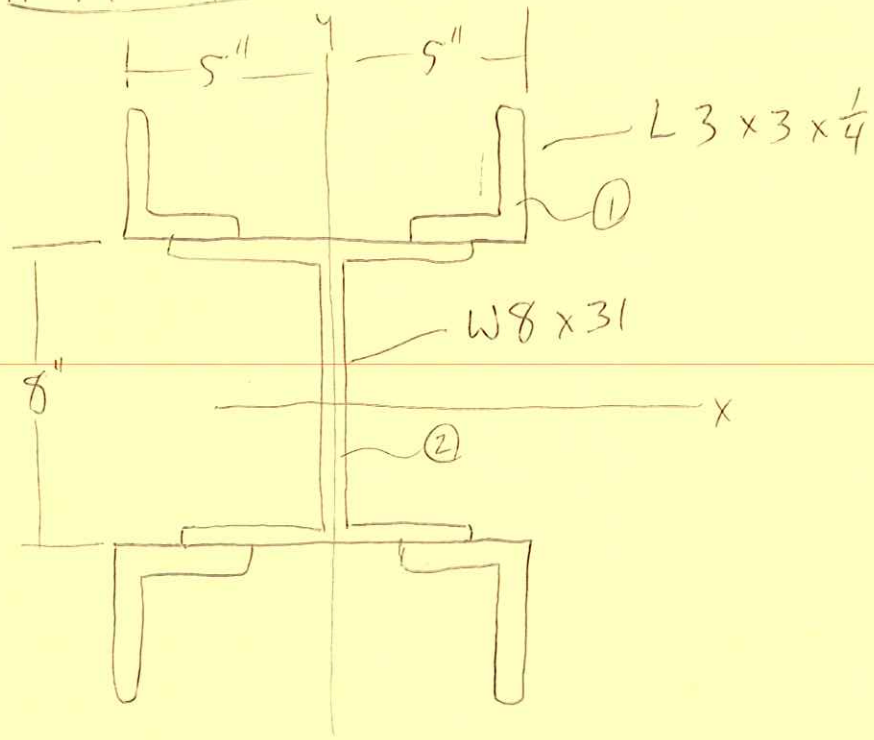


PROB. 9.51



$$\begin{aligned}
 (I_x)_1 &= 4[\bar{I}_x + Ad^2] \\
 &= 4[(1.24 \text{ in}^4) + (1.44 \text{ in}^2)(4 \text{ in} + 0.842 \text{ in})^2]
 \end{aligned}$$

$$(I_x)_1 = 1.4 \times 10^2 \text{ in}^4$$

$$(I_x)_2 = 110 \text{ in}^4$$

$$I_x = (I_x)_1 + (I_x)_2 = 250 \text{ in}^4$$

$$\begin{aligned}
 (I_y)_1 &= 4(\bar{I}_y + Ad^2) \\
 &= 4[(1.24) + (1.44)(5 - 0.842)^2]
 \end{aligned}$$

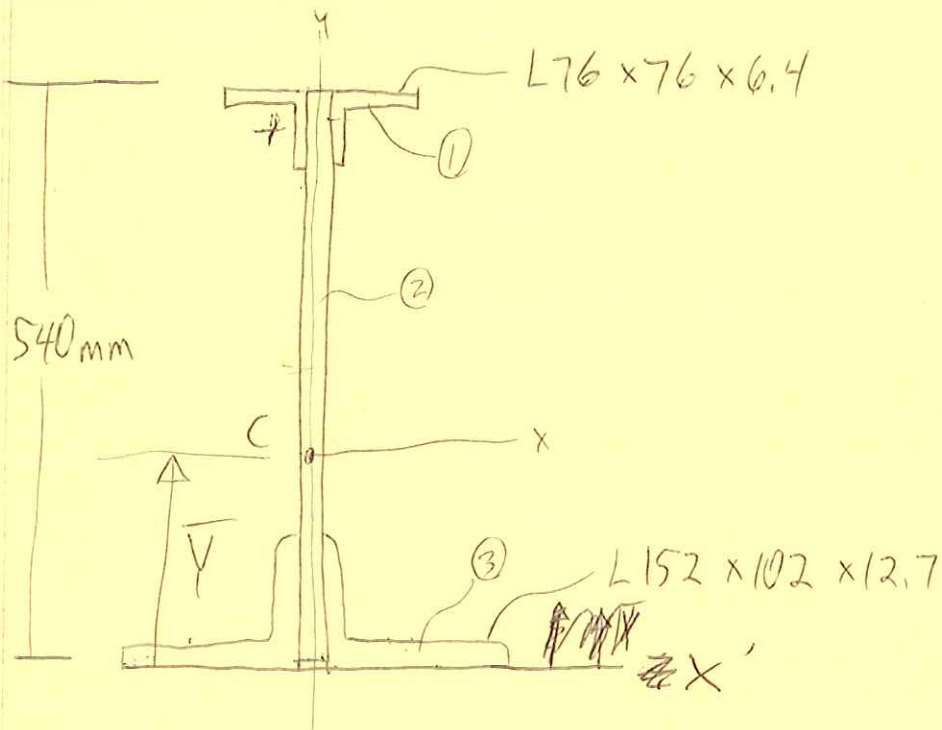
$$(I_y)_1 = 104.5 \text{ in}^4$$

PROB. 9.51

$$(I_y)_2 = 37.1 \text{ in}^4$$

$$(I_y) = (I_y)_1 + (I_y)_2 = 142 \text{ in}^4$$

PROB. 9.54



FIRST, FIND CENTROID OF BEAM.

$$\bar{Y} = \frac{\sum \bar{y}A}{\sum A}$$

FOR AREA 1:  $\bar{y}_1 = 540 - 21.4 = 519 \text{ mm}$

$$A_1 = 2(929 \text{ mm}^2) = 1860 \text{ mm}^2$$

FOR AREA 2:  $\bar{y}_2 = \frac{1}{2}(540 \text{ mm}) = 270 \text{ mm}$

$$A_2 = (16 \text{ mm})(540 \text{ mm}) = 8640 \text{ mm}^2$$