CapitalBudgetRequest

Improve Center Woods Complex

Overview

Agency	Virginia Cooperative Extension and Agricultural Experiment Station (229)
Project Code	none
Project Type	Improvements-Infrastructure Repairs
Biennium	2022-2024
Budget Round	Initial Bill
Bill Version	Regular Session
Request Type	Previously Submitted
Project Location	Roanoke Area
Facility/Campus	Other
Source of Request	Agency Request
Infrastructure Element	Agricultural Facility

Contains O & M costs? Yes

Contains significant technology costs? No

Contains significant energy costs? No

Possible that project will be used by other than a state or local governmental entity, or for research under sponsored programs (higher education)? No

Agency Narrative

Agency Description

Executive Summary:

The Department of Fish and Wildlife Conservation at Virginia Tech is home to nationally and internationally recognized undergraduate and graduate programs, including the only undergraduate program in fisheries management in the Commonwealth of Virginia. With five embedded federal scientists, close ties to the Virginia Department of Wildlife Resources, and one of the highest funded research programs at Virginia Tech, the department stands as a model of stakeholder integration under the land-grant university mission.

Over the last five years, the Department of Fish and Wildlife Conservation faculty were awarded $34.3 million in new research funding, consistently ranking in the top five in funding per FTE among all departments at Virginia Tech. The applied research conducted by the faculty and students of the department directly benefits conservation of game and non-game species in the Commonwealth through cooperative research and previsioning of federal funds. For example, over the past five years, 82 percent of the research dollars awarded to the department came from eight federal agencies. Ultimately, the work of the department benefits the outdoor recreation and tourism industry in Virginia. In 2011 the U.S. Fish and Wildlife Service and U.S. Census Bureau estimated that people engaged in wildlife associated recreation (including hunting, fishing, and wildlife watching) spent in $3.5 billion annually in Virginia and the Governor’s Office estimated tourism revenue at $26 billion in 2018.

Center Woods serves as the staging location for all field research conducted by the department and class field trips and plays a critical role in providing a quality learning experience for both undergraduate and graduate students. First-rate facilities can have significant impacts on the future of the department, the work of the faculty, and learning opportunities for students. The proximity of meeting rooms, research laboratories, facilities for holding animals under standardized experimental conditions, and a significant area of forest make Center Woods a place where students and collaborators can come to experience and engage in the modern tools and technologies of fish and wildlife conservation. A new building at Center Woods will assure students are better prepared and equipped to take on the emerging natural resources management and conservation challenges of the 21st century including sea level rise and its impact on coastal communities and the continuous increasing urbanization of Virginia’s population.

Many of the existing facilities of Center Woods have past their life expectancy and are now too small, outdated, and dilapidated to support the learning activities and research of the department. The size and condition of the facilities limits program operations and activities. This project request is for an $13.4 million General Fund appropriation to construct approximately 25,900 gross square feet of new office, research and

laboratory, field support, and field storage spaces at Center Woods in Blacksburg, Virginia.

Project Description:

This project will construct a new 25,900 GSF facility to support the needs of the Department of Fish and Wildlife Conservation within the College of Natural Resources and Environment. The facility will meet current program needs of the department through the development of four categories of space: office, research and laboratory, field support for research and laboratory, and field storage for research and laboratory.

This request also includes demolition of 12 existing facilities or structures which have surpassed their useful life and whose square footage will be replaced as required and with optimal efficiency in the new facility. Of this group, half have been assigned asset numbers and total approximately 14,000 GSF. The remaining half are non-numbered structures such as storage sheds and total approximately 3,000 GSF. The overall total gross square footage to be demolished is approximately 17,000 GSF.

The need for office space includes spaces for research faculty and graduate assistants, meeting rooms, and a separate open work space for staff of the Conservation Management Institute (CMI), an applied research center within the department. Each research faculty office is nominally connected with three open office stations for graduate and research assistants. Meeting rooms vary in size with two that are sized to fit up to eight people, and another, larger meeting room, to accommodate up to 40 people. The area for CMI professional staff will be an open office with work stations. The square footage is sized for current staffing numbers that include a modest growth projection. In total, the office space is approximately 4,970 assignable square feet.

