

## Capital Budget Request

### Renovate / Renew Academic Buildings

#### Overview

Agency	Virginia Polytechnic Institute and State University (208)
Project Code	18065
Project Type	Improvements-Other
Biennium	2014-2016
Budget Round	Amended Bill
Request Origin	Previously Approved
Building Name	
Project Location	Roanoke Area
Facility/Campus	Blacksburg Main Campus
Source of Request	Agency Request
Building Function	Higher Education Instruction - 100% E&G
Infrastructure Element	Classroom / Office
Contains significant technology costs? No	
Contains significant energy costs? No	

#### Agency Narrative

**Agency Description**

The Renovate / Renew Academic Buildings project is authorized and funded for detail planning in Chapter 806 (2013), item C39.05, H.1, and the project code is 208-18065. The Six-Pack approved a cost review for the project that was issued by the Department of General Services, Preplanning Cost Review Report dated October 10, 2013 which identified an appropriate cost target of \$26,302,000 for the entire project, including \$2.5 million of equipment. The university has worked closely with the design professionals and a construction manager to prepare an affordable project. The proposed budget of \$30.7 million in this submission reflects current pricing just prior to the completion of preliminary designs. Once the university receives an updated Project Cost Review and Funding Report from the Six-Pack based on preliminary designs, the university will apply value engineering efforts to bring the project within budget.

Planning work continues with preliminary designs expected to be submitted to the Department of General Services for a final cost review in July 2014. At the current phase of design, the project is scheduled to be ready for construction in January 2015.

The university requested construction funding for the project in the 2014-2016 budget to ensure a continuous project delivery. This project remains a high priority capital project for the university and is critical to improving the instructional environment for students. This request is for an amendment to the 2014-2016 budget for construction funding to complete the project.

The project will fully renovate and renew three existing academic buildings located in the core of main campus. The three buildings were constructed between 1899 and 1928 and have had no major renovations or improvements since coming into service. The facility condition index (value of outstanding repairs over building replacement value) of these buildings range from 56 percent to 78 percent. These rates reflect an extraordinary level of deterioration that may not be overcome with normal repair or maintenance reserve work. Because of their generally deteriorated conditions, the buildings now serve as temporary housing for programs and are no longer appropriate to serve as permanent space.

Individually, these renovations are small projects and may be combined to a single package to achieve efficiencies in pricing through an attractive sized package, reduced general conditions fees, and compressing escalation with concurrent schedules. This renovation package provides a unique opportunity to bring three underutilized assets to high productivity, substantially reduce campus deferred maintenance, and solve several critical space needs without building additional campus space. The three buildings in this package request are described below.

(1) The renovation of Davidson Hall-Front Section (building number 156) has been on the university's plan since 1993 and will complete renovations started in the Davidson Hall Improvements-Phase I capital project (no. 17662). This phase of the project will renovate and rehabilitate the historic front section of the building. The 18,670 gross square foot front section of Davidson Hall was constructed in 1928 with an addition/top floor constructed in 1933. This renovation project will fully renovate the building's exterior and interior which has extensive egress and ADA deficiencies and deteriorated building systems. The building has received no major renovations, upgrades or improvement projects since originally constructed. The renovation and improvements will include replacement of heating and ventilation, electrical, plumbing and telecommunications systems, installation of central air conditioning, and extensive upgrades and system improvements to classrooms and

instructional laboratories. Sprinkler and addressable fire alarm life safety systems will be incorporated throughout. Restrooms will be replaced with accessible facilities. Exterior improvements will include tuck pointing the stonework and replacing any damaged masonry elements. Windows and exterior doors will be replaced to realize increased energy savings.

