REPORT OF THE SECRETARY OF
ADMINISTRATION ON

USE OF VALUE ENGINEERING

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 32

COMMONWEALTH OF VIRGINIA
RICHMOND
1996

COMMONWEALTH of VIRGINIA

Office of the Governor

George Allen
Governor

Michael E. Thomas
Secretary of Administration

January 10, 1996

To: The Honorable George Allen, Governor of Virginia
Members of the General Assembly of Virginia

As required by House Joint Resolution 687 (1995), I am pleased to submit the attached report, "Use of Value Engineering," for your information and review.

Very truly yours,

Michael E. Thomas

MET:ars

Attachment

c: Mr. Donald C. Williams, Director
Department of General Services

Mr. M. H. Wilkinson, Executive Director
Commission on Local Government

Mr. Nathan I. Broocke, Director
Division of Engineering and Buildings

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EXECUTIVE SUMMARY

I. Introduction

House Joint Resolution Number 687, agreed to by the 1995 Session of the General Assembly, requested the Secretary of Administration (a) study the cost savings that have resulted from the use of value engineering (VE) in capital projects costing more than five million dollars and (b) ascertain to what extent, if any, such value engineering may benefit localities.

STUDY APPROACH

This study was assigned to the Bureau of Capital Outlay Management (BCOM) of the Department of General Services.

The BCOM developed the policy and procedures for implementing the use of value engineering on state capital projects and receives reports of agency value engineering study recommendations and agency action thereon. The BCOM also provides limited value engineering and cost analysis of capital project proposals as part of the process of developing the administration's capital budget submission.

The study examined recommendations developed by value engineering teams retained to review agency projects and cost data and other information submitted by the agencies related to acquiring the VE studies.

II. Summary of Findings

Value engineering of state capital outlay projects with an estimated construction cost of more than $5,000,000 began in July 1994. State procedures require that the VE study be conducted at the preliminary design stage. The project design is approximately 35% complete at preliminary design stage.

As of October 15, 1995, fourteen (14) of eighteen (18) capital projects subject to VE have been studied. Studies were waived for three correctional facility projects and one site development project. The median estimated construction amount of the projects was approximately $13,300,000. The projects were predominantly college academic and student support facilities. There was one major port facility project.

VE STUDY COSTS

The median cost of a VE study was approximately $29,000. The median cost of the design architect/engineer's participation was approximately $7,000. Additional design costs related to changes in the design resulting from accepted VE recommendations were approximately $10,000. The total of these costs ($46,000) represents approximately one-third of one percent of

the median estimated construction cost.

ESTIMATED CONSTRUCTION COST SAVINGS

A typical VE study produced 44 recommendations of savings for the average project. State agencies typically accepted 16 of the recommendations for an acceptance rate of approximately 35%. The estimated value of the proposed recommendations totaled approximately $5.3 million while the total estimated value of accepted recommendations was approximately $1.5 million.

In terms of cost versus benefit each dollar spent in conducting the value engineering study and implementing an accepted VE recommendation produced a $22 reduction in the estimated construction cost of the project.

We noted that the predominance of recommendations occurred in the architectural area (34%) with electrical (20%), mechanical (19%), and structural (14%), the other significant design areas.

As noted earlier, approximately 35% of the recommendations are accepted. Most often recommendations are rejected because in the opinion of the design architect/engineer they are not technically acceptable (27%). Other most often cited reasons for rejection are, owner requirement or preference (16%), affects building aesthetics (12%), program requirements (12%), and other (12%).

III. Recommendations

The study indicates a positive ratio of reduction in estimated construction cost to the cost of conducting the VE study. In the case of state projects value engineered since July 1994, estimated construction cost has been reduced $22 for each dollar spent in conducting the VE study. The study results are consistent with other public agency experience.

A particular deficiency in this study is the limited number of projects that have been value engineered since the program was launched in 1994 and particularly the sparsity of state projects that are reasonably similar to the schools and jails that represent the predominant types of projects constructed by localities. Another consideration is the propriety of the state mandating value engineering of local construction projects in which little, if any, state funding is involved.

We recommend that (1) localities be provided this study and encouraged through the auspices of the Commission on Local Government, Virginia Municipal League and Virginia Association of Counties to use value engineering on capital projects costing more than $5,000,000 and including less than $30,000 of state funding and (2) the General Assembly consider legislation requiring localities receiving state aid of $30,000 or more for construction projects with an estimated construction cost of greater than $5,000,000 to have the projects value engineered.

INTRODUCTION

This report presents the findings and recommendations of a study conducted pursuant to House Joint Resolution Number Six Eighty-Seven (HJR 687) of the 1995 Session of the General Assembly (Appendix A) which requested the Secretary of Administration to (a) study the cost savings that have resulted from the use of value engineering by agencies of the Commonwealth in capital projects costing more than five million ($5,000,000) dollars in estimated construction cost and (b) ascertaining to what extent, if any, such value engineering may benefit localities.

Section 2.1-483.1:1 of the CODE OF VIRGINIA (Appendix B) 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. (Appendix C)

Value engineering is a systematic process of review and analysis of a project design performed by a 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 totally redesigning 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 of portions of a project. This generally occurs when the team recommends a design change that may involve a higher initial investment during construction but measured on a life cycle basis (construction cost plus operating cost) is much more cost effective.

The use of VE in public construction is not a new phenomenon. The United States Navy Facilities Engineering Command and the United States Army Corps of Engineers have applied VE to Military Construction Program (MCP) projects of Department of Defense Agencies since the early 1980's. The City of New York, the County of San Diego, and other public agencies in the San Diego area are among numerous public bodies that employ VE.

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 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. The VE study is conducted at preliminary design stage. Building shape, floor plan layout and building systems components are sufficiently developed at this stage of design (35% design complete) for each of the 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, etc. 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 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 is negotiated, the A/E is entitled to an addition to the design contract amount.

STUDY APPROACH

This study was assigned to the Bureau of Capital Outlay Management (BCOM) of the Department of General Services. The BCOM is the focal point for all of the Commonwealth's capital outlay programs. The section's principal responsibilities include: (1) acting as the technical arm of the Director of the Division of Engineering and Buildings in his role as State Building Official; (2) developing policy and procedures for state agency procurement of professional and construction services; (3) monitoring and facilitating execution of the capital outlay program and (4) assisting the Department of Planning and Budget in the development of the Governor's capital program. The BCOM also provides limited value engineering and cost analysis of capital project proposals as part of the process of developing the administration's capital budget submission.

The study examined recommendations developed by VE teams retained to review agency projects; reports by state agencies of their action on VE recommendations and other VE cost information related to acquiring the VE studies requested through a one-time BCOM survey. (Appendix D).

PROJECTS STUDIED

Eligible projects from which data was extracted to develop this study are listed in Table 1.

The requirement to conduct a VE study on the following projects was waived after consideration of the individual request for such relief on each project:

- Red Onion Mountain Maximum Security Prison
- Sussex Maximum Security Prison
- Bon Air Juvenile Correctional Center Expansion
- James Madison University, College of Integrated Science and Technology, Phase II Infrastructure.

Individual estimated project construction cost ranged from a low of $7,099,500 to a high of $38,344,733. The median value was $13,277,087.

Since an objective of the study is to ascertain what benefit VE might have for localities, it is appropriate to compare the types of projects reviewed in this study with the general types of projects predominantly constructed by localities. The majority of locality construction can be characterized as primary and secondary school, local and regional jail, public library and general administrative space. Of the four types characterized, the preponderance of projects is in schools and jails. Data available from the Department of Education for the period July 1, 1994 - June 30, 1995 showed $190,096,695 in new construction and $19,366,729 in selected additions and renovations for a total of $209,463,424 was put under construction.

Comparable projects constructed by state agencies would include general academic space on four-year or community college campuses, general state administrative space, medium security correctional facilities, college libraries and student dining halls.

Of the 14 projects examined in this study on which VE was conducted and data reported, only the new Dining Hall at Longwood College, the Jepsen Science Building at Mary Washington College, the new Phase II Academic Building at James Madison University, the new Phase I Academic Building at Prince William Institute and the new Women's Multi-custody Correctional Center are somewhat similar in function and building system types to typical locality projects.

The complete detailed study of the 14 projects can be found in Appendix G.

FINDINGS

The Study examined five (5) principal areas:

- Study Cost
- Study Savings
- Study Benefit/Cost Ratios

- o Types and character of recommendations
- o Disposition of recommendations

STUDY COST

Study cost is defined as the cost of the VE team analysis of the project; the design A/E's participation in the VE process and the added cost of any project redesign required as a result of accepting a VE team recommendation. The total cost of a study ranged from $158,611 to $22,495 with the median being $48,571. The median cost of the VE team analysis (contract) was $29,083 while the median cost for additional design was $10,008. The median cost of design A/E participation was $7,419. As a percent of estimated construction cost, the total cost of value engineering ranged from a low of 0.17% to a high of 1.57% with the median at 0.35%. See the next page.

Table 1 provides specific data on each project.

Survey of Value Engineering Studies Completed Through October 1995

VE Study Costs

Project Code	Agency	Project Title	VE Study Date	VE Consultant	VE Contract Amount	A/E Fee to Participate	Add'l Design Costs	Total Costs	Estimated Construction Amount	Total Cost as a % of Construction Amount	
					a	b	c	d = a + b + c	e	f = d / e	
194-14392	DGS	New Library of Virginia	Jun-92	Edward J. Nichols & Assoc.	$36,533	$0	$50,905	$87,438	$34,251,995	0.26%	
208-14814	VPISU	Student Health & Fitness Center	Apr-95	Hanscomb Associates	$35,507	$22,500	$0	$58,007	$16,011,800	0.36%	
214-15502	LC	New Dining Hall	Dec-94	Hudson & Associates	$25,000	$11,660	$5,000	$41,660	$7,099,500	0.59%	
215-14770	MWC	Jepson Science Building	Nov-94	Marsh Witt Associates	$30,000	$16,026	$112,585	$158,611	$10,121,300	1.57%	(2)
216-15619	JMU	CISAT Residence Hall Phase 1	May-95	Edward J. Nichols & Assoc.	$24,013	$6,500	$0	$30,513	$10,840,354	0.28%	
216-15660	JMU	CISAT Infrastructure Phase 2		--- Study waived ---							
216-15660	JMU	CISAT Academic Phase 2	Jun-95	Pacific Environmental Svcs.	$28,166	$10,000	$0	$38,166	$22,525,543	0.17%	
236-14774	VCU	Fine Arts Center Addition	Aug-94	UVa Team/Hudson & Assoc.	$19,798	$0	$263,000	$282,798	$11,502,000	2.46%	(3)
236-15523	VCU	Academic Campus Parking Deck II	Oct-94	UVa Team/Hudson & Assoc.	$22,495	$0	$0	$22,495	$8,842,300	0.25%	
236-15577	VCU	Convocation & Recreation Center	Aug-94	Marsh Witt Associates	$34,445	$24,542	$51,637	$110,624	$18,956,300	0.58%	
247-15344	GMU	Pr. Wm. Academic Bldg Phase I	Jan-95	Hanscomb Associates	$18,865	$3,250	$15,293	$37,408	$10,993,000	0.34%	
247-15345	GMU	Arlington School of Law Phase I	Feb-95	Lewis & Zimmerman	$34,902	$8,338	$12,241	$55,481	$15,052,173	0.37%	
247-15579	GMU	Physical Education II Swimming Pool	Apr-95	Hanscomb Associates	$19,585	$1,845	$7,775	$29,205	$8,453,000	0.35%	
407-14271-6	VPA	NIT North Exp'n., Upland Development	Apr-95	CH2M Hill	$34,600	$14,500	$41,600	$90,700	$25,073,000	0.36%	
777-15758	DYFS	Bon Air Juvenile Corr. Ctr. Expansion		--- Study waived ---							
799-15194	DOC	Red Onion Mountain		--- Study waived ---							
799-15461	DOC	Women's Multi-Custody Corr. Center	Jan-95	Marsh Witt Associates	$32,564	$0	$0	$32,564	$38,344,733	0.08%	(1)
799-15467	DOC	Sussex Maximum Security Institute		--- Study waived ---							
				TOTAL:	**$396,473**	**$119,161**	**$560,036**	**$1,075,670**	**$238,066,998**	**0.45%**	
				AVERAGE:	**$28,320**	**$8,512**	**$40,003**	**$76,834**	**$17,004,786**	**0.45%**	
				MEDIAN:	**$29,083**	**$7,419**	**$10,008**	**$48,571**	**$13,277,087**	**0.35%**	

Notes:

(1) - No cost for A/E participation or redesign as preliminary design was over budget.

(2) - Redesign costs high due to change in project site after preliminary design was complete. Relocation recommended by VE Study.

(3) - Redesign costs were high as project design was changed substantially to incorporate VE comments.

(4) - The following studies were not included in above summary as incomplete information was available at the time the survey was compiled:

216-15485	JMU	CISAT Student Center	Nov-95	Edward J. Nichols & Assoc.	tbd	tbd	tbd	tbd	$5,755,639	tbd
221-15519	ODU	Teletechnet Center	May-95	U.S. Cost, Inc.	$29,697	$0	tbd	tbd	$5,855,200	tbd

"tbd" = to be determined

Table 1

Survey of Value Engineering Studies Completed Through October 1995

VE Study Costs
(for 14 studies)

See Table 1 for details.	VE Contract Amount a	A/E Fee to Participate b	Additional Design Cost c	Total Cost d = a+b+c	Estimated Construction Amount e	Total Cost as a % of Construction Amount f = d / e
Total Cost	**$396,473**	**$119,161**	**$560,036**	**$1,075,670**	**$238,066,998**	**0.45%**
Average Cost	**$28,320**	**$8,512**	**$40,003**	**$76,834**	**$17,004,786**	**0.45%**
Median Cost	**$29,083**	**$7,419**	**$10,008**	**$48,571**	**$13,277,087**	**0.35%**

*** See notes on supporting tables.**

STUDY SAVINGS

Study savings represent reductions in the estimated cost of construction of the project. The actual cost of construction of any project is not determined until a low bid is accepted, a contract awarded, and contract change orders are accounted for at the completion of construction.

Analysis of the VE studies completed to-date indicated that total savings per project recommended by VE teams ranged from $1,549,000 to $12,349,000 with a median of $4,923,000. The dollar value of recommendations accepted by agencies ranged from $181,000 to $3,352,000 with a median of $1,555,000. (See next page.)

The acceptance rate (the ratio of accepted to proposed recommendations) ranged from 18.2% to 59% with a median of 39.4%. Measured in terms of the dollar amount of the recommendations, the acceptance rate ranged from 3.6% to 60.3% with a median of 31.6%. Measurement of acceptance in dollar is more meaningful as it shows whether really cost sensitive recommendations are being accepted. Table 2 provides specific data on each project.

STUDY BENEFIT COST RATIOS

The real measure of the effectiveness of value engineering is the benefit (recommendations accepted that reduced the estimated cost of construction) produced for each dollar spent (VE contract, A/E participation and redesign expense) in conducting the value engineering/study.

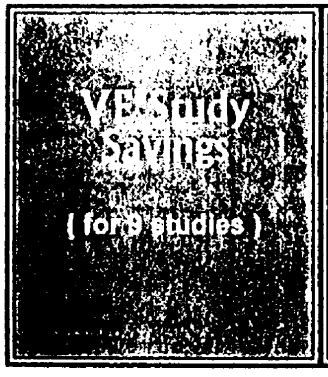
The study found that the ratio of benefit to cost, i.e., dollars saved per dollar spent, ranged from 58:1 to 5:1 with a median ratio of 22:1. This can be compared to figures reported in the San Diego area that range from 15:1 to 582:1 from a study of 82 separate projects. (Appendix E) Data reported from New York City for the 1991-1993 period ranged from 112:1 to 1020:1. (Appendix F) (See page 12 and Table 3.)

The abbreviated value engineering and cost analysis of preplanning studies and capital projects conducted by BCOM well before VE studies are accomplished can account for the somewhat lower benefit cost ratio revealed in this study. Table 3 provides specific data on each project.

