ARCH 324 - Structures 2, Winter 2009

von Buelow, Peter

<http://hdl.handle.net/2027.42/64938>  
http://hdl.handle.net/2027.42/64938
By Similar Triangles From Stress Diagram:
\[
\frac{1.8 \text{ ksi}}{X} = \frac{2.5 \text{ ksi}}{18-X} \quad 2.5X = 1.8(18 - X) \quad X = 7.5" 
\]

\[ R_c = \frac{f_c B x}{2} = \frac{(1.8 \text{ ksi})(12")(7.5")}{2} = 81 \text{ k} 
\]

\[ R_c = R_t = A_o f_o \quad A_o f_o = 81 \text{ k} \]
\[ A_o = 32.4 \text{ in}^2 \quad f_o = \frac{81 \text{ k}}{20 \text{ ksi}} = 4.05 \text{ in}^2 \]

Now Reduce by \( \lambda = 8 \)
\[ A_5 = 32.4 \text{ in}^2 = 4.05 \text{ in}^2 
\]

\[ M = R_c (18 - x/3) = R_t (18 - x/3) = 81k (18" - 7.5"/3) = 104.6 \text{ in} \cdot \text{k} 
\]