WINFREY-FIXED ASSET ACCOUNTS

REPORT OF COMMITTEE ON UNIFORM HIGHWAY ACCOUNTING

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FIXED ASSET ACCOUNTS AND PROPERTY LEDGERS FOR STATE HIGHWAYS

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SYNOPSIS

Highway departments in the past have not kept detailed records of the investment in highways nor calculated the annual highway depreciation cost, either for the system as a whole or for units thereof To illustrate one method of keeping a continuous record of highway investment, two ledger forms are developed and illustrated for a typical section of highway 11 74 miles long

This section is called a "control section" and is recommended as a property unit necessary to any system of keeping a continuous record of construction investment, retirement of investment, annual depreciation, and mileage of the State system — For the control section, a graphical log is drawn to show the construction history and to aid in the determination of retirements caused by reconstruction

The ledgers are based upon highway costs items as follows, which are those tentatively recommended by the Committee on Accounting of the American Association of State Highway Officials Right of way, engineering, drainage, grading and earthwork, drainage structures, surface and base, shoulder and approach surfacing, bridge and other structures, traffic and pedestrian services, and roadside development The annual construction cost, cost retired, and existing investment are shown on the ledger for each year from the earliest con-The entries for each account item are shown in progressive totals to struction afford additional information The second ledger is for the purpose of estimating annual depreciation and the current value of the control section The general procedure of doing this is by estimating each year the expectancies of service for each item and calculating the annual depreciation and current value The adjustments which are necessary because of changing the accordingly expectancies as new conditions exist and to correct for the retirement of property before it is fully depreciated are made each year without special calculations, since they are a part of the normal procedure

Unlike many forms of industrial and utility properties, such as buildings, engines, motorized equipment, poles, pipe lines, etc., the complete highway is a type of property which is frequently acquired piecemeal, retired and replaced piecemeal, and fully retired only when sections are abandoned. Its accounting for as fixed property assets presents variable problems, the solutions for which must compromise theory and practice to a practical procedure and result

It is a new thought to keep a property

inventory of highways Highway departments in the past have been generally concerned with a receipts and disbursement statement, without attempts to record the total construction cost and present worth of a given section Usually, however, records have of road been kept showing total year by year expenditures for construction on the system, sometimes by counties Even in such cases, the amounts likely represented the expenditure from a "construction fund" without sufficient regard to

classification of accomplishment as between construction and maintenance In no State until this year has there been attempted an accounting record to show retirement of investment due to reconstruction or to show the present value of any section of road

Concurrently with the reorganization in 1936 of the Committee on Uniform Accounting of the American Association of State Highway Officials and the developments of the State-wide Highway Planning Surveys, attention and discussion were focused on evaluating the highways and setting up investment ledgers for them so as to permit of an estimate of the annual highway depreciation expense A half dozen or more States have already taken definite steps in this direction

Three difficulties may be named which have deterred the States from setting up these ledgers (1) Lack of a compilation of historical construction cost and the cost retired by relocation and reconstruction, (2) lack of a plan and procedure of maintaining the investment record; and (3) lack of a basis by which to set rates for depreciating the highways.

Answer to the first problem is found in the road life studies of the highway planning surveys, whereby the total historical cost and the original cost of existing State highways are being determined by 45 States The second problem is not at all difficult, but has not yet received attention; this paper presents one method of setting up and continuing an investment record and of estimating depreciation The third problem is being answered, too, by the road life studies, but even without the results, investment accounts could be opened with tentative rates subject to modification as judgment and experience indicate

DISCUSSION OF PROBLEMS

Before presenting a definite procedure for setting up and continuing highway investment ledgers a general discussion of the problems and considerations is offered. The principal objectives are to devise procedures to show the current highway investment and to provide for calculation of annual depreciation of highways In the discussion to follow. reference is made to a typical section of a route-herein called Adams County. Control Number 3, Section A-for which three forms have been developed Form A, Construction Project Log, is a graphical representation of the construction history on the control section Form B, Highway Investment Ledger, gives the complete record of construction expenditures, original cost of property retired, and the original cost of existing highway Form C, Highway Current Value Ledger, is arranged to show for each year the calculated depreciation expense and the depreciated value of the section

