Pearl River Tower

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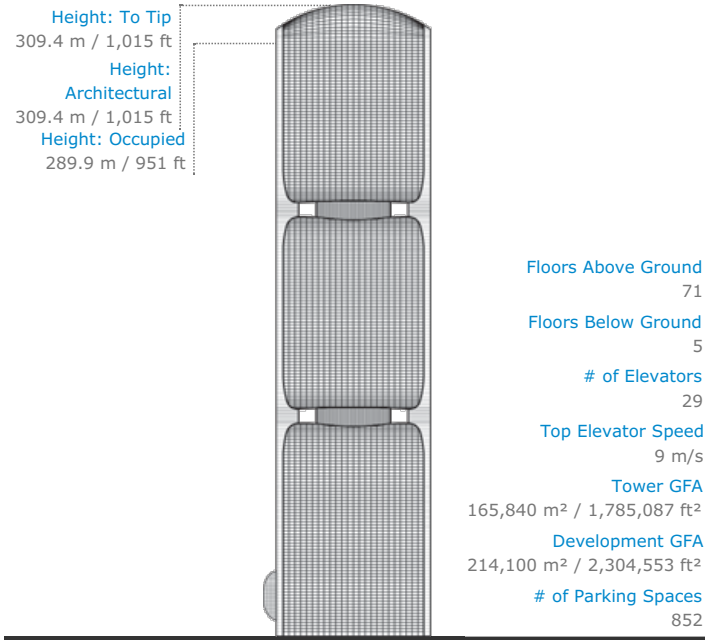

Floors Above Ground
71

Floors Below Ground
5

# of Elevators
29

Top Elevator Speed
9 m/s

Tower GFA
165,840 m² / 1,785,087 ft²

Development GFA
214,100 m² / 2,304,553 ft²

# of Parking Spaces
852

Facts

Official Name	Pearl River Tower
Structure Type	Building
Status	COM
Country	China
City	Guangzhou
Street Address & Map	15 Zhujiang Xi Road, Junction between Zhujiang Xi Road and jinsui Road, Tianhe District
Postal Code	510610
Building Function	office
Structural Material	composite • Core: Reinforced Concrete • Columns: Concrete Encased Steel • Floor Spanning: Steel
Proposed	2005
Construction Start	2006
Completion	2013

Companies Involved

Owner/Developer	The Guangzhou Pearl River Tower Properties
Architect	
• Design	Skidmore, Owings & Merrill LLP
• Architect of Record	Guangzhou Design Institute
Structural Engineer	
• Design	Skidmore, Owings & Merrill LLP
MEP Engineer	
• Design	Skidmore, Owings & Merrill LLP
Main Contractor	Shanghai Construction Group
Other Consultant	
• Acoustics	Shen Milsom Wilke, Inc.
• Façade	Meinhardt
• Fire	Rolf Jensen & Associates
• Landscape	SWA Group
• Vertical Transportation	Fortune Shepler Consulting
• Wind	RWDI
Material Supplier	
• Cladding	Jangho Group Co., Ltd.
• Elevator	Otis Elevator Company
• Façade Maintenance Equipment	CoxGomyl
• Paint/Coating	Jotun; AkzoNobel
• Sealants	Dow Corning Corporation

About Pearl River Tower

Using some of the most sophisticated technologies currently available, the designers of Pearl River Tower created a highly integrated structure that derives its efficiencies by applying previously tested solutions in a combination never before accomplished at such at large scale. It was important to both the client and the design team that a holistic approach be used, so as to avoid an array of solutions that might be conceptually compelling, but would not survive the rigors of design development and future value-engineering exercises. This demanded a design approach that was not form-driven, but performance-based, with all systems having a degree of interdependency.

Thus, the building has been carefully shaped to use natural forces to maximize its energy efficiency. The tower's sculpted body directs wind to a pair of openings at its mechanical floors, pushing turbines that generate energy for the building. East and west elevations are straight, while the south façade is concave; the north façade is convex. The south side of the building is dramatically sculpted to direct wind through the four

openings, two at each mechanical level.

The building's siting and evocative curving shape work together to drive performance. Its generally rectangular floor plate has been shifted slightly from Guangzhou's orthogonal grid in order to maximize use of prevailing breezes, and to better capture the sun's energy through the strategic location of photovoltaics.

The tower's shading system uses automated, daylight-responsive blinds set within the building's double-skin façade, thereby reducing the building management's operational needs. Its ventilation/dehumidification system uses heat collected from the double-skin façade as an energy source. The integrated façade assembly provides very good thermal performance, as well a high level of natural daylight to the space. Low-energy, high-efficiency lighting systems use radiant panel geometry to assist in the distribution of light. The double-skin façade also allows greater flexibility in the layout of office space, as it reduces the amount of internal mechanical chases required for ventilation, heating and cooling.

The tower's mechanical design approach also allowed architects to reduce the building's floor-to-floor height from 4.2 meters to 3.9 meters, reducing the number of constructed stories by five. Occupants can be comfortably positioned close to perimeter walls. The radiant cooling, chilled ceiling and decoupled ventilation system provides improved human thermal comfort, efficient heat exchange, and improved office acoustics. The ventilation system is delivered via a raised access floor, providing improved indoor air quality and air change effectiveness. There is also a reduced cost of tenant fit-out and future retrofits due to the absence of fan coils, VAV boxes, filters, ductwork, insulation, and other items typically requiring tenant-specific alterations.

While it is the combination of performance-driven curving shape and exposed vertical-axis wind turbines that fuse Pearl River Tower into the public perception of the Guangzhou skyline, its most significant impact is drawn from the level of integration between sustainable design elements. The combination of turbines, shading systems, a double-skin façade with energy-efficient lighting, ventilation, and mechanical design all work together complementarily, resulting in a substantial decrease in the amount of electrical power required to operate the building's HVAC and lighting systems. Full implementation of Pearl River Tower's sustainable strategies will result in an overall energy savings of approximately 30 percent as compared to a conventionally designed building of the same scale, constructed to comform to the Chinese baseline energy code.

Pearl River Tower

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