

COST-KEEPING SYSTEM FOR COUNTY HIGHWAY WORK*

By H. A. Sewell

Engineer, Pend Oreille County, Washington, U.S.A.

THE number and character of forms to be used in a cost-keeping system for county highway work will depend largely on the size of the county and the method of handling the superintendence of road work; but there are certain elements or principles of any such system which will apply to all cases. These elements I will group under the heads (1) Authorization of Work, (2) Reports, (3) Segregation, and (4) Summary.

Budget of Expense

The first element under authorization of work should be a well-considered budget of expense, based not upon the usual basis of "salaries or per diem," "contracts," "labor," "team work," "materials and supplies," "tools and machinery," etc., as we generally find in the county budget; but rather upon the amounts to be allowed for all these items for construction or maintenance of each particular piece of road, or bridge, whether it be by contract or day labor, and, in addition, a fixed amount for overhead for the district or county, as the case may be, which cannot properly be charged to any particular stretch of road. No one realizes more than do I the difficulties of forming a budget under our present system of county bookkeeping, but after installing the rest of a cost-keeping system it will yearly become an easier matter to formulate an adequate and well-balanced budget. After the adoption of the budget it should be rigidly adhered to, except in cases of palpable oversight or emergency.

Authorization Blanks and Work Orders

Having adopted the budget, the next element of authorization is some form of "authorization blank," "work order" or "job sheet," to be delivered to each man in charge of road work, for each individual job, by his superior in charge of district or county, as the case may be. This blank should show in more or less detail the work to be done and the amount to be allowed for the work.

Closely allied with the "work order" is the "requisition." Agreeable to local conditions, it may be issued to the job foreman by his superior, or by the foreman himself upon the authority contained in the work ordered. The principal object of the requisition is to prevent haphazard and unregulated purchase of material and machinery and to show who received such material or machinery. Needless to say, neither the "work order" nor the requisition applies to contract work, as the contract and specifications are sufficient authorization of the work and the bond protects the county.

Segregation of Expenditures

The second group of elements I have classed as reports. By this I mean the segregation of the expenditures of road money so as to show on what particular piece of road the expenditure occurred, and, further than that, if possible, the exact location and nature of the expenditure. The forms to be used for these reports, and whether they shall be daily, weekly or monthly, will again depend upon the magnitude of the work and local methods of handling the same. Another important factor in designing a report is the character, education and experience

of the person making the report; and great care must be exercised in not making it so complex as to cause either of the alternatives, no reports, or the loss of a good road boss.

The ideal place for the report would be on the claim vouchers or pay roll, as such a system would be simple and direct. Unfortunately, however, the vouchers and pay rolls used in this state are prescribed by bookkeepers and not by engineers, and no provision is made for segregation of time. Therefore, the next best scheme is to design a system of report which may be properly segregated and distributed.

The report or reports should show the work order number of the job, the names of the foremen and workmen, the location and exact nature of the work, and the number of hours working time.

In case the foreman is allowed to requisition materials or tools for his use or take some from stock, he should be required to render a memorandum report of such transactions. On contract work the inspector should make the reports. Traffic reports should be kept on all maintenance work where possible.

Distribution of Costs

There is a large group of elements to be considered under the head of segregation and distribution, as there are so many heads under which costs might be segregated. Here, however, we must follow our budget and distribute costs as nearly as possible according to the items outlined in the budget, leaving any other segregation desired as a sub-segregation under the main segregation, according to overhead and roads, to be recapitulated in the summary of costs. The reports having been made as simple as possible to be and still convey the necessary information, most of the work of segregation must be done in the office, and it may be carried as far as the accuracy of the data and the local conditions render advisable.

The first question to be decided is which items are to be considered as overhead expense and which are to be charged as road expense. It is my rule to charge every expense to overhead which cannot be directly traced to some particular road or group of roads, but is of general value to the district or county and may be (although not necessarily must be) of general use. Thus, small tools may be bought for and worn out by a patrol crew on a particular section of road, yet such tools are of general value and might be used elsewhere should occasion require, and would be charged to overhead expense, heading "Tools and Machinery." The headings and sub-headings should cover the principal items of overhead and the remaining overhead items should be carried in miscellaneous columns, adjoined by a blank column to show cause of outlay. Sometimes one claim paid will be segregated under several heads in several columns. "Materials and supplies" purchased in quantity, which will ultimately be charged direct to the several roads, should be carried in a stock account and, when used, should be charged to the respective roads and the amount credited to the stock account. The extent to which these accounts need be subheaded will depend largely on the magnitude of the work accounted.

The items of road expense chargeable to the several roads direct are easily classified into labor and materials, and the subheads are familiar to all. Here, for convenience, the entire crew's time for a certain period of time, depending on the report interval, may be entered together as segregated by the reports, checked against the pay rolls. If possible, different classes of work readily measured by units should be segregated and the

*From a paper presented July 24th at the Annual Convention of the Washington Association of County Engineers.