A typical section of a route, or control section, is used as the basis of discussion for it is believed that the records of investment and depreciation for a State system of highway routes can be maintained more accurately if they are kept by short sections of routes than if they are kept by long routes or for the entire system as a whole

Because of its complex physical character, a highway section is difficult to inventory on a continuous basis The investment in it is changed frequently by addition, betterment, or reconstruction in part or for the full length For inventory and investment purposes, it is desirable, though hardly practical, to keep separate record of each construction job and each retirement of property. preferably in such form that the age of all property would be known Further. in determining the investment retired upon reconstruction and the depreciated value of the existing highway it is almost beyond reasonableness to expect the engineer to furnish the required information without he first deal separately with the right of way, grading, structures, and other items This is stated as a necessary procedure for the reason that it is most difficult to estimate retirements and probable lives unless basic and individual units of property are dealt with individually

In the investment and current value ledgers submitted herewith, however, construction jobs are not kept separate by ages for the reason that attempts to do so resulted in forms too extensive in detail and too many in number On the other hand, right of way, grading, structures, and other items are separated for the convenience of the engineer

The accounts for highway investment tentatively suggested by the Committee and which are used in this paper for illustration are

- 301 Right of way
- 302 Engineering
- 303 Roadway and drainage grading and earthwork
- 304 Drainage structures, and roadway earthwork protective structures
- 305 Roadway surface and base
- 306 Improved shoulder and approach surfacing
- 307 Bridges, viaducts, grade separation structures, and tunnels
- 308 Traffic and pedestrian services
- 309 Roadside development

That part of right of way costs which is for land may not need to be depreciated because the land will probably suffer no But conservawear nor obsolescence tive practice would at least call for writing off with reasonable rapidity those extra costs due to damages, unusual legal expenses, and considerations which bring the total right of way cost above normal land values If this is followed the normal land value could be set equal to the salvage value and the extra costs considered as depreciable value and written off as annual depreciation expense For this reason the report on right of way costs should separate land from other items.

Engineering, while a construction cost item that should be reported separately, is most difficult to handle as a separate Prorations must be reinvestment sorted to time and time again in ledger Forms B and C if engineering is carried as a separate account Where bridges are retired there is no way without reference to original cost reports of determining how much of the engineering account should be retired Since the life expectancy and condition percent (value) of engineering is determined by the expectancy and condition percent of the construction work accomplished. it can be calculated for the section as a whole only by weighing all other items and assigning to engineering the com-If engineering is added to posite value the other accounts in just proportion at time of first ledger entry, many labors and uncertainties of the future are avoided. When considering investment apart from expenditures there is little, if any, justification for keeping engineering in a separate investment account

The roadway grading perhaps comes as near to being a permanent part of the highway as any part can come It probably does not depreciate because of wear and tear Functional depreciation due to obsolete line (and sometimes width and grade) accounts for almost its full loss in value and this is usually 100 percent when it does happen In view of this there is some reason for not setting up annual depreciation rates for grading but to make charges to expense only if and when retired. Such practice would result in abrupt increases in depreciation costs for given control sections when relocated, but no doubt for an entire State system the increase or decrease from year to year would be small.

In the example on Form C, grading has been usually assigned a salvage value of 50 percent and a probable life of 50 years. This practice will result in annual depreciation charges more nearly equal from

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FORM C (SHEET 1)-HIGHWAY CURRENT VALUE LEDGER 1932, 1933 1934 1932

Termini County line north to Marietta

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As of December 31, 1933

FORM C (SHEET 2)-HIGHWAY CURRENT VALUE LEDGER 1935, 1936, 1937 Termini County hne north to Marietta

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year to year and more nearly true to fact, especially in systems wherein no relocations are made in a given year as contrasted to many in another year Studies of the State experiences will aid in making decisions of how best to handle grading and all earthwork The initial procedure can be modified just as soon as field experience indicates that the ledgers do not reflect true conditions

Drainage structures bear a definite relationship to grading, except that there is deterioration with age, and perhaps less salvage value at time of reconstruction.

