Committee Minutes

BUILDINGS AND GROUNDS COMMITTEE

Lavery Hall Room 330
10:00 a.m.

June 5, 2017

Open Session

Board Members Present: Mr. Mike Quillen, Mr. Steve Sturgis, Mr. Jeff Veatch

VPI & SU Staff:
Ms. Jennifer Altman, Deputy Chief Mac Babb, Mr. Van Coble, Mr. Joe Crane, Dr. Donna Dunay, Chief Kevin Foust, Dr. Mike Friedlander, Mr. Mark Gess, Mr. Rodd Hall, Mr. Brian Lee, Ms. Sarah McCoy, Mr. Mike Mulhare, Ms. Laura Neff-Henderson, Mr. Dwyn Taylor, Mr. Jonathan Teglas, Mr. Luke Watson

Guests:
Mr. David Reeping

1. **Tour of the Upper Quad and New Cadet Hall:** The Committee toured several Upper Quad facilities, including New Cadet Hall and the Liberal Arts Building.

2. **Opening Remarks and Approval of Minutes of the April 3, 2017 Meeting:** The Committee approved the minutes of the April 3, 2017 meeting.

* 3. **Resolution on Appointment to the Virginia Tech/Montgomery Regional Water Authority:** The Committee recommended full board approval of a resolution reappointing L. Allen Bowman as the at-large representative to the Virginia Tech/Montgomery Regional Water Authority for a four-year term expiring August 31, 2017.

* 4. **Resolution to Amend Policy on Smoking University Policy 1010:** The Committee recommended full board approval of a resolution to amend University Policy 1010, regarding smoking, to add electronic cigarette or vaping device to the definition of smoking. The resolution had previously been approved by university governance and the President.

* 5. **Resolution for Atmos Gas Line Easements to Serve the Virginia Tech Baseball Facilities:** The Committee recommended full board approval of a resolution authorizing the Vice President for Administration, his successors and/or assigns, to execute an easement or easements to extend Atmos gas lines to serve the planned

improvements to the Virginia Tech Baseball Facilities, located at Duck Pond Drive and Southgate Drive. Natural gas service is needed for the new baseball stadium and the Weaver Baseball Center as part of the Virginia Tech Baseball Facilities Improvements Project.

6. **Report on Unsolicited Public-Private Education Facilities and Infrastructure Act (PPEA) Proposal:** The Committee received a report on the unsolicited PPEA proposal received from Carilion Clinic to construct the Virginia Tech Carilion Clinic Health Science and Technology Building at the Riverside Center in Roanoke, which will house the Comparative Oncology Research Center and an education center.

   The chair recommended that the Committee or full board tour the Roanoke campus and facilities at a future meeting.

7. **University Building Official 2017 Annual Report:** The Committee received the seventh annual summary report of activities from the University Building Official (UBO). As set forth in University Policy 5407, the annual report identifies the code enforcement and building permit activities performed during the prior year.

8. **Capital Project Status Report**: The Committee received an update on the status of all capital projects.

   Mr. Veatch inquired whether the university plans to implement electronic access on buildings other than residence halls. Dr. Wilson and Chief Foust explained that there are no significant changes planned to current practice. Electronic access is generally used to limit entrance to residence halls and areas of safety concern (such as research laboratories, chemical storage facilities, etc.), but other facilities are open to the public during normal business hours or on an extended schedule due to class, laboratory, and studio hours. Campus police and security provide lock/unlock services and increased patrols of the facilities that are open late in the evenings, on weekends, or 24 hours a day and 7 days per week during the primary academic year (such as Burchard and Cowgill Halls and the Classroom Building).

9. **Open Discussion**

   The Chair solicited recommendations from the members regarding future agenda items for the Committee, particularly in light of the reorganization being considered by the Task Force on Board Structure and Governance. The members engaged in an informal discussion regarding previous topics they found valuable, current updates, and potential future agenda items; highlights included:

   - The Chair noted the administration's current work on the Campus Master Plan and that further updates would be presented to the Board this fall or early in 2018.
     - The Chair requested that a future location for a faculty-focused facility or function be considered as part of the Master Plan effort.

    - The scope of the Campus Master Plan has been expanded to include high-level facility and site planning for key Destination Areas, particularly the Intelligent Infrastructure and Human Centered Communities area.
- The Committee requested more frequent updates on campus safety and security initiatives.
    - The Police Department is currently considering whether body camera technology has advanced significantly enough to allow implementation on campus. Chief Foust has not applied the technology at this time due to concerns about battery life and reliability of activation in previous generation products, but early evaluations of newer product lines seem promising.
    - The initial Executive Director of the New River Valley Emergency Communications Regional Authority, Donna Brown, has tendered her notice to retire effective July 1, 2017. The Authority's Board has conducted a national search for her replacement and has made an offer to a well-qualified candidate.
- The members observed that parking and transportation are high priority concerns for students.
    - Dr. Wilson explained that the recent update to the Parking and Transportation Master Plan confirmed that there are ample parking spaces for single occupancy and commuter vehicles on campus as compared to the number of permits issued, but the spaces are not necessarily located in proximity to the highest-demand areas of campus. There are several expansions planned to alternative transportation programs to mitigate these concerns; in addition, the Campus Master Plan will recommend additional features to improve circulation throughout the Blacksburg campus.
    - The Blacksburg to National Capital Region bus service commenced today and is expected to increase in ridership over the summer and at the start of fall semester.
- The Committee is interested in learning more about utilities and energy management on campus, including the future of the Virginia Tech Electric Service.

The Chair thanked Mr. Sturgis for his service to the Committee.

Joint Open Session with Finance and Audit

Board Members Present: Mr. Charles T. Hill, Mr. Mike Quillen, Mr. Wayne Robinson, Mr. Steve Sturgis, Mr. Dennis Treacy, Mr. Horacio Valeiras, Mr. Jeff Veatch

VPI & SU Staff: Deputy Chief Mac Babb, Mr. Whit Babcock, Mr. Bob Broyden, Mr. John Cusimano, Mr. Brian Daniels, Dr. John Dooley, Chief Kevin Foust, Dr. Mike Friedlander, Mr. Rick Hinson, Mr. Tim Hodge, Ms. Elizabeth Hooper, Dr. Chris Kiwus, Ms. Sharon

Kurek, Ms. Nancy Meacham, Dr. Scott Midkiff, Mr. Ken Miller, Mr. Michael Mulhare, Ms. Laura Neff-Henderson, Mr. Van Noble, Mr. Mark Owczarski, Mr. Charles Phlegar, Dr. Scot Ransbottom, Mr. Aaron Reece, Ms. Lisa Royal, Mr. Charlie Ruble, Ms. Savita Sharma, Mr. M. Dwight Shelton Jr., Ms. Kayla Smith, Mr. Jason Soileau, Mr. Brad Sumpter, Mr. Dwyn Taylor, Mr. Jon Clark Teglas, Ms. Tracy Vosburgh, Dr. Sherwood Wilson

*** 1. Approval of Resolution for Capital Project for Renovations to Undergraduate Science Laboratories:** The Committees reviewed for approval a capital project resolution for renovations to Undergraduate Science Laboratories. In June 2016, the Board of Visitors approved a $600,000 planning authorization for renovations to repurpose deteriorated and inefficient faculty laboratory spaces to accommodate enrollment growth in engineering, life sciences, and other technology related majors that require introductory science laboratory courses.

Preliminary designs are nearly complete for renovations of spaces in Hahn Hall and Derring Hall to create seven new undergraduate laboratory instruction spaces, one science instruction classroom, and four multi-purpose science instruction spaces. These improvements will add 168 new stations to the sciences instruction laboratory inventory that will accommodate approximately 5,140 additional contact hours per academic year for high demand course sections in biology, chemistry, organic chemistry, and microbiology.

The project schedule calls for construction to begin in January 2018 and for the spaces to be available for scheduling fall 2018 course sections. To meet this schedule, the university is requesting authorization for the full project in June 2017 to ensure working drawings are complete by December 2017 and for construction to start in January 2018. These improvements are planned and sized in strategic coordination with the expected program of the new 105,000 gross square foot, state-funded, undergraduate science laboratory building expected to open in fall of 2020, pending construction funding from the state.

The total project costs inclusive of planning, construction, and equipment is $10 million. This request is for a $9.4 million supplement to complete working drawings design and construction of the renovation project. The university has prepared a funding plan of entirely nongeneral fund resources sufficient to fund the entire $10 million of project costs.

The Committees recommended the Resolution for Capital Project for Renovations to Undergraduate Science Laboratories to the full Board for approval.

2. **Motion for Closed Session:** Motion to begin closed session.

3. **Motion to Reconvene in Open Session**: Motion to reconvene in open session.

Joint Closed Session with Finance and Audit

Board Members Present: Mr. Charles T. Hill, Mr. Mike Quillen, Mr. Wayne Robinson, Mr. Steve Sturgis, Mr. Dennis Treacy, Mr. Horacio Valeiras, Mr. Jeff Veatch

VPI & SU Staff: Mr. Whit Babcock, Mr. Bob Broyden, Mr. Brian Daniels, Chief Kevin Foust, Mr. Mark Gess, Ms. Kay Heidbreder, Dr. Chris Kiwus, Ms. Sharon Kurek, Mr. Michael Mulhare, Mr. Charles Phlegar, Ms. Savita Sharma, Mr. M. Dwight Shelton Jr., Ms. Kayla Smith, Mr. Jason Soileau, Ms. Tracy Vosburgh, Dr. Sherwood Wilson

1. **Briefing on Probable Litigation:** The Committees met in closed session to receive a briefing on probable litigation.

There being no further business, the meeting adjourned at 12:25 p.m.

*__Requires full Board approval__

CARILION CLINIC AECOM SKANSKA

Carilion Clinic AECOM Skanska

HST, CORC Research and Education Building

PPEA Proposal - Conceptual Stage

April 28, 2017

CARILION CLINIC

April 28, 2017

Sherwood G. Wilson
Vice President for Administration
Virginia Polytechnic Institute and State University
Burruss Hall 201
800 Drillfield Drive
Blacksburg, VA 24061

Dear Sherwood:

Enclosed is a PPEA proposal relating to the construction of the Virginia Tech Carilion Clinic Health Science and Technology Building at the Riverside Center in Roanoke which will house the Comparative Oncology Research Center and an education center.

Carilon Clinic has brought together a partnership including an architect and contractor with whom we have a long history of successfully completing complex projects on time and within budget. However, Carilon will give good faith consideration to other partners who may have an interest in the project. The criteria for choosing another partner(s) will include, among other things, value brought to the project, references, relevant construction experience and a contractual commit to complete the project with a tight budget and on a very tight schedule.

Since the public announcement, Carilion and its partners have made significant progress on the project and our team is poised to move quickly. Carilion is willing to commit resources in advance of finalizing a comprehensive agreement in order to complete the project per the proposed timeline and will secure a guaranteed maximum price agreement with the contractor. Carilion is committing to the project a prime one and a half acre parcel that it owns and can easily be prepared for construction.

Please let me know if you have questions or need more information.

Sincerely,

Nancy Howell Agee
President and CEO

Cc: Dr. Timothy D. Sands

WORD: PPEA LETTER 2017

P.O. Box 13727 Roanoke, VA 24036-3727

CarilionClinic AECOM SKANSKA

Virginia Tech/Carilion Clinic - School of Medicine and Research Institute

Conceptual Stage

CARILION CLINIC AECOM SKANSKA

1 Qualifications and Experience

We Know this Campus

We are proposing an experienced team of designers and builders who have been delivering facilities on the Virginia Tech Carilion Research Education and Medical Park campus for the last 15 years. We have developed strong relationships with your research teams and other staff and have a thorough understanding of your operations. This team's extensive knowledge will ensure this project is properly planned and delivered.

a Identify the legal structure of the firm or consortium of firms making the proposal. Identify the organizational structure for the project, the management approach and how each partner and major subcontractor in the structure fits into the overall team.

Legal and Organizational Structure

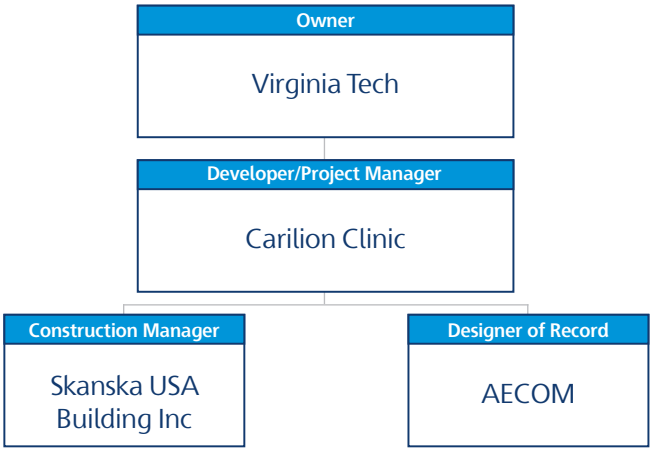
As with the initial Virginia Tech Carilion School of Medicine and Research Institute, Carilion Clinic will serve as the developer and project manager for the Virginia Tech Carilion Health Science and Technology (HST) Research, Comparative Oncology Research Center (CORC) and Classroom Building, refered to as the project throughout. The project will be located in the Riverside Center Research Education and Medical Park in Roanoke, Virginia on the Carilion Clinic campus.

Carilion will provide project management support and will contract with its well proven and successful team of Skanska USA Building Inc., the construction manager and AECOM, the architect and engineer of record.

There will be two committees established to provide leadership and project management decisions during design and construction: the project committee and the project leadership team. The project committee will be the governing body and will include representatives from Virginia Tech and Carilion providing the high-level leadership and guidance needed.

The project leadership team, comprised of Carilion, AECOM and Skanska will provide the day-to-day leadership, project management, planning and decisions.

The organization chart is shown below. Please keep in mind that additional team members may be added as necessary.



Management Approach

Carilion will manage a core team of highly qualified professionals who have worked together for over 15 years on six major research and medical projects in the area. Additional members of Carilion's staff, experienced in medical education, research and construction management, will support the core team.

