Chapter

VIII

SD ASSOCIATION OF COUNTY HIGHWAY SUPERINTENDENTS

Certification Manual

County Highway Department's Cost Accounting System

Section 8-County Highway Department:

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Link to full document -
https://legislativeaudit.sd.gov/
Select 'Resources', 'Counties', and then 'County Accounting Manual'. Scroll down to Section 8.
PLEASE NOTE the link directly under the manual contains 'Recent changes to the County Accounting Manual.'

COUNTY HIGHWAY DEPARTMENT

The county highway department, under the direction of the county highway superintendent, is established to construct, maintain and repair county roads and bridges. South Dakota Codified Laws (SDCL) prescribe the duties to be performed and the accounting treatment to be applied. One such law, SDCL 31-11-6, requires the highway superintendent to maintain a cost accounting system, and states, in part:

> The county highway superintendent shall keep a detailed record of the cost of any work on any section of the highway, bridge, tile, or culvert construction, repair work, or materials therefor done under his supervision by the county, by day labor and shall immediately upon the completion of each piece of work file the record with the county auditor, showing in detail the cost of all labor, materials, repairs, repair materials, hauling, inspection costs, and a proper proportion of the yearly equipment depreciation and repair charges for the county road building equipment, rental of machinery and every other item of cost....

The purpose of this section is to provide the county highway departments with a cost accounting system to allow all counties to account and report in a uniform manner.

Some of the information contained in this section was taken from the July, 1972 publication, Cost Records and Budgets, Volume II, of the National Association of County Engineers Action Guide Series, which is a recognized source of road cost accounting systems. In addition, input was received from the following seven counties for the development of this section: Union, Pennington, Codington, Roberts, Hutchinson, Corson and Custer.

COUNTY HIGHWAY DEPARTMENT - COST ACCOUNTING

Objective:

The objective of a cost accounting system for county highway departments is to provide actual cost information on work completed or projects undertaken and to enable cost estimates to be projected for current and future projects. Cost accounting records can serve as a basis for comparing the cost of your operation with others and give you the tools to understand and evaluate the expenditures incurred in relation to actual accomplishments.

Establishing Road Cost Records:

The following steps should be considered in establishing cost accounting records:

1. **Standardized Definitions**

   Uniform definitions for all functions of work should be developed and adopted so that like operations can be reported in the same way. To obtain uniformity, it is necessary to have common understanding of the meaning of the terms used.

   The normal functions of a highway department are divided into two general classes of work, construction and maintenance. Construction, in a broad sense, is to develop highways or facilities on new locations or to realign or improve the quality well above the existing highway or facility and includes the following types of work:

   - Removal of old roadbed and structures, and detour expense when done in connection with a larger construction project
   - Significant widening or realignment of an existing roadway or structure
   - Original surfacing with a material higher in quality than the adjacent roadside
   - Building flood control protective structures
   - Total reconstruction of structures or facilities to a higher quality than the original structure
   - Significant installations or extensions of curb, gutter, or underdrain
   - Significant items incidental to the improvement of a construction project as a whole

   All project work undertaken by the county highway department which is not classified as construction as defined above should be considered as maintenance. It should generally be remembered that construction costs increase the value of the highway facility and are properly added to the asset, while maintenance costs are operating expenses. Judgment must be exercised to classify projects as construction or maintenance.

2. **Road and Structure Identification**

   A simple numerical designation should be assigned to each road and road structure under the control of the county highway department as a permanent form of identification. The numerical coding used should be detailed enough to identify specific road sections and structures with a twenty foot opening or larger and should be flexible to expand to identify new roads and structures.

   A map should be prepared to show all of the roads and structures for which the county is responsible with the code designation assigned to each. The county, in addition, may wish to erect visible markers indicating the beginning of a road section, subsection or the bridge designation. If the map contains adequate identification of roads and structures, it would not

be necessary to erect markers.

Without some system of permanent identification of the site of work performed, it would be difficult to obtain accurate and comparable costs on the various types of roads.

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 construction and maintenance 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.

The equipment costs are reflected to projects 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.

- 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:

Salaries of Indirect Nature to shop
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:

Indirect Equipment Cost Per Equipment Unit =

$$\frac{\text{Hourly Operation of Each Unit of Equipment}}{\text{Hourly Operation of All Equipment}} \times \text{Total Indirect Equipment Costs}$$

$$= \frac{1{,}000 \text{ hours}}{15{,}000 \text{ hours}} \times \$3{,}500 = \$233.33$$

Indirect Equipment 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 work-sheet 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

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 percent-age 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 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, 20__

Total Direct Labor Cost for Year Ended December 31, 20__

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, **but not necessary recommended** 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 **indirect labor** 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

Therefore, a road maintenance project with 10 miles would have an administrative cost of $800.00 (10 x $80.00) and each bridge maintenance project would have an administrative cost of $80.00.

