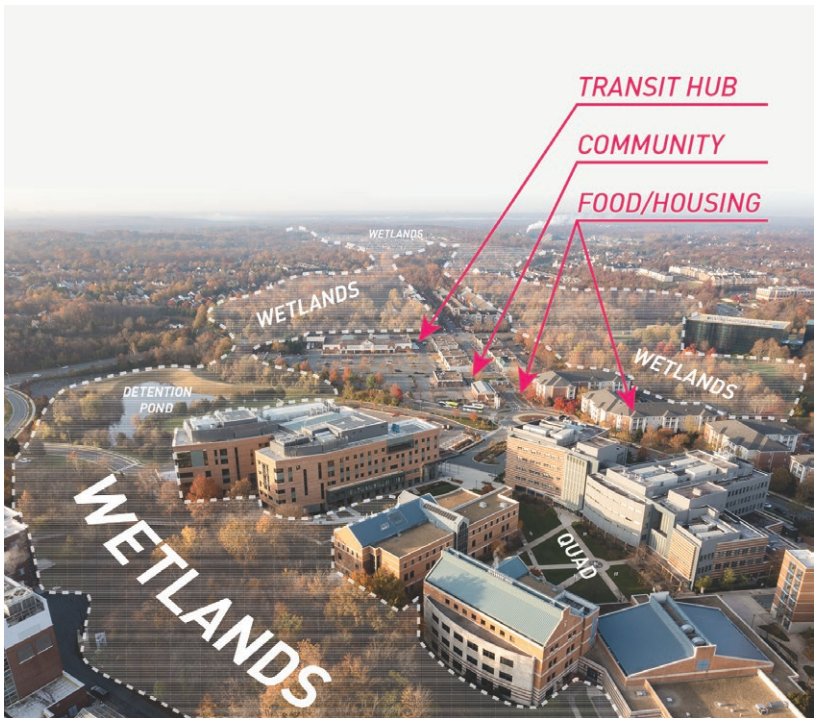
UNIVERSITIES OF SHADY GROVE

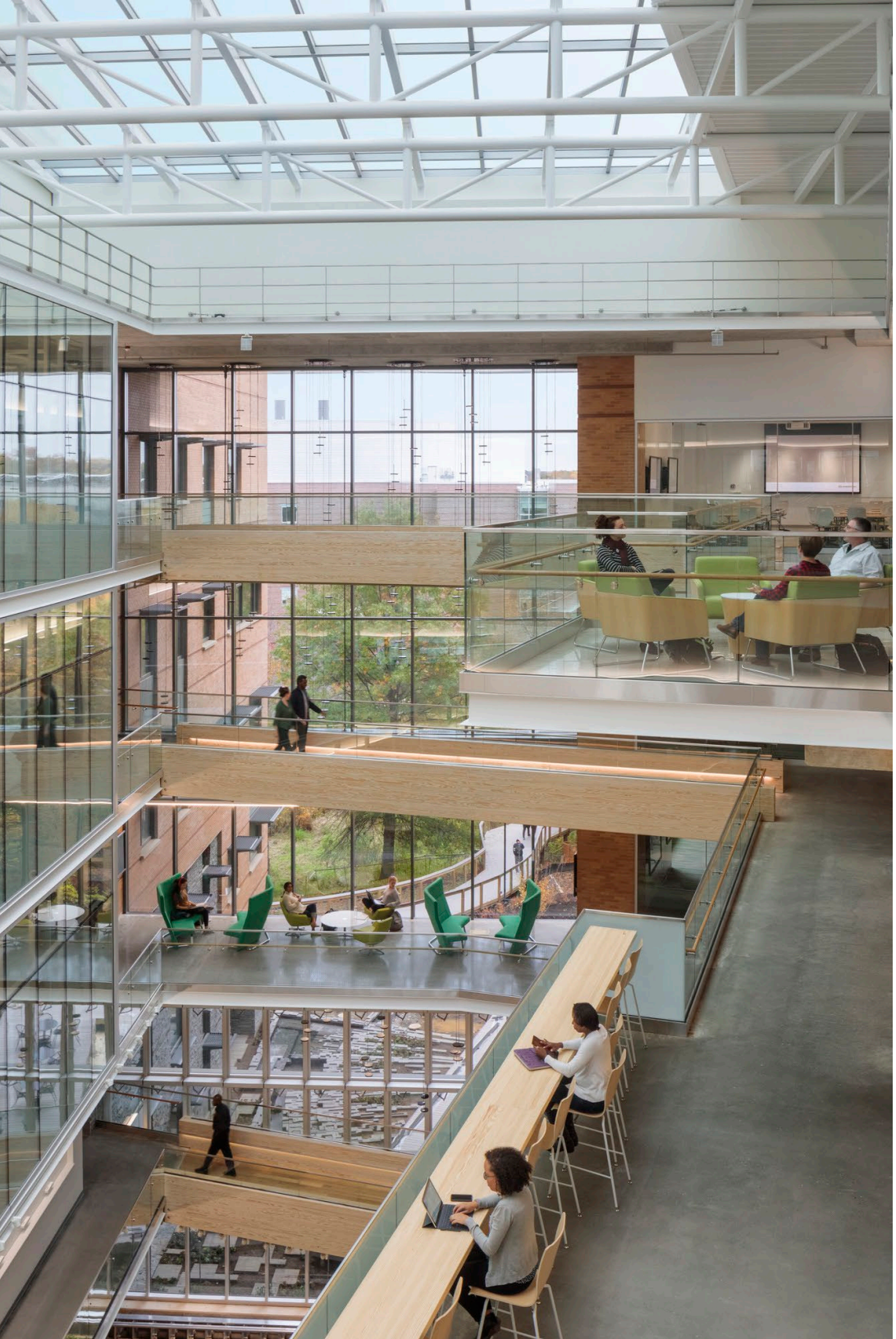
BIOMEDICAL SCIENCES & ENGINEERING EDUCATION FACILITY

