Formula for Built Floor Beams and Plate Girders.* — The tension flanges of built floor beams and plate girders are to be proportioned by the formula

\[ A = \frac{WL}{8DT} - \frac{A'}{6} + A'' , \]

where \( A \) is the area of the flange, \( A' \) that of the web, \( A'' \) that lost from the flange by a rivet hole, \( W \) the uniformly distributed load in tons, \( L \) the length of the beam in feet between centres of supports, \( D \) the depth in feet between centres of gravity of flanges, and \( T \) the intensity of working tensile stress in tons. The same formula will apply to the compression flanges by making \( A'' \) equal to zero.

Stiffeners. — Built floor beams and plate girders must be stiffened by four (4) angle irons at each support, and by two (2) angle-irons at several intermediate points; the distance apart of the stiffeners being made no greater than twice the depth of the beam when the ratio of thickness of web to depth of same is not less than one-eightieth \( \left( \frac{1}{80} \right) \), and no greater than one and a half \( (1\frac{1}{2}) \) times the depth when this ratio is one over one hundred and twenty \( (\frac{1}{120}) \). Distances for intermediate ratios are to be interpolated.

Tee-irons are not to be used as stiffeners.

Stiffening angles, which must always be in pairs (one angle on each side of the web), must extend from the upper leg of the upper flange angle to the lower leg of the lower flange angle, being made flush with the other legs of the flanges by filling plates.

Web Splices in Floor Beams and Plate Girders. — Webs of floor beams and plate girders must be well spliced at all joints by a splice plate on each side of the web; and joints must be located where the shear is not great.

Limiting Depths of Floor Beams and Plate Girders. — The depth of the web of a floor beam or plate girder must never exceed one hundred and twenty \( (120) \) times its thickness.

* For proof of this formula, see Appendix II.