

## SECTION VIII--COUNTY HIGHWAY DEPARTMENT

The equipment costs are reflected through the rental rates in the Standard Equipment Cost Journal described on page 14.

The properly designed rental system will enable the highway department to establish rental rates that will reflect in hourly rates the cost of owning, repairing and operating equipment. Requirements for such a system are:

- Reporting procedures which will provide the information needed with respect to use, cost and accrued rental of each piece of equipment
- A perpetual or historical record of the individual unit to reflect accumulated cost and performance data
- A periodic comparison of equipment cost and rental charges that disclose the discrepancy between these two items, for each group of like units, and for the fleet as a whole
- A schedule of rental charges that will cover depreciation and the estimated cost of supplies and repairs. Such a schedule is generally prepared to provide a single rate for a class or group of equipment of like use, size and capacity, rather than for each individual unit of equipment. A rental computation should be made by totaling all equipment costs by class or type and dividing that total by the total number of hours of operation of all equipment within that class. It should be recognized that equipment within the same class or group could have different size or efficiency and would therefore require separate rental rates. By relating the actual cost of operation of each unit with the schedule rate for the group, a ready comparison of the economy and efficiency of each unit is obtained. This schedule should be adjusted each year on the basis of an analysis of actual cost and rental.

As discussed above, the equipment cost is a projected cost and it would be possible if needed at year end to determine the actual equipment costs of a particular project from the newly computed rental rates.

A sample format to determine actual rental rates and to project future rental rates is included as Appendix C.

### Components of Equipment Costs:

Equipment costs refers to the overall cost involved in providing the services of county-owned equipment, excluding wages and expenses of operators. This cost is composed of "direct costs," "indirect costs," and "depreciation."

- (a) Direct costs are composed of two parts, repair and operating costs. Direct costs are costs which can be identified to a particular unit of equipment.

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### 3. Equipment Identification

A permanent numerical code should be used to identify each major piece or unit of shop, construction and maintenance equipment owned by the county highway department. The number, if possible, should be permanently affixed to the unit by the use of stencils or decals to provide positive identification of the unit when assigning costs applicable to that unit of equipment.

### 4. Project Identification

Work to be completed should be identified as a specific construction, road maintenance or bridge maintenance project. After the project has been identified, related expenditures will be accumulated monthly by function and object.

### 5. Functional or Activity Accounts

Major functional accounts should be established to serve as a control for the distribution of costs. These accounts are designed to reflect in detail the exact nature of the work performed under the major headings of construction, maintenance and administration. A suggested expenditure classification by function/subfunction is shown in Appendix A. Expenditures should be recorded to the minimum at the function level, but subfunctions are provided if a greater breakdown of expenditures is desired.

### 6. Object Accounts

Records should disclose the objects of expenditures; i.e., amounts spent for personal services (salaries and wages), travel, materials, supplies, contracts, rent, utilities, etc., for each activity. By the use of object accounts, together with functional accounts, the records will reflect the exact nature of the expenditures by activities. A suggested expenditure classification by object is shown in Section II, page 55 of this manual and may be expanded, if needed, to record a more detailed breakdown of expenditures by object as shown in Appendix B.

Highway Department project costs contain the following components which will be charged to each project:

#### 1. Equipment Costs

##### Rental Systems:

Equipment records are needed to determine the actual cost of operation of each unit of equipment and to determine the actual cost per hour of its production. To reflect equipment costs in the total cost of each operation, an equipment rental system is recommended which collects the costs into accounts for individual units of equipment and then transfers them, based on the amount of service rendered, to projects, operations or road sections. Current rental rates are based on a projection of prior year actual costs. Administrative and clerical costs and their respective benefits are not included in equipment rental costs.

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- Repair cost means the cost of parts and materials installed or consumed in repairing or overhauling equipment, together with the labor expended in these operations. Also included are the costs of services performed by commercial shops.
- Operating cost means the cost of supplies consumed in operating and servicing equipment, including servicing obtained from commercial services. It includes the cost of consequential amounts of labor involved in servicing, other than that of operators on duty with the equipment. The following are typical operating cost items:

- Fuel
- Lubricants
- Grease
- Tires and tubes
- Tire repairing
- Insurance
- Expendable accessories (spark plugs, batteries, fan belts, etc.)