3. Material Costs

The procurement and production of materials and supplies represents one of the three major expenditures for roadwork. Therefore, it is important that accurate records be maintained of the procurement costs and uses of materials. There are two generally accepted methods of keeping material records:

- To hand all materials (except minor or local purchases) through stores or inventory accounts

- To limit purchases to immediate needs, and charge materials directly to the project or unit of equipment to be benefited

The first method has several advantages; most important, there is complete control over the procurement and use of material. It permits the purchase of materials in quantities beyond the immediate department needs with savings in unit costs through quantity buying and discounts, and the department can maintain stocks of commonly used material on hand for immediate or emergency use and often eliminate costly delays in the progress of work.

In this method, the cost of the materials and supplies are charged to stores accounts when acquired and the costs transferred to the work benefited as materials are used. This method is recommended for major purchases in all cases where the road department is in a position to take advantage of its benefits.

The second method is used where materials and supplies are obtained only as needed and are charged directly to the work on which they are used. This method is satisfactory for material for immediate use, especially repair parts or accessories for equipment. When field employees are authorized to make minor purchases for immediate use, they should be charged directly to the work to avoid carrying the costs through the inventory accounts.

As can be seen from the above, a combination of the two methods may be employed effectively. The first method produces lower costs and the second eliminates unnecessary record keeping, stockpiling and handling costs and also avoids tying up county funds in inventories.

Materials purchased for direct use require no further stock records as the purchase document charges the costs to the activity benefited.

When materials are purchased for storage, inventory records should be charged with new materials as they are received. Inventory records must reflect the quantity of materials on hand at all times. This is important to ensure that all materials moving through the stores be properly accounted for.

No materials should be withdrawn from stock without a stock issue requisition or some form of documentation, and inventory should only be accessible to authorized employees.

Materials purchased directly or consumed through the issuance of a stock order ticket are entered into the cost system through the Direct Materials Journal and the Administration and Overhead Cost Journal on pages 13 and 15, respectively.

It should be remembered that to properly record fuel usage on vehicles the equipment must be refueled and fuel consumed should be reconciled monthly with inventory.

At least annually, inventory records of materials purchased for storage should be verified by physical inventory or actual count of the stock on hand.

Materials purchased for administrative purposes and as accumulated through the Administration and Overhead Cost Journal on page 15 are apportioned annually to all maintenance projects. The administrative material costs are apportioned to county roads and bridges using the same procedure as prorating administrative salaries as explained in the

previous section.

4. **Engineering, Right-of-Way and Contract Costs**

These costs are simple straightforward costs that can be charged directly to the individual project and are entered into the system through the Miscellaneous Voucher Journal shown at page 16.

Documents that provide basic cost information are as follows:

1. **Employee Time Cards**

Employee time cards provide hours worked each day, project worked on and duties performed. The time cards are summarized and posted as direct labor to each individual project, to the Equipment Record for equipment serviced or to the Administration and Overhead Cost Journal for administrative costs which can not be directly related to a project or unit of equipment. Time should be recorded on employee time cards at the minimum to the nearest half hour increment.

2. **Equipment and Vehicle Use Report**

Equipment and vehicle use reports provide the hours or miles operated as applicable, description of work or travel and the total hours or miles for each day of operation. These documents are recorded in the individual Equipment Records shown at Appendix E and in the Standard Equipment Cost Journal shown at page 14 where the costs are accumulated and spread to various equipment and projects. The project equipment cost is computed in the Standard Equipment Cost Journal by multiplying the total hours each unit of equipment is used by the established rental rates determined from a projection of the previous year's actual cost of operation of that unit. The Equipment Rental Rate projection is illustrated in Appendix C.

3. **Stock Issue Tickets**

The stock issue tickets provide the information for recording costs of fuels, supplies and materials issued to equipment and projects. Stock issue tickets provide the source document from which materials can be directly charged to projects, or repair and operating costs can be charged to equipment which will be reflected to the project by the rental rate. Whenever items are taken from inventories a stock issue ticket should be prepared, the inventory value should be adjusted and the cost of equipment or project affected should be recorded.

