

## VDOT'S VALUE ENGINEERING PROGRAM: CREATIVE MANAGEMENT AND INTERPERSONAL RELATIONS

This document was presented at the 1992 International Conference of the Society of American Value Engineers (SAVE) at Phoenix, Arizona by Ron F. Garrett, Virginia DOT. It was published in the SAVE Annual Proceedings and is copyrighted (SAVE, 1992). Permission to upload this document to CompuServe has been given by SAVE.

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Ron is a member of the American Society of Highway Engineers, and the Virginia Section of the Institute of Transportation Engineers.

### ABSTRACT

This report provides an innovative perspective to the management and operation of the Value Engineering (VE) program in the public sector. Outlined is a method of effectively gaining acceptance of VE and the interpersonal relations involved in a public state government agency where VE expansion was proposed by our Transportation Commissioner and then mandated by the passage recent state legislation.

In the current biennium where many state governments are faced with declining revenues and budget short falls, VE today is as important or perhaps more important than at any other juncture of time in recent history. It is imperative to cost-effectively utilize available funds to accomplish the task at hand. This report details the VE program within the Virginia Department of Transportation (VDOT) and displays the positive aspects and likewise the "negatives" which have been encountered along with our self management concept. Items concerning training, acceptance by management of VE recommendations and our unique management approach to the program will provide insight into how a new program may be developed. Representatives from state/local government bodies as well as representatives from the private sector should benefit from this information and I will be available to discuss our program if requested.

### VE HISTORY AT VDOT

The VDOT began using VE on project plans in the mid-1970's. Since that time VDOT has become a leader in VE with our legislated program.

Originally, the practice of VE was limited to training sessions contracted through the National Highway Institute. These sessions resulted in many VDOT staff members being trained in value methodology, and identified potential savings on several projects. Reviews on specific projects, separate from training, were not performed at that time. In 1985, VE was established as an ongoing program within the Department's Management Services Division. A full time coordinator was appointed, and his duties included organizing training and leading all reviews. Virginia was among the first states to appoint a full-time VE coordinator. From 1985 through 1989 over fifty projects were reviewed with an average savings of 10 percent of the estimated project cost.

In late 1989, Commonwealth Transportation Commissioner Ray D. Pethel developed and approved plans for a major expansion of VDOT's VE program. This expansion, now in place and operating, includes changes and/or program additions in several areas: establishment of regional VE coordinators, project selection and recommendation tracking/implementation, the appointment of a VE Advisory Committee, and expanded VE training.

### REGIONAL COORDINATORS

An examination of the current and planned construction projects, as contained in the Program Project Monitoring System (PPMS) and the Six-Year Improvement Plan, as well as political considerations, identified six regions where assignment of a VE coordinator would be effective.

Consequently, by February 1, 1991, a staff of five regional coordinators were employed and an extensive training program was undertaken for the newly designated coordinators. Training

included numerous sessions designed to improve inter-personal relation skills, computer applications, VE theory application, public speaking and group facilitation training.

Establishment of the five Regional VE Coordinator positions has been perhaps the most visible change in our program. The coordinators are housed in the District offices of their geographical region. The VDOT VE staff found that reviews conducted closer to the project, in the district office using district staff in addition to central office staff, were generally more successful than those conducted in the central office. The conduct of VE Reviews close to the project location certainly added accessibility to the project site. This enables each review team to visit the project and visually familiarize themselves with the proposed projects. This separation divorces the participant from his/her normal work station thereby removing incoming phone calls, questions from associates and other routine distractions. These factors certainly contribute to the VE team members ability to focus on the review project.

### RECOMMENDATION TRACKING

The regional VE coordinators plan and lead all VE reviews in their regions, track and report on recommendations, coordinate training in the regions, and serve as the VE representative to the district management staff. VDOT policy states that the VE reviews are to be conducted prior to the Field Inspection on construction projects.

### VE ADVISORY COMMITTEE

A further modification in the VE program was the establishment of the VE Advisory Committee. This senior management committee was appointed by the Department's Chief Engineer, and is composed of selected district administrators and engineering division administrators. The committee meets annually to approve the annual VE work plan and the VE training schedule. This committee can also meet at other times to address VE-related business.

