



Chronicles of LEED

Strategies and Outcomes

Course Description

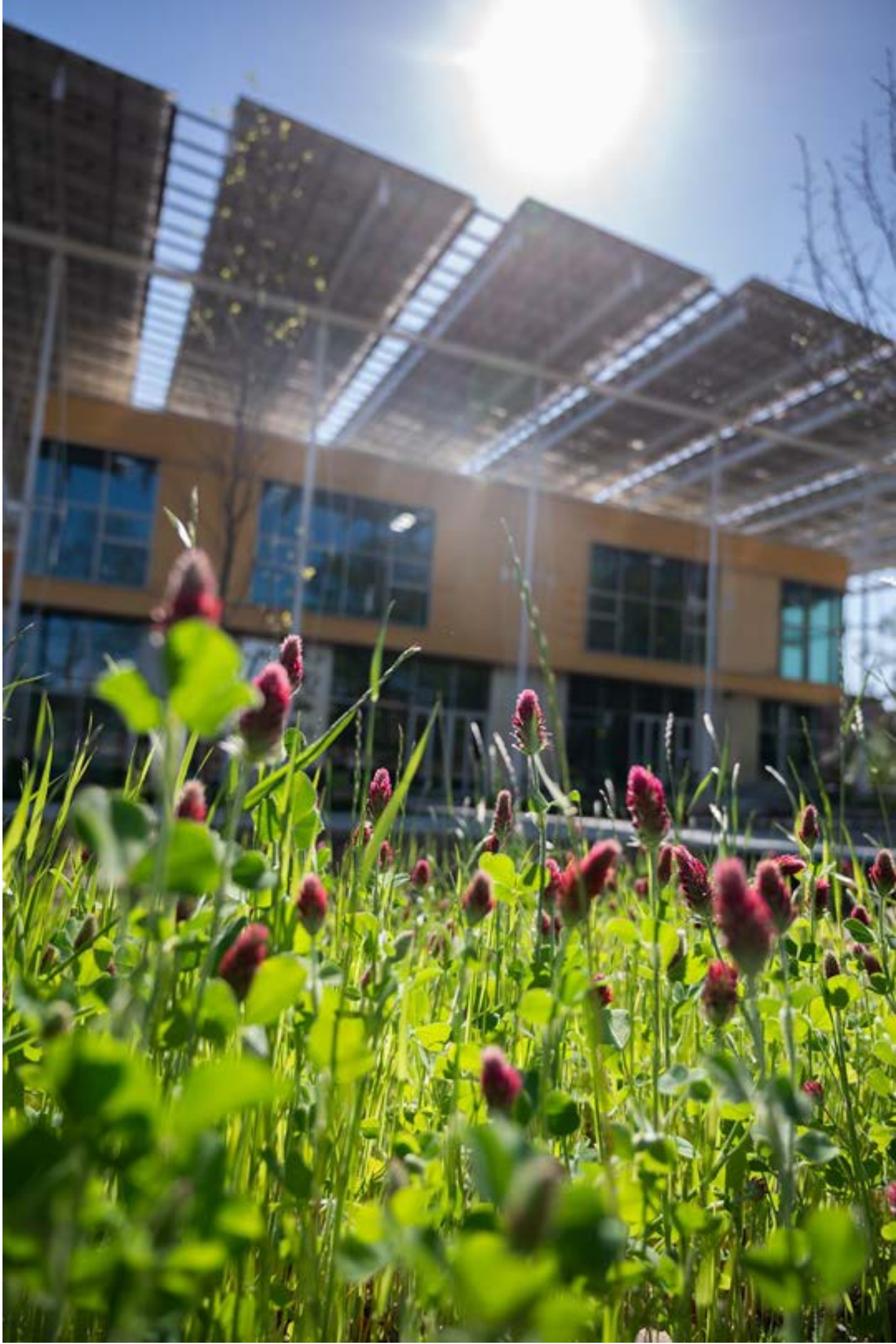
Join us for an inspiring journey as we explore real-world examples of LEED certified projects that are reshaping our built environment and combating climate change. Through a series of captivating case studies, you'll discover how innovative strategies are dramatically reducing energy and water consumption, creating healthier and more productive spaces for occupants, and paving the way for a more sustainable future. From towering skyscrapers to university centers, each project tells a unique story of environmental stewardship. You'll gain invaluable insights into the challenges faced, solutions implemented, and the measurable impacts achieved on LEED v4 BD+C, ID+C, and O+M building projects.



Course Description

- Explore LEED v4 BD+C, ID+C, and O+M projects that focus on energy efficiency, water conservation, material selection, and indoor environmental quality
- Discuss how LEED v4 BD+C, ID+C, and O+M strategies address climate change, reduce energy and water use, and make healthier spaces for occupants
- Review how innovative technologies were leveraged to create LEED v4 BD+C, ID+C, and O+M projects and implement cutting-edge design strategies
- Examine case studies that illustrate the pinnacle of sustainable design and promote environmental and human health





Project Goals

- Lead by example through demonstrating that a building can foster regenerative systems in a mixed climate with cold winter and hot, humid summers.
- Amplify impact by inspiring change on the Georgia Tech campus, across the Southeast building industry, and the world.



Project Outcomes

- Project achieved LEED Platinum certification with 89 points
- Building received Living Building Challenge certification

**Kendeda Building****LEED BD+C: New Construction (v4)****PLATINUM, AWARDED APR 2021****SUSTAINABLE SITES**

AWARDED: 10 / 10

Prereq	Construction activity pollution prevention	0 / 0
Credit	Site assessment	1 / 1
Credit	Site development - protect or restore habitat	2 / 2
Credit	Open space	1 / 1
Credit	Rainwater Mgmt	3 / 3
Credit	Heat island reduction	2 / 2
Credit	Light pollution reduction	1 / 1

**WATER EFFICIENCY**

AWARDED: 11 / 11

Prereq	Outdoor water use reduction	0 / 0
Prereq	Indoor water use reduction	0 / 0
Prereq	Building-level water metering	0 / 0
Credit	Cooling tower water use	2 / 2
Credit	Water metering	1 / 1
Credit	Outdoor water use reduction	2 / 2
Credit	Indoor water use reduction	6 / 6

**ENERGY & ATMOSPHERE**

AWARDED: 29 / 53

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Building-level energy metering	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	6 / 6
Credit	Advanced energy metering	1 / 1
Credit	Demand response	0 / 2
Credit	Renewable energy production	3 / 3
Credit	Enhanced refrigerant Mgmt	1 / 1
Credit	Green power and carbon offsets	0 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 20
Credit	Optimize energy performance	18 / 18

**MATERIAL & RESOURCES**

AWARDED: 6 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Building life-cycle impact reduction	1 / 5
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	1 / 2
Credit	Building product disclosure and optimization - material ingredients	1 / 2
Credit	Construction and demolition waste Mgmt	2 / 2

**INDOOR ENVIRONMENTAL QUALITY**

AWARDED: 11 / 16

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	2 / 2
Credit	Low-emitting materials	0 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	2 / 2
Credit	Thermal comfort	1 / 1
Credit	Interior lighting	1 / 2
Credit	Daylight	3 / 3
Credit	Quality views	1 / 1
Credit	Acoustic performance	0 / 1

**INNOVATION**

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1

**REGIONAL PRIORITY CREDITS**

AWARDED: 4 / 4

Credit	Advanced energy metering	0 / 1
Credit	Renewable energy production	0 / 1
Credit	Daylight	1 / 1
Credit	Rainwater Mgmt	1 / 1
Credit	Outdoor water use reduction	1 / 1
Credit	Indoor water use reduction	1 / 1

**LOCATION & TRANSPORTATION**

AWARDED: 11 / 20

Credit	LEED for Neighborhood Development location	0 / 16
Credit	Sensitive land protection	1 / 1
Credit	High priority site	1 / 2
Credit	Surrounding density and diverse uses	4 / 5
Credit	Access to quality transit	2 / 5
Credit	Bicycle facilities	1 / 1
Credit	Reduced parking footprint	1 / 1
Credit	Green vehicles	1 / 1

**INTEGRATIVE PROCESS CREDITS**

AWARDED: 1 / 1

Credit	Integrative process	1 / 1
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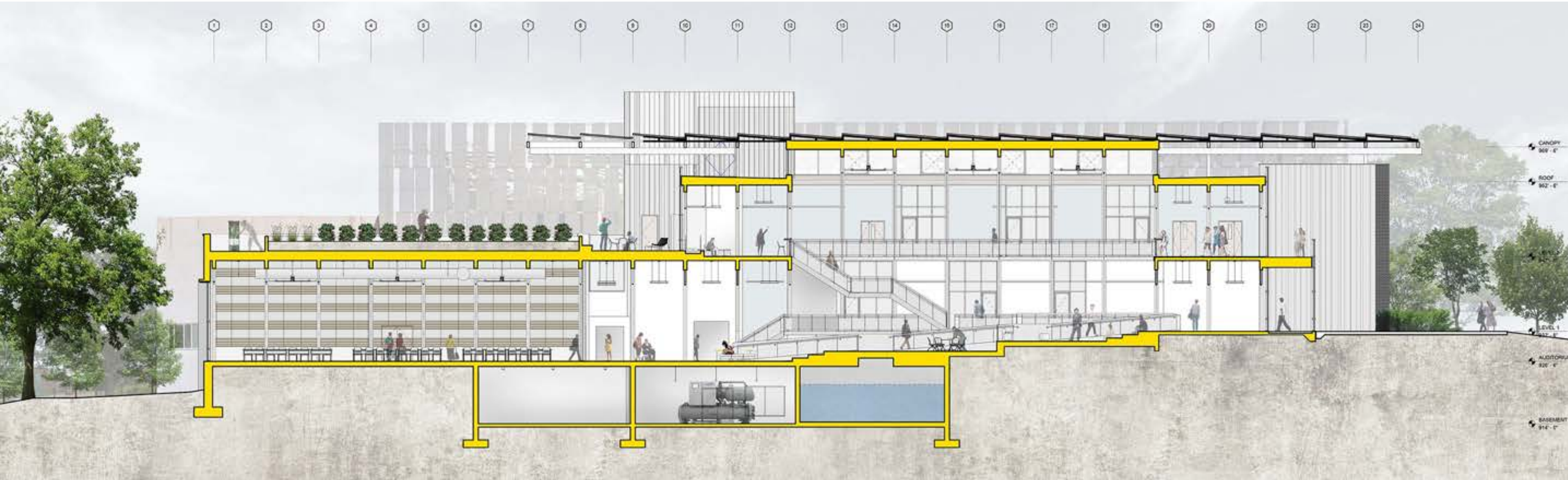
TOTAL**89 / 110**



Living Building Challenge

- Fully certified projects must meet all of the objectives contained in seven performance areas or Petals that are divided into 20 requirements called Imperatives.
- The project must prove that it is net-positive water and energy over a minimum of 12 months of continuous occupancy and operations.





