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ENGINEERING INSTITUTE COUNCIL DISCUSSES SALARIES AND UNIONIZATION

AT the invitation of the council of the Engineering Institute of Canada, delegates appointed by the executive committee of the Ontario provincial division met some of the members of the council in Montreal last week and discussed salaries of engineers in Ontario and elsewhere in Canada, and also legislation and other matters effecting their economic status and prestige.

After twelve hours' discussion the meeting reached no decision, but passed a resolution requesting the council to appoint a committee to investigate and recommend what action the institute should take to improve the financial position of many of its members, it being generally recognized that the institute owes an obligation to its individual members even though it is not in any sense a trade union. Although it was admitted that every possible means should be utilized in effecting an improvement in the material interests of the institute's members throughout Canada, it was agreed that no such steps should be taken without mature consideration.

During the meeting attention was drawn to the fact that the International Federation of Engineers', Architects' and Draughtsmen's Unions had established branches in Montreal and Toronto, and initial steps had been taken toward the formation of a branch in Hamilton. After very full discussion, the meeting came to the conclusion that the establishment of these branches was unnecessary and undesirable, and that the institute is doing everything possible in the way of furthering the interests of the profession in the Dominion.

One result of the conference will probably be the recommendation of a schedule of increased salaries and fees for engineering services.

Letter to the Editor

FAILURES IN CONCRETE CONSTRUCTION

Sir,—Each year brings its usual crop of additional reinforced concrete structures. Many of these are built according to the most approved methods of design and construction, and others stand the strain of the loads which they are called upon to resist owing to a fair share of good luck, while occasionally failures occur which temporarily disturb the public confidence in this type of construction.

The spectacular development of reinforced concrete during the past 15 or 20 years has created a very large number of so-called specialists; a mass of information, both practical and theoretical, has been produced, and certain standards have been evolved which have been more or less generally adopted. Building laws and specifications have been enlarged to include highly technical information pertaining to the design and inspection of reinforced concrete materials. But failures still occur!

A careful analysis of all the conditions surrounding concrete construction might result in the following conclusions as regards present-day failures:—

Probably the most dangerous element in concrete construction is the field "expert." I refer particularly to the type of man who claims to "know all about concrete." I believe that the over-confidence of this type of individual is probably responsible, partially at least, for many of the failures. The mistakes he makes are as follows:—

- 1.—Removal of forms before the concrete is sufficiently cured.
- 2.—The use of form supports or "uprights" without wedges.
- 3.—Insufficient lateral braces for "uprights."
- 4.—Insufficient mixing of concrete.
- 5.—Mixing of concrete too wet, thereby destroying the mix proportions before the concrete has reached the forms, and also causing the leakage and "flooding" of cement.
- 6.—The use of sand or gravel with loam or clay.
- 7.—The use of insufficient cement in the mix.
- 8.—Improper heating of concrete materials in cold weather, and not sufficiently protecting the poured concrete against frost.
- 9.—Lack of proper tamping.
- 10.—A general spirit of over-confidence and carelessness on the part of field foremen, which is dangerous.

On account of the factors of safety used in design, it is difficult to ascertain exactly to what extent design plays a part in the failure of reinforced concrete; but, undoubtedly, if the design is weak, it is a factor in failure, in conjunction with faulty or careless construction.

Generally speaking, current designing practice may be criticised as follows:—

(A) The use of flat slab design. The flat slab, if economically designed, is an unusual arrangement which tends to produce very high stress in both steel and concrete. This type of construction is nothing more or less than an optical illusion, and is probably the greatest piece of engineering camouflage which has ever been "put over" the innocent public.

(B) The general tendency of concrete design toward the use of too much steel and insufficient cement. The general uniformity in the quality of steel bars would seem to indicate that somewhat higher stress in the steel might be used with richer mixtures of cement.

With regard to the use of increased cement proportions, the following conclusions might be noted:—

- (a) Practically all concrete failures indicate that the concrete and not the steel bars failed.
- (b) The increased use of cement very materially increases the compressive strength and bonding power of concrete.