TYPES AND CHARACTER OF RECOMMENDATIONS

The study revealed the particular area of buildings that generally produce VE recommendations. Changes in the architectural design was the area producing the most recommendations (34%). Such recommendations could involve the facade, floor layout, material quality, etc. Other major recommendation areas include electrical (20%), e.g., electric service, lighting, motor selection, etc.; mechanical (19%), e.g., heating and air conditioning system, plumbing; structural (14%) e.g., steel frame, reinforced concrete, pre-cast concrete, foundation type; and civil (6%) e.g., site grading, drainage structure, paving. A breakdown of VE recommendations accepted and rejected is shown on pages 13, 14 and 15.

Survey of Value Engineering Studies Completed Through October 1995



See Table 2 for details.	Number of Value Engineering Recommendations			Dollar Amount of Value Engineering Recommendations		
	Proposed a	Accepted b	Acceptance Rate c = b / a	Proposed d	Accepted e	Acceptance Rate f = e / d
Total Savings	397	140	35.3%	$47,683,000	$13,271,000	27.8%
Average Savings	44	16	35.3%	$5,298,111	$1,474,556	27.8%
Median Savings	33	13	39.4%	$4,923,000	$1,555,000	31.6%

*** See notes on supporting tables.**

Survey of Value Engineering Studies Completed Through October 1995

VE Study Savings

Project Code	Agency	Project Title	VE Study Date	VE Consultant	Number of VE Recommendations			Dollar Amount of VE Recommendations		
					Proposed	Accepted	Acceptance Rate	Proposed	Accepted	Acceptance Rate
					a	b	c = b / a	d	e	f = e / g
194-14392	DGS	New Library of Virginia	Jun-92	Edward J. Nichols & Assoc.	70	13	18.6%	$12,349,000	$1,440,000	11.7%
208-14814	VPISU	Student Health & Fitness Center	Apr-95	Hanscomb Associates	69	30	43.5%	$3,762,000	$2,182,000	58.0%
214-15502	LC	New Dining Hall	Dec-94	Hudson & Associates	29	11	37.9%	$4,923,000	$615,000	12.5%
215-14770	MWC	Jepson Science Building	Nov-94	Marsh Witt Associates	39	23	59.0%	$6,259,000	$3,352,000	53.6%
216-15619	JMU	CISAT Residence Hall Phase 1	May-95	Edward J. Nichols & Assoc.	31	13	41.9%	$3,092,000	$1,778,000	57.5%
216-15660	JMU	CISAT Infrastructure Phase 2		--- Study waived ---						
216-15660	JMU	CISAT Academic Phase 2	Jun-95	Pacific Environmental Svcs.						
236-14774	VCU	Fine Arts Center Addition	Aug-94	UVa Team/Hudson & Assoc.						
236-15523	VCU	Academic Campus Parking Deck II	Oct-94	UVa Team/Hudson & Assoc.	17	5	29.4%	$5,226,000	$188,000	3.6%
236-15577	VCU	Convocation & Recreation Center	Aug-94	Marsh Witt Associates	19	8	42.1%	$3,282,000	$1,980,000	60.3%
247-15344	GMU	Pr. Wm. Academic Bldg Phase I	Jan-95	Hanscomb Associates	33	6	18.2%	$1,549,000	$181,000	11.7%
247-15345	GMU	Arlington School of Law Phase I	Feb-95	Lewis & Zimmerman	90	31	34.4%	$7,241,000	$1,555,000	21.5%
247-15579	GMU	Physical Education II Swimming Pool	Apr-95	Hanscomb Associates						
407-14271-6	VPA	NIT North Exp'n., Upland Development	Apr-95	CH2M Hill						
777-15758	DYFS	Bon Air Juvenile Corr. Ctr. Expansion		--- Study waived ---						
799-15194	DOC	Red Onion Mountain		--- Study waived ---						
799-15461	DOC	Women's Multi-Custody Corr. Center	Jan-95	Marsh Witt Associates						
799-15467	DOC	Sussex Maximum Security Institute		--- Study waived ---						
				TOTAL:	**397**	**140**	**35.3%**	**$47,683,000**	**$13,271,000**	**27.8%**
				AVERAGE:	**44**	**16**	**35.3%**	**$5,298,111**	**$1,474,556**	**27.8%**
				MEDIAN:	**33**	**13**	**39.4%**	**$4,923,000**	**$1,555,000**	**31.6%**

Notes:

Above percentages are approximate and may be understated. Occasionally, VE proposals overlap one another.

This results in some double-counting in the "proposed" column. In using this report, it is recommended that the above percentages be considered as minimum values.

Actual Acceptance rates would be higher because of this overlap. Due to the very short time frame in which VE studies are prepared,

backup information is generally insufficient to precisely quantify the amount of overlap between VE proposals.

Table 2

Survey of Value Engineering Studies Completed Through October 1995

VE Study Benefit/Cost Ratios
(for 9 studies)

See Table 3 for details.	Total VE Study Costs a	Accepted VE Recommend. b	Total Cost As a % of Accepted VE Recommendations c = a / b	Benefit / Cost Ratio d = b / a
Total	**$602,237**	**$13,271,000**	**4.54%**	**22 :1**
Average	**$60,224**	**$1,327,100**	**4.54%**	**22 :1**

*** See notes on supporting tables.**

Survey of Value Engineering Studies Completed Through October 1995

VE Study Benefit / Cost Ratios

Project Code	Agency	Project Title	VE Study Date	VE Consultant	Total VE Study Costs (See Table 1)	Accepted VE Recommendations (See Table 2)		Total Cost As a % of Accepted VE Recommendations	Benefit / Cost Ratio
					a	b		c = a / b	d = b / a
194-14392	DGS	New Library of Virginia	Jun-92	Edward J. Nichols & Assoc.	$87,438	$1,440,000		6.07%	16 :1
208-14814	VPISU	Student Health & Fitness Center	Apr-95	Hanscomb Associates	$58,007	$2,182,000		2.66%	38 :1
214-15502	LC	New Dining Hall	Dec-94	Hudson & Associates	$41,660	$615,000		6.77%	15 :1
215-14770	MWC	Jepson Science Building	Nov-94	Marsh Witt Associates	$158,611	$3,352,000		4.73%	21 :1
216-15619	JMU	CISAT Residence Hall Phase 1	May-95	Edward J. Nichols & Assoc.	$30,513	$1,778,000		1.72%	58 :1
216-15660	JMU	CISAT Infrastructure Phase 2		--- Study waived ---			(1)		
216-15660	JMU	CISAT Academic Phase 2	Jun-95	Pacific Environmental Svcs.			(1)		
236-14774	VCU	Fine Arts Center Addition	Aug-94	UVa Team/Hudson & Assoc.			(1)		
236-15523	VCU	Academic Campus Parking Deck II	Oct-94	UVa Team/Hudson & Assoc.	$22,495	$188,000		11.97%	8 :1
236-15577	VCU	Convocation & Recreation Center	Aug-94	Marsh Witt Associates	$110,624	$1,980,000		5.59%	18 :1
247-15344	GMU	Pr. Wm. Academic Bldg Phase I	Jan-95	Hanscomb Associates	$37,408	$181,000		20.67%	5 :1
247-15345	GMU	Arlington School of Law Phase I	Feb-95	Lewis & Zimmerman	$55,481	$1,555,000		3.57%	28 :1
247-15579	GMU	Physical Education II Swimming Pool	Apr-95	Hanscomb Associates			(1)		
407-14271-6	VPA	NIT North Exp'n., Upland Development	Apr-95	CH2M Hill			(1)		
777-15758	DYFS	Bon Air Juvenile Corr. Ctr. Expansion		--- Study waived ---			(1)		
799-15194	DOC	Red Onion Mountain		--- Study waived ---			(1)		
799-15461	DOC	Women's Multi-Custody Corr. Center	Jan-95	Marsh Witt Associates			(1)		
799-15467	DOC	Sussex Maximum Security Institute		--- Study waived ---			(1)		
				TOTAL:	**$602,237**	**$13,271,000**		**4.54%**	**22 :1**
				AVERAGE:	**$60,224**	**$1,327,100**		**4.54%**	**22 :1**

Notes:

(1) - For comparison purposes, this table includes only those projects where both the study costs and associated savings were known.

Table 3

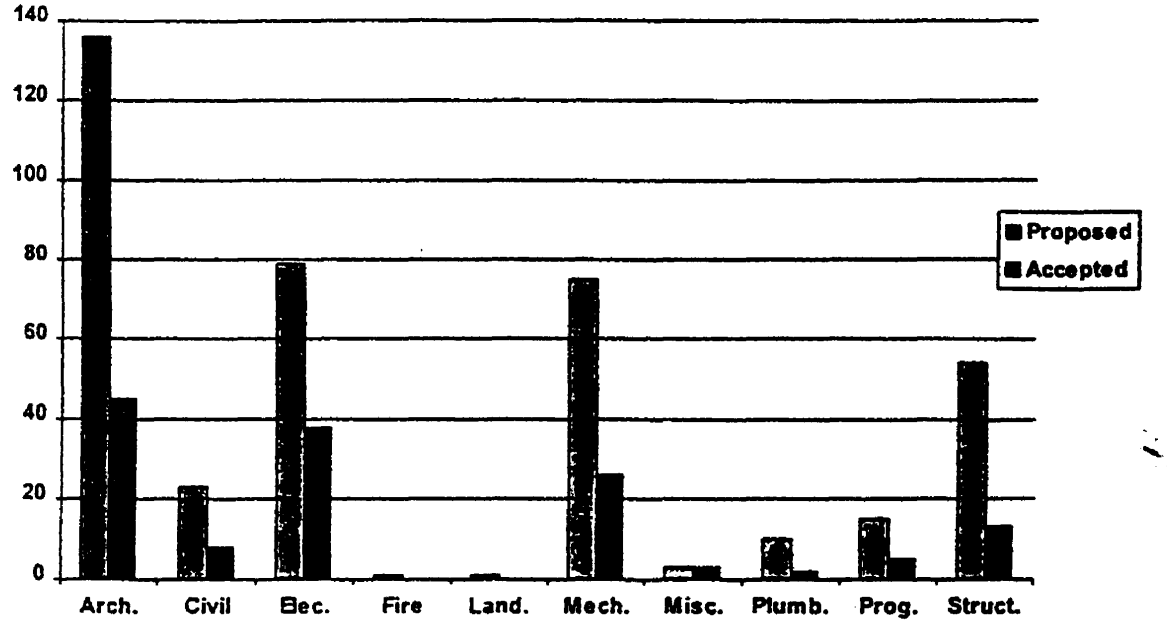
VE Recommendations ---
Proposed vs. Accepted, by Area

	Number of VE Recommendations			$ Value of VE Recommendations		
Area	Proposed	Accepted	Accepted as a % of Proposed	Proposed ($000s)	Accepted ($000s)	Accepted as a % of Proposed
	a	b	c = b / a	d	e	f = e / d
Architectural	136	45	33.1%	$26,023	$6,504	25.0%
Civil	23	8	34.8%	$1,179	$623	52.8%
Electrical	79	38	48.1%	$4,049	$1,576	38.9%
Fire Safety	1	0	0.0%	$23		
Landscaping	1	0	0.0%	$14		
Mechanical	75	26	34.7%	$4,449	$1,121	25.2%
Miscellaneous	3	3	100.0%	$1,537	$1,504	97.9%
Plumbing	10	2	20.0%	$680	$111	16.3%
Program	15	5	33.3%	$1,694	$1,191	70.3%
Structural	54	13	24.1%	$8,035	$641	8.0%
Total	397	140	35.3%	47,683	13,271	27.8%

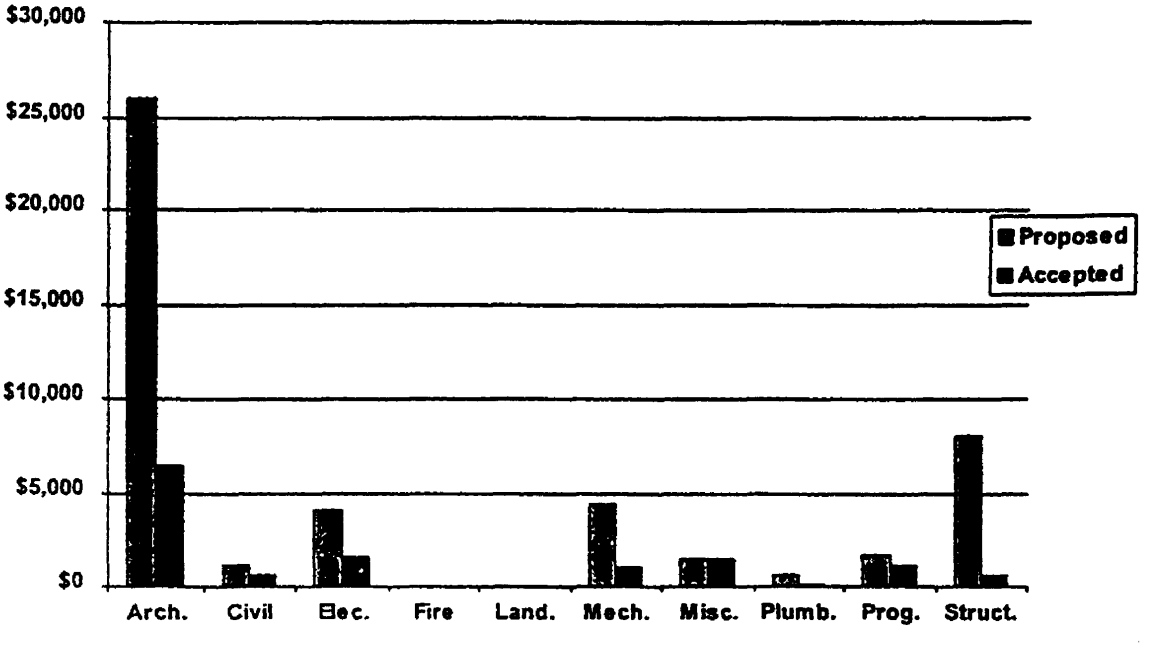
Note: Above percentages are approximate and may be understated. Occasionally, VE proposals overlap one another. This results in some double-counting in the "proposed" column. In using this report, it is recommended that the above percentages be considered as minimum values. Actual acceptance rates would be higher because of this overlap. Due to the very short time frame in which VE studies are prepared, backup information is generally insufficient to precisely quantify the amount of overlap between VE proposals.

VE Recommendations ---
Proposed vs. Accepted, by Area

By Number of Items



By Dollar Value ($000s)



Reasons for Rejecting VE Recommendations

REASON	Number of Rejected Items		Value of Rejected Items	
	Number	As % of Total	Value ($ 000s)	As % of Total
Affects building aesthetics.	20	12.0%	$2,102	7.8%
Affects building operations.	2	1.2%	$52	0.2%
Affects safety/security.	5	3.0%	$246	0.9%
Already incorporated/included in another proposal.	7	4.2%	$3,240	12.0%
Alternative method was proposed.	7	4.2%	$305	1.1%
Engineering design decision.	4	2.4%	$222	0.8%
Environmental considerations.	3	1.8%	$145	0.5%
Not practical based on bldg geometry.	3	1.8%	$1,171	4.3%
Not technically acceptable.	44	26.5%	$4,527	16.8%
Other	20	12.0%	$4,574	16.9%
Owner requirement or preference.	26	15.7%	$6,734	24.9%
Program requirement.	12	7.2%	$1,114	4.1%
Savings overstated or other costs were not included.	7	4.2%	$1,097	4.1%
Would conflict with COM or code requirements.	3	1.8%	$84	0.3%
Would not meet local requirements.	3	1.8%	$1,397	5.2%
Grand Total:	166	100.0%	$27,010	100.0%

Note: Above statistics are based on those VE items where the reasons for rejection were known.

DISPOSITION OF RECOMMENDATIONS

As previously discussed, not all VE recommendations can be incorporated in the project design. Most often VE recommendations are rejected because they affect building aesthetics or operation, impact security or safety, are not technically acceptable, conflict with CODE or agency developed building standards, conflict with owner preference or do not meet the functional requirement. A breakdown of the most commonly cited reasons for rejection of a recommendation can be found on page 15 .

