

unit cost entered, as well as the entire cost of the class of work and of the whole section. For contracts, the bid prices and actual costs may both be entered if desired. Engineering and inspection on any particular road should be carried in an engineering account and charged to that road or job in the yearly summary. Bridge work may well be carried in separate accounts in a bridge ledger and charged to the road on the yearly summary.

Annual Cost Summary

Having segregated the various items for future reference, the next question is as how to make use of them. This is through the summary, preferably annual. In the annual report or summary the divisions of the budget should be closely followed, so as to show whether expenses over-run or fall short of the budget. This is for the information of the general public. In addition to this a recapitulation should be prepared, if possible, for the benefit of highway engineers, showing unit costs of construction and maintenance, based upon convenient units. On maintenance the most convenient unit is probably the mile; and by use of the traffic reports a convenient unit is cost per year per mile per unit of traffic.

The report should, if possible, contain a statement of assets in the way of machinery and tools, based upon their depreciated value at that time, and the difference between this statement and the one for the year before should be subtracted from or added to the tools and machinery account under overhead expense, according as the asset value has increased or decreased. Where a piece of machinery is finally junked and its asset value gone, its entire cost should have been absorbed by the overhead account.

Cost System of Pend Oreille County

The system which I have installed in the engineer's office in Pend Oreille County is based on that provision of the law which provided that the county engineer shall keep a record of the history of each road.

The authorization blanks consist of work orders and requisitions issued by the supervisor to his respective foremen and by the engineer for permanent highway maintenance. These blanks are printed in triplicate, the stub being retained by the supervisor, the next division going to the engineer's office, and the outside blank going to the foreman. In the case of a work order he keeps it, while a requisition is turned in to the person or firm providing the material or machinery, to be attached to claim vouchers. The engineer files his for future reference. Certified copies of all contracts, of course, are filed in the engineer's office, as required by law. In some cases small jobs of day work on construction or maintenance are let out to local parties on work orders. In such cases the work order numbers and classification of labor on the pay roll are usually sufficient to properly record the work, so it is not customary to require reports on such work.

All foremen employed on more than one job are required to turn in monthly industrial labor reports showing when, where and how all work is done. While at first sight the idea of having a separate sheet for each individual may appear cumbersome, it is simple for the foreman, and affords the exact information desired. It also is easily checked against the pay roll, and in a small county, at least, is easily handled in the engineer's office by placing in a letter file for each month and segregating the various reports for entry in the ledger.

A memorandum of all tool and machinery purchases and transfers is also required of all foremen on a "Tool and Machinery" report and all materials and supplies

bought, or taken from stock, must be accounted for on "Material and Supplies" report. On jobs of magnitude a weekly report is required to keep a check on the work. On those jobs the foreman is usually competent to segregate work, or there is an inspector or engineer on the job; therefore a segregated report is required, thus saving an office segregation. We require a daily report from truck crews, not because of the fact that the magnitude of the work requires it, but because no report blank could be formulated which would show the elements required for a larger period than one day without being too complex to be kept in the field. We have the patrol system of maintenance on our main highways, and patrolmen are required to keep traffic reports for certain weeks.

A blank for the use of the supervisor is the Tool and Machinery Receipt, and, while not properly speaking a part of the cost-keeping system, a word of explanation may be proper on account of the close connection a check on tools has with the cost keeping. The receipt proper is the stub, and is kept by the supervisor after being signed by the foreman. Upon returning the tools, or otherwise accounting for them, the foreman receives his release in the return receipt. In case tools are to be reloaned the supervisor gives the man to receive the tools a reloan order in lieu of the tools, which he presents to the man possessing the tools as his authority.

Overhead and Stock Accounts

The record books employed in the county consist of Overhead Account, containing the overhead expense and stock account; a Road Ledger, in which are charged road expenditures proper; a Bridge Record, for bridge expenditure, and an Engineering Account.

The Overhead Account is a bound book, with columns to show the following items: Date, Name, Warrant, Requisition No., Cause of Outlay, Tools and Machinery (subheads, No. Units, Unit Price, New Equipment, Maintenance Old), Supervision, Insurance, Miscellaneous.

The Stock Account should really be a separate book, but we keep it in the same book as overhead to save space. It comprises four columns, besides the date, name of claimant and voucher number, namely: Material or Supply, No. Units, Unit Cost and Total Cost. If it were carried in a separate book it would be more convenient to head groups of three columns with the kinds of material and supplies and place the other items as subheads. Whenever anything is taken from stock and charged to a particular road it is credited in red ink in the Stock Account. A column is also provided on the overhead page for items allowed but unaccounted by the reports or otherwise, which we hope in time will disappear.

The Road Ledger

The Road Ledger is divided into sheets for construction and maintenance, which are arranged together for each road and placed alphabetically in the book, according to the road name. The sheets are very similar and are divided the same, except that the top of the sheet is different. The top of the construction sheet shows Character of Country, History of Road, Bridges, and Right of Way, or Damages. The top of the maintenance sheet shows Brief History of Maintenance, History of Traffic. The columns and headings are as follows: Year, Month, Section, Township, Range, Nature of Work, Width (Subgrade, Surface), Wages Per Hour (Man, Team, Foreman), Work (No. Units, Unit), Cost (Unit, Total), Material and Supplies, Powder, Caps, Fuse, Lumber, Steel, Cement, Pipe, and Blanks, all subheaded Amt., Price, Total and Grand Total, Fund, and Remarks.