

An Approach to Performance Rating

H. O. SCHEER, Engineer of Maintenance, Illinois Division of Highways

•DETAILED and current data of maintenance expenditures are a prime requirement in sensible programming and directing of maintenance work. In the past, in Illinois (and I am sure in many other states), maintenance expenditures were gathered and reported annually in cost per mile regardless of type of road, traffic, and other such items. Historical cost data, which should have been of considerable assistance in projecting future maintenance needs, could not be utilized because the performance data were not known. In other words, we knew the amount of money we spent but we did not know how much work was accomplished with that money. A sound standard did not exist for measuring the adequacy of maintenance, and maintenance engineers within the state varied in their opinions as to what was a standard of adequacy.

A study was made several years ago in an attempt to set up a standard of maintenance. It was decided that the standard of maintenance depended largely on the amount of money that was available and also on the volume of traffic using the highway facility. In 1965, a study was started in Illinois to develop a reliable method of reporting maintenance costs and accomplishments. In the past, we had known how much money was spent, but we did not know for sure where it was spent and for what, except in general terms. This new system was put into effect July 1, 1967, and we believe it will provide information necessary for proper management and for measuring the performance of our employees.

We have 11 general categories of work items, subdivided into 47 individual work items. A section man or foreman now not only reports the number of hours his crew puts in, but also what they accomplished. Bituminous patching is reported in tons; permanent replacement of PCC pavement, in square yards; crack-filling, in gallons of asphalt; bump-burning and joint-cutting, in lineal feet; mud-jacking and undersealing, in cubic yards; sealing, in square yards; shoulder-patching, in tons of material used; shoulder-grading, in cubic yards; ditch-cleaning, in cubic yards; mowing and spraying, in acres; cleaning dirt and debris, by lane miles; snow removal, by equipment hours; erection of snow fence, by lineal feet; and repairing and maintaining guardrail, by lineal feet. However, there are some maintenance items that cannot be reported in units of work accomplished, such as the maintenance of rest areas, repairing and maintaining weigh scales, subway pumping, general duties, and loss time. It was not difficult for a man to report how many lineal feet of guard fence he painted or repaired or how many acres he mowed, since this is easily determined. We realized that in items involving material, such as blacktop patching, we would have to estimate, to some extent, the amount of material used. Our employees were instructed that a certain size truckbed, level full, will hold so many tons of material. The employee would then estimate, knowing the maximum capacity of his bed, how much of a fraction of the full bed he used. This, it would appear, permitted a man to cheat by reporting an excess use of material to make his accomplishment seem greater.

Each quarter, a cost report is prepared for supervisory personnel. This cost report shows the amounts expended for materials, labor, and expenses during that quarter on each subsection. This serves not only to tell how much was spent, but to check the accuracy of the employee reporting on his subsection. That is, he might report he had used 50 tons of bituminous material when actually only 10 tons were paid for during that quarter and charged to his subsection. The men know this and realize that it

might be embarrassing if they were asked why they reported using a large amount of material when only a small amount was purchased.

The information obtained from our time cards is fed into the computer, and reports are developed at the end of each month showing how much was accomplished on each section during that month. This report shows the work accomplished in work units, the labor hours in man hours, the factor of man hours per work units, and the cost per units. Reports are furnished to supervisory personnel for each unit under their jurisdiction. A report is also furnished the supervisor which shows the work units for each crew under him. The field engineer receives the report on each of the individual crews and he can easily compare the work accomplished by each crew and thereby rate the performance of the individual crews. The district maintenance engineer receives a report showing the work accomplished in each field engineer's territory by work functions. Through this, he can determine the performance of each of the engineers. In my office, I receive a report which shows the accomplishments of each of the districts and I can thereby compare the performance of individual districts against each other.

Realizing that the workload of one section of road varies considerably with another section due to age, traffic volume, topography, and other such items, we made a physical inventory of the entire highway system. This inventory includes the lineal feet of guardrail, the number of entrances, culverts, lane miles of pavement by width, the acres of right-of-way to be mowed, width of right-of-way, and all other such individual items that make up the entire highway structure. Our maintenance sections are divided into subsections. A subsection is continuous length of a marked route within the limits of a maintenance section. A maintenance section might have only one subsection or it might have three or four. This inventory is made by subsections, and so we know what each subsection has in its maintenance requirements. Through this inventory we can evaluate the workload of one maintenance section against another, and of one field engineer's area or one district against another.

The method I have briefly described will, in time, give us a very good method of performance rating for the various maintenance crews and districts in Illinois.