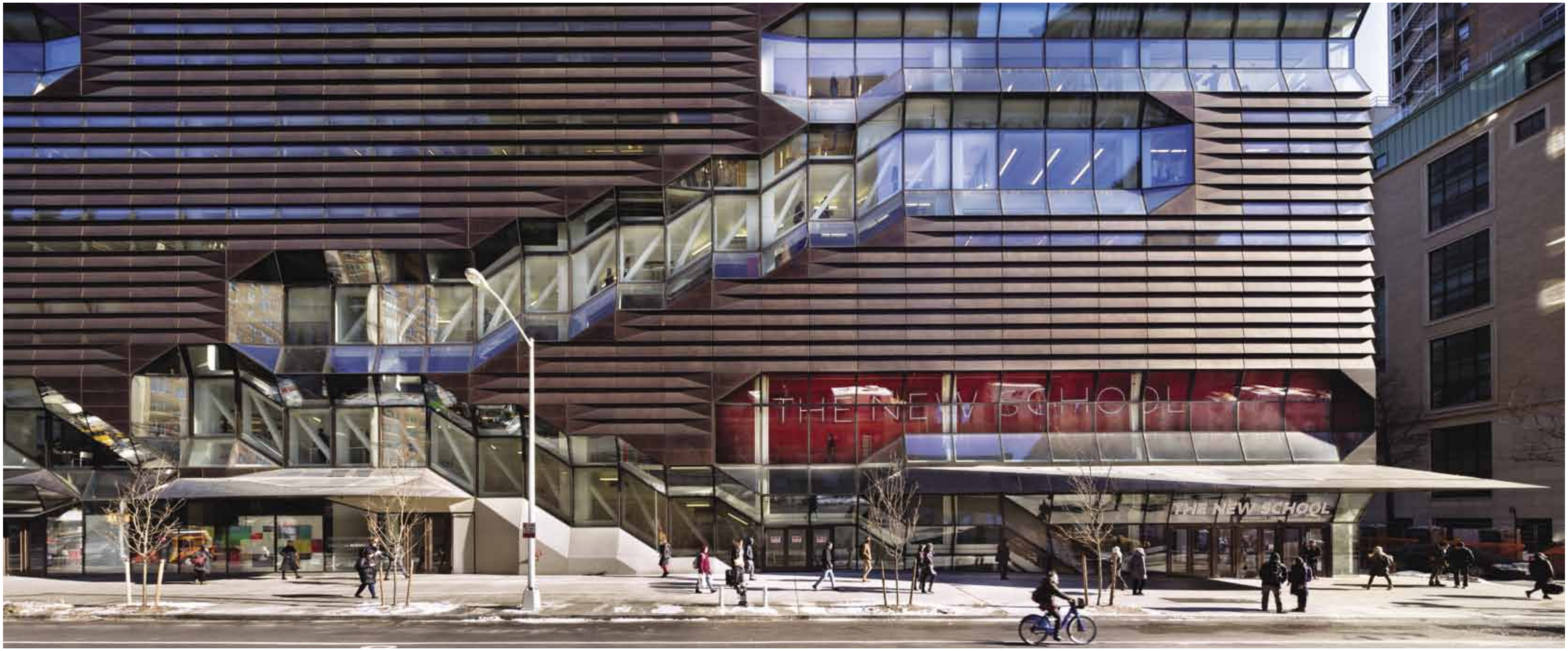


The hand-finished brass shingle facade of The New School's University Center takes cues from the Greenwich Village architecture to the south and the strong cast iron buildings of Ladies' Mile to the north.

Courtesy SOM / © James Ewing

The New School University Center

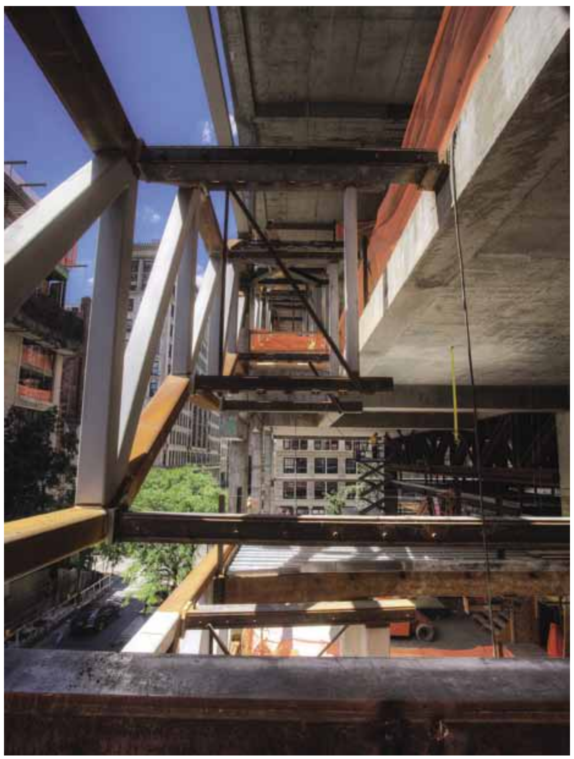
A brass and glass facade reveals a lively interior circulation system, reflecting The New School's progressive approach to education and linking the institution to its roots in the surrounding New York neighborhoods.

