BOARD OF VISITORS BUILDINGS AND GROUNDS COMMITTEE
MINUTES

Monday, August 22, 2022

Open Session Meeting
The Buildings and Grounds Committee of the Board of Visitors of Virginia Polytechnic Institute and State University convened on Monday, August 22, 2022 at 1:45 p.m. in open session in the Hokie Stone Room of the Newport News Center/Tech Center Research Park (700 Tech Center Parkway, Suite 305, Newport News, VA 23606). A quorum of the Committee was present.

Board of Visitors Members
Present: Tish Long (Rector)
Ed Baine
Sharon Brickhouse Martin
Shelly Butler Barlow (Committee Chair)
David Calhoun
Sandy Cupp Davis
Greta Harris (Committee Member)
C.T. Hill (Committee Member)
Brad Hobbs
Anna James
Melissa Nelson
Chris Petersen (Committee Member)
Jeff Veatch

Absent: Carrie Chenery

Constituent Representative(s) Present:
Robert Weiss (Faculty Representative)
Holli Drewry (Administrative and Professional Faculty Representative)
Serena Young (Staff Representative)
Jamal Ross (Undergraduate Student Representative)
Anna Buhle (Graduate Student Representative)

Also present were the following Virginia Tech staff members:
President Tim Sands, Lynsay Belshe, Bob Broyden, Brock Burroughs, Cyril Clarke, John Cusimano, Susan Duncan, Kari Evans, Mark Gess, Alan Grant, Kay Heidbreder, Patrick Hilt, Frances Keene, Chris Kiwus, Elizabeth McClanahan, Ken Miller, Liza Morris, Justin Noble, Kim O'Rourke, Mark Owczarski, Charlie Phlegar, Zohaib Qazi, Dan Sui, Dwyn Taylor, Jon Clark Teglas, Rob Viers, Tracy Vosburgh

1. Welcome: The Committee Chair convened the meeting and provided welcoming remarks.

2. Approval of the Minutes from the June 2022 Meeting: The Committee reviewed for approval the minutes from the June 2022 meeting.

   The minutes for the Committee’s June 2022 meeting were approved.
3. Overview of the Capital Construction Program: The Committee received an overview of the university’s capital construction program from Bob Broyden, Associate Vice President for Campus Planning and Capital Financing. The Campus Planning and Capital Financing team provides leadership in the administration and management of all major capital outlay projects, which are defined as projects with a total project cost of $3 million or more inclusive of all expenditures necessary to complete the project, and/or projects involving the construction of 5,000 square feet or more. The university’s current capital portfolio is valued at approximately $1.2 billion. Project managers work closely with sponsoring colleges and departments, future building users, and other project stakeholders to achieve project goals. Following milestone authorizations by the Board of Visitors, project managers coordinate all phases of a project from initiation through completion and close-out.

4. Acceptance of the Capital Project Status Report: The Committee reviewed for acceptance the quarterly capital project status report from Dwyn Taylor, Assistant Vice President for Capital Construction. The Committee receives this report at each meeting in an effort to remain apprised of status, milestones, and updates related to active capital projects.

The Committee accepted the quarterly capital project status report.

5. Update on Agricultural Facilities: The Committee received an update from Alan Grant, Dean of the College of Agriculture and Life Sciences, on agricultural facilities planning and construction. Dean Grant highlighted several areas of significant progress made to improve our agricultural facilities, including over $3.7 million in non-capital investments since 2019. The Committee expressed its appreciation for the Agricultural Research and Extension Center tours led by Dean Grant and team during this Board meeting.

6. Design Review for the Life, Health, Safety, Accessibility, and Code Compliance Project: The Committee reviewed for approval a Design Review for the Life, Health, Safety, Accessibility, and Code Compliance project. Ensuring the safety, health, and accessibility of the campus environment is critical to the long-term success of the university and its service to the Commonwealth. This project is the first priority of three high priority accessibility initiatives identified by the university in the Life, Health, Safety, Accessibility, and Code Compliance category of the 2018-2024 Capital Outlay Plan. The project is scoped to create a new accessible route on an existing primary pedestrian corridor which will support equal access to key facilities in the North Academic District. The project is in the working drawings phase with construction anticipated to begin November of 2022 and to attain substantial completion November of 2023. The university received total project funding of $10.4 million in Life, Health, Safety, Accessibility, and Code Compliance funds from the state for three projects, $4.97 million of which will be applied to the first priority project.

The Committee approved the Design Review for the Life, Health, Safety, Accessibility, and Code Compliance project.

7. Overview of the Campus Master Plan: The Committee received an overview of Beyond Boundaries 2047: The Campus Plan from Liza Morris, Assistant Vice President for Planning and University Architect. The current plan was approved by the Board of Visitors in November 2018. It guides the university as it imagines and develops the physical campus through 2047. The plan builds upon the Beyond Boundaries vision to ensure appropriate capacity in facilities and infrastructure. Since its completion, the plan has received two national achievement awards. In
2019, the Society for College and University Planning awarded the university the Excellence in Planning for an Existing Campus Merit Award for its innovative, collaborative, multidisciplinary, and integrated approaches to planning and design. In 2021, the university received the Excellence in Landscape for Open Space Planning Award (also awarded by the Society for College and University Planning) for universal design features within the plan set to boost campus accessibility and mobility.

8. **Resolution to Adopt the 2022 Student Life Village Master Plan:** The Committee held a robust discussion regarding the 2022 Student Life Village Master Plan. The university has prepared the Student Life Village master plan to guide the physical development of a new residential district in supplement to the 2018 Campus Master Plan. The plan sets forth a long-range vision that builds off the goals, objectives, and aspirations of the master plan and the university’s strategic plan. The planning process for the Student Life Village included engagement with campus executive leadership, a broad range of constituents including students, and was shaped by the technical expertise of campus stakeholders. The plan incorporates analysis of land use, residential program needs, landscape, building massing, scale, and siting. Additionally, the plan evaluated and incorporated layers of infrastructure including mobility and accessibility, utilities and stormwater, technology, and safety. The topic will be discussed in more detail at the November Board meeting.

9. **Future Agenda Items and Closing Remarks:** The Committee discussed potential topics for inclusion on future meeting agendas.

There being no further business, the meeting adjourned at 4:16 p.m.

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Joint Open Session with the Finance and Resource Management Committee

The Buildings and Grounds Committee and the Finance and Resource Management Committee of the Board of Visitors of Virginia Polytechnic Institute and State University convened on Monday, August 22, 2022 at 4:16 p.m. in joint open session in the Hokie Stone Room of the Newport News Center/Tech Center Research Park (700 Tech Center Parkway, Suite 305, Newport News, VA 23606). A quorum of the joint Committee was present.

Board of Visitors Members

Present:  
Tish Long (Rector)  
Ed Baine (Committee Chair)  
Sharon Brickhouse Martin  
Shelly Butler Barlow (Committee Chair)  
David Calhoun  
Sandy Cupp Davis  
Greta Harris (Committee Member)  
C.T. Hill (Committee Member)  
Brad Hobbs (Committee Member)  
Anna James (Committee Member)  
Melissa Nelson  
Chris Petersen (Committee Member)  
Jeff Veatch

Absent:  
Carrie Chenery

Constituent Representative(s) Present:

Robert Weiss (Faculty Representative)  
Holli Drewry (Administrative and Professional Faculty Representative)  
Serena Young (Staff Representative)  
Jamal Ross (Undergraduate Student Representative)  
Anna Buhle (Graduate Student Representative)

Also present were the following Virginia Tech staff members:

President Tim Sands, Callan Bartel, Lynsay Belshe, Bob Broyden, Brock Burroughs, Cyril Clarke, John Cusimano, Kari Evans, Mark Gess, Kay Heidbreder, Patrick Hilt, Frances Keene, Chris Kiwus, Elizabeth McClanahan, Nancy Meacham, Ken Miller, Liza Morris, Justin Noble, Kim O’Rourke, Mark Owczarski, Charlie Phlegar, Zohaib Qazi, Dan Sui, Don Taylor, Dwyn Taylor, Jon Clark Teglas, Rob Viers, Tracy Vosburgh

1. Approval of Resolution for a Capital Project for Building Envelope Improvements:  
The Committees reviewed a resolution for a capital project for building envelope improvements for approval. The resolution is for a $47.2 million authorization to complete building envelope improvements.

The Committees recommended the Resolution for Building Envelope Improvements to the full Board for approval.

There being no further business, the meeting adjourned at 4:31 p.m.

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* Requires Full Board Approval
# Discusses Enterprise Risk Management Topic(s)
+ Discusses Strategic Investment Priorities Topic(s)
Open Session Agenda

BUILDINGS AND GROUNDS COMMITTEE

Monday, August 22, 2022

Open session meeting begins at 1:30 p.m.
in the Hokie Stone Room of the Tech Center Research Park.

<table>
<thead>
<tr>
<th>Agenda Item</th>
<th>Reporting Responsibility</th>
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</thead>
<tbody>
<tr>
<td>1. Welcome</td>
<td>Committee Chair</td>
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<tr>
<td>2. Approval of the Minutes from the June 2022 Meeting</td>
<td>Committee Chair</td>
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<tr>
<td># + 3. Overview of the Capital Construction Program</td>
<td>Bob Broyden</td>
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<tr>
<td># + 4. Acceptance of the Capital Project Status Report</td>
<td>Dwyn Taylor</td>
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<tr>
<td>+ 5. Update on Agricultural Facilities</td>
<td>Alan Grant</td>
</tr>
<tr>
<td># + 7. Overview of the Campus Master Plan</td>
<td>Liza Morris</td>
</tr>
</tbody>
</table>
| * + 8. Resolution to Adopt the 2022 Student Life Village Master Plan | Bob Broyden  
Frances Keene  
Liza Morris |
| 9. Future Agenda Items and Closing Remarks | Committee Chair |

* Requires Full Board Approval
# Discusses Enterprise Risk Management Topic(s)
+ Discusses Strategic Investment Priorities Topic(s)
Open Joint Session Agenda

FINANCE AND RESOURCE MANAGEMENT COMMITTEE
AND BUILDINGS AND GROUNDS COMMITTEE

3:45 p.m.

Hokie Stone Room, Newport News Center / Tech Center Research Park

August 22, 2022

<table>
<thead>
<tr>
<th>Agenda Item</th>
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| * 1. Approval of Resolution for a Capital Project for Building Envelope Improvements | Ken Miller
                                              Chris Kiwus
                                              Bob Broyden |

* Requires full Board approval
# Discusses Enterprise Risk Management topic(s)
+ Discusses Strategic Investment Priorities topic(s)
**BOARD OF VISITORS BUILDINGS AND GROUNDS COMMITTEE MINUTES**

Tuesday, June 7, 2022

**Open Session Tour**
The Buildings and Grounds Committee of the Board of Visitors of Virginia Polytechnic Institute and State University met on Tuesday, June 7, 2022 at 8:00 a.m. for an urban forestry and campus landscape tour. The tour originated at the Lobby of the Inn at Virginia Tech and Skelton Conference Center (901 Prices Fork Road, Blacksburg) and concluded at the New Classroom Building (1455 Perry Street, Blacksburg). A quorum of the Buildings and Grounds Committee was present.