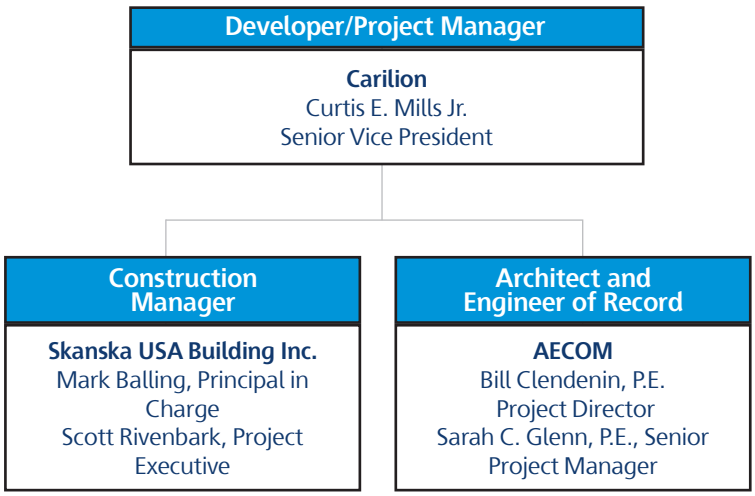
As the construction manager, Skanska will contribute their extensive local and global experience in the construction of research and academic facilities. This team completed the Virginia Tech Carilion School of Medicine and Research Institute in 2010 under the PPEA process. In addition, Skanska has experience in various public procurement processes within Virginia and neighboring states. As designer of record, AECOM has extensive experience in all design aspects of local and state research and medical projects.

Virginia Tech will own the building. A development team will be formed to ensure decisions are made that meets the needs of the end users. Under the direction of Carilion, the development team will deliver a custom-designed and custom-built facility in a package that is carefully crafted to serve the unique needs of the project. The development team will also collaborate with key personnel from the project leadership committee. During the design phase, we will work with the project committee to verify programming requirements and develop a conceptual design for approval by Virginia Tech. We will continue collaboration throughout the design and construction with regularly scheduled meetings and conference calls. The team will be committed to timely and complete communications in order to address the stakeholder concerns while maintaining the aggressive timeframe allowed for the project.

The single point of contact for Carilion will be Curtis E. Mills Jr., senior vice president, an experienced professional who will prepare all agreements and provide top level leadership for Carilion and the development team. As the overall project manager, he will lead the development team. In this role, he will oversee and manage the team's day-to-day activities, anticipate possible problems and resolve any problems that do arise. He will also coordinate all questions and requests for information.

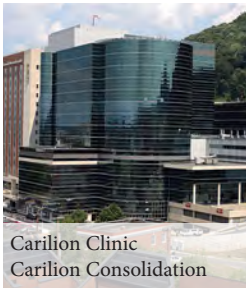
All members of the development team were selected for their professional acumen and specialized experience they bring to development, design, construction, financing and management of the project.

Team Organization



Development Team Approach

The Carilion AECOM Skanska team has successfully worked together on similar research, education and medical projects using a proven management methodology to deliver these projects on schedule and within budget. With this team's strong organizational structure and effective planning and control systems, the Carilion AECOM Skanska team will provide timely completion, clear communication and quality construction, all within a framework of partnering and to make the process and experience positive and rewarding for all stakeholders.



Carilion Clinic
Carilion Consolidation

Virginia Tech/Carilion
School of Medicine and Research Institute

Carilion Clinic
Riverside Parking Deck

Carilion Clinic
Riverside Clinic Building

The Carilion AECOM Skanska development team worked on all of the above projects together.

Construction Management

Providing executive leadership and project oversight for Skanska USA Building is Mark Balling, principal in charge. He will monitor Skanska's resources so that they are properly allocated to fulfill the goals and objectives of the project. Mark, with the support of the project team and input from the project committee, will have the primary responsibility to develop and implement the plan to deliver the services necessary to complete the project in the most effective and economic manner. Additionally, he will determine the level of resources needed to properly carry out all of our responsibilities and be authorized to mobilize resources as required. As principal in charge, Mark will have the authority to act on behalf of Skanska USA Building in all matters related to the project.

The construction management team from the Virginia Tech Carilion School of Medicine and Research Institute project.

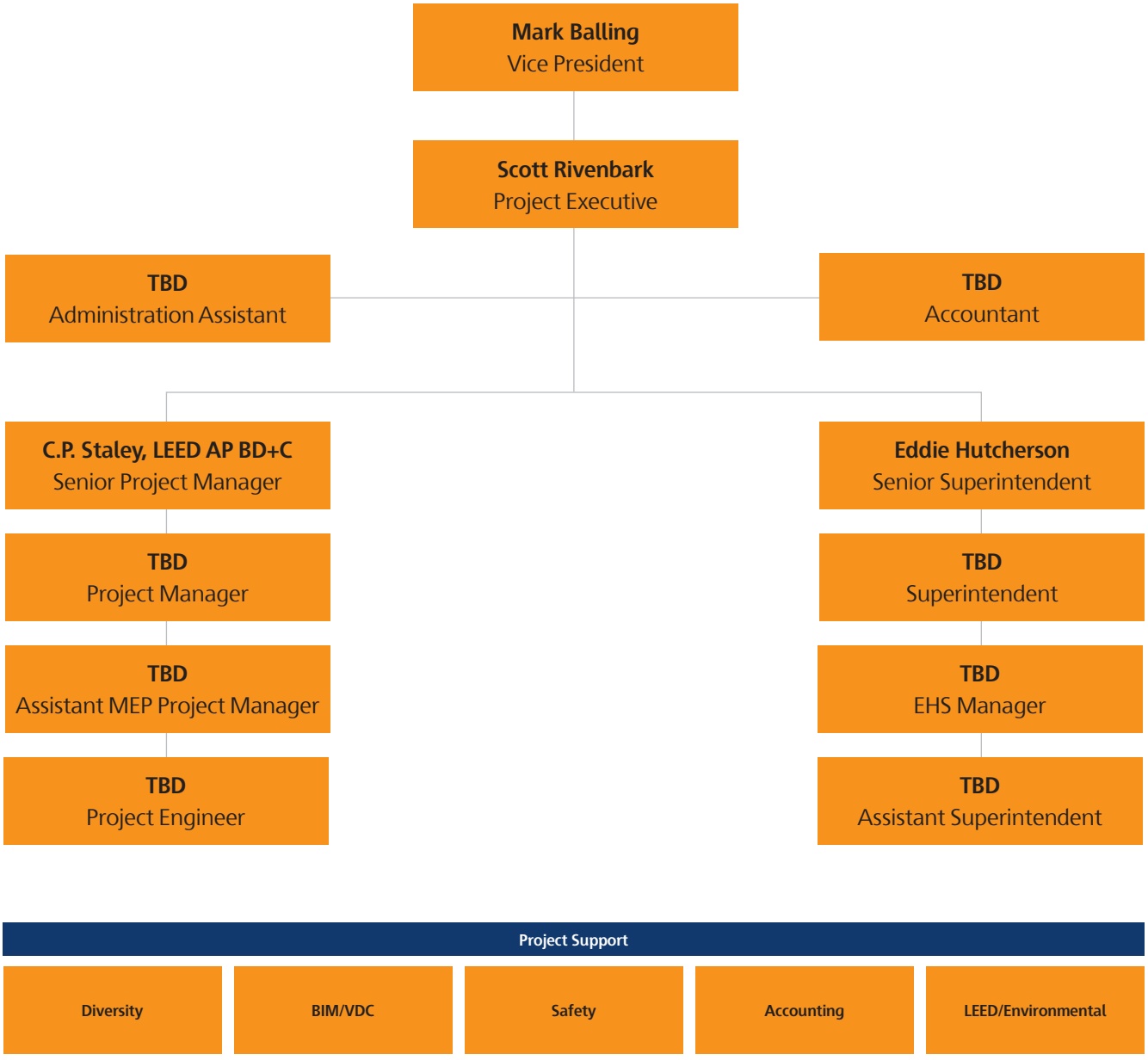
Scott Rivenbark, the construction manager project executive, is responsible for the coordination and development of the project. Sarah Glenn, PE, AECOM's senior project manager, will work closely with Scott to maintain communication between Virginia Tech, Carilion and Skanska. This effort is undertaken to facilitate the production of a design and delivery which will meet the client's requirement to be on schedule and within budget. Project communication and coordination procedures include formal client contracts, frequent project meetings and document distribution. As the designer and construction manager, AECOM and Skanska will gather input from Virginia Tech, utilize available resources and create a facility that is directly responsive for Virginia Tech's needs. Carilion's project manager, Curtis Mills, will oversee the team and monitor its progress throughout the development process to ensure key milestones are being met.

Design Management

AECOM is a nationally known, full service architectural and engineering firm specializing in the planning, programming and design of complex buildings, including academic and laboratory facilities. AECOM will employ its time-tested organizational structure and management methodology to see that your needs are documented and translated into workable, cost-effective designs.

The design senior project manager, Sarah Glenn, PE will be responsible for the day-to-day management and coordination of the design team and subconsultants. Sarah has significant experience in directing multidiscipline, multi-firm design teams. She will remain with the project from the earliest design phases through construction and project delivery. She will work closely with Virginia Tech, Carilion and the construction management team to determine and maintain the desired project requirements, work with the construction manager to control the project budget and schedule, and oversee the development of the construction documents.

Organizational Chart



b Describe the experience of the firm or consortium of firms making the proposal and the key principals involved in the proposed project including experience with projects of comparable size and complexity. Describe the length of time in business, business experience, public sector experience and other engagements of the firm or consortium of firms.

Development Team

The development team will be represented by Carilion, who will also serve as the developer, and will include AECOM as the designer and Skanska as the construction manager. Each firm brings their experience and resources in planning, designing and constructing similar research, education and medical facilities in order to successfully deliver the project. This is the same team who planned, built and delivered the Virginia Tech Carilion School of Medicine and Research Institute Building as well as the other buildings on the Carilion campus.

Carilion Clinic

Carilion has had over 100 years of managing developing internal construction projects including everything from minor renovations to major research facilities. Its facilities group includes project managers, interior designers and staff architects. Carilion is a long time participant in medical education and understands research issues that qualify it to construct such an educational facility and has experience in research and the design of medical buildings.

AECOM

AECOM is a multinational architecture and engineering firm formed in 1990 from some of the world's leading design firms with distinguished histories dating back to the early 1900's. We are the architect and engineer of record for the Virginia Tech Carilion School of Medicine and Research Institute as well as numerous other complex facilities delivered as part of a team with Skanska USA Building on behalf of Carilion Clinic. Together with Skanska, we have delivered nearly $300 million worth of construction at Riverside Center and the adjacent Carilion Clinic Roanoke Memorial Hospital. AECOM has nearly 100,000 employees - including architects, engineers, designers, planners, scientists and management and construction services professionals.

These projects include Carilion Clinic (230,000-SF/ completed), Riverside 1 Office Building (100,000 -SF/ completed) and a 1500-vehicle parking deck (completed) at Riverside Center and Carilion Roanoke Memorial Hospital's Mountain Pavilion (150,000-SF addition/completed) and Consolidation (250,000-SF addition 150,000-SF renovation/ completed) projects. We are highly capable of undertaking the challenges of this project by bringing unmatched familiarity with the design and construction, regulatory, functional and aesthetic requirements of the proposed site and building. All previous Skanska AECOM projects have successfully used a fast-track, guaranteed maximum price (GMP) approach.

AECOM has created, integrated and reconfigured translational research and education facilities to provide innovative solutions which enable and promote the important mission of higher education institutions in the area of health sciences and technology. In a rapidly changing research and education environment, our architects, laboratory and clinical consultants, engineers and interior designers anticipate future needs in research and education technology, cost and operational efficiency. We will provide services for this project from our Roanoke office, less than an hour's drive from Virginia Tech and less than two miles from the project site.

Today AECOM has nearly 100,000 employees - including architects, engineers, designers, planners, scientists and management and construction services professionals - serving clients in more than 150 countries. We are ranked as the number one engineering design firm by revenue in Engineering News- Record (ENR) magazine's annual industry rankings, and have been recognized by Fortune magazine as a World's Most Admired Company. Headquartered in Los Angeles, California, AECOM companies had revenue of approximately $18 billion during the 12 months ended September 31, 2016. The recent incorporation of URS accelerates our vision to become the world's premier fully integrated infrastructure firm addressing the full real estate life-cycle for our clients, from initial analysis, through financing, design, construction and operation.

Skanska USA Building

Skanska USA Building Inc. is a multi-faceted construction manager based in Parsippany, New Jersey, employing over 4,300 construction professionals since early 1970's. The development team will work directly with Skanska's local team and their regional Virginia/North Carolina office located in Durham, North Carolina.

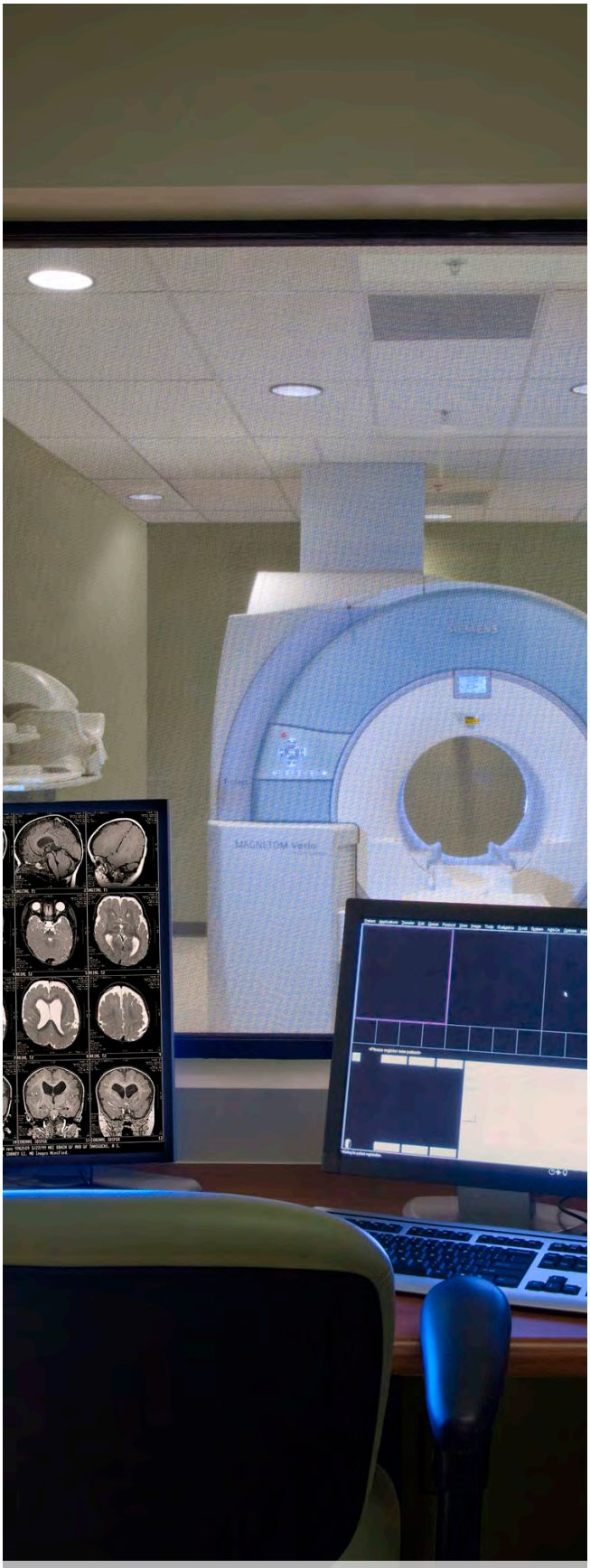
Multidisciplinary resources and proven construction management capabilities will enable Skanska's veteran manager, Scott Rivenbark and his team to act quickly and decisively. As leader of the construction management team, Skanska will be responsible for all aspects of construction management and delivery. He will bring corporate oversight to the project. Scott is experienced in the construction and development of research, healthcare and medical projects of all delivery types, such as construction management at risk, design-build, and design-bid-build projects. He is currently working on this project beginning with the conceptual stages, providing advice on comprehensive strategic planning and direction to other team members.

