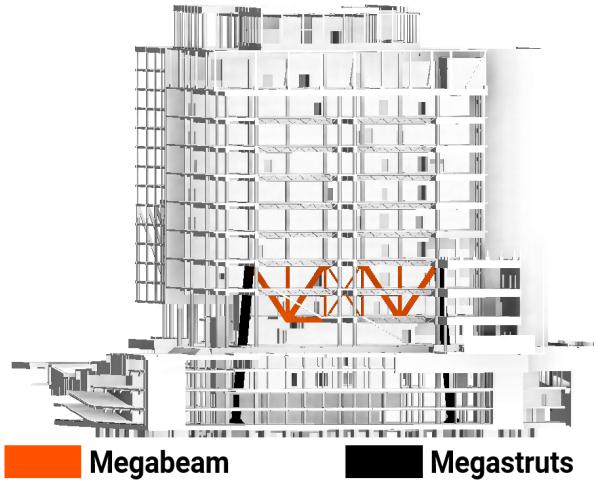
Realex - Office block rue de la Loi

Rue de la Loi, Brussels (BE)

Complete stability mission

Owner	Architect	Cost of the works	Studies	Execution
LEASELEX srl	Assar Architects	Not communicated	2011 - 2024	2024 - ...

ST CM



The structure is a building with an above-ground height of 65 m, located on rue de la Loi.

The 4 basement levels extend over the entire surface delimited by a moulded wall, part of which already exists. The lower level of the basements is +/- 7 m below the maximum water table.

On the superstructure side, the structure is divided into 2 zones :
- the «Offices» zone, comprising 15 storeys above the ground floor,
- the «Conference Centre» zone, comprising 10 storeys above ground floor.

Offices and basements :

The office area is partially cantilevered over 7 m on one side and 4.5 m on the other. The overhangs are managed by deflection structures and prestressed post-tensioning. Robustness (redundancy) was ensured by the number of prestressing cables and additional passive steel.

The majority of floors in common areas are made up of prefabricated prestressed elements (hourdis) laid on prefabricated reinforced concrete or prestressed beams to guarantee high installation efficiency. The compression screed, made of in-situ reinforced concrete, holds the entire floor together, creates a diaphragm to absorb horizontal forces and ensures good 'non-progressive collapse' behaviour.

However, some slabs are cast in place (duct exits, esplanade supports, slabs in the main cores, floors taking up the forces of cantilever deflections, etc.) formworked in place or with pre-slabs and sometimes with post-tensioning.

Conference Centre :

In order to create the large empty spaces required for the conference centre programme, the structure of this area is different from that of the offices. Among other things, it requires the creation of a «megastructure».

This part of the structure is exceptional both in terms of its dimensions and the magnitude of the forces it absorbs.

It is composed exclusively of a high-tech metal structure and is divided into 2 parts :
- The megastruts: elements that carry vertical loads down to the foundations. Made up of very thick metal plates.
- The megabeam: located between the mezzanine and +2 level, is made of steel over 2 levels (10m), whose chords are 1m high and 600 mm wide double-T PRS beams, spanning 35 m. It rests on the megastruts and supports the 10 levels of the conference centre. Connections are made by axes or by contact, avoiding excess material in the assemblies and limiting on-site welding.

. To stabilise the compressed diagonals, the restoring effect of the tensioned elements (diagonals and bottom chord) is used in a similar way to the pylon of a cable-stayed bridge to limit the buckling length.

The floors, made up of reinforced concrete slabs cast in situ (with formwork or pre-slabs) supported by metal beams (PRS) operating in a «mixed» configuration with relatively long spans (between 18 m and 14m) to long spans (28m for the ceiling beams of the large conference room on level -2), ensure also good 'non-progressive collapse' behaviour.