



Renovate Davidson Hall, Phase I

project 1 of 1

Virginia Polytechnic Institute and State University (208)

General Information

Project Type: Project Code: Start Year:

Agy Priority: Location: Facility:

Building #: Building Name:

Building Function:

Is this an Umbrella Project? OR a higher education blanket project?

Projected time to submit working drawings: months

Projected time to occupy facility or complete project: months

Projected time to award construction contract: months

Included in the existing Six Year Capital Plan

Contact Information

Name:

Email:

Phone:

Agency Narrative

Description

The Davidson Hall project was a University top priority request in the 2008 budget session, and the state placed it in the tier two funding section of Chapter 1, 2008 with \$1.506 million of detail planning funds. The planning funds have been allotted under project code 17662 and preliminary design is underway. Under the planning work, the University has determined with a high degree of confidence that an approximately 44,000 gross square foot (GSF) demolition and replacement project may be accomplished for the original budget proposal of \$31.4 million including the \$1.506 million of planning funds authorized in Chapter 1. This 44,000 GSF project will meet the intent and be programmatically consistent with the original project proposal that justified the planning funds.

The location of Davidson Hall is on the core of the academic campus and is a critical instruction location for students. This project will replace the center and north sections and is the highest and best use of the land and building. The proposed project will restore the level of space needed for the program and will enable students to be optimally trained to move into today's industrial, governmental, and academic laboratories that specialize in nanotechnology, chemical biology, computational chemistry, environmental chemistry, drug discovery, and macromolecular chemistry to serve the commercial and governmental needs of the Commonwealth.

The scope of the project is based the design effort underway and includes 44,000 GSF, of demolition and replacement. The facility is included in the Facility Inventory Condition and Assessment System with a Facility Condition Index of 70 percent. The replacement space will include 25 large size classrooms and class laboratories, faculty offices, and group work areas to support chemistry instruction. The replacement section of Davidson Hall will have an estimated structural useful life of about 50 to 80 years.

The project is on schedule for a January 2010 construction start date, and the University is requesting authorization and funding in the 2010 budget session to move the project to the construction phase to continue an efficient project implementation.

Justification

Program description:

The chemistry program includes over 250 people including undergraduates, graduate students, postdoctoral fellows, research technicians, and faculty and delivers about 22,337 weighted-student-credit-hours annually - one of the highest volumes of service teaching in the University.

Chemistry instruction at Virginia Tech is of direct value to the Commonwealth of Virginia and a vital component of a comprehensive university. Many small and large companies that do business in Virginia have direct ties to the Chemistry Department, through short courses, the hiring of Virginia Tech chemistry graduates, intellectual property transfer, small business start up, and grants and contracts. Many recent discoveries in the areas of proton exchange membranes for hydrogen fuel cells, drug discovery, medical diagnostics, homeland security, and composites for structural applications can be traced to activities in chemistry at Virginia Tech. Graduate students were involved in each of these advances and undergraduates were involved in many of them, and the projects provided invaluable laboratory training to the students.

The proposed replacement project will mitigate two negative impacts on chemistry instruction caused by the ill suited conditions of Davidson Hall. First, the chemistry program is slowly losing space as areas of the building's center are shuttered, resulting in overcrowding and overuse of the New Chemistry/Physics building and Hahn Hall as critical activities are shifted in an attempt to accommodate laboratory demand. Second, the out-dated laboratory infrastructure of the building constrains the level of modern chemical activity that may be practiced, thus limiting the training potential for students.

The proposed project will restore the level of space needed for the program and will enable students to be optimally trained to move into today's industrial, governmental, and academic laboratories that specialize in nanotechnology, chemical biology, computational chemistry, environmental chemistry, drug discovery, and macromolecular chemistry. The replacement section will support the specialized instrumentation that requires high ceilings, adequately powered and environmentally conditioned space that can not be accommodated in the current infrastructure of the building.