This project presents an exciting opportunity for Skanska to continue and expand its track record of success in the Roanoke area. Carilion, acting as the developer, will engage both Skanska and AECOM under design and construction management agreements. Communication among the project participants will be timely, meaningful, and effective. The Carilion AECOM Skanska team will be fully engaged with the project committee and other stakeholders in executing a partnering process that will resolve issues quickly and efficiently. This process will include the following steps:

- An initial partnering session amongst the development team to develop a team charter
- A clear commitment from the parties' principals to fully support the goals of the charter
- At least one scheduled facilitator-led follow-up during the construction and one post-construction

Carilion, Skanska and AECOM have had a successful relationship for the past 15 years which has resulted in:

- Seeking win-win solutions
- Placing principals above personalities
- Solving problems at the lowest level
- Providing clear, open and timely communication
- Maintaining mutual respect for each party's role



Carilion Clinic
Riverside Clinic Building

Project Experience and References

Virginia Tech Carilion
School of Medicine and Research Institute

Roanoke, VA

This $54 million project is a collaboration between Carilion Clinic and Virginia Tech Polytechnic and State University. The exterior veneer of the building combines Hokie Stone from the Virginia Tech campus in Blacksburg with the brick and precast architectural concrete of the Carilion Riverside campus in Roanoke. The facility is a steel framed structure bearing on rammed aggregate piers and has spread footings for a foundation system.

The four-story, 152,850-SF building is comprised of a medical school, research institute and contains 52,000-SF of lower level structured parking. The medical school contains 48,650-SF of medical classrooms, a medical library, offices and lab spaces. The research institute consists of 104,200-SF of research lab space containing 31 labs, offices, a Dean's suite, and additional shell space that was developed into vivarium space for the Research Institute.

This project was built to LEED Silver certification standards and includes numerous sustainable features including a green roof and a serpentine curtain wall to provide natural light to the medical school library. A Hokie Stone lined main entrance vestibule greets students, researchers and visitors as they enter the building.

This project includes many high-level finishes, including architectural wood, wood and metal panels, curved ceiling assemblies, accent canopies, fluid applied flooring, marmoleum composite tile, ceramic tile and fixed audience seating for the medical school symposium rooms and 200-seat main lecture room.

Carilion Clinic
Riverside Clinic Building
Roanoke, VA

The development team provided preconstruction and construction management design-build services for a new LEED Silver Certified outpatient clinic for Carilion Clinic, a repeat client. The $64 million building is 211,080-SF with five levels from ground through the fourth level with roof penthouses, and is serviced by five elevators. The ground Level consists of parking, MEP infrastructure rooms, and a café with kitchen prep areas.

The first floor has programming such as an MRI, CT scanners, diagnostic, ultrasound, nuclear medicine, orthopedics, offices and exam rooms. The second through fourth levels primarily consist of IT data, storage, exam and office space. Specialty interiors include but are not limited to: polished concrete flooring, architectural steel, casework and high end finish areas. The MEP systems include but are not limited to: fire suppression, plumbing, HVAC (roof top AHU's), electrical, communications, and security systems. The building is on a structural steel frame, supported by geo-pier deep foundations.

The exterior façade consists of architectural precast, brick veneer, metal panels, curtainwall, and storefront systems. The roofing for the project is an EPDM system with a green roof garden system. This project included sitework for the clinic building as well as the remaining 25-acre Carilion Clinic Research, Eduction and Medical Campus development. Sitework included grading, paving, potable water, fire protection, sanitary sewer, storm sewer, landscaping and hardscapes.

Physical Therapy/Occupational Therapy services will be provided within the Institute and will be tailored to the specific needs of the specialty clinics.

The Institute's ancillary support areas include a conference/education center, Executive and Practice Management offices, and administrative support spaces that will require close integration with clinical functions.

Carilion Clinic
Insititute for Orthopaedics and Neurosciences
Roanoke, VA

AECOM designed the $15.5 million renovation of a former grocery store, The Ivy Market Building, to house an approximately 116,050-SF, multi-specialty, new outpatient medical clinic space, the Institute for Orthopaedics and Neurosciences (ION). The property has been repurposed to accomodate conoslidate orthopaedics and neurosciences related functions.

The project advancing Carilion Clinic's strategic plan for orthopaedics and neurosurgery services, the Institute is envisioned as a destination for complex and comprehensive muscolskeletal conditions. The new institute will be an anchor facility serving as Carilion Clinic's regional outpatient care hub where exceptional, integrated and highly coordianted care will be delivered while advancing and supporting translational research and education.

The new Institute provides care in a number of complementary specialties – orthopaedics, neurosurgery, pain management, physical medicine and rehabilitation, outpatient therapy, and diagnostic imaging – all under one roof. Combining all these specialties at one location saves patients time and travel, but also provides a new, collaborative model of patient-centered care. Doctors from once-distinct disciplines will confer on the care of individual patients in hybridized clinical spaces, and interdisciplinary teams of physicians will see those with certain specialty conditions - such as rheumatoid arthritis, scoliosis, osteoporosis and spina bifida - in specialty clinics.

Virginia Polytechnic Institute and State University Human and Agricultural Biosciences Building I

Blacksburg, VA

The $43 million, 93,860-SF Human and Agricultural Biosciences Building I includes research laboratory space for two departments within the College of Agriculture and Life Sciences at Virginia Tech, namely, biological systems engineering and food science and technology. Additionally, scale-up pilot laboratory space is included to facilitate larger scale experimentation and production.

The upper two levels of this four-story facility are dedicated to the research laboratories and are designed as open, flexible, modular spaces to ease future reconfigurations should research needs shift and change focus. All commonly used equipment and support areas are centralized in the core of the building with labs along the exterior. Faculty offices, research staff work areas and graduate student areas are also incorporated as a separate zone on these floors.

The pilot plant is on the main level. It is a large, open high-bay space to accommodate larger equipment and research activities. The facility optimizes the space adjacent to the high-bay room by including a mezzanine level. The main public gathering, administration and support spaces are on the pilot plant and mezzanine levels, including a sensory test panel area and prep kitchen. The project is LEED Gold certified.

Virginia Tech Carilion
School of Medicine and Research Institute

Together we can.

The Carilion, AECOM and Skanska team recently worked together to design and build the School of Medicine and Research Institute.

c

Provide the names, addresses and telephone numbers of persons within the firm or consortium of firms who may be contacted for further information.

Carilion Contact

Name: Curtis E. Mills, Jr.
Address: 1906 Belleview Ave.
Roanoke, VA 24014
Phone: 540.981.7000
Email: CEMills@carilionclinic.org

AECOM Contact

Name: Sarah Glenn, P.E., LEED AP
Address: 10 South Jefferson St., Suite 1600
Roanoke, VA 24011
Phone: 540.857.3100
Email: Sarah.glenn@aecom.com

Skanska Contacts

Name: Scott Rivenbark, Project Executive
Address: Roanoke, VA 24014
Phone: 540.400.3834
Email: Scott.rivenbark@skanska.com

Name: Mark Balling, Vice President
Address: 4309 Emperor Blvd, Suite 200
Durham, NC 27703
Phone: 919.941.7971
Email: Mark.balling@skanska.com

d

Provide a current or most recently audited financial statement of the firm or firms and each partner with an equity interest of twenty percent or greater.

e

Please see a copy of Carilion's most recently audited financial statements on the following pages.

Identify any persons known to the proposer who would be obligated to disqualify themselves from participation in any transaction arising from or in connection to the project pursuant to the Virginia State and Local government conflicts of interest act, Chapter 31 of Title 2.2.

No persons known to the proposer would be obligated to disqualify themselves from participation in any transaction arising from or in connection to the project pursuant to the Virginia State and Local government.

Curtis E. Mills, Jr.

Carilion Clinic, Senior Vice President

30 Years of Relevant Experience

43 Years with Carilion Clinic

Virginia Polytechnic Institute and State University
B.S., Business Education

Curtis has over 40 years of research, education and medical facility experience, including construction management, property management and facility services. During his career he has had primary leadership responsibility for numerous construction projects. Curtis' history managing this design and construction team includes the Virginia Tech Carilion School of Medicine and Research Institute, Carilion Clinic, Riverside Parking Deck and the Riverside Clinic Building.

SKANSKA

Mark Balling

Skanska, Vice President

30 Years of Relevant Experience

1 Year with Skanska

Villanova University
B.S., Business Administration

Mark has 30 years of experience in the construction industry with extensive experience in higher education projects. He has had a personal oversight of $1.9 billion in projects over his career. He has successful experience building some of the top education and healthcare facilities in Virginia, and Mark excels at building relationships with owners, architects and all stakeholders. He is ultimately responsible for ensuring that Virginia Tech and Carilion have all the required resources to complete the project.

Scott Rivenbark

Skanska, Project Executive

28 Years of Relevant Experience

20 Years with Skanska

North Carolina State University
B.S., Civil Engineering

Scott has successfully managed all projects located in the Riverside Center Research, Education and Medical Park where this project will be located. He is the direct management oversight for the project team and provides continuity from preconstruction through the entire construction phase. Scott ensures the appropriate resources are available for the project, and he takes an active role in key milestone events in the preconstruction phase to include the partnering session, GMP development, value engineering, constructability and schedule reviews. Scott oversees construction and leverages his experience and expertise to ensure the project remains on schedule and within budget.

Bill Clendenin, P.E.

AECOM, Project Director

33 Years of Relevant Experience

33 Years with AECOM

West Virginia University
B.S., Mechanical Engineering

Bill serves as our healthcare market leader and project director for our Roanoke office. He has over 33 years of design, project management, and director experience, including over 17 years dedicated to healthcare projects. Bill has served as project director for nine indefinite delivery healthcare contracts supporting over 90 projects since 2003. These IDCs have included projects for the U.S. Army Medical Education and Training Center (METC), the DoD Food Analysis and Diagnostic Testing Laboratory (FADL) and the U.S. Army Institute of Surgical Research (USAISR). As project director for your project, Bill will work closely with our senior project.

Daniel DiMarco

AECOM, Associate Principal

22 Years of Relevant Experience

20 Years with AECOM

Virginia Polytechnic Institute and State University
B.A, History
M.A, Architecure

Daniel leads the architectural healthcare studio in the Roanoke office. He has over 20 years of comprehensive design experience for leading healthcare facilities, including public, private, and government clients. Daniel leads and supervises project teams from programming and early planning through all phases of design into construction documents. He has also led a variety of studies including feasibility, life safety, and building assessment. Daniel's project involvement includes determining client requirements based on client visioning, establishing staffing work plans, and monitoring project budgets and scheduling. He was the Architect of Record on the Virginia Tech Carilion School of Medicine and Research Institute as well as the Carilion Clinic, both buildings currently in Riverside Center.

AECOM

Sarah Glenn, P.E.

AECOM, Senior Project Manager

19 Years of Relevant Experience

15 Years with AECOM

Virginia Polytechnic Institute and State University
B.S., Civil Engineering
MBA, Business Administration

Sarah has 19 years of post-graduate experience in project management, structural engineering, and sustainable design. She has managed the design of large and small research laboratory and healthcare projects for public and private clients in locations within the United States and overseas. Her areas of expertise include hospital and laboratory design, sustainable design, and alternative project delivery methods. Sarah managed the design of the Virginia Tech Carilion School of Medicine and Research Institute, Carilion Riverside Clinic, and Riverside Parking Structure.

Dave Prevette

AECOM, Senior Project Manager

15 Years of Relevant Experience

1 Year with AECOM

Virginia Polytechnic Institute and State University
MBA, Architecture

David is a Senior Architect in the Roanoke office of AECOM, bringing 15 years of professional experience in higher education planning, design, and construction administration. His portfolio includes a variety of building types, from student unions and academic buildings to recreation and cultural arts facilities. He uses his talents to build strong client relationships and successful projects. He frequently shares his passion for the profession as a mentor to emerging firm talent and with architecture students in southwest Virginia.

2016 Financial Statement

Carilion Clinic and Subsidiaries

Consolidated Financial Statements as of and for the Years Ended September 30, 2016 and 2015, and Independent Auditors' Report

CARILION CLINIC AND SUBSIDIARIES

Roanoke, Virginia
A Nonstock, Nonprofit Corporation
Chartered by the Commonwealth of Virginia

OFFICERS OF THE BOARD OF DIRECTORS

James A. Hartley	Chairman
Nancy H. Agee	President
Nicholas C. Conte	Secretary
G. Robert Vaughan, Jr.	Treasurer

BOARD OF DIRECTORS

Nancy H. Agee	Daniel R. Jones, MD
R. Steve Blanks	William R. Kingery, Jr
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John A. Bond	Raymond D. Smoot, Jr., PhD
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Victor Iannello	Danielle H. Yarber

Deloitte.

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550 South Tryon Street
Suite 2500
Charlotte, NC 28202
USA

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Fax:+1 704 887 1570
www.deloitte.com

INDEPENDENT AUDITORS' REPORT

To the Board of Directors of
Carilion Clinic and Subsidiaries
Roanoke, Virginia

We have audited the accompanying consolidated financial statements of Carilion Clinic and subsidiaries (the "Clinic"), which comprise the consolidated balance sheets as of September 30, 2016 and 2015, and the related consolidated statements of operations, changes in net assets, and cash flows for the years then ended, and the related notes to the consolidated financial statements.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Clinic's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Clinic's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Clinic as of September 30, 2016 and 2015, and the results of its operations and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Notes 1, 4, and 15 to the consolidated financial statements, the consolidated financial statements include alternative investments valued at $500,315,000 (24% of total assets) and $409,936,000 (21% of total assets) as of September 30, 2016 and 2015, respectively, whose fair values have been estimated by management in the absence of readily determinable fair values. In addition, the defined benefit postretirement plan assets disclosed in Notes 8 and 15 include alternative investments of $439,924,000 and $325,947,000 as of September 30, 2016 and 2015, respectively, whose fair values have been estimated by management in the absence of readily determinable fair values. Our opinion is not modified with respect to these matters.

