**Strain upon the Posts.**

In the middle of the bridge the strain upon the posts cannot exceed the greatest load upon one panel, or 19,288 pounds; this is sustained by 4 posts, each $4 \times 6$, having a united cross-section of 96 square inches. The pressure per square inch in the middle of the span will therefore be 200 pounds.

At the ends of the truss it is proper to calculate the cross-section of the posts at 176 square inches, for if the arches are omitted, the spaces between the small posts must be filled up by extending the end posts to the lower chords.

The weight at one end of the bridge is 9644 pounds and the pressure per square inch is 550 "

The formula for the resistance to flexure of the posts is

$$w = \frac{9000 b d^3}{l^2}.$$

We have 4 posts $4 \times 6 = 9$ feet 4 inches long.

" 2 " 5 $\times$ 8 = 9 " 4 "

The weight which would cause the second to yield, is expressed by

$$w = \frac{2 \times 9000 \times 8 \times 5^3}{(9\frac{1}{2})^2} = 206640,$$

and for the 4 smaller posts

$$w = \frac{4 \times 9000 \times 6 \times 4^3}{(9\frac{1}{2})^3} = 158693.$$

Limit of resistance to flexure = 365,333 pounds.

Greatest weight to cause flexure = 96,433 pounds.

**Strain upon the Ties.**

The strain upon the ties will be to the pressure upon the posts, in the proportion of the diagonal of the panel to the perpendicular, or as $12\frac{1}{2}$ is to 10 nearly, or as $5 : 4$, consequently the strain upon the middle ties will be

$$\frac{9288 \times 5}{4} = 24110 \text{ lbs.}$$

The cross-section of the rods is $7854 \times 4 = 31416$ square inches.

The strain per square inch will be 7680 pounds.