

The Case for Capital Budgeting in the State Highway Departments

EUGENE C. HOLSHOUSER

Many opportunities exist for obtaining better highway service from the funds available for this purpose, some of which are already widely adopted. One under-utilized means of insuring more economical use of highway money is capital budgeting. Although capital budgeting is recognized by administrative specialists in both business and government as a fundamental aid to effective management, it is neglected by many State highway departments. Basically, capital budgeting is valuable because it can, and should, contribute to more orderly, systematic, and efficient road building.

NATURE OF HIGHWAY CAPITAL BUDGETING

Capital budgeting has different meanings depending on whether it is applied in municipal and state government, national government, or private industry.¹ However, the fundamental objective—that of providing a systematic means of selecting among alternative fixed property investments and of properly implementing the decision—is the same. Highway departments are concerned with the optimum investment and use of tax funds entrusted to them.

Highway capital budgeting involves, in essence, selecting a priority-based list of construction projects, carefully linking the construction program with a formal financial scheme, and carrying out the entire plan through a definite work schedule. (For purposes of this paper, buildings, shops, and land not used for highway construction, per se, are omitted. In other words, the paper is largely confined to highway construction budgeting.) Thus, the projects comprising the program, the estimated expenditure requirements, and the anticipated budgetary resources (revenue) available are included. The latter may involve estimates of support to agencies providing services to the highway department, proceeds of loans, debt service, maintenance, and administration to determine the amount available for construction work. It is to be noted that capital budgeting embodies technical planning as well as financial planning; it includes executing or carrying out, as well as formulating, the plan.

If it is to be of maximum utility, (a) the financial plan and the construction plan must be closely integrated, (b) the technical progress and the financial outlays for each project and for the whole program must be continuously known, knit together, and compared with the plan, and (c) the execution process must be an extension of program formulation—that is, another step in the over-all process.

The highway capital budget may appropriately cover a period as long as 8 or 10 years. Theoretically, the period should be of sufficient length to include the most time-consuming project from initial planning to final inspection and settlement. Although the desirable length will vary from State to State and from system to system within a state, a period of about six years may be the optimum in many states. Some of the larger projects and various types of special projects may require this much time

¹For illustrations of municipal, state, and national governmental capital budgeting see Jesse Burkhead, "Government Budgeting" (New York, John Wiley and Sons, Inc., 1956), pp. 182-211. The advantages of and problems resulting from capital budgeting in municipalities are examined in Lyle E. Schaller, "The Balance Sheet on Capital Budgeting," National Tax Journal, XIII, No. 2 (June 1960), 163-167. Capital budgeting in industry is described by Joel Dean, "Capital Budgeting" (New York, Columbia University Press, 1951).

or possibly more; for example, a 12-lane freeway being built through Seattle, Washington, will require an estimated nine years to complete.

To put highway capital budgeting in proper perspective, its relationship to the goals of highway building, needs studies, the annual operating budget, and the over-all highway management process is examined briefly.

It is often said that a highway department should secure the most highway service possible with the resources available or, alternatively stated, should attempt to maximize net social benefits. These general ideas are not very useful unless they are accompanied by more specific statements setting out the goals of highway building and alternative methods of accomplishing these goals. Such questions as these should be asked and thoroughly considered: How should the appropriate level of highway service be determined? Should additional emphasis be placed on opening up natural resource and recreational areas, or on reducing urban traffic congestion by building bypasses, or on providing better access to relatively isolated areas? In other words, goals more specific than "building and maintaining highways" are highly desirable. It is true that the specific goals of highway building must be established within the framework of the Federal-aid systems and Federal funds available for each class of highways. However, it is important for highway management to ask itself "What are we trying to do and how well are we accomplishing it?" A practical course needs to be charted in the capital budget looking toward achieving specific, agreed-on goals.

The capital budget should be buttressed by a long-range engineering and financial needs study, similar to the master transportation plan in municipalities, which seeks to look 15 or 20 years ahead and plot the highway improvement program in broad terms. This study, along with the explicit goals of highway building, establishes the guide posts for the capital budget.

Putting the capital budget into actual operation is a year-by-year process. "The capital budget can lay a course, but it is the annual budget which sails the ship." The first year of the capital budget — with projects in all phases, such as, in the location process, in engineering design, in right-of-way acquisition, under construction contract — is integrated with and becomes a part of the annual operating budget. The general budgetary apparatus as well as project reports are essential to capital budget execution. These statements emphasize the close interrelationship of the annual operating budget and the capital budget and the dependence of the latter on the former. Capital budgeting cannot be done independent of the operating budgeting machinery. Without an adequate annual operating budget, capital budgeting will almost surely be ineffective.

