The Renovation of Thurston Hall

Washington, DC

A Premiere Reflection of a National Trend

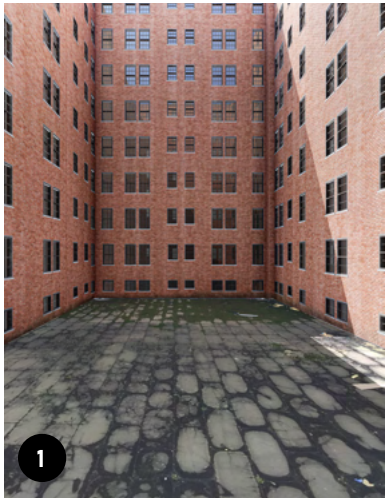
In 2022, for the first time since AIA has been tracking such data, **renovations exceeded new construction in national architectural billings.** The renovation of Thurston Hall is a leading example of this trend, and underscores the vital benefits of saving and revitalizing our existing built environment.

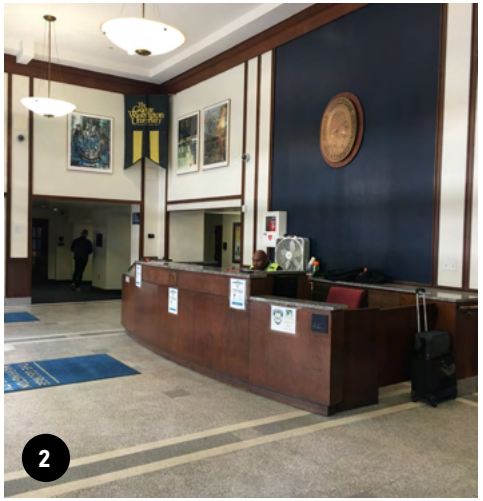
+ Thurston Hall, circa 1930s

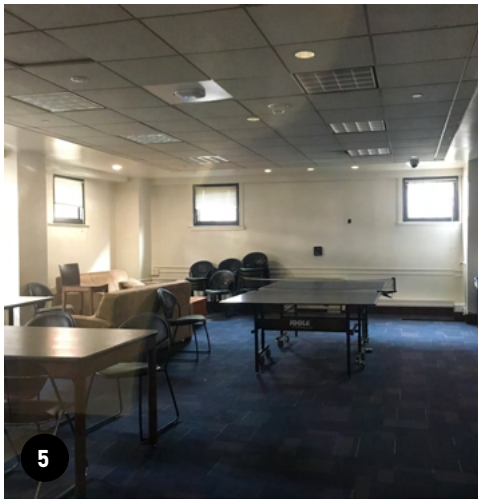
Pre-Renovation Conditions

The existing building had good bones, including a largely reusable structural system. Interior conditions were to be expected of a multi-unit residence block of the 1930s: dense corridors, little natural light, and **unhealthy environments in which to live and learn.**

The central light well was uninhabited and overgrown - but presented a vital opportunity.







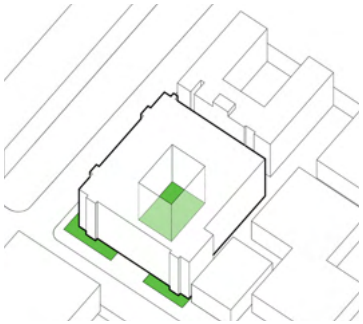
+ Key

1. Uninhabitable Light Well
2. Lobby
3. Light Well from Above
4. Corridor
5. Student Lounge

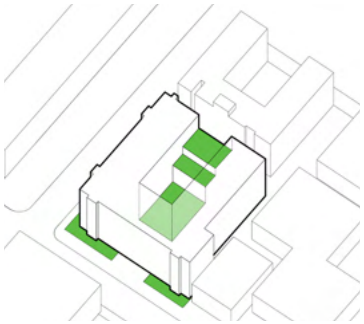
One Move, Every Possibility

The design vision for the renovation was derived from a single move: carving away a portion of the building on the South side to create a lively courtyard that became the building's nucleus.

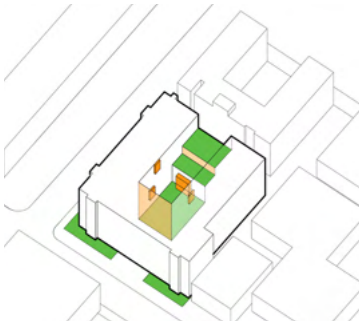
Everything connects to, and is informed by, this key design move.



