

# 2014 Pre-Construction Conference

*April 4, 2014*

## Value Engineering: Origin, Reasons and Submittals

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## What is Value Engineering?

**Value engineering (VE)** is a systematic method to improve the "**value**" of goods or products and services by using an examination of function. **Value**, as defined, is the ratio of function to cost. **Value** can therefore be increased by either improving the function or reducing the cost.



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(VE “defined” in a best seller)

*“Where there is no guidance, the people fall, but in the abundance of counselors there is safety”*

**Proverbs 11:14**  
(English Std. Version)

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## History of Value Engineering

Value engineering began at General Electric during World War II. Because of the war, there were shortages of skilled labor, raw materials, and component parts. Lawrence Miles and Harry Erlicher at G.E. looked for acceptable substitutes. They noticed that these substitutions often reduced costs, improved the product, or both. What started out as an accident of necessity was turned into a systematic process. They called their technique “value analysis”.

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## Circular No. A-131

May 21, 1993

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

**SUBJECT:** Value Engineering

1. Purpose
2. Supersession Information
3. Authority
4. Background
5. Relationship to other management improvement processes
6. Definitions
7. Policy
8. Agency responsibilities
9. Reports to OMB
10. Inspectors General audits
11. Related Guidance
12. Effective date and Implementation
13. Sunset review
14. Inquiries

**1. Purpose.** This Circular requires Federal Departments and Agencies to use value engineering (VE) as a management tool, where appropriate, to reduce program and acquisition costs.

**2. Supersession Information.** This Circular supersedes and cancels OMB Circular No. A-131, **Value Engineering**, dated January 26, 1988.

**3. Authority.** This Circular is issued pursuant to 31 U.S.C. [[section]]1111.

White

House

Circular

It's the Law!

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- A “VE study” may be performed during location or preliminary design; however, according to FHWA, a VE study must be performed during final design regardless of whether a VE study was performed during earlier phases of project development.

## F.H.W.A. Requirements

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Value Engineering (VE) is defined as a systematic process of review and analysis of a project, during the concept and design phases, by a multidiscipline team of persons not involved in the project.

## F.H.W.A. Requirements



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Value Engineering is conducted to provide recommendations for:

- providing the needed functions safely, reliably, efficiently, and at the lowest overall cost;
- improving the value and quality of the project
- reducing the time to complete the project.

## F.H.W.A. Requirements

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The successful application of the VE process can contribute measurable benefits to the quality of the surface transportation improvement projects and to the effective delivery of the overall Federal-Aid Highway Program

## F.H.W.A. Requirements

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National Value Engineering Award

Most Value Added Proposal



Pre-Construction Engineering  
\$100 million or Greater

Florida Department of Transportation  
District Four  
Crosstown Parkway Extension

*For Demonstrating Outstanding Value Engineering Achievements in Teamwork, Cost Savings, Enhanced Performance, or Expedited Project Delivery That Resulted in an Overall Improved Project*

Presented by the AASHTO Value Engineering Technical Committee  
July 9, 2013

## Project Description

- Extend Crosstown Parkway from Manth Lane to US 1
- Provide relief to 2 existing crossings of the North Fork St Lucie River
- Final 2 mile segment of corridor



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## Major Project Elements

- ◆ Parkway design features, significant green space, longitudinal park feel
- ◆ Construction of 6 lane divided highway
- ◆ Construction of twin 66 foot wide bridges approximately 4000 feet long
- ◆ Shared use pathway on both sides of the Parkway



## Proposed Typical Sections

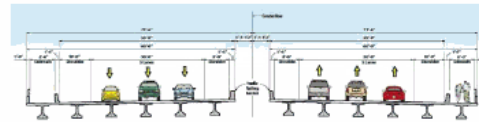


Figure 2. Typical Bridge Section



Figure 3. Future Typical Section

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## **Cost Estimate**

- ◆ Construction Cost - \$121M
- ◆ ROW - \$18.6M (no CSX)
- ◆ Utility Relocations - \$4.7M
- ◆ Design & Contingencies - \$10.7M
- ◆ Total Project Cost - \$155M



## **VE Recommendations**

- ◆ Utilize 11 foot lane widths - \$27 M
- ◆ Utilize "Thirsty Duck" technology to reduce detention areas - \$3.3M
- ◆ Provide pedestrian access - \$50K Value added
- ◆ Utilize the Design/Build Method of delivery
- ◆ Total Project Cost Avoidance - \$30M +



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## Most Recent Change to the VE Rule

### MAP 21

The Federal Highway Administration (FHWA) has revised 23 CFR Part 627 – Value Engineering. This regulation requires the application of value engineering (VE) to all federal aid highway projects on the National Highway System (NHS) with estimated costs as follows:

A. *Projects on the National Highway System (NHS) receiving Federal assistance with an estimated total cost of \$50,000,000 or more; and*

B. *Bridge projects on the NHS receiving Federal assistance with an estimated total cost of \$40,000,000 or more.*

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## Needed Submittals for a successful VE study:

- The project description and review status
- Location (roll) map
- (8) copies of the cost estimate
- (8) sets of half plans (size 11x17)
- A CD with the Design Files (MicroStation/ InRoads)

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**That's All Folks!**



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*Thank you for your time and attentiveness*



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