The surface and base are combined into one account Salvage values, retirements, and expectancies would be easier estimated were the two items separated Because of experience to date and the definite character of roadway surface and base no trouble should be experienced in handling both their retirement and depreciation, but a separation of wearing surface from base would facilitate the procedures and increase accuracy

Shoulder and approach surfacing present no particular problems because they wear out and are similar to roadway surface.

Bridge structures, if handled individually, are perhaps the easiest item to account for and usually serve long life without alteration

Traffic services present a problem insofar as the signs, markers, guard rail, etc. do not account for much investment on a single section and are normally replaced as maintenance items. Thev could be handled without annual depreciation, as long as replacements are charged to maintenance Retirements caused by reconstruction, of course, would be charged off, properly account-Any special costly ing for salvage devices, such as railroad crossing signals perhaps should be depreciated on an annual basis In the example, traffic services are depreciated at a rate about

equal to 10 years average life because in the past they have experienced high obsolescence

Whether roadside development is depreciated and at what rate seems to be a matter wholly dependent upon the character of the investment on each control section Trees and shrubs should last as long as the right of way, flowers and beautification not very long, shelters and picnic grounds probably should be depreciated rather rapidly

When it is known that the highway program calls for a certain section to be reconstructed within a definite future period, the annual depreciation cost will be somewhat equalized over the years if the expectancies and salvage values are estimated accordingly The alternate to this procedure would be to wait and take out the remaining depreciable values as a retirement expense during the year of reconstruction The former method is to be preferred and is used on Form C See Account 305 for 1932, 1933 and 1934

The procedure of applying the depreciation calculation to the original cost of the property existing at the end of the year less additions during the year is suggested for the reason that it would be wrong to take a full year's depreciation on construction added during the year and fractional years introduce an un-The plan illuswarranted refinement trated by Form C also does not apply the depreciation factor to the property retired during the year, the undepreciated value of the property retired during the year is charged directly in with "depreciation during year including adjustments" This figure is obtained by subtracting column (11) from column (12) of the previous year, thus giving directly for the identical property the difference in current value at the beginning and end of the This method eliminates the calcuvear lations to determine the undepreciated and depreciated portions of each retire-Likewise, separate calculation of ment

the amounts in the reserve against the property retired, which amounts, of course, must be taken from the reserve upon retirement of the property, is eliminated by setting the depreciation reserve balance Form C, column 14, as the difference between original cost (column 6) and current total depreciated value (column 12) The reserve, of course, must be for only that property actually in service as of the date for which the reserve is reported

The plan here proposed provides for calculation of depreciation at the end of the year Since there will be no reports which necessitate monthly estimates of highway depreciation expense this plan should be satisfactory Calculations at the end of the year, after the construction and retirements are known, facilitates the work and causes fewer entries to be made to adjust for the errors in retirement and depreciation forecasts

Other than for roadway surfaces by type and bridges individually which should be shown on supplementary Forms B and C, it is planned to carry other accounts for the control section as a whole regardless of age of the property If each contract were to be carried separately it would require much splitting and prorating of previous contracts to keep them in accord with the overlaps and changes in lengths brought about by subsequent reconstruction While the plan offered here does require adjustment in ages, it is preferred to the elaborate long list of entries that would result if each item of each contract were forever to be identified

In heu of estimating the salvage and depreciable values, longer expectancies and average lives might be used such that by the time of retirement the property would be depreciated to actual salvage value by applying the condition percent factor (rate of depreciation) directly to total original cost This plan is not recommended for the reason that It does not follow standard practice and is not in accord with the actual service lives The annual depreciation charges, however, would be comparable to those obtained by the other method, provided the average lives and salvage values were comparable