The mission statement of Virginia Tech as a public land-grant University serving the Commonwealth of Virginia, the nation, and the world community includes discovery and dissemination of new knowledge central to its mission. Through its focus on teaching and learning, research and discovery, and outreach and engagement, the University creates, conveys, and applies knowledge to expand personal growth and opportunity, advance social and community development, foster economic competitiveness, and improve the quality of life.

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) Increase student involvement in discovery and engagement by creating more opportunities for undergraduates to be involved in research capstone experiences, education abroad, and experiential learning; (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) Contribute to the holistic and transformative educational experiences of Virginia Tech undergraduate and graduate students; and (6) Improve the capital assets that underpin student learning and support programs.

Discovery: (1) Strengthen research activities with a focus on energy; and (2) Strengthen research activities with a focus on materials.

Engagement: (1) Connect the University's discovery, learning, and engagement assets through partnerships with both the public and private sectors to advance the economic vitality of the commonwealth and the quality of life of its citizens; and (2) 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.

In summary, the reconstruction of the center section of Davidson Hall is essential to the growth and health of the chemistry program at Virginia Tech. A more modern physical plant for chemical training will facilitate undergraduate, graduate, and faculty recruiting and enable the chemistry department to strengthen its programs in chemical biology, computational chemistry, nonmaterial's chemistry, and macromolecular chemistry.

Existing facilities:

The University is confronted with an aging inventory of science laboratory space, much of it built in the 1970's and before, that is inadequate even with significant renovation to support the new protocols and instrumentation the latest micro- and nano-scale work require. This demolition and replacement project is needed to provide the sophisticated, state-of-the-art classroom and laboratory space that is required by the technologies utilized in modern science fields, such as those for chemistry.

The chemistry department operates in three buildings on campus: the New Chemistry/Physics Building is used for undergraduate classroom instruction, Hahn Hall is used for sponsored research, and Davidson Hall is used for undergraduate and graduate laboratory instruction.

Davidson Hall was constructed in 1928 with additions in 1933 and 1938, and with renovations in 1965 and 1981. The building originally housed undergraduate and graduate chemistry classrooms and laboratories. The undergraduate classrooms and a portion of the laboratories moved to the New Chemistry/Physics building in 2004. The relocation of the undergraduate program to the new building has made room to update Davidson Hall - one of the most outdated and seriously deteriorated facilities on campus.

Conditions in many areas of Davidson Hall are approaching unsafe levels due to age and incompatibility with modern scientific teaching methods. For example, the north and center sections now show rainwater leakage; missing stonework at exterior walls; inadequate climate and dust control; and outdated electrical power, water, nitrogen gas plumbing, and air handling that hamper training and challenge proper safety. The center section is so deteriorated that nearly half of the teaching laboratories have been shuttered. The building deterioration in the center section is severe and will require razing and replacement - renovation of this section is not an option. The historic front (south) section of Davidson Hall will remain and is scheduled for complete renovation in a subsequent project as reflected in the University's Six-Year Capital Outlay Plan.

Funding plan:

In accordance with the capital program outlined in Chapter 1, 2008, the University is requesting the balance of the project budget (net additional \$29.894 million) to fully fund the project. The program for the project is 100 percent educational and general instructional support for the chemistry undergraduate and graduate programs with modern instructional classrooms and laboratories. Thus, the funding plan calls for full state support. This project will not impact student fees.

Options Considered

Other options considered but not selected include renovating the center and north sections of the building or delaying the project entirely. Rebuilding the deteriorated sections of the building is the selected option because it is the most cost effective solution for replacing academic space in the central area of campus, which is in high demand.

Renovating the center section of the existing facility is not a viable option because constructing new space is more effective for the amount and condition of space. Further, the existing structure may not be adequately modernized because of restrictive floor to ceiling heights. Because of the intensive laboratory requirements and the existing structural limitations, the estimated premium to renovate, as compared to replacement, is about 100 percent to achieve the same program specifications. An effort to renovate the building to meet modern requirements may result in a 50 percent loss of net assignable square feet because of the ceiling height restrictions, essentially doubling the unit cost per square foot.