**Board of Visitors Members Present:**
- Shelly Butler Barlow (Committee Chair)
- Sharon Brickhouse Martin
- C.T. Hill
- Chris Petersen
- Mehul Sanghani
- Horacio Valeiras
- Preston White

**Board of Visitors Members Absent:**
- Tish Long (Rector)
- Ed Baine
- Carrie Chenery
- Greta Harris
- Anna James
- Jeff Veatch

**Constituent Representative(s) Present:**
- Paolo Fermin (Undergraduate Student Representative)

Also present were the following Virginia Tech staff members:
- Lynsay Belshe, Bob Broyden, Wendy Halsey, Jamie King, Chris Kiwus, Jack Leff, Megan Marsh, Jon Clark Teglas, Paul Winistorfer

**1. Urban Forestry and Campus Landscape Tour:** The Committee assembled in the lobby of the Inn for an urban forestry and campus landscape tour. The Division of Campus Planning, Infrastructure, and Facilities is responsible for coordinating efforts to assure that our buildings and grounds constantly express the sense of place and quality that is intrinsic to Virginia Tech. Interwoven into the Blacksburg campus landscape, among the daily activities of students and employees and the memories of proud alumni, are more than 10,000 trees. Like Hokie Stone-clad buildings, trees are enduring symbols of pride for the university community — steadfast, scenic, and integral to sustainability. The Committee was briefed by University Arborist, Jamie King – an alumnus of Virginia Tech – who has been at the center of deepening campus efforts around tree preservation and sustainability since his hire in 2019. In support of the Virginia Tech 2020 Climate Action Commitment, the university has invested in and actively leverages the grounds system as a living laboratory. Having earned Tree Campus USA designation for 14 years in a row, this recognition directly highlights the university’s commitment to tree preservation, community engagement, and experiential learning.

♦ Discusses Enterprise Risk Management topic(s).
* Requires full Board approval.
opportunities. The Committee also met several members of the university’s grounds crew. These team members maintain the functional, access, and aesthetic standards for 850 intensively managed acres on campus, 20 miles of roadway, 20 miles of sidewalks, 70 parking lots, and the 4-acre Duck Pond.

The tour concluded at 9:40 a.m.

Joint Open Session with the Finance and Resource Management Committee
The Buildings and Grounds Committee and the Finance and Resource Management Committee of the Board of Visitors of Virginia Polytechnic Institute and State University reconvened on Tuesday, June 7, 2022 at 10:00 a.m. in joint open session in Room 260 of the New Classroom Building (1455 Perry Street, Blacksburg). A quorum of the joint Committee was present.

Board of Visitors Members
Present: Tish Long (Rector) Shelly Butler Barlow (Committee Chair) Ed Baine (Committee Chair) Sharon Brickhouse Martin C.T. Hill Chris Petersen Mehul Sanghani Horacio Valeiras Preston White

Absent: Carrie Chenery Anna James Melissa Nelson Jeff Veatch Greta Harris

Constituent Representative(s) Present:
Paolo Fermin (Undergraduate Student Representative)

Also present were the following Virginia Tech staff members:
President Tim Sands, Callan Bartel, Lynsay Belshe, Eric Brooks, Bob Broyden, Brock Burroughs, Caroline Buscaglia, Al Cooper, Alisha Ebert, Kari Evans, David Gerrard, Alan Grant, Tony Haga, Wendy Halsey, Jim Hillman, Frances Keene, Chris Kiel, Chris Kiwus, Kayla Lambert, Jamie Lau, Jack Leff, Rob Mann, Megan Marsh, Elizabeth McClanahan, Nancy Meacham, Ken Miller, Liza Morris, Mike Mulhare, Heidi Myers, Kim O’Rourke, James Perkins, Charlie Phlegar, Dwyn Taylor, Jon Clark Teglas, Chris Wise

1. Approval of Resolution to Supplement the Student Wellness Improvements Authorization: The Committees reviewed for approval a resolution to supplement the student wellness improvements authorization. This request was for a $12 million supplement to adjust the total authorization for the Student Wellness Improvements project to $70 million to complete a renovation of War Memorial Hall.

* Discusses Enterprise Risk Management topic(s).
* Requires full Board approval.
The Committees recommended the Resolution to Supplement the Student Wellness Improvements Authorization to the full Board for approval.

There being no further business, the joint meeting adjourned at 10:08 a.m.

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Open Session Meeting
The Buildings and Grounds Committee of the Board of Visitors of Virginia Polytechnic Institute and State University reconvened on Tuesday, June 7, 2022 at 10:30 a.m. in open session in Room 260 of the New Classroom Building (1455 Perry Street, Blacksburg). A quorum of the Buildings and Grounds Committee was present.

Board of Visitors Members
Present: Tish Long (Rector) Shelly Butler Barlow (Committee Chair) C.T. Hill Chris Petersen Mehul Sanghani Horacio Valeiras
Absent: Ed Baine Sharon Brickhouse Martin Carrie Chenery Greta Harris Anna James Melissa Nelson Jeff Veatch Preston White

Constituent Representative(s) Present: Paolo Fermin (Undergraduate Student Representative)

Also present were the following Virginia Tech staff members: President Tim Sands, Lynsay Belshe, Eric Brooks, Caroline Buscaglia, Van Coble, Al Cooper, Jeff Earley, Alisha Ebert, Kari Evans, David Gerrard, Alan Grant, Tony Haga, Wendy Halsey, Jim Hillman, Patrick Hilt, Elizabeth Hooper, Frances Keene, Chris Kiel, Chris Kiwus, Kayla Lambert, Jamie Lau, Jack Leff, Joy Manning, Megan Marsh, Ross Mecham, Bernadette Mondy, Liza Morris, Mike Mulhare, Heidi Myers, Kim O'Rourke, James Perkins, Charlie Phlegar, Dan Sui, Dwyn Taylor, Jon Clark Teglitas, Lisa Wilkes

2. Welcome: The Committee Chair convened the meeting and provided welcoming remarks.

3. Consent Agenda: The Committee approved the items listed on the Consent Agenda.

   a. Approval of the Minutes from the April 4, 2022 Meeting: The Committee reviewed for approval the minutes from the April 4, 2022 meeting.

   ♦ Discusses Enterprise Risk Management topic(s).
   * Requires full Board approval.
b. Resolution to Approve a Public Utility Easement to the Town of Blacksburg – Fiber at the Virginia Tech Corporate Research Center: The Committee reviewed for approval a resolution authorizing the Interim Senior Vice President and Chief Business Officer to execute an amendment to the existing easement, or a new easement as may be appropriate, to the Town of Blacksburg. The Shenandoah Telecommunications Company (Shentel) has requested the university grant the easement to the town in the area of Research Center Drive between Forecast Drive and Pratt Drive on the Blacksburg campus in support of the town’s internet expansion project.

The Committee recommended the resolution to the full Board for approval.

c. Resolution to Approve a Public Utility Easement to the Town of Blacksburg – Squires Parking Lot: The Committee reviewed for approval a resolution authorizing the Interim Senior Vice President and Chief Business Officer to execute an easement to the Town of Blacksburg. The Town of Blacksburg has requested the university grant an easement for the installation and upgrade of a sanitary sewer line in the area of Squires Student Center, in support of the Blacksburg campus’ sanitary sewer capacity.

The Committee recommended the resolution to the full Board for approval.

d. Resolution to Approve a Joint Appointment to the New River Valley Regional Water Authority: The Committee reviewed for approval a resolution authorizing the re-appointment of Dr. William R. Knocke as the at-large member to the New River Valley Regional Water Authority for a new four-year term.

The Committee recommended the resolution to the full Board for approval.

e. Acceptance of the Capital Project Status Report: The Committee accepted the quarterly capital project status report.

4. Update on Agricultural Facilities: The Committee received an update on agricultural facilities planning and construction from Alan Grant, Dean of the College of Agriculture and Life Sciences, and David Gerrard, Head of the Department of Animal and Poultry Sciences. The progress of several capital and non-capital investments that will have significantly positive programmatic impact were highlighted.

5. Annual Report of the University Building Official: The Committee received the annual report from the University Building Official, Chris Kiel. The University Building Official has primary responsibility for the proper management for, and enforcement of, the Virginia Uniform Statewide Building Code (VUSBC) to ensure that construction projects conducted on property owned by the university are

* Discusses Enterprise Risk Management topic(s).
* Requires full Board approval.
completed in compliance with the code, related laws, and regulations. The office serves as primary liaison with outside regulatory agencies on code issues that affect the design, construction, and approval to occupy new university facilities or maintain existing facilities. The office also serves as an integral partner in ensuring physical accessibility on campus. The office was established in July 2010 after the Restructured Higher Education Financial and Administrative Operations Act of 2005 and the Management Agreement with the Commonwealth of Virginia granted the university the authority to designate its own building official. Organizationally, the University Building Official reports directly and exclusively to the Board of Visitors through the Buildings and Grounds Committee.

6. **Overview of the Facilities Renovations Program:** The Committee received an overview of the university’s renovations program from Assistant Vice President for Facilities Operations, Wendy Halsey, and Director of Renovations, Joy Manning. Facility improvements with a total project cost below $3 million or involve less than 5,000 gross square feet of new space are managed via the renovations program. Hundreds of renovations projects completed each year provide significant and direct impact to the university’s students, faculty, and staff.

7. **Future Agenda Items and Closing Remarks:** The Committee discussed potential topics for inclusion on future meeting agendas. Given that a new Committee will convene at the next meeting, in-depth overviews of both the capital construction program and the campus master plan are planned for the August meeting. It was noted that the timing of these overviews, paired with the substantial progress on the Student Life Village master plan – which the Committee received in-depth briefings during Board meetings in November 2021 and April 2022 – presents an opportunity to consider adding the Student Life Village study as a supplemental appendix to the aggregate campus master plan.

There being no further business, the meeting adjourned at 11:15 a.m.

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* Discusses Enterprise Risk Management topic(s).
* Requires full Board approval.
Open Joint Session Agenda

FINANCE AND RESOURCE MANAGEMENT COMMITTEE
AND BUILDINGS AND GROUNDS COMMITTEE

Room 260, New Classroom Building

10:00 a.m.

June 7, 2022

<table>
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Chris Kiwus  
Bob Broyden |

* Requires full Board approval.  
◆ Discusses Enterprise Risk Management topic(s).
Open Session Agenda

BUILDINGS AND GROUNDS COMMITTEE

Tuesday, June 7, 2022

* Bus departs for tour at 8:00 a.m. from the Lobby of the Inn at Virginia Tech and Skelton Conference Center.

Open session meeting begins at 10:30 a.m. in Room 260 of the New Classroom Building.

