

# Capital Budget Request

## Improve Derring Hall for Architecture and Science

### Overview

Agency	Virginia Polytechnic Institute and State University (208)
Project Code	none
Project Type	Improvements-Other
Biennium	2016-2018
Budget Round	Initial Bill
Request Origin	Previously Submitted
Project Location	Roanoke Area
Facility/Campus	Blacksburg Main Campus
Source of Request	Agency Request
Infrastructure Element	Laboratory / Classroom

Contains significant technology costs? No

Contains significant energy costs? No

### Agency Narrative

#### Agency Description

Derring Hall was constructed in 1969, and the building has not had any major improvements or renovations since the original construction was completed. The building's total size is approximately 208,000 gross square feet and houses general assignment classrooms, instructional laboratories and components of the biology, geological sciences, and physics programs.

Because of the large size of the building and limited solutions to house existing occupants, the university has developed a strategy of renovating the building in phases. This project reflects the first phase and proposes to fully renovate the interior and exterior of approximately 118,130 gross square feet. The envisioned improvements include upgraded HVAC systems, upgraded electrical systems, rehabilitated and improved plumbing systems, improvements to meet accessibility and life safety codes, and to improve the programmatic function of the building for several academic programs that are selected to relocate to Derring.

#### Justification

##### Program Description:

Derring currently houses general assignment classrooms, instructional laboratories and components of the biology, geological sciences, and physics programs. As science programs are relocated to new, modern laboratory facilities, the university schedules major renovations of their vacated space as a cost and space effective solution to address the needs of programs with lower building systems requirements. For Derring Hall, the university is in the process of relocating portions of biology with implementation of the Integrated Life Sciences Building in the Corporate Research Center and the Life Sciences I laboratory and vivarium. The Nanoscience and Geoscience Laboratory, a capital project proposal of higher priority ranking, is the final precursor necessary to vacate the portions of Derring Hall to make way for this renovation.

The programs identified to occupy the areas improved by this renovation project are programs that support the Top Jobs 21 goal of ensuring an educated workforce through instructional excellence, affordable access, and cost efficient operation. The renovated space will provide a solution to consolidate the faculty and instructional activities of physically dispersed programs (including leases) for departments like the Center for Public Administration and Policy, Landscape Architecture, Economics, and the School of the Visual Arts. A renovated Derring Hall is an excellent solution to accommodate the needs of these programs because the building may be efficiently modernized within the existing structural constraints to meet their instructional requirements.

The university's strategic plan includes the principal strategies of:

- Increasing undergraduate involvement in meaningful research experiences and experiential learning (hands on minds on).
- Continuing to investigate, develop, and utilize current and emerging technologies to enhance traditional classrooms, provide mobile access, and expand high-quality distance learning opportunities.
- Identifying opportunities during construction and renovation to create flexible classroom spaces that fully support e-learning components.
- Pursuing quality-of-life initiatives in support of the university as a vibrant, dynamic, and sustainable workplace.

Existing Facilities:

Derring Hall is an approximately 208,000 gross square foot building constructed in 1969 with no major improvements or renovations since the original construction was completed. The building has become outdated and deterioration is progressing beyond the scope of normal operations and maintenance reserve repairs. The building is in the Facility Inventory Condition and Assessment System with a facility condition index of 29 percent; thus, the proposed phase one renovation will include a complete repair of the exterior envelop associated with the interior and mechanical improvements.

The increased use of modern scientific equipment, ranging from computers to specialized laboratory equipment, is exceeding the capabilities of the existing mechanical, electrical, plumbing, and environmental control systems. The existing physical and structural constraints of the building, such as low floor-to-ceiling heights, make the building better suited to classroom and instructional laboratory uses rather than current wet laboratories requiring extensive HVAC systems and related support. These structural constraints make renovating the building more suitable for housing programs in the College of Architecture.

This project requests authorization to renovate a major portion of Derring Hall and address the need for upgraded HVAC systems, upgraded electrical systems, rehabilitated and improved plumbing systems, and overall renovations intended to meet accessibility and life safety codes, and to improve the programmatic function of the building. These building renovations will extend the useful life of the facility as an academic building supporting instruction.

#### Funding Plan:

The program of this project request is 34 percent research and 66 percent instruction. The funding plan for this \$63.5 million project calls for \$52.7 million of general fund support and \$10.8 million of nongeneral fund authorization. The nongeneral fund component is requested as a revenue bond authorization that will be repaid by overhead revenue generated from the research program.

#### Options Considered:

Other options considered, but not selected, include new construction or delaying the project to a later biennium. Renovating Derring Hall is the selected option because it is the most effective choice for meeting program needs, does not add new space to campus, and is less costly than new construction for these programs. The project is listed as a high priority for this biennium because of the timing availability of Derring Hall for renovations and because addressing the program space needs of the College of Architecture and the College of Science is a high priority. The university has several departments that are disjointed because sufficient contiguous space to house the operations are not available. The dispersed arrangement of these units causes operational inefficiencies and impedes program objectives. Deferring the project will prolong the resulting, significant negative impact on instructional programs.

#### Alternatives Considered

---

#### Costing Methodology

The method for estimating costs includes: 1) using unit costs in the Bureau of Capital Outlay Management's Construction Costs Database updated April 2015 with a regional market multiplier and a multiplier for softs costs; and 2) comparables as shown in the CR-3. Both methods are escalated to a construction midpoint of 2019 at three percent.

On a total project cost basis, inclusive of design, construction, and equipment, the unit costs are \$538 per gross square foot. The unit construction costs of the project are \$414 per gross square foot, including self-performed construction work. The building types in this request are renovation of dry laboratories, wet laboratories, and classroom/office in the Bureau of Capital Outlay Management's Construction Costs Database.

