

## Project Profile

# Henry® helps Passive House high-rise meet rigorous air infiltration requirements

425 Grand Concourse, The Bronx, NYC



### Products used

#### Air Barrier System:

- Membrane** – Henry® Air-Bloc All Weather STPE®
- Flashing membrane** – Henry Blueskin Metal Clad®
- Primer** – Henry Blueskin® LVC Adhesive
- Sealant** – Henry 925 BES Sealant

### Project at a glance

- Location:** Bronx, NY
- Project type:** New construction
- Building function:** Mixed-use
- Construction type:** Poured in place concrete
- Number of stories:** 26
- Number of units:** 277
- PHIUS program version:** PHIUS 2015
- Architect:** Dattner Architects
- General contractor:** Monadnock Construction
- Air barrier system installer:** PG Drywall
- Building Envelope Consultant:** DeSimone Consulting Engineers
- Passive House Consultant:** Steven Winter Associates
- Developers:** Trinity Financial, Inc.; MBD Community Housing

### The Situation

Rising 26 stories above its South Bronx location, 425 Grand Concourse is currently the largest Passive House in the US (PHIUS) project in North America. Designed by Manhattan-based Dattner Architects, this mixed-use, mixed-income high-rise features 277 units of affordable housing, plus a medical facility, supermarket, community support space, and CUNY Hostos student services center. Like all Passive House buildings, it is extremely energy-efficient, using about 70% less energy than a conventional project.

Passive House buildings are exceptionally well insulated, virtually airtight structures that take advantage of passive solar heat gains and internal heat gains. The goal is to shrink heating, cooling and ventilation demands to such a degree that they can be met with a minimal mechanical system.

Along with enormous energy savings, Passive House buildings deliver excellent comfort, fresh indoor air, and extremely low operating costs. To achieve these benefits, Passive House design focuses on five key principles:

- An airtight building envelope
- Continuous, climate-appropriate insulation
- Thermal bridge-free construction
- Shaded, high-performance windows
- Continuous ventilation and heat recovery

Not surprisingly, Passive House testing requirements are rigorous. The Passive House (PHIUS) Standard is the industry's toughest energy-efficient certification method, with extremely stringent building envelope requirements. For commercial buildings like 425 Grand Concourse that are taller than five stories with non-combustible construction, the required air infiltration rate is not to exceed 0.08 CFM per square foot @ 50 Pa.

Knowing they would need to meet these extremely tight building envelope requirements, the design team at Dattner Architects looked to Henry for an optimal air barrier system solution.

### The Solution

Having specified Henry air barrier systems for other Passive House projects, Dattner Architects selected Henry Air-Bloc 17MR Fluid Applied Vapor Permeable Air Barrier membrane with Henry Blueskin SA flashing as the Basis of Design. The project's General Contractor, Monadnock Construction agreed with the selection of a Henry air barrier system. However, the contractor was challenged by a long lead time for the project's windows and expected the air barrier system to be exposed for longer than originally planned. The complication forced a pivot to an alternate

Henry solution that could withstand UV exposure for up to 12 months – Henry Air-Bloc All Weather STPE Fluid Applied Vapor Permeable Air Barrier membrane and Henry Blueskin Metal Clad flashing. A system mock-up was built, and DeSimone Consulting Engineers approved the change.

While Air-Bloc All Weather STPE can be spray-applied, the sub-contractors PG Drywall chose to power roll the air barrier. This application method helped support an on-schedule, issue-free installation.

## The Results

Blower door test results on 425 Grand Concourse came in at .055 CFM per square foot @ 50 Pa – well below the required minimum rate of 0.08 CFM per square foot @ 50 Pa.

Along with helping the building envelope exceed Passive House air infiltration requirements, this vapor-permeable Henry air barrier system will be contributing to the building's long-term energy efficiency and sustainability for years to come. The airtight building envelope is also helping the high-rise maintain a healthy living environment with filtered, ventilated air in an area with one of the highest childhood asthma rates in the country.

“We use Henry products on a lot of our projects, whether they are Passive House or not, so we were confident that we could achieve the high quality air barrier required with Henry products at 425 Grand Concourse,” said Heather McKinstry AIA, LEED AP, CPHC, Associate, Dattner Architects.

Henry Company is proud to have collaborated and contributed to this milestone in Passive House design and construction.



Photo courtesy of © Albert Vesperka/Esto

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**Heather McKinstry**  
– Dattner Architects

## About Passive House Projects

The term “Passive House” and its established principles refer to the underlying design theory, while “Passive Building” refers to the act of implementing that theory. Despite the implication, Passive House design and building is not limited to “houses” – the approach has been applied to a wide range of industrial and commercial structures, including high-rise multifamily buildings, office buildings, schools, and much more.

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