

**REPORT OF THE
VIRGINIA DEPARTMENT OF GENERAL SERVICES**

**Value Engineering of State
Agency Capital Outlay Projects**

**TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA**



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EXECUTIVE SUMMARY

I. Introduction

The Director of the Department of General Services is required by Section 2.1-483.1:1 of the Code of Virginia to report to the Governor and the General Assembly on or before September 15 of each year the (i) number and value of the state capital projects where value engineering (VE) was employed and (ii) identity of the capital projects for which a waiver of the requirements of Section 2.1-483.1:1 was granted, including a statement of the compelling reasons for granting the waiver. This report provides information for the period from July 1, 2000 through June 30, 2001.

II. Projects

Sixteen (16) projects with an combined estimated construction value of approximately \$260 million qualified for Value Engineering as required by Section 2.1-483.1:1 of the *Code of Virginia* and Section 814.0 VALUE ENGINEERING of the Commonwealth of Virginia *Construction and Professional Services Manual for Agencies*, December 1996 (CPSM).

III. Savings

Estimated savings for owner-accepted VE items were provided for fifteen (15) of the above projects. These projects had a total combined estimated construction value of approximately \$245 million. The estimated savings recommended by the value engineering teams and accepted by state agencies for these projects totaled approximately \$1.1 million, or 4.6% of the estimated construction value.

IV. Waivers Granted

There were no waivers granted during this reporting period to exempt projects from the requirements for preparing a value engineering study.

VALUE ENGINEERING OF STATE CAPITAL OUTLAY PROJECTS FOR THE PERIOD JULY 1, 2000 - JUNE 30, 2001

1. Introduction

The Director of the Department of General Services is required by Section 2.1-483.1:1 of the Code of Virginia to report by September 15 each year to the Governor and the General Assembly on the (i) number and value of the capital projects where value engineering (VE) was employed and (ii) identity of the capital projects for which a waiver of the requirements of Section 2.1-483.1:1 was granted, including a statement of the compelling reasons for granting the waiver. This report provides the information for the period from July 1, 2000 - June 30, 2001.

2. Background

Section 2.1-483.1:1 of the Code of Virginia establishes the requirement for use of value engineering on any capital project costing more than five million (\$5,000,000) dollars. This requirement became effective in 1994 and procedures for implementing a value engineering program were developed and issued to state agencies in July 1994.

Value engineering is a systematic process of review and analysis of a project design performed by an independent team of persons not originally involved in the design of the project. The team members are themselves licensed design professionals and the team leader is specially trained in conducting the team study process.

The purpose of the review and analysis of the design is to offer suggestions to the project owner and project design firm that improve project quality and reduce total project cost by combining or eliminating inefficient or expensive parts or steps in the original design or recommending the total redesign of the project using different technologies, materials or methods. Value engineering is often used to deal with cost growth problems during project design. In some cases, a VE study may result in an increase in cost for a portion of a project. This generally occurs when the team recommends a design change that may involve a higher initial investment during construction, but is more cost effective when measured on a life cycle basis (construction cost plus long term operating costs).

Not all projects are candidates for VE. Where an initial analysis of a project indicates that the cost of conducting the VE study may not produce sufficient recommendations of cost savings to cover study costs, there is no potential net benefit in conducting the study.

Current state procedures require any capital project with an estimated construction cost greater than **\$5,000,000** to be value engineered, unless waived by the Director of the Department of General Services. The VE study is conducted at the preliminary design stage of the project. The project design is approximately **35% complete** at the preliminary design stage.

The Commonwealth process involves a **40-hour study** of the project by the VE team. The team is composed of registered design professionals that practice architecture and the engineering disciplines (civil, electrical, mechanical, etc.) involved in the project design and a certified value specialist who is the VE team leader. The A/E **firm** that designed the project is a part-time participant in the VE study. Building shape, floor plan layout and building systems components are sufficiently developed at the preliminary stage of design for all VE team disciplines to evaluate the essential elements of the design and suggest alternatives where appropriate.

The recommendations produced by the VE team are reviewed by the project owner and the design A/E **firm**. Recommendations are selected or rejected by the project owner in consultation with the design A/E based on program requirements, cost, technical feasibility, aesthetics, and other related considerations.

Recommendations dealing with technical design issues must ultimately be accepted or rejected by the design A/E firm since the design A/E is the party with ultimate liability for the design and is required by law to professionally seal the design documents.

