bed rock. The latter was found to exist about 100 feet below high-water. It was also decided that the old masonry was not large enough to suit the new structure and it was therefore demolished and entirely new piers built.

The clearing away of the debris of the fallen structure was a somewhat difficult task, but it was finally accomplished by the aid of the oxy-acetylene torch and dynamite. At the present time there is little or no evidence to show that this accident had ever happened. There still remains, however, about 10,000 tons of the old bridge at the bottom of the river extending out from the shore over 800 feet. Tied down by this wreckage are the remains of some 60 or 70 men who lost their lives when the accident took place. As the water at this point is very deep and the wreckage is far below the requirements of navigation, this steel will probably remain for all time in its present location, as there is no known method of salvage at the depth at which it lies.

The most serious problem in the construction of the masonry was the sinking of the pneumatic caissons for the two main piers. On the south side a single caisson 180 ft. x 55 ft. in area was used. On the north side two caissons each 80 ft. x 60 ft. were sunk with a 10-ft. space between them, the pier being bridged over this opening. No serious difficulty was met with in the sinking of these caissons although the material on the north shore was very much harder to penetrate than that of the south.

The completed main piers at the present time, extending as they do about 25 ft. above the water, do not give evidence of the enormous amount of labor expended in their construction. As the north pier was driven 60 ft. and the south pier 100 ft. below the bed of the river, at a cost of approximately $1,000,000 each, some idea of their enormous proportions may be obtained.

The anchor piers show up more prominently, being entirely above high-water. These piers are 136 ft. long and 29 ft. wide and extend about 140 ft. above the surface of the ground, or higher than a 10-story office building.

The span of the Quebec Bridge is 1,800 ft. between main piers—the longest of any bridge in the world—being 100 ft. longer than that of the famous Forth Bridge in Scotland. The length of the suspended span is 640 ft., and the total length between abutments, 3,239 ft. The bridge has a clear height of 150 ft. above extreme high-water for a distance of 700 ft. at the centre of the bridge, in order to allow passage of ocean ships beneath. The bridge is 88 ft. wide centre to centre of trusses, or 21 ft. wider than the old bridge. The height of the main posts over the main pier is 310 ft., with an unsupported length of 145 ft. These posts weigh 1,500 tons each, the four of them costing in the neighborhood of $1,000,000. The height of the bridge above the floor at the main piers is about 180 ft. Some idea of the enormous proportions of this bridge may be gathered from the fact that a 16-story building could rest on the floor at this point and hardly extend above the tops of the main posts.

The steel shoe or pedestal carrying the main posts and other members on the main pier has a base with an area of approximately 22 ft. x 26 ft. It is 19 ft. high and weighs about 400 tons. The total reaction on each of these shoes amounts to 55,000,000 lbs. Some idea of this enormous force may be gathered from the fact that it represents the weight of 150 standard locomotives. If these locomotives were placed one upon the other they would extend to a height 15 times that of an ordinary 10-story building.

The bottom chord of the bridge weighs approximately 400 tons between main panel points. This has to be shipped in four pieces for shipment and handling during erection. The outside dimension of this chord near the shoe is approximately 7 ft. x 10 ft. 6 in. If it were not for the interior diaphragms and bracings, it would be possible for six or seven men to walk abreast throughout the length of this member.

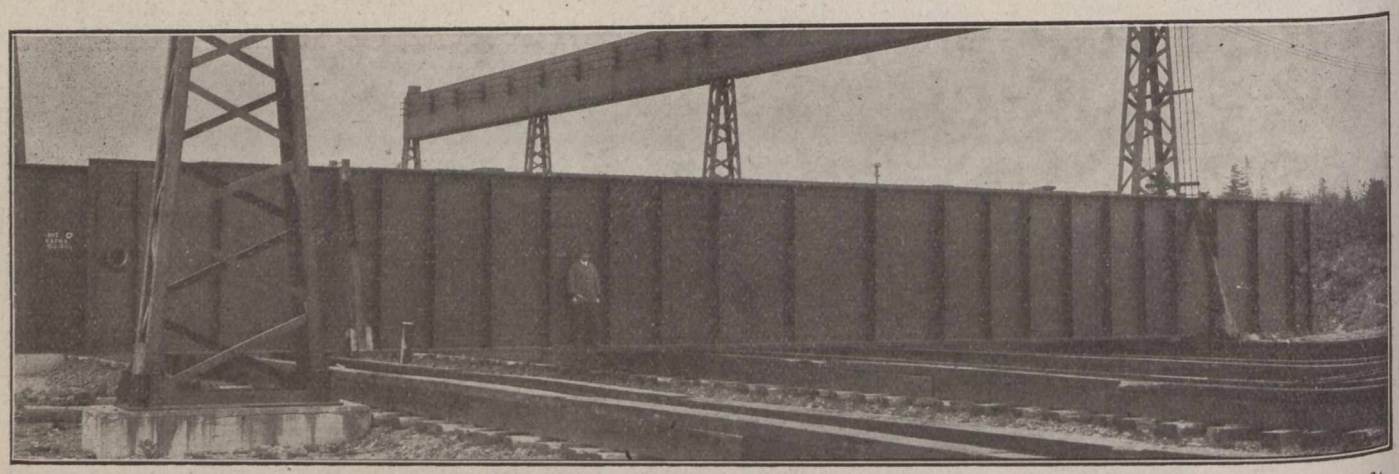

Fig. 2.—View showing one web of double floor beam at the bridge site storage yard. These girders are 10 ft. high and 88 ft. c. to c. 11-inch pins are used to connect the 60-ton floor beams to the post.

The main post, as stated before, is 310 ft. high. It is approximately 9 ft. x 10 ft. in outside dimensions, and has an area of 1,902 sq. in. It is composed of four columns laced together, and requires to be shipped in 27 pieces and connected together in the field. The weight of the bridge will amount to about 65,000 tons, which weight exceeds that of the 200 bridges constructed on the National Transcontinental Railway. These bridges, if placed end to end, would extend over a distance of 11 miles. This weight is also about five times that of the new double-track C.P.R. bridge over the St. Lawrence at Lachine.

A proportion of the steel used in the bridge will be nickel steel, 40 per cent. stronger than the ordinary carbon steel used in other bridges. This nickel steel is used principally near the centre of the bridge where the weight is the greatest factor in deciding the size of the members.