- Site is 58,800 square feet or 1.35 acres

- There is approximately 47,000 sq. ft. of programmable space of which nearly 37,000 sq. ft. is enclosed and conditioned space

- Roof deck contains the honeybee apiary, pollinator garden, and blueberry orchard

Project Details

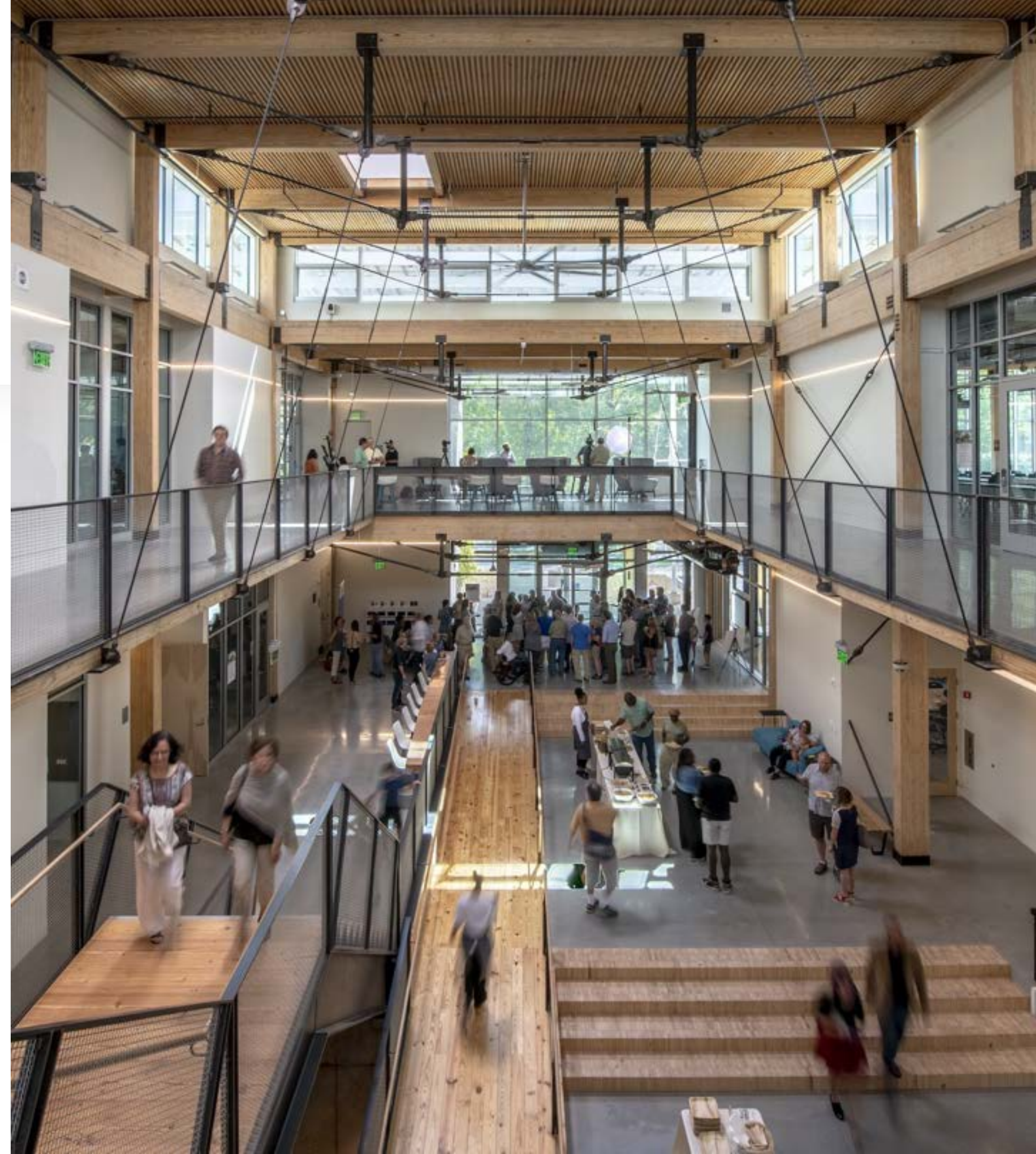


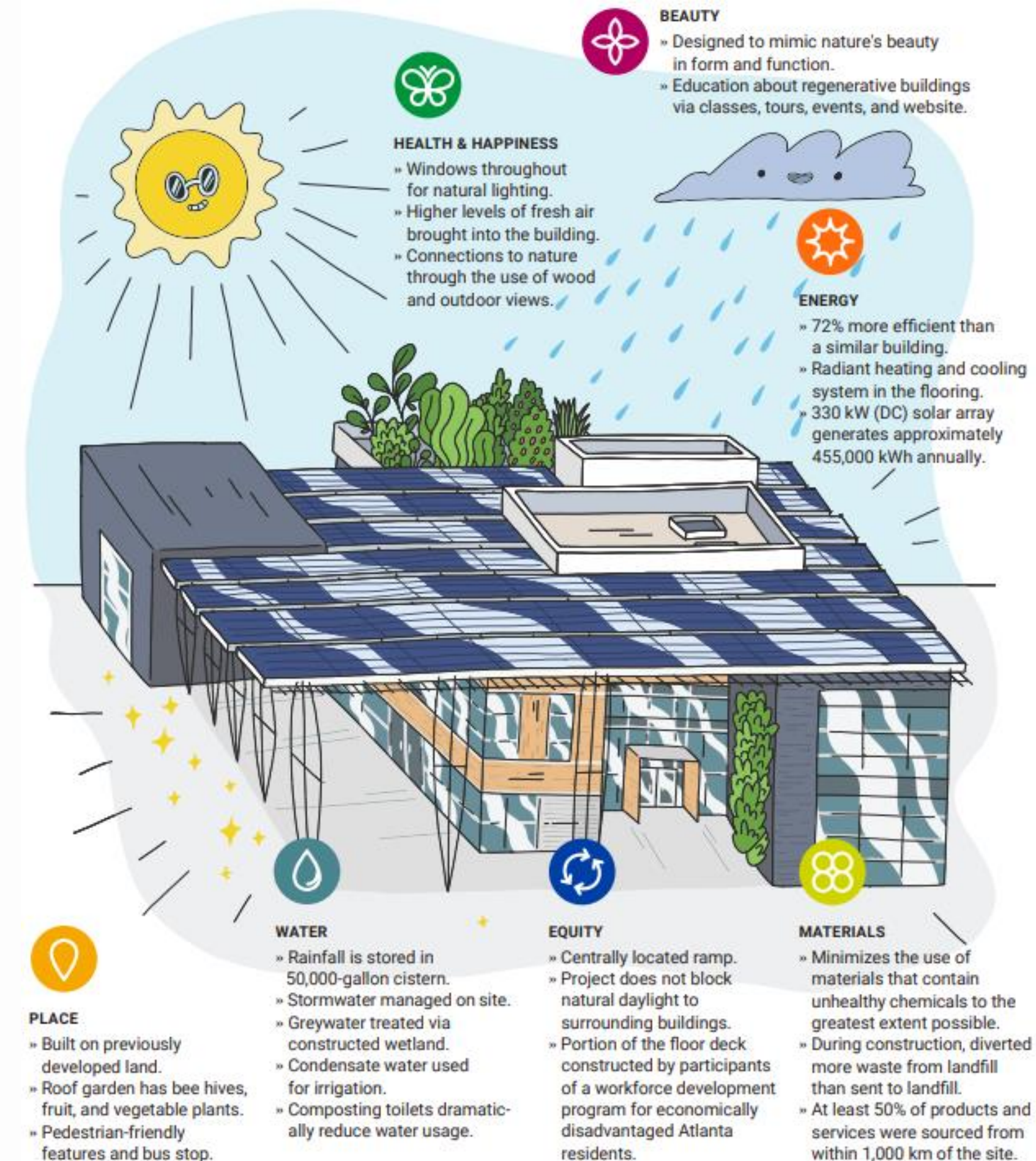


The building features two 64-person classrooms, two 24-person class labs, two 16-person class labs, a 16-person seminar room, a 24-person makerspace, 176-person auditorium, rooftop apiary and pollinator garden.

Building Budget

- The total project budget including all hard and soft costs was \$25,000,000.
- The Kendeda Building is about 15% more expensive than a comparable Georgia Tech building.
- The Kendeda Building pre-purchased 30 years of electricity





Net Positive Water

- The Basement Cistern Capacity is 50,000-gallons of rainwater
- Water Collected and Infiltrated into the Ground is approximately 15 times the amount needed for operations.



Solar

- Solar Array is a 330 kW system
- 917 solar panels generate 440,000 kWh annually
- Photovoltaic system supplies over 200% of building's annual energy needs



Carbon Footprint

- Project construction achieved zero carbon footprint by first incorporating low-carbon and salvaged building materials, then by recycling over 99% of construction waste

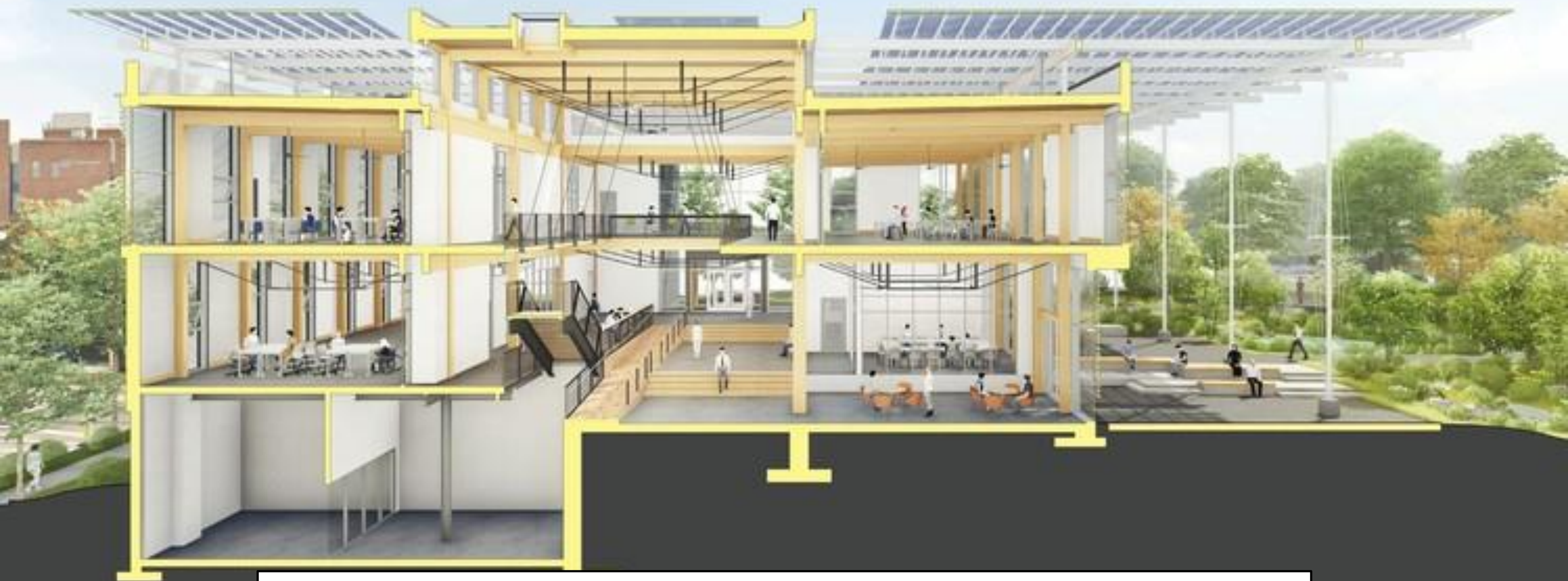
Greywater

- 90% or more of an average rainfall managed onsite
- Greywater is collected from shower drains, sink drains, and water fountains and pumped to a constructed wetland at the entrance of the building





The Project kept economic benefits close to home by sourcing at least 50% of products and services from within 621 miles.



