

(c) The rich mix of cement permits the use of "anti-freeze" ingredients for winter concrete, and also creates an additional factor of safety against any possibility of the concrete being weakened by the addition of such mixtures.

(d) An additional general factor of safety is obtained against losses in strength of concrete due to any of the deficiencies of construction previously mentioned.

However, if reinforced concrete be used with the reasonable care which should characterize any type of engineering construction, it undoubtedly constitutes one of the most permanent, economical, safe and fireproof methods of building that the world has yet produced.

R. E. W. HAGERTY,
Toronto, Ont., April 19th, 1920. Consulting Engineer.

PERSONALS

P. M. SAUDER, of Calgary, Alta., has been appointed divisional engineer of the Lethbridge Northern Irrigation District, with headquarters in Lethbridge, Alta.

WALTER A. S. MELANSON, of Moncton, N.B., has been appointed to succeed Joseph Theriault as district road engineer for the North Shore counties, New Brunswick.

E. J. BUEGLER, formerly consulting engineer of Westinghouse, Church, Kerr & Co., Inc., has been elected vice-president of the Foundation Co., in charge of engineering.

V. G. YOUNGHUSBAND, who superintended the work on the new Parliament Buildings at Ottawa, has left the Peter Lyall Construction Co. to enter the employ of the Foundation Co., Ltd., Montreal.

D. A. MOLITOR, consulting engineer, Detroit, Mich., formerly of Toronto, Ont., addressed the Windsor Branch of the Engineering Institute of Canada last Thursday evening, on "The Metric System."

ONISPHORE H. COTE, engineer, Montreal, has been appointed trade commissioner of Quebec City by the Board of Trade. Mr. Cote was previously connected with the Shawinigan Water & Power Co.

N. B. WILSON, civil engineer, of Guelph, Ont., has been appointed town foreman of Hespeler, Ont. Since his return from overseas, Mr. Wilson has been engaged as instructor in the Department of Soldiers' Civil Re-Establishment, at Guelph.

F. P. MOFFAT, who for several years was senior divisional engineer on the Hudson Bay Railway, has been appointed valuation engineer for the Department of Railways and Canals. Mr. Moffat will direct the valuation of the Grand Trunk system, which is being taken over by the Dominion government. His headquarters will be in Montreal.

DAVID MACKAY, who has been one of the construction superintendents of the Toronto Works Department for the past 14 years, has resigned in order to enter business on his own account as a general contractor. His office will be at 287 Ashdale Ave., Toronto, and he will specialize in reinforced concrete construction and tunnelled sewers. Mr. Mackay was brought to Canada from Glasgow, Scotland, by Toronto's former city engineer, C. H. Rust. In Glasgow Mr. Mackay had 10 years' experience in compressed air work in the construction of sewers and bridge piers, as foreman in the employ of the Glasgow Works Department. During the past 14 years he has directed construction on many of Toronto's prominent paving and sewer jobs, and on several special undertakings, such as the attempted cleaning of the tunnel under Toronto Bay.

OBITUARY

ANGUS J. MACDONALD, railroad contractor, Vancouver, B.C., died April 11th at his home in Vancouver, following an acute attack of Bright's disease. Mr. MacDonald was born in 1876 in Kirkfield, Ont. He went to Vancouver in 1911 as superintendent of construction for the C.N.R. His most recent work was the erection of a large warehouse for the C.N.R. at False Creek.

Representatives of the highways departments of Manitoba, Alberta and Saskatchewan met last Thursday at Regina to discuss the correlation of the road programs of the three prairie provinces.

PLAIN AND REINFORCED CONCRETE PIPE

(Continued from page 410)

the rigid pipe is very suitable for high-class caisson work, and is made with a cast-iron cutting edge at the bottom of the caisson. Sections 20 ft. long, and joined together with cast-iron flanges bolted on the inside of the caisson, are used. These flanges are embedded in the concrete and held securely in position by bolts the length of the pipe, which also act as longitudinal reinforcement. If a watertight caisson is needed, a gasket is placed between the cast-iron flanges. A type similar to this, 30 ins. in diameter, is used very successfully by one of the largest contracting firms in New York City for underpinning work.

In most of the above-mentioned lock-joint pipes, the pouring is done with conical-shaped buckets fitted with a ball valve at the bottom. The pipes are then placed under canvas and steamed for about four hours under ordinary weather conditions, and allowed to set for twelve hours, then stripped and turned on their sides after three days, and shipped after two weeks of final setting.

Leakage tests made at Baltimore, Md., in 1913 on 5 miles of 84-in. and 11 miles of 108-in., gave an actual leakage of 13,000 g.p.d., against an allowable leakage of 38,000 g.p.d. The head was 80 ft. Another test in Dallas, Tex., in 1915 on 14,400 ft. of 36-in., gave 17,000 g.p.d. leakage, against an allowed leakage of 22,000 g.p.d. The heads were 30 and 80 ft. Another test in Fort Worth, Tex., the same year, with the same length of pipe, 48 ins. diameter gave 15,000 g.p.d. leakage against 36,000 g.p.d. allowed. The head was from 20 to 60 ft.

A test of the strength of the joint was made by placing 24,000 lbs. directly on the joint between two pipes supported on two bearings at 6 ft. centres. The deflection measured at the joint was only $\frac{1}{16}$ in.

In conclusion I may say that concrete has been used as a material for the construction of sewers for many years. Practically all cities have adopted it for the construction of the larger diameter sewers. Its use for smaller diameter sewers has not been adopted so extensively, undoubtedly owing to the fact that there has been more or less question connected with all concrete products which have been placed on the market. This is due to the fact that until recent years there has never been a recognized standard specification for the manufacture of cement concrete sewer pipe, and also to the tendency of cement product manufacturers to overlook the fundamental principles recognized in all concrete work.

Within the past few years the engineers have appreciated the value of concrete as a material for sewer pipe and have put forth every effort for the standardization of specifications and methods of manufacture. There are a number of instances on record where concrete sewer pipe has been in use for over 20 years. The city of Brooklyn, N.Y., laid its first concrete pipe about 1850, and since that time has laid over four hundred miles of this kind of sewer. Over 75% of all sewers laid in the city of Milwaukee during the past seven years have been concrete pipe. The specifications of many of the larger cities, including Chicago, Kansas City, Santiago and Oklohoma City, also permit its use.

The Maisonneuve Park Commission, Montreal, have accepted the tender of the Maisonneuve Quarry, Ltd., for quarrying stone from Maisonneuve Park for a term of five years at \$1.15 per ton. The contractor undertakes to quarry 100,000 tons per annum.