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Value Engineering Officer's Operational Guide

US Army Corps
of Engineers
Office of
Chief of Engineers

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, D.C. 20314

CEN-ECE-V

Pamphlet
No. 11-1-3

1 January 1987

ARMY PROGRAMS
Value Engineering Officer's Operational Guide

1. **Purpose.** This pamphlet prescribes the basic duties and responsibilities of Value Engineering Officers (VEO) and procedures for operation of Value Engineer (VE) programs. Information and responsibilities are included to assure correct preparation and conduct of USACE sponsored Value Engineering Workshops. Differences in local conditions will justify varying the outlined procedures. It is to the advantage of USACE to maintain maximum uniformity in fulfilling its VE mission.

2. **Applicability.** This pamphlet is applicable to all field operating activities.

3. **References.**

a. FAR, Part 48, Value Engineering.

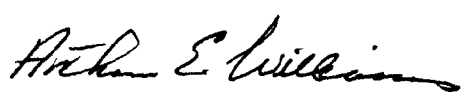
b. AR 672-20.

c. AR 5-4, Value Engineering, Chapter 4.

d. OCE Supplement 1 to AR 5-4.

4. **General.** This pamphlet is not intended to supersede any regulations nor is it intended to abridge command authority or responsibility in any respect. Appendixes of this pamphlet have been prepared to facilitate reproduction as separate documents by Field Operating Activities.

FOR THE COMMANDER:



ARTHUR E. WILLIAMS
Colonel, Corps of Engineers
Chief of Staff

5 Appendixes
APP A - Basic Duties, Responsibilities and Procedures
APP B - V.E. Workbook
APP C - V.E. Proposal
APP D - Guide for Hosting USACE-Sponsored V.E. Workshop
APP E - Contractor Participation Program
APP F - OCE Value Engineering Study Team - OVEST

This Pamphlet supersedes EP 11-1-3 dated 15 June 1976.

APPENDIX A

Value Engineering Officer's Operational Guide

BASIC DUTIES, RESPONSIBILITIES AND PROCEDURES

Department of the Army
U.S. Army Corps of Engineers
Washington, D.C. 20314

1. The Value Engineering Officer.

a. Definition. Value Engineering Officer (VEO) as used in this pamphlet refers to the professional who has been specifically so designated and who has the direct responsibilities discussed in this pamphlet.

b. Qualifications. The VEO should be a Certified Value Specialist (CVS), currently certified by the Society of American Value Engineers (SAVE), and should be an engineer or architect. The VEO should also have a construction and/or design oriented background complimented by management experience and training (see paragraph 2, Training) in the principles, application and management of VE. The VEO must:

(1) Be capable of organizing and maintaining an effective VE program.

(2) Understand the concepts and techniques of VE.

(3) Recognize that application of the VE method can and does effectively reduce the cost of construction, procurement and operations and maintenance.

(4) Have the ability to influence others in the acceptance of Value Engineering.

(5) Have the ability to work smoothly and effectively with others, and should seek, with the use of good human relations, to effect improvement through VE with the cooperation of those responsible for the concept and/or original design.

(6) Have the ability to explain to others that the application of VE to a high-cost area is an effective supplement to the normal design processes and should be applied concurrently with design efforts.

c. Authority. Authority follows the normal chain of command, from the Chief of Engineers to the Division Commanders to the District Commanders. The VEO's location within the organization will be at staff level, with the VEO answering directly to the District/Division Commanders precluding the necessity of crossing supervisory lines, and giving the VEO ready access to the various organizational elements. The VEO position warrants full-time staffing with administrative assistance as required. The District workload may justify an Assistant VEO.

d. Responsibilities. The VEO is responsible for the satisfactory accomplishment of all duties within the scope of authority assigned, which include the following:

(1) Maintain an active and productive VE program conforming to the requirements of existing applicable regulations.

(2) Maintain a training program to assure that all engineers and other appropriate personnel are familiar with the principles and application of VE.

(3) Cooperate with all district elements in order that a continuous effort is assured for performance of VE studies.

(4) Promote active contractor participation through meetings and correspondence.

(5) Assure that maximum cost reduction through VE is realized by adherence to established VE methodology.

(6) Assure that all contract-related organizational elements actively engage in the promotion of contractor participation under the VE Incentive Clause.

(7) Keep higher echelons informed as to progress made, especially with regard to attaining assigned goals.

(8) Establish and publish guidance outlining the Division or District VE policies.

2. Training.

a. The VEO. All VEO's and their Assistants shall have, as a minimum, completed a 40-hour VE workshop approved by the certification board, Society of American Value Engineers, to fulfill the requirements for Value Specialist certification. They should receive refresher training by attending the OCE-sponsored VE Workshop or equivalent every 5 years. In order to be equivalent, the workshop must be construction oriented and utilize the 6-step VE job plan. The VE workshop and attendance of annual conference meetings with other USACE Value Engineering Officers will provide VEO personnel valuable information for administration of the USACE VE Program. Value Engineering Officers should achieve the status of Associate Value Specialist (AVS) within 3 years and of Certified Value Specialists (CVS) within 5 years of entry into the VEO position.

b. USACE Personnel. Training of at least 2 hours will be arranged for personnel at branch chief level and above in District offices, section chief level and above in Division offices and at HQ USACE. Value Engineering orientation courses with at least a 4-hour duration will be a minimum requirement for all other engineering and architectural personnel until such time as the engineer or architect with design, construction and operational responsibilities can be scheduled to attend the OCE-sponsored 40-hour VE workshop.

c. Other Army Personnel. It is to the advantage of the USACE VE program that other Army Commands (TRADOC and FORSCOM) and the installation's directorate of Engineering and Housing (DEH) personnel with construction-oriented missions, including O&M responsibility, be trained in the VE methodology. USACE VE Officers will cooperate to provide VE executive seminars, orientation courses, and the USACE 40-hour VE Workshop.

d. Contractors and Architect-Engineers. While training of contractors and A-E's is not the responsibility of the USACE, it is advantageous to assist in their VE training whenever possible. Training needs can be determined through local organizations such as, American Institute of Architects (AIA), National Society of Professional Engineers (NSPE) and Associated General Contractors of America (AGC), or by contracting the individuals. Seminars conducted at District or Division level have been well received and have proven valuable in promoting contractor VE participation.

3. In-house Value Engineering.

a. Selecting Projects for Study. It is essential that projects for VE study be selected carefully. Experience in VE will result in greater ease in selecting projects. However, until such experience is obtained, the VEO may find it desirable to utilize one or more of the following six methods of selecting projects. It is important to stress the fact that in proposing subjects for VE study it is not necessary to provide solutions.

(1) Prepare a plan of action by assigning goals including the identification of specific items for study.

(2) Publicize the need of projects for study, explain exactly what is wanted and the basis for selecting a project, and invite all technical personnel within the Office to suggest projects to the VEO by a given date.

(3) Periodically (e.g., quarterly) issue instructions to certain organizations, such as the Design Branch of Construction Division, to submit a minimum number of projects by a given date. It is necessary to stress the basis on which the projects are to be submitted; i.e., high-cost materials, methods of construction, maintenance, energy conservation, etc. This method will assure the receipt of the required number of projects, but it will still be necessary to "weed out" low-potential ideas.

(4) Coordinate the appointment of a team to take a given design and brainstorm it for high VE potential areas.

(5) Appoint a standing VE committee or board of top personnel from appropriate internal office to meet periodically for the purpose of selecting projects to study.

(6) The normal reviews of project design memoranda (for Civil Works) and plans and specifications for all programs at District, Division, and OCE levels afford excellent opportunities to identify high cost components where VE studies may be beneficial. Every reviewer should be alert to such possibilities. Review comments and letters of transmittal should describe any such areas for which VE studies are suggested or recommended. For Civil Works in particular, OCE and the Division can then provide guidance in the projects for VE study by the District.

b. Selecting the Team.

(1) The team should consist of approximately five members recommended by the VEO and/or project selection committee and be coordinated with the appropriate supervisors. All members need not be engineers; in fact, persons other than engineers are frequently valuable assets to a team if they are familiar with the VE methodology.

(2) One team member should be designated leader and, as such, shall be responsible for gathering data, arranging for meetings, leading the study, and reporting results. The VEO need not participate in the study, but should be available for guidance. The team should be furnished workbooks and a suitable proposal format. See Appendixes B and C for suggested books.

c. Performing the Study. The study should be performed in accordance with the approved Corps VE methodology and as early in the design phase as practicable.

d. Evaluating the Study. A completed study should be evaluated immediately. ER 1110-2-1200 (Para. 13(g)) states "Significant revisions to approved project plans and specifications, whether made prior to advertising or by amendment of an invitation for bids or by modification of an existing contract will be approved by the approving authority of the plans and specifications being revised... ." Significant revisions are defined as "those which modify the structural features, functional purpose or operational maintenance characteristics of the equipment or work involved." Proposed changes to Using Agency criteria must be submitted to the agency for approval. All concerned should be kept aware of the necessity for expeditious review and approval. In Civil Works, any substantial departure from an approved design memorandum found necessary or advisable during the preparation of plans

and specifications will be incorporated in a supplement to the applicable design memorandum, which will be submitted for approval prior to completion of the plans and specifications.

e. Recognizing Contributors. Those contributing to the success of an in-house study should be recognized promptly. Participants involved with a VE Study with exceptional results, i.e., energy conservation, environmental improvements, architectural achievements should be considered for a special acts award. One or more persons may independently perform a VE Study and submit the results for approval through the Suggestion Program. Approval of such a suggestion may result in an appropriate monetary award. (See AR 67220.)

4. Contractor-Initiated Value Engineering Proposals.

a. Although contractors cannot be required to participate in the VE program under the Incentive Clause, they should be encouraged to do so and assisted in their efforts.

b. Responsibilities of the District VEO. The VEO should:

(1) Inform Resident Offices and Project Engineers of District policies and procedures, and of the VE activity, monetary savings and goals.

(2) Work closely with the local chapter of the AGC in promoting contractor participation in VE.

(3) Assure that VE is properly and adequately supported in all Resident Offices.

(4) Participate in preaward and/or preconstruction conferences to explain and promote VE.

(5) Establish and maintain a current reference file including visual aids such as 35mm slides, vu-graphs and film strips depicting successful VE application.

(6) Expedite the processing of all Value Engineering change proposals. A cost account will be established to track normal engineering administrative costs as mentioned in the value engineering contract clause.

c. Responsibilities of Resident Engineers.

(1) The Resident Engineer should expedite transmittal of all Value Engineering Change Proposals.

