Hong Kong and Shanghai Bank Headquarters

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Hong Kong and Shanghai Bank Headquarters

the team......

Architects : Foster Associates
Structural Engineers : Ove Arup & Partners
Building Services : Roger Preston & Partners

Of Architect and Client.......

A : “a symbol of strength and stability”
C : “the best bank building in the world”

the building......

Duration of construction : 1979 -1986
Built-up Area : 90,000 sq.m.
Number of level : 47+ 3 (B)
Total height : 179m
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the challenges.....

- Time Constraint
- Restricted Site
- Soil Conditions – granite, mud and sands
- Few locally produced building materials
- “No noise, dirt or grime” restriction
Massive exoskeleton graphically illustrating the forces and the weight of the building.

Glass wall to be developed to allow clear views and to resist typhoon wind loadings.

2-storey high primary trusses span between towers.

Floors to be hung from primary trusses.

Shallow basement levels. Could be deeper if required.

Simple caisson foundations.

Hallway stairway to receive lifts, stairs, etc.

Concrete tower. Lifts. To be slip formed for speed and economy.

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the advantages.......

- ‘Phased Regeneration’ – work can be done in parts, ‘complete’ at any stage
- Flexibility
- Prefabrication – faster
- Light weight structure – glass, steel
- Visual accessibility maintained across the building
- Open public space – ’plaza’ - below main bank
- Image
- ‘Buildability’
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• Steel Super-frame
  Composed of “kit of parts”:
  - 8 masts, arranged in two parallel rows of four. Each mast consists of four tubular steel columns braced by rectangular beams
  - 17 pairs of suspension trusses, located at each of the 5 double height spaces up the building
  - 102 hangers, from which the floors of the building would be suspended
  - 24 cross braces, each 2 stories high, designed to connect the masts inside the building at double height spaces. Also 2 great 3-story high cross braces at either end of the atrium to provide north-south stability
  - 43 floors framed by a series of primary and secondary beams, decked with steel and 100 mm of concrete

• Pile Foundation
  - 8 main caissons, 10 meters in diameter and 18 meters below ground
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BASIC STRUCTURAL SYSTEM

- Suspension Truss
- Hanger
- Mast Section
- Floor Beams
- Vierendeel
- Steel Column
- Horizontal Bracing
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The ‘stacking plan’ for the building, January 1982.

- Suspended floor plates
- Double-height trusses
- Central Atrium space
- Lower Open Plaza
- Basement Floors

Double-height trusses
Central Atrium space
Lower Open Plaza
Basement Floors
**Service & Circulation core**

**Open Floor Space**

**Composite Steel Column**

**TYPICAL FLOOR PLAN**

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how the building works.....

blocks of floors are suspended by hangers dropped from trusses, which in turn are supported by the masts
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LOAD DIAGRAM

179 m
Giant suspension trusses bolted to the main mast by spherical bearings
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8 masts, arranged in two parallel rows of four - each mast consists of four tubular steel columns braced by rectangular beams.
The relation between floors, ceilings, sunscreens, mullions and masts
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The steel-framed underbelly of the building separating the air-conditioned space above from the public ‘plaza’ below.
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POWER
MUSCULAR HI-TECH

DELICACY
PURE TRANSPARENCY
References

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