



PRECAST CONCRETE & SUSTAINABILITY

915 WALNUT PARKING STRUCTURE

- Project Type: Parking Structure
- Location: Kansas City, Mo.
- Owner: Simbol Commercial, Kansas City
- Architect: Stott & Associates Architects PC, Ames, Iowa
- Engineer: FDG Inc., Arvada, Colo.
- Contractor: The Weitz Co., Overland Park, Kans.
- Precaster: IPC Inc., Des Moines, Iowa



OVERVIEW

The 915 Walnut Street Parking Structure is sandwiched between two older buildings in downtown Kansas City. The 106,000 ft² structure provides 325 parking spaces for the adjacent condominiums. The owner's goal was to create a highly sustainable design and a green presence that would attract attention to the project. To that end, the parking structure features a dramatic rooftop garden. The garden serves as a key selling point for the condominiums. It provides residents with a safe, fun, and beautiful area to have picnics, walk their pets, or just enjoy the outdoors. The 16,000 ft² green rooftop area has also created a great deal of interest within the community, being used for public tours, weddings, receptions, and other special events.

The all-precast concrete structure was originally designed as cast-in-place, but none of the design variations being considered could meet the budget or schedule requirements. "This project is an excellent example of the benefits a total-precast concrete solution can provide," explains Michael Stott, principal of Stott & Associates Architects PC. "By switching to an all-precast solution, the cost was reduced by approximately 25%, and the challenging schedule met."

Site conditions were also a challenge. The site was sandwiched between two existing older buildings in a congested downtown area, and the structure was built within 2 in. to 3 in. of those buildings, which were not square. Precast concrete components produced off-site in a controlled environment ensured that precise tolerances would be met. Finished components delivered to the site reduced site impact and construction time.

16,000 FT²
area of rooftop garden

100 PERCENT
of the parking spaces were covered

25 PERCENT
cost reduction

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Construction was possible from only one side of the 915 Walnut Street Parking Structure in downtown Kansas City, Mo. Courtesy of Dirk McClure of IPC Inc.



This section drawing shows the greater number of modified precast concrete double-tees used to support the increased loading of the rooftop garden. Courtesy of Stott & Associates Architects PC.



A 16,000 ft² rooftop garden, the largest elevated garden in Kansas City, Mo., graces the top of the seven-level 915 Walnut Street Parking Structure. Courtesy of Simbol Commercial.

The crown jewel of the facility is its rooftop garden. Additional loading was calculated and provided by IPC, the precaster, to ensure that components would support the added soil and plants and the added load as the trees and landscaping mature. Eight inch double-tees were used to meet this need. The project also called for precast concrete columns, ledge beams, stairs, spandrels, wall panels, and shear walls.

The owner was extremely pleased with the finished product, and the rooftop garden has become an icon in the city. The local chapter of the U.S. Green Building Council has prominently featured this project on its website. The project was also a cowinner in the 2007 PCI Design Awards in the category of Best Sustainable Design.

PRECAST CONCRETE'S CONTRIBUTION TO SUSTAINABLE CONSTRUCTION PRACTICES

Materials & Resources:

All of the precast concrete components were produced locally. Nearly all of the products used to manufacture the components were extracted within a 500 mi radius of the jobsite.

Recycled materials were used in the concrete, including fly ash and recycled steel for the reinforcing bars, strand, embed plates, and connection plates.

Energy & Atmosphere:

All of the parking spaces are covered and approximately 50% of the roof structure consists of vegetation, reducing the heat-island effect.


Sustainable Sites:

The project is in an urban area sandwiched between two older, historic buildings.

Water Efficiency:

Storm water runoff volumes are reduced by absorbing rain into the rooftop garden soil.

Innovation & Design Process:

The rooftop garden is an innovative feature that provides a high-profile green presence for the project and the city. 



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