CapitalBudgetRequest

Construct Animal Production and Livestock Facilities Phase II

Overview

Agency	Virginia Cooperative Extension and Agricultural Experiment Station (229)
Project Code	none
Project Type	New Construction
Biennium	2020-2022
Budget Round	Initial Bill
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 Virginia Tech Cooperative Extension/Agriculture Experiment Station agency has 37 facilities that contain approximately 250,000 gross square feet (GSF). The facilities are systemically deteriorated beyond repair and do not offer practical renovation or upgrade possibilities. The condition of the facilities adversely impacts operations and services provided by the program. The state authorized and appropriated Phase I of these improvements in Chapter 759/2016. Phase I is underway and scheduled to begin construction in early 2020. Phase II is essential to complete the scope of work to sustain and advance the commonwealth's valuable agriculture industry. This project will renew approximately 166,800 GSF of animal-based facilities in Montgomery County, renew and expand 28,000 GSF of aviary and fisheries facilities in Blacksburg, and renew and expand 40,200 GSF of aging and deteriorating facilities at the Agricultural Research and Extension Centers around the state.

Renew Animal-based Facilities in Montgomery County

This subproject completes the two-part effort to systematically replace approximately 292,800 GSF of animal-based facilities that have exceeded their useful life and are deteriorated beyond repair. This phase includes 99,600 GSF of renewed animal and multi-use facilities primarily serving beef cattle, equine, sheep, and poultry research. In addition, this project will replace and relocate College of Veterinary Medicine poultry virus holding facilities, hog, goat, calf barns, and related research facilities; the School of Plant and Environmental Sciences greenhouses and support facilities; and the Department of Entomology Urban Pest Control building and support facilities. The new facilities of this second component total approximately 64,200 GSF. A final component to this project includes a Meat, Produce, and Farm Products Outreach Center at approximately 3,000 GSF that will serve as an exhibition space on core campus for Agency 229 programs and feature a retail component for university farm product sales. In total, the three components of this project are approximately 166,800 GSF. The state authorized and appropriated Phase I of these improvements in Chapter 759/2016, Item 1.B. Phase I includes 126,000 GSF, primarily serving beef cattle, equine, poultry and swine research and is scheduled to begin construction in early 2020.

Renew and Expand Aviary and Fisheries Facilities in Blacksburg

This subproject will renew and expand approximately 28,000 GSF of the Center Woods Complex. This facility is located off of Plantation Road and serves the Fisheries and Wildlife program of the College of Natural Resources and Environment. Center Woods serves as the staging location for all field research conducted by the department and class field trips. It plays a critical role in providing a quality learning experience for both undergraduate and graduate students.

Renew and Expand Agricultural Research and Extension Centers Around the State Phase I

The Agricultural Research and Extension Centers (AREC) are a network of 11 centers strategically located throughout the state that emphasize close working relationships between Virginia Agricultural Experiment Station (VAES), Virginia Cooperative Extension, and the industries they work with. The mission of the system is to engage in innovative, leading-edge research to discover new scientific knowledge and create and disseminate science-based applications that ensure the wise use of agricultural, natural, and community resources while enhancing quality of life.

The facility needs outlined in this subproject will create a modern, state-of-the-art network of research and extension centers to raise the profile, accessibility and capacity of the AREC system to continue and enhance the valuable work that has been going on for decades. AREC leaders, faculty and staff are by nature extremely resourceful – adept at maximizing the usefulness and efficiency of resources available to them. Upgrading of facilities at the ARECs will greatly enhance the programs of the 229 colleges and provide significant visibility to the university.

This subproject is the initial part of a strategy to renew and expand all 11 AREC locations to meet requirements and goals of the Smart Farm Innovation Network Initiative. A thorough survey of each AREC by Virginia Agricultural Experiment Station staff, AREC directors, and superintendents was conducted in 2018. This subproject represents the top capital project priorities as produced by the 2018 survey; in total, approximately 40,200 GSF of new construction and renovation across the ARECs. The remaining capital project priorities identified in the survey will be described as a separate capital project request.

