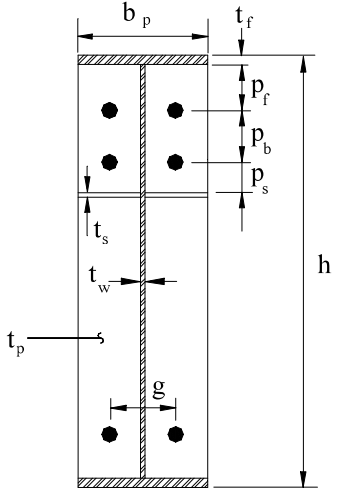
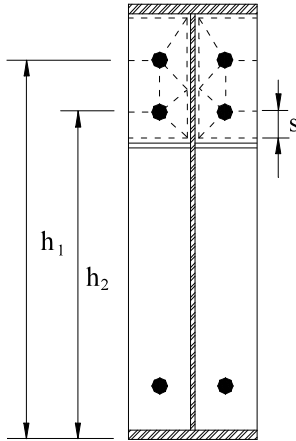
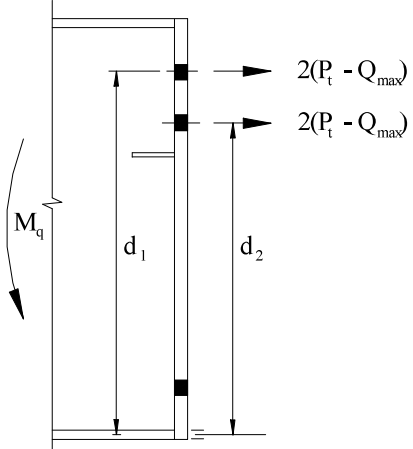


Table 3-5 Summary of Four-Bolt Flush Stiffened Moment End-Plate Analysis (Stiffened Inside the Tension Bolt Rows)

Geometry	Yield-Line Mechanism	Bolt Force Model
		
<p>End-Plate Yield</p>	$\phi M_n = \phi_b M_{pl} = \phi_b F_{py} t_p^2 Y$ $Y = \frac{b_p}{2} \left[h_1 \left(\frac{1}{p_f} \right) + h_2 \left(\frac{1}{s} \right) \right] + \frac{2}{g} [h_1 (p_f + 0.75 p_b) + h_2 (s + 0.25 p_b)] + \frac{g}{2}$ $s = \frac{1}{2} \sqrt{b_p g} \leq p_s \quad (\text{Note upper bound on } s \text{ for this connection}) \quad \phi_b = 0.90$ <p>Note: Use $p_f = s$, if $p_f > s$</p>	
<p>Bolt Rupture w/Prying Action</p>	$\phi M_n = \phi M_q = \begin{cases} \phi [2(P_t - Q_{max})(d_1 + d_2)] \\ \max \phi [2(T_b)(d_1 + d_2)] \end{cases} \quad \phi = 0.75$	
<p>Bolt Rupture No Prying Action</p>	$\phi M_n = \phi M_{np} = \phi [2(P_t)(d_1 + d_2)] \quad \phi = 0.75$	