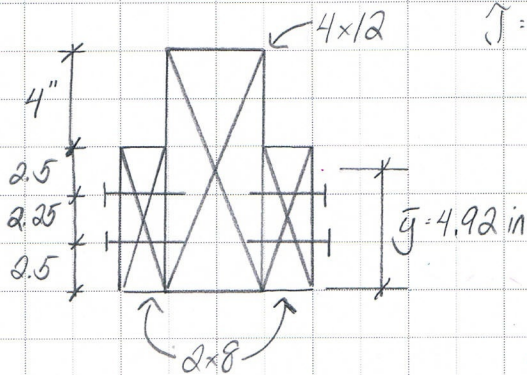


Horiz. Shear



$$b = 3.5 + 2(1.5) = 6.5 \text{ in}$$

$$V_{\max} = 3020 \text{ lb.}$$

$$I = 642.64 \text{ in}^4$$

$$\text{Max Load: } w_{\text{eq}} = \frac{8(13300 + 1763)}{20^2} = 302 \text{ plf}$$

$$\text{Find centroid: } A_1 = 3.5(11.25) = 39.4 \text{ in}^2$$

$$y_1 = 11.25/2 = 5.63 \text{ in}$$

$$A_2 = 2(1.5)(7.25) = 21.75 \text{ in}^2$$

$$y_2 = 7.25/2 = 3.63 \text{ in}$$

$$\bar{y} = \frac{\sum A y}{\sum A} = \frac{39.4(5.63) + 21.75(3.63)}{39.4 + 21.75} = 4.92 \text{ in}$$

$$Q = y^* A^*$$

$$y^* = 4.92 - \frac{1}{2}(2.25 + 2.5) = 2.55 \text{ in}$$

$$A^* = 6.5(2.25 + 2.5) = 30.9 \text{ in}^2$$

$$Q = 78.8 \text{ in}^3$$

$$J_b = \frac{3020 \text{ lb}(78.8 \text{ in}^3)}{642.64 \text{ in}^4} = 371 \text{ lb/in}$$