



N.C. DEPARTMENT OF TRANSPORTATION

Value Management Office

Value Engineering Program

The Code of Federal Regulations (CFR) Title 23, Chapter 1, Part 627 states that each state is to maintain a Value Engineering Program that carries out Value Engineering (VE) analysis for all projects on the National Highway System (NHS) that are \$50 million or more and \$40 million or more for projects with structures or on projects that are over \$500 million regardless of NHS designation. The VE Analysis is applied during a VE Study that occurs during the design phase of a project.

The Value Engineering Program is 1 of 7 programs that contribute to the Value Management Office's overall goals. Please contact the Value Management Office for more information about these programs. You may also find more information at:

<https://connect.ncdot.gov/resources/Products/Documents/VMO%20Guidelines.pdf>

What You Need to Know

- VE Studies are not required on Design Build projects at this time but are required on Design Bid Build and CMGC that meet the threshold
- The VE Study participants are individuals who are not directly familiar to the project development or planning
- Private Engineering Firms are used at times to supply engineers who share their expertise and experience within a certain discipline (Roadway, Structures, Hydraulics, Geotechnical, Utilities, Traffic Control, etc.) or as facilitators
- VE Studies can be scheduled for Projects even if they aren't required
- VE Analysis is not just a cost savings tool
- There is a brief overview training and workbook available
- There is a more in depth training that walks through the VE analysis process on a specific project available periodically
- If a VE study is not provided for a required project, the DOT risks the possibility of Federal Funds being removed from the project.
- DOT is audited each year on required projects.

Would you like information on training?

Would you like to be added to the VE Study Schedule Monthly Distribution?

Would you like to request a study?

Contact the Value Management Office at
(919)707-6683 or valuemanagementunit@ncdot.gov

(Turn Over)

Value Engineering Analysis Process



(1) Information Phase: The VE study team gathers information about the present design and cost, then determines the needs, requirements, and constraints of the owners, users, and/or stakeholders, as well as the design criteria. Also, the project manager joins the team to provide additional project information, challenges, and answer any project-related questions.

(2) Function Analysis Phase: The VE study team defines the project functions using measurable objectives consisting of an active verb and a descriptive noun. The VE study team analyzes these functions to determine which need improvement, elimination, or combination. Tools used during this phase include: random function identification, function listing, and value index.

(3) Creative Phase: The VE study team uses a variety of creative techniques, such as brainstorming, to generate alternative ideas to perform the project functions.

(4) Evaluation Phase: The VE study team refines and combines ideas, develops functional alternatives, and evaluates by comparison. Appropriate tools of comparison include advantage and disadvantage comparison and a rating of a 1, 0 or -1. These designations are used after a discussion of each idea. A rating of 1 is the decision by the team to carry the opportunity forward to development. If more discussion on the idea is needed, a 0 rating is given. An idea which will not be carried forward for development will receive a -1 rating. By the end of the evaluation step in the VE process, all ideas will have a 1 or -1 rating. The opportunities given a 1 rating are now identified as recommendations.

(5) Development Phase: Based on the evaluation phase, the VE study team begins to develop in detail the recommendations carried forward. During this phase it is essential to establish costs and backup documentation needed to individually convey the alternative solutions.

(6) Presentation Phase: The findings of the VE study are presented to management in the form of a written report. Each recommendation is documented on an individual recommendation form included in the report along with information documenting the rest of the VE study. The report is then sent to the appropriate business units to coordinate the final disposition. This phase may also include a verbal presentation.

As part of the presentation phase of the VE study process, each recommendation is evaluated by management and assigned accepted, accepted with modifications, or rejected. Additionally, a written justification, based on sound engineering principles, is supplied with all recommendations. These decisions are then communicated back to VMO for tracking.

(7) Implementation Phase: As part of the final phase of the VE study process, all recommendations with an accepted or accepted with modifications status are incorporated into the project. The project manager will then provide documentation indicating implementation of the accepted and accepted with modification recommendations. The Value Management Office will then verify this information.