NON-STATE AGENCY USE OF VALUE ENGINEERING

The Department of Corrections reports that the Board of Corrections implemented a policy in 1994 that requires approved local and regional jail projects that add new beds and receive state aid (Financial Assistance for Construction of Local Facilities) be value engineered. The policy has been in place just over a year and only limited information is available at this time from which to draw conclusions. Appendix H provides a listing of projects approved by the Board of Corrections since 1994.

We are aware that a number of localities are already utilizing VE since VE studies do not require specific legislative approval. Such studies are conducted based on management evaluation of the scope, complexity and estimated cost of a project and the potential or need for identifying possible reductions in estimated construction cost through a VE study.

There is some concern that projects with a mix of federal and local monies might be blocked by federal regulation from use of federal funds to pay for a VE study. Although we have not surveyed regulations of all federal programs that provide grants and financial aid to construction at the local level, we believe such regulations typically would treat VE as a professional design service and would cover the cost of a VE study based on the cost sharing formula attached to the grant/aid program.

Generally, the federal government, e.g., GSA and DOD has been pro-active in using VE on construction projects. OMB Circular A-87 Subject: Cost Principles for State and Local Governments, which establishes principles and standards for determining cost applicable to grants, contracts and other agreements with State and local governments suggests VE studies would be an allowable cost. (Appendix I)

RECOMMENDATIONS

The study indicates a positive ratio of reduction in estimated construction cost to the cost of conducting the VE study. In the case of state projects value engineered since July 1994, estimated construction cost has been reduced by an average of $22 for each dollar spent in conducting the VE study. The study results are consistent with other public agency experience.

A particular deficiency in this study is the limited number of projects that have been value engineered since the program began in 1994 and particularly the sparsity of state projects that are reasonably similar to the schools and jails that represent the predominant types of projects constructed by localities. Another consideration is the propriety of the state mandating value engineering of local construction projects in which little, if any, state funding is involved.

In conclusion, we recommend that (1) localities be provided this study and encouraged through the auspices of the Commission on Local Government, Virginia Municipal League and Virginia Association of Counties to use value engineering on capital projects estimated to cost more than $5,000,000 and including less than $30,000 of state funding, and (2) the General Assembly consider legislation requiring localities receiving state aid of $30,000[1] or more for construction projects with an estimated construction cost of greater than $5,000,000 to have the projects value engineered.

[1]The proposed state aid threshold amount of $30,000 is slightly higher than the median cost of a VE study, thus the state money will cover the cost to the locality of the study; which study should identify sufficient acceptable recommendations for reduction in construction cost to more than recover the $30,000 in state aid based on the findings in this report.

APPENDIX A

GENERAL ASSEMBLY OF VIRGINIA -- 1995 SESSION

HOUSE JOINT RESOLUTION NO. 687

Requesting the Secretary of Administration to study the cost savings as a result of the use of value engineering in certain capital projects and ascertain to what extent, if any, such value engineering may benefit localities.

Agreed to by the House of Delegates, February 4, 1995
Agreed to by the Senate, February 21, 1995

WHEREAS, the 1994 General Assembly passed House Bill 18 and Senate Bill 125, identical bills that were signed into law by the Governor as Chapters 829 and 442, respectively, of the 1994 Acts of Assembly; and

WHEREAS, the legislation added a new section numbered 2.1-483.1:1 to Title 2.1 of the Code of Virginia; and

WHEREAS, the legislation required the Department of General Services, through its Division of Engineering and Buildings, to ensure that value engineering is employed for any project costing more than five million dollars; and

WHEREAS, the legislation defined "value engineering" as a systematic process of review and analysis of a capital project by a team of persons not originally involved in the project; and

WHEREAS, such team includes appropriate professionals licensed pursuant to Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia; and

WHEREAS, the purpose of such team is to offer suggestions that improve project quality and reduce total project cost by combining or eliminating inefficient or expensive parts or steps in the original proposal or by totally redesigning the project using different technologies, materials, or methods; and

WHEREAS, the Department of General Services is under the direction and control of the Secretary of Administration; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Secretary of Administration be requested to study the cost savings that have resulted from the use of value engineering in capital projects costing more than five million dollars and ascertain to what extent, if any, such value engineering may benefit localities.

All agencies and entities of the Commonwealth shall cooperate with the Secretary, upon request. The Secretary shall conclude his study and report his findings to the Governor and the 1996 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX B

§ 2.1-483.1:1. Use of value engineering. — The Department of General Services, through its Division of Engineering and Buildings, shall ensure that value engineering is employed for any capital project costing more than five million dollars. For purposes of this section, *"value engineering"* means a systematic process of review and analysis of a capital project by a team of persons not originally involved in the project. Such team, which shall include appropriate professionals licensed in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1, may offer suggestions that would improve project quality and reduce total project cost by combining or eliminating inefficient or expensive parts or steps in the original proposal or by totally redesigning the project using different technologies, materials, or methods.

The Director of the Department of General Services may waive the requirements of this section for any proposed capital project for compelling reasons. Any such waiver shall be in writing, state the reasons for the waiver, and apply only to a single capital project. (1994, cc. 442, 829.)

APPENDIX C

COMMONWEALTH of VIRGINIA
Department of General Services

Division of Engineering and Buildings
(804) 786-3263

July 13, 1994

805 East Broad Street, Room 101
Richmond 23219-1989

MEMORANDUM

TO: All State Agencies

SUBJECT: Value Engineering of Capital Outlay Projects

FROM: Donald C. Williams

The General Assembly passed legislation (HB 18/SB 125) during the 1994 Session that requires the performance of a value engineering (VE) study on every capital outlay project with an estimated construction cost at preliminary drawings greater than five million dollars ($5,000,000). The legislation is effective July 1, 1994. Any capital outlay project for which preliminary drawings have not been received at DEB by July 30, 1994 will be subject to the above requirement. The Director of the Department of General Services may waive the requirement for a VE study for compelling reasons.

The VE study shall be performed under the supervision of a certified value engineering specialist. VE team members shall include appropriate design professionals licensed in accordance with Chapter 4 of Title 54.1, CODE OF VIRGINIA. The cost of the VE Study and added cost of the design A/E firms participation in the study will be funded from savings identified during the study in the construction costs of the project.

A copy of the final VE study and the agency's final action on the VE study recommendations shall be sent to the Division of Engineering and Buildings. Authority to prepare working drawings will not be issued by the Director of the Department of General Services until this information is received.

We have attached an information sheet for use in procuring the VE study. This information and the final procedures will be incorporated in the Capital Outlay Manual in the next revision. The VE study shall be procured using the attached Request for Proposal for a Value Engineering Study. The structure and wording of the RFP shall not be changed or altered without the prior written approval of the Director of the Division of Engineering and Buildings. The RFP may be structured as an open-end A/E (Value Engineering) procurement.

Limitations for an open-end A/E (Value Engineering) contract are:

1. Single project orders shall not exceed $35,000.

2. Aggregate total of fees for all project orders shall not exceed $200,000 over the term of the contract.

3. The term of the contract shall be two years from its initial date.

4. All other terms and conditions of Category D Open-End A/E Contracts found in Chapter VI, Section 4.4, of the Capital Outlay Manual shall apply.

Questions concerning the Value Engineering policy and procedures may be addressed to Mr. Henry G. Shirley, Director, Bureau of Capital Outlay Management, (804) 225-3872.

Attachments (2)

1. Value Engineering Information Sheet
2. Request for Proposal

VALUE ENGINEERING (VE)

INFORMATION SHEET

Capital Outlay Projects with an estimated construction cost greater than $5,000,000 shall have a 40-hour VE Study conducted of the design. A presentation of the study results shall be made to the agency management. The study shall be conducted concurrent with the preliminary (35%) design review utilizing the five-step job plan as recognized by the Society of American Value Engineers (SAVE).

The agency shall procure the services of a Value Engineering Consultant using professional services procurement procedures. The procurement process should begin at least 90 days prior to the anticipated date the preliminary drawings will be submitted to the Bureau of Capital Outlay Management (BCOM).

The agency shall provide the following documentation to the Value Engineering Consultant on the project requiring the VE Study:

(a) Two (2) sets of 35% drawings (full size).
(b) Four (4) sets of half-size drawings.
(c) Outline Specifications and Systems Checklists (2 copies).
(d) Detailed Cost Estimate (6 copies).
(e) Basis of design (6 copies).
(f) Design Calculation (mechanical, electrical, etc.). (2 copies)
(g) Boring logs and soil reports.
(h) Scope of Project/Program requirements (6 copies).
(i) Photographs of site (8" x 10" size).

The VE Study shall be conducted at the project site location or the agency office. The design Architect/Engineer's (A/E) involvement in the VE Study with anticipated manhours by discipline for routine general construction is summarized below:

	PM	ARCH	STR	MECH	ELEC	CIVIL
• A/E Design Team Present Over-view of Design Concept	4	4	4	4	4	4
• A/E Design Team joins VE Team Review & Supplements VE Effort	4	4	4	4	4	4
• Oral Presentation of VE Study Results to Agency	4					
• A/E Review, Supplement, and Comment on VE Report to Agency	8	4	4	4	4	4
• Follow-up on Questions/Decisions from Oral Presentation	4					
TOTALS	24	12	12	12	12	12

In the package of documentation which the design A/E prepares for the Agency to provide to the Value Engineering Consultant, the design A/E may include a "Criteria Challenge Package" to question specific project design criteria, instructions and/or user requirements and to identify alternate items or procedures that might satisfy the REQUIRED FUNCTIONS at a lower life cycle cost. Examples of "criteria" which might be challenged are the exterior appearance or materials which may have resulted from a visit to the AARB, the Energy Budget required by the Capital Outlay Manual, a user requirement for every office to have a window, or a user criteria for square footage in spaces which exceed that necessary for the space function.

Each challenge must include Code references, a life cycle analysis supported by recent research and testing, and any calculations that are necessary to support the challenge. A brief narrative describing the advantages, disadvantages and magnitude of potential savings shall be included as well.

The Criteria Challenge Package shall be marked **VALUE ENGINEERING** AND SUBMITTED WITH PRELIMINARY (35%) submittal to BCOM and with the documentation provided to the Value Engineering Consultant. However, project development will be based on current standards until such time as a formal approval is received for any waiver or deviation from codes, standards or Manual requirements.

The design A/E will also:

- Present an overview of the project criteria and development to the value engineering team.
- Provide comments on the VE study report to the Agency within 14 calendar days of receipt of the report.
- Participate in joint 35% review/VE resolution meeting at the Agency and at BCOM if required.
- Submit a final report within 14 calendar days of the resolution meeting to the Agency and BCOM. Implement all finally accepted VE recommendations into the project design.

REQUEST FOR PROPOSAL

Date: **RFP #**

Title: Value Engineering Consultant Services
for a Value Engineering Study

Issuing Agency:

Location Where Work Will Be Performed:

Period of Contract:

Sealed Proposals Will Be Received Until_____at_____For Furnishing The Services Described Herein

All Inquiries Concerning Requirements of This RFP Should Be Directed To:

IF PROPOSALS ARE MAILED, SEND DIRECT TO ISSUING AGENCY SHOWN ABOVE. IF PROPOSALS ARE HAND-DELIVERED, DELIVER TO:

In Compliance With This Request For Proposals And To All The Conditions Imposed Herein, The Undersigned Offers And Agrees To Furnish The Services In Accordance With The Attached Signed Proposal Or As Mutually Agreed Upon By Subsequent Negotiation.

Name and Address of Firm:

_____ Date: _____

_____ By: _____

_____ Zip _____ Title: _____

FEI/FIN NO._____ Telephone # ( ) _____

TABLE OF CONTENTS

I. SCOPE OF WORK. The Value Engineering Team Study will be conducted immediately following completion of the 35% design and shall consist of one 40 hour team study by a multi-discipline team of six professionals meeting on five consecutive work days. The study group will follow the five step job plan as recognized by the Society of American Value Engineers (SAVE). The VE report (15 copies) shall encompass the recommendations of the VE study group with detailed cost estimates, life cycle analysis and sketches, as necessary.

These VE services shall be performed in a timely manner concurrent with the normal design review procedure by the Bureau of Capital Outlay Management and without delay in the design schedule.

PROJECT DESCRIPTION: Value Engineering Services for _____ (describe project)

II. ESTABLISHMENT AND APPROVAL OF VE TEAM. VE services shall be performed by a team of designers separate and completely independent from the project design & consultant firms which prepare the 35% plans and specifications. The VE services shall be coordinated, supervised and led by a person having Certified Value Specialist (CVS) credentials that qualify him/her to perform such services. The proposer will provide one team.

Members of the team shall be professionally registered architects and engineers in the Commonwealth of Virginia. All shall be completely knowledgeable of VE methodology by attending a certified forty hour workshop. The Value Engineer Consultant shall be the Team Leader and will be a CVS, certified by the Society of American Value Engineers and have had a minimum of eight years combined college education and practical on-the-job VE experience. Practical experience is considered to have been gained by being actively engaged as a consultant in VE activities. Team members should be knowledgeable of the systems applicable to a facility.

A list of proposed and alternate team members and their respective resumes representing their various disciplines/areas of expertise, together with the certified (CVS) team leader's qualifications and discipline, shall be submitted with proposal and approved at the time of negotiations. Changes to or substitutions to the approved VE team configuration shall be submitted in writing to the Owner for approval.

III. PROPOSER'S VALUE ENGINEERING TEAM CONFIGURATION

a. VE Team Leader (CVS)**
b. Architect
c. Structural Engineer
d. Mechanical Engineer
e. Electrical Engineer
f. Typing & Clerical

** The Value Engineer Consultant and person responsible for pre-study work assembling, editing and reproducing the recommendations generated by the Value Engineering Team Study. The Value Engineer Consultant must edit and sign the final report.

IV. INFORMATION FOR STUDY GROUPS.

Prior to commencing the VE study, the design A/E will forward the following information to the Value Engineering Team (VE Team):

(a) Two sets of 35% drawings (full size)
(b) Four sets half size drawings
(c) Outline Specifications & Systems Checklists (2 copies)
(d) Detailed Cost Estimate (6 copies)
(e) Basis of design (6 copies)
(f) Design Calculations (Struct., Mech., Elec.) (2 copies)
(g) Boring logs and soil reports
(h) Scope of Project/Program requirements (6 copies)
(i) Photographs of site (8" x 10" size)

The VE Team shall be assembled and isolated away from their normal work station in order to avoid the normal daily interruption. The Owner will provide a suitable room with tables and chairs.

V. CERTIFIED VALUE SPECIALISTS (CVS) RESPONSIBILITIES

a. Pre-study
   (1) Review complete design package & identify high cost areas.
   (2) Prepare cost model (actual vs. historical)
   (3) Prepare bar graphs of all sub-systems.
   (4) Prepare preliminary cost worth ratios.

b. 40 Hour Study
   (1) Team Leader and coordinator.
   (2) Team recorder.
   (3) Presentation of recommendations.

c. Post Study
   (1) Write and assemble report.
   (2) Proof all VE recommendations, especially the cost estimate and life cycle analysis.
   (3) Calculate redesign effort for each recommendation in manhours.
   (4) Sign and submit final report within 7 days. Express mail 10 copies to the Owner and 5 copies to design A&E of record.

VI. VE REPORT AND DOCUMENTATION REQUIREMENTS. The results of the VE study performed on the project shall be documented as follows:

(a) Contents page.
(b) Brief description of total project and project requirements with a copy of the Owner's program requirements.
(c) Brief summary of VE recommendations.
(d) One site plan, floor plan and elevation on 8-1/2"x 11" or fold out.
(e) Summary sheet (only) of 35% cost estimate.
(f) VE cost model of project.
(g) Each VE recommendation will be described "Before and After VE" and will be accompanied with a detailed cost estimate of savings, life cycle cost analysis, discussion of advantages and disadvantages and sketches as necessary.
(h) Complete 5 step job plan (worksheets) of all work that will be submitted as appendices for reference.