4. **Vendor Billings-Vouchers**

This document is used to directly charge goods and services received to projects or equipment. This document will be used to charge the cost of goods not maintained on an inventory basis and will be used to record the value of services received, such as contracted labor.

Note: Not all vouchers prepared for the county auditor will be posted as source documents. The only vouchers posted as part of this cost record will be for goods not stockpiled as inventory and for services provided by non-county employees.

The individual source documents mentioned above provide the basic costs which must be accumulated to provide the total project costs. It is acceptable that the above source documents be combined. For example, the timesheet could possibly contain the equipment and vehicle use report information. The accumulation of costs is accomplished by recording the source documents into journals as shown on the following pages.

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1. **Direct Labor Journal**

The Direct Labor Journal facilitates the accumulation of direct labor worked by individual county employees on various projects. The journal is set up in a columnar format, listing the employee name, total hours worked, pay rate and total labor cost by project, function and object.

When a project report is required, the total direct labor costs for a particular project are recapped and posted to that project's "Project Cost Record" as shown on page 17. Information recorded in the direct labor journal is taken from time cards. A specific source document should be referenced in the direct labor journal such as a time card. Example: TC#1 = Time card number one.

DIRECT LABOR JOURNAL

Date 20__	Employee	Source Document	Hours Worked	Pay Rate	Total Cost	Hours	Project No.	Function/ Object	Amount
1/16	John Doe	TC #1	40.0	$8.00	$320.00	30	1	410-114 (Surfacing) Salary	$240.00
						10	2	510-114 (Snow-Traffic Service) Salary	

2. Direct Materials Journal

The Direct Materials Journal is for the purpose of recording materials that have been used on various projects. The source documents to record this data into the journal are the stock issue tickets and vendor billings - vouchers. This journal is again set up in columnar format showing date, type of material, source document number and amount by project, function and object.

The Direct Materials Journal is summarized periodically and the total materials used on a project is posted to the "Project Cost Record."

DIRECT MATERIALS JOURNAL

Date 20__	Material Description	Source Document	Total Amount	Project No.	Function/ Object	Amount
1/16	Gravel	Stock Issue 714	$17,000.00	1	430.351	$17,000.00
1/19	Oil	Voucher #6192	$ 2,357.00	2	443.341	$2,357.00

3. **Standard Equipment Cost Journal**

This journal is for accumulating the standard equipment costs which are allocated to individual projects. Equipment use reports are recorded in this journal to show the date, equipment used, hours, rental rate, function and the project upon which the equipment was used.

The standard equipment costs are summarized by project and the total costs are posted to the "Project Cost Record."

STANDARD EQUIPMENT COST JOURNAL

Date 20__	Equipment Description	Source Document	Total Hours	Rental Rate	Total Amount	Project No.	Hours	Function	Amount
1/16	39-6	TC #2	7.0	$12.15/hr	$85.05	1	5	510	$60.75
						2	2	510	$24.30

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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

			Administrative Costs				Indirect Labor Costs							Indirect Equipment costs					
20__	Description	Source Doc	Supt Salary	Book-keeper Salary	Employee Benefit (Note 1)	Other (Note 2)	Retirement	Empler Soc Sec	Empler Insurance	Sick Leave	Holi-day Leave	Vaca-tion Leave	Other	Shop Utili-ties	ren-tal	Utili-ties water	Elec-tric	Shop tools	Other
Total							$500	$670	$1200	$1000	$1000	$3000	$1000	$1200	$300	$300	$1000	$300	

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.

5. **Miscellaneous Voucher Journal**

This journal will be used to accumulate expenditures not related to Labor, Material, Equipment or Overhead and will consist of Engineering Costs, Right-of-Way Costs and Contracted Project Costs. The source document for these costs will be the voucher. The cost elements will be recapped periodically (monthly) for posting to the Project Cost Record.

MISCELLANEOUS VOUCHER JOURNAL

Date 20__	Description	Source Document	Total Amount	Project No.	Function/ Object	Amount
1/1	Engineering B & F	V2001	$2,500.00	1	117-281	$2,500.00
1/1	Jones Const	V2002	2,000.00	1	210-251	1,000.00
				2	210-251	1,000.00
			$4,500.00			$4,500.00

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Project Records:

Once the source documents have been recorded in the journals by project, the next step is to periodically (monthly) summarize each column to get total project costs to date per that cost dimension. These total costs are then posted to the "Project Cost Record" from the above mentioned journals.

