



Value Engineering

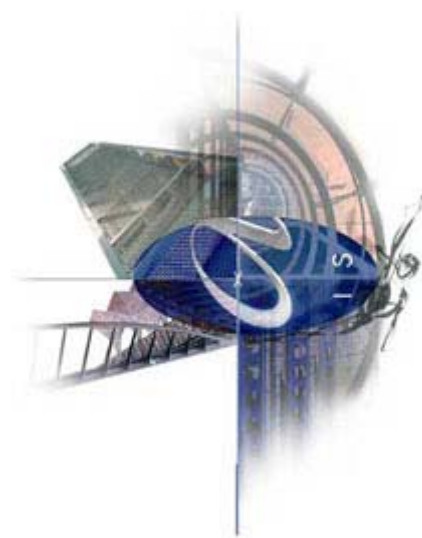
Overview:

Value Engineering is a continuous review and refinement process of design and specification, which augments the design efforts from initial concept up to the issuance of the last construction variation. It is normal that the integration of a Value Engineering program will result in a project savings of 5% to 15%, and a functional design constructible within budget.

Objective:

Utilizing a systematic approach, which identifies and provides the required functions of a project at the lowest possible cost, keeping the design intent unchanged, which will result in the following:

1. Savings on construction costs
2. Lower life cycle costs
3. Improved operational performance
4. Reduced maintenance costs
5. Identification of risks and mitigation strategies



Scope of Services:

Ongoing Regular Value Engineering

At the beginning of a project, a VE analysis is performed to ensure the design consultant operates within overall cost constraints and provides maximum efficiency. The components of this analysis would include:

1. Examine potential cost benefits of special studies
2. Review progress drawings
3. Comment on progress drawings
4. Work with design consultant to make adjustments to maintain overall budget
5. Conduct cost, time and efficiency studies
6. Analysis of high cost and problematical elements
7. Incorporate operational and conservation issues into the early design process

VE Workshops

VE Workshops are conducted using a multi-disciplined team approach which include such professionals as architectural, structural, civil, mechanical and electrical engineers as deemed relevant for the disciplines being studied. This structure allows the involvement of the Owner, Design Consultant and Construction Manager. The team approach used for VE studies are comprised of three specific phases:

- I Pre-Study Preparation Phase
- II VE Study Phase
- III Post VE Study Phase

I Pre-Study Preparation Phase

Coordination of the VE effort is vital to a project's success. It is important that a rapport be developed between the Design Consultant and the Owner's representatives so that each is aware of his responsibility and that the goal of the VE effort is to produce a better project.



II VE Study Phase

Value Engineering is a systematized approach for isolating high cost areas in design and arriving at the best balance between cost, performance and quality. The basic VE job plan consists of the following five stages:

1. Information Stage
2. Creative Stage
3. Analysis Stage
4. Development Stage
5. Presentation Stage

Information Stage

1. Gather all available facts
2. Build a cost model
3. Select components of the model which have the highest potential cost savings
4. Analyze functions of selected items
5. Allocate the current estimated cost to each function and determine the basic function worth

Creative Stage

Generate a wide variety of ways to provide the basic functions and any required secondary functions

by using brainstorming techniques.

Analysis Stage

Alternative design proposals are evaluated on a life cycle cost basis utilizing cost estimates approaching the same level of detail as the current cost estimate for the existing design.

Development Stage

1. List all alternatives or combinations of alternatives which have a significant cost savings potential.
2. Obtain additional information on remaining alternatives such as Life Cycle Cost analysis.
3. Seek technical assistance from suppliers and specialists.

Presentation Stage

Select the best alternatives to meet the basic functional requirements.

III Post VE Study Phase

Prepare a formal VE report summarizing the results of the study. This report includes the following:

1. Executive Summary
2. Introduction
3. Project Goals and Objectives
4. VE Study Methodology and Analysis
5. VE Study Recommendations