The capital budget is the basic management means of formulating and executing the construction program. It is interwoven with and is a product of the entire management process. Without such a budget, or something approximating it, administrators have few guides with respect to many long-range decisions. Where appropriate use is made of the capital budget, its fundamental importance to management efficiency at all operating levels seems firmly established.

UTILITY AND LIMITATIONS

Governments in the United States spend close to \$10 billion a year in building and maintaining roads and streets. Even this tremendous rate of expenditures does not nearly satisfy all needs for highway improvement. The amount of money involved and the fact that highway departments are faced with the problem of choice among alternatives make it imperative that the departments do their best to assure that highway dollars provide as much road service as possible. Often highway departments must proceed rapidly, as in 1958 when they were allowed only about eight months in which to obligate \$400 million of additional ABC funds. The establishment of construction priorities is of profound importance. When alternative road or street improvements are considered, such information as cost estimates, adequacy ratings, and estimated potential benefits is essential to selecting the optimal projects. If effective use is to be made of available resources, thorough fiscal planning is required. The fact that Federal aid is ordinarily offered by system and can be switched to a limited extent

emphasizes the importance of this type of planning. Uneconomical use of scarce funds is almost certain to occur unless the highway department has carefully prepared, well-integrated technical and financial plans.

There are several specific advantages of highway construction budgeting, and the utility of such budgeting will be augmented if the program is carefully linked with other State and local planning and is published.

With the advent of the accelerated highway improvement program in 1956, the average lead time for preconstruction activities increased. It is obvious that advance decisions must be made regardless of whether there is a plan which can be used as a guide. Since advance decisions must be made it is only logical to plan in advance. The alternative is day-to-day decisions on a road-by-road basis which result in recurring changes and crises with repetition of mistakes and unnecessary waste of valuable top management time. The importance of capital budgeting is further pointed up by the fact that errors in planning a long-term program usually have more serious and more lasting consequences than errors in planning and annual program.

Adequate capital budgeting will permit employment of all personnel engaged in highway building, without either unmanageable peak loads or unduly light work loads. The budget schedule may indicate, for example, that design work in a certain district will taper off in about a year and, at the same time, design work in a nearby district will become heavier. With this knowledge, the appropriate management personnel can arrange for transfers from one district to the other or for enlarging the design staff in one district and allowing vacancies to remain unfilled in the other. Such budgeting will facilitate adjustments to seasonal requirements, such as the economical use of construction personnel during the winter season. The result should be increased productivity. Also, management of the department will be much simpler if, rather than switching from one thing to another at a moment's notice, the planned program is followed.

Along with facilitating effective employment of manpower, departmental road machinery and equipment can be utilized more effectively. This machinery and equipment, with proper planning, can be placed at the right location at the right time. More important, if contractors and their suppliers know what the future demands of the highway department will be in terms of manpower, equipment, and supplies they can avoid shortages and can save money by planning of their own based on the published program. These economies should result in lower bids.²

A given level of highway building several years in the future will have important implications for the administrative and maintenance staffs of the highway department. In forecasting revenue available for construction, the estimated level of maintenance and administrative expenditures is established. Construction progress, especially on the Interstate System, has considerable effect on the level of maintenance expenditures because no Federal aid is available for maintaining State highways. As another example, the personnel recruiting section can base its estimate of manpower needs on the long-term budget. If this section knows with reasonable certainty what the highway personnel needs will be five years hence, it can proceed more intelligently to assure that the appropriate personnel is secured.

Outside the highway department, local governmental units, particularly municipalities, and public utilities are vitally concerned with the road program. If cities are given five or six years advance notice of highway construction in the area, local officials will have an adequate opportunity in appropriate cases to aid in location study and in any case to plan for changes in growth, zoning, dislocation, and other changes which may occur during and after construction. Where a highway improvement is projected through or near an urban renewal project, early coordination is essential if conflicts and serious delays in highway construction are to be avoided. The problems are likely to be complex and time consuming, and an adequate solution may require

²See James W. Martin, "Programming Highway Construction," Proceedings of the Kentucky Highway Conference, March 12-13, 1958 (Lexington: College of Engineering, University of Kentucky, 1958).

prolonged discussion and planning with city officials and urban renewal specialists. This situation presents an opportunity for great mutual benefit to the city and the highway user. However, full advantage cannot be taken of the situation without long-range planning by the highway department.

