VALUE ENGINEERING MANUAL

FEBRUARY 2025

Contents

Value Engineering (VE) Introduction

Mission

The mission of the VE program is to enable VDOT to obtain optimum value from transportation funds by:

- Improving project quality;
- Eliminating unnecessary costs; and
- Reducing overall life-cycle costs.

Through the VE program, VDOT applies VE methodologies to identify and define the basic functions of highway projects and their components and recommend ways to meet the identified functions at the lowest possible cost and highest value.

Activities performed to meet the mission include conducting VE studies, facilitating and tracking the implementation of VE recommendations, and training VDOT staff in the VE methodology.

The overarching goal of VE is to ensure that the project design optimizes cost versus value. VE also seeks to find ways to reduce the time it takes to complete a project and enhance qualitative aspects of a project. Therefore, a VE analysis is encouraged on all projects where there is a high potential to realize the benefits regardless of whether a VE analysis is required by FHWA or the Virginia Code.

Organizational Structure and Operations

VDOT's VE Program is assigned to the Construction Division, located in the Department's Central Office in Richmond, Virginia. The VE Coordinator promotes and advances the VE program and reports to an Assistant State Construction Engineer. Any questions regarding the VE program or requests for a VE analysis should be directed to the VE Coordinator.

Applicable Laws and Regulations

Both state law and federal regulations guide the VE process. Virginia Code § 33.2 – 261 sets forth the Commonwealth's law as it applies to VE. The federal regulations relating to VE are located in the Code of Federal Regulations (CFR) at 23 CFR 627. As the federal regulations are more extensive, this manual will focus on them and will note any Virginia specific requirements.

Purpose and Applicability (as required by 23 CFR Part 627.1)

This manual sets forth VDOT's VE program. The policies and procedures included in this manual establish:

1) When a VE study is required;
2) How it is conducted; and
3) How the approved recommendations are implemented.

Regardless of whether a VE analysis is required by this manual, a VE analysis is encouraged on all projects where there is a high potential to realize the benefits of a VE analysis.

The policies, procedures, functions, and capacity to monitor, assess, and report on the performance of the VE program, along with the VE analyses that are conducted and Value Engineering Change Proposals (VECP) that are accepted are established by this manual.

VDOT's sub-recipients, including localities, shall conduct VE analyses in compliance with this manual.

Definitions (adapted from 23 CFR Part 627.3)
The following terms used in this manual are defined as follows:

Bridge project: A bridge project shall include any project where the primary purpose is to construct, reconstruct, rehabilitate, resurface, or restore a bridge.

Final design: Any design activities following preliminary design and expressly include the preparation of final construction plans and detailed specifications for the performance of construction work.

Project: The term "project" means any undertaking eligible for assistance under title 23 of the United States Code or any undertaking funded by the state to improve or maintain the transportation system. The limits of a project are defined as the logical termini in the environmental document and may consist of several contracts, or phases of a project or contract, which may be implemented over several years.

Construction costs: The total cost of the work to be conducted during the construction phase of a project, excluding preliminary engineering (PE) and construction engineering and inspection (CEI) costs.

Total project costs: The estimated costs of all work to be conducted on a project including the environment, design, right-of-way, utilities and construction phases, including PE and CEI costs.

Value Engineering (VE) analysis: The systemic process of reviewing and assessing a project by a multidisciplinary team not directly involved in the planning and development phases of a specific project that follows the VE Job Plan and is conducted to provide recommendations for:

- Providing the needed functions, considering community and environmental commitments, safety, efficiency, and overall life-cycle cost (as defined in 23 USC 106(f)(2));
- Optimizing the value and quality of the project;
- Reducing the time to develop and deliver the project.

