

facture of the eyebars, so as to come to an agreement with the board.

There have also been some modifications and additions to the specifications and contract form, asked for by all the bidders, such as customs duties, &c., for which your board was not qualified to act and for which the contractors have been referred to you.

Your board is of the opinion that it is possible to construct a bridge in accordance with either of the tenders received upon the board's design 'V,' which would make a satisfactory structure.

Your board is also of the opinion that it is possible to construct a bridge in accordance with design 'A,' 'B,' and 'C,' submitted by the St. Lawrence Bridge Company, which would make a satisfactory structure, providing that plans, details and material were made in accordance with the specifications of the board, including modifications allowed to other bidders.

Respectfully submitted,
(Signed) CHARLES MACDONALD,
RALPH MODJESKI,
H. E. VAUTELET.

Hon. Geo. P. Graham,
Minister of Railways and Canals,
Ottawa, Ont.

That was sent to me, and as hon. gentlemen will see it gave me no definite advice as to what tender should be received by the department. It named several tenders and several designs and said any of these would make a satisfactory bridge. Considering it one of the most important parts of the duty of the board to advise the department definitely as to what design and tender it should accept, I wrote this letter to the chairman in reply to the report of the board which I have just read:

Ottawa, 1st of November, 1910.

H. E. Vautelet, Esq., C.E.,
Chairman, Quebec Bridge Commission,
Montreal.

Dear Mr. Vautelet,—I am in receipt of your letter of the 26th ultimo, containing resolution of the Board, and some very valuable information respecting the tenders, and the companies tendering in connection with the erection of the Quebec Bridge.

Your Board says that the bridge can be constructed according to the tenders on the Board's design No. 1, and also on designs 'A,' 'B' and 'C', submitted by the St. Lawrence Bridge Company.

Although the information you submit is very valuable indeed and shows great care in working out, I fear that it does not afford me sufficient data on which to make a recommendation to my colleagues. I would ask the Board, therefore, to go one step further and make a recommendation to me, as to what tender, under all the circumstances, should be accepted.

In view of the close study the Board has given this great project, and also taking into consideration the fact that the members agree on certain designs, I think it is not unreasonable to suppose that they ought to be able to make a unanimous recommendation

as to the tender that ought to be accepted by the government.

I note that the stock of the British Empire Bridge Company is held entirely by the Cleveland Bridge and Engineering Co., Ltd., of Darlington, England, and the Patent Shaft and Axletree Company, of Wednesbury, England; and that the stock of the St. Lawrence Bridge Company, Ltd. is held by the Dominion Bridge Company and the Canadian Bridge Company. The capital of the British Empire Bridge Company is \$5,000,000, and the capital of the St. Lawrence Bridge Company is \$500,000.

As you will readily understand in a gigantic enterprise of this kind, the ability of the contracting party to carry the work to completion is of vital importance.

Should the Board decide to recommend that the work be given to either of these companies I would request that you ask them to furnish the Board with an understanding that each of the parent companies holding the stock of the successful tendering company will become a party to the contract and responsible for its fulfilment.

I agree with you thoroughly that all the details ought to be settled between the successful tenderer and the Board before an announcement is made to whom the contract has been awarded because any tenderer to whom the contract may be given, refusing to sign such contract, forfeits its deposit of \$500,000 now in the hands of the minister.

Allow me to thank the Board for the very careful manner in which it has gone about its work, and to express the hope that it may be able to arrive at a unanimous decision on which the minister can act with confidence.

Yours truly,
(Sgd.) GEO. P. GRAHAM.

I received in reply a report, dated Quebec, and signed by Charles Macdonald and Ralph Modjeski, two members of the board, in reply to that letter. It is as follows:

Quebec, November 3rd, 1910.

Dear Sir,—In reply to your request of the 1st November asking for a definite recommendation for the acceptance of tenders respecting the Quebec Bridge, probably it would be well to give a little history of the situation. The public possibly do not realize the immensity of the undertaking and only members of the engineering profession can fully comprehend it. Nothing of equal magnitude has ever been attempted. Every engineer in connection with it has felt an indescribable responsibility. Under the circumstances, it is not to be wondered at, but rather is a proof of the care they have exercised that differences of opinion should have arisen as to the best method of accomplishing this task.

When the members of the Board as originally constituted first considered this great project they knew it was the greatest work ever undertaken and they endeavoured to approach it with open minds. After very careful study they discovered that their views did not coincide on some points. Part of the Board were inclined to favour the double intersection principle, similar to that adopted in the famous Forth Bridge, while the other por-