From the last equation of Appendix II. we have for the value of the flange stress at any section,

\[ S = \frac{M}{D\left(1 + \frac{A'}{6A}\right)} \]

In this case

\[ D\left(1 + \frac{A'}{6A}\right) = 26\left(1 + \frac{\frac{1}{4} \times 27}{6 \times 2.64}\right) = 36.7. \]

Dividing each of the moments by 36.7 gives, for the stresses at the three points of division, respectively 5.8 tons, 8.74 tons, and 10.24 tons. Therefore, between the centre of the support and first point of division, there must be enough rivets to take up a stress of 5.8 tons; between the first and second points, enough for a stress of \(8.74 - 5.8 = 2.94\) tons; and between the second and third points, enough for a stress of \(10.24 - 8.74 = 1.5\) tons.

From Table XXXVI. we find the resisting bending-moment of a five-eighth inch rivet to be 0.18 inch ton, and the working bearing-pressure on a quarter-inch plate, 0.938 ton.

Let us first consider the stress of 5.8 tons. It is equally divided between the two angles, making the stress on each 2.9 tons. The lever arm of this last stress is \(\frac{\frac{1}{3} \times (\frac{1}{4} + \frac{5}{16})}{\frac{1}{2}} = \frac{5}{32}\)", and the moment \(\frac{5}{32} \times 2.9 = 0.816\) inch ton, dividing which by 0.18 gives five as the number of rivets required to resist bending. Dividing 5.8 by 0.938 gives seven as the number required for bearing. If there be but seven rivets in two feet and a half, the spacing will be five inches, which would be practically too great. It is better to space the rivets two and a half inches near the ends of the beam; and, if it be thought advisable, the distance may be increased to four or even five inches near the middle.

From the above, we may conclude that calculating rivet spacing for flanges of floor beams is, as a rule, too much refinement for highway-bridge designing.

If the depth of the beam be reduced near the ends, or if, by reason of lack of headway beneath the bridge, shallow beams be used, it might be well to go through the above investigation.