THE 16-STORY, 375,000-SQUARE-foot New School University Center on Manhattan's Fifth Avenue and 14th Street is a mixed-use LEED Gold facility that includes seven stories of academic space for an 800-seat auditorium, library, classrooms, labs, nine stories above for a 600-bed dormitory, and most important, spaces throughout for students to interact spontaneously. One of the primary programmatic requirements was to create opportunities for students to socialize, says Lia Gartner, vice president for design, construction, and facilities management for The New School. Before the University Center was built, The New School had neither a student union, nor a college green or quad, for chance encounters. "The streets of New York were our campus," says Gartner.

In fulfilling this complex program that emphasizes interdisciplinary collaboration, architects Skidmore, Owings & Merrill (SOM) relied on a series of innovative architectural forms to both meet circulation goals and express the building to the surrounding neighborhood. Internally, the University Center's spatial organization is articulated dramatically through a skin of hand-finished brass shingles that contrast with the open connective tissue of the stairs and "sky quads," social spaces that are visible through a glazed skin.

"The stairs give students a privileged view of the city, and from the street, pedestrians see that the building is alive, buzzing, and well-used," says Jon Cicconi, SOM's senior design architect. To achieve this effect, SOM reinvented the traditional fire stair to supplement vertical transportation and activate social spaces in the building. They uncoiled the stair from its traditional tower formation and stretched it out along the facade of the academic building, creating 18 unique gathering spaces at landing areas in the process.

This configuration also enabled The New School to provide easy access for students to get to classes without relying on elevators. "The entire classroom population changes on a bell schedule," Gartner says. "In any given ten-minute interval, everybody



Left At the fourth floor, three 10-to-12 foot deep transfer trusses were installed to make the clear-span space for an 800-seat auditorium.
Below Tube steel is used to create the perimeter trusses for the stair.

Right At each stairway landing social spaces allow for spontaneous meetings.
Center The stairway gives students a privileged view of the city.
Bottom The auditorium is flexible in order to accommodate different types of performances.

gets up and leaves and an equal number come back in. It was critical not to have students rely on the elevators to get to class."

Fire stairs are usually hidden in ugly, dark interior caverns, Gartner says. "We wanted something visible and inviting. The architect came up with an ingenious solution that married the fire stairs with open stairs."

The system that SOM created for the academic portion of the building stacks two stairs: the egress fire stair, fully enclosed and fire-rated, is topped by an inter-communicating stair. There are three stairways in all, and each consists of a steel truss on the perimeter which is used for lateral load resistance to wind and seismic activity, according to Michael Beals, senior project manager for DeSimone Consulting Engineers, the project's structural engineer. "We were able to economize on the shear walls in the core by moving the lateral bracing to the perimeter and making the stairs perform double duty," says Beals.

Each Grade 65 perimeter truss is built up of 12-by-8-by-⅝-inch horizontal HSS steel tubing for the top and bottom chord and 8-by-8-by-⅜-inch vertical HSS steel tubing for the interstitial members. The steel trusses are welded to steel couplers up to 3 feet high at the concrete columns to integrate the two structural systems. The stairs, made up of embedded steel Vierendeel panels, either cantilever from the perimeter steel tube truss 8 feet to 10 feet or frame across to steel posts or hangers supported by the concrete structure beyond.

"Surprisingly, it is a code-mandated fire stair that ends up defining the geometry of the entire building," says Adam Letcher, senior architect responsible for technical coordination and construction administration for SOM. "The stair gives the impression of weightlessness, but in reality it is either hung from the floor above, or posted from the floor below, depending on its position."

This page: Daniel Faraone of DeSimone Consulting Engineers

This page: Courtesy SOM / © James Ewing

Because the fire stairs are uncoiled, the standpipe and air pressurization ducts for the fire stair zigzag rather than proceed straight up the building. This afforded artist Rita McBride the perfect canvas for her art—she encased the protruding ducts in pentagonal-shaped brass throughout the building.

The stairs' angled profile visually protrudes through the horizontal bands of the facade and brings a three-dimensional composition to the building. The Toronto-based design/build curtain wall contractor, Gamma North America, designed custom unitized curtain wall panels with vision glass.

Gamma's anchoring system was designed with custom aluminum outriggers. These outriggers, coupled with the units' aluminum hooks, carried the load of the units onto the concrete slabs and/or structural truss members of the building. Because of the complexity of the lower seven floors of the building, especially at the staircase area, the outriggers had to be customized according to the various in and out and up and down conditions in order to successfully engage with the units' hooks. The customization was achieved by designing custom steel extensions at several locations along the truss structure.

To make material selection for the building's horizontal banding, SOM took cues from the architecture of Greenwich Village to the south and of the strong cast-iron buildings of the Ladies' Mile historic district to the north. "We used metal in a creative and contemporary way that is unique and yet harmonizes with the other architecture in the area," Gartner says. "This is not a precast facade that repeats. It is very handmade and expresses the handmade sense of neighborhood."

