



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: Supplement: 2002 General Obligation Bond Projects 4. Agency priority: 3  
 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	4,750,000
Nongeneral fund	
9 (c) revenue debt	
NGF supported 9 (d) revenue bonds	
<b>Total request</b>	<b>4,750,000</b>

2. Project cost changes:

NONE.

3. Description:

In accordance with the state's support to supplement previously authorized GOB project cost overruns associated with materials inflation and code compliance, this request is to increase the budget for the ICTAS, Phase I (project code 16714) by \$4 million and the budget for the Building Construction Laboratory (project code 16796) by \$750,000 of General Fund support. Approval of this request is needed in the 2006 session to minimize further scheduling and cost impacts to the projects.

Institute for Critical Technology and Applied Science I:

- This first building (Phase I) for Virginia Tech's Institute for Critical Technology and Applied Sciences (ICTAS) was authorized in the 2002 General Obligation Bond (GOB) Program with \$13,996,000 in GOB funding and \$17,000,000 in nongeneral fund support from the authorization of 9(d) agency bonds, for a total project cost of \$30,996,000.

- The project authorization calls for the construction of a 103,000 gross square foot (GSF), highly specialized research laboratory building for engineering and science programs.
- This project request includes \$4 million of General Fund support to complete the originally envisioned program.

Building Construction Laboratory:

- The Building Construction Laboratory project was authorized in the 2002 General Obligation Bond (GOB) Program with \$2.5 million in GOB funding and a \$4 million nongeneral fund addition to the \$1 million of nongeneral fund planning authorization granted in the 1998 General Assembly, for a total project budget of \$7.5 million.
- The proposed Building Construction Laboratory building is authorized as a 32,000 gross square foot state-of-the-art facility that will accommodate the undergraduate and graduate student population growth in the Building Construction program.
- This project request includes \$750,000 of General Fund support to complete the originally envisioned program.

**4. Project scope change:**

Institute for Critical Technology and Applied Science I:

- The university plans to address the cost overrun through a combination of a minor reduction in project scope from 103,000 GSF to 100,000 GSF and a \$4million increase in authorized funding for the project.

Building Construction Laboratory:

- No changes in scope are expected for the Building Construction Laboratory project.

**5. a. Approved Master Site Plan:** Yes  No   
**If not, explain:**

**b. 2004-10 Capital Outlay Plan:** Yes  No   
**If not, explain:**

**6. Equipment for a previously funded project.**

NONE.

**7. Supplement to a previously funded project.**

Institute for Critical Technology and Applied Science I:

- Since planning began on the building, there has been a significant worldwide escalation in the cost of construction and related materials. Due to the escalation in construction costs, the initial pre-bid cost estimated put the project \$8 million over the approved budget of \$30,996,000.

- The university put the project through two exhaustive value engineering studies and several programmatic reviews. These efforts ultimately reduced \$4 million of the initial \$8 million overrun. The university's efforts to reduce costs have required some significant design changes that are currently underway in anticipation of supplemental funding.
- The university's latest cost estimates for the ICTAS, Phase I building are \$4 million over the authorized project budget of \$30,996,000. It is the University's intention to address this problem through a combination of a minor reduction in project scope from 103,000 GSF to 100,000 GSF and a \$4 million increase in authorized funding for the project. Without supplemental funding, the project is not viable and may not move forward.

Building Construction Laboratory:

- Since planning began on the building, there has been a significant worldwide escalation in the cost of construction and related materials. Due to the escalation in construction costs, the initial pre-bid cost estimated put the project \$1 million over the approved budget of \$7.5 million.
- The university put the project through two exhaustive value engineering studies and several programmatic reviews. These efforts ultimately reduced \$250,000 of the initial \$1 million overrun. The university's efforts to reduce costs have required significant design changes that are currently underway in anticipation of supplemental funding; these changes do not decrease the size of the building.
- The university latest cost estimates for the project are \$750,000 over the current \$7.5 million authorization. Value engineering and reprogramming exercises have exhausted all cost-cutting measures; without this requested funding increase, the project is not viable and may not move forward.

## **C. Project Justification**

### **1. a. Existing condition:**

Institute for Critical Technology and Applied Science I:

The University's inventory of laboratory space to support modern research methods is not sufficient or technically capable of meeting even current research performance requirements. To achieve the envisioned output potential of the ICTAS program, total additional building space needs are estimated at 285,000 gross square feet (GSF) phased over three buildings. This phase one ICTAS facility, with approximately 100,000 GSF, is part of the 2002 GOB program and will provide a critical "jump start" to initiate the program.