VII. VE REPORT FORMAT. All reports must be systematically assembled and must be short and concise, yet informative enough for decision making. VE Reports shall be prepared and submitted on 8-1/2" x 11" bond paper and bound under hardback cover appropriately identified. Sketches may be 8-1/2" x 11" or fold-out. Pages must be sequentially numbered in the lower right hand corner to facilitate assembly. Tabs should be used for quick reference of important sections of report.

VIII. ORAL PRESENTATION. At the completion of the Value Engineering Study, the team leader and members, as appropriate, shall make an oral presentation to the owner of the items identified for recommendation to be implemented on the project. Audience for the presentation will include representatives of the following: the A/E and Consultants and the Agency. The Department of General Services may send a representative.

IX GUIDANCE AND CONSULTATION.

a. Value Engineering Team Studies will be conducted in Virginia in meeting rooms provided by the Commonwealth of Virginia.

b. When preparing the fee for VE services, the VE proposer is required to hire team members with a business office in the Commonwealth of Virginia. No member of the design A/E's firm or its consultant's firm may be a member of VE Team.

c. Questions concerning clarification of requirements for the VE study and for this request for proposal should be directed to _____.

X. PROPOSAL REQUIREMENTS:

A. Proposals shall be signed by an authorized representative of the firm.

B. Proposals should be prepared simply and economically, providing a straightforward, concise description of the firm's capabilities to satisfy the requirements of the RFP. Emphasis should be on completeness and clarity to content.

C. A signed proposal in one (1) original and three (3) copies shall be submitted to the Owner. Each copy of the proposal shall be bound in a single volume where practical. All documentation submitted with the proposal shall be bound in that single volume. Elaborate brochures and other representations beyond that sufficient to present a complete and effective proposal are neither required nor desired.

D. Any information thought to be relevant, but not applicable to the enumerated scope of Work, should be provided as an appendix to the proposal.

E. Each firm submitting a proposal should provide a current statement of qualifications. The following is the minimum to be considered a complete proposal. The format required for the proposal to be considered is to be presented and submitted in TABS AS NOTED BELOW:

1. Copy of this RFP.

2. Type and description of recent VE studies by the firm/proposer including client name, point of contact and telephone number.

3. Past VE performance, to include average number of recommendations developed and average percentage of cost reductions recommended and average percentage implemented.

4 Identification and statement of qualifications of the Certified Value Specialist (CVS) who will be assigned to the study for actual "hands on" work.

5. Identification and statement of qualifications of all proposed VE team members and alternates, if any, to be used on the study along with a description of their role(s) on the project team.

6. Indicate the desired and the minimum amount of advanced notice (# of days) required to organize and be available to conduct the VE study.

7. Indicate ability to assemble and distribute reports within 7 days of completion of the VE study.

XI. EVALUATION AND AWARD OF CONTRACTS:

A. Evaluation Criteria: Proposals shall be evaluated by the Agency using the following criteria:

1. Expertise, experience, and past performance of the proposer in providing services as related to the Scope of Services.

2. Qualifications and experience of Certified Value Specialist (CVS) who will be assigned to this project.

3. Special experience and qualifications of the proposed team members as related to this type of project.

4. Ability to assemble VE Team in the _____ to _____ time period.

5. Ability to assemble and distribute report in a timely manner.

B. AWARD OF CONTRACT: The Agency shall engage in individual discussions and interviews with two or more offerors deemed fully qualified, responsible and suitable on the basis of initial responses, and with professional competence to provide the required services. Repetitive informal interviews are permitted. Offerors shall be encouraged to elaborate on their qualifications, performance data, and staff expertise pertinent to the proposed contract as well as alternate concepts. Proprietary information from competing offerors shall not be disclosed to the public or to competitors. At the conclusion of the informal interviews, on the basis of evaluation factors published in the Request for Proposal and all information developed in the selection process to this point, the Agency shall rank, in the order of preference, the interviewed offerors whose professional

qualifications and proposed services are deemed most meritorious. Negotiations shall then be conducted with the offeror ranked first. If a contract satisfactory and advantageous to the Agency can be negotiated at a fee considered fair and reasonable, the award shall be made to that offeror. Otherwise, negotiations with the offeror ranked first shall be formally terminated and negotiations conducted with the offeror ranked second, and so on, until such a contract can be negotiated at a fair and reasonable fee. Should the Agency determine in writing and in its sole discretion that only one offeror is fully qualified, or that one offer is clearly more highly qualified and suitable than the others under consideration, a contract may be negotiated and awarded to that Offeror.

XII. GENERAL TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES:
(The term "Value Engineering Consultant" used herein shall mean the entity contracted to provide the services indicated in this RFP.)

A. CAPITAL OUTLAY MANUAL: This solicitation is subject to the provisions of the Commonwealth of Virginia Capital Outlay Manual and any revisions thereto, which are hereby incorporated into this contract in their entirety except as amended or superseded herein.

B. MANDATORY USE OF STATE FORM AND TERMS AND CONDITIONS:
Failure to submit a proposal on the official state form provided for that purpose shall be a cause for rejection of the proposal. Return of the complete document is required. Modification of or additions to any portion of the solicitation may be cause for rejection of the proposal; however, the Commonwealth reserves the right to decide, on a case by case basis, in its sole discretion, whether or not to reject such proposal as nonresponsive. Supplementary data and information which respond to inquiries, demonstrate qualifications and expertise, etc., may be attached to the proposal forms.

C. PRECEDENCE OF TERMS: In the event there is a conflict between the General Terms and Conditions for Professional Services and any Special Terms and Conditions used in a particular procurement, the Special Terms and Conditions shall apply.

D. DEFAULT: In case of failure to deliver the reports, documents or services in accordance with the contract terms and conditions, the Commonwealth, after due oral or written notice, may procure them from other sources and hold the Value Engineering Consultant responsible for any resulting additional procurement and administrative costs. This remedy shall be in addition to any other remedies which the Commonwealth may have.

E. ASSIGNMENT OF CONTRACT: A contract shall not be assignable by the Value Engineering Consultant in whole or in part without the written consent of the Commonwealth.

F. ANTITRUST: By entering into a contract, the offeror conveys, sells, assigns, and transfers to the Commonwealth of Virginia all rights, title and interest in and to all causes of the action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the Commonwealth of Virginia under said contract.

G. ETHICS IN PUBLIC CONTRACTING: By submitting their proposals, all Offerors certify that their proposals are made without collusion or fraud and that they have not offered or received any kickbacks or inducements form any other offeror, supplier, manufacturer or subcontractor in connection with their proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

H. ANTI-DISCRIMINATION: By submitting their proposals, all offerors certify to the Commonwealth that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Act of 1975, as amended, where applicable, and Section 11-51 of the Virginia Public Procurement Act which provides:

In every contract over $10,000 the provisions in A. and B. below apply:

A. During the performance of this contract, the contractor agrees as follows:

- The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or disability, except where religion, sex, national origin or a disability is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

- The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.

- Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this Section.

B. The contractor will include the provisions of A. above in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

I. DEBARMENT STATUS: By submitting their Proposals, all Offerors certify that they are not currently debarred from submitting Proposals on contracts by any Agency of the Commonwealth of Virginia, nor are they an agent of any person or entity that is currently debarred from submitting Proposals on contracts by any Agency of the Commonwealth of Virginia.

J. APPLICABLE LAW AND COURTS: Any contract resulting from this solicitation shall be governed in all respects by the laws of the Commonwealth of Virginia and any litigation with respect thereto shall be brought in the courts of the Commonwealth. The Value engineering Consultant shall comply with applicable federal, state and local laws and regulations.

K. QUALIFICATIONS OF OFFERORS: The Commonwealth may make such reasonable investigations as deemed proper and necessary to determine the ability of the offeror to perform the work/furnish the item(s) and the offeror shall furnish to the Commonwealth all such information and data for this purpose as may be requested. The Commonwealth reserves the right to inspect offeror's physical facilities prior to award to satisfy questions regarding the offeror's capabilities. The Commonwealth further reserves the right to reject any proposal if the evidence submitted by, or investigations of, such offeror fails to satisfy the Commonwealth that such offeror is properly qualified to carry out the obligations of the contract and to complete the work/furnish the item(s) contemplated therein.

XIII. SPECIAL TERMS AND CONDITIONS:
(The term "Value Engineering Consultant" used herein shall mean the entity contracted to provide the services indicated in this RFP.)

A. INSURANCE:

1. Prior to the start of any work under the contract, the Value Engineering Consultant shall provide to the Agency Certificates of Insurance forms approved by the Commonwealth of Virginia and maintain such insurance until the completion of all project orders issued under the contract. The minimum limits of liability shall be:

Workers' Compensation -- Standard Virginia Workers Compensation Policy

Broad Form Comprehensive General Liability -- $500,000 Combined Single Limit coverage to include:

Premises - Operations; Products/Completed Operations; Contractual; Independent Contractors; Owners and Contractor's Protective; Personal Injury (Libel, Slander, Defamation of Character, etc.);

Automobile Liability -- $500,000 Combined Single Limit

B. AUDIT: The Value Engineering Consultant agrees to retain all books, records, and other documents relative to this contract for five (5) years after final payment, or until audited by the Commonwealth of Virginia, whichever is sooner. The Agency its authorized agents, and/or State auditors shall have full access to and the right to examine any of said materials during said period.

C. TERMINATION OF CONTRACT: The Value Engineering Consultant or the Agency may terminate this contract on thirty (30) days notice in writing, together with a statement of reasons therefor. Termination by the Agency is subject to hearing before and approval by the

Governor (or his designee) if such hearing and approval are requested by the Value Engineering Consultant within fifteen (15) days after receipt of termination notice. Upon such termination, the Value Engineering Consultant shall be entitled to the compensation accrued to the date of termination.

Any contract cancellation notice shall not relieve the Value Engineering Consultant of the obligation to deliver and/or perform on all outstanding orders issued prior to the effective date of cancellation unless the Agency specifies that performance on said project orders currently in progress are terminated.

D. MODIFICATION OF CONTRACT: The Agency may, upon mutual agreement with the Value Engineering Consultant, issue written modifications to the scope of services of the project orders issued as a part of this contract, except that no modifications can be made which will result in an increase of the original project order contract price by $10,000 or a cumulative amount of more than 25%, whichever is greater, without the advance written approval of the Governor or his designee. In making any modification, the resulting increase or decrease in cost for the modification shall be determined by one of the following methods as selected by the Agency in accordance with requirements of the Public Procurement Act and the Capital Outlay Manual.

1. The written modification shall stipulate the mutually-agreeable fixed price for the specific addition to/deletion from the scope of work/specifications which shall be added to or deducted from the contract amount.

2. The written modification shall stipulate the number of unit quantities added to/deleted from the contract and multiplied by the unit price or hourly rate which shall be added to or deducted from the contract amount.

3. The written modification shall direct the Value Engineering Consultant to proceed with the work and to keep, and present in such form as the Agency may direct, a correct account of the cost of the change together with all vouchers and time sheets therefor. The cost shall include an allowance for overhead and profit to be mutually agreed upon by the Agency and the Value Engineering Consultant and written into the Memorandum of Understanding. Changes using this procedure will usually include a maximum.

E. OWNERSHIP OF MATERIALS: Ownership of all material and documentation originated and prepared pursuant to the Request for Proposal shall belong exclusively to the Agency and is subject to public inspection in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by a bidder, offeror, or contractor in connection with a procurement transaction shall not be subject to disclosure under the Virginia Freedom of Information Act; however, the bidder, offeror, or contractor must invoke the protections of this section prior to or upon submission of the data or other materials, and must identify the data or materials to be protected and state the reason why the protection is necessary (Code of Virginia Section 11-52D).

F. SUBCONTRACTS: No portion of the work shall be Subcontracted without prior written consent of the Agency. In the event that the Value Engineering Consultant desires to subcontract some part of the work specified herein, the Value Engineering Consultant shall furnish the Agency the names, qualifications and experience of their proposed subcontractors. The Value Engineering Consultant, however, remains fully liable and responsible for the work to be done by his subcontractor(s) and shall assure compliance with all requirements of the contract.

APPENDIX D

COMMONWEALTH of VIRGINIA

DEPARTMENT OF GENERAL SERVICES

DONALD C. WILLIAMS
DIRECTOR

D. B. SMIT
DEPUTY DIRECTOR

August 22, 1995

202 NORTH NINTH STREET
SUITE 209
RICHMOND, VIRGINIA 23219

(804) 786-6152 VOICE/TDD
(804) 371-8305 FAX

Mr. John T. Casteen, III
University of Virginia
University Avenue
Charlottesville, Virginia 22903-3295

Dear Mr. Casteen:

House Joint Resolution Number 687 of the 1995 General Assembly Session directs the Department of General Services to study the cost savings that have resulted from the use of value engineering in capital projects costing more than five million dollars. The study is to ascertain to what extent, if any, such value engineering may benefit localities.

We need your assistance in conducting the study. We would appreciate your facility staff completing the attached form and returning it to Mr. Henry G. Shirley, Director, Bureau of Capital Outlay Management, 805 East Broad Street, Eighth Floor, Richmond, Virginia 23219 by **October 15, 1995**. Please direct any questions to Mr. Shirley at (804) 786-3367.

Sincerely,

Donald C. Williams

Attachments (2)

1. HJR 687
2. Form

cc: The Honorable Michael E. Thomas
Mr. Nathan I. Broocke

VALUE ENGINEERING

AGENCY

1) PROJECT CODE	2) TITLE	3) STUDY DATE	4) VE CONTRACTOR	5) VE CONTRACT AMOUNT	6) DESIGN A/E FEE TO PARTICIPATE	7) DESIGN COST DELTA	8) EST. CONSTRUCTION AMOUNT

Instructions:

General: List all projects that a VE Study has been completed on or before September 30, 1995.
List all projects that VE Study has been waived by DGS. Negative reports are required.

1. Five-digit project code number
2. Project title
3. Inclusive dates of the VE Study
4. Name of the contractor performing the VE Study
5. Dollar amount of VE contract
6. Added fee for A/E participation/preparation for VE Study
7. Increase/Decrease in A/E design fee due to VE recommendations accepted
8. Estimated project construction cost from most recent approved CO form

APPENDIX E

RESULTS OF VALUE ENGINEERING IN SAN DIEGO AREA

Agency	Number of Studies Performed (A)	Total Cost of Projects Before Studies (B)	Total Savings (C)	Percent Project Cost Reduction (D)	Total Cost of Studies (E)	Cost per Study (F)	Average Return on Investment (ROI)
City of San Diego (MWWD)	15	$1,100,022,000.	$145,980,000.	13.3	$1,233,830.	$82,250.	118/1
International Border Water Commission	2	$320,000,000.	$86,000,000.	26.9	$148,700.	$74,350.	582/1
County of San Diego	18	$152,000,000.	$7,319,000.	4.8	$502,000.	$27,900.	15/1
MTDB	2	$122,046,000.	$5,300,000.	4.3	$314,000.	$157,000.	17/1
U.S. Navy	34	$523,389,000.	$61,831,000.	11.9	$1,053,000.	$31,000.	59/1
Caltrans	11	$1,179,980,000.	$38,114,670.	3.2	$816,200.	$74,200.	47/1
Total	82	$3,397,437,000.	$344,544,670.	10.1	$4,067,730.	$49,610.	85/1

Notes: Columns D = C/B, F = E/A, ROI = C/E

4/95

APPENDIX F

City of New York
Office of Management and Budget
75 Park Place • New York, NY 10007

CITY OF NEW YORK
VALUE ENGINEERING PROGRAM AND RECENT RESULTS

Value Engineering (VE) is a systematic analytical methodology directed toward analyzing the functions of projects for the purpose of achieving the best value and most effective operation at the lowest life-cycle project cost - capital and operating.

Value Engineering is a collaborative effort between all concerned City agencies with budgetary and operational jurisdiction over a project, and outside consultants with expertise on critical project components. The City has utilized VE effectively in the last dozen years on mainly large-scale capital projects with a view to controlling costs. However, the VE process does not only result in cost reductions, but also frequently generates project improvements, and anticipates and solves functional problems by raising relevant issues early in the design process which could adversely compromise the project's development, cost and schedule.

The VE process has also been applied with equal success to smaller prototype or unique projects where the focus might not be on controlling costs but on some other aspect of project development, like new technology. Value Analysis (VA) has been effective for reviewing operational processes to fundamentally redesign key functions to achieve more efficient operations.

