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# 14-1 (2a) 

CALCULATING THE LOAD

GIVEN: \( f_b = 24 \text{k} \text{si} \)
\[ W = 30 \times 116 \]
\[ \omega_{kw} \]
\[ l = 64' \]

FOR \( W 30 \times 116 \) from Table D-35 we get,
\[ S\alpha = 329 \text{in}^3 \]

FOR A SIMPLY SUPPORTED UNIORMLY LOADED BEAM,
MAXIMUM MOMENT \( M = \frac{WL}{8} \)

NOW,
\[ f_b = \frac{M\alpha}{I} = \frac{M}{S\alpha} = f_b \]
\[ \therefore M = S\alpha f_b \]
\[ \therefore M = 329 \text{in}^3 \times 24 \text{(k/ln}^3) \]
\[ \therefore M = 7896 \text{ksi} = 7896 \frac{\text{ksi}}{12} \]
\[ \therefore M = 658 \text{ksi} \]

\[ \therefore M = \frac{WL}{8} \quad \therefore W = \frac{Mx8}{L} \]
\[ \therefore W = \frac{658 \text{ksi} \times 8}{64'} \]
\[ \therefore W = 82.25 \]