

M I N U T E S

SPECIAL COMMITTEE ON SELECTED STUDIES — HOUSE

July 27 and 28, 1976
Room 510 - State House

Members Present

Representative Lynn Whiteside, Chairman
Representative Pascal Roniger, Vice-Chairman
Representative Mike Glover
Representative Rex Hoy
Representative Jim Lowther
Representative Donald Mainey
Representative Bill Reardon
Representative Frank Smith
Representative Robert Whittaker

Staff Present

Myrta Anderson, Kansas Legislative Research Department
Ramon Powers, Kansas Legislative Research Department
Mary Ann Torrence, Revisor of Statute's Office

Conferees and Others Present

Dale Daucher, General Services Administration, Washington, D.C.
Lee Moriarty, Kansas Consulting Engineers, Topeka
W.W. Smith, Division of Vehicles, Topeka
Tom Pitner, Department of Administration, Topeka
John Conard, Governor's Office, Topeka
John D. McNeal, Kansas Department of Transportation, Topeka
Paul E. Nixon, Wichita Chapter, Society of American Value Engineers
Charles D. Carey, Jr., Mechanical Contractors Association
Louis J. Krueger, State Architect, Topeka
Thomas V. Tiedeman, Public Technology, Inc., Washington, D.C.
Roger N. Wilson, WIBW, Topeka
Bernard A. Koch, WIBW, Topeka
Hilton M. Kennedy, Procurement Division, Department of Administration, Topeka
Dale E. Dugan, Kansas Department of Transportation, Topeka
Jack Turner, Secretary, Kansas Department of Transportation, Topeka

Representative Whiteside called the meeting to order at 10:00 a.m. The motion was made and seconded to approve the minutes of the June 24 and 25 meeting, as corrected. Motion carried. Representative Whiteside stated the topic under consideration for the July 27-28 meeting was value engineering. Ramon Powers, Legislative Research Department, then summarized the previous Committee deliberation on value engineering. He stated that certain issues which had come out of the discussion were:

1. The bill introduced by Representative Whittaker is to be regarded as a vehicle for discussion of the concept of value engineering, not as a final proposal.
2. Value engineering involves more than the financial incentive provisions provided in H.B. 2979. It can involve in-house procedures for improving performance, quality, maintainability, and reliability of products or services.

3. Concern was expressed by state officials about value engineering if it were applied after the design stage. Nothing would preclude a firm from designing deficiencies and later joining the prime contractor in submitting a value engineering proposal, and sharing the 50% savings. (Also it appears that H.B. 2979 would obligate the state to accept value engineering change orders initiated by the contractors.)
4. Concern was also expressed over the time frames involved in review of value engineering proposals, and questions arose over possible litigation.
5. And, questions arose as to how value engineering would affect the original bidding for contracts. By H.B. 2979, would the state be forcing contractors, etc., to engage in value engineering which they are not now presently doing?

Mr. Powers also reviewed certain basic concepts related to the study as presented in the publication, Value Management:

"Programs for Value Management may take several forms. Value studies are team efforts that may be conducted in-house under a program manager with Value Management experience. Consultants may be utilized to conduct value studies on their own or as leaders for an in-house value study team. Value Service Clauses may be inserted in system design, architect/engineer, or construction manager contracts to require firms to conduct value studies on such designs for a fixed fee. Finally, Value Incentive Clauses in large-order procurement contracts provide contractors with financial incentives to suggest cost-saving contract modifications. The several Value Management approaches can be used individually or in combination."

By using H.B. 2979 as the vehicle for our introduction to the study of value engineering, the Committee has emphasized the last form of value engineering rather than any of the others mentioned.

In defining value management, the authors of the article state that:

"Value Management is a standardized and rigorous method for studying a given set of functions in order to develop more economical, cost-effective, or resource-conserving alternative ways to perform the required functions."

Subsequently, value management functions are defined, as are cost-saving goals, and the team approach. A job plan is presented on page seven.

Finally, a quote from page seven on "Standard Methodology".

"After the study team is formed, and perhaps divided into subgroups, all available relevant data on the subject are assembled. The team then defines the study subject in terms of the functions which it performs and the sub-functions performed within it. Costs and worth figures are then assigned to each function. The original function is then carefully considered from numerous points of view and alternative methods for performing the function are conceived and evaluated. Evaluation is based on having a low cost-to-worth ratio (see P. 8). From this process a set of recommended ways to accomplish the basic function, complete with impact predictions will be developed."

