

crossing. As a result of this preliminary survey it was finally decided to investigate in detail two alternatives:—

(a) A three span crossing at Point-du-Lac, each span approximately 2,200 ft. long.

(b) A single span crossing between the cable houses 4,800 ft. long.

Point-du-Lac is situated at the eastern end of Lake St. Peter about 6 miles up the river from the cable cross-



Lowering the Caisson—The Four Screws Were Turned Equal Distances Simultaneously

ing. From a construction point of view the site at this point appeared at first to be the most favorable for an overhead crossing. The St. Lawrence River at this point is about 7,000 ft. wide, but as the water is very shallow except for a distance of 2,000 ft. in the centre, a crossing could have been built using 3 spans of approximately 2,200 ft. each.

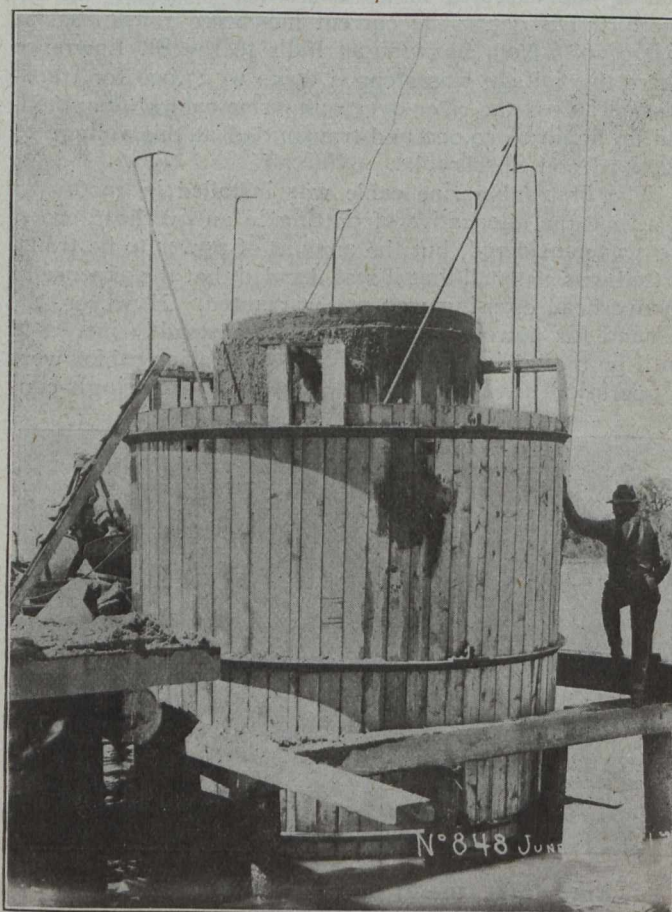
The towers on either side of the main channel would have been about 205 ft. high, while the other two towers would have been about 110 ft. high. The crossing at this point probably would have been somewhat cheaper than the other alternative but it would have necessitated the construction of about 15 miles of double circuit high tension pole lines in order to connect up with the main transmission lines. The cost of these connecting lines would have brought the total cost up to that of the single span scheme.

A fairly strong point against the three span crossing was the inaccessibility of the towers during certain periods in the spring and fall when the river is full of floating ice. The single span scheme was finally decided on as being the most advantageous, although it was fully realized that there were many difficult problems to solve in connection with the design and construction.

The crossing as completed consists of a central span 4,801 ft. long and two anchor spans, the north shore span being 571 ft. long and the south shore span 951 ft. long.

There are two towers 350 ft. high and 60 ft. square at the base, the upstream and downstream faces tapering to a width of 14 feet at the top. A cross arm at the top, 14 ft. wide by 100 ft. long, carries three double groove sheaves 50 ft. apart over which the anchor cables pass. The tower foundation is made up of four circular reinforced concrete piers 11 ft. in diameter placed on the corners of a 60 ft. square. These piers are connected by heavily reinforced concrete beams 4 ft. wide by 8 ft. deep. The tip of the foundation is 14 ft. above the normal water level.

Three lines of  $1\frac{3}{8}$ " diameter steel cables 50 ft. apart span the river between the two towers. To each end of each centre span cable is yoked two anchor span cables. These are carried over the tower on the main sheaves and then down to a point about 20 ft. from the anchors. At this point equalizing beams are cut into the lines and the load is transmitted from them to the anchor piers by means of short straps of  $1\frac{3}{4}$ " diameter cable. The cables are gripped at the ends by means of heavy steel bridge sockets



Forms in Place for 6 ft. Lift for Caisson

in accordance with the usual practice for suspension bridge cables and other structures of this type.

It was originally intended to use the main cables as conductors and to insulate them from the towers by means of specially designed insulators. Unfortunately these insulators were not completed in time for erection and for the present the main cables are used as messengers from which No. 1/0 stranded copper conductors are suspended. These suspended lines are supported every 250 ft. by suspension insulators of 8 units to a string.