Direct equipment costs are posted to the Equipment Record shown in Appendix E.

- (b) Indirect equipment costs are those not identified with any particular unit of equipment, thus requiring prorating costs of all equipment benefited. The following are typical examples of indirect costs:

- Shop storage and miscellaneous costs of an overhead nature relating to the care and handling of equipment, such as:

- Utilities
- Rental and maintenance
- Replacement of expendable shop tools and small equipment
- Shop supplies
- Insurance on buildings and small equipment
- Depreciation on buildings (40 year life)

Indirect equipment costs are apportioned yearly over all equipment based on their hours of operation. Indirect equipment costs are accumulated in the Administration and Overhead Cost Journal as illustrated on page 15 before being apportioned to the Equipment Record as shown in Appendix E.

The indirect equipment costs assigned to a particular unit of equipment are determined by a ratio of hourly operation of each unit of equipment to the total hourly operation of all equipment as determined from the summary of all the individual equipment records of Appendix E. The resulting ratio, when applied to the total indirect equipment costs, provides the indirect equipment cost applicable to that particular unit of equipment. The indirect equipment costs (overhead) would be applied as follows:

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Indirect Equipment Cost Per Equipment Unit =

Hourly Operation of Each Unit of Equipment		Total
-----	x	Indirect
Hourly Operation of All Equipment		Equipment Costs
1,000 hours	\$233.33	
= ----- x \$3,500 =	Indirect Equipment	
15,000 hours	Cost for Unit No.1	

This procedure should be continued for each piece of equipment annually and should be saved in the form of a detailed worksheet as shown above. The individual indirect costs should be added to the individual equipment record for the purpose of computing future rental rates.

The actual indirect equipment cost of a specific project can be computed at year end if needed.

- (c) Depreciation is the measurement of the declining value of property due to age and wear. It is normally based on the original cost of the equipment including erection, attachments and transportation, less the estimated salvage value at the time the equipment is retired from service. This is the amount to be depreciated and will be computed using the straight-line method which distributes the cost equally over the useful life of the equipment. The original cost should equal the cash outright purchase price or should represent the cash purchase price plus the actual value of the trade-in allowed. The actual value of the trade-in allowed for new purchases should be determined by obtaining the purchase quotes/bids to include the cost, both with and without trade-in. Depreciation is computed at year end and should be added to the individual Equipment Record as per Appendix E for the purpose of computing future rental rates.

To determine depreciation allowance, the service life, expressed in years, is used to determine the period during which the amount to be depreciated of the equipment will be charged off. The amount to be depreciated divided by the years of service life will give the depreciation rate to be included in the rental charge. For example, if given an amount to be depreciated of \$12,000.00 and an estimated service life of 10 years, it would require a yearly depreciation rate of \$1,200.00 to earn its original value by the time the service life is exhausted:

Cost of Equipment	\$15,000.00
Less Salvage Value	3,000.00
	-----
Amount to be Depreciated	\$12,000.00
Divided by estimated Service Life	10 years
	-----
Depreciation Cost per Year	\$ 1,200.00/year
	=====

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Except in cases where the unit is rebuilt to extend the service life or it is damaged beyond economical repair, depreciation will not ordinarily have to be adjusted during the service life of the unit.

The depreciated value (purchase price less accumulated depreciation) of a unit of equipment will seldom equal the actual secondhand market value of the particular unit. The age, amount of use and mechanical condition will determine the resale or trade-in value, which may be greater or less than the depreciated or book value.

Depreciation is to be recognized for buildings and will be depreciated over forty years.

A table of suggested useful lives in years and salvage value percentages for equipment is shown in Appendix D.

The depreciation record can be incorporated with the Fixed Asset Record discussed in Section IV of this manual.

### Detailed Equipment Records:

In order to obtain performance and cost data on each unit, all repairs, supplies and accessories must be charged to the particular unit as they are furnished. Daily records are necessary to properly and accurately assign costs to individual units of equipment. At year end, indirect costs and depreciation expense are computed and posted to the detailed equipment records. A sample format of an Equipment Record is included as Appendix E.