Accepted recommendations must be incorporated into the project design and most often this will require additional work on the part of the design A/E. Since the nature and scope of this additional work is not known when the A/E design contract and price are negotiated, the A/E is entitled to a fee for this additional design service.

Several projects evaluated during this report period were designed using abbreviated procedures for capital outlay projects authorized by Section 4-5.08.b. of the 1997 Acts of Assembly, Chapter 924. These projects are commonly referred to as HECO (Higher Education Capital Outlay) projects. Under the HECO process, several colleges and universities have been delegated all post-appropriation review, approval, administrative and policy and procedure functions performed by the Department of Planning and Budget, Department of General Services and the Division of Engineering and Buildings for projects which do not have a general fund component in their project funding.

3. **Projects Studied and Savings Identified**

The sixteen (16) projects that were value engineered are listed in the table on the next page with a total estimated construction value of **\$260,766,000**. The amount of savings attributable to the VE process for Restoration and Renovation of the Finance Building was not available. The savings reported are based on agency-accepted VE items, and the agency VE selections for the Finance Building have not been finalized as the project is currently on hold. The total aggregate construction value for the remaining fifteen (15) projects is **\$245,667,000**. The VE teams identified design changes to the projects that were acceptable to the agency that produced an aggregate estimated savings in construction cost of **\$11,231,000**. The **largest** single project estimated savings identified and accepted by an agency was **\$2,059,000**. The **smallest** single project estimated savings identified and accepted by an agency was **\$110,000**. The **mean** estimated savings identified and accepted by an agency was **\$749,000**.

4. **Study Costs**

The typical cost of a **40** hour VE study is approximately **\$35,000**. Deducting study preparation costs, the Commonwealth realized a net savings in estimated construction cost of **\$10,706,000** for the fifteen (15) studies completed and accepted this reporting period. (This total excludes Project Number **194-16016**, Renovation/Restoration of the Finance Building, as noted above. See the attached table.)

5. **Waivers Granted**

No waivers of the requirements to conduct a value engineering study were granted this reporting period.

Value Engineering Annual Report for Fiscal Year 2001

Project Code	Agency / Institution	Project Title	Preliminary Construction Budget	Estimated VE Savings (Accepted Items)	VE Savings as a % of Budget	Remarks
194-16016	Department of General Services	Restoration/Renov. of the Finance Building	\$15,099,000	\$0	0.0%	None accepted to date, Project on hold.
207-16282	University of Virginia	Medical Research Building No. 6	\$41,090,000	\$131,000	0.3%	
207-79992	University of Virginia	Addition to Aquatic & Fitness Center	\$6,440,000	\$447,000	6.9%	
208-16080	Virginia Tech	Agriculture & Forestry Research Lab.	\$19,686,000	\$2,059,000	10.5%	
208-16084	Virginia Tech	Chemistry/Physics Phase II	\$18,783,000	\$1,157,000	6.2%	
208-16480	Virginia Tech	Lane Stadium South Endzone Expansion	\$26,507,000	\$1,510,000	5.7%	
212-16085	Virginia State University	Renovation of Johnston Mem. Library	\$7,100,000	\$332,000	4.7%	
216-16297	James Madison University	CISAT A3a Laboratory Building	\$19,323,000	\$593,000	3.1%	
2174 6303	Radford University	Peters Hall Renovation/Addition	\$8,800,000	\$454,000	5.2%	
236-16406	Virginia Commonwealth University	Bowe Street Parking Deck	\$8,300,000	\$559,000	6.7%	
242-16418	Christopher Newport University	Residence Hall III	\$18,769,000	\$142,000	0.8%	
247-16352	George Mason University	Fairfax Campus - Housing V	\$20,435,000	\$2,005,000	9.8%	
260-15874	Nathern Virgina Community College	Medical Education Campus	\$24,637,000	\$1,412,000	5.7%	
260-16176	Germanna Community College	Fredericksburg Area Campus - Phase II	\$5,798,000	\$189,000	3.3%	
260-16260	Germanna Community College	Culpeper Workforce Development and Technology Center	\$5,989,000	\$110,000	1.8%	
425-16026	Jamestown-Yorktown Foundation	Theater, Special Exhibit Gallery, and Permanent Gallery	\$14,010,000	\$131,000	0.9%	
TOTAL (including Project 194-16016)			\$260,766,000	\$11,231,000	4.3%	
TOTAL (excluding Project 194-16016)			\$245,667,000	\$4 1,231,000	4.6%	