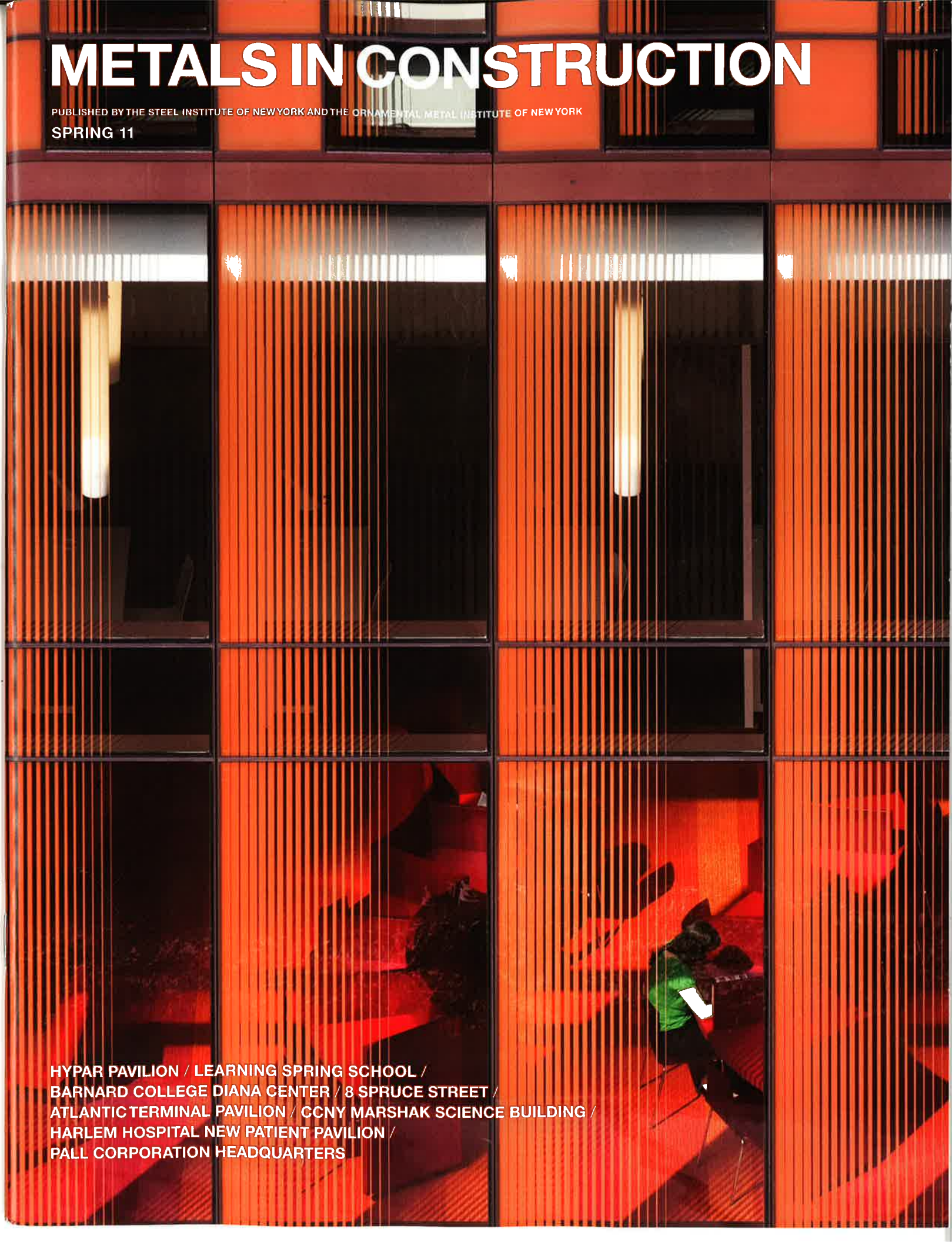
METALS IN CONSTRUCTION

PUBLISHED BY THE STEEL INSTITUTE OF NEW YORK AND THE ORNAMENTAL METAL INSTITUTE OF NEW YORK

SPRING 11



HYPAR PAVILION / LEARNING SPRING SCHOOL /
BARNARD COLLEGE DIANA CENTER / 8 SPRUCE STREET /
ATLANTIC TERMINAL PAVILION / CCNY MARSHAK SCIENCE BUILDING /
HARLEM HOSPITAL NEW PATIENT PAVILION /
PALL CORPORATION HEADQUARTERS

Learning Spring School

A sheltering facade of zinc panels and aluminum louvers lets filtered daylight in while keeping autistic students focused on the lessons at hand.

