ORDINARY IRON HIGHWAY-BRIDGES.

great that it will be impossible to show the plan below the elevation; in which case it will be necessary either to make separate drawings for the plan and elevation, or to place one alongside of the other on the same sheet. In making tracings of the working-drawing, the tracing-cloth can be shifted about so as to group similar parts and so as to avoid too much intersection of different portions.

Provided that any piece be symmetrical about a plane cutting it at the middle of its length and at right angles thereto, it will be sufficient to show only one-half of the piece; and the measurement may be referred to the end of the member, to the central plane, or to both. Where the same detail is used in more places than one, it is not necessary to show it more than once, provided that it be exactly the same in every respect.

As an illustration of how to make a working-drawing, take the case of the bridge treated in the last chapter, and assume that the paper and table are each four and a half feet wide. Using the scale of an inch to the foot, the depth of the elevation will be two feet, and the width of the plan one foot four inches. Allowing six inches above the elevation, and as much more between elevation and plan, will bring the lower side of the plan within two inches of the edge of the paper: this arrangement will do very well. The first step is to draw a line with the steel straight-edge, as nearly as possible, without taking too much trouble, parallel to the length of the paper, and at a distance of two feet six inches below the upper edge. This line should be very fine and perfectly straight. It can be made so by prolonging it half the length of the straight-edge at a time, and afterwards testing it in several places. On this line take a point a foot or more from the left-hand end of the paper, as the centre of the end lower chord pin. Lay off along this line with the greatest possible accuracy the panel length, until the centre of the bridge be reached: in this case twenty feet must be laid off four times. At the panel points erect short perpendiculars with the triangles, and on the perpendicular at the centre lay off the camber, which in this case is three inches (see p. 9). Had the bridge contained an odd number of panels, it would have been necessary to draw the middle panel, and