(2) The renovation of Sandy Hall (building no. 101) has been on the university's plan since 2001. Sandy Hall was constructed in 1924; there have been no major improvements or renovations since it came into service. The building includes about 10,960 gross square feet and the building's support systems and infrastructure are out-dated and inefficient. Further, the building is not air-conditioned and does not have mechanical ventilation systems. Sandy Hall currently serves as temporary swing space for academic programs in transition. As these programs move to new or newly renovated facilities on campus in the next year Sandy Hall will be available for interior and exterior renovation activities. The improvements will include exterior envelope repairs, hazardous material abatement, minor structural improvements and upgrades to HVAC, electrical and plumbing systems. Improvements to accessibility, fire protection and egress will include the incorporation of sprinkler and addressable fire alarm systems, and an approximately 4,800 gross square foot three story addition added to the building's west side housing an egress stair, elevator, accessible restrooms and academic support space. Restrooms will be replaced with accessible facilities. Upon completion the expanded building size will total approximately 15,762 gross square feet.

(3) The renovation of the Liberal Arts Building (building no. 175) has been on the university's plan since 1993, formerly titled Renovation of Performing Arts Building. The building was constructed in 1899 as a YMCA building and currently houses instructional programs of the School of Performing Arts and Cinema. This renovation project will fully renovate the exterior and interior of the 15,900 gross square foot building. The Liberal Arts Building is one of the most outdated buildings on campus with extensive egress and ADA deficiencies and deteriorated building systems. The improvements will include exterior envelope repairs, hazardous material abatement, replacement of HVAC, electrical and plumbing systems, and gutting of interior partitions to reconfigure interior rooms and spaces. Sprinkler and addressable fire alarm systems will be incorporated, and approximately 2,000 gross square foot four story addition (vertical circulation tower) will be added to the northwest side housing an egress stair, elevator and uni-sex toilets. Restrooms will be replaced with accessible facilities. Upon completion the expanded building size will total 17,900 gross square feet.

The renovations will renew the facilities and clear deferred maintenance effectively resetting the life expectancy to 50 years with adequate maintenance.

#### Justification

##### Program Description:

Combined these projects will provide efficiently designed space for two college level activities and a major department on campus. These renovations will substantially reduce maintenance backlogs, result in more efficient building layouts in high value campus real estate, return existing square footage to its long-term highest and best use, and provide important cost efficiencies up front and over the long term compared to new construction.

(1) A renovated Davidson Hall-Front Section will provide modern, accessible and technologically capable space for faculty, staff and graduate students of the Department of Chemistry. The department of Chemistry is home to 356 undergraduate and 184 graduate students and generates more than \$8M annually in externally funded research. The renovation of this space will complete the update of this building's laboratories, classrooms, offices and other learning spaces.

(2) A renovated Sandy Hall will serve as the academic home for the College of Science which is currently located in temporary, prefabricated modular buildings located in the upper quad of the campus. This college is home to 4,061 undergraduate and 634 graduate students and generates more than \$22 million annually in externally funded research. It is the largest college in terms of instructional output generating nearly 240,000 student credit hours each academic year. The renovated Sandy Hall will provide critical student and faculty support for advising and other student support functions including a distance learning classroom facility.

(3) A renovated Liberal Arts Building will serve as the academic home for the College of Liberal Arts and Human Sciences which is currently located in inadequate space in Wallace Hall. The majority of these colleges programs are housed in close proximity to the Liberal Arts Building and relocation to this area will promote efficiencies and interdepartmental communication within the college. The College of Liberal Arts and Human Sciences is home to 4,510 undergraduate and 1,526 graduate majors. It is the second largest college in terms of instructional delivery providing more than 223,685 total credit hours each academic year. The renovated Performing Arts Building will provide seminar space and offices for student advising and other student support functions.

The University's strategic plan includes three scholarship domains: Learning, Discovery, and Engagement; and three Foundational Strategies: Development of the Organization, Investment in the Campus Infrastructure, and Effective Resource Development, Allocation, and Management. This project supports several key domains and strategies of the strategic plan, and the specific goals of each area addressed by this project are listed below.

