VALUE ENGINEERING AT FHWA

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Presentation Agenda

- Overview of FHWA/State DOT Program
- VE Program Performance
- Overview of FHWA VE Regulations
- Successful Practices
1. So what is FHWA’s interest in the VE program?
2. Put simply, VE has proven itself to be an effective cost control process that has been time tested.
3. In this time of limited transportation funding it becomes essential that State DOTs and Federal Highway do everything in their power to stretch their transportation dollars. VE is but one of the many activities a State DOT may undertake to meet the goal of cost containment. VE has been time tested and proven to provide significant project cost savings. Take a look at the last 5 years, the period from 2008 to 2012. State DOTs conducted 1947 VE studies, implementing 6,513 recommendations. Those recommendations which resulted in over $8 billion in project cost savings or cost avoidance over the last five years. While these numbers are significant, State DOTs and FHWA is just scratching the surface. There is much more that can be done in the area of VE analysis. If all state DOTs develop a comprehensive VE program and VE’ed those projects with the highest potential, the results could be phenomenal.
4. It is important to understand what we mean when we talk about project cost savings. The recommendations that VE teams make involve construction, right of way, utility or other direct project savings. These savings mean that the project studied will not cost as much as anticipated and the savings can be used to fund additional transportation work. Through VE analyses, a projects costs less which means there is more money for other projects.
5. Now there will be those that claim VE just doesn’t work. We hear it all the time, we tried it one time and had disastrous results, the project was delayed and the recommendations couldn’t be implemented. VE is not a miracle process. It has to be done right, with the right team, on the right project, and at the right time. If a State DOT puts forth the effort, studies projects at the right time, staffs VE teams with qualified Team Leaders and team members, follows the VE Job Plan and quickly resolves VE recommendations, either accepting or rejecting them, they will see positive results from the VE program and consequently stretch their tax dollars.
1. Let’s take a closer look at what can be expected when VE is done right. On average, a VE team will recommend cost savings equaling about 10% construction cost savings every time they conduct a VE study. On average, management implements 50% of all proposed recommendations. That means, every time a VE team comes together their recommendations will result in 5% construction cost savings on average.

2. Let’s put it in real terms, if a State DOT studies a $10 million dollar project, which is not such a big project any more, the State DOT could expect to realize $500,000 direct project savings from the VE study. Now I know we all deal in terms of multi-million dollar projects and the concept of cost savings could get lost in the shear magnitude of what we deal with every day, but $500,000 is a lot of money, money that could be used on other projects. A $25 million dollar project would result in $1 ¼ million in project savings, on average.

3. Let’s take a look at the return on investment for the VE program. On average, the cost to conduct a VE study is extremely low compared to the implemented savings. The return on investment over the last five years is 165 to 1. That means, if you spend $5,000 to pay for a VE study, the team will return $825,000 dollars of direct project cost savings, on average.

4. $5,000 for the VE team and they give you back $825,000 in implemented project savings. What’s not to like, when you see these results?
1. **Section 627.5** was changed from General Principles and Procedures to Applicable Projects to clarify when a VE analysis is required by FHWA. The section was amended to clarify that VE analyses are to be conducted prior to completion of final design and all approved recommendations are to be incorporated into the projects Plans, Specifications and Estimate prior to construction.

2. The definition for applicable projects has not changed much since these are defined in federal law. All federally funded projects on the NHS with a total project cost greater than $25 million, all federally funded bridge projects, either on or off the NHS with a total project cost greater than $20 million, and all major projects either on or off the NHS require a VE analysis.

3. We already discussed projects with a delay in construction letting where there is a scope or design change resulting in the project meeting the definition of an applicable project. These projects require a VE analysis since the project has moved back into the design phase and a VE study is required.

4. However, projects that are under the threshold at final design and there is no scope or design change are not required to undergo a VE analysis. For example, if during the letting delay construction costs escalate pushing the project over the threshold, a VE analysis is not required since there has been no scope or design change.

5. Divisions and State DOTs should use caution, however, if a project is nearing the threshold during the design phase, a VE analysis should be conducted in order to ensure you meet federal VE regulations.