Delaying the project to a future biennium is not a viable option because the center section of Davidson Hall is deteriorating rapidly and the safety of the building will become questionable in the near future. General operations and maintenance reserve projects can no longer bring the facility up to acceptable conditions and the space is needed to satisfy growing demand for classroom and laboratory space on campus.

Costing Methodology

The costs are based on schematic design cost estimates from professional consulting services. Virginia Tech has secured the services of Einhorn Yaffee Prescott to perform architectural and engineering design services for the replacement of the deteriorated section of Davidson Hall. The project has recently completed schematic design and consultant cost estimates at this design phase show the project remains within the original budget of \$31.4 million. The University continues to evaluate value engineering decisions and has recently secured Barton Malow as Construction Manager for this project to ensure the project holds to the budget and meets the programmatic goals of

the University. 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.

Project Costs

1. Aquisition of Property:	\$0
2. Acquisition of Plant	\$0
3. Building and Built-in Equipment	\$20,508,000
4. Sitework and Utilities	\$3,207,000
5. Architectural and Engineering Fee	\$2,677,000
6. Loose Furnishings and Equipment	\$1,159,000
7. Contigencies	\$473,000
8. Project Inspection	\$583,000
9. Other Costs	\$2,793,000
Total Cost	\$31,400,000

The following items (10, 11, 12) are included in above costs

10. Estimated Total Planning Costs:	\$2,879,000
11. Estimated New Construction Costs:	\$26,144,000
12. Estimated Improvements Costs:	

Itemized "9. Other Costs"

1. Project Management In Capital Project Budget:	\$388,000
2. Special Consultants (if not included in A & E fees):	
A. Scheduling Consultant	\$0
B. HVAC Commissioning	\$205,000
C. Furniture Design	\$58,000
3. Asbestos and lead based paint survey and design:	
4. Asbestos abatement:	\$79,000
5. Independent Cost Estimates:	\$20,000
6. Value engineering	\$0
7. Subsoil investigations:	\$87,000
8. Construction testing services:	\$233,000
9. Printing	\$8,000
10. Advertisements	\$3,000
11. Work by owner	\$1,066,000
12. Signage	\$34,000
13. Miscellaneous utility charges	
14. Moving expenses	\$0
15. Miscellaneous other costs (itemize):	
A. Native Stone	\$306,000
B. Review Process	\$19,000
C. Other	\$287,000

D. _____

Operating and Maintenance Costs

	1st Year	2nd Year
1. Personal Services	\$239,503	\$239,503
2. Nonpersonal Services	\$684,491	\$684,491
3. Equipment	\$25,000	\$5,000
Total O and M	\$948,994	\$928,994
4. FTE Employees:	5.00	5.00
5. One Time Costs:	\$20,000	\$0
6. Cost Savings	\$0	\$0
7. FTE Savings	\$0	\$0

8. Planned start date of new O and M costs
(if different than the beginning of the fiscal year) 2012-07-01 00:00:00.0

Funding Requests

F Year	GF	NGF	Tax Debt	9c Debt	9d Debt	Total Request
2011	\$29,894,000	\$0	\$0	\$0	\$0	\$29,894,000

Funding Phase: Construction

Prior Funding

Biennium	Appropriation Act	Act Item	Funding Source	Project Code	Amount
2008-10	Chapter 1	Enactment 3 - Sec. 1	General Fund	17662	\$1,506,000

Project Scope

1. Acquisition - Property	0	Sq. Ft. / Acres	Cost per Sq. Ft. or Acre	n/a
2. Acquisition - Plant	0	Sq. Ft.	Cost per Sq. Ft.	n/a
3. New Construction	44,288	Sq. Ft.	Cost per Sq. Ft.	\$590
4. Improvements		Sq. Ft.	Cost per Sq. Ft.	n/a
5. Capacity	0	Beds/Units	Cost per bed/unit	n/a

Capital Lease

Name of Lessor:

Space Requirements:

Need for Leased Space:

Time Period