## 2. Labor Costs

The salaries and expenses of equipment operators and other field employees engaged in construction and maintenance activities should be directly charged to the projects and activities on which they are assigned and recorded in the Direct Labor Journal. The distribution of these costs should show the location and exact nature of the work performed. Each report should be complete in itself and eliminate the need for additional forms for the distribution of costs. The tabulation of the costs to be charged to each road or bridge and to the work classifications may be made daily, but are generally deferred until the end of the payroll period. If the employees are covered by social security, vacation and sick leave, or have any other fringe benefits paid by the county, the total of these costs used should be accumulated through the Administration and Overhead Cost Journal at page 15 and prorated to the various work activities. For this record, administrative salaries are maintained separately and are prorated to maintenance projects. The fringe benefits paid by the county are also referred to as payroll additives or indirect labor as these costs cannot be directly applied to equipment or a specific project.

Indirect labor costs are apportioned at year end based on a percentage of total direct labor costs and are then added to equipment and project records based on individual equipment and project direct labor costs. Total direct labor costs can be determined from the

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direct payroll recorded on the journals described in this cost system. The computation of indirect labor apportioned would appear as follows:

Indirect labor ratio per project or equipment unit =

Total Indirect Labor Costs for Year Ended December 31, 19\_\_

-----  
 Total Direct Labor Cost for Year Ended December 31, 19\_\_

Indirect Labor Ratio x Direct Labor of each project or equipment = amount of Indirect Labor Cost to be applied to each project or equipment annually.

Indirect Labor Cost           \$ 17,870  
 ----- = ----- = 10.5% = Indirect Labor Ratio

Total Direct Labor Cost   \$170,000

Ratio x Direct Labor Cost of Equipment No. 1 = Indirect Labor Cost = 10.5% x \$4,000 = \$420.00

The indirect labor cost computed should be determined each year and added to the respective equipment or project record. Only those payroll additives actually paid from county highway funds should be included in determining total benefits to be distributed.

The indirect labor ratio should be used for current project reports based on the previous year and added at the completion of the project based on direct labor of the project. At year end, the actual indirect labor cost of a specific project can be computed if needed.

An acceptable alternative procedure to prorate fringe benefits to projects and equipment would be to add the hourly value of fringe benefits to the hourly salary of employees and apply them through the direct labor and indirect labor costs. For example, if an employee earns \$5.00 per hour plus \$2.00 per hour of fringe benefits, the total hourly direct and indirect salary charge would be \$7.00 per hour.

Administrative costs are apportioned at year end to all maintenance projects based on the total miles of county roads and bridges under the administrative control of the county highway department. Administrative costs are not prorated to construction projects or township projects. Under this proration, the administrative cost per mile and bridge are equal. The computation of administrative salaries apportioned would appear as follows:

Total Administrative Costs

----- = Cost Per Mile  
 Total Miles of County Roads + Number of Bridges   or Bridge

\$40,000.00

\$40,000.00

----- = \$80.00 per Mile  
 450 Miles + 50 Bridges   500 Miles and Bridges   or Bridge

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4. Administration and Overhead Cost Journal

This journal is for the purpose of accumulating administration costs, indirect equipment costs and indirect labor costs which are not identified to a particular project or unit of equipment. This journal will be summarized at year end and indirect equipment costs and indirect labor costs will be prorated to projects or equipment costs. The administrative costs will be apportioned directly to maintenance project records. The indirect labor costs applicable to projects will be posted to the project record directly and the indirect labor costs and indirect equipment costs applicable to equipment will be posted to the equipment record and then used to determine the rental rate. Information recorded in the Administration and Overhead Journal is taken primarily from time cards and vouchers.

ADMINISTRATION AND OVERHEAD COST JOURNAL

Date	Description	Administrative Costs				Indirect Labor Costs							Indirect Equipment Costs						
		Source Document	Supt. Salary	Keepers Salary	Employee Benefits	Employer Retirement	Employer Social Security	Employer Insurance	Wage Sick Leave	Wage Day Leave	Wage Vacation Leave	Other Leave	Shop Utilities	Gen. Utilities	Water	Tric	Tools	Other	
19__																			
<b>Total</b>						\$500	\$670	\$1200	\$1000	\$1000	\$3000	\$1000	\$1200	\$500	\$500	\$1000	\$500		

Note 1: Employee benefits include sick and annual leave of administration.

Note 2: Costs such as the highway superintendent's pickup cost (from equipment record) should be included at year end before distribution of costs to roads and bridges.