(2) At each preconstruction conference, the contractor's understanding of the principles and application of VE should be ascertained. Those contractors who have not had experience in VE should be encouraged to seek instruction in its principles and application. Contractors should be offered assistance in establishing and maintaining VE procedures.

(3) The Resident Engineer should expedite transmittal of all Value Engineering Change Proposals.

5. Records and Reports.

a. Filing and Records. Files should be maintained in accordance with the applicable regulations. Complete and accurate records of all VE actions should be kept throughout their useful life. Each in-house proposal should be summarized, recorded, approved and filed for future reference. Recording may be in the form of Appendix B and C (Value Engineering Workbook and/or Proposal) or parts thereof, or other appropriate form. Files should contain all applicable DOD, DA and USACE regulations.

b. Guidance for Reporting VE Savings and Improvement Actions. Savings resulting from VE are reported in accordance with applicable regulations. Reports of VE actions are reviewed extensively for potential adoption and to appraise the progress of the Value Engineering Program. In order to be effective, the following guidelines should be followed in the preparation of these reports to simplify validation of savings against assigned VE goals.

(1) Provide all essential facts to eliminate assumptions by the reader. VE descriptions are read mostly by technical personnel for possible adoption; and therefore, the descriptions are of little use when technically deficient.

(2) Clearly describe the original and changed designs (for civil works make reference to USACE, or other, approval of the original design). Keep in mind that this information will be incorporated into the Corps' computerized VE information retrieval system, VE-trieval. Reports should include a clear and concise narrative of the before and after situation.

(3) Show that the VE effort generated an alternative, less-costly means of performing the required functions. Show that VE methodology was used, thereby preventing the conclusion that the action was the result of economic analysis or normal design review. Emphasize the functional analysis, that several alternatives were considered, and the attention paid to value versus cost. Refrain from the use of terminology such as "through an economic analysis," "by a cost analysis," or other phrases that might indicate that techniques other than Value Engineering had been practiced. (For civil works, the recommended alternative is an innovation and not a standard that should have been used initially. Also, it is not a mandatory change required by unanticipated site conditions. Value Engineering is a voluntary effort to develop an alternative; not an involuntary effort dictated by circumstances).

(4) Describe each action in a positive manner to reflect only the Value Engineering aspects. Normally it will be necessary to describe the situation which led to the application of VE. Most facts required for audit should appear in backup information rather than on the report where they may detract from the description of the action.

(5) Limit or eliminate references to funding procedures. Narratives pertaining to funds that were saved does not add to the VE description. Funding information should be in back- up material.

(6) Include all cost factors in the calculation of net savings including life cycle cost analysis, if appropriate. List offsetting cost factors to show that they have been considered. This will preclude return of the cost analysis for the omitted factors.

(7) The VEO should include statements concerning social and economic values in the narrative of all VE savings and improvements reports when applicable to overcome negative response to cost reduction aspects of the report. Value Engineering gives equal consideration to the creation and preservation of unique and important ecological, aesthetic and cultural values, energy conservation, environment and the functional needs of the user. Economic values include design and construction costs, operational reliability and performance, operation, and maintenance costs, safety during and after construction, decreased construction time, use of quality materials that reduce life cycle costs and enhance flexibility of the facilities where a change of mission could occur, as well as other engineering considerations.

(8) Give credit to those performing the study by identifying them in the report of savings.

6. Implementation.

a. Local Changes. Approved changes, whether the result of contractor proposals or in-house studies, should be implemented immediately by revising the affected design. Other designs should be examined to determine if VE changes are applicable and revised as appropriate. Projects advertised for bids or under contract should be revised by amendment and contract modification, respectively.

b. Changes from Other Offices. Reports of VE actions from other offices should be examined for applicability to local designs. Applicable actions should be implemented immediately. Information on approved VE changes is stored in the VE information retrieval system, VE-trieval. Contact your local librarian for assistance in using the data system.

c. Standard Designs. When standard designs for military construction are studied under the guidance of HQ USACE resulting changes which are approved will be announced by Engineer Technical Letter as soon as practicable. This will enable Districts to have the advantage of the changes before the revised standards are issued. For maximum savings, such changes should be implemented before opening of bids or, where practicable and when earlier revision is not possible, by contract modification.

7. Publicity. To promote interest and added participation in the VE program, every available means of publicity should be utilized.

a. Public Affairs Officer (PAO). The VEO should maintain a close working relationship with the PAO and should keep that office aware of progress made in the program. The VEO should seek to publicize all approved proposals resulting in significant savings.

b. Associated General Contractors (AGC). The VEO should make himself acquainted with representatives of local AGC chapters, and should be prepared to discuss VE, as it applies to contractors, at chapter or regional meetings.

c. Handout Materials. Booklets or other handouts explaining benefits of the VE incentive clause should be furnished USACE contractors and subcontractors. Other beneficial information should be furnished contractors to encourage participation in the VE program.

APPENDIX B

Value Engineering WORKBOOK (EP 11-1-3)

Project

Study Item

Study Team | **Office Symbol** | **Telephone**

Leader

Members

DISCIPLINES

ARCH	☐	SPECS	☐
CIVIL	☐	STRUCT	☐
ELEC	☐	_____	☐
MECH	☐	_____	☐

US Army Corps of Engineers

Study Number | **Date**

Consultants

Name-Title	Address	Telephone

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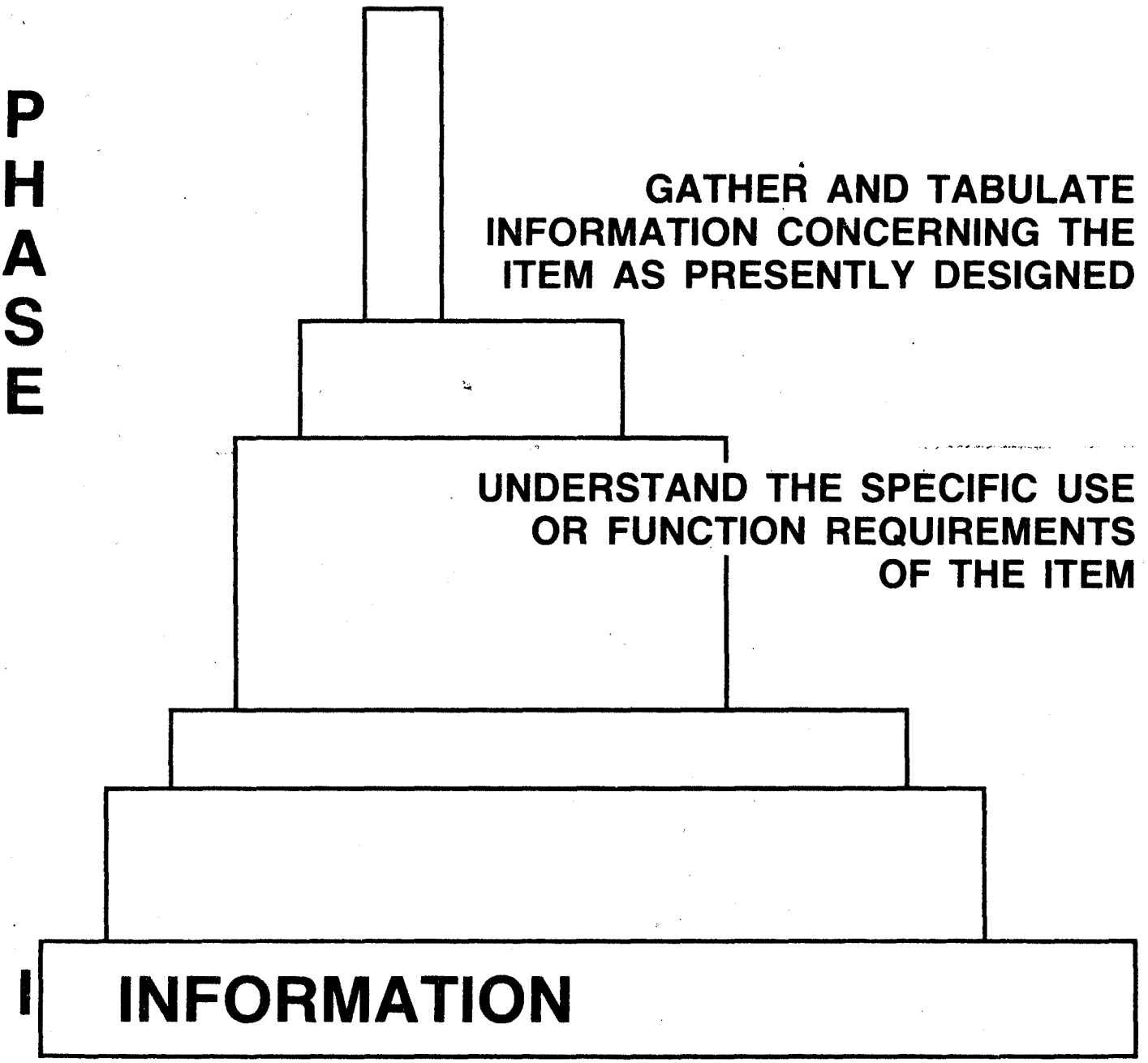
PHASE I



Reference Manuel C. Macedo, Jr., Paul V. Dobrow, and Joseph J. O'Rourke, Value Management for Construction (New York: John Wiley & Sons, 1978), p. 240 et. seq.

INFORMATION
PHASE I

TECHNIQUES

Get all facts from the best possible sources.

Determine and evaluate the function of the present design.

Prepare a FAST diagram.

Obtain cost information.

Determine present design constraints.

USE GOOD HUMAN RELATIONS

KEY QUESTIONS TO ANSWER

WHAT IS IT?

WHAT DOES IT DO?

WHAT MUST IT DO?

WHAT DOES IT COST?

RECORD ALL INFORMATION

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PRESENT
System or Design

Status of Project

Approval Authority

Individual	Position/Organization	Telephone

Historical Data

Codes

Special Criteria

Restrictions

Other

FUNCTION ANALYSIS WORKSHEET

ITEM: UNDERGROUND STORAGE TANKS

BASIC FUNCTION(S): CONTAIN FUEL

COMPONENT	FUNCTION VERB	FUNCTION NOUN	BASIC or 2d	EXPLANATION	QUANTITY	UNIT	ORIGINAL COST
Fuel Tank	Contain	Fuel	B	10,000 Gal.	1	Ea.	$10,000
Concrete	Prevent	Flotation	2	Form Cone w/saddle	35	Cy	3,500
Steel	Reinforce	Concrete	2	Tension Concrete	540	Lbs.	405
Steel Strap	Fasten	Tank	2	Connect Tank to Anchor	4	Ea.	200
Turn Buckle	Tension	Strap	2	Eliminate Slack	8	Ea.	80
Eye Bolt	Anchor	Strap	2	Imbedded in Concrete	8	Ea.	60
Excavation	Create	Space	2	For Placing Tank	140	Cy	560
Backfill	Fill	Space	2		140	Cy	560
	Protect	Tank	2				
	Prevent	Flotation	2				
					TOTAL		$15,365

FUNCTION ANALYSIS WORKSHEET

Place the name of the item being studied (What is it?) at the top of the table.

