CapitalBudgetRequest

Construct Human & Agriculture Biosciences Building II

Overview

Agency	Virginia Cooperative Extension and Agricultural Experiment Station (229)
Project Code	none
Project Type	New Construction
Biennium	2016-2018
Budget Round	Initial Bill
Request Origin	Previously Submitted
Project Location	Roanoke Area
Facility/Campus	Other
Source of Request	Agency Request
Infrastructure Element	Laboratory
Contains significant technology costs? No	
Contains significant energy costs? No	

Agency Narrative

Agency Description

This project has been on the university's capital plan since 2009 and is included as a high priority to provide the Agricultural Experiment Station in the College of Agriculture and Life Sciences with expanded, modern research space. The Human and Agricultural Biosciences Building II is envisioned as a 92,000 gross square foot laboratory facility to provide programs with a combination of research laboratories, laboratory support space, research offices, faculty offices, and graduate student research space.

Justification

Program description:
This building is planned to be the second research building constructed in the Life Sciences Precinct expansion located directly north of the site of the planned Human and Agricultural Biosciences Building-Phase I research building. The proposed construction is a state-of-the-art laboratory facility to meet the modern demands of plant science research and discovery. The 92,000 gross square feet facility will be a combination of research laboratories, laboratory support space, research offices, faculty offices and graduate student research space which will be used to house a number of research programs in the facility. New technologies, such as genetic engineering and information technology, are revolutionizing plant sciences. The laboratory facilities at Virginia Tech are not sufficient to meet the demands of this rapidly evolving area and thus a new, modern laboratory is needed to support not only agricultural research but also forestry and other biomaterials research. College of Agriculture and Life Sciences departments of Entomology and Plant Pathology, Physiology and Weed Science currently housed in Price Hall may be among the departments occupying this new facility.

The university strategic plan, A Plan for a New Horizon includes the following principal strategies that will be supported by this project:
• Increasing the number of our programs recognized as among the best internationally
• Establishing a distinctive and globally recognized profile
• Emphasizing translational research and scholarship
• Building upon existing and emerging strengths
• Maintaining growth in research expenditures toward a target of $680 million by 2018.
• Increasing graduate enrollment toward a target of an additional 1,000 students
• Increasing the number of post-doctoral positions in STEM-H research areas.
• Creating meaningful partnerships with businesses and government entities to address complex problems by co-locating researchers and practitioners in "living labs"
• Increasing undergraduate involvement in meaningful research experiences and experiential learning (hands on minds on)
• Developing ways to integrate computational science/informatics and digital fluency for managing and analyzing complex data sets across a wide range of disciplines.

Existing facilities:
The laboratory facilities at Virginia Tech are not sufficient to meet the demands of rapidly evolving areas such as genetic engineering and

information technology thus a new, modern laboratory is needed.

Funding Plan:
The scope of this project is for Educational and General programs of the Cooperative Extension/Agricultural Experiment Station; thus, the funding plan calls for 100 percent general fund support.

Options considered:
Options considered but not pursued include leasing the desired space at an off-campus location or delaying the project. Leasing space off-campus would be costly and the transportation challenges of dispersion of instructional and research programs across multiple buildings will impact students and faculty negatively. Delaying the project would prevent the program from growing and conducting additional research.

Alternatives Considered

Costing Methodology

The University's project cost estimates are 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 envelope 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.

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 is necessary for energy efficiency lighting for academic work. Ceiling heights must be a minimum of 16 feet for sound attenuation in large lecture and assembly environments as required for effective pedagogy. Design priorities will include flexibility in classrooms and interior spaces to maximize the long-term programmatic functionality of the building. Building location and site design will focus on maintaining and creating that sense of place that is unique to Virginia Tech.

The University's role as the leading producer of technology intensive degrees relies upon a system of classrooms and instructional laboratories and research spaces that support technology driven work 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 and faculty to retrieve information and to communicate and to connect digitally with sites around campus and around the world. The use of electronic equipment by students and faculty requires dedicated power outlets corresponding to the seat/station count and power outlets in common areas. This requires automated audiovisual and classroom lighting controls, which also rely on wireless networks. 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.

Site development costs in this region are historically in the medium to high range and require deep foundations. This project may also require relocation of parking spaces at the planned site. 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.