ROCKVILLE, MD



The Universities at Shady Grove (USG) is part of a consortium of nine public universities in the University System of Maryland. USG is recognized for collaborating with institutions, community leaders, and industry partners to provide accessible education and community services.

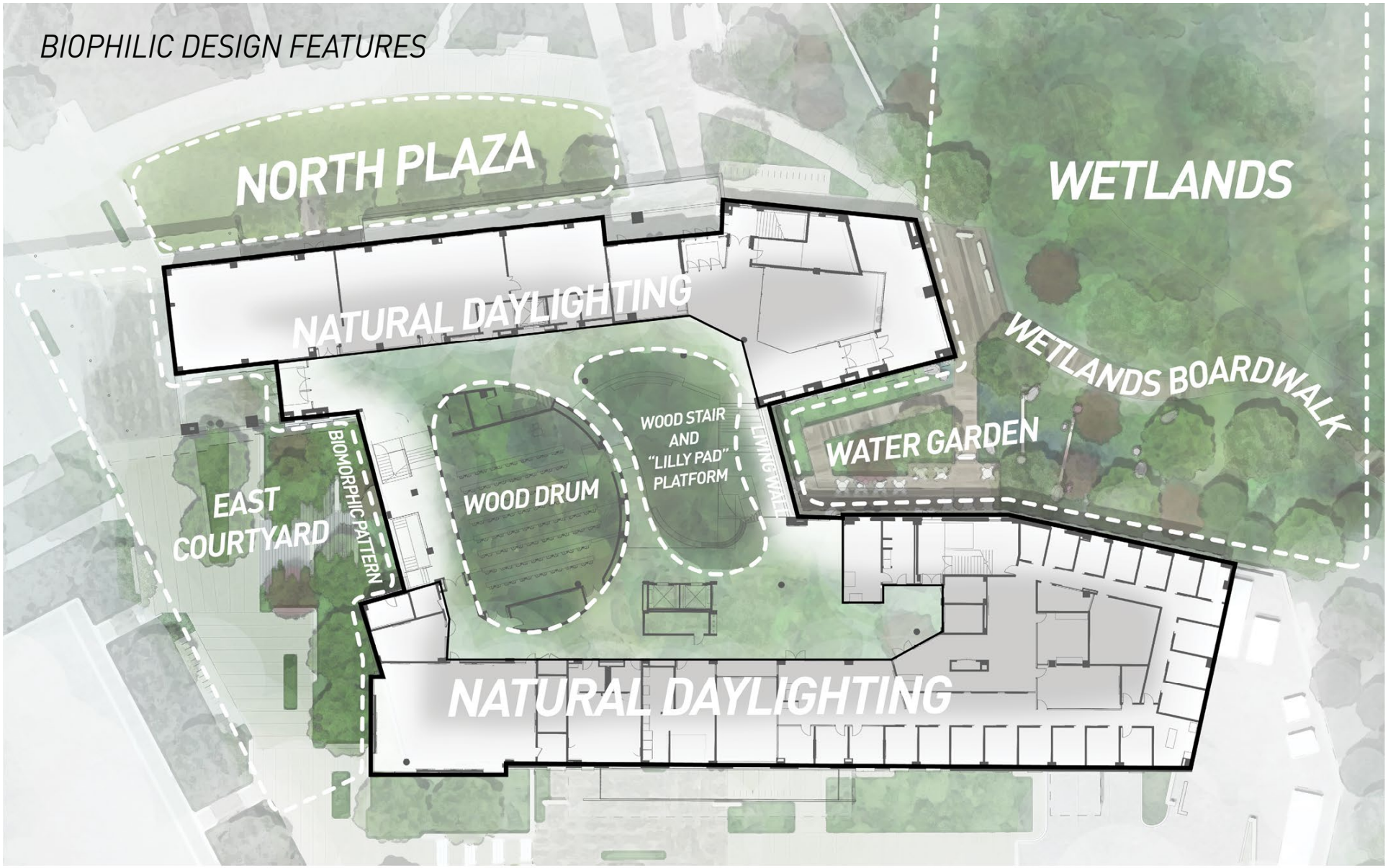
For the Biomedical Sciences & Engineering (BSE) Education Building, the design team generated a master plan to mirror the accessible goals of USG within the building and its connected landscape. They did this by integrating regional amenities, regional transit hubs, pedestrian pathways, and biophilic features into a plan that improves ecological health and campus connections.



