the maximum tension at $A$ would be 323,785.8 lbs.

This compared with the greatest tension above reveals the curious fact, that, while the stays support $\frac{1}{5}$ths, of the total load, the tension in cable is decreased only $\frac{2}{5}$ths.

Calling $L$ the length of cable $AM$, $w$ its area in square inches, $T$ the average tension, in tons, of cable $AM$, we find $L$ by the formula:

$$L + \frac{L T}{14500 \times w} = 812.467$$

$$T = 1424.72 \text{ tons } w = 133.928 \, \square''$$

hence $L = 811.871$

If $A_iO$, the span of guidewire, be called $l_i$, we finally find its deflection $\lambda_i$, through the relation:

$$l_i \left\{ 1 + \frac{3}{8} \left( \frac{L}{l_i} \right)^2 \right\} = L$$

$$\lambda_i = \sqrt{\frac{3}{8} l_i^2} \pm \sqrt{\frac{3}{8} l_i^2 \left( 1 - \frac{L}{l_i} \right) \left( \frac{3}{8} l_i^2 \right) ^2}$$