The building is composed of materials screened for hazardous chemicals known to harm human and environmental health, even though they are common in most buildings.



Good indoor environmental quality was the primary driver in the design of these spaces to support learning





The Kendeda Building received the American Institute of Architects COTE Top Ten Award for 2021



Willis Tower

- \$500M redevelopment renovation
- LEED for Existing Buildings certification

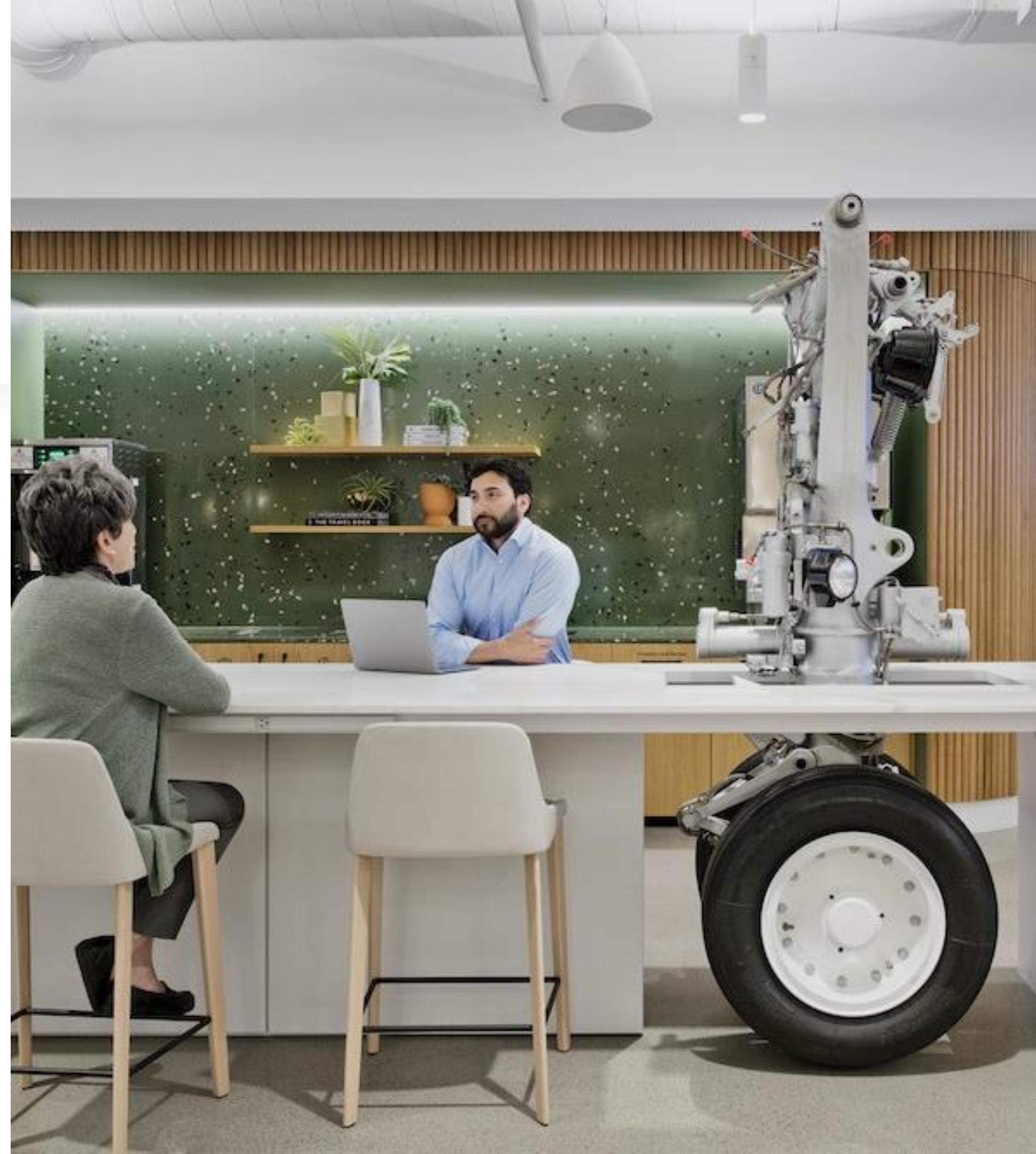
Improvements

- Installed a new building automation system along with high-efficiency lighting systems with improved controls
- All new air media and variable frequency drives, chiller modernization, expansive low-flow plumbing fixture upgrades



Tracking Progress

- Willis Tower continues to track annual performance through the LEED v4.1 Arc platform
- The team hope to witness improvements not only in energy and water use, but to see increased occupant satisfaction scores in annual surveys





Upgrades

- Installation of high-efficiency lighting systems
- Improvements to the building's HVAC exhaust and return fan dampers
- Introduction of all new air media, fan gearboxes and fan blades

Upgrades

- Installation of low flow high efficiency units saving approximately 11 million gallons of water consumption annually
- Replacement of all the building's automatic transfer switches





Boren Labs in Seattle, Washington



SUSTAINABLE SITES

AWARDED: 5 / 11

Prereq	Construction activity pollution prevention	0 / 0
Credit	Site assessment	1 / 1
Credit	Site development - protect or restore habitat	0 / 2
Credit	Open space	1 / 1
Credit	Rainwater Mgmt	0 / 3
Credit	Heat island reduction	2 / 2
Credit	Light pollution reduction	0 / 1
Credit	Tenant design and construction guidelines	1 / 1



WATER EFFICIENCY

AWARDED: 5 / 11

Prereq	Outdoor water use reduction	0 / 0
Prereq	Indoor water use reduction	0 / 0
Prereq	Building-level water metering	0 / 0
Credit	Cooling tower water use	1 / 2
Credit	Water metering	1 / 1
Credit	Outdoor water use reduction	1 / 2
Credit	Indoor water use reduction	2 / 6



ENERGY & ATMOSPHERE

AWARDED: 9 / 53

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Building-level energy metering	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	0 / 6
Credit	Advanced energy metering	0 / 1
Credit	Demand response	0 / 2
Credit	Renewable energy production	0 / 3
Credit	Enhanced refrigerant Mgmt	1 / 1
Credit	Green power and carbon offsets	0 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 20
Credit	Optimize energy performance	8 / 18



MATERIAL & RESOURCES

AWARDED: 4 / 14

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Building life-cycle impact reduction	1 / 6
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	0 / 2
Credit	Building product disclosure and optimization - material ingredients	1 / 2
Credit	Construction and demolition waste Mgmt	1 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 2 / 10

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	1 / 2
Credit	Low-emitting materials	0 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	Daylight	0 / 3
Credit	Quality views	0 / 1



INNOVATION

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 1 / 4

Credit	Building product disclosure and optimization - environmental product d...	1 / 1
Credit	Outdoor water use reduction	0 / 1



LOCATION & TRANSPORTATION

AWARDED: 18 / 20

Credit	LEED for Neighborhood Development location	0 / 20
Credit	Sensitive land protection	2 / 2
Credit	High priority site	2 / 3
Credit	Surrounding density and diverse uses	6 / 6
Credit	Access to quality transit	6 / 6
Credit	Bicycle facilities	0 / 1
Credit	Reduced parking footprint	1 / 1
Credit	Green vehicles	1 / 1



INTEGRATIVE PROCESS CREDITS

AWARDED: 1 / 1

Credit	Integrative process	1 / 1
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TOTAL

51 / 110

40-49 Points
CERTIFIED

50-59 Points
SILVER

60-79 Points
GOLD

80+ Points
PLATINUM

Project Details

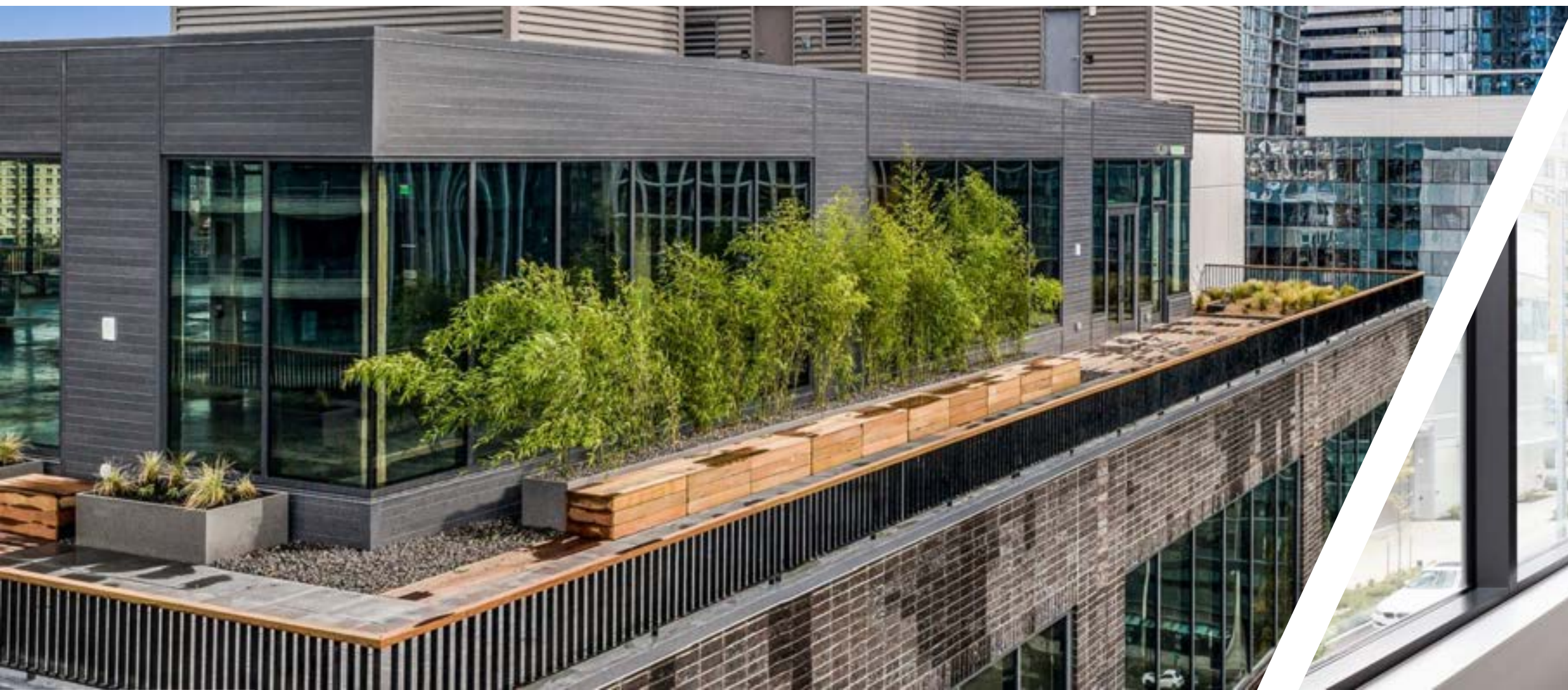
- The building's 15,000 sq ft floor plates and prebuilt lab suites make it very attractive to younger life sciences companies
- Boren Labs provides all of the modernized building infrastructure its occupants need to work



Project Details

- Building is 10-stories with nine levels of lab and support office space
- Human-centric in its design, each floor enjoys plentiful natural light and a private deck with outdoor access







