



Institute for Contemporary Art at the Markel Center

VIRGINIA COMMONWEALTH UNIVERSITY

Virginia Commonwealth University
Institute for Contemporary Art
601 W Broad Street, Richmond, VA 23284

LEED Gold Case Study

LEED Gold Building Highlights

- Located at the busiest intersection in the city and easily reached via public transportation, on foot, or by bicycle
- 100% recyclable titanium zinc paneling on exterior
- Landscape design includes Pennsylvania blue stone, two water features, and numerous native plant species
- 43 geothermal wells provide energy for 6 miles of radiant floor tubing to heat and cool the building
- Over 8,000 square feet of green roofs reduce storm water runoff, insulate the building, and reduce the creation of urban heat island effect
- Over 36% of the exterior is glazing, allowing in natural light



Image: Iwan Baan





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Project Purpose

VCU's 41,000 square foot Institute for Contemporary Art at the Markel Center is an incubator for interdisciplinary experimentation for the entire university while simultaneously providing opportunities for collaboration both locally and internationally.

VCU and the ICA are committed to building a greener and more sustainable campus and world. Maximizing the opportunities of the construction project, VCU incorporated technologies that ensure a positive environmental impact and align closely with state and institutional goals.

Location

The Markel Center is located on the urban campus of Virginia Commonwealth University in Richmond, VA. VCU, comprised of the Monroe Park Campus and the Medical College of Virginia, covers 158 acres of downtown Richmond and serves a population of approximately 32,000 students and 2,300 faculty and staff. The Markel Center is located on the Monroe Park Campus at the busiest intersection in the City of Richmond, which sees approximately 60,000 vehicles daily.

The building is along the route of the GRTC Pulse, a new 7-mile long bus rapid transit line. It has two bike racks, and an adjacent lot hosts a 16-bike city bike share station.

Project Teams

Client: **Virginia Commonwealth University**
Architect: **Steven Holl Architects, BCWH**
Landscape Architect: **Michael Boucher Landscape Architecture**
MEP Engineer: **ARUP, Ascent Consulting Engineers**
LEED Consultant: **Sustainable Design Consulting**
Civil Engineer: **Vanasse Hangen Brustlin**
Structural Engineer: **Robert Silman Associates**
Lighting Consultant: **L'Observatoire International**
AV/IT/Security Systems Design: **Convergent Technologies**
Theater Consultant: **Theater Consultants Collaborative, Inc.**
Elevator Consultant: **Jenkins & Huntington, Inc.**
Food Service Consultant: **Foodservice Consultants Studio**
Code Consultant: **Aon Fire Protection**



Images: Iwan Baan



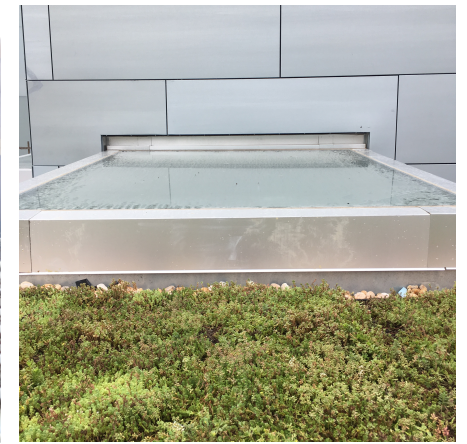
Sustainable Strategies

The project achieved 8 of 14 Sustainable Sites credits (worth 20 points) in the LEED program through the following strategies.

- Previously developed site surrounded by existing infrastructure and has no sensitive attributes
- Surrounded by myriad pedestrian-accessible services
- On the GRTC bus route, and the new BRT PULSE route
- A shower is provided for staff, permanent bike racks are provided, and a program is in place for additional bike racks during events
- One of four ICA spaces in adjacent lot is dedicated to be LEV/ FEV. Parking on site was reduced to zero.
- A combination of vegetated and light colored roofing is employed to minimize heat island effect and cooling load for building



