

Welcome to

شركة الأبنية السريعة للمقاولات ذ.م.م.  
Rapid Building Construction Co. Ltd.



RBC constantly seeks opportunities for the next generation and beyond.

The most environmentally friendly method of construction for the 21st Century.

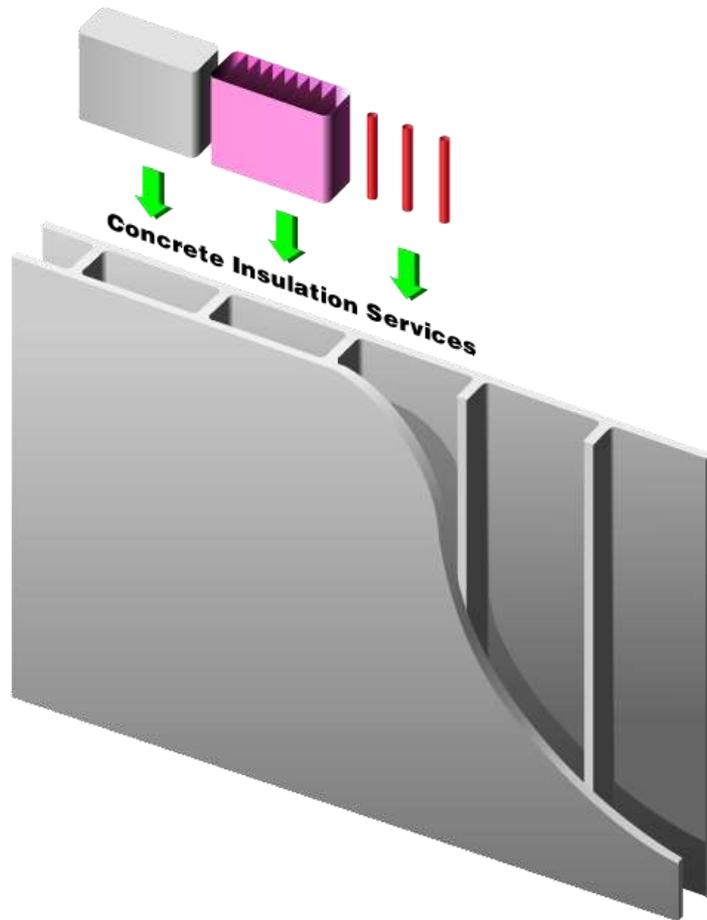
## Durability



- **Coca Castle :**  
Structure of  
Plaster -  
Segovia, Spain  
Castle of Coca  
was built in the  
15th century  
It was  
considered as  
one of the best  
castles in Spain.  
The castle is a  
turreted  
structure of  
plaster and red  
brick,

- The current System is based on 124 mm thick wall panels, which are factory moulded from fibreglass reinforced Gypsum, creating two 13 mm thick sheets, spaced apart by web members at 250 mm centres.
- Panels are manufactured 12 x 3 meters





- The Cavities can be used to accommodate building services such as plumbing and electrical conduits, filled with insulation for increased thermal performance or filled with concrete for increased load bearing.
- The panel, when filled with concrete, can support up to 9 story.

## Manufacturing



Manufacturing plants in AUSTRALIA, INDIA, CHINA, SOUTH AFRICA and proposed in SAUDI ARABIA.

# Complete view of the wall and Calcinations Plant for Rashtriya Chemicals and Fertilizers in Mumbai, India



250 tonne plaster silo

Air filter and Calciner

Manufacturing

wall Drying Rooms

Phospho gypsum ponds

Plaster manufacture & Storage

Wall cutting facility

17,000 m<sup>2</sup> wall storage/drying

## Manufacturing

- This panel has the following constituent materials:
  - Plaster of Paris
  - Fibreglass rovings
  - Waterproofing agent
  - Some special chemicals
  - Consistency reducers
  - Water
  - Setting additives



## Manufacturing



## Manufacturing



Transporting to drying racks or drying room



Force drying in 1- 2 hours



Air drying

## Manufacturing



Cut in the factory using a computer controlled SAW to an accuracy of 5 mm.