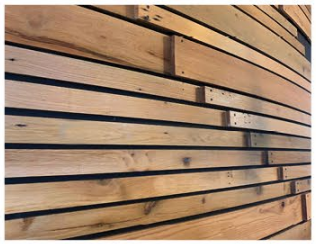
Sustainability was integral to the design of the BSE, defining the building and strengthening the vitality of the USG campus. The BSE achieved LEED Platinum and showcases environmental connectivity, energy efficiency, user health, and productivity through the experience of the building itself. Upon entering, the building graciously opens into a welcoming 6-story atrium, where visitors are washed in daylight and connected to an ecosystem of academic cross-pollination.

The centerpiece of the building's design is an ecological spine that runs between two east-west oriented wings framing an atrium that serves as the central living room for student collaboration. This spine is an extension of the natural environment, moving through the interior and celebrating the biodiversity of the adjacent wetland and forest through spatial diversity, botanical integration, harvested daylight, protected viewsheds, and natural materials.

BIOPHILIC DESIGN FEATURES



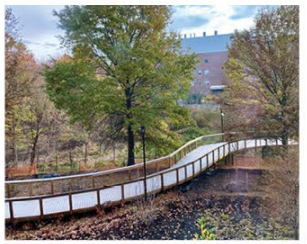

Biomorphic Patterning


Reclaimed Wood Drum


Wood Platform


Living Green Wall


Water Garden

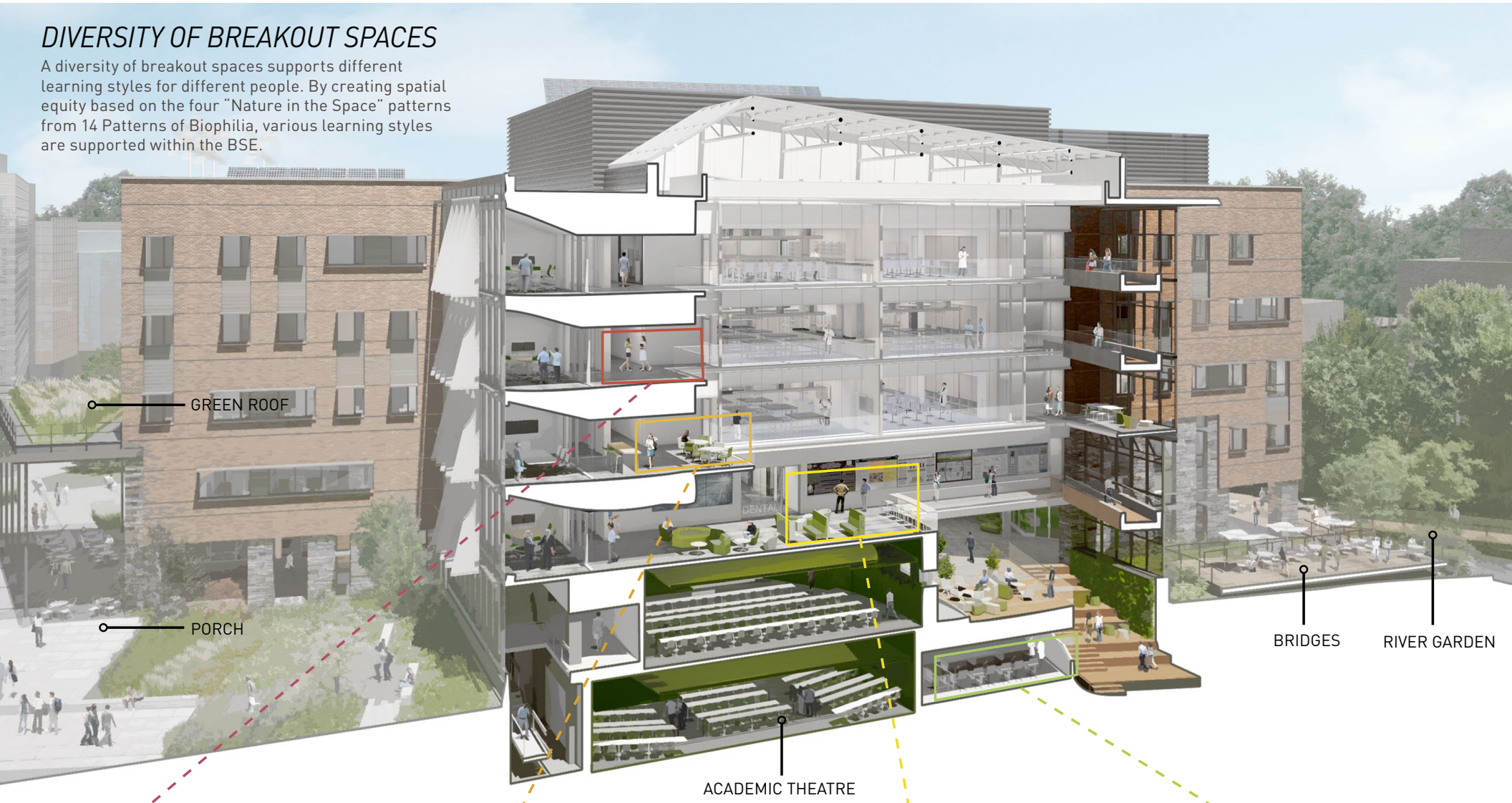

Boardwalk


ProtoMat
LPKF
Laser & Electronics

The living wall installation was part of a biophilic plan to bring interior and exterior campus environments into the building atrium, reinforcing the visual connection between the indoor and outdoor environment. Scholarly research confirms the building's biophilic design prompts environmentally responsible behavior (ERB).

DIVERSITY OF BREAKOUT SPACES

A diversity of breakout spaces supports different learning styles for different people. By creating spatial equity based on the four "Nature in the Space" patterns from 14 Patterns of Biophilia, various learning styles are supported within the BSE.



RISK/PERIL:

A space with a good Risk/Peril condition feels exhilarating, and with an implied threat, maybe even a little mischievous or perverse. One feels that it might be dangerous, but intriguing, worth exploring and possibly even irresistible.

PROSPECT:

An unimpeded view over a distance for surveillance and planning. A space with a good Prospect condition feels open and freeing, yet imparts a sense of safety and control, particularly when alone or in unfamiliar environments.