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<td>Joy Manning</td>
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<td>7. Future Agenda Items and Closing Remarks</td>
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♦ Discusses Enterprise Risk Management topic(s).
* Requires full Board approval.
OVERVIEW OF THE CAPITAL CONSTRUCTION PROGRAM

BOB BROYDEN
ASSOCIATE VICE PRESIDENT FOR CAMPUS PLANNING AND CAPITAL FINANCING
AUGUST 22, 2022
Program

Current portfolio:

- 18 authorized projects -- active and complete (w/in 1-year warranty phase)
- Total value of ~$1.2B
- Adds ~1.6M gross square feet (GSF) of new construction
- Renovates nearly 300K GSF of existing space
Overall Process

Pre-Authorization
- 6-Year Capital Plan
- Budget Request
- Project Approval

Post-Authorization
- Schematic Design
- Preliminary Design
- Working Drawings
- Construction

~ 2 years
~ 2 years
~ 2 years

Occupancy

Post-Authorization
- 1 year Warranty Phase

- Buildings and Grounds review & approval

Attachment H
Our Project Managers are the “Hub”
Ensuring Design Excellence

- Control Measures at each Phase of Design
- Broad Stakeholder Input
- Emphasize Partnership

Phases:
- Schematic Design
- Preliminary Design
- Working Drawings
- Market Analysis
- Construction Contract Awarded
Ensuring Construction Excellence

Competitive Sealed Bids
“Design-Bid-Build”

Construction Manager
at Risk

Design - Build
# New Upper Quad Residence Hall

**Status:**
- Project on track (50% complete)

**Next Actions:**
- Anticipated completion in August 2023

### BOV Capital Project Report

### CM at Risk
- BOV Authorized

**Project Title**
- New Upper Quad Residence Hall

### Project Details

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget (SM)</th>
<th>Construction Budget (SM)</th>
<th>New Gross (Gsf)</th>
<th>Renovation (Gsf)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Upper Quad Residence Hall</td>
<td>$424,000</td>
<td>$322,000</td>
<td>96,000</td>
<td>16,950</td>
<td></td>
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</table>

**Legend:**
- **Design**
- **Construction**
- **SD = Schematic Design**
- **PD = Preliminary Design**
- **WD = Working Drawings**

**Designer:** Clark - Nexsen

**Builder:** Vannoy
Discussion
The High Cost of Building a Better University

by Donald J. Guckert and Jeri Ripley King

Higher education design and construction project managers perform their work on the forward-edge of an ever-changing world. We face increasingly complex facilities, shortening timelines, proliferating code and regulatory requirements, emerging technologies, and growing concerns for indoor air quality and environmental sustainability. As we strive to keep abreast of these changes, we continue to hear one question from governing boards, administrators, and customers: “Why does it cost so much?”

We cannot deny that educational facilities cost more to build than many other types of construction. Even in the realm of education, there is a hierarchy ranging from sophisticated research facilities to parking structures. Yet, all our facilities seem to come at a premium cost. Lower cost alternatives are always available, but our institutions choose, instead, to build to a quality level that is above the baseline. These choices flow from the institution’s vision and strategic plan. The facilities we construct reflect the values and aspirations of our institutions.

A Sense of Place

Many universities are vying for national and international recognition. To do this, they compete for students, faculty, and research funding. More than ever before, university building designs are viewed as enhancing and preserving our institutional heritage, while creating an attractive environment in which to learn, discover, and live. We do not just build or renovate structures; we create a “sense of place.”

Clearly, this “sense of place” plays an important role in marketing the institution. In a 2001 study of college-bound high school seniors by Noel-Levitz, a market-research firm, the most notable experiences seniors encountered on their best college visit had to do with the appearance of the campus and its facilities. This study confirmed the report by the Carnegie Foundation for the Advancement of Teaching in 1986 that found 62 percent of prospective students thought that “appearance of the grounds and buildings was the most influential factor during a campus visit.”

The attractive appearance of the grounds and buildings comes at a cost. In constructing a new building for a campus environment, we seek elaborate designs that convey emotions and reactions that range from stimulating debates over architecture to communicating notions of continuity and timelessness. Often the little extras add a lot to the quality of the built campus environment: prominent building entrances, buried utilities in tunnels and chases, hidden downspouts in interior walls, screened waste receptacles, underground cooling towers, discrete access for service vehicles, and extensive landscaping and courtyards.

Land must be used carefully, with attention to gathering places and circulation. The need for green space must balance the need for building space. This drives us to optimize building footprints, by building skyward and below grade to conserve precious campus real estate. Multiple stories require more costly foundations and structures designed to withstand seismic and wind loading standards. Stair towers and elevators consume project resources and decrease the percentage of assignable space. All these factors lead to a higher cost per square foot.

Codes, Regulations, and Standards

The type of occupancy determines the applicable building code requirements. The large assemblies, found in most university facilities, dictate the highest level of life safety design. These code requirements have a tremendous impact on cost by requiring stair towers, fire rated corridors, fireproofing on structural members, fire alarm systems, sprinklers, and

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Don Guckert is associate vice president and director of the facilities services group at the University of Iowa, Cedar Falls, Iowa. He serves as dean of planning, design, and construction for APPA’s Institute for Facilities Management, and he can be reached at don-guckert@uiowa.edu. Jeri King is senior management analyst for planning, design, and construction at the University of Missouri-Columbia. She can be reached at kingj@missouri.edu.
An often-overlooked impact on cost is the expectation that construction activities will be conducted with minimal disruption to campus life.

smoke evacuation systems. Even the grade of carpeting in a university facility is selected to minimize concerns about flame spread.

In addition to codes, building design and construction must meet a myriad of legislative mandates and regulations. The list reads like alphabet soup: ADA, EPA, OSHA, and more. These laws and agencies govern building accessibility, removal of hazardous waste, asbestos, light ballasts, lead paint, storm water runoff, construction dust control, noise control, and more. Then, there are the state permits, local permits, contracts, agreements, and requirements by donors and funding agencies that must be managed.

The type of facility and occupancy also drives ventilation requirements. Labs require more ventilation than classrooms; classrooms require more ventilation than offices. Increased ventilation leads to upsizing HVAC systems, because outside air must be heated or cooled before it is delivered to the finished space. In a trend toward thwarting indoor air-quality problems, building mechanical codes have increased ventilation requirements far beyond the infrastructure capacities in many buildings built before the 1990s. The impact is profound on renovation projects where HVAC costs alone can consume the majority of the project budget.

**Institutional and Statutory Requirements**

Institutional and statutory requirements can drive up costs, too. Contractors must provide the highest industry coverage for insurance and bonding and construct in accordance with the highest industry standards. Architects may be required to furnish professional liability insurance. Public owners must follow state procurement statutes, which increase design and bidding costs and constrain the use of more cost effective delivery approaches. Many institutions require contractors to pay prevailing wages to their workers, equating to union-scale.

An often-overlooked impact on cost is the expectation that construction activities will be conducted with minimal disruption to campus life. The campus is a protected environment that accommodates learning, social interaction, discovery, living, dining, recreation, and public service. As invited guests into this haven, contractors are required to conduct their activities in a manner that minimizes the impact on the institution's primary missions. This is not a typical construction site. Project costs go up dramatically when universities restrict access to building sites; limit space for staging; require off-campus parking; enforce jobsite cleanliness, add fencing and protection; route construction vehicles around, rather than through the campus; limit noise and hours of operation; and impose complex phasing schemes to accommodate academic calendars.

**Time is Money**

Demanding schedules are an inherent part of higher education design and construction efforts. In general, shortening the timeline will drive up costs, lengthening the schedule will drive them down. An aggressive three-month renovation will be unaffordable if we only allow six weeks for completion of the work. Conversely, easing the schedule to six months will yield savings.

Contractors, when bidding a shortened schedule, will increase their bids to reflect overtime payments to workers, incentive payments to vendors, reduced worker productivity, and contingencies to cover the risks of falling behind schedule or completing late. On the other hand, extra time in the schedule reduces the contractor's risk, facilitates effective coordination among subcontractors, provides sufficient time for fabrication and delivery of materials and equipment, and other accommodations that result in a more cost-effective project delivery.

More often than not, we aggressively work toward inflexible milestones, such as semester starts and athletic event schedules. In research environments, the need to be up-and-running is paramount. When the higher education environment demands design and construction projects delivered on increasingly shorter timelines, this drives up the cost of university projects.

**Complexity**

The facilities we build are among the most challenging in the building construction industry. We build state-of-the-art research facilities, high occupancy performance and athletic venues, heavily trafficked and technological learning environments, and living and social environments that must appeal to a new generation. In short, we are constructing complex communities.

Program activities often dictate the need for a combination of classrooms, laboratories, meeting rooms, and offices. While grouping one type of activity in a facility would reduce costs, our buildings rarely house only one type of activity. In addi-

Continued on page 21
We are resolved not to repeat the shortsighted mistakes that were made by a previous generation of campus administrators and facilities managers.

Continued from page 19

tion, they must meet the functional requirements of the campus environment.

For example, classrooms and auditoriums are usually on the lower levels of a building and demand larger, column-free spans. The lower levels may then have to support upper floors designed to accommodate floor loadings for bookshelves and lab equipment. Inverting these spaces, by placing the column-free classrooms on the upper floors and the heavy load-bearing spaces on the lower floors, would be more cost effective, but less functional in a campus setting.

Our facilities must accommodate a mix of functions and heavy traffic. To manage this, we install complex building systems. Mechanical systems are designed for extreme conditions: hottest and coldest temperatures, humidity extremes, strictest climate control, and highest occupancy. We recognize that the design of a mechanical system represents the greatest opportunity for energy conservation in the future. Investments in energy efficient mechanical systems will yield a lower stream of future utility costs.

Maintainability, Sustainability, and Longevity

Good stewardship involves constructing buildings that will last, buildings that can be easily maintained, and buildings that can be converted to other programmatic or technologic uses in the future.

With many people using university facilities in frequent cycles throughout the course of a day, not only do the structures need to be able to handle this, but also the components of these facilities must be of a quality to withstand constant heavy use and abuse. Because of the campus building boom in the 1960s, we know all too well the consequences of cheaper designed and constructed facilities that were not built to survive the test of time. Our requirement for durability raises the price of doors, door hardware, carpeting, entrance mats, floor tile, and restroom fixtures, but it lowers the future costs of maintaining and replacing the lower quality products. We are resolved not to repeat the shortsighted mistakes that were made by a previous generation of campus administrators and facilities managers.

The way we use our facilities demands that we construct utility systems within the building to high reliability standards. This often results in paying for system redundancies, generators, uninterruptible power supply systems, harmonics reduction, and central utility systems. In addition, telecommunication/computer wiring and pathways are often over-built to enable user flexibility, and save the expense of rewiring and reconstructing walls or ceilings in the near future. We have learned that planning for tomorrow can cut down on the costs of retrofitting existing buildings.

Environmental sustainability is another factor having an increasing impact on construction costs within higher education. An emerging trend on campuses, facilities are being constructed with recyclable materials, materials are certified as manufactured from renewable sources, and building and system designs are using progressive methods and technologies to conserve energy and reduce the waste stream. Pursuing Leadership in Energy and Environmental Design, or LEED certification, developed by the U.S. Green Building Council, brings the prestige and positive publicity sought by many institutions seeking a progressive and environmentally sensitive image. However, this comes at a higher cost.

Making these long-term, sound, investment choices is what separates higher education from the vast array of other building environments. Higher education, more than any other built community and commercial environment, constructs buildings to last beyond our lifetimes. Every institution with an active building program envisions itself in existence into perpetuity. We make the choice to invest in higher quality construction of our campus, in part, because we have so many years ahead of us to reap the benefits on these initial investments.

Why Does it Cost so Much?

It is said that excellence is in the details. Thousands of details go into the construction of a university building. Rarely can we point to one item as driving the high project cost. The high cost of university construction is caused by the accumulation of investments in all of the details that go into building a quality facility. If we are to compete with the best institutions, we must meet the demands for higher quality facilities.

Construction costs mirror the values and aspirations of the institution. Our universities choose to provide stimulating, enriching environments that will serve our students, faculty, and researchers well into the future. We are building a better university, one that is built on the traditions of the past and constructed to compete for faculty and students into the next century. 