## Manufacturing



After cutting, loaded onto collapsible frames, called stillages, ready for transport.



Up to 500 m<sup>2</sup> of Hamann® system can be transported on one truck.

## Container Transport



Up to 500 m<sup>2</sup> of Panel can be transported in one open top container

There is a great need for alternative building materials and fast construction methods for mass housing.

Conventional building materials are :

- Energy intensive
- In great demand in some countries materials like river sand & water are becoming scarce
- Are spiraling in cost
- High in CO<sup>2</sup> emissions with severe impact on the environment
- Not efficient and often require long Construction times

## House Construction South Africa



- 60 m<sup>2</sup> three bedroom house.
- Erection time for walls and roof only 1 day.

## House Construction South Africa



60 m<sup>2</sup> - three bedroom  
affordable house fully  
completed in 5 days.



- Small low cost houses can be constructed without the need of any other materials:
  - No concrete
  - No timber
  - No steel
  - No Lintels
  - No beams
  - Minimum footings

## Emerging Economies













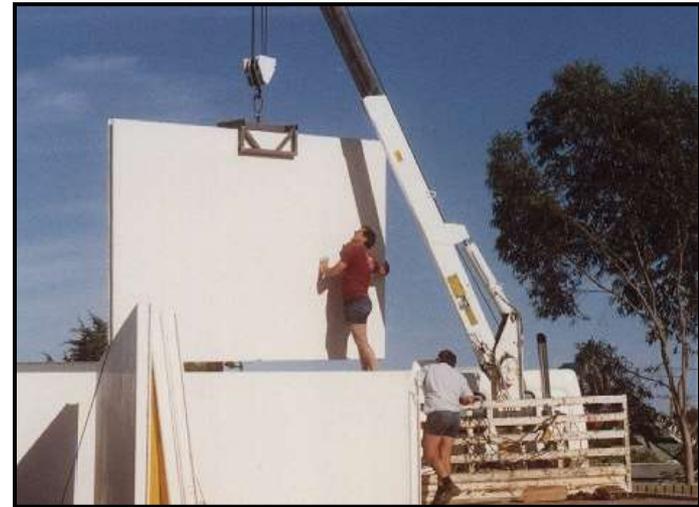








## Installation



By crane up to 12 meter panels

## Installation



Electrical wiring and plumbing, are placed in the wall cavity, avoiding the need for external fixing or time spent to channel or groove out these services as in a conventional wall.

## Installation

- Load bearing system and can be used for multi storey construction.
- Filled with concrete after the services are installed.
- Even when filled with concrete, lighter than conventional brick – or block work by more than 20%. This leads to reduced foundation costs.

