h_2 \left(\frac{1}{p_{fo}} \right) + h_3 \left(\frac{1}{p_{fi}} \right) + h_4 \left(\frac{1}{s} \right) \right] + \frac{2}{g} \left[h_1 \left(d_e + \frac{p_b}{4} \right) + h_2 \left(p_{fo} + \frac{3p_b}{4} \right) + h_3 \left(p_{fi} + \frac{p_b}{4} \right) + h_4 \left(s + \frac{3p_b}{4} \right) + p_b^2 \right] + g$$

$$s = \frac{1}{2} \sqrt{b_p g} \quad \text{Note: If } p_{fi} > s, \text{ use } p_{fi} = s.$$

s : 90.6 mm

b_p : 230 mm

h_1 : 724.6 mm

h_2 : 635.6 mm

h_3 : 538.7 mm

h_4 : 449.7 mm

g : 142.9 mm

p_{fi} : 41 mm

p_{fo} : 41 mm

d_e : 39 mm

p_b : 89 mm

