

## CONTINUOUS APPLICATION OF VALUE ENGINEERING

This document was presented at the 1993 International Conference of the Society of American Value Engineers (SAVE) at Fort Lauderdale, Florida by Laurel M. Dennis, P.E., Sacramento, CA. It was published in the SAVE Annual Proceedings and is copyrighted (SAVE, 1993). Permission to upload this document to CompuServe has been given by SAVE.

Laurel Dennis is the Value Engineering Manager (VEM) for the Rancho Los Amigos Medical Center Project for Los Angeles County. As VEM, she is responsible for managing and directing the VE efforts during the design and construction of the \$300 million expansion at the hospital. Prior to this, she held various positions including construction manager/ project manager for various projects.

### ABSTRACT

A VE Program applied on a continuous basis throughout the project increases the potential for cost reductions and the chance for implementation of the VE proposals. This paper describes the VE Program developed for the County of Los Angeles Rancho Los Amigos Medical Center, applying VE continuously.

- o VE Program for the Project
- o Roles and Responsibilities of the team members
- o Identification of potential VE ideas

During the development of the project and its components, each component is assessed for potential VE impact. The identification of VE items is a continuous process. The development of ideas for VE analysis is encouraged of all team members and coordinated by the VEM.

### OVERVIEW

Traditional VE is limited to one or two workshops. Therefore, emphasis is given to large cost items where the cost impact can be achieved. The designers are typically paid for any redesign efforts resulting from the recommended alternatives. If the redesign fees offset the savings of implementing cost reducing alternatives, then the study is not VE.

Some common items being reviewed for potential VE ideas are listed as follows:

#### SCHEMATIC DESIGN REVIEWS

- o Form/Function Design
- o Structural Design
- o Program versus Schematic Design Allocation
- o Circulation Space Allocation
- o Mechanical/Electrical Space Allocation
- o Building Systems Development
- o Construction Phasing
- o Site Configuration
- o Outline Specifications
- o Construction Access Configuration

A traditional VE process consists of a peer review of building components by system. A workshop is scheduled at the end of the design development and/or construction document phase where the design architects and engineers present their design. The owner and a peer group of designers review and evaluate the decisions and selections made by the designers and make recommendations on alternatives with the goal of increasing constructibility, decreasing initial construction cost, maximizing effectiveness of construction dollars spent, and minimizing life-cycle costs.

#### DESIGN DEVELOPMENT REVIEWS

- o Building Systems Development
- o Materials Selection
  - o Interior Finishes
  - o Flooring Types
  - o Lighting Types
  - o Exterior Wall Assembly
- o Construction Methods
- o Specifications Development

These alternatives are then prioritized and evaluated to determine how well they meet the goals of the program and the design criteria of the project. The designers leave the workshop with a list of alternatives to study and/or implement.

#### CONSTRUCTION DOCUMENTS

- o Construction Document Details
- o Contract Specifications

Involving VE during the early phases and on a continual basis allows recommendations to be made when solutions can be implemented as part of the design process while openness to change is greater and redesign fees lower. Also the earlier VE is applied, the greater the potential cost reductions and/or cost avoidance with lower costs of implementation.

#### OTHER DOCUMENTS

- o Environmental Impact Report (EIR)
- o Utility Studies
- o Project Schedules
- o Cash Flow Phasing
- o Parking Studies

The VE Program for the County of Los Angeles at the Rancho Los Amigos Medical Center was developed applying VE on a continual basis starting with the schematic design phase of the project.

### APPROACH

First, a guideline was developed outlining the VE Program with an introduction to VE. This guideline was used by the team members. The guideline was developed to provide the project team with an outline of the value management approach to be used during the various phases of the Rancho Los Amigos Medical Center Project. This VE Program Guideline regulates the documentation and communication of the VE efforts by the project team members.

This is a partial list, illustrating some potential areas for VE.

At the start of the VE Program, the VE Manager (VEM) met with each of the project team members. The project team members include the County of Los Angeles Internal Services Division/Project Management Division (ISD/PMD), Owner/Client, Architectural Program Manager, A/E design firms and Construction Manager. The issues reviewed were:

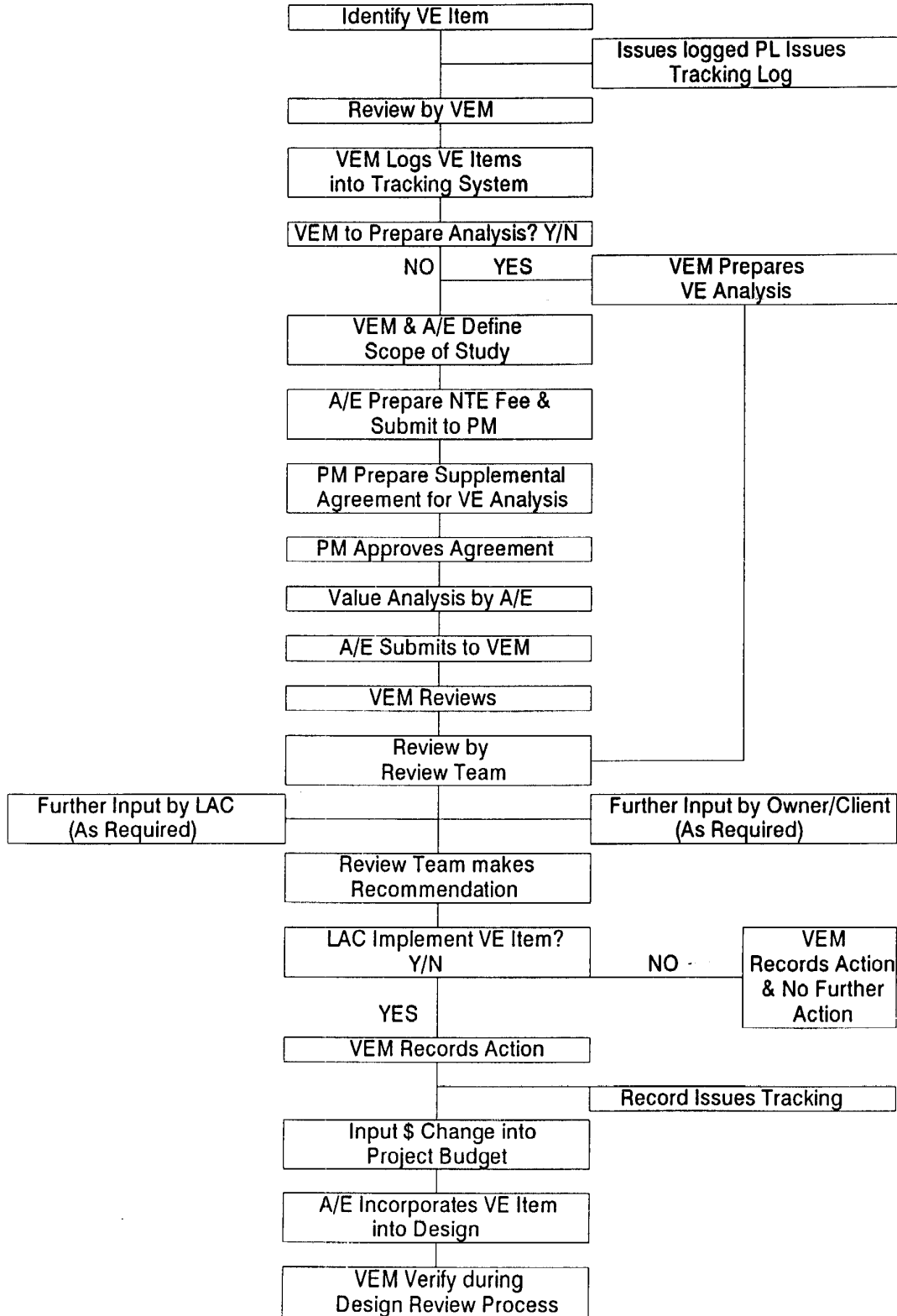
After an item is identified for further value analysis, the item is forwarded to the VEM for review and logging into the Tracking System, as shown on the VE Process Flow Chart (Figure 1). Once the idea is given a VE Item Number, the VEM determines whether the VEM or the A/E prepares the VE analysis. If the A/E is to prepare the analysis, the VEM meets with the A/E to define the scope of the study. The A/E establishes a proposed fee to prepare and submit the analysis to the County for authorization to proceed. Upon approval, the A/E proceeds with the value analysis (VA) for the defined VE Item and submits it to the VEM. The VEM reviews the VA for completeness before submission to the Review Team for recommendation.

#### SCHEMATIC DESIGN REVIEWS

- o Overview of the VE approach

# VALUE ENGINEERING PROCESS FLOW CHA

## County Value Engineering Program Guideline



The completed VA is submitted to the Review Team for recommendation for final action by the County ISD/PMD. The review team consists of the County ISD/PMD, Architectural Program Manager, Owner/Client, VEM and Construction Manager. If further input is needed by Los Angeles County or user groups, these will be done through the on-site representatives. The Review Team's recommendation is forwarded to ISD/PMD for a final approval.

ISD/PMD makes the final decision regarding implementation of the VE Item. The VEM records the decision status into the Tracking System and the A/E incorporates the VE Item into the documents, as required. The decision status of these VE items are reported in the Monthly Report. The cost impact due to the results of the decision of the VE item are incorporated in the project costs.

During the next design submittal, the VEM reviews the design documents to verify that all the VE Items have been incorporated. Any issue unincorporated, remains as an outstanding design review comment until a resolution is reached.

#### ROLES AND RESPONSIBILITIES

The VEM is central to the VE efforts. The VEM coordinates all the team members in activities concerning VE and the documentation of the cost and schedule impacts related to these items. In accomplishing this objective, the VEM leads in coordinating, identifying and implementing VE items. However, ultimate responsibility for design and preparation of any necessary construction documents, cost estimates and life-cycle computations for each VE item belongs to the assigned A/E.

The A/E is responsible for preparing the value and cost analysis and implementation of the VE item into the design.

The Review Team reviews the VA and forwards the recommendation to the County, 2ISD/PMD, for final determination of the proposed VE Item.

#### CONCLUSION

The application of the VE Program in this way has resulted in the approval of approximately 80% of the almost 500 VE items studied. The net cost savings for this \$300 million project is over \$8 million. Besides using the program for VE studies, VE techniques were expanded for review of program changes, owner/client requested changes, and resolution of problems.