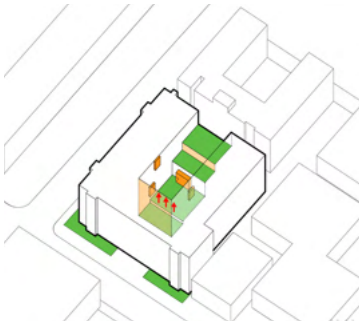
1 **Existing Light Well**



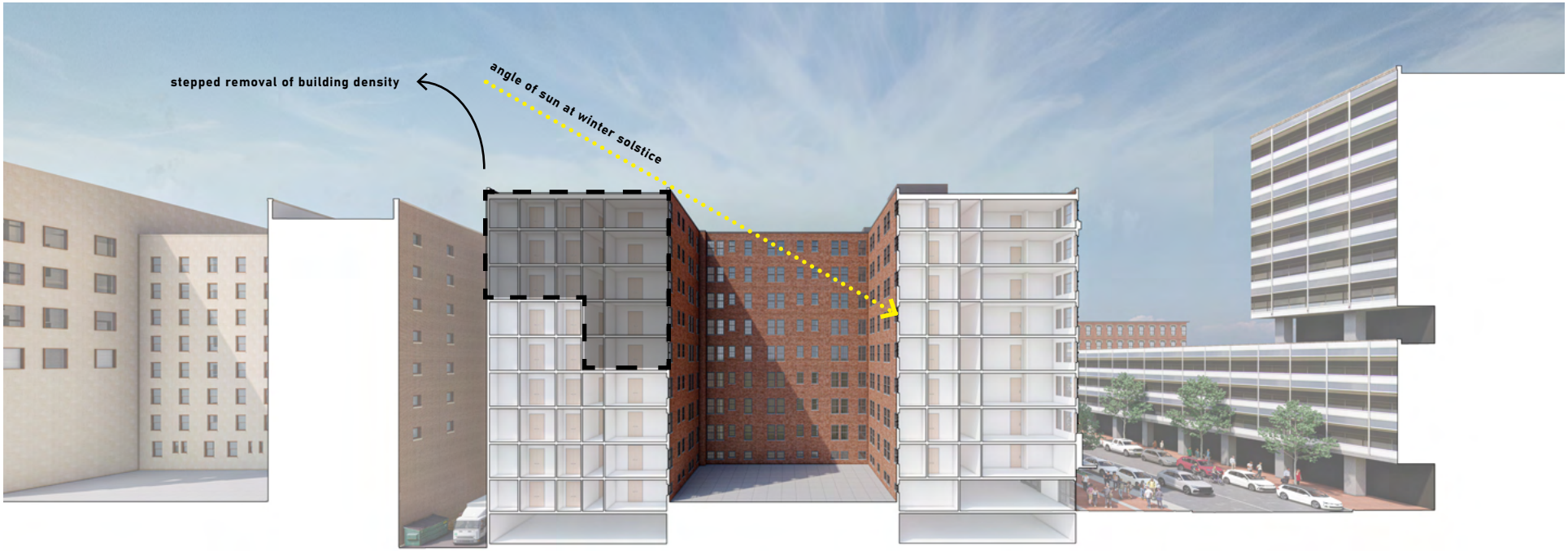
2 **Carve**



3 **Lantern**



4 **Urban Living Room**



+ North / South Building Section **Before**

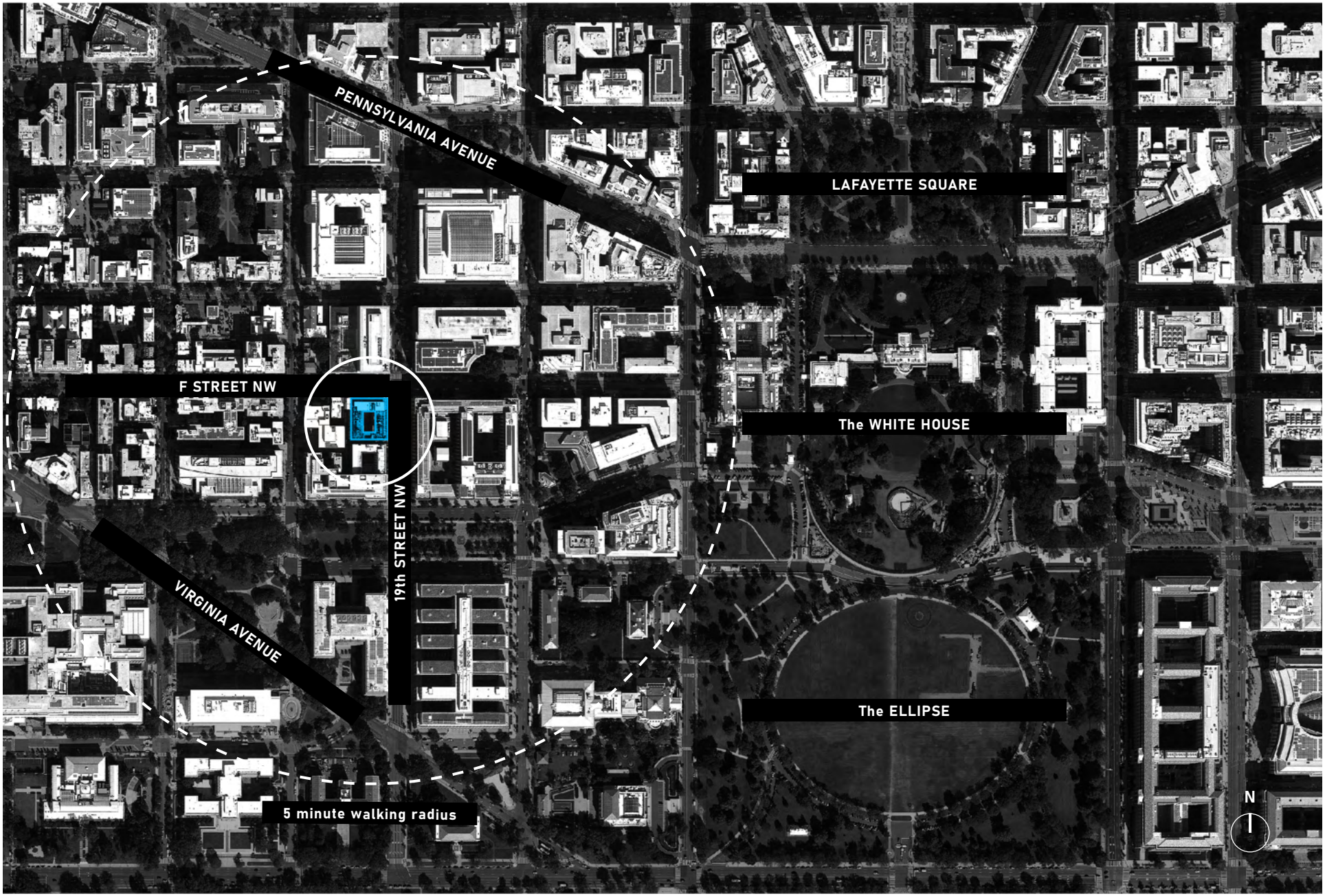
+ North / South Building Section **After**, with carving out of Southern portion

Demolition in Progress

+ **Before** Renovation (a Light Well)

+ **After** Renovation (a Courtyard)

Context Plan – The Density of DC's Foggy Bottom



An Inward-Facing Approach

> The exterior of the building was left virtually unchanged, abiding DC historic preservation codes and encasing **a dramatic interior transformation** – a hidden jewel in the heart of a dense urban fabric.

