

offset by the savings effected by the more accurate proportioning possible.

It will be of interest here to cite a recent experience of the Hydro-Electric Power Commission. On a job upon which the surface area method is being regularly used, a structure is also being built by the commission for an outside firm, using methods specified by their engineers. On the same job a similar structure, in which concrete of the same quality is called for, is being built by the use of the surface area method. Materials for the two structures are from the same sources and are mixed and placed by similar equipment. The following results, from seven consecutive tests of field concrete specimens, some of which were from each of the jobs and which represent concrete placed simultaneously, illustrate the kind of results obtainable with the two methods:—

Cylinder No.	Class of concrete.	Proportions.	Compressive strength, lbs. per sq. in.	Method.
90	B	1:2:4	2,000	H.E.P.C.
91	B	do.	2,480	do.
92	B	do.	1,960	Outside
93	B	do.	1,470	do.
94	B	do.	1,800	do.
95	B	do.	1,510	do.
96	B	1:2½:5	2,090	H.E.P.C.

In the pouring represented by the last specimen, the mix had been changed to a 1:2½:5, yet the quality and mobility of the concrete were maintained at the standard desired.

The surface area method here described has been found in actual practice to have the characteristics laid down in the opening paragraphs of this article. It takes well in the field and the laboratory studies involved in its use are cheaper than those required for other methods, and obtain information of wider application. The method has been found to give a means of estimating the relative economy of different aggregates, because two factors, workability and strength, which were formerly variable, have now been reduced to constants. The success so far obtained in its use has been so encouraging that it is now expected that it will be used on all work undertaken in the future by the Hydro-Electric Power Commission of Ontario; and in the next three years alone, the Commission's work will total over 500,000 cu. yds. of concrete.

SASKATOON LOOKS INQUIRINGLY UPON REGINA AND MOOSE JAW WATER SCHEME

WHAT will be the effect on Saskatoon's supply of water, if the towns and cities in the southern part of Saskatchewan obtain their supply from the South Saskatchewan river? This is one of the twenty questions concerning Saskatoon's future which are answered by C. J. Yorath, city commissioner, in his annual report for 1919. Mr. Yorath says:—

"A committee of one hundred, representing the municipalities of the southern part of the province, recently waited upon the provincial government to discuss a proposal to take a water supply from the Saskatchewan river at the Elbow, to serve the cities of Regina and Moose Jaw, and other towns.

"This is a proposal which will have to be very carefully watched by the urban centres and residents in the north part of the province. There will be no objection to the southern municipalities obtaining their water supply from the South Saskatchewan river, provided that in doing so, they do not prejudicially affect the supply of those who do at present, and will in future, by virtue of their location, rely upon their supply of water from this source.

"This matter is brought to the attention of the citizens, as it may very seriously affect the development of the northern part of the province if certain precautions are not taken.

"The Saskatchewan river, according to the records of the Irrigation Department, showed the lowest flow of water on January 10th, 1913—i.e., 1,130 cu. ft. per sec.

"During the non-irrigation season, October to April, the following maximum diversions are already authorized by the Department of Irrigation:—

"From the Bow and Elbow rivers

"(Tributary to the Saskatchewan river)

"Canadian Pacific Railway, 700 sec. ft. for irrigation.

"Canada Land and Irrigation Co., 1,500 sec. ft. for irrigation.

"City of Calgary, 120 sec. ft. for domestic and industrial purposes.

"General reserved, 100 sec. ft.

"From the Oldman river

"(Tributary to Saskatchewan river)

"Lethbridge, 25 sec. ft., industrial and domestic.

"General reserved, 100 sec. ft.

"Lethbridge northern project, 900 sec. ft. for irrigation.

"Other diversions, 150 sec. ft.

"During the irrigation season (May to September), the above amounts may be approximately doubled.

"The following is a note appended to information supplied by the Commissioner of Irrigation:—

"I feel sure that I ought to call your attention to the fact that care should be taken in making use of the above data, especially with regard to drawing conclusions as to available water supply, as all water is subject to many conditions of administration, which are liable to materially affect the results."

"The present maximum daily requirements of Saskatoon, during the winter months are 3.25 sec. ft.

"The present maximum daily requirements of Regina, during the winter months are 4.70 sec. ft.

"The present maximum daily requirements of Moose Jaw, during the winter months are 1.83 sec. ft.

"Of course, these requirements will largely increase as the population increases.

"No definite project for supplying southern Saskatchewan from the Saskatchewan river has yet been decided upon. The lowest estimated cost of carrying out such a project is \$12,000,000, based on 1913 prices, which to-day would probably be increased to at least \$16,000,000.

"The fixed charges on an expenditure of \$16,000,000 would be made up as follows:—

"Interest on \$16,000,000 at 5½% \$ 880,000
"Sinking fund to repay loan in 50 years 104,800

"Total \$ 984,800

"In addition to the above, there would be an annual charge for maintenance and operation of approximately \$200,000, so that it will be readily realized that considerable revenue will be required from the southern municipalities to make the project self-supporting and not a charge upon the province as a whole. Some idea of the revenue derived from water works utilities will be obtained from the annual revenue earned by this city's water department, i.e., approximately \$120,000.

"The above information is given to the citizens of Saskatoon so they will realize how important it is that steps should be taken to safeguard their interest in respect to:—

"1. The future water supply of Saskatoon;

"2. That their burden of taxation is not increased in order to supply water to cities in the southern part of the province which have been less advantageously located."

About a mile of sewers were laid in Dundas, Ont., last year at a cost of \$235,778. This comprises 3,005 ft. of 30-in. segment block, 210 ft. of 30-in. vitrified tile, 828 ft. of 24-in. vitrified tile, 658 ft. of 18-in. tile, and 300 ft. of 8-in. tile. Twenty manholes have been constructed.

It is estimated that about \$250,000 is being expended in Orillia, Ont., in street improvements, as follows: \$34,604 for storm sewers; \$4,406 for relaying water services and renewals of sidewalks; \$198,147 for bituminous paving; and \$12,786, estimated cost of engineering, interest during construction, etc.