

The XI

76 11th Avenue

Project Description

A glance across the Hudson River to Manhattans famed Meatpacking District compels a second look. Two towers, in an apparent coordinated movement, create a spectacle not seen before in New York. In a moment the towers appear to embrace, in another they seem to pull away. No vantage point yields the same view such is the geometric complexity of The XI.

A full city block enclosed by 10th Avenue, West Side Highway, 17th Street and 18th Street has been made the home of this market shifting development by HFZ Capital. At approximately 896,000 square feet the development includes a 35-story West Tower, a 27-story East Tower and a 5-story podium wrapping around the base of the two towers. The primary program of the development is residential; however, hotel, retail, gallery, amenities and parking programs are also included.

Each tower consists of surfaces that appear to lean, twist and overhang. The shape of each tower goes through an almost ninety degree rotation from its position at foundation to its final position at roof level. Perimeter sloping and stepping columns are used to mold the structure and achieve the complex geometry. At overhang conditions 'tree' columns are created by 'growing' columns vertically from the perimeter sloping columns to manage interior spans as the building grows outwards towards the top. In addition, the perimeter column spacing creates an exterior tube that helps to address the torsion of the twisting towers. The lateral loads generated from the sloping and stepping columns are transmitted through the floor slabs to the central core wall system. The core walls are arranged around elevator shafts and egress stairs and act as the central spine of the tower providing the requisite stiffness to control drifts etc. under wind loads, seismic loads and code defined safety loads. Slabs were designed to minimize the number of interior columns and allow maximum flexibility in the interior prime revenue generating spaces. Despite the geometric complexity and constantly changing floor plates reinforced concrete offered the perfect structural medium to meet the technical & scheduling needs of the project. High strength concrete mixes ranging from 7,000 psi to 9,000 psi were used to keep structural sizes within architecturally acceptable limits. The superstructure massing was generally constructed using a three-day cycle.

Similarly, reinforced concrete was used to thread support around other adjacent complexities such as the existing highline to the east. Here a new retail space and cellar was constructed directly underneath the existing high line while it remained in service. Alternative temporary support for the existing highline was maintained throughout the process of placing a new independent reinforced concrete superstructure and foundation system.

The dramatic superstructure system is rooted to a foundation system which uses an array of reinforced concrete mini-caisson caps, caisson caps and mat footings supported on large diameter caissons.



Participants

Category - **High-Rise Buildings**

Owner/Client - **HFZ Capital**

Design Architect - **BIG Architects**

Architect of Record - **Woods Bagot**

Structural Engineer of Record - **WSP USA**

General Contractor - **OMNIBUILD**

Concrete Subcontractor (Foundation) - **LaQuilla Group**

Concrete Subcontractor (Superstructure) - **SBF Construction**

Ready Mix Concrete Supplier - **Ferrera Brothers**

Concrete Mix Designer - **NYCON Supply**

Field Testing Laboratories - **S.A.L.K Group**

Concrete Admixture Manufacturer #1 & #2 - **BASF**

