

HIGHWAY RESEARCH CIRCULAR

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COMMITTEE ACTIVITY

Committee on Maintenance and Operations Management *A3-C01*
Group 3 Council
Highway Research Board

Definitions for Terms Relating to Maintenance Management

Introduction

Between 1963 and 1967, there was an upsurge of interest in the management of highway maintenance. A number of research studies were carried out on almost every aspect of maintenance management. Many highway departments adopted the elements of new management systems. It soon became evident that the researchers and managers involved in these efforts did not always use a common language. Indeed, as many as five or six different terms were used to describe the same concept.

The Committee on Maintenance Management recognized the need to work toward a more uniform terminology for the area of maintenance management. In January 1968, a subcommittee, William N. Records, Chairman, was appointed to work on defining terms in common usage. After two years of work, the Committee voted to adopt and publish the list of definitions which are included in this Circular.



HIGHWAY RESEARCH BOARD

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* As of December 31, 1970

DEFINITIONS
FOR TERMS RELATING TO MAINTENANCE MANAGEMENT

A. MANAGEMENT

1. Activity - a specific type of work which is carried out to (a) replace an unserviceable highway physical element; (b) rehabilitate a deteriorated or unsightly element; (c) provide a service to the public or governmental agencies; or (d) support an activity which meets the criteria of (a), (b), or (c).
2. Function - a group of related activities which constitute a major component of a maintenance program (i.e., Surface Maintenance).
3. Information System - an alternate term for "Reporting System."
4. Maintenance Management System - a formal procedure which is used to plan, organize, direct, control and evaluate maintenance programs and maintenance management units.
5. Maintenance Management Unit - a component of a highway department that is responsible for carrying out specific activities in specific locations with specific resources.
6. Maintenance Organization - collectively, the management units that are responsible for carrying out the maintenance programs of a highway department.
7. Maintenance Program - a group of related functions (and their subsidiary activities) which constitute a major component of a highway department's overall program.
8. Operation - an alternate term for "Activity."
9. Performance Budgeting System - a formal procedure which is used to establish workloads, allocate resources (labor, equipment, materials, funds), schedule work and evaluate results.
10. Reporting System - a formal procedure which is used to collect, process, analyze and distribute data and information needed by the managers of a maintenance organization and its management units.

B. FACILITIES

1. Garage - an installation which (a) is used by maintenance crews for a major base of activities; (b) has substantial indoor space; and (c) may also serve as a material source or yard.
2. Material Source - a quarry, pit, plant, warehouse, stockpile or similar installation which produces or stocks a material that is either (a) transported to a work site and immediately used in activity or (b) transported to another material source and put into stock for future use.

3. Parking Area - a site which (a) is used for temporary storage of equipment units (usually overnight); (b) has no indoor space; and (c) is located on or near a roadside.
4. Shed - an installation which (a) is used by maintenance crews for a minor base of activities; (b) has minimal indoor space; and (c) may also serve as a material source or yard.
5. Shop - an installation which (a) is used for fabricating, repairing and/or servicing equipment units; (b) has substantial indoor space; and (c) may also serve as a garage, material source or yard.
6. Yard - an installation which (a) is used for storing equipment units; (b) has minimal indoor space and (c) may also serve as a material source.

C. RESOURCES

1. Attachment - a machine or mechanical device which (a) is used to carry out activities; (b) is movable; and (c) is dependent, while in use, on another machine classified as an equipment unit (i.e., a snow-plow is an attachment to a truck).
2. Crew - a group of workmen and equipment units that are assigned to carry out a specific activity at a specific work site during a specific work shift. (A crew may vary in size from hour to hour, may be divided into subgroups for multi-step activities, may shift intact to a new operation or new work site, or may be disbanded at any time).
3. Equipment Unit - a machine which is (a) used to carry out an activity; (b) movable and (c) independent or semi-independent of other machines, while in use (machines which draw power from other machines through cables, belts, hoses, etc. are classified as semi-independent).
4. Fleet - a group of equipment units assigned to a specific management unit for administrative purposes.
5. Gang - a group of workmen assigned to a specific management units for administrative purposes.
6. Material - an expendable item which: (a) is used to carry out an activity and (b) must be incorporated in a highway physical element or left in place to accomplish a desired result.
7. Supply - an expendable item which: (a) is used to carry out an activity but (b) does not have to be incorporated in a highway physical element or left in place to accomplish a desired result (a supply may be incorporated or left in place by choice).
8. Tool - a machine or mechanical device which is used to carry out an activity but which does not qualify for designation as an attachment or equipment unit.