Each type of project may have any number of individual projects. For instance, each county road must be maintained as a separate maintenance project; each bridge within the county must be a separate maintenance project. Any construction activity should be identified and have its own Project Cost Record. The summary of the project cost records could comprise the annual report submitted to the county commissioners.

A Project Cost Record could take on the following appearance:

PROJECT COST RECORD
Construction Project No. 1
or
Road Maintenance Project No. ___
or
Bridge Maintenance Project No. ___

Project Description:

Date (Month)	Total Cost	Project Costs				
		Direct Labor Journal	Direct Materials Journal	Equipment Cost Journal	Misc. Voucher Journal	Overhead Cost Journal (Year End)
January Costs	$20,800.75	$240.00	$17,000.00	$60.75	$3,500.00	-0-
February Costs						
Accumulated Costs						

When the journal postings to the individual project cost records are complete, the project cost records will show the cost of the individual projects to date.

Departmental Reports:

With current reporting and prompt summarization of information, progress reports and cost data can be prepared for any time period and for any phase of the work. Accurate, current information is particularly valuable when operating on a limited budget or on an appropriation basis. In these cases, it is imperative that you know the exact financial condition of the road department at all times to avoid an embarrassing deficit and/or a shutdown of operations. Although the county auditor may furnish expenditures and balances, at the end of the month, you should know the cost of your daily operations.

The most commonly used reports include, but are not limited to, the following:

- Progress reports on projects or operations, actual cost to date, estimated costs and quantities for completion and projected completion dates

- Unit cost reports - cost per mile, square yard, cubic yard, or other unit of measurement, of any phase of maintaining or constructing highways, such as grading, mowing, cleaning ditches, hauling material, placing surfacing material, etc.

- Manpower use - analysis of the labor used, idle time, accomplishments, and the cost of

each

- Equipment - quantity and cost of fuel, lubricants, supplies, repairs, etc., the miles of hours operated, idle time and a comparison of efficiency of different units

- Inventory controls - the quantity and cost of materials and supplies purchased, used and on hand as well as cost of handling and storage

The reports prepared will generally consist of project reports. Upon their completion, monthly reports and annual reports will be prepared summarizing a variety of cost aspects as determined from cost records.

Project Budgets:

The costs of similar operations as reflected by cost records are important in preparing estimates of the cost of proposed current and future construction programs. Accurate estimates of the cost of proposed work are a necessity if funds are to be allocated to the best advantage and avoid serious over and under runs. For these reasons, the budget can be one of the important tools of management. It can be used as an advance estimate of the cost of operations as well as a measure of progress made in operations. Estimates of proposed construction projects should be formally prepared on a Project Budget Worksheet as shown in Appendix F.

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APPENDIX A
EXPENDITURE CLASSIFICATION BY FUNCTION

HIGHWAY COSTS (Function/Subfunction)

100 ENGINEERING

110 Preliminary engineering – costs incurred well in advance of the actual construction of the project
- 111 Field engineering – **including bridge inspections**
- 112 Aerial surveys
- 113 Material investigation – **testing of stockpiles for general use**
- 114 Test borings
- 115 Traffic and speed studies on specific projects **(road counters)**
- 116 Consultant engineering
- 117 Preparation of plans, specifications and estimate

added
- **118 GPS /GIS activities**

- 119 Other costs

120 Right-of-way
- 121 Purchase of land and easements
- 122 Purchase of improvements
- 123 Salaries and expenses of appraisers
- 124 Fees of contract appraisers
- 125 Salaries and expenses of right-of-way agents
- 126 Moving of improvements **such as utilities and fences**
- 127 Damages
- 128 Legal, title insurance, court cost, recording fees
- 129 Other costs

130 Construction engineering
- 131 Field engineering and inspection
- 132 Office engineering
- 133 Consultant engineering
- 134 Material testing and inspection
- 135 Preparation of progress and final estimates and reports
- 139 Other costs

200 CONSTRUCTION - ROADS AND ROADWAY SURFACING
(new roads and roads that have been totally retrofitted)

210 Roadway Earthwork and grading
- 211 Clearing and grubbing
- 212 Excavation
- 213 Overhaul, borrow, bank sloping, and finishing-**reshaping an existing road**
- 214 Right-of-way fences (digging postholes, trenches, etc.)
- 215 Moving buildings and structures - demolition
- 216 Sub-base materials- **constructing a new road**
- 217 Wetting, rolling and compacting
- 218 Detours and traffic services during construction