VE Job Plan: A systemic and structured action plan for conducting and documenting the results of the VE analysis. While each VE analysis shall address each phase in the VE Job Plan, the level of analysis conducted and effort expended for each phase may be scaled to meet the needs of each individual project. The VE Job Plan shall include and document the following phases:

1. *Information / [Investigation Phase]*: Gather project information including project commitments and constraints.
2. *Function Analysis Phase*: Analyze the project to understand the required functions.
3. *Creative / [Speculation Phase]*: Generate ideas on ways to accomplish the required functions which improve the project's performance, enhance its quality, and lower project costs.
4. *Evaluation Phase*: Evaluate and select feasible ideas for development.
5. *Development Phase*: Develop the selected alternatives into fully supported recommendations.
6. *Presentation Phase*: Present the VE recommendations to project stakeholders.
7. *Resolution / [Implementation Phase]*: Evaluate, resolve, document, and implement all approved recommendations.

Value Engineering Change Proposal (VECP): A construction contract change proposal submitted by the construction contractor based on a VECP provision in the contract. These proposals may improve the project's performance, value and/or quality, lower construction costs, or shorten the delivery time, while considering their impacts on the project's overall life-cycle cost and other applicable factors.

Identifying Projects for VE

The VE analysis will be conducted prior to the completion of final design on each applicable project. VDOT will include all approved recommendations in the project's plans, specifications, and estimates prior to authorizing the project for construction.

Virginia state law and federal regulations have different requirements as to when a VE study is required.

Virginia Law

Virginia Code § 33.2-261 requires a VE study when the total estimated **construction cost** of a project is **over $15 million**.

Federal Law – 23 CFR Part 627.5

VDOT will conduct a VE study for each project located on the National Highway System (NHS) with an estimated total project cost of $50 million or more that utilizes Federal-aid highway funding. The NHS is defined in 23 U.S.C. 103, but generally contains all of the Federal-Aid program.

VDOT will conduct a VE study for each bridge project located on the NHS with an estimated total project cost of $40 million or more that utilizes Federal-aid highway funding.

For major projects, defined as a project with an estimated cost of $500,000,000 or more, a VE analysis shall be conducted. This includes Design-Build and P3 projects.

VDOT will conduct VE analyses on other projects as designated by the US Secretary of Transportation or FHWA including, but not limited to Projects of Divisional Interest (PODIs)

If a change is made to the project's scope or design between the final design and the construction letting which results in an increase in the project's total cost exceeding the thresholds identified above, VDOT will conduct a VE study. However, if the cost estimate increased because of inflation, differences in estimating technique, or quantity updates during the preparation of the pre-advertisement estimate, this would not trigger the VE study requirement.

An additional VE analysis is not required if, after conducting a VE analysis required by this manual, the project is subsequently split into smaller projects in the design phase or the project is programmed to be completed by the letting of multiple construction projects. However, a VE analysis may not be avoided by splitting a project into smaller projects, or programming multiple design or construction projects.

Other projects may be selected for a VE study based on the following criteria:

- High estimated project construction or operation cost;
- Project schedule, including projects which have:
  - proposed long construction times,
  - short design schedules,
  - complicated and lengthy design processes, or
  - significant time between completion of design and actual construction;
- Project complexity; and
- Recommendations from district and central office preliminary engineering managers.

As noted above, Design-Build and P3 projects are generally exempt from VE studies. However, a VE analysis is required if they fall into the major project category or a VE study is otherwise requested by FHWA.

A VE analysis is required on projects delivered using the Construction Manager/General Contractor (CM/GC) method of contracting, if the project meets the requirements identified above. Note, at the time of drafting, VDOT does not use this method of contracting.

Waiver of State Requirement for VE Analyses

The Commissioner may only waive a VE analysis that is required by § 33.2-261 of the Virginia Code but is not required by FHWA regulation. The Commissioner cannot waive a VE analysis that is required by federal regulation.

If a project meets the state criteria for a VE study, but the Project Manager believes a VE study would not be beneficial, the Commissioner may approve a waiver. To begin the waiver process, contact the Central Office VE Coordinator. Generally, the District Engineer will need to submit a signed letter detailing why the project is a good candidate for a waiver to the Central Office VE Coordinator. The Central Office VE Coordinator then drafts a letter for signature by the State Construction Engineer, Chief Engineer, and ultimately, by the Commissioner.