+ North and East facades from Northeast corner

+ Alleyway along South facade

Bringing the City Inside

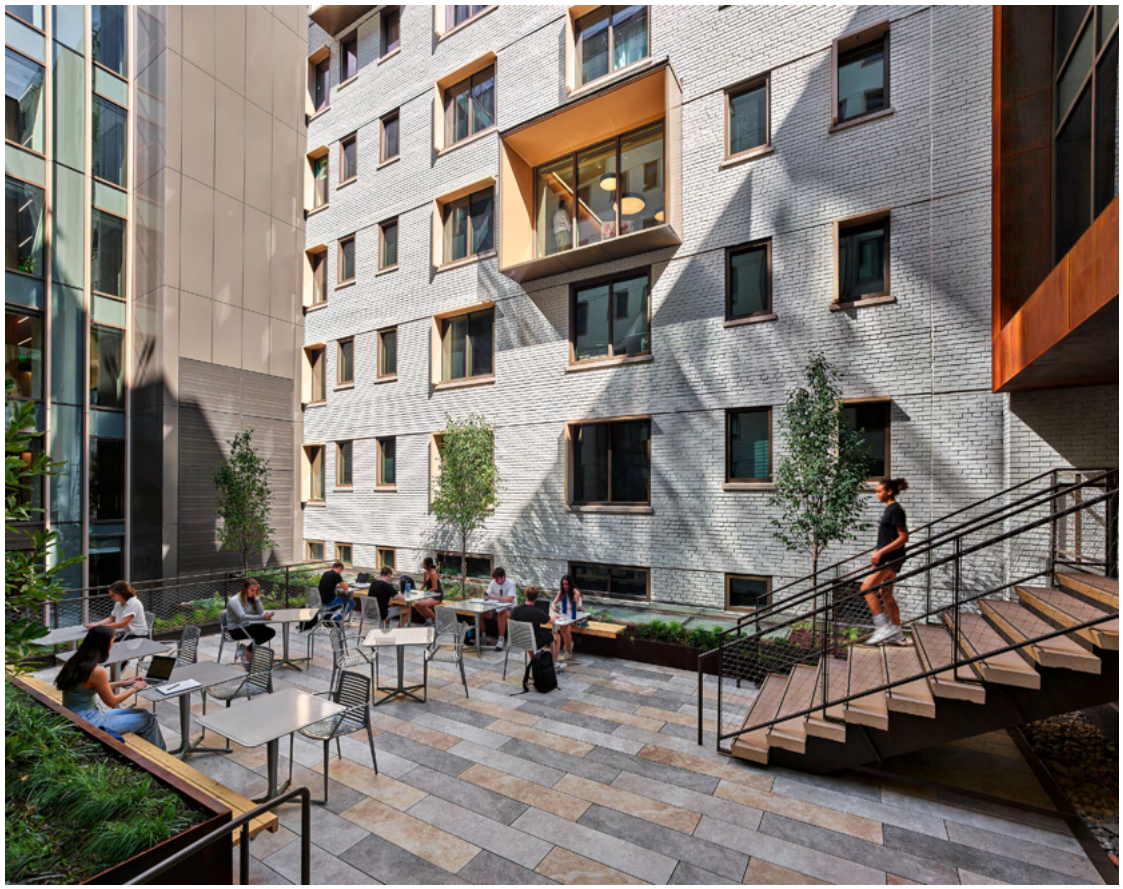
> The energy of the District is carried through the threshold of Thurston Hall, with a direct thread from street to central courtyard and **connecting students to their place in the city.**

+ Main Entrance on North Facade

+ Entry Lobby, with preview of main Courtyard space

The Courtyard

An **urban living room** at the heart of the building provides a dynamic public space, while expanding student access to light, fresh air, and views to their surroundings.



+ North and East facades from Northeast corner

+ Alleyway along South facade

Bolstering Student Health + Well-being

> The 2019 Healthy Minds Study (HMS) shows that today's undergraduates are suffering high levels of mental health challenges, **conditions that can be directly affected by the spaces in which they live and study.**

By the Numbers

900

Maximum CO2 levels (ppm)

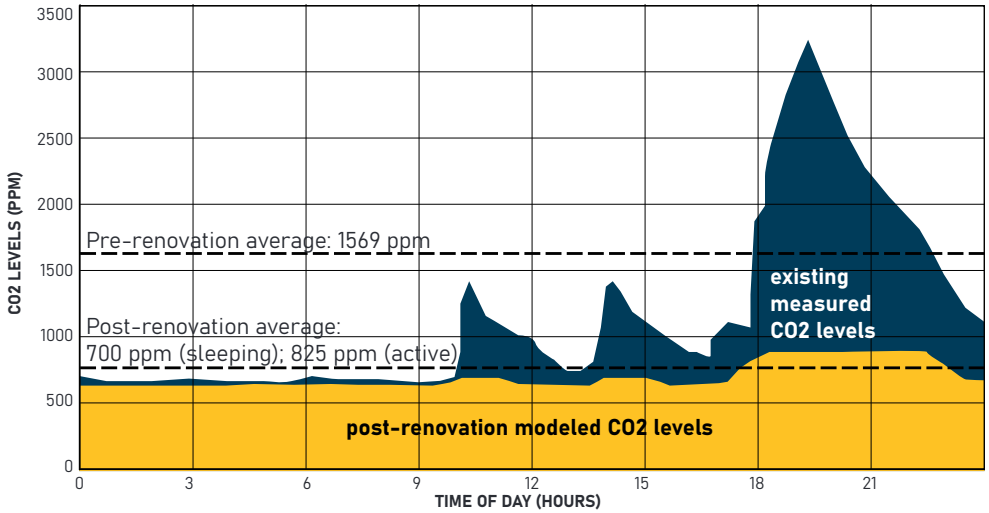
45%

Regularly occupied areas served primarily by daylight (sDA300/50%)

