

# A PAGE OF COSTS

## ACTUAL, ESTIMATED and CONTRACTED

### THE COST OF EXCAVATING GRAVEL IN A CANAL WITH A 65 TON SHOVEL.

Mr. J. B. Brophy, of Trenton, Ontario, Canada, division engineer of the Trent Canal, Department of Railways and Canals, furnished the following data as to the working of a steam shovel under him for the month of June, 1908.

The work was done at the canal near Trenton, Ontario. The material was a gravel. The cutting was 10 1-2 feet deep and was side cutting, the material being loaded into cars as high as the machine would reach. From June 1 to 13 the shovel excavated 16,000 cubic yards, the average haul being 1,200 feet. From June 15 to 30, 20,000 cubic yards were excavated, the average haul being 1,400 feet. This makes a total of 36,000 cubic yards with an average haul of a little more than 1,300 feet.

The outfit used on the work consisted of the following: A 65-ton steam shovel with a 2 1-2 cubic yard dipper, made by the Bucyrus team Shovel Co., of South Milwaukee, Wis. Two 12-ton Porter dinkeys. About 1-8-mile of track was used and 22 dump cars of 4 cubic yards capacity. The cost of this outfit was approximately as follows:—

65-ton shovel . . . . .	\$9,000
2 12-ton dinkeys . . . . .	5,000
22 4-yd. dump cars at \$230 . . . . .	5,060
16 tons 20-lb. rails at \$32 . . . . .	512
1,000 ties at 10 cents. . . . .	100

Total . . . . . \$19,672

Estimating 2 per cent. for monthly interest, depreciation and repairs, gives a charge per month of about \$390.

The shovel worked 12 hours per day, but the track gang and water wagon only worked 10 hours per day. We assume the standard wages on this class of work, which are:—

#### 70-Ton Shovel Working in Clay.

Shovel runner . . . . .	\$125.00 per mo.
Craneman . . . . .	90.00 per mo.
Fireman . . . . .	60.00 per mo.
Watchman . . . . .	40.00 per mo.
Dinke runners . . . . .	3.00 per day
Brakemen . . . . .	2.00 per day
Foreman . . . . .	3.00 per day
Oiler . . . . .	1.75 per day
Laborers . . . . .	1.50 per day
Water boy . . . . .	1.00 per day
Teams . . . . .	5.00 per day
During the month 26 days were worked. The total cost of the work and the organization of the forces were:—	

#### Loading:

1 Shovel runner . . . . .	\$125.00
1 Craneman . . . . .	90.00
*Adapted from Engineering-Contracting.	
1 Fireman . . . . .	60.00
4 Pitmen . . . . .	156.00
1 Team hauling water . . . . .	180.00
50 Tons coal at \$5.00 . . . . .	250.00
Oil, waste, etc. . . . .	10.00

Total . . . . . \$871.00

#### Hauling:

2 Dinkey runners . . . . .	\$156.00
2 Brakemen . . . . .	104.00
1 Oiler . . . . .	45.50
1 Trackman . . . . .	39.00
60 Tons coal at \$5.00 . . . . .	300.00
Oil, waste, etc. . . . .	16.00

Total . . . . . \$660.50

#### Dumping:

1 Foreman . . . . .	\$ 78.00
16 Laborers . . . . .	624.00
1 Water boy . . . . .	26.00

Total . . . . . \$728.00

#### Miscellaneous:

1 Superintendent . . . . .	\$150.00
1 Timekeeper . . . . .	65.00
1 Watchman . . . . .	40.00

#### Track gang:

1 Foreman . . . . .	78.00
5 Laborers . . . . .	195.00
Interest, depreciation and repairs (estimated). 390.00	

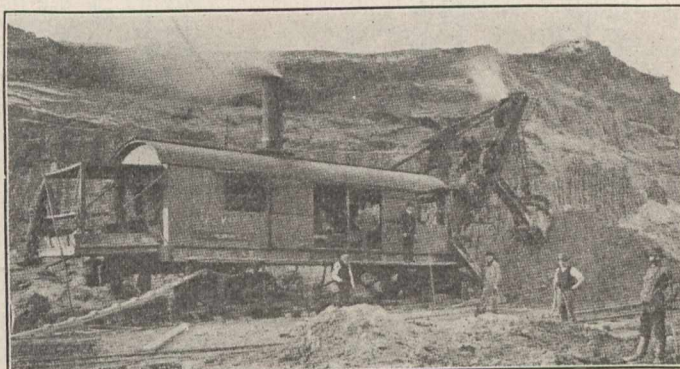
Total . . . . . \$908.00

Grand total . . . . . \$3,177.50

The cost per cubic yard of material excavated was:

Superintendence . . . . .	\$0.007
Loading . . . . .	0.024
Hauling . . . . .	0.018
Dumping . . . . .	0.020
Track work . . . . .	0.008
Interest, depreciation and repairs (estimated). 0.010	

Total . . . . . \$0.087



The yardage moved in one shift is very large for this size shovel. For another output of a 65-ton Bucyrus shovel see Engineering-Contracting, August 5, 1908, page 82. On the Trent Canal 1,385 cubic yards were moved in a 12-hour shift, which would be at the rate of 1,155 cubic yards in 10 hours, of 115 cubic yards per hour. When it is remembered that only 4-yard cars were being loaded and the bank was only 10 1-2 feet high, this record is a very good one. It means that the shovel was actually digging earth about one-half of its time. These are the reasons for the very low costs.

The contractors on this work are Larkin and Sangster, of St. Catharines, Ontario. Mr. J. H. Wallace is superintendent in charge of the work.

### EXCAVATING CEMENTED GRAVEL.

In a clay cut on railway work in Ontario County, Ontario cemented gravel was encountered. The bed of gravel lay along the bottom of the cut, and required a cutting of from eight-tenths to four feet. The gravel bed was so hard that a pick would only enter it about one and a half inches, but the extent of work was so small that the contractor did not feel justified in purchasing a pick plough.

The work required 5 pickers for 4 shovellers with, in addition, one man on the dump. The material had to be hauled up to one thousand feet and four, and towards the end six carts were required, on the work.