Image: Iwan Baan





Energy + Atmosphere

- **212 panels of vertical glass and 16 skylights** are found in the galleries, Forum, and the third level administrative suite. The glass ranges in transparency from clear to opaque and is formulated to reduce the transmissivity of glass while also filtering out the ultraviolet radiation that can damage works of art.
- **Additional lighting** throughout the Markel Center is LED, and all spaces are outfitted with occupancy sensors.
- **6 miles** of radiant tubing is embedded in the top four inches of the concrete floors in the galleries, forum, and third level administrative suite. These are connected to 43 geothermal wells drilled to depths between 400 and 600 feet below ground. This creates a hydronic closed loop system and the energy sourced from the wells is converted into radiant floor heat.
- **3,350 square feet** of glass cavity walls exist on significant portions of the western and eastern faces of the building. These double-paned glass walls will reduce heat transfer out during winter months, and reduce heat transfer during the summer.



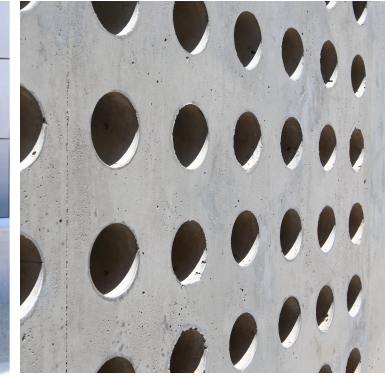


- **35% decrease** in demand for potable water and need to treat wastewater due to low-flow faucets and spouts
- **7,500 square feet** of green roof assemblies cover three of the four gallery roofs, and the loading dock roof. Blanketed with native species, the green roofs help insulate the building during cold months, absorb urban heat during hot ones, and reduce storm water runoff. Green roof assemblies are designed to be low maintenance and require no watering or weeding. The assembly consists of membranes and insulation layers that guard against leaks. The green roof at The New Market Terrace is accessible to visitors.
- **5 species of native vegetation** can be found included in the landscaping. The plant choice was guided the desire to have water efficient landscaping and includes broomsedge, Pennsylvania sedge bluestem, river oats, beard grass, and blue-stemmed goldenrod. The plants offer a range of color, texture, and height, beautifying the landscape
- **Modeled energy savings over 35%** in BTU's and over **38% in cost**, equaling a savings of over **\$68,000**.



Materials and Waste:

- **100% recyclable** zinc panels made of **40% recycled** content sheathe the exterior of the building. The paneling resists corrosion and is a natural fungistatic, meaning that it reduces the risk of mold, mildew, and fungus, reducing the need for harsh chemical cleaners.
- **145 bluestone pavers** were used to pave the Thinking Field on the ground floor, exterior space of the ICA. Bluestone, or basalt rock, can withstand cold, hard winters and freeze-thaw cycles. The pavers are approximately 4 x 8 feet in size with a crushed bluestone fill in between which includes a stabilizer that expands with moisture that keeps the pavers in place. The application of bluestone pavers and gravel provides a permeable base to manage storm water runoff.
- Over **30%** of the construction materials contain recycled content, and over **20%** were regionally sourced. These materials include concrete, structural steel, steel decking, drywall, studs, doors, insulation, zinc panels, and carpet.
- Adorning the walls of the ICA performance space is **Forest Stewardship Council (FSC)** certified cherry wood. The end grain cherry floor is regionally sourced from Pennsylvania. All casework and doors throughout are also FSC certified.
- **Recycling receptacles** will be included throughout the building; however, they will be emptied into the dumpster with all other waste, and separated out at the facility.





Innovation

- The alley adjacent to the building is a “green alley.” Seemingly just a cobblestone alley, this design strategy is being adopted across the city and has been shown to reduce storm water runoff while filtering silt and pollutants and reducing the heat island effect given off by asphalt. In addition, green alleys are also aesthetically pleasing and allow easier access to the utilities embedded beneath them.

Indoor Environmental Quality

- Although visitors cannot see it now, contractors and subcontractors followed a strict construction management plan that protected sensitive building systems, like the plenum spaces that include ductwork, and workers from being exposed to things like dust, fumes, and other dangerous construction byproducts.
- Throughout the building, filters with 90-95% efficiency are used not only to protect the artwork but improve the indoor air quality for visitors. Additionally, CO₂ sensors are installed in all densely occupied areas.
- During the construction phase--and ongoing during exhibition installation--only low-emitting materials including paints, coatings adhesives, carpet, and sealants will be used.

