

Value Analysis / Value Engineering

Policy and Guidelines

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Ministry of Transportation
VA/VE Policy and Guidelines

Date **July 6, 1998**

MoT VA/VE Policy

Policy Statement

Every project with total capital costs in excess of the amount set by Treasury Board (currently \$5 million) shall be subjected to a value analysis / value engineering (VA/VE) process at the appropriate stages and with the appropriate level of resources.

On projects with total capital costs below the \$5 million threshold set by Treasury Board but greater than \$500,000., this policy requires that a VA/VE review be given due consideration and carried out if determined to be reasonably beneficial.

Objective

The objective of this policy is to ensure that MoT applies the appropriate VA/VE procedure and level of effort to each project.

Purpose of Guidelines

The purpose of these guidelines is to facilitate the application of VA/VE as a tool in the project development process; they are not rigid procedures and do not override the sound judgment of project managers who are required by this VA/VE policy to :

- determine the timing and appropriate procedure - VA or VE
- determine the appropriate level of effort
- select a VA/VE consultant and assist in arranging the workshops
- participate in the final workshop to select the alternatives to be recommended, and
- confirm the accepted recommendations are implemented by the project team.

Background

History Of Value Analysis And Value Engineering

Value analysis/engineering evolved during World War II when shortages of materials and labour forced the introduction of many substitutes. The management of the General Electric Company noted that often these substitutes reduced costs and improved the product. Lawrence Miles developed a system of techniques, which he called value analysis (VA), that made significant improvements in a product.

The U.S. Department of Defense adopted the concept of VA in 1954 when the Navy's Bureau of Ships applied the process to its procurement actions; they changed the name to Value Engineering. In 1964, the U.S. Department of Defense expanded the cost reduction program which led to further utilization of VA/VE principles. About that time, many federal, state, and local government agencies adopted formal VA/VE programs. Additionally, many industrial companies established formal VA/VE programs as part of their profit improvement efforts.

Objective of VA/VE Procedures

The objective of VA/VE procedures are :

- to ensure the most appropriate solution to an identified deficiency
- to provide solutions at lowest life-cycle costs
- to enhance the constructability of solutions, and
- to minimize risks

The Concept of Two Sequential Procedures

Value analysis and value engineering are systematic methods of achieving maximum value for money during project planning and design stages. Value for money is achieved when the required functions of a program, project, system or component are obtained at the minimum life cycle costs (both capital and operating costs considered).

In order to achieve value for money, the value analysis or value engineering procedure applies a disciplined, systematic set of techniques that isolate primary and secondary functions of the program, project, system or component under review, establishes costs and values for them, then identifies alternatives to perform these functions at minimum life cycle cost. This procedure can be undertaken without jeopardizing function, scope or quality standards. This structured procedure utilized a team that is independent of the project's management or design staff and is able to carry out an objective, critical review of cost and value.

Regardless of whether the practice was called value analysis or value engineering, much of the early work on assessing value was done late in the project life cycle - often on completed designs. Several leading agencies have now adopted multi-phased approaches to managing value in their capital programs. For the transportation sector in B.C., a two-stage sequential procedure has been adopted. The "Value Analysis" procedure is applied to analyzing a project at Planning and Evaluation Phase when there has been sufficient planning and design input to have identified a preliminary scope. That is, the VA process is an opportunity to analyze and modify the scope or content of the project ("the what"). There is greater opportunity for cost savings at this earlier phase in the project life cycle.

The "Value Engineering" (VE) process uses the same disciplined, systematic set of techniques that isolate primary and secondary functions and is carried out during the Design and Engineering Phase. That is, the VE process is an opportunity to analyze and modify systems, components, materials and methods ("the how").

The MoT VA/VE Model

General

The VA/VE model for MoT provides for two sequential procedures and variable levels of effort to reflect the potential for enhancing value.