Project Description:

Renew Animal-based Facilities in Montgomery County

Based on an extensive programmatic analysis conducted by the College of Agriculture and Life Sciences, the Department of Animal and Poultry Science's Sheep, Poultry, Equine and Beef/Cattle animal programs each identified buildings and facilities that are deteriorated beyond repair and cannot continue to efficiently serve animal program production, animal housing, on-going instruction, and scientific research. Several other facilities, including an animal processing center, also requires a comprehensive update to serve the programs.

The proposed solution would replace facilities in Blacksburg and four nearby animal research centers. The full extent of new and renovated facilities required to support the animal and livestock programs have been separated into two phases to efficiently plan, stage, and execute the transition of animal programs into new or renovated facilities.

Chapter 759/2016 appropriated the Construct Livestock and Poultry Research Facilities Phase I project. The project will begin construction in early 2020, with plans for a phased occupancy through the summer of 2021. The Construct Livestock and Poultry Research Facilities Phase II project is needed to complete the restoration of the university livestock and poultry research facilities.

The second phase includes 12 new construction projects that contain approximately 99,600 square feet as well as demolition of approximately 62,500 square feet of dilapidated assets.

- Facilities serving multiple animal programs total 31,400 SF and include a new Equipment Storage and Repair Center (10,000 SF) at Moore Farm, to replace an existing shed, and a new Feed Mill with Grain and Commodity Storage Facility (16,400 SF) and Campus Composing Equipment Storage Shed (5,000 SF) at Kentland Farm.

- Beef/Cattle program facilities total 19,250 SF and include a new Calving Facility (6,250 SF) at Kentland Farm and a new Animal Processing Center (13,000 SF) to replace the outdated animal processing center occupying a portion of the Food Science Technology building on core campus.

- Equine program facilities total 24,850 SF and include a new Nutrition and Exercise Facility (6,000 SF), Storage Barn (2,700 SF), and Stallion Barn (2,150 SF) all located at the Smithfield Horse Center. There will also be a new Research/Extension Program Barn (14,000 SF) at Plantation Road.

- Sheep program facilities total 12,100 SF and include a new Sheep Center Facility (12,100 SF) located in proximity to the old Heth farmstead, just off Plantation Road.

- Poultry program facilities total 12,000 SF and include a new Hatchery Facility (2,000 SF) and Brooder House (10,000 SF). These Breeding/Genetics facilities will be constructed on pastureland at the Turkey Run Farm in Montgomery County, requiring a new access farm road, extension of water service, sanitary line and electric service from connections at Glade Road.

The College of Agriculture and Life Sciences, and the Virginia-Maryland College of Veterinary Medicine jointly occupy a tract of land adjacent to core campus. The colleges have used this land for their research-based programs and activities for several decades. As a product of recent master planning efforts, a new development district is now identified as the highest and best use for this land tract. This concept, along with the inefficiency of continued support for an aging research complex, has prompted the relocation of agricultural and animal-based assets from this tract to better long-term locations near the respective college facilities at more centralized campus holdings.

This portion of the project scope includes multiple new construction projects that contain approximately 64,200 square feet as well as demolition of approximately 75,400 square feet of outdated assets.

College of Agriculture and Life Sciences portion of the tract contains School of Plant and Environmental Sciences and Department of Entomology research assets. Each of the identified assets is slated for relocation with a strategy to increase efficiency by consolidating the program:

- Research and support facilities total approximately 26,200 SF and include a new Urban Pest Control and Plant Pathology Research Facility (approximately 8,200 SF), a new Pesticide Handling and Storage Facility (approximately 2,000 SF), and multiple new structures for storage, shop, and field office space (16,000 SF) in the Turfgrass Research Center area off Southgate Road.

- Greenhouse facilities total 8,000 SF and include several new greenhouse structures in the Life Sciences District on core campus. These structures are necessary to meet today's standards for modern greenhouse research facilities; half of the total greenhouse square footage will have the capability to support climate-specific research initiatives.

The Virginia-Maryland College of Veterinary Medicine portion of the tract contains a variety of animal-based research assets. Each of the identified assets is slated for relocation with a strategy to increase efficiency by consolidating the program:

- Veterinary Instruction and Animal Housing facilities total 13,000 SF and include new instructional barn space, housing facilities, and support facilities such as grain, hay, and equipment storage located in proximity of the Veterinary Medicine Complex in the Life Sciences District on core campus.