Deloitte + Touche LLP

January 26, 2017

CARILION CLINIC AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS
AS OF SEPTEMBER 30, 2016 AND 2015
(In thousands)

	2016	2015
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 13,650	$ 19,645
Accounts receivable—net of allowance for doubtful accounts of $145,925 in 2016 and $145,982 in 2015	208,246	216,030
Inventories	16,367	15,842
Prepaid expenses and other current assets	21,807	17,923
Total current assets	260,070	269,440
INVESTMENTS	140,594	117,281
INTEREST RATE SWAPS	10,438	8,600
ASSETS WHOSE USE IS LIMITED	1,020,928	924,834
PROPERTY AND EQUIPMENT—Net	656,178	633,222
OTHER ASSETS	20,912	22,542
TOTAL	$2,109,120	$1,975,919
LIABILITIES AND NET ASSETS		
CURRENT LIABILITIES:		
Current portion of long-term debt	$ 14,988	$ 13,366
Accounts payable	52,567	46,839
Due to third-party payors	28,817	33,176
Accrued salaries and wages	73,966	65,160
Accrued vacation	42,210	39,484
Other current liabilities	57,993	61,987
Total current liabilities	270,541	260,012
LONG-TERM DEBT—Net of current portion	568,864	583,506
INTEREST RATE SWAPS	95,851	74,434
PENSION AND OTHER LIABILITIES	682,045	515,645
Total liabilities	1,617,301	1,433,597
COMMITMENTS AND CONTINGENCIES (Notes 4, 5, 7, 13, and 14)		
NET ASSETS:		
Unrestricted:		
Carilion Clinic and subsidiaries	462,230	513,307
Noncontrolling interest	4,515	4,335
Total unrestricted net assets	466,745	517,642
Temporarily restricted	13,198	12,804
Permanently restricted	11,876	11,876
Total net assets	491,819	542,322
TOTAL	$2,109,120	$1,975,919

See notes to consolidated financial statements.

CARILION CLINIC AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS
FOR THE YEARS ENDED SEPTEMBER 30, 2016 AND 2015
(In thousands)

	2016	2015
UNRESTRICTED OPERATING REVENUES AND GAINS:		
Patient service revenue—net of contractual allowances and discounts	$1,647,063	$1,541,423
Provision for bad debts	(105,727)	(141,771)
Net patient service revenue	1,541,336	1,399,652
Other operating revenue	111,676	111,466
Net assets released from restrictions	2,465	2,405
Total unrestricted operating revenues and gains	1,655,477	1,513,523
OPERATING EXPENSES:		
Salaries and outside labor	811,015	746,548
Benefits	194,833	172,190
Supplies and other expenses	475,427	436,619
Depreciation	83,282	74,739
Interest expense	22,080	22,404
Total operating expenses	1,586,637	1,452,500
OPERATING INCOME	68,840	61,023
NONOPERATING INCOME (LOSS):		
Investment income (loss)	37,438	(8,960)
Other nonoperating loss	(3,998)	(2,932)
Total nonoperating income (loss)	33,440	(11,892)
EXCESS OF UNRESTRICTED REVENUES AND GAINS OVER EXPENSES FROM CONSOLIDATED OPERATIONS	102,280	49,131
PENSION-RELATED CHANGES OTHER THAN NET PERIODIC PENSION COST	(153,342)	(90,749)
NET ASSETS RELEASED FROM RESTRICTIONS FOR PURCHASES OF PROPERTY AND EQUIPMENT	165	69
DECREASE IN UNRESTRICTED NET ASSETS FROM CONSOLIDATED OPERATIONS	(50,897)	(41,549)
CHANGE IN UNRESTRICTED NET ASSETS ATTRIBUTABLE TO NONCONTROLLING INTEREST	180	285
CHANGE IN UNRESTRICTED NET ASSETS ATTRIBUTABLE TO CARILION CLINIC AND SUBSIDIARIES	$ (51,077)	$ (41,834)

See notes to consolidated financial statements.

2 Project Characteristics

a Provide a description of the project, including the conceptual design. Describe the proposed project in sufficient detail so that type and intent to the project, the location and the communities that may be affected are clearly identified.

Site

The project is located at 4 Riverside Circle, which is currently a surface parking lot serving the other buildings in Riverside Center. The ground floor of the building is within the 100 year flood elevation of the Roanoke River. Any consistently occupied ground floor spaces and building equipment spaces are raised approximately five feet so that they are a minimum of two feet above the 100 year flood elevation.

Naturally landscaped space remains along the south edge of the site to enhance the beauty of the campus and wayfinding elements are incorporated into the landscape design to guide visitors from the parking structure to Riverside 1 and Riverside 3. A landscaped plaza provides a gathering spot for research faculty, students, and visitors and creates a sense of community between VTCRI and VTCSOM and HST.

Building

The project will include approximately 105,000 gross square feet of research and education space along with the Comparative Oncology Research Center and classroom and education space for a total of approximately 136,000 gross square feet. Five Principal Investigators (PIs) will be recruited for each of the five thematic areas:

- Biomaterials – Body Device Interfaces
- Brain Health and Disease
- Cardiovascular Sciences
- Infectious Disease and Immunity
- Metabolism and Obesity

Wet and dry laboratories, core facilities, experiential learning classrooms, and administrative spaces occupy three elevated levels above a ground floor which is primarily occupied by parking, loading and building support but also contains a welcoming public atrium, research-on-display workshop, and a café which connects the building to the public and VTCRI/VTCSOM at the street level.

The building façade respects the South Jefferson Redevelopment Area guidelines and maximizes the opportunity for daylight and views on the north, south and east elevations. Opportunities for daylight and views are more limited on the west side due to the proximity of HST to the existing Riverside Parking Structure, however natural light is a critical element of the building and glazing is incorporated into this elevation as well. Floor-to-floor heights are 16'-0" to match VTCRI and allow easy connectivity between the two buildings.

Thematic Groups

It is anticipated that most HST research teams will be recruited from other institutions. In order to provide flexibility for the ebb and flow of research funding to different areas of biomedical research, the spaces are programed to be modular and flexible in their use and configuration. The spaces for each thematic area are not overly specialized and detailed for particular research programs, rather, they are planned to accommodate a range of future uses.

Each thematic area has an assignable footprint of approximately 9,400-SF and supports five principal investigators. Typical spaces included are listed below. The ratio of wet and dry researchers for Brain Health and Disease, Biomaterials and Cardiovascular Sciences is anticipated to be 3:2. The wet:dry ratio for infectious disease is anticipated to be 4:1 and for metabolism and obesity is expected to be 2:3.

Below is a typical allocation of spaces within a thematic area. Core facilities, including Imaging, Clinical Research, Behavioral, and Animal cores are provided outside the areas listed below.

- Five (5) PI Offices at 150-SF each
- Five (5) senior researcher offices at 120-SF each
- Post doc work area at 620-SF
- Shared administrative support area at 300-SF
- Wet lab area for three PI's at 900-SF each
- Wet lab support area for three PI's at 820-SF each
- Dry lab area for two of the five PI's at 300-SF each
- Shared support area at 775-SF
- One experiential learning lab at 500-SF

Core Facilities (Approximate square footage)

Imaging – 2,860-SF

An imaging core is located on the first elevated floor immediately adjacent to Brain Health and Disease. The imaging core includes the following equipment:

- Large bore MRI
- Small bore MRI
- PET CT
- Focus ultrasound
- MEG

The large bore MRI is shared by humans and larger animals, such as pigs and companion dogs who may be patients of the Virginia Maryland College of Veterinary Medicine. The small bore MRI is for rodents. There has been some discussion of locating the small bore MRI on the third elevated floor, within the animal core. One advantage of maintaining all of the heavy imaging equipment in a central location on the lowest floor is that it reduces the impact on the building infrastructure. As the design progresses, the benefits and costs of separating the MRIs will be evaluated.

Human clinical research – 2,720-SF

A human clinical research core is located on the second elevated floor. The center includes four exam rooms, two procedure rooms and two hospital-like patient bedrooms. A nurses' station, patient reception and waiting area support the space. At this time, patient overnight stays are not anticipated but this could change as the design evolves.

Human behavioral research – 2,300-SF

The human behavioral research core is located near the clinical research core on the second floor. Co-locating the two reduces the number of areas in HST where human subjects will visit and may offer an opportunity for the two cores to share support spaces. A metabolic kitchen and configurable dining area as well as a whole room calorimeter are included in the behavioral research core. Individual interview booths and an exercise area are also included.

Animal core – 6,225-SF

The animal core is located on the north end of the third elevated floor. The location allows for the shortest and most direct path of travel from the animal breeding facility in VTCRI. The animal core includes holding areas for rats, mice, guinea pigs and pigs; cage wash; sterilization; feeding and bedding; and necropsy. There are two small animal operating rooms and one large animal operating room within the animal core. The animal core is located adjacent to infectious disease. A dedicated elevator from the loading dock serves the area.

Experiential Learning Classrooms - 2,500-SF

Each thematic research area includes an experiential learning classroom where undergraduate students will observe, experience and participate in ongoing research programs at HST. Many spaces within HST, including procedure areas, surgery suites, workshops, and wet lab areas will be outfitted with an audio/video backbone to allow transmission of the work to classrooms in HST, Blacksburg and beyond.

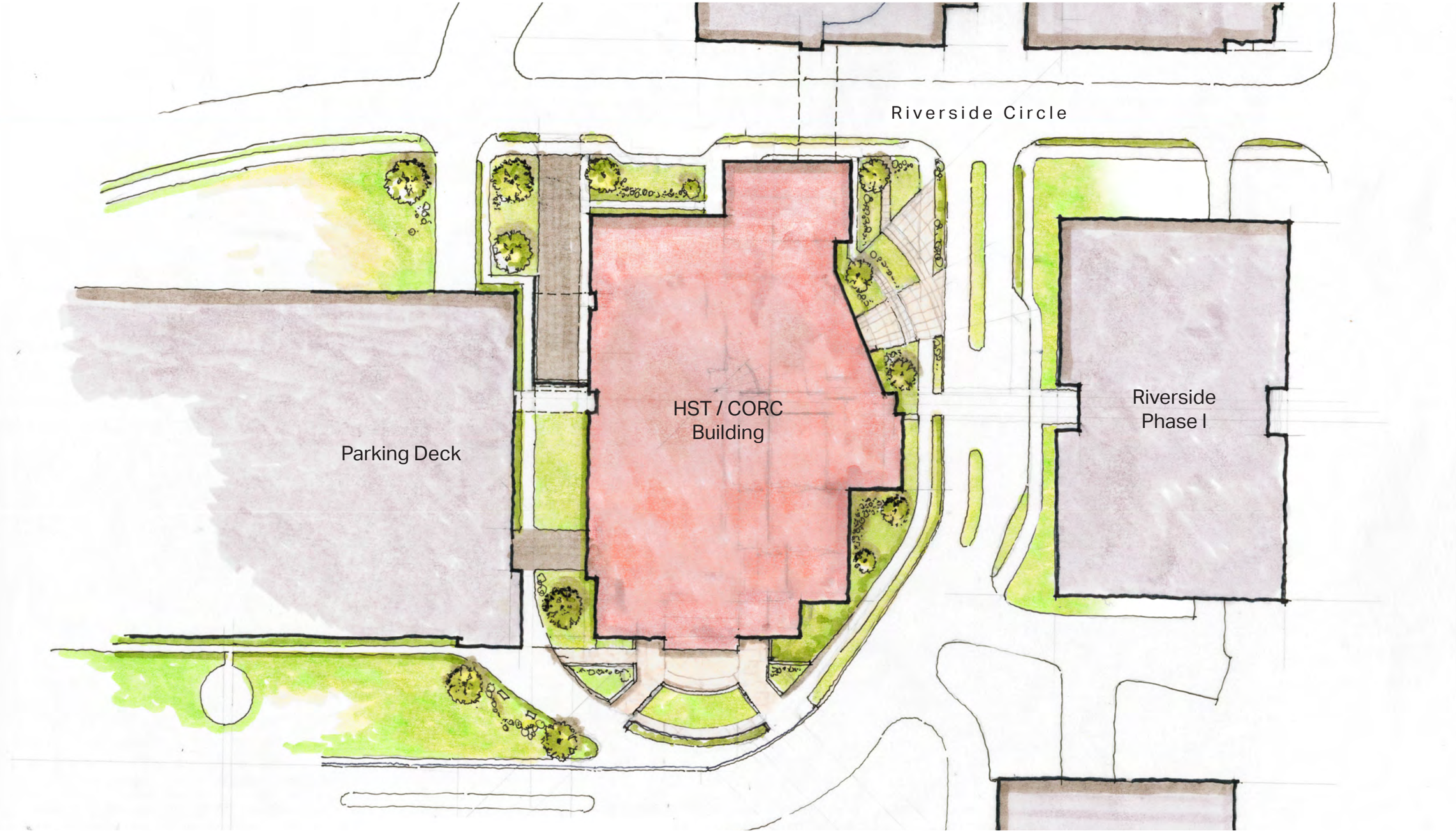
Classroom and Education Space - 17,000-SF

The project includes approximately 17,000 gross square feet of education space. The space will include classrooms sized to seat 40 to 125 people in a variety of seating arrangements.

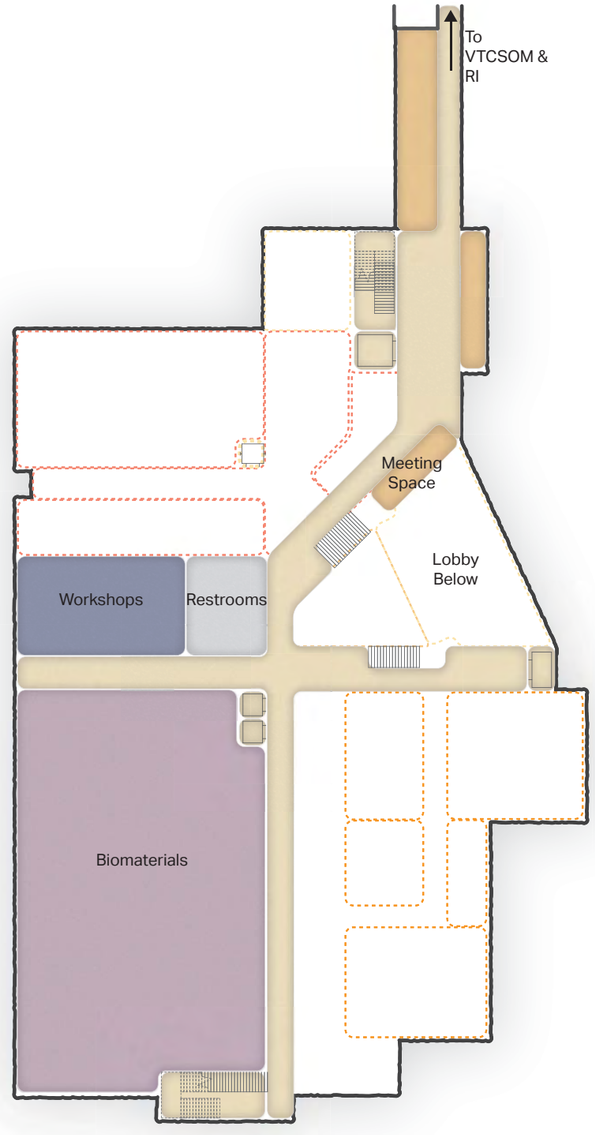
Comparative Oncology Research Center - 16,000-SF
The Comparative Oncology Research Center (CORC) is a cancer treatment center for canine and feline pets. CORC will be located in the building with connectivity to research labs and collaborative spaces. The program for CORC includes three surgery suites, an imaging suite including a linear accelerator, exam room spaces and holding rooms for animals staying for extended treatment periods.