219 Other costs

220 Roadway drainage and related protective structures (culverts, etc.)
- 221 Structural excavation and backfill
- 222 Corrugated metal culvert pipe **(new roads)**
- 223 Concrete culvert pipe **(new roads)**
- 224 Concrete work
- 225 Reinforcing steel
- 226 Structural steel
- 227 Storm sewers
- 228 Curb and gutters
- 229 Other costs

230 Roadway base and surface
- 231 Crushed rock surfacing
- 232 Bituminous treatment **(mat overlays)**
- 233 Bituminous road-mix
- 234 Bituminous plant-mix
- 235 Asphalt concrete
- 236 Portland cement concrete
- 237 Overhaul
- 238 Wetting, rolling and compacting
- 239 Other costs

240 Roadside development
- 241 Removal and replacing top soil
- 242 Initial seeding, sodding and planting
- 249 Other costs

250 Miscellaneous construction - functional costs
- 251
  Note: Functional classifications in this subdivision should be assigned as required
- 259 Other costs

300 CONSTRUCTION - Component major structures forming integral parts of the roadways system (bridges, etc)

310 Excavation

added
- **311 Structure excavation (including bridge removal**)
- 319 Other costs

320 Foundations
- 321 Forms
- 322 Concrete work
- 329 Other costs

330 Basic structures and superstructures
- 331 Concrete work
- 333 Structural steel
- 335 Reinforcing steel
- 339 Other costs

340 Finishing, inspecting and testing
- 349 Other costs

350 Building or installing traffic service facilities
  Note: Functional classifications in this sub-

division should be assigned as required.

359 Other costs

MAINTENANCE COSTS (Functional)

400 PHYSICAL OR GENERAL MAINTENANCE

410 Routine roadway surface operations
- 411 Patching
- 412 Blading of roads
- 413 Joint and crack filling
- 414 Dust palliatives (mag water including prepping)
- added **415 Checking roads, bridges and culverts**
- 419 Other costs

420 Special roadway surface operations
- 421 Mud jacking and undersealing
- 422 Replacing in kind (graveling, **which includes hauling, laying and loading**)
- 423 Scarifying and remixing
- 424 Bituminous treatment
- 425 Resurfacing (**chip sealing also includes brooming and tabbing**)
- 426 Protection and handling of traffic during the above operations
- 429 Other costs

430 Shoulders and side approaches
- 431 Patching
- 432 Reseeding and resodding
- 433 Bituminous resealing
- 434 Replacing in kind
- 435 Reshaping
- added **436 Reclaiming Gravel (pull shoulders)**
- added **437 New approaches**
- 439 Other costs

440 Roadside and drainage
- 441 Cuts, fills, and washouts
- 442 Drainage channels and structures (replace culverts)
- 443 Cleaning for drainage
- 444 Cleaning and repairing catchment basins
- 445 Walls, cribbing and riprap
- 446 Trees, shrubs and planting
- 447 Mowing
- 448 Reseeding and resodding
- 449 Other costs

450 Structures
- 451 Repairing and maintaining walls
- 452 Repairing and maintaining sewer and drainage systems
- 453 Repairing and maintaining tunnels
- 454 Repairing and maintaining viaducts
- 455 Repairing and maintaining dams
- 456 Repairing and maintaining overpasses
- 457 Repairing and maintaining bridges
- 458 Repairing and maintaining permanent snow fences
- 459 Other costs **(cattleguards)**

500 TRAFFIC SERVICES

510 Snow, ice and sand
- 511 Snow removal
- 512 Erection and removal of temporary snow fences
- 513 Sanding icy surfaces
- 514 Application of chemicals
- 515 Ice removal
- 516 Opening of inlets and drainage channels
- 517 Removal of sand drifts

added
- **518 Check roads for snow and ice conditions**

- 519 Other costs

520 Traffic control and service facilities
- 521 Painting of stripes and markings
- 522 Repairing, maintaining and operating traffic signs **(includes checking signs)**
- 523 Repairing and maintaining guard rails
- 524 Repairing and maintaining historical landmarks, tablets, etc.
- 525 Detours not chargeable to construction

added
- **526 911 Signing** (CY 2006)

- 529 Other costs

600 UNUSUAL OR DISASTER MAINTENANCE
Expenditures under this division will be classified according to the catastrophe or event. For example:

- 601 Floods and washouts
- 602 Tornadoes and cyclones
- 603 Sandstorms
- 604 Blizzards
- 605 Accidents
- **606 Fire support**
- 619 Other disaster or unusual maintenance