- Animal Bio-Safety Level 2 (ABSL2) Multi-Species Research facilities total 17,000 SF and include multiple ABSL2 structures. These facilities are a more efficient solution that constructing separate research facilities for each individual species and research initiative.

A final component to this project includes a Meat, Produce, and Farm Products Outreach Center (3,000 SF) to serve as a showcase for Agency 229 programs and feature opportunity for university farm product sales.

In total, the three components of this subproject include construction of multiple facilities across numerous sites on and adjacent to core campus that total approximately 166,800 square feet and demolition of approximately 138,000 square feet of deteriorated assets.

Renew and Expand Aviary and Fisheries Facilities in Blacksburg: First-rate facilities have significant impact on the department's future, faculty work, and student learning opportunities. The close proximity of classrooms, research laboratories, animal holding facilities, and significant wooded area make Center Woods a place where students, faculty, staff, and commercial partners can develop and engage in the new tools and approaches of fish and wildlife conservation. Center Woods equips students to take on the emerging natural resources management and conservation challenges of the 21st century.

To support enrollment and research activity growth within the College of Natural Resources and Environment and the Department of Fish and Wildlife Conservation, this project will construct a modern two-story rectangular structure with flexible spaces for offices, laboratory spaces, small collaborative meeting rooms, a large meeting room, "dirty" laboratories for preparing and cleaning field equipment, and animal behavior rooms. Part of the building will provide open spaces for truck and boat repair, maintenance, fabrication, and storage. This space requires only heating and will be located in the Center Woods complex.

The approximately 28,000 square foot expansion will include a building with ten faculty offices (1,600 SF), flexible space for thirty graduate student cubicles (1,200 SF), four smaller meeting/project rooms (1,200 SF), and a large meeting (1,067 SF). The building will also include two wet labs with sinks, cabinets, and hoods designed for flexibility (2,453 SF), 13 dirty labs for cleaning and preparing field equipment with direct outside access through oversized doors (13,312 SF), four experimental animal behavior laboratories to setup special behavioral experiments with animals (896 SF), three two-story bays with garage doors to provide workspace for truck and boat maintenance and repair and storage space for boats that house expensive and sensitive electronic equipment (3,400 SF). These bays will be heated through overhead heaters, but no cooling is required.

Finally, the building will also include a shop area (768 SF) next to the garage bays to provide space for fabrication of field equipment and experimental units. This space will include floor drains and overhead pull down electrical outlets. It will be heated through overhead heaters, but no cooling is required.

On the exterior of the building, there will be a one-story, open covered area (2,000 SF), adjacent to the garage bays, to store boats that that do not contain expensive and sensitive electronics. This space will be fenced to restrict access and prevent theft of small boat motors.

Total enclosed project space is approximately 26,000 GSF, and the covered but not enclosed space is approximately 2,000 GSF. The full building and subproject totals approximately 28,000 GSF.

Renew and Expand Agricultural Research and Extension Centers Around the State Phase I
Each AREC has minimum requirements to meet the basic needs of Research/Support, Extension/Outreach, Housing, and Infrastructure. This

project will address the top priority infrastructure and renovation needs for Agricultural Research and Extension Centers across the state. The balance of the needs are be addressed in a larger system-wide project.

- Alson H. Smith, Jr. AREC: This AREC has inadequate means by which to safely store pesticides and other chemicals, clean out sprayers and tanks, and dispose of wastewater and residual products to meet the safety requirements of pesticide storage and application. A renovation of Pesticide Building 0875 (5,400 SF) will provide this and be similar to the one constructed at the Tidewater AREC in 2007.

- Eastern Shore AREC: Because this AREC is situated in a more remote location of the state, it is difficult to find viable housing options. A new housing unit (1,200 SF) will provide students, faculty, or staff consistent short- to mid-term housing options necessary for on-site field research.

- Eastern Virginia AREC: Due to its small size, this AREC cannot easily engage with or host stakeholder groups and the local community, which is one of its primary functions through the Virginia Cooperative Extension. A renovation to Experiment Building 0880 (900 SF) will provide this space. This AREC also has inadequate areas for handling and processing seed materials; a seed drying addition to Building 0884 (200 SF) is required to fulfill the research goals of this AREC.