In FY-94, the City conducted approximately 10 studies, using the Value Engineering and Value Analysis methodologies. These projects were wide ranging in scope and included several water quality treatment and sludge-related facilities, the ferry terminal reconstruction, a review of the City's day-care contracting process, an environmental education facility, and the impact of anticipated automation on the foster care documentation and payment processes. The results from these studies are still being finalized.

FISCAL YEAR	CAPITAL CONSTRUCTION COST	ACCEPTED COST REDUCTION	PERCENT REDUCTION	RETURN ON INVESTMENT
1991	$1,698,725,000	$126,734,000	7.5%	144:1
1992	$1,316,238,000	$507,497,000	38.5%	1020:1
1993	$910,752,000	$56,236,000	6.2%	112:1

CONTACT: Jill Woller, CVS, Deputy Chief Engineer, NYC OMB (212) 788-6137

APPENDIX G

VE Study Costs

Project Code	Agency	Project Title	VE Study Date	VE Consultant	VE Contract Amount	A/E Fee to Participate	Add'l Design Costs	Total Costs	Estimated Construction Amount	Total Cost as a % of Construction Amount	
					a	b	c	d = a + b + c	e	f = d / e	
194-14392	DGS	New Library of Virginia	Jun-92	Edward J. Nichols & Assoc.	$36,533	$0	$50,905	$87,438	$34,251,995	0.26%	
208-14814	VPISU	Student Health & Fitness Center	Apr-95	Hanscomb Associates	$35,507	$22,500	$0	$58,007	$16,011,800	0.36%	
214-15502	LC	New Dining Hall	Dec-94	Hudson & Associates	$25,000	$11,660	$5,000	$41,660	$7,099,500	0.59%	
215-14770	MWC	Jepson Science Building	Nov-94	Marsh Witt Associates	$30,000	$16,026	$112,585	$158,611	$10,121,300	1.57%	(2)
216-15619	JMU	CISAT Residence Hall Phase 1	May-95	Edward J. Nichols & Assoc.	$24,013	$6,500	$0	$30,513	$10,840,354	0.28%	
216-15660	JMU	CISAT Infrastructure Phase 2		--- Study waived ---							
216-15660	JMU	CISAT Academic Phase 2	Jun-95	Pacific Environmental Svcs.	$28,166	$10,000	$0	$38,166	$22,525,543	0.17%	
236-14774	VCU	Fine Arts Center Addition	Aug-94	UVa Team/Hudson & Assoc.	$19,798	$0	$263,000	$282,798	$11,502,000	2.46%	(3)
236-15523	VCU	Academic Campus Parking Deck II	Oct-94	UVa Team/Hudson & Assoc.	$22,495	$0	$0	$22,495	$8,842,300	0.25%	
236-15577	VCU	Convocation & Recreation Center	Aug-94	Marsh Witt Associates	$34,445	$24,542	$51,637	$110,624	$18,956,300	0.58%	
247-15344	GMU	Pr. Wm. Academic Bldg Phase I	Jan-95	Hanscomb Associates	$18,865	$3,250	$15,293	$37,408	$10,993,000	0.34%	
247-15345	GMU	Arlington School of Law Phase I	Feb-95	Lewis & Zimmerman	$34,902	$8,338	$12,241	$55,481	$15,052,173	0.37%	
247-15579	GMU	Physical Education II Swimming Pool	Apr-95	Hanscomb Associates	$19,585	$1,845	$7,775	$29,205	$8,453,000	0.35%	
407-14271-6	VPA	NIT North Exp'n., Upland Development	Apr-95	CH2M Hill	$34,600	$14,500	$41,600	$90,700	$25,073,000	0.36%	
777-15758	DYFS	Bon Air Juvenile Corr. Ctr. Expansion		--- Study waived ---							
799-15194	DOC	Red Onion Mountain		--- Study waived ---							
799-15461	DOC	Women's Multi-Custody Corr. Center	Jan-95	Marsh Witt Associates	$32,564	$0	$0	$32,564	$38,344,733	0.08%	(1)
799-15467	DOC	Sussex Maximum Security Institute		--- Study waived ---							
				TOTAL:	**$396,473**	**$119,161**	**$560,036**	**$1,075,670**	**$238,066,998**	**0.45%**	
				AVERAGE:	**$28,320**	**$8,512**	**$40,003**	**$76,834**	**$17,004,786**	**0.45%**	
				MEDIAN:	**$29,083**	**$7,419**	**$10,008**	**$48,571**	**$13,277,087**	**0.35%**	

Notes:

(1) - No cost for A/E participation or redesign as preliminary design was over budget.

(2) - Redesign costs high due to change in project site after preliminary design was complete. Relocation recommended by VE Study.

(3) - Redesign costs were high as project design was changed substantially to incorporate VE comments.

(4) - The following studies were not included in above summary as incomplete information was available at the time the survey was compiled:

216-15485	JMU	CISAT Student Center	Nov-95	Edward J. Nichols & Assoc.	tbd	tbd	tbd	tbd	$5,755,639	tbd
221-15519	ODU	Teletechnet Center	May-95	U.S. Cost, Inc.	$29,697	$0	tbd	tbd	$5,855,200	tbd

"tbd" = to be determined

Table 1

Survey of Value Engineering Studies Completed Through October 1995

See Table 1 for details.	VE Contract Amount a	A/E Fee to Participate b	Additional Design Cost c	Total Cost d = a+b+c	Estimated Construction Amount e	Total Cost as a % of Construction Amount f = d / e
Total Cost	$396,473	$119,161	$560,036	$1,075,670	$238,066,998	0.45%
Average Cost	$28,320	$8,512	$40,003	$76,834	$17,004,786	0.45%
Median Cost	$29,083	$7,419	$10,008	$48,571	$13,277,087	0.35%

See Table 2 for details.	Number of Value Engineering Recommendations			Dollar Amount of Value Engineering Recommendations		
	Proposed a	Accepted b	Acceptance Rate c = b / a	Proposed d	Accepted e	Acceptance Rate f = e / d
Total Savings	397	140	35.3%	$47,683,000	$13,271,000	27.8%
Average Savings	44	16	35.3%	$5,298,111	$1,474,556	27.8%
Median Savings	33	13	39.4%	$4,923,000	$1,555,000	31.6%

See Table 3 for details.	Total VE Study Costs a	Accepted VE Recommend. b	Total Cost As a % of Accepted VE Recommendations c = a / b	Benefit / Cost Ratio d = b / a
Total	$602,237	$13,271,000	4.54%	22 :1
Average	$60,224	$1,327,100	4.54%	22 :1

* See nc ›n supporting tables.

VE Study Savings

Project Code	Agency	Project Title	VE Study Date	VE Consultant	Number of VE Recommendations			Dollar Amount of VE Recommendations		
					Proposed	Accepted	Acceptance Rate	Proposed	Accepted	Acceptance Rate
					a	b	c = b / a	d	e	f = e / g
194-14392	DGS	New Library of Virginia	Jun-92	Edward J. Nichols & Assoc.	70	13	18.6%	$12,349,000	$1,440,000	11.7%
208-14814	VPISU	Student Health & Fitness Center	Apr-95	Hanscomb Associates	69	30	43.5%	$3,762,000	$2,182,000	58.0%
214-15502	LC	New Dining Hall	Dec-94	Hudson & Associates	29	11	37.9%	$4,923,000	$615,000	12.5%
215-14770	MWC	Jepson Science Building	Nov-94	Marsh Witt Associates	39	23	59.0%	$6,259,000	$3,352,000	53.6%
216-15619	JMU	CISAT Residence Hall Phase 1	May-95	Edward J. Nichols & Assoc.	31	13	41.9%	$3,092,000	$1,778,000	57.5%
216-15660	JMU	CISAT Infrastructure Phase 2		--- Study waived ---						
216-15660	JMU	CISAT Academic Phase 2	Jun-95	Pacific Environmental Svcs.						
236-14774	VCU	Fine Arts Center Addition	Aug-94	UVa Team/Hudson & Assoc.						
236-15523	VCU	Academic Campus Parking Deck II	Oct-94	UVa Team/Hudson & Assoc.	17	5	29.4%	$5,226,000	$188,000	3.6%
236-15577	VCU	Convocation & Recreation Center	Aug-94	Marsh Witt Associates	19	8	42.1%	$3,282,000	$1,980,000	60.3%
247-15344	GMU	Pr. Wm. Academic Bldg Phase I	Jan-95	Hanscomb Associates	33	6	18.2%	$1,549,000	$181,000	11.7%
247-15345	GMU	Arlington School of Law Phase I	Feb-95	Lewis & Zimmerman	90	31	34.4%	$7,241,000	$1,555,000	21.5%
247-15579	GMU	Physical Education II Swimming Pool	Apr-95	Hanscomb Associates						
407-14271-6	VPA	NIT North Exp'n., Upland Development	Apr-95	CH2M Hill						
777-15758	DYFS	Bon Air Juvenile Corr. Ctr. Expansion		--- Study waived ---						
799-15194	DOC	Red Onion Mountain		--- Study waived ---						
799-15461	DOC	Women's Multi-Custody Corr. Center	Jan-95	Marsh Witt Associates						
799-15467	DOC	Sussex Maximum Security Institute		--- Study waived ---						
				TOTAL:	**397**	**140**	**35.3%**	**$47,683,000**	**$13,271,000**	**27.8%**
				AVERAGE:	**44**	**16**	**35.3%**	**$5,298,111**	**$1,474,556**	**27.8%**
				MEDIAN:	**33**	**13**	**39.4%**	**$4,923,000**	**$1,555,000**	**31.6%**

Notes:

Above percentages are approximate and may be understated. Occasionally, VE proposals overlap one another.

This results in some double-counting in the "proposed" column. In using this report, it is recommended that the above percentages be considered as minimum values.

Actual Acceptance rates would be higher because of this overlap. Due to the very short time frame in which VE studies are prepared,

backup information is generally insufficient to precisely quantify the amount of overlap between VE proposals.

Table 2

Survey of Value Engineering Studies Completed Through October 1995

VE Study Benefit / Cost Ratios

Project Code	Agency	Project Title	VE Study Date	VE Consultant	Total VE Study Costs (See Table 1)	Accepted VE Recommendations (See Table 2)		Total Cost As a % of Accepted VE Recommendations	Benefit / Cost Ratio
					a	b		c = a / b	d = b / a
194-14392	DGS	New Library of Virginia	Jun-92	Edward J. Nichols & Assoc.	$87,438	$1,440,000		6.07%	**16 :1**
208-14814	VPISU	Student Health & Fitness Center	Apr-95	Hanscomb Associates	$58,007	$2,182,000		2.66%	**38 :1**
214-15502	LC	New Dining Hall	Dec-94	Hudson & Associates	$41,660	$615,000		6.77%	**15 :1**
215-14770	MWC	Jepson Science Building	Nov-94	Marsh Witt Associates	$158,611	$3,352,000		4.73%	**21 :1**
216-15619	JMU	CISAT Residence Hall Phase 1	May-95	Edward J. Nichols & Assoc.	$30,513	$1,778,000		1.72%	**58 :1**
216-15660	JMU	CISAT Infrastructure Phase 2		--- Study waived ---			(1)		
216-15660	JMU	CISAT Academic Phase 2	Jun-95	Pacific Environmental Svcs.			(1)		
236-14774	VCU	Fine Arts Center Addition	Aug-94	UVa Team/Hudson & Assoc.			(1)		
236-15523	VCU	Academic Campus Parking Deck II	Oct-94	UVa Team/Hudson & Assoc.	$22,495	$188,000		11.97%	**8 :1**
236-15577	VCU	Convocation & Recreation Center	Aug-94	Marsh Witt Associates	$110,624	$1,980,000		5.59%	**18 :1**
247-15344	GMU	Pr. Wm. Academic Bldg Phase I	Jan-95	Hanscomb Associates	$37,408	$181,000		20.67%	**5 :1**
247-15345	GMU	Arlington School of Law Phase I	Feb-95	Lewis & Zimmerman	$55,481	$1,555,000		3.57%	**28 :1**
247-15579	GMU	Physical Education II Swimming Pool	Apr-95	Hanscomb Associates			(1)		
407-14271-6	VPA	NIT North Exp'n., Upland Development	Apr-95	CH2M Hill			(1)		
777-15758	DYFS	Bon Air Juvenile Corr. Ctr. Expansion		--- Study waived ---			(1)		
799-15194	DOC	Red Onion Mountain		--- Study waived ---			(1)		
799-15461	DOC	Women's Multi-Custody Corr. Center	Jan-95	Marsh Witt Associates			(1)		
799-15467	DOC	Sussex Maximum Security Institute		--- Study waived ---			(1)		
				TOTAL:	**$602,237**	**$13,271,000**		**4.54%**	**22 :1**
				AVERAGE:	**$60,224**	**$1,327,100**		**4.54%**	**22 :1**

Notes:

(1) - For comparison purposes, this table includes only those projects where both the study costs and associated savings were known.

Table 3

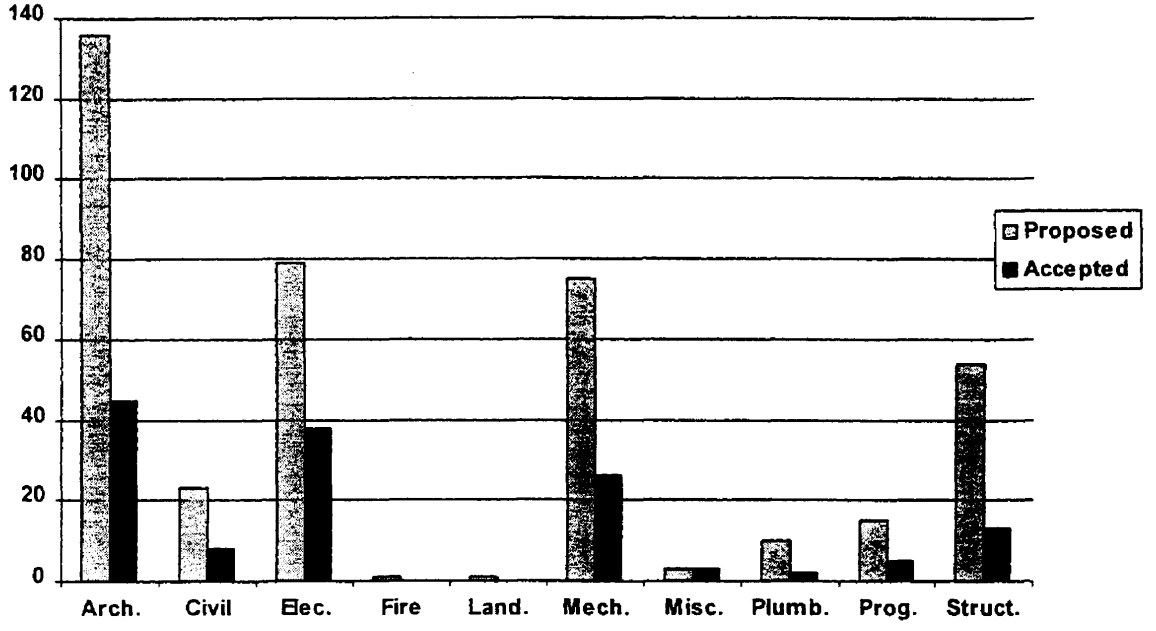
VE Recommendations ---
Proposed vs. Accepted, by Area

	Number of VE Recommendations			$ Value of VE Recommendations		
Area	Proposed	Accepted	Accepted as a % of Proposed	Proposed ($000s)	Accepted ($000s)	Accepted as a % of Proposed
	a	b	c = b / a	d	e	f = e / d
Architectural	136	45	33.1%	$26,023	$6,504	25.0%
Civil	23	8	34.8%	$1,179	$623	52.8%
Electrical	79	38	48.1%	$4,049	$1,576	38.9%
Fire Safety	1	0	0.0%	$23		
Landscaping	1	0	0.0%	$14		
Mechanical	75	26	34.7%	$4,449	$1,121	25.2%
Miscellaneous	3	3	100.0%	$1,537	$1,504	97.9%
Plumbing	10	2	20.0%	$680	$111	16.3%
Program	15	5	33.3%	$1,694	$1,191	70.3%
Structural	54	13	24.1%	$8,035	$641	8.0%
Total	397	140	35.3%	47,683	13,271	27.8%