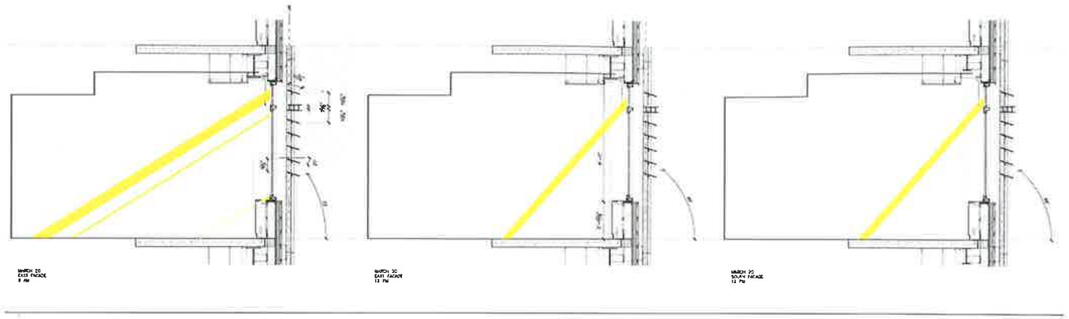
THE LEARNING SPRING SCHOOL (LSS) IS NOT your average New York City independent educational institution. Established by a group of concerned parents in the fall of 2001, LSS was conceived, built, and staffed for children with high-functioning autism spectrum disorders. Not long after opening up in a commercial building on 29th Street, the school realized that its facilities were inadequate to meet the very specialized needs of its student body. Adding to the challenge, as early intervention for children in the autism spectrum became more and more prevalent, admissions applications began pouring in, and enrollment quickly exceeded the space's capacity. To address both of these shortcomings, LSS commissioned New York architectural firm Platt Byard Dovell White (PBDW) to design a dedicated building that would meet the school's growth projections and create an environment conducive to educating children with autism. Their success at creating this environment was in no small part owing to a custom curtain wall design—a sheltering system of glass, zinc, and aluminum sunshade system that lets filtered daylight in while keeping autistic students calm and focused on the lessons at hand.

What makes the facade unusual is that such systems are not generally used to enclose educational settings. However, to help foster LSS's mission of enabling autistic children to succeed academically as well as socially and emotionally, PBDW laid out an extensive 34,000-square-foot program accommodating occupational therapy, drama and music, lifestyles, culinary arts, fine arts, science and computer labs, and a library—with every space geared to fit the unique qualities exhibited by children with autism. Among the most critical of these is the tendency to become overwhelmed by sensory stimuli.

"Generally when we design spaces for kids with

This spread: Frederick Charles

Facing Zinc spandrel panels, operable windows, and aluminum louver solar shades are designed to make the interiors feel both well lit and sheltered. **Above** The school sits at the corner of Second Avenue and 20th Street.



Above Studies of sunlight hitting the east and south facades.
Left Insulated glass units with low-e coatings on the #2 surface are structurally glazed to the framing. Terra cotta accents the building's corners and street level facade.

Top: Platt Byard Dovell White; left: Frederick Charles

autism we try to play down the environment," explains Matthew Mueller, an associate architect at PBDW. "A lot of kids have sensory issues with their visual surroundings and others have issues with things that are too tactile or too rough. We tried to make the interiors calming, using materials that are not too distracting to help keep the students focused."

Nowhere was this rationale of minimizing stimulus more conspicuous than in the design of the cladding enclosure system. "The building facade allows nice light in, but you feel there's an internal focus to rooms," says Mueller. "It's not about views, it's about mitigating light, eliminating glare, and making an environment that's comfortable so students can focus internally."

PBDW began designing the facade as a window wall system with framed spandrel panels, thinking that it would be less expensive to construct than curtain wall. However, exterior enclosure contractor Jordan Installation Services recommended to the firm that, in fact, an integrated curtain wall system would be a better option during the construction

"Building the wall as essentially one type of assembly enabled us to create the expression we wanted."

Matthew Mueller,
Platt Byard Dovell White

Above The school's interior courtyard lends to its serene learning environment.

