

Getting 100% of the VE Savings (Value Engineering for the General Contractor)

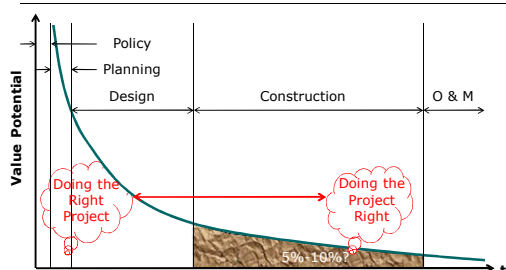
Jeffrey Plant, MBA, PEng, PMP, AVS
Plant Group Inc.
Toronto, Canada

Based upon presentation to SAVE International
June 2009 (Detroit, Michigan)

Introduction

- Value Engineering in Construction
- A Brief History
- VE applied to DBB and DB Projects
- Why do Contractors mistrust VE?
- What would make VE more relevant to Contractors?
- A Success Story

Value Engineering in Construction¹



1. Based upon Figure 4 NCHRP Synthesis of Practice 78

A Brief History: VE in Construction

- 1954 – US Navy (Bureau of Ships)
- 1964 – US Corps of Engineers req'd VEIC in all construction contracts
- 1969 – CalTrans introduced cost-reduction incentive clauses in construction contracts
- 1970-1980's – Many agencies adopted VEICs in construction

Basic Terminology...

- Value Engineering Incentive Clause (VEIC)
 - The contract provision that permits or encourages contractor-initiated VE change proposals
- Value Engineering Change Proposal (VECP)
 - The contractor's VE submission

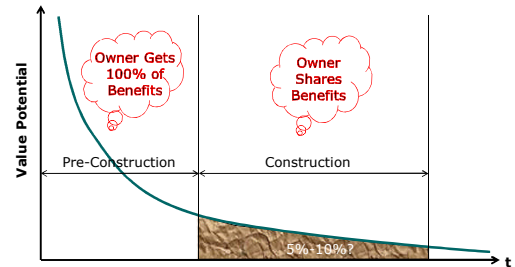
During the 1980s and 1990s

- A realization by many agencies that the greatest VE benefits can be realized well before a Contractor is even selected
- A shift in focus from encouraging VE during construction to agency-initiated/mandated VE during the early project stages

The Situation Today?

- VEICs are common
- VECs are less common
- Few contractors use the "Value Method" to identify VECs

Who Benefits? ¹



1. Based upon Figure 4 NCHRP Synthesis of Practice 78

Conclusion

- Owners are less motivated to approve Contractor-initiated Value Engineering Change Proposals (VECP's) because:
 - Benefits are often relatively small
 - Implementation risks are higher
 - Process is time consuming
 - Culture may be change-adverse
 - (Owners mistrust Contractors)

VEIC in Design-Bid-Build (DBB)

- The Federal Acquisition Regulations (FAR), on contracts over \$100,000, encourage the Contractor to develop, prepare and submit value engineering change proposals (VECP's) voluntarily
 - 50/50 sharing of savings
 - FHA claims 5% of total VE Savings are through accepted VECs

VECPs in Design-Bid-Build (DBB)

- Many VECP relate to constructability
 - Traffic staging
 - Sequencing of construction
 - Sources of borrow material
 - Disposal sites for excess material
 - Easements on private property

Specific VECP Examples...

- Ontario MTO
 - Highway 401 west of Colborne
 - Combining two detours into one saved \$29,000 in crash barriers
 - Highway 33 west of Kingston
 - Use of in-situ RAP in lieu of imported Granular "A" to protect Macadam base saved \$80,000

What do Contractors do best?

- They “do the project Right.”
 - Optimize constructability
 - Procure efficiently
 - Schedule efficiently
 - Mobilize resources
 - Manage risk
 - Manage quality



VEICs may Penalize Contractors

- Contractors are experts in construction
 - Shouldn't they be entitled to the savings related to their area of expertise?
 - Why risk additional cost (and risk) by telling contractors how to construct?



VECPs may Penalize Contractors

- Contractor bears cost of preparing VECP
- Contractor bears risk of delay
- Owner may challenge savings offered
 - Contractor costs may not be recognized



Why do Contractors mistrust voluntary VE?

- Process takes time
- Requires investment (too costly)
- No guaranteed results
- Approval process is bureaucratic
- Owner may not approve
- Project may be delayed



What is the Alternative?