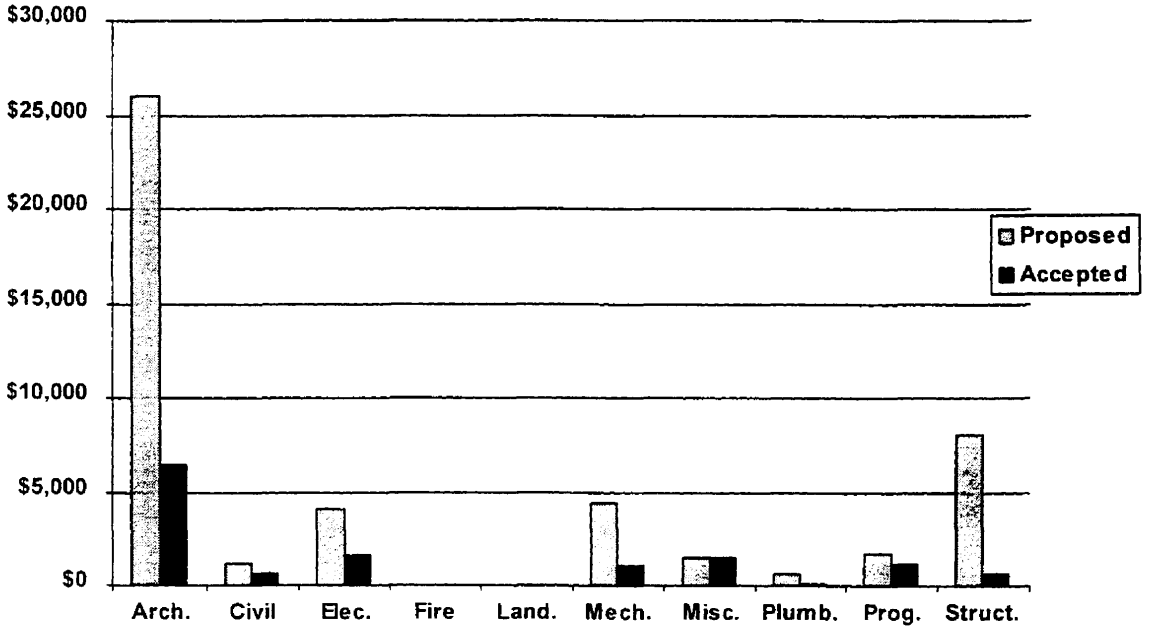
Note: Above percentages are approximate and may be understated. Occasionally, VE proposals overlap one another. This results in some double-counting in the "proposed" column. In using this report, it is recommended that the above percentages be considered as minimum values. Actual acceptance rates would be higher because of this overlap. Due to the very short time frame in which VE studies are prepared, backup information is generally insufficient to precisely quantify the amount of overlap between VE proposals.

VE Recommendations ---
Proposed vs. Accepted, by Area

By Number of Items



By Dollar Value ($000s)



Reasons for Rejecting VE Recommendations

REASON	Number of Rejected Items		Value of Rejected Items	
	Number	As % of Total	Value ($ 000s)	As % of Total
Affects building aesthetics.	20	12.0%	$2,102	7.8%
Affects building operations.	2	1.2%	$52	0.2%
Affects safety/security.	5	3.0%	$246	0.9%
Already incorporated/included in another proposal.	7	4.2%	$3,240	12.0%
Alternative method was proposed.	7	4.2%	$305	1.1%
Engineering design decision.	4	2.4%	$222	0.8%
Environmental considerations.	3	1.8%	$145	0.5%
Not practical based on bldg geometry.	3	1.8%	$1,171	4.3%
Not technically acceptable.	44	26.5%	$4,527	16.8%
Other	20	12.0%	$4,574	16.9%
Owner requirement or preference.	26	15.7%	$6,734	24.9%
Program requirement.	12	7.2%	$1,114	4.1%
Savings overstated or other costs were not included.	7	4.2%	$1,097	4.1%
Would conflict with COM or code requirements.	3	1.8%	$84	0.3%
Would not meet local requirements.	3	1.8%	$1,397	5.2%
Grand Total:	166	100.0%	$27,010	100.0%

Note: Above statistics are based on those VE items where the reasons for rejection were known.

VE Recommendations ---
Proposed vs. Accepted, by Project

	Number of VE Recommendations			$ Value of VE Recommendations		
Project	Proposed	Accepted	Accepted as a % of Proposed	Proposed ($000s)	Accepted ($000s)	Accepted as a % of Proposed
	a	b	c = b / a	d	e	f = e / d
194-14392	70	13	18.6%	$12,349	$1,440	11.7%
208-14814	69	30	43.5%	$3,762	$2,182	58.0%
214-15502	29	11	37.9%	$4,923	$615	12.5%
215-14770	39	23	59.0%	$6,259	$3,352	53.6%
216-15619	31	13	41.9%	$3,092	$1,778	57.5%
236-15523	17	5	29.4%	$5,226	$188	3.6%
236-15577	19	8	42.1%	$3,282	$1,980	60.3%
247-15344	33	6	18.2%	$1,549	$181	11.7%
247-15345	90	31	34.4%	$7,241	$1,555	21.5%
Total	**397**	**140**	**35.3%**	**47,683**	**13,271**	**27.8%**

Note: Above percentages are approximate and may be understated. Occasionally, VE proposals overlap one another. This results in some double-counting in the "proposed" column. In using this report, it is recommended that the above percentages be considered as minimum values. Actual acceptance rates would be higher because of this overlap. Due to the very short time frame in which VE studies are prepared, backup information is generally insufficient to precisely quantify the amount of overlap between VE proposals.

Additional Backup Information

a. VE Recommendations - Summary and Detail, by Project

b. Agency comments on VE Process summarized from their transmittal letters

VE Details, by Project

13-Nov-95

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
DGS	194-1439	A01	Arch.	784		Owner requirement or preference.	
DGS	194-1439	A02	Arch.	1163		Owner requirement or preference.	
DGS	194-1439	A04	Arch.	172		Owner requirement or preference.	
DGS	194-1439	A05	Arch.	294	147		
DGS	194-1439	A07	Arch.	113		Owner requirement or preference.	
DGS	194-1439	A10	Arch.	1129		Owner requirement or preference.	
DGS	194-1439	A11	Arch.	87		Affects building aesthetics.	
DGS	194-1439	A14	Arch.	37	18.5		
DGS	194-1439	A18	Arch.	127	127		
DGS	194-1439	A19	Arch.	451		Owner requirement or preference.	
DGS	194-1439	A26	Arch.	18	118		
DGS	194-1439	A28	Arch.	242		Affects building aesthetics.	
DGS	194-1439	A31	Arch.	878	878		
DGS	194-1439	A37	Arch.	85		Owner requirement or preference.	
DGS	194-1439	A40	Arch.	155		Affects building aesthetics.	
DGS	194-1439	A44	Arch.	88		Alternative method was proposed.	
DGS	194-1439	A46	Arch.	279			
DGS	194-1439	A47	Arch.	133		Affects safety/security.	
DGS	194-1439	A50	Arch.	18		Environmental considerations.	
DGS	194-1439	A52	Arch.	110		Owner requirement or preference.	
DGS	194-1439	A53	Arch.	100		Owner requirement or preference.	
DGS	194-1439	A54	Arch.	0		Affects safety/security.	
DGS	194-1439	A56	Arch.	108		Owner requirement or preference.	
DGS	194-1439	A58	Arch.	39	39		
DGS	194-1439	A60	Arch.	85		Affects building aesthetics.	
DGS	194-1439	A62	Arch.	28		Affects building aesthetics.	
DGS	194-1439	A65	Arch.	29	29		
DGS	194-1439	A67	Arch.	64		Environmental considerations.	

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
DGS	194-1439	A68	Arch.	53		Other	Quality control considerations.
DGS	194-1439	A69	Arch.	38		Not technically acceptable.	
DGS	194-1439	A70	Arch.	63		Environmental considerations.	
DGS	194-1439	A71	Arch.	82	41		
DGS	194-1439	A73	Arch.	1454		Owner requirement or preference.	
DGS	194-1439	A73b	Arch.	-300	-300		
DGS	194-1439	A74	Arch.	153			
DGS	194-1439	E01	Elec.	75	75		
DGS	194-1439	E08	Elec.	93		Not technically acceptable.	
DGS	194-1439	E09	Elec.	139		Not technically acceptable.	
DGS	194-1439	E10	Elec.	107	107		
DGS	194-1439	E11	Elec.	130		Not technically acceptable.	
DGS	194-1439	E12	Elec.	40		Not technically acceptable.	
DGS	194-1439	E13	Elec.	16		Not technically acceptable.	
DGS	194-1439	E15	Elec.	44	44		
DGS	194-1439	E17	Elec.	283		Affects building aesthetics.	
DGS	194-1439	E20	Elec.	55		Not technically acceptable.	
DGS	194-1439	E21	Elec.	24		Not technically acceptable.	
DGS	194-1439	E22	Elec.	40		Affects safety/security.	
DGS	194-1439	E23	Elec.	36		Owner requirement or preference.	
DGS	194-1439	M01	Mech.	659		Not technically acceptable.	
DGS	194-1439	M02	Mech.	119		Not technically acceptable.	
DGS	194-1439	M03	Mech.	140		Not technically acceptable.	
DGS	194-1439	M04	Mech.	232		Not technically acceptable.	
DGS	194-1439	M07	Mech.	70		Not technically acceptable.	
DGS	194-1439	M09	Mech.	0		Not technically acceptable.	
DGS	194-1439	M10	Mech.	0		Not technically acceptable.	
DGS	194-1439	M19	Mech.	0		Not technically acceptable.	
DGS	194-1439	M20	Mech.	0		Not technically acceptable.	
DGS	194-1439	M22	Mech.	0		Not technically acceptable.	
DGS	194-1439	M27	Mech.	56		Not technically acceptable.	

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
DGS	194-1439	M29	Mech.	0		Not technically acceptable.	
DGS	194-1439	M31	Mech.	10		Not technically acceptable.	
DGS	194-1439	M34	Mech.	43		Not technically acceptable.	
DGS	194-1439	M40	Mech.	0		Not technically acceptable.	
DGS	194-1439	M41	Mech.	283		Not technically acceptable.	
DGS	194-1439	M43	Mech.	118		Not technically acceptable.	
DGS	194-1439	M49	Mech.	116	116		
DGS	194-1439	S02	Struct.	592			
DGS	194-1439	S12	Struct.	342		Not technically acceptable.	
DGS	194-1439	S24	Struct.	0			
DGS	194-1439	S26	Struct.	128			
		Project Subtotal:		**$12,349.0**	**$1,439.5**		
VPISU	208-1481	A02	Arch.	32		Affects building operations.	
VPISU	208-1481	A03	Arch.	24	24		
VPISU	208-1481	A04	Arch.	97	50		
VPISU	208-1481	A07	Arch.	90		Affects building aesthetics.	
VPISU	208-1481	A10	Arch.	107		Affects building aesthetics.	
VPISU	208-1481	A16	Arch.	7		Owner requirement or preference.	
VPISU	208-1481	A17	Arch.	28		Owner requirement or preference.	
VPISU	208-1481	A21	Arch.	27		Owner requirement or preference.	
VPISU	208-1481	A24	Arch.	20		Affects building operations.	
VPISU	208-1481	A26	Arch.	0			
VPISU	208-1481	A27	Arch.	185		Affects building aesthetics.	
VPISU	208-1481	CS01&	Civil	5	5		
VPISU	208-1481	CS03	Civil	0			
VPISU	208-1481	CS05	Civil	95	95		
VPISU	208-1481	CS07	Civil	155		Owner requirement or preference.	
VPISU	208-1481	CS08	Civil	0			
VPISU	208-1481	CS10	Civil	39	39		
VPISU	208-1481	CS11	Civil	10	10		
VPISU	208-1481	CS12	Civil	0			

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
VPISU	208-1481	CS14	Civil	57		Alternative method was proposed.	
VPISU	208-1481	CS15	Civil	160	160		
VPISU	208-1481	E01	Elec.	67	67		
VPISU	208-1481	E03	Elec.	27	0		
VPISU	208-1481	E06	Elec.	13	0		
VPISU	208-1481	E08	Elec.	55	55		
VPISU	208-1481	E11	Elec.	18	18		
VPISU	208-1481	EA	Elec.	2			
VPISU	208-1481	EB	Elec.	2	2		
VPISU	208-1481	EC	Elec.	15			
VPISU	208-1481	M01	Mech.	45	45		
VPISU	208-1481	M02	Mech.	68	68		
VPISU	208-1481	M03	Mech.	32	32		
VPISU	208-1481	M04	Mech.	13		Owner requirement or preference.	
VPISU	208-1481	M05	Mech.	3	3		
VPISU	208-1481	M06	Mech.	14		Owner requirement or preference.	
VPISU	208-1481	M07	Mech.	0	-60		
VPISU	208-1481	M08	Mech.	69		Other	Less environmental control.
VPISU	208-1481	M09	Mech.	38	38		
VPISU	208-1481	M10	Mech.	0			
VPISU	208-1481	M11	Mech.	0			
VPISU	208-1481	M15	Mech.	0	-5		
VPISU	208-1481	P01	Prog.	60		Program requirement.	
VPISU	208-1481	P02	Prog.	45		Program requirement.	
VPISU	208-1481	P03	Prog.	12		Program requirement.	
VPISU	208-1481	P04	Prog.	10		Program requirement.	
VPISU	208-1481	P06	Prog.	29		Program requirement.	
VPISU	208-1481	P07	Prog.	54	54		
VPISU	208-1481	P08	Prog.	24		Already incorporated/included in another proposal.	
VPISU	208-1481	P10	Prog.	136		Program requirement.	
VPISU	208-1481	P12	Prog.	950	950		

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
VPISU	208-1481	P13	Prog.	35	35		
VPISU	208-1481	P14	Prog.	72	72		
VPISU	208-1481	P16	Prog.	58		Program requirement.	
VPISU	208-1481	PA	Prog.	10		Program requirement.	
VPISU	208-1481	PB	Prog.	100	80		
VPISU	208-1481	PC	Prog.	99		Program requirement.	
VPISU	208-1481	S02	Struct.	155	155		
VPISU	208-1481	S03	Struct.	105	105		
VPISU	208-1481	S05	Struct.	0			
VPISU	208-1481	S07	Struct.	0			
VPISU	208-1481	S09	Struct.	0			
VPISU	208-1481	S11	Struct.	0			
VPISU	208-1481	S13	Struct.	0			
VPISU	208-1481	S14	Struct.	40	40		
VPISU	208-1481	S15	Struct.	70		Engineering design decision.	
VPISU	208-1481	S16	Struct.	34		Engineering design decision.	
VPISU	208-1481	S17	Struct.	15	15		
VPISU	208-1481	SA	Struct.	0			
VPISU	208-1481	SB	Struct.	30	30		
		Project Subtotal:		**$3,762.0**	**$2,182.0**		
LC	214-1550	A01	Arch.	373	105		
LC	214-1550	A03	Arch.	295		Program requirement.	
LC	214-1550	A04	Arch.	0	79		
LC	214-1550	A05	Arch.	300			
LC	214-1550	A06	Arch.	145	72		
LC	214-1550	A07	Arch.	82			
LC	214-1550	A08	Arch.	0			
LC	214-1550	A09	Arch.	170			
LC	214-1550	A10	Arch.	576			
LC	214-1550	A11	Arch.	589			
LC	214-1550	A11.1	Arch.	0	32		

