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14-1 (1)

\[ W_{24\times68} \text{ from } D-29 \]

\[ S = 154 \text{ in}^3 \]

\[ R_1 = 24 + 16 = 40 \text{ k} \]

\[ R_2 = 24 + 16 = 40 \text{ k} \]

\[ V: \]

\[ A = 213 \]

\[ M: \]

\[ M_{\text{max}} = 16' \times 40 \text{ k} - 16' \times 10 \text{ k} - 8' \times (6' \times 1.5 \text{ k/ft}) \]

\[ = 288 \text{ k-ft} \]

\[ \text{or} \]

\[ M_{\text{max}} = \left( \frac{A \times 15}{2} \right) - \left( \frac{10 \times 15}{2} \right) \]

\[ = 213 + 75 \]

\[ = 288 \text{ k-ft} \]

(a) MAX BENDING STRESS @ MAX BENDING MOMENT SECTION:

\[ f = \frac{M_{\text{max}}}{S} = \frac{288 \text{ k-ft} \times 12 \text{ in}}{154 \text{ in}^3} = 22.44 \text{ ksi} \]

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

\[ f = \frac{213 \times 12 \text{ k}}{154} = 16.60 \text{ ksi} \]