GLASS & METAL ALLIANCE

400 ROUSE BOULEVARD | THE NAVY YARD
PHILADELPHIA, PA

Ribbon windows and wood accent a life science facility.

By: Amanda Gibney Weko

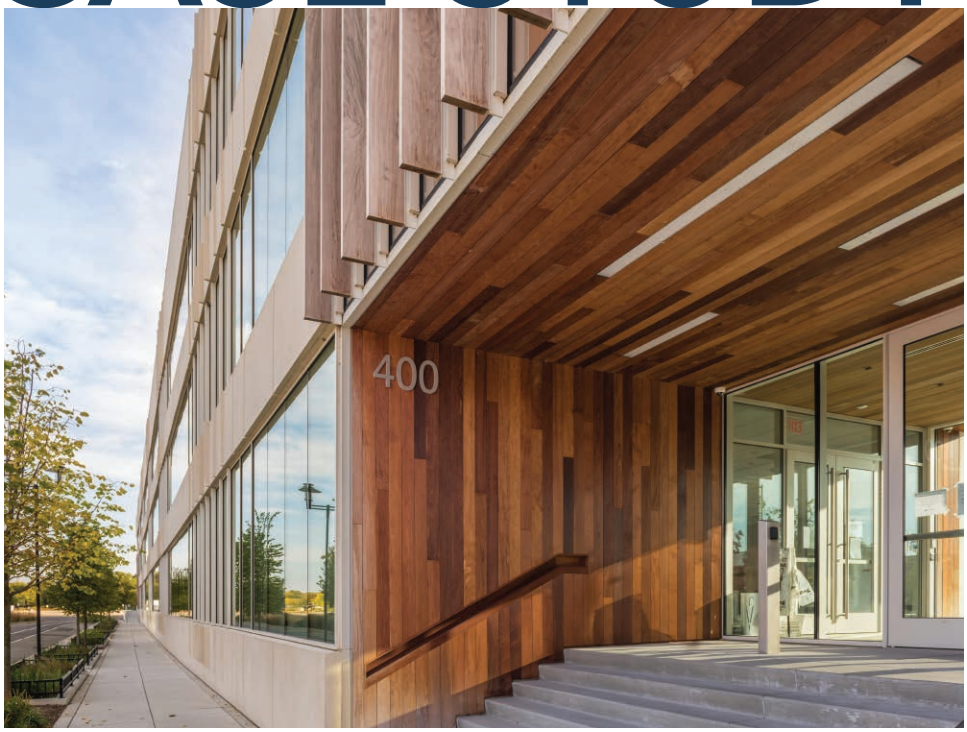
CASE STUDY

GMA Glazier
Freedom Glass & Metal, Inc.
Clementon, N.J.

Team
GC/CM: Penntex Construction
Architect: DIGSAU
Current Owner: Ensemble

Scope
Exterior curtain wall with shadow boxes, wood accents, and glass railing for a 95,000-square-foot single-tenant life sciences building

Completion
February 2020



Main entry view showing detail of Ipe fins and ribbon window projecting caps (all photos © Joe Garvin)

INTRODUCTION
Built as part of the U.S. headquarters of global pharmaceutical and medical device company, WuXi AppTec, 400 Rouse Boulevard includes 95,000 square feet of laboratories, offices, and research and development space. Philadelphia architecture firm DIGSAU designed the building. Penntex Construction of Blue Bell, Pa., served as general contractor. The project marked Wuxi Apptec's fourth building in the Navy Yard, all of which were built by Penntex. Completed in the winter of 2020, 400 Rouse Boulevard earned LEED Gold Certification. GMA member and certified Women's Business Enterprise (WBE), Freedom Glass & Metal, Inc. of Clementon, N.J., performed the glazing scope of work.

DYNAMIC FACADE
The dynamic facade of the cast-in-place concrete structure features a combination of curtainwall and alternating bands of ribbon windows and concrete accented with vertical metal fins and vertical wood beams.

LONG-TERM RELATIONSHIP
Freedom and Penntex have a 30+ year working relationship. In fact, the pair partnered in 2003 on Wuxi Apptec's initial Navy Yard facility, the first new structure to be built on the site in 35 years. Freedom Senior Vice President Jim Arsenault managed the scope at 400 Rouse Boulevard, overseeing estimating and material ordering. Vice President Jim Frail coordinated manpower and equipment. Both were on site regularly to oversee the largest project in Freedom's history. At the height of the $2.4 million glazing project, a crew of 16 glaziers was on site daily.

Freedom President and Owner Dana Frail expressed pride in her company's ability to scale up for this project. "This was the first job where we went over $2 million on one project. My father started this company in 1984 doing small projects. We have gradually gotten bigger as the industry has changed. We have worked well together for almost 30 years."

Clockwise from top left: exterior showing curtainwall with fins and punched openings; detail of main entrance with close-up view of wood-painted metal, Ipe fins, and both vision and spandrel glass; side view showing ripple effect of metal cap projections; corner view showing ribbon windows

CREATIVE PROBLEM-SOLVING

While the glazing products used were fairly standard, the application and challenges were different. Freedom installed Kawneer 1600 Series curtainwall with Solarban® 70XL glass. A combination of clear vision glass and opaque spandrel glass required a shadow box detail. The Freedom team installed boxes within the curtainwall openings with a metal panel system (painted to look like wood grain) inserted to add dimension. On top of the boxes, 2.5-inch-thick Ipe wood beams were mounted vertically on each of the system's vertical mullions. The heavy wood accents were something Freedom had never done before.

"It took quite a bit of engineering to figure out how to support the weight of the wood," explained Jim Frail. The solution involved adding steel beneath the curtainwall on which the wood could be supported. Holding the heavy wood beams in position for attachment also presented a challenge. Ultimately, the glazing team attached brackets to the wood fins prior to installing them on the building. "Like anything else you do for the first time, it took some trial and error," Frail added.

A second challenge involved heat within the shadowboxes. Solar gain caused excess heat buildup within the openings, which could have disfigured the metal panels over time. Freedom brought this to the architect's attention and DIGSAU developed a baffle system that enables heat to escape without allowing water intrusion.

The ribbon windows were a combination of structurally glazed and anchored into place with cover caps across the sill and head. The metal cap fins align with kerfs in the precast concrete structure and vary in projection from 2 to 4 inches to give a rippling look along the side of the building. On the rear of the building, punched window openings incorporate Kawneer's 451T framing material.

ADDITIONAL SCOPE

After successfully installing the exterior glazing, Freedom was engaged to add a glass railing system beside ramps at the building's main entrance. The patterned glass pieces combine as a series of trapezoids along the slope of the ramp. The company also performed a small interior fit-out to install extruded aluminum window sills that cover the transition between the concrete structure and wall panels to create a finished look.

POSITIVE EXPERIENCE

Penntex Vice President of Construction Ric Zappan endorsed Freedom's performance on the project. "Freedom Glass continues to perform work of excellence. They were very proactive in resolving construction issues during the installation of the Ipe wood fins on the main curtain wall, and their expertise of [the] aluminum framing system was very instrumental while formulating and installing all of the additional angled metal fascia for the project."

TIME LAPSE

To watch a time-lapse video of construction at 400 Rouse Boulevard, visit https://youtu.be/pLDKWK6OXGc.