Summary of Human and Agricultural Biosciences Building, Phase II Other Costs:
1. Hokie stone used as primary exterior building envelope material.
2. Building foundation deep caissons or piers to remediate unsound subsurface foundation conditions
3. Extensive subsurface rock excavation and removal.
4. Raised flooring systems throughout classrooms and laboratories for flexible use of electronic equipment

Agency Funding Request

Phase	Year	Fund	Subobject	Requested Amount
Construction	2018	0100 - General Fund	2322 - Construction, Buildings	$67,800,000
			Total	$67,800,000

Project Costs

Cost Type	Total Project Costs	Requested Funding	DGS Rec
Acquisition Cost	$0	$0	
Building & Built-in Equipment	$41,893,000	$41,893,000	
Sitework & Utility Construction	$6,311,000	$6,311,000	
Construction Cost Total	**$48,204,000**	**$48,204,000**	
DESIGN & RELATED SERVICE ITEMS			
A/E Basic Services	$5,455,000	$5,455,000	
A/E Reimbursables	$115,000	$115,000	
Specialty Consultants (Food Service, Acoustics, etc.)	$334,000	$334,000	
CM Design Phase Services	$730,000	$730,000	
Subsurface Investigations (Geotech, Soil Borings)	$104,000	$104,000	
Land Survey	$21,000	$21,000	
Archeological Survey	$0	$0	
Hazmat Survey & Design	$0	$0	
Value Engineering Services	$0	$0	
Cost Estimating Services	$42,000	$42,000	
Other Design & Related Services	$292,000	$292,000	
Design & Related Services Total	**$7,093,000**	**$7,093,000**	
INSPECTION & TESTING SERVICE ITEMS			
Project Inspection Services (inhouse or consultant)	$1,356,000	$1,356,000	
Project Testing Services (conc., steel, roofing, etc.)	$365,000	$365,000	
Inspection & Testing Services Total	**$1,721,000**	**$1,721,000**	
PROJECT MANAGEMENT & OTHER COST ITEMS			
Project Management (inhouse or consultant)	$814,000	$814,000	
Work By Owner	$104,000	$104,000	
BCOM Services	$10,000	$10,000	
Advertisements	$0	$0	
Printing & Reproduction	$0	$0	
Moving & Relocation Expenses	$83,000	$83,000	
Non Built-In Data and Voice Communications	$939,000	$939,000	
Signage	$52,000	$52,000	
Demolition	$0	$0	
Hazardous Material Abatement	$0	$0	
Utility Connection Fees	$0	$0	
Utility Relocations	$1,460,000	$1,460,000	
Commissioning	$678,000	$678,000	
Miscellaneous Other Costs	$1,839,000	$1,839,000	
Project Management & Other Costs Total	**$5,979,000**	**$5,979,000**	
Furnishings & Movable Equipment	$3,839,000	$3,839,000	
Construction Contingency	$964,000	$964,000	
TOTAL PROJECT COST	**$67,800,000**	**$67,800,000**	

Capacity

Cost Type	Unit of Measure	Units	Cost Per Unit
Acquisition Cost		0	$0
Construction Cost	GSF	92,000	$524
Total Project Cost	GSF	92,000	$737

Operating and Maintenance Costs (Agency)

Cost Type	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
GF Dollars	$0	$0	$1,042,360	$1,073,631	$1,105,840	$1,139,015
NGF Dollars	$0	$0	$0	$0	$0	$0
GF Positions	0.00	0.00	5.35	5.35	5.35	5.35
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
229-2_CR-3 HABB2.xls	625,664	Rob Mann	6/14/2015	CR-3_HABB-II

Workflow History

User Name	Claimed	Submitted	Step Name
Rob Mann	05/18/2015 11:51 PM	05/18/2015 11:51 PM	Enter Capital Budget Request
Rob Mann	05/18/2015 11:51 PM	05/18/2015 11:52 PM	Continue Drafting
Rob Mann	05/26/2015 03:55 PM	05/26/2015 03:56 PM	Continue Drafting
Jennifer Hundley	06/12/2015 05:33 PM	06/12/2015 05:39 PM	Continue Drafting
Rob Mann	06/13/2015 11:10 AM	06/13/2015 11:16 AM	Continue Drafting
Rob Mann	06/13/2015 02:26 PM	06/13/2015 02:31 PM	Agency Review Step 1
Rob Mann	06/13/2015 08:08 PM	06/13/2015 08:10 PM	Agency Review Step 1
Bob Broyden	06/14/2015 02:15 PM	06/14/2015 02:15 PM	Ready for DPB Submission
Ruth Anderson	06/15/2015 12:15 PM	06/15/2015 12:15 PM	DPB Review
Ruth Anderson	06/15/2015 12:16 PM	06/15/2015 12:26 PM	DPB Review
Ruth Anderson	06/15/2015 12:51 PM	06/15/2015 12:51 PM	DPB Review
Ruth Anderson	06/16/2015 11:15 AM	06/16/2015 11:16 AM	DPB Review
Anne Smith	06/19/2015 02:48 PM	06/19/2015 02:49 PM	DPB Review
Rob Mann	06/19/2015 03:21 PM	06/19/2015 03:22 PM	Agency Review Step 1
Bob Broyden	06/19/2015 03:45 PM	06/19/2015 03:45 PM	Ready for DPB Submission
			DPB Review