700 ADMINISTRATION, STAFF AND OVERHEAD

710 Executive administration
Salaries and expenses of the following and their clerical staffs:
- 711 Highway commission **(governing board)**
- 712 Highway superintendent **and assistant superintendent (including travel and conference costs)**
- 713 Chief engineer

720 General administration
- 721 Engineer

730 Accounting
- 731 Auditing
- 732 Cost accounting
- 733 Payroll

740 Personnel – **Including safety training, drug testing, clothing allowance and employee meetings.**

750 Purchasing

760 Legal

770 Public relations

780 Buildings and grounds
added **781 Building (heat, lights, insurance, painting and janitorial)**
added **782 Care and upkeep of grounds**

added **790 Shop Costs**
added **791 Equipment repair and maintenance (fueling of equipment)**
added **799 Other shop costs**

added **800 OTHER FUNCTIONS**

added **810 Landfill operation**

added **820 Weed and pest control (including West Nile)**

added **900 INDIRECT COSTS**

added **910 Stockpile – to aggregate costs for various stockpiles. These costs may include stripping to open a pit, reclaiming the pit, hauling, crushing, royalties and other costs that will ultimately end up as a part of the cost per unit of material.**

APPENDIX B
EXPENDITURE CLASSIFICATION BY OBJECT

100 PERSONAL SERVICES
Amounts paid to or for account of county highway officers and employees will be classified as personal services.

- 110 Regular Pay
  - 112 Highway director and county highway engineer
  - 114 Employees - not on hourly basis (excluding 112 above)
  - 116 Employees on hourly basis
- 120 Other pay (straight time)
  - 121 Overtime pay (premium)
  - 123 Vacation leave
  - 124 Sick leave
  - 125 Holiday leave
  - 126 Jury leave
  - 127 Military leave
  - 133 Compensation insurance
  - 136 Retirement benefit and pension fund costs
  - 137 Federal insurance contributions (employer's portion)

200 CONTRACTUAL SERVICES (Excluding Capital Outlay):
Payments for services rendered other than by county highway employees under either an expressed or implied contract are considered contractual services.

- 210 Communications and transportation of commodities:
  - 211 Postage (exclusive of post office box rent)
  - 213 Telephone and telegraph
  - 215 Communication charges not classified above
  - 217 Freight and express
- 220 Printing and advertising done by persons outside the highway department
  - 221 Printing
  - 223 Binding
  - 225 Duplication and reproduction
  - 226 Advertising
  - 227 Publicity and public information
  - 229 Printing and advertising not classified above
- 230 Rents and utilities
  - 231 Heat
  - 232 Electricity
  - 233 Water
  - 239 Utilities not classified above

241 Rent of buildings
242 Rent of construction and maintenance equipment
243 Rent of land other than right-of-way
244 Rent of right-of-way
245 Rent of office equipment
249 Rents not classified above

250 Repairing and servicing by persons outside the highway department
251 Repairing and servicing highways and bridges
255 Repairing and servicing buildings and grounds
259 Repairing and servicing machinery and road equipment
260 Repairing and servicing passenger cars
261 Repairing and servicing office furniture and equipment
262 Repairing and servicing engineering equipment
263 Repairing and servicing shop equipment
264 Repairing and servicing miscellaneous equipment
269 Repairing and servicing not classified above

270 Travel and subsistence
271 Private car mileage
273 Hire of passenger cars and airplanes
275 Railroad, airplane, bus and taxi fares
276 Subsistence, meals and lodging
279 Travel and subsistence not classified above (including nontravel)

280 Fees, professional and other services (other than salaries and wages)
281 Professional fees - engineering
282 Professional fees - accounting
283 Professional fees - legal
286 Recording fees, court costs, and notary fees
287 Laboratory fees
288 Appraisers and witness fees
289 Fees not classified above

290 Other contractual services
291 Dues and subscriptions
293 Laundry, dry cleaning and towel service
295 Insurance and bonds
296 Salvage, demolition and removal services
299 Contractual services not classified above

300 & 400 COMMODITIES

This category includes the costs of all materials and supplies which are consumed by use in any function including items having a short life such as tools, etc.

310 Maintenance and construction materials and supplies
311 Materials and supplies for construction and maintenance of buildings
321 Lumber (posts, pilings, etc.)