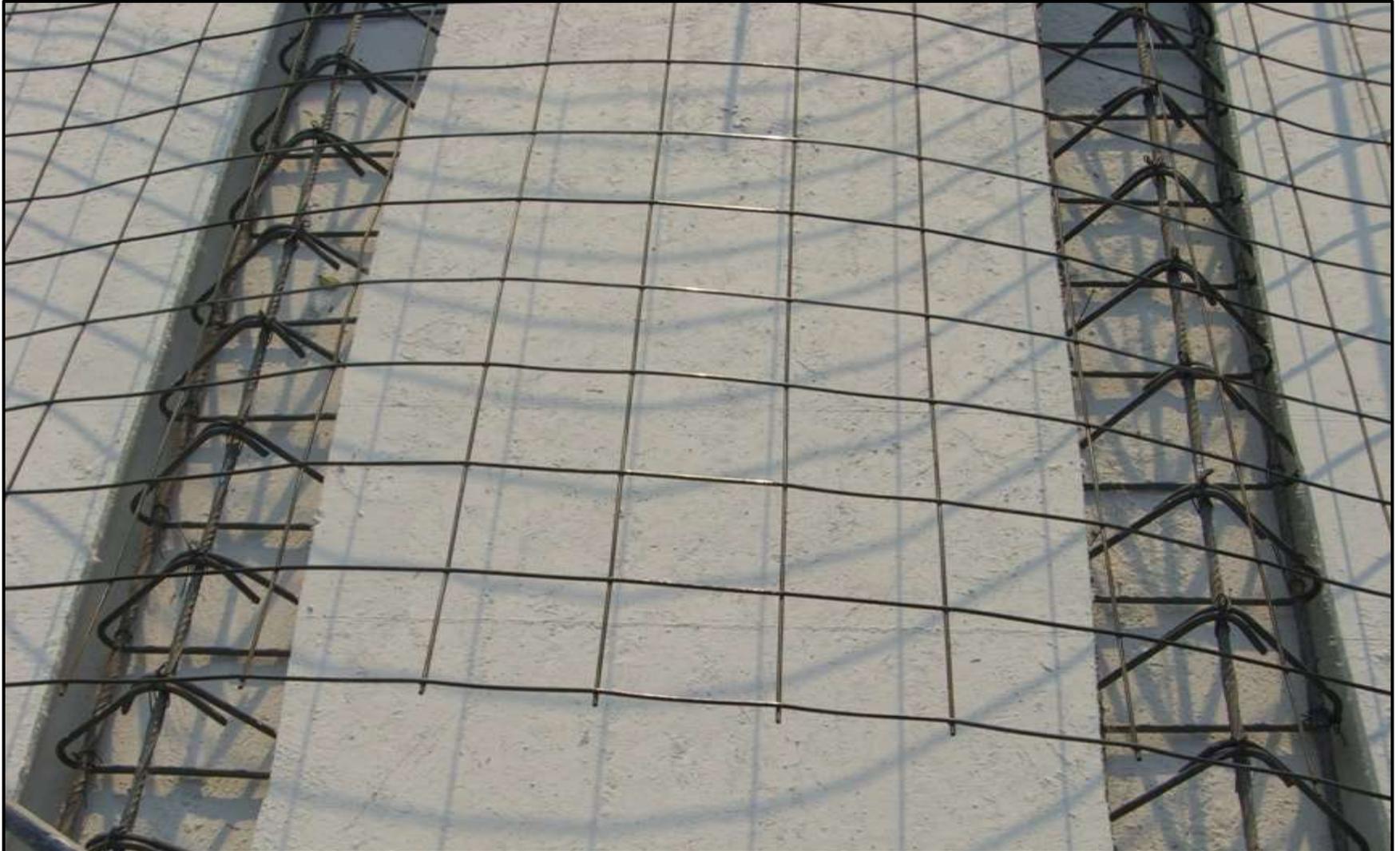


Filling the walls with concrete off the form work

## Floor Formwork



## Floor Formwork



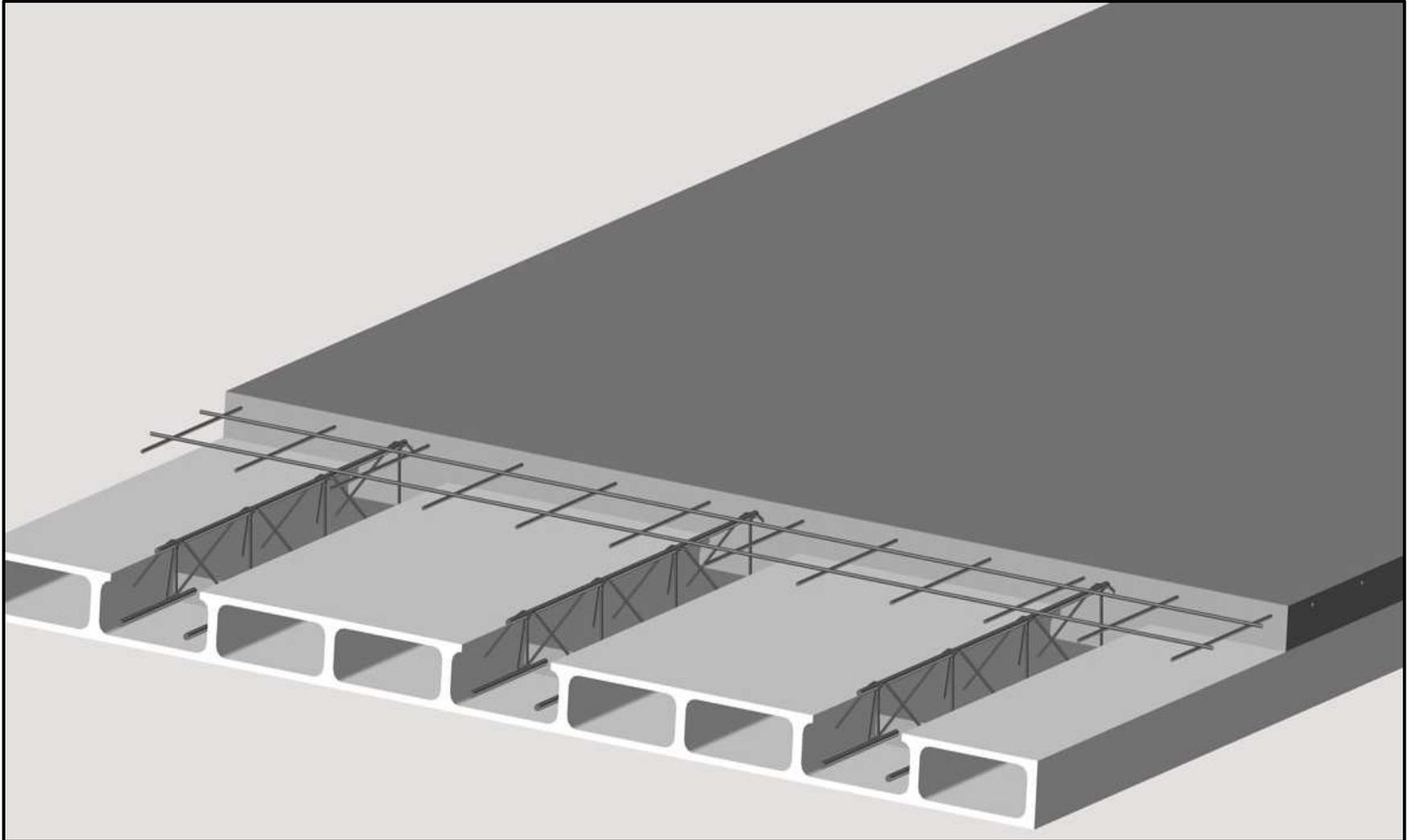
## Floor Formwork



Concrete beams are poured, ready for pouring 50mm concrete slab.



## Floor Formwork



## Testing Earthquake



Destructive Earthquake Testing

## Testing Earthquake



Destructive Earthquake Testing

## Testing

- Testing by the Structural Engineering Research Centre (SERC)/CSIR, Chennai.
- **6 structures underwent earthquake testing.**
