

Street—N.-E. Branch of the North-West Sewer on Finlayson Street. From—Douglas Street. To—Quadra Street. Service—Sewer Loan 1916.  
 Class of Work—10" Vitrified Sewer. Foreman—J. McInnes.

Date	Rock		Excavation Dirt		Hardpan		Pipelaying		Backfilling		Manholes		B. Smithing		Miscellaneous		Teaming		Total Labor Expenditure \$ c.	
	Total \$ c.	Per Cub. Yds. \$ c.	Total \$ c.	Per Cub. Yds. \$ c.	Total \$ c.	Per Cub. Yds. \$ c.	Total \$ c.	Per Lin. Ft. \$ c.	Total \$ c.	Per Cub. Yds. \$ c.	Total \$ c.	Per No. \$ c.	Total \$ c.	Per Lin. Ft. \$ c.	Total \$ c.	Per \$ c.	Total \$ c.			
1916																				
Bro't For'd	471.30	879	0.536				125.85	1550	0.081	112.55	702	0.16	97.80					176.40	42.10	1026.00
Sept. 12	11.00						4.10			6.90			1.35					5.40		28.75
" 13	21.90						2.75			1.35			1.40					1.35		29.50
" 14	19.25						4.15			4.00								1.35		28.75
" 15	27.35						1.40											3.65		32.40
" 16	23.25						1.40			2.75										27.40
" Sun'y																				
" 18	23.25						1.40			2.75								1.35		28.75
Report on week ending Sept. 18	126.00	200	0.63				15.20	204	0.074	17.75	130	0.136	2.75					13.85		175.55
" Total to date Sept. 18	597.30	1079	0.553				141.05	1754	0.08	130.30	832	0.157	100.55					190.25	42.10	1201.55

Fig. 1.

Some of the general advantages of a cost data system are:—

1st. It acts as a recording gauge and gives a permanent and continuous record of all variation in costs. If, through stress of work, the engineer is unable to visit the jobs regularly, still his weekly reports enable him at once to place his finger on any increase in cost, and he can confine his time to points where the cost data indicates it is needed.

2nd. He knows by comparison which foreman's work is costing more than it should, and what is more, the foreman knows he knows it. The very fact that detail costs of each job are on file in the office for future reference has an excellent moral effect upon the men.

3rd. It is of value to the competent foreman who knows that his favorable record will assure him steady employment with the city, and will be of service should he apply elsewhere for a position. It is also a convincing argument against the incompetent foreman, who claims that he has been unjustly dismissed, and it strengthens the hand of the engineer who is employing foremen upon their merits, as it is difficult for any one to argue against data kept over an extended period. An engineer with experience on municipal work will appreciate the importance of this.

4th. An engineer must have the confidence of those whom he serves, and this depends largely upon his ability to give them any information they desire when they ask for it. This is facilitated by a system which keeps him in close touch with all the details of his work.

Lastly, one of the great benefits derived from keeping weekly cost data is the interest that it creates in the foremen for their work. The factor of competition, which is usually lacking upon municipal work, is introduced and there is some definite aim in view. The information obtained is an incentive for them to try and steadily reduce costs by improved methods. They acquire the habit of figuring out the cost of their work from day to day, and it is surprising the excellent suggestions that are made with a view to economy, and one gets the benefit of the brains of all the foremen instead of those of possibly a few, and the efficiency of the entire department is increased thereby.

The city of Victoria has gradually enlarged the sphere of work carried out by day labor until to-day practically none is done by contract.

The writer, during the last four and a half years, introduced and improved upon a cost data system starting with sewer construction and enlarging the scope until it covered practically all work done by the corporation.

Some of the forms developed are illustrated in Figs. 1 to 8, and the following is a description of the method of working:—

The foremen hand in the segregation of their labor on the back of the time sheets. Fig. No. 1 is an illustration of a time sheet for sewer work, and sheets with the desired segregations are used for the different classes of work, such as sidewalk and road construction, boulevard maintenance and construction, waterworks, etc.

Once a week the field engineers measure up and plot on the plans and profiles the amount of the different classes of work done. From this information the cost data clerk, who is also head timekeeper, with the assistance of another timekeeper during his spare time, makes out a weekly summary sheet. From this the foreman is given the unit cost of the different classes of work for the week, the cost for the preceding week, and the average cost to date, as shown on Fig. No. 2.