Learning: (1) Strengthen and integrate all aspects of the undergraduate academic experience, including the academic experience for transfer students, (2) Invest in departmental and university-level support for undergraduate education, (3) Enhance quality graduate and professional education, (4) Establish a graduate education portfolio reflective of a 21st century university, (5) Develop and integrate advanced technology and information systems applications that assist collaboration, reflection, assessment, and sharing among faculty members, students, and staff members, (6) Contribute to the holistic and transformative educational experiences of Virginia Tech undergraduate and graduate students, and (7) Improve the capital assets that underpin student learning and support programs.

Engagement: (1) Engage students, at the undergraduate and graduate levels, in opportunities for service learning and experiential education that prepare them to serve a diverse and complex marketplace and society while building the capacity of communities.

Foundational Strategies: (1) Effectively manage the University's space and land resources for learning, living, and work, and (2) Enhance health,

safety, and security operations to support the University's discovery, learning, and engagement endeavors.

#### Existing facilities:

- (1) Davidson Hall was constructed in 1928 and has not had any major renovations or improvements since it went into service. The facility condition index in FICAS is 72 percent. Maintenance reserve projects and other maintenance work are no longer sufficient to keep the building serviceable; a full building renewal is required to restore the building to service. Due to lack of air-conditioning and sufficient electrical and telecommunication resources, the building is no longer able to provide a satisfactory environment for the sensitive equipment used in modern instruction, or provide suitable space for collaboration between student and faculty. Improvements to the building's systems and exterior are required to restore useful life to the facility.
- (2) Sandy Hall was constructed in 1924; there have been no major improvements or renovations since it came into service. The facility condition index in FICAS is 56 percent. Maintenance reserve projects and other maintenance work are no longer sufficient to keep the building serviceable; a full building renewal is required to restore the building to service. The building includes about 10,960 gross square feet and the building's support systems and infrastructure are out-dated and inefficient. Further, the building is not air-conditioned and does not have mechanical ventilation systems.
- (3) The Liberal Arts building is located in a key position on the academic core of campus. The location is a critical serving point to support the instruction of students. The facility condition index in FICAS is 78 percent. Maintenance reserve projects and other maintenance work are no longer sufficient to keep the building serviceable; a full building renewal is required to restore the building to service. Rehabilitating this outdated structure to meet the requirements of modern instruction practices will address student needs and expectations

#### Funding Plan:

The proposed program is 100 percent Educational and General instruction: thus, the funding plan calls for 100 percent General Fund support.

#### Alternatives Considered

The options considered include building new facilities, razing and replacing these facilities, and deferring improvements to a future biennium. Building new facilities is considered more expensive than renewal, will add unnecessary space, and will increase maintenance and utility costs compared to renewal. Razing and replacement is considered unnecessary because the building envelopes and support structures are sound and the sites are constrained which prohibits a larger footprint or taller building. Solving the space needs of these programs is a top priority of the university and these buildings are no longer serviceable; thus, deferring the project may result in expensive leases to house the programs and advanced deterioration that prohibits refurbishment.

#### Costing Methodology

This project will involve renovation of a historical buildings and construction of new laboratory space. Virginia Tech's project cost estimate is derived from a database of on-campus construction costs of comparable project types. Virginia Tech building construction reflects the high level of quality, durability and tradition that makes Virginia Tech a distinctive and memorable place for students. Our estimates also include the cost of technology, specialized instruction, and energy efficiency goals of the institution.

The building envelopes will be comprised primarily of 'Hokie Stone' with precast concrete accents consistent with university standards as affirmed by the Board of Visitors. The Virginia Tech Board of Visitors has directed that all new building projects and expansion projects built on the Blacksburg central campus must use Hokie stone as the predominate building material on all building facades. Brick, metal panels, and siding materials are not permitted as substitutions for Hokie stone. In maintaining the random ashlar stone pattern of our collegiate Gothic buildings, the university has explored a wide range of contemporary stone erection means, methods and systems. The most efficient system tested that meets erection, insulation and moisture protection requirements utilizes a four-inch thick nominal stone thickness with a two-inch nominal air barrier over moisture resistant sheathing. Stainless steel anchoring straps and load bearing shelf angles and stainless steel flashings comprise the structural support and flashings system, meeting our requirement for a 50-100 year enclosure life expectancy. Because the university owns the stone quarry, the quarrying and stocking of all the cut stone is carried as a project (soft) cost, and the construction budget carries all erection, final stone dressing, installation and intensive quality assurance inspection costs. Renovation of the historic portion will require extensive repointing and installation of new windows.