Other Special Considerations

These special considerations only apply if a VE analysis is required by § 33.2-261 of the Virginia Code but not required by federal regulation. If a VE analysis is required under federal regulation, it must be conducted.

1. Sound walls

Sound wall studies are to concentrate on the construction components (i.e., landscaping, drainage, fencing, etc.) rather than the specific sound wall design. The Commissioner has approved a policy mandating a VE study of Sound Barrier standards every two years in addition to the above detailed individual project studies.

2. Maintenance Projects

In accordance with § 33.2-261 of the Code of Virginia, highway maintenance projects costing $15 million or greater that serve to upgrade an existing system or produce a new system accompanied by, at least, a minimum set of plans will be subject to a Value Engineering study. Projects funded by a combination of maintenance and construction funds totaling a cost of $15 million or greater will be subject to a Value Engineering study.

EXEMPTIONS: Projects/contracts repetitive in nature, such as plant mix overlays, sign overlays, bridge painting, surface treatments, slurry seals, guardrail maintenance, pavement repairs, pavement markings, and epoxy or latex overlays do not lend themselves to VE study as the costs of such contracts are multiples of the same project. Projects of this repetitive nature will only be Value Engineered as components of the VDOT Standards studies and VDOT Policies and Procedures studies.

For maintenance project selection the VE Coordinator will be copied on the six-month maintenance schedule along with the final budgets. For projects/contracts where alternative cost analysis meetings are held, a VE Coordinator will be invited to participate.

3. Emergency Contracts

Projects/contracts that are considered "Emergency," where immediate action must take place to ensure the safety of the traveling public, are exempt from consideration for VE study requirements.

VE Program Policies for Identifying Projects for VE and Implementing Recommendations

In accordance with 23 CFR Part 627.7, VDOT has established the following policies and procedures to ensure VE analyses are identified, conducted, and that approved VE recommendations are implemented on all applicable projects. Project Managers are encouraged to consider a VE analysis on any project for which there is or may be a benefit.

Ensuring VE Analyses are Conducted

It is the responsibility of the Project Manager to ensure the VE analysis requirements are met on a project by identifying and alerting the VE Coordinator when a project requires a VE study.

Pursuant to the Project Development Process set forth by VDOT's Location & Design Division, the VE analysis occurs during the Preliminary Design Phase.

Although the Project Manager is responsible for initiating the VE process, the VE Coordinator may use the following tools to identify potential projects that may require a VE study:

- The Six-Year Improvement Program
- 36 Month Advertisement Schedule
- Project Cost Estimating System (PCES) Schedule Activity 32, (i.e., The Value Engineering Study should be conducted at the Preliminary Field Inspection (PFI) Design Phase 20%-30% design. Contact the Value Engineering Staff at least three months in advance to schedule the study)
- Preliminary field reviews
- Interviews with the Location and Design, Structure and Bridge, Urban, Local Assistance and Asset Management managers in the respective Districts or Central Office.

Approval and Implementation of VE Recommendations

Prior to a project being authorized to proceed to a construction letting, the Project Manager must verify that all approved recommendations are implemented and documented in a final VE report.

For all VE studies, the Chief Engineer approves the VE recommendations. Once the Chief Engineer completes his review, the Project Manager signs a form verifying that the approved recommendations will be included in the project plans, specifications, and estimates prior to the project being authorized for construction.

Notification of the Chief Engineer's approval is sent to all the decision-makers, Project Manager, and VE team members. If the project has Federal funding, the Department may elect to seek FHWA's approval, or concurrence on the study. The VE study may also be selected by FHWA as a retained action, which may require FHWA approval. In cases where FHWA has selected to retain action on a project, the FHWA representative (Area Engineer) will contact VDOT project staff if they need to be involved in the study, and the subsequent approval process.

Any VE recommendation which is approved by the Chief Engineer pending further investigation is monitored until the investigation is complete and final resolution is determined.

