

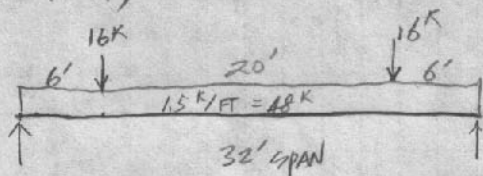
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14-1 (1)

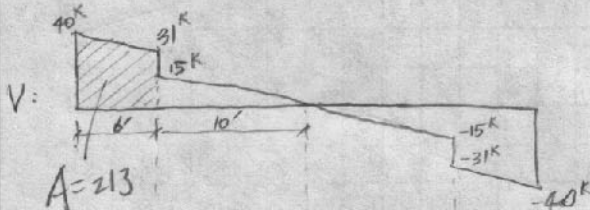


$$R_1 = 24 + 16 = 40 \text{ k}$$

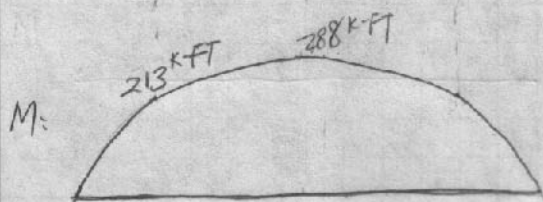
$$R_2 = 24 + 16 = 40 \text{ k}$$

W24x68 FROM D-29

$$S = 154 \text{ in}^3$$



$$A = \frac{b \times (40 + 31)}{2} = 213$$



$$M_{max} = 16' \times 40 \text{ k} - 10' \times 16 \text{ k} - 8' \times (16' \times 15 \text{ k/ft}) = 288 \text{ k-ft}$$

or

$$M_{max} = \left( \begin{array}{l} \text{Area of trapezoid} \\ A = 213 \end{array} + \begin{array}{l} \text{Area of triangle} \\ A = 75 \end{array} \right)$$

$$= 213 + 75 = 288 \text{ k-ft}$$

(a) MAX BENDING STRESS  $f$  @ Max BENDING MOMENT SECTION:

$$f = \frac{M_{max}}{S} = \frac{288 \text{ k-ft} \times 12 \text{ in/ft}}{154 \text{ in}^3} = 22.44 \text{ KSI}$$

(b) MAX BENDING STRESS @ SECTION UNDER THE 16 k LOADS:

$$f = \frac{213 \text{ k-ft} \times 12 \text{ in/ft}}{154} = 16.60 \text{ KSI}$$