There has already arisen the question of what base to use in arriving at the investment in the present system Optional considerations are (1) original cost, (2) replacement cost based on today's prices or those of a recent period of years, or (3) a combination of original cost and replacement cost Stock and bond value or earning value, of course, cannot be used In setting up the investment, original cost is perhaps the base to use whenever records disclose the costs There are many miles of road and many structures, however, for which original cost records and dates of construction are not available For these properties, estimated investments must be used A price level as of the year the property was taken into the State system, or as of the year the investments were estimated would be reasonable

If considerable construction work exists on the control section from that completed by the county before the section was designated a part of the State system, it may be required to conduct a field inventory and valuation for the purpose of determining the present total investment.

Finally, there is the question of whether ledger Forms B and C should be set up for just those values added with State highway funds, or those added with State and other organization funds In many cases counties and cities have built up a control section which is now State highway If highway transportation costs are to be calculated, certainly the full value of the highway should be recorded, because public funds from one source or other were used For strict accounting of State highway department administration, perhaps only funds expended by it should be used It is suggested, however, that the entire value be included on Forms B and C, regardless of source of construction momes If the contributed amounts are desired to be a matter of record, separate ledgers could be carried for the purpose

CONTROL SECTIONS

In keeping an investment ledger for highway property it is necessary to decide what shall be the basic accounting This is a decision easily property unit made for buildings, land, and for most equipment, but not for the highway whose component parts are not well defined by the manner and time of rebuilding and retirement The highway section proposed by the Committee which can to advantage be used as the unit for both investment accounts and maintenance costs is the control section, which is described in the paper by The control Faltinson of Texas¹ number may be related to a legislative route number, but it, as well as the section identification, must be independent of the traffic route number and fixed at termini not likely to change Landmarks at which the sections should terminate are county lines, intersecting primary routes, large bridges, and corporate limits of cities In mountainous States it will prove desirable to break sections at the point where construction cost and grades show great change.

All construction contracts should be awarded with reference to these control sections and the final estimates reported separately for each section if the contract overlaps two or more sections

The accounting work will be more nearly exact if the sections approach

¹ Faltinson, R C Suggested control sections for a State system of highways and their use in statistical and cost records Association of State Highway Officials, Annual Meeting, Dallas, Texas, December 5-9, 1938 the shortest length likely to be changed by construction or relocation A large number of sections of 5 to 15 miles in length is preferable to a smaller number of long ones Only a given number of jobs will be completed in a year anyway, and with a large number of sections just a few accounts will need to be brought up to date each year and prorations will not be so likely as they will with long sections

The construction illustrated on Form A as Adams county, control 3, section A, does not represent in detail an actual case, but one modified to illustrate typical progressive construction as it is being encountered, and as it will be encountered with ever increasing reconstruction

Form A, construction log, is of primary value to the engineer as a means of relating one job to another within the control section limits If construction jobs always covered the full length of the section a graphic record such as this would not be so necessary It is from this record that the overlap of jobs may be visualized, that the sequence of construction stages may be related, and that the retirement of previous work may be indicated Where the right of way is relocated a new sheet should be started, at least the fact that a new line is used should be clearly indicated, otherwise it will appear that the old construction is salvaged and made a part of the new work The exact form of this log is not material; the essentials are to show all operations which add to or subtract from the investment of the section, with some detail of information as contract number, character of work, miles, width, thickness of surface and base, line and distance changes, and limits of work Addıtions and betterments should be shown regardless of whether done by contract or day labor and regardless of the fund from which paid for A map strip could be used at the top to show location and line In setting up these logs all past construction including work by counties should be plotted so that the history will be complete.

HIGHWAY INVESTMENT LEDGER

The financial record on Form B parallels the history on the construction log It should be posted when final estimates are paid, or when construction is completed under day labor work orders An accurate investment record of this type requires that all construction (which includes additions and betterments) be finaled and classified by the construction cost accounts adopted From this final cost report the added investment is posted to part 1 and accumulated to date.