Foundational Sciences Building



Project Details

- Incorporates innovative features like shading devices and rain gardens
- 44 research laboratories are designed to promote wellness, sustainability, and adaptability

Project Details

- 206,500 square foot, five-story building includes classrooms, teach and research laboratories, a research library, conference rooms, computer labs, collaborative space, and faculty offices





To address the stormwater management component of the project, a dry detention basin is provided north of the Foundational Science Building and within the East Mall project area

LEED Scorecard

Gold 60/110

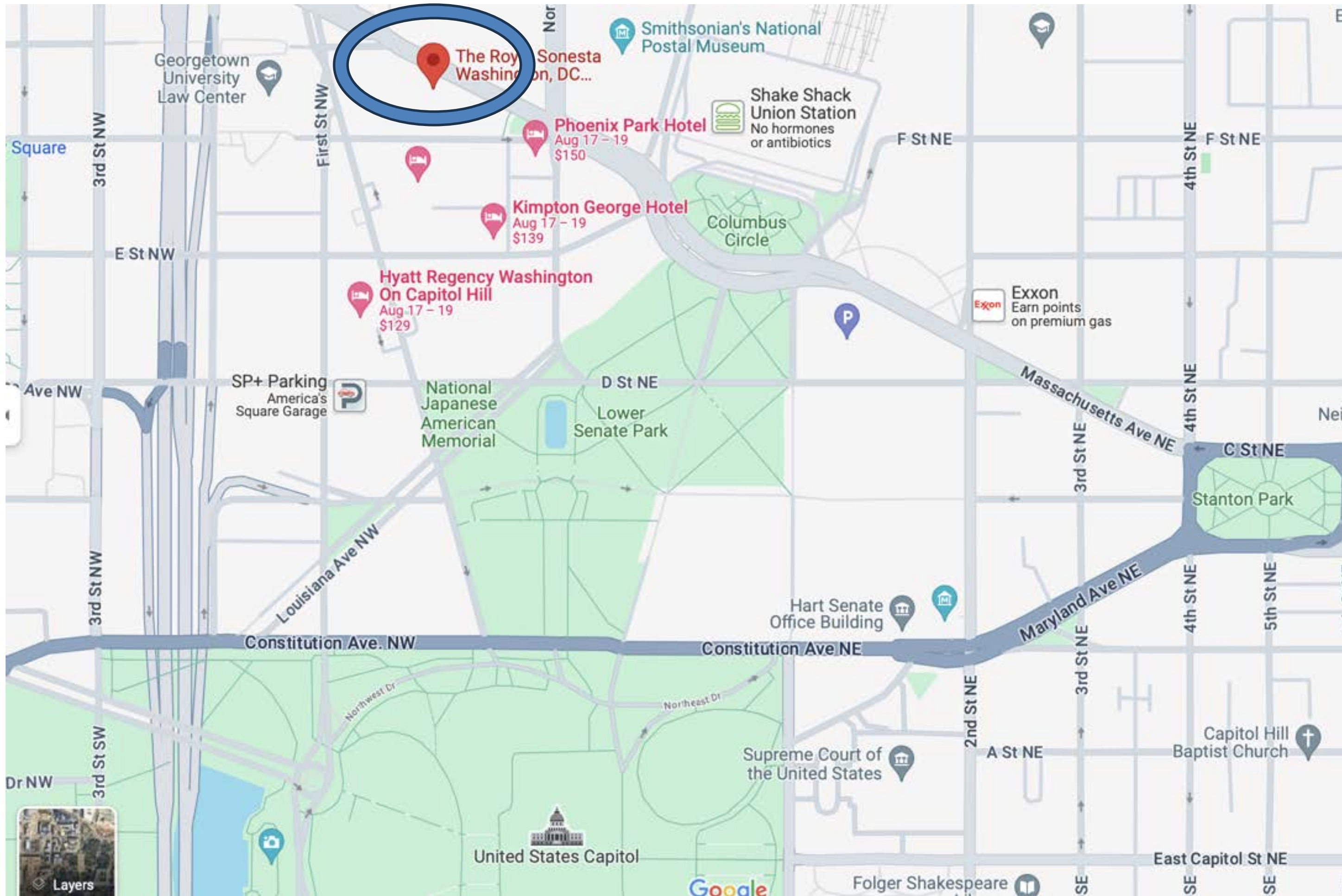
✓ INTEGRATIVE PROCESS CREDITS	1 / 1	
✓ LOCATION & TRANSPORTATION	9 / 20	
✓ SUSTAINABLE SITES	5 / 10	
✓ WATER EFFICIENCY	7 / 11	
✓ ENERGY & ATMOSPHERE	16 / 53	
✓ MATERIAL & RESOURCES	4 / 13	
✓ INDOOR ENVIRONMENTAL QUALITY	8 / 16	
✓ REGIONAL PRIORITY CREDITS	4 / 4	
✓ INNOVATION	6 / 6	



20 Massachusetts Avenue

Project Details

- 444,000 square foot project was gold certified under LEED v4
- Conversion of a former government office building into a Class A mixed-use destination
- 274-key luxury Royal Sonesta Hotel



Project Details

- As the first luxury hotel to open in Capitol Hill in nearly 40 years, the hotel features 274 guest rooms that are some of the largest in the city, with an average room size of 480 square feet.

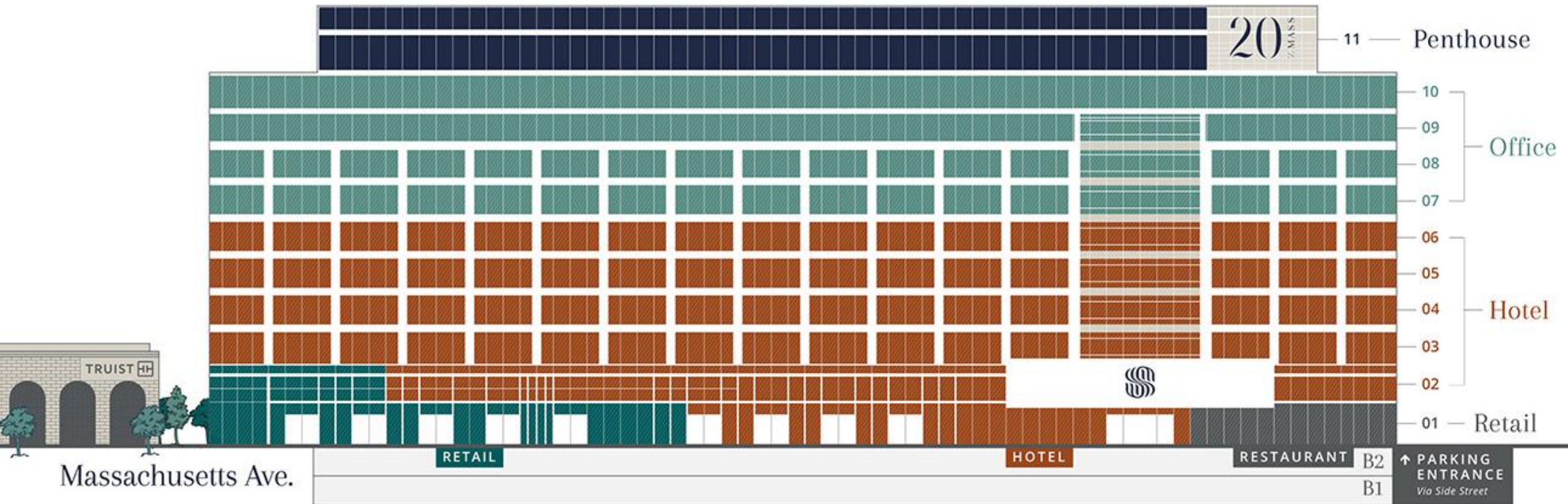




A new glass curtain wall façade and 10-story atrium cut into the existing structure bring in natural light while a green roof features drought-resistant planting and an integrated stormwater management system.



The 20 Mass redevelopment was designed by architectural firm Leo A. Daly and constructed by DPR Construction.



Project Details

- The renovation gutted the interior and exterior while retaining the entire structure, adding three additional floors, and extending the footprint of the building to increase the building's total size to 485,000 square feet.

Project Details

- Building was designed with extensive modeling of the envelope, maximizing energy efficiency in the lighting and HVAC systems
- Interior window shading, low-e glazing, textured terracotta panels and matte/opaque finishes are deployed strategically to combat unwanted solar effects





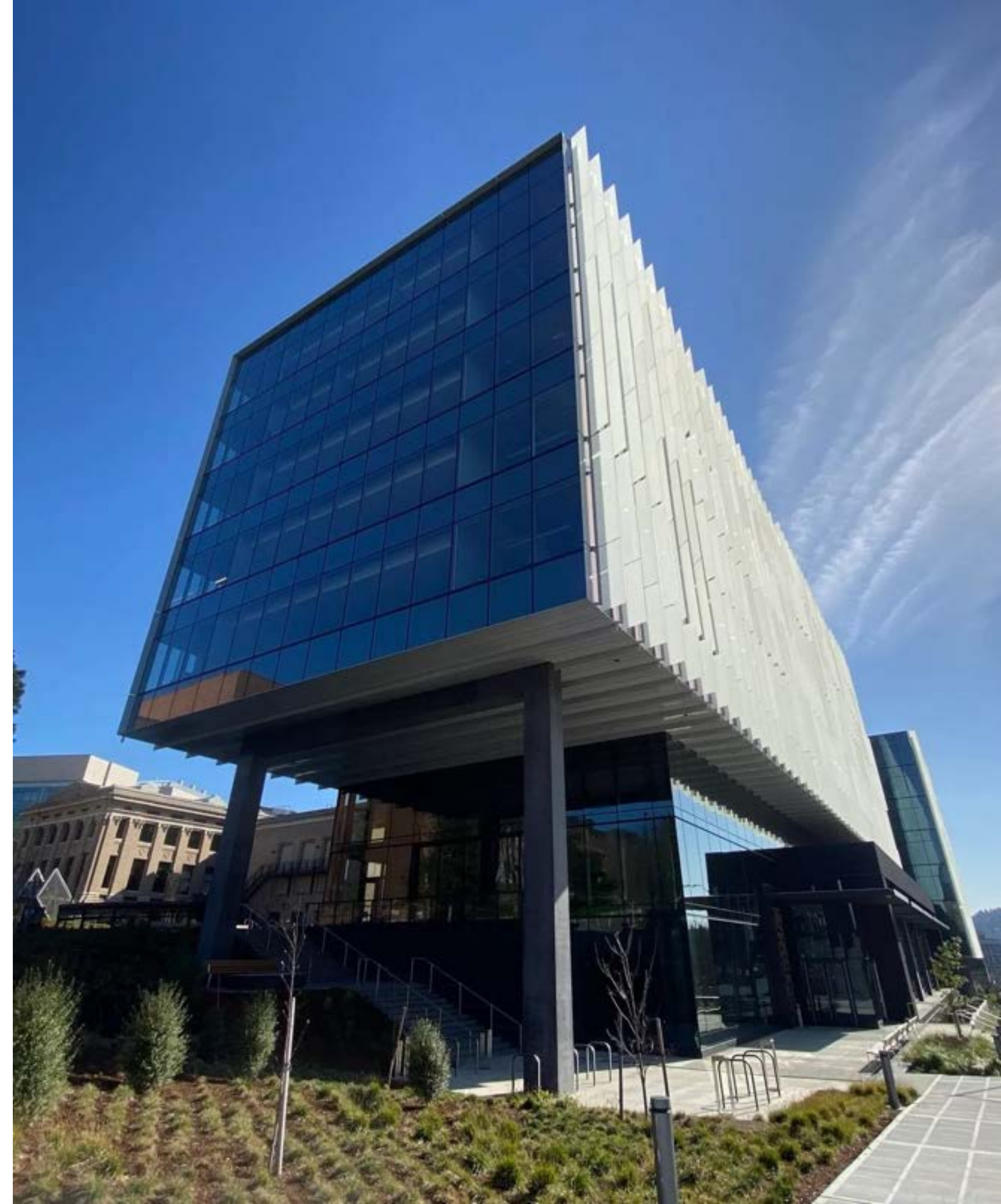
Hans Rosling Center for Population Health



In 2016, the University of Washington announced the launch of the Population Health Initiative. Working at the intersection of human health, social and economic equity, and environmental resilience, population health is an inherently collaborative field.