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
LC	214-1550	A11.2	Arch.	0	25		
LC	214-1550	A11.3	Arch.	0	10		
LC	214-1550	A11.4	Arch.	0	180		
LC	214-1550	E01	Elec.	65	65		
LC	214-1550	E02	Elec.	19		Would conflict with COM or code requirements.	
LC	214-1550	E03	Elec.	10		Affects building aesthetics.	
LC	214-1550	E04	Elec.	23		Other	Affects maintenance.
LC	214-1550	E05	Elec.	0			
LC	214-1550	E06	Elec.	41	15	Not technically acceptable.	
LC	214-1550	L01	Land.	14			
LC	214-1550	M01	Mech.	22	11		
LC	214-1550	M02	Mech.	20		Other	Conflicts with other components.
LC	214-1550	M03	Mech.	78		Other	Concern for air quality.
LC	214-1550	S01	Struct.	1450		Already incorporated/included in another proposal.	
LC	214-1550	S01A	Struct.	600			
LC	214-1550	S02	Struct.	0			
LC	214-1550	S03	Struct.	21	21		
LC	214-1550	S04	Struct.	30		Would conflict with COM or code requirements.	
		Project Subtotal:		**$4,923.0**	**$615.0**		
MWC	215-1477	A01	Arch.	512	200		
MWC	215-1477	A02	Arch.	1165		Already incorporated/included in another proposal.	
MWC	215-1477	A02.1	Arch.	1202	1123		
MWC	215-1477	A03	Arch.	109	25		
MWC	215-1477	A03.1	Arch.	240		Other	Owner did not wish to assume risk.
MWC	215-1477	A04	Arch.	57	57		
MWC	215-1477	A05	Arch.	32		Owner requirement or preference.	
MWC	215-1477	A06	Arch.	0			
MWC	215-1477	A07	Arch.	33	33		
MWC	215-1477	A08	Arch.	129		Not technically acceptable.	
MWC	215-1477	E01	Elec.	25	25		
MWC	215-1477	E02	Elec.	17	17		

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
MWC	215-1477	E03	Elec.	53	53		
MWC	215-1477	E04	Elec.	34	17		
MWC	215-1477	E05	Elec.	11	11		
MWC	215-1477	E06	Elec.	63		Other	VE assumptions incorrect or flawed.
MWC	215-1477	E07	Elec.	15	10		
MWC	215-1477	E08	Elec.	8	8		
MWC	215-1477	E09	Elec.	27	13		
MWC	215-1477	E10	Elec.	13	6		
MWC	215-1477	E11	Elec.	94	47		
MWC	215-1477	E12	Elec.	27	14		
MWC	215-1477	FP01	Fire	23			
MWC	215-1477	M01	Mech	43	43		
MWC	215-1477	M02	Mech	70	35		
MWC	215-1477	M03	Mech	40		Alternative method was proposed.	
MWC	215-1477	LP/SH	Misc.	215	182		
MWC	215-1477	MWC	Misc.	202	202		
MWC	215-1477	R01	Misc.	1120	1120		
MWC	215-1477	P01	Plumb.	10	10		
MWC	215-1477	P02	Plumb.	36			
MWC	215-1477	P03	Plumb.	67			
MWC	215-1477	P04	Plumb.	98			
MWC	215-1477	P05	Plumb.	44			
MWC	215-1477	P06	Plumb.	70			
MWC	215-1477	P07	Plumb.	89			
MWC	215-1477	P08	Plumb.	71			
MWC	215-1477	P09	Plumb.	94			
MWC	215-1477	P10	Plumb.	101	101		
		Project Subtotal:		**$6,259.0**	**$3,352.0**		
JMU	216-1561	A03	Arch.	63		Affects building aesthetics.	
JMU	216-1561	A04	Arch.	84	84		
JMU	216-1561	A05	Arch.	18		Affects building aesthetics.	

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
JMU	216-1561	A08	Arch.	121		Savings overstated or other costs were not included.	
JMU	216-1561	A18	Arch.	185		Owner requirement or preference.	
JMU	216-1561	A19	Arch.	353	353		
JMU	216-1561	A21	Arch.	75	75		
JMU	216-1561	A23	Arch.	45		Not technically acceptable.	
JMU	216-1561	A24	Arch.	436		Already incorporated/included in another proposal.	
JMU	216-1561	A25	Arch.	587	587		
JMU	216-1561	C01	Civil	0			
JMU	216-1561	C02	Civil	0			
JMU	216-1561	C05	Civil	0			
JMU	216-1561	C07	Civil	0			
JMU	216-1561	E01	Elec.	25	25		
JMU	216-1561	E02	Elec.	19	19		
JMU	216-1561	E04	Elec.	0			
JMU	216-1561	E06	Elec.	10	10		
JMU	216-1561	E13	Elec.	412	412		
JMU	216-1561	M01	Mech.	271		Not technically acceptable.	
JMU	216-1561	M02	Mech.	98	98		
JMU	216-1561	M03	Mech.	115	115		
JMU	216-1561	M05	Mech.	0	0		
JMU	216-1561	M10	Mech.	12		Not technically acceptable.	
JMU	216-1561	M17	Mech.	140		Not technically acceptable.	
JMU	216-1561	M20	Mech.	23		Not technically acceptable.	
JMU	216-1561	M24	Mech.	0			
JMU	216-1561	M28	Mech.	0			
JMU	216-1561	M29	Mech.	0			
JMU	216-1561	S06	Struct.	0	0		
JMU	216-1561	S12	Struct.	0	0		
		Project Subtotal:		**$3,092.0**	**$1,778.0**		
VCU	236-1552	A01	Arch.	397		Affects building aesthetics.	
VCU	236-1552	A02	Arch.	2971		Other	Impacts financial feasibility of project.

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
VCU	236-1552	A03	Arch.	216		Other	Not feasible due to scheduling considerations.
VCU	236-1552	A04	Arch.	913		Savings overstated or other costs were not included.	
VCU	236-1552	A05	Arch.	0		Savings overstated or other costs were not included.	
VCU	236-1552	A06	Arch.	216		Other	Space needs increased during design.
VCU	236-1552	E01	Elec.	45		Other	Savings already included in preliminary estimate.
VCU	236-1552	E02	Elec.	51	23		
VCU	236-1552	E03	Elec.	54		Affects safety/security.	
VCU	236-1552	E04	Elec.	11			
VCU	236-1552	M01	Mech.	18		Not technically acceptable.	
VCU	236-1552	M02	Mech.	5	5		
VCU	236-1552	M03	Mech.	21	45		
VCU	236-1552	S01	Struct.	202	100		
VCU	236-1552	S02	Struct.	15	15		
VCU	236-1552	S03	Struct.	39			
VCU	236-1552	S04	Struct.	52		Affects building aesthetics.	
		Project Subtotal:		**$5,226.0**	**$188.0**		
VCU	236-1557	A01	Arch.	76		Owner requirement or preference.	
VCU	236-1557	A02	Arch.	1092	1092		
VCU	236-1557	A03	Arch.	205		Owner requirement or preference.	
VCU	236-1557	A04	Arch.	193	193		
VCU	236-1557	A05	Arch.	64		Owner requirement or preference.	
VCU	236-1557	A06	Arch.	98	98		
VCU	236-1557	C01	Civil	122		Not technically acceptable.	
VCU	236-1557	C02	Civil	144	144		
VCU	236-1557	E01	Elec.	19	19		
VCU	236-1557	E02	Elec.	50		Not technically acceptable.	
VCU	236-1557	E03	Elec.	-11		Not technically acceptable.	
VCU	236-1557	E04	Elec.	145		Program requirement.	
VCU	236-1557	E05	Elec.	215		Program requirement.	
VCU	236-1557	E06	Elec.	80	80		
	236-1557	M01	Mech	72	72		

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
VCU	236-1557	M02	Mech.	67		Not technically acceptable.	
VCU	236-1557	M03	Mech.	282	282		
VCU	236-1557	S01	Struct.	59		Savings overstated or other costs were not included.	
VCU	236-1557	S02	Struct.	310		Not technically acceptable.	
		Project Subtotal:		**$3,282.0**	**$1,980.0**		
GMU	247-1534	A01	Arch.	19		Owner requirement or preference.	
GMU	247-1534	A04	Arch.	58		Other	Would inconvenience users.
GMU	247-1534	A05	Arch.	6			
GMU	247-1534	A10	Arch.	15			
GMU	247-1534	A11	Arch.	14			
GMU	247-1534	A14	Arch.	25			
GMU	247-1534	A17	Arch.	6			
GMU	247-1534	A21	Arch.	40		Affects building aesthetics.	
GMU	247-1534	A22	Arch.	38			
GMU	247-1534	A23	Arch.	11	11		
GMU	247-1534	A24	Arch.	41			
GMU	247-1534	A25	Arch.	0			
GMU	247-1534	E04	Elec.	30			
GMU	247-1534	E05	Elec.	7			
GMU	247-1534	E07	Elec.	34			
GMU	247-1534	E08	Elec.	111			
GMU	247-1534	E13	Elec.	11			
GMU	247-1534	E14	Elec.	55			
GMU	247-1534	E15	Elec.	0			
GMU	247-1534	M01	Mech.	-7	-7		
GMU	247-1534	M02	Mech.	353		Not technically acceptable.	
GMU	247-1534	M03	Mech.	166			
GMU	247-1534	M05	Mech.	21		Other	Less environmental control.
GMU	247-1534	M06	Mech.	16	16		
GMU	247-1534	M07	Mech.	86	86		
GMU	247-1534	M10	Mech.	0			

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
GMU	247-1534	S01	Struct.	35	35		
GMU	247-1534	S02	Struct.	190			
GMU	247-1534	S03	Struct.	40	40		
GMU	247-1534	S04	Struct.	6			
GMU	247-1534	S05	Struct.	8			
GMU	247-1534	S06	Struct	96			
GMU	247-1534	S07	Struct.	18			
		Project Subtotal:		**$1,549.0**	**$181.0**		
GMU	247-1534	A02	Arch.	36		Affects building aesthetics.	
GMU	247-1534	A03	Arch.	322	90		
GMU	247-1534	A05	Arch.	291		Other	Would inconvenience users.
GMU	247-1534	A06	Arch.	102			
GMU	247-1534	A07	Arch.	0			
GMU	247-1534	A08	Arch.	0			
GMU	247-1534	A10	Arch.	0			
GMU	247-1534	A12	Arch.	82			
GMU	247-1534	A19	Arch.	21	10		
GMU	247-1534	A21	Arch.	26	26		
GMU	247-1534	A22	Arch.	178	150		
GMU	247-1534	A23	Arch.	76			
GMU	247-1534	A27	Arch.	131	131		
GMU	247-1534	A28	Arch.	119	59		
GMU	247-1534	A29	Arch.	106			
GMU	247-1534	A30	Arch.	0			
GMU	247-1534	A31	Arch.	257	257		
GMU	247-1534	A35	Arch.	44	44		
GMU	247-1534	A37	Arch.	10	10		
GMU	247-1534	A38	Arch.	80	8		
GMU	247-1534	A39	Arch.	10		Not technically acceptable.	
GMU	247-1534	A41	Arch.	67		Affects building aesthetics.	
GMU	247-1534	A42	Arch.	58		Affects building aesthetics.	

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
GMU	247-1534	A43	Arch.	115			
GMU	247-1534	A45	Arch.	36		Alternative method was proposed.	
GMU	247-1534	A46	Arch.	42		Alternative method was proposed.	
GMU	247-1534	A47	Arch.	30	30		
GMU	247-1534	A48	Arch.	35		Would conflict with COM or code requirements.	
GMU	247-1534	A49	Arch.	0			
GMU	247-1534	A50	Arch.	34	34		
GMU	247-1534	A51	Arch.	30	30		
GMU	247-1534	A52	Arch.	19	19		
GMU	247-1534	C01	Civil	13		Other	Would require demolition at next phase.
GMU	247-1534	C02	Civil	71		Other	Would require use of proprietary product.
GMU	247-1534	C03	Civil	92	46		
GMU	247-1534	C04	Civil	47		Not technically acceptable.	
GMU	247-1534	C07	Civil	41		Would not meet local requirements.	
GMU	247-1534	C10	Civil	124	124		
GMU	247-1534	C13	Civil	4		Would not meet local requirements.	
GMU	247-1534	E01	Elec.	32	16		
GMU	247-1534	E02	Elec.	35	35		
GMU	247-1534	E03	Elec.	64	45		
GMU	247-1534	E04	Elec.	27		Other	Site limitations.
GMU	247-1534	E07	Elec.	4		Savings overstated or other costs were not included.	
GMU	247-1534	E08	Elec.	2			
GMU	247-1534	E09	Elec.	19		Affects safety/security.	
GMU	247-1534	E10	Elec.	37		Affects building aesthetics.	
GMU	247-1534	E11	Elec.	23	23		
GMU	247-1534	E12	Elec.	8	4		
GMU	247-1534	E13	Elec.	23	23		
GMU	247-1534	E14	Elec.	8	4		
GMU	247-1534	E15	Elec.	305	142		
GMU	247-1534	E16	Elec.	174		Owner requirement or preference.	
GMU	247-1534	E17	Elec.	0		Savings overstated or other costs were not included.	

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
GMU	247-1534	E18	Elec.	0			
GMU	247-1534	E19	Elec.	62		Affects building aesthetics.	
GMU	247-1534	E20	Elec.	27	27		
GMU	247-1534	M01	Mech.	68			
GMU	247-1534	M02	Mech.	34	34		
GMU	247-1534	M03	Mech.	17	17		
GMU	247-1534	M04	Mech.	11	11		
GMU	247-1534	M05	Mech.	17	17		
GMU	247-1534	M06	Mech.	50			
GMU	247-1534	M07	Mech.	3		Other	Reduces quality.
GMU	247-1534	M09	Mech.	14		Alternative method was proposed.	
GMU	247-1534	M10	Mech.	28		Alternative method was proposed.	
GMU	247-1534	M11	Mech.	31		Other	Concern for air quality.
GMU	247-1534	M12	Mech.	0			
GMU	247-1534	M13	Mech.	0		Savings overstated or other costs were not included.	
GMU	247-1534	M14	Mech.	12			
GMU	247-1534	M16	Mech.	0			
GMU	247-1534	M17	Mech.	0			
GMU	247-1534	M18	Mech.	4	4		
GMU	247-1534	S03	Struct.	119		Already incorporated/included in another proposal.	
GMU	247-1534	S05	Struct.	85	85		
GMU	247-1534	S06	Struct.	74			
GMU	247-1534	S07	Struct.	46		Already incorporated/included in another proposal.	
GMU	247-1534	S08	Struct.	1352		Would not meet local requirements.	
GMU	247-1534	S10	Struct.	35		Engineering design decision.	
GMU	247-1534	S12	Struct.	503		Not practical based on bldg geometry.	
GMU	247-1534	S14	Struct.	0			
GMU	247-1534	S16	Struct.	64		Not practical based on bldg geometry.	
GMU	247-1534	S18	Struct.	0		Already incorporated/included in another proposal.	
GMU	247-1534	S19	Struct.	0			
GMU	247-1534	S20	Struct.	7		Not technically acceptable.	

Agency	Project	Ref. #	Discipline	Proposed	Accepted	Reason for Rejection	If "Other", Reason for Rejection
GMU	247-1534	S22	Struct.	604		Not practical based on bldg geometry.	
GMU	247-1534	S23	Struct.	286		Not technically acceptable.	
GMU	247-1534	S24	Struct.	65		Other	VE assumptions incorrect or flawed.
GMU	247-1534	S26	Struct.	30		Owner requirement or preference.	
GMU	247-1534	S30	Struct.	83		Engineering design decision.	
		Project Subtotal:		**$7,241.0**	**$1,555.0**		
		Grand Total:		**$47,683.0**	**$13,270.5**		

Commonwealth of Virginia
Department of General Services
Division of Engineering & Buildings
Bureau of Capital Outlay Management

Agency Comments on VE Process

MWC: "Our experience with VE has been limited to one project. While I believe the process was a beneficial one, I am not certain that it represents a "typical" VE review; perhaps there is no "typical" experience...the increased design fee is largely attributable to the relocation of the building which was one of the recommendations provided by the VE team. It is clear that VE has increased the design cost for this project, but it is somewhat more difficult to quantify the true savings in construction costs."