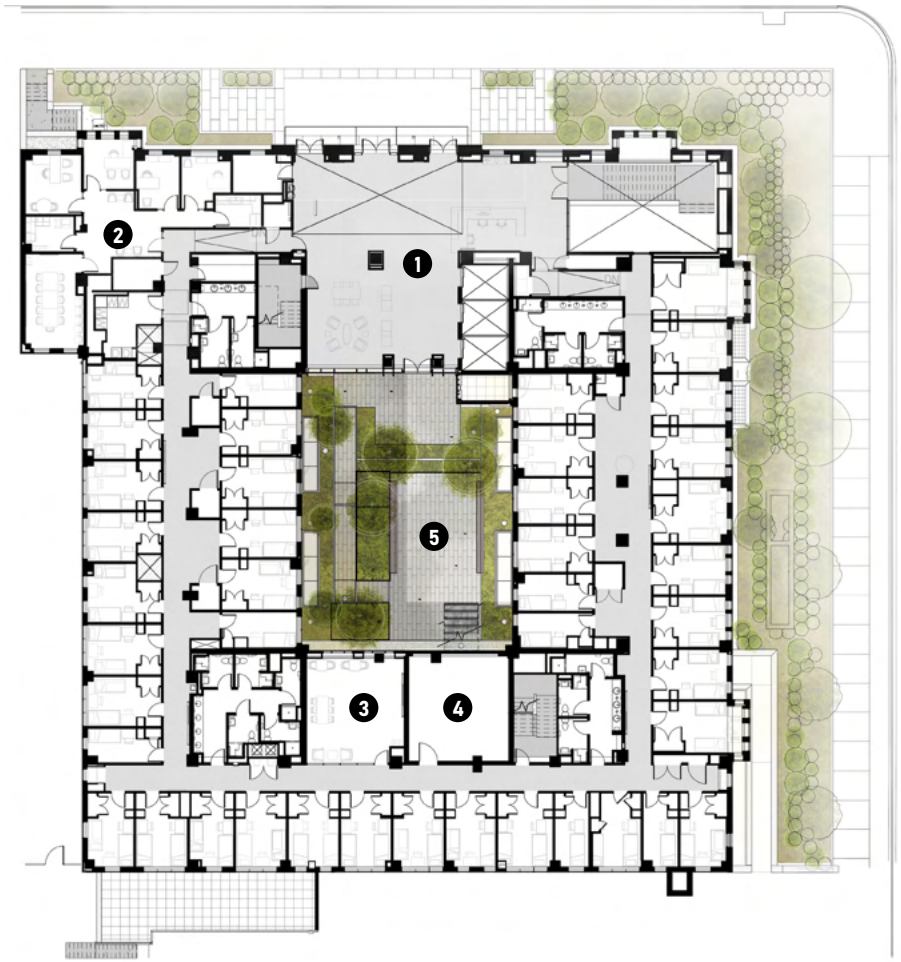
100%

Occupants who control their own light levels

Better Air Quality, Better Cognitive Function

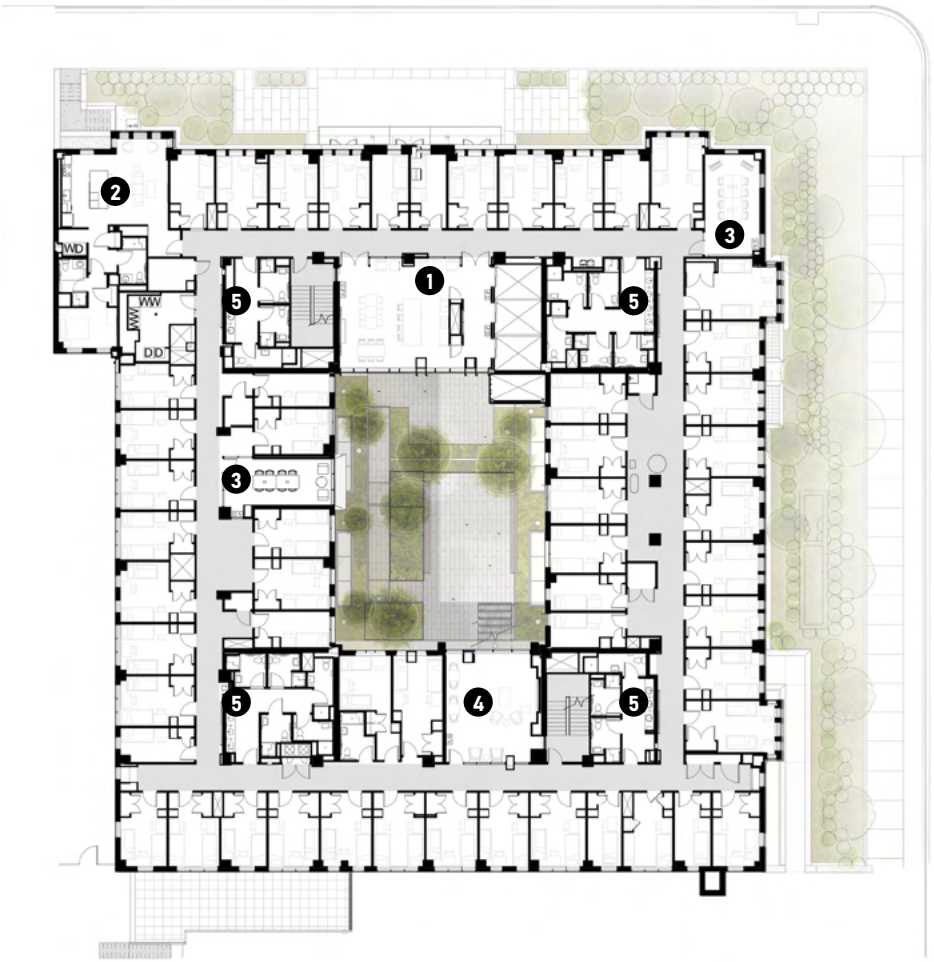


Floor Plans