MYSTERY:

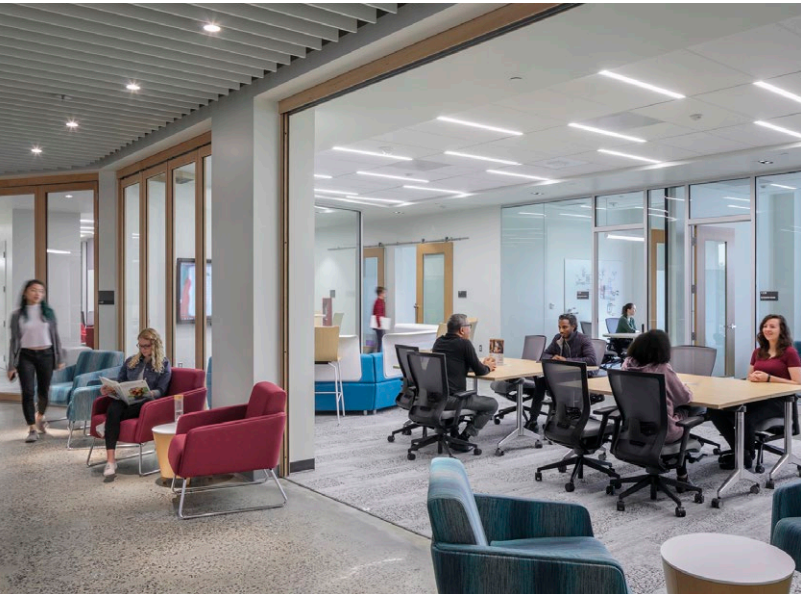
Mystery is the promise of more information achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment.

REFUGE:

Refuge is a place for withdrawal, from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.

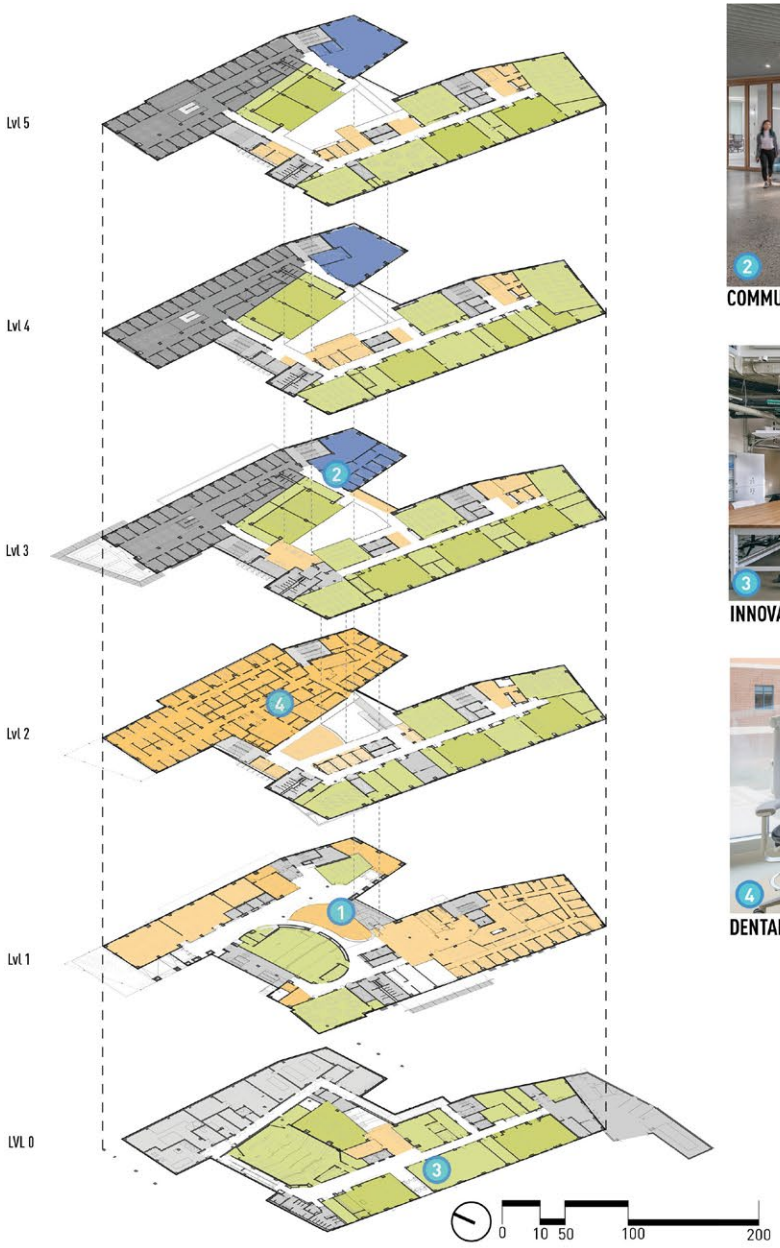
The 228,000 SF, six-story building houses academic programs in dentistry, mechanical engineering, biotechnology, biological sciences, electrical engineering, and associated fields. In addition to one "icon" laboratory space located on each floor, over 30,000 SF of innovation labs and maker spaces occupy the ground floor where they celebrate entrepreneurship and engage the community.

