45 East 22nd Street
New York, NY

Team

Owner: The Continuum Company, New York, NY

Architect: KPF, New York, NY

Structural Engineer: DeSimone Consulting Engineers
New York, NY

Concrete Contractor: Navillus Contracting, New York, NY

Reinforcing Bar Fabricator: CFS Steel, Bronx, NY

Total Project Cost: $60 million

Total Project Size: 260,000 sq ft

Floor System: Reinforced Concrete Flat Plate

Framing System: Reinforced Concrete Shear Walls

Award: 2016 CRSI Award Winner—Residential Building Category

Photography: KPF, New York, NY
DeSimone Consulting Engineers
New York, NY

STRUCTURAL FRAMING SYSTEM
45 East 22nd Street is a 260,000sf, 60-story (780-foot), ultra-luxury residential tower that cantilevers the neighboring six-story building and includes two below-grade levels. The Continuum Company (owner) required high, flat ceilings with floor-to-ceiling glass walls for this residential project. The structural system is comprised of cast-in-place concrete slabs and columns, with lateral load resisting shear wall cores. The flat plate concrete floor system was chosen to optimize the tower height and sellable floor space.

UNIQUE STRUCTURAL AND/OR ARCHITECTURAL DESIGN FEATURES
The tower floor plate is as small as 62 feet wide x 52 feet deep near the base, which gives a maximum slenderness ratio of about 13:1. Compounding the overall slenderness, the tower cantilevers outward as it rises to maximum floor plate of 94 feet wide x 52 feet deep. High strength concrete of up to 14ksi and high strength reinforcing steel (rebar) GR 75 was used to provide the high strength and minimize congestion. Near the base of the tower, high strength steel GR 97 SAS bars were used to restrain the top of the 16 feet horizontal cantilever (slopes outward over 50 feet height).

REASONS FOR CHOOSING REINFORCED CONCRETE
• High reinforcing steel (rebar) GR 75 was used to provide the high strength and minimize congestion.

• High strength concrete was used for the shear walls and floor plates provided the required strength and stiffness.