Sequential VA/VE Procedures

The MoT Process for VA/VE studies in transportation projects has different types of value review depending on the phase of the project life cycle. The potential review points are :

- project value analysis in the Planning and Evaluation phase, and
- project value engineering in the Design and Engineering phase

Project Value Analysis

The Project VA procedure is used to identify value for money related to “the what” of a project. During the Planning and Evaluation phase of a project, value analysis provides the opportunity to objectively identify the costs and benefits of various planning and design options. At this stage, value analysis focuses on identifying the major project cost drivers, confirming that the scope addresses identified needs and ensuring that the primary function is being provided. Although accurate cost and value information is always desirable, it is essential at this stage to prepare conceptual-level comparative cost estimates. If the scope is changed as a result of the VA review, the project team must assess the requirements for any additional development work to establish an appropriate estimate for budget purposes.

VA does not replace the Multiple Account Evaluation (MAE) process. Although MAE addresses a number of VA issues, MAE is an evaluation process and the results of any evaluation are only as good as the options that go into the model. The core of the VA/VE process is the idea generation phase which includes the functional analysis process that can strongly influence the direction of creative thinking. MAE can be added to the later phases of the VA process to enhance the evaluation capabilities; however, MAE by itself will not satisfy the requirement for VA.

Project Value Engineering

The scope of the project, which was confirmed at the project planning stage, is likely set out at this stage in a Project Initiation Notice. Since the engineering design is now being developed, the focus of the value review changes from value analysis of scope and concept to value engineering of components and constructability. At this stage, value engineering reviews the costs and benefits of “how the project is to be built” i.e. obtaining the most cost effective materials and specifications as well as a review of constructability issues and associated elements such as traffic management. As required, the reviews can be focused on individual components of a project - i.e. bridge structures may require a more in-depth review than the surface paving.

Value Engineering Proposal (VEP)

VEP is a condition in a construction contract that invites the contractor to submit proposals to modify the work and share in the resulting savings with the owner. The Ministry has sole judgement of the acceptability of a contractor’s VEP. This condition is currently standard in the Major Works documents. A VEP should :

- reduce the cost of the contract without increasing the life-cycle costs
- provide an improvement to the product
- change the construction schedule to benefit the Ministry
- reduce or transfer risk to benefit the Ministry
- not impair the functionality of the work

Although there are substantial differences between VA and VE, they both utilize the following four-step approach :

1. Identifying alternatives
2. Estimating costs and assigning values
3. Critical reviewing and evaluating these costs and values
4. Developing consensus on changes resulting from the review

The MoT model provides for a mix of MoT expertise, outside experts and representative(s) of the design team. A description of the MoT VA/VE process, including sample agendas for typical session, is provided in Appendix 1.

Levels of Effort, Project VA and VE Procedures

As stated above, the VA/VE model for MoT provides for variable levels of effort to reflect the potential for enhancing value. If there is no likelihood of changing the scope, quality, schedule or resulting cost of a project, then resources should not be wasted on a VA or VE study.

The four levels of effort are :

PJV1 : An experienced VA/VE team of facilitator and specialized experts for 3 - 5 days. Since the level of expertise and experience required for this level of effort (the SAVE Process) may not be available locally, the facilitator and the review team may come from U.S.-based firms and the costs have been estimated on that basis. The usual approach is to contract with a VA/VE consultant who provides the facilitator as well as plans and executes the process. These firms either have their experts on staff or have a network of experts that they draw from. One of the experts should be a qualified cost consultant. For Process PJV1, the estimated cost ranges from \$100,000. to \$180,000.

PJV2 : An experienced VA/VE facilitator and a “standard” review team for 4 - 5 days. For levels of effort PJV2 and PJV3, a standard review team consists of one member of the design team (assumed a consultant), two members from MoT with expertise applicable to the subject project and two experts from the local consulting community. For Process PJV2, the estimated cost ranges from \$70,000. to \$110,000.

PJV3 : An experienced VA/VE facilitator and a “standard” review team for 2 - 3 days. The review team has the same composition for PJV2 but due to the shorter duration, the estimated cost ranges from \$40,000. to \$70,000.

