



Virginia Department of Planning and Budget
Project Request Justification

2006-2008 Biennium Date: July 22, 2005

A. General Information

- 1. Agency name: Virginia Tech
- 2. Agency code: 208
- 3. Project title: Replace Deteriorated Section of Davidson Hall
- 4. Agency priority: 4
- 5. Contact Person: M. Dwight Shelton, Jr.
- 6. Contact's telephone number: (540) 231-8775
- 7. Contact's e-mail address: mdsjr@vt.edu

B. Proposed Project

1. Project Cost:

General Fund/General Fund supported debt	23,000,000
Nongeneral fund	
9 (c) revenue debt	
NGF supported 9 (d) revenue bonds	
Total request	23,000,000

2. Project cost changes:

NONE.

3. Description:

- This project has been on the university's plan since 1993, formerly titled Renovation/ Addition of Davidson Hall. The project originally envisioned renovation of the entire facility; however the cost and constructability of addressing the entire building as a single project was not practical. Thus, the university has phased the project to two components that are more manageable.
- This project reflects the first component that will fully replace the unrecoverable center section of the existing building. It will include the replacement and upgrade of electrical, plumbing, and mechanical ventilation systems, air-conditioning (connection to the central plant), and disposal of hazardous materials. These renovations will renew the center of the building and will enable Davidson Hall to continue to serve the science program with high quality academic space.

- The replacement section of Davidson Hall will have an estimated useful life of about 80 years.
- The scope of the project was established by a thorough analysis of the chemistry programs instructional activities as one of the university's highest volume service teaching departments.
- The program for the project is envisioned to support the chemistry undergraduate and graduate programs with modern instructional classrooms and laboratories. Thus, the funding plan calls for full state support.

4. Project scope change:

NONE.

5. a. Approved Master Site Plan:
If not, explain:

Yes No

b. 2004-10 Capital Outlay Plan:
If not, explain:

Yes No

6. Equipment for a previously funded project.

NONE.

7. Supplement to a previously funded project.

NONE.

C. Project Justification

1. a. Existing condition:

- 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.
- The relocation of the undergraduate program to the new building made room to update Davidson Hall – one of the most outdated and seriously deteriorated facilities on campus. Conditions in many areas of the building continue to deteriorate and are

approaching unsafe levels due to age and incompatibility with modern scientific teaching methods. For example, the building now shows rainwater leakage; missing stonework; inadequate climate and dust control; outdated electrical power, water, nitrogen gas plumbing, and air handling (fume hoods) that hamper training and challenge proper safety. General operations maintenance and maintenance reserve projects will not bring the facility up to acceptable conditions.

- 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 section of Davidson Hall will remain and is scheduled to be completely renovated in a subsequent project scheduled for the 2008-2010 biennium.)

Higher Education Only

b. Facility Condition Index:

FCI 34.3

c. Space deficit:

Yes No

2. Programmatic information:

- The chemistry program includes over 250 people including graduate students, undergraduates, 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 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 vibration-free, high ceiling, adequately powered and environmentally conditioned space that can not be accommodated in the current infrastructure of the building.
- 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, nanomaterials chemistry, and macromolecular chemistry to serve the commercial and governmental needs of the Commonwealth.

3. Alignment to strategic plan:

This project will support Virginia Tech's strategic plan in the areas of Graduate Education and Undergraduate Education. When completed, the renovations will provide renewed academic space to serve the chemistry undergraduate and graduate science programs in support of the following university goals:

Graduate Education:

1. Increase the quality of the graduate programs.

Undergraduate Education:

1. Maintain a current, relevant, and comprehensive undergraduate curriculum.
2. Strengthen the quality of undergraduate instruction.
3. Create learning experiences for undergraduate students that maximize the benefits of attending a large research university.

D. Options Considered

Other options considered but not selected include renovating the center section of the building or delaying the project entirely. Rebuilding the deteriorated center of the current 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 cost effective for the amount and condition of space. Further, the existing structure may not be adequately modernized because of restrictive floor to ceiling heights.

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.

E. Project Schedule Changes:

NONE.