If the Project Manager should find that an accepted VE recommendation cannot be implemented, a letter or e-mail explaining the situation and requesting repeal of the VE recommendation is sent to the VE Coordinator. The VE Coordinator adds his or her comments it is then sent to the Chief Engineer for his action.

Any approved recommendations must be incorporated into the project prior to the request for federal funding authorization which is done prior to advertisement of the project.

If there is a delay between when the final plans are completed and the project advances to a letting for construction, the Project Manager will review the project to determine if a change has occurred to the project's scope or design where a VE analysis would be required.

The State Contracts Engineer, or his designee, will verify that a VE study, if required, has been completed prior to letting the contract. The State Contracts Engineer will also verify that all approved recommendations have been implemented as documented the final VE report.

The formal written report and approval should be retained for a period of at least three years.

FHWA Reporting

VDOT will monitor and assess the VE program and provide an annual report to FHWA on September 30th of each year or as otherwise requested. The annual report will contain:

1) A summary of all approved recommendations implemented on applicable projects requiring a VE study;
2) The accepted VECPs;
3) VE program functions and activities.

The annual report will be submitted on the template provided by FHWA or in another agreed upon format. VDOT will maintain a database of VE studies conducted in prior years.

VECP

VDOT has established VECP policies and procedures in section 104.02 of the *VDOT Road and Bridge Specifications*.

Local Assistance

VDOT ensures that VE analyses are conducted, and all approved recommendations are implemented on local assistance projects by including information on VE studies in the Local Assistance Program Manual at Section 12.2.5.10. The manual states:

> "Locality will complete the VE process and all recommendations must be submitted to VDOT. The final decision as to which recommendations are incorporated into the final plans is made by the Chief Engineer."

For those localities with VDOT maintained roads, the Chief Engineer has the final approval on recommendations that are incorporated into the plans. Localities that operate and maintain their own roads manage their own VE Approval process and approve recommendations that are incorporated into the plans.

> NOTE: For recommendations that may impact US Primaries or State Routes, where VDOT has maintenance responsibility, the locality will need to coordinate those recommendations with VDOT.

While the locality has the option of using consultant VE Services to conduct the study, VDOT offers VE services to localities at their request.

Urban Construction Initiative (UCI) Projects

Section II. D. of the Urban Construction Initiative Program Administration Manual outlines the requirements for Value Engineering Studies. The manual states:

> "Federal regulations outline requirements for value engineering (VE) studies. The Code of Virginia further defines these regulations and requires a VE study on all projects

exceeding $15 million in construction cost. There is a provision for waiver of this requirement which also must be submitted to VDOT for approval. The VE report consists of recommendations for changes to the proposed project. The final Decision as to which recommendations are to be incorporated into the final project may be made by a person of responsible charge from the municipality.

A copy of the final VE study should be submitted to the Urban Program manager for recordkeeping purposes, however no VDOT action is required."

While the locality has the option of using consultant VE Services to conduct the study, VDOT offers VE services to localities at their request.

Role of VE Coordinator

VDOT has appointed a VE Program Coordinator to promote and advance VE program activities and functions. The VE Program Coordinator establishes and maintains VDOT's VE policies and procedures; facilitates VE training; ensures VE analyses are conducted on applicable projects; monitors, assesses, and reports on the VE analyses conducted and the VE program; participates in periodic VE program and project reviews; submits the required annual report to the FHWA; and supports other elements of the VE program.

Conducting a VE Analysis in Accordance with Federal Requirements in 23 CFR Part 627.9

Timing of the VE analysis

VDOT will conduct a VE analysis as early as practicable during the development of the project. The Project Development Process set forth by VDOT's Location & Design Division includes Value Engineering as an activity in the Preliminary Design Phase. Therefore, the VE study will occur during the Preliminary Design Phase for the vast majority of projects. The Project Manager should contact the VE coordinator if the Project Manager would like to conduct the VE study at a different point in the Project Development Process. At a minimum, the VE analysis shall be conducted prior to the completion of the project's final design.