Mechanical equipment and building automation systems will be designed to maximize energy efficiency and minimize operations and maintenance costs. Mechanical equipment will be located inside and screened from view to maximize student use of the campus landscape. Electrical systems will support current academic technologies and increased student use of individual technology equipment. Effective use of exterior and interior glazing will enhance energy efficiency lighting fixtures for an improved academic experience. Design priorities will include flexibility to maximize the long-term programmatic functionality of the building.

Virginia Tech produces the most STEM-H graduates of any university in the Commonwealth. Our role as the leading producer of STEM-H degrees relies upon a system of classrooms, instructional laboratories that support technology driven instruction in engineering, physical sciences, life sciences, and advanced mathematics. All buildings must have high-capacity wireless networks to support multiple devices (laptop computer, tablet computer, smartphone) used simultaneously by students to retrieve information and to communicate within the classroom and to connect digitally with instructional sites around campus and around the world. The use of electronic equipment in the classroom by student participants also requires dedicated power outlets corresponding to the seat/station count and power outlets in common areas. Raised floor systems are needed to accommodate these and future developments in technology and classroom configuration. Specialized degrees in engineering and physical sciences require specialized equipment specific to those fields and sometimes shielded or vibration protected areas in which to operate this equipment. The university operates its own communications network using primarily internet connectivity which requires accessible, climate controlled server rooms in lieu of the traditional phone closet. Because the communications infrastructure is installed by our own university operated auxiliary it is carried as a project (soft) cost outside of the normal construction budget.

Renovation of the historic portion will involve complete replacement of mechanical, plumbing, electrical systems that have exceeded their useful

life. It will also require installation of sprinkler, fire alarm systems and accessibility improvements.

The project is anticipated to have moderate site conditions but restricted site access in a dense and active part of campus will impact mobilization costs. This project will use a C-M at risk construction delivery method appropriate for the size and complexity of this project. Project costs are estimated to the mid-point of construction using three percent escalation in accordance with the instructions for developing the Six-Year Capital Outlay Plan.

### Agency Funding Request

Phase	Year	Fund	Subsubject	Requested Amount
Construction	2016	0100 - General Fund	2322 - Construction, Buildings	\$30,700,000
Total				\$30,700,000

### Project Costs

Cost Type	Total Project Costs	Requested Funding	DGS Rec
Acquisition Cost	\$0	\$0	\$0
Building & Built-in Equipment	\$20,757,434	\$20,757,434	\$0
Sitework & Utility Construction	\$1,037,872	\$1,037,872	\$0
Construction Cost Total	\$21,795,306	\$21,795,306	\$0
Design & related Services from Other Costs tab	\$3,026,311	\$3,026,311	\$0
Inspection & Testing Services from Other Costs tab	\$636,419	\$636,419	\$0
Project Management & Other Costs from Other Costs tab	\$1,689,379	\$1,689,379	\$0
Furnishings & Movable Equipment	\$2,397,484	\$2,397,484	\$0
Construction Contingency	\$1,155,101	\$1,155,101	\$0
Total Project Cost	\$30,700,000	\$30,700,000	\$0

### Capacity

Cost Type	Unit of Measure	Units	Cost Per Unit
Acquisition Cost		0	\$0
Construction Cost	GSF	58,202	\$374
Total Project Cost	GSF	58,202	\$527

