GLASS & METAL ALLIANCE

1430 WALNUT STREET | PHILADELPHIA, PA

Collaboration and precision ensured a European glazing system's first U.S. appearance was a clear success.

By: Amanda Gibney Weko

CASE STUDY

GMA Glazier

Eureka Metal & Glass Services, Inc.

Team

Architect: Bohlin Cywinski Jackson
Construction Management: Clemens Construction Company
Developer: Midwood Investment & Development
Structural: CVM Engineers
MEP: Bala Consulting Engineers
Civil: Stantec Consulting Engineers
Lighting: The Lighting Practice

Timeline

November 2014 - March 2015

Photo © Jeffrey Totaro

FIRST OF ITS KIND

The dramatic glass box at 15th and Walnut Streets in Center City, Philadelphia, is more than an elegant enclosure for the new Cheesecake Factory. It's also the first of its kind fully truss-supported unitized glass curtain wall in North America. The European system of structurally glazed panels made its U.S. debut with the project, requiring extensive collaboration between GMA glaziers and architects Bohlin Cywinski Jackson (BCJ).

The high-performance glazing can be shop-fabricated and erected faster and with greater precision than conventional systems. However, using the new system required a high degree of coordination and communication.

Eureka Metal & Glass Services, Inc., of Philadelphia was awarded the glazing contract. Since the curtain wall system was being used for the first time in the U.S., Eureka President Terry Webb explained that a lot of solutions had to be identified in a design process that lasted nearly a year.

"We worked through the design phase with the team from BCJ and Ed Zaucha and Joern Philippi from [glazing fabricator] APG," said Webb. "We collaborated on detailing to achieve design intent of a consistent face of glass within budget."

PRECISION DESIGN

The architects envisioned an ultra-clear glass box appearance where each face of the building would look like a single sheet of glass. The three-story building has a height similar to most six-story buildings, with 22-foot floor-to-floor heights. Typical interior vertical framing members weren't desired because these might detract from the clear glass appearance.

Instead, unitized glass panels measuring 22-feet-9-inches by 7-feet-6-inches (the largest in Philadelphia) were installed and butt-glazed on the exterior to meet design intent. A shallow four-inch mullion required intricate steel to support such large glass panels. Elevation tolerations were only one-eighth of an inch.

"Who would have expected a three-story commercial building to make our hearts race?" - Inga Saffron, Philadelphia Inquirer architecture critic

Clockwise from top left: Andrew Moroz and Frank Grauman of BCJ with Terry Webb of Eureka; a crane navigates the extremely tight construction site; steel and glazing corner detail; construction progress; glaziers at work (Photos © Joseph Garvin)

APG engineer Philippi's international experience came in handy. He was familiar with a unitized approach with a truss mounted to the interior of the vertical frame. He then used Stadt German modeling software to ensure the solution met Philadelphia codes.

Clemens Construction Company superintendent Tim Forsyth and the Eureka team developed a simplified layout document combining information for three facade-related crafts: ironworkers (who set the cantilevered floor edge steel), masons (who installed CMU knee wall), and glaziers (who installed the curtain wall). Advance coordination ensured smooth and precise installation.

The third-floor corners were particularly challenging. Here, the sloped roof ties back to vertical facades. Intersecting corners are supported by silicone-glazed aluminum tubes. Although it appears the floor supports the corner, it is actually top-hung from a pivot point on the roof. Similar collaboration came into play; Clemens, Eureka, APG, and BCJ together developed a three-step flashing to prevent potential issues from snow loads or water infiltration.

DOUBLED EFFORT

Eureka employed dual foremen, with Matt Domanick and Matt Bradley sharing the role. The project had significant work over the 2014 holidays; by using two foremen, Eureka could tackle responsibilities from two directions and keep the schedule on track. The Matts provided overlap and support to each other and the team.

SAFETY FIRST

The frigid, treacherous winter of 2014-15 saw ice on floors, roof, scaffolds, glass, and the glaziers - conditions with 90 percent fall hazard for four winter months. "Our glaziers were highly trained magicians who acted in a professional manner without incident," said Webb. The Finishing Trades Institute safety department lent its expertise for safety planning for the most challenging conditions. In the end, the crew only lost two days due to weather.

AWARD-WINNING

The General Building Contractors Association presented 1430 Walnut Street with a 2015 Construction Excellence Award for Best Commercial Project Over $10 Million.

The building also includes innovative rooftop storm water management using a combination of green roof and blue roof technology to absorb, retain, and slow the release of rainwater into Philadelphia's storm system.

APG fabricated the unitized curtain wall. Eureka fabricated the stick curtain wall, entrances, and canopy support system. Framing for the recessed, stick-built curtain wall was supplied by Kawneer. Oldcastle provided the all-glass entry systems. A wafer-thin "floating" metal canopy on 15th Street shows the complexity of the metal work GMA contractors performed in addition to the glazing.