



# Technical equipment

## Structure

### Foundations and infrastructure

Foundations with oversite concrete.  
Raft covered by a slab on membrane.  
Peripheral walls in moulded panels (retaining walls).  
Vertical structure using reinforced concrete panels and columns.

### Horizontal structure:

- Beams in reinforced/pre-stressed concrete.
- Floors in full reinforced slabs or pre-stressed hollow filler blocks.

### Characteristics of concrete:

The use of high-performance concrete (HPC) for major high-strain structural elements (vertical structures under towers, structural transfer beams) has made it possible to minimise the impact of load-bearing elements and to optimise the free height under transfer beams.

### Superstructure

- Panels in reinforced concrete for the central core.
- Column-beam structure surrounding the cores.
- Solid reinforced floor slabs or pre-stressed hollow filler blocks.
- Staircases in reinforced concrete.

### Dead and live floor loads

- Offices in wings: 400 kg/m<sup>2</sup> in open areas (300 kg/m<sup>2</sup> after partitioning).
- Central area offices: light archives 650kg/m<sup>2</sup> in open area (550 kg/m<sup>2</sup> after partitioning).
- Circulation staircases – lift lobbies: 400kg/m<sup>2</sup>.
- Plant rooms: 1,000 kg/m<sup>2</sup> (+250 kg/m<sup>2</sup> of floating screed depending on room type).
- Event space: 500 kg/m<sup>2</sup> of mobile load + 500 kg/m<sup>2</sup> of static load.

## Façades

### Principle

- Innovative façade comprising triple glazing in the vision part and insulating shadow boxes for the spandrels and opaque piers.

- The extra 'vision' section in triple glazing comprises single glazing in clear float on the outside and internal double glazing. A layer of filtered air circulates continually in the void between the two. The air enters at the foot of the façade panels and escapes to the exterior at the top.
- The dimensions of the vision part are maximal in the office spaces (height: 2.20 metres). The 'spandrels and piers' part in shadow box consists of a single glazed outer layer in extra clear float and an internal insulating panel. The external face of this panel is covered with a reflective metal panel positioned so as to enhance the coloured sides of the vertical elements.
- The whole façade is alternately modulated at 180 cm and 90 cm.
- Option of fitting an 'internal screen' type blind against the façades in a masking rail provided for the purpose.

### Performance in normal areas

- Solar factor:  $\leq 32$ .
- Light transmission:  $\geq 50$ .
- K value:  $\cong 1.1$ .
- Sound insulation: 36 (-1,-4) db in situ as per ISO 104.

### Cleaning and maintenance

- Cleaning cradles for the upper floors, cherry pickers for base façades.

## Atrium and hanging gardens

### Atrium

#### Construction

- The external façade of the atrium is made of clear double glazing and a frame similar to that used for the offices, to provide a homogenous whole.
- The internal partition which separates the atrium from the ground floor spaces is made of clear double glazing.
- The floor is finished in natural stone paving.

#### Performance

- Solar factor:  $\leq 32$ .
- Light transmission:  $\geq 50$ .

### Air Conditioning

- The atrium is heated and cooled by an independent air conditioning unit, located in an area at the top of the atrium.

### Landscaping

- Decorative planting in ground tubs and wall plants.

### Hanging gardens

#### Construction

- The external façade of the hanging gardens, of single-storey height, is made of extra-clear glazing and a framework similar to that of the offices, to provide a homogenous whole.
- The floor is made of paving on blocks.
- The ceiling is covered by a metallic false ceiling.