Project Details

- The Rosling Center will house the UW Department of Global Health
- Rosling Center will be a hub for addressing critical issues like poverty, equity, health-care access, climate change and government policy



Where do the
7 billion live?

You

A

B

C

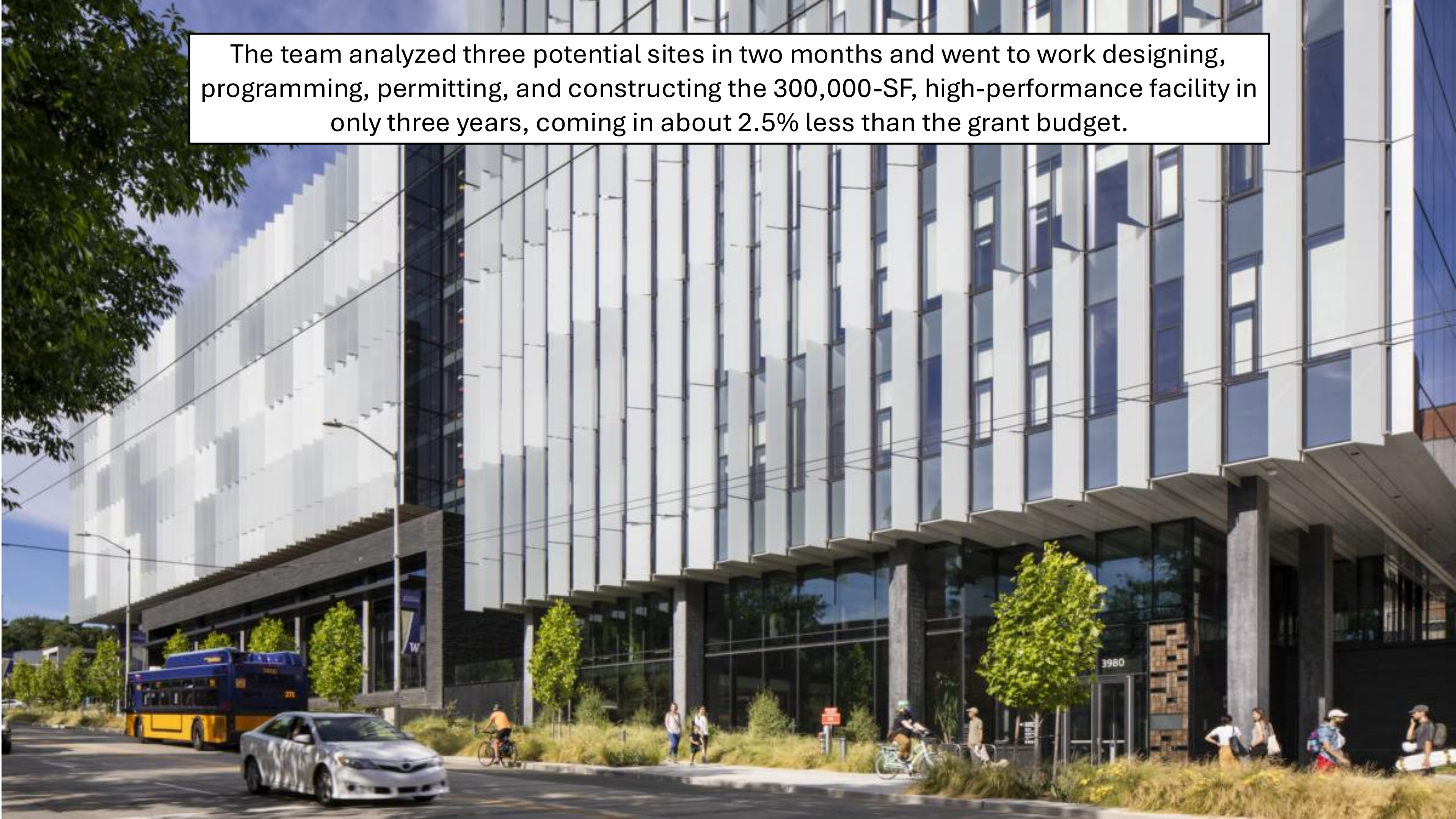


Project Details

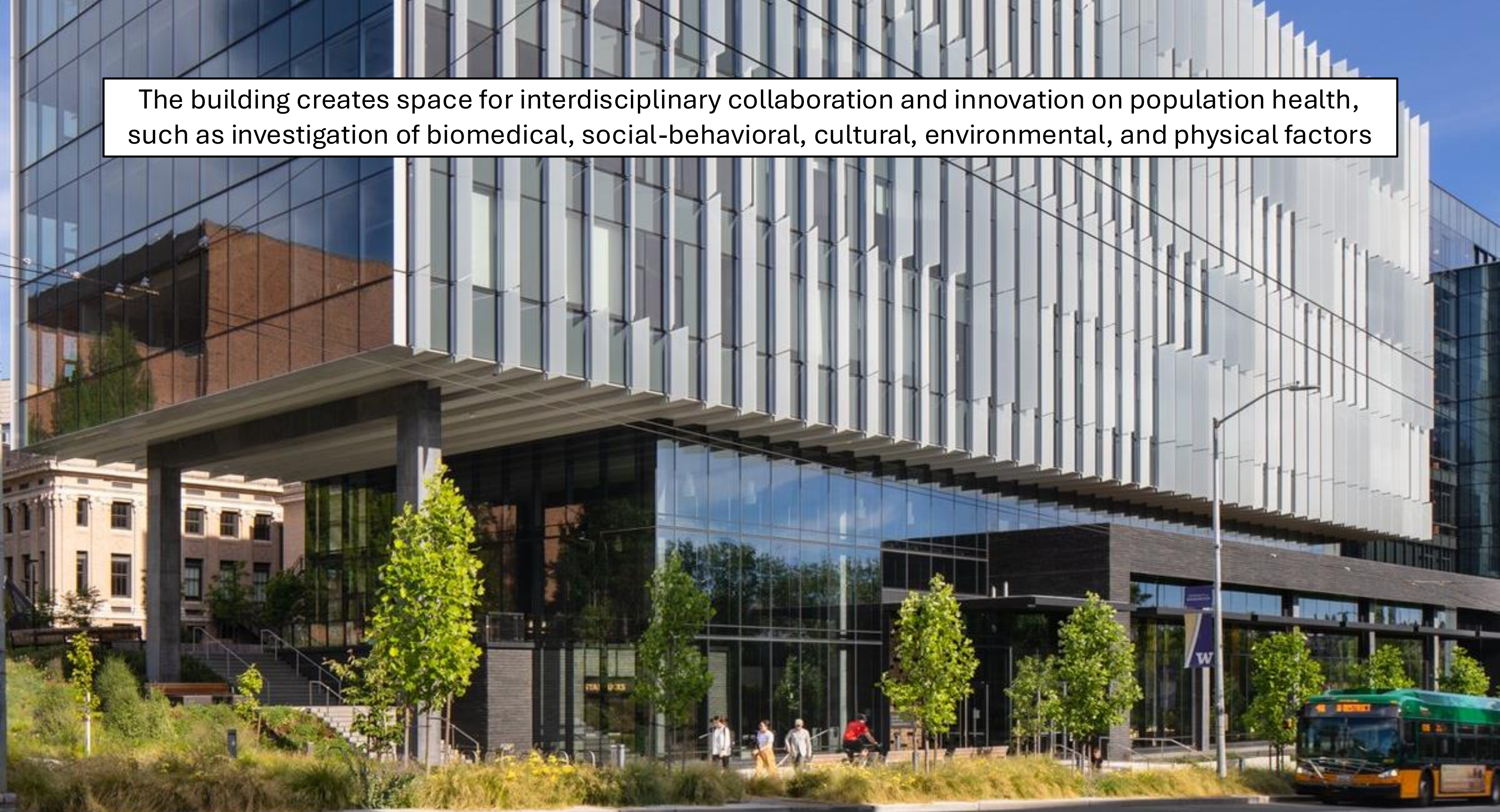
- Hans Rosling Center for Population Health was made possible by a \$210 million gift from the Bill & Melinda Gates Foundation in 2016 and \$15 million in funding from the people of Washington state
- The design-build team's mission was to create a high-quality, high-performance facility within a short amount of time on a fixed grant budget while balancing many institutional needs



The team analyzed three potential sites in two months and went to work designing, programming, permitting, and constructing the 300,000-SF, high-performance facility in only three years, coming in about 2.5% less than the grant budget.



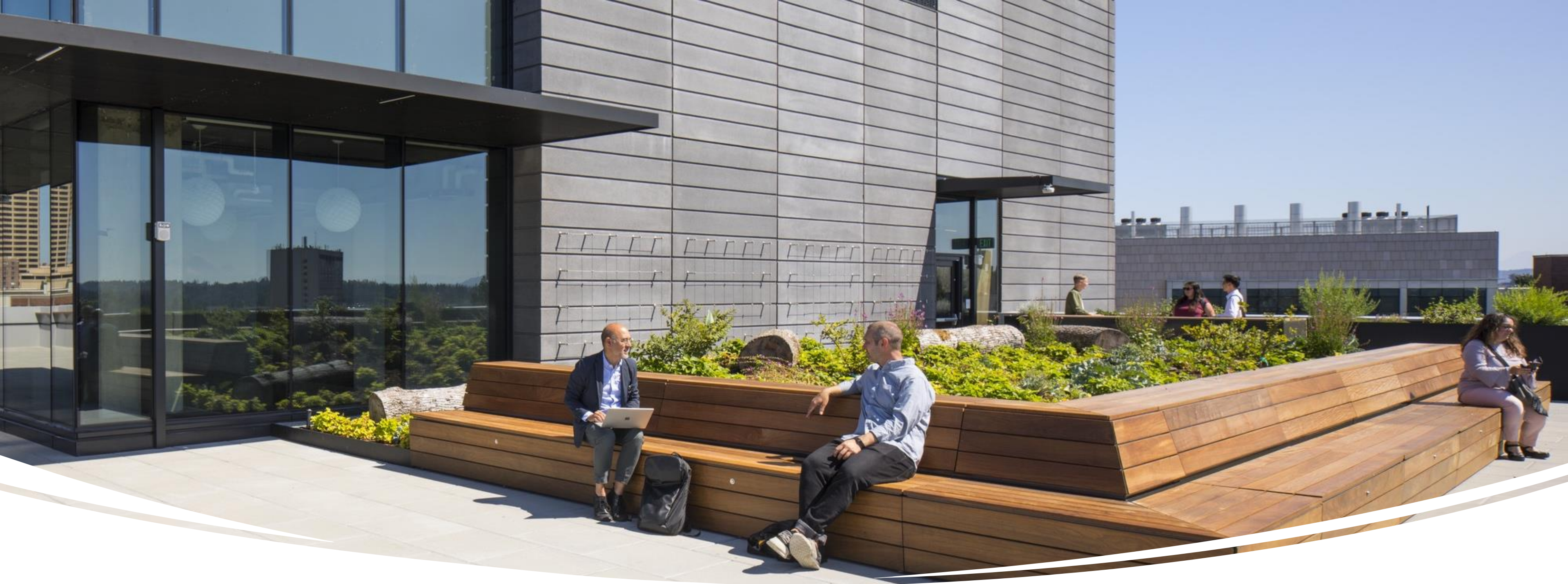
The building creates space for interdisciplinary collaboration and innovation on population health, such as investigation of biomedical, social-behavioral, cultural, environmental, and physical factors





