

TEST OF
QUEBEC
BRIDGE

AUGUST 21, 1918

to use it.

Official Test of the Quebec Bridge.

As stated in Canadian Railway and Marine World for September, the Quebec Bridge Board of Engineers made an official test of the bridge on Aug. 21, in accordance with the specification's requirements. Two heavily loaded trains, each hauled by 2 Santa Fe locomotives, were placed on the bridge, completely filling both tracks of the 1,800 ft. span between the two main piers. The 4 locomotives, instead of being at the extreme end of the train, were placed together at the end of the south cantilever arm, with cars in front and behind, this location providing the greatest effect on the span under their concentrated weight. Each of the locomotives weighed 514,000 lb., and the total weight of locomotives and cars was 5,627 tons, or an average over the whole span of about 3,500 lb. per lin. ft. on each track. The bridge was designed for 2 class E60 locomotives, followed and preceded by a train load of 5,000 lb. per lin. ft. of track. Although the trains used were the heaviest that it was practicable to obtain under normal conditions, it will be seen that there is ample room for increase in weight of locomotives and train loads before the bridge is actually loaded to the limits prescribed by the specification.

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Under this somewhat severe test, the maximum deflections noted at the center of the suspended span was 5 7/8 in. The deflection at the south end of the suspended span, under the 4 locomotives, was 6 5/32 in., and at the north end of the suspended span it was 3 15/16 inches. The movement at the expansion joint, between the cantilever arm and the suspended span, under full load, was 1 1/2 in. This latter motion, however, was effected somewhat by temperature during the two hours the trains were left standing on the bridge. Under the maximum train loads prescribed by the specification, the calculated deflection at the end of the cantilever arm would amount to 10 in.

There was a marked absence of vibration while the trains were moving on the bridge, and the test, considering the conditions under which it was made, was highly satisfactory in every respect.

October 1918