- Hampton Roads AREC: This AREC has inadequate controlled environment growth facilities. A new Growth Chamber Facility (750 SF) is a critical component of the research program and necessary to remain current with industry partners.

- Middleburg AREC: This AREC's primary research and outreach revolves around animal-based programs. A new Animal Teaching/Outreach Facility (7,500 SF) is necessary to support ongoing animal management, extension programs, and data collection.

- Reynolds Homestead FRRC: The existing laboratories at this AREC are in poor condition and not suitable for conducting appropriate experiments. A renovation of this laboratory area, Building 1240 Basement (1,240 SF), is necessary to fulfill the research goals of this AREC.

- Southern Piedmont AREC: This AREC has inadequate means by which to safely store pesticides and other chemicals, clean out sprayers and tanks, and dispose of wastewater and residual products to meet the safety requirements of pesticide storage and application. A new Pesticide Handling Facility (970 SF) will provide this and be similar to the one constructed at the Tidewater AREC in 2007.

- Shenandoah Valley AREC: Due to the increasing size of agricultural equipment and the diverse nature of activities and programs at this AREC, it is necessary to have a new Multi-Purpose Building (7,500 SF) that includes large volume shed space available with conditioned office space and restroom facilities for farm staff.

- Southwest Virginia AREC: This AREC's primary research and outreach revolves around animal-based programs. Expanded livestock space (2,500 SF) is necessary to support ongoing animal management, extension programs and data collection.

- Tidewater AREC: Due to the increasing size of agricultural equipment and the diverse nature of activities and programs at this AREC, it is necessary to have a new Multi-Purpose Building (9,000 SF) that includes large volume shed space available with conditioned office space and restroom facilities for farm staff. This AREC also has inadequate controlled environment growth facilities and requires a new Smart Greenhouse (3,000 SF); these facilities are a critical component of the research program and necessary to remain current with industry partners.

In total, this subproject includes multiple facilities across numerous sites across the commonwealth that total approximately 40,200 square feet.

The project scope, site development, and building configuration of the renew animal-based facilities, renew and expand Center Woods facilities, and renew and expand ARECs top priorities subprojects will be consistent with the 2018 master plan update and include universal accessibility design principles as appropriate.

Justification

Program Description:

Renew Animal-based Facilities in Montgomery County

Virginia agriculture industry represents a significant portion of commerce for the commonwealth. Virginia Tech's Cooperative Extension/Agriculture Experiment Station agency provides critical information to advance and protect these industries. The focus of this request targets the facility needs of animal-based programing activities that sustain and advance the commonwealth's valuable industries. Those sectors include sheep, poultry, swine, equine and beef/cattle, and the allied industries they drive. Of the overall Virginia agriculture industry, in gate receipts alone, these sectors reflect nearly $3.6 billion annually according to a 2014 study by the National Agriculture Statistics Service. Additional state revenues created by allied industries account for approximately $40 million annually for the commonwealth.

The profitability, and therefore the long-term sustainability, of these industries depend directly on the capacity of Virginia Tech's Cooperative Extension/Agriculture Experiment Station to create and translate novel new technologies. At present, the agency has 37 facilities totaling approximately 250,000 GSF that are approximately 40 to 60 years old. These facilities have served the commonwealth well past their useful life. Given the extraordinary age, condition, and buildup of deferred maintenance, maintenance and renovations are no longer viable options to

sustain asset serviceability. The university and state have reaped nearly two service lives from these building assets, and the conditions of most facilities are becoming a health concern for humans and animals.

Renew and Expand Aviary and Fisheries Facilities in Blacksburg

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 Game and Inland Fisheries, 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.

In 2016 faculty were awarded $8.9 million in new research funding, ranking fifth in total funding and first in funding per FTE among all departments at Virginia Tech. Since 2005, the department's undergraduate enrollment has increased by almost 60 percent and graduate enrollment has increased by 44 percent. Student enrollment, number of faculty and support staff, and research funding are all expected to grow in the future in accordance with the department and college strategic plans.

