

330 Madison Avenue

Over-cladding the façade of a 1960s high rise with a modern curtain wall system improves performance, appearance, and property value.

BUILDING OWNERS IN MANHATTAN have always looked for ways to make their buildings more marketable to keep occupancy rates high while watching the bottom line for effective returns on their investments. Toward that end, older office buildings that are outdated in appearance and performance are increasingly the focus of repositioning into newly renovated, modernized facilities that meet the needs of the current market.

One such building is the 1963 Kahn and Jacobs-designed office tower located at 330 Madison Avenue between 42nd and 43rd Streets, just a block from Grand Central Terminal. Contemporary for its time, the 742,000-square-foot building used a curtain wall system that mixed single-pane glazing with opaque areas, creating an appearance of horizontal bands seeming to pass behind vertical mullions. The building is massed in three distinct vertical

portions. The lower area rises twelve stories and is built fully up to the property lines. A mid-section steps back on two sides for another six stories, followed by a slender upper section that is set back even further. The current owners, Vornado Realty Trust, were seeing good financial performance, but wanted to consider some upgrades to improve market appeal (i.e. more daylight, updated exterior appearance, more comfort near windows, etc.) and increase occupancy. They also recognized that the curtain wall system was nearing the end of its service life and wanted to improve both its overall performance and appearance.

Vornado enlisted the help of New York City-based MdeAS Architects, who have been creating a growing portfolio of building repositioning projects. As Dan Shannon, principal at MdeAS points out, "Every project of this type is unique. Each one stands alone in terms of its goals, its challenges, and its solutions." Using that approach, they assessed the building, along with structural and curtain wall consultant Gilsanz Murray Stefcick (GMS), to determine the condition of each of the existing curtain wall com-



ponents and the system overall. Among other things, they quickly determined that the existing single-pane glazing was problematic due to its energy inefficiency and the temperature discomfort it caused for people inside, and needed to be replaced. However, they also performed a structural analysis on the vertical mullions, which protruded out from the glazing plane, and determined that they were robust and structurally quite strong. These mullions were essentially rectangular aluminum tubular columns that ran the full height of each section of the building. This led to a further recognition that perhaps portions of the existing curtain wall system could be retained while others were selectively removed.

Armed with the information from their assessments and

analyses, the architects and engineers began to look at options. They settled on a very effective solution that allowed a new curtain wall system to be attached directly to the existing mullions as an "over-cladding" of the building. This design approach offered numerous advantages. First, it reduced the total labor and materials needed, contributing to cost control for the project. Second, it minimized or in some cases eliminated penetrations into the existing skin of the building. Third, it allowed for the new curtain wall system to be installed cleanly from the outside with demolition of the existing windows done after the fact from the inside. Finally, this approach minimized disruption to the tenants who would be occupying the building during construction. That



meant that the tenants would not need to relocate, in turn preventing vacancies or owner costs for temporary relocation.

The glazing of the new curtain wall received considerable attention. Mike Zaborski, project architect with MdeAS, points out that, "Working from the original mullion system, the new curtain wall had a 4-foot, 10-inch-by-11 foot, 8-inch glass module, typically with one glass panel for the full floor height." The specified glazing is 1½-inch-thick double pane, insulated glazing units (IGUs) from Viracon to improve energy efficiency and indoor comfort. The outer lite is ⅜ inch (10 mm) thick clear, heat strengthened glass with a low-e coating (VRE-46) on the #2 surface. The ½-inch (13.2 mm) airspace uses a mill finish spacer and gray

Above A detail of curtain wall replacement underway (left) and a view of the building just as the first new glazing units are installed (right).