Applications of value management in state government involving use of value service claims in architect/engineer and construction contracts, are presented on page nine. The value incentive clauses in large procurement contracts is described at the bottom of page ten. Applications of value management by state and local governments are described on pages 12 and 13.

In addition, Mr. Powers discussed the experience of the states of Minnesota and Pennsylvania with the concept of value engineering. In Pennsylvania value engineering is implemented through the Department of Administration. Mr. Hollar, Director of

Cost Reduction, Pennsylvania stated that \$10,000 had been appropriated for the study. In Minnesota, value engineering was not mandated by legislation but a form of "in-house value engineering" was implemented.

Representative Whittaker stated that H.B. 2979 was meant to be a vehicle to start consideration of the topic. He stated that several options exist for the basics of organization of a value management program.

1. Value Service Clause
2. In-House Program
3. Value Specialist as Consultant
4. Value Management Incentive Clauses

Chairman Whiteside then introduced Thomas Tiedeman, Manager of Building Technology at Public Technology, Inc., Washington, D.C., who presented information to the Committee on Value Management Applications in the Public Sector. (See Attachment I.)

Public Technology, Inc., (PTI) is a non-profit independent research and development group and was organized in 1971 by: International City Manager's Association; National Association of Counties; National Governor's Conference; National League of Cities; U.S. Conference of Mayors; and Council of State Governments. The governing board of PTI includes chief administrators of the founding organizations.

PTI's project areas include building technology, environmental management, municipal information systems, program evaluation, remote sensing, criminal justice, fire service equipment and planning, energy conservation, building regulation and several other areas. In developing technical solutions to problems, PTI works with state and local governments, private industry and federal agencies.

PTI is financially supported by subscriptions from member jurisdictions, federal grants and contracts and by foundations. Wichita and Overland Park are subscribing members of PTI. The goal of the experimental program (as defined in Value Management Applications in the Public Sector) was to determine the feasibility for transfer and exchange of innovative technologies for construction and building management between the Public Buildings Service and state and local governments. A direct objective of the experimental technology exchange program was to demonstrate transfer of specific technologies to state or local governments.

PTI's study of value management applications in the public sector indicated that value management has been used successfully by several jurisdictions and several of the applications reported return on investment rates of eight to one and above.

Value engineering studies conducted during a project's design phase appear to be the most frequent, and most successful, applications of value management in federal, state and local government. Use of value incentive, contract clauses, was much less common.

In a telephone interview, Robert Hutchinson, Town Manager of Plainville, Connecticut, gave his views this way:

"I was somewhat skeptical when Value Engineering was first suggested because I did not see why I should pay specialists to get this kind of advice. I thought this was what consulting engineering firms did as a regular part of their normal approach to a project. Because of inflation, our cost estimates had escalated out of sight, so we had nothing to lose. The value study came up with an estimated \$1.4 million in first cost savings off our \$7.5 million original cost estimate. The estimated annual operating budget of \$533,000 was cut nearly in half."

There is no guarantee that any value engineering program or its use on a particular project will be successful. The results for value studies during design have led to the belief that success is the rule rather than the exception. Quite surprisingly, several factors emerged with regularity during the inquiry:

1. Savings were generally five to one or better over the costs for performing the value study.
2. Ten percent savings of total construction costs were frequent.
3. About half of the recommendations first made by value study teams were not implemented for a variety of reasons.

Three major approaches can be used to implement value engineering studies during a project's design phase:

1. The project A/E is paid a separate fee to conduct value engineering studies since the A/E must perform additional services not part of the standard contract.
2. A value specialist is commissioned by the jurisdiction as a consultant to perform the necessary studies.
3. The jurisdiction devotes specific in-house resources (and this use of a specific budget line is important) to conduct value engineering studies.

The PTI study was not able to gather clear evidence that one of these approaches is better than another; each appears to be satisfactory.

Design phase value engineering studies are not without their problems. They require front-end cash outlays to pay for the study. There is no guarantee that this money will be recouped - though in each case it was, usually several times over. Finally, value studies, because they produce major recommendations for change, can often bring on hot tempers unless maintaining positive working relationships is given real attention.