UVA: "...timing of the study (Preliminary Submission) is too late to accomplish any major design changes due to prior approvals of AARB, Board of Visitors, and BCOM and reluctance of the Agency to lose [sic] time for re-submissions. The piossibility [sic] of two three day sessions, one at the Schematic Phase and one at the beginning of the Contract Document Phase may be more beneficial than a single study at the Preliminary Phase."

VCU: "Value Engineering potentially could add to the base of information available to an institution or agency as it makes decisions regarding cost, quality, and scope of work that can be accomplished in a major capital project. Our initial experience, however, indicates that it may be an additional process to the existing reviews conducted by the Bureau of Capital Outlay Management. Multiple reviews can produce conflicting results and time delays in completing planning and design procedures and in getting the project to the marketplace. We believe, therefore, that Value Engineering should be an elective process rather than a mandate."

JMU: "...V/E process seems to have added 2 months to the approval of the CO-5."

APPENDIX H

COMMONWEALTH of VIRGINIA

Department of Corrections

RON ANGELONE
DIRECTOR

P. O. BOX 26963
RICHMOND, VIRGINIA 23261
(804) 674-3000

December 20, 1995

Mr. Henry G. Shirley
Director, Bureau of Capital Outlay Management
Division of Engineering and Buildings
805 East Broad Street
Richmond, Virginia 23219

Subject: Approved Local and Regional Jail Construction

Dear Mr. Shirley:

As requested, attached to this letter is a listing of the local and regional jail construction projects approved by the Board of Corrections during calendar years 1994 and 1995. The total of new construction projects approved in 1994 is $416,541,869, with State participation totaling $188,591,803. In 1995, the total approved is $135,009,008, with State reimbursement totaling $65,938,876. Renovation projects are in addition to these totals. This office reviews the Planning Studies, the budget, 35%, and 95% drawings and specifications, and does inspections for each project to insure compliance with Board of Corrections standards for construction, security, and minimum space program requirements. In addition, we also look for compliance with the VUSBC, in I-3 occupancies.

We also study the proposed budgets very closely, working with the A/E to provide a budget that is reasonable. No budget is recommended to the Board of Corrections without careful analysis. This office estimates that the savings to the localities and the taxpayers of Virginia is well over $25 million in 1994 and 1995.

In November, 1994, the Board of Corrections issued a policy that each approved construction project which provides new beds must undergo value engineering. Formal VE sessions have been held for

the A. P. Hill Regional Jail, Pamunkey Regional Jail, Virginia Peninsula Regional Jail, and Hampton Roads Regional Jail. Informal VE and cost reduction has been performed for Riverside Regional Jail, Henrico Regional Jail, and Fairfax Regional Jail. This office has participated in a number of the formal VE sessions, as a partner in the project. Only projects approved in 1994 have reached a stage where VE is feasible. We do not have exact figures, as each regional jail authority with its design consultants selects the VE suggestions that are to be implemented, but the following order of magnitude figures are offered:

- A. P. Hill Regional Jail accepted 33 of 77 VE suggestions for a potential savings of $5.5 million. In addition, inaccuracies in the original construction cost estimate were found totaling another $1.4 million.

- Pamunkey Regional Jail accepted 22 of 60 VE suggestions representing a possible savings of $1.44 million.

- Virginia Peninsula Regional Jail accepted VE savings of approximately $1.2 million. DOC did not participate in this VE and the exact amount of VE savings is somewhat in question. This information came from the design firm.

- Hampton Roads Regional Jail has accepted 35 of 62 VE suggestions. One of the suggestions was to relocate several stairwells and use the created spaces to add two cells in each pod, allowing elimination of a complete housing unit. The actual amount of savings, estimated to be approximately $3.5 million, is reduced somewhat by additional design fees and design time, but the savings are very real. This VE was performed at the 95% design phase and includes several design changes, but the Owner was very pleased and excited by the outcome of the VE.

I hope that I have provided the information that you requested, and if there are any questions, or if there is a need for clarification, please do not hesitate to contact this office at any time, 674-3105.

With best regards,

William M. Sprinkle, PE
Assistant Director
Engineering and Construction

Enclosure

/WMS

cc: E. O. Watson, PE
A. B. Ballard

BOARD OF CORRECTIONS APPROVED JAIL CONSTRUCTION PROJECTS

FOR GENERAL ASSEMBLY FUNDING

18-Dec-95
BY: WMS

PROJECTS APPROVED IN 1994 FOR 1995 GENERAL ASSEMBLY

NEW CONSTRUCTION

	PROJECT	NEW BEDS	DATE OF COMPLETION	BOARD APPROVED PROJECT COST	ANTICIPATED STATE REIMBURSEMENT	PROJECT COST PER BED *
1	ROANOKE CITY JAIL - ANNEX	160	Feb-96	$9,954,959	$2,298,199	$62,218
2	PAMUNKEY REGIONAL JAIL (PARTICIPANTS: COUNTIES OF HANOVER, CAROLINE, AND TOWN OF ASHLAND)	318	Aug-97	$23,077,877	$11,538,939	$78,372
3	CHESTERFIELD COUNTY JAIL - ADDITION	96	COMPLETE	$3,338,247	$834,562	$34,773
4	MIDDLE PENINSULA REGIONAL JAIL (PARTICIPANTS: COUNTIES OF ESSEX, KING & QUEEN, KING WILLIAM, MATHEWS, AND MIDDLESEX)	120	Jun-97	$8,125,802	$4,062,901	$67,715
5	CHESAPEAKE CITY JAIL - ADDITION	418	Jun-96	$38,283,295	$9,570,824	$90,244
6	NORFOLK CITY JAIL - EXPANSION	300	Jan-97	$24,827,874	$6,206,969	$82,760
7	FAIRFAX REGIONAL - EXPANSION (PARTICIPANTS: COUNTY OF FAIRFAX AND CITY OF FAIRFAX)	795	Jun-97	$66,515,391	$33,257,695	$81,454
8	HAMPTON ROADS REGIONAL JAIL (PARTICIPANTS: CITIES OF PORTSMOUTH, NORFOLK, NEWPORT NEWS, AND HAMPTON)	872	Dec-97	$56,622,584	$28,311,292	$68,449
9	VIRGINIA PENINSULA REGIONAL JAIL (PARTICIPANTS: COUNTIES OF JAMES CITY, YORK, AND CITIES OF WILLIAMSBIRG AND POQUOSON)	318	Feb-97	$24,000,047	$12,000,024	$75,472
10	ALBEMARLE-CHRLOTTESVILLE REGIONAL JAIL (PARTICIPANTS: COUNTY OF ALBEMARLE, CITY OF CHARLOTTESVILLE)	115	Dec-97	$13,754,774	$6,877,387	$56,203
11	A. P. HILL REGIONAL JAIL (PARTICIPANTS: COUNTIES OF LOUDOUN, ARLINGTON, PRINCE WILLIAM, CAROLINE, CITIES OF ALEXANDRIA, RICHMOND)	336	Dec-97	$23,520,000	$11,760,000	$70,000
12	ROANOKE COUNTY - EXPANSION	70	Jul-98	$1,550,000	$387,500	$22,143
13	RIVERSIDE REGIONAL JAIL (APPROVED 9: BID ADJUSTMENT 94) (PARTICIPANTS: COUNTIES OF CHESTERFIELD, PRINCE GEORGE, SURREY, CHARLES CITY, CITIES OF PETERSBURG, HOPEWELL, COLONIAL	804	Jan-97	$61,414,317	$30,707,159	$76,386

	PROJECT	NEW BEDS	DATE OF COMPLETION	BOARD APPROVED PROJECT COST	ANTICIPATED STATE REIMBURSEMENT	PROJECT COST PER BED *
	HEIGHTS)					
14	HENRICO REGIONAL JAIL (APPROVED 93, BID ADJUSTMENT 94) (PARTICIPANTS: COUNTIES OF HENRICO, GOOCHLAND, NEW KENT)	677	Jul-96	$61,556,702	$30,778,351	$85,017
	1994 NEW CONSTRUCTION TOTALS:	**5,399**		**$416,541,869**	**$188,591,8..**	
RENOVATION CONSTRUCTION						
15	PIEDMONT REGIONAL JAIL - PLUMBING (PARTICIPANTS: COUNTIES OF AMEILA, CUMBERLAND, PRINCE EDWARD, BUCKINGHAM, TOWN OF FARMVILLE)		COMPLETE	$5,650	$2,825	
16	RICHMOND CITY - LIGHTING/PLUMBING		COMPLETE	$158,223	$39,556	
17	VIRGINIA BEACH JAIL - LIGHTING		COMPLETE	$17,827	$5,547	
18	GLOSTER COUNTY JAIL - KITCHEN		COMPLETE	$220,005	$55,001	
19	WARREN COUNTY - LIGHTING/PLUMBING		COMPLETE	$152,009	$38,002	
20	CHESTERFIELD COUNTY JAIL - LIGHTING		COMPLETE	$32,536	$8,134	
21	PORTSMOUTH CITY JAIL - HVAC		COMPLETE	$724,928	$181,232	
22	CHESAPEAKE CITY JAIL - LIGHTING		COMPLETE	$26,821	$6,705	
	1994 RENOVATION CONSTRUCTION TOTALS:			**$1,337,999**	**$337,002**	
PROJECTS APPROVED IN 1995 FOR 1996 GENERAL ASSEMBLY						
NEW CONSTRUCTION						
1	AUGUSTA, STAUNTON, WAYNESBORO REGIONAL JAIL	104	Aug-98	$8,047,568	$4,023,784	$75,794
2	HAMPTON CITY - JAIL ANNEX	318	Sep-96	$6,262,512	$1,565,628	$16,765
3	NEW RIVER VALLEY REGIONAL JAIL (PARTICIPANTS: COUNTIES OF PULASKI, GRAYSON, GILES, TOWNS OF RADFORD, GALAX)	240	Feb-99	$19,514,417	$9,757,208	$79,810
4	ALLEGHANY REGIONAL JAIL (PARTICIPANTS: COUNTY OF ALLEGHANY, TOWN OF COVINGTON)	54	Feb-99	$4,798,965	$2,399,483	$86,340
5	SOUTHSIDE REGIONAL JAIL (PARTICIPANTS: COUNTY OF GREENSVILLE TOWN OF EMPORIA)	92	Jan-98	$7,362,082	$3,681,041	$79,805
6	RAPPAHANNOCK REGIONAL JAIL (PARTICIPANTS: COUNTIES OF STAFFORD, SPOTTSYLVANIA, KING GEORGE, CITY OF FREDERICKSBURG)	658	Sep-98	$47,461,559	$23,730,780	$77,026
7	BLUE RIDGE REGIONAL JAIL (PARTICIPANTS: COUNTIES OF CAMPBELL, HALIFAX, CITY OF LYNCHBURG, TOWN OF BEDFORD)	680	Jul-99	$41,561,905	$20,780,952	$66,144

	PROJECT	NEW BEDS	DATE OF COMPLETION	BOARD APPROVED PROJECT COST	ANTICIPATED STATE REIMBURSEMENT	PROJECT COST PER BED *
	1995 NEW CONSTRUCTION TOTALS:	**2,146**		**$135,009,008**	**$65,938,876**	
RENOVATION CONSTRUCTION						
8	PIEDMONT REGIONAL JAIL - CANTEEN		COMPLETE	$4,494	$2,247	
9	HENRY COUNTY JAIL - HVAC, STAIRWELL		Mar-96	$262,000	$65,500	
10	WARREN COUNTY - REC YARD, KITCHEN		Mar-96	$198,608	$49,682	
	1995 RENOVATION CONSTRUCTION TOTALS:			**$465,102**	**$117,429**	

* - NOTE, COST PER BED FIGURES ARE FOR NEW CONSTRUCTION, OR RENOVATION COSTS WITH THE TOTAL NUMBER OF BEDS IN THE FACILITY, AND DO NOT INCLUDE LAND COSTS. VARIABILITY IN THIS FIGURE IS DUE TO THE TYPE OF CONSTRUCTION, THE USE OF DORMITORIES, AND THE EXTENT OF RENOVATIONS.

APPENDIX I

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

January 15, 1981

CIRCULAR NO. A-87
Revised

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Cost principles for State and local governments

1. Purpose. This Circular establishes principles and standards for determining costs applicable to grants, contracts, and other agreements with State and local governments and federally-recognized Indian tribal governments.

2. Supersession. This Circular supersedes Federal Management Circular 74-4 as revised. The Circular is reissued under its original designation of OMB Circular A-87.

3. Summary of changes. No substantive changes are made in the Circular.

4. Policy intent. This Circular provides principles for determining the allowable costs of programs administered by State, local, and federally-recognized Indian tribal governments under grants from and contracts with the Federal Government. They are designed to provide the basis for a uniform approach to the problem of determining costs and to promote efficiency and better relationships between grantees and the Federal Government. The principles are for determining costs only and are not intended to identify the circumstances nor to dictate the extent of Federal and State or local participation in the financing of a particular project. They are designed to provide that federally-assisted programs bear their fair share of costs recognized under these principles except where restricted or prohibited by law. No provision for profit or other increment above cost is intended.

(No. A-87)

5. Applicability and scope.

a. The provisions of this Circular apply to all Federal agencies responsible for administering programs that involve grants and contracts with State, local, and federally-recognized Indian tribal governments.

b. Its provisions do not apply to grants and contracts with:

(1) Publicly-financed educational institutions subject to Office of Management and Budget Circular A-21, and

(2) Publicly owned hospitals and other providers of medical care subject to requirements promulgated by the sponsoring Federal agencies.

Any other exceptions will be approved by the Office of Management and Budget in particular cases where adequate justification is presented.

6. Attachments. The principles and related policy guides are set forth in the attachments, which are:

Attachment A - Principles for determining costs applicable to grants and contracts with State, local, and federally-recognized Indian tribal governments.

Attachment B - Standards for selected items of cost.

7. Inquiries. Further information concerning this Circular may be obtained by contacting the Financial Management Branch, Budget Review Division, Office of Management and Budget, Washington, D.C. 20503, telephone 202-395-4773.

James T. McIntyre, Jr.
Director

Attachments

(No. A-87)

ATTACHMENT A
CIRCULAR NO. A-87

PRINCIPLES FOR DETERMINING COSTS APPLICABLE TO GRANTS AND CONTRACTS WITH STATE, LOCAL, AND FEDERALLY RECOGNIZED INDIAN TRIBAL GOVERNMENTS

(No. A-87)

PRINCIPLES FOR DETERMINING COSTS APPLICABLE TO GRANTS AND CONTRACTS WITH STATE, LOCAL, AND FEDERALLY RECOGNIZED INDIAN TRIBAL GOVERNMENTS

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(No. A-87)

(No. A-87)

PRINCIPLES FOR DETERMINING COSTS APPLICABLE TO GRANTS AND CONTRACTS WITH STATE, LOCAL, AND FEDERALLY RECOGNIZED INDIAN TRIBAL GOVERNMENTS

A. Purpose and scope.

1. Objectives. This Attachment sets forth principles for determining the allowable costs of programs administered by State, local, and federally-recognized Indian tribal governments under grants from and contracts with the Federal Government. The principles are for the purpose of cost determination and are not intended to identify the circumstances or dictate the extent of Federal and State or local participation in the financing of a particular grant. They are designed to provide that federally-assisted programs bear their fair share of costs recognized under these principles, except where restricted or prohibited by law. No provision for profit or other increment above cost is intended.

2. Policy guides. The application of these principles is based on the fundamental premises that:

a. State, local, and federally-recognized Indian tribal governments are responsible for the efficient and effective administration of grant and contract programs through the application of sound management practices.

b. The grantee or contractor assumes the responsibility for seeing that federally-assisted program funds have been expended and accounted for consistent with underlying agreements and program objectives.

c. Each grantee or contractor organization, in recognition of its own unique combination of staff facilities and experience, will have the primary responsibility for employing whatever form of organization and management techniques may be necessary to assure proper and efficient administration.

3. Application. These principles will be applied by all Federal agencies in determining costs incurred by State, local, and federally recognized Indian tribal governments under Federal grants and cost reimbursement type contracts (including subgrants and subcontracts) except those with (a) publicly-financed educational institutions subject to Office of Management and Budget Circular A-21, and (b) publicly-owned hospitals and other