

braces, sometimes to both; those of the top chord, to that portion through which the pin hole is bored; those for the upper lateral struts should be left loose. If there be any reason to fear rough handling of the iron in transit, it may be necessary to send some of the connecting-plates separately; but the more loose pieces, the more field riveting, and the more field riveting, the greater the erecting expenses, and the longer the time and the greater the risk in raising the bridge.

Rivet spacing should be as regular as circumstances will permit; and all changes in spacing should be made suddenly, instead of gradually, so as to facilitate the punching of the holes by machine.

All measurements should be in feet, inches, and the following vulgar fractions of inches; viz., halves, quarters, eighths, sixteenths, thirty-seconds, and sixty-fourths. Workmen do not seem to understand decimals: so it is better not to use them.

Avoid also the use of the development method, as it is beyond the comprehension of ordinary workmen.

The length of all main members should be measured on the drawing, then checked by calculation.

When nuts are placed in a confined position, — for instance, pin nuts in jaws, — care should be taken that there be ample room for them to turn in; as it is very awkward, and sometimes impossible, to screw up a nut which is stationary, by turning the pin. Nuts in confined positions may be turned by hammering them eccentrically.

Be careful to design no connection in such a manner that there will be rivets that cannot be driven without inconvenience. This remark is especially applicable to field riveting.

It must be borne in mind, that, no matter how carefully the bill of iron was prepared, there will be many minor changes found necessary in making the working-drawings; but, as a rule, such changes cannot materially affect the total weight of iron in the bridge.