As an example of the quantity and quality of existing space, the College of Engineering currently occupies about 506,000 assignable square feet (ASF) that includes 307,000 assignable square feet (ASF) of research space. This space is spread over eight main buildings and multiple smaller spaces adjacent to campus or off campus. Of the 307,000 ASF of research space, only 86,000 ASF is modern (being built between 1990 and 1997). The remainder of the research space is between 30 years old and 75 years old. While this older space continues to support less intensive functions, it is not suitable for the pursuit of state-of-the-art research work. None of the existing engineering and life sciences space has the systems or structural capacity necessary to house the new research technologies for

imaging and measurement, such as nuclear magnetic resonance facilities, that are required to conduct research at the micron scale.

Building Construction Laboratory:

The Building Construction program's current space allocation is not sufficient to accommodate the program and impedes further development as classroom space is at capacity. Without this project, the university has no viable alternatives to accommodate the students' and the industry's expectation for an expansion in the amount and quality of Building Construction graduates.

**Higher Education Only**

**b. Facility Condition Index:**

FCI \_\_\_\_\_

**c. Space deficit:**

Yes  No

**2. Programmatic information:**

Institute for Critical Technology and Applied Science I:

This first building (Phase I) for Virginia Tech's Institute for Critical Technology and Applied Sciences (ICTAS) was authorized in the 2002 General Obligation Bond (GOB) Program. The project originally called for the construction of a 103,000 gross square foot (GSF), highly specialized research laboratory building for engineering and science programs, with construction slated to begin in early 2005.

The completion of the ICTAS Phase I building is vital to the success of Virginia Tech's Institute for Critical Technology and Applied Sciences initiative and the achievement of the university's goal to increase research productivity in growth-oriented areas of science and technology. The establishment of a research facility of this caliber will dramatically impact the teaching and research experience in advanced engineering and sciences at Virginia Tech by allowing students and researchers to utilize the latest materials and techniques in their fields. The enhanced reputation this will bring to the university's engineering and science programs will increase Virginia Tech's status as a major research university, attract the brightest students and most successful faculty, and promote scientific and technological development in Southwest Virginia. Further, this building is envisioned to significantly enhance and increase research space that is needed to support local business and industry and to provide for economic development throughout the Commonwealth.

Building Construction Laboratory:

The proposed Building Construction Laboratory building is planned as a 32,000 gross square foot state-of-the-art facility that will accommodate the undergraduate and graduate student population growth in the Building Construction program. The facility will house laboratory space, classroom space, and support space that will complement and define the Building Construction learning objectives. Laboratory spaces include testing labs, wet labs, material handling, tool and welding labs, and workshops for assembly of construction systems. Classroom spaces include classrooms, seminar rooms, and studios.

The Building Construction department is a growing program with significant expectations from the contractor community for a higher volume of graduates with a state-of-the-art

education. While our students have enjoyed significant employment opportunities, many companies lament the need for a larger throughput of students. Virginia building contractors often go without or are forced to hire from outside the Commonwealth to satisfy their workforce needs. The Building Construction program's current space allocation is not sufficient to increase the program and impedes further development as classroom space is 'at capacity'.

### **3. Alignment to strategic plan:**

This project will supplement the following two previously authorized GOB projects: Institute for Critical Technology and Applied Science, Phase I and Building Construction Laboratory. This project will support Virginia Tech's strategic plan in the areas of Research and Scholarship, Graduate Education, and Undergraduate Education. When completed, both buildings will provide modern facilities to support a multitude of activities in each of these areas and further the following university goals:

Research and Scholarship:

1. Increase the stature of Virginia Tech as a national research university in quality of research and scholarship.
2. Increase the stature of Virginia Tech as a national research university in quantity of research and scholarship.

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.
4. Expand the university's leadership role in the effective integration of instructional technology and pedagogy.

## **D. Options Considered**

### Institute for Critical Technology and Applied Science I:

- Delaying the ICTAS, Phase I project to a future biennium is not a viable option because the college has a ten-year implementation plan to reach their research goal, and this building is critical to initiate the ICTAS program, which is a key element in this plan.
- Virginia Tech is requesting supplemental funding for the ICTAS I project now because timing is critical given the speed at which the fields of nanotechnology, sensor development, bioengineering, biomaterials, and communications technology are evolving. The timescale at which developments in basic science are reaching the application stage has dropped from years to months in many areas of related study. As such, institutions that seek to claim a primary position in these fields must do so in the immediate future. Delaying the project will place the ICTAS program at a competitive disadvantage for funding and projects because late entrants will be limited to working on

ancillary applications and data corroboration and that is not compatible with the University's top tier research objective.

Building Construction Laboratory:

- Delaying the Building Construction Laboratory project to a future biennium is not a viable option. The Building Construction department is a growing program with significant expectations from the contractor community for a higher volume of graduates with a state-of-the-art education.
- While our students have enjoyed significant employment opportunities, many companies lament the need for a larger throughput of students. Virginia building contractors often go without or are forced to hire from outside the Commonwealth to satisfy their workforce needs. The Building Construction program's current space allocation is not sufficient to increase the program and impedes further development as classroom space is 'at capacity'.

**E. Project Schedule Changes:**

NONE.