+ Level 1 Floor Plan

1. Lobby / Reception
2. RA Office / Admin.
3. South Lounge
4. Mechanical
5. Courtyard

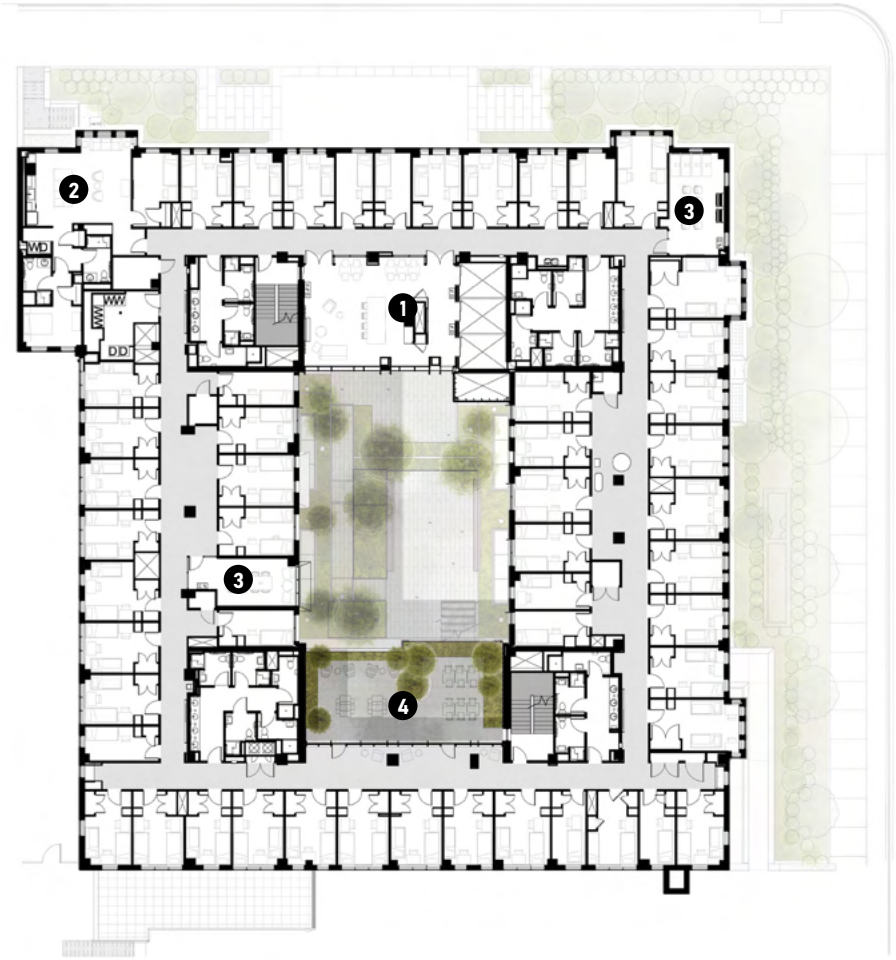


+ Level 2 Floor Plan (typical)