Research and laboratory space is at the core of the mission of the Department of Fish and Wildlife Conservation. The current need is comprised of 10 new spaces, subdivided into three types. The first type is the wet lab at roughly 920 square feet. These labs are designed for experimentation and research that require multiple sinks with ample bench lengths, cabinetry, and hoods. The second and third types are roughly one-third of the space of a wet lab at approximately 280 square feet each. This area is based on a common size experiment room used in other research facilities connected with the department, such as those at Latham Hall. Type two is an animal project space designed for experiments and research that involve living organisms, these spaces require a sink, bench space and storage as well as a floor drain. Type three is for fabrication and project experimentation space that does not directly involve living organisms, and in that respect is a ‘clean’ space. All of these research and laboratory space types require a design emphasis on mobility (such as reconfigurable equipment), and frequency (such as power outlets at regular intervals along the bench), and similar attributes, to achieve maximum flexibility and ensure long-term viability. In total, there is a need for two wet labs, four animal project spaces and, four clean fabrication spaces, bringing the research and laboratory space to approximately 4,080 assignable square feet.

Field Support for research and laboratory spaces includes six field prep and storage spaces. These spaces are approximately 400 square feet and each serve either one previously described wet lab or two previously described animal project or clean fabrication project spaces. Also, due to the number of vehicles and boats in use by the department, there is a need for a two-story tall garage with a general shop area to perform routine repair and maintenance of the fleet. In sum, field support spaces total approximately 4,250 assignable square feet.

The final category of need is connected with field storage for research and laboratory functions. Field storage is divided into large equipment and smaller, personnel equipment. The total space for field storage is approximately 6,125 assignable square feet. Both the field storage and field support spaces are also serving to replace a percentage of the square footage that is being removed from the department’s portfolio due to the structures identified for demolition above.

These four categories totals approximately 19,425 assignable square feet and with an efficiency factor of 75 percent, totaling approximately 25,900 gross square feet.

The project scope, site development, and building configuration for the Improve Center Woods Complex project is consistent with the 2018 master plan to achieve key university objectives which maximize existing site utilization while meeting the needs of this century’s students and faculty. The site’s key objectives include appropriate building configuration, scale and massing, stormwater mitigation and site integration, and sustainability priorities consistent with the 2021 Climate Action Commitment.

Justification

Program Description:

The Department of Fish and Wildlife Conservation at Virginia Tech is home to nationally and internationally recognized undergraduate and graduate programs. With five embedded federal scientists, close ties to the Virginia Department of Wildlife Resources, and one of the highest funded research programs at Virginia Tech, the department stands as a model of stakeholder integration under the land-grant university mission.

Over the last five years, faculty were awarded $34.3 million in new research funding, consistently ranking in the top five in funding per FTE among all departments at Virginia Tech. Since 2005 the department’s undergraduate enrollment has increased by almost 62 percent and graduate enrollment has increased by 40 percent. Student enrollment, number of faculty and support staff, and research funding are all expected to continue to grow in the future in accordance with the department and college strategic plans.

Faculty, students, and staff of the Department of Fish and Wildlife Conservation conduct research and experiential learning in a complex of

structures centered near the middle of the south side of Center Woods. Center Woods is a mature wooded area covering approximately 45 acres along a ridge located roughly a quarter-mile south of the nearest campus development, the Smart Design and Construction Village. This location is a low traffic area and adjacent to core campus making it the ideal location for work with wild animals and fish, as well as the storage of field equipment. The department currently maintains and stores more than 20 boats and 30 trucks at the Center Woods location to support the department's fieldwork. Center Woods is also home to the Research Aviary which opened in September 2015. Other programs supported by facilities at Center Woods include the Black Bear Research Program, the Virginia Tech Shorebird Program, the Freshwater Mussel Propagation Laboratory, and the Conservation Aquaculture Program.

Center Woods serves as the staging location for all field research conducted by the department and class field trips. Center Woods plays a critical role in providing a quality learning experience for both undergraduate and graduate students. Over the past five years, undergraduates from the Department of Fish and Wildlife Conservation have been employed with organizations in 20 states and three foreign countries, including nine universities, 10 federal agencies, and seven state agencies from Alaska to Florida.

The university's strategic plan includes the following principle strategies that will be supported by the completion of this project:

• Increase extramural research expenditures.
• Achieve top US public land-grant ranking.
• Increase graduate student enrollment.
• Advance the rural Virginia initiative.
• Increase and sustain excellence in research, discovery, and creativity.
• Increase institutional impact and visibility.
• Increase representational diversity, cultural competency, and address critical societal issues impacting humanity and equity.
• Attract, retain, and develop the talents of students, faculty and staff prepared to serve both the local and global communities while also supporting lifelong engagement and learning.
• Continue to develop the physical campus and technology infrastructure.

Existing Facilities:

Several buildings at Center Woods are over 25 years old and were constructed of sheet metal and wood framing. Although they are still used as laboratory and office space because of current space limitations in other academic buildings, these structures have reached their functional life expectancy and present problems in safety and rodent control, many have been included in the list of structures to demolish as part of this project request. Laboratory spaces in these buildings are also outdated and do not provide the functionality needed to support modern laboratory and fieldwork in fish and wildlife sciences. For example, faculty are often working at field sites that might be contaminated with pollutants, disease, or both, but there are no facilities for cleaning and disinfecting field equipment to avoid spreading contaminants and disease among field sites.

