

11 Hoyt makes complex facade panel design look easy

The new condominium tower 11 Hoyt in Brooklyn, N.Y., is designed to provide space for nature and community to thrive, vertically, within the densifying neighborhood of the downtown area.

The building is approximately 770,000 ft² (71,500 m²), including 55,000 ft² (5100 m²) of interior and exterior amenities, 476 residential units ranging from studios to three bedrooms, and a total of 52 stories standing at 620 ft (189 m) tall.

Precast concrete was chosen for 11 Hoyt, and BPDL Beton Prefabrique of Alma, QC, Canada, was selected as the precaster.

The system of precast concrete double-donuts for the façade was selected for its reliability and watertightness, as well as its efficient, on-site construction, saving time and money while reducing risk.

The cast-in-place superstructure had to maintain a simple, flat slab edge to meet cost and construction schedule demands. Using a strong yet fluid and easily malleable material, the team was able to fabricate the facade panels in a shop-controlled environment. The result is a precast concrete facade that is three-dimensional, as deep as 3 ft 9 in. (1.14 m); inhabitable; and able to support a live load.

Building on the high thermal mass of concrete, the building's 60-to-40 window-to-wall ratio pairs continuous interior insulation with high-performance windows to create an energy-efficient thermal envelope that greatly reduces energy loads imposed on mechanical systems.

The project's connection between inside and outside is furthered by the tower's thickened precast concrete facade. The building pushes out in plan to create expanded living spaces with built-in window seats framing 8 ft (2.4 m) tall windows, maximizing views of the neighborhood and waterfront and offering glimpses of the building's sculptured exterior.

Migrating across the facade like cusps of a wave in sections, the scalloped bay windows allow for more than 190 unique floor plans that accommodate a diverse mix of residents.

The project progressed smoothly for the most part, largely because of the cooperation of the various entities involved. "There was a weekly design assist process that started at the early stage of the project that allowed the design team and BPDL to go over every design challenge and discuss solutions," says Matthieu Gagne, project manager for BPDL. "From the start, the cooperative atmosphere and mindset was what allowed the design and construction to be so successful." Even



The system of precast concrete double-donuts used in the 11 Hoyt condominium tower facade was selected for its reliability and watertightness. The new Brooklyn, N.Y., structure contains 476 residential units. Copyright Tom Harris, courtesy of Studio Gang.

before the production of the first panels and mold, the design team visited BPDL's precast concrete plant in Canada to visualize the production process and understand any possible limitations.

To reduce production challenges, BPDL produced multiple internal samples and mock-ups ahead of the production and

drawings process, which allowed BPDL to foresee challenges that this complicated geometry brought. “We needed to understand our limitations during the design assist and drafting process,” Gagne says.

Transportation and delivery were also tackled using extensive preplanning. “The BPDL transportation team modeled the loading of our trucks and used short trial runs ahead of time,” Gagne says. “The atypical geometry required custom parts to be drafted and built for the panels to be safely secured on the trucks.”

Installation challenges were also circumvented by preplanning. “The erector, Midwest Steel, was brought in early during the design process to provide feedback and solutions,” he says. “The coordination they did with the general contractor, Triton, was instrumental in the project, especially for developing the hoist panels rigging procedure.”

—William Atkinson

Florida STEM center built for the future

The new STEM Center—which focuses on science, technology, engineering, and math—at Ransom Everglades School in Coconut Grove, Fla., creates a new quad at the entrance to the school’s historic campus. The thought behind the new building’s placement is that it showcases the school’s commitment to academic excellence, the arts, and next-generation environments for teaching and learning.

The school envisioned a 45,000 ft² (4180 m²) center for science and math that allows for a multidisciplinary approach to education for both faculty and students. Precast concrete was chosen for the project because the owner and designer wanted to create a responsibly designed building that is as intelligent as the students, activities, and faculty it houses.

Gate Precast in Kissimmee, Fla., was selected for the project. Gate and the designer created a lightweight building envelope solution that not only reflects the core mission statement of the school but also provides forward-thinking construction prefabrication methods.

The STEM building is in one of the most vulnerable areas of the city’s coastal neighborhoods. As a result, it had to be a high-performing “smart” building at all levels: its structure, its systems, and even the way the architect planned it.

The precast concrete facade is an integral part of this STEM building, which is already gaining attention as one of the most innovative STEM buildings in the region and possibly the nation.

Flexibility and adaptability, from moving walls to movable furniture and services, make this facility one of the leading STEM high school centers in the country and showcase a forward-thinking faculty and award-winning student body.

Transparency not only allows for passive security best practices but also enhances a daylit environment, creating



Ransom Everglades School's new STEM Center was placed to form a quad at the entrance to the school in Coconut Grove, Fla. Courtesy of Gate Precast Co.

awareness of the activities inside and outside the classrooms, and provides an opportunity to showcase learning and the ever-present cinematic activity within the building.

The roof level has an outdoor laboratory designed for modular agriculture. The majority of the roof surface also hosts photovoltaic panels, contributing to the pursuit of the U.S. Green Building Council’s LEED silver or gold level of certification.

Although the project went smoothly for the most part, there were a few challenges, says Bruce Bartscher, vice president of operations for Gate Precast. “To handle the design intent of undulating features on the face, we thickened our typical 2¼ in. face to 3¼ in. and added high-density foam that was run through our CNC [computer numerical control] to create sharp contrast,” he says.

Fortunately, there were no challenges related to production. In terms of transportation, though, size had to be considered. “Because the panels were 10 ft by 30 ft, we shipped them on edge, utilizing the frames for support,” he says.

—William Atkinson 

On a lightweight architectural precast concrete panel system, a steel frame provides the structure that supports the weight of the nonstructural concrete skin for the Ransom Everglades School’s STEM Center.
Courtesy of Gate Precast Co.