Project Details

- Composed of a mosaic of oak squares, each block features an etching of a significant contribution to the mission of population health. The design of these feature walls relied heavily on community involvement and a call went out to virtually all University of Washington departments to identify the etchings



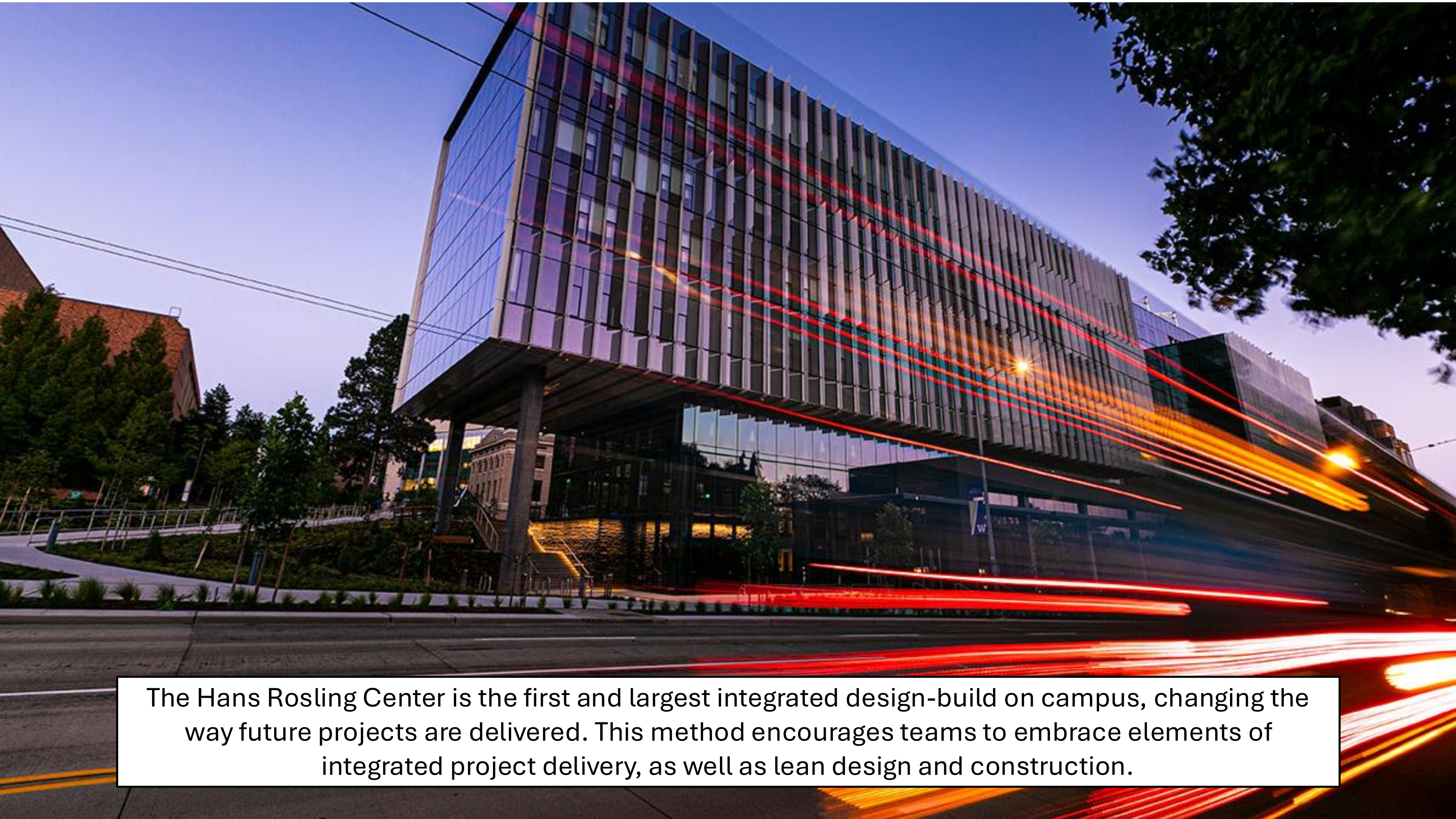
Project Details

- The building features rooftop terraces that provide open-air environments for both planned and impromptu gatherings, while ground-level outdoor seating areas create further opportunities for community interaction. This thoughtful arrangement effectively breaks down artificial social barriers that might exist between different groups, all while maintaining a sense of identity for individual teams.

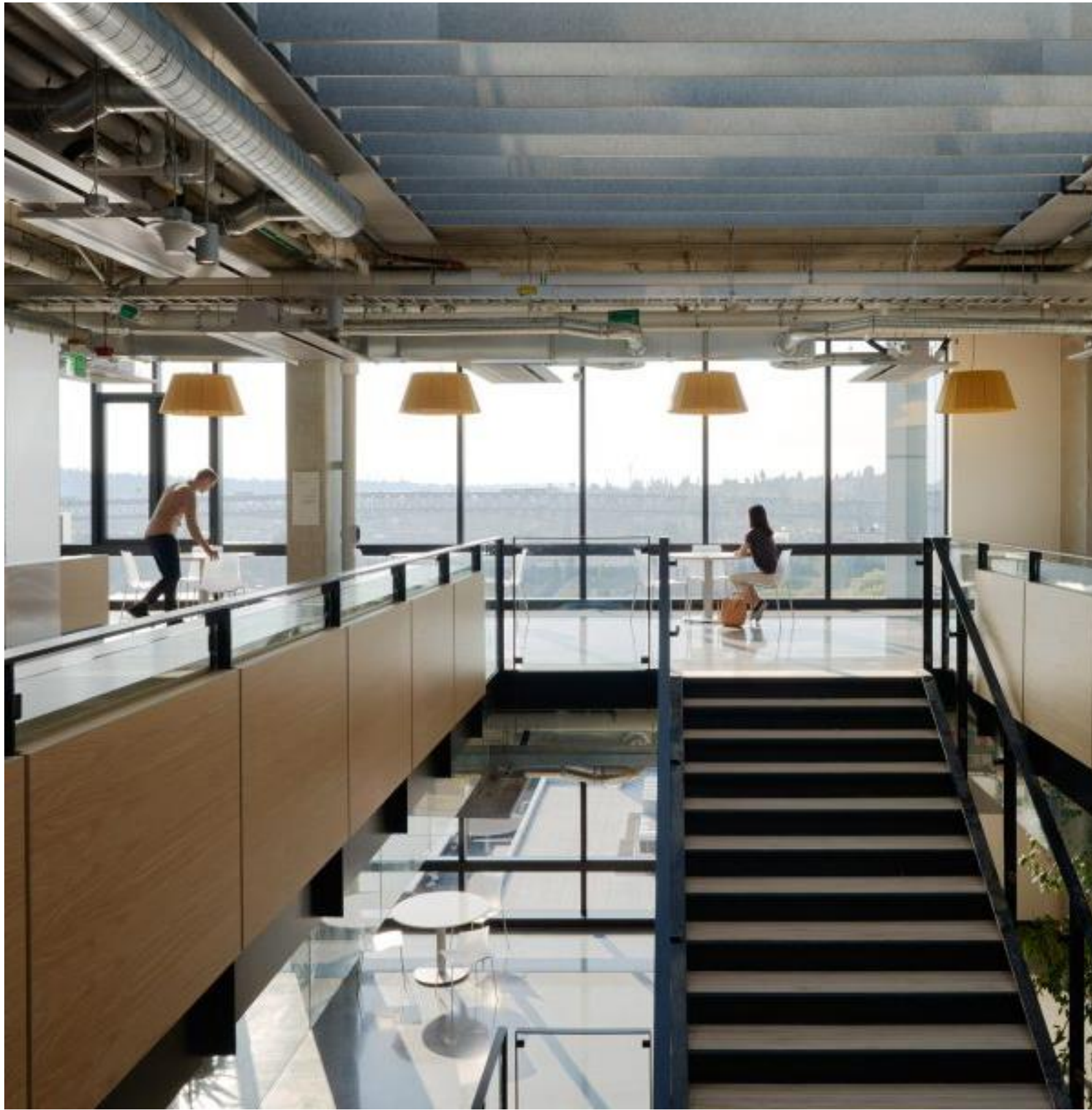


Project Details

- By minimizing physical barriers between public spaces and working areas, the design maintains visual connections that encourage interaction.
- The integration of art and storytelling elements throughout the facility underscores the building's mission and that of its occupants, providing opportunities for education and inspiration.



The Hans Rosling Center is the first and largest integrated design-build on campus, changing the way future projects are delivered. This method encourages teams to embrace elements of integrated project delivery, as well as lean design and construction.



The project finished on time, much faster than previous projects, added about \$8 million of enhancements during construction and completed \$6.5 million under budget.



UW - Hans Rosling Center for Pop Health

LEED BD+C: New Construction (v4)

PLATINUM, AWARDED FEB 2023



SUSTAINABLE SITES

AWARDED: 7 / 10

Prereq	Construction activity pollution prevention	0 / 0
Credit	Site assessment	1 / 1
Credit	Site development - protect or restore habitat	2 / 2
Credit	Open space	1 / 1
Credit	Rainwater Mgmt	0 / 1
Credit	Heat island reduction	2 / 2
Credit	Light pollution reduction	1 / 1



WATER EFFICIENCY

AWARDED: 8 / 11

Prereq	Outdoor water use reduction	0 / 0
Prereq	Indoor water use reduction	0 / 0
Prereq	Building-level water metering	0 / 0
Credit	Cooling tower water use	0 / 2
Credit	Water metering	1 / 1
Credit	Outdoor water use reduction	1 / 2
Credit	Indoor water use reduction	6 / 6



ENERGY & ATMOSPHERE

AWARDED: 26 / 53

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Building-level energy metering	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	6 / 6
Credit	Advanced energy metering	1 / 1
Credit	Demand response	0 / 2
Credit	Renewable energy production	0 / 3
Credit	Enhanced refrigerant Mgmt	1 / 1
Credit	Green power and carbon offsets	0 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 20
Credit	Optimize energy performance	18 / 18



MATERIAL & RESOURCES

AWARDED: 7 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Building life-cycle impact reduction	3 / 5
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	0 / 2
Credit	Building product disclosure and optimization - material ingredients	1 / 2
Credit	Construction and demolition waste Mgmt	2 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 10 / 16

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	2 / 2
Credit	Low-emitting materials	1 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	0 / 2
Credit	Thermal comfort	0 / 1
Credit	Interior lighting	0 / 2
Credit	Daylight	2 / 3
Credit	Quality views	1 / 1
Credit	Acoustic performance	1 / 1



INNOVATION

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 2 / 4

Credit	Renewable energy production	0 / 1
Credit	Building product disclosure and optimization - environmental product d...	1 / 1
Credit	Building product disclosure and optimization - sourcing of raw materia...	0 / 1
Credit	Indoor water use reduction	1 / 1



LOCATION & TRANSPORTATION

AWARDED: 13 / 20

Credit	LEED for Neighborhood Development location	0 / 16
Credit	Sensitive land protection	1 / 1
Credit	High priority site	1 / 2
Credit	Surrounding density and diverse uses	4 / 5
Credit	Access to quality transit	5 / 5
Credit	Bicycle facilities	1 / 1
Credit	Reduced parking footprint	1 / 1
Credit	Green vehicles	0 / 1



INTEGRATIVE PROCESS CREDITS

AWARDED: 1 / 1

Credit	Integrative process	1 / 1
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TOTAL

80 / 110



Frito Lay City Logistics





Project Details

- The project was delivered on an expedited timeline to achieve the target occupancy date, customizations for this 112,000 square-foot build-to-suit space for Frito Lay.
- There is a High-security exterior perimeter fencing to provide separation and security between Buildings 1 and 2.