### TRAINING

Listed below is pertinent training data/ accomplishments achieved at VDOT during Fiscal Year 90/91:

Four hundred thirty-five VDOT employees trained in VE methods (37 city representatives, county representatives, others)

Six, week-long VE workshops conducted

Eight one and one-half day training sessions conducted

Fifty-nine projects reviewed

Four scoping-stage projects reviewed

Thirty-seven projects closed during Fiscal Year 91

Seventy-one Value Opportunities/recommendations accepted

Seven million accepted value opportunities

Total Administrative Cost is \$354,000

Cost per review is \$5,621

A summary of the Closed Projects for Fiscal Year 1990/91 is shown below:

To qualify as a closed project, a VE review must have been conducted for the project and the executive summary, including VE workbook, must have been submitted to the appointed decision makers and their responses received as to their approval/disapproval of the Value Opportunity. Decision makers are identified during the VE Review and are usually Division Head level administrators who will be affected by revisions resultant of design changes due to VE recommendations. After their responses are compiled, these are submitted to VDOT's Chief Engineer for final resolution. The VE Regional Coordinator is notified of the Chief Engineer's decision and this constitutes a Closed Project.

\*Most frequently occurring recommendation area - Pavement design (37, 20-No, 1-Under Study, 16-Yes) (Then R/W, then drainage)

\*Most accepted recommendation area - Curb and Gutter (7 for 7) (Then topsoil, 4 for 5; then landscape, 10 for 18)

#### LEGISLATION

Unlike many VE programs in both the public and private sector, the VDOT embarked on a vastly expanded program as directed by our Commissioner and reinforced by passage of Virginia General Assembly House Bill 423 which added Section 33.1-190.1 to the Code of Virginia. The content of this new legislation mandates that any highway construction project exceeding a \$2 million cost shall be subjected to a VE review. Cost, however, is not the only factor that determines a review. Project complexities, location and design complications, urgency and construction schedules are also considered during project selection. The expanded VE program is in a tremendous contrast to the previous "one-man" operation in place prior to passage of this legislation by the General Assembly.

#### EXPANDED VE PROGRAM: INTERPERSONAL RELATIONS

The unique aspects of VDOT's VE program are not limited to the fact that our's was proposed by top level management and further mandated by state law but we also have a different approach to our management functions. While each coordinator answers directly to the Assistant Division Administrator of the Management Services Division, the regional coordinators office is physically located in the respective District Field Office. The coordinator is in a position where a good relationship must be built with the District Administrator and field staff but yet the coordinator does not answer directly to District Management. This arrangement eliminates any pressure, real or perceived, for the VE coordinator to be influenced to comply with District Management for inclusion/exclusion of VE Recommendations. Of course, each coordinator is responsible to diplomatically perform his/her duties in a professional manner being cognizant that support from the District Staff is critical for the conduct of successful VE Reviews.

To sell the program to a staff that was understandably reluctant to accept what was perceived as a negative and critical approach to VDOT's design process, it has been absolutely essential to practice diplomacy beyond normal expectations for the sake of future acceptance of recommendations. Perhaps this is the appropriate time to point out that we no longer refer to our recommendations as such, rather they are now titled VE Opportunities. Our goal with this approach was to further eliminate any inference that VE team proposals were critical of project designers, but rather that we indeed were simply suggesting more cost efficient methods of fulfilling basic functions of a Highway Design project. This marketing effort involves constant personal contacts to succeed.

With the continuing strengthening of relations for each Coordinator/District, I can confidently state that the program in each District is progressing satisfactorily.

#### PROGRAM MANAGEMENT: ASSIGNMENTS

In our ongoing VE program our Division Administration has invoked an innovative and unique approach to the management of our program. As stated earlier, due to fiscal

constraints within our government, a position of a statewide program manager for VE has not been approved and as a result has put the burden of these tasks on our Assistant Division Administrator (ADA). Largely due to the lack of time available by our ADA, necessity has become the Mother of Invention. To carry out the routine administrative duties, each coordinator is being assigned special areas in which to assist. One coordinator has been spending approximately 20% of his time in the Central Office performing functions assigned by the ADA. These tasks have included development of a tracking system and implementation system whereby submitted Value Opportunities could be monitored through final construction plans as directed by our Chief Engineer. This system also affords us the capability to determine actual cost savings after final construction of the recommended alternatives submitted through the VE process.

