



Barnard College Diana Center

The school's new multidisciplinary building relies on a steel structure to meet its complex and tightly packed programming requirements.

THE ONE-BLOCK CAMPUS OF Barnard College is so compact you could easily overlook it. Thanks to an adventurous new arts building and student center designed by Weiss/Manfredi this distinguished private women's college affiliated with Columbia University stands a little taller next to its much larger neighbor. A shimmering composition of colored, translucent, and transparent glass with a series of dynamic cantilevered circulation and studio spaces, the building, known as the Diana Center, asserts its contemporary sensibility in the mostly masonry campus. Clever use of color—which shifts in shades of red and brown throughout the day—means it also relates to its brick neighbors.

"We had initially looked at precast concrete [for the exterior], but it lacked a sense of mystery," says Michael Manfredi, a principal at Weiss/Manfredi. "It needed to be a contemporary building that acknowledged the context of the largely brick campus." The architects wanted a building that balanced both contemporary and contextual. In order to achieve the effect they desired, the firm used mock-ups to test the color in various light condi-

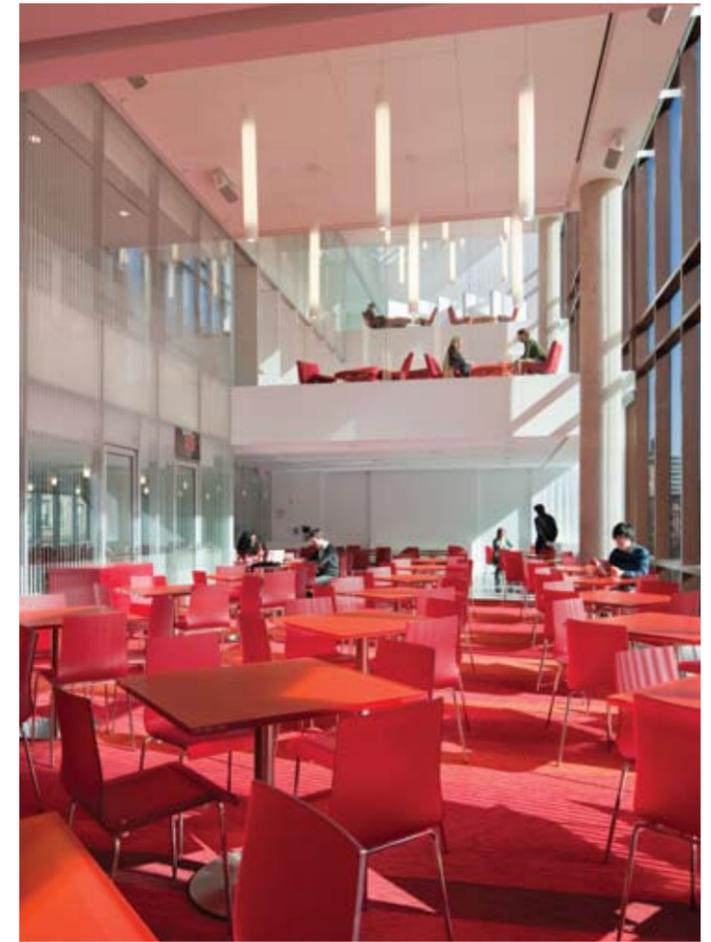
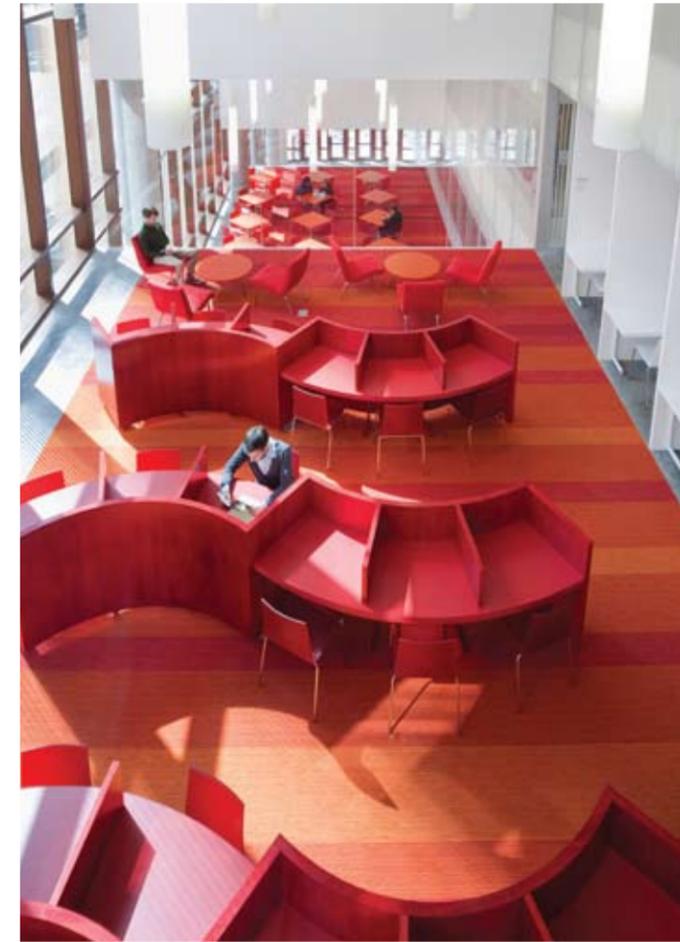
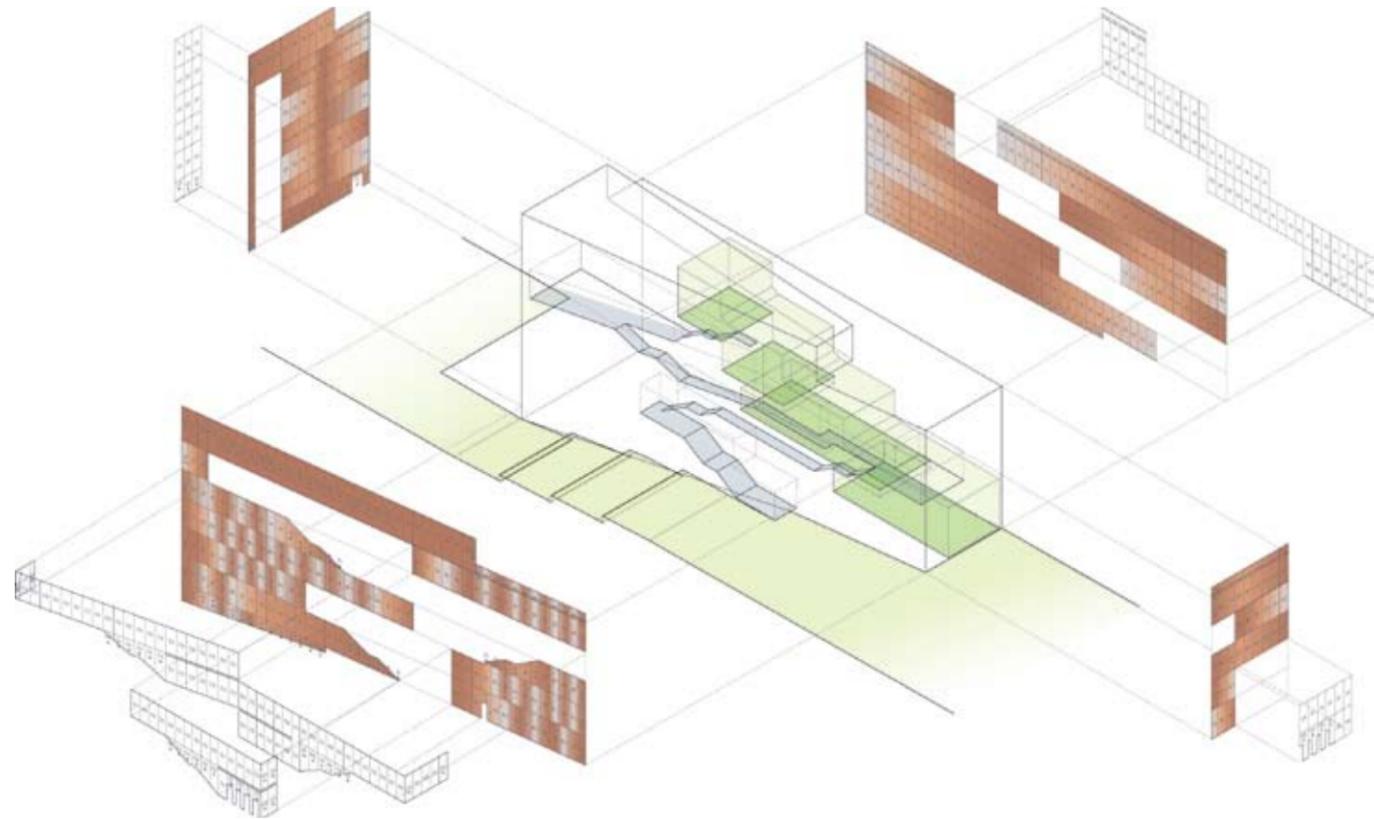
tions. They settled on a panelized system of transparent, fritted, and translucent glass over colored back-panels. The acid-etched #1 surface evokes the look of opaque masonry while still reflecting light. The building's color is created by a pale terra cotta-colored frit on the #2 surface and the bright red painted back panel beneath.

