



Residential prefab construction on a vast scale, Chinese style

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Sky City, taking prefab technology to the skies

The next tallest building on Earth seems to have finally broken ground, setting in motion the most ambitious built-environment business maneuver in years.

Broad Group, a Chinese company, has finally started construction on what it says will be the world's tallest building, Sky City, a 208-storey steel-framed residential tower in Changsha, Hunan Province. Reaching 838m, it will be 10m taller than Dubai's Burj Khalifa.

More surprising than its height is the speed at which it is planned to be built. The Burj Khalifa took five years, but Sky City will be topped out by April 2014 and will be finished a month or two later!

Behind such an eye-popping speed is Broad's system of total prefabrication and military-style logistics. On a smaller scale, Broad did something similar with the 30-storey New Ark Hotel at Dongting Lake near Changsha, built in just 15 days. The company's chairman, **Mr Zhang Yue**, who was China's 210th richest man in 2012 according to Forbes, heaps yet more fabulous claims on Sky City:

- His building will use only one fifth of the energy consumed by conventional towers.
- It will be able to survive an earthquake of magnitude nine on the Richter scale.
- The air inside will be 20 times purer than the smoggy air of industrial Changsha.
- And it will cost nearly half of what the Burj Khalifa cost.

The news sparked concerns that such a big building erected so fast could happen only by sacrificing safety and quality. But thanks to prefabrication, Sky City is scheduled for completion in under one year. Surprisingly, the new tower is planned to be:

- 83% residential in a largely industrial city far from the millionaires of Guangdong. Around 7,000 apartments will provide homes for 17,400 people;
- 5% of the space will be a hotel; and
- The remaining 12% is divided between schools, healthcare and office uses, as well as shops and restaurants.

How it will make money is not clear, and according to reports Broad Group is self-financing it to the



tune of \$838m. The Burj cost \$1.5bn.

The real point of Sky City is not the city in itself; Mr. Zhang Yue is driven by a vision of sustainable urban residential development and a vast commercial proposition: safe, efficient, affordable housing in China and all over the world.

The Chinese market

To maintain harmony, China must find a way of accommodating the millions who flock to cities every year in search of economic betterment. To that end it plans to build 36 million social housing units by 2015, at a cost of nearly \$800bn. Considering the scale of the Endeavour, the government sees prefabrication as the way forward, but precast concrete is the reigning method, and mid- and high-rise steel frame residential construction is not accommodated by building regulations.

Mr Zhang's ultimate game is to be number one homebuilder, but with prefabricated steel, he's betting on an outside chance. In an interview with International Construction Review, last year, Broad Group chairman Zhang Yue said Broad employed 5,000 skilled technicians in its prefabrication plants in Changsha. He said Broad now has franchises in six Chinese provinces, and plans to have one in every Chinese province.

The global market

But he doesn't want to stop there. *"Ultimately,"* he said, *"I hope we will be able to supply 30% of the global construction market worldwide."* Mr Zhang has won global recognition for his approach to building, which, he told us, was inspired by the devastating 7.9-magnitude earthquake in Sichuan province in 2008. More than 80,000 people died in that event, many from the collapse of badly constructed buildings.

Gaining international recognition

In 2009 Broad put up a prototype building in three days in Changsha and asked the UN to come and see it. In its 2010 report on the Sichuan earthquake, the United Nations Environment Program (UNEP) singled out Broad's prefabricated steel method as exemplary for safety, affordability and sustainability. That same year, at the UN's international climate change conference in Cancun, Broad erected a multi-storey pavilion in eight days, winning lavish praise from the conference host, Mexican president Felipe Calderón. And in 2011 Zhang Yue was named a Champion of the Earth by UNEP.

This is all very exciting, but not enough inside China to guarantee the chunk of the housing market Mr Zhang wants. To capture imagination in a vast market and to get the necessary regulatory alignment from the centre, Mr Zhang evidently feels a titanic gesture is needed. And Sky City is such a gesture. Its top selling points (air quality, earthquake safety) might sound off-key to a Western property developer, but they push very sensitive buttons for Chinese people.

Contemplating the UK market

Its energy efficiency and high-density approach tick urgent boxes for planners and regulators in China, where space and resources are scarce, but not only. Indeed, we are witnessing in Britain:

- Relaxed planning laws;
- Increasing eco-friendly regulation in the building industry;
- Tough budget constraints; and



- An urge for more affordable housing nationally.

From inception, Sky City has been the most ambitious built-environment business maneuver in years. Now that it's happening, we can see if it is going to work. And how we can import that model to the UK.

Olivier R i b e r t
Managing Director

"An unfulfilled vocation drains the colour from a man's entire existence."
Honoré de Balzac