- **They achieved a rating for the equivalent of a magnitude 7 earthquake on the Richter scale.**
- Also tested by Indian Institute of Technology (IIT) Madras.

## Sustainable Development

Urgent need for alternative materials :

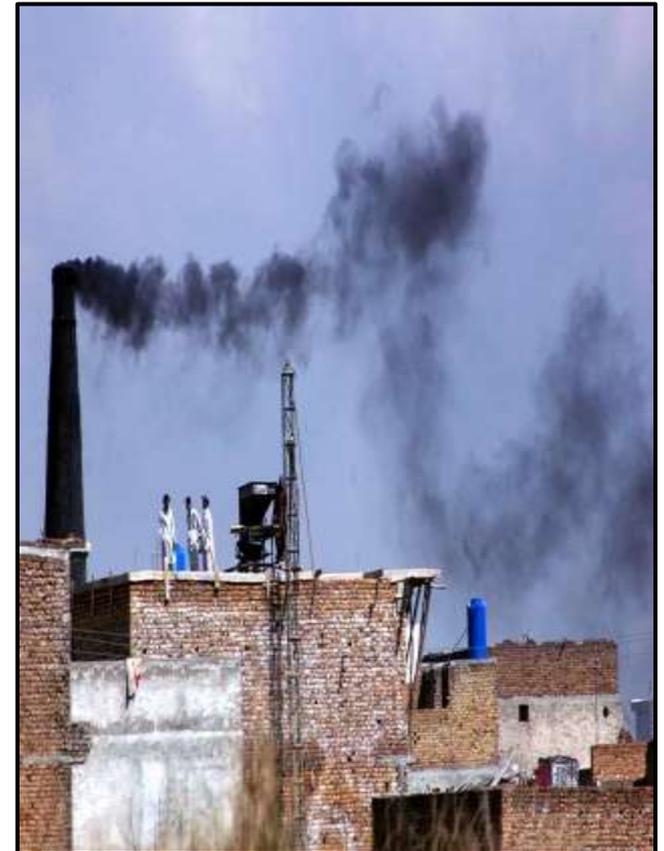
- That are energy efficient
- Have little of no CO<sub>2</sub> emissions
- Are strong and durable
- Can be constructed quickly
- Are resistant to natural disasters like earthquakes, cyclones, fire and flood
- That can be produced at a cost to meet needs of masses
- Have the ability to be recycled.