If the completion dates desired by the highway department are to be met, the same type of advance notice is needed by public utility officials incident to utility relocation. The utility companies need adequate opportunity and time to provide for meeting the costs, to engineer the projects, to procure material and supplies, and to fit the work into its construction schedule.

In short, satisfactory capital budgeting allows organizations and groups, both inside and outside the highway department, which will be affected by the construction programs to plan ahead. The savings in time and money produced thereby are apparent.

The experience of the few state highway departments which have published their capital budget for highway development indicates that publication can contribute considerably to fuller public understanding and support. Because of the size and complexity of the operation, the average citizen knows little, and cannot be expected to know in detail, how the highway department operates. However, lack of knowledge may be due also to an air of secrecy surrounding the plans and work of the highway department and a failure to explain well what it does choose to make public. Almost complete lack of knowledge is likely to intensify anxieties and suspicions and to encourage local jealousies and rivalries. The highway department can limit political influence on project selection by publishing its capital budget. Wise policy dictates taking advantage of an opportunity to do so.

Capital budgeting makes it possible for a highway department to spend in an economical manner all the money that is available to it. A department with such a developed process can prevent the carrying forward of large balances at a time when critical needs are apparent. Obviously, such carrying forward entails uneconomical postponement of needed construction. With proper financial planning this practice need not occur.

It appears that solution of unique problems (right-of-way acquisition, for example) and the complexity of coordinating preconstruction activities render well-developed capital budgeting peculiarly appropriate in State highway departments. Important examples of the potential benefits of a soundly conceived and executed highway capital budget have been presented. Obviously, not all possible benefits have been discussed. In summary, it might be said that the fullest development of careful, comprehensive, and continuous capital budgeting is likely to produce far better results than sketchy, haphazard, inconsistent performance. Without such budgeting neither the long-term goals of planning nor the most efficient administration is likely to be achieved.

Appropriate budgeting cannot, of course, solve all the problems involved in directing and controlling a highway department. It is no substitute, for instance, for inefficient employees. It does not, per se, solve human relation problems. However, capital budgeting can contribute indirectly to problem-solving even in these areas. It cannot be expected to work miracles; but with concomitant changes, some of which the budgeting process is helpful in bringing about, it can be extremely valuable. The major drawback is not the lack of potential of the capital budget; it is rather that the full potential is not achieved in highway departments.

IMPEDIMENTS TO EFFECTIVE CAPITAL BUDGETING

Federal legislation in 1956 provided for a vastly expanded highway modernization program. Expenditures for highway purposes today amount to almost twice those of 1955. The tooling up required and the increase in the complexity of problems to be solved has permitted little time for the development of adequate budgeting in the highway departments. The concentration on operating problems has left little time for efforts at defining the aims or goals of highway building. The highway departments have operated with such haste that faulty decisions and faulty arithmetic almost inevitably occur.³ However the lack of time and of well-developed, explicit goals are not

³Some sensational examples are presented in a rather misleading article by Karl Detzer, "Our Great Big Highway Bungle," Readers Digest, July 1960, pp. 45-51.

the most important impediments to effective capital budgeting. The major impediments appear to be (a) an inadequate concept of budgeting and (b) lack of a firm Federal-aid support policy. In order to shed light on the status of highway department capital budgeting practice, each of these obstacles will be examined in turn.

A radical and far-reaching change in budget concept occurred in the United States in the late 1930's and the 1940's. Until the early 1940's the prevailing view was that the primary function of the budget was to provide financial control — to restrict and to prevent financial irregularities. The expenditure side of the budget, although typically based on inadequate program planning, received undue attention; revenue estimating was largely ignored.

The emphasis with respect to budgeting was almost wholly negative. Budgeting was frequently considered to be the antithesis of planning. It was commonly identified with the economy movement. In its conception as an accounting or financial document, the budget was often a barrier to spending necessary amounts of money; that is, it tended to limit expenditures without consideration of the effect on work to be performed or services to be provided.⁴ Thus, in general, budgeting was associated with niggardliness rather than with planning or management. With the negative flavor of budgeting, the budget staff was classified by the various functional agencies and departments as essentially a "snooper" organization.⁵

The old concept of budgeting is now outmoded. The modern concept is that the primary utility of budgeting lies in its potential for helping management at all levels to operate more efficiently. It can be used as an effective aid to planning, administration, and policy making. Instead of being undertaken for just a few months before official approval of the budget document, budgeting has become a continuous task — a year-round business that pervades the work of all units in a department or organization.

