being used, one hoist of each crane to a section. The traveller, therefore, lifted and placed at one time approximately 320,000 pounds. The sections, after leaving the cranes, were fleeted apart until they hung vertically over their final positions in the bridge, when they were lowered into place on the erection bridge.

The erection bridge was a complete erection unit entirely and was handled as such. It was made up of four longitudinal plate girder webs of a length equal to the longest main panel of the cantilever arm. These webs

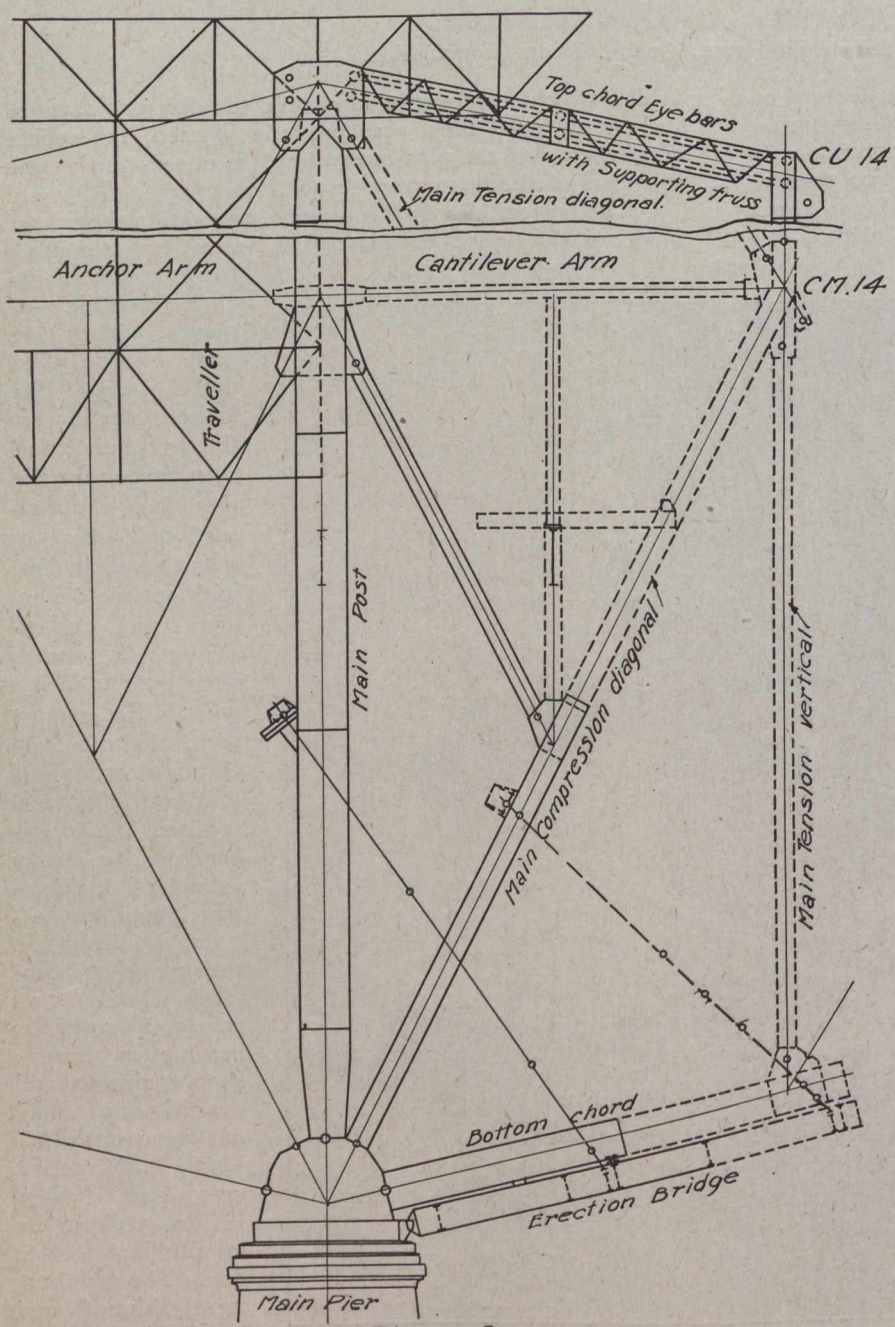

Diagram I.

were placed together in pairs under each cantilever arm chord. The pairs of webs were braced together by two transverse plate girder webs with a lateral system of their own. These transverse plate girders were used to support the bottom lateral members until they were connected up to the chords. The two girders of each pair were connected together by a bottom lateral system and cross girders which served as seats for the jacks which were used for aligning the chords to make the splices and jacking up the completely riveted chord to make the pin connections to the web members above.

The main compression diagonals are built members with an arrangement of cross-section similar to that of the bottom chord members but of much smaller area. They are spliced, shipped and handled in a similar manner to that of the bottom chord members. Those in the panels next to the main pier, where the weight of the member has very little influence on the stresses in the remainder of the bridge, are made of carbon steel. In all the other panels of the cantilever arm these diagonals are made of nickel steel. They were supported and adjusted, while their splices and end connections were being made, by means of tackle leading from the sub and main panel points of the diagonal to the bridge members in the panels already completed.

The main tension diagonals are built up of four plate girder webs; the webs are connected and riveted together in pairs by means of lattice bars and tie plates; the pairs are connected together by means of spacer tie plates. The largest of these tension diagonals, in the panel next to the main pier, is 150 feet 6⅛ inches centre to centre of end-connecting pins. For this member each pair of webs was shipped to the bridge site in three sections, making up the total length of the completed member. Before erection, these sections were assembled together on the floor of the bridge between the bridge trusses and the traveller. The splices were here completely riveted; each pair of webs was then hoisted in one piece into position separately by the traveller. These main tension diagonals were all of nickel steel except those in the panel next to the main pier.

The pin-holes at the lower end of the main tension diagonals and at the upper end of the main tension verticals, were slotted ¼ of an inch on the side remote from the bearing surface in order to facilitate the driving of the last connecting pins. The main tension verticals were all built of nickel steel and were designed similarly to the main tension diagonals. They were spliced, shipped and handled in a similar manner.

All the main compression verticals were similar in built-up construction to the main compression diagonals, and were handled in the same way. They were temporarily supported during erection by means of tension anchor bolts at the lower end of the members. These anchor bolts engaged brackets on the compression verticals and reaction brackets on the gusset plates of the main middle or "K" joints. The anchor bolts were thrown into tension by means of tackle which attached to the upper end of the members and by means of which the members were tied back to and supported by the truss material already erected.

The main panel top chords in the cantilever and anchor arms are composed of two lines of eyebars, spaced 3 feet 6 inches centre to centre vertically, the one above the other. Each panel of eyebars in all panels over 50 feet in length is made up of two lengths of eyebars per panel,