

DESCRIPTION OF THE NEW DAM AND PUMPING STATION BUILT BY THE CITY OF PETERBOROUGH, ONT.

A. W. Ellison Fawkes.*

One of the most important public works undertaken by the city of Peterborough in recent years, is the construction of the new waterworks dam and pumping station. This work has advanced so rapidly that the installation of the machinery is in progress. Nearly a year ago a by-law was submitted by the city council to the ratepayers, giving the Water Commissioners authority to expend \$120,000 in the erection of a new concrete dam, and equipping a pumping station with the machinery necessary to force the water into the mains for the city's use. The by-law received the approval of the ratepayers, and the Commissioners proceeded with the work of construction by letting the contract to the Bishop Construction Company, of Montreal, Que., who made a start on June 30th, 1909, with Mr. G. Morrison in charge of the work for the contractors.

The work was divided into two sections, the West portion started first, Fig. 1, taken on July 9th, shows the construction of the coffer dam. Constructed of 6 x 6 in. timbers, 6 ft. wide, and sheeted on the upstream side with 2-in jointed lum-



Fig. No. 1.

ber, thus making a good watertight job of the cofferdam part of the work. This was a more expensive way of cofferdam than is usually adopted, but it more than paid for itself by reducing the leakage to a minimum, and making excavations more expedient. Two pumps, a 12-in. and 6-in., were used to lift out the water from within the cofferdam at the rate of

5,000 gallons per minute. Fig. No. 2, 20th July, 1909, shows a start to drill the rock and to excavate on the most westerly section; when the excavation was in full blast we were taking out about 300 cubic yards per day; this work proceeded till the 28th August, 1909, when a start was made to put in the first layer of concrete (Fig. No. 3) to the west portion of the work. Owing to the poor nature of the rock at the depth re-

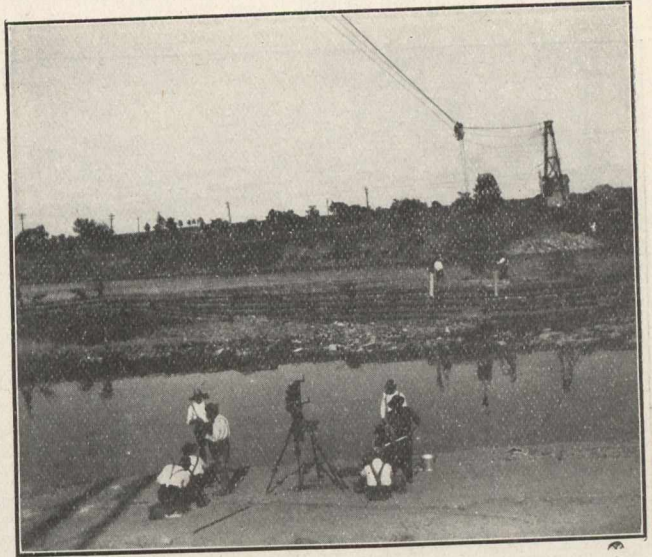


Fig. No. 2.

quired it was deemed necessary to put a layer of concrete the whole way across 1 foot 6 inches thick, to guard against the water scouring out the rock at the base of the walls to the wheel pits. This precaution was not wasted, as when the connecting of the east cofferdam had been in place only a few weeks a pike pole was put down along the face of sheeting, and a space of several inches was found between the ends of the sheeting and the rock. The rock had scoured out at this particular place; of course the flow of water was greater at this place as the whole of the river practically was turned through this sluiceway. The concrete was examined and was perfect in every way. The concrete at this part of the work was put into the following: Mix 1 part by measure of Portland cement, 3 parts by measure sand, 5 parts by measure gravel, same not to exceed 2 inches in diameter, with a 20 per cent. allowance for fillers. The concrete was mixed by a mixer of an approved type, putting in concrete at the rate of 150 cubic yards on a full working day.

The following tests of the cement may prove interesting.

Specific gravity, 3.123.

Blowing good.

Color. Good

Residue on Sieves, 100.2.4 per cent. 200.19.2 per cent.

Set. Initial 2.25 hours. Final, 4.00 hours.

Water used. Neat 21.7 per cent. Mortar, 8.7 per cent.

Tensile strength, 24 hrs. 440. 3 days. 557. 7. days. 645. 28 days. 735.

Fig. No. 3, 24th September, 1909, shows the progress of the work now up above water, also the method adopted to place concrete into forms, by means of a cableway from west to east, with a bucket of 1 cubic yard capacity. Up to this time over 2,300 cubic yards of concrete were deposited. At the same time as the concrete was being deposited, progress was being made on the erection of the steel-work to the racks amounting to 150,000, as shown in Fig. No. 4, 14 Sept., 1909. By the 27th September, 1909, the work had so far advanced to warrant the removal of the cofferdam to the west section of

*Resident Engineer, Peterborough Waterworks Improvement.