Where practice is well developed, budgeting has become an important element of management. Priority-based construction projects and the method of financing the projects are carefully fitted into a long-term program. The first year of this program is integrated with and becomes a part of the annual operating program. A definite scheme for periodic revision of the long-range (capital) budget is devised.

No longer is the planning process primarily a matter of costs; it has become basically a problem of functional programming and management. The budget itself is a comprehensive plan for a departmental or governmental work program and is both a vital aspect and an end product of the total planning process. Budgeting facilitates the decision-making process by providing a basis for a systematic comparison among alternatives. It encourages and provides some of the tools for an increasing degree of precision in the planning process.⁶

The budget staff in many organizations is closely associated with the chief executive officer. The staff may well be composed mainly of personnel with a broad, general management outlook. Increasingly, it is realized that the appropriate function of the budget staff is service — to interpret, to present alternatives, to help regular departmental personnel toward a better understanding of budgeting, and to provide advice, but not to make decisions. Stated alternatively, the primary function of a budget staff is to provide a better basis for decision-making by regular departmental personnel.

Effective budgeting today is interwoven with and is the product of the whole management or decision-making process. In 1954, the transition was described as follows:

Any technique of management reaches maturity when, after its earlier mistakes have antagonized human beings sufficiently, it emerges with a new outlook and practice that is in harmony with the basic motivations of people. Budgeting now seems to be undergoing this metamorphosis. Out of the disturbance it has created is appearing a calmer, more orderly, more positive approach.⁷

4/ Homer D. Reed, "Budget Estimates and Justifications," *Public Management*, XLII, No. 4 (April 1960), 74.

5/ James W. Martin, "Patterns of State Budgeting," (Lexington: Bureau of Business Research, University of Kentucky, 1960).

6/ Frederick C. Mosher, "Program Budgeting: Theory and Practice." (Chicago: Public Administration Service, 1954), pp. 49-50.

7/ James L. Pierce, "The Budget Comes of Age," *Harvard Business Review*, XXXII (May-June 1954), 58.

The transition of budget concept is not complete and many of the vestiges of the old concept linger on. In recent years, especially since 1956, some of the narrowness of concept held by many State highway departments has vanished. However, it is still not well understood by the management of many highway departments that "To budget is to operate the total department function within and according to a plan"⁸ or that a budget is a "comprehensive plan, expressed in financial terms, by which an operating program is effective for a given period of time."⁹ Neither is it always understood that budgeting is a basic process of management and not just a "control device" or "financial gadget." Many directors of operating divisions in the highway department may be unable to visualize how such a process can aid them in their own work. The lack of a broad management concept of budgeting has had unfortunate repercussions in several directions. Only two types will be mentioned here.

The value of the services that can be rendered by budget staff personnel, both departmental and State agency, are often not appreciated. A typical illustration of this situation occurs when a nonmanagement-oriented engineer performs a task which needs the knowledge and skills of a professional management person. Wasted engineering talent and an inferior job are the usual results.

...engineers, in general, like many other classes of professional people, can lay no claim to management knowhow...The idea that personnel can specialize in the field of administration, just as in civil engineering, seems not to have entered the thinking of state highway department leadership in certain states.¹⁰

Many highway departments have no real budget staff — they have not acquired the appropriate personnel. Some highway departments have a reasonably good budget staff, but their talents are not properly exploited.

In most States, the notable exceptions being Delaware, New Jersey, New York, and Rhode Island, in which highways are supported wholly or primarily from the general fund, the State budget agency gives little attention to highway budgeting. There are many reasons for this: shortage of qualified personnel, lack of time, emphasis on general fund agencies, the tradition of failing to provide services for the highway department, lack of authority to do a proper job, and others. The one of most interest here is that many highway departments have not solicited state budget agency aid; in fact, many have resisted it. They have resisted it primarily because of (a) lack of appreciation for the service a qualified budget staff can render, (b) shortage of competent budget personnel, and (c) fear that some of their prerogatives will be usurped. To say that the fear of usurpation is groundless in all States would be to distort the facts. Some State budget office people are frustrated because they have no supervision over the highway department and seem willing to jump at any opportunity to get "a foot in the door." One budget officer, when asked the role of the State budget office in highway affairs, remarked, "We do nothing. We are waiting for the legislature to get fed up with the highway department, and it is getting more fed up every day." That the proper function of a budget staff is service seems to have escaped some State budget agency people. As indicated previously their proper function is to suggest, interpret, present alternatives, and advise in areas in which they have unusual competence, and to work jointly with the highway department budget staff. It is not to try to tell engineers, for example, how they should perform their assigned tasks. It is not to make decisions for highway department personnel. In order to gain prestige and the respect of the highway department, budget offices must perform excellent work of a service nature without creating human relations problems.

