

When this falsework had been completed out to the north main pier the main shoes were erected, and the bases for these shoes were accurately placed and the entire shoe erected. An elaborate series of triangulations and measurements, extending over several months, were made to locate the longitudinal and transverse centre lines of these shoes. Once the bases had been placed in their proper position the rest of the shoe went forward rapidly, and a start on the erection of the bottom chords was made.

According to the program of erection, it was proposed to lay the bottom chords complete with their lateral bracing from the main shoe to the anchor pier, the main traveler moving back as the work progressed. When this had been done the traveler moved ahead again to the main pier and started the erection of the web members up to their middle intersection above the floor. This was carried back to the north anchor pier, after which the erection of the upper half of the web members in the top chord was effected, the traveler moving forward as the work progressed.

Work stopped for the season with the anchor pier completely erected with the exception of two upper panels near the main pier.

Owing to the deformation of all members under full load, it has been necessary to manufacture the compression members slightly longer and the tension members

in the upper end of the upper tension diagonals and in all the eyebars in the top chord. The holes in the diagonals were elongated 2 inches and each eyebar $\frac{1}{2}$ inch at each end, the elongation being made in the side of the hole nearest the centre of the member. By this means it was possible to drive these pins without any difficulty, the play in the holes being taken up as the cantilever arm is erected and stresses applied to the members of the anchor arm.

The driving of pins was materially facilitated by the fact that these pins are in duplicate, each pin going through two webs only of the 4-web members. This also applies to the top chords. In designing the driving rams for these pins it was estimated that heavy rams, weighing in the neighborhood of two or three tons, would be

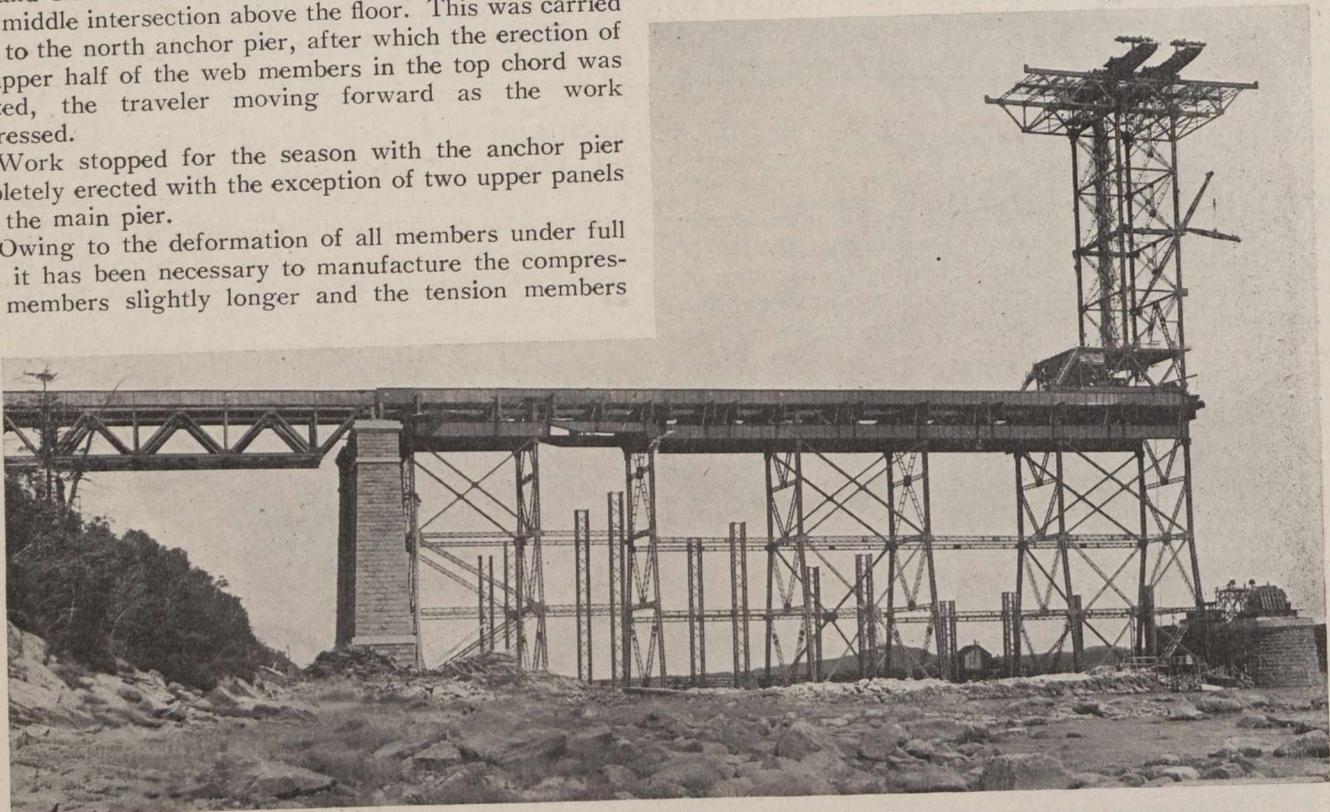


Fig. 2.—Falsework and Floor Erected, and a Start Being Made on the Erection of the Main Shoes.

slightly shorter than their actual geometric length. On account of this fact there would naturally be difficulties in making the pin connections between the various members of the anchor arm in view of the fact that all these members are erected on falsework and consequently under no load except from their own weight. To offset this difficulty, the bottom chord was given a camber which would correspond to the deformations indicated by the Williot's or deformation diagram. In other words, after the bottom chord had been entirely riveted up from end to end, it was lowered a certain amount at each panel point by means of jacks at the foot of the steel falsework to correspond to this deformation. The final displacement, including deformation of falsework posts, amounted to zero at the main shoe, seven inches at the middle point, and five inches at the north anchor pier, varying practically uniformly between these points.

Owing to the length of this bottom chord, it was able to obtain this deformation without any difficulty.

To offset the effect of deformation of the web members from their own weight, and to enable pins to be driven without any difficulty, elongated holes were bored

required. It was found in actual practice, however, that these were not necessary, and after the first one or two pins had been driven a steel rail 10 feet long, weighing 80 lbs. per yard, was used and pins in practically every case were driven home in from one to two minutes.

The maximum clearance allowed in all pin holes is $\frac{1}{32}$ inch + $\frac{1}{100}$ inch.

The amount of steel erected during the season just passed is about 15,000 tons, and this was practically erected in four months, from August 1st to December 1st.

A duplicate traveler is now being erected on the south side of the river and will be in commission the first thing in the spring. If the work is carried on according to programme, it is expected that the remainder of the anchor arm and the whole of the north cantilever arm as well as the south anchor arm, should be erected next season.

The St. Lawrence Bridge Company, Montreal, are the contractors for the superstructure. The work is being carried out under the supervision of the Board of Engineers, Quebec Bridge, composed of Mr. C. N. Monsarrat (Chairman and Chief Engineer), Mr. Ralph Modjeski and Mr. C. C. Schneider.