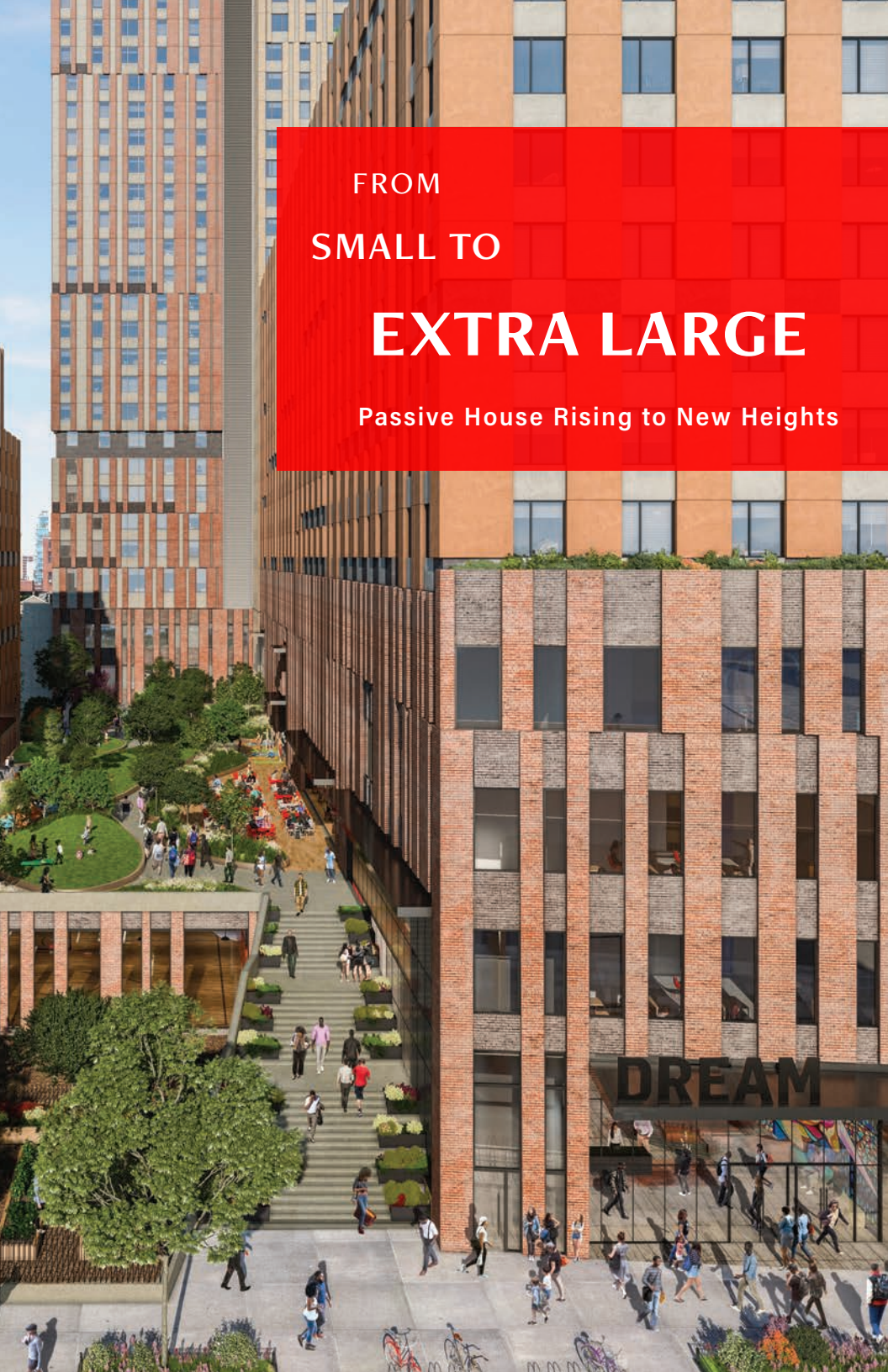

FROM

SMALL TO

EXTRA LARGE

Passive House Rising to New Heights

425 *Grand* CONCOURSE

Bronx, New York

Trinity Financial was selected by the city of New York to develop a new 27-story affordable housing project in the Bronx. The city wanted a signature building representing twenty-first-century affordable housing coupled with nonresidential uses on the ground floor. Trinity's goals included Passive House certification, reduced tenant utility costs, reduced landlord operating costs, and resiliency. The resulting mixed-use building includes 277 studio to three-bedroom apartments, a medical urgent care clinic, educational and cultural facilities located within, and retail space located outside the Passive House boundaries. Tenant amenities include a fitness room, two community rooms, laundry facilities on each floor, and landscaped terraces on the 4th and 26th floors.

Team

Developer
Trinity Mid Bronx Development LLC

Architect
Dattner Architects D.P.C.

Builder
Monadnock Construction

Certified Passive House Consultant
Steven Winter Associates, Incorporated

Mechanical Engineers
Dagher Engineering PLLC

Due to its Passive House construction and occupant density, 425 Grand Concourse's large internal heat gains and humidity levels mean that this building is cooling-load dominated, like most other large multifamily buildings in this climate zone. The design team had to pay close attention to both the HVAC systems and the window specification and installation details to avoid condensation that could result in mold growth.

Apartment temperatures are controlled by a variable refrigerant flow heat recovery system on each floor, allowing simultaneous heating and cooling during shoulder seasons. Smart refrigerant branch controllers provide thermostatic control for each unit. As an additional benefit, building management gets separate heating and cooling consumption numbers for utility billing.

Like many sites in New York City, the building is located close to a major highway that results in high particulate content in the air, placing high demands on achieving good indoor air quality. The team settled on a total of four large ERVs, two for the higher floors, and two for the lower floors. This approach minimizes shell penetrations and maintenance issues, and reduces ducting. Each unit includes temperature, humidity, and CO_2 monitoring. Tenants can access these data to learn more about their energy usage patterns.

To address resiliency issues, there is a gas-fired generator located on the roof. A generator was originally required only to service emergency loads during a power outage. The team upsized the generator to provide power for other essential services, including one elevator; domestic water pumps (NYC water pressure only reaches the lowest four to six floors without pumping); building security; and local Wi-Fi networking. In the event of a power outage, residents can comfortably remain at home, or leave the building without having to walk down 27 flights of stairs.

Renderings courtesy of Dattner Architects

Passive House Metrics

Specific space heating demand	3.0 kBtu/ft²/yr	9.6 kWh/m²/yr
Specific space cooling demand	5.5 kBtu/ft²/yr	17.4 kWh/m²/yr
Source energy use intensity (EUI)	61.3 kBtu/ft²/yr	193.2 kWh/m²/yr
Air changes per hour	0.35 ACH_{50} (design)	