1. North Lounge
2. Staff Apartment
3. Study
4. South Lounge
5. Wet Core

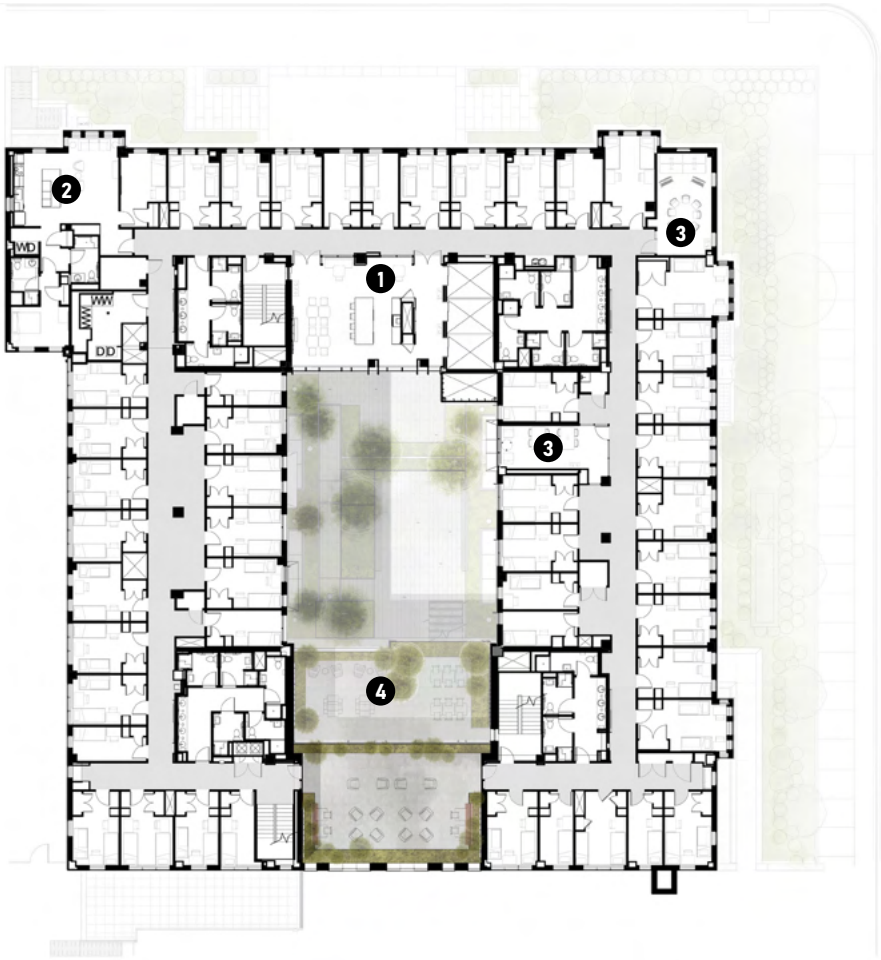
N

Floor Plans



+ Level 5 Floor Plan

1. North Lounge
2. Staff Apartment
3. Study
4. Outdoor Patio



+ Level 7 Floor Plan

1. North Lounge
2. Staff Apartment
3. Study
4. Outdoor Terrace

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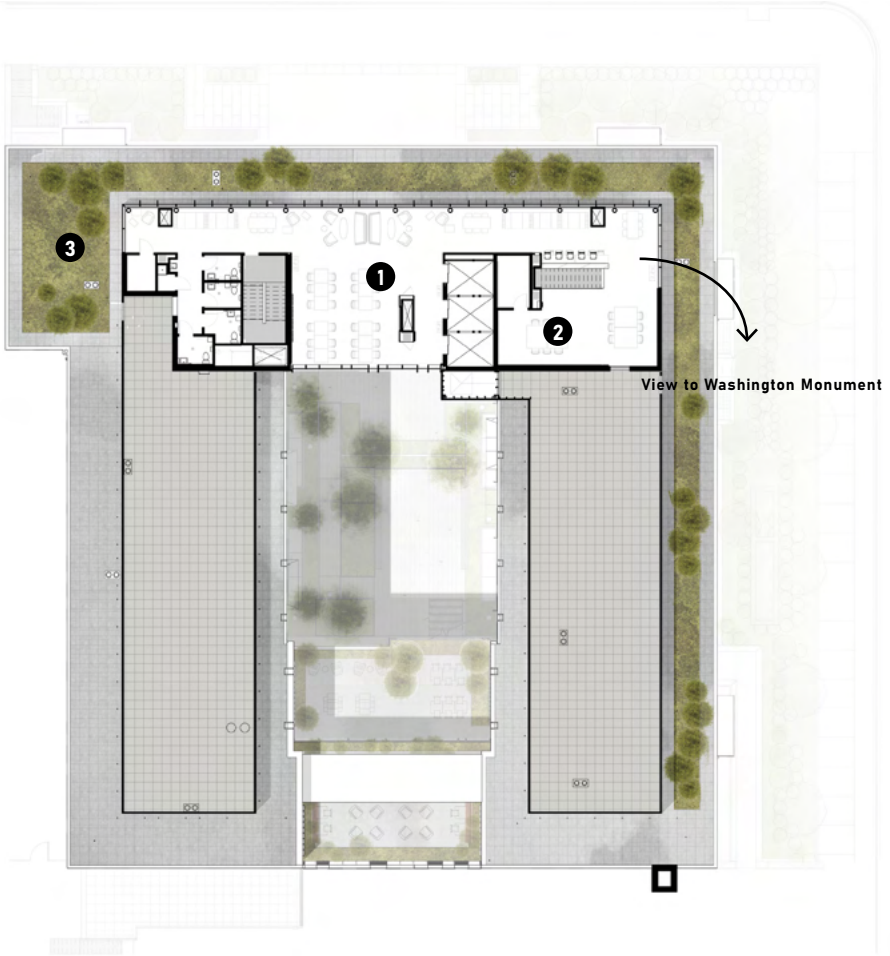
Rooftop Level

A new floor was constructed atop Thurston's existing nine floors. The penthouse provides additional community and event space, accompanied by a green roof and sweeping views that **immerse students in the bustling activity of Washington, DC.**

+ Flexible gathering and event space with views of the surrounding DC urban landscape.



+ Penthouse Level Floor Plan

1. Open Study + Gathering Space
2. Student Lounge Area
3. Green Roof

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Courtyard Connections - Outdoor Terraces

The carving out of the Southern portion of the structure creates new outdoor areas, a form of **vertical park system** stepping down to the main courtyard.

The fifth floor patio and seventh floor terrace are the results of the core design move, providing another type of space for interaction and access to outdoor space from the front door of living units - a rarity for an urban student residential

Seventh Floor Terrace

Special care was given to the South facade where a portion of the brick was carved out, inserting porous framing elements that allow for natural light while maintaining the hierarchy of the original facade.

Courtyard Connections - Student Lounges

The lounges on the North side provide **double-height spaces** with communal kitchens and ample lighting from the open courtyard.

The first space a student enters from the elevators is one of the North Lounges, **intentionally sequenced to mirror the experience of entering a house into a living room.** These active spaces provide opportunities for social connections for First Year students, shared over personal meals, campus happenings, and the bustling energy of the courtyard outside.

Courtyard Connections - Places for Living

Residents are supported by a **holistic set of services and amenities**, including live-in staff apartments and gender-neutral wet cores that redefine the experience of shared bathing areas for inclusivity.

Top: Live-in staff apartments establish direct access to counseling and support services for students, right down the hall.

Bottom: Four gender-neutral wet cores per floor create welcoming and safe environments for bathing, with a commitment to equitable use and sense of privacy for every single student.

Courtyard Connections - Places for Learning

A true living-learning community, areas for group study are highlighted through **pop-outs around the courtyard**, supplemented by smaller nooks for more focused, individual work.

Top: Pop-out Group Study Room, with views out to Courtyard and to other pop-outs.

Bottom: Individual nooks at the end of corridors provide a different type and scale of study space.

