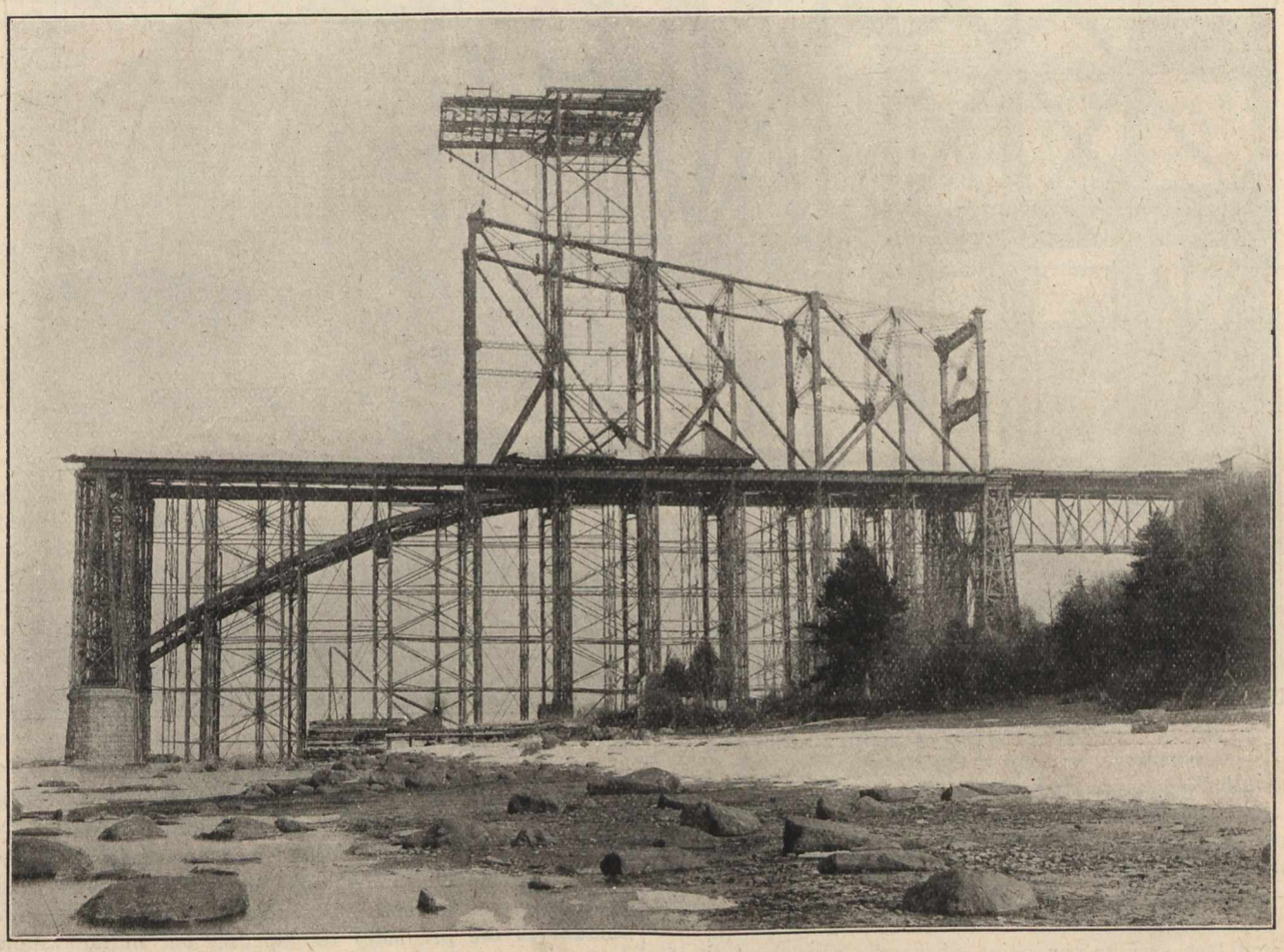
a pleasing effect to the structure. Those above the roadway have uniform cross-sections made of four 4 x 4 inch angles. Below the roadway the trussed floor beams form part of the X-brace members in the upper panels, and those in the lower panels have I-shaped cross-sections made with two pairs of angles back to back, latticed.