On the other hand, some highway departments have failed to take advantage of high caliber State budget staffs that fully realize their appropriate function. The former

8/ Charles R. Lockyer, "Project Statement: Machine Control of Construction Budgeting" (Unpublished memorandum, Kentucky Department of Highways, February 8, 1960).

9/ International City Managers' Association, "Municipal Finance Administration" (Ann Arbor, Michigan: Cushing-Malloy, Inc., 1955), p. 61.

10/ James W. Martin, "Administrative Dangers in the Enlarged Highway Program," Public Administration Review, XIX, No. 3 (Summer 1959), 166.

may, in an effort to keep the latter relatively ignorant of highway operations, withhold information or present superficial information which is largely meaningless or misleading.

The outmoded concept of budgeting has certainly contributed to the generally unhealthy relationship between highway departments and State budget agencies.

Another adverse effect of inadequate budget concept is the lack of attention to the execution phase of budgeting. The job has really only begun when the program is formulated. It requires considerable attention from management to translate construction plans into finished highways. A good plan is nearly worthless unless it can be placed in operation, and it does not go into operation automatically. It is wasteful to concoct elaborate plans if the plans do not include means of putting them into effect according to schedule. The proper execution of the budget is by no means simple. The complexity may be indicated by the fact that some departments develop reasonably good long-range plans which are revised so much they are unrecognizable when they are finally put into effect.

In some States, Federal aid amounts to almost one-half of all revenue available to the State for highway purposes. It is obviously important to efficient capital budgeting that the highway department officials know the approximate amount of Federal aid they can expect to receive in future years. Congressional action with respect to the trust fund, set up in 1956 to finance the newly accelerated highway program, makes this virtually impossible.

The Highway Revenue Act of 1956, which created the highway trust fund, was drafted with the clear knowledge that receipts of the fund would be insufficient to meet expenditures on a pay-as-you-go basis during the early 1960's. A provision was included which would authorize borrowing from the general fund to keep the program on the intended schedule. The final legislation, however, included the "Byrd amendment" which put the program on a pay-as-you-go basis and provided that if the trust fund receipts were not sufficient to meet the authorizations for the Interstate System, the apportionments would be reduced accordingly. The primary effects of this amendment were to relegate the Interstate System to the lowest financial priority, to allow erratic fluctuations in amounts of Federal funds available, and to make it impossible to proceed at the pace Congress apparently intended.

In the 1958 Federal Aid Act, additional (anti-recession) funds were authorized and the Byrd amendment was temporarily suspended. It became evident early in 1959 that revenues were not going to be sufficient to sustain the program at the planned level. As Congress searched for a solution, many States completely halted the advertising of major highway construction projects because of uncertainty regarding Federal financing. The Interstate authorization for fiscal 1961, which had been increased \$300 million to \$2.5 billion by the 1958 legislation, was reduced in the autumn to an actual apportionment of only \$1.8 billion. Reimbursement planning set limits on the amount of the available apportionments a State could obligate and still obtain prompt Federal reimbursement. Generally, this planning called for low expenditures the first two quarters of fiscal 1960 and higher expenditures the last half of the year. States which completely suspended the advertising of major construction projects during the summer and fall of 1959 found they had considerable catching up to do in the spring of 1960. It was not until June 1960 that the Bureau of Public Roads announced what amounts could be obligated during the fiscal year starting July 1960.

The cut-back in Federal funds and the accelerating and decelerating of the highway construction program have thrown construction progress off schedule and have tended to destabilize the highway construction contracting industry which finds it cannot plan ahead. (The use of Federal-aid funds for highways as an anti-cyclical device may contribute to the stability of the over-all economy.) The situation has been particularly disheartening to States which had rather carefully prepared, long-range construction plans. In some highway departments it has undoubtedly contributed to a "what's the use" philosophy. A major deterrent to long-range construction planning would be removed if the States knew with reasonable certainty the approximate amount of Federal funds for highway construction they will receive for at least a 5- or 6-year period.