Western Courtyard Facade

Courtyard Connections – Chances to Meet

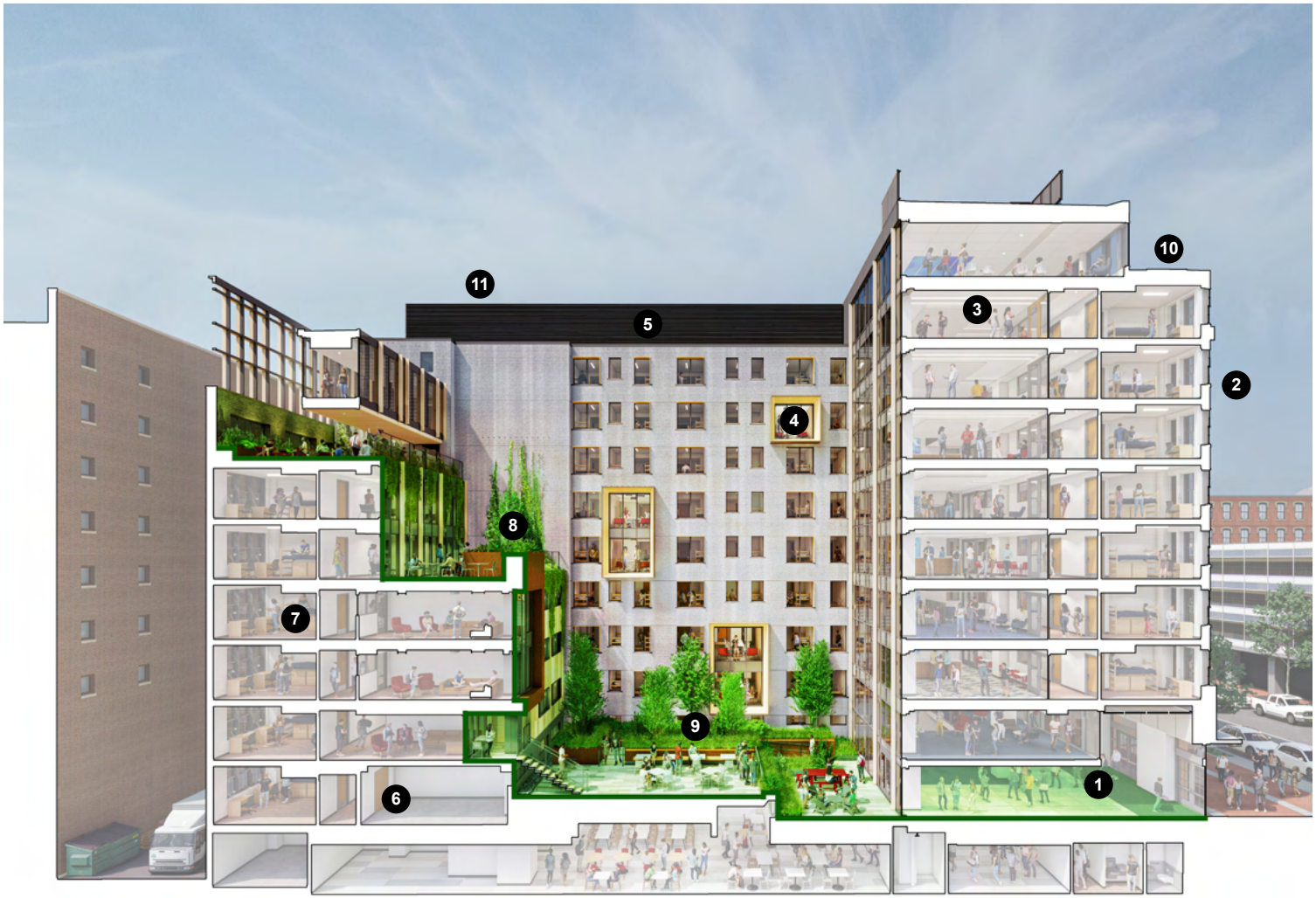
A diversity of spaces for different forms of social interactions are distributed throughout, encouraging interactions of various scales, **both spontaneous and planned**.

Top: Eighth Floor Bridge Connection, looking over Seventh Floor terrace and central courtyard.

Bottom: Sixth Floor glass corridor with flexible seating.

Optimizing a Sustainable Renovation

Building off of the **inherently sustainable approach of adaptive re-use,** the renovation of Thurston Hall drastically improves indoor air quality and overall energy performance, lending to a near LEED Platinum certification.



1. **EXISTING BUILDING REUSE** reduces the carbon impact of the project by 50%.
2. **IMPROVED BUILDING ENVELOPE** with added insulation, increased airtightness, and improved glazing reduces energy demand and improves comfort
3. **EFFICIENT LIGHTING,** primarily LED fixtures, results in a 70% reduction in lighting power density
4. **DAYLIGHTING + VIEWS** reduces energy demand and improves occupant health and well-being.
5. **DEDICATED OUTDOOR AIR SYSTEM** decouples ventilation from heating/cooling and provides fresh air in ways that maintain low CO2 levels, supporting occupant well-being
6. **TWO PIPE HEAT PUMP LOOP** ties together all forms of water-cooled equipment (HVAC, domestic hot water, IT, kitchen walk-ins, etc) to improve efficiency and lower overall energy demand
7. **SENSOR NETWORK** monitors occupancy, light levels, and CO2 levels to maintain optimal conditions while limiting energy use
8. **NATIVE LANDSCAPING** reduces potable water demand and urban heat island effect and improves occupant health and well-being
9. **RAINWATER HARVESTING** with a 45,000 gallon cistern reduces potable water demand and improves community resilience
10. **VEGETATED ROOF** mitigates heat island effect and improves runoff volume and quality
11. **PHOTOVOLTAIC ARRAY** reduces energy demand and provides clean energy

Sustainability by the Numbers

> The renovation upholds the goals of **the DC Building Energy Performance Standards (BEPS)**; it is an exemplary project for the larger sustainability initiatives of the nation's capital.

40%

Less energy use compared to national average for residence halls/dining, before renewables

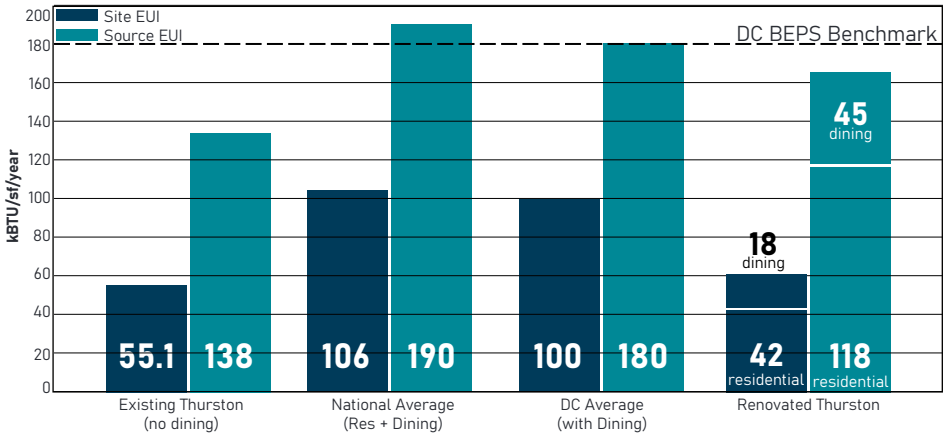
89%

2-year, 24-hour storm event managed on-site

80%

Existing walls, floors and roof maintained

Supporting the Wider Urban Environment



Framework for Design Excellence

Design for **Integration**

The renovation is guided by a core design move to achieve multiple goals: removing a southern portion of the building to expand access to natural light, air, and dynamic community spaces.