All chord members are made in single panel lengths, varying from 50 feet on centers at the anchorage to over 60 feet at the pier, where they are most steeply inclined. The top chord proper is composed entirely of 15-inch eyebars from 1½ to 2 1-16 inches in thickness. The bottom chord has a rectangular cross-section about 4½ feet deep and 5½ feet wide over all, made of four built channels having their flanges latticed with angle bars. The direction of the bottom chord changes at the pin centres ; to facilitate erection, a short section of the adjacent chord is shop riveted to each following chord piece to provide a field splice clear of the panel point beyond it on the river side. All vertical posts except the main posts over the pier are made of two built channels in the planes of the trusses with their flanges latticed, and are field spliced at one or two points. The sub-posts intersecting the tension diagonals are provided with pairs of extended flange plates to receive the latter members on separate pins at each side of the vertical posts. The main vertical post is made up of four built I-beams having 48-inch webs, 8 x 6 inch flange angles, and 7 x ¾ inch inside flange reinforcement plates.

The tension diagonals are made of two lengths of 15-inch eyebars extending together across two panels and connected as already stated to separate pins on opposite sides of the intersecting vertical posts. The diagonal nearest the main pier is a compression member calculated for compression as well as tension. It requires a net cross section of 144 square inches, which is made of four 6 x 6 x 31.8-lb. angles, and four 44 x 11-16 inch web plates. The short vertical and horizontal struts in alternate panels, and the sub-vertical posts reaching from the intersections of the vertical and diagonal members to the top chords to support the latter are made of four angles latticed on four sides and have riveted connections except at the top chord, where they engage the main pins. All of the chord pins, except those at the top and bottom of the main vertical post are 12 inches in diameter, and have maximum lengths of over 10 feet.

In order to secure a more pleasing appearance in side elevation, the line of the top chord is produced, from the top of the end inclined tie to the centre of the anchorage pier, by means of false members which intersect an ornamental portal. All of these members are built of light angles, latticed, since they do not carry any dead or live load stress.

The dead load of the bridge is so great that the cantilever will always produce an upward resultant at the shore end of the anchor truss ; the vertical anchorage bars there will always be under tension, varying with the live load ; and the anchor piers will not receive any weight from the bridge, all of it being concentrated on the pedestals of the main pier. There will, however, be a heavy wind stress transmitted to the anchor piers that will have a considerable vertical resultant. This stress is delivered by the lateral systems to the end floorbeams, and thence is transferred through the tower-like vertical members to the top of the piers, where it is taken by the anchor eyebars and distributed through the pier masonry.



South Anchor Arm Under Construction.

The main chord pins are fitted with a clearance of 3-64 inch and 1-16 inch clearance is allowed for each eyebar in packing. All the riveted splices and main connections have field rivet holes drilled to cast iron templates, and all splice plates are shop fitted and matchmarked. Great care has been taken in checking the drawings and inspecting the shop work ; this has resulted in such accuracy that the south anchor arm already erected has been assembled in the field without difficulty and without fitting or alterations.

All material used is open hearth steel, soft or medium, and is sub-punched and reamed for all riveted work. The 15-inch eyebars have heads 36 inches in diameter and not more than ⅛-inch thicker than the body of the bar. They are upset in three heats and finished under a 12,000 lb. steam hammer ; their annealing is done in about 12 hours in wood furnace. Several full-size tests have been made ; the bars have developed a total ultimate strength of about 58,000 lbs. per square inch and an elongation of 20 per cent. in a measured distance of 18 feet. These results correspond very well