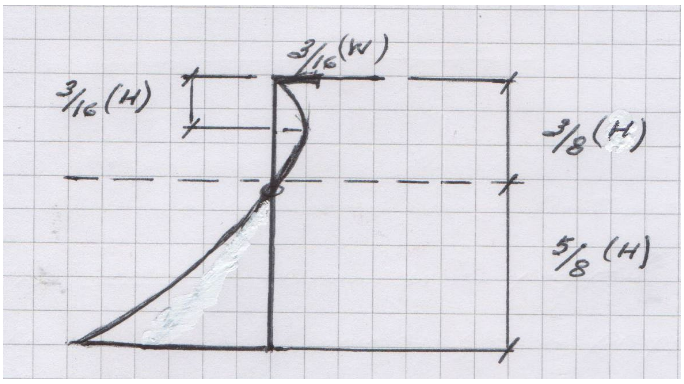
And finally… (February 2020)

Left-hand column

Determine the maximum bending moment at the upper part of the column.

The maximum bending moment is at the position of zero shear from the top of the column.

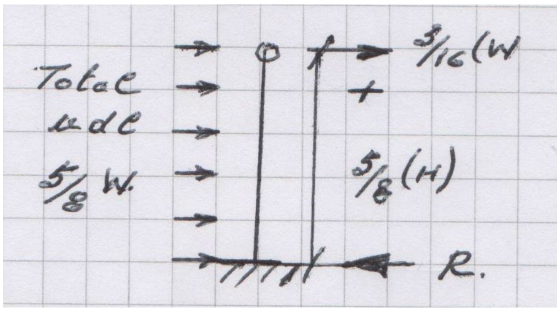
Thus $\frac{3}{16}wH$ divided by w/m = $\boldsymbol{\frac{3}{16}H}$



Maximum bending moment at upper part of column.

$$= \left\{\left[\frac{3}{16}H\right]\left[\frac{3}{16}W\right]\right\} - \left\{\left[\frac{3}{16}H \div 2\right]\left[\frac{3}{16}W\right]\right\}$$
$$= \left(\frac{9}{256} - \frac{9}{32 \times 16}\right)WH$$
$$= \left(\frac{18}{512} - \frac{9}{512}\right)WH$$
$$= \boldsymbol{\frac{9}{512}WH}$$

Bending moment at base of column.



$$= \left\{\left[\frac{3}{16}W\right]\left[\frac{5}{8}H\right]\right\} + \left\{\left[\frac{5}{8}W\right]\left[\frac{5}{16}H\right]\right\}$$
$$= \left[\left(\frac{15}{128}\right) + \left(\frac{5}{8} \times \frac{5}{16}\right)\right]WH$$
$$= \boldsymbol{\frac{5}{16}WH}$$

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