### Other Costs

Cost Type	Total Project Costs	Requested Funding	DGS Rec
Design & Related Service Items			
A/E Basic Services	\$2,377,294	\$2,377,294	
A/E Reimbursables	\$53,796	\$53,796	
Specialty Consultants (Food Service, Acoustics, etc.)	\$70,143	\$70,143	
CM Design Phase Services	\$217,953	\$217,953	
Subsurface Investigations (Geotech, Soil Borings)	\$44,680	\$44,680	
Land Survey	\$20,501	\$20,501	
Archeological Survey	\$0	\$0	
Hazmat Survey & Design	\$28,370	\$28,370	
Value Engineering Services	\$0	\$0	
Cost Estimating Services	\$16,782	\$16,782	
Other Design & Related Services	\$196,792	\$196,792	
Design & Related Services Total	\$3,026,311	\$3,026,311	
Inspection & Testing Service Items			
Project Inspection Services (inhouse or consultant)	\$548,637	\$548,637	
Project Testing Services (conc., steel, roofing, etc.)	\$87,782	\$87,782	
Inspection & Testing Services Total	\$636,419	\$636,419	

Project Management & Other Cost Items		
Project Management (inhouse or consultant)	\$402,333	\$402,333
Work By Owner	\$32,693	\$32,693
BCOM Services	\$0	\$0
Advertisements	\$0	\$0
Printing & Reproduction	\$0	\$0
Moving & Relocation Expenses	\$52,607	\$52,607
Data & Voice Communications	\$466,571	\$466,571
Signage	\$21,293	\$21,293
Demolition	\$0	\$0
Hazardous Material Abatement	\$77,878	\$77,878
Utility Connection Fees	\$0	\$0
Utility Relocations	\$207,574	\$207,574
Commissioning	\$225,651	\$225,651
Miscellaneous Other Costs	\$202,779	\$202,779
Project Management & Other Costs Total	\$1,689,379	\$1,689,379

### Operating and Maintenance Costs (Agency)

Cost Type	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GF Dollars	\$0	\$182,000	\$187,000	\$192,000	\$197,000	\$202,000
NGF Dollars	\$0	\$0	\$0	\$0	\$0	\$0
GF Positions	0.00	1.00	1.00	1.00	1.00	1.00
NGF Positions	0.00	0.00	0.00	0.00	0.00	0.00
GF Transfer	\$0	\$0	\$0	\$0	\$0	\$0
GF Revenue	\$0	\$0	\$0	\$0	\$0	\$0
Layoffs	0	0	0	0	0	0

Planned start date of new O&M costs (if different than the beginning of the fiscal year):---

### Supporting Documents

File Name	File Size	Uploaded By	Upload Date	Comment
<a href="#">BITS~208-18065-000~RRAB~HECO-2.pdf</a>	257,249	Rob Mann	6/25/2014	RRAB - 18065 HECO-2 (\$1.889M)
<a href="#">BCOM Memo_RRAB 10.10.2013.pdf</a>	1,656,817	Rob Mann	6/25/2014	BCOM RRAB-18065 Cost Report 10.10.2013

### Workflow History

User Name	Claimed	Submitted	Step Name
Rob Mann	06/25/2014 10:08 AM	06/25/2014 10:08 AM	Enter Capital Budget Request
Rob Mann	06/25/2014 10:08 AM	06/25/2014 12:52 PM	Continue Drafting
Rob Mann	06/26/2014 02:03 PM	06/26/2014 02:04 PM	Agency Review Step 1
Rob Mann	06/27/2014 03:27 PM	06/27/2014 04:05 PM	Agency Review Step 1
Rob Mann	06/27/2014 05:13 PM	06/27/2014 05:18 PM	Ready for DPB Submission
Bob Broyden	06/30/2014 02:28 PM	06/30/2014 02:33 PM	Ready for DPB Submission
Bob Broyden	06/30/2014 03:15 PM	06/30/2014 03:16 PM	Ready for DPB Submission
Rob Mann	06/30/2014 03:51 PM	06/30/2014 03:52 PM	Ready for DPB Submission
Bob Broyden	06/30/2014 03:55 PM	06/30/2014 03:55 PM	Ready for DPB Submission
			DPB Review