Indicate the component parts on the table.

List all the functions performed by the item (What does it do?) in the Function column. As indicated in the table, a two work (verb-noun) description should be used.

Identify the item's function(s) as to basic "B" (What must it do?) and secondary "2d". The Explanation column can be used when necessary to add more detail on the function of the item.

List the quantity requirements for each component and the unit of measure.

Indicate the cost of each component and a total for the original design.

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Function Analysis Original Design

FUNCTION ANALYSIS WORKSHEET

ITEM ______________________

BASIC FUNCTION(S) ______________________

COMPONENT	FUNCTION VERB	FUNCTION NOUN	BASIC or 2d	EXPLANATION	QUANTITY	UNIT	ORIGINAL COST

ENG Form 3986-R, Sep 85

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FAST Diagram Original Design

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ESTIMATE ORIGINAL DESIGN

Item	Quantity	Unit	Labor and Materials	Total*

*Excludes Overhead & Profit

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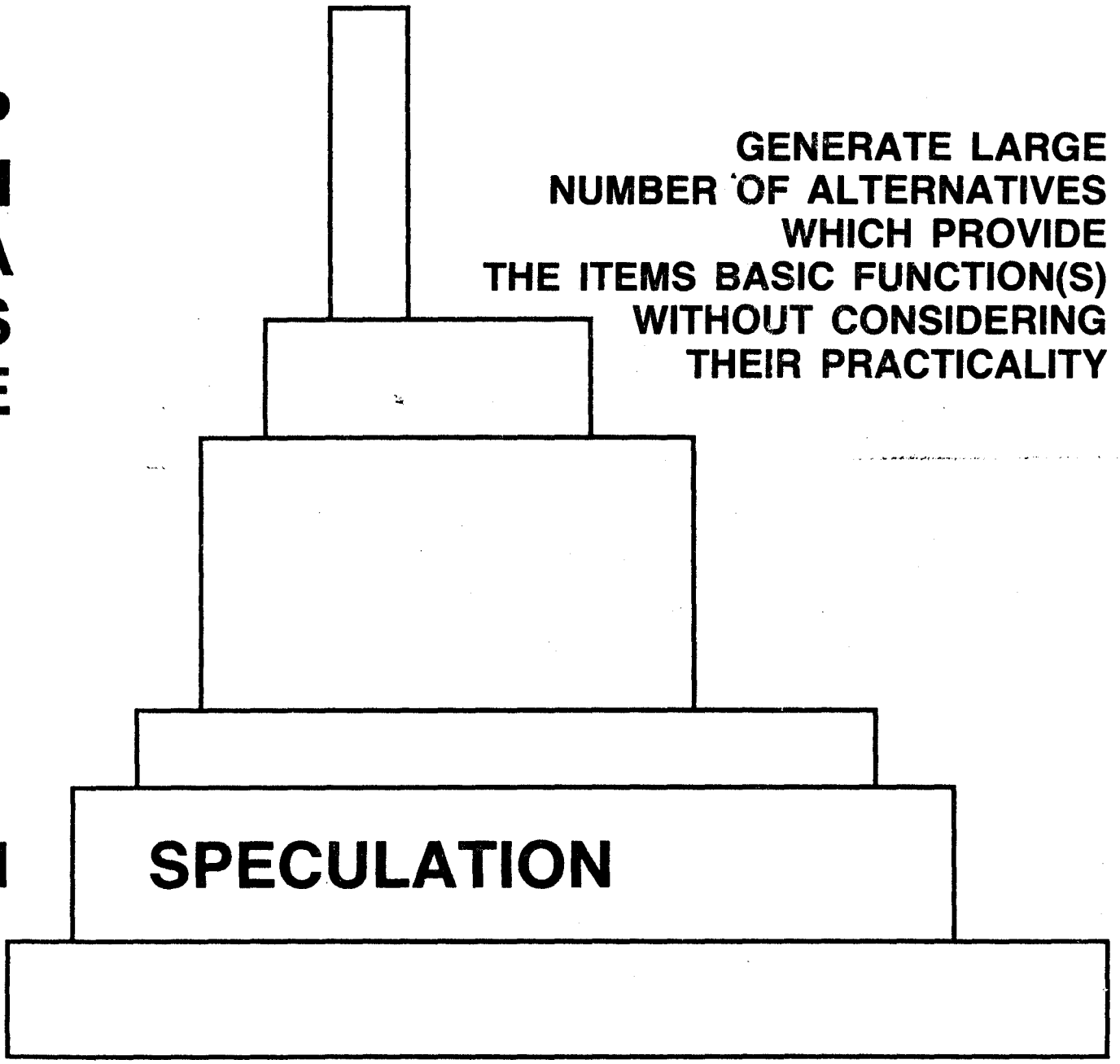
PHASE II



GENERATE LARGE NUMBER OF ALTERNATIVES WHICH PROVIDE THE ITEMS BASIC FUNCTION(S) WITHOUT CONSIDERING THEIR PRACTICALITY

Reference Text, Ibid., p. 243 et. seq.

SPECULATION
PHASE II

TECHNIQUES

Use creative thinking (group brainstorming).

Don't let regulations or people control your thinking.

Eliminate.

Simplify.

Modify and/or combine alternatives.

USE GOOD HUMAN RELATIONS

KEY QUESTION TO ANSWER

WHAT ELSE WILL PERFORM THE BASIC FUNCTION(S)?

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Ideas

BASIC FUNCTION: _____ (verb) _____ (noun)

Alternatives – List as many as possible.

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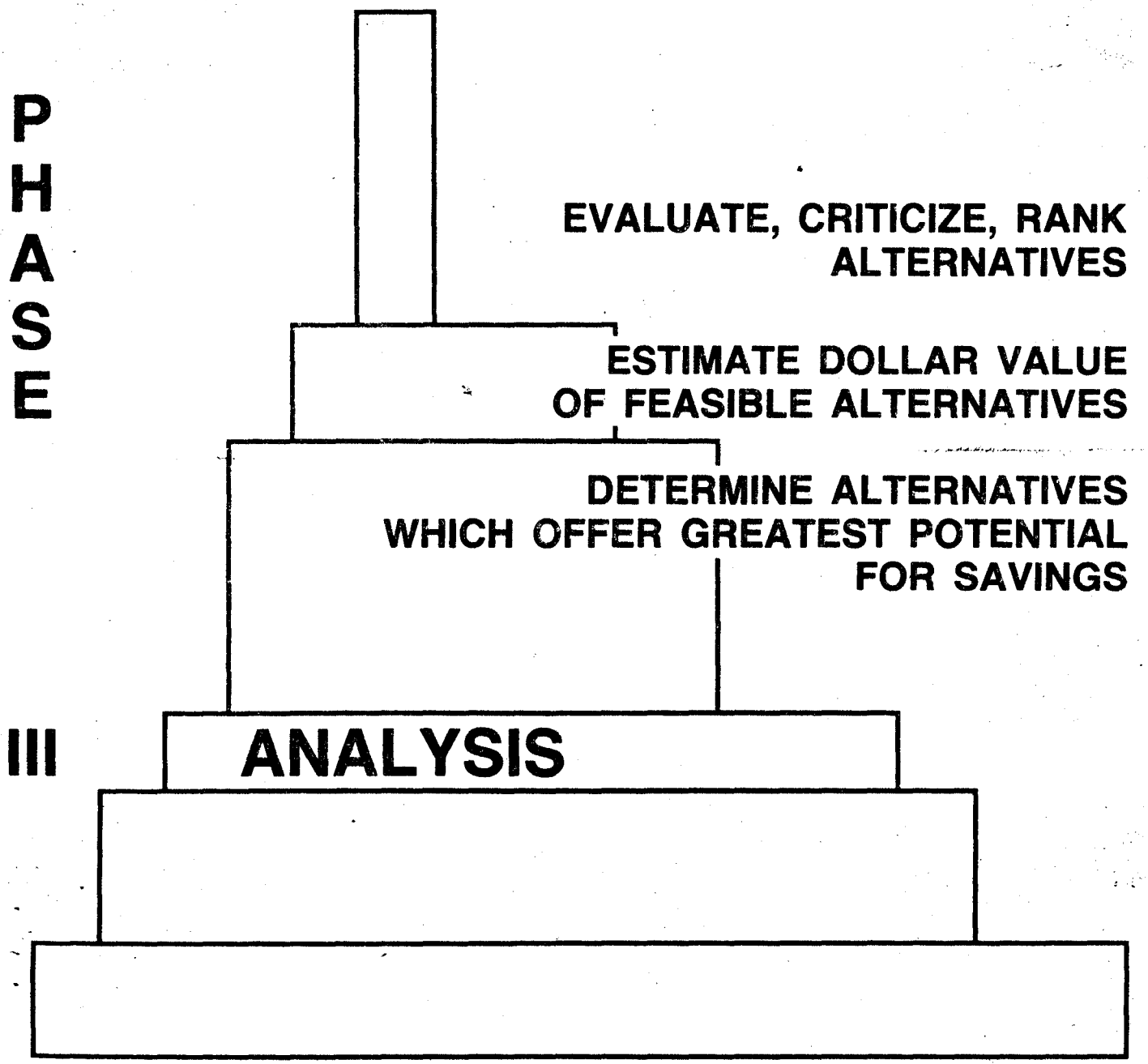

Reference Text, Ibid., p. 246 et. seq.

ANALYSIS
PHASE III

TECHNIQUES

Use cost references.

Apply matrix.

Make sketches.

Consult experts.

Use your own judgement.

USE GOOD HUMAN RELATIONS

KEY QUESTIONS TO ANSWER

WHAT DOES EACH FEASIBLE ALTERNATE COST?

WILL EACH PERFORM THE BASIC FUNCTION(S)?

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Criteria Weighing Example

EXTERIOR WALL

CRITERIA

	A COST	B MAINTAINABILITY	C AESTHETICS	D PROVEN QUALITY	E HVAC IMPACT	F REDESIGN TIME	G	H	I	J	K	(SUM OF SCORES IN BOTH VERTICAL AND HORIZONTAL)	ORDER
A		A1	A3	A2	A3	A4						A 13	1
B			B5	D1	E3	B2						B 7	4
C				D3	C4	C4						C 8	3
D					E3	D5						D 9	2
E						F3						E 6	5
F												F 3	6
G												G	
H												H	
I												I	
J												J	
K												K	

Preference Weightings

0 – No difference
1 – Minor
2
3 – Medium
4
5 – Major

To each box under SCORE, be sure to write both the letter representing the PROBLEM AREA and the numeral or cipher representing the WEIGHTING for the choice you feel is most important.