When the engineer files his report on work completed he should include a similar report on previous investments destroyed or otherwise retired from Not always will it be possible use to do this on an accurate basis without additional field engineering. However, the engineer on the job is in the best position to make the estimates and should be required to do so. With the exception of grading and small drainage structures, estimates of investments retired should not prove difficult to make It is thought that the engineer, by reference to plans, the construction log, and construction costs in Form B, Part 1, can make reliable estimates of the original cost of the items retired from use without knowing the age of each item

Form B is carried at original cost which is more easily handled and records a history more valuable than would be the case if any other basis of costs were used Construction costs are carried forward in progressive totals for the reason there is administrative value in having them available In industrial and utility properties there would be no necessity of showing the total of historical expenditures, the original cost of existing property being all that would be required For the reasons previously given, the retirements are not listed by original jobs, but just in total for the year by control sections Construction entries in Part 1 when reduced by the retirements in Part 2 result in Part 3 showing the original cost of the existing improvements within the limits of the control section without regard to age or construction job

Detail description of Form B is not given for the reason that all columns are self-explanatory

The amount of descriptive detail to include on Form B, the highway investment ledger, is questionable If the construction log gives all essential details, there is perhaps little need of repeating them on Form B Further, if space is needed, Part 3 of the form could be omitted in favor of subtracting the totals of Part 2 from Part 1 and posting the results directly to Form C, column (6) Further, Form B could be arranged in three sheets instead of one as illustrated.

All previous construction should be recorded on Forms B when they are initially prepared Their continuation. however, would require entries only for the construction and retirements completed currently

HIGHWAY CURRENT VALUE LEDGER

Form C, Highway Current Value Ledger, is not presented for all years 1910 to 1937, because the procedures are amply illustrated by the years of 1932 to 1937 Again, in this form it proved too extensive and too involved to keep all items by ages, so separate contracts are combined into the nine accounts, 301 to 309, and an age assigned in column 3 which is an approximate average age It is suggested, however, that supplementary or "back up" sheets

be used for roadway surfacings when of more than one type and for bridges when more than one are on the control section While not shown herewith, these supplementary sheets were used for both Forms B and C, and found to be very For Form B the headings valuable in columns (8) to (17) are used for separate surface types and bridges, while on Form C the roadway types or bridges are entered in column (2) in place of The totals only accounts 301 to 309 on these supplementary sheets are posted to the main control section sheets In opening this ledger it would be necessary to enter the calculations for the current Nothing is to be gained by vear only computing the figures for past years

The two sheets of Form C were prepared year by year, on the basis they would have been prepared had the record actually been started in 1932. It is probable, however, that the expectancies of life used are not those that engineers would have used 1932 to 1937 so that to this extent the entries are modified on the basis of present judgment Detailed explanation and procedure

for Form C follow

Columns (1) and (2) give the highway investment accounts tentatively recommended by the Committee on Uniform Accounting The account numbers in column (1) are not recommended ones since they cannot be assigned until the highway accounting system is devised as a coordinated whole

Column (3), age in years, provides for the actual age or average age of each account on the basis of only that property included in column (8) Weighted average ages should be used Fractional years are dispensed with and (in this example) all construction is assumed to be zero years old December 31 of the year completed

The $\frac{1}{15}$ and $\frac{29}{1}$ used in columns (3) and (4) for account 305 in 1935 indicate that two surface types are involved

and the average age was not used If supplementary sheets were used, each type would be reported separately and these columns as well as column (5) could be left bank on the main ledgers

Column (4) gives the service life expectancy in years as of December 31 of the year applicable to columns (3) to (14) The expectancy applies only to the property in column (8), which does not include the retirements nor additions during the year These expectancies are determined by judgment. experience, and knowledge of the particular conditions existing on the section They should be assigned by experienced engineers, fully familiar with the stiuctural, traffic, soil, and climatic conditions on the section Retirement and road life studies such as are being conducted by the several State Highway Planning Surveys will result in valuable guides in this connection.