Frederick Charles

and for the lifetime of the building. "We all felt that utilizing a curtain wall assembly would ensure a more reliable wall in the long run," says Mueller. "When you transition between different wall assemblies, it creates more opportunities for leaks and defects. Building the wall as essentially one type of assembly lessened this risk and still enabled us to create the expression we wanted." This solution lent itself to improved construction, better coordination, and more control over the finished product as the sequencing involved only one primary trade. In the end, while the curtain wall was more expensive, the client and the design team felt that the upfront expense would minimize maintenance costs in the future, providing a long-term return on investment.

The architects developed a scheme using zinc spandrel panels, operable windows, and aluminum louver solar shades, all designed to make the interiors feel both well lit and sheltered. The system is not unitized, but stick-built with aluminum mullions attached to building anchors. Anchors handling gravity loads are used every other floor, while on the intervening floors clips that only manage wind loads are used. The operable windows—Guardian Solarban insulated glass units with ¼-inch inner lites, ½-inch gaps, and ¼-inch outer lites with low-e coatings on the #2 surface—are structurally glazed to the framing. The 1-millimeter quartz-zinc spandrels are a rain screen system with an 18-gauge galvanized steel back panel, insulation, and vapor barrier, an air space, and then the exterior cladding. The back panel is glazed into the curtain wall pockets at the spandrel areas. Then vertical aluminum girts fasten to flanges on the back panel. The zinc panel attaches to these vertical girts. They are interlocking with concealed fasteners that attach them and feature cutouts allowing the supports for the aluminum sunshade system—which are welded directly to the steel substructure—to penetrate through the wall. The sunshade systems, which are built from 5/16-inch-thick aluminum plates, span the 18- to 20-foot column bays. They hang from their own dedicated support system, which delivers all of its loads back to the main building structure rather than the curtain wall assembly. The

Facing Sunshades built from 5/8-inch-thick aluminum plates span 18- to 20-foot column bays.

Above Along with the building's other environmentally friendly features, such as operable windows for natural ventilation, low-flow fixtures, and high-efficiency HVAC equipment, the facade has put the project on track to receive a Gold LEED for Schools rating.

span proved to be a bit extreme for the aluminum plates, which deflected from their own weight, raising concerns about how the louvers would react to wind loads. In response, the designers placed stainless steel tension rods running vertically through the sunshade system at the midpoint of the spans, holding them rigid in the face of wind and gravity. The rods are fabricated from solid ¾-inch diameter 316 Grade stock.

This primary wall assembly is accented by terra cotta rain screen details at the building's corners, as well as a channel glass corner and bookends. In addition to its tasteful, modern appearance from the outside, and calming effects on the inside, the cladding design had an environmental payoff. The building's corner site at Second Avenue and 20th Street faces southwest, putting it right in the line of fire of New York's most punishing daylight. The system's aluminum sunshades, low-e coated insulated glass units, and zinc rain screen spandrels help to cut solar gain significantly. Along with the building's other environmentally friendly features, such as operable windows for natural ventilation, low-flow fixtures for water savings, and high-efficiency equipment for energy savings, the facade has put the project on track to receive a Gold LEED for Schools rating—and a gold star from the instructors.

This spread: Frederick Charles

Learning Spring School

Location: **247 East 20th Street, New York**
Developer: **The Learning Spring School**, *New York, NY*
Architect: **Platt Byard Dovell White Architects**, *New York, NY*
Structural Engineer: **Leslie E. Robertson Associates**, *New York, NY*
Mechanical Engineer: **AKF Group LLC**, *New York, NY*
Construction Manager: **Cauldwell Wingate Company**, *New York, NY*
Curtain Wall Consultant: **William G. Young of Axis Facades**, *New York, NY*
Structural Steel Erector: **Metropolitan-Walters LLC**, *New York, NY*
Miscellaneous Iron Erector: **Metropolitan-Walters LLC**, *New York, NY*
Architectural Metal Erectors: **Metropolitan-Walters LLC**, *New York, NY*; **Jordan Installation Services**, *East Northport, New York*
Ornamental Metal Erectors: **Metropolitan-Walters LLC**, *New York, NY*; **Jordan Installation Services**, *East Northport, New York*
Curtain Wall Erector: **Jordan Installation Services**, *East Northport, New York*
Metal Deck Erector: **AC Associates**, *Lyndhurst, NJ*