The Project Manager shall closely coordinate the VE analysis with other project development activities to minimize the impact that approved recommendations might have on:

1) Previous VDOT, community, or environmental commitments;
2) The project's scope or schedule; and
3) The use of innovative technologies, materials, methods, plans or construction provisions.

When VDOT chooses to conduct a VE analysis for a project utilizing the Design-Build project delivery method, the VE analysis should be performed prior to the release of the final Request for Proposals or other applicable solicitation documents.

For projects delivered using the CM/GC contracting method (which VDOT does not use at the present time), the VE analysis is not required prior to the preparation and release of the RFP for the CM/GC contract. The VE analysis is required to be completed and approved recommendations incorporated into the project plans prior to requesting a construction price proposal from the CM/GC contractor.

Requirements for all VE Analyses

All VE analyses shall:

1. Use a multidisciplinary team not directly involved in the planning or design of the project, with at least one individual who has training and experience with leading VE analyses (see section below on selecting the VE team);
2. Develop and implement the VE Job Plan
3. Produce a formal written report outlining, at a minimum:
    i. Project Information;
    ii. Identification of the VE analysis team;
    iii. Background and supporting documentation, such as information obtained from other analyses conducted on the project (e.g., environmental, safety, traffic operations, constructability);
    iv. Documentation of the stages of the VE Job Plan which would include documentation of the life-cycle costs that were analyzed;
    v. Summarization of the analysis conducted;
    vi. Documentation of the proposed recommendations and approvals received at the time the report is finalized; and
    vii. The formal written report shall be retained for a at least 3 years after the completion of the project.

VE analyses on bridge projects, in addition to the requirements above, shall:

1. Include bridge substructure and superstructure requirements that consider alternative construction materials; and
2. Be conducted based on:
    i. An engineering and economic assessment, taking into consideration acceptable designs for bridges; and
    ii. An analysis of life-cycle costs and duration of project construction.

VECP

VDOT has incorporated a VECP clause in Section 104 of the *Road and Bridge Specifications*. Under this Section, VDOT allows the construction contractor to propose changes to the project's plans, specifications, or other contract documents. VDOT will consider changes that could improve the project's performance, value and quality, shorten the delivery time, or lower construction costs, while considering impacts on the project's overall life-cycle cost and other applicable factors. The basis for VDOT to consider a VECP is the analysis and documentation supporting the proposed benefits that would result from implementing the proposed change in the project's contract or project plans.

See the VECP clause in Section 104.02(c) of the *Road and Bridge Specifications* for details regarding the VECP process and requirements.

Nuts and Bolts of a VE Analysis

The guidance below relates to conducting a VE analysis to comply with the requirements of this manual.

Consultants

VDOT may employ qualified consultants to conduct a VE analysis. The consultant shall possess training and experience with leading VE analyses. A consulting firm or individual shall not be used to conduct or support a VE analysis if they have a conflict of interest defined as a direct or indirect financial or personal interest in a contract or subcontract (23 CFR 1.33).

VE Team Selection

The Project Manager is to determine the specific disciplines required on the VE team. VE teams are multi-disciplinary and team members are selected based on expertise in the specific discipline(s) needed for the project. Members of the VE team must not have previously been directly involved with the project. While it is helpful to have team members that are familiar with the VE process, it is not a requirement to serve as a team member. However, at least one person must have training and experience leading VE studies. Typically, VE study teams are comprised of approximately four to eight people.

The Project Manager will contact the appropriate section managers to request VE team members. Project Managers may request team members from other Districts as well as the Central Office. Representatives from localities may be requested through the District Local Assistance representative. Additionally, an FHWA Representative may be invited to all projects with Federal funding.

The Project Manager notifies selected team members by e-mail, telephone, or in person indicating the project to be studied, the location of the study, and the daily schedule. A sample agenda for a VE workshop is attached as Appendix B.

