

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

**Value Engineering of State  
Agency Capital Outlay Projects  
for Fiscal Year 2002**

**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 2.2-1133.B 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 2.2-1133.B was granted, including a statement of the compelling reasons for granting the waiver. This report provides information for the period from July 1, 2001 through June 30, 2002.

### II. Projects

Eighteen (18) projects with a combined estimated construction value of approximately \$250 million qualified for the Value Engineering process. The requirements for Value Engineering are defined in Section 2.2-1133.A of the *Code of Virginia*. The associated administrative procedures are provided in 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 sixteen (16) of these projects. These projects had a total combined estimated construction value of approximately \$227 million. The estimated savings recommended by the value engineering teams and accepted by state agencies for these projects totaled \$9.2 million, or 4.0% of the estimated construction value.

### IV. Waivers Granted / Projects Excluded

One waiver was granted during this reporting period to exempt Jamestown-Yorktown Foundation's Central Support Complex from the requirements for preparing a value engineering study.

The Virginia Institute of Marine Science's Marine Science Research Complex, met the requirements for a VE Study but is also excluded from this report. Although a study was prepared for this project, the scope is currently undergoing significant revision. An updated VE study will be prepared for this project and the savings will be reported in the 2003 VE Annual Report.



# VALUE ENGINEERING OF STATE CAPITAL OUTLAY PROJECTS FOR THE PERIOD JULY 1, 2001 - JUNE 30, 2002

## 1. Introduction

The Director of the Department of General Services is required by Section 2.2-1133.B 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 2.2-1133.B was granted, including a statement of the compelling reasons for granting the waiver. This report provides the information for the period from July 1, 2001 - June 30, 2002.

## 2. Background

Section 2.2-1133.A 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. The procedures for implementing the VE process are contained Section 814.0 of the Commonwealth of Virginia's *Construction and Professional Services Manual for Agencies*, December 1996 (CPSM).

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 redesign of the project using different technologies, materials or methods. Value engineering is often used to deal with "cost growth" during the project design phase. 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's 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

Eighteen (18) projects with a combined estimated construction value of **\$248,003,000** qualified for Value Engineering as required by Section 2.2-1133.A 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). VE savings were reported for sixteen (16) of these projects with an aggregate construction value of **\$227,452,000**. The VE teams identified design changes, which were accepted by the agencies and institutions, that produced an aggregate estimated savings in construction cost of **\$9,155,000**. The **largest** single project savings, **\$2,770,000**, was reported by VCU on their Massey Cancer Center Addition project. The **smallest** single project savings, **\$0.00**, was reported by UVA on their Emmet Street Parking Structure project. The **mean** estimated project savings identified and accepted by all agencies was **\$572,000**. ( $\$9,155,000 / 16 \text{ projects} = \$572,000$ ).

### 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 approximately **\$8,595,000** for the sixteen (16) studies completed and accepted this reporting period.

### 5. Waivers Granted / Projects Excluded

One waiver was granted during this reporting period to exempt the Jamestown-Yorktown Foundation's Central Support Complex project from the requirements for preparing a value engineering study. Although the construction budget, including sitework and utilities, was above the \$5,000,000 threshold, the "building-only" budget for this project was less than \$5,000,000. The building is to be constructed using economical and durable "tilt-up" concrete panels.

A second project, the Virginia Institute of Marine Science's Marine Science Research Complex, also met the requirements for a VE Study. A VE Study was prepared for this project, however, the scope is currently undergoing significant revision. As such, the project has been excluded from the current FY02 Annual Report. The updated study will be prepared and reported in the FY03 Annual Report.

**Table 1  
Value Engineering Summary for FY 2002**

Project Code	Agency / Institution	Project Title	Preliminary Construction Budget	Estimated VE Savings (Accepted Items)	VE Savings as a % of Budget	Remarks
207-16094	University of Virginia	O'Hill Dining Facility	\$15,800,000	\$437,000	2.8%	
207-16285	University of Virginia	Material Science and Engineering Nano Technology Laboratory	\$24,000,000	\$397,000	1.7%	
207-16645	University of Virginia	Emmet Street Parking Structure	\$13,700,000	\$0	0.0%	
208-16143	Virginia Tech	Alumni Center/CEC/Hotel Complex	\$30,850,000	\$1,050,000	3.4%	
208-16480-02	Virginia Tech	Stadium Expansion - Phase II	\$38,500,000	\$1,054,000	2.7%	
208-16485-01	Virginia Tech	Bioinformatics Facility - Phase I	\$13,500,000	\$670,000	5.0%	
208-16485-02	Virginia Tech	Bioinformatics Facility - Phase II	\$18,000,000	\$586,000	3.3%	
216-16396-02	James Madison University	Athletic Performance Center	\$7,253,000	\$206,000	2.8%	
216-16525	James Madison University	Renovation of Harrison Hall/Annex	\$6,774,000	\$92,000	1.4%	
221-16293	Old Dominion University	Engineering & Computational Sciences Building	\$11,820,000	\$315,000	2.7%	
236-16338	Virginia Commonwealth University	Gladding Residence Hall Addition	\$6,000,000	\$84,000	1.4%	
236-16344	Virginia Commonwealth University	Massey Cancer Center Addition	\$18,200,000	\$2,770,000	15.2%	
236-16401-01	Virginia Commonwealth University	Student Commons Addition	\$6,750,000	\$172,000	2.5%	
260-16502	Virginia Community College System Central Virginia Community College	Manufacturing Technology Building	\$5,371,000	\$116,000	2.2%	
268-16522	Virginia Institute of Marine Science	Marine Science Research Complex	\$14,551,000	---	---	See Note 1.
425-16472	Jamestown-Yorktown Foundation	Central Support Complex	\$6,000,000	---	---	See Note 2.
501-16141	Virginia Department of Transportation	Fulton Equipment Division - New Equipment Maintenance Facility	\$5,789,000	\$968,000	16.7%	
501-16679	Virginia Department of Transportation	Northern Virginia Maintenance Complex	\$5,145,000	\$238,000	4.6%	
TOTAL (excluding projects 268-16522 and 425-16472. See notes below.)			\$227,452,000	\$9,155,000	4.0%	
TOTAL (all projects)			\$248,003,000			

**Notes:**

- 1) Project scope is undergoing significant revision. A revised preliminary design and an updated VE Study will be prepared during the next fiscal year.
- 2) A waiver of the requirement to prepare a VE Study was granted for this project. The building-only budget (i.e., excluding sitework and utilities) was less than \$5,000,000. The building is to be constructed of economical "tilt up" concrete construction.