The building's connectivity nurtures a sense of discovery. Materials, daylight, and views work in concert to create a wide variety of human scaled spaces and experiences. Moving through the building, users enjoy the tactility and sweeping forms of wood, the thrill of traversing a bridge four or five stories in the air, the energy felt when looking in on innovative collaboration, and the satisfaction of finding a favorite spot to relax or catch up with friends.

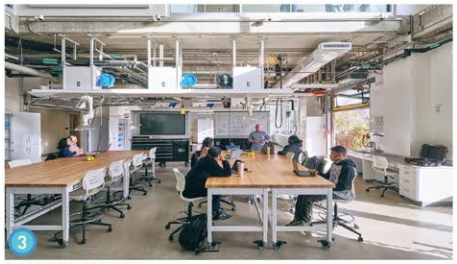


Located near the largest collection of health, bioscience, and IT companies in Maryland, the BSE creates accessible pathways to education that helps meet the region's increased demand for scientists and skilled workers. The building provides a home for over 10 community partner organizations and provides a range of community services from free dental services and COVID vaccination clinics to youth STEM classes and collaborations with nonprofit incubators.

USG responded to Montgomery County's need for health, bioscience, and IT professionals with a building designed to support STEMM education and training. With an undergraduate population that is majority female, majority minority, and more diverse in age and socioeconomic range than traditional colleges and universities, USG wanted to ensure populations traditionally underrepresented in STEMM were able to overcome barriers to securing jobs and training. To break down barriers to access,the BSE was designed to be as aesthetically welcoming, physically accessible, and programmatically flexible as possible to equitably engage a diversity of communities.



COMMUNITY OUTREACH



INNOVATION LABS

DENTAL CLINIC

ATRIUM

COMMUNITY
DENTAL CLINIC
STUDENT CENTER
BREAKOUT SPACE
CAFE
OPEN RESEARCH
PRIVATE SECTOR ENGAGEMENT

COMMUNITY
OUTREACH

CLASSROOMS
FABRICATION
LABS
LEARNING

WORK
OFFICES
ADMINISTRATION

STORMWATER STRATEGY AND WATER COLLECTION

Surface Conveyance to Wetland via Level Spreaders

Surface Runoff

Wetlands

Underground Cistern

Dewatering and Roof Rainwater Collection to Cisterns and HVAC Condensate

Underground Cistern

Surface Conveyance to Wetland via Level Spreaders

Bioswale

Surface Runoff

1/32"= 1'