Value incentive contract clauses for construction contractors have aroused much more controversy than have value studies conducted during the design phase. The most difficult problem which potentially arises involves use of pressure tactics on the public sector owner. Suppose, for example, a contractor suggests a value change proposal which can produce a major cost savings but does so by reducing project scope, project damaging aesthetics, reducing maintainability, or reducing durability. Suppose further that the owner rejects the change proposal because of its negative characteristics. One can easily imagine that the contractor has a strong financial incentive to use every pressure available to push forward his change proposal. The potential danger is one of introducing political pressure into what should be a professional decision making process.

Both the design phase and value incentive approaches to value engineering can work. These cautions on value change proposal contract clauses are not meant to imply that the contract clauses do not work or should not be used. The record of the Public Buildings Service of GSA shows that value change proposals can produce real and significant savings. There is, however, little information available on state government experience with these contract clauses. This means that great care should be exercised in developing the necessary laws, regulations, and administrative procedures.

Comments on the proposed legislation before the Committee, H.B. 2974, were as follows:

1. The value incentive contract clause approach has been demonstrated successfully in numerous construction applications for public agencies, especially for Federal agencies.
2. The incentive clause approach is not, however, the only way to implement value engineering. Value studies made during the facility design process should be seriously considered by this group. The greatest potential for positive change exists at the earliest stages of design. This is also the time when modifications to a project are made most economically and expeditiously. Numerous jurisdictions have used value studies during the design process with great success.

3. Value Engineering is a relatively young field. Its use by state and local government is still more recent. If this legislation is enacted, the legislature may wish to review, after some appropriate interval, the progress which has been made and consider suggestions for possible modification of pertinent legislation.
4. The need to economize on administrative processing of value engineering change proposals is quite real. The \$25,000 minimum savings figure given in the Bill is not necessarily the best approach to achieve this end. A number of smaller savings can cumulatively be even more important than a few large savings. The ability to submit smaller value engineering change proposals is also likely to stimulate contractor participation in this program. The key premise that must be maintained is to assure that the amount of administrative change order processing is appropriate for the size of the savings which are being proposed.
5. Value engineering change proposals will frequently involve redesigning at least some portions of the proposed facility. If a project architect/engineer under contract to the state is to review the proposed changes and to make necessary changes then it is only reasonable that the architect/engineer be compensated. In no way should value engineering change proposal become a burden on the design professional. This would seriously hinder program effectiveness. Similarly, the processing of value change proposals will require a certain amount of staff time from state agencies, perhaps requiring additional staffing.
6. A value engineering program should be designed to avoid unnecessary litigation. For this reason I recommend that this committee substitute the word "may" for the word "shall" on page 3, line 13.
7. A value engineering program seeks to reduce costs, but not at a sacrifice to facility quality, aesthetics, or maintainability. To assure that this goal is achieved, I suggest that the words "manner consistent with requirements for performance, reliability, quality and maintainability" be inserted following the comma and before the word "the" on page 3, line 12.
8. Past value engineering studies have demonstrated that Life Cycle Cost Savings - savings which accrue over a period of time - can be just as important as initial cost savings. This is especially true in terms of energy consumption. Similarly, initial cost savings which cause the state to incur substantial long term or life cycle cost increases should not be encouraged. For this reason you may wish to extend the value incentive program to include life cycle cost savings which can be recouped within a reasonable time period. You may choose to indicate a pay-back period ranging from thirty to as few as three years and may establish an appropriate schedule for contractor incentives in this regard.

Committee discussion followed.

Chairman Whiteside then called on the next conferee, Mr. Dale Daucher, Acting Director of Value Management, Public Buildings Service, Washington, D.C. Mr. Daucher directed his comments to two general areas -- the experience of the General Services Administration with value engineering and comments on the specific legislation proposed. (Attachment No. II.) He stated that the concept was used in the Navy and described his experience with the use of value engineering in Navy construction contracts. He said he had worked with Mr. Donald Parker, Director of Value Management, Public Buildings Service, GSA, in designing the program. Mr. Parker is quoted in Value Management as stating:

"Value management works. It has given excellent results for GSA and many other groups. Top level management commitment is the key ingredient in a successful VM program. It takes both personal and financial investment risk to bring about the desired return."