PJV4 : An experienced VA/VE facilitator with a reduced review team for 1 - 2 days. The reduced review team would consist of one member of the design team (assumed a consultant), one member from MoT with expertise applicable to the subject project and one expert from the local consulting community. For Process PJV4, the estimated cost ranges from \$20,000. to \$40,000.

BCTFA and Treasury Board have accepted the variable level of effort approach partially on the basis that there will be an auditable process trail for the decision. The project manager shall complete the appropriate Decision Guide (Appendix 2 or 3) and make appropriate notations justifying the process selection. Since the selection process is subject to management audit, maintenance of accurate records is imperative. In the event the project manager decides, on the basis of the guideline, that no VA/VE process is justified, the Decision Guide shall be countersigned by the project sponsor. The VA/VE process is not complete until the project scope, schedule and budget have been revised in accordance with Ministry procedures.

Guidelines for Project VA

As set out above, there are four levels of effort to be considered. The considerations for determining the appropriate level of effort are : cost of the project, complexity of the project which can be roughly gauged by the type of work (structures most complex, paving least complex), the stage of project planning / development, the state of completion of a needs analysis and the schedule urgency. Since not all these factors carry the same weight, the Decision Guide shown in Appendix 2 has been prepared to assist project managers in selecting the level of effort. This Decision Guide requires the project manager to rate each of the above factors to produce a numerical score. At the project VA level, the level of effort is best rated on the entire project. The score is used in the table at the bottom of the chart to select the more appropriate processes; the scores overlap so there are usually two candidates. Project managers must use their judgment to make the final selection.

Guidelines for Project VE

The factors for selecting the appropriate level of effort for VE are similar to those for VA. As with VA, since not all factors carry the same weight, the Decision Guide shown in Appendix 3 has been prepared to assist project managers in selecting the level of effort. This Decision Guide requires the project manager to rate each of the factors to produce a numerical score. For Project VE, the project can be broken into components to focus the effort on those areas most likely to see benefits. For example, if the project contains both roadworks and structures, separate ratings can be done on the two components. A structure could be divided into the superstructure and the substructure and the result could be that VE is only justified on one component. The three steps for project VE are :

Step 1: Break the subject project or, if appropriate, contract into its components which are of a common nature such as grading and bridges. There may be sections of grading which are very unique such as a section through a significant rock cut. All significant structures should be treated separately.

Step 2: For each component, complete a Decision Guide PJVE (Appendix 3). Each guide form provides a score which indicates the likely value of a VE process.

Step 3: Refer to the schedule at the bottom of the form which lists the range of processes. In the Range of Scores tabulated on the left column, find the one or two ranges which include the score of the component. Some judgment is required to make the actual selection of the process. Even if no process is justified by the guideline, there remains the potential confidence that may be provided to the Owner by conducting a review.

Qualifications and Selection of VA and VE Teams

Selection of VA/VE Consultants

To reduce the time demands on project managers, a suitably-qualified VA/VE consultant should be asked to provide all the elements of the VA/VE exercise - including the facilitator and the members of the review team. MoT staff will often be in a better position to organize some of the logistics of the workshops and a support staff member can be designated to work with the VA consultant. Since VA/VE is not currently a Category of Interest in the RISP system, Quality Management Branch (QMB) will establish and maintain a list of VA/VE consultants including ratings and commentary on facilitators and review team members. Project managers may obtain candidate VA/VE consultants from QMB. Sample Terms of Reference for requesting proposals are also available from QMB.

Qualifications for Facilitators

The prime requirement for successful value analysis and value engineering is a skilled facilitator with both strong people management skills and a background in assessing cost and value of construction projects. Expertise in highway design is not a prime requirement.

Certification to facilitate the generic VE process (i.e. not specific to any industry or sector) is currently available through the Society of American Value Engineers (SAVE) which provides two levels of certification - the Certified Value Specialist (CVS) and the Value Management Practitioner (VMP). SAVE certification is desirable but not essential; it is strong facilitation skills that are essential.

