

Value Engineering and the Estimate



**AASHTO Transportation
Estimator Association
Conference**

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Presentation Outline



- I. VALUE ENGINEERING
- II. ESTIMATE
- III. BOTH
- IV. CONCLUSION

I. Value Engineering



What is Value Engineering?

- The systematic application of recognized techniques which identify the required function or service, establish a value for that function, and provide the necessary function reliably at the lowest overall cost.

History of Value Engineering

- GE developed Value Analysis during WWII
- US Army Corps of Engineers changed the name to Value Engineering
- FHWA developed an Office of Value Engineering in 1974
- AASHTO published guidelines in 1987

AASHTO Guidelines for Preconstruction Engineering Management (1991)

- "... Value Engineering will pay dividends in improved design, reduced cost, or both. Generally, very complex designs, unique structures, difficult traffic control, ... are good candidates for value engineering. Using a value engineering team and study approach to analyze project alternatives leads to the selection of the preferred alternative."

TxDOT Policy on Value Engineering (1997)

- In accordance with the rules published in the Federal Register amending 23 CFR Part 62, a value engineering study will be required on all NHS projects over \$25 mil beginning in FY98 following the "AASHTO Guidelines to Value Engineering, 1987"

Value Engineering in Industry

- Analyzing an item or product
- reducing cost
- achieving volume savings
- increasing profit margin

Value Engineering in Transportation

- Analyzing a complex project
- Improving design(including constructability)
- reducing cost
- Improving the schedule
- verifying the existing design

What it is NOT



- Value Engineering is NOT Design Review
- Value Engineering is NOT an arbitrary reduction in scope or standards to reduce cost
- Value Engineering is NOT just good engineering

Value Engineering Study Process

- Selection
- Investigation
- Speculation
- Evaluation
- Development
- Presentation

When do you perform a Value Engineering Study?

- CONCEPT STAGE -Feasibility Studies
- SCHEMATIC DESIGN STAGE -Advance Planning
- 30 PERCENT DESIGN STAGE - Preliminary Design

II. Estimate



What is a good Estimate?

- One where the low bidder hits the engineer's estimate?
- One where the project can be built at the estimated cost?
- Does this mean you have a good project meeting the transportation needs?

What is a good Estimate?

- A good estimate is one that matches what it actually takes to build the project that truly serves the public at the lowest overall cost.
- THIS IS A GOOD VALUE

When do you need a good Estimate?

- As soon as the need for a project is identified
- Programming and Funding Sources
- Setting the Letting Schedule
- All the time for Monitoring Cash Flow Projections

II. Both



When can you do a Value Engineering Study to get a good Estimate?

- CONCEPT STAGE -Feasibility Studies
- SCHEMATIC DESIGN STAGE -Advance Planning
- 30 PERCENT DESIGN STAGE - Preliminary Design

Benefits at the Concept Stage

- Value Engineering will evaluate alternate routes and perform Design and Cost Studies at this time
- Update existing “windshield” Estimate
- Allow project to better compete for funding programs with a more accurate estimate

Benefits at the Schematic Design Stage

- Value Engineering will analyze Environmental and Right of Way issues at this time
- Determine Right of Way costs
- Validate the Project Schedule so projected cash needs can be dedicated.

Benefits at the 30 Percent Design Stage

- Value Engineering will analyze detailed design, specifications and estimate at this time
- Last best chance to get a good estimate for the project
- Finalize actual letting date and forecast cash flow

IV. Conclusion



Value Engineering in TxDOT

- Active program for over 12 years with documented savings
- Studies only last a maximum of one week
- Cost of the study is minimal since team members are from TxDOT

Golden Rule of Value Engineering

- The required function should be achieved at the lowest possible life cycle cost, consistent with the requirements for performance, maintainability, safety and aesthetics.

Keys to a Successful Value Engineering Study

- Right Project
- Right Timing
- Right Team