The Ascent (at Roebling's Bridge)

Covington, KY

Team

Owner:
Corporex, Covington, KY

Architect:
Studio Daniel Libeskind / GBBN Architects Inc., New York, NY

Engineer:
THP Limited Inc., Cincinnati, OH

General Contractor:
Dugan & Meyers Construction Co. Cincinnati, OH

Reinforcing Bar Fabricator:
Gerdau Ameristeel, Louisville, KY

Total Project Cost:
$110 million

Total Project Size:
310,000 sq ft (26-stories)

Award:
2010 CRSI Design Award Winner–Residential Building Category

Photography:
THP Limited Inc., Cincinnati, OH

STRUCTURAL FRAMING SYSTEM

The designer's goal in creating the 26-story Ascent at Roebling's Bridge condominium complex was to maximize views of downtown Cincinnati across the river while creating a signature look. A reinforced concrete structural frame ensured a viable and economical design.

The building is founded on 150-ton, 16"diameter auger cast-in-place concrete piles installed 300' into the interbedded, unweathered gray shale and limestone bedrock. Typical framing, consisting of 25 supported levels, features 9" two-way post-tensioned flat plates supported by reinforced concrete columns at the garage levels and 8" two-way post-tensioned flat plate on residential levels. Slabs take advantage of studrails for increased punching shear capacity at the columns.

UNIQUE DESIGN FEATURES

The exterior façade consists of a vertical, non-repeating pattern of reinforced precast concrete panels and glass curtain wall. Four reinforced concrete columns were sloped in two directions over 21' perpendicular to the east elevations and 26'-7" parallel to the east elevation for the building's full height, due to the outward-leaning east façade. This resulted in a horizontal force at the base of the slope of 435 kips and 541 kips, respectively, in each direction due to gravity loads.

The covered archway, which gives visual prominence to the building's grand entrance, consists of a swooping saddle, pie-sliced shape in plan, with a 16"-thick post-tensioned slab. It spans 54' from the south building elevation to a single outward-leaning, irregularly shaped reinforced concrete column that tapers out on all sides from the column base.

A three-story entrance lobby designed to be column free required a 34-foot-deep transfer wall beam spanning 74' between the north and south elevations between the third and sixth floors. This transfer beam supports approximately one-sixth of the total tower-floor area above it. A large reinforced concrete hanger suspended from the transfer beam supports the second-floor area below.

REASONS FOR CHOOSING REINFORCED CONCRETE

Thin post-tensioned balcony slabs project $9\frac{1}{2}$' from a continuous perimeter beam along the north façade. The balcony slab thickness was decreasing from $6\frac{1}{2}$ to 6" providing an outward slope.

The vertical, non-repeating pattern of precast concrete façade panels in warm earth tones works with the offset glass curtain wall to create a textured appearance that visually blurs the distinction between the interior and exterior spaces.

The reinforced concrete system responded ideally to the challenging architectural features and the many unique structural elements.

Reinforced concrete offered a good, intelligent solution to the demands of this unorthodox architectural design. The unusual design for the porte cochere works well with the building, while the thin concrete balconies provide an almost transparent appearance.

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