CRITERIA WEIGHING PROCESS INSTRUCTIONS

List functions, elements to be compared. (In this case—cost, maintainability, aesthetics, etc.)

Based on information obtained, compare "A" with "B" (cost vs. maintainability) and place the letter representing the most important in the upper left hand block in the matrix. Add to this block the appropriate weight factor, i.e., 1-2-3-4-5. (The weight factor is determined by the speed of the decision, i.e., if rapid use 5, etc.)

Compare "A" to "C" (cost vs. aesthetics) in a similar manner and add the weight factor.

Compare "A" to each of the other elements, determining importance and weight.

When this is done, step to "B" and compare it, on a one-to-one basis, to each other letter element. Continue this process until every element has been compared to every other element.

After all elements have been compared, add the weight factors for each letter, both vertical and horizontal, and indicate the sum.

Then transfer, in descending order, the element with its associated weight to the ANALYSIS MATRIX.

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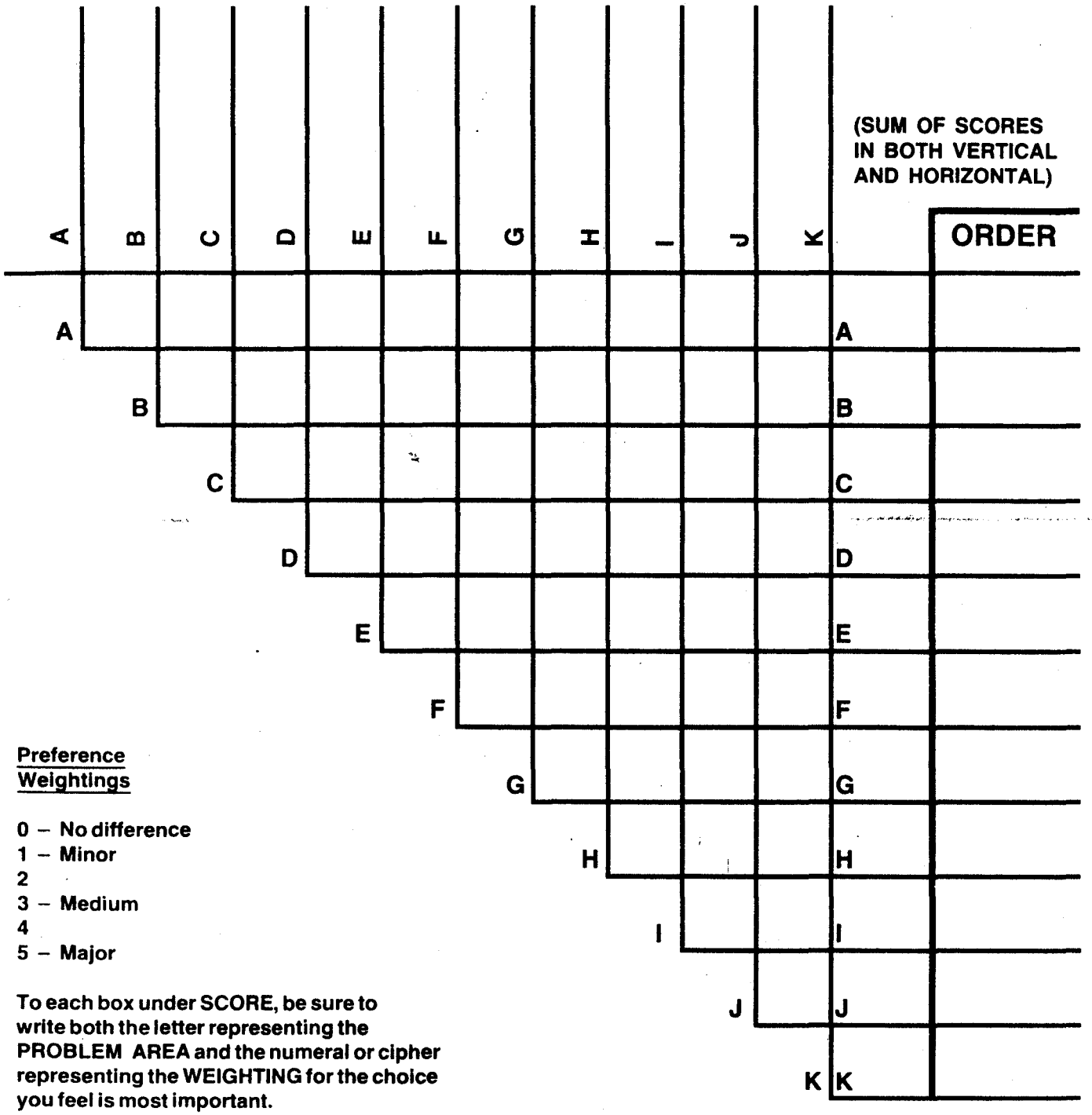
Criteria Weighing

CRITERIA



Preference Weightings

0 – No difference
1 – Minor
2
3 – Medium
4
5 – Major

To each box under SCORE, be sure to write both the letter representing the PROBLEM AREA and the numeral or cipher representing the WEIGHTING for the choice you feel is most important.

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Analysis Matrix Example

EXTERIOR WALL

BASIC FUNCTION CONTROL ELEMENTS/SUPPORT LOAD

List the best ideas from ranking and comparisons techniques. Determine which one stacks up best against the desired criteria.

Desired Criteria	COST	PROVEN QUALITY	AESTHETICS	MAINTAINABILITY	HVAC IMPACT	REDESIGN TIME				
Weight From Criteria Matrix	a	b	c	d	e	f	g	h	i	
Present	13	9	8	7	6	3				Totals
STEEL FRAME W/LT WGHT PNLS, INSULD MTL	3 / 39	4 / 36	1 / 8	4 / 28	3 / 18	5 / 15				144 #3
STEEL STUD W/ BRICK VENEER	1 / 13	4 / 36	4 / 32	4 / 28	4 / 24	1 / 3				136
STEEL STUD W/ STUCCO	3 / 39	3 / 27	3 / 24	3 / 21	4 / 24	1 / 3				138 #4
EXP CONC BLOCK W/SPLIT FACE FIN	4 / 52	4 / 36	4 / 32	3 / 21	3 / 18	3 / 9				168 #1
CONC BLOCK W/ STUCCO EXTERIOR	4 / 52	3 / 27	3 / 24	2 / 14	2 / 12	3 / 9				138 #4
CONC BLOCK, PAINTED	5 / 65	2 / 18	1 / 8	1 / 7	2 / 12	3 / 9				119
CONC BLOCK W/ FACE BRICK	1 / 13	4 / 36	4 / 32	4 / 28	4 / 24	4 / 12				145 #2

Excellent-5 Very Good-4 Good-3 Fair-2 Poor-1

ANALYSIS MATRIX INSTRUCTIONS

Transfer the criteria evaluated in the CRITERIA WEIGHING MATRIX to the spaces above the letters a. through i. It is not necessary to use all the criteria evaluated since the previous evaluation may indicate minor importance. The criteria should be listed in descending order of weight.

Transfer the weight determined for criteria to the appropriate spaces below the letters a. through j.

Describe briefly the original design after 'Present Way.' List the alternative proposals in the spaces below the 'Present Way.'

In the upper left triangular shaped area of the blocks after the present and alternative ideas, place one of the numbers shown at the bottom of the page. This number indicates the performance of the idea relative to the desired criteria.

Multiply the weight (discussed in paragraph 2 above) by the performance evaluation number (discussed in paragraph 4 above) and place the answer in the space diagonally below. This will provide an evaluation of alternatives with the higher number being the more desirable.

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Analysis Matrix

BASIC FUNCTION

List the best ideas from ranking and comparisons techniques. Determine which one stacks up best against the desired criteria.

Present	Desired Criteria										Totals
	Weight From Criteria Matrix	a	b	c	d	e	f	g	h	i	

Excellent-5 Very Good-4 Good-3 Fair-2 Poor-1

Sketches & Notes

Item	Quantity	Unit	Labor and Materials	Total*

*Exclude Overhead & Profit

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Compare Ideas

BASIC FUNCTION			
Idea	Advantage	Disadvantage	Rating
(Including cost, time, probability, benefit, state... art, etc.)			

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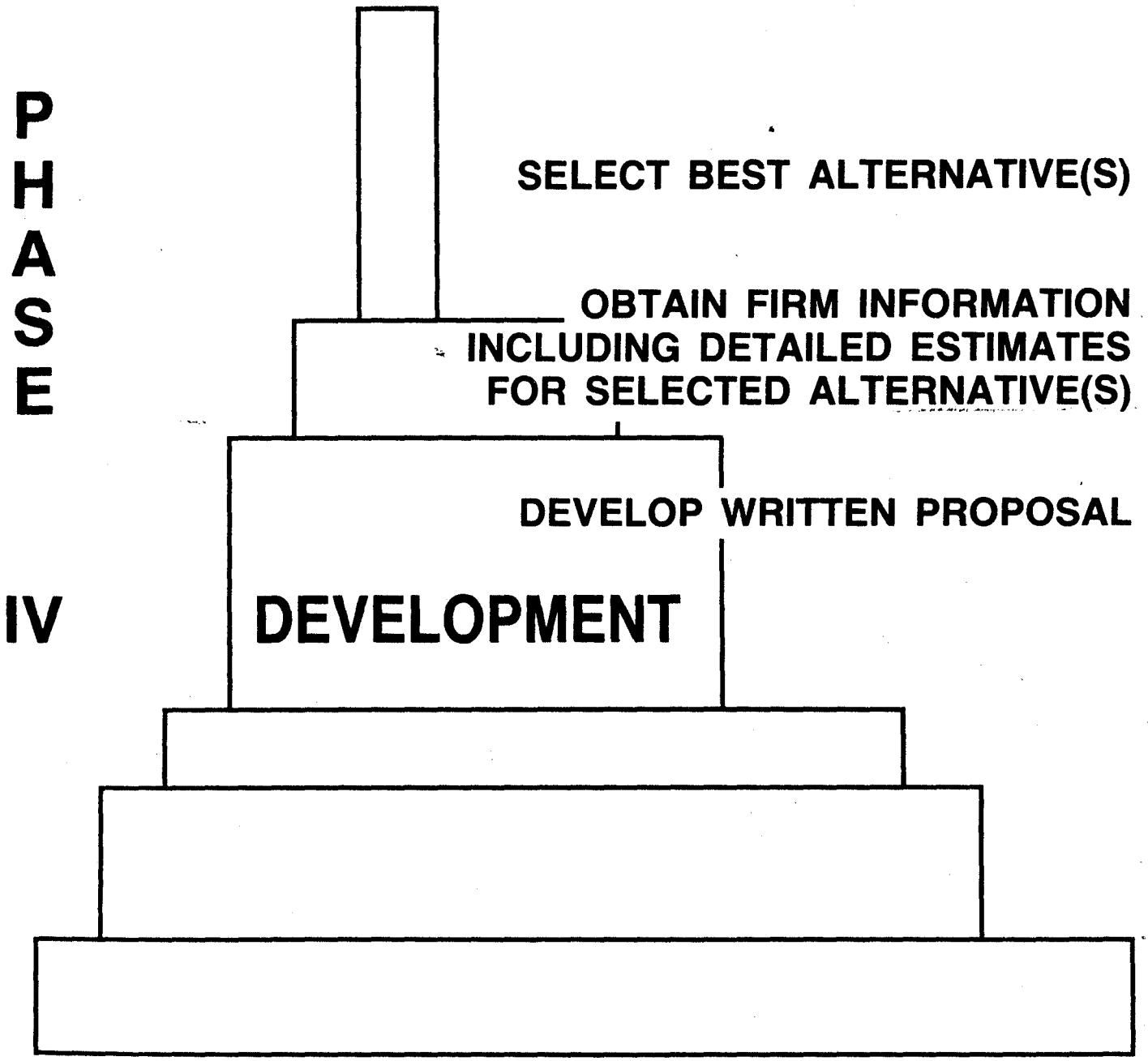