The panels are set in a bronze-colored anodized aluminum frame. The effect is warm and varies throughout the day and across the seasons. "Without the translucent glass, the back-panels are an almost lurid orange," Manfredi says. Had they used a brick red color on the back-panels, the building would have looked much darker due to the way the glass filters the color.

Composed of economical 5-foot-tall modules, the facade's 1,154 panels respond to interior programming with variations in transparency and opacity. But the building's steel structure is what allows the school to accommodate a wide range of academics within its walls; just as the campus is tightly packed, the 98,000-square-foot Diana Center is tightly programmed. Behind those colorful facades a complex hive of activities keeps the building humming throughout the day and long into the night. The center includes a café, multi-purpose spaces, classrooms, art and architecture studios, offices, an auditorium and a black box theatre. Spaces, including the double height café, are stacked and interconnected, with glazed dividing walls offering

Facing The seven-story Diana Center occupies the same footprint as the two-story concrete building that preceded it, made possible by the lighter weight of its steel framing.

Albert Vecerka/Esto



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Facing above An exploded diagram of the Center's stacked programming.
Facing left The entire building acts as a moment frame; W-section beams and plate girders distribute lateral loads across the building, eliminating excess structure keeping the building envelope thin.

Above Interior spaces, including a double-height café, multi-purpose rooms, art and architecture studios, offices, an auditorium and a black box theatre are stacked and interconnected, with glazed dividing walls offering views throughout the building.

