



51 Astor Place

A new multi-use spec building at the site of Cooper Union's former engineering school brings Fumihiko Maki's elegant design and Minskoff Equities' market divination to Manhattan's bohemian enclave. Its unfolding structure helps 51 Astor Place keep its different aims in productive tension.

FEW TEARS WERE SHED around Manhattan's Astor Place when Cooper Union moved its engineering program into the futuristic Academic Building and vacated its former headquarters, a late-1960s-vintage tan-brick structure on a site that had hosted a variety of short-lived enterprises. As part of an effort to shore up its institutional finances, Cooper leased the land for 99 years to commercial developer Edward J. Minskoff Equities, which saw the site as a great opportunity with its easy access to mass transit and a neighborhood attractive to young, creative types. Demolishing the engineering building cleared the way for an adventurous mixed-use project by Pritzker Prize-winning architect Fumihiko Maki.

Maki's design presents contrasting facades that deliver different visual statements to each view. Seen from the west, the tower is all business, dark and stark, with highly reflective low-emissivity glazing that offers mirror images of Burnham's Wanamaker Annex; from the east and the southern corner, called the "prow," the podium presents a more exuberant geometry, supporting a fifth-floor roof garden and opening out welcomingly onto a landscaped ground-level public plaza.

Nick Zigomanis, a partner at architect of record

Adamson Associates, considers the chief design innovation to be elegant simplicity of form that serves a deceptively complex set of functions. The building comprises two linked volumes on a full city block, appearing in plan as a quadrilateral tower (three vertical masses around the concrete and steel core), with its longest edge running uptown-downtown along Fourth Avenue, and a roughly trapezoidal podium facing Third Avenue and Astor Place, making the ground-plane footprint irregularly pentagonal. The podium, says Susan Bacas, managing partner of project structural engineer Ysrael A. Seinuk, was designed to accommodate large tenants, with lighter columns than in the tower. The two volumes were constructed at the same time with separate cranes and teams to accelerate the schedule.

Though the architects did not plan explicit themes for each facade, Zigomanis recalls, they recognized that a monolith resembling the large west facade on all sides would be "far too oppressive for that site." The curtain wall brings contrast and high visual energy to the building's other elevations. Ribbed aluminum mullions wrap around the north, east, and southeast facades, and form a rectangular panel interrupting the west facade at its lower south corner and helping define the business entrance to the main lobby. The prominent mullions emphasize verticals and articulate the backdrop to the plaza. Michael Chen, an associate with building envelope consultant Israel Berger, describes these "fins" as 6-inch-deep asymmetrical elements extending the height of each building segment, designed with floor-to-floor splicing and alignment pieces between fins to allow for building movement due to either wind-induced sway or different gravity loads, tolerating movements of $\frac{3}{8}$ inch vertically and $\frac{1}{2}$ inch horizontally. The curtain wall also includes thin



Top The building's form serves a complex set of functions, including future educational and retail tenants.

Above A structural steel design with few right angles lends 51 Astor a unique shape as viewers encounter it from different directions.

Facing Diagonal separation between lighter and darker glass expanses, which also have contrasting glazing module sizes, emphasizes the east facade's structural volume.

granite elements around the entrances and the Astor Place facade, but it remains light enough to place a minimal load on the frame. Zigomanis cites the design-assist process, in which Permasteelisa was brought on early in design development, as a high-priority and effective strategy in ensuring precise detailing.

The most striking external feature is a diagonal separation between darker and lighter glass expanses on the tower's east facade, with contrasting module widths of 5 feet and 2 feet, 6 inches beneath and above the diagonal, respectively. Both surfaces comprise Viracon Insulating Glass Units: The dark glass below the diagonal is a VWP1-40 with a reflective pewter coating on the #2 (airspace-facing) surface and a low-e coating on the #3 surface, while the lighter, more reflective upper area is a VRE1-46 with a radiant low-e coating on the #2 surface. The combination of the coatings with a stainless steel diagonal spacer yields high thermal performance.