EXAMPLE of VE Team Composition: For a study of a bridge and approach design project that crosses wetlands, team members from the following Divisions may be included:

- Environmental Division, for expertise in permits and wetlands;
- Location and Design Division, for expertise in roadway design;
- Structure and Bridge Division, for expertise in bridge design;
- Traffic Operations Division, for expertise in traffic control; and
- Materials Division, for expertise in soil conditions and pavement design
- NOTE: On all projects that have Federal oversight, an FHWA Representative will be invited to serve as a VE team member.

Preparing for the Study

The Project Manager gathers the relevant information for the VE team to review in advance of the study. The information is typically loaded into a folder on ProjectWise. Suggested information includes but is not limited to:

- Project plans;
- Project correspondence;

- Project file;
- Photographs/video;
- Adjacent project/roadway design;
- Detailed cost estimate;
- Environmental documents and other studies; and
- List of individuals involved with the project

During the Study

Questions about the history of the project will be directed to the Project Manager.

The VE Coordinator or consultant functions as the team leader, is responsible for leading team interaction, and ensures that the VE process is followed. The Project Manager provides the team members with forms necessary to document the VE process and completely develop the recommendations.

VE studies usually require two days for an average project. However, the actual length of time required is determined by the complexity of the project and the team composition. A condensed study format, which requires one to two days, may be used for low cost/complexity projects and topic specific studies.

The Design Team plays a critical role in the success of the VE study. It is critical that the Project Manager thoroughly understand the role of the Design Team in the VE process. The Design Team begins the VE study with a presentation on the design of the project. A list of suggested topics for the Design Team presentation is included in Appendix C. The Design Team is also responsible for providing an analysis of the recommendations advanced by the VE team. The analysis provided by the Design Team must include cost information. A template for the Design Team analysis is in Appendix D.

The VE study is typically held virtually using the Microsoft Teams (or other equivalent) platform.

Performance Measures

VE Team recommendations, which are forwarded to the applicable decision-makers, may include Quantitative Performance Measures (cost savings/increases) and Qualitative Performance Measures which identify applicable benefits of the recommendation. For Bridge Projects, the VE team should consider alternative construction materials for both the substructure and the superstructure. As part of the Life Cycle Cost Analysis, consider the designs incorporating the alternative materials from a LCCA perspective.

The Qualitative measures examined by the VE team include:

1. Minimize Environmental Impact
    - Parks/Recreation
    - Historic/Cultural
    - Aesthetics
    - Wetlands/Streams
    - Permitting

- EIS/CE
- Noise
- Wildlife

2. Improve Constructability
   - Maintenance of Traffic
   - Construction Time
   - Construction Materials
   - Sequence of Construction
   - Feasibility
3. Enhance Operational Performance
   - Safety
   - Maintainability
   - Level of Service
   - User Costs
   - Future Expansion
   - Driver Expectancy

Presentation of VE Recommendations

The VE Coordinator submits the completed Study Report, which includes the Executive Summary, Study Documentation, a VE response form, and all appropriate cover letters, to other members of the VE staff and VE team members for editorial review. When the package is approved by the reviewers, it is sent to the decision makers responsible for approval of the VE recommendations.

The list of identified decision-makers may include the District Location and Design Engineer, the District Construction Engineer, and the State Location and Design Engineer. Whenever a VE recommendation directly relating to project right of way is submitted, the Right of Way Division Administrator is included. Similarly, the Materials Division Administrator should be included whenever a VE recommendation addresses pavement. Responsible persons may also include the Structure & Bridge Engineer, Local Assistance Engineer, the Resident Engineer, representative of a locality or, if applicable, an FHWA Division Representative may serve as a decision-maker on projects with Federal funding. These persons are requested to respond to the VE recommendations, in writing, with a copy to the State Location and Design Engineer.

The responses are sent to the VE Coordinator.

Acceptance of VE Recommendations

Responses received from the decision-makers indicate which VE recommendations are approved for implementation and provide reasons for rejecting those that are not approved. Once all decision makers concur on the proposed recommendations, the responses are combined into a summary package and sent to the Chief Engineer for review.