Reference Text, Ibid., p. 247 et. seq.

DEVELOPMENT
PHASE IV

TECHNIQUES

Recommend specifics not generalities.

Gather convincing facts.

Spend as if your own.

USE GOOD HUMAN RELATIONS

KEY QUESTION TO ANSWER

WILL THE ALTERNATIVE(S) MEET ALL NECESSARY REQUIREMENTS?

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PROPOSED FAST DIAGRAM

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ESTIMATE

Item	Quantity	Unit	Labor and Materials	Total*

*Exclude Overhead & Profit

ANNUAL COMPOUND INTEREST TABLE

EFFECTIVE RATE (APR) = 10% BASE = 1.10

YEARS	PRESENT VALUE REVERSION OF 1 PW	PRESENT VALUE ORD. ANNUITY 1 PER PERIOD PWA
1	.909091	.909091
2	.826446	1.735537
3	.751315	2.486852
4	.683013	3.169865
5	.620921	3.790787
6	.564474	4.355261
7	.513158	4.868419
8	.466507	5.334926
9	.424098	5.759024
10	.385543	6.144567
11	.350494	6.495061
12	.318631	6.813692
13	.289664	7.103356
14	.263331	7.366687
15	.239392	7.606080
16	.217629	7.823709
17	.197845	8.021553
18	.179859	8.201412
19	.163508	8.364920
20	.148644	8.513564
21	.135131	8.648694
22	.122846	8.771540
23	.111678	8.883218
24	.101526	8.984744
25	.092296	9.077040
26	.083905	9.160945
27	.076278	9.237223
28	.069343	9.306567
29	.063039	9.369606
30	.057309	9.426914
31	.052099	9.479013
32	.047362	9.526376
33	.043057	9.569432
34	.039143	9.608575
35	.035584	9.644159
36	.032349	9.676508
37	.029408	9.705917
38	.026735	9.732651
39	.024304	9.756956
40	.022095	9.779051

	PW	PWA
41	.020086	9.799137
42	.018260	9.817397
43	.016600	9.833998
44	.015091	9.849089
45	.013719	9.862808
46	.012472	9.875280
47	.011338	9.886618
48	.010307	9.896926
49	.009370	9.906296
50	.008519	9.914814
51	.007744	9.922559
52	.007040	9.929599
53	.006400	9.935999
54	.005818	9.941817
55	.005289	9.947106
56	.004809	9.951915
57	.004371	9.956286
58	.003974	9.960260
59	.003613	9.963873
60	.003284	9.967157

Value Engineering
WORKBOOK

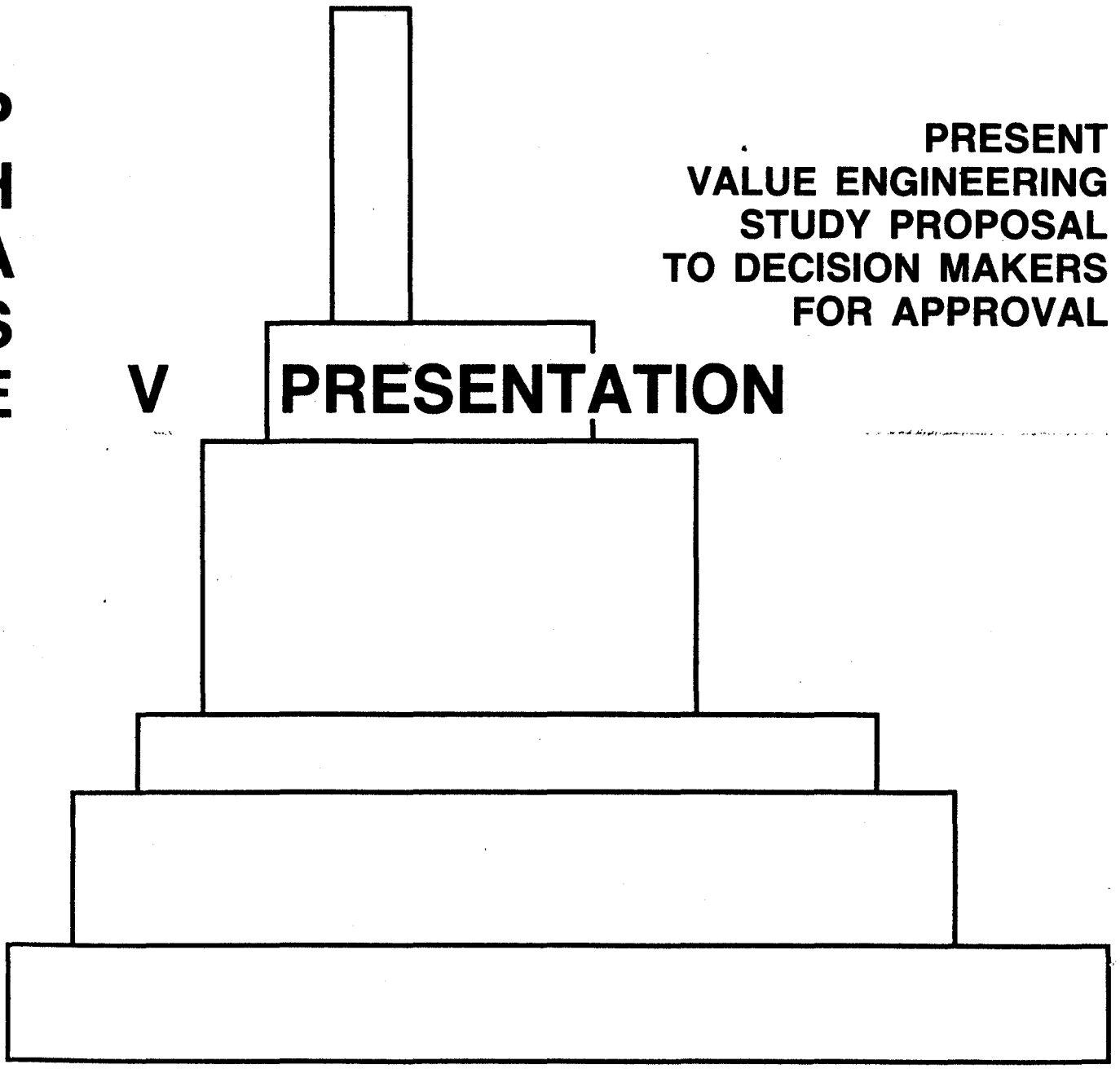
Life Cycle Cost Analysis

Item			Present or Proposal No.		Proposal No.		Proposal No.	
Life Cycle Period ____ Yrs			Est Amount	Present Worth	Est Amount	Present Worth	Est Amount	Present Worth
Initial Costs	Base Cost (Actual Present Worth)							
	Interface Costs	a.						
		b.						
		c.						
	Other Initial Costs	a.						
		b.						
		c.						
	Sub-Total							
Salvage and Replacement	Single Expenditure (% APR)		Est Amt X PW Factor = Present Worth					
	a.	Year ___ PWF ___						
	b.	Year ___ PWF ___						
	c.	Year ___ PWF ___						
	d.	Year ___ PWF ___						
	e. Salvage	Year ___ PWF ___						
	Sub-Total							
Annual Costs	Annual Costs (% APR)		Est Amt X PWA Factor = Present Worth					
	a. Maintenance	PWA F ___						
	b. Operation	PWA F ___						
	c.	PWA F ___						
	d.	PWA F ___						
	e.	PWA F ___						
	Sub-Total							
Total Present Worth								
Life Cycle Savings								
Present Worth Method								

Value Engineering
WORKBOOK

PHASE V PRESENTATION

PRESENT
VALUE ENGINEERING
STUDY PROPOSAL
TO DECISION MAKERS
FOR APPROVAL



Reference Text, Ibid., p. 250 et. seq.

PRESENTATION
PHASE V

TECHNIQUES

FAST diagram as communications tool.

Be brief, pertinent, convincing.

Remove roadblocks.

USE GOOD HUMAN RELATIONS

ORAL PRESENTATION

This presentation should include, but not be limited to, the following:

Identification of project studied.
Brief summary of problem (high cost, difficult construction, et al.).
Description of original design.
Cost of original design.
Results of FAST (function analysis systems technique).
Technical data supporting selection of the alternative(s).
Cost data supporting the alternative(s).
Advantages and disadvantages and reasons for accepting alternative(s).
Sketches of before and after designs, clearly depicting proposed changes (drawings marked to show proposed changes are acceptable).
Problems and cost of implementation.
Estimated cost savings.
Acknowledgement of contribution by others.
Summary statement.

CONSIDERATIONS

People are:

Interested in performance first.
Influenced by the effect adoption of the proposal will have on their sphere of work.
Persuaded by the before and after part of the proposal with advantages and disadvantages of each.