It is argued in some quarters that it is useless to plan ahead in detail for 5 or 6

years because of the possibility of changed legislative policy, unforeseen economic developments, higher or lower design standards, and similar factors. It must be admitted that such factors do derange well-formulated long-term plans. However, it is pertinent to observe that long-range decisions must be made — even management by crisis involves making some decisions several years in advance, regardless of whether planning is done. The odds are that those decisions based on detailed planning and study of the alternatives will result in more efficient road building. The possible upset due to various factors can probably be minimized by the use of alternative assumptions, by planning so that forecasts and assumptions can be easily adjusted, and by making a thorough examination of the capital budget and revising, if necessary.

HIGHWAY CAPITAL BUDGETING PRACTICE

It should be clear that one does not find highly-developed capital budgeting in State highway departments. It is true that some aspects are done well in some highway departments. Generally speaking, however, highway department practice compares unfavorably with capital budgeting in municipalities and in private business.

Most highway departments have something approximating a capital construction budget. However, as of January 1960, 18 highway departments established construction priorities on their Federal-aid primary system (not including the Interstate System) for no longer than two years. Only one-third have a construction program of at least 5 years in length. Only four States have published their long-term highway capital budgets on a project-by-project basis. In order to allow everyone concerned adequate time to make plans based on the construction program and to insure that projects are completed on schedule, a capital budget covering at least three or four years should be published. The published version, of course, need not be in as great detail as that used for internal departmental purposes.

There are vast differences among States in the quality of the planning and in the resulting program. In some States, priority lists have little significance. Also, the length of the construction program changes from year to year in some States. For example, a State with a 6-year program may allow the program to dwindle to only one year before it makes a recanvass and adds five additional years of program. Such a plan is unfortunate in that it is too rigid and does not provide for the continuous evaluation of the program needed in an ever-changing society. The capital budget cannot be formulated and then forgotten. A better arrangement calls for examining the budget annually in thoroughgoing fashion with a view toward appraising the progress of the program and making revisions which are absolutely essential. At this time, the program should be extended one year to maintain the original time span.

Only one specific example of poorly-developed capital budget practice, which seems to be widespread, will be singled out here.

If budgeting is to be effective there must be a close integration of technical and financial planning. In the highway departments, technical planning and fiscal planning are not regarded as two completely separate and distinct functions; but generally speaking, neither are they integrated as closely as they should be. Most of the long-range budget formulation job (frequently referred to as "preparation of the estimates") is ordinarily done by the planning and programing staffs. The finance or administrative division usually does the fiscal planning and presents the information to the construction planners. The planners base their long-term construction program, at least loosely, on the expected revenue for future years. If the estimates are to be entirely realistic, the planning personnel and the finance people should work together very closely in establishing the construction program.

Neatly fitting each major phase of each project into the construction schedule requires a careful professional job of detailed revenue estimating. In setting up the detailed program, the people concerned require many kinds of information on fiscal affairs, some of which can scarcely be shown here. They will need detailed knowledge concerning the timing of revenue collections, of bond funds, and of Federal-aid apportionments; the appropriate cash balances; the estimated budgetary resources, including year-end balances, which will become available; and other fiscal information.

The point is that the financial planners cannot present the financial status to the construction planners and let them "take it from there." There should be such interchange of ideas and explanations between the two groups that the tentative detailed program is a joint product.

It should not, of course, be inferred that the highway budget staff, or whoever does the financial planning, usurps the prerogatives of the construction planners. The proper function of the financial planners is to explain the financial situation and point out the implications. They can be much more helpful, however, if they are acquainted with the construction planning.

There are indications that, in many States, such cooperation is not the rule. Some construction planning personnel seem to assume that they can properly interpret financial information presented to them and work out the program themselves. There are probably some exceptions, but generally this is "doing it the hard way." In addition, the later tasks of the financial planners are more difficult if they have not participated freely in the formulation of the program.

The lack of integration of technical and financial aspects is even more apparent in the execution phase. It is important that the technical progress and financial outlay for each project be closely integrated and be continuously compared with the budget. Highway department project records and practice generally do not permit the accomplishment of this objective. Highway management needs these budgetary facts, properly interpreted, on a timely basis. It needs to know, for example, all projects which fall behind schedule so that appropriate action can be taken. It needs to know quickly that cost estimates were too high or too low, so that the construction schedule can be adjusted accordingly.

State highway departments are making some headway toward developing sound capital budgeting. A few examples follow.