The following assignable square footages are included:

Office and Conference	1,248-SF
Research and Wet Lab	846-SF
Procedures and Support	1,026-SF
Holding	1,425-SF
Surgery	1,500-SF
Imaging and Treatment	600-SF
Linac and Linac Control	1,500-SF
Client Spaces	1,535-SF
Necropsy	175-SF


Riverside Circle
HST / CORC
Building
Parking Deck
Riverside
Phase I

Concept Block Plan
Ground Floor

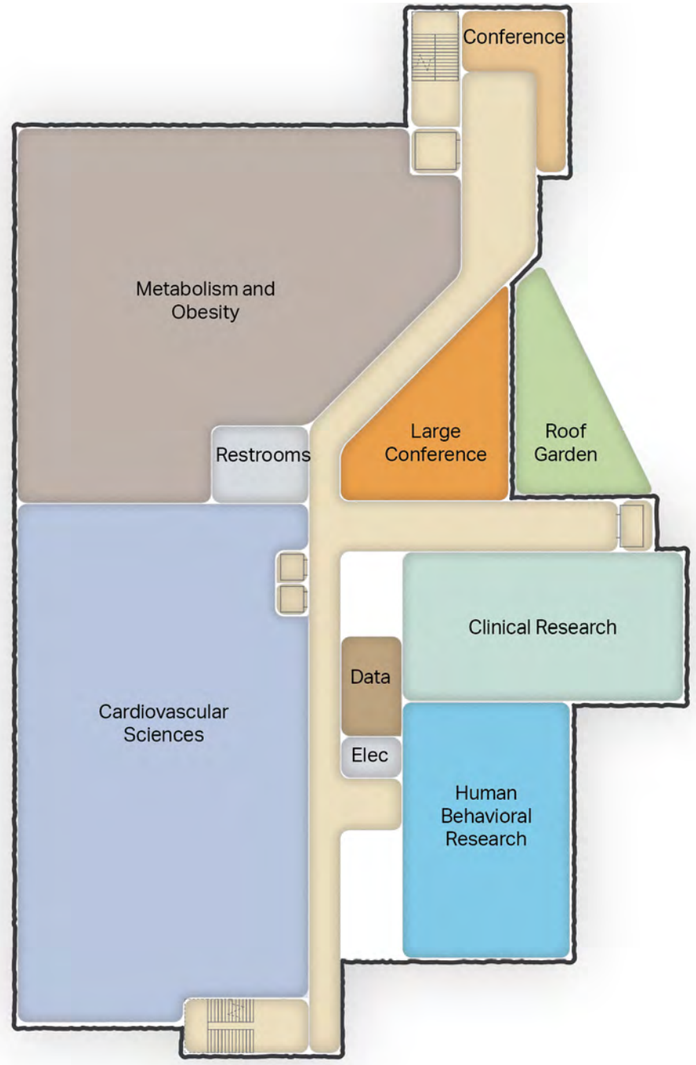


Concept Block Plan
First Floor

Concept Block Plan
Second Floor

N

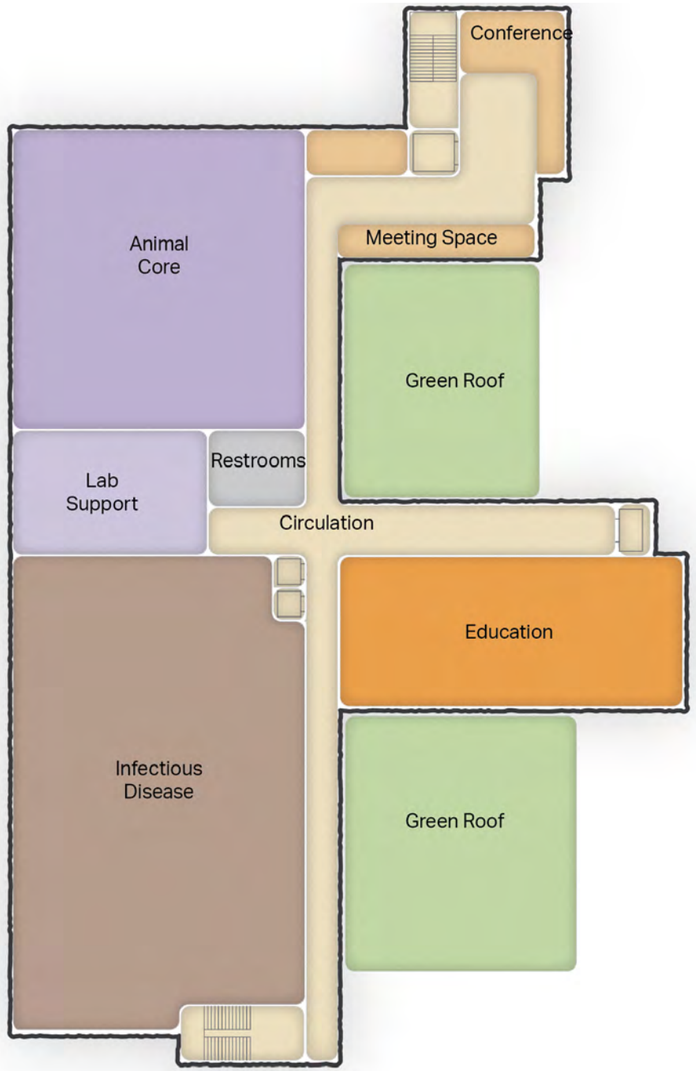
0 40 80



Concept Block Plan
Third Floor

N

0 40 80



Concept Block Plan
Fourth Floor

Legend

- Behavioral Research
- Biomaterials
- Brain Health and Disease
- Cardiovascular Sciences
- Central Admin Support
- Clinical Research
- Infectious Disease and Immunity
- Metabolism and Obesity
- Comparive Oncology Research Center (CORC)
- Workshops
- Animal Core
- Imaging
- Education / Conference Space
- Touchdown / Meeting Space
- Lab Support
- Circulation
- Building Support

b

Identify and fully describe any work to be performed by the University.

As with the initial Virginia Tech Carilion School of Medicine and Research Institute project, the development team will work closely with the project committee from the design phase through the construction phase until project completion.

Membership of the project committee would be confirmed during discussions between Carilion and Virginia Tech. The committee would be made up of university representatives and those of the development team. The development team would be involved in the following phases of the project:

- Verification and approval of the final space program
- Project design approvals
- Value engineering - keeping costs within the set budget
- Developing equipment lists for use in the final design and capital budget
- Developing furniture lists for the capital budget

The university will also provide and install certain pieces of equipment which will be clearly identified. As a part of the coordination process, Skanska will establish an equipment matrix that will list out all potential equipment, room by room, in the new Research and Classroom building. This matrix will be reviewed with the development team and Virginia Tech to ensure that all equipment is being accounted for and planned properly. This will ensure that all rough-ins are installed correctly and will assign who purchases and installs each piece of equipment.

Please see the equipment matrix on the following page.

Virginia Tech Carilion
School of Medicine and Research Institute

CARILION / AECOM / SKANSKA USA BUILDING

Equipment Responsibility Matrix

Virginia Tech Carilion HST, CORC and Classroom Building

April 25, 2017

Equipment Items	Planned By				Furnished By			Installed By			Comments
	Skanska USA Building	AECOM / Lab Planner	Carilion	Virginia Tech	Skanska USA Building	Carilion	Virginia Tech	Skanska USA Building	Carilion	Virginia Tech	0
HST and Overall Building Items											
Furnishings, All Others				X			X			X	Common furnishings - tables, chairs, etc
FEC w/fire extinguishers		X			X			X			
Gas Services / Connections to Buildings		X									Gas service to meter be provided by local gas company
Housekeeping Equipment				X			X			X	
Janitorial Equipment				X			X			X	
Landscaping/Seeding		X			X			X			Will provide to minimm level required by code
Re-Lamping at End of Project				X			X		X		Replacement of only burned out lamps is by Contractor
Lighting General		X			X			X			
Lighting Procedure/Exam/Surgical		X			X			X			Support steel furnished by Skanska as well
Lighting Procedure/Mobile				X			X			X	Considered as FF&E
Hokie Stone Material		X					X	X			Skanska will install the Hokie Stone
Fume Hoods		X			X			X			
Autoclaves / Glassware Washers / Rack Washers		X			X			X			
Glassware Dryer		X			X			X			
Vivarium Eqpt (cage racks and changing stations)		X					X			X	
Tunnel Washer		X			X			X			
Ice Makers / Ice Machines		X			X			X			
Environmental / Cold Rooms		X			X			X			
Laboratory Refrigerators and Freezers - By Others				X			X			X	By others
Whole Room Calorimeter and System Equipment		X		X	X			X			Modular system - Planned and coordinated between VT and AECOM
Snorkel Exhausts		X			X			X			
Exam Lights		X			X			X			
Bio-safety Cabinets / Chemical Storage Cabinets		X					X			X	Skanska will coodrinate
Point-of-use Water Polishers		X					X			X	
Scales, Balances, Tissue Processors - OFOI				X			X			X	OFOI
Human MRI (shielding, rough-ins, interfaces by CM) - OFOI		X		X			X			X	Skanska will provide rough-in and support for the equipment; MRI provider will provide equipment drawings.
Electron Microscopes (shielding, rough-ins interfaces by CM) - OFOI		X					X			X	Equipment specifications provided by Virginia Tech
Laser Confocal Microscopes (interfaces by CM) - OFOI		X					X			X	Equipment specifications provided by Virginia Tech
Core Facilities Equip. (rough-ins, interfaces by CM) - OFOI		X					X			X	Equipment specifications provided by Virginia Tech
Surgery tables and anesthesia machines (interfaces byCM) - OFOI		X					X			X	Equipment specifications and drawings provided by Virginia Tech for non CORC areas.
Edstrom Animal Watering System (interfaces by CM) - OFOI		X					X			X	
Data Center Electronic Equip. (rough-ins, interfaces by CM) - OFOI		X					X			X	
Autopsy tables - OFOI		X					X			X	Equipment specifications and drawings provided by Virginia Tech for non CORC areas.
Surgical Boom Supports		X			X			X			
Physicist Reports for Shielding			X	X	X			X			To be determined as the design progresses
Lockers and Benches				X			X			X	Considered FF&E
Material Handling Equipment		X					X			X	
Network/Computer system cabling		X			X			X			Equipment to be provided by VT;
Office Equipment and Accessories				X			X			X	Copiers, monitors, computers, FF&E, etc.
Proximity Readers		X		X	X			X			Coordinated between VT and AECOM
Radio System, Communication				X			X			X	
Seating Visitors/Staff/Patients				X			X			X	Mobile seating
Security System (CCTV, Card Access) Equipment and Cabling			X	X	X			X			Coordinated between VT and Carilion
Shelving/Cabinet (Built-in ~~or otherwise~~)		X			X			X			
Shelving Freestanding				X			X			X	
Signage/Graphics - interior wayfinding and Room ID		X			X			x			Design as Additional Service per fee proposal
Signage/Graphics - exterior monument sign (1 ea)		X			X			x			At entrance similar to existing sign; Design as Additional Service
Signage/Graphics - exterior branding		X		X			X			X	Skanska can provide rough-in if identified and located early; Design as Additional Service per fee proposal. Power coordination is part of Basic Service if we have information in a timely manner.
Stools, furnishings, etc.				X			X			X	Considered as furniture
Tellecommunications cabling		X		X	X			X			Equipment is by others; Design as Additional Service per fee proposal.
Telephone System Rough-in		X			X			X			Equipment is by others
Monitor Brackets		X			X			X			Part of A / V Package
Monitors				X			X			X	
Vivarium equipment		X					X			X	By Owner
Voice/Data service entr. Cabling from MH to MDF demarcation - MAIN SERVICE		X					X			X	Main service, but will be coordinated with VT and Verizon
Wall Protection and Corner Guards		X			X			X			
Wallcoverings		X			X			X			Not anticipated in the design
Waste receptacles				X			X			X	Considered as FF&E
Waste Receptacles (Biohazard)				X			X			X	
Window Dressing				X	X			X			
ALL AREAS											

CARILION / AECOM / SKANSKA USA BUILDING

Equipment Responsibility Matrix

Virginia Tech Carilion HST, CORC and Classroom Building

April 25, 2017

Equipment Items	Planned By				Furnished By			Installed By			Comments
	Skanska USA Building	AECOM / Lab Planner	Carilion	Virginia Tech	Skanska USA Building	Carilion	Virginia Tech	Skanska USA Building	Carilion	Virginia Tech	
All cages, racks, carts, lab equipment, enclosures, incubators, freezers, refrigerators, chemical storage cabinets, scientific equipment are NOT indicated above and MUST be accounted for.				X			X			X	All MEP rough-ins and supply services as well as hook-up and start-up is required and is to be included in the base cost.
CORC - Classroom Specific Items											
Animal MRI (shielding, rough-ins, interfaces by CM) - OFOI				X			X			X	Skanska will provide rough-in and support for the equipment
Focused Ultrasound (interfaces by CM) - OFOI				X			X			X	Skanska will provide rough-in and support for the equipment
PET-CT (shielding, rough-ins, interfaces by CM) - OFOI				X			X			X	Skanska will provide rough-in and support for the equipment
MEG (shielding, rough-ins, interfaces by CM) - OFOI				X			X			X	Skanska will provide rough-in and support for the equipment

C Include a list of all federal, state and local permits and approvals required for the project and a schedule for obtaining such permits and approvals.

Over the past 15 years this development team has worked closely with Roanoke's local building inspections and permitting officials to establish a beneficial working relationship. This relationship has enabled the team to meet the requirements of the local approving authorities while structuring the work packages to support the needs of the project.

