ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES.
PROCEEDINGS. 42d annual convention, Portland, Maine,
May 18,19 and 20, 1966, p. 89-91.

An unfortunate situation that has confronted state highway departments for a long time has been that in many instances their highway maintenance operations were used to discharge political obligations. However, in 1961 some thirty states had most of their maintenance employees under Civil Service. Another problem is the difficulty of obtaining adequate financing for highway maintenance in competition with the heavy demands for highway construction and reconstruction.

Be that as it may, we must meet our increasing maintenance obligations. With the limits we all find that there is to the amount of money available for maintenance, we have to exert every effort to operate more efficiently and more effectively. To do this, we have to know where we are going with our program and how we are going to get there. To accomplish that, we must be able to make comparisons of the various ways we do our jobs with alternative ways. This requires measurement of what we are doing, what others do, and what we propose to do. Hence, highway maintenance must be concerned with performance standards, and this leads me to the introduction of our first panelist, Mr. F. C. Turner, who will talk on the "Development of Maintenance Performance Standards."

"DEVELOPMENT OF MAINTENANCE PERFORMANCE STANDARDS"

By

F. C. Turner, Chief Engineer
Bureau of Public Roads
U. S. Department of Commerce

The continuing rise in expenditures for highway maintenance, comprising about 25% of all expenditures for roads and streets, is of concern to us all. It increased 49% between 1956 and 1964. Total expenditures by all levels of government rose to $3.1 billion, and the Bureau of Public Roads (BPR) estimates it will continue to increase about $200 million per year. Average expenditure for maintenance per mile of highway went from $430.00 per mile in 1950 to over $800.00 in 1964.

More maintenance will be demanded in the future for the continued growth in number of vehicles and of vehicle miles traveled, wider rights of way, aging of existing highways, and an increasing amount of highways, bridges, etc. Our problem now is to keep maintenance costs from getting out

of hand while providing an adequate amount to keep the roads safe and comfortable to drive on; hence, management has a responsibility to provide and maintain adequate machinery to efficiently do the job. It must analyze and determine maintenance productivity to accomplish efficiency.

Fortunately, many studies are available to help management. Included are Highway Research Board's Special Report 65, Supplements I and II; and "Factors Influencing Tractor Mowing Operations" by BPR. The latter covers data from 8 states with emphasis on equipment, utilization, and production rates. This could be a basis for analyzing mowing operation efficiency.

Another study on highway maintenance was started in 1963 and produced cooperatively by Virginia and the Bureau of Public Roads. It is primarily concerned with planning, scheduling, and control to assure an efficient operation. Another source is nineteen reports of studies conducted under the National Cooperative Highway Research Program supported by funds from Federal-aid Highway Acts.

The needs for performance standards are so great that in 1960 AASHO organized a Subcommittee on Highway Maintenance Standards. To date it has published six information guides on the following subjects: (1) Bridge Painting, (2) Roadside Mowing, (3) Physical Maintenance of Pavements, (4) Maintenance of Shoulder and Road Approaches, (5) Maintenance of Roadsides, (6) Maintenance of Drainage.

A great aid to improve management of maintenance has been better communication facilities used increasingly and more efficiently in highway maintenance operations. Radio, automatic sensing, and other devices are doing many things to help, such as automatically reporting the start of icy conditions on highways. Radio is also valuable when wires are down in times of storms, floods, and other emergencies.

Another important item is proper acquisition, usage (including scheduling), and upkeep of equipment, and includes inventory, evaluation of need, and productivity of the different types. It is important to have realistic acquisition and retirement schedules for all equipment.

Equipment training programs and preventative maintenance are highly desirable. Labor accounts for 55% and equipment 25%, or at total of 80% of all highway maintenance costs.

Production cost studies by the BPR bear out the value of periodic detailed analysis of equipment time utilization. The use of time study procedures by a department's maintenance staff, particularly those procedures developed by the Bureau,

will increase production and decrease unit costs. Many of the Bureau's Engineers have become extremely cost conscious because of these studies pointing out the importance of eliminating lost time for production equipment. It is estimated that savings, as a result of a highway department adequately utilizing highway equipment, could equal a one cent gas tax increase to that department.

Analysis of output of equipment will show whether or not you have scheduled the right equipment and the proper amount of labor for each maintenance job. Profits, however, will not only come from greater productivity but also from using the best size equipment, equipment fleet, service shop, and the pointing out of other overhead costs that must be financed.

This kind of management, using practical analysis as a management tool, has and does pay huge dividends in highway construction and will do the same in highway maintenance. Each state is strongly urged to make its own study so as to meet its special requirements and conditions. The Bureau will endeavor to assist in the organizing of such study by any state.

The BPR is supporting efforts to decrease costs of both construction and maintenance. A major emphasis in the Bureau's national program of research and development for highway transportation will support projects directed toward reduction in construction and maintenance costs.

Maintenance is big business today requiring experience, technical capability, and management.

"MAINTENANCE REQUIREMENTS IN THE ELECTRONICS FIELD FOR MAINTENANCE COMMUNICATIONS AND FOR STRANDED MOTORISTS"

By

Robert M. Vickery, Maintenance and State Aid Engineer
Maine State Highway Commission

Maintenance communications have kept pace with the changing times. A few years ago the central office had only the telephone and the U. S. mail with which to contact its employees in the field. Radio now brings the field men and the personnel into an integrated unit. First, radio communications were set up between the offices and the supervisors in the field. Gradually, all foremen and the more important patrol vehicles were likewise equipped.