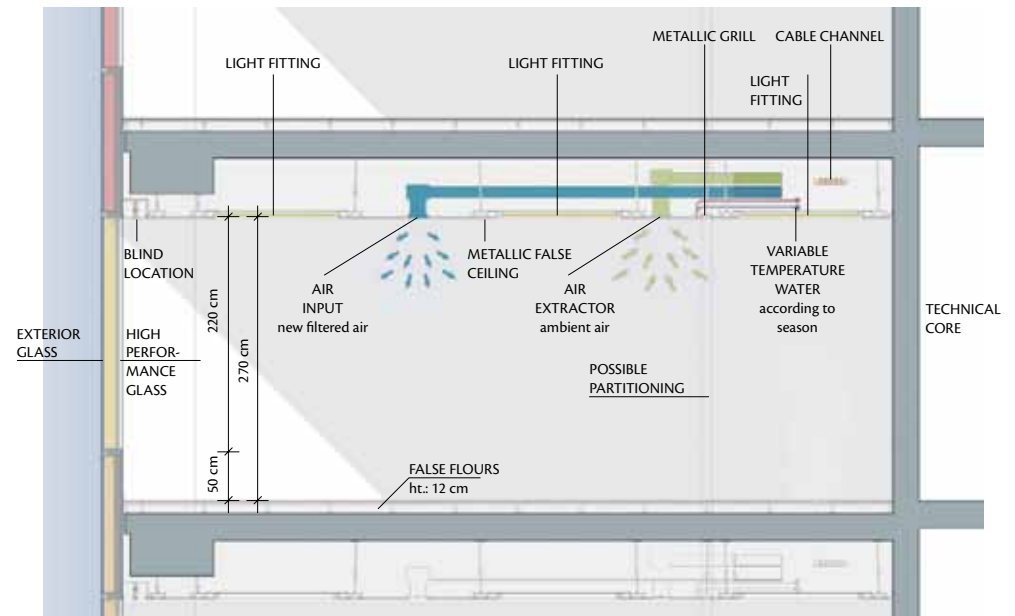
### Landscaping

- Decorative planting in ground or hanging planters.

## Air Conditioning/Heating/Ventilation

### Production

- Chilled water supply:  
This is provided by a central unit situated on the 21st floor which comprises:
  - Three 900 kWf cooler units for a total of 2.7 MWf. Each unit covers 40% of the total cooling requirements of the building.
  - Three 1,080 kWf cooling towers for a total of 3.24 MWf located on the 22nd floor.
- Hot water supply (heating):  
This is provided by three 930 kWc condenser boilers for a total of 2.79 MWc. Each boiler covers 40% of the total hot water requirements of the building.
- Air conditioning systems:  
The fresh air supply systems are conditioned independently on the basis of the types of activity and their volumes (offices, archives, kitchens, plant rooms, etc.)



## Air conditioning

### Fresh air supply

- General: the fresh air input is 50 m<sup>3</sup>/h per person on the basis of an occupancy level of one person per 12.5 v.
- Supplementary fresh air supply:
  - 30 m<sup>3</sup>/h per person for any meeting rooms, on the basis of one person per 2.5 m<sup>2</sup>, calculated on a surface equal to 10% of the gross surface area of the level in question.
  - Space reserved on level -1 for the installation of supplementary air conditioning units for the installation of a kitchen and a restaurant on the 1st floor and conference rooms on the ground floor.
- Additional extraction per floor:
  - 200 m<sup>3</sup>/h for kitchenette(s).
  - 100 m<sup>3</sup>/h for a data room.
- Air quality benefiting from anti-bacterial treatment by:
  - Humidification of air using very high-temperature steam.
  - Anti-bacterial treatment by application of biocide in the cooling towers.
  - 85% air filtering.

## Comfort

- All the offices are fitted with radiant ceilings (cooling or heating).
- The positioning of the radiant units allows the offices to be partitioned in line with the façade framework, made up of alternating 1.80 metres and 0.90 metres modulation.
- The radiant ceiling regulators are of the addressable DDC type which can be controlled by the CTM or by ambient probes. Individual regulation boxes can be installed in the event of partitioning.
- Maintained internal temperature of 21°C ±1°C with -8°C outside in winter and of 25°C ±1°C at 30°C outside in summer, for traditional patterns of occupation for all the offices.
- The degree of relative humidity is kept at 45% ±5% in winter by vapour humidification and at 50% ±5% in summer.
- The basic hot and cold supply includes a reserve power supply for the optional installation of a restaurant and kitchen on the 1st floor. Above and beyond this reserve, the building has surplus cold and hot supplies of around 20% in primary production.

## Electricity

### Production

- Mains supply.
- 11 kV electrical supply provided by Sibelga.
- HT substation with 3 oil-filled 1,000 kVA transformers each powering a General Low Voltage Panel (GLVP).
- Offices are provided with low voltage supplies from the GLVP.
- Meters can be installed on the panels for the rented parts (2 per rented floor).
- Emergency unit for legal requirements (smoke extraction, lifts, etc.).

### Distribution

#### Power available by floor

- From floors 2 to 17:
  - 63A for the West wing.
  - 50A for the East wing.
  - Power to the common parts on each floor is distributed from the common panel.
- From floors 18 to 20:
  - 80A.
- The 1st floor:
  - 100A for the West wing.
  - 50A for the East wing.
  - Power to the common parts on the level is distributed from the common panel.
- Vertical power supplies using prefabricated trunking or by cables.