Participation of Design Team

A representative of the design team should be included on the review team to provide the historical perspective and prevent the review from following any “dead ends”. The design team representative should be a senior person familiar with the range of disciplines involved in the project. If more than one representative from the design team is required or desirable, it is essential that members of the design team not comprise more than one-quarter the members of the review team.

Source of Review Team Members

The key criteria for selecting review team members are :

- expertise that is appropriate for the project being reviewed
- such personality attributes as creativity and an open mind

Team members may be selected for their ability to cover more than one area of expertise required for a review. Following is a list of common disciplines required for a VA/VE study :

- Traffic Engineering
- Highway Design
- Bridge Design
- Geotechnical Engineering
- Construction
- Cost Estimating
- Highway Operations

To enhance the value for both the VA/VE study and for Ministry staff training, MoT staff will be included on review teams. MoT candidates should not have had prior involvement in the design of the project to be reviewed and should be from a different Region than the one with the subject project. Review teams should be more-or-less equally split between MoT staff and candidates from local consultants. The standard review team assumes two MoT and two consultants; the costs of the various processes have been estimated on this basis.

Estimating Costs and Benefits

Competent members of the team for estimating the costs and benefits of proposals are essential. The type of cost estimating required for value analysis is different than that required for value engineering. VA requires the ability to compare alternative project solutions where parametric cost estimating (i.e. factored estimates) are appropriate. Only personnel experienced in this activity should be considered for this key role. The VA/VE consultant should be expected to have this capability.

The project manager may have to decide how the costing resources will be provided before the RFP is issued to the VA/VE consultants. MoT could set out in the RFP that either MoT members of the review team, the design consultant or the VA/VE consultant will provide the costing. If there is uncertainty about which costing resource is more suitable, have the costing set out as an alternative in VA consultant's proposal.

Observers

Project managers should expect to have a numbers of interested parties sit through the sessions as observers - not active participants. Observers may be senior members of the regional office or from external agencies such as BCTFA or Treasury Board. BCTFA are to be provided with a copy of the draft report.

Administration of VA/VE Program

Administration

MoT will manage the selection and oversight of VA/VE consultants. Once the level of effort has been determined, the project manager requests the appropriate number of proposals and makes the selection. The project manager may not necessarily be involved in the review process until the final stage of selection of alternatives for implementation.

Monitoring

Monitoring and performance evaluation of this VA/VE policy is the responsibility of the QMB. One copy of each final VA/VE report is to be provided to the Quality Management Branch for review and continuous improvement initiatives. QMB will consolidate the results of all VA/VE studies and compare these results to the objectives set out in the Cost Containment Strategies adopted by Treasury Board through the Capital Expenditure Review. Copies of this summary of results along with a copy of each report are to be provided to Treasury Board.

Training

Training of MoT personnel in the value management process will be incorporated into an actual VA or VE study. The Consultant will provide a briefing to the project team on the policy and expectations before the study commences. After the study has been completed, the Consultant and the members of the review team will brief any interested members in the regional office.

Deviations form MoT Standards

Many VA/VE proposals will challenge Ministry design standards. Prior to accepting any such proposal, the project manager will follow established procedures for obtaining exceptions to standards including, if necessary, applications to the Chief Highway Engineer.

Facilities for Workshops

As the majority of the review team are from outside the region, they tend to work extended hours during the workshops and facilities must be able to accommodate this. Hotels are ideal but have an associated cost. If other offices are considered, ensure members have access to the workshop room outside of normal business hours. A supply of white boards, flip charts and appropriate markers is to be provided. Catering services for lunches and beverages must also be considered if not using hotel facilities.

Acknowledgment

This policy and guideline is the product of the March 1998 report *VA/VE Policy and Guidelines* prepared by Bramcon Project Consultants Ltd.