- Contractors focus on internal constructability analysis, methods engineering and procurement
 - Savings accrue 100% to Contractor
- Contractors use submittal review process to substitute materials, products and equipment
 - Savings accrue 100% to Contractor

Can Contractors Add Value?

- Contractors know **procurement**.
 - Materials, equipment, suppliers, availability and reliability
- Contractors know **scheduling**.
 - Sequencing of work, logistics, coordination
- Contractors know **methods**.
 - Fabrication, assembly, erection, finishing

Conclusion

- Contractors are not bothering to submit voluntary VECP's unless potential benefits are significant
 - Most VECPs are not identified through a formal VE process
- Owners are missing out on VE opportunities related to the expertise of contractors

Possible Solutions...

- Get contractors involved in the pre-construction stages of projects
 - Pay contractors to participate in VE studies
 - Draw upon contractor expertise from out-of-jurisdiction
 - Draw upon retired contractors and consultants with construction expertise

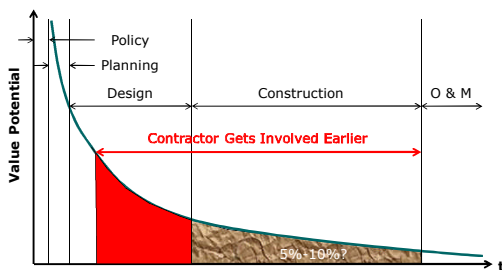
Possible Solutions...

- Increase the frequency of "mandatory" VE studies (paid for by the Owner)
- Increase the percentage of VE savings accruing to the Contractor
 - 15-25% of net savings may be too low for mandatory VE studies

How can VE help Contractors?

- By maximizing the component of residual Value Potential that accrues to the Contractor

Why does VE work better in D/B?¹



1. Based upon Figure 4 NCHRP Synthesis of Practice 78

When to do VE in a D/B Project?

- Proposal Stage
 - Optimize preliminary design to minimize construction cost
- Post-tender/Pre-award
 - Identify other VE changes with owner prior to BAFO
 - Owner shares ideas from other bidders
- Post-Award
 - With Owner or without Owner

Post-award VE without Owner...

- Challenge the design team
- Push the design envelope
- Focus on critical cost/schedule items
- Identify value opportunities that can be implemented through the design development process
- Identify other opportunities that require Owner approval

What is "Design Development"?

- Extension of the detailed design by the Contractor through the design review process
- Convincing the Owner that "changes" are within the scope of the contract requirements

Why bother?

- There is a potential to as much as double profits on competitively tendered projects
 - Tendered Gross Margins of 5-10%?
 - 5-10% Potential VE Savings start to look very interesting

A Success Story...

- Highway 2000 Jamaica



A Success Story cont'd...

- Contractor awarded DBFO Contract
- Contractor undertook Post-award VE Study without Owner
- Potential cost savings equal to over 10% of Contract identified



A Success Story cont'd...

- Contractor decided to proceed with VE proposals that did not require Change (Variation) Orders from Owner
 - Schedule was paramount
 - Review & approval delays were unacceptable

A Success Story cont'd...

- Major VE Benefits:
 - Jump-start of design team
 - Identification of critical design elements
 - Contractor achieved savings in several interchanges, alignment modifications, tolling strategy, drainage works, pavement design, approvals process and improved safety features

A Success Story cont'd...

- Project completed on schedule, on budget and with good quality
- All "design development" savings accrued to Contractor
- Contractor has established reputation as the preferred highway contractor in Jamaica
- Owner benefited from successful project

About the VE Study...

- VE at Risk
 - Consultant brought the "team"
 - International Specialists & Experts
 - Plus, Contractor & Design Consultant
 - 1 week formal VE study
 - Fee plus bonus (% to maximum)
 - 100% of bonus earned

Final Thoughts...

- Contractors can benefit by undertaking formal VE studies
- Owners can benefit from more contractor involvement in formal VE studies

More Final Thoughts...

- Risks to contractors need to be reduced if there are to be more construction stage VE studies
 - Mandatory VE Studies (Owner Pays)
 - Increased share of benefits
 - Compensation for VE delays
 - More "at risk" VE studies
- Together we can get closer to achieving 100% of the VE Savings!

Thank-you.

- Questions?

Jeffrey Plant, MBA, PEng, PMP, AVS
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