### Type of current and metering

- Low voltage: 3 x 400V + N + T.
- Metering of usage for each rental panel is possible.

### Horizontal distribution of motive power

- Distribution on each floor in false floor by the occupier.
- Sockets for maintenance and cleaning in the common parts and corridors.
- Kitchenette sockets in each rental area.
- Electrical pre-equipment in data room.
- Sockets for boiler in the sanitary areas.

### Office area lighting

- TL 5 low luminance lighting with electronic ballast in the office zones.
- TL 5 lighting with electronic ballast in communications corridors.
- ± 450 lux lighting in open-plan arrangement and ± 400 if partitioned.
- General control by CTM and by derogation outside office hours.
- Option of local control by double lighting switch via the distribution boxes located in the false ceilings.
- Independent switching for the first rank of light fittings fitted against the façade.

## Car parks and staircases

- TLD lighting with electronic ballast controlled by CTM and by derogation outside office hours.

## Lift lobbies

- Lighting by compact fluorescent bulbs with electronic ballast controlled by CTM and by movement sensors outside of office hours.

## Sanitary areas

- Lighting by compact fluorescent bulbs with electronic ballast controlled by movement sensors.

## Security lighting

In accordance with the royal decree and norms.

## Telephony/Information technology

### Connections

- An agent's room located on floor -1, fitted out for connection to telephony providers.
- Principal trunking and telephone connections for common requirements such as lifts, high-voltage telemetering devices, calls to fire service, calls to building CCTV system.

### Vertical distribution

- Ladder racks in shaft enabling installation of data/telephone cables.
- Distribution by floor under the false floor by occupier.
- Data room on each floor.

## Safety/Security

### Technical management of the building

- Control and monitoring system for the building's technical installations.
- Security room close to the entrance hall and the main staircases.
- This room is pre-equipped for the installation of a security system that can operate 24 hours a day.

### Trunked provision

To the main entrance for access control, badge readers and video entryphones.

### Fire safety

- The fire detection system principally comprises the optical fire detectors, manual controls, sonic alarms and the general mechanism involving fire safety.
- The office zones are fitted with detectors distributed on the basis of an open plan layout, with empty mountings provided in case of partitioning.
- The car park areas and the basement archive zones, the corridors, staircases, lobbies, shafts and the plant rooms are also fitted with fire detectors.

## Goods and passenger lift

### Distribution

- The tower is equipped with a low set comprising 4 x 1,600 kg lifts and a high set comprising 4 x 1,250 kg lifts, each set working in quadruplex. The low set serves floors 0 to 11 (transfer floor). The high set serves floor 0, the 1st floor and floors from 11 (transfer floor) to 20.
- A 1,950 kg goods lift serves every level (levels -3 to 21).
- A set of two 630 kg lifts operating in duplex serves the three basement floors and the ground floor.

### Performance

- Speed:
  - Low set: 2.5 m/s.
  - High set: 4 m/s.
  - Goods lift: 2 m/s.
  - Car park lifts: 1 m/s.
- Maximum waiting time of 25 to 30 seconds.
- Minimum transport capacity of 17% in 5 minutes.
- Destination display system on landings for the two low and high sets.
- Optionally, one lift (low set + high set) can be fitted with a priority call system reserved for disabled people and a slow-close door system.

## Office layout

- Constant free height of 2.70 metres from floors 2 to 20.

### False floor

- 60 x 60 cm panel of 3 cm maximum thickness mounted on jacks.
- Carpet tiles: 50 x 50 cm.
- Free height of floor void: 9 cm.

## Energy saving

High level of insulation in the building envelope (K global < K45).

Free-cooling: in summer and mid-season, as soon as the external temperature is 6°C less than the internal temperature of the building, the pulsion sets operate at night on fresh air alone to cool the building mass.

Free-chilling: in winter and mid-season, the cooling units are in stand-by mode and the cooling towers alone provide chilled water supply via a 385 kWf exchanger.

The office air conditioning units are fitted with a hygroscopic energy recovery wheel (sensitive and latent).

Independent switching of the first rank of light fittings.

Rainwater recovery to supply ground floor toilet cisterns, for the cleaning of car parks and for tubs on façades.