In addition, AECOM and Skanska have developed a mutually beneficial relationship with Virginia Tech's University Building Official (UBO) which will be a significant benefit during approval, design and construction.

The following permits and approvals are required:

1. Roanoke Redevelopment and Housing Authority (RRHA)
    - Approval of site revisions to development plans and schematic design
2. City of Roanoke
    - City of Roanoke, comprehensive development plan and/or basic development plan approved revisions
    - City of Roanoke, UBO building permits including the following phased permits:
        - Land disturbance permit
        - Foundations permit
        - Shell permit
        - Final building permit
3. Commonwealth of Virginia
    - Virginia Department of Conservation and Recreation approval
    - Certificate of Public Need (COPN) is not required
    - Virginia Tech University's Building Official (UBO)
    - Comprehensive agreement between Carilion and Virginia Tech

The development team has worked together to build all existing facilities in the Research, Education and Medical Park. This will be the same location where the HST, CORC and Classroom Building would be located.

d

Identify any anticipated adverse social, economic and environmental impacts of the project. Specify the strategies or actions to mitigate known impacts of the project.

This project will be located in the same Research, Education and Medical Park as the initial School of Medicine and Research Institute project so many of the same restrictions and guidelines will apply. The entire park is considered a brownfield site and is located within an established 100-year flood plane. Measures are planned to manage the existing soils accordingly, as well as accommodate the flood plane by elevating the first occupied level to above the 100-year high water elevation.

- There are no known adverse social impacts
- There are no known adverse economic impacts. The project does not displace or impact existing businesses or industries
- There are no known adverse environmental impacts. This site development represents an improvement to the environmental conditions of the area.

e

Identify the projected positive social, economic and environmental impacts of the project.

The project will create strong synergistic interactions at the interface of human and animal medicine as well as to make the VTC partnership and Virginia Tech unique in having an integrated research program in human and animal cancer in a single facility. This would also create a unique training environment in the country for undergraduate, graduate, medical and veterinary students focused on a major emerging disease area that is impacting the health of the nation.

The spaces would accommodate experiential learning experiences for Virginia Tech undergraduates, graduate students and research fellows working with Carilion Clinic physician scientists and their staffs to provide necessary research. Beyond the educational value for the students, co-locating additional graduate and undergraduate students in Roanoke will strengthen the attraction for medical and technology industry and startups to locate in the region, which thrive on student internships and employment. The existing partnership of the Commonwealth, Virginia Tech, and Carilion Clinic is uniquely positioned to quickly scale the current research program to form an Innovation Corridor in Roanoke. The focus of an Innovation Corridor would be an expansion of existing strengths of technology innovation, interdisciplinary science, medical research, and instruction/training in medical research and practice to form a Health Sciences and Technology campus.

Innovation Corridors are flourishing in terms of scientific and technological advancements and in terms of drawing in new industry into the ecosystem where technologies are developed and discoveries are made. Companies move into the region and new companies are established, all which translate into new jobs and economic development.

The presence of the new HST Building on the Carilion Clinic campus will add to the growing South Jefferson corridor and further efforts to build a robust and exciting economic climate in downtown Roanoke. The building will enhance ongoing efforts by the Roanoke Redevelopment and Housing Authority to convert a blighted brownfield into an economically vibrant asset. The site is currently bordered by a rail yard and four-Lane Bridge. The development will be an environmental enhancement to the area.

The HST facility could create up to 350 new jobs and raise the number of research teams to 55 from the current 30 (full buildout). Core research positions have an annual salary in the $110,000 range. It is estimated the project along with the current facility will have a $188 million annual financial impact on the local economy.

> "Virginia Tech is very excited about the completion of the Virginia Tech Carilion School of Medicine and Research Institute in August/ September...Thanks to your team's efforts, we are on schedule (possibly ahead) and under budget. Skanska's strong working relationship with Carilion, AECOM and VT is one of the many factors contributing to the success of this project."
>
> Gary Mason
> Virginia Tech Carilion - School of Medicine and Research Institute
> Associate Director of Operations

f Identify the proposed schedule for the work on the project, including the estimated time for completion.

Virginia Tech and Carilion have identified the need to plan, design and construct the project as quickly as the most practical delivery method allows, all with the purpose of expanding the Research, Education and Medical teaching capabilities of the initial facility, the Virginia Tech Carilion School of Medicine and Research Institute. In order to realize their objectives, the project needs to be approved and designed such that construction can be underway in December 2017 and proceeding in uninterrupted phased sequences. The PPEA process will make this goal achievable.

In order to realize the fastest delivery timeline, the team will pursue as aggressive, fast-track design and construction schedule. Our approach will be to issue multiple, phased design packages to allow the start of construction of the foundations and structural elements as the balance of the construction and design documents are being completed. For the past 15 years, this team has successfully implemented fast-track design and construction methods on the last four significant projects on the research, education and medical campus in Roanoke, Virginia.

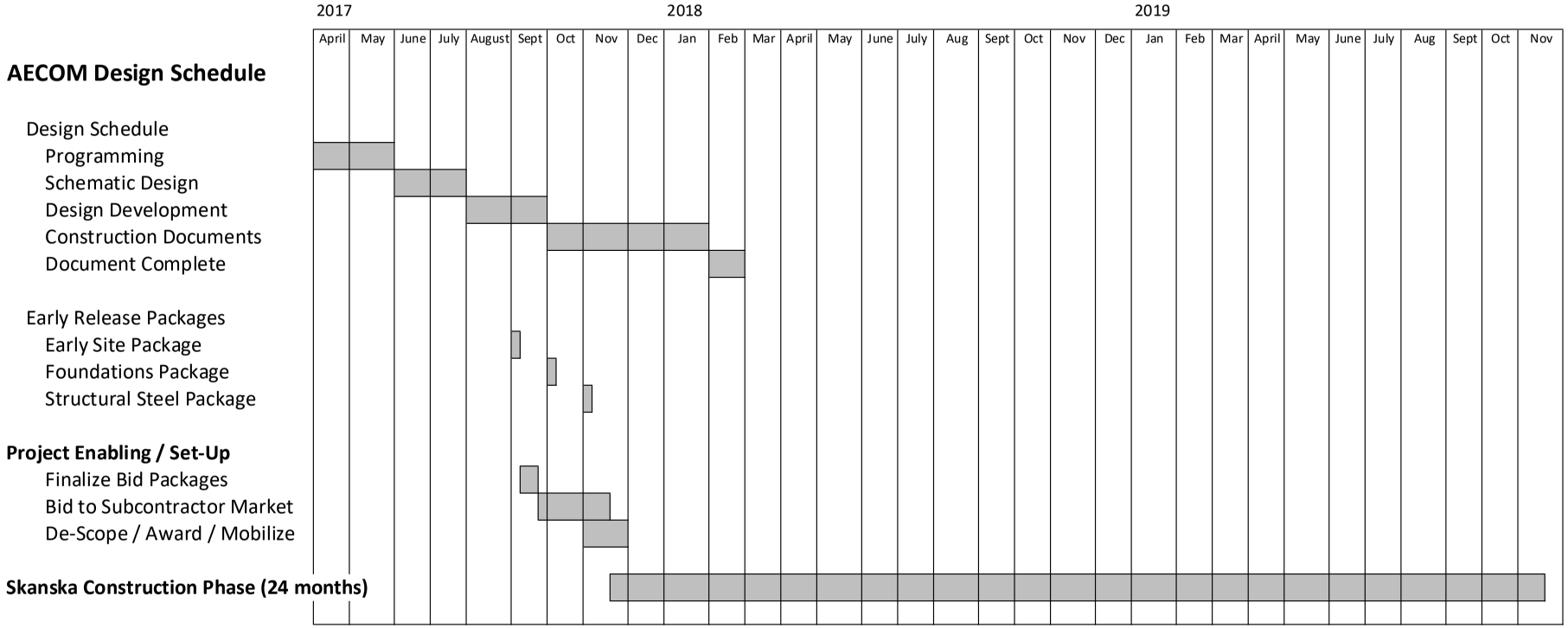
The success in meeting the objectives of Virginia Tech hinges upon realizing the team's goal of starting construction work in December 2017. And just as with the initial Virginia Tech Carilion School of Medicine and Research Institute building, it is critical to the efficiency of the project that the work is able to progress continuously without interruptions.

The initial School of Medicine and Research Institute project ran very smoothly, and just as with that one, our ability to meet the start of construction on time hinges upon several contingencies that are beyond our control. The following contingencies must be managed in order to meet the proposed schedule:

- All stakeholders, including the project committee, must be available to assist with programming the facility as scheduled (see schedule, next page).
- Stakeholders will remain engaged in the project throughout the design phase in order to refine the project requirements. Timely decision making will be paramount.
- Virginia Tech and Virginia State reviewing agencies will acknowledge the fast-track nature of the project by granting expedited or abbreviated reviews as much as possible within State procurement guidelines and regulations.

The following schedule summarizes our general plan for the work and highlights critical dates.

Virginia Tech Carilion HST, CORC and Classroom Building



g

Propose allocation of risk and liability for work completed beyond the agreement's completion date and assurances for timely completion of the project.

This proposal is based upon aggressive and timely approvals afforded by the PPEA Guidelines adopted by Virginia Tech as well as approval of the proposed programming and design by all stakeholders. Not realizing these time sensitive approvals may result in realizing later start dates, completion dates and occupancies for the respective users.

The critical milestone dates detailed in part 2F, proposed project schedule, are consistent with the need to start construction in December 2017 in order to complete the project as quickly as possible. Missing these dates will result in a schedule delay. The decision making process not in the hands of the developer may cause increased costs and possible delay to be incurred by the developer. Carilion will be responsible for contractor delays.

Carilion is doing as much work as it can and will continue to do work until Virginia Tech signs a final agreement with Carilion.

h

State assumptions related to ownership, legal liability, law enforcement, and operation of the project and the existence of any restrictions on the University's use of the project.

The assumptions are:

- Carilion will be liable for design and construction of the project;
- Carilion will finance the planning, design and preconstruction costs but will be reimbursed when state funds are available;
- Skanska will carry builder's risk and liability insurance to cover construction of the project. AECOM will carry appropriate liability insurance
- The project will be restricted to use as a research, veterinary oncology and education building
- Carilion will be responsible up to building turnover. After this point, Virginia Tech will not have any restrictions of the property when occupied. An ownership responsibility agreement between Virginia Tech and Carilion will be worked out with regard to legal liability, law enforcement and operation and maintenance of the facility and its completion and turnover.

i

Provide information relative to phased or partial openings of the proposed project prior to completion of the entire work.

This proposal is based upon single phased construction and occupancy.

The Date of Substantial Completion has been established to occur 23 months following the start of construction in October of 2017. A period of final work activities including punch list completion, city and state required inspections, stocking and move-in activities all occuring between this date and the date of final completion. This schedule is dependent upon Virginia Tech meeting the critical approval timeline outlined in Section G.

j

List any other assumptions relied on for the project to be successful.

- **Programming** - The project committee will be readily available to work with the team to validate HST, education space and CORC programming as indicated in the project schedule.
- **Design Reviews** - Reviews of proposed packages will occur as indicated in the project schedule.
- Timely approval from RRHA
- Approvals from the Board of Visitors as indicated in the project schedule.
- Reviews of phased construction packages will be completed by the permitting authority.

k

List any contingencies that must occur for the project to be successful.

- **Flood Plain Variance** - The proposed project will be located in the Riverside Center, within the 100-year flood plain of the Roanoke River. Local authorities, including the City of Roanoke and Roanoke Redevelopment Housing Authority have planned for and approved the development of eight buildings in the Riverside Center. The first building in the park was completed in 2006 and three additional buildings have been completed.
- Per the requirements of the City of Roanoke, all occupied floors and building equipment are located at least two feet above the 100-year flood elevation. The Commonwealth of Virginia construction and professional services manual, 2004 edition, states that state-owned buildings will not be constructed within the 100-year flood plain unless a variance is granted by the director, division of engineering and buildings, acting in his capacity as building official for state-owned buildings and after consultation with the state coordinator for the National Flood Insurance program (DCR). This project will seek a variance on this issue. Project success is contingent upon receiving the variance. We will seek to obtain a waiver from the state to build in a 100-year floor plain.
- **Funding** - State funding will be available by the start of construction.

3 Project Financing

a

Provide a preliminary estimate and estimating methodology of the cost of the work by phase, segment, or both.

Total estimated proposed construction cost is $80,235,750 in construction and design costs for the program as described herein and based on the current economic value.
The approach to the cost estimate is based upon a conceptual level design with unconfirmed programming relying on historical square foot pricing recently experienced in the area. Major trade subcontractors were also consulted and provided input for the appropriate value of their related activities. The project is being proposed as one phase construction with joint occupancy by Health Sciences and Technology and the College of Veterinary Medicine.

Note that the proposed cost estimate is based on the following key characteristics developed in the conceptual design effort:

- Educational facilities publicly accessible from main lobby with ability for access control
- Maximization of the site development with no reasonable expansion opportunity
- Raised ground level for linear accelerator, CORC client spaces, cafe and education spaces
- Four elevated levels of biomedical research, CORC and education space
- Imaging core with space for two MRI's, PET CT and focus ultrasound
- Human behavioral core with metabolic kitchen
- Human clinical core with exam and procedure rooms
- Animal holding facility for rodents and mini pigs
- 105,000-SF health sciences and technology research laboratory for 25 principal investigators
- Comparative oncology research center program as developed with the Virginia Maryland College of Veterinary Medicine
- Approximately 17,000-SF of education space

The general breakdown of estimated costs are as follows:

Design and consultants costs	**$5,775,000**
Site work, utilities, building shell and build-out:	**$61,929,000**
General conditions, permits, preconstruction services and fees:	**$8,071,000**
Developer cost allowances:	**$4,460,750**
Total estimate	**$80,235,750**

As the design progresses through the schematic, design development, and construction document phases, detailed estimates will be revised and costs finalized. This estimate does not include furniture, fixtures, or equipment.

b Submit a plan for the development, financing and operation of the project showing the anticipated schedule on which funds will be required. Describe the anticipated costs of an proposed sources and uses for such funds including any anticipate debt service costs. The operational plan should include appropriate staffing levels and associated costs. Include supporting due diligence studies, analyses or reports.

Funding

- Carilion will finance the estimated $3-5 million costs for final programming, preconstruction and design cost that will expended before December 2017. Carilion will be reimbursed in full when state funds are available.
- Project costs up to $48.3 million will be covered by State funds
- Virginia Tech will pay up to $18,000,000 of project costs
- Carilion Clinic will pay up to $14,000,000 of project costs
- Carilion Clinic will also be committing land valued at $2 million
- There will be no debt service costs related to this proposal.
- This proposal not cover any operations in the Project.

c Include a list and discussion of assumptions underlying all major elements of the plan. Assumptions should include all significant fees associated with financing given the recommended financing approach. In addition, complete disclosure of interest rate assumptions should be included. Any ongoing operational fees, if applicable, should also be disclosed as well as any assumptions with regard to increases in such fees.

