CANADIAN ENGINEERING STANDARDS ASSOCIATION

Visit from Secretary of the British Association—Appointment of Committees and Sub-Committees—Report to be Prepared on Standard National Electric Code

AT a meeting of the main committee of the Canadian Engineering Standards Association, held September 8th, H. H. Vaughan presiding, the following new members were appointed:—

J. M. R. Fairbairn, nominated by the Canadian Pacific Railway; H. H. Kelley, nominated by the Grand Trunk Railway; A. F. Stewart, nominated by the Canadian National Railways; F. A. Gaby, nominated by the Hydro-Electric Power Commission of Ontario; A. A. Dion, nominated by the Canadian Electrical Association; and J. Stadler, nominated by the Canadian Pulp and Paper Association.

The lists of members for the following sectional committees were approved:—

Electrical sectional committee, Dr. L. A. Herdt, chairman.

Sectional committee on steel bridges and construction, G. H. Duggan, chairman.

Sectional committee on wire rope, Prof. H. M. Mackay, chairman.

Recommendations as to membership of the following sub-committees were received, and the committees appointed accordingly:—

Sub-committee on steel railway bridges, P. B. Motley, chairman.

Sub-committee on incandescent lamps, John Murphy, chairman.

Sub-committee on transformers, A. A. Dion, chairman.

The secretary reported the progress made with regard to various questions already under consideration, and further reported a number of requests for action on the part of the association. Several of these were approved for further enquiry and report.

The chairman welcomed C. Le Maistre, the secretary of the British Engineering Standards Association, who is now on a visit to Canada and the United States. Mr. Le Maistre described briefly the work of the B.E.S.A., and drew the attention of the committee to certain matters in which his association would welcome the assistance and co-operation of the Canadian Engineering Standards Association, referring especially to proposals which have been made with a view of obtaining some degree of Anglo-American agreement as to screw thread standards. Mr. Le Maistre further pointed out the desirability of international agreement as to rules affecting electrical appliances and fittings, particularly for interior use.

As regards the first suggestion, it was decided to appoint a sub-committee on screw-threads, with instructions to consider and report on Mr. Le Maistre's communication.

Considerable discussion took place on the question of rules for electrical appliances, and the committee agreed that the formulation of a "Canadian Electric Code" was most desirable. The committee then directed that a sub-committee should be called together to enquire and report further as to this point.

H.R.H. the Prince of Wales unveiled commemorative tablets on the Quebec bridge during his recent visit at Quebec. These tablets bear the names of the engineers chiefly responsible for the successful completion of the bridge.

Regina's Board of Trade favors the proposed pipe line from Elbow, Sask., for supplying Regina and Moose Jaw with Saskatchewan river water. A committee has been appointed to interview the provincial government.

A. C. Grant, of the Grant Construction Co., has asked Toronto's city council to excuse him from carrying out his contract to lay a concrete roadway on Keewatin Ave., North Toronto. Mr. Grant complains that he cannot obtain labor even at fifty cents an hour and carfare. He states that he also has a contract in Brampton, Ont., which he will not be able to complete this year for the same reason.

THE BEAR RIVER BRIDGE

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then begun with an orange-peel bucket, through a well in the centre of the dam. As the cofferdam went down, it was built up to keep the top above low water level. The position of the cutting edge was determined daily by obtaining the levels of four points on the dam equidistant from the cutting edge, and the dredging was directed accordingly to keep the dam vertical.

This was quite successful until a depth of 12 ft. had been obtained, when one side of the dam got hung up on a large boulder, with the result that the dam took a list of about 15 degs. from the vertical.

Divers were then sent down to direct water jets around the obstructions and dredging was carried on the outside of the dam on the high side. Finally the dam was straightened up into its correct position at a penetration of about 28 ft. and resting on a bed of coarse gravel and boulders. The total height of the dam is 62.4 ft. containing 130,000 ft. of timber and 1,473 cu. yds. of concrete.

Pier 4, the pivot pier, was sunk in similar manner to the depth of 36 ft. and contains 175,000 ft. of timber and 19,000 cu. yds. of concrete. Pier 5 was sunk to a depth of 40 ft. and contains 142,000 ft. of timber and 1,453 cu. yds. of concrete.

Under-Water Pile Driving

At piers 6 and 7, where the boring showed a considerable depth of mud, it was decided to excavate about 15 ft. and drive piles. After the excavation was complete, there was a depth of 35 ft. of water at low water, and the under-water method of driving piles was introduced.

This method caused considerable discussion on the work, some claiming that it would develop at least 85% efficiency as compared with the ordinary method of driving piles with a drop hammer. I may here say that the average penetration with the under-water method was only about one-half of what was obtained at the same location with a lighter hammer falling through air. In the under-water method, the guide pile and hammer were handled by a stiff derrick operated by a 25 h.p., 3-drum hoist. The guide, constructed of four 3½-in. steel angles, latticed together, was 22 in. sq., inside measurement, and all rivets were sunk on the inside. It was made in 15 ft. sections, capable of being bolted together to give the required length. Lugs riveted to the top section rested on crossed timbers on the cofferdams, and the guide hung therefrom, just clear of the bottom of the excavation and over the spot where the pile was to be driven.

The pile was then inserted in the guide and allowed to drop to the bottom. With heavy piles, as much as 10 ft. penetration was obtained in some cases right at the start. The hammer weighing about 5,000 lbs., was built to give a clearance of about ¼ in. all round inside the guide, and terminated in a truncated pyramid. The hammer was lowered into the guide after the pile and driving commenced, a fall of from 12 to 15 ft. being given. The fall was thus limited, as it was found that the pile heads broomed badly.

Prevented Interruption of Work

The piles used were exceptionally good, but many of them failed to stand up under this treatment. The maximum penetration obtained was 46 ft., whilst test piles, driven from the same location from a scow with a 24,000 lb. hammer and a trolly, gave a penetration of 65 ft.

However, the big advantage of being able to drive under water was that the work could go on at all stages of the tide, and this meant that at high water the driving was being done through 70 ft. of water. The condition of the old bridge was such that anything within reason which would hasten completion of the new could not be neglected.

The length of the bridge is 1,640 ft. The total amount of concrete used was 13,000 cu. yds. The contractors for the abutment and for piers 1 and 2 and 8 to 14 inclusive were Powers & Brewer, of St. John; for piers 3 to 7 inclusive, the Foundation Co., Ltd., of Montreal. G. G. Hare was the engineer for the Dominion Atlantic Railway, and the writer was resident engineer.