Three years ago, the North Carolina State Highway Commission established an Advance Planning Department which is accountable only to the Director of Highways and the Commission. The advance planning staff, with collaboration, has recently made an analysis of long-range highway needs in North Carolina. (This is a needs, not a budget, document.) The analysis was based on an estimation of adequate levels of highway service as indicated by present and anticipated traffic; land development; and economic, social, and population trends. The analysis culminated in a suggested 15-year construction priority list by 5-year periods. The list serves as a guide to future highway improvement. The Advance Planning Department is charged with working cooperatively with municipalities in developing thoroughfare plans. A comprehensive land development and thoroughfare plan is a prerequisite for future highway improvement in urban areas. The advance planning staff includes transportation planners, regional planners, specialists in geography, and a statistician. With the many disciplines available, the staff can analyze proposed projects from the point of view of economic impact on the community as well as from a strictly engineering angle.

The California Division of Highways has had since 1952 a revolving fund of \$30 million which is used for the advance acquisition of right-of-way. The purpose of the fund is to protect future highway right-of-way from expensive developments. By concentrating on parcels where building construction appears imminent, the cost of right-of-way has been reduced considerably. An estimated \$215 million has been saved through this means. It is perhaps needless to add that without a long-term construction plan, right-of-way cannot be acquired very far in advance.

The Kentucky Department of Highways is developing machine control apparatus for budget execution purposes. According to the plan, as soon as the construction budget is approved, the basic information will be recorded by the electronic data processing staff. As each project moves forward both the technical progress and the financial outlays will be posted to the project record and both will be compared with the budget. Periodic or special reports could show almost every imaginable type of information on the progress of the program. Management will have timely information constantly available. The plan calls for a program expediter in the office of the chief engineer who will be responsible for keeping the program on schedule. After receiving reports from the data processing center, this person, with budget staff collaboration, will explain the significance of the reports to the appropriate persons.

In 1957, the Michigan State Highway Department published its 5-year trunkline construction program schedule. Each project is identified, the type of work indicated, and the estimated contract award date (by quarter) given. The department wisely cautioned that the schedule could be met only if the revenue estimates prove accurate, agreement is reached with municipalities, and no serious delays are encountered in acquiring right-of-way. A work schedule form was prepared for each project in the program, and target dates for the completion of each phase of work were plotted. A performance control form shows a comparison of target dates and actual completion dates and provides the basis for analyzing progress on the various projects.

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Discussion

Livingston. — I have heard highway administrators often comment that you could spend your entire cash receipts for maintenance if you were so disposed.

This would indicate only that the size of capital improvement program is going to be the result of proposed or expected income less the fixed charges. If you tamper with the fixed charges, then you are going to give an untrue picture of the capital improvement program.

I think this is what Morf and Donnell meant when they were asking whether the capital improvement program they released for you to examine was 125 percent or 90 percent of the anticipated revenue.

Morf. — I am not sure that I know what Mr. Holshouser is speaking of when he speaks of this capital improvement program as distinguished from something that we have. He speaks of all the benefits that might flow from it, but he does not say what it is he is speaking of that we do not have.

Livingston. — I think he feels there is a certain lack somewhere in the budgetary process in the setting up of the capital improvement program.

Holshouser. — Many of the highway departments, of course, have capital budgets, or something approximating them. But I think they are all lacking to a certain extent with regard to integrating financial and construction planning and in the execution phase. In other words, they are not as comprehensive and as well planned as they might be. Many States do not have a capital budget or anything approximating one.

Morf. — I believe that no budget we have is perfect, and might be improved. I was wondering if you had anything other than that generalization to make for improvement.

Holshouser. — I was hoping to get suggestions, rather than to give them out.

Livingston. — You have investigated a number of State budgets, and they are lacking in certain respects. Is the lack in these budgets as construed in state highway departments something that results from a statutory limitation, or from an administrative limitation?

Holshouser. — I think there are many reasons for this, that is, why the States do not have comprehensive, well-planned construction budgets.

One thing is the lack of time and personnel, especially since 1956. The congressional policy with respect to Federal aid has certainly been a major concern, in that it has been used thus far as a counter-cyclical device, and plans cannot be depended upon. The States which are penalized most heavily are those which have done some advance planning. Those which have done no planning have not much difficulty in making the change.

Wilson. — How are you going to improve that? The budget will not change that.