APPENDIX 1

DESCRIPTION

of

MoT 6-STAGE VA/VE PROCESS

and

SAMPLE AGENDAS

Description of MoT 6-Stage VA /VE Process and Sample Workshop Agendas

The MoT process consists of the following six stages :

Stage 1 - Documentation Review and Site Visit

Prior to the formal VA/VE workshops, the external review team members will carry out a review of the design documentation to identify issues to be addressed during the first workshop. If there is concern about the accuracy of the cost estimate, the VA/VE consultant should be asked to review the estimate prior to commencing the workshops as the unit costs in the estimate may be used for costing alternative proposals. This review often identifies areas of significant concern.

If considered beneficial and cost-effective, the external review team will also visit the project site to familiarize themselves with the local circumstances.

Stage 2 - Idea Generation Workshop

The VA/VE Consultant will organize and coordinate an interactive workshop with the review team to identify alternative solutions. The workshop environment will produce a series of Value Analysis Proposals (VAP) which potentially offer better value to the project.

The VA/VE Consultant will brief the participants prior to the workshop to ensure that they understand and are completely familiar with the process.

The duration of the workshop will vary with the level of effort but would be expected to range from one-half day for PJV4 to a full day for PJV1 and PJV2. A sample agenda for Stage 2 is attached.

Stage 3 - VAP Evaluation Workshop

Evaluation of the VAPs will follow the idea generation workshop. The VAPs raised during the Stage 2 workshop will be documented by the VA/VE Consultant and circulated in draft format to the participants at the start of the Stage 3 workshop.

The evaluation will assess the feasibility and impact on function and design of each VAP. Each of the VA proposals will be reviewed with the participants for advantages, disadvantages and comments. Sufficient preliminary design work will be provided at this workshop to allow the capital and life cycle cost effects for each VAP to be determined. The more significant VAP's should be approximately costed during the session to determine the amount of effort required to complete Stage 4 and be able to set the date for the Stage 5 workshop. A sample agenda for Stage 3 is attached.

Stage 4 - VAP Costing

The duration of this stage, given as one to five days, is of course influenced by the level of effort selected for the procedure. However, the prime reason the duration of this stage is difficult to forecast is that the amount of estimating work depends on the number and complexity of the VAP's generated and retained after the evaluation phase.

Furthermore, the type of estimating required for value analysis is different than that required for value engineering and if the appropriate resource is not provided, one can expect longer durations as well as suspect results. VA requires the ability to compare alternative project solutions where parametric estimating (i.e. factored estimates) are appropriate. Only personnel competent in this activity should be considered for this key role. The VA/VE consultants should be expected to have this capability. MoT will have control over how the costing resources are provided when they issue the RFP to the VA/VE consultants. MoT could set out in the RFP that either the MoT members of the review team or the design consultant will provide the costing. Alternatively, this task can be assigned to the VA consultant. A sample agenda for Stage 4 is attached.

Stage 5 - VAP Selection Workshop

On completion of the evaluation stage and any subsequent cost analyses, the VA/VE Consultant will present the draft VAP's and feedback from the participants in a final workshop to the project manager, the VA/VE design representatives, the design consultant (if there is any significant design change) and any stakeholder impacted by a VAP. The participants should be decision makers as the purpose of this workshop will be to approve and accept those VAP's that provide optimum value to the project. A sample agenda for Stage 5 is attached.

Note : If the Stage 5 workshop cannot be accomplished coincident with the stages 2 and 3, it may not be practical for all members of the review team (including the facilitator from the VA/VE consultant) to return for this final workshop. The use of telephone conferencing is an acceptable alternative provided the majority of the review team can be present.

Stage 6 - Reporting

On completion of the evaluation stage, the design alternatives, cost analyses and feedback from the participants will be documented.

A draft report will be submitted within one week of completion of the Stage 5 workshop detailing the work of the study team, the organization and composition of the workshops, and documenting the value analysis proposals generated during the study. The report will incorporate any construction cost information and will show the net cost effect of the approved alternatives. Each VAP will be supported by a cost benefit and design analysis.