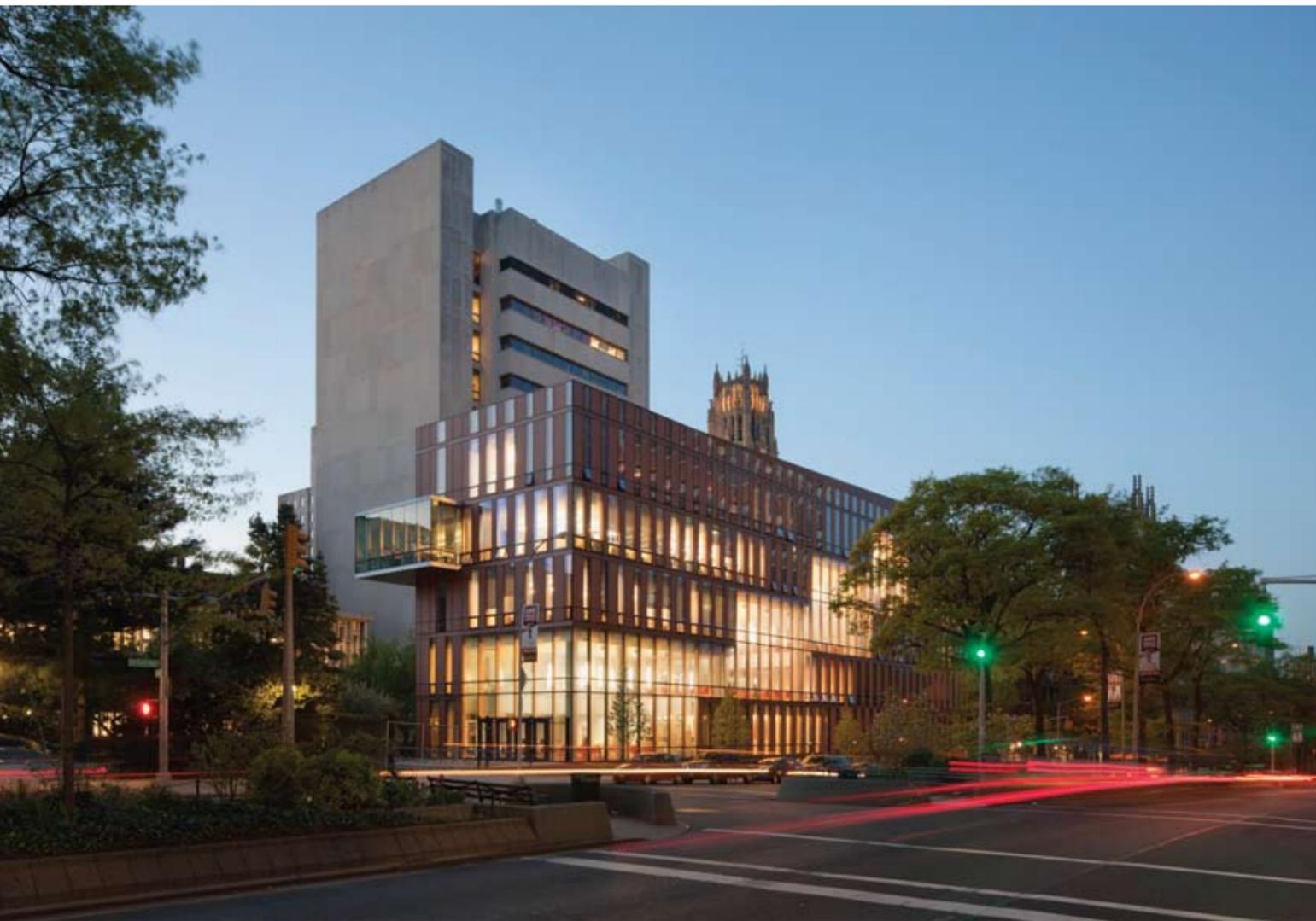
views throughout the building. The design and engineering team looked at using concrete for the structure, but a number of factors, including quicker construction times, made steel the best solution for achieving the building's sleek design.

Because the building is so tightly programmed, every decision made by the engineer, Manhattan-based Severud Associates, counted. "There's not a lot of space for wind bracing," says Edward Messina, a principal at Severud Associates, the project's structural engineers. The whole building acts as a moment frame, with W-section beams and plate girders that distribute lateral loads across the building, eliminating the need for extra structure and helping to keep the building envelope thin.

The auditorium created more

daunting structural challenges. The largest space in the building, the auditorium required a large transfer girder with a 40-foot span that could support the three floors above as well as the planted and habitable roof. Because the floor heights above could not be impacted, the engineers had to calculate the optimum dimensions for the 200-by-60-foot, A992 50 ksi steel transfer beam, while keeping it as slim as possible. The project uses nearly 600 tons of steel in all.

The roof of the building is a planted oasis in the city, a teaching space, and a social hub for the school. Faculty in environmental science and biology departments use the planted roof as a part of their curriculum. A portion of the roof is covered with pavers for film screenings and small social events. The con-

