## 1. Introduction

Lot 3 of the CityDox project includes the construction of an Integrated Business Services (IBS) office building.
This note summarizes the technical equipment planned for the IBS floors.
From a technical point of view, each level is divided into two half-levels, except for the smaller level +6, which has only one zone. The floors are provided with basic equipment that can be supplemented and/or modified by the occupier. All such additions and modifications must be approved by the Owner in advance.
From a fire point of view, the floors shall also be divided in their false ceilings by screens in accordance with the fire legislation in force.
It is reminded that each occupant is required to install and maintain his internal installations in accordance with the regulations and standards in force. It is also the occupier's responsibility to take all necessary steps to obtain his operating permits and to open his meters.
This building must remain compatible with the rest of the site both in terms of environmental aspects (discharges, noise, vibrations, etc.) and fire safety.

In order to offer maximum flexibility to the future occupant, the basic ceiling fittings for the floors have not been installed at present. The descriptions below show the fittings initially envisaged but which can be adapted with equipment compatible with the basic primary system.

## 2. Technical Facilities

### 2.1 Basic references

The installations are dimensioned considering the following elements:

#### 2.1.1 Winter and mid-season temperature

For an outside temperature of between -9°C and 30°C, the indoor temperature to be respected in the reception hall, EIS and meeting rooms is between 20°C and 25°C, with an average temperature of 22°C.

#### 2.1.2 Temperature in summer

When the outside temperature is 30°C or less, a maximum inside temperature of 25°C must be respected in the reception area, offices and meeting rooms.

#### 2.1.3 Reference documents

- The Royal Decree of 10 March 1981 making the General Regulations on Electrical Installations (RGIE) compulsory for domestic installations and certain electrical energy transmission and distribution lines
- The latest edition of the General Regulations for the Protection of Labor
- The Royal Decree of 25 January 2001 concerning temporary or mobile construction sites.

■ The regulation on the protection of public drinking water and the subscriber by the water distribution company.

■ The specifications of the Royal Belgian Gas Association (ARGB).

■ NBN and European standards in force

■ Standards, prescriptions and codes of practice, published by the Belgian Standards Institute and the Belgian Electrotechnical Committee

■ Ministerial decrees and/or circulars supplementing or amending the above-mentioned specifications and regulations

■ The requirements of the electrical energy distributor

■ Ministerial orders and/or circulars supplementing or amending the above-mentioned specifications and regulations

The installations shall be approved by approved bodies.

2.2 HVAC

2.2.1 Ventilation

Levels +1 to +6 are ventilated by a centralized ventilation unit with a wheel exchanger (efficiency greater than 80%) located in the ventilation room on the ground floor. The air intake and discharge are made in the roof via the hopper.

An airflow of 110 $m^3$/h is planned for two bays (2m70) with an average of a hundred people/floor and 45 $m^3$/h/person. In the base, a supply air outlet is placed every two bays alternating with the return air which is provided in the plenum via acoustic hoses.

The basic installation foresees that each half-shelf is ventilated in 3 zones (front face, rear face and central zone). Each of these zones is equipped with a CAV controller for supply and exhaust. The supply and extract airflows of the same zone are balanced. The supply air ducts in the same zone are sized with a constant cross section to allow the occupant to modify the terminal flow distribution.

The supply air in the floors is regulated at at least 18°C throughout the year.

2.2.2 Heating/cooling

Heating is centralized. Heat production is provided by a 6-pipe reversible air/water heat pump located on the roof.

Cooling is provided by this reversible heat pump in cascade with a cooling unit also located on the roof.

Cooling and heating are distributed in separate circuits via a hopper. The emitters and the terminal circuit in the ceiling are not currently installed. In the base, the emission of heat and cold is envisaged by reversible radiant ceilings. These are perforated metal elements.

The temperature regimes are:

■ 50/45°C and 7/12°C for the ventilation unit coils, zone coils and fan coil units in the data rooms,

■ 35/30°C and 15/18°C for radiant ceilings.

With the prior agreement of the Owner and provided that the request is made in good time, radiant ceilings may be replaced by emitters with compatible temperature regimes (e.g., dynamic beams).

Chilled water network connections at 7-12°C are placed in the Data rooms of the EIS in order to be able to place any refrigerated cassettes/ventilators.

The power available to supply the emitters is:

■ Level +1 to +5: - Heating: 61,720 W- Cooling: 82,140 W

■ Level +6: - Heating: 53,270 W - Cooling: 65,290 W

■ Data rooms: - +1 to +5: 4,700 W- +6: 2,350 W

Heat meters are provided per half floor and are in the common hall.

2.3 Electricity

The building is supplied by a private medium voltage cabin located on the ground floor. This cabin complies with the requirements of the distribution company managing the electricity network.

2.3.1 Primary low voltage distribution network

A low-voltage main switchboard protects and distributes the power supply to the various floor switchboards via supply columns (ladders and cable floors). The photovoltaic panels are connected to this LVB.

All feeders are equipped with automatic circuit breakers (with adjustable thermal and magnetic relays).

