

The counterdam, across the lower end of the foundation area, to defend the pit from the lower pool, was finished by the end of February. There were only two small steam pumps, a six-inch and four-inch, on the contract and these could not lower the water below the lower pool, down to which it had run off naturally. Two large steam pumps, a twelve-inch and a fourteen-inch with boilers, were then rented and a pocket dam, built just below the main dam. This was

The enlargement of the Ontario side by blasting and scouring was quite successful and aided the discharge greatly.

Excavation in the Quebec foundation was possible during the last week of March and continued till the end of April. The lower pool then rose over the counterdam and operations had to cease, the plant being nearly all removed. On 4th May, the main dam failed by scouring under the

Item	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total
B. C. Fir 12" x 12"	C. ft.						1,200		8,600	11,650				21,450 c. ft.
White Pine 3" x 12"	Ft. b.m.								21,600					21,600 ft. B.M.
Steel Beams	Lb.				11,800	30,900	2,500		33,900					79,100 pounds
Anchor Bolts	"	1,000			5,000	1,000								7,000 pounds
Common Excavation	C. yd.			500	6,000	5,450		550	370					12,870 c. yds.
Rock Excavation	C. yd.			150	650	50	1,050	250	250	240				2,640 "
Boulder Excavation	"			60	540	300	700	300	180	220				2,300 "
Stone Protection	C. yd.				200		1,000	800						2,000 "
Concrete	C. yd.	600	250		1,150	2,660	320	4						4,984 "
Material on hand														
I Beams, Channels	Lb.									100,500				100,500 pounds
Cement	Barrel									640				640 barrels
Sand	Cu. yd.									2,400				2,400 c. yds.
Broken stone	"									4,200				4,200 "

Quantity of Contract Work in 1910-1911 on the Timiskaming Dam.

to intercept and collect the leakage which was led in box flumes over the work and emptied below the counterdam. The pocket dam was first a small earth bank, the sandy soil alone available, however, dissolved beneath the water, but froze hard in the air, bridging and obscuring leaky places. A sloping dam of planks, pointed and driven like sheet piling, was made but still the leakage kept the pumps fully engaged and water constantly burst beneath. Two more large pumps were added during March and every effort made to staunch leaks. It was not till the end of the month that four large pumps, working day and night, could keep the pit unwatered.

Meanwhile the spring rise was approaching, and to meet it the main cofferdam was raised 7 feet with continuous cribwork, which was filled with stone, adding weight to that already built. The cofferdam was of light section, but was

Quebec end. The water was then overtopping it more than a foot.

**Ontario Channel Excavation.**—The dredge Queen excavated in the channel during the autumn of 1909 and encountered much difficulty from boulders upon which the scows and tug frequently grounded. After work stopped for winter, a force of drillers was kept on to blast boulders over the ground to be dredged during 1910. Low water aided this, and half the approach channel had been well prepared for dredging and some excavation had been swung out with the derrick by the end of March, 1910.

It was 17th May, 1910, before the dredge started, and after making one cut the dipper arm broke 18th June, then teeth were removed, so before repairs were finished it was 5th July. The material was so hard that it had to be blasted at times and low water prevented through cuts being finished

Item	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Total
B. C. Fir 12" x 12"						\$ 768		\$ 5,504	\$ 7,456				\$ 13,728
"        6" x 12"								918					918
White Pine 3" x 12				\$ 708	\$ 1,854	150		2,034					4,746
Steel Beams				300	60								420
Anchor Bolts	\$ 60						\$ 165	111					3,861
Common Excavation			\$ 150	1,800	1,635	1,575	375	375	360				3,960
Rock Excavation			225	975	75	525	225	135	165				1,725
Boulder Excavation			45	405	225	750	600						1,500
Stone Protection				150		2,720	34						42,364
Concrete	5,100	2,125		9,775	22,610								
	\$ 5,160	\$ 2,125	\$ 420	\$ 14,113	\$ 26,459	\$ 6,488	\$ 1,399	\$ 9,077	\$ 7,981				\$ 73,222
MATERIAL ON HAND.													
I Beams Channels									\$ 3,015				3,015
Cement									640				640
Sand									1,200				1,200
Broken Stone									3,150				3,150
													\$ 81,227

Value of Contract Work in 1910-1911 on the Timiskaming Dam.

well strutted on the down stream side. It was a question, whether stop-logs should be provided in this upper portion, but to arrange for them was difficult, and they could only pass 4,000 c.f.s., 5% of the flood. It seemed better instead, to blast out the Ontario side and increase by loosening and scour the space through which to get discharge, while the cofferdam blocked the Quebec channel.

to the contractors' work. The autumn rise, however, aided matters and a cut was fortunately carried to the cofferdam before work stopped in the middle of November.

The blasting of surface boulders was continued all season by a small force with good results, and when the cofferdam was cut 18th November, a good opening quickly scoured to the already excavated sluiceway channel.