Overflow to Pond

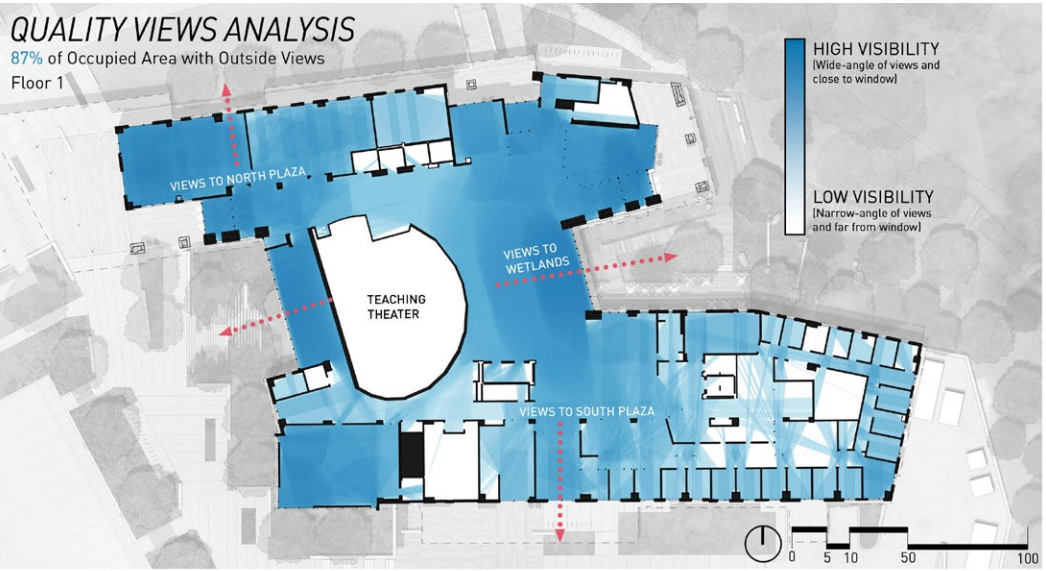
Overflow to Pond

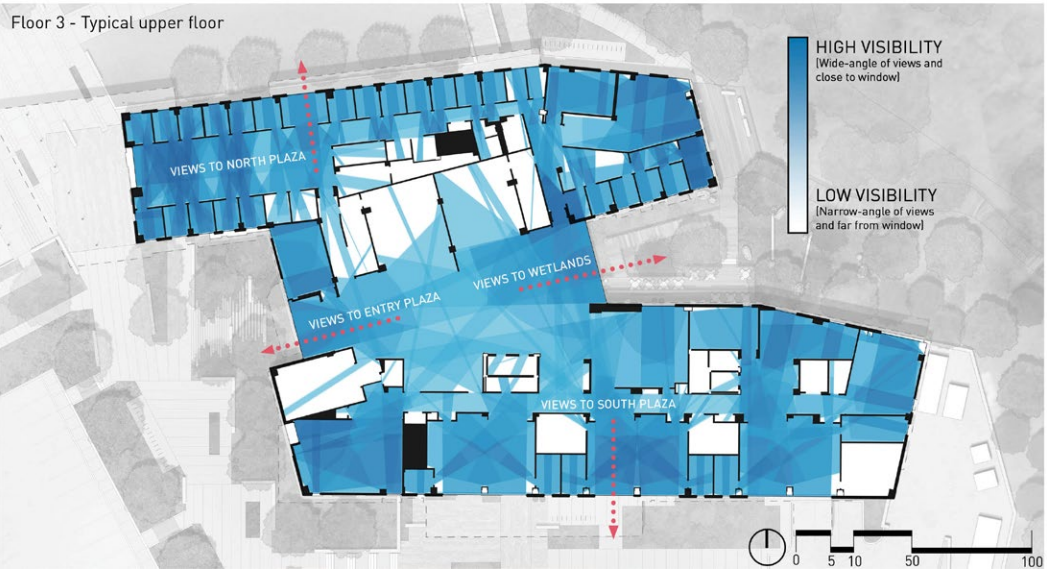
0 5 10 50 100

Providing a new campus gateway, the BSE reorganizes the broader campus environment toward nature and rehabilitates the local wetlands. An elevated boardwalk through the wetlands immerses pedestrians in the campus' natural environment. The "Piney Branch Water Garden" at the boardwalk's terminus demonstrates the symbiotic relationship between public art, building performance, ecological connectivity, and human comfort.

PINEY BRANCH WATER GARDEN

1. Interior living wall in the BSE atrium extends from the ground floor to the 1st floor
2. Elevated water basin with submerged sculpted panel, surrounded by suspended cast aluminum and copper elements
3. Sculpted elements integrated with evergreen ground covers
4. Lower basin with underwater and emergent sculptural details and water lilies
5. Metal walkway bridge over lower water basin connecting outdoor deck to BSE entry and campus boardwalk
6. Water basin connects to bioswale and infiltration berm to the east; water returns for recirculation
7. Planted bioswale and infiltration berm connects to the existing forested wetland to the east
8. Interior cafe connects to outdoor seating areas
9. East entry to the BSE