6. The last bullet is to emphasize that Divisions have the authority to require a VE analysis when they determine it is appropriate. Please keep in mind, that should the Division require a VE analysis above the required analysis, this should be communicated to the State DOT early enough to not impact the project schedule. Examples of projects possibly warranting additional VE analysis could be where a project continues to rise above the initial estimates where it could be expected the project may benefit from the analysis or a major project where individual construction projects are large and complex. Another example could be a State program where each project falls below the threshold but taken together totals up to a significant program for instance a resurfacing program or bridge deck replacement program. These types of applicable projects are up to the Division in coordination with the State DOT to determine if a VE analysis is appropriate.
Section 627.7 State DOTs must establish and sustain a VE program which includes:

- Monitoring and assessing the VE program to ensure that all VE requirements are met and taking corrective actions necessary to improve the VE program.
- Submitting an annual report to FHWA documenting the performance of the VE program. Annually my office sends out a VE call for data which provides the format for reporting the State VE data.
- Establishing VECP policies and procedures which include the processes of how VECPs are submitted, reviewed and approved by the State DOT, and,
- Establish the policies and procedures to ensure that LPA administered projects meeting the thresholds for applicable projects undergo a VE analysis and meet all the requirements of the VE regulation.
- The VE program must include the process the State DOT will use to ensure that all VE analysis are conducted on all projects meeting the thresholds for applicable projects. Once again, how a State DOT meets this requirement is up to them. Some State DOTs conduct an annual review of their STIP to identify potential projects and then tracks these on a list of potential VE projects.
1. Now comes an extremely important part of the VE analysis. The VE Job Plan has been written to clearly define the process used to conduct the VE analysis. There are 7 phases that each VE study must follow.

(1) **Information Phase** is used to gather project information including project commitments and constraints, project plans, specifications and estimates and present it to the team so they all understand the project.

(2) **Function Analysis Phase** Analyze the project to understand the required functions which includes breaking the project down into it’s component pieces so they can be easily understood and analyzed.

(3) The **Creative Phase** is used to Generate ideas on ways to accomplish the required functions which improve the project’s performance, enhance its quality, and lower project costs.

(4) The **Evaluation Phase** is used to Evaluate and select feasible ideas for development.

(5) The **Development Phase** Develops the selected alternatives into fully supported recommendations including drawings, and estimates.

(6) During the **Presentation Phase** The team prepares presentation material in order to present the VE recommendation to the project stakeholders.

(7) The **Resolution Phase**: Evaluates, resolves, documents and implements all approved recommendations.

It is important to remember that the VE Job Plan merely identifies the process that the VE analysis must follow. As stated earlier, each phase of the VE Job Plan can be scaled to meet the specific project needs. For instance, simpler projects will not take as long to go through each phase where more complex project will take more time and effort.
Should be at about 3:00

The annual VE call for data will be used to assess the overall performance of the FHWA VE program. Stay tuned as Federal highway develops additional improvement activities using this data.

I provided some web links to help you deliver the VE program

Federal highway has identified successful VE practices which is on our web page.

VE training can be obtained from our NHI course at the following link.

And finally federal highway has a plethora of VE information on our web site including the updated VE regulation and policies.
There is an AASHTO VE technical committee.
The objective of this technical committee is to establish and maintain policy to assist states in the development of individual Value Engineering Programs, ensure integrity and uniformity of value engineering practices, and promote value engineering within all areas of state and federal transportation programs.

They also, plan and deliver a biennial transportation value engineering conference. Their next VE conference will be in Minneapolis in July 2013.

I provided a link to the AASHTO Guide which was developed by the AASHTO VETEC.

SAVE International is the non-profit organization internationally recognized as the leader in VE. If you get a chance check out their web site for some valuable reference materials.
It is important to realize that we have consultants, local agencies, state dots, division and others on this webinar and I don’t want to slight anyone. The proper way to handle project specific issues are to contact your State DOT or FHWA Division as appropriate.

Of course I will always take your call and address your issues as appropriate, but, I don’t want to circumvent anyone in the chain of authority.

Once again, should you have any questions regarding the VE program, policies, or guidance please feel free to contact me.

Thank you

Now lets get to the questions.