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.

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 efficient 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 and 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, 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.

Agency Funding Request				
Phase	Year	Fund	Subobject	Requested Amount
Construction	2019	0100 - General Fund	2322 - Construction, Buildings	\$52,700,000
Construction	2019	0815 - 9(D) Debt Service - Construction Costs	2322 - Construction, Buildings	\$10,800,000
Total				\$63,500,000
Project Costs				
Cost Type	Total Project Costs	Requested Funding	DGS Rec	
Acquisition Cost	\$0	\$0		
Building & Built-in Equipment	\$42,256,000	\$42,256,000		
Sitework & Utility Construction	\$1,732,000	\$1,732,000		
<b>Construction Cost Total</b>	<b>\$43,988,000</b>	<b>\$43,988,000</b>		
<b>DESIGN &amp; RELATED SERVICE ITEMS</b>				
A/E Basic Services	\$6,004,000	\$6,004,000		
A/E Reimbursables	\$115,000	\$115,000		
Specialty Consultants (Food Service, Acoustics, etc.)	\$0	\$0		
CM Design Phase Services	\$658,000	\$658,000		
Subsurface Investigations (Geotech, Soil Borings)	\$0	\$0		
Land Survey	\$0	\$0		
Archeological Survey	\$0	\$0		
Hazmat Survey & Design	\$58,000	\$58,000		
Value Engineering Services	\$0	\$0		
Cost Estimating Services	\$58,000	\$58,000		
Other Design & Related Services	\$335,000	\$335,000		
<b>Design &amp; Related Services Total</b>	<b>\$7,228,000</b>	<b>\$7,228,000</b>		
<b>INSPECTION &amp; TESTING SERVICE ITEMS</b>				
Project Inspection Services (inhouse or consultant)	\$1,212,000	\$1,212,000		
Project Testing Services (conc., steel, roofing, etc.)	\$462,000	\$462,000		
<b>Inspection &amp; Testing Services Total</b>	<b>\$1,674,000</b>	<b>\$1,674,000</b>		
<b>PROJECT MANAGEMENT &amp; OTHER COST ITEMS</b>				
Project Management (inhouse or consultant)	\$901,000	\$901,000		
Work By Owner	\$104,000	\$104,000		
BCOM Services	\$12,000	\$12,000		
Advertisements	\$0	\$0		
Printing & Reproduction	\$0	\$0		
Moving & Relocation Expenses	\$92,000	\$92,000		
Non Built-In Data and Voice Communications	\$1,143,000	\$1,143,000		
Signage	\$58,000	\$58,000		
Demolition	\$0	\$0		
Hazardous Material Abatement	\$127,000	\$127,000		
Utility Connection Fees	\$0	\$0		
Utility Relocations	\$173,000	\$173,000		
Commissioning	\$496,000	\$496,000		
Miscellaneous Other Costs	\$1,171,000	\$1,171,000		
<b>Project Management &amp; Other Costs Total</b>	<b>\$4,277,000</b>	<b>\$4,277,000</b>		
Furnishings & Movable Equipment	\$5,453,000	\$5,453,000		
Construction Contingency	\$880,000	\$880,000		

<b>TOTAL PROJECT COST</b>	<b>\$63,500,000</b>	<b>\$63,500,000</b>
---------------------------	---------------------	---------------------

### Capacity

Cost Type	Unit of Measure	Units	Cost Per Unit
Acquisition Cost		0	\$0
Construction Cost	GSF	118,000	\$373
Total Project Cost	GSF	118,000	\$538

### Operating and Maintenance Costs (Agency)

Cost Type	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
GF Dollars	\$0	\$0	\$341,259	\$351,497	\$362,042	\$372,903
NGF Dollars	\$0	\$0	\$69,897	\$71,993	\$74,153	\$76,378
GF Positions	0.00	0.00	0.42	0.42	0.42	0.42
NGF Positions	0.00	0.00	0.09	0.09	0.09	0.09
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="#">10-CR-3 Derring Hall Renovation.xls</a>	625,664	Rob Mann	6/13/2015	CR-3_Derring Hall Renovation

### Workflow History

User Name	Claimed	Submitted	Step Name
Rob Mann	05/18/2015 11:29 PM	05/18/2015 11:29 PM	Enter Capital Budget Request
Rob Mann	05/18/2015 11:30 PM	05/18/2015 11:30 PM	Continue Drafting
Rob Mann	06/08/2015 05:41 PM	06/08/2015 05:42 PM	Continue Drafting
Jennifer Hundley	06/12/2015 05:15 PM	06/12/2015 05:42 PM	Continue Drafting
Rob Mann	06/13/2015 10:16 AM	06/13/2015 10:19 AM	Continue Drafting
Rob Mann	06/13/2015 01:06 PM	06/13/2015 01:10 PM	Agency Review Step 1
Rob Mann	06/13/2015 07:35 PM	06/13/2015 07:42 PM	Agency Review Step 1
Bob Broyden	06/14/2015 02:18 PM	06/14/2015 02:18 PM	Ready for DPB Submission
Ruth Anderson	06/15/2015 01:29 PM	06/15/2015 01:30 PM	DPB Review
Ruth Anderson	06/18/2015 10:59 AM	06/18/2015 10:59 AM	DPB Review
Anne Smith	06/19/2015 02:50 PM	06/19/2015 02:50 PM	DPB Review
Rob Mann	06/19/2015 03:24 PM	06/19/2015 03:25 PM	Agency Review Step 1
Bob Broyden	06/19/2015 03:51 PM	06/19/2015 03:51 PM	Ready for DPB Submission
			DPB Review