The two-segment curtain wall generates the optical illusion that this flat surface is actually faceted. The feature takes its angle from the podium's setback from the southeast curb plaza as seen in plan, says Zigomanis: "In effect, the transcribed angular line of the facade really is deriving itself from the same geometric massing display." At the prow, he says, "that corner of the building is almost a book in the way it unfolds: truly a brilliant move, and a simple one."

Structurally, the steel-frame-and-concrete-core building has solved problems that were anything but simple—the design has very few right angles for the structural steel layout—and did so on an accelerated construction schedule with a remarkable lack of onsite complications or delays, reports Seinuk associate principal Damian Monteiro, who oversaw the fieldwork for Bacas. The framework uses 1,900 tons of A572 Grade 50 structural steel, about 310,000 square feet of metal deck, and about 50,000 shear studs; steel member sizes ranged from W14x43 to W14x455.

The foundation reuses a segment of the old engineering building's basement wall under the tower along Ninth Street and the northern segment of Fourth Avenue, pouring a new wall underneath it to the sub-basement level; the sub-basement does not extend to the podium side. The tower-side team, with 13 floors and a higher piece count, started earlier, linking up with the podium floor at the fifth floor; erecting double-floor-height columns required constructing decks on top floors for overhead protection before coming back down to work on decks below. But coordinating the back-and-forth aspect of the steel erection with work on the concrete core's shear walls, built from the bottom up, was a timing challenge. Since the site "was at the point where wind overtakes earthquakes" as a source of shear-force concerns, Bacas adds, and the tower is eccentric to the podium, "the right-hand [east] side has a frame controlling the rotation of the building," with six tightly spaced, very heavy W14x455 columns and heavy beams adjacent to the property line.

The triangular southeastern plaza, with a steel dashed line embedded in the sidewalk to demarcate the historic Indian trail connecting Astor Place and Stuyvesant Street, connects the building to the East Village community, in harmony with the city's plan



for linked landscaped plazas along Fourth Avenue. The terms of the lease require that 51 Astor include an educational tenant along with offices and retail; the southeast entrance is thus termed the "college entrance" as well as the "community facility entrance," and space on the lowest two floors will accommodate academic functions. Three double-height retail areas enliven the ground plane. Floor heights are generous: 14-foot slab-to-slab height on floors 3 through 11, 16 feet on the academic second floor, and 18 feet on the 12th.

Despite its disparate components and purposes, 51 Astor "doesn't come across as a building that's too fussy or complicated," Zigomanis says. Its design elements resolve with subtlety, amplifying variety as an observer walks around its perimeter. It strives for high performance both in its environmental impact—it meets the LEED Gold standard—and in tenant amenities, including a web-based service request system and bicycle storage with showers. It is a building that rewards prolonged study, one whose apparently straightforward features reveal increasingly rich complexities.

This page: Claudia Giordano; facing page: Richard Ginsberg; opening spread: Joel Raskin

51 ASTOR PLACE

Location: **51 Astor Place, New York, NY**

Owner: **Edward J. Minskoff Equities, Inc., New York, NY**

Architect: **Maki and Associates, Tokyo, Japan**

Associate Architect/Architect of Record: **Adamson Associates International, New York, NY**

Structural Engineer of Record: **Ysrael A. Seinuk, New York, NY**

Mechanical Engineer: **WSP USA, New York, NY**

Construction Manager: **F.J. Sciame Construction, LLC, New York, NY**

Curtain Wall Consultant: **Israel Berger & Associates, New York, NY**

Structural Steel Fabricator: **Cives Steel, Gouverneur, NY**

Structural Steel Erector: **Stonebridge Steel Erection, South Plainfield, NJ**

Miscellaneous Iron Erector: **FMB Inc., Harrison, NJ**

Ornamental Metal Erector: **FMB Inc., Harrison, NJ**

Curtain wall Fabricator: **Permasteelisa North America, New York, NY**

Curtain Wall Erector: **Tower Installation, Windsor, CT**