331 Signs, markers, paints and preservatives

purchased
341 Asphalt, road oil, joint fillers
351 Aggregate - material, sand, chat, stone, soil
371 Steel and other metals, hardware, nails, bolts, wire and pipe, etc.
381 Culverts
387 Fencing
391 Maintenance and construction materials and supplies not classified above

410 Equipment repair parts, supplies and accessories
411 Fuel for operation of motors and motor vehicles
415 Lubricating oils
421 Greases and transmission oils
425 Tires and tubes
427 Washing, waxing supplies, etc.
428 Accessories, chains, etc.
431 Expendable repair and replacement parts
439 Nonexpendable repair parts and accessories not included above

440 Professional and scientific supplies and materials
441 Laboratory supplies
445 Engineering supplies
451 Medical supplies
453 Photographic and reproduction supplies
455 Maps, technical and educational films and slides
459 Professional and scientific supplies and materials not classified above

460 Stationery - office supplies
461 Stationery and supplies (letterheads, envelopes, forms, office supplies, etc.)

480 Other supplies and materials
481 Janitor supplies
485 Shop supplies
489 Small tools (perishable)
491 Fuel and solvents for heating or cleaning purposes
493 Clothing - uniforms, work clothes, gloves, helmets, etc.
499 Supplies and materials not classified above

500 OTHER GENERAL EXPENSES
Under this category will be charged all other items which are not appropriately chargeable to other categories.

APPENDIX C
EQUIPMENT RENTAL RATE
For the Year Ended December 31, 20___
Class of Equipment = Truck Unit No. = P55

	Current Year Actual Cost	Rate of Projected Expenditures	Following Year Projected Cost
Supplies Used:			
Gasoline, Oil, Diesel Fuel	$ 64,808.00		
Tires, Tubes	1,527.00		
Other			
Total Supplies	66,335.00	x 105%	$ 69,652.00
Repairs:			
Parts Used	20,620.00		
Direct Labor	16,957.00		
Commercial Labor	3,158.00		
Other	68.00		
Total Repairs	40,803.00	x 105%	42,844.00
Overhead:			
Depreciation	23,833.00	x 100%	23,833.00
Indirect Labor Costs	1,984.00	x 105%	2,083.00
Indirect Equipment Costs	38,840.00	x 105%	40,782.00
Total Overhead	64,657.00		66,698.00
Total Actual Costs and Projected Costs	$ 171,795.00		$179,194.00
Actual Hours Operated and Projected	10,517 Hours		10,580 Hours
Actual & Projected Rental Rate (Total cost/hours operated)	$16.33/hour		$16.94/hour

Notes:
(1) All units of a specific class of equipment will be averaged yearly to determine a new rental rate to be applied the following year.

(2) The above example is projecting expenditures to be 5 percent greater than actual previous year expenditures except for depreciation expense which is the same.

(3) The current year actual rental rate cost may, but does not have to, be recomputed to all current year projects which used an estimated rental rate.

(4) The figures used above do not relate to any previous examples of this section.

APPENDIX D
VEHICLE AND EQUIPMENT DEPRECIATION AND SALVAGE VALUE RATES

Description	Suggested Equipment Life (Years)
Asphalt Pavers	10
Asphalt Recyler	10
Backhoe - Truck and Tractor Mounted	10
Barge-Drilling	6
Breaker-Power Asphalt	15
Broom Sweeper-Tractor Mounted	10
Broom-Power Driven	10
Broom-Traction Driven	15
Buildings - Fireproof Construction	50
Buildings - Non Fireproof Construction	33
Bus	10
Compressors	10
Concrete Groover	15
Crane-Truck Mounted	20
Digger-Derrick	15
Digger-Posthole	10
Digger-Posthole-Portable	10
Digger-Posthole-Tractor Mounted	15
Distributor	15
Drill Soils	10
Drill Wagon	10
Drill-Air Leg	5
Drill-Concrete Core Tr, Mounted	6
Drill-Portable Core	10
Drill-Soils-Truck Mounted-Self Powered	15
Dryers	15
Epoxy Injection Systems	10
Guard Rail Straightener	10
Heater Planer	10
Heater-Infrared Asphalt	10
Heater-Tank	20
Jack-Mud	20
Joint Cleaner-Tractor Mounted	15
Kettles-Tar & Kyrock	20
Ladder-Aerial Truck Mounted	15
Loader-Belt Conveyor	20
Loader-Force Feed	20
Loader-Four Wheel Drive	15
Loader-Two Wheel Drive	12
Loader-Wheel Tractor	10