- See information in section 3B
- There will be no financing fees or interest included in the project
- Operational fees are not applicable to this project

d Identify the proposed risk factors and methods for dealing with these factors.

- Delays in Final Programming decision making could aversely affect the construction time line and add expense to the project due to inflation of construction costs. Carilion will manage these risks by setting tight time lines for decision making.
- Expanding the scope of this project can cause costs to exceed the proposed budget. Major decision makers will be required to stay within allocated budgets for each section of the project. Excess costs will be required to be offset by scope reduction or value engineering.
- Delays in state funding could cause disruption of the design and construction process and create delays in the substantial completion date.
- Risks during construction will be managed by both Carilion and Skanska. Skanska's excellent safety program will help manage risk to the construction and to employees and sub-contracts on the job.
- The risk of cost overrun for the project will be minimized by Skanska and Carilion signing a GMP (Guaranteed Maximum Price).
- Delays in approved funding could cause unanticipated increases in escalation costs and create delays in the substantial completion date.

e Identify any local, state or federal resources that the proposer contemplates requesting for the project. Describe the total commitment, if any, expected from governmental sources and the timing of any anticipated commitment. Such disclosure should include any direct or indirect guarantees or pledges of the University's credit or revenue.

- No resources will be requested from local sources, but Skanska and Carilion will be working with local authorities to insure good working relationships and communications in order to facilitate the timely issuance building permits, required inspections and final certificate of occupancy.
- Carilion and AECOM will request assistance from the Roanoke Regional Housing Authority expediting the review and approval of the project based on standard and requirements for construction in the South Jefferson Redevelopment Area, the location of the Riverside Center.
- Carilion and AECOM will request assistance from appropriate State authorities for guidance and final approval of plans to build in the flood zone.
- No guarantees or pledges are anticipated of Virginia Tech's credit or revenues for this project.
- University Building Official (UBO) review

f Identify the amounts and the terms and conditions for any revenue sources.

- Other than costs for final programming and initial design activity that will be fronted by Carilion this Project is contingent up approval of the Project Costs in the State's budgetary process and committed project funds from other sources.
- $48.3 million in state funding is required for the project.

See 3.b for additional information.

g Identify any aspect of the project that could disqualify the private entity from obtaining tax-exempt financing.

No private equity financing will be involved with this project.

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4 Benefit and Compatibility

a

Identify who will benefit from the project, how they will benefit and how the project will benefit the overall community, region, or state.

The project is the cornerstone for the further development of a Health Sciences and Technology Innovation District in Roanoke, VA. The project will expand the established research programs of VTCRI and promote Virginia Tech's "One Health" approach which recognizes the interdependence of human and animal health.

The location of the project on the Riverside campus in Roanoke is critical to its success as no other location offers direct adjacency to VTCRI, the Virginia Tech Carilion Medical School and Carilion Clinic. Development of the project in this location offers the following benefits:

- **Virginia Tech**
  - Increase access to National Institutes of Health research funding
  - Increase research university ranking
  - Expand Roanoke campus
  - Enhance opportunities for students, faculty and employees
- **Carilion Clinic**
  - Enhance ability to attract physicians to the region
  - Support the organization's mission to provide medical education and research opportunities
  - Deepen ties with Virginia Tech
  - Provide additional space for continuing education and professional development
- **General Public**
  - Strengthen medical and health research activity in Roanoke
  - Improve quality of life and local economy through increased economic activity
  - Improve quality of life by bringing medical research breakthroughs to the bedside
  - Improve quality of life by improving employment opportunities
  - Enable spin-offs and commercialization of funded research programs
  - Expand health sciences and technology educational opportunities
  - Improve access to cancer treatment for companion animals
- **Business Community**
  - Increase the number of people in the region with disposable income
  - Increase demand for housing and retail services
  - Increase business property value
  - Improve the conomic visibility of the region
  - Improve access to highly skilled professionals
- **Local Government Agencies**
  - Increase tax revenue through increased property taxes, increased payroll and business development
  - Improves the economic vitality of a blighted brownfield
  - Improve the economic visibility of the region
- **Commonwealth of Virginia**
  - Increased tax revenue through increased economic activity
  - Increase visibility and prestige in SW Virginia

b Identify any anticipated public support or opposition, as well as any anticipated government support or opposition, for the project.

Support is anticipated from the general public, Carilion staff, Virginia Tech students and faculty, SW Virginia business leaders, Chambers of Commerce, Economic Development agencies, local governments and elected officials and many private physicians.

c Explain the strategy and plans that will be carried out to involve and inform the general public, business community, and governmental agencies in areas affected by the project.

The construction itself will have minimal impact on residents in the area immediately surrounding the construction site.

Regular communication will occur with Roanoke City to keep them informed about potential disruptions to traffic -which will be minimal, if they exist at all.

Roanoke City officials will be briefed as needed.

The Roanoke Redevelopment and Housing Authority will be briefed by project management staff as needed.

Mark Lawrence, Vice President for Governmental Affairs for Carilion and Chris Yianilos, Executive Director of Government Relations for Virginia Tech, will serve as liaisons with the legislature and the Governor's office to keep both informed of project developments and issues.

The general public will also be informed about the status of the project through News Releases and updates posted on the internet

d

Describe the anticipated significant benefits to the community, region or state, including the anticipated benefits to the economic condition of the university and whether the project is critical to attracting or maintaining competitive industries and businesses to the university or the surrounding region.

The Roanoke Region is continuing development as a biomedical research hub for Virginia; bringing key economic benefits along with enhanced medical services to the region. The development of this project is critical to maintaining the economic momentum generated with the establishment of the Virginia Tech Carilion School of Medicine and Research Institute. The addition of 25 additional principal investigators, a veterinary oncology clinic and increased numbers of undergraduate and graduate students in Roanoke will further enhance the economic impact of the Health Sciences and Technology district activity.

> "The expansion of the health sciences and technology innovation hub in Roanoke is a tactical investment to grow the state's biomedical and health research enterprise," said Virginia Gov. Terry McAuliffe. "We are building a statewide portfolio that will accelerate bioscience and medical research as a major component of the new Virginia economy. Our efforts will position the Commonwealth as a national leader in advanced research." (Roanoke Star, March 21, 2016)

The project expands the number of researchers in the region from 30 to 55, significantly increasing access to National Institute of Health funding opportunities.

e

Describe compatibility with the local comprehensive plan, local infrastructure development plans, the capital improvements budget or other government spending.

This project will be designed in compliance with South Jefferson redevelopment plan that is part of Roanoke city's comprehensive development plan.

Carilion has all locally required infrastructure in place as a result of previous implementation of the Riverside Center Development Plan.

No other local government spending is anticipated relating to the project.

f Provide a statement setting forth participation efforts that are intended to be undertaken in connection with this project with regard to the following types of business: (i) minority owned businesses, (ii) women-owned businesses and (iii) small businesses.

Skanska USA Building Inc. is committed to utilizing Small Business and Disadvantaged Business Subcontractors and Venders whenever possible in all of its work for both public and private projects. They agree with the concept that growing small businesses is good for the construction industry by increasing the pool of talented contractors, and also providing important social and economic opportunities.

This team will implement Skanska's Small, Women, and/or Minority-Owned Business (SWAM) plan in order to identify and utilize (i) minority-owned businesses, (ii) women-owned businesses, and (iii) small businesses. This plan is successfully being utilized on numerous projects throughout the region so Skanska's project and office support teams are already familiar with and have been trained in the program and implementation process. Their teams are aware of the importance to meet or exceed Virginia Tech and Carillon's expectation of small, minority, and women owned business participation.

With over 70 years of working in the surrounding region we have an extensive network of qualified subcontractors in the area. We will pull subcontractors from many nearby markets and will advertise and solicit specifically to regional subcontractors who are familiar with the local market. Additionally, advertisements will go out from our Durham, North Carolina and Rockville offices for a traveling subcontractor base.

We will conduct open forums to explain the project requirements and opportunities for contracting to interested firms. Complete bid packages will be issued to bidders, including instructions, a detailed scope, contract drawings, logistics plans, schedules, specifications, Skanska's Safety Program and a sample GMP subcontract. We will use the following non-exhaustive list to generate interest and subcontractor/vendor participation for your project:

- Advertisements in local and regional newspapers
- Project marketing conferences with the trade community
- Continuous communications with the subcontracting community
- Distribution of early bid packages
- Encourage "alternative" bids or "voluntary" alternates during the bid process
- Prequalification of all trade contractors
- Numerous trade and vendor bid packages
- Participation at tradeshows and events in Virginia
- Host training opportunities for subcontractors.

How do we generate Subcontractor "Buy-In"?

Networking Conferences

We will hold project information conferences in Roanoke and the surrounding areas. We will also hold open house networking sessions, where subcontractors can come and review the drawings and contracts in a relaxed atmosphere.

Smaller Packages and Relationship Building

We will break work up into smaller packages to ensure that SWaM participation goals are attained and use reduced barrier packages. We can also link larger, first tier subcontractors to smaller vendors and subcontractors who offer SWaM participation to help them achieve project goals.

Through our methods, bidders will understand that working with the design and construction team is an interactive partnership in which they will become a key part of the process. Skanska expects bidders to provide exceptional service promoting team building. We will also place particular emphasis on interviewing the actual subcontractor personnel.

SWaM Specific Strategies: We will work with Virginia Tech and other local entities to collect available information of firms that are currently certified as SWaM contractors/vendors to augment our internal database. Additionally, we will work to identify capable SWaM firms in the region that may be interested in the project, but are not yet certified, and assist them in the certification effort.

Through our ongoing outreach efforts in this area, we can utilize current information and increase outreach activities by hosting project orientation sessions, mixers between first and second tier contractors, meeting with community organizations to solicit their support and encouraging first tier contractors to partner with SWaM certified firms.

In addition, we hold subcontractor training on various topics to improve subcontractors' business skills, such as Estimating 101, insurance and bonding and how to review drawings for constructability. We have found that by educating the subcontractor market, we improve competition. This results in better pricing and improves the overall quality of work.

We are seeing results of encouraging good faith efforts by all first tier contractors to include SWaM participation at the second tier level. Our project team will press on with the good faith effort, pre-qualify contractors based on their planned approach to increase participation and use good faith effort as a component of vendor selection.

The SWaM participation goal for this project is 42 percent.

Skanska had standing room only at a James Madison University minority contractor outreach event.

CARILION CLINIC AECOM SKANSKA

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University Building Official 2017 Annual Report
(Report Period April 1, 2016 – March 31, 2017)

BUILDINGS AND GROUNDS COMMITTEE

June 2017

The Restructured Higher Education Financial and Administrative Operations Act of 2005 and the Management Agreement with the Commonwealth of Virginia grant the university the authority to designate its own building official. The Board of Visitors approved a resolution to establish a university building official and building code review unit at its June 20, 2008 meeting and the office was established July 1, 2010. Effective June 3, 2011, the Bureau of Capital Outlay Management (BCOM) formally delegated building official authority for Virginia Tech to the university's building official.

The Committee will receive the seventh annual summary report of activities from the University Building Official (UBO) since the Board approved policies and procedures governing the UBO, including the presentation of an annual report. As set forth in University Policy 5407, the annual report will identify the code enforcement and building permit activities performed during the prior year.

Since the previous annual report, the Office of the UBO has revised many of its processes and procedures to reflect newly purchased permitting software. In addition to streamlining the office's permitting process and tracking capabilities, the revised processes and procedures have consolidated some inspections and created additional permit definitions. As a result, many of the statistics listed below do not directly correlate with those listed in previous years. Editorial notes have been included with some statistics to provide clarity.

In the last year, the following tasks have been completed:

Major Statistics:

- Number of Plan Reviews for Permit performed: 2,381 (increase of 131 or 6% since 2016 Annual Report)
    - Includes repeated reviews to achieve code compliance
    - Note: In previous years, this statistic required estimating repeated reviews, whereas this year's number is a specific number tracked in the new software.
- Number of Permits issued (all permits and all trades): 1,375 (increase of 242 or 22% since 2016 Annual Report).
    - Note: A minor portion of this increase is due to several new permit classifications.
- Number of Inspections performed (all trades, pass and fail): 2,665 (decrease of 658 or 24% since 2016 Annual Report)
    - Note: In the past year, all above ceiling inspections were consolidated

into one general inspection class, ultimately reducing the total number of inspections performed.

- Number of Re-Inspections due to field failures/rejections: 412 (approximate decrease of 252 or 15.5%)
    - Note: In the past year, all above ceiling inspections were consolidated into one general inspection class, ultimately reducing the total number of inspections performed. Additionally, the new software allows for better accounting of re-inspections. In previous years, this number was estimated at 20% of the total number of inspections.
- Examples of issues typically found in error in plan review stage:
    - Incomplete documents, details, and drawings
    - Incorrect code references or incomplete application of the Virginia Rehabilitation Code
    - Incorrect applications of fire rated assemblies
    - Incorrect application of fire separation and fire equipment access
- Examples of issues found in the field include:
    - Failure to install fire rated wall/floor penetration assemblies in new construction
    - Identification of non-compliant existing wall/floor penetrations in existing facilities
    - Improper electrical grounding system installations
    - Installation issues with fire alarm and suppression systems
- The UBO office is required by the Virginia Statewide Building Code to issue permits for and inspect large tents, stages, and amusement devices.
    - Tent and Stage requests permitted and inspected: 23 (decrease of 16 since 2016 Annual Report)
    - Special Events reviewed and inspected: 24 (increase of 2 since 2016 Annual Report)
- Number of Certificates of Occupancy (CO) Issued: 5
    - East Control Building, Building 0208 (10/3/2016)
    - Metal Barn, Building 0144 (05/06/2016)
    - Pearson Hall, Building 0002 (01/24/2017)
    - Virginia Tech Airport Hangar, Building 0219 (07/28/2016)
    - West Control Building, Building 0209 (10/3/2016)
- Number of Demolition Permits Issued: 11 (decrease of 43 since 2016 Annual Report)

Staffing and Development

- The UBO office hired a structural engineer to fill the open Reviewer/Inspector position.
- The UBO office participated in code committees to improve staff knowledge and application of the building code and provide input to the upcoming code change expected in 2018.
- The UBO office worked with the Department of Housing and Community Development to provide code enforcement education for other building and fire

officials.
- The UBO office provided presentations on codes and code enforcement to several classes in the School of Architecture.