Mr. Parker started the process of value engineering by using a one-page clause in contracts. By 1971, both Arthur Sampson and Donald Parker had devoted time and effort to the concept and had started to implement the methodology. They started by building in-house programs and holding workshops of 200-250 people. Then the concept would be applied to a specific project. Mr. Daucher gave specific examples of value engineering projects in Ft. Lauderdale, Florida (hot and cold faucets); Harrisburg, Pennsylvania (parking, etc.); Portland, Oregon (federal office building); Boston, Massachusetts (judges' chambers).

He stated that in Portland the decision was made to change from reinforced concrete to structural steel. The building was completed within the time span and there was a substantial cost saving (approximately \$130,000). In Boston the decision was made to have free-standing bookcases bolted to the walls rather than built-in walnut cabinets in the judicial chambers. This resulted in a savings of approximately \$2,500.

For life cycle costs a ratio has been arrived at of sharing cost savings on contracts -- 30% subcontractor; 30% prime contractor; 40% government. On the federal government level, the Environmental Protection Agency is also interested in value engineering and has implemented it in their grant sharing program. The only litigation that Mr. Daucher knew of involved with value engineering has been with the Corps of Engineers.

In the Committee discussion which followed Mr. Daucher's comments, the question arose as to whether the legality of change orders initiated under value engineering had been questioned. Mr. Daucher stated to his knowledge there had been no problems involved. There was a \$1,000,000 change involved with the South Portal Building in Washington, D.C., in a change from two and one-half inches polished marble to black concrete finished. This amounted to approximately a \$500,000 savings to the taxpayer. By far the biggest savings in value engineering is in the design phase. After Committee discussion, Chairman Whiteside adjourned the meeting for lunch.

Afternoon Session

Chairman Whiteside then introduced Mr. Louis J. Krueger, State Architect, who briefly reviewed the process of contract letting and evaluation. He stated that he felt value engineering was a good approach if it could be implemented on an in-house voluntary basis. However, problems might arise in the change order procedure. If, for example, there were \$350,000 remaining in a project in construction contingency funds, would the Architectural Division have the authority to tell a user agency that it could not spend the money? Also what happens to the savings that come to the state? It is well to remember that the contractor is in business for one motive -- profit. Also it is well to remember that if there is criticism on a project the architect is usually the one who gets the blame and not the contractor. If, for example, one looks at every change order with the dollar sign in mind, one must also be careful that the product is not cheapened.

Mr. Krueger stated that, as has been mentioned previously, there are several options in the value management procedure: value service clauses, in-house programs, hire value engineers as consultants prior to receiving bids. Mr. Krueger stated that he was in favor of fighting the growing bureaucracy in any way that could be done. His definition of value engineering is a group of experts, i.e., engineers who adopt a boiler-room technique to save money without sacrificing function, utility or operating costs.

Any type of value engineering is going to involve some increase in staff. For example, the Architectural Services has one person who works full-time with an associate architect to be sure that he stays within the job requirement. If this person were to do value engineering his workload would stack up. Mr. Krueger stated that he was glad the Committee saw some of the limitations in the implementation of value engineering.

There is sometimes a considerable spread in bids on construction contracts. On the Youth Center at Atchison, for example, the bids were: \$73,400; \$89,000; \$185,000. The way the Architectural Services interpreted the bidding process was that the low bidder wanted the work.

One recent design called for a special shape of brick, which meant the bricks would have to be molded to shape. The department decided that the cost of making a special shape of brick was too much considering the value to the project so the special shape of brick was not used. In this sense, there is already a form of in-house value engineering going on but the manpower and the time does not exist to implement it before the budgeting process. One should also be sure that the facility does not have to sacrifice function or utility in implementing value engineering. It is well to remember that the contractor that bids the lowest may be the most difficult to work with.

In response to questioning, Mr. Krueger indicated that it would be beneficial to implement value engineering provided the department was given a time frame to work with in getting buildings built and a way of satisfying the user agencies. He suggested that perhaps the procedure would be to take two or three test projects, hire outside consultants and see what the results were. He stated that perhaps the amount to be saved would be equivalent to the value engineering fee.

