

**PUMPING EQUIPMENT AT THOROLD**

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**I**NCREASED industrial activity generally due to the acquisition of several new plants, has necessitated extensions to the water supply system for domestic, commercial and fire protection purposes in the municipality of Thorold, Ont.

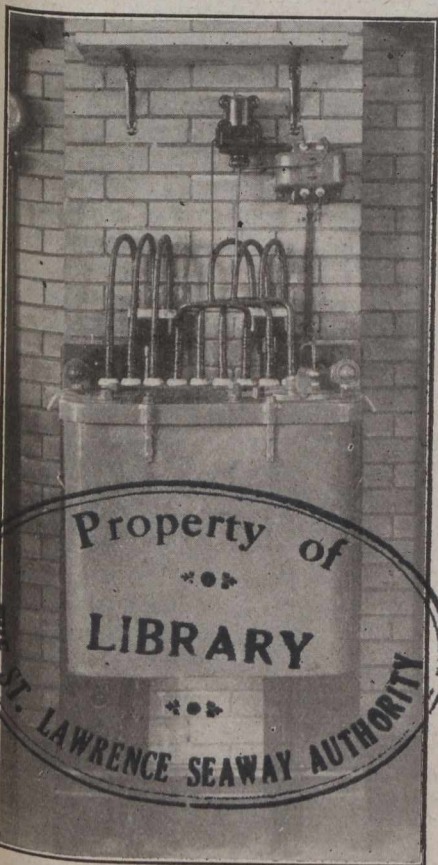
This new installation consists of a two-stage 1,500-Imperial-gallon turbine pump, directly connected to a 250-horse-power induction motor, with the necessary control and auxiliary apparatus.

A 3-phase, 2,300-volt transmission line supplies the equipment terminals on a pole structure about 100 feet from the pump house on which are mounted three S. & H. primary cutouts, fused with 150-amp. link fuses, and one

3-conductor, form L, 3,000-volt, outdoor type L.S. Cat. No. 82, G. & W. pothead. From this pothead a three-core, 2,300-volt, No. 2 varnished cambric lead-covered underground cable was run to the basement, terminating in a similar indoor type cable end bell and S. & H. cut-outs, fused with 100-amp. link fuses.

Two 3-phase circuits branch from these fuses, one feeding the old pumping and lighting equipment and the other supplying power for the new pumping unit.

The control equipment for the motor consists of a 300-amp., 2-



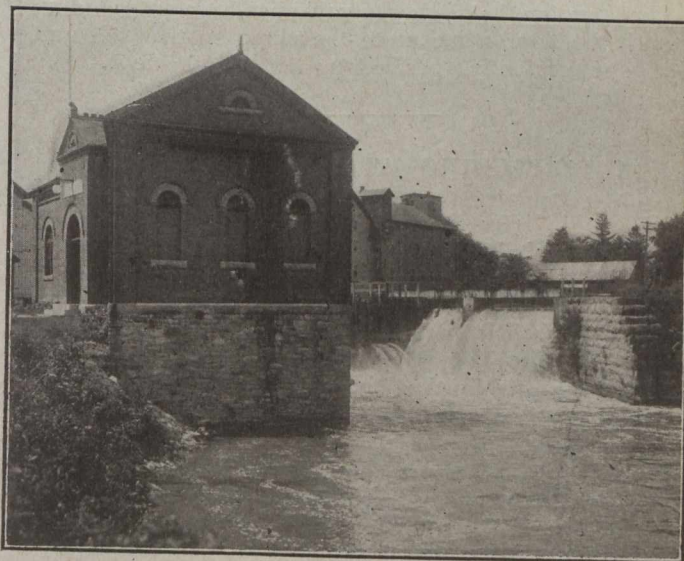
**Mounting of Compensator for Turbine Pump**

500-volt, 3-pole, single-throw, Westinghouse type F1, hand-operated oil switch, complete with two 100/5-amp. current transformers, inverse time limit over load trip double coil relays and one 100 amp. scale ammeter all mounted on a marine finished slate panel, also one Crocker-Wheeler 250-horse-power, type P.D., 3-phase compensator with five taps ranging from 33 per cent. to 80 per cent. supplied with push-button switch and oil immersed, no voltage release energized by means of a 2,200/220-volt potential transformer protected by plug fuses on the primary side. The compensator is mounted on the brick wall near the oil switch and motor. All connections between switch board and motor are 3-conductor No. 6 paper-insulated lead-covered cable run in 1½-inch galvanized conduits.

The 250-horse-power, 2,200 volt, 58-amp., 3-phase, 25-cycle, 1,500-r.p.m., squirrel-cage induction motor is

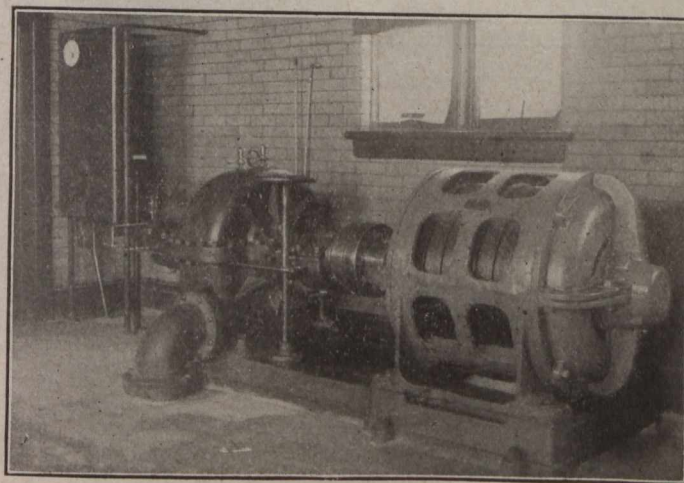
directly connected to the pump by means of a flexible coupling fitted with eight adjustable rubber buffers on turned steel pins to compensate for any possible unequal wear between pump and motor bearings.

The pump is of the 2-stage turbine type with horizontally split case so constructed that the impellers and shaft may be lifted out by simply removing the top half of the casing without disturbing any pipe connection.



**Thorold Pumping Station**

The impellers are of bronze and are fitted with seal rings so arranged that the hydraulic pressure at all times balances the end thrust. However, should the hydraulic balance in any way become affected, the full end thrust would be taken care of by a liberally proportioned water jacketed marine type thrust bearing which holds the impellers central with the discharge channels. The thrust collar is a solid forging and is adjustable on the shaft.



**Motor-Driven Turbine Pump**

The 2 15/16-inch steel shaft is brass-covered at the stuffing boxes, and all bearings are babbitt lined.

The pump is capable of delivering 1,500 Imperial gallons per minute against a head of 350 feet when running at 1,500 r.p.m.

The base plate is of box section extending the full length under the pump and motor and is secured to the floor by six 1½-inch anchor bolts and cement grouting.