VE Training

VE training is periodically offered to the employees of VDOT in two ways: a 32-hour session for potential team members, and a one day session for managers. Persons interested in VE training should contact the VE Coordinator.

Appendix A

VIRGINIA ACTS OF ASSEMBLY -- 2018 SESSION

CHAPTER 423

An Act to amend and reenact § 33.2-261 of the Code of Virginia, relating to value engineering.

[H 134]

Approved March 23, 2018

Be it enacted by the General Assembly of Virginia:

1. That § 33.2-261 of the Code of Virginia is amended and reenacted as follows:

§ 33.2-261. Value engineering required in certain projects.

For the purposes of this section, "value engineering" means a systematic process of review and analysis of an engineering project by a team of persons not originally involved in the project. Such team may offer suggestions that would improve project quality and reduce total project cost, ranging from a combination or elimination of inefficient or expensive parts or steps in the original proposal to total redesign of the project using different technologies, materials, or methods.

The Department shall employ value engineering in conjunction with any project that has an estimated construction cost of more than $15 million on any highway system using criteria established by the Department.

After a review, the Commissioner of Highways may waive the requirements of this section for any project for compelling reasons. Any such waiver shall be in writing, state the reasons for the waiver, and apply only to a single project.

The provisions of this section shall not apply to projects that are designed (i) utilizing a design-build contract pursuant to § 33.2-209 or 33.2-269 or (ii) pursuant to the Public-Private Transportation Act of 1995 (§ 33.2-1800 et seq.).

Federal Regulations can be found at: eCFR :: 23 CFR Part 627 -- Value Engineering

Appendix B – Sample Schedule

VDOT Project # 0294-076-327,P101; UPC: 119073

Smart 22 – Route 294 and Old Bridge Road Intersection Improvements

Value Engineering Workshop

Location: Online (Microsoft Teams)

Date July 18th and 19th

Meeting Agenda

Day 1

9:00 a.m.	Welcome and Introductions – Paul Moose
9:10 a.m.	Safety Moment & VE Overview – Paul Moose
9:15 a.m.	Project Overview – Design Team Members
	The design team will provide an overview of the project including topics such as:

- Design/functional analysis
- Major project features and the rationale behind them
- Alternatives considered
- Adjacent facilities
- Adjacent projects (if any) including any future projects
- Project challenges

Note: Following the Project Overview, the design team will be dismissed with the provision that the PM remain available should questions arise.

10:00 a.m.	Speculation Phase – VE Team
	The VE Team will discuss the project and generate alternatives to those functions identified in the Project Overview
11:00 a.m.	Break
11:10 a.m.	Complete Speculation Phase
12:00 p.m.	Lunch
12:45 p.m.	Evaluation Phase - VE Team
	The team will use VE methodologies to eliminate some of the alternatives generated in the Speculation Phase and develop a short list of proposed VE alternatives.
2:00 p.m.	Presentation of Short List to Design Team – VE Team & Design Team
	The VE Team will present the short list of VE alternatives to the design team.
2:30 p.m.	Adjourn

Note: Following adjournment, the Design Team will assemble cost data associated with the short list of VE alternatives along with any comments regarding impact to both quantitative (Cost and schedule) and qualitative (Operational performance Environmental impact, and Constructability) performance measures.

Day 2

12:30 p.m.	Welcome Back and Safety Moment – Paul Moose
12:35 p.m.	Presentation of Cost Data & Comments on VE Alternatives – Design Team
1:30 p.m.	Break *(Design team excused)*
1:45 a.m.	Go/No-Go Decisions for each VE Alternative – VE Team
3:00 p.m.	Adjourn

Appendix C – Design Team Overview

The Design Team Overview is a PowerPoint presentation given by the Design Team to educate the VE team on the project.

