

APPENDIX III.

METHOD OF FINDING THE LENGTH OF THE LONG DIAGONALS
IN A DOUBLE-INTERSECTION BRIDGE.

Let

l = panel length of bottom chord = GD or DB in the accompanying diagram,

c = half increase of panel length in top chord,

d = depth of truss between centres of chords = AB ,

α = angle between radial line at panel point and perpendicular to lower chord ;

then

$$\alpha = \sin^{-1} \frac{c}{d},$$

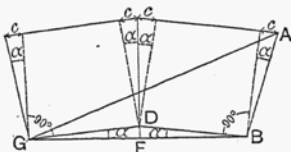
and

$$DE : c :: l : d,$$

or

$$DE = \frac{cl}{d}.$$

$$BG = 2GE = 2\sqrt{l^2 - \frac{c^2 l^2}{d^2}} = 2l\sqrt{\frac{d^2 - c^2}{d^2}}.$$



When the camber is small, BG can be taken equal to $2GD$.

In triangle ABG , AB and BG are known, also angle

$$ABG = 90^\circ + 2\alpha.$$