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CAPITAL PROJECTS UPDATE

PREPARED FOR THE BUILDINGS AND GROUNDS COMMITTEE OF THE BOARD OF VISITORS

DWYN TAYLOR
ASSISTANT VICE PRESIDENT FOR CAPITAL CONSTRUCTION
AUGUST 22, 2022
Project Portfolio

- 18 authorized projects -- active and complete (w/in 1-year warranty phase)
- Total value of ~$1.2B
- Adds ~1.6M gross square feet (GSF) of new construction
- Renovates nearly 300K GSF of existing space
## Capital Construction Executive Summary (Progressive)

**Date Prepared:** 15 JUL 2022

**LEGEND:**
- **SD = Schematic Design**
- **PD = Preliminary Design**
- **WD = Working Drawings**

### Project Title

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget ($M)</th>
<th>Construction Budget (SM) (Construction contract value)</th>
<th>New Const (GSF)</th>
<th>Renovation (GSF)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2024</th>
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<td>FYQ1</td>
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<td>FYQ4</td>
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</tbody>
</table>

**Note 1:** Non-VT project  
**Note 2:** Multiple GMPs results in design/construction overlap (fast track)  
**Note 3:** Project will be executed in prioritized sub-projects; first priority sub-project has a construction budget of $3.7M  

**TOTALS:** $1,265.3, 1,625,869, 258,357
Project Portfolio Distribution

BOV Authorized Projects

Legend:
- Corps
- Ldrshp & Mil Sci
- NUQ Residence Hall
- Holden Hall
- Tennis Ctr
- Improve
- Gas Fired Boiler
- U/G Science Labs
- Mitchell Hall
- Chiller Plant (Ph II)
- ADA Life Health Safety
- Data & Decision Sciences
- Hitt Hall
- Gas Fired Boiler
- CID LLC
- Innov Campus
- ADA Life Health Safety
- Livestock & Poultry Research
- Data & Decision Sciences
- Ldrshp & Mil Sci
- CID LLC
- Mitchell Hall
- Student Wellness
- Livestock & Poultry Research
- Innov Campus
- Student Wellness
- Gas Fired Boiler
- CID LLC
- Student Village
- Holden Hall
- CID LLC
- Data & Decision Sciences

Pre-Planning/Feasibility | Design | Construction | Warranty/Close-Out
---|---|---|---
NOV 2021 BOV | APR 2022 BOV | JUN 2022 BOV | AUG 2022 BOV
Legend:

- **Orange**: NOV 2021 BOV
- **Gray**: APR 2022 BOV
- **Blue**: JUN 2022 BOV
- **Maroon**: AUG 2022 BOV

**Supported/Non-VT Projects**

- **Pre-Planning/Feasibility**
- **Design**
- **Construction**
- **Warranty/Close-Out**

**Projects Listed:***

- **Gilbert St Proj**
- **Seafood AREC**
- **Smart Road (NVC)**
- **Multi-Modal Trans Fac**

**Timeline:**

- NOV 2021 BOV
- APR 2022 BOV
- JUN 2022 BOV
- AUG 2022 BOV
Capital Project Portfolio

Legend

- = In Design
- = Under Construction
- = Warranty/Complete
= Design only

Virginia Tech Campus

Innovation Campus

Kentland Farm

Legend
In Design
Projects In Design

New College of Business*
*A/E Procurement underway for design

GBAC LLCs (On Hold)

Mitchell Hall

Life, Health, Safety, Accessibility

Student Wellness Improvements*
*Pricing underway for construction

*A/E Procurement underway for design

*Pricing underway for construction
### Mitchell Hall
*(Replace Randolph Hall)*

**Status:**
- Project fully authorized for construction by General Assembly
- Schematic Design Phase complete
- Preliminary Design initiated
- CMaR pre-construction services contract is underway

**Next Actions:**
- BOV Preview (targeted for November 2022 session)

### Table: Project Title Details

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget (SM)</th>
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<td></td>
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</table>

Legend:
- **Design**
- **Construction**
- **SD = Schematic Design**
- **PD = Preliminary Design**
- **WD = Working Drawings**
Planning: New Business Building

Status:
- A/E procurement underway

Next Actions:
- Finalize A/E selection/contracting process and initiate design
- Targeting BOV Construction Authorization in summer 2023

CMaR
State Authorized

Designer: TBD
Builder: TBD

<table>
<thead>
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<th>Project Title</th>
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<td>$8.0</td>
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<td>104,000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Legend:
- SD = Schematic Design
- PD = Preliminary Design
- WD = Working Drawings
Status:
- Supplemental funding request approved by General Assembly for full scope of this project which also addresses other accessibility priorities on campus
- Working Drawings complete and under review by VT

Next Actions:
- Issue Invitation for Bids for construction contract

Designer: Quinn Evans
Builder: TBD
**Student Wellness Improvements**

**Status:**
- Design complete
- CMaR finalizing Guaranteed Maximum Price (GMP)

**Next Actions:**
- Complete negotiations for construction and award contract

**CM at Risk**
BOV Authorized

---

**Legend:**
- **Design**
- **Construction**

**SD = Schematic Design**
**PD = Preliminary Design**
**WD = Working Drawings**

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<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Designer:** Cannon Design

**Builder:** Whiting-Turner
Program originally conceived for this project is now envisioned to be included in Phase 1 of the Student Life Village.

This project may be closed and its budget redirected to support the program within the Student Life Village.

Status:

Next Actions:

Designer: TBD

Builder: TBD
Under Construction
Active Construction Projects

- Multi-Modal Transit Facility (ToB project)
- Data & Decisions Science Building
- Undergraduate Science Laboratory Building
- HITT Hall
- Corps Leadership & Military Science Building
- New Upper Quad Residence Hall
- Dietrick Renovation
- Innovation Campus Academic Building (Alexandria, VA)
- Livestock & Poultry Research Facilities (Various locations)
Innovation Campus - Academic Building

Status:
- Project on track (20% complete)
- Underground parking structure nearing completion
- Vertical construction underway

Next Actions:
- Anticipated completion in April 2024

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget (SM)</th>
<th>Construction Budget (SM)</th>
<th>New Const (GSP)</th>
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<td>$226.3</td>
<td>299,733</td>
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<td></td>
<td></td>
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</table>

Designer: SmithGroup

Builder: Whiting-Turner
### Undergraduate Science Laboratory Building

**Status:**
- Project on track (3% complete)

**Next Actions:**
- Anticipated completion in April 2024

---

**Legend:**
- **SD** = Schematic Design
- **PD** = Preliminary Design
- **WD** = Working Drawings

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<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget (SM)</th>
<th>Construction Budget (SM) (Construction contract value)</th>
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<tr>
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<td>102,746</td>
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<td></td>
<td></td>
<td></td>
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</table>

**Designer:** ZGF

**Builder:** Skanska

**CMAR State Authorized**
Dietrick Renovation
(& Quillen Family Spirit Plaza)

**Status:**
- Project on track (45% complete)

**Next Actions:**
- Anticipated completion in March 2023

**Design-Bid-Build BOV Authorized**

**Designer:** Hanbury

**Builder:** Branch Builds
Hitt Hall

Status:
- Project on track (18% complete)

Next Actions:
- Anticipated completion in March 2024

Designer: Cooper Cary
Builder: W M Jordan
**New Upper Quad Residence Hall**

**Status:**
- Project on track (50% complete)

**Next Actions:**
- Anticipated completion in August 2023

**Legend:**
- Design
- Construction
- SD = Schematic Design
- PD = Preliminary Design
- WD = Working Drawings

### Project Title: New Upper Quad Residence Hall

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<td>G2</td>
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**Designer:** Clark - Nexsen  
**Builder:** Vannoy
Corps Leadership & Military Science Building

Status:
• Project on track (54% complete)

Next Actions:
• Anticipated completion in July 2023

Designer: Clark - Nexsen
Builder: Vannoy

CM at Risk
BOV Authorized
Livestock & Poultry Research Facilities (Phase I)

Status:
- Construction underway on 4 of 6 bid packages:
  - Poultry: 99% complete
  - Swine: 80% complete
  - Equine: 99% complete
  - Beef: 95% complete

Next Actions:
- Supplemental funding request for 3 hay barns and demolition submitted to DEB for allocation

Legend:
- SD = Schematic Design
- PD = Preliminary Design
- WD = Working Drawings

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<th>Project Title</th>
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<td>$18.2</td>
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Designer: Spectrum Design
Builder: (Various)
Data & Decisions Sciences Building

Status:
- Project on track (80% complete)

Next Actions:
- Anticipated completion in April 2023

### Project Title
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**LEGEND:** Design — Construction

**State Authorized**

**CM at Risk**

**Designer:** Moseley

**Builder:** Kjellstrom & Lee
**Chiller Plant (Phase II)**

**Status:**
- Project complete

**Next Actions:**
- Contract finalization and close-out underway

---

**Project Title** | **Total Project Budget ($M)** | **Construction Budget ($M)** | **New Const (GSF)** | **Renovation (GSF)** | **Legend** | **CY 2022** | **CY 2023** | **CY 2024** | **CY 2025**
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
Chiller Plant Phase II | $42.9 | $32.7 | N/A | | **Design** | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q1 | Q2 | Q3 | Q4 | Q5 | Q6

**Designer:** AEI

**Builder:** Faulconer
Gas-Fired Boiler at Central Steam Plant

**Status:**
- Project complete

**Next Actions:**
- Waiting DEQ issuance of final boiler permit for alternative fuel source (fuel oil)

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<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget ($M)</th>
<th>Construction Budget (SM) (Construction contract value)</th>
<th>New Cost (csf)</th>
<th>Renovation (csf)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas-Fired Boiler at Central Steam Plant</td>
<td>$8.2</td>
<td>$3.8</td>
<td>N/A</td>
<td></td>
<td>FY22 Q3 Q4 Q1</td>
<td>FY23 Q3 Q4 Q1</td>
<td>FY24 Q3 Q4 Q1</td>
<td>FY25 Q3 Q4 Q1</td>
</tr>
</tbody>
</table>

**Legend:**
- SD = Schematic Design
- PD = Preliminary Design
- WD = Working Drawings

**Designer:** AEI

**Builder:** Southern Air
Holden Hall Renovation

Status:
- Project complete

Next Actions:
- Address punch list and close out contract

Designer: Moseley
Builder: WM Jordan

Legend:
- SD = Schematic Design
- PD = Preliminary Design
- WD = Working Drawings

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget ($) (SM)</th>
<th>Construction Budget ($) (Construction contract value)</th>
<th>New Const (GSM)</th>
<th>Renovation (GSM)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holden Hall Renovation</td>
<td>$74.9</td>
<td>$58.5</td>
<td>82,905</td>
<td>20,240</td>
<td>FY22 03 04</td>
<td>FY23 01 02</td>
<td>FY24 01 02</td>
<td>FY25 03 04</td>
</tr>
</tbody>
</table>
**Creativity & Innovation District LLC**

**Status:**
- Project complete

**Next Actions:**
- Close out contract

### Legend:
- **Design**
- **Construction**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget (SM)</th>
<th>Construction Budget (SM) (Construction contract value)</th>
<th>New Const (GSP)</th>
<th>Renovation (GSP)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>JAN-MAR</td>
<td>APR-JUN</td>
<td>JUL-SEP</td>
<td>OCT-DEC</td>
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</tr>
<tr>
<td>Creativity &amp; Innovation District Living Learning Community</td>
<td>$105.5</td>
<td>$85.3</td>
<td>232,000</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Design-Build**

