



Photo courtesy of Monte French Design Studio

Case Study:

11 E Lenox Multifamily Building, Boston, MA

Boston's First Ground-Up Mass Timber Passive House Project Integrates Innovative 5-in-1 Wall Assembly

Currently under construction and on track for occupancy in late 2022, 11 E Lenox is a seven-story, 34-unit multifamily building in Boston's Roxbury neighborhood. The project was conceived in 2019, when developer Haycon was looking for a cost-effective and environmentally sustainable solution to stay within Boston's height limits for mid-rise construction. The building's innovative design removes the need for a podium or additional fireproofing, resulting in a sturdy, fire-resistant, energy-efficient, comfortable and cost-effective structure that's beautiful inside and out.

11 E Lenox is the first ground-up mass timber Passive House project in Boston. Well before the launch of the Boston Mass Timber Accelerator Program, mass timber was selected for the project to help achieve its sustainability goals. Building with mass timber results in lower embodied carbon compared to traditional materials, such as concrete and steel. But the project team didn't stop there. 11 E Lenox is pre-certified and expects to meet PHIUS+ 2018 standards, which require advanced energy efficiency measures that benefit the building owner and occupants through passive design and high-performance construction methods.

DUPONT

ArmorWall

Fire-Rated Structural Insulated Sheathing



11 E Lenox is PHIUS-pre-certified and **projected to use 81% less energy** than a baseline building EUI of 65 according to 2030 Challenge baseline metric.

After the project's architecture firm, Monte French Design Studio, and other project partners conducted extensive research on mass timber and completed feasibility studies for the project, construction began in June of 2021.

DuPont™ ArmorWall™ Plus Fire-Rated (FR) Structural Insulated Sheathing (SIS) was specified for the project to realize the 5-in-1 system's many benefits, including labor and schedule savings, air, water and fire resistance and structural support for cladding materials.

An Innovative Wall System for an Innovative Project

Selecting the right exterior wall system for an innovative project like this required advanced understanding and application of building science and installation innovation by the team, in part due to the project's small physical footprint in a bustling neighborhood. To address these needs and provide many other benefits, ArmorWall™ Plus FR SIS was specified in late 2020, well before construction began.

"I was first introduced to ArmorWall™ working at Monte French Design Studio through our local rep, façades X, in trying to develop a façade system that would work on this building," said William Lee, project architect, Monte French Design Studio. "11 E Lenox is the first ground-up, new mass timber and Passive House project in Boston. ArmorWall™ is a structural insulated sheathing, which means that we can direct-apply cladding and fenestration to it without the need of additional girts and trades on site – which saves us time, labor and, ultimately, money."

ArmorWall™ Systems utilize patented Fusion Technology to fuse the fire-resistive Magnesium Oxide (MgO) structural sheathing layer to the high-performance poured polyurethane insulation layer, which creates an ideal structural substrate for many types of cladding attachment. Additionally, all panels arrive to the jobsite with a factory-applied, high-quality air- and water-resistive barrier that eliminates the need for additional field-applied coatings or wraps. The [award-winning](#) ArmorWall™ Plus FR SIS was used on the 11 E Lenox project.

One issue that the project team won't have to worry about is the degradation of the building envelope during construction and over the life of the building. This can occur when manufacturers use glue or lamination to bring together the insulation and sheathing components in their products. Over time, moisture intrusion can break down this connection and cause degradation of the building envelope. This won't occur with ArmorWall™ Plus FR SIS. "The fused design of ArmorWall™ essentially eliminates any long-term potential for delamination of the polyurethane core and the sheathing," said Chip Bisignano, building envelope specialist, DuPont.

"Our expectations on this project are to meet and exceed Passive House requirements – and part of that is maintaining continuous thermal and air barrier continuity," Lee continued. "11 E Lenox, as a Passive House project, needs to maintain less than .6 air changes per hour, which is incredibly tight. Using a product like ArmorWall™ allows us to achieve all of those requirements in one package."

Location:
Boston, MA

Building Type/Details:
Multifamily mixed-use
Mass timber
43,000 sq. ft.
7 stories
34 units
Passive House (PHIUS) pre-certified

Solution:
ArmorWall™ Plus Fire-Rated (FR) Structural Insulated Sheathing (SIS) as part of DuPont™ ArmorWall™ Systems

Sales Representative:
[façades X](#)

Architect:
[Monte French Design Studio](#)

General Contractor:
[Haycon Inc.](#)

Installer:
[ONTIME Construction Services](#)

Structural Engineer:
[H+O Structural Engineering](#)



The majority of the 43,000-square-foot structure is mass timber, with the exception of the prefabricated concrete cores that house the elevator and stairs and the indoor parking garage.

Installation of mass timber elements of 11 E Lenox, including 5-ply cross-laminated timber (CLT) floors, glulam columns and a double-glulam beam system. The wood's natural warmth and beauty will be showcased in the apartment interiors, since these columns, beams and 80 percent of the underside of the CLT slabs will remain exposed.



Five Wall System Elements Installed in One Revolution

Installation of the 2¾ inch thick ArmorWall™ panels began in February 2022.

“One of the benefits to using ArmorWall™ is schedule,” said Patrick Larcom, Haycon Inc. construction project manager for 11 E Lenox. “With every project, we’re able to work with one installer. The one installer is able to install the whole system and we’re left with an end product that covers our water barrier, insulation for the exterior, an airtight layer and also meets our fire code. We definitely plan to use ArmorWall™ on future projects.”

Project leaders knew they would face continued supply chain, labor and other challenges all too common in the construction industry throughout 2021 and 2022. By bringing an innovative and committed building envelope installer onto the project early, the project team was able to plan for schedule, material and labor savings with ArmorWall™ Plus FR SIS.

“Once our crew learned how to install the system, we were able to cut 50-70% of installation time compared to other systems,” said Jonathan Barcelos, general manager, ONTIME Construction. “Working with ArmorWall™ is very easy. It’s as simple as cutting drywall in a sense. We can definitely comply with a variety of details around corners, inside corners and small custom pieces. I’m a big advocate of ArmorWall™.”

Not Just a Pretty Façade

Interior work on 11 E Lenox began in early 2022 and installation of exterior cladding – a combination of fiber-cement and terra cotta paneling – began in mid-June.

One of the most valuable benefits the DuPont™ ArmorWall™ System provides to the project is a smooth and consistent structural substrate for cladding attachment that also meets continuous insulation requirements and maintains a one-hour fire rating. The structural properties of the system reduces the need for costly and heavy girt systems that other building enclosure products require. This feature lowers material costs and reduces labor, both of which proved invaluable on the project.

[Visit our website](#) for more information on this project including site photos, videos of the project team in action and an interview with the project leaders.

For more information, visit ArmorWall.DuPont.com or call **1-800-448-9835**.



DuPont™ ArmorWall™ Plus FR SIS panels can be installed in as little as one revolution around the building – with one trade – saving significant time, labor and cost. Once sheathing fasteners and seams are sealed, the structure is considered weathered and dried-in and interior construction can begin.



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