It should be noted that the photovoltaic panels are owned by a third-party investor who guarantees the occupier a purchase price that is always below the market price.

2.3.2 Secondary low voltage distribution network

The installation boxes for the switchgear, conduits and lighting fixtures are mounted in unfinished rooms such as technical rooms, car parks, archives and stairwells. They will be recessed in the finished rooms.

Each floor has its own electrical panel for lighting and power.

These panels are sized for:

■ Lighting: 2.5 W/m² with 100% simultaneity

■ Flat driving force: 20 W/m² with 100% simultaneity

■ Data room: 2.5 kW with 90% simultaneity

■ Kitchenette: 5 kW with 70% simultaneity

A 10% reserve is provided in each panel (space and busbar).

The sanitary facilities and corridors are equipped at the base. The Occupant is responsible for the equipment on the floors.

2.3.3 Lighting network

The lighting is switched on by switches.

A "dimming" system is planned as a basic feature but has not yet been installed to allow the occupant to adjust his needs.

This system consists of a light sensor that reduces the intensity of the window-side luminaires in the EIS areas according to the natural light supply. Differential dimming will be applied between the corridor and window side luminaires. The future occupant will be able to easily add detectors in individual office configuration. A quick T-connector is provided for all window modules, one end of which will be used for future sensor connection.

Average illuminance levels are measured at 0.80m from the floor and comply with NBN EN 12464-1:

- EIS and similar premises: 500 Lux for individual offices
- EIS and similar premises: 500 Lux for open plan offices 300 Lux
- hallway, reception: 300 Lux
- Clearances:
- Sanitary facilities: 200 Lux
- archives and stocks: 200 Lux
- Technical rooms: 200 Lux
- car park: 100 Lux
- reception and delivery: 300 Lux.

The basic luminaires are wired for landscape operation. All modifications to the partitioning (modification of wiring, increase in the number of luminaires, addition of switches, etc.) are the responsibility of the Occupant.

2.3.4 Types of luminaires

In the EIS areas the lighting fixtures envisaged are:

- fitted with LED strips,
- recessed in the false ceiling,
- equipped with a low luminance optical unit for screen work,
- with a minimum efficiency of 80%.

The LED strips have a color temperature of 4000 K.

In the corridor areas, the luminaires envisaged are circular LED downlights.

All luminaires will be electronically ballasted.

The luminaires for outdoor use have a minimum protection rating of IP54.

Spotlights are equipped with compact fluorescent lamps.

Low-voltage halogen lamps are generally prohibited but are permitted locally if architecturally justified.

2.3.5 Emergency lighting

Emergency lighting independent of the normal network in accordance with the Royal Decree of 19/12/97 and the RGPT 63 is provided by autonomous units.

2.3.6 Installation method of the secondary distribution in offices or similar

The secondary electrical distribution of office floors is possible in false floors to, for example, floor boxes. Floor boxes and their wiring from the floor switchboard is not provided in the base.

2.3.7 Fire safety

The building is equipped with a fire alarm system with push button.

Any modification to this installation due to the partitioning is at the Occupant's expense.

2.3.8 Access control

The video intercom system allows control of the main entrance to the building and the entrance to the car parks. The central video intercom station is located on the ground floor of the building. These entrances are also equipped with badge readers. Pre-equipment is provided for the lift locks and emergency staircases, allowing the occupant to privatize each floor.

Any additional access control installation is at the Occupant's expense.

2.4 Sanitary facilities

2.4.1 Cold water distribution network

Each EIS is supplied with mains water and rainwater for the supply of toilets and urinals. Meters with remote reading are placed in the false ceilings of the toilets.

2.4.2 Hot water distribution network

Only the showers on the ground floor are supplied by an instantaneous water heater (about 20kW). The installation of a boiler for the kitchenettes or any other appliance is the responsibility of the Occupant.

2.4.3 Fire-fighting water distribution network

The start of the mixed network (cold water and fire) is located in the meter room; in each station there is a rotating wall-mounted hose reel with 30 meters of hose and a hydrant. The visible parts of the fire circuit, which is made entirely of galvanized steel pipes, are painted red or identified by red strips on the anti-condensation insulation.

2.4.4 Wastewater drainage

The drainage systems and ventilation are made of high-density polyethylene (HDPE). On each floor, the drains are directed to the sanitary ducts via the false ceiling of the lower floor. A sufficient number of manholes are provided.

2.4.5 Rainwater drainage

HDPE network in the service shaft.

2.4.6 Sanitary appliances

The number of sanitary appliances is shown on the plans.

WC: white porcelain wall-mounted bowl. Built-in cistern with double push button.

Urinal: white porcelain wall-mounted bowl. Infrared sensor for automatic flushing. Wall-mounted dividers between urinals. Washbasins: the washbasins are integrated in a sanitary shelf. Mirror fixed above the shelves without sharp edges.

Waste basin: white porcelain waste basin. Wall-mounted tap equipped with a removable jet breaker. Removable bucket rack.

Showers: 900*900 mm acrylic shower tube, built-in type. Swinging wall in transparent safety glass.