**BOV Authorized**

Designer: Hanbury

Builder: WM Jordan
Improve Kentland Facilities (Phase II)

Status:
• APR Building construction complete
• BETR Building construction complete
• MRL Building construction complete

Next Actions:
• APR Building: None -- warranty period complete
• BETR Building: None -- warranty period complete
• MRL Building: Resolve manure treatment issue (design/warranty issue)

Designer: Spectrum Design
Builder(s): APR = Snyder; MRL & BETR = CPPI
**Multi-Modal Transit Facility**

**Status:**
- Construction underway (approx 50% complete)

**Next Actions:**
- Anticipated completion in April 2023

**Design-Bid-Build**
Town of Blacksburg (ToB) Project

**Site Plan**

---

**Project Title:** Multi-Modal Transit Facility

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget (SM)</th>
<th>Construction Budget (SM) (Construction contract value)</th>
<th>New Const (GSSF)</th>
<th>Renovation (GSSF)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>JAN-MAR</td>
<td>APR-JUN</td>
<td>OCT-DEC</td>
<td>JAN-MAR</td>
<td>APR-JUN</td>
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<td></td>
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<td></td>
<td></td>
<td>FY23</td>
<td>Q2</td>
<td>FY23</td>
<td>FY23</td>
<td>Q2</td>
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<td>FY24</td>
<td>Q3</td>
<td>FY24</td>
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<td></td>
<td>FY25</td>
<td>FY5</td>
<td>FY25</td>
<td>FY25</td>
<td>FY25</td>
</tr>
</tbody>
</table>

**Legend:**
- **SD** = Schematic Design
- **PD** = Preliminary Design
- **WD** = Working Drawings

**Designer:** Wendel (ToB contract)

**Builder:** WM Schlosser (ToB contract)
Definitions

- **State Authorized**: Authorized and funded (whole or in part) by the Virginia General Assembly
- **BOV Authorized**: Authorized and funded by the Virginia Tech Board of Visitors
- **Schematic Design Phase** = 0% to approx 20% design complete
- **Preliminary Design Phase** = Approx 20% to approx 50% design complete
- **Working Drawing Phase** = Approx 50% to 100% design complete
- **GMP** = Guaranteed Maximum Price
Construction Methods

Design-Bid-Build (DBB):
• A/E completes full design
• Invitation For Bid (IFB) issued...contract awarded to lowest bidder

Construction Manager at Risk (CMaR):
• A/E completes full design
• CMaR’s compete for project during early stage of design
• CMaR hired during schematic design phase
• When final designs are complete, CMaR develops Guaranteed Maximum Price (GMP)

Design-Build (D/B):
• A/E completes partial design (“criteria docs”)
• D/B teams (builder + A/E) compete for project and propose full price for project delivery
• Selection based upon “best value”
• D/B team completes design and executes construction
CAPITAL PROJECTS UPDATE

PREPARED FOR THE BUILDINGS AND GROUNDS COMMITTEE OF THE BOARD OF VISITORS

D W Y N  T A Y L O R
ASSISTANT VICE PRESIDENT FOR CAPITAL CONSTRUCTION
AUGUST 22, 2022
Mitchell Hall (Replace Randolph Hall)

CMaR
State Authorized

Status:
- Project fully authorized for construction by General Assembly
- Schematic Design Phase complete
- Preliminary Design initiated
- CMaR pre-construction services contract is underway

Next Actions:
- BOV Preview (targeted for November 2022 session)

Designer: Perkins & Will
Builder: Skanska
Planning: New Business Building

Status:
- A/E procurement underway

Next Actions:
- Finalize A/E selection/contracting process and initiate design
- Targeting BOV Construction Authorization in summer 2023

Designer: TBD
Builder: TBD
Status:
• Project on track (20% complete)
• Underground parking garage nearing completion
• Steel structure construction underway

Next Actions:
• Anticipated completion in April 2024
**Hitt Hall**

**Status:**
- Project on track (18% complete)

**Next Actions:**
- Anticipated completion in March 2024

**Summary Table**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget ($M)</th>
<th>Construction Budget ($M)</th>
<th>New Const (Gsf)</th>
<th>Renovation (Gsf)</th>
<th>CY 2022</th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>HITT Hall</td>
<td>(Note 2) $85.0 $65.5</td>
<td></td>
<td>101,000</td>
<td></td>
<td>JAN-MAR</td>
<td>APR-JUN</td>
<td>JUL-SEP</td>
<td>OCT-DEC</td>
</tr>
</tbody>
</table>

**Timeline Diagram**

- **Designer:** Cooper Cary
- **Builder:** W M Jordan
**Data & Decisions Sciences Building**

**Status:**
- Project on track (80% complete)

**Next Actions:**
- Anticipated completion in April 2023

<table>
<thead>
<tr>
<th>Designer</th>
<th>Builder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moseley</td>
<td>Kjellstrom &amp; Lee</td>
</tr>
</tbody>
</table>

**Legend:**
- SD = Schematic Design
- PD = Preliminary Design
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**Table: Project Title**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Total Project Budget ($)</th>
<th>Construction Budget ($)</th>
<th>New Const (GSF)</th>
<th>Renovation (GSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data &amp; Decision Sciences Building (D&amp;DS)</td>
<td>$78,000</td>
<td>$58,800</td>
<td>120,000</td>
<td></td>
</tr>
</tbody>
</table>

**CM at Risk**
- State Authorized
QUESTIONS?
UPDATE ON AGRICULTURAL FACILITIES

Alan L. Grant, Ph.D.
Dean of the College of Agriculture and Life Sciences

August 22, 2022
WHERE ARE VIRGINIA TECH’S AGRICULTURAL FACILITIES?

**11 ARECs**  
- 227 active ag buildings  
- 570,258 GSF  
- 4,626 acres

**Montgomery County**  
- 140 active ag buildings  
- 648,559 GSF  
- 3,379 acres

**TOTAL AG FACILITIES**  
- 367 active buildings  
- 1,218,817 GSF  
- 8,005 acres

**Agricultural Research And Extension Centers (ARECs)**  
**Virginia Agricultural Experiment Station**  
- Shenandoah Valley AREC  
  - Steeles Tavern  
  - Cattle  
  - Forestry  
- Alson H. Smith Jr. AREC  
  - Winchester  
  - Viticulture  
  - Pests  
  - Horticulture  
- Middleburg AREC  
  - Middleburg  
  - Herbs  
  - Cattle  
  - Forestry  
- Eastern Virginia AREC  
  - Warsaw  
  - Agriculture  
- Eastern Shore AREC  
  - Pungo  
  - Agriculture  
  - Disease  
- Virginia Seaboard AREC  
  - Hampton  
  - Aquaculture  
  - Microbiology  
  - Training  
  - Engineering  
- Southwest Virginia AREC  
  - Blacksburg  
  - Agriculture  
  - Disease  
  - Forestry  
  - Sheep  
- Reynolds Homestead Forest Resources Research Center  
  - Blacksburg  
  - Cattle  
  - Agriculture  
  - Disease  
  - Forestry  
  - Pests  
  - Environment  
  - Horticulture  
- Southern Piedmont AREC  
  - Suffolk  
  - Agriculture  
  - Savine  
- Tidewater AREC  
  - Suffolk  
  - Environment  
  - Horticulture  
- Hampton Roads AREC  
  - Virginia Beach  
  - Environment  
  - Horticulture
AG FACILITIES IMPROVEMENTS 3-YEAR UPDATE

- Since the AREC Bus Tour in February 2019...

Non-Capital Projects Completed: 57

- CALS Minor Projects: 34
- CALS Major Projects: 7
- Maintenance Reserve Projects: 16

Non-Capital Project Investment: $3,741,000
**AG FACILITIES IMPROVEMENTS 3-YEAR UPDATE**

Capital project development over the last 3 years:

<table>
<thead>
<tr>
<th>Phase</th>
<th>No. of New Buildings or Major Renovation</th>
<th>Gross Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Planning</td>
<td>41</td>
<td>137,916</td>
</tr>
<tr>
<td>Capital Budget Request</td>
<td>13</td>
<td>50,660</td>
</tr>
<tr>
<td>Design</td>
<td>3</td>
<td>27,860</td>
</tr>
<tr>
<td>Under Construction</td>
<td>7</td>
<td>99,091</td>
</tr>
<tr>
<td>Completed</td>
<td>4</td>
<td>48,340</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68</strong></td>
<td><strong>363,867</strong></td>
</tr>
</tbody>
</table>

- AREC Strategic Facility Plan completed
- 3 Federal earmark requests submitted for new facilities
- 27 acres of land acquired, 47 additional acres leased
- Exterior signage upgraded at 9 ARECs, 2 in progress.
PROGRESS SINCE LAST MEETING

- Electrical upgrades in cattle barn, sheep barn, two tobacco barns and workshop/equipment shed at SWAREC
- New public water system connection at TAREC
- Began planning renovation to Campbell Arena
- Developed wayfinding signage plan for Kentland Farm and Plantation Road area
- Began installation of new emergency generator for Entomology Quarantine Lab at Price’s Fork Research Center
- Installation underway for new LED lighting in four buildings at the Kentland Dairy Center and two buildings at the Urban Horticulture Center
Hampton Roads AREC Relocation Study

- General Assembly requested VAES to evaluate a plan for possible relocation of the Hampton Roads AREC (HB30 Chapter 2, Item C-25.10)
- Provided $500,000 to fund the study
- Report to include timeline, suitable location requirements, building costs, and moving costs.
- Kickoff meeting held July 22, 2022
- Term Contract planning consultant hired
- Study components:
  1. Current assets and program definition
  2. 1:1 replacement strategy
  3. Alternatives considered
- Report is due to General Assembly by December 15, 2022
TECHNOLOGY AND CONNECTIVITY
Technology and Connectivity

- Continue to await delivery of hardware for the following:
  - Routers and switches at all ARECs designated for 1 Gbps service
  - Additional wireless access points for both interior and exterior expansion of wifi service
  - 4G/5G radios for field-level wireless service at Eastern Va. AREC

- Final service pricing confirmed for 10 Gbps at Kentland Farm. Deployment of service expected in 6 weeks.
### College of Agriculture Life Sciences (CALS) Projects Status Report