Design for **Equitable Communities**

A diverse range of amenities and resources are made available to residents, including communal, gender-neutral wet cores that prioritize inclusion and privacy.

Design for **Ecology**

Native vegetation was introduced in the renewed courtyard and the high roof contains a section of extensive green roof, virtually doubling the project's urban planted areas.

Design for **Water**

Thurston Hall is designed to absorb and retain runoff through increased planted areas, a vegetated roof, and a 45,000 gallon cistern. Harvested rainwater is used for drip irrigation for plantings.

Design for **Economy**

The renovation is focused on renewing the building for the next 100 years, including improving the building envelope for durability and airtightness, and reinforcing its structure to accommodate modern seismic needs.

Design for **Energy**

The existing envelope was improved (insulation, glazing, airtightness) and high performance systems installed. Together, the strategy results in a 40% overall energy use reduction before renewables, and a 62% reduction including them.

Design for **Wellness**

Health risk factors for today's undergraduates are social isolation and high levels of anxiety and depression. In addition to technical solutions, the project also fosters student connectivity through strategic programming.

Design for **Resources**

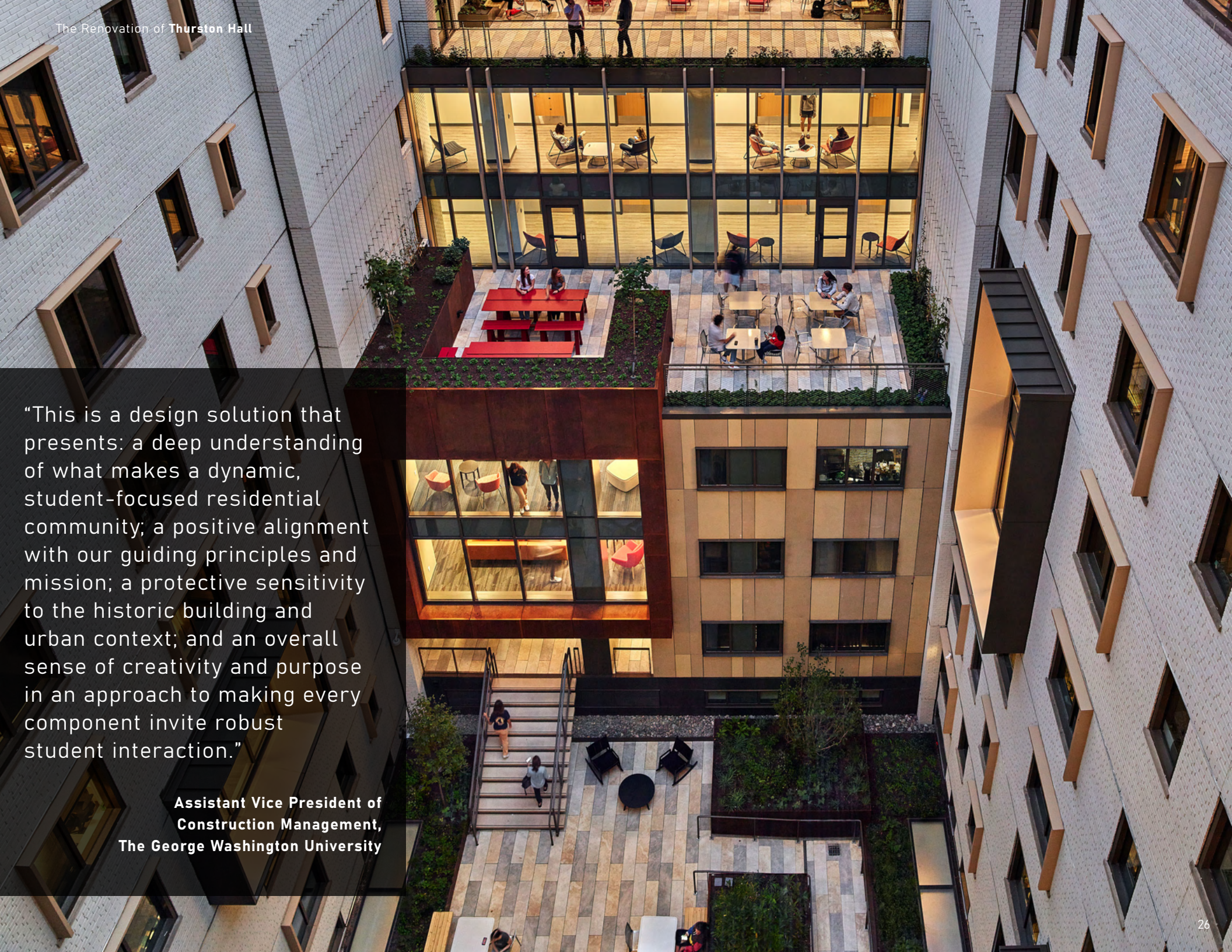
Thurston Hall is a celebration of what is possible with our existing building stock, reusing 80% of the existing structure and resulting in an embodied carbon use intensity that is 52% lower than a conventional residence hall.

Design for **Change**

The team studied potential interoperability of Thurston and its neighboring residence hall, slated for a future, similar renovation. A new under-alley piping connection was installed to support phasing and facilitate potential interconnection.

Design for **Discovery**

Post occupancy survey results showed increased satisfaction in overall building usage, indoor air quality, physical health, academic performance, outdoor connections, and resident happiness.



"This is a design solution that presents: a deep understanding of what makes a dynamic, student-focused residential community; a positive alignment with our guiding principles and mission; a protective sensitivity to the historic building and urban context; and an overall sense of creativity and purpose in an approach to making every component invite robust student interaction."

Assistant Vice President of Construction Management, The George Washington University

Thurston Hall Renovation
VMDO Architects
The George Washington University, Washington, District of Columbia

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