

Portland Canal Tunnels
~~103P068~~ Ltd.
 103P058

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NOTES ON
PORTLAND CANAL TUNNELS, LTD.

The main working of this company consists of an adit 3671 feet in length and cross cuts what is known as the Fissure Zone of Glacier Creek. Its objects are to provide an entry to the adjoining mining properties as well as drainage and transportation. The developing of a water power is also contemplated.

The portal is about $3\frac{1}{2}$ miles north from Stewart, B. C., and 350 feet above mean high tide at that point. It is on the line of the Glacier Creek spur from the Canadian and Northeastern Railway. Work was begun in October, 1912 and cross cutting or drifting or both was continuously prosecuted from then until January, 1915. The power plant of the Portland Canal Mining Company was leased for the work.

The heading, $7\frac{1}{2}$ by 8 ft. in the clear, was driven a distance of 2916 ft. at an average rate of 8 ft. per day. The best weekly record was 67 ft., and the best monthly 271 ft. Two 8-hour shifts per day were employed, consisting of four machine-men and three shovelers. After the 1000-ft mark was passed, four shovelers were employed. Compressed air at 100 lb. pressure was supplied by a water-driven, 520 cu. ft., Rand class D-2 compressor, and delivered into the tunnel through a 4-in. pipe. Two $3\frac{1}{4}$ -in. Ingersoll-Rand E44 drills, mounted on a 7-ft. single screw bar were used. Miners and shovelers started work together. The bar was

set up above the rock pile, and from ten to twelve holes were drilled from this position. By this time the rock was out, the bar was lowered, and three lifters were drilled. The first 1600 ft. of the the tunnel is in greenstones, while the remainder is in argillites, quartz and porphyry. With but two exceptions during the entire work, a round was drilled every shift. Five--foot rounds were drilled, but seldom 'bottomed.'

Three 20-cu.ft. cars were used, and tramping was done by the shovelers. The track, of 20-lb. rails, 18-in. gage, and $\frac{1}{2}\%$ grade, was laid on the left--hand side of the tunnel. One switch, about half way in, was used; the empty incoming car was taken off the track near the face to allow the loaded one to pass. At a point 730 ft. from the portal an 80-ft. adit was run, opening into a canon. This not only made an excellent dumping place, but shortened the tramping distance by 750 ft. The shovelers laid and leveled the track. The floor from within 3 ft. of the face to 40 ft. back was covered with steel plates before blasting. A drain 12.in. deep was made on the right side of the tunnel, the lifter being drilled low for this purpose.

Ventilation was provided by two Schutte & Koerting blowers. The ventilating line consisted of 10-in. diameter, 24-gage galvanized pipe. The pipe was made in 10-ft. lengths, with riveted joints, painted with tar and wrapped with muslin. The compressor was run two hours after blasting to clear the tunnel.

T I M E A N D C O S T O F O P E R A T I O N S

Average time of operations.

	Hr.	Min.
Picking down - Setting up	1	00
Drilling from upper set-up	4	30
Shoveling back - lowering bar	0	30
Drilling from lower set-up	1	15
Tearing down	0	10
Blowing out holes	0	5
Loading	0	15
T o t a l	7	45

Detailed summary of costs

	Total cost.	Cost per foot.
Labor:		
Machine men	\$ 11,526.00	\$ 3.953
Shovelers	10,711.00	3.673
Timbering	753.17	0.258
Drainage	123.00	0.042
Ventilation	224.50	0.077
Ties and wedges	394.60	0.135
Compressed air line	210.00	0.072
Compressor men	3,398.35	1.166
Blacksmith and helper	3,546.50	1.216
Superintendent	2,554.00	0.876
T o t a l	\$ 33,441.12	\$11.468

Supplies:		
Powder	\$ 7,469.25	\$ 2.562
Fuse	391.50	0.134
Caps	92.00	0.032
Candles	421.90	0.145
Blacksmith coal	364.50	0.125
Machine drills and parts	1,464.77	0.503
Drill steel	343.57	0.118
Timbers	150.00	0.052
Repairs on compressor	77.40	0.027
Oils	97.00	0.031
Miscellaneous	216.00	0.073
T o t a l	\$ 11,087.89	\$3.802

Equipment:

	Total cost	Cost per foot
Muck sheets	\$ 110.00	
Steel rails	1,290.00	
Ventilators	225.00	
Ventilating pipe	960.00	
Compressed air line	1,070.00	
Cars	400.00	
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T o t a l	\$4,055.00	\$ 1.391

Length of tunnel	2916 ft.
Total cost	\$48,584.01
Cost per foot	\$16.661

All supplies were bought at Vancouver, British Columbia, and came North by steamship. The prices of some of the more important supplies at the tunnel were as follows:

40% Dynamite	\$ 0.134	per pound
60% "	0.159	" "
(powder was used in about the proportion of 30% of the former to 70% of the latter.)		
20-lb Steel rails	\$72.24	per long ton
Blacksmith coal	27.00	per ton

The scale of wages is as follows:

Machine men	\$4.00
Shovelers	4.00
Blacksmith	5.00
Compressor men	5.00

Beyond the point to which these figures apply the size of the tunnel was cut down, one instead of two drills being worked in the face and the costs per foot from then on decreased about \$1.00 per foot. The principal ore bearing veins in the Fissure Zone were reached by the cross cut at 2364 feet, 2642 feet, 2916 feet, and 3560 feet from the portal. All are similar in character, quartz breccia in argillites carrying pyrite, sphalerite and galena, abundant in the order named, as their ores. About 2000 feet of drifting has been done on these veins at a cost of something less than \$16.00 per foot. In the last vein reached an ore body consisting of a system of ore seams was opened for a width of more than thirty feet.

Drifts north and south on the strongest of the ore seams in this vein and for a length of 300 feet along it show an average width of 20 inches of ore and an average value of \$11.90 per ton in gold, silver, lead and zinc values. Excluding the zinc the average value is about \$10.00 per ton. Further drifting on this and some of the other veins is contemplated as the proper future development of this property.

W. C. Chumley

Seattle, Washington,

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