## Environment Considerations

In India, clay brick production accounts for 27% of total national energy consumption.

1 million clay bricks

- Destroys 0.80 ha of agricultural land
- Uses 5.60 Mwh of energy
- Emits 310 tonnes of CO<sub>2</sub>
- Depletes scarce water resources
- Depletes Sands and minerals
- Pollutes the atmosphere



## Environment Considerations

It is no wonder China has banned the production of clay bricks.



## Comparison Cost-India

Materials used	RBC Building Method	Conventional Building	Saving in %
Cement	16 tonnes	32.55 tonnes	50.8
Steel	1800 kg	2779 kg	35.2
River sand	20 m <sup>3</sup>	83.37 m <sup>3</sup>	76
Granite metal	38 m <sup>3</sup>	52.46 m <sup>3</sup>	27.56
Bricks	-	57200	
Hamann® System	500m <sup>2</sup>	-	
Water	50000 L	200000 L	75
Built Area	143m <sup>2</sup>	154.45m <sup>2</sup>	8
Labour	389 man days	1200 man days	67.59
Construction Time	21 days	120 days	82
Total Weight of superstructure	170 tonnes	490 tonnes	65
Embodied energy in kWh	82921	215400	61.5

## Product Features

- Low energy cost for production.
- Produced from cost effective and abundant materials.
- Cyclone resistant : using a simple tie down system, the roof is secured through the cavity of the wall to the foundation.



## Product Features



Lightweight at only 42kg per m<sup>2</sup>

## Product Features

- A clean and dry system; the dry construction process eliminates the need for bricklaying and most plastering. Site cleanliness is assured.
- It has a higher thermal insulation.
- Fire proof, it has been tested for fire and succeeded in achieving a 4 hour fire rating in a load bearing situation (Concrete filled).

## Product Features



Fencing

## In Summary

- The most technologically advanced building product of the 21<sup>st</sup> Century.
- Offers the best solution for affordable mass housing in developing countries as well as for up-market residential housing and multi-storey construction.
- The best building product available in the world today.

