the areas lost from the plate and angles by these rivet holes should be deducted when figuring the net section.

In heavy beams, several plates are often used to vary the section gradually from the centre of the beam to the ends; but if one share Weyrauch's views upon rivet stresses, as expressed in his "Structures of Iron and Steel," he will avoid any such practice.

Many bridge companies reduce the depth of built beams at the ends, in order to save a little weight of iron. This method may be advantageous to the company which pays for finished bridges by the pound; but it is seldom so to the manufacturer, for the triangular pieces cut from the web are often wasted: besides, the extra work in cutting the web, bending the angles, and making square rests for the beam-hanger nuts on the inclined flanges, more than counterbalances any saving of material.

For a bridge with sidewalks, reducing the depth of the floor beams at the ends adds to the appearance of the structure, and need not interfere with the bearing of the hanger nuts.

Tables XIX., XX., and XXI. give the sizes of floor beams for all cases ordinarily met with.

To illustrate the method of proportioning an ordinary floor beam, let us take the case of a beam for a twenty-foot panel, fourteen feet clear roadway, and fifteen feet between centres of trusses, the bridge belonging to Class A.

The live load on the beam will be

\[ 14 \times 20 \times \frac{100}{2000} = 14 \text{ tons.} \]

The weight of the lumber, from Table XV., is

\[ \frac{2085 \times 2.5}{2000} = 2.606 \text{ tons.} \]

Let us assume the weight per foot of the beam to be fifty-five pounds, the total weight of same will then be

\[ \frac{55 \times 16}{2000} = 0.44 \text{ ton.} \]

The total load on the beam is, therefore,

\[ 14.000 + 2.606 + 0.440 = 17.046 \text{ tons.} \]