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RIVETED JOINTS FOR PENSTOCKS

IN many of the more recent hydro-electric developments of large capacity, it has been necessary to use steel penstocks of large diameters under high heads, and in order to keep the thickness of metal within reasonable limits, so that the work can be handled by the ordinary equipment of structural shops, it is quite essential to use the most efficient types of joints.

The article by H. A. Babcock and J. R. Montague in this issue assembles information on the design of these heavier joints which is not readily obtained in text books, and which should, therefore, be of value to designers who have to handle problems of the nature discussed.

The strength of a joint depends upon three main factors, namely, tension in the plate, shear on the rivets and bearing on the rivets; and as in the heavier types of joints one finds several combinations of these three factors, these combinations must be carefully considered when solving for the maximum efficiency.

CONTRACT FORMS

CONTRACT forms and specifications have been the subject of special study by engineers and architects for a number of years. The American Institute of Architects has developed the Standard Documents; the American Railway Engineering Association has adopted a uniform general contract form; a special committee of the American Society of Civil Engineers has the subject now under consideration. To date, the only voice which the general contractor, who

is the man most vitally interested in contract forms, has had in the matter, has been either on the invitation of some one of the committees of these associations, as an ineffectual protester in some local exchanges, or as the victim of circumstances on an individual contract. What he has said before the committees of engineers and architects has doubtless had some effect on the final results, and at least has put the contractor's position on file. What he has said in his local exchange or in the secluded recesses of his own office, will doubtless never be allowed publication. Both the Association of Canadian Building and Construction Industries and the Associated General Contractors of America now propose to make the general contractor's position clear and effective on the subject of contracts. They intend to make a careful study of existing forms, both good and bad, of every kind, and in co-operation with the engineers and the architects, to eliminate unfair practices and to establish clear, definite and equitable clauses in contracts under which general contractors of recognized standing will work.

OWEN SOUND'S INTERSWITCHING PROBLEM

OWEN SOUND lies in the valley of, and at the mouth of, the Sydenham River. The harbor was formed by widening and deepening the river. The mouth of the river at the entrance has a width of 295 ft.; the main harbor has an average width of 350 ft. The upper or narrow portion, near the Tenth Street bridge, is only about 100 ft. wide. The town is served by branches of the Canadian Pacific and Grand Trunk railways. The yards and stations of each immediately adjoin the harbor, the Grand Trunk being on the west and the Canadian Pacific on the east. There is no connection between them. Each railway enters the town through an industrial district which it well serves. Neither road, in any place, traverses a residential or business district or crosses an important street. The station of each is within about one-half mile of the business centre of the town. But there is no connection between the two railways, thus preventing the interswitching of either passenger or freight cars.

A number of methods of interswitching have been proposed, and W. F. Tye, consulting engineer, Montreal, was recently asked to investigate them. Mr. Tye has reported that the best method, from a strictly railway point of view, would be to permit the Grand Trunk to follow First Avenue West to a point between Ninth and Tenth Streets, cross the Sydenham River at the bend, switch back at a point on First Avenue East just south of Ninth Street, and run back to the Canadian Pacific Railway on First Avenue East. "As such a route would be highly objectionable to the residents of First Avenue West," says Mr. Tye, "I did not seriously consider it."

Of the other suggestions, he reports that only three appeared to be worthy of detailed examination:—

- 1.—Crossing the river at its mouth.
- 2.—Crossing the harbor at Tenth Street traffic bridge and switching back on First Avenue East.
- 3.—Electrical switching.

Of these three Mr. Tye recommends the second method despite the fact that it would bring steam locomotives into the mercantile districts, passing and shunting directly behind a number of the best shops, with all the attendant disadvantage of noise, soot, dirt, smoke, etc. They would also pass within 300 ft. of some of the best residences of First Avenue West. Moreover, this method would involve considerable shunting across busy Tenth Street at the east end of the bridge. The switch would be located immediately to the south of Tenth Street, and each train passing between the two roads in either direction would have to cross Tenth Street twice.

With all these disadvantages, it is indeed unfortunate for Owen Sound that the second method is the only one that Mr. Tye can recommend from an economical point of view.