The condition percent in column (5) is the current depreciated value of the depreciable portion in column (10) of the existing original cost in column (8), expressed as a percentage of original In this particular example it is \mathbf{cost} figured on a straight line basis as the ratio of the expectancy (column 4) to the total probable life (column 3 plus While this straight line column 4) principle is used here as an example it is not presented as a recommendation, rather as a simple means of illustration The condition percent column would be used in the same manner regardless whether straight line, sinking fund, or present worth theories were applied

In column (6) is shown the original cost of the highway existing as of December 31 for the year concerned These figures are taken directly from Part 3 of Form B

In column (7) is recorded from Part 1 of Form B the cost of construction added during the year Column (8) is obtained by subtracting column (7) from (6)

to get the original cost of the property in service as of December 31 which also was in service January 1 of the same The same cost could be obtained vear by subtracting the retirements (Form B, Part 2) during the year from the property existing December 31 of the previous year As is pointed out later, this particular procedure is followed in order that no depreciation will be figured on construction during the year it is completed and in order that column (8) will not include the retirements during the year

Column (9) is the net salvage value of the original cost in column (8) which it is estimated will be realized at the expiration of service life. It must be estimated with due regard to the expectancy of life and conditions surrounding probable reconstruction

Column (10) is column (8) less column (9) This depreciable value is that estimated amount likely to be lost or used up during the service life and which, therefore, must be recovered through depreciation expense It is the amount which depreciates annually in value according to column (5)

Column (11) is the depreciated value on December 31 of the existing original cost given in column (8) It is calculated by multiplying the depreciable value in column (10) by the condition percent in column (5) and adding the salvage value from column (9)

In column (12) is given the current total depreciated value of the control section as of December 31 It is the sum of column (11) and column (7) Column (11), it is to be remembered, is the depreciated value at the end of the year of only that property which existed at the end of the year and also at the beginning of the year. Column (7) is the investment added during the year by new construction

Column (13) shows the depreciation expense during the year including ad-

justments which increase the amount because of retirement of property not fully depreciated and decreasing adjustments caused by increasing expectancies from those used the previous year The annual depreciation including adjustments is obtained by subtracting column (11) from column (12) in the previous year's calculation For information, the values in column (12) for December 31, 1931 are

Account 301	\$3,000
302	15,090
303	67,206
304	6,452
305	45,075
306	-
307	16,727
308	1,724
309	·
310	—
Total	\$155,274

Column (14) is the depreciation reserve balance, obtained by subtracting column (12), total depreciated value, from column (6), original cost of existing highway

The two sheets of Form C, covering 1932 to 1937, illustrate how the form and entries work out in practice. The ages and expectancies for instance, vary with both reconstruction and re-estimates of the expectancies Where the section is wholly regraded and brought up to current standards it is thought that it could be started over again at age zero regardless of amount of salvage of old grading---likewise with other accounts

The annual depreciation cost varies as follows 1932—\$7,364, 1933—\$18,191, 1934—\$45,896, 1935—\$2,662, 1936— \$11,776, and 1937—\$10,761 The increase in 1933 results from reducing the expectancy of account 305, surface and base, from 8 years in 1932 to 4 years in 1933 because of expectation then of complete reconstruction soon The very heavy increase in 1934 is caused by retirements for which adequate depreciation had not been previously taken An optimistic view prevailed in 1935 after complete reconstruction of the section for then expectancies were generally increased, causing accounts 302, 303, and 304 to show a negative annual depreciation, and the whole section a depreciation of only \$2,662 Depreciation is about constant in 1936 and 1937 and probably will remain about \$11,000 a year for the next 5 to 10 years

The entries to fiscal accounts of highway investment and highway depreciation are as follows.