Funding Plan:

The program of this project is entirely Educational and General for the Cooperative Extension/Agricultural Experiment Station programs; thus, the funding plan calls for 100 percent General Fund support for this $13.4 million project.

Options Considered:

Options considered and not selected include renovation of existing facilities and deferring the project to a future biennium. Renovation of existing facilities would be costly and likely produce an outcome that falls short of the project need due to the structural and material lifespan limitations of the existing facilities Deferring the project is also not desired because of the urgent need for improvements and the ongoing impact on the quality of extension outreach and research.

Methodology

Cost Explanation and Methodology:

A. Methods Used to Estimate Costs:

The method for estimating costs for the Improve Center Woods Complex project includes: 1) using unit costs in the Bureau of Capital Outlay Management's Construction Costs Database updated May 2020 with a regional market multiplier and a multiplier for soft costs; and 2) comparables as shown in the CR-1. Both methods are escalated to a construction midpoint of 2025 at 4.25 percent escalation in accordance with the instructions for developing the Six-Year Capital Outlay Plan and the rate utilized in the most recent CR-1 Project Planning form (as of July 2021).

On a total project cost basis, inclusive of design, construction, and equipment, the unit costs are $517 per gross square foot. The unit construction costs of the project are $344 per gross square foot, including self-performed construction work and $1.3 million for extraordinary utilities and sitework costs. The building types in this request are conference rooms, high-bay laboratory and office spaces in the Bureau of Capital Outlay Management's Construction Costs Database.

Virginia Tech's building construction for this off campus location reflects commercial quality similar to structures in the University's Corporate

Research Center. The estimates also include the cost of technology, specialized instruction, and energy efficiency goals of the institution. Project soft costs were informed from the university's on-campus database to capture regional costs.

Construction Manager at Risk is the preferred delivery method for this project due to complexity associated with the extended length of utilities to be run to the site, overall site logistics, wet/dry labs, and sustainability features that will be incorporated in concert with the university's climate action commitment.

The construction and demolition costs are based on the efforts of an external cost consultant, which analyzed the program requirements and compared to current market building comparable within university settings. Soft cost estimates developed by university staff are based on historical data costing analysis and trends over the past eight years. The project is anticipated to have moderate site conditions. Project costs are estimated to the mid-point of construction using 4.25 percent escalation in accordance with the instructions for developing the Six-Year Capital Outlay Plan.

B. The proposed costs include the following critical considerations to ensure the project fully meets the needs of the program and the university:

1) The property contains multiple potential building sites at the edge of a mature forest. The potential sites will need to be investigated prior to selecting the ideal site.

2) Once the ideal site is selected the utilities will need to be extended along the existing roadway. Power, domestic water, sanitary sewer, natural gas, technology, and storm water infrastructure will all be needed at the building site.

3) Mechanical equipment and building automation systems are designed and selected to meet performance requirements and to optimize total costs of ownership inclusive of energy costs and operations and maintenance costs. System selections are justified based on a 30-year economic life cycle analysis. Mechanical equipment will be covered and secured to maximize equipment life and service.

4) Academic buildings include interior glazing for energy efficiency, lighting for academic work, and to enhance pedagogy.

5) High-capacity wireless networks to support multiple devices (laptop computer, tablet computer, smartphone, and other WIFI devices) used simultaneously by students and faculty to retrieve information and to communicate and to connect digitally with sites around campus and around the world. Testing can utilize online applications requiring the capacity for an entire classroom to be connected simultaneously.

6) Power outlets corresponding to the seat/station count and power outlets in common areas will exceed the minimum code requirements by approximately 30 percent.

7) Automated audiovisual and lighting controls are included for all classroom and class laboratory spaces.

8) Climate controlled technology server rooms.

9) Communications infrastructure, both wired and wireless, is installed by a university operated auxiliary; thus, these costs are shown in the Other Costs section of the proposed budget.

10) Code and regulation are updated over time. Following are some changes that have occurred that were not in place on the comparable projects that were used to provide the parametric estimate for this project:

a. DEQ increased the storm water management requirements in 2014. Extensive BMP's and off-set credits are required to be installed and/ or purchased to comply with this Federal regulation.
b. ASHRE 90.1 energy code stipulates that buildings use less energy with each successive issuance of the code. The most recent change requires 18.5 percent decrease in energy usage. This translates into increased capital costs.
c. The state mandated High Performance Building Act provides three options for compliance. Virginia Tech utilized LEED V4 which mandates energy savings beyond the requirements of energy code, ASHRE 90.1. This increases the capital construction costs.
d. LEED additionally requires the commissioning of the energy savings components. The costs are on the order of 0.75-1.3 percent of the construction costs. The services are provided by a third party and are captured in the Other Costs section.

