

## CHAPTER XVI.

## COMPLETE DESIGN FOR A BRIDGE.

LET the bridge to be designed have a span of one hundred and sixty feet, and a clear roadway of fourteen feet with no sidewalks, and let it belong to Class A. Referring to the table on p. 8, we see that the trusses should be of single intersection. On p. 5 we find that the live load should be eighty pounds per square foot of floor, which corresponds to eleven hundred and twenty pounds per lineal foot of bridge.

Table I. gives the dead load as seven hundred and forty-two pounds per lineal foot, say seven hundred and forty pounds.

Table IV. gives eight for the number of panels, and twenty-four feet for the economic depth.

The diagonal upon 20 and 24 is 31.24, which divided by 24 gives 1.3 for the secant; and 20 divided by 24 gives 0.833 for the tangent.

The panel live load,  $w$ , is equal to

$$\frac{1}{2} \times \frac{1120 \times 20}{2000} = 5.6 \text{ tons.}$$

The panel dead load,  $W_p$ , is equal to

$$\frac{1}{2} \times \frac{740 \times 20}{2000} = 3.7 \text{ tons.}$$

Let us assume that about a third of this is concentrated at the upper panel point, making

$$W' = 1.2 \text{ tons.}$$

The sum of the live and dead panel loads, or  $W''$ , is

$$5.6 + 3.7 = 9.3 \text{ tons.}$$