Mr. Krueger stated that there is a committee that selects the associate architect which consists of the Director of the Budget Division, the director of the division having control of the user agency and the head of the user agency. If the building were one in the higher education field, for example, the committee would be: the Chancellor, a representative of the Board of Regents, and Mr. Bibb.

There are no less than three and no more than five architectural firms bidding on the contract and there is negotiation for the fee. The Purchasing Department then selects the contractor, which is always the lowest bidder. The bid is turned over to the Purchasing Department then to the Architectural Services, to the user agency for recommendation and then the Purchasing Department makes up and awards a contract. The Purchasing Department selects the general contractor, mechanical contractor, electrical contractor, etc.

During Committee discussion, Mr. Krueger indicated it might be practical for value engineers to be employees of the state but that this procedure might not produce the greatest savings. In some Japanese electronic firms, for example, he stated the firms hire a value engineer. When the engineer has saved twice his salary they hire another value engineer to do another project, etc. In a discussion of the range of fees charged by value engineers, it was indicated that the range is from one-half of 1 percent of construction costs to around \$20,000 on a contract of \$2,000,000. Sometimes the fee is as low as \$6,000 for some reasonable size buildings.

Chairman Whiteside then introduced, Mr. Milton Kennedy, Procurement Division, Purchasing Division, as the next conferee. Mr. Kennedy stated that no one could disagree with the concept of value engineering in theory but he did not feel that it had practical application with letting contracts in Kansas. He said he felt the federal government procedures used in the ballistic missile project contracts in the Department of Defense were completely different from procedures used in state government purchasing. By the time the bid process is started on the state level the design phase is completed. The state government does not have the staff expertise or data base to evaluate contracts during the bidding process.

The Law Enforcement Assistance Act gave a grant of \$500,000 to develop a model procurement code. The Bar Association and other groups had considerable in-put on the Committee. The end result was 26 volumes which the staff worked two years to develop. Only section 17 deals with value engineering and incentive clauses. Mr. Kennedy stated he felt there was too much potential for abuse in the value engineering concept. He said he felt there was a difference between "competitive firm fixed price contracts" and "competitive negotiated contracts" and "advertised" and "negotiated" contracts. Value engineering might be applied to one type of contract but not the other. Committee discussion followed.

Chairman Whiteside then introduced Tom McNeal, Planning and Development Department, Department of Transportation, the next conferee. Mr. McNeal stated that the concept of value engineering had merit but not if it were mandatory. As far as the Department of Transportation was concerned, value engineering had already been implemented on an informal basis. The Research and Development Division is concerned with carrying out procedures on a more efficient basis. An example of a recent change is the "nuclear density gauge" for monitoring the density of soil. The main procedures in the highway department involve: moving dirt, laying concrete and laying asphalt.

Under the present system of contracts a contractor can propose a change but the Department of Transportation is not under obligation to accept a change. Another change involved the drum dryer as an alternate method in mixing concrete. This change resulted in a return savings of 5¢ a ton.

Twice a year a representative of the Department of Transportation meets with the contractor's association. Both make lists to discuss possible changes in procedures. Approximately 60 percent of the suggestions are gripes and the remaining will be items which someone has heard discussed around the table. Probably about 25 percent of the changes proposed are accepted. The results of some of the changes are not known for five to ten years. Also, with respect to the legality of the concept of value engineering, it is perhaps not the legality that is as important as what the press or public opinion may think about the issue.

In response to questioning, Mr. McNeal stated that he thought there was merit in the concept of value engineering but said there would be difficulty in implementing the concept if the management of the department did not favor it. Committee discussion followed. Chairman Whiteside then adjourned the meeting.

July 28, 1976

Chairman Whiteside called the meeting to order at 9:00 a.m. The first conferee was Mr. Jack Turner, Secretary of Transportation, who gave a slide presentation and summary of the organization and procedures of the Department. The slide presentation and discussion covered the following topics:

1. Cost Trends -- Highway Maintenance and Operations
2. The DOT Basic Leadership Role and Responsibility
3. Cycle of Maintenance -- Planning and Production Cycle
4. Model of Maintenance Program Management System
5. Work Programs -- Reduced to Functional Workload and Resources
6. Annual Maintenance Budget
7. Comparison of Maintenance Functional Budget 1967-1970
8. Annual Maintenance Labor Budget
9. Land Management
10. 3R Impact on Maintenance

Mr. Turner stated that transportation departments became concerned about rising maintenance costs around 1960 and the Bureau of Public Roads was involved with a national research effort in maintenance cost research.