**BUILDINGS AND GROUNDS COMMITTEE**

August 22, 2022

**Spectrum**

Snyder, CPPI

RRMM

E.T. Gresham

**Pkg 1: SIMCON**

Pkg 2: CPPI

Pkg 3: CPPI

Pkg 4: Clark Nexsen

Pkg 5: TBD

Pkg 6: TBD

### Projects in Construction

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Estimated Total Project Cost</th>
<th>Fund Source</th>
<th>Project Teams</th>
<th>Contract Completion Date</th>
<th>Project Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Kentland Facilities, Phase II</td>
<td>Applied Reproduction Facility (APRF): 4.10 SF barn at Van Med for piglet and breeding instruction. Bovine Reproduction, Teaching and Research (BRTF) Facility. 5,060 SF classroom building and 5,060 SF demonstration arena at livestock center on Plantation Road.</td>
<td>$14,463,000</td>
<td>Capital Outlay</td>
<td>Spectrum</td>
<td>Fall 2020</td>
<td>All projects have reached substantial completion and have certificate of occupancy. Minor corrective work is ongoing and owner furnished equipment installation is in progress.</td>
</tr>
<tr>
<td>New Virginia Seaford AREC Building</td>
<td>2,100 SF, 4-story building to replace existing aging and structurally unsatisfactory facility in Hampton, Virginia with state-of-the-art aquaculture research and extension facilities. Facility owned and developed by Virginia Tech Foundation.</td>
<td>$9,260,000</td>
<td>Various</td>
<td>MM</td>
<td>April 2022</td>
<td>Certificate of Occupancy has been received. Remaining punch list items are being addressed and change order work completed. Move-in is complete. Equipment from old building has been salvaged.</td>
</tr>
<tr>
<td>Livestock and Poultry Research Facilities, Phase I</td>
<td>Pkg 1: New Swine Center at Kentland Farm. Pkg 2: New Beef Nutrition Facility &amp; Hay Shed at Kentland Farm. Pkg 3: New Bovine 35 Carcass Collection Facility at the Turkey Research Center (Glade Rd.) Pkg 4: New Equine Barn &amp; Equipment Storage Building at Livestock Center (Plantation Rd.) Pkg 5: New Hay Shed at certified Horse Center, Fields west of US-460, and With Farm Pkg 6: Final Demolition of remaining facilities.</td>
<td>$21,074,000</td>
<td>Capital Outlay</td>
<td>Spectrum</td>
<td>Packages 1-4: Summer and Fall 2022</td>
<td>Packages 1-4 are under construction and progressing toward late summer / early fall completions. Packages 5-6: Design on hold pending funding appeal</td>
</tr>
</tbody>
</table>

### Projects in Design

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Estimated Total Project Cost</th>
<th>Fund Source</th>
<th>Project Teams</th>
<th>Contract Completion Date</th>
<th>Project Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>System-Wide AREC Improvements, Phase I</td>
<td>Review and expand 36,000 SF of aging and deteriorating AREC facilities - 12,160 SF of renovations and 24,000 SF of new construction storages, greenhouse, housing, research and outreach facilities - to update condition and expand capacity. 15 projects identified at 15 ARECs.</td>
<td>$56,850,000</td>
<td>Capital Outlay</td>
<td>TBD</td>
<td>TBD</td>
<td>Capital budget request submitted to state for consideration in 2023 budget.</td>
</tr>
<tr>
<td>Relocation of Hampton Roads AREC</td>
<td>Study requested by the General Assembly to evaluate possible relocation of the Hampton Roads AREC to a new site. Report to assess existing asset inventory, programmatic needs, new site requirements and possible alternatives.</td>
<td>$300,000</td>
<td>Capital Outlay</td>
<td>AECOM</td>
<td>Dec-22</td>
<td>Project has been initiated with term contract planned consultant. Evaluation is underway.</td>
</tr>
<tr>
<td>Human and Agricultural Biosciences Building II</td>
<td>Construct new research lab facility for the School of Plant and Environmental Sciences to co-locate numerous research teams in one location with modernized facilities to focus on studying climate change.</td>
<td>$68,900,000</td>
<td>Capital Outlay</td>
<td>EVS</td>
<td>TBD</td>
<td>Re-programming effort underway for a $51.5M construction target. Draft Feasibility report is under review.</td>
</tr>
</tbody>
</table>

### Projects Initiation / Planning Stage

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Estimated Total Project Cost</th>
<th>Fund Source</th>
<th>Project Teams</th>
<th>Contract Completion Date</th>
<th>Project Status</th>
</tr>
</thead>
</table>

### Non-Capital Projects

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Estimated Total Project Cost</th>
<th>Fund Source</th>
<th>Project Teams</th>
<th>Contract Completion Date</th>
<th>Project Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Projects (&lt;$50,000 each)</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>New Smith s- AREC New Horsehouse</td>
<td></td>
<td>$56,000</td>
<td>CALS / VAES</td>
<td>Ongoing</td>
<td>Complete</td>
<td></td>
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<tr>
<td>AH Smith s- AREC Greenhouse Controls Upgrade</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>SoilARC Tobacco Barn 3D</td>
<td></td>
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<tr>
<td>EVNSIC LED Lighting Upgrade</td>
<td></td>
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<tr>
<td>Southwest AREC Smart Tiller Power Connection</td>
<td></td>
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</tr>
<tr>
<td>Alphin-Scott Arena Roof Drain repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complete</td>
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</tr>
<tr>
<td>Repair failing roof drain.</td>
<td></td>
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</tbody>
</table>
| | | | | | | 1 of 5
## College of Agriculture Life Sciences (CALS) Projects Status Report

### BUILDINGS AND GROUNDS COMMITTEE
August 22, 2022

### PROJECTS IN CONSTRUCTION

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>PROJECT DESCRIPTION</th>
<th>ESTIMATED TOTAL PROJECT COST</th>
<th>FUND SOURCE</th>
<th>PROJECT TEAM</th>
<th>CONTRACT COMPLETION DATE</th>
<th>PROJECT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Projects (&lt;$25,000 each):</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middleburg AREC - Hot Walker Installation</td>
<td>Site prep and electrical hookup for installation of new horse exercising research equipment</td>
<td>$40,000</td>
<td>CALS / VAES</td>
<td>Multiple</td>
<td>Ongoing</td>
<td>In Progress</td>
</tr>
<tr>
<td>Recycled Homestead AREC - Scarifier Repairs</td>
<td>Repair deteriorating areas and trim on main AREC building. Installation of new working pens and open shed. Receiver and dryer connections for two buildings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Shenandoah Valley AREC - Working Pens</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Middleburg AREC - Laundry Hookup</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ARDC Exterior Signage Upgrade</td>
<td>Installation of 2 new exterior signs at each ARDC with refreshed designs to match current branding.</td>
<td>$80,000</td>
<td>CALS / VAES</td>
<td>Workzone</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Beef Barn Repairs</td>
<td>Exterior and interior demolition followed by the installation of new ceiling, hay loft flooring, doors, windows and lighting. This work was originally included in LPRF Phase 1, but removed due to scope concerns.</td>
<td>$1,064,000</td>
<td>Maintenance Reserve</td>
<td>HDH, FEA</td>
<td>Summer 2022</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Eastern Virginia AREC - Experiment Building Renovation</td>
<td>Renovation and upgrade of existing under-utilized office, workshop and meeting space. Building HVAC system has failed and is not working. Electrical and plumbing are outdated. Building is not ADA accessible. General condition is deteriorating.</td>
<td>$110,000</td>
<td>Maintenance Reserve</td>
<td>structures Group</td>
<td>TBD</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Eastern Shore AREC - Exterior Building Repairs</td>
<td>Multiple buildings are in need of exterior repairs. Head house (1214) and Shop Building (1215) is in need of structural repairs to walls and repointing. Implement Shed (1216), Sweet Potato Storage (1217), Produce Grading (1218), and Insectary (1220) need exterior waterproofing, door repair, pointing repairs and gutters.</td>
<td>$796,000</td>
<td>Maintenance Reserve</td>
<td>structures Group</td>
<td>TBD</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Tidewater AREC - Water system repair</td>
<td>Water line from well to main office complex is failing in multiple locations and requires frequent repairs, creating water quality concerns. Project is to connect to public water system with 1.5-inch water line.</td>
<td>$40,000</td>
<td>Maintenance Reserve</td>
<td>ET Gresham</td>
<td>Summer 2022</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Urban Horticulture Center - LED Lighting Retrofit</td>
<td>Replace failing fixtures to restore operational effectiveness and realize energy savings (3 buildings)</td>
<td>TBD</td>
<td>Energy Management</td>
<td>In House</td>
<td>TBD</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Kentland Farm Dairy Complex - LED Lighting Retrofit</td>
<td>Replace failing fixtures to restore operational effectiveness and realize energy savings (5 buildings)</td>
<td>TBD</td>
<td>Energy Management / CALS</td>
<td>In House</td>
<td>TBD</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Prices Fork Quarantine Lab - Emergency Generator</td>
<td>Installation of new backup generator for operational reliability at Entomology Quarantine Facility at Prices Fork Research Center.</td>
<td>$64,000</td>
<td>CALS</td>
<td>Gibson Engineering</td>
<td>TBD</td>
<td>Construction is underway.</td>
</tr>
<tr>
<td>Southwest Virginia AREC - Electrical Repairs</td>
<td>Replace aging electrical infrastructure (panels, wiring, lighting, receptacles) in 2 buildings</td>
<td>$50,000</td>
<td>Maintenance Reserve</td>
<td>Woodward Electrical</td>
<td>Summer 2022</td>
<td>Construction is underway.</td>
</tr>
</tbody>
</table>

