**Team**

**Owner:**
University of Pittsburgh.

**Architect:**
Edge Studio, Pittsburgh, PA

**Engineer:**
Atlantic Engineering Services of Pittsburgh
Pittsburgh, PA

**General Contractor:**
Mascaro Construction Company
Pittsburgh, PA

**Reinforcing Bar Fabricator:**
The Whitacre Engineering Company
Canton, OH

**Total Project Size:**
22,000 sq ft

**Award:**
2012 CRSI Design Award Winner – Educational Facility Category

**Photography:**
Massery Photography, Inc., Pittsburgh, PA

**STRUCTURAL FRAMING SYSTEM**

This 3-story addition to Benedum Hall at the University of Pittsburgh Main Campus was built on top of and through the existing 2-story basement, which connects the 16-story Benedum tower and auditorium buildings. The structural system consisted of two-way site cast concrete flat slabs supported by, concrete columns, sloping concrete columns, and concrete walls. Micropile foundations were installed in the basement of the existing building, and the concrete columns rose from those pile caps through two existing concrete-framed floors to support the two floors and roof.

**UNIQUE DESIGN FEATURES**

The Mascaro Center for Sustainable Innovation was constructed with cast-in-place (cip) concrete for two reasons. First, concrete was the only logical and economical choice to create the desired tapered sloping columns, the custom “Y” and “K” shaped columns, and the long cantilevered slab edges on the south elevation. Second, the exposed concrete structure blends with the character of the adjacent building and becomes the fundamental expression for the new building.

**REASONS FOR CHOOSING REINFORCED CONCRETE**

The Mascaro Center for Sustainable Innovation has many unique structural and architectural features. The distinct southern elevation is highlighted with tapered sloping site cast concrete columns that support the cantilevered floor and roof slabs. Not to be outdone, the northern elevation is framed with tapered site cast concrete “Y” and “K” columns that can be seen through the exterior glazing supported by the floor and roof slabs. These custom shaped columns also support a stair and landing, which cantilever from the side of the columns. While the building appears to be elevated from a green plaza, the new columns were constructed through two below grade basement levels, which connected the two adjacent buildings which house the Swanson School of Engineering. Openings within the existing cast in place concrete slabs were cut to allow the columns to extend down to the concrete pile cap foundations below the lowest level slab on grade.