

Promise Academy I

Promise Academy I, a new project by nonprofit organization Harlem Children's Zone, relies on a steel structure to meet the building's multiple educational programming needs and solve challenges posed by its tight construction site.

RECENTLY COMPLETED WITHIN THE ST. Nicholas Houses complex, a public housing development in central Harlem, Promise Academy I aims to offer the community's children a bright future by providing them with school facilities that best fit K-12 students' educational needs. With a facade colored in light, neutral shades accented by glazing framed in bold red, this five-story, 135,000-square-foot school building with rooftop play areas stands out from the surrounding institutional red brick housing.

Given a very restrictive site within the residential development, architect John Ciardullo Associates, PC, chose a structural steel frame to solve challenges encountered during the design process and ensure the building functions as a school that accommodates more than 1,300 students of various ages.

Given its location within a housing development, Promise Academy I occupies a very constrained site where the face of the building falls on the property line. Since the perimeter footings could not extend beyond the property line, strap beams were used to tie back these footings to the interior footings. The lightweight steel frame was advantageous in reducing the eccentric loads on the perimeter footings.

"All the schools that we build in the city are steel-framed buildings," says Chuck Heaphy, a senior architect who led the project for Ciardullo. "We find that steel is well suited for schools for various reasons." One of the most important of these is the structure's ability to adapt to the wide variety of spaces required in modern educational environments: classrooms, libraries, cafeterias, gymnasium, and auditoriums. "Using steel allowed us freedom in our design to configure the spaces as we needed for this wide range of spaces in a tight site for a K-12 building," says Heaphy.

In the Promise Academy I building, the use of steel enabled not only different bay sizes needed for classrooms but also long spans for large public assembly spaces. A 67-by-97-foot area on the first floor is used as a combination gymnasium-auditorium where long span steel beams create the necessary column-free space. Cellular LB60 x 215, 52-inch-deep proprietary Smartbeam beams were selected for the gymnasium in order for them to span across the width of the gymnasium. In addition to supporting the gymnasium roof, a set of double cellular beams were used to support a three-story classroom section directly over gymnasium. The circular openings allowed the architects to run the mechanical, plumbing, and sprinkler systems through





Facing A curtain wall marked with red trim creates a visual connection with the surrounding residential complex, revealing a library. The school's steel structure allowed architects to stack a recreational area on the roof, maximizing use of the small building site.

Right The school is the largest school built for Geoffrey Canada, who is featured in the acclaimed documentary "Waiting for Superman," and his Harlem Children's Zone initiative.

Below A unitized metal wall system of aluminum-faced composite panels encloses most of the building's exterior.



the beams, ensuring the gymnasium maintained the 24-foot clearance required for basketball and volleyball. The exposed steel frame at the gymnasium served to organize the MEP systems and resulted in an aesthetically pleasing structure.

Steel was also used on top of the gymnasium to create a rooftop play area. A rarely used steel shape, 8-inch hollow steel sections (HSS) with a 24-foot height, was used around the play yard's perimeter to support a network of steel cables. A netting system was connected to the cables in order to enclose the play yard.

"The most important priority for the project was scheduling," says Heaphy. "The Harlem Children's Zone wanted this school to be up and running as soon as possible because there was an urgent need for educational space." A unitized metal wall system composed of aluminum faced composite panels encloses the majority of the building's exterior. The unitized system allowed 12-by-30-foot panels for the wall system to be fabricated offsite in Long Island while the steel frame was being erected. Using this wall system helped them to save at least three to four months of erection time. The concurrent process of offsite panel fabrication and onsite steel frame erection worked well for a project started during severe wintertime weather conditions. "Six weeks after the steel frame was erected, we had an enclosed building ready for the interior work," says Heaphy.

Contrasting materials on the lower and upper levels of the building achieved aesthetic and functional goals—brick on the lower floor allowed the architects to tie the building into its surrounding context and also provided durability for the lower floor. Above the first floor, the four-story metal panel system puts less weight on the lower part of the building.



This spread and opening spread: John Ciardullo Associates



Above A typical classroom. The steel structure accommodates the range of spaces required for a K-12 school, including classrooms, cafeterias, and auditoriums.

Below left Cellular beams span across the width of the gymnasium, creating a column-free space and supporting three stories of classrooms overhead.
Below right The school's main entrance.



This spread: John Ciardullo Associates

A structural glazed curtain wall occupies only a small portion of the building enclosure, but serves an important purpose. On the southwest corner, two libraries stack together on the third and fourth floors where the curtain wall creates a welcoming transparency, enforcing a strong visual connection between the school and its surrounding community. In addition to the libraries, the aluminum curtain wall was used to accentuate the corners of three major circulating stairs flooding them with natural light.

Since its founding in the 1990s as a "one-block pilot", Harlem Children's Zone has provided comprehensive help and critical support to children and their families in underserved communities continually expanding the reach of its programs in the past several years. It serves more than 12,300 youth and 12,400 adults today. Open since May 2013, Promise Academy I will continue serving the community and bringing positive changes to the neighborhood for its current and future generations. □

PROMISE ACADEMY I

Location: 245 West 129th Street, New York, NY
 Owner/Developer: HCZ-Promise LLC, a partnership between Harlem Children's Zone and Civic Builders, New York, NY
 Architect: John Ciardullo Associates, P.C., New York, NY
 Structural Engineer: John Ciardullo Associates, P.C., New York, NY
 Mechanical Engineer: DVL Consulting Engineers, Inc., Hackensack, NJ
 Construction Manager: Tishman Construction, an AECOM Company, New York, NY
 Structural Steel Fabricator and Erector: Glasmar Steel Erectors, Inc., Rockville Centre, NY
 Miscellaneous Iron Erector: FMB, Inc., Harrison, NJ
 Architectural Metal Fabricator and Erector: W&W Glass, LLC, Nanuet, NY
 Ornamental Metal Erector: JEM Architecturals Inc., Bronx, NY
 Curtain Wall Fabricator and Erector: W&W Glass, LLC, Nanuet, NY
 Metal Deck Erector: Glasmar Steel Erectors, Inc., Rockville Centre, NY