Special assignments are being delegated to this coordinator including reports for management to update the status of our program, routine correspondence preparation and whatever additional assistance the ADA may deem necessary.

Other coordinators throughout the state have been recruited to participate in their fields of expertise. Some examples include a coordinator who oversees bridge construction reviews, another specializes in the development of workshop training and one who assists in the Project Program Monitoring System. Our staff includes an at-large coordinator who assists in preparation of manuals and conducts scoping stage reviews (reviews conducted at the 15% or project initiation stage). The Central Office Coordinator maintains records and organizes/coordinates work books/executive summaries for the Chief Engineers review. This individual conducts VE reviews in other regions of the state when unavailability of manpower dictates.

#### MANAGEMENT: TOP TO BOTTOM/BOTTOM TO TOP

VDOT's approach to management of our VE program has not only been a boost to the Coordinators morale and self-esteem but it has also proven to be a useful tool for management also. This system is supported and operates from top to bottom and bottom to top. Our ADA is relieved of numerous duties and responsibilities that would require needless hours of involvement if not for this "Team Management" concept.

Certainly this does not eliminate management involvement in VE. The ADA supervises the program and the Coordinators and as such serves as the cog of the wheel with the regional coordinators reporting in regularly by electronic mail, quarterly meetings and bi-weekly\* sessions to be apprised of pertinent information. The resultant interaction between management and coordinators is superb and has only strengthened our program.

#### COORDINATORS: SELF-MANAGEMENT

Other policies which enhance the coordinators self-management tasks include flexible work hours which management supports thus allowing each person to set their own eight hour work schedule. While the work day often lasts longer during VE reviews, this is another tool by which our coordinators are allowed to function with ample freedom in managing their own program.

This unique approach to self management appears to be producing positive results including the morale building aspect where each coordinator benefits by sharing responsibility and decision making in which our ADA is fully supportive. We are proud of this innovative management approach in a traditionally management world.

#### TECHNOLOGY TRANSFER

Among our staff, the latest information relative to policies, procedures and any current regulations is made available through our Quarterly Staff meetings, mini Bi-Weekly staff meeting of local VE coordinators and extensive use of our electronic mail (E-mail) system as mentioned previously. The rapport developed through our communications system is essential in maintaining an informed, knowledgeable staff.

#### SELLING VE

Our functions in the respective Districts have not only included the conduct of VE, but has required us to practice salesmanship with staff in these areas. Upon reporting to my new office the first task was to meet with each Division head, Administrator and Resident Engineer. Including VE duties, it has become my privilege to participate in District Staff meetings, safety functions, picnics and any extra-curricular functions in the District to aid in my acceptance and that of the VE programs. Our duties also include presenting our VE Program to local governingbodies and private sector organizations.

While dealing with the acceptance hurdle, it has become an integral part of our program to work to accommodate our designers while not sacrificing or compromising our VE Opportunities (recommendations). Often this has transformed a rejected recommendation developed by a VE team into an acceptable suggestion due to revisions to the proposal by designers. In this way, not only were we successful in seeing the recommendation implemented, but the designers had contributed and played an integral part in the development of the recommendation.

The participation of Department personnel also benefits from the support of our Commonwealth Transportation Commissioner as well as top level management in general. Through our training statewide we have striven to familiarize as many employees as possible with VE. An attached data sheet (Refer to Chart 3) details our training efforts, and likewise general statistics for the past year.

#### VE: IMAGE AND OWNERSHIP

The professionalism of our staff along with an instilled positive image helps maintain a high-visibility of the program and encourages participation and involvement from all employees throughout the Agency. Likewise, it develops a sense of ownership of the VE program by everyone which stimulates comments/suggestions/criticism from all levels.