Holshouser. — This is just something that has to be lived with. I do not know if we can expect anything different in future years or not. I think perhaps we have a public relations job, here. It seems that neither Congress nor the public generally is aware what damage this type of Federal-aid policy is doing.

Burnes. — What do you mean by a comprehensive capital budgeting plan, in terms of a 5- or 6-year rolling program versus a one-shot annual program?

Holshouser. — This is only part of it, a 5- or 6-year program which is revised at least annually and extended so that you always have the same number of years in your program. But it should be all you have. It should be prefaced by planning which takes into consideration the amount to be spent for maintenance and administration, other agencies which the highway supports, bond retirement, etc., because the funds spent for highway construction are usually considered a residual. So you have to study the entire picture before you come up with your estimate of how much will be available for highway construction during a 5- or 6-year period.

Burnes. — That is right. You get a priority of expenditures as you come down to get the amount you spend for construction.

Granum. — I subscribe to what Mr. Holshouser is attempting to do here. I think that investigation of a number of State budgets would prove his point rather conclusively. There are a number of States that have nothing resembling what we would call a capital or performance budget. They have budgets, to be sure. Many of them list items like so many dollars for labor, so much for equipment, so much for material, even, as in New Jersey, for example, down to a budget item for a new typewriter.

Now, if this is the type of budget which the highway administrators have to have by law, or the basis for the control of the functions they have to perform, then such a budget presumably is satisfactory. But I do not believe that is the kind of budget we are talking about.

Our principal job, in building highways, is to construct and to maintain them. And the performance budget is one which establishes the nature of the construction program that you desire to carry out on specific systems of roads, and a study of the available published budgets from a number of States will show that such budgets are rare.

And therefore, the control and execution of management policy remains very difficult. I would expect that your paper would elaborate in this area and try to develop, as you point out, the case for such capital performance budgets.

Holshouser. — I hope to do that, although I think it is important to keep in mind Mr. Martin's previous statement that some highway departments are just not ready for performance budgeting at this time, because they probably do not do a good job of object-type budgeting, which is much more simple. The change-over would be quite elaborate and would require a good many changes throughout the department.

Hart. — Am I to presume in this discussion that we should present to the legislature individual projects and so forth? I know that in Wisconsin, we do not like to present individual projects to the legislature. We think the administration of the money, the segregated fund, is an administrative function of the highway commission and not of the legislature. They get approval of the appropriations, but I do not think Wisconsin would go in for submitting to the legislature approval of an individual project as such.

Granum. — I did not necessarily indicate that it should be submitted to the legislature. We are talking about budgets as a working tool within the highway department, whether they are submitted or not.

Holshouser. — I think there are several lines of thought on this. Michigan, for example, publishes its 5-year budget, and this lists the various projects for the 5-year program on a project by project basis. Other States prefer not to make their program public.

Livingston. — The difficulty with this type of budget relates to projects which must be eliminated. We had a project included in a budget, the plans all developed, the right-of-way about 70 percent acquired at the time of the budgeting process, and we ran into absentee owners who were then in Europe. It was impossible to bring them to court to gain possession. At this point, in order to put the money to work, the project had to be removed from the program and another one substituted for it.

I think this is the reason that many of these men are skeptical about publishing for public distribution anything except a current year's budget.

Holshouser. — I think you have to clearly set out the bases of the program. That is, it is contingent on certain things. If these are clearly stated, as Michigan has done, you have no budget problem here.

Burnes. — You still have advantage of having it unpublished internally.

Livingston. — I am not naive enough to believe an unpublished budget does not become public knowledge.

Buswell. — We used to have a 5-year program established and published. We found out that certain promises that we had made could not be carried out because of a loss in State revenue and the fact that the price index had increased to the extent that some projects had to be dropped. People later came in and wondered why we cut out their project and not someone else's, and they gave us a great amount of trouble.

I think an unpublished budget for planning within the department is fine, but I hate to see a published budget within the department go out for 5 years in advance.

Johnson. — I am very much disturbed if our concepts of long-range programing would be limited to what has been discussed here today, because in actual fact we have not been discussing long-range programing. We have been discussing short-range programing, scheduling, and long-range budgeting. Long-range programing is a relative matter, and I have heard some States refer to their annual program as a long-range program, because they have been used to programing on a month-to-month basis.

But perhaps the answer to some of these questions that have been raised recently is the fact that this may not be the kind of a long-range program that you want to present to the public. What you want to present is perhaps some of these broader decisions in terms of routes and in terms of large sums of money to be expended to do a broad job, broken down by large areas.