Funding Request

Phase	Year	Subobject	Fund	Amount
Full Funding	2023	2322 - Construction, Buildings	01000 - General Fund	$13,400,000
			Total	$13,400,000

Project Costs

Cost Type	Requested Funding

Acquisition Cost	$0
Building & Built-in Equipment	$8,897,522
Sitework & Utility Construction	$0
Construction Cost Total	**$8,897,522**
DESIGN & RELATED SERVICE ITEMS	
A/E Basic Services	$787,433
A/E Reimbursables	$5,339
Specialty Consultants (Food Service, Acoustics, etc.)	$11,567
CM Design Phase Services	$13,346
Subsurface Investigations (Geotech, Soil Borings)	$46,267
Land Survey	$2,669
Archeological Survey	$0
Hazmat Survey & Design	$178
Value Engineering Services	$16,016
Cost Estimating Services	$2,669
Other Design & Related Services	$43,598
Design & Related Services Total	**$929,082**
INSPECTION & TESTING SERVICE ITEMS	
Project Inspection Services (inhouse or consultant)	$230,446
Project Testing Services (conc., steel, roofing, etc.)	$65,842
Inspection & Testing Services Total	**$296,288**
PROJECT MANAGEMENT & OTHER COST ITEMS	
Project Management (inhouse or consultant)	$232,465
Work By Owner	$52,496
BCOM Services	$8,008
Advertisements	$5,339
Printing & Reproduction	$5,339
Moving & Relocation Expenses	$3,559
A/V Cabling	$0
IT Cabling	$0
Telephone Cabling	$0
A/V Equipment	$0
IT Equipment	$112,999
Telephone Equipment	$0
Signage	$26,693
Demolition	$70,744
Hazardous Material Abatement	$890
Utility Connection Fees	$44
Utility Relocations	$1,532,781
Commissioning	$49,826
Miscellaneous Other Costs	$109,440
Project Management & Other Costs Total	**$2,210,623**
Furnishings & Movable Equipment	$636,711
Construction Contingency	$429,774
TOTAL PROJECT COST	**$13,400,000**

Size and Scope

Cost Type	Unit of Measure	Units	Cost Per Unit
Acquisition Cost	GSF	0	$0
Construction Cost	GSF	25,900	$344

Total Project Cost	GSF	25,900	$517

Operating and Maintenance Costs

Cost Type	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
GF Dollars	$0	$0	$410,984	$423,313	$436,013	$449,093
NGF Dollars	$0	$0	$0	$0	$0	$0
GF Positions	0.00	0.00	2.20	2.20	2.20	2.20
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
Center Woods Program Chart 9.2021.pdf	89,423	Cassidy Limer	9/21/2021	
Gateway Building at Center Woods Feasibility Study_FINAL.pdf	19,474,741	Cassidy Limer	9/21/2021	
229-1 CR-1 Center Woods 9.20.21.xlsx	579,982	Rob Mann	9/22/2021	

Workflow History

User Name	Claimed	Submitted	Step Name	Submit Action
Cassidy Limer	09/15/2021 11:27 AM	09/15/2021 11:27 AM	Enter Capital Budget Request	Continue Working
Cassidy Limer	09/15/2021 11:27 AM	09/17/2021 04:52 PM	Continue Drafting	Continue Working
Rob Mann	09/17/2021 06:42 PM	09/17/2021 06:53 PM	Continue Drafting	Continue Working
Cassidy Limer	09/20/2021 08:12 AM	09/21/2021 11:18 AM	Continue Drafting	Continue Working
Cassidy Limer	09/21/2021 03:00 PM	09/21/2021 03:06 PM	Continue Drafting	Continue Working
Rob Mann	09/22/2021 08:33 AM	09/22/2021 09:00 AM	Continue Drafting	Continue Working
Cassidy Limer	09/22/2021 09:11 AM	09/22/2021 09:14 AM	Continue Drafting	Submit for Agency Review
Rob Mann	09/22/2021 03:47 PM	09/22/2021 04:04 PM	Agency Review Step 1	Ready for DPB Bulk Submit
Rob Mann	09/22/2021 04:05 PM	09/22/2021 04:09 PM	Ready for DPB Submission	Continue Review
Rob Mann	09/23/2021 04:45 PM	09/23/2021 04:45 PM	Ready for DPB Submission	Submit to DPB
			DPB Review	