below the river bed without accident or interruption and left in its correct position. Piles were driven, 152 in all, at all tides; at high tide there was 60 ft. of water over the top of piles. The method of driving was by means of an apparatus designed by the contractors. This apparatus was suspended in position and piles placed in same and driven, and after a few piles were driven to determine the proper length, all piles were then cut to their correct length and driven home, thereby avoiding cutting these piles under water.

The piles averaged about 45 ft., the tops were left at an elevation of about 4 ft. above the cutting edge. After the piles were driven the soft mud was taken out and concrete laid under water to an elevation about 12 ft. above cutting edge, forming a base 51 ft. x 31 ft. over piles. At this elevation the bottom of the interior wall was embedded two feet in the concrete. After the base was set concreting was continued in the interior wall to the elevation of the bottom of the shaft. This section was 17 ft. by 38 ft., completing the base. On the base the shaft was built as in the case of piers 3 and 5.

All concrete was 1 : 2 : 4 mixture; that in the caissons being placed by means of buckets through the water, that in the shafts being laid in the open air as the tides permitted.

A fairly good mixture of sand and gravel was obtained from a nearby beach and this was used without treatment.

The five piers were completed between November 17th, 1913, and June, 1914, with about 50 days out for storms, when it was impossible to work, leaving a net working period of approximately five months.

The contract was under the direction of Mr. P. B. Motley, bridge engineer of the Canadian Pacific Railway, and Mr. Hare, chief engineer of the D.A.R. Railway Company. Contractor for the channel piers above described, The Foundation Company, Limited, Montreal and Vancouver.

The bridge superstructure consists of one 85-ft., seven 103-ft. and one 50-ft. deck plate girder spans, four 157-ft. deck truss spans and a deck truss swing span 141 ft. 10 ins. long centre to centre of bearings. Of these the swing and the 103-ft. girders were newly made, the remainder being taken from existing C.P.R. bridges. Floating was adopted as the means of placing both new and old truss spans—all being erected on falsework in one opening and being skidded down a falsework track until they could be picked up on the scows. The superstructure was erected in 1914 by the Dominion Bridge Company.

RAILROAD EARNINGS.

The railroad earnings for the first two weeks of August are as follow:—

	1914.	1915.	Decrease.
Canadian Pacific Railway.			
August 7	$2,236,000	$1,787,000	— $449,000
August 14	2,162,000	1,815,000	— 347,000
Grand Trunk Railway.			
August 7	$1,106,823	$ 993,773	— $113,050
August 14	1,068,710	1,004,412	— 64,298
Canadian Northern Railway.			
August 7	$ 354,400	$ 259,500	— $ 94,500
August 14	319,500	249,000	— 70,500

COAST TO COAST

North Vancouver, B.C.—The engineering department of the municipality has just completed the construction of a timber dam across Mosquito Creek to impound a surplus water supply of 600,000 gallons.

Edmonton, Alta.—The operating expenses of the Edmonton Radial Railway have been reduced $106,869 in the past six months, due to more economical handling of the department and the saving effected by the motormen of 0.03 kw. per car mile.

Victoria, B.C.—Beginning early in August and for the next two months the dredge "King Edward" will be engaged in dredging a channel from deep water to the mouth of the Courtenay River at Comox Harbor. The channel will be 100 ft. wide, with a low-water depth of 8 ft.

Victoria, B.C.—About 13,000 square yards of civic paving have been completed to date, and about 10,000 square yards are yet to be finished under the 1915 programme. The grading and foundation work on a large portion of it have been completed, and the civic paving plant is in operation.

Sarnia, Ont.—In connection with the trouble which the new waterworks system has been giving, the city council now proposes to sink a well, 25 ft. in diam., at the edge of the river to about 15 ft. below the water level, and to pump water from it to a lagoon alongside the infiltration basins.

Peterboro', Ont.—Mr. R. H. Parsons, city engineer, reports that 9,540 lineal feet of sidewalks have been laid to date this year at an average cost of 12¾ cents per sq. ft. The sewers on Monaghan Road, Chemong Road, Aberdeen Avenue, Bethune Street, Westcott and Ware Streets have been completed.

Saanich, B.C.—About 1½ miles of grading and paving on the Saanich Road have been completed, and the whole work as far as Royal Oak will likely be finished by September 15th. A new road will be opened up from East Saanich to Cordova Bay, to have a maximum grade of 5 per cent., and to replace the present road, which has grades as high as 17 per cent.

Chilliwack, B.C.—The city sewerage system has been completed. It has been under construction for the past sixteen months, the work having been handicapped by water and quicksand. Originally it was being done by contract, but it was later taken over by the city and completed under the direction of Mr. A. Hobson, city engineer.

Edmonton, Alta.—Under the direction of the Department of Mines at Ottawa, the laying of a pavement was commenced last week in which is being used asphalt from the deposits in Northern Alberta, chiefly at Fort McMurray. It is expected that similar experiments will be made in Calgary at an early date. The product has been given the name of McMurray Asphalt and indications point to its successful use as a paving material.

Montreal, Que.—The Cedars Rapids Manufacturing and Power Co. has closed a contract for another block of 10,000 h.p. delivery to commence in March, 1916. The company is already selling about 83,000 h.p. from its new plant, described in *The Canadian Engineer* for January 1st and July 9th, 1914. The total capacity of the plant, of which the original installation provides for 100,000 h.p., will be 160,000 h.p. Work applicable to