### PROJECTS IN DESIGN

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>PROJECT DESCRIPTION</th>
<th>ESTIMATED TOTAL PROJECT COST</th>
<th>FUND SOURCE</th>
<th>PROJECT TEAM</th>
<th>PROJECT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Projects (&lt;$25,000 each):</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tidewater AREC Peanut Storage Shed</td>
<td>960 square foot prefabricated structure for field storage of harvested peanuts.</td>
<td>$27,000</td>
<td>CALS / VAES</td>
<td>Multiple</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Eastern Virginia AREC - RTK Tower Installation</td>
<td>Power and data connections for new GPS and Wi-Fi tower.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tidewater AREC - RTK Tower Installation</td>
<td>Power and data connections for new GPS and Wi-Fi tower.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Piedmont AREC - Packhouse Restroom Repairs</td>
<td>Repairs and upgrades for Packhouse Restroom to be ADA compliant</td>
<td>$122,000</td>
<td>Maintenance Reserve</td>
<td>Thompson &amp; Linton</td>
<td>TBD</td>
</tr>
<tr>
<td>PROJECT NAME</td>
<td>PROJECT DESCRIPTION</td>
<td>ESTIMATED TOTAL PROJECT COST</td>
<td>FUND SOURCE</td>
<td>PROJECT TEAM</td>
<td>CONTRACT COMPLETION DATE</td>
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</tr>
<tr>
<td>Heith Farm Shed &amp; Silo Demolition</td>
<td>Demolish two structures that are currently unsafe and operationally unnecessary</td>
<td>$140,000</td>
<td>CALS</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Prices Fork Quarantine Lab Room &amp; Renovation</td>
<td>Minor Modifications to improve workflow and safety within Entomology Quarantine Facility at Prices Fork Research Center.</td>
<td>$338,000</td>
<td>CALS</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>South Bimini AREC - Pavement repairs</td>
<td>Existing main parking lots (3) and primary internal roadways are deteriorating and need of repair; approximately 1,400 square feet of milling and 6,000 square feet of 2-inch asphalt overlay required.</td>
<td>$126,000</td>
<td>CALS / VAES</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Judging Pavilion Repairs</td>
<td>Interior and exterior demolition followed by installation of new flooring, doors, window, HVAC system, lighting, a covered walkway and exterior paint. This work was originally included in UPF Phase 1, but removed due to scope concerns.</td>
<td>$162,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Campbell Arena Repairs</td>
<td>New enclosure of the existing open-air steel structure constructed of metal panel siding over steel girts and posts. This work was originally included in UPF Phase 1, but removed due to scope concerns. Existing equitation barn to be repurposed for small animal research and extension activities.</td>
<td>$93,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Alison H. Smith Chilled Water System repairs</td>
<td>Existing chillers are leaking and utilize a refrigerant that is no longer readily available. System condition is deteriorating and in need of major repair and replacement.</td>
<td>$138,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Middleburg AREC Stable exterior repairs</td>
<td>Existing roof and windows are leaking. Several stals are unusable due to leaks. Several windows are rotted.</td>
<td>$100,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Middleburg AREC Clinic/Admin Building HVAC repairs</td>
<td>Two existing heat pump systems have failed during critical and ongoing research projects.</td>
<td>$40,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Tidewater AREC Main Office and Lab Roof Replacement</td>
<td>Existing roof is leaking causing damage to main lobby interior walls and classroom area.</td>
<td>$78,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Compost Facility (To support main campus &amp; surrounding farms)</td>
<td>This highly visible and prominent barn is for many purposes such as lambing of sheep, loafing facility, hay bale storage, emergency storage for weather affected crops, and equipment and parts storage. The condition of the roof and siding is poor, failing to provide the necessary weather protection. Without mitigation costs, the condition will deteriorate to the point of loss.</td>
<td>$3,023,000</td>
<td>Coker Composting &amp; Consulting</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Turkey Farm Processing Building Repair</td>
<td>The existing building was built in the 1950's and received heavy use for that purpose. Over the years its condition has continued to worsen and recent wind and snow storms have accelerated the deterioration. In order to secure research projects utilizing recently renovated fields, the Turkey Farm unit now needs to utilize this shed as a working facility for cattle. The work was originally included in UPF Phase 1, but removed due to scope concerns.</td>
<td>$140,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Moore Farm Barn DSGI Repairs</td>
<td>This highly visible and prominent barn is for many purposes such as lambing of sheep, loafing facility, hay bale storage, emergency storage for weather affected crops, and equipment and parts storage. The condition of the roof and siding is poor, failing to provide the necessary weather protection. Without mitigation costs, the condition will deteriorate to the point of loss.</td>
<td>$100,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Moore Farm Shed DSGI Repairs</td>
<td>This hay shed was built in the 1920's and received heavy use for that purpose. Over the years its condition has continued to worsen and recent wind and snow storms have accelerated the deterioration. In order to secure research projects utilizing recently renovated fields, the Beef Cattle unit now needs to utilize this shed as a working facility for cattle. The work was originally included in UPF Phase 1, but removed due to scope concerns.</td>
<td>$200,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>PROJECT NAME</td>
<td>PROJECT DESCRIPTION</td>
<td>ESTIMATED TOTAL PROJECT COST</td>
<td>FUND SOURCE</td>
<td>PROJECT TEAM</td>
<td>CONTRACT COMPLETION DATE</td>
</tr>
<tr>
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</tr>
<tr>
<td>Alson H. Smith AREC - Repair paving and parking</td>
<td>Existing asphalt parking lot and drives are deteriorating and in need of repaving.</td>
<td>$56,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Middletown AREC - Exterior Repairs</td>
<td>Existing several buildings are in need of repair/replacement due to advanced age. Annex (0812), Frame Beef Barn (0803), Living Barn (0807), Walking Barn and Milk House (0808), Loofing Barn (0810), Clinic/Admin Building (0821), Stable (0830). 8 run-in sheds (0799) are deteriorating and in need of repair or replacement. Corn House and Machinery Shed (0803) is in need of structural repairs. Arkansas of Annex (0812) roads and roads drainage corrections.</td>
<td>$130,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Shenandoah Valley AREC - Repair/Replace Sheep Barn</td>
<td>Sheep Barn (0804) has rotten posts at ground level and leaking roof. The building should be evaluated for repair or replacement.</td>
<td>$76,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Shenandoah Valley AREC - Renovate Carriage House</td>
<td>Renovate Carriage House to add two single-user public restrooms and welcome center area for visitors to the McCormick Farm.</td>
<td>TBD</td>
<td>CALS / VAES</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Southern Piedmont AREC - Building Repairs</td>
<td>Replace/replace siding and five deteriorated lean-to equipment storage sheds attached to four tobacco curing barns (0803A, 0803B, 0803C, 0803D)</td>
<td>$51,000</td>
<td>Maintenance Reserve</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Smithfield Equine Complex</td>
<td>Develop new facilities for Equine Complex on Plantation Road including covering outdoor areas, add bleachers, restrooms, announcer stand, fencing, quarantine facility.</td>
<td>TBD</td>
<td>Private</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Smithfield Equine Classroom Renovations, Phase 2</td>
<td>Completion of building envelope repairs, restroom repairs, accessibility improvements.</td>
<td>$105,000</td>
<td>Maintenance Reserve, CALS</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

**INFORMATION TECHNOLOGY (IT) EVALUATION & PROJECTS**

Updates through July 31, 2022. New information is in bold.

**PROJECTS COMPLETED**

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>PROJECT DESCRIPTION</th>
<th>ESTIMATED TOTAL PROJECT COST</th>
<th>FUND SOURCE</th>
<th>CONTRACT COMPLETION DATE</th>
<th>PROJECT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC A/V Upgrades, Phase 1</td>
<td>Installation of new audio and video equipment for ARECs to provide enhanced conferencing capability in meeting rooms. Phase 1 includes Alson H. Smith, Eastern Shore, Hampton Roads, Southern Piedmont and Tidewater ARECs.</td>
<td>$34,000</td>
<td>CALS / VAES</td>
<td>Fall 2019</td>
<td>Phase 1 (five ARECs) is complete. Scope and schedule for Phase 2 project (remaining ARECs) to be evaluated upon completion of Phase 1.</td>
</tr>
<tr>
<td>AREC A/V Upgrades, Phase 2</td>
<td>Installation of new audio and video equipment for ARECs to provide enhanced conferencing capability in larger conference rooms. Phase 2 includes Alson H. Smith, Hampton Roads, Southern Piedmont and Tidewater ARECs.</td>
<td>$238,000</td>
<td>CALS / VAES</td>
<td>Spring 2022</td>
<td>These 4 installations are complete.</td>
</tr>
<tr>
<td>PROJECT NAME</td>
<td>PROJECT DESCRIPTION</td>
<td>ESTIMATED TOTAL PROJECT COST</td>
<td>FUND SOURCE</td>
<td>PROJECT TEAM(s)</td>
<td>CONTRACT COMPLETION DATE</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------</td>
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<td>--------------------------</td>
</tr>
<tr>
<td>AreC Voice-Over Internet Protocol (VOIP) Conversion</td>
<td>Conversion of legacy voice telephone system at all ARECs to unified VOIP system matching voice service on campus.</td>
<td>$75,000</td>
<td>CALS/IT</td>
<td>Division of IT</td>
<td>TBD</td>
</tr>
<tr>
<td>Network Equipment Upgrades and Expansion</td>
<td>A project to upgrade routers and switches as well as expand in-building wireless and some external wireless has been started. This project will replace LifeGate as well as enhance wireless connectivity within AREC buildings and expand wi-f</td>
<td>$1,140,000</td>
<td>CALS/IT/VAES</td>
<td>Various</td>
<td>TBD</td>
</tr>
<tr>
<td>Real Time Kinematic (RTK)</td>
<td>A project to install RTX systems at select ARECs has been started. RTX enables the ARECs to implement precision agriculture research practices. RTX increases the accuracy over and above standard GPS from an accuracy of 2-4 meters to ~1 centimeter. Installation is planned for Spring 2022.</td>
<td>$123,000</td>
<td>CALS/IT</td>
<td>John Deere</td>
<td>Summer 2022</td>
</tr>
<tr>
<td>Eastern Virginia AreC Field-level Wireless (a SmartFarm Project)</td>
<td>Installation of new technology, similar to Wi-Fi but with better exterior coverage and security management, is fields at Eastern Virginia AREC to study the effectiveness of this equipment for supporting data-intensive agricultural, plant-based research as well as providing ready access to the internet and data networks.</td>
<td>$80,000</td>
<td>CALS/IT</td>
<td>Pierson Wireless</td>
<td>Summer 2022</td>
</tr>
<tr>
<td>AreC Voice-Over Internet Protocol (VOIP) Conversion</td>
<td>Conversion of legacy voice telephone system at all ARECs to unified VOIP system matching voice service on campus.</td>
<td>$245,000 Annually</td>
<td>CALS/VAES</td>
<td>Various</td>
<td>TBD</td>
</tr>
</tbody>
</table>

**Bandwidth and Internet Connectivity**
- Agricultural Research and Extension Center (AREC) projects have 200 MB service except Shenandoah Valley (50 MB), Southwest Virginia (10 MB), Northern Piedmont (50 MB), and Western Piedmont (30 MB).
- Virginia Tech’s E3S Division (2 MB), University of Virginia (75 MB), Virginia Tech (30 MB) and Virginia State (50 MB).
- Virginia Tech’s E3S Division (2 MB), University of Virginia (75 MB), Virginia Tech (30 MB) and Virginia State (50 MB).
- Northern Piedmont Center has a 50 MB cable connection. Goal is to upgrade all to at least 200 MB. 200 MB service has been ordered. Eastern Shore has been upgraded to 200 MB service. Revitalization is in the process of having an order placed for 100 MB service. A quote has been received for 100 MB service at Southwest Virginia. 1 Gbps service is now available at Ailes in Smith and Hampton Roads ARECs, and has been ordered for Southern Piedmont, and Tidewater. Eastern Shore AREC will be upgraded to 200 Mbps.

**AreC Voice-Over Internet Protocol (VOIP) Conversion**
- Conversion of legacy voice telephone system at all ARECs to unified VOIP system matching voice service on campus.
- $75,000
- CALL IT
- Division of IT
- Ongoing

**Network Equipment Upgrades and Expansion**
- A project to upgrade routers and switches as well as expand in-building wireless and some external wireless has been started. This project will replace LifeGate as well as enhance wireless connectivity within AREC buildings and expand wi-fi and the AREC network to additional buildings and some exterior spaces.
- $1,140,000
- CALL IT/VAES
- TBD
- TBD

**Real Time Kinematic (RTK)**
- A project to install RTX systems at select ARECs has been started. RTX enables the ARECs to implement precision agriculture research practices. RTX increases the accuracy over and above standard GPS from an accuracy of 2-4 meters to ~1 centimeter. Installation is planned for Spring 2022.
- $123,000
- CALL IT
- John Deere
- Summer 2022

**Eastern Virginia AreC Field-level Wireless (a SmartFarm Project)**
- Installation of new technology, similar to Wi-Fi but with better exterior coverage and security management, is fields at Eastern Virginia AREC to study the effectiveness of this equipment for supporting data-intensive agricultural, plant-based research as well as providing ready access to the internet and data networks.
- $80,000
- CALL IT
- Pierson Wireless
- Summer 2022

**Smart Farms Projects**
- A project has been initiated by faculty in the Department of Animal and Poultry Sciences, in partnership with CALS IT and Division of IT, to potentially install new technology, similar to Wi-Fi but with better exterior coverage and security management, on fields at Shenandoah Valley and Middleburg ARECs. The proposal is to study the effectiveness of this equipment for supporting data-intensive agricultural, animal-based research. Project has expanded to include faculty from the School of Plant and Environmental Sciences, and now includes work at Kentland Farm. An additional project in cooperation with DOIT, CALS, and CIIRW would create a 5G/CBRS testbed at Kentland Farm.
- TBD
- TBD