The final report will be issued within two weeks of receiving comments from MoT. Copies of reports are to be issued to BCTFA, Treasury Board and Quality Management Branch.

Attachments : Sample Agendas for Stages 2, 3, 4 and 5

AGENDA

STAGE 1- PROJECT REVIEW AND SITE VISIT

ITINERARY FOR SITE VISIT

DATE	To Be Advised
TIME	One-Half To One Day Depending On Travel Time
MEETING LOCATION:	To Be Advised
ATTENDEES:	Review Team Members (2 - 6) VA/VE Facilitator (1) Project Team Representative(s)
ITINERARY	From ____ to ____ : Travel to Project Site From ____ to ____ : Tour Project Site From ____ to ____ : Travel from Project Site

PRESENTATION AGENDA

DATE	On Day 1 if time permits; 1st item on Day 2 if not
TIME	Two Hours to One-half Day Depending on Complexity of Project
LOCATION:	Close to Site if Day 1; at Workshop location if Day 2
ATTENDEES:	Review Team Members VA/VE Facilitator Project Team Representative(s)

PRESENTATION :

Project Objectives and History	MoT Project Manager
Introduction of Review Team	VA Co-ordinator or VA Facilitator
Presentation of Existing Design and Cost Estimate	Project Team
Questions and Answers	All

AGENDA

STAGE 2 WORKSHOP- IDEA GENERATION

DATE To Be Advised

TIME One-Half To One Day Depending On Level of Effort

LOCATION: To Be Advised

ATTENDEES: Review Team Members (2 - 6)
Design Team Representative(1 - 2)
VA/VE Recorder (1)
VA/VE Facilitator (1)

PROCESS

- Presentation of Existing Design (if not on Day 1) Project Manager / Team
- Introduction and objectives of the study VA/VE Facilitator
- Recap of Existing Plan Design Alternatives Design Team Representative
- Recap of the project budget Design Team Representative
- Identify functions and alternatives All

Lunch Break (if full day session)

- Continue identifying options and alternatives All
- Adjourn

AGENDA

STAGE 3 WORKSHOP- VAP EVALUATION

DATE	Immediately After Stage 2
TIME	One-Half to One Day Depending on Level of Effort
LOCATION:	To Be Advised
ATTENDEES:	Review Team Members (2 - 6) Design Team Representative(1 - 2) VA/VE Recorder (1) VA/VE Facilitator (1)

PROCESS

- Review draft proposals, correct / change as required All
- Provide design input for each VAP to allow pricing MoT
- Cost more significant VAP's All
- Assess volume of cost estimating and assign estimating for VAP's Facilitator
- Set date for Stage 5 Workshop Facilitator

AGENDA

STAGE 4 - COSTING

DATE	Immediately Following Stage 3
TIME	One Day to Five Days Depending on Volume of VAP's
LOCATION:	To Be Advised
ATTENDEES:	Review Team Members (2 - 6) Design Team Representative(1 - 2) VA/VE Facilitator (1)

PROCESS

- Provide any additional design input to allow costing All
- Cost all selected VAP's All
- Prepare for Stage 5 Workshop All

AGENDA

STAGE 5 WORKSHOP- VAP SELECTION

DATE Upon Completion of Stage 4 ;
1 to 5 Days after Completion of Stage 3 Workshop

TIME One-Half Day Duration

LOCATION: To Be Advised

ATTENDEES: Review Team Members (by telephone if necessary)
Design Team Representative(s) plus other members design team
Project Manager (chair session if VA/VE facilitator not present)
VA/VE Facilitator (by telephone if necessary)

PROCESS

- Present draft VAP's and Recommendations VA/VE Consultant
- Feedback from Attendees All
- Selection of options to be recommended MoT