Students, faculty, and staff of the Department of Fish and Wildlife Conservation conduct research and experiential learning in an area on campus known as Center Woods. This location is a low traffic area adjacent to campus, which makes it the ideal location for work with wild animals and fish, and the storage of field equipment. The department currently maintains and stores more than 13 boats and 25 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, Virginia Tech Shorebird Program, Freshwater Mussel Propagation Laboratory, and Conservation Aquaculture Program.

Center Woods serves as the staging location for all field research conducted by the department and class field trips. It 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, ten federal agencies, and seven state agencies from Alaska to Florida.

Renew and Expand Agricultural Research and Extension Centers Around the State Phase I

VAES faculty are located at 11 Agricultural Research and Extension Centers and within the College of Agriculture and Life Sciences, the College of Natural Resources and Environment, and the Virginia-Maryland College of Veterinary Medicine at Virginia Tech. VAES research directly supports agriculture, the state's largest industry, accounting for one in every five jobs and providing an economic impact of approximately $55 billion annually with an additional annual contribution from the Forest Products industry of approximately $27 billion.

The ARECs serve as program sites for producers, school groups, and the state's citizens and as field-research sites for undergraduate and graduate students. AREC faculty and staff, along with faculty based at the main campus, deliver research and extension programs at these sites, which represent the commonwealth's diversity and take advantage of the unique characteristics and challenges found in each location.

The existing AREC facilities do not support demand for the program activities and require improvements and expansion. This project will bring the system up-to-date and provide capacity to meet client demand for services. Each AREC has minimum requirements to meet the basic needs of Research/Support, Extension/Outreach, Housing, and Infrastructure.

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 public, land-grant ranking.
• Increase graduate student enrollment.
• 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:

Renew Animal-based Facilities in Montgomery County

Many of the current Department of Animal and Poultry Science facilities are deteriorated beyond repair and do not offer practical renovation or upgrade possibilities. Other facilities require major renovation to continue providing the animal industries in Virginia invaluable information. Without these facilities, education and development of the next generation of leaders in animal agriculture would not be possible. Moreover, failure to support the growing animal industries across the commonwealth would negatively impact the financial stability of the economy.

Facilities at the tract of land jointly occupied by the College of Agriculture and Life Sciences and the Virginia-Maryland College of Veterinary

Medicine are the result of research grants from the past several decades. New buildings are interspersed with old underused and abandoned buildings. Most buildings are one-story and utilitarian in nature. Many buildings are open-sided and roofed but are not conditioned or enclosed on all four sides. These buildings, in general, are all research-focused and vary from office and laboratory environments to animal housing and supporting facilities.

Renew and Expand Aviary and Fisheries Facilities in Blacksburg

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 space limitations in other academic buildings, these structures have reached their functional life expectancy and present problems in safety and rodent control. Laboratory spaces in these buildings are also outdated and do not provide the functionality needed to support modern laboratory and field work in fish and wildlife sciences. For example, faculty are often working at field sites that might be contaminated with pollutants and/or diseases, but there are no facilities for cleaning and disinfecting field equipment to avoid spreading these contaminants and disease across field sites.

Renew and Expand Agricultural Research and Extension Centers Around the State Phase I

In 2018, a study was conducted by Virginia Agricultural Experiment Station staff and the AREC directors and superintendents to identify strategic facility needs relative to anticipated growth and investment in support of the Agency 229 Smart Farm Innovation Network Initiative. This capital project request identifies needs for expansion and/ or renovation of all 11 AREC sites.

This subproject will help bring the AREC system up-to-date and provide capacity to meet client demand for services. With the median age of facilities at some ARECs reaching over 50 and 60 years old, many existing research laboratories and supporting facilities across the ARECs are in poor condition, have reached their functional life expectancy, are not suitable for conducting experiments required to respond to modern agricultural issues, and cannot support demand for the program activities. The ARECs have inadequate means to meet safety requirements, conduct appropriate experiments, and support their ongoing research and extension programs. This project represents only the top priorities; the balance of the needs are be addressed in a larger system-wide project.

Overall, the agency’s animal production and livestock facilities are deteriorated and require repair or replacement to continue providing the animal industries in Virginia invaluable information. Without these facilities, education and development of the next generation of leaders in animal agriculture would not be possible. Moreover, failure to support and grow the growing animal industries across the commonwealth would negatively impact the financial stability of the economy.