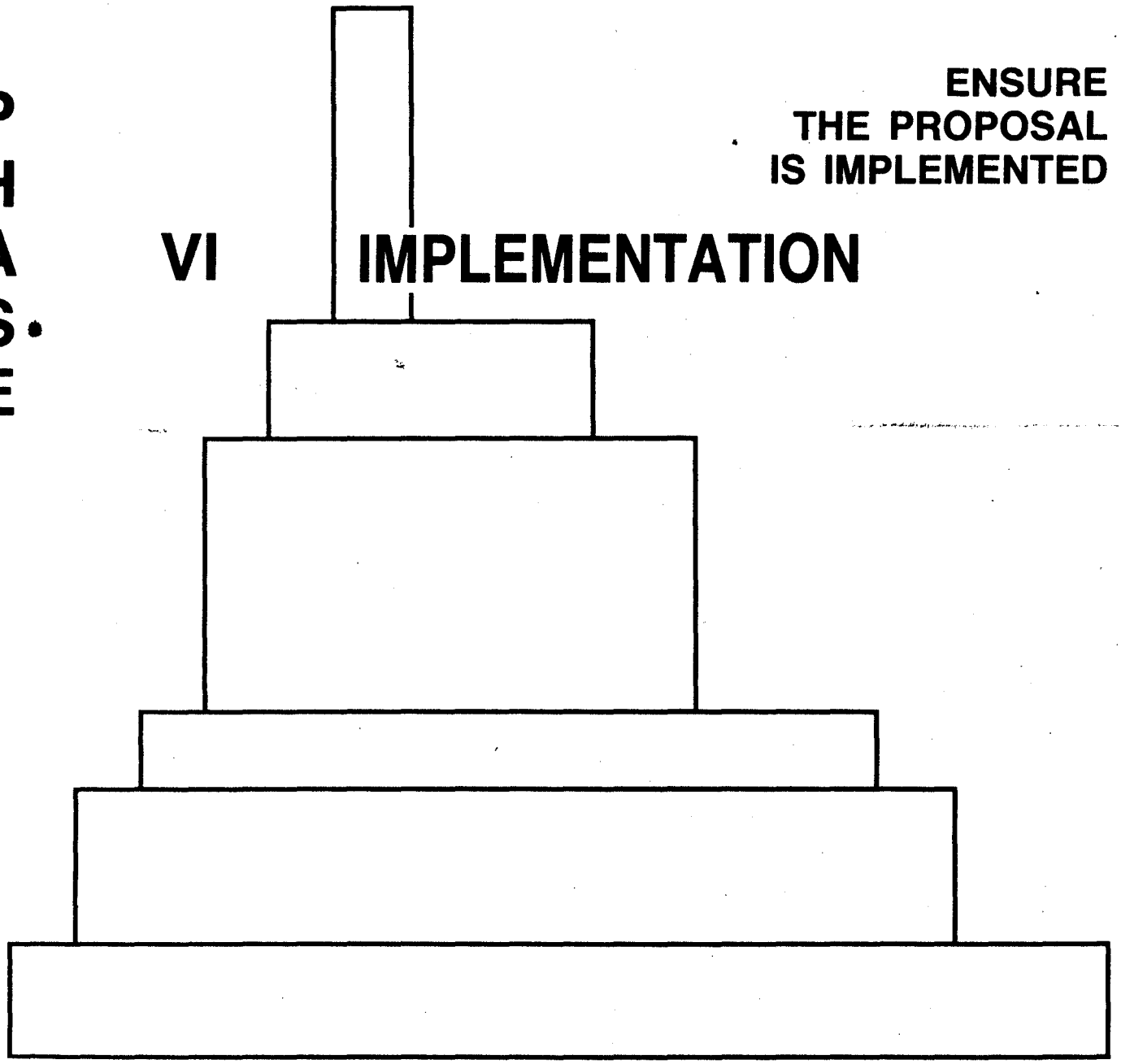
Value Engineering
WORKBOOK

Outline

Value Engineering
WORKBOOK

PHASE VI IMPLEMENTATION

ENSURE THE PROPOSAL IS IMPLEMENTED



Reference Text, Ibid., p. 251 et. seq.

IMPLEMENTATION
PHASE VI

TECHNIQUES

Provide assistance.

Correct misconceptions.

Minimize delays.

Schedule follow-up meetings.

Value Engineering WORKBOOK

Plan

Implementation Actions. (List actions required to implement each of the selected alternatives.)

Critical Items

Problems

Technical Evaluation. (Detail for each selected alternative any required test or analytical procedures that may be necessary to verify that the basic function(s), can be performed without decrease in necessary quality, maintainability, reliability, performance, and compatibility. If any tests or analysis have been performed, list results.)

Remarks

Remarks. (List all other actions necessary such as obtaining approvals, shop drawings, samples, operational tests and persons, groups or agencies to take action to complete acceptance of recommendations. Include any approval actions required at higher authority.)

APPENDIX C

Value Engineering PROPOSAL (EP 11-1-3)

Project

Study Item

Study Team | **Office Symbol** | **Telephone**

Leader

Members

DISCIPLINES

ARCH	☐	SPECS	☐
CIVIL	☐	STRUCT	☐
ELEC	☐	_____	☐
MECH	☐	_____	☐

US Army Corps of Engineers

Study Number | **Date**

ENG Form 3987-R, Sep 85 EDITION OF JUN 76 IS OBSOLETE **SAVINGS** _____

(Proponent: DAEN-EC)

Value Engineering
PROPOSAL

Description

FUNCTION OF ITEM

VERB	NOUN
_____	_____
_____	_____
_____	_____
_____	_____

DESCRIPTION

Value Engineering
PROPOSAL

SKETCH

Value Engineering PROPOSAL

ESTIMATE

Item	Quantity	Unit	Labor and Materials	Total*

*Excludes Overhead & Profit

Value Engineering
PROPOSAL

FAST
DIAGRAM

Value Engineering
PROPOSAL

Description

Value Engineering
PROPOSAL

SKETCH

Value Engineering PROPOSAL

ESTIMATE

Item	Quantity	Unit	Labor and Materials	Total*

*Excludes Overhead & Profit

Value Engineering
PROPOSAL

FAST
DIAGRAM
(Use is Optional)

Value Engineering
PROPOSAL

Life Cycle Cost Analysis

Item		Present		Proposal No.		Proposal No.	
Life Cycle Period ____ Yrs		Est Amount	Present Worth	Est Amount	Present Worth	Est Amount	Present Worth
Initial Costs	Base Cost (Actual Present Worth)						
	Interface a.						
	Costs b.						
	c.						
	Other a.						
	Initial b.						
	Costs c.						
	Sub-Total						
Salvage and Replacement	Single Expenditure (% APR)	Est Amt X PW Factor = Present Worth					
	a. Year ___ PW F _____						
	b. Year ___ PW F _____						
	c. Year ___ PW F _____						
	d. Year ___ PW F _____						
	e. Salvage Year ___ PW F _____						
	Sub-Total						
Annual Costs	Annual Costs (% APR)	Est Amt X PWA Factor = Present Worth					
	a. Maintenance PWA F _____						
	b. Operation PWA F _____						
	c. PWA F _____						
	d. PWA F _____						
	e. PWA F _____						
	Sub-Total						
Total Present Worth							
Life Cycle Savings							

ANNUAL COMPOUND INTEREST TABLE

EFFECTIVE RATE (APR) = 10% **BASE = 1.10**

YEARS	PRESENT VALUE REVERSION OF 1 PW	PRESENT VALUE ORD. ANNUITY 1 PER PERIOD PWA
1	.909091	.909091
2	.826446	1.735537
3	.751315	2.486852
4	.683013	3.169865
5	.620921	3.790787
6	.564474	4.355261
7	.513158	4.868419
8	.466507	5.334926
9	.424098	5.759024
10	.385543	6.144567
11	.350494	6.495061
12	.318631	6.813692
13	.289664	7.103356
14	.263331	7.366687
15	.239392	7.606080
16	.217629	7.823709
17	.197845	8.021553
18	.179859	8.201412
19	.163508	8.364920
20	.148644	8.513564
21	.135131	8.648694
22	.122846	8.771540
23	.111678	8.883218
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34	.039143	9.608575
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37	.029408	9.705917
38	.026735	9.732651
39	.024304	9.756956
40	.022095	9.779051

	PW	PWA
41	.020086	9.799137
42	.018260	9.817397
43	.016600	9.833998
44	.015091	9.849089
45	.013719	9.862808
46	.012472	9.875280
47	.011338	9.886618
48	.010307	9.896926
49	.009370	9.906296
50	.008519	9.914814
51	.007744	9.922559
52	.007040	9.929599
53	.006400	9.935999
54	.005818	9.941817
55	.005289	9.947106
56	.004809	9.951915
57	.004371	9.956286
58	.003974	9.960260
59	.003613	9.963873
60	.003284	9.967157

FINANCIAL ANALYSIS

SUMMARY OF COST OF PRESENT DESIGN:

INITIAL COST $_____
OR
LIFE CYCLE COST $_____

COST OF PRESENT DESIGN $_____

SUMMARY OF COST OF PROPOSED DESIGN: (W/O IMPLEMENTATION COSTS)

INITIAL COST $_____
OR
LIFE CYCLE COST $_____

COST OF PROPOSED DESIGN $_____
GROSS SAVINGS (PRESENT MINUS PROPOSED) $_____

SUMMARY OF IMPLEMENTATION COSTS FOR PROPOSED DESIGN:

COST OF STUDY $_____
COST OF RE-DESIGN $_____
COST OF MODIFICATION $_____

TOTAL COST OF IMPLEMENTATION $_____

NET SAVINGS:
(GROSS SAVINGS MINUS COST OF IMPLEMENTATION) $_____

APPENDIX D

Value Engineering Officer's Operational Guide for

HOSTING USACE-SPONSORED VALUE ENGINEERING WORKSHOP

Department of the Army
U.S. Army Corps of Engineers
Washington, D.C. 20314

PREFACE

The success of a Value Engineering Workshop depends largely on the students' frame of mind and orderly manner in which the instructors can conduct their task at hand. It is paramount that the workshop begin on time with as little confusion as possible. You have the ability to contribute more to the success of the workshop than you may realize. This guide is intended as an aid to help you, the Host Value Engineering Officer, to have a successful and profitable workshop.

It is the responsibility of the Training Officer in the Host District and Division and Office of Chief of Engineers to provide total support for Value Engineering Workshops. However, the Host Value Engineering Officer (District and/or Division) must insure the logistical, administrative and technical support for successful and profitable workshops. While this responsibility has been placed upon the Training Officers by OCE, the VE Officers in the respective District/Division Offices must be available during the entire workshop period to provide assistance as required.