Skidmore, Owings & Merrill selected Muntz metal, CDA Alloy 203, a non-corrosive alloy of brass typically used in shipbuilding, for the curtain wall system. "Brass mediates the two building scales in the area and relates

Courtesy SOM / © James Ewing

Left The spatial organization of the center is articulated dramatically through the brass curtain wall, which frames the open connective tissue of the stair that is visible through a glazed skin.

Right The uncoiled fire stair defines the geometry for the entire building.

to the natural materials used in Greenwich Village," says Cicconi. "We decided to go with brass because the colors age in a graceful way and it is slightly less price-volatile than copper."

The 131,000 square feet of custom brass curtain wall entailed the creation of 149 dies. A total of 5,277 brass panels were fabricated for the project, says Jim Mitchell, president of Gamma North America. The brass alloy had quite a journey before arriving at the site in New York City. First, Gamma's engineers designed the system in Miami and the 1,815 unitized aluminum panels that would hold the brass panels were produced there. The panel design was then transferred to Gamma's Quebec City operation for production. "This facility has the expertise to make and bend panels such as this," Mitchell says. "Each panel was a custom fold."

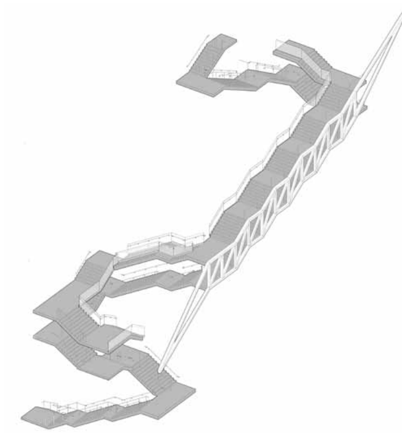
After producing the 2 mm-thick panels, Gamma shipped the panels for finishing in Toronto, where craftsmen gave the panels their patina using acid and oil rubs. Because of the number of variables involved in the process, patinas are prone to color variances over large surfaces. SOM performed quality control, inspecting 30 percent of all panels to ensure the finish would provide the intended look. From the Toronto shop, the panels were shipped back to Miami to be installed in the unitized panels before being sent to New York.

The custom vertical and horizontal aluminum extrusions for Gamma's pressure-equalized system were designed to carry the glass and brass panels and to meet the stringent structural and thermal requirements of the building. The units were individual unitized panels that varied in height and width. Each unit had an anchoring component attached to each vertical mullion used to hang the unit from the outrigger located on the building structure. Each unit was carefully installed in a well-defined sequence around the perimeter of the building.

While the school's aesthetic presence and connection with the surrounding community are crucial, it also has to engage the thousands of university students who use it each day. As with the staircase design, structural steel performed an important function in the building's auditorium, creating a clear span space to accommodate 800 seats. At the fourth floor, three 10-to-12-foot-deep, 65-to-80-foot-long steel transfer trusses were installed over the auditorium space. "The steel transfers accommodated the transition between the column module above to the column-free space below," explains Beals.

Because the trusses were designed in Grade 65 steel with heavy W14x700 shapes for top and bottom cords, construction manager Tishman Construction, an AECOM Company, was able to bring each truss in fully assembled. "The use of the lighter steel allowed us to bring them on the road in one shot," says Thomas Hoban, senior vice president of Tishman Construction. "We had a low-snow winter last year; the day the trucks came in with the trusses, it started to snow." Nonetheless, the trusses were dropped into place and "fit like a glove. We were done by the afternoon," Hoban adds.

Tishman required each subcontractor to utilize BIM on the project—the building's intricate details and construction coordination demanded three-dimensional modeling from the top down. "This was really a 3-D building," Hoban says, an observation clear to both students the enjoying lively spaces within and to passersby on the street who observe the unique tableau through the glazed skin. "Drawings in 2-D couldn't convey the true nature of the building, especially how the interactive spaces at each stair lobby were connected. The model allowed us to ferret out the information each trade needed to perform its job. If ever there was a building that needed BIM, this was it." ☐



THE NEW SCHOOL UNIVERSITY CENTER

Location: **65 5th Ave, New York, NY**
Owner: **The New School**, *New York, NY*
Developer: **The Durst Organization**, *New York, NY*
Architect: **Skidmore, Owings & Merrill**, *New York, NY*
Structural Engineer: **DeSimone Consulting Engineers**, *New York, NY*
Mechanical Engineer: **Cosentini Associates**, *New York, NY*
Construction Manager: **Tishman Construction, an AECOM Company**, *New York, NY*
Curtain Wall Consultant: **Gamma USA**, *New Rochelle, NY*
Structural Steel Fabricator and Erector: **Metropolitan Walters LLC**, *New York, NY*
Miscellaneous Iron Erector: **FMB, Inc.**, *Harrison, NY*
Curtain Wall Erector: **Gamma USA**, *New Rochelle, NY*
Metal Deck Erector: **Metropolitan Walters LLC**, *New York, NY*