APPENDIX 2

DECISION GUIDE for VALUE ANALYSIS

Decision Guide for Level of Effort, Value Analysis

Project Name: _____

Decision Factor	For each factor, circle one number in each row.					
Capital Cost	\$500K - \$5M	\$5M - \$10M	> \$10M	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	<input type="text"/>	<input type="text"/>	<input type="text"/>
Type of Project	Primarily Roadworks	Simple Structures	Complex Structures	<input type="text"/>	<input type="text"/>	<input type="text"/>
	2	4	6	<input type="text"/>	<input type="text"/>	<input type="text"/>
Stage of Design	Detailed Complete	Preliminary Complete	Functional Complete	<input type="text"/>	<input type="text"/>	<input type="text"/>
	3	5	7	<input type="text"/>	<input type="text"/>	<input type="text"/>
Studies available indicating number of Options Investigated	Considerable	Some	None	<input type="text"/>	<input type="text"/>	<input type="text"/>
	2	4	6	<input type="text"/>	<input type="text"/>	<input type="text"/>
Schedule Urgency	High	Moderate	Low	<input type="text"/>	<input type="text"/>	<input type="text"/>
	2	4	6	<input type="text"/>	<input type="text"/>	<input type="text"/>
Score per Column	<input type="text"/>	<input type="text"/>	<input type="text"/>			
Total Score = Sum of the Three Column Scores				<input type="text"/>		
Appropriate VA Process (see table below)				<input type="text"/>		
Prepared by: _____			Date: _____			
Note: Retain completed form in project file for potential audit.						

Total Score	Process	Description	Approx. Cost per session
24 - 28	PJV1	An experienced VE team of facilitator and several specialized experts for 3 - 5 days.	\$100,000 to \$180,000
20 - 26	PJV2	An experienced facilitator with a "standard review team for 4 - 5 days.	\$70,000 - \$110,000
16 - 22	PJV3	An experienced facilitator with a "standard" review team for 2 - 3 days.	\$40,000 - \$70,000
12 - 18	PJV4	An experienced facilitator with a reduced review team for 1 - 2 days.	\$20,000 - \$40,000
10 - 14	-	No review is justified	nil

APPENDIX 3

DECISION GUIDE for VALUE ENGINEERING

Decision Guide for Level of Effort, Value Engineering

Project Name: _____

Component of Project: _____

Decision Factor	For each factor, circle one number in each row.		
Prior Value Review Processes	Value Review at Planning Phase <input type="text" value="1"/>	Value Analysis Completed <input type="text" value="2"/>	None <input type="text" value="3"/>
Capital Cost of Component	\$500K - \$2M <input type="text" value="1"/>	\$2M - \$5M <input type="text" value="2"/>	> \$5M <input type="text" value="3"/>
Type of Component	Roadworks <input type="text" value="2"/>	Simple Structures <input type="text" value="4"/>	Complex Structures <input type="text" value="6"/>
Stage of Design	Detailed Completed <input type="text" value="3"/>	Detailed less than 50% <input type="text" value="5"/>	Preliminary Complete <input type="text" value="7"/>
Studies available indicating number of Options Investigated	Considerable <input type="text" value="2"/>	Some <input type="text" value="4"/>	None <input type="text" value="6"/>
Schedule Urgency	High <input type="text" value="2"/>	Moderate <input type="text" value="4"/>	Low <input type="text" value="6"/>
Score per Column	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total Score = Sum of the Three Column Scores			<input type="text"/>
Appropriate VE Process (see table below)			<input type="text"/>
Prepared by: _____		Date: _____	
Note: Retain completed form in project file for potential audit.			

Total Score	Process	Description	Approx. Cost per session
24 - 28	PJV1	An experienced VE team of facilitator and several specialized experts for 3 - 5 days.	\$100,000 to \$180,000
20 - 26	PJV2	An experienced facilitator with a "standard" review team for 4 - 5 days.	\$70,000 - \$110,000
16 - 22	PJV3	An experienced facilitator with a "standard" review team for 2 - 3 days.	\$40,000 - \$70,000
12 - 18	PJV4	An experienced facilitator with a reduced review team for 1 - 2 days.	\$20,000 - \$40,000
10 - 14	-	No review is justified	nil