

We knew that these conditions existed, and had a very good idea of the obstacles we would be likely to meet. The conditions were not favorable for letting a straight-out contract for the trenching. It was certain that a large portion of the trenches must be dug by hand, and the amount that might possibly be better handled by a machine was too small to warrant bringing in a machine for the purpose. In the purchase of supplies the city was in position to secure fully as advantageous terms as any contractor could possibly get. The manner in which the pipe was laid and the back-fill tamped was of such paramount importance that we felt that the city should retain full control over the workmen who were doing this work. This could only be secured by having the work done by city forces.

After a full canvass of the situation in all of its phases the council decided to have the work done entirely by city forces. It was then up to the engineering department to devise some scheme for overcoming, in part at least, the most objectionable features of that system.

The writer suggested the piecework method of payment, and advised its application to as much of the work as could be done without too much trouble. Many doubts were expressed as to the feasibility of the plan, and the council seriously objected to allowing it to be applied to the pipe-laying because of the danger of the work being slighted.

After considerable discussion the council agreed to allow a test of the method to be made on the trenches only, all other work to be done by day labor. The trenches could be handled by the new method more easily than any other part of the work, and if there should be any tendency to slight the work on the part of any of the workmen it could be easily corrected without endangering the perfection of the sewer. The accounting was a simple matter. Cross timbers for alignment and level purposes were set by the engineering force at 25-foot intervals, thus dividing the trenches into convenient one-man sections. The records of the engineer's office gave the amount of excavation in each 25-foot section, and a single setting of the slide rule gave the compensation. There was a little additional bookkeeping involved, but no complications. A simple method of numbering the sections was adopted, by means of which each man could keep track of the sections excavated by him, and the location of each section could be quickly determined if its number was given. The engineer's record was kept in the ordinary field book, and as there would be no embankment that column was used for entering the compensation for that section computed on the earth excavation basis. As the timekeeper's reports came in, the name of the one excavating a section was entered under the head of "Remarks." In this way complications were rendered impossible and omissions were quickly run down.

As fast as the classifications reports came in from the engineers they were entered on the same book and the proper compensation correction for each section was entered in red ink. The credits shown on the field book were transferred to a single-entry ledger and payments made bi-weekly. We found that though the accounting took a little more time than the day wage system, it was negligible as compared with the advantages that were found to accrue from the new plan.

We had very little data from which to determine what would be a fair scale of prices. Taking what we had, because of it being something of an experiment at best, preferring to be liberal in our prices, we fixed the following scale: Excavation per cubic yard: Earth 15 cents, hardpan 30 cents, loose rock 60 cents. What solid rock we encountered was excavated by day labor men.

The amount was small. As it was a little doubtful whether we would be able to secure as many men as we needed for the trenches at these prices, it was announced that if, after a two weeks' trial it was found that the prices were too low to enable the average man to earn ordinary wages, then we would either increase the schedule or return to day wages. With this encouragement enough men were secured to begin operations, and before the first week ended the success of the plan was assured. In fact, the trenchers were able to earn such wages that we were forced to increase our day wage scale in order to hold the men we wanted on the other work. While at first glance this might seem to be a disadvantage, in actual practice it proved to be the reverse.

It gave us the advantage of a sliding scale in place of an arbitrary one. Our minimum wage was \$2.50 per eight-hour day. When a day wage man wanted to go in the trenches we had this option. If he was a poor or indifferent worker we would let him go, but if he was a desirable man we would increase his wages to a price that would hold him. If a man was found shirking or slighting his work we would manage to get him in a position where there would be nothing for him to do just then except to go ahead into the trenches, and once in the trench, he would not get on the day wage force again. On the other hand, if there was a man in the trench that we wanted on the day force we could usually secure him. In this way we were able to keep a force of select men, and there was practically no complaint of unfairness or favoritism.

There was much less of this than we expected, and, as they had but two grounds for complaint, yardage and classification, it was very easy to get rid of them. As a whole, the trench men were perfectly satisfied with the deal we gave them. We were very liberal in our classification, were not unnecessarily insistent on having the sides of the trenches trimmed to line, and when unusual difficulties or obstructions were encountered we either gave them extra pay or took over the section to be excavated by the day men. There were a certain number of the trench men who were kept there throughout the entire job. They were worth more there than anywhere else, both to themselves and the city. These men averaged \$4.00 a day or more, one of them averaging \$5.00. Their example was a stimulus to the entire trenching force. To watch the twenty or more men we had in the trenches for one day was one of the best object lessons on the relative efficiency of common laborers that I ever received. The incentive for efficient work was the same in each individual case. Each man knew that he would get full pay for what he accomplished, and no more. And yet the variation in the amount of the day's work was astonishing. It ranged from 16 to 35 yards of earth in an eight-hour day.

So great a variation must have some reason for its existence. As a rule, the ordinary foreman would not see enough difference to warrant a remark. To all appearances the men were working equally hard, and on the whole with equal diligence. Jones was a husky specimen of the laboring class, above the average in intelligence, especially shrewd and quick to catch on to short cuts and ways of saving his muscle at the expense of his brains. As a day-wage man he was the most persistent, unscrupulous and shrewd hand at "soldiering" that we had in the city. Working in the trenches by the yard, he drew down the largest pay checks of any man in the crew. He worked no harder than other men, but he knew how to make every move count, and, having no incentive for shirking, he kept his shovel in motion. He spent no time talking, looking around or loafing on the job. He