[redacted]

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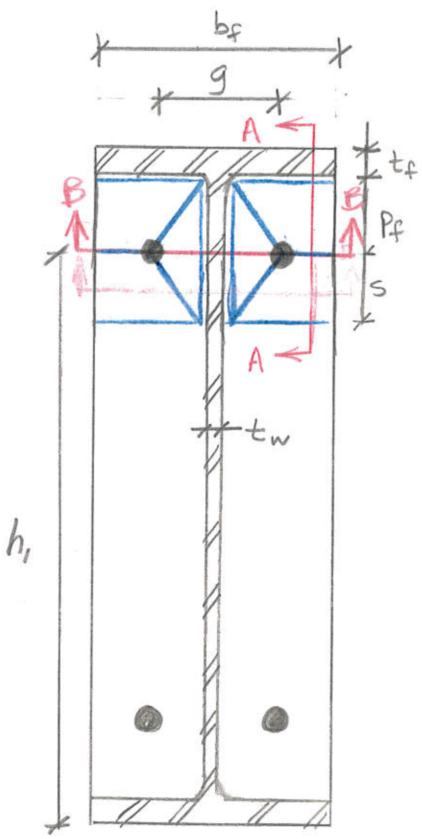
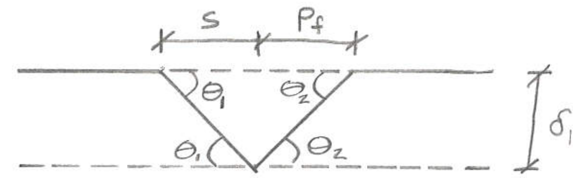
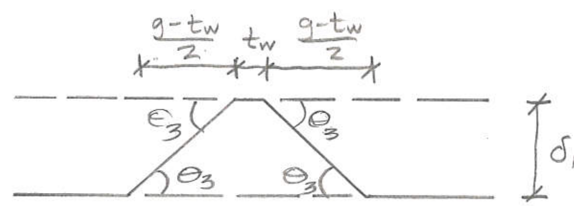




A-A



B-B

$$\theta_1 = \frac{\delta}{s} \qquad \theta_2 = \frac{\delta}{p_f} \qquad \theta_3 = \frac{2\delta}{g-t_w}$$

$$\frac{W_i}{m_p} = \sum l_i\theta_i = (b_f - t_w)\left(\frac{\cancel{\delta}}{p_f}\right) + (b_f - t_w)\left(\frac{\cancel{\delta}}{s}\right) + 2(p_f+s)\left(\frac{2\cancel{\delta}}{g-t_w}\right)$$

$$+ \cancel{2}\left(\frac{b_f-g}{\cancel{2}}\right)\left(\frac{\cancel{\delta}}{s} + \frac{\cancel{\delta}}{p_f}\right) + \cancel{2}\left(\frac{g-t_w}{\cancel{2}}\right)\left(\frac{\cancel{\delta}}{p_f}\right) + \cancel{2}\left(\frac{g-t_w}{\cancel{2}}\right)\left(\frac{\cancel{\delta}}{s}\right)$$

$$+ 2p_f\left(\frac{2\cancel{\delta}}{g-t_w}\right) + 2s\left(\frac{2\cancel{\delta}}{g-t_w}\right)$$

$$= \frac{b_f}{p_f} - \frac{t_w}{p_f} + \frac{b_f}{s} - \frac{t_w}{s} + \frac{4(p_f+s)}{(g-t_w)} + \frac{b_f-g}{s} + \frac{b_f-g}{p_f} + \frac{(g-t_w)}{p_f}$$

$$+ \frac{(g-t_w)}{s} + \frac{4p_f}{(g-t_w)} + \frac{4s}{(g-t_w)}$$

$$= \frac{b_f}{p_f} - \frac{t_w}{p_f} + \frac{b_f}{s} - \frac{t_w}{s} + \frac{b_f}{s} - \cancel{\frac{g}{s}} + \frac{b_f}{p_f} - \cancel{\frac{g}{p_f}} + \cancel{\frac{g}{p_f}} - \frac{t_w}{p_f}$$

$$+ \cancel{\frac{g}{s}} - \frac{t_w}{s} + \frac{4(p_f+s)}{g-t_w} + \frac{4p_f}{g-t_w} + \frac{4s}{g-t_w}$$

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$$= \frac{2b_f}{p_f} - \frac{2t_w}{p_f} + \frac{2b_f}{s} - \frac{2t_w}{s} + \frac{8p_f}{g-t_w} + \frac{8s}{g-t_w}$$

$$= 2b_f\left(\frac{1}{p_f}+\frac{1}{s}\right) - 2t_w\left(\frac{1}{p_f}+\frac{1}{s}\right) + \frac{8(p_f+s)}{g-t_w}$$

if $t_w = 0$

$$= 2b_f\left(\frac{1}{p_f}+\frac{1}{s}\right) + \frac{8}{g}(p_f+s)$$

$$\times\left(\frac{m_p}{F_{yp}t_p^2} = \frac{1}{4}\right) = \frac{b_f}{2}\left(\frac{1}{p_f}+\frac{1}{s}\right) + \frac{2}{g}(p_f+s) = \frac{Y}{h_1}$$ [FROM TABLE 3-2 AISC D.G. 16]

$$W_e = M_{p1}\theta = M_{p1}\frac{1}{h_1} = W_i$$

$$\boxed{\therefore\ \phi M_{pl} = \phi F_{yp} t_p^2 h_1\left[\frac{b_f}{2}\left(\frac{1}{p_f}+\frac{1}{s}\right) + \frac{2}{g}(p_f+s)\right]}$$

$$\theta = \frac{\delta_1}{h_1} \Rightarrow \delta_1 = \theta h_1 \Rightarrow \boxed{\delta_1 = h_1}$$