D. PERFORMANCE

1. Accomplishment - the total number of work units which are completed for a specific activity by a specific crew or crews during a specific time period (State activity, crew identification and elapsed time; i.e., crew #106 mowed 18.7 acres during the week of July 13-19).
2. Accomplishment Rate - production divided by the number of man-hours or equipment-hours expended (State activity, crew identification, elapsed time and basis for hours; i.e., Smith County crews mowed 1.17 acres per payroll man-hour during FY 1968).
3. Productivity Rate - the number of man-hours or equipment-hours expended divided by the accomplishment (State activity, crew identification, elapsed time and basis for hours; i.e., Smith County crews averaged 0.58 hours of tractor working time per acre mowed on May 28).
4. Work Load - the total number of work units which are required (or estimated to be required) for a specific activity in specific locations during a specific time period (State operation, locations, and elapsed time; i.e., premix patching on secondary routes in Smith County will amount to 1,000 tons during FY 1970).
5. Work Method - a procedure or routine which is used by a crew to carry out an activity or step of an activity.
6. Work Unit - a quantity used as a measure of work for a specific activity (State quantity and activity; i.e., tons of patching, acres of mowing).

E. STANDARDS

1. Level of Service - an alternate term for "Maintenance Standard." Use of the term in this context is discouraged because it differs from a definition given in HRB Special Report 87, "Highway Capacity Manual 1965", p. 7.
2. Maintenance Level - an alternate term for "Maintenance Standard."
3. Maintenance Standard - a formally established criterion for a specific operation which encompasses elements usually found in Quality, Quantity and Performance Standards (a Maintenance Standard will usually provide general indications about why, where, when and how an activity will be carried out as well as expected results).
4. Performance Standard - a formally established criterion for a specific activity which (a) outlines the work involved; (b) describes work methods and composition of efficient crews; and (c) lists the expected accomplishment or productivity rate.

5. Quality Standard - a formally established criterion for a specific activity which (a) describes a deficiency, condition or schedule that establishes the need for work; (b) outlines the work involved; (c) tells how to achieve good workmanship; and (d) lists expected end results.
6. Quantity Standard - a formally established criterion for a specific activity which (a) outlines the work involved and (b) lists the number of work units which are usually required to meet the quality standards for various categories of roads.

F. COSTS

1. Activity Direct Cost - the sum of labor, equipment, material and supply direct costs that can be related to a specific activity.
2. Activity Indirect Cost - the sum of labor, equipment, material and supply indirect costs that must be prorated to a specific activity.
3. Cost - a dollar value which can be attributed to a specific service, product or activity.
4. Direct Cost - a dollar value which is the sum of expenditures that can be related to a specific service, product or activity without proration.
5. Equipment Direct Cost - a dollar value which is the sum of expenditures for fuel, lubricants, supplies, parts, service labor, repair labor, insurance, depreciation, interest on investment and other items that can be related to the service provided by a specific unit or class of equipment (operating labor is not included).
6. Equipment Indirect Cost - a dollar value which is the sum of expenditures for labor fringe benefits (retirement, leave, etc.), supervision, general shop operation, procurement and other overhead items that must be prorated to the service provided by a specific unit or class of equipment.
7. Expenditure - a charge incurred by disbursing funds, transferring funds between accounts or making an entry to show the existence of a liability.
8. Indirect Cost - a dollar value which is the sum of expenditures that must be prorated to a specific service, product or activity.
9. Labor Direct Cost - a dollar value which is the sum of expenditures for wages (including overtime), subsistence, travel and other items that can be related to the service provided by a specific employee or class of employees.

10. Labor Indirect Cost - a dollar value which is the sum of expenditures for fringe benefits (retirement, leave, etc.), training, supervision, general office operation and other overhead items that must be prorated to the service provided by a specific employee or a class of employees.
11. Material Direct Cost - a dollar value which is the sum of expenditures for purchases from suppliers, and services from outside processors and/or haulers plus direct costs for highway department labor and equipment involved in processing, handling, and/or hauling a specific lot or class of material.
12. Material Indirect Cost - a dollar value which is the sum of expenditures for supervision, general office operation, procurement and other overhead items, plus indirect costs for highway department labor and equipment involved in processing, handling and/or hauling that must be prorated to a specific lot or class of material.
13. Supply Direct Cost - similar to definition for "material direct cost."
14. Supply Indirect Cost - similar to definition for "material indirect cost."
15. Total Cost - the sum of direct and indirect costs for a specific service, product or activity.
16. Unit Cost - the direct cost, indirect cost or total cost for a specific service, product or activity divided by a measure of quantity such as total work units completed.