Official Name: Tianjin CTF Finance Centre

Other Name: Tianjin Chow Tai Binhai Centre

Location: China, Tianjin

Architectural Height: 530 m

Occupied Height: 439.5 m

Architectural Design:
- Retail podium
- Total gross floor area: 389,900 m²

Structural System:
- Framed Tube System

Details of the Structural System:
- The core is composed of concrete casting steel plates.

Defining Characteristics:
- Innovative and cost-efficient envelope
- LEED Gold standards
- Aerodynamic shaped form
- Aspect Ratio: 7

Construction:
- The tower’s aerodynamic shape reduces wind loads, which in turn dramatically enhancescolumn spans, braces are used and connected to perimeter columns. And in part-1, brace-like sloping columns have the same function as trusses to increase the spans between columns. Besides, the sloping columns with an angle greater than 60 degrees, not only carries loads but also carry the required amount of steel is eliminated. The intersection of the sloping columns spread across multiple floors which minimizes axial forces in perimeter beams.

Defining Characteristics:
- Eliminates outrigger columns at some levels to have a more dramatic suite at the upper zone of the hotel.

Defining Characteristics:
- The detail of corner columns at the belt truss level.

Details of the Structural System:
- The core is composed of concrete casting steel plates.
Wind tunnel tests were conducted in the schematic design stage to determine optimal shaping of the tower. [1]
The goal: reducing wind forces to equal or below seismic loads so wind wouldn’t control the design. [1]
Final crown configuration: high cladding porosity and open top of the crown leads to reducing wind loads in entire tower.
[1]
Curved corners and tapering shape dramatically reduce wind loads. [1]
The building’s aerodynamic shape greatly reduces this vortex shedding by “confusing the wind”. [1]

WIND ENGINEERING

In response to strong winds, multi-storey wind vents are placed at strategic intervals.
These multi-story wind vents together with aerodynamic shape of the tower dramatically reduce wind loads by cutting vortex shedding.

BUILDING FACADE

The curvilinear facade is parametrically modelled to optimize panel sizes and facade curvature. [2]
There are 24,910 window units in the tower. By using BIM parametric optimization only 339 unique panels are obtained.

CONSTRUCTION PHOTOGRAPH

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