1. Introduction. Huntsville Division (HQ USACE) is responsible for obtaining a suitable meeting room, and will request room setup in accordance with room layout plan included herein. The host Training Officer will be responsible for clerical help which will be available during the workshop.

2. Lodging Accommodations. Huntsville Division (HQ USACE) shall locate and reserve suitable lodging for students and coordinate the student names and rates of each facility with the host Training Officer. The location of the facility should be within walking distance of the meeting place, taking into consideration inclement weather. If the meeting room is to be at the place of lodging, then the room shall meet the requirements as specified under "Meeting Room."

3. Workshop Value Engineering Projects. It shall be the responsibility of the host Value Engineering Officer to obtain sufficient workshop projects from his district, or from districts providing students, prior to the commencement of the Value Engineering Workshop. These studies should be coordinated with the course instructors at least 2 weeks prior to the week of the course. Projects should be selected with great care in order that they may meet the following requirements:

a. Studies should be of sufficient magnitude to provide a challenging and interesting 20-hour work project without overwhelming the study teams to a point that they would become discouraged. Submission of basic information for review by designated instructors, i.e., drawings, specifications, and total estimate of cost prior to obtaining complete data listed in the paragraph below is encouraged. This will eliminate work involved in preparation of study topics which may not be selected for use in the workshop.

b. Data for selected projects shall include, as appropriate, the best available detailed estimates, background information, design documents (including plans and specifications), General Design Memorandum, Feature Design Memorandum, Environmental Impact Statement, engineering files, past use and future potential use, etc. A minimum of 10 study projects should be provided. The name and FTS telephone number of the responsible individual in the respective District from which the project was chosen should be listed so that team members can contact him for clarification and additional information concerning the project. The submitting VEO should insure that a narrative description is provided explaining the project. If there are specific items within a project to be studied, they should be identified. Study projects should be available at the workshop location not later than one workday preceding the workshop start date.

c. The workshop instructors, in conjunction with the host VEO, will select members for the study teams and assign each team a study project, preferably prior to starting the workshop. Teams should contain a mix of engineering disciplines, as well as people from different districts, to the maximum extent possible. When possible, the class should be limited to thirty (30) students. This enables instructors to provide required individual attention and provides the ideal six teams of five members each.

4. Meeting Room. The room must be large enough to accommodate the students and all of the necessary equipment. It shall be well illuminated and capable of being darkened for showing films, vu-graphs, and/or slides. The temperature and ventilation shall be conducive for classroom work. Trash cans and coat racks shall be provided and arrangements shall be made to have the room opened at least 30 minutes prior to commencing class. (See sketch for suggested room layout.) This room must be available for the entire workshop without equipment or student displacement at any time. Use of the facility for other activities will not be permitted. Any changes must be cleared with the instructors.

5. **Equipment.** The following equipment shall be available in good working order:

a. Movie Projector—16mm with sound, with extra reel and projection bulb.

b. Overhead vu-graph projector, with extra projection bulb.

c. Projector screen—at least 60 by 72 inches.

d. Lectern.

e. Chalkboard (3 by 5 feet minimum) with chalk and eraser.

f. Small table by vu-graph.

g. Pointer.

h. Tables and chairs (to be set up as shown in room layout).

i. Pencil sharpener.

j. 35mm slide projector with spare projection bulb.

k. Equipment for making paper copies and transparencies. (With at least two complete packages of appropriate transparency film for making vu-graphs.)

l.Two telephones with FTS and/or prepaid long distance capability.

m. Local telephone directory.

n. Extension cords as necessary.

o. Three-hole punch (large holes).

p. Stapler and staples.

q. Staple remover.

6. **Supplies.** The following supplies shall be furnished:

a. A pencil for each student (sharpened).

b. At least 12 sheets of 8- by 10½-inch ruled paper.

c. One pad of tracing paper per study team.

d. At least two different colored grease pencils and felt tip pens per study team.

e. Appropriate drafting tools—scales, triangles, etc.

f. Scotch tape and dispenser (two minimum).

g. Paper clips.

h. Large sheets of paper (flip-chart size or larger).

i. 3- by 5-inch note cards.

j. Felt-tip markers (¼-inch).

k. Masking tape (two rolls).

l. Typing correction fluid (two bottles).

7. Logistical Support. The host VEO and Training Officer shall make certain that all materials such as student text books, notebooks complete with insertions as directed, training films, transparency copier, vu-graphs, handouts, items for study, etc., are on hand at least 1 week prior to the course. If you have any doubt about anything, call one of the scheduled workshop instructors. Don't wait until the last minute.

8. Division or District Commander's Remarks. The host VEO shall prepare or assist in the preparation of the Division or District Engineer's remarks for commencing the workshop. Be careful that nothing is said that could divert the students from a learning process. The opening remarks can set the stage for a successful or unsuccessful workshop. Be sure to have the speaker available on time. A 5- to 10-minute welcome with appropriate remarks supporting the VE program and examples of local VE successes would be appropriate. A suggested outline for opening remarks is located at the end of this appendix.

9. Room Preparation. When the workshop is held in a Corps office, tables, chairs, projectors, screen, etc., should be set up no later than Friday prior to commencing the workshop. Be sure that the student notebooks are complete and distributed at the tables, along with pencils and paper. Also, have all the training aids, i.e., films, vu-graphs, projects to study, etc., at the rear of the room. When the workshop is held in a hotel or motel, the host VEO shall physically check the room setup on Sunday afternoon to insure compliance with room layout included herein, and make sure that all equipment and supplies are present. Don't assume anything!

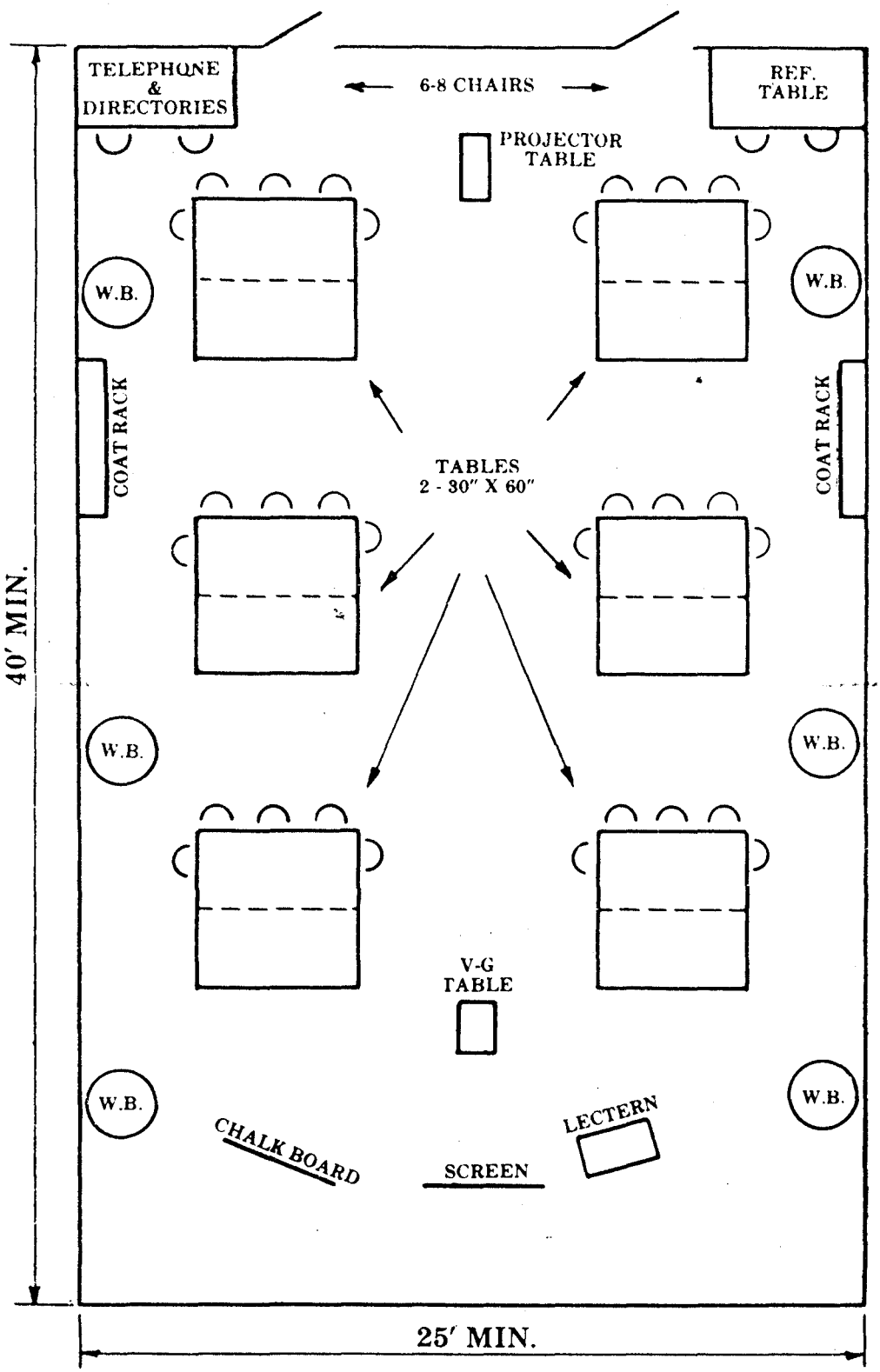
10. Clerical Support. The District Training Officer will have clerical help on standby for various typing duties. Team and class rosters will be typed early in the week as required by instructors. Clerical help should be available to type the students' course completion certificates.

11. General Activities. The host Training Officer and VEO should be available throughout the workshop to assist the instructors and students in their needs. They should be qualified to operate the movie projector, or have a qualified person to do so. If a class picture is made, be sure that each student can be identified by name.

12. Post Workshop Activities. The host VEO, upon completion of the workshop, shall be sure that training aids are forwarded in accordance with instructions from the VE instructors. It is important that these training aids be mailed promptly. Within 3 working days after completion of the course, the host Training Officer and VEO shall accomplish the following:

a. The VEO will make two copies each of the Value Engineering Proposal and Value Engineering Workbooks and mail one each for each study project to HQ USACE (DAEN-ECE-V) WASH DC 20314. The other copies will be mailed to respective VEO who submitted the study project. The originals will be mailed to the student whose name and address appears on the back.

b. The host VEO will mail a copy of the Study Team Roster with an asterisk by the Team Leader's name to HQ USACE (DAEN-ECE-V) WASH DC 20314.



SUGGESTED ROOM LAYOUT

Opening Remarks

(1) VE is an assigned mission of the Corps of Engineers and, as such, it is the responsibility of every employee to actively participate in achieving the ultimate in design quality and economy.