The team enhanced landscaping with a large quantity of pollinators and native plants. LED lighting fixtures were selected to mitigate light pollution to neighboring locations. Coordinated scheduling, supply chain management and communication ensured project completion on time and on budget.





City Logistics - Frito Lay

LEED BD+C: Warehouses and Distribution Centers (v4)

SILVER, AWARDED MAR 2024



SUSTAINABLE SITES

AWARDED: 4 / 10

Prereq	Construction activity pollution prevention	0 / 0
Credit	Site assessment	1 / 1
Credit	Site development - protect or restore habitat	0 / 2
Credit	Open space	1 / 1
Credit	Rainwater Mgmt	0 / 3
Credit	Heat island reduction	2 / 2
Credit	Light pollution reduction	0 / 1



WATER EFFICIENCY

AWARDED: 6 / 11

Prereq	Outdoor water use reduction	0 / 0
Prereq	Indoor water use reduction	0 / 0
Prereq	Building-level water metering	0 / 0
Credit	Cooling tower water use	0 / 2
Credit	Water metering	0 / 1
Credit	Outdoor water use reduction	2 / 2
Credit	Indoor water use reduction	4 / 6



ENERGY & ATMOSPHERE

AWARDED: 14 / 53

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Building-level energy metering	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	0 / 6
Credit	Advanced energy metering	0 / 1
Credit	Demand response	0 / 2
Credit	Renewable energy production	0 / 3
Credit	Enhanced refrigerant Mgmt	0 / 1
Credit	Green power and carbon offsets	0 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 20
Credit	Optimize energy performance	14 / 58



MATERIAL & RESOURCES

AWARDED: 6 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Building life-cycle impact reduction	0 / 5
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	2 / 2
Credit	Building product disclosure and optimization - material ingredients	1 / 2
Credit	Construction and demolition waste Mgmt	2 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 6 / 16

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental Tobacco Smoke Control	0 / 0
Credit	Enhanced IAQ strategies	2 / 2
Credit	Low-emitting materials	3 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	0 / 2
Credit	Thermal comfort	0 / 1
Credit	Interior lighting	0 / 2
Credit	Daylight	0 / 3
Credit	Quality Views	0 / 1
Credit	Acoustic performance	0 / 1



INNOVATION

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 1 / 4

Credit	Optimize energy performance	1 / 1
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LOCATION & TRANSPORTATION

AWARDED: 6 / 20

Credit	LEED for Neighborhood Development location	0 / 16
Credit	Sensitive land protection	1 / 1
Credit	High priority site	1 / 2
Credit	Surrounding density and diverse uses	4 / 5
Credit	Access to quality transit	0 / 5
Credit	Bicycle facilities	0 / 1
Credit	Reduced parking footprint	0 / 1
Credit	Green vehicles	0 / 1



INTEGRATIVE PROCESS CREDITS

AWARDED: 1 / 1

Credit	Integrative process	1 / 1
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TOTAL

50 / 110

40-49 Points
CERTIFIED

50-59 Points
SILVER

60-79 Points
GOLD

80+ Points
PLATINUM

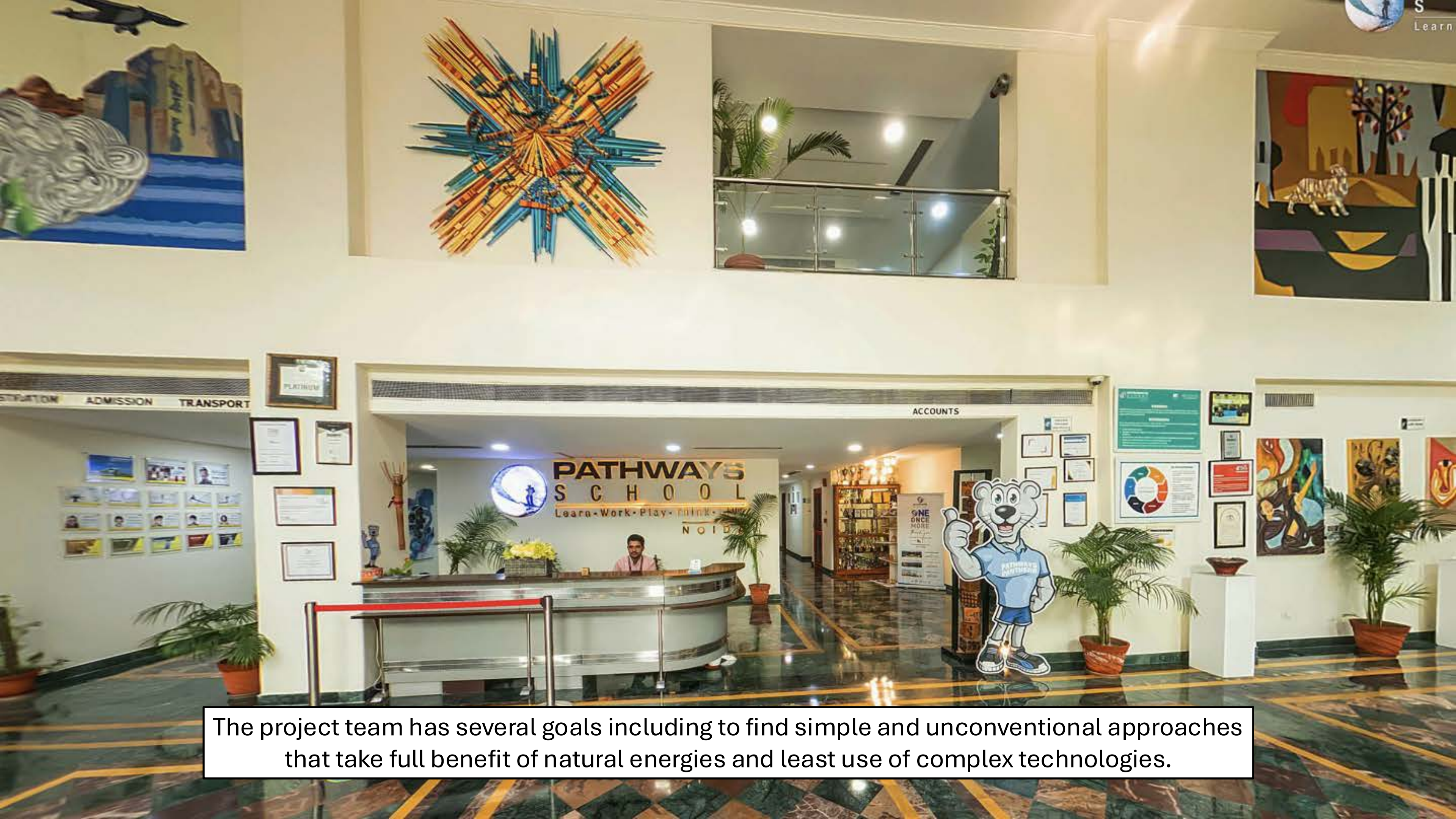


Pathways School

Project Details

- At Pathways Schools , their mission of imparting holistic education includes teaching students about sustainability.
- The design draws inspiration from traditional Indian architecture, specifically the design principles used in ancient forts and palaces. These structures naturally maintain cool temperatures in summer and warmth in winter, demonstrating effective climate control without modern technology.





The project team has several goals including to find simple and unconventional approaches that take full benefit of natural energies and least use of complex technologies.

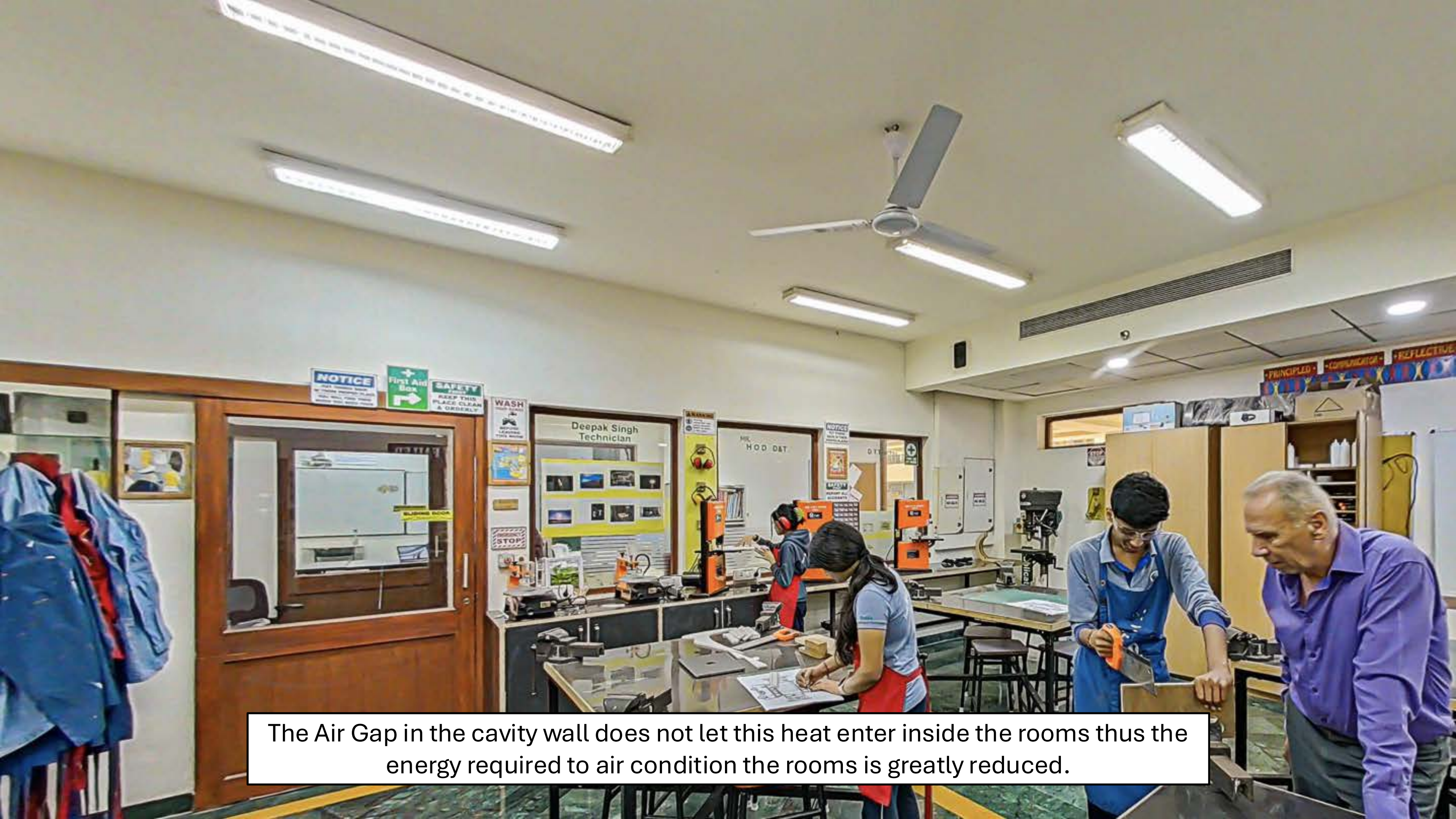


The school's total energy requirements are 40% less than that of conventional buildings. The total HVAC requirements are 60% less than that of conventional buildings.

