

PROJECT SPOTLIGHT

NEXT beams help fast-track Bronx parking structure design

A fully loaded tractor trailer, or semitruck, weighs up to 40 tons (36 tonnes). Imagine a parking structure with 24 of those tractor trailers parked on one level, 24 parked directly above, and a rooftop with parking for almost 1000 cars and delivery vans. Sprinkle in 1240 more vehicles parked throughout the structure. Then add two, two-way-traffic elevated ramps for drivers to enter and exit and a bridge to get from one end of the structure to the other.

Now imagine this multilevel parking structure squeezed into 14 acres (56,600 m²) in one of five industrial business zones in the Bronx borough in New York, N.Y.

The Bronx Logistics Center was speculative and, at 1.3 million ft² (120,800 m²), is New York City's largest industrial development. After several years of design (and redesign), the developer wanted it built as soon as possible. Up to eight transportation and logistics companies serving the most difficult aspect of e-commerce—getting products to their final destination, called last-mile delivery—could then start repaying the \$75 million investment by leasing space.

This is an ideal application for precast, prestressed concrete. From pricing and design to turnover, the Bronx Logistics Center was built in four years with more than 1700 components representing almost half of the project's cost. The total precast concrete is 684,000 ft² (63,500 m²).

Many of the precast concrete components were standard prestressed concrete double tees, columns, shear walls, lite walls, R beams, L beams, IT girders, spandrels, stair wall panels, stair risers, and slabs modified to meet the city's cat-

egory C seismic building code, architect's design, and load requirements. Unistress Corp. of Pittsfield, Mass., fabricated those using specifications developed with TRC Worldwide Engineering.

But only northeast extreme tee (NEXT) beams could quickly and safely meet the first floor's 800 lb/ft² (3900 kg/m²) load requirement and 500 lb/ft² (2400 kg/m²) for the floor above.

Unistress subcontracted its production to J. P. Carrara & Sons of Middlebury, Vt. Having fabricated NEXT beams for state and local bridge projects, the producer used a standard concrete mixture design when transportation departments specify 8000 lb/in.² (55 MPa) at 28 days: 800 lb (362 kg) cementitious mix of 600 lb (272 kg) Type III portland cement and 200 lb (91 kg) Class F fly ash, 1340 lb (608 kg) ¾ in. (19 mm) aggregate (saturated surface dry), 1360 lb (617 kg) sand (saturated surface dry), and 2 gal./yd³ (8.9 l/m³) calcium nitrate corrosion inhibitor.

J. P. Carrara fabricated 133 NEXT 32F beams for the project. They are up to 69 ft (21 m) long, 11.33 ft (3.5 m) wide, and weigh up to 46 tons (42 tonnes). They were prestressed with forty-six 0.6 in. (15.2 mm) diameter black strands with a required 6000 lb/in.² (414 MPa) release strength.

Unistress developed a just-in-time delivery schedule. Precast concrete production began in early 2022 and lasted about eight months. Precast Services Inc. of Twinsburg, Ohio, began assembly in late 2022 and finished in mid-2023 due to the project's massive size and complexity. Among other challenges, a ramp between a new building and existing railroad tracks required in-depth planning of crane positioning and hoisting to ensure worker and pedestrian safety. Unistress turned over the project to the client in late 2023.

—Stephanie Johnston

The Bronx Logistics Center's project team earned a 2025 Harry H. Edwards Industry Advancement PCI Design Award honorable mention for combining multilevel parking structure design with accelerated bridge construction methodology. Courtesy of Unistress Corp.



New school's precast concrete facade enhances neighborhood renaissance

In 2018, the New York City Council approved a \$1.1 billion rezoning initiative to transform commercial/industrial neighborhoods along Jerome Avenue, the longest thoroughfare in the Bronx, into walkable communities with new housing, new parks, new sidewalks, and new schools.

Six years later, in fall 2024, the Bronx Debate Academy (PS468X) on the Aurelia Greene Educational Campus was one of 24 new schools to welcome its inaugural class: 433 students from preschool through fifth grade. In fall 2025, the school expanded enrollment to 35 sixth, seventh, and eighth graders. The total number of students was 468, thus giving the school its name.

Located at 1302 Edward L. Grant Highway, the air-conditioned five-story building has 3 pre-kindergarten classrooms, 3 kindergarten classrooms, 15 standard classrooms, 2 special education classrooms, a cafeteria, a gym, a library, and a playground and art, community, exercise, music, reading, and speech resource rooms.

Universal Concrete Products of Stowe, Pa., contributed to this renaissance by providing the aesthetically striking multicolored exterior envisioned by SBLM Architects of New York, N.Y.

“With no prior school nearby to reference, the design draws from textures, materials, and voices in the surrounding

blocks—interpreting copper tones, strong masonry lines, and community energy into a space that feels both new and rooted.”

As is often the case for school building projects, the New York City School Construction Authority (NYCSCA) chose architectural precast concrete for its low cost, design versatility, and installation speed.

A prefabricated facade enabled NYCSCA to accelerate construction to meet the school's opening deadline. In addition, architectural precast concrete panels insulated with 4 in. (100 mm) extruded polystyrene helped the structure comply with the New York City Green Schools Rating System climate resiliency standards. By providing a continuous air and vapor barrier in the same wall panel system, precast concrete lowers initial mechanical equipment requirements as well as long-term heating and cooling costs.

Universal Concrete Products supplied 176 panels totaling 40,375 ft² (3751 m²). They reflect the design versatility that makes architectural precast concrete cladding so popular. Thin bricks in a blend of cream, gray, and white with light and medium sandblast finish came from Taylor Clay Products in Salisbury, N.C., and their acquisition was facilitated by Belden Tri-State Building Materials of New York. Custom window surrounds were made with light gray, and light gray panels were engraved with multiple waves to convey movement. Horizontal dark and light gray blocks serve to lengthen the building's appearance, while vertical light green blocks draw the eye upward.

—Stephanie Johnston 

Universal Concrete Products' most recent school project, the Bronx Debate Academy (PS468X) on the Aurelia Greene Educational Campus in New York, N.Y., features multicolored thin brick cladding and 4 in. (100 mm) extruded polystyrene insulated wall panels with formliner. Courtesy of SBLM Architects.