SECTION VIII--COUNTY HIGHWAY DEPARTMENT

Description	Suggested Equipment Life (Years)
Mix Plants	15
Mixer	15
Mobile Testing Laboratories	5
Motor Boat (110 H.P.)	10
Motor Boat (40 H.P.)	10
Mowers-Diesel Rotary 3 Sec. Tlr.	15
Mowers-Power Sickle & Rotary	15
Mowers-Rotary	10
Mowers-Sickle	10
Passenger Carrying Vehicles	5
Patrol-Motor Grader	10
Pavement Marking Remover	5
Power Brush Machine-Joint Cleaner	8
Pump-Water	20
Roller-Pneumatic-Tire-Pull Type	10
Roller-Pneumatic-Tire-Self Propelled	10
Roller-Power	10
Roller-Sheepsfoot	10
Roller-Small-Trailer Type	10
Roller-Vibrating	10
Sand Blaster	10
Saw-Rotary-Concrete	10
Scraper-Wheel Self Propelled and Pull	10
Sealers-Joint	20
Shovel-Gas	15
Sign Machine	20
Snooper-Truck Mounted	10
Snow Drag	10
Snow Leveling Wing for Motor Grader	10
Snow Leveling Wing with Blower	10
Snow Plow-One Way & V Type	10
Snow Plow-Reversible-Expressway	10
Snow Plow-Rotary	10
Snow Plow-V Type for Motor Grader	10
Sprayers-500 Gallon & Up	10
Sprayers-Under 500 Gallon	10
Spreader-5 Cu. Yd. - Skid Mounted	10
Spreader-Sand Chip - 8' Hopper	10
Spreader-Self Powered-Chip	10
Spreader-Traction Driven	10
Spreader-Truck Mounted-5 Cu. Yd.	10
Street Sweeper-4 Cubic Yard Self Propelled	10
Striper	20

Description	Suggested Equipment Life (Years)
Tank-Booster-Truck Mounted	10
Tractor-Crawler	15
Tractor-Sprayer	10
Trailer-Large Semi	20
Trailer-Tilt Top	20
Truck - 1/2 Ton Pickup	5
Truck - 1/2 Ton Pickup (Compacts)	5
Truck - 10,000 G.V.W.	10
Truck - 24,000 to 25,000 G.V.W.	10
Truck - 3/4 Ton Pickup	5
Truck - 32,000 G.V.W. with Plow and Wing	10
Truck - 6 to 7 Ton with Plow and Wing	10
Truck - Diesel - 25,000 to 27,000 G.V.W.	10
Truck - Diesel - Tandem - 43,000 G.V.W.	10
Truck - Tandem 43,000 G.V.W.	10
Truck - Tractor Type	10
Truck-Gravel Testing Unit	10
Truck-Rotary-Snow Plow Unit	10
Welder-Portable	10

APPENDIX E
EQUIPMENT RECORD

Unit 1 Rental Rate _____ Hr

	Operating Costs													Repair Costs				Other Costs					
	Gas		Diesel		Oil		Grease		Misc		Direct Shop						Direct Shop	Indirect Equip	Depr	Accum	Indirect	Total Hours of	
Date	Gal	Amt	Gal	Amt	Qt	Amt	Lb	Amt		Hrs	Labor	Description	Cost	Hrs	Labor	Costs	Cost	Depr	Labor	Operation	Operator

APPENDIX F
PROJECT BUDGET WORKSHEET
ESTIMATED AND ACTUAL

Project No.:
Project Description:
_____
_____
_____

PROJECT COSTS:

	Estimated Cost	Actual Cost
1. Direct Labor Costs (Total man-hours x average pay rates)	$_____	$_____
2. Direct Material Costs		
(a)	$	
(b)		
(c)		
(d)	_____	
Total Direct Material Costs	_____	_____
3. Equipment Costs		
Equip. No. Hours x Rental Rate		
(a)		
(b)		
(c)		
(d)	_____	
Total Equipment Costs	_____	_____
4. Indirect Labor Costs (Previous Year Indirect Labor Ratio x Estimated Direct Labor Costs)		
5. Engineering Costs		
(a)		
(b)		
(c)	_____	
Total Engineering Costs	_____	_____
6. Right-of-Way Costs		
(a)		
(b)		
(c)	_____	
Total Right-of-Way Costs	_____	_____
7. Contracted Project Costs		
(a)		
(b)	_____	
Total Contracted Project Costs	_____	_____
TOTAL ESTIMATED AND ACTUAL PROJECT COSTS	$ ==========	$ =========

Note: The project budget worksheet is required for construction projects.

FLOWCHART OF HIGHWAY DEPARTMENT RECORDS