Project Details

- The project team consciously kept the ceiling heights about 4.2 meters thus allowing the space for hot air.
- The Fan Coil Units are placed a little lower and send the cool air draft downwards thus not hitting the pocket of hot air trapped on the top.

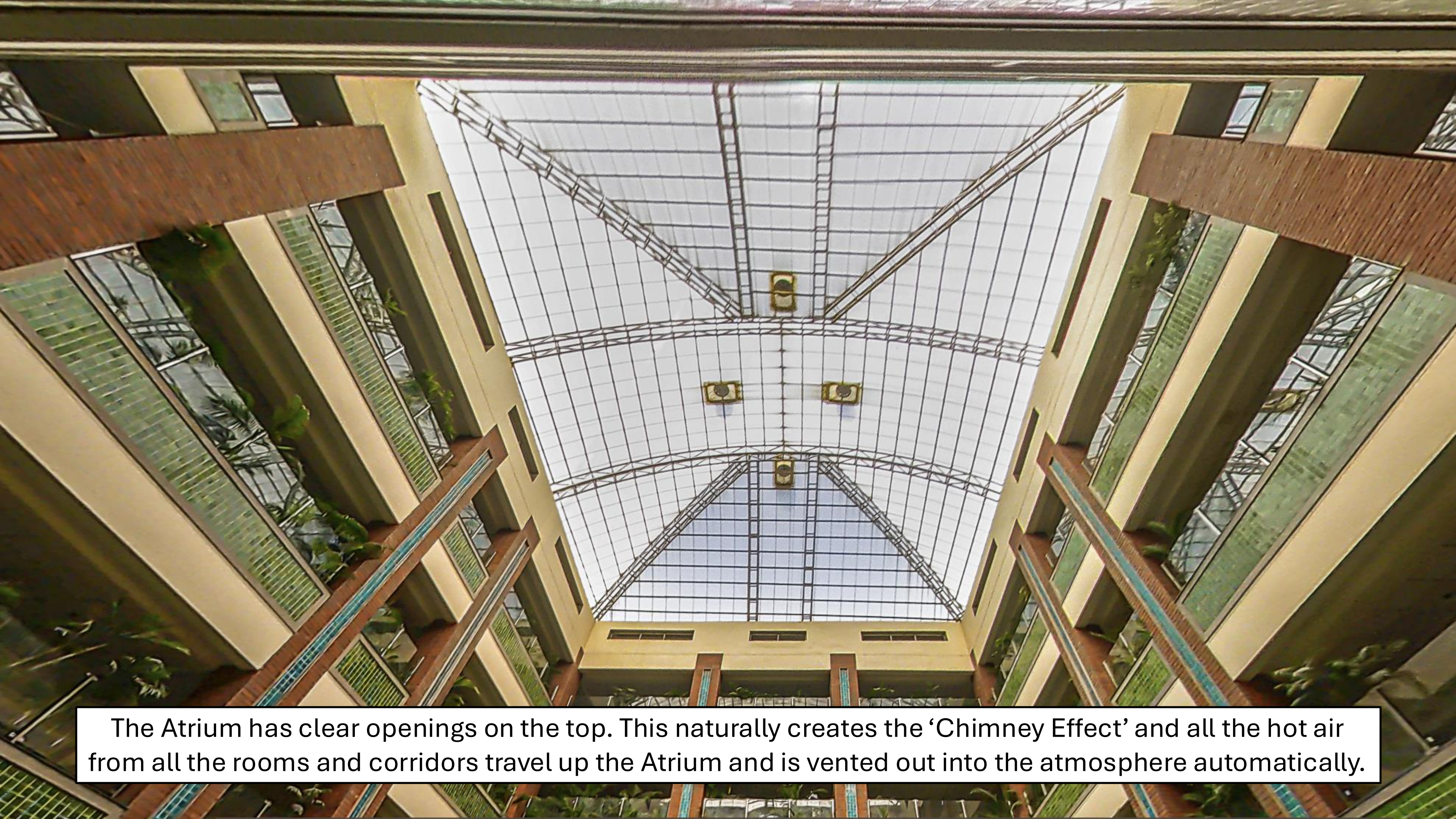




The Air Gap in the cavity wall does not let this heat enter inside the rooms thus the energy required to air condition the rooms is greatly reduced.



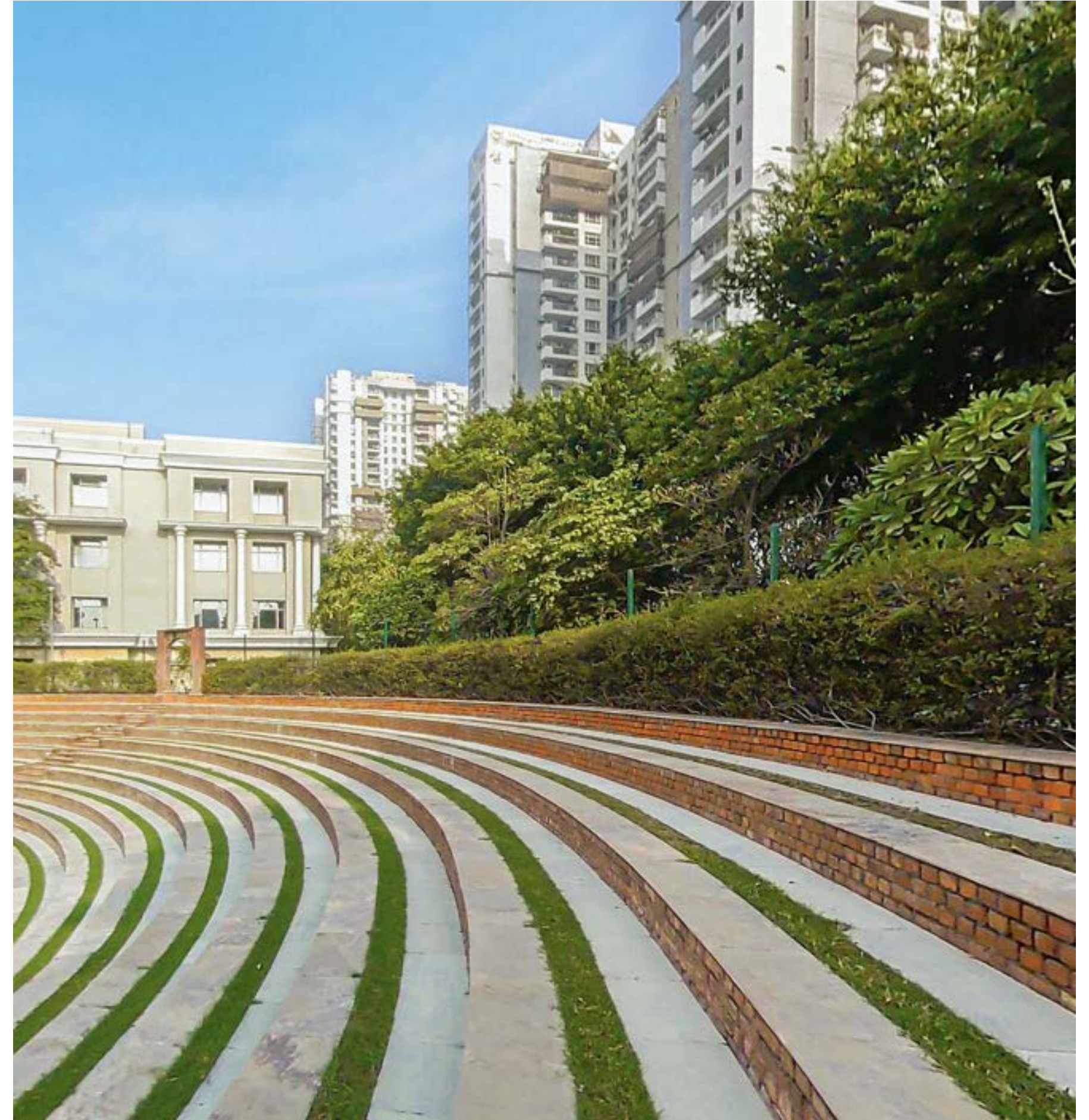
Non-conditioned corridors also provide a buffer zone for students coming from warm outdoors and vice versa.



The Atrium has clear openings on the top. This naturally creates the 'Chimney Effect' and all the hot air from all the rooms and corridors travel up the Atrium and is vented out into the atmosphere automatically.



The school has routed the atmospheric air through earth air tunnels 75 meters long buried 4 meters below the ground. After travelling this 75 meters, this air picked up at 44 to 45 degrees cools down to about 28 to 30 degrees. Now the air will cool to 24 degrees and be pumped inside.



Thousands of trees are planted on the open areas. These plantations are strategically deployed.



All these years the school employees have seen Bore Wells in the surrounding areas getting dry, but the school wells always remain charged.

Strategies

- Optimize building envelope performance through proper insulation and high-performance windows.
- Implement energy-efficient HVAC systems and lighting controls.
- Utilize renewable energy sources like solar panels or wind turbines.



Strategies

- Install water-efficient fixtures and appliances.
- Implement rainwater harvesting and greywater recycling systems.
- Design drought-resistant landscaping to reduce irrigation needs.



Strategies

- Use recycled, reclaimed, or locally sourced materials.
- Choose materials with low volatile organic compound (VOC) emissions.
- Implement proper waste management and recycling programs during construction and operation.



Strategies

- Ensure proper ventilation and air filtration systems.
- Maximize natural daylight and provide quality views to the outdoors.
- Design for thermal comfort and individual controllability of lighting and temperature.



Strategies

- Choose locations with access to public transportation and amenities.
- Preserve or restore natural habitats and ecosystems.
- Implement stormwater management strategies to reduce runoff.



Strategies

- Engage in collaborative planning with all stakeholders from the project's inception.
- Set clear sustainability goals and regularly assess progress throughout the design and construction phases.



Strategies

- Conduct thorough commissioning of building systems to ensure optimal performance.
- Implement continuous monitoring and maintenance programs to sustain efficiency over time.



Strategies

- Prioritize designs that promote physical activity, such as prominent staircases and bike storage.
- Create spaces that support mental health through biophilic design and access to nature.