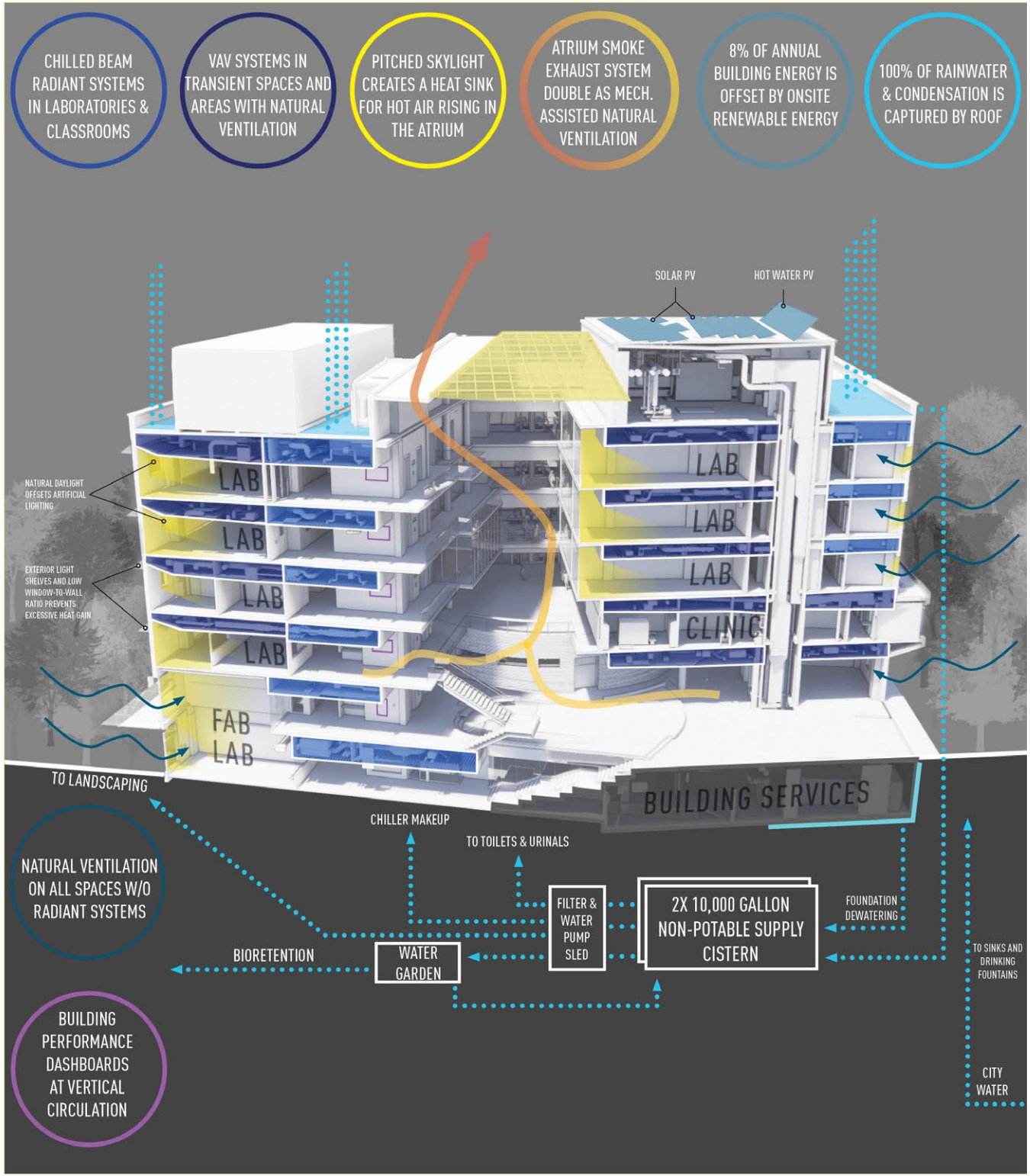


87% of the BSE's occupied spaces have exterior views complemented by natural materials like reclaimed wood, living walls, and water features – fostering feelings of wellbeing and improving productivity.

The LEED Platinum BSE employs numerous passive strategies that work with nature to maximize the performance of the building and its occupants. Based on current data, the BSE:

- Achieves an EUI of 98 before renewable energy (36% less than a typical lab)
- Harnesses 1,023,680 kWh annually (19.11% of the BSE's total energy)
- Reduces stormwater runoff volume by 28%
- Uses 79% less water than baseline
- Captures 100% of rainwater
- Features 20% recycled material content
- Diverts 69% of construction waste
- Preserves 43% of the site as open space to help regenerate natural biodiversity
- Maximizes biophilic design

The building has become a showpiece for sustainability, having hosted visits by Maryland's state senators, the governor, and green building thought leaders.




BIOMEDICAL SCIENCES & ENGINEERING

USG Biomedical Sciences & Engineering Education Building
Lake|Flato Architects
The Universities at Shady Grove, Rockville, Maryland

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