Funding Plan:

The program for this project is 100 percent Educational and General for the Cooperative Extension/Agricultural Experiment Station packaged project; thus, the funding plan calls for 100 percent General Fund support for this $72.6 million project.

Options Considered:

Options considered include renovation of other existing animal facilities to house animals and deferral of the project. Renovation of other existing facilities would be costly as facilities would require major reconfigurations to the specified animal breed and population. Deferral of this project to a future biennium is also not desired because of the urgent need for improvements and the on-going impact on the quality of instruction and research.

Methodology

Cost Explanation and Methodology:

A. Methods Used to Estimate Costs:

The method for estimating costs for the Construct Animal Production and Livestock Facilities, Phase II project includes: 1) using unit costs in the Division of Engineering and Building’s Construction Costs Database updated March 2018 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 2023 at four and a half percent escalation in accordance with the instructions for developing the Six-Year Capital Outlay Plan.

On a total project cost basis, inclusive of design, construction, and equipment, the unit costs are $309 per gross square foot. The unit construction costs of the project are $207 per gross square foot, including self-performed construction work. The building types in this request are wet laboratory, dry laboratory, and classroom spaces in the Division of Engineering and Building’s Virginia Construction Costs Database.

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. The estimates also include the cost of technology, specialized instruction, and energy efficiency goals of the institution.

Design bid Build is the intended delivery method for this project.

B. Due to the similar nature of the three project components this section is combined and chiefly speaks to the increase expenses to manage

multiple projects located in different geographic regions of the commonwealth.

1) This capital project has packaged together many smaller subprojects in multiple locations around the commonwealth with several unique construction types. To make the projects attractive to the contracting community, the university will package similar types of construction in a geographic area resulting in many bid packages that will combine to deliver the entire capital project.

2) Multiple bid packages will increase the bidding services required by the A/E, thus increasing the soft costs for the project.

3) Virginia Tech will not realize economy of scale when constructing smaller buildings with specific needs such as herbicide storage, horse sheds, greenhouses, pesticide buildings, and multiple other unique facilities. This will increase construction costs.

4) Each bid package will require full time management by the General Contractor thus increasing the total quantity of contractor management across the entire capital project. This will increase construction costs.

5) Each geographic location will require DEQ permitting. This will impact costs to the construction line item as there will be a greater percentage of general condition as compared to one larger project at one geographic location. Due to the expenses associated with travel times for Virginia Tech forces, the university intends to use third party inspectors to ensure compliance with DEQ regulations. This will increase soft costs for DEQ related expenses.

6) The AREC projects that are remote from main campus will require increased third party clerk of the works inspections thus increase soft costs. Utilizing third party inspection in lieu of Virginia Tech forces will be more economical than the expenses associated with travel times from main campus.

7) Establishing utility connections for potable water, sewer, natural gas, electricity and internet to server the new facilities will increase the cost beyond a standard square footage estimation.

Funding Request

Phase	Year	Subobject	Fund	Amount
Full Funding	2021	2322 - Construction, Buildings	01000 - General Fund	$72,600,000
			Total	$72,600,000

Project Costs

Cost Type	Requested Funding
Acquisition Cost	$0
Building & Built-in Equipment	$48,629,846
Sitework & Utility Construction	$0
Construction Cost Total	**$48,629,846**
DESIGN & RELATED SERVICE ITEMS	
A/E Basic Services	$4,026,551
A/E Reimbursables	$116,712
Specialty Consultants (Food Service, Acoustics, etc.)	$301,505
CM Design Phase Services	$0
Subsurface Investigations (Geotech, Soil Borings)	$155,616
Land Survey	$63,219
Archeological Survey	$0
Hazmat Survey & Design	$9,726
Value Engineering Services	$184,793
Cost Estimating Services	$63,219
Other Design & Related Services	$1,108,760
Design & Related Services Total	**$6,030,101**
INSPECTION & TESTING SERVICE ITEMS	
Project Inspection Services (inhouse or consultant)	$1,434,580
Project Testing Services (conc., steel, roofing, etc.)	$690,544
Inspection & Testing Services Total	**$2,125,124**
PROJECT MANAGEMENT & OTHER COST ITEMS	

