

PROFILE ON CENTRE LINE OF POWER CANAL FROM THE WELLDAND RIVER TO THE NIAGARA RIVER

bucket, 1 Hayward 1½-yd. clam-shell bucket (motor driven), 1 Andresen-Evans 3-yd. bucket (on cableway excavator), 12 Sullivan channellers, 1 McCully No. 5 gyratory crusher, 2 McCully No. 6 gyratory crushers, 1 McCully No. 7½ gyratory crusher, 2 Barber-Green 60-ft. portable conveyors, 1 Traylor 60-in. by 84-in. steel jaw crusher, 36 thousand-watt Davis flood lamps, 13 four-hundred-watt Lyman flood lamps, 2 Napanee hoists, 1 Ligerwood hoist, 1 Beatty hoist, 2 Jordan spreaders, 2 Imperial tie tampers, 1 double-track snow plow built by Canadian Steel Foundries, numerous Herbert Morris hoists, 2 Lincoln track bonders, numerous Norton Jacks and a large quantity of valves, hydrants, pipe, tanks, stand-pipes, searchlights, transformers, motors, etc. There are about 36 pumps of various types and capacities, a few of which are operated continuously, the others being held for emergencies and intermittent use.

The job is equipped with its own telephone system, which also is connected by private wire direct to the head office of the Hydro-Electric Power Commission in Toronto, and with its own water distribution system and electric light system.

Fifty-five miles of construction railway have been built, including yards, sidings, etc. The 2½ miles of railway from the canal to the disposal area is one of the busiest double track lines in America, carrying from 180 to 200 trains (of ten cars each) daily during the 20 working hours. A despatching system, controlled by telephone, has been found necessary, especially at night.

In the Whirlpool yards are located a large machine shop, store houses, cement stores, forges, etc. The list of equipment above mentioned does not include the many machine tools, trip-hammers, wood-working machines, welding outfits, etc., with which these buildings are equipped nor the thousand and one items with which the store-houses

are filled to the roofs in orderly bins and racks, including everything that might possibly be needed, from safety pins and iodine to dynamite and structural steel.

The main transformer house is at station 320. Here are installed 12 Sullivan air compressors, each having a capacity of 1,000 cu. ft. per minute against 125 lbs. pressure. The installed transformer capacity at the station is about 7,500 k.v.a., of which 3,000 k.w. is direct current.

Another transformer house is being erected at Sta. 90. A small transformer house was erected near Chippawa at the beginning of the work for the purpose of supplying the

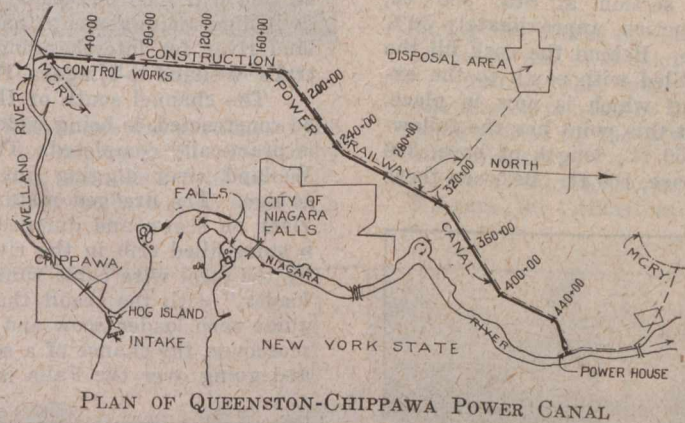
Welland river section. All power is obtained from the Ontario Power Co., which is now controlled by the Hydro-Electric Power Commission. The compressed air is used for operating the drills and channellers and for numerous small tools. It is piped in double 8-in. and single 10-in. lines, with valves every 500 ft.

The first shovel on the job was the 2-yd. Atlantic type shovel, which began work in the spring of 1917 at Sta. 324. Since then there has been removed to date a total of a little more than 4,000,000 cu. yds. of earth and 500,000 cu.

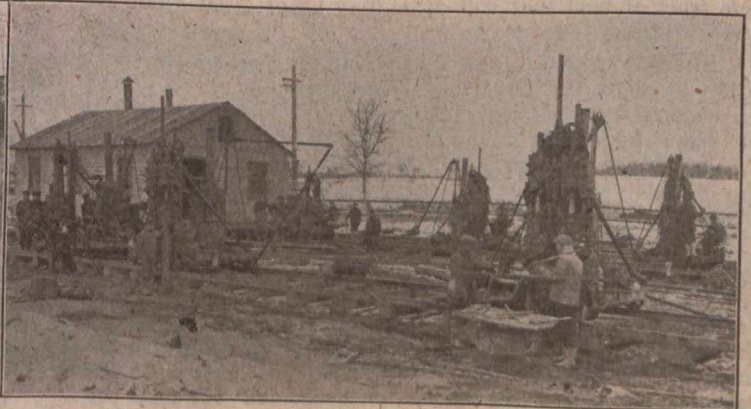
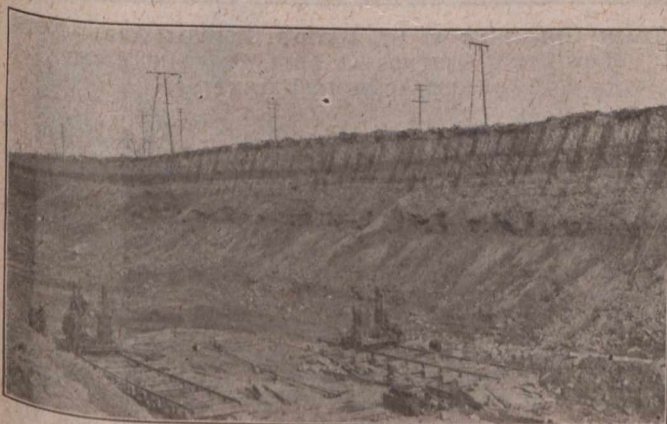
yds. of rock. The excavating plant has been increased continuously, two of the largest shovels having been received only a few months ago, and the work is now progressing 50% faster than previously. Since January 1st, 1919, approximately 2,200,000 cu. yds. of earth and 350,000 cu. yds. of rock have been removed, partly by the dredge, partly by the cableway excavator and partly by miscellaneous equipment, but mostly by the shovels.

The best day's record for any one shovel was the loading of 420 cars in two 10 hr. shifts, this being equivalent to 8,500 cu. yds. bank measurement.

The total amount of material to be excavated from the canal section is 9,000,000 cu. yds. of earth and 4,000,000 cu.



PLAN OF QUEENSTON-CHIPPAWA POWER CANAL



CHANNELERS AT WORK—AT LEFT, STA. 316+25—AT RIGHT, STA. 419+00, SHOWING TRAVELLING SMITHY MOUNTED ON TRUCKS