On the state level, the Department has developed a state maintenance plan which attempts to project maintenance needs for a two to four year period. Fiscal requirements are determined and approved by an executive committee and the legislative branch. Some of the key factors for value engineering at this stage are production standards. Resource requirements include labor, resources and equipment. Once the budget is approved then the plan is implemented by the various district offices.

The Department attempts to reduce costs and cost savings were implemented in patching pot holes recently by eliminating hand labor and going to mechanized labor. Within the state maintenance engineer's office there is an in-house team that looks at cost versus function to determine cost savings areas. Mr. Turner mentioned a change in procedure in mowing, for example, that had resulted in a cost saving function.

The preconstruction phase is also an important area for looking at costs. In the right-of-way department approximately 600-700 projects are in operation at once. The use of "nuclear density gauges" in determining the density of soil is another example of a cost saving implementation.

In response to a question, Mr. Turner summarized the budget-making process. In May the district engineers begin the process by making recommendations, an executive committee reviews the district engineers budgets, each major department defends its budget to departments, the executive committee and a representative of the Budget Department. In September, the final forms are filled out and the budget review takes place

by the Governor and the Budget Department. The budget-making process is a 4-5 month process and essentially the Department's position is "if you approve this budget we will do this much work, if you reduce the budget we will have to reduce services."

In addition, Mr. Turner described the bidding process in the Construction Department and other departments. Mr. Turner stated that the Departments let out approximately \$26,000,000 of their annual maintenance budget. In answer to questioning, Mr. Turner said that there might be some benefit in including a value incentive clause in contracts but stated he did not know about the legality of such procedure. The Transportation Department is attempting to do value engineering internally. He stated the Department needed to build up technical staff in all areas.

Using outside consultants as value engineers would also be acceptable to the Transportation Department. The Department has a request for approximately \$490,000 for a management information system of which 80 percent would be paid by the federal government and 20 percent by the state government. The Department needs the approval of the Finance Council for this proposal. Also expansion of the internal audit function is increasing productivity. There are also statutory guidelines for the Planning and Research Division which provide that 1½ percent of all interstate funds have to be set aside for research. The Department has already implemented approximately \$2,000,000 or \$2,500,000 in savings by closing satellite maintenance shops.

Chairman Whiteside then introduced Tom Pitner, Attorney, Department of Administration, who commented on the legal aspects of value engineering. (Attachment III.) He stated that the courts would expect the state to take advantage of cost savings although it would be expected that the Architectural Services Department would look closely at change orders. If a change order changes a project substantively the project is rebid, however, this situation is very rare. the integrity of the Purchasing Department must be retained. It might be likely that the state would be sued but Mr. Pitner stated he thought the state would win. The concept of value engineering is not litigation free, however. Change orders are not covered in H.B. 2979. On the KU Medical Center, for example, there were approximately \$78,000 in change orders but these orders are not covered by competitive bidding.

Mr. Paul Nixon stated he had looked at the case law with respect to this issue and there were only a few cases where a collusive atmosphere could be shown.

In response to questioning, Mr. Pitner stated that if change orders were granted and a reduction were granted, the credit would be given to the state but this situation happened very rarely.

In the Committee discussion which followed, it was decided to give the idea of value engineering a test run. It was stated that it would be necessary to have the support of the top management of the agencies involved or the concept would not be given a fair trial. The suggestion was made that the interim report to the Coordinating Council indicate that the Committee recommends that up to \$40,000 be appropriated to hire value engineering consultants who would be selected by the Secretary of Administration and hired by the Division of Purchases, to report to the Secretary of Administration and Division of Purchases on value engineering projects. These consultants would in turn hold workshops and give seminars to state agency personnel. It was further suggested that the Secretary of Administration would make an annual report on a yearly basis prior to the opening session of the Legislature on the results of the value engineering project appropriations.

Committee discussion followed on the agenda for the August 19-20 meeting on Unemployment Compensation. Meeting then adjourned.

Prepared by Myrta Anderson

Approved by Committee on:

Date