Operations

- Continued to implement the Office of the UBO's new software to improve and manage the permit review and inspection work with better connectivity and less paper.
- Continued the permitting and inspection of sidewalks and other pavements or slabs, as well as roads not covered by the Virginia Department of Transportation.
- Continued the permitting and inspection of utility work outside building footprints.
- Continued to coordinate the permitting and inspection of cabling and conduit penetrations for Network Communication Services, including the removal of abandoned communication wiring across campus.
- Identified several issues of code violations: resolved or working on resolutions with the State Fire Marshal Office regarding work done by the university and contractors without proper permits, plans, or authorization.
- Continued to coordinate efforts with the local building officials association to assist the campus and community through outreach efforts to contractors and staff regarding the building codes.

CAPITAL PROJECT STATUS REPORT

LIVE ◂ LEARN ◂ WORK

- Board of Visitors Meeting: *June 5, 2017*
- Christopher H. Kiwus, PE, PhD
  Associate Vice President and Chief Facilities Officer

VirginiaTech

PROJECTS APPROVED, NOT YET FUNDED

- Chiller Plant Phase II
- Undergraduate Science Laboratory
- Virginia Tech Carilion Research Institute Biosciences Addition

PROJECTS IN PROGRESS

- Health Center Improvements/Student Wellness Services
- Holden Hall Renovation
- Improve Kentland Facilities
- Lane Electric Substation Expansion
- Livestock and Poultry Research Facilities – Phase I
- Multi-Modal Transit Facility
- O'Shaughnessy Hall Renovation
- Undergraduate Science Laboratories Renovations

PROJECTS UNDER CONSTRUCTION

- Athletic Facilities Improvements
- Biocomplexity Institute Data Center Expansion
- Eastern Shore AREC Equipment Storage Building
- Fire Alarm Systems and Access
- Renovate/Renew Academic Buildings
- Residential Door Access Improvements
- Unified Communications and Network Renewal Project
- Upper Quad Residence Halls

BUILDING AND GROUNDS COMMITTEE
June 5, 2017
Capital Project Status Report

Project Name	Project Description	Estimated Total Project Cost	Non-General Funds	Project Teams	Contract Completion Date	Project Status
APPROVED, NOT YET FUNDED						
Chiller Plant Phase II	This project includes the replacement and upgrade of central plant equipment in the existing campus chiller plants and the expansion of the underground distribution infrastructure to link campus chiller substations and bring existing campus buildings online. The improvements include the replacement of two outdated chillers in the North Plant with two new upgraded larger capacity chillers; and addition of up to two new 1,500 ton chillers in the Southwest Plant. The project also includes the replacement and upgrade of ancillary equipment with state-of-the-art, optimally sized pumping and system support equipment, and the expansion of the distribution system to connect the two plants. The project accommodates LEED refrigerant requirements by replacing outdated, inefficient chiller equipment with equipment that uses newer refrigerant types.	$40,000,000	$0	Affiliated Engineers, Inc. (AEI) Atlanta, GA Glave & Holmes Architecture Richmond, VA Hurt & Proffitt Civil Engineering Blacksburg, VA	TBD	Schematic Design was completed on April 27, 2017 and internal review is currently underway.
Undergraduate Science Laboratory	This project will construct a new undergraduate science laboratory facility of 102,000 gross square feet (GSF) to accommodate the growing demand for STEM-H degrees at Virginia Tech.	$75,000,000	$0	ZGF Architects Washington, DC TBD	August, 2020	The project has been authorized for planning, but funding will not be available until FY2018. The A/E has been selected. Initial design efforts will begin by the end of May 2017.
Virginia Tech Carilion Research Institute Biosciences Addition	This project will construct an approximately 136,000 gross square foot (GSF) building adjacent to the Virginia Tech - Carilion Research Institute in Roanoke, VA. The new facility will include high intensity biomedical research capable laboratories with surgical-type suites, Biosafety Level Three laboratories, and animal imaging facilities that require high field magnetic resonance imaging. The remaining space will include high intensity dry laboratory research and training spaces including computational facilities, offices, procedural training rooms, and classroom space.	$92,000,000	$0	AECOM Skanska	TBD	The state has authorized university submittal of a request for planning funds. The forms have been submitted for Virginia Department of Planning and Budget approval. This project will follow the university's PPEA process. A conceptual stage unsolicited proposal has been submitted by Carilion and accepted by Virginia Tech. Public notice of receipt of an unsolicited proposal has been published, initiating a 45-day period in which other proposals may be presented to the university.
DESIGN						
Health Center Improvements/ Student Wellness Services	The planning authorization for the Health Center Improvements project was updated by the Board of Visitors at the March 2016 meeting to initiate a revised and comprehensive solution for student wellness services.	TBD	$3,071,000	Cannon Design TBD	TBD	The A/E contract has been awarded and the Feasibility Study is ongoing to upgrade McComas Hall and perform a major renovation of War Memorial Hall for the Schiffert Health Center, Cook Counseling, Recreational Sports, College of Liberal Arts and Human Sciences programs, and the College of Agriculture and Life Sciences. The Feasibility Study is targeted for completion by July 2017.
Holden Hall Renovation	This project includes the renovation of an approximately 21,000 gross square foot (GSF) portion of Holden Hall. The remaining 21,000 GSF of the existing building will be demolished and replaced with approximately 80,000 GSF of new engineering instruction and research space for a total building size of 101,000 GSF.	$67,000,000	$17,500,000	Moseley Architects Virginia Beach, VA W.M. Jordan Co.	TBD	The A/E and the Construction Manager at Risk (CM) have been selected. The A/E is scheduled to complete revisions to the Schematic Design documents in July.
Improve Kentland Facilities	This project includes new construction of three buildings totaling approximately 28,900 gross square feet (GSF) including a metabolism research laboratory, an applied reproduction facility, and a bovine extension teaching/research facility to serve Agency 229, Virginia Cooperative Extension and the Virginia Agricultural Experiment Station.	$9,363,000	$0	Spectrum Design, PC Roanoke, VA TBD	TBD	Bids for construction of the three buildings were received in December 2016. All three bids exceeded the construction budget. Value engineering negotiations with the apparent low bidder have rendered savings, but the savings are not sufficient to close the gap. Additional cost savings measures are under consideration in order to award the contract and begin construction in the summer of 2017.
Lane Electric Substation Expansion	This project will expand the existing electrical sub-station to add approximately 37 percent additional power capacity to serve the campus Life Sciences and Northwest Precincts and the Corporate Research Center's proposed expansion.	$6,500,000	$6,500,000	AEP and VTES AEP and VTES	TBD	The project is administered by Virginia Tech Electric Service in coordination with Appalachian Power Company (APCo) and Appalachian Electric Power (AEP). Construction of two control buildings is complete and VTES is continuing electrical fit-out inside. New 69 kilovolt electrical lines have been checked and are satisfactory. APCo is continuing fit-out of additional 69 kilovolt metering points. Transformer procurement is complete, and delivery is scheduled for fall 2017.

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Livestock and Poultry Research Facilities - Phase I	This proposed project will provide a combination of new replacement facilities and renovated facilities at the Blacksburg campus and three nearby university production and research farms.	$22,500,000	$0	Spectrum Design, PC Roanoke, VA TBD	TBD	The A/E contract has been awarded and Schematic Design is underway.
Multi-Modal Transit Facility	This is a Capital Lease Project administered by the Town of Blacksburg and funded by Federal Transportation Administration grants and a university match.	TBD	TBD	Wendel Associates Buffalo, NY TBD	August, 2020	Sixty percent (60%) design documents have been completed by the Town of Blacksburg's (ToB) A/E and have been reviewed by the university. Ninety percent (90%) design documents are scheduled for delivery to the ToB for review in June 2017. Current schedule shows full design documents will be completed by December 2017 and bidding for construction is anticipated between January and March 2018. Construction is anticipated to begin in spring 2018. The project is being designed to LEED Platinum standards, providing a campus sustainability demonstration showcase.
O'Shaughnessy Hall Renovation	This project includes major renovation of a 72,000 gross square foot (GSF) student residence building into a living-learning community.	$21,500,000	$1,750,000	Moseley Architects Virginia Beach, VA WM Jordan, Roanoke, VA	August 1, 2018	Construction is scheduled to begin in May 2017 with completion in August 2018.
Undergraduate Science Laboratories Renovations	This project will repurpose up to seven laboratory spaces in Derring Hall and up to three laboratories in Hahn Hall. These repurposed laboratories will expand space to meet growing demand for course sections in biology, chemistry, organic chemistry, physics, and microbiology.	$10,000,000	$10,000,000	Studio Twenty Seven Architecture Washington, DC TBD	August 2018	The university initiated programming and space analysis for the renovation of selected labs in Derring Hall and Hahn Hall. Schematic Design documents were received in March 2017. Preliminary Design is in progress and documents are due in June 2017. Authorization to proceed to working drawings design and construction is being sought at the June 2017 BOV meeting.
CONSTRUCTION						
Athletic Facilities Improvements	This is an umbrella project for improvements to multiple athletics facilities, including Rector Field House, Baseball, Tennis, and Cassell Coliseum Bowman Room (Nutrition Center).	$37,500,000	$37,500,000	Rector: Cannon Design Baseball: Cannon Design Tennis: TKA Architects (Criteria Documents) Nutrition: Hanbury Architects Rector: Branch Associates Baseball: Whiting-Turner Contracting Co. Tennis: D/B Contractor TBD Nutrition: TBD	Rector: Spring 2018 Baseball: Spring 2018 Tennis: TBD Nutrition: TBD	Sub-projects as follows: 1) Rector Field House - Includes building renovation and new additions to provide indoor infield, batting and pitching cages for softball, an indoor throws area for Indoor Track & Field, new entry, restrooms, team rooms, and support spaces. Site utilities, demolition, and foundation construction are currently in progress. 2) Baseball - Includes demolition of the existing press box and seating bowl, and construction of a new, larger press box structure to include suites, press, game operations, radio/TV broadcast, ticket office, team store, concessions, restrooms, and support spaces. Also includes renovations to the existing Weaver Baseball Center to add a team locker room, team lounge, training, equipment, coaches locker room, and support spaces. Demolition of the existing press box and seating bowl has been completed. Construction of new foundations is underway. 3) Tennis - Includes an addition and renovation to provide for improved tennis team and training facilities. Design/Build procurement is being finalized. 4) Nutrition Center - Includes the potential renovation and/or new construction to provide improvements for athletic team training and nutrition program. A Feasibility Study to identify a site, and to provide concept plans and cost, has been completed. Project is on hold pending funding authorization.
Biocomplexity Institute Data Center Expansion	This project includes the renovation of four rooms in the Biocomplexity Institute of Virginia Tech (BI) building into a high performance computing center.	$5,900,000	$5,900,000	TSS Columbia, MD Whiting-Turner Baltimore, MD	May 1, 2017	Construction is substantially complete. BI is installing racks and IT equipment. Last report for this item.
Eastern Shore AREC Equipment Storage Building	This project includes the construction of a 7,500 gross square foot (GSF) agricultural equipment storage building at the AREC in Painter, Virginia.	$502,000	$535,000	Dewberry Charlotte, NC Asturian Group, Inc. Virginia Beach, VA	July 2017	Construction began in April 2017. Completion is scheduled for late July 2017.
Fire Alarm Systems and Access	This project provides for critical life safety improvements in several educational and general facilities on campus. Fire alarm systems will be installed or expanded in as many campus buildings as funding allows, including Architecture Annex, Food Science & Technology, Lane Hall, Litton-Reaves Hall, Norris Hall, Patton Hall, Randolph Hall, War Memorial Hall (Gym), Wallace Annex, and Whittemore Hall.	$4,900,000	$0	Multiple A/E Firms Multiple Contractors	Summer 2017	Architecture Annex, Food Science & Technology, Lane Hall, Patton Hall, Wallace Annex, War Memorial Hall (Gym), and Whittemore Hall are complete. Randolph Hall is in construction. Funding for Norris Hall has been approved and construction will start in the next few weeks. Funding for Litton-Reaves Hall will be requested from the Virginia Department of General Services.

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Renovate/Renew Academic Buildings	This project will renovate three existing campus buildings - Sandy Hall, Liberal Arts Building, and the original portion of Davidson Hall. Collectively, these renovations will increase the functionality of three underutilized building assets, address several deferred maintenance issues, and reduce critical space deficiencies. Small additions are planned for Sandy and Liberal Arts Buildings to meet current emergency egress code requirements. New elevators in Sandy and Liberal Arts Buildings will provide ADA access.	$35,029,000	$0	Glavè & Holmes Architecture Richmond, VA Branch & Associates Roanoke, VA	June 2018	Construction is underway on all three buildings. Substantial completion for all three buildings is scheduled for June 2018.
Residential Door Access Improvements	Project to retrofit and install wireless electronic door access locks on approximately 4,520 student room doors campus-wide.	$7,735,000	$7,735,000	Hokie Passport, CNS, and CBORD	Fall 2017	Project is physically complete. Final University Building Official (UBO) inspections will occur in May after the semester ends.
Unified Communications and Network Renewal Project	This project replaces outdated equipment and upgrades campus communications systems, providing infrastructure and equipment enhancements over a five year period. The project scope includes upgrades to the Internet Protocol (IP) Network, the cable plant, and equipment rooms in buildings throughout campus.	$16,508,000	$16,508,000	Multiple A/E Firms Various Contractors	December 2017	The data center team has completed the technical evaluation of the orchestration and automation frameworks. The team is continuing to test software defined networking (SDN) solutions to validate integration strategies. Procurement planning activities for the project are underway. The cabling team is working to terminate and test the new cabling in Litton-Reaves Hall.
Upper Quad Residential Facilities	This project provides for the demolition and construction of replacements for Brodie and Rasche residence halls to serve the Corps of Cadets. The new residence halls totaling approximately 210,000 gross square feet (GSF) will provide over 1,000 beds in double and triple rooms sharing hall community bathrooms. These new residence halls will be constructed at the approximate location of the original Rasche Hall and Brodie Hall. Both buildings will provide double and triple occupancy rooms that meet the residence and in-room storage space needs of the cadets. Both new residence halls will provide dedicated meeting, community, and group spaces, specifically designed to meet Corps program and organization needs. Thomas Hall and Monteith Hall will also be demolished as part of this project.	$91,000,000	$91,000,000	Clark Nexsen Charlotte, NC Barton Malow Company Charlottesville, VA	Pearson - August 8, 2015 Second Residence Hall - April 2017	Construction of Pearson Hall (Rasche Hall replacement) is complete. Substantial completion for the second residence hall achieved in April 2017. Furniture, fixtures, and equipment (FFE) were delivered and installed in May. Thomas and Monteith Halls are scheduled for demolition in summer 2017.