	Account	Highway Invest	ment
	Date	Dr	Cr
Bal	12-1-32	\$207,789	
	6–15–34	203,705	\$91,633
	Total	411,494	91,633
Bal	12-31-34	319,861	
	8-16-36	135,167	23,374
	12-20-36	12,993	
	12-31-36	468,021	23,374
Bal	12-31-36	444,647	
Acco	unt High	way Depreciation	on Reserve

Date	Dr	Cr
Bal 12-1-32		\$59,879
12-31-33		18,191
Bal 12-31-33		78,070
12-31-34	\$91,633	45,896
Total	91,633	123,966
Bal 12-31-34		32,333
12-31-35		2,662
Bal 12-31-35		34,995
12-31-36	23,374	11,776
Total	23,374	46,771
Bal 12-31-36		23,397
12-31-37		10,761
Bal 12-31-37		34,158

The contra-entries to the credits in the highway depreciation reserve account, of course, are to depreciation expenses—a part of the annual highway cost

These two accounts are shown in total for the control section Adams 3-A without regard to the individual highway investment accounts 301 to 309. In actual practice this should be all that is required for balance sheet purposes, further, posting to fiscal accounts and general ledgers by control sections would not be to any advantage, since the totals for the system as a whole should suffice In this example, the control section is used merely as an illustration because data for the whole State system were not available

In concluding this presentation on highway control section ledgers it is mentioned that a primary purpose of this paper is to submit a procedure which may be used as a basis for discussion and additional study Mention of details is omitted and the arrangement of fiscal accounts in the general ledger and balance sheet is not discussed From study during the past two years and experience gained in designing the forms submitted with this paper, the author is confident that the keeping of ledgers for all fixed assets, including highways of State highway departments, will involve far less personnel and cost than is generally thought Once the ledgers are set up, they can be continued with but little additional work As study and discussion of possible procedures of accounting for highway property take place no doubt acceptable principles and methods will be agreed upon by the engineers and accountants

The highway investment ledgers and annual highway depreciation expense calculations will afford administrators their only source of certain information required in the determination of

(1) Whether a given section of roadway or entire route is costing more or less than the revenue earned, and the economies to be effected by reconstruction

(2) The total annual cost of operation of the State system, present and future, as a basis of calculation of the revenue required to continue the system and to prevent financial trouble (3) The annual road cost as a basis of determining what the revenue should be and its allocation to the several classes of users

(4) The highway investment and the ultimate disposal of revenue

ASSET ACCOUNTS FOR OTHER FIXED PROPERTY

While the foregoing discussion and illustrations are applied to highways only, the theory and practice apply equally well to all forms of highway department property, road machinery, automotive units, shop and office equipment, buildings, land and other fixed property investments A highway department should set up ledgers for all such properties, charging off depreciation monthly, quarterly, annually, or by the hour or mile of operation depending upon the character of the property and its Engineering equipment, bluefunction printing and duplicating machinery, all road operative units, laboratory apparatus, automotive shop equipment and service buildings are the more important types of property that should be depreciated and depreciation expense charged currently to cost accounts There are many items of shop, laboratory, and office tools or property that may be carried on inventory without depreciation, their cost being charged to expense when purchased or when retired This group of items is intermediate between expendable supplies and parts and the larger, more costly equipment Strict interpretation of cost accounting theory would require depreciation to be charged off regularly, but for practical reasons it could be dispensed with However, the items should be carried on property ledgers and their investment reported

Rates for depreciation of these properties should be determined from the experience of the department and changed as may be necessary to keep the book accounts in agreement with the actual depreciated value of the property Any cost reports of operations involving the use of fixed property are not true reports without the inclusion of depreciation as an item of expense

Individual ledgers for each unit of automotive and road equipment, machines, apparatus, and buildings are recommended When many items of like equipment are operated, a consolidated ledger also may be kept as a control upon the overall depreciation rate and experience Many of the smaller and more numerous items can be satisfactorily handled as a group on ledgers similar to Forms B and C as suggested for highways