

power to appoint from time to time such technical, clerical and other assistants as may be required, and at such salaries as may be authorized by the Governor General in Council, on his recommendation, made through the Minister of Railways and Canals.

In the event of serious differences of opinion arising between the members of the Board as to the scheme for reconstruction or any of its details, the Board shall call in eminent bridge engineers, not more than two in number, for the purpose of advising on the points of different, who, with the members of the Board, shall settle the question at issue.

The Board shall furnish monthly to the Minister of Railways and Canals a report showing the progress of the work, and the expenditure thereon; also such other reports as he may, from time to time, require from them in that connection.

Payments for work done and materials delivered and of office-staff pay-lists and accounts, will be made by the Department of Railways and Canals, only on certificates to be issued by the Chief Engineer of the Board, and after audit by the department. The accounts and books of the Board shall be at all times open for inspection by the departmental auditor.

The Committee submit the same for approval.

RODOLPHE BOUDREAU,
Clerk of the Privy Council.

Now, Sir, that board was appointed, and they began their work, began studies in various parts of the world. Mr. Vautelet went to the various points, not only on this continent but in Europe, where he thought the latest scientific information could be obtained. Their instructions were that the first necessity for the reconstruction of this bridge should be its stability; the second was its cost; and the third was the time in which it should be constructed, everybody understanding that in a work of this magnitude no hurry could be expected, and no undue haste was asked. The engineers made their studies in different parts of the world, it took them quite a long time, and at last they came to the point where they began to prepare a design. Now in order that the House may be well acquainted with the information received by the various companies as to the terms on which tenders would be received, I want to read an advertisement that appeared on November 24, 1909. This advertisement invited the various intending tenderers to come to the head office at Montreal and to co-operate with the board, in pursuing their studies and investigations necessary for the preparation of the plans for this great work. Allow me to read this advertisement:

DEPARTMENT OF RAILWAYS AND
CANALS, CANADA.
Quebec Bridge.

Tenders for superstructure.
Notice to Bridge Builders.

Contractors for bridge superstructure are
Mr. GRAHAM.

invited to visit the office of the Board of Engineers in the Canadian Express Building, Montreal, Canada, after January 3, 1910, where information may be had to enable them to prepare bids for the superstructure of a 1758 feet span bridge, 88 feet in width.

Bids will be received on the specification and for the design shown on the plans as prepared by the Board.

The contractor is invited to submit alternative designs which must conform to the conditions laid down in the general specification.

By Order,
L. K. JONES,
Secretary.

Every contractor had that advertisement, and every intending tenderer visited the office of the Quebec Bridge Board and made his own investigations. Now differences did arise between the engineers, just as differences arise between strong men on many points; and it may not be out of place to say that the stronger the men, sometimes, the more intense the differences. The engineers differed largely, so far as I could ascertain, on the principles of the double intersection and the single intersection for the construction of the bridge. A portion of the board contended that the design should be on the double intersection principle, and another portion contended that it should be on the single intersection principle. An hon. gentleman asks me to explain the differences. I could not explain it technically, but any one who has seen a lattice fence will have some idea of the difference. I will not attempt to explain the differences, they were engineering technicalities. One portion of the board insisted that with the double intersection principle you could not ascertain to such a definite point the amount of stress that would be on each member; while on the single intersection principle you could calculate to a more definite degree what stress would be on each of the members. The engineers continued to differ for some months, until at last the department said, we must come to a point where we can advertise for tenders for the construction of this bridge, and if this board of engineers cannot do it, we will have to get a board of engineers that can do it. Consequently, the board met on May 2, 1910, and they came to this arrangement as a sort of compromise. The Chairman had prepared a plan on the single intersection principle; the other members of the board were contending at that time for the double intersection principle, and they did not agree altogether with the design of the Chairman, but this compromise was arrived at in order that tenders might be invited. It is embodied in this resolution:

Copy of a resolution passed at a meeting of the board held May 2, 1910.

It is resolved that the plans and specifications for a cantilever design now completed be approved and submitted to the minister for