

Drawing B is a general location map showing the position of the works above described and also the position of a submerged weir which it is proposed to build in the Chippewa-Grass Island Pool for the purpose of raising the level of the pool so as to increase the flow of water down the American channel and over the American Falls. This weir is to be located about 1,700 feet upstream from the intake to the plant of the Ontario Power Company and will extend out into the river for a distance of about 2,200 feet. It is designed to be built of loose rock fill, as shown on drawing C. Two methods for its construction are indicated; the one to be used where the bed of the river is hardpan, and the other where the bed is solid rock. It is intended that the weir will raise the standard low water level of the Chippewa-Grass Island Pool approximately one foot, which will be sufficient to increase the flow over the American Falls by about 2,500 to 3,000 cubic feet per second.

Changes in designs and methods of construction to suit field conditions may be made as the work proceeds.

Estimates of cost of the proposed works are attached hereto.

#### ESTIMATED COST OF PROPOSED REMEDIAL WORKS AT THE FLANKS OF THE HORSESHOE FALLS

##### COMBINED SUMMARY

	American	Canadian
Rental of construction equipment..	\$ 34,500	\$ 34,500
Construction houses and road..	5,000	5,000
Repairing and maintaining roads..	10,000	5,000
Excavation..	48,000	22,500
Submerged weir..	15,000	5,300
Cofferdam..	49,000	56,000
Total..	\$161,500	\$128,300
Contingencies..	24,300	19,200
Engineering, superintendence and overhead..	16,200	12,800
Insurance..	8,100	6,400
Contractor's profits..	20,000	16,000
Construction interest..	\$230,100	\$182,700
	4,600	3,700
Total cost..	234,700	\$186,400

#### PROPOSED REMEDIAL WORKS—ESTIMATED COST OF SUBMERGED WEIR IN CHIPPAWA-GRASS ISLAND POOL

##### COMPARATIVE SUMMARY

	Rock Bottom	Hard pan Bottom
Plant rental..	\$ 84,600	\$ 83,000
Stone delivered at site..	150,000	150,000
Construction roadway..	10,000	10,000
Construction houses and plant erection..	10,000	10,000
Steel trestle..	112,000	....
Labour installing trestle..	37,000	....
Pile bents..	....	28,000
Stringers, decking and trackwork..	....	24,000
Decking and trackwork..	16,000	....
Precast concrete block anchors..	25,000	25,000
Removing trestle..	25,000	15,000
Placing stone in weir..	45,000	45,000
Total..	\$514,600	\$390,000
Contingencies..	77,300	58,500
Engineering, superintendence and overhead..	51,500	39,000
Insurance..	25,800	19,500
Contractor's profits..	50,000	40,000
Construction interest..	\$719,200	\$547,000
	21,500	16,400
Total cost..	\$740,700	\$563,400

#### ESTIMATED COST OF PROPOSED REMEDIAL WORKS ON AMERICAN FLANK OF HORSESHOE FALLS

##### SUMMARY

1. Rental of construction equipment..	\$ 34,500
2. Construction houses and road..	5,000
3. Repairing and maintaining roads..	10,000
4. Excavation 9,600 yards at \$5..	48,000
5. Submerged weir (340 feet long), 660 yards at \$22..	15,000
6. Cofferdam, 650 feet at \$75..	49,000
Total..	\$161,500
Contingencies at 15 per cent..	24,300
Engineering, superintendence and overhead at 10 per cent..	16,200
Insurance, 5 per cent..	8,100
Contractor's profit..	20,000
Construction interest, 2 per cent..	\$230,100
	4,600
Total cost..	\$234,700

##### DETAILS

1. Construction Equipment Rental		
1 20-ton locomotive crane..	\$ 30	
6 drills at \$10..	60	
1 compressor at \$25..	25	
1 2-yard shovel..	35	
6 trucks at \$15..	90	
Fuel and supplies..	25	
130 days at \$265..		\$ 34,500
2. Construction Houses and Road..	\$ 5,000	5,000
3. Repairing and Maintaining Roads..	10,000	10,000
4. Excavation—		
Area to be covered, 130,000 sq. ft. Approx.		
average depth to be excavated, 2 feet.		
Total excavation, $\frac{130,000 \times 2}{27} = 9,600$ yds.		
9,600 yds. at \$5..	48,000	48,000
5. Submerged Weir—		
Length, 340 ft.; width, 12 ft.; height, 5 ft.		
Volume, 2 yds. per lin. ft.		
Total volume, $340 \times 2 = 680$ yds.		
680 yds. at \$22..	15,000	15,000
6. Cofferdam—		
Length..	650 feet	
Average depth of water..	3½ feet	
Average height of cofferdam..	8½ feet	
Average cost per lin. ft., \$75.		
$650 \times \$75 = \$48,750$		
say, \$49,000.		

#### ESTIMATED COST OF PROPOSED REMEDIAL WORKS ON CANADIAN FLANK OF HORSESHOE FALLS

##### SUMMARY

1. Rental of construction equipment..	\$ 34,500
2. Construction houses, etc..	5,000
3. Repairing and maintaining roads..	5,000
4. Excavation, 4,500 yds. at \$5..	22,500
5. Cofferdam construction, 700 ft. at \$80..	56,000
6. Submerged weir (120 ft. long), 240 yds. at \$22..	5,300
Total..	\$128,300
Contingencies, at 15 per cent..	19,200
Engineering, superintendence and overhead at 10 per cent..	12,800
Insurance, 5 per cent..	6,400
Contractor's profits..	16,000
Construction interest, 2 per cent..	\$182,700
	3,700
Total cost..	\$186,400