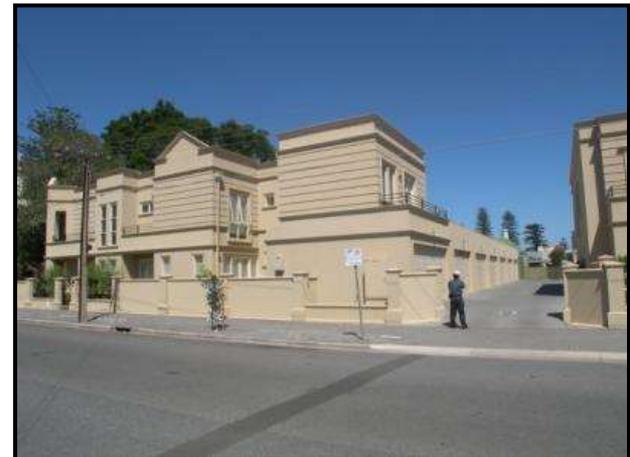
## Projects Gallery



Marina development 2002



## Projects Gallery



Apartment complex 2003

## Projects Gallery



Luxury apartment 2004



## Projects Gallery



Lakeside apartments 2005

## Projects Gallery



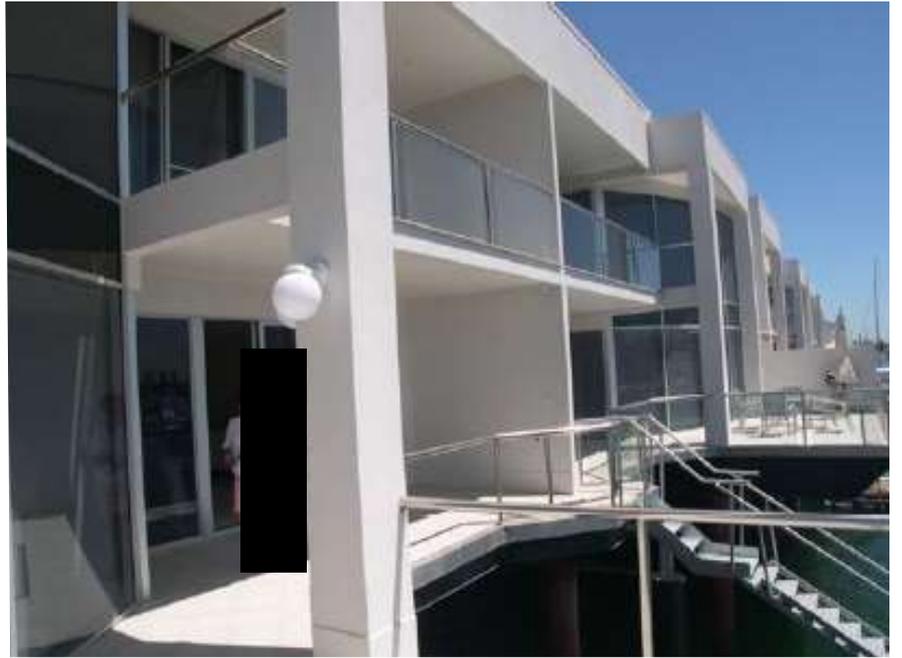
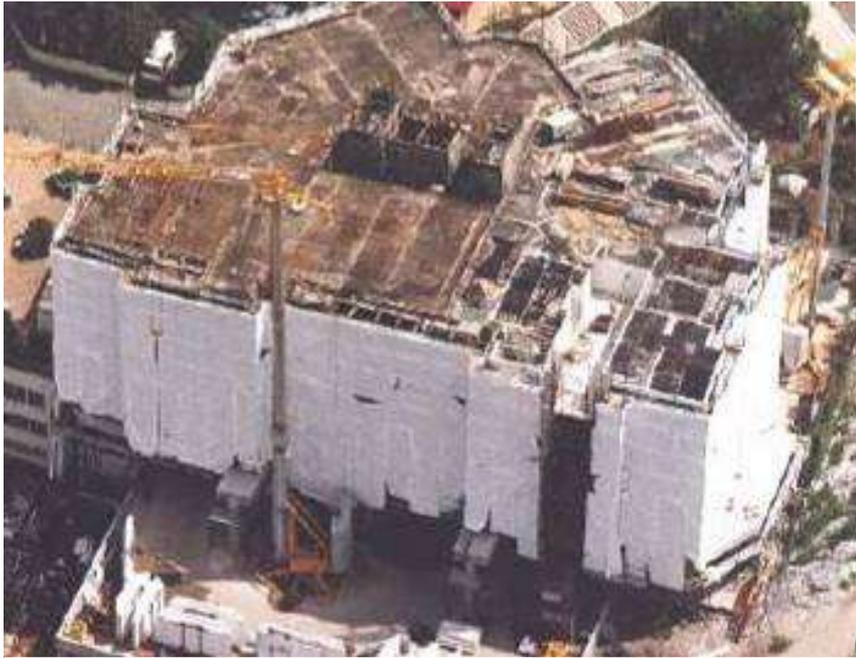
- Six storey earthquake resistant building under construction Tianjin.



- Completed apartment building









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*Thank you*