While VE in the Commonwealth has been gradually accepted it appears as though ours is a program whose time has come and eventually will be the "standard" in Highway

# Value Engineering Process

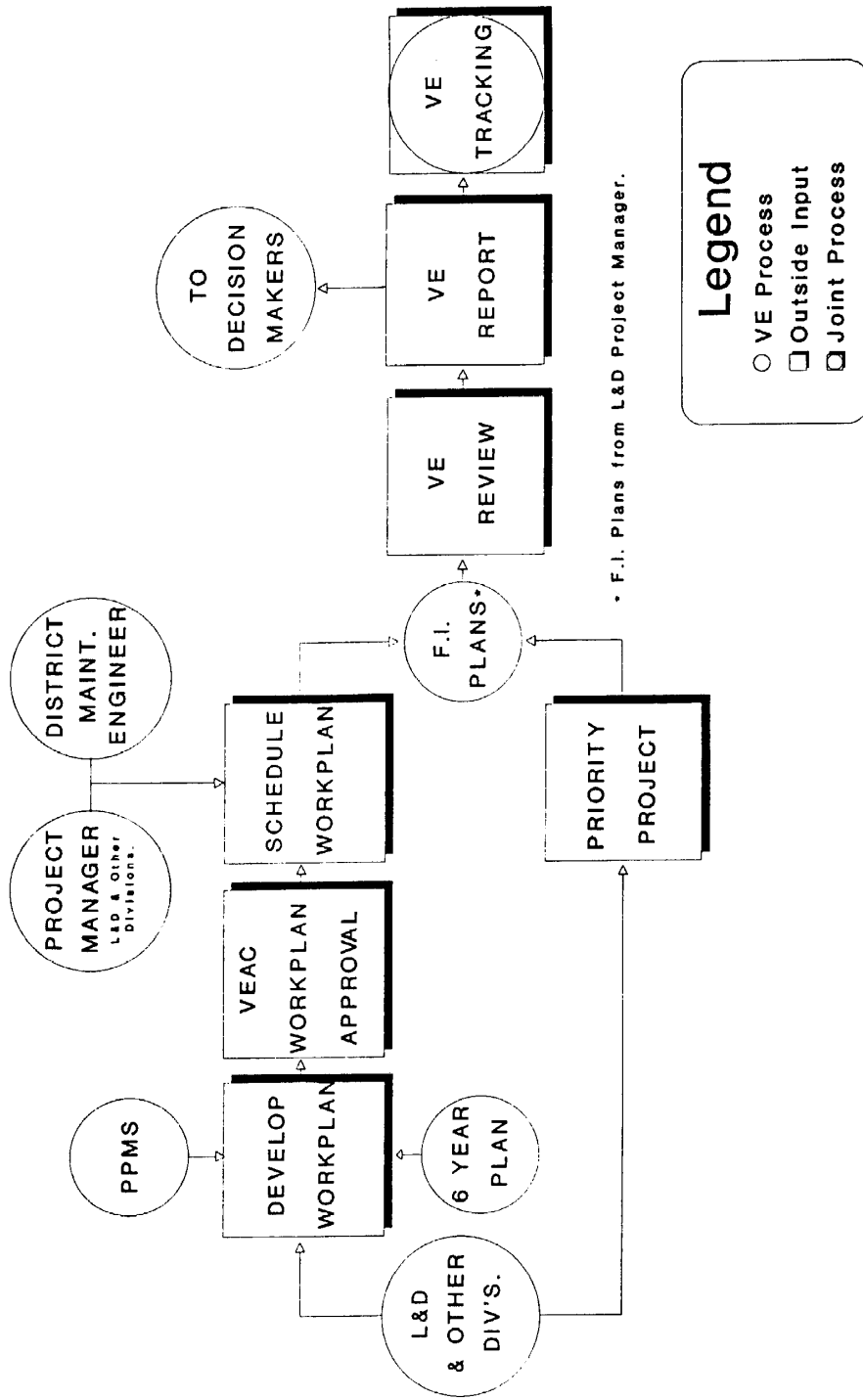


Chart 1

**1990 SESSION**  
**VIRGINIA ACTS OF ASSEMBLY - CHAPTER 160**

*An Act to amend the Code of Virginia by adding a section numbered 33.1-190.1, relating to use of value engineering in certain highway projects.*

[H 423]

Approved MAR 19 1990

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-190.1 as follows:

*§ 33.1-190.1. Value engineering required in certain projects.—The Department shall employ value engineering in conjunction with any project on any highway system using criteria established by the Department and including but not limited to all projects costing more than \$2 million. For the purposes of this section, "value engineering" shall mean a systematic process of review and analysis of an engineering project by a team of persons not originally involved in the project. Such team may offer suggestions which would improve project quality and reduce total project cost, ranging from combination or elimination of inefficient or expensive parts or steps in the original proposal to total redesign of the project using different technologies, materials, or methods.*

*After a review, the Commonwealth Transportation Commissioner may waive the requirements of this section for any project for compelling reasons. Any such waiver shall be in writing, state the reasons for the waiver, and apply only to a single project.*

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President of the Senate

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Speaker of the House of Delegates

Approved:

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Governor

Chart 2

# Value Engineering Implementation Process

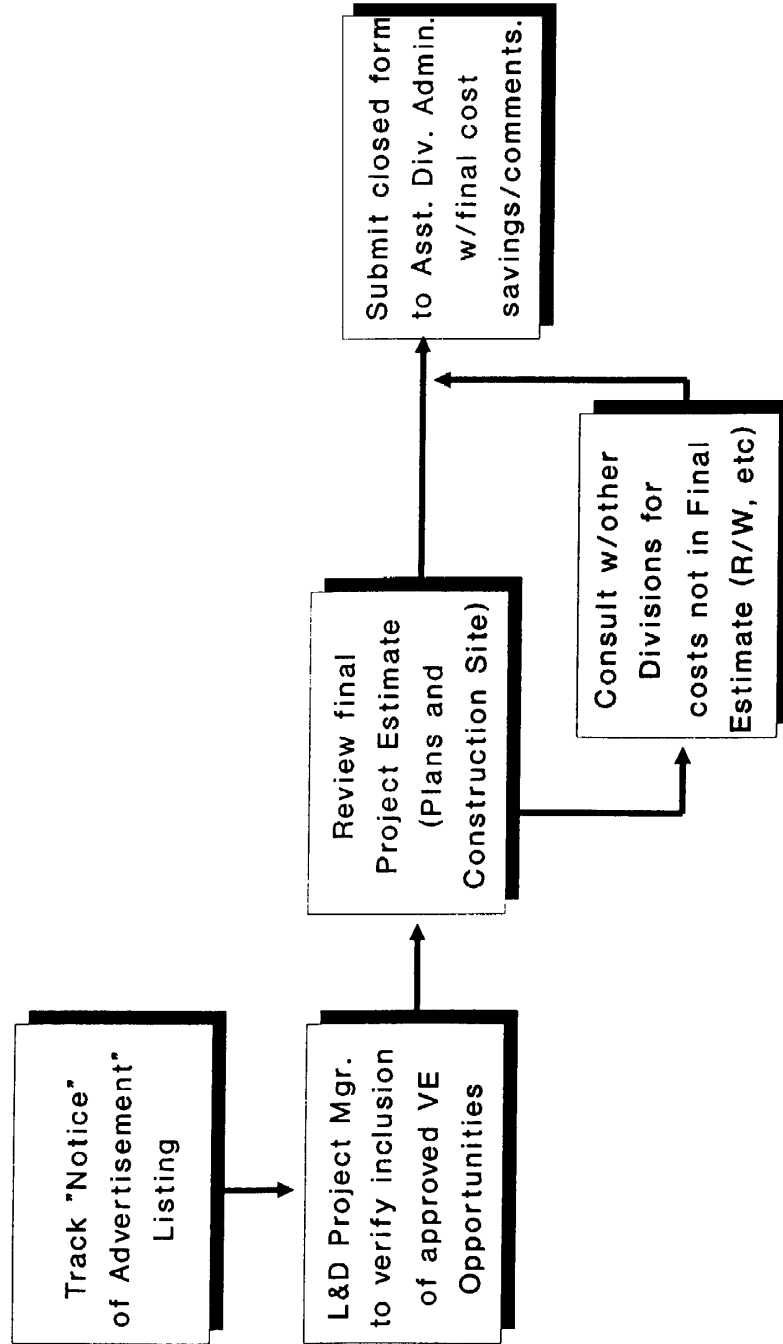


Chart 3