The Design Team Overview covers:

1) Project scope
2) Project estimate and schedule
3) A map of the location
4) Basis of Design
5) Excerpts from the plans showing design details
6) Traffic safety enhancements
7) Maintenance of Traffic
8) Geotechnical
9) Environmental
10) Project Challenges

The VE coordinator can provide a sample upon request.

Appendix D – Presentation of Cost Data & Comments on VE Alternatives
Template for the Design Team to use:

VALUE ENGINEERING STUDY
Analysis of VE Team Recommendations

1) **Recommendation 1:**
Describe recommendation.

Qualitative measures:

- Impacts
  - Describe Impacts:
- Design Performance/Constructability
  - Pros:
  - Cons:
- Operational Performance
  - Pros:
  - Cons:

Quantitative measures:

- Schedule
  - Describe schedule impacts.
- CN Cost Impact
  - Provide detailed cost information. Must have an actual estimated dollar amount.
- Other Considerations
  - Describe any other things the VE team should consider when determining whether to advance the recommendation.

Appendix E – Approval Forms

For signature by the District Engineer

Value Engineering Recommendation Approval Form **Project No: Project #** **UPC#: UPC**						
Recommendation		Minimized Environmental Impact	Enhanced Operational Performance	Improved Constructability	Savings/Cost Avoidance	District Approval Y/N
1	Opportunity #1	✓	✓	✓	Opportunity Value	
2	Opportunity #2	✓	✓	✓	Opportunity Value	
3	Opportunity #3	✓	✓	✓	Opportunity Value	

Please provide comments if VE recommendations are not approved or are approved in a modified form.

Please return this form by Month day, year to Sarah Towell (sarah.towell@vdot.virginia.gov) and send a copy to (Joseph.Koscinski@vdot.virginia.gov).

_____

District Engineer

For signature by Central Office Stakeholders

Value Engineering Recommendation Approval Form **Project No: Project #** **UPC#: UPC**							
Recommendation		Minimized Environmental Impact	Enhanced Operational Performance	Improved Constructability	Savings/Cost Avoidance	Structure and Bridge Approval Y/N*	L&D Approval Y/N
1	Opportunity #1	✓	✓	✓	Opportunity Value		
2	Opportunity #2	✓	✓	✓	Opportunity Value		
3	Opportunity #3	✓	✓	✓	Opportunity Value		

*Only for VE recommendations related to bridges

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Structure and Bridge

_____

Location and Design

For the Chief Engineer's approval and signature

VALUE ENGINEERING APPROVAL SHEET
CHIEF ENGINEER

Project Summary Information			
Project No.	Project #	**Review Estimate**	Estimate Value
District	District	**Tentative Adv. Date**	Adv. Date
UPC	UPC	**Total Proposed Opportunity**	Proposed Opportunity
Project Description	Project Description		

The following Value Engineering study has been reviewed by the State Construction Engineer, and is deemed ready for the Chief Engineer's review and signature.	
	Kerry Bates, P.E. **State Construction Engineer**

Opportunity Description					**Approval (Y/N)**	
Opportunity	**Estimate Cost**	Opportunity Value	**Environmental**	✓.		
1	**Revised Costs**	Opportunity Value	**Operational**	✓		
	Value Opportunity	Opportunity Value	**Constructability**	✓	**Chief Engineer - Barton Thrasher, P.E.**	

Project Manager Verification Form

VALUE ENGINEERING INCORPORATION SHEET
PROJECT MANAGER

Project Summary Information			
Project No.	Project No.	**Review Estimate**	Review Estimate
District	District	**Tentative Adv. Date**	Adv. Date
UPC	UPC	**Total Proposed Opportunity**	Total Proposed Opportunity
Project Description	Project Description		

The following approved Value Engineering opportunities have been incorporated into the plan set. If not, then justification shall be submitted with this form.	
	Project Manager

Opportunity Description					Incorporated (Y/N)
Opportunity	**Estimate Cost**	Opportunity Value	**Environmental**	✓	
1	**Revised Costs**	Opportunity Value	**Operational**	✓	
	Value Opportunity	Opportunity Value	**Constructability**	✓	