November 6, 1919

BELLEVILLE, ONT., WATER SUPPLY*

PRIOR to 1918 the city of Belleville, Ont., with a population of about 13,000, was supplied with water by two steam pumps and one electrically operated pump, the latter being used only for domestic supply. On account of the growing demand for water, the increased cost of pumping and the condition of the steam pumps, which had been operating many years, it was decided to install new electric pumps and as soon as a duplicate transmission line could be built to the pumping station, to discard all the old pumping equipment.

The pumping station is west of the Moira river (which flows through the centre of the city) and is about one mile from the central business district. The supply is pumped

through a single 16-in. main, about one mile long, to a standpipe of 360,000 gals. capacity and to the distributing mains. In the new layout, provision was made for a duplicate 16-in. supply main to be installed at a later date.

In order to properly accommodate the new electric pumps and control apparatus, the old steam pump room was enlarged and provision was made for placing the starters from the motors on a gallery to which was also carried the main valve stems and valves in the priming piping. This gallery extends around the sides of the pump room. On the back wall of the gallery is mounted the 550-volt bus disconnecting switches, meters, etc. The bus is sectional so that normally some of the pumps can be fed off one circuit and some off the other, or if necessary all the pumps can be fed off either circuit.

There are four pumps, one of 800 gals., driven by a 100-h.p., 3-phase, 60-cycle, 550-volt, 1,800 r.p.m., induction motor; two of 1,100 gals., each driven by a 125h.p. motor; and one of 1,560 gals., driven by a 150-h.p. motor. All the motors are of the squirrel cage type. The pumps are designed to operate most efficiently at a head of 250 ft. (108 lbs.).

They are also designed to deliver about two-thirds their normal capacities at a head of 325 ft. (141 lbs.) for fire purposes, this high pressure being required to overcome the friction in the long 16-in. main and still give ample pressure in the central business district. The small deficiency in volume for fire service can be made up by the future addition of pumps driven by gasoline engines. The pumps are all two-stage split-stage type; that is, two single-stage pumps connected in series, with the motor in the centre except in the case of the largest pump, where the motor is at one end.

The intake, which extends some distance into the Bay of Quinte, delivers through screens to a suction well in the pump room, from which the pumps discharge to a steel header located at the top of the suction well. The present 16-in. delivery main is connected near one end of this header and provision has been made for connecting a future 16-in. delivery main near the opposite end. All the water pumped is measured with a Venturi meter.

Preliminary plans have been drawn providing for a new intake and suction well from which low-lift electric pumps will deliver the water to rapid sand filters, which in turn

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When deciding upon the head and other characteristics of these pumps, and the location and type of electrical equipment, consideration was given to the possibility of using the pumps and equipment in a more complete water treating and pumping plant.

The transformers by which 550-volt service could be supplied to the present or future pumps from lines operating "Y" or delta connected, have been located temporarily on a pole-type structure just outside the pump house. Permanent installation of this equipment will be decided upon when a more adequate water treating and purifying system is being installed. Two independent power lines are being built to serve this station.



A comparison of the cost of pumping for 1916 and 1919 shows a saving for 1919 of \$750. Part of the domestic pumping in 1916 was handled by the old electric pump and the remainder by steam, 600 tons of coal at \$4.75 per ton being used. In 1919 all the pumping was done by the electric pumps.

The Engineers' Club of Peterborough, Ont., will hold a dinner this evening at the Empress Hotel, Peterborough. After the dinner the club loses its identity and becomes the Peterborough branch of the Engineering Institute of Canada. This dinner will therefore mark the inauguration of the new branch as well as the termination of the old club.

Sir Adam Beck was heartily endorsed last week at a meeting of the Municipal Hydro-Electric Association of Ontario, and he was urged to continue as "Hydro" chairman. Sir Adam had threatened to resign on account of his defeat in the recent provincial election, as he thought that the "Hydro" chairman should be a member of the legislature. The Association stated that a seat would be found for him, and urged Sir Adam so strongly to continue his work that he found it impossible to resist the popular pressure upon him to remain in office.