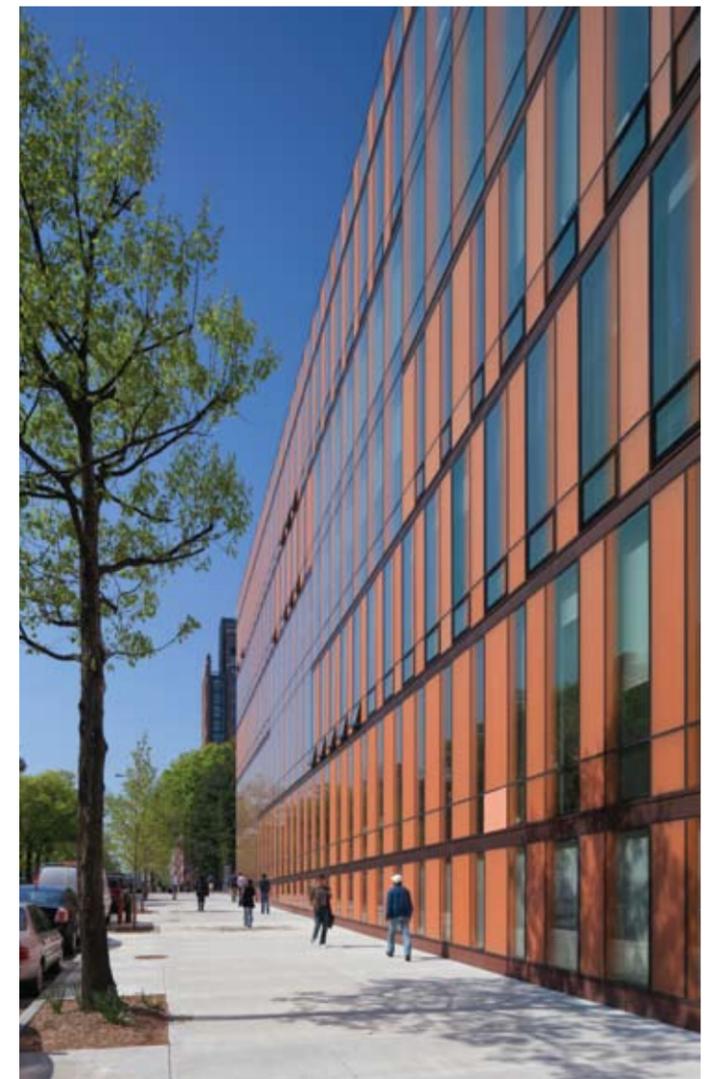


Right A panelized system of transparent, fritted, and translucent glass over colored back-panels creates the facade's unique color.

crete deck over steel roof deck had to be engineered to support extra loads for soil and plants, as well as bodies. "Its designed for much heavier loads because of the use," Messina says. The roof offers expansive views of the campus, the city beyond, and the domes and spires of Columbia.

Taking the building from a rendering into real life took a close and collaborative rapport between the architects and engineers. "Severud is very sensitive to the relationship between architecture and structure," Manfredi says. "They also have lots of experience working on tight urban sites and navigating the bureaucratic complexities of New York." Though taller than the previous building on site, the seven-story Diana Center occupies the same footprint of the two-story Brutalist concrete building that preceded it, a condition made possible by the lighter weight of steel framing.

Like the best stereotypes of the graduates of this famed Seven Sisters women's college, the cleverly executed Diana Center is dynamic and full of ideas. The project, which achieved LEED Gold rating and won the 2011 AIA Honor Award, was also satisfying for the architects and engineers. "I like the building very much," Messina says. "That's the great thing about this business. You start out with an idea and you end up with a building." Some of the artists and scholars training in the building likely will find equally satisfying creative and analytic projects. Good design and engineering played an important role in giving them a top-quality learning facility to pursue their work and become the leading women of the future.



This page The building's facade responds to the context of its masonry neighbors.



This spread: Albert Vecerka/Esto

BARNARD COLLEGE DIANA CENTER

Location: **3009 Broadway, New York, NY**
 Owner: **Barnard College, New York, NY**
 Architect: **Weiss/Manfredi, New York, NY**
 Structural Engineer: **Severud Associates, New York, NY**
 Mechanical Engineer: **Jaros, Baum & Bolles Consulting Engineers, New York, NY**
 Construction Manager: **Bovis Lend Lease, New York, NY**
 Curtain Wall Consultant: **R.A. Heintges & Associates, New York, NY**
 Structural Steel Erector: **Car-Win Construction, Mount Holly, NY**
 Miscellaneous Iron Erector: **Summit Group II LLC, Duncan, SC**
 Architectural Metal Fabricator and Erector: **Champion Metal & Glass, Deer Park, NY**
 Ornamental Metal Erectors: **Summit Group II LLC, Duncan, SC;**
Champion Metal & Glass, Deer Park, NY
 Curtain Wall Erectors: **Enterprise Erectors, Inc., New York, NY;**
Egan Architectural Metal & Glass, Yonkers, NY
 Metal Deck Erector: **Car-Win Construction, Mount Holly, NJ**