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DESIGNING WITH PRECAST

Spring 2024

2024 PCI DESIGN AWARDS





Government and Public Building and Harry H. Edwards Industry Advancement Award Honorable Mention

PROJECT TEAM

Owner: City of Winter Park, Winter Park, Fla.

PCI-Certified Precast Concrete Producer and Precast Concrete Specialty

Engineer: GATE Precast Company, Kissimmee, Fla.

Architect: Adjaye Associates, New York, N.Y.

Engineer of Record: TLC Engineering, Orlando, Fla.

General Contractor: Brasfield & Gorrie LLC, Winter Park, Fla.

PCI-Certified Erector: Team Precast Group, Lincoln University, Pa.

Building Envelope Consultant: Thornton Tomasetti, New York, N.Y.

Project Cost: \$35 million

Project Size: 55,800 ft²

WINTER PARK LIBRARY AND EVENTS CENTER WINTER PARK, FLORIDA

Boasting angled exterior precast concrete walls, the Winter Park Library and Events Center is a monumental public landmark that offers idyllic views while providing a welcoming presence within an urban environment. Located just outside Orlando, Fla., this aesthetically unified “micro-village” encompasses a two-story library, an events center with a rooftop terrace, and a portico.

TWISTED SISTER BUILDINGS

Planning, budgeting, and design of the Winter Park Library and Events Center took approximately six years, as stakeholders sought an innovative design suitable for a hurricane-prone environment, unstable soil conditions, intense sun, high temperatures, and other challenges. Ultimately, GATE Precast Company of Monroeville, Ala., alongside architecture firm Adjaye Associates and the rest of the design team selected a design featuring compound, convex exterior precast concrete walls with a series of scalloping, frond-like patterns, which allude to native vegetation and help mitigate the impact of extreme heat on the interiors of the buildings.

Russell Crader, associate principal at Adjaye Associates, said precast concrete was the ideal building material for the work. “Critical to the design of the project was its geometry, which features outwardly slanting walls that provide solar shading for interior comfort and energy efficiency,” he said. “To meet the ambi-



tions of the design in terms of ease of maintenance, resiliency, aesthetics, and energy reduction, precast concrete was identified as the basis for development and the most efficient construction assembly.”

Asymmetrical shapes dominate the architectural aesthetic of the buildings on campus, and the use of precast concrete was essential for achieving the design. GATE Precast Company used a series of 50 twisted-shape forms with connection plates set at twisted and varying elevations to manufacture each of the 182 panels for the three structures. Meticulous care went into manufacturing the forms, which were fabricated using stacked plywood cut using a computer numerical control machine to ensure accuracy. Additionally, during the pouring process, a bull float was used to ensure an even concrete mixture.

The texture, color, aggregates, and concrete matrix for the precast concrete were all carefully selected for aesthetic value, durability, and low maintenance. Each of the rose-colored panels was finished with a glass-blast treatment to expose the four different types of aggregate included in the mixture design. As a result, the appearance of each structure changes throughout the day based on the angle of sunlight as it hits the building. The project involved a slew of design and construction challenges, including installing the panels at acute angles, coordinating the connection points from the precast concrete to the steel structure, and various handling and erection issues associated with the buildings’ slanted designs. Thanks to the dedication and innovative efforts of the entire project team, all of these challenges were overcome. The buildings create a space for users that promotes education and social interaction while standing as a testament to the fluidity and design capabilities of precast concrete.

“The Winter Park Library and Events Center is a knowledge and cultural campus that has become a center for lifelong learning and a space for community empowerment and edification,” Crader said. “Since its opening in December 2021, the library has provided increased programming opportunities and has seen a 64% increase in cardholders. This translates to increased impact and benefit for the community.”



Photos: © Dror Baldinger, FAIA.

KEY PROJECT ATTRIBUTES

- GATE Precast Company worked closely alongside other members of the project team to manufacture nearly 200 angular, splayed precast concrete walls that seemingly defy gravity.
- The designers selected precast concrete for the Winter Park Library and Events Center because it is optimally suited to the site’s environmental conditions and achieves the desired aesthetic.
- Throughout the project, the team overcame many design and construction challenges related to installing precast concrete panels at acute angles, coordinating connections points from the precast concrete to the steel structure, and other issues.

PROJECT AND PRECAST CONCRETE SCOPE

- The Winter Park Library and Events Center covers approximately 56,000 ft². The campus is composed of a two-story library, an events center with a rooftop terrace, and a portico.
- Roughly 27,000 ft² of precast concrete panels were manufactured to complete the three-building “micro-village.”
- Many twisted-shape forms with connection plates set at varying elevations were required to produce the precast concrete components.
- The precast concrete used on the project was manufactured from August 31, 2020, to January 26, 2021. Precast concrete erection occurred between October 2020 and February 2021.