



VALUE ENGINEERING PROGRAM PROGRAM GUIDELINES

I. Scope

- A. All Arizona Department of Transportation (ADOT) Value Engineering activities will be conducted in accordance with these Guidelines.
- B. Activities of a similar nature, which may be performed by ADOT employees or consultants, but which is not in accordance with these Guidelines, shall not be referred to as "Value Engineering." This will avoid confusion about the Value Engineering program.

II. Administration

- A. The Value Engineering (VE) Section will administer the program under the direction of the Assistant State Engineer for Construction & Materials. The VE Section can be reached Phone (602) 712-8544, Fax (602) 712-3220.
- B. The VE Section will develop appropriate administrative procedures and documents, and will maintain the program files. They will also maintain a Value Engineering study database. The database will contain information about resources available within the Department, as well as technical resources available elsewhere.

III. Study Selection and Timelines

- A. The VE Section will meet quarterly with ADOT Project Management for the purpose of reviewing upcoming projects and determining their potential for future VE studies.
- B. Projects requiring a VE study shall include:
 - 1. Each project located on the National Highway System (NHS) (as specified in 23 U.S.C. 103) with an estimated total program amount (to include environment, design, right-of-way, utilities, and construction phases) of \$50 million or more that utilize Federal-aid highway program funding.
 - 2. Each bridge project (primary purpose is construction, reconstruction, rehabilitation, resurfacing, or restoration of a bridge) located on the NHS with an estimated total program amount of \$40 million or more that utilizes Federal aid highway program funding.
 - 3. Any major project (as defined in 23 U.S.C. 106(h)), located on or off the NHS, that utilizes Federal-aid highway funding in any contract or phase comprising the major project.
 - 4. Any project where a VE study has not been conducted and a change is made to the project's scope or design between the final design and the construction letting which results in an increase in the project's total program amount exceeding the thresholds identified in the above paragraphs.
 - 5. Any other project FHWA determines to be appropriate that utilizes Federal-aid highway program funding.
- C. Additionally while not required, it is encouraged to consider any complex project on or off the NHS with an estimated program amount of \$25 million or more for a VE study. The ADOT Project Manager (Project Manager) and the VE Coordinator will meet and review the project's scope of work and decide whether the project will benefit from a VE study.
- D. The VE Study should be conducted after finalization of the design concept report and as soon as

the final designer is selected. Therefore, it is essential that the Project Manager keep the VE Section current on the status of the project. It takes three to four weeks to set up and prepare for the VE study.

IV. Team Selection

- A. VE study teams will normally consist of 5-9 persons, drawn from different sections of ADOT. Some teams may be supplemented with one or more consultant employees.
- B. The VE Section will maintain a roster of employees with value engineering experience.
- C. Once a project is selected, the VE Section, in collaboration with the Project Manager, will determine the disciplines needed on the team including the respective FHWA Area Engineer, and will contact the appropriate representative of the various groups/sections to request one or more team members. The Value Engineering Coordinator and the Group/Section Manager or their representative will jointly determine which employee to assign to the study team, based on experience. The VE team should consist of a multidisciplinary team not directly involved in the planning or design of the project with at least one individual who has training and experience with leading VE studies and has completed specialized VE training or obtained certification, for example Certified Value Specialist by SAVE International. A qualified consultant may be employed to conduct the VE study. The consultant shall possess training and experience with leading VE studies and have obtained certification as a Certified Value Specialist by SAVE International. A consulting firm or individual shall not be used to conduct or support a VE study if they have a conflict of interest. For projects delivered using the CMAR contracting method, staff from the CMAR contractor or its subcontractors, such as the estimator or construction superintendent, may serve as a member of the multidiscipline VE team as long as their participation does not create a conflict of interest.
- D. A representative from the Project Development Team will be invited to participate on the Study Team.

V. Study Procedure

- A. VE studies will generally require 3-4 continuous days of full time effort by the entire team. The time allotted to each study will be determined in advance. Some studies may be conducted as a series of sessions.
- B. The VE Section will select a facilitator to lead the Study.
- C. The VE Section will secure an appropriate location for each study. Most studies will be held in Phoenix, but other locations may be considered.
- D. The VE Section will prepare a Study Plan and distribute it in advance to each team member. The Study Plan will contain information about the scope of the study, the logistics, and team preparation. Value Engineering Section will arrange for pertinent documents to be made available to the team at the beginning of the study.
- E. The VE Section will arrange for a brief presentation or discussion by the designer at the beginning of the study. A field trip is desirable when feasible.
- F. A Study Report will be issued by the VE Section, generally within two weeks following the completion of the study. The Study Report will be sent to the Project Manager and the VE study team members for review and will outline at a minimum:
 - a. Project information
 - b. Identification of the VE analysis team

- c. Background and supporting documentation
 - d. Documentation of the seven phases of the VE study including life-cycle costs analyzed
 - e. Summary of the analysis conducted
 - f. Documentation of the proposed recommendations and approvals received at the time the report is finalized
- G. In addition to the requirements above, the Study Report for bridge projects shall:
- a. Include bridge substructure and superstructure requirements that consider alternative construction materials
 - b. Be conducted based on:
 - i. An engineering and economic assessment, taking into consideration acceptable designs for bridges; and
 - ii. An analysis of life-cycle costs and duration of project construction

VI. Review and Implementation

The review of the VE Study Report will be conducted by the Project Manager and the final Designer, who will seek assistance from ADOT technical groups as required. After consulting the final design team and within two weeks of receipt of the VE Study Report, the Project Manager shall provide a written response to the VE Section with a courtesy copy to the FHWA Area Engineer documenting final disposition of the approved recommendations. The written response should include:

- Approved recommendations to be implemented
- Approved recommendations that were modified – provide details of change
- Approved recommendations not adopted – provide reason(s)

VII. Annual Reports

The VE Section will prepare an Annual Report for each ADOT fiscal year summarizing the activities, achievements, savings and costs of the Value Engineering program.

VE studies completed by Certification Acceptance (CA) Agencies will be tracked separately and incorporated into the Annual Report.

VIII. Training

- A. From time to time the VE Section will offer training to enhance knowledge of potential VE team members.
- B. VE team members can get basic VE training via NHI's web based training course "Introduction to Value Engineering"; course number 134005A.