Project Management (inhouse or consultant)	$1,172,652
Work By Owner	$5,125,586
BCOM Services	$19,452
Advertisements	$9,726
Printing & Reproduction	$72,945
Moving & Relocation Expenses	$116,712
A/V Cabling	$0
IT Cabling	$0
Telephone Cabling	$0
A/V Equipment	$0
IT Equipment	$1,648,552
Telephone Equipment	$0
Signage	$48,630
Demolition	$0
Hazardous Material Abatement	$0
Utility Connection Fees	$145,890
Utility Relocations	$0
Commissioning	$53,493
Miscellaneous Other Costs	$826,707
Project Management & Other Costs Total	**$9,240,345**
Furnishings & Movable Equipment	$5,601,987
Construction Contingency	$972,597
TOTAL PROJECT COST	**$72,600,000**

Size and Scope

Cost Type	Unit of Measure	Units	Cost Per Unit
Acquisition Cost		0	$0
Construction Cost	GSF	234,838	$207
Total Project Cost	GSF	234,838	$309

Operating and Maintenance Costs

Cost Type	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
GF Dollars	$0	$0	$0	$422,662	$435,342	$448,402
NGF Dollars	$0	$0	$0	$0	$0	$0
GF Positions	0.00	0.00	0.00	7.05	7.05	7.05
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
HECO-2 229-18277 Livestock & Poultry Reseach Facilities 10.26.2016_DPB.pdf	872,484	Cassidy Limer	7/23/2019	
AREC Facilities Master Plan_Final_June 2019.pdf	22,962,115	Cassidy Limer	7/23/2019	
229-2 Animal Production Facilities Ph 2 Program Chart.pdf	101,631	Cassidy Limer	7/26/2019	
229-2 CR-1e Project Planner-Animal Prod and Livestock-VIRGINIA TECH-State Version.xlsx	620,358	Cassidy Limer	7/29/2019	

Workflow History

User Name	Claimed	Submitted	Step Name	Submit Action
Cassidy Limer	07/16/2019 04:27 PM	07/16/2019 04:27 PM	Enter Capital Budget Request	Continue Working
Cassidy Limer	07/16/2019 04:27 PM	07/25/2019 03:33 PM	Continue Drafting	Submit for Agency Review
Rob Mann	07/25/2019 04:36 PM	07/25/2019 04:36 PM	Agency Review Step 1	Return for Further Data Entry
Cassidy Limer	07/25/2019 05:37 PM	07/25/2019 08:52 PM	Continue Drafting	Continue Working
Cassidy Limer	07/25/2019 08:53 PM	07/26/2019 12:55 PM	Continue Drafting	Submit for Agency Review
Rob Mann	07/26/2019 02:23 PM	07/26/2019 02:32 PM	Agency Review Step 1	Ready for DPB Bulk Submit
Rob Mann	07/26/2019 02:37 PM	07/26/2019 02:37 PM	Ready for DPB Submission	Submit to DPB
Anne Smith	07/26/2019 05:12 PM	07/26/2019 05:12 PM	DPB Review	Return to Previous Submitter
Rob Mann	07/29/2019 10:08 AM	07/29/2019 10:08 AM	Agency Review Step 1	Return for Further Data Entry
Cassidy Limer	07/29/2019 02:47 PM	07/29/2019 03:00 PM	Continue Drafting	Continue Working
Jennifer Hundley	07/30/2019 10:51 AM	07/30/2019 10:57 AM	Continue Drafting	Submit for Agency Review
Rob Mann	07/30/2019 12:31 PM	07/30/2019 12:31 PM	Agency Review Step 1	Return for Further Data Entry
Cassidy Limer	07/30/2019 04:44 PM	07/30/2019 04:44 PM	Continue Drafting	Submit for Agency Review
Rob Mann	07/31/2019 10:48 AM	07/31/2019 10:52 AM	Agency Review Step 1	Ready for DPB Bulk Submit
Rob Mann	07/31/2019 03:29 PM	07/31/2019 03:29 PM	Ready for DPB Submission	Submit to DPB
			DPB Review	