(2) VE is a proven management tool which I fully support and expect my managers to use in the performance of their assigned duties. The use of this procedure has reduced the cost of Government construction by $ _____ in this district (Division _____) to date. We have just seen the tip of the iceberg. If this technique is used during the normal design process, the savings will be multiplied many times over and the quality of work improved proportionately. (Discuss District-Division examples).

---

(3) I am responsible for the Value Engineering program in its drive to provide the taxpayer with a dollar's worth of construction for every dollar of cost. This cannot be done without trained personnel knowledgeable in the procedures for accomplishing the studies. You are here to become familiar with those procedures through the application of the VE technique to an actual design.

(4) I welcome you to _____ and hope you will find your week enjoyable, as well as educational. If there is anything we can do to make your stay more rewarding, please let us know.

APPENDIX E

Value Engineering Officer's Operational Guide

CONTRACTOR PROGRAM

Department of the Army
U.S. Army Corps of Engineers
Washington, D.C. 20314

Value Engineering in Construction and Procurement Contracts

1. Contractors have participated in the Corps of Engineers Value Engineering program since 1964. The contractors and the Government have shared the savings, with the contractor receiving a minimum of 50 percent on the instant contract since that time. These savings represent actual changes to contracts documented by issuance of contract modifications. Since the beginning of the program, the average acceptance rate has been approximately 65 percent. The contractor's program is a successful program, with even a greater potential. The program is rooted in the commitment of the Corps of Engineers to provide the highest quality of construction, yet with a commitment to its assurance that the public get full value for every tax dollar spent. Based on these goals of high quality and reasonable cost, contractors should be urged to review designs and propose changes to reduce contract cost without sacrificing quality. The Value Engineering Incentive Clause provides the means for contractors to share in the savings generated. Managing the contractor's program is discussed in paragraph 4 of Appendix A. A contractor's pamphlet designed for use by contractors is also available which can be used to the VEO's advantage by furnishing to successful contractors upon award of contract. Some districts also furnish a written encouragement to submit proposals along with a recommended submittal format as a guide for contractors to use.

2. The Value Engineering Incentive Clause carries a threefold purpose:

a. To take advantage of contractors' know how.

b. To improve the Corps' basic criteria and standard designs.

c. To provide a contractual means of sharing the savings while maintaining functional needs.

From a contractor's point-of-view, the main objectives are to provide a quality product, complete the contract on time and obtain a profit. The VE Incentive Clause provides the contractors a means of accomplishing these objectives while at the same time increasing the contractors' profits. Quite often a contractor can provide a fresh approach to construction that can reduce the cost of facilities and at the same time improve the construction sequences and reduce time on the job.

3. A contractor Value Engineering Change Proposal (VECP) is one that requires a modification to the contract and reduces the contract cost. The incentive clause applies to all construction and procurement contracts over $100,000 and may be applied to lesser dollar contracts when the contracting officer determines there is a potential for cost reduction. The Corps of Engineers uses the incentive clause which provides for the contractor to share in the cost reduction for proposals voluntarily submitted.

4. The contract clause requires contractors to furnish the following information on proposals submitted:

a. A description of the existing contract requirements and the proposed changes, along with comparative advantages/disadvantages of each.

b. A list of the contract requirements that must be changed.

c. A detailed cost estimate of the savings. The contractor can deduct the cost of developing the proposal along with any costs directly attributable to subcontractors from the gross savings.

d. A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs. Normal review of proposals are not considered Government cost.

e. A prediction of any effects the proposal change would have on collateral cost to the Corps. Collateral costs are for operations, maintenance, and logistic support of Government-furnished property.

f. A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction.

g. Identification of any previous submission of the VECP, along with all pertinent information as to its disposition.

5. Submission. Contractors shall submit the Value Engineering Change Proposal to the Resident Engineer at the work site, with a copy to the Contracting Officer. This copy usually becomes the VEO's advance working copy. The Contracting Officer is required to notify the contractor within 45 days of the status of the proposal.

6. Sharing of Savings. There are several sharing arrangements in effect at this time because of changes in the clause in April 1984 and November 1985. Prior to April 1984, the clause provided for sharing only on the instant construction contract. Sharing was on a 55%-45% basis, with the larger amount going to the contractor. From April 1984 to November 1985, construction contractors shared as above and also received a 20% share in collateral savings for an average year. Collateral savings are reductions in operations, maintenance, and logistic support of Government-furnished material. After November 1985, the sharing arrangement reverted back to that prior to April 1984. Supply and service contracts provide for a 50%-50% sharing on instant contracts, 50%-50% sharing on future acquisition contracts for like items over a 3-year period from the first proposal, 50%-50% sharing on concurrent contracts where the proposal is used within the contracting officer's area. On supply and service contracts dated prior to November 1985, there was a provision for 20%-80% sharing on collateral savings for an average year, with the 20% going to the contractor up to a maximum of $100,000 of the contract price.

7. Construction contracts require the contractor to have a Value Engineering clause in any subcontracts in excess of $50,000. Procurement and supply contracts require the contractor to have a Value Engineering clause in subcontracts in excess of $100,000. The subcontractor's share of savings is provided by the prime contractor and will not reduce the Government's share.

8. Examples. Following are some examples of computing the contractor's share and Government share of the savings. Note that any adjustment to the contract is made "without regard to profit." In calculating the contract price adjustment, the following examples are useful, based on the clause requirements of (.45 ICS + .55 GC) for reduction in contract price.

Example 1

Contractor submits Value Engineering Change Proposal to Government.

Gross estimate of proposal*	$13,950
Contractor's cost of development and implementation	735
Government cost for testing	1,350

What is reduction in contract price?

* Does not include profit. The contractors (subs and prime) retain profit in accordance with incentive clause.

Solution

a. Computations.

Gross estimate of proposal	$13,950
Contractor cost of development and implementation (CC)**	−735
Net Savings (ICS)**	13,215
Government cost for testing (GC)**	$ 1,350

Reduction in contract price 0.45 ICS** + 0.55 CG** = .45 (13,215) + .55 (1,350) =
5,946.75 + 742.50 =
ANSWER 6,689.25

b. Contractor and Government Savings.

What is contractor net savings?

Gross	$13,950.00
Contract reduction	−6,689.25
Gross gain	$ 7,260.75
Contractor cost (CC)**	−735.00
ANSWER	$ 6,525.75 ✓

What does Government gain?

Contract reduction gross	$6,689.25
Government cost (GC)**	−1,350.00
ANSWER	$5,339.25

* Does not include profit. The contractors (subs and prime) retain profit in accordance with incentive clause.
** CC - Contractor costs
CG - Government cost
ICS - Instant contract savings

Example 2

Subcontractor submits Value Engineering Change Proposal to the prime contractor for submission to the Government.

*Gross estimate of proposal	$13,950
Subcontractor's cost of development and implementation	525
Prime contractor's cost of development and implementation	735
Government cost for testing	1,350

Contractor's agreement with subcontractor for incentive sharing ratio is 50/50.

What is reduction in contract price?

Solution

a. Computations.

Gross estimate of proposal		$13,960
Subcontractor's cost of development and implementation	$ 525	
Prime contractor cost of development and implementation	$ 735	
	$1,260*	(CC)
* Total contractor cost of development and implementation		$1,260
Net savings (ICS)		$12,690
Government cost for testing (GC)		$ 1,350
Reduction in contract price 0.45 ICS + 0.55 = GC		
.45 (12,690) + .55 (1,350) = 5,710.50 + 742.50 =		
ANSWER		6,453.00

b. Contractor and Government Savings.

What is contractor net savings?

Gross	$ 13,950
Contract reduction	−6,453
Gross gain	7,497
Contractor's cost (CC)	−1,260
Contractor's profit ANSWER	$ 6,237

What does Government gain?

Contract reduction, gross	$ 6,453
Government cost	−1,350
ANSWER	$ 5,103

c. What is Prime Contractor's and Subcontractor's Share?

Prime Contractor's (Net)

Contractor's profit	$ 6,237.00
Less 50% to sub	−3,118.50
Balance	$ 3,118.50
Plus prime's cost	735.00
Prime share ANSWER	$ 3,853.50

Reduction in Contract Price

Government cost	$1,350.00
Government gain	5,103.00
Total Reduction	$6,453.00

Prime Contractor's Share

Cost	$ 735.00
Savings	3,118.50
Total	$3,853.50

Contractor Share

Prime Contractor	$3,853.50
Subcontractor	3,643.50
Total	$7,497.00

Subcontractor's Net

Cost	$ 525.00
Savings	3,118.50
Total	$3,643.50

APPENDIX F

Value Engineering Officer's Operational Guide

USACE VALUE ENGINEERING STUDY TEAM OVEST

Department of the Army
U.S. Army Corps of Engineers
Washington, D.C. 20314

APPENDIX F

Office of the Chief of Engineers Value Engineering Study Team (OVEST)

1. By permanent Order 55-1, November 1984, HQ USACE established the Office of the Chief of Engineers Value Engineering Study Team (OVEST), a full-time viable capability to conduct VE studies on significant targets of opportunity. HQ USACE notified divisions and districts that OVEST was fully operational on 8 March 1985.

2. The object of OVEST is to support all Corps of Engineers elements world-wide to achieve and/or exceed VE initiatives and command goals.

3. OVEST is comprised of a senior architect, structural engineer, electrical engineer, mechanical engineer and civil engineer, under the direction of a supervisory general engineer and assisted by an administrative secretary.

4. OVEST is located in Savannah, Georgia, and receives administrative support from the South Atlantic Division and Savannah District.

5. Projects are submitted for study to OVEST by HQ USACE, divisions, districts and other FOA's. OVEST performs VE studies at any stage of a Project: criteria, concept, final design, during construction, plus O&M projects.

6. Principal project selection criteria is based primarily on the following:

- Exceeds $2,000,000
- Is expensive
- Is complex
- Has multiple use
- Materials are critical
- Maintenance and/or operation costs are high
- Project design period was compressed
- Design behind the "state of the art"
- Design is a result of custom, tradition or opinion
- Uses obsolete material or methods.

7. Data required for an OVEST study are drawings, specifications, reports, cost figures, programming documents, pertinent correspondence, minutes of meetings, consultants and anticipated volume.

8. Funding for the studies is provided by the requesting division or district.

9. OVEST prepares a detailed VE report/proposal which includes alternative concept designs for each project study undertaken and makes a formal presentation to the requesting division/district; the objective being to reduce life cycle costs while maintaining or improving functionality to serve Corps customers. The OVEST mission is to pursue project excellence with fiscal responsibility.