**Funding needs and sources are being resolved.**

**AreC Voice-Over Internet Protocol (VOIP) Conversion**
- Conversion of legacy voice telephone system at all ARECs to unified VOIP system matching voice service on campus.
- $245,000 Annually
- CALS/VAES
- Various
- TBD

**Network Equipment Upgrades and Expansion**
- A project to upgrade routers and switches as well as expand in-building wireless and some external wireless has been started. This project will replace LifeGate as well as enhance wireless connectivity within AREC buildings and expand wi-fi and the AREC network to additional buildings and some exterior spaces.
- $1,140,000
- CALL IT/VAES
- TBD
- TBD

**Real Time Kinematic (RTK)**
- A project to install RTX systems at select ARECs has been started. RTX enables the ARECs to implement precision agriculture research practices. RTX increases the accuracy over and above standard GPS from an accuracy of 2-4 meters to ~1 centimeter. Installation is planned for Spring 2022.
- $123,000
- CALL IT
- John Deere
- Summer 2022

**Eastern Virginia AreC Field-level Wireless (a SmartFarm Project)**
- Installation of new technology, similar to Wi-Fi but with better exterior coverage and security management, is fields at Eastern Virginia AREC to study the effectiveness of this equipment for supporting data-intensive agricultural, plant-based research as well as providing ready access to the internet and data networks.
- $80,000
- CALL IT
- Pierson Wireless
- Summer 2022

**Smart Farms Projects**
- A project has been initiated by faculty in the Department of Animal and Poultry Sciences, in partnership with CALS IT and Division of IT, to potentially install new technology, similar to Wi-Fi but with better exterior coverage and security management, on fields at Shenandoah Valley and Middleburg ARECs. The proposal is to study the effectiveness of this equipment for supporting data-intensive agricultural, animal-based research. Project has expanded to include faculty from the School of Plant and Environmental Sciences, and now includes work at Kentland Farm. An additional project in cooperation with DOIT, CALS, and CIIRW would create a 5G/CBRS testbed at Kentland Farm.
- TBD
- TBD

**Funding needs and sources are being resolved.**
Life, Health, Safety, Accessibility & Code Compliance

Board of Visitors Design Review

Liza L.C. Morris, NCARB
Assistant Vice President for Planning and University Architect

August 22, 2022
PROJECT INFORMATION

Scope:

Two Elevator Towers

Delivery method:

Design Bid Build

Total project budget:

$4,970,000* for Priority 1

Design phase:

Working Drawings

Estimated construction start:

November 2022

Estimated construction completion:

November 2023

* Total project budget of $10.4M includes priority 1, 2, and 3 accessibility projects
PROJECT LOCATION

Site

/ LIFE, HEALTH, SAFETY, ACCESSIBILITY & CODE COMPLIANCE

Attachment H
EXTERIOR RENDERING

Levels 2 + 3 elevators and breezeways

View to the south

Levels 1 + 2 elevators and breezeways

LIFE, HEALTH, SAFETY, ACCESSIBILITY & CODE COMPLIANCE
That the Design Review graphics be approved, and authorization be provided to continue with the project design consistent with the drawings shown.
DESIGN REVIEW FOR LIFE, HEALTH, SAFETY, ACCESSIBILITY & CODE COMPLIANCE

Ensuring the safety, health, and accessibility of the campus environment is critical to the long-term success of the university and its service to the Commonwealth. This project is the first priority of three high priority accessibility initiatives identified by the university in the Life, Health, Safety, Accessibility & Code Compliance category of the 2018-2024 Capital Outlay Plan. The project is scoped to create a new accessible route on an existing primary pedestrian corridor which will support equal access to key Education and General funded facilities in the North Academic District.

The project is in the working drawings phase with construction anticipated to begin November of 2022 and to attain substantial completion November of 2023. The university received total project funding of $10.4 million in Life, Health, Safety, Accessibility & Compliance funds from the state for three projects, $4.97 million of which will be applied to the first priority project.
Title of Project: 
Life, Health, Safety, Accessibility & Code Compliance

Location: 
The project is sited within the North Academic District, on an existing primary pedestrian route that connects the core of the academic enterprise with a transportation intensive portion of the district. This route runs between Derring Hall, Bishop-Favrao Hall, Cowgill Hall and Johnston Student Center, and is currently not an accessible route. Alternative accessible routes through this area of campus are circuitous, lengthy and difficult to locate and navigate.

Current Project Status and Schedule: 
The project will be delivered under design-bid-build procurement and is currently in the working drawings phase. Construction is anticipated to begin November of 2022 with substantial completion anticipated November of 2023.

Project Description: 
The project is approximately 1,524 gross square feet and is comprised of two separate standalone structures. The lower level of the two structures provides two, two-stop elevators from the Perry Street elevation (level 1) to the intermediate level between Derring Hall and Cowgill Hall (level 2). The upper level structure provides two, two-stop elevators from level 2 to the Tech Plaza level (level 3).

A new accessible route will be created by the completion of these structures which will provide a more direct accessible route to key academic facilities in the district and beyond.

Brief Program Description: 
Ensuring the safety, health, and accessibility of the campus environment is critical to the long-term success of the university and its service to the Commonwealth. This project is the first priority of three high priority accessibility initiatives identified by the university in the Life, Health, Safety, Accessibility & Code Compliance category of the 2018-2024 Capital Outlay Plan. The project is scoped to create a new accessible route on an existing primary pedestrian corridor which will support equal access to key Education and General funded facilities in the North Academic District. The project is a crucial component toward resolving the lack of accessible routes in this area of campus.
Contextual Issues and Design Intent:
The Northern Academic District straddles vertical topography created by two branches of Stroubles Creek. The land use pattern to address the steep slopes resulted in the creation of multiple levels in the campus environment. Many of these levels are currently not directly accessible via the primary pedestrian routes.

Alternative accessible routes through this area of campus are circuitous, lengthy and difficult to locate and navigate. This project is the first of three high priority accessibility initiatives identified by the university to address these issues in this area of campus.

Due to elevation changes exceeding thirty feet in the project area, with compressed spaces outside of existing building footprints, and extensive underground utilities, an accessible solution involving two structures, with each providing two, two-stop elevators, is the best method to create an accessible route in this area.

The proposed architecture is consistent with the Campus Design Principles, yet is also sensitive to the context of several adjacent brutalist-era buildings. Each proposed structure is designed as a wayfinding ‘lantern’. The base of each is rendered in precast concrete and responds to the context of bold brutalist framework while retaining a proportional relationship to the university’s collegiate gothic aesthetic. The top of each structure is designed with clear and semi-opaque glazing and will be lit from within. Vertical emphasis is achieved through the use of extruded aluminum fins. Integrated planters will be clad in Hokie Stone at the lower level.

Funding:
This project was first proposed under the 2018-2024 Capital Outlay Plan and received a portion of the initial request, $3.1 million in Life, Health, Safety, Accessibility & Compliance funding by the 2020 General Assembly. In the 2022-2028 Capital Outlay Plan, $7.3 million of supplemental General Fund support was requested and received. The total appropriation authorized by the General Assembly for this project is $10.4 million, $4.97 million of which will be applied to the first priority project.

Architect/Engineer:
Quinn Evans

Contractor:
TBD
OVERVIEW OF THE CAMPUS MASTER PLAN

LIZA MORRIS, ASSISTANT VICE PRESIDENT FOR PLANNING AND UNIVERSITY ARCHITECT

AUGUST 22, 2022
VT-Shaped Discovery

- VT SHAPED STUDENTS
- INTERDISCIPLINARY TEAMS
- PURPOSE-DRIVEN AND PERSON-CENTERED CURRICULUM

The VT student of 2047 learns by doing, creating, and engaging, service to humanity, and does so not in isolation or as an academic exercise but rather with the support of a community.
PLAN COMPONENTS

The Master Plan
Beyond Boundaries: The Campus Plan

National Capital Region (NCR) Plan
Technical Appendix
Accessibility Assessment
Space Utilization Study
Campus Life Report
IIHCC Partnerships Study
ARECs Online Atlas Documentation
VTC Roanoke Academic Health Center Plan
Gateway Study Plan
Parking & Transportation Master Plan
Drillfield Master Plan
Campus Wide Master Plan
Related Planning Efforts
Energy & Utilities Master Plan
PLAN DRIVERS

01 The VT Experience

02 Sense of Place

03 Connections

04 Growth

05 Access for All

06 Sustainability

Attachment H
CAMPUS VISION

01: The Central Spine
02: The Agricultural Belt
03: The Campus Districts
04: Tech + Town
05: The Infinite Loop
06: The Green Links
FRAMEWORKS

01 Academic & Research Framework
ENHANCING LEARNING AND RESEARCH ENVIRONMENTS

02 Strategic Partnerships Framework
EXPANDING STRATEGIC PARTNERSHIPS

03 Campus Life Framework
FOSTERING AN INCLUSIVE CAMPUS LIFE EXPERIENCE

04 Landscape Framework
PROTECTING THE LAND GRANT LEGACY

05 Mobility Framework
PROMOTING ACCESS AND MOBILITY
01 North Academic District
02 Northeast & Upper Quad District
03 Creativity & Innovation District
04 Student Life District
05 Life Sciences & Technology District
06 21st Century Living-Learning District
07 Intelligent Infrastructure Corridor
08 Peripheral Districts
  Athletics and Recreation
  Glade Road
  Oak Lane
ILLUSTRATIVE PLAN

VIRGINIA TECH: 2047

Proposed Building
Existing Building
DISCUSSION
Readahead: Virginia Tech Campus Master Plan earns national recognition for excellence in university planning

BUILDINGS AND GROUNDS COMMITTEE

August 22, 2022

https://vtx.vt.edu/articles/2019/08/ops-masterplanaward.html
Campus Master Plan
https://www.facilities.vt.edu/planning-financing/campus-master-plan.html
RESOLUTION FOR A CAPITAL PROJECT FOR BUILDING ENVELOPE IMPROVEMENTS

BOB BROYDEN, ASSOCIATE VICE PRESIDENT FOR CAMPUS PLANNING AND CAPITAL FINANCING

August 22, 2022
Building Envelope Improvements

- This request is a follow up to previous briefings to the Board of Visitors
- A new envelope system methodology was used during the 2000s and later modified because it did not meet the needs of the university
- The modified methodology is proven to meet our requirements
- The Board provided guidance to refurbish the envelope systems introduced in the 2000s that do not meet our requirements
- The university has developed a plan to refurbish the envelope systems of all the effected buildings
- Most of the buildings will be refurbished by an in-house team of stonemasons
- This request is for a capital project authorization to make improvements to the four buildings that exceed the capabilities of the in-house team
- The university has developed an entirely nongeneral fund financing plan for the project; thus, the project may be authorized by the Board
RESOLUTION FOR A CAPITAL PROJECT FOR BUILDING ENVELOPE IMPROVEMENTS

NOW, THEREFORE, BE IT RESOLVED, that the university be authorized to complete the Building Envelope Improvements project and to secure temporary short-term financing through any borrowing mechanism that, prior to such borrowing, has been approved by the Board, as applicable, in an aggregate principal amount not to exceed the $47.2 million authorized for the total project budget, plus related issuance costs and financing expenses.

RECOMMENDATION

That the resolution authorizing Virginia Tech to proceed with the Building Envelope Improvement Package be approved.

August 23, 2022