and $$m = \frac{\sinh c(1+z)}{2c} \cdot \frac{\cosh cx}{\cosh c} \cdot \frac{\sinh cx}{\sinh c} \cdot \frac{2h}{c^2} \left[1 - \frac{\cosh cx}{\cos hc} \right]$$

When c is very small, moment of intertia I tends to be infinite and the above equations become those ordinarily used for stiffened bridges. When c is large, I is small and the equations are those of the unstiffened bridge. In the former case influence lines for bending moment 'm' and shear 's' are given respectively by the following equations;

$$m = 1/2\,(1 - z)(1 + x) - h\,(i - x^2) \text{ i.e. } m^o - rhy$$

and $$m' = 1/2\,(1 + z)(1 - x) - h\,(i - x^2) \text{ i.e. } m^o - rhy$$

$$s = 2hx + 1/2\,(1 - z) \quad x < z$$

$$s' = 2hx - 1/2\,(1 + z) \quad x > z$$

In the latter case influence lines for bending moment and shear are given respectively by the following equations.

$$m = a/2c\,[e^{-c(z-x)} - 4h/c]\,; \quad x < z$$

$$m' = 1/2c\,[e^{-c(x-z)} - 4h/c]\,; \quad x > z$$

and $$s = -1/2\,e^{-c(x-z)} \quad ; \; x < z$$

$$s' = 1/2\,e \quad ; \; x > z$$

The suspension bridges have so far been divided into two distinct classes, stiffened and unstiffened. The latter have been used wherever cheapness was the primary consideration and the former where stiffness was essential. By the use of the preceding formulae it has become possible to design a bridge for any specified stiffness or depth of girder. To determine the economic degree of stiffness to be adopted we must have a much clearer conception of the relative advantages and