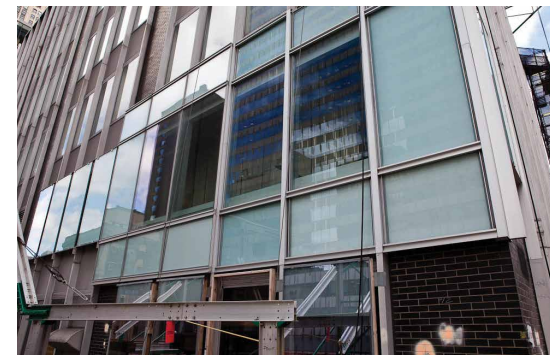
This spread and opening spread: MdeAS Architects

Right Aligned with the original mullion system, the new curtain wall had a 4-foot, 10-inch-by-11 foot, 8-inch glass module. **Below** The new curtain wall system is installed before existing windows were removed from inside the building.

silicone. The inner lite is ¼-inch (6 mm) clear heat strengthened glass. This combination provides a winter U-Factor of 0.30 (R-3.33) with a solar heat gain coefficient of only 0.28. Nonetheless, in the interest of enhancing daylighting into the tenant areas, the clear treated glass achieves a visible light transmittance of 43 percent.

In addition to the curtain wall work, the repositioning project scope also includes renovations to the main entrance lobby along with upgrades to all of the restrooms throughout the building. There were also improvements, adjustments, and modernization to the mechanical and electrical systems affected by the other work.

With the design worked out, the re-positioning team at Tishman Construction was engaged to carry out the \$100 million project. Over the course of two years (2010 to 2012) they used their experience from other such projects to manage significant construction work at the fully occupied site. Several factors were invaluable to the successful execution of the project. First, mock-ups were created of the curtain wall for each building section. Since the lower portion was built to the property line, the curtain wall assembly for this area needed to fit between the existing mullions in order to comply with New York City zoning requirements. The upper areas, which were set back, did not have this restriction, so the curtain wall could be mounted to the face of the existing mullions. Mockups of each of these





Left The completed facade as seen from East 42nd Street and Madison Avenue. **Facing page** As part of the building's repositioning, its main entrance and lobby were upgraded as well.



systems allowed the team to determine the proper fit as well as test the strength of the curtain wall anchors under the various field conditions. That meant the final constructability details could be verified in addition to the final visual appearance.

Staging of the curtain wall sections on this zero-lot-line property was achieved by using the roof areas at upper story setbacks. In addition, suspended scaffolding units could be loaded with several panels at a time and either raised or lowered to their final destinations. During the over-cladding operation as many as twelve of these units were in place and operating over multiple shifts, which helped to speed overall construction time. The suspended scaffolding also offered flexibility and a noise abatement strategy in the event an area was off-limits on a particular day to accommodate tenant events or meetings.

The project's energy efficient glazing is taller by about 8 inches

at both the top and bottom compared to the previous glass panels, giving tenants markedly increased daylight and views. The lobby renovation and other upgrades were performed concurrently with the over-cladding of the façade, and produced similarly dramatic improvements. The owners saw the building quickly ramp up to 100 percent occupancy and have indicated that they are on their way to a strong double-digit return on investment.

Moving forward, Pat Hauserman, director of building repositioning with Tishman, notes, "There are 440 million square feet of commercial space in New York City. Of that, about 70 percent was built before 1980. The current and future market is in transforming these buildings to be energy efficient, sustainable, marketable, and updated." And as it stands now, 330 Madison Avenue is a prime example of how to successfully achieve those goals and blaze a trail for others following in its path. □

"The current and future market is in transforming these buildings to be energy efficient, sustainable, marketable, and updated."

Pat Hauserman, Tishman Construction

330 MADISON AVENUE

Location: **330 Madison Avenue, New York, NY**
 Owner/Developer: **Vornado Realty Trust, New York, NY**
 Architect: **MdeAS Architects, New York, NY**
 Structural Engineer: **Gilsanz Murray Steficek LLP (GMS), New York, NY**
 Mechanical Engineer: **Goldman Copeland Associates, New York, NY**
 Construction Manager: **Tishman Interiors Corp., New York, NY**
 Curtain Wall Consultant: **Joseph Blanchfield, Gilsanz Murray Steficek LLP (GMS), New York, NY**
 Architectural Metal Fabricators and Erectors: **Coordinated Metals, Inc., Carlstadt, NJ; IDA Exteriors Inc., Derby, CT**
 Ornamental Metal Fabricator and Erector: **Melto Metal Products Co., Inc., Freeport, NY**
 Curtain Wall Erector: **W&W Glass, Inc., Nanuet, NY**

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