FLEXIBLE EXPANSION

Strategy

Main Action

Affect

Flexibility on different scales

Change can occur on different scales of the building. The flexible expansion will add a new flexible cantilever to the building, without interfering with its structure.

Construction

The flexible extension will be constructed out of steel for the structure and timber for the flexible infill. Steel cables hang the structure from the roof.

The layered facade

The flexible extension will have different layers, all could be independently added or removed. Complex fixed zones in front of the vertical columns and along the horizontal floors will give the building its architectural values, in where the change is possible.

Addition to the existing structure

The flexible extension will be a new flexible cantilever to the building, without interfering with its structure.

Add or remove floor from zone

Strategic

Convertible 1-15 years

Change building floors function

Change floor layout

Refit able 1-7 years

Maintain/upgrade building services

Flexible/adjustable hourly to monthly

Change unit use

Change unit performance

Change unit layout

Add or remove floor from zone
Facade and interior possibilities

Several different possibilities one could make with the flexible expansion and interior walls.

Flexible expansion detail existing - new 1:5

Flexible expansion detail exterior 1:5

This detail shows the connection with the existing on the right.

The horizontal bands will host multiple layers of the facade. It also shows that the thermal boundary can be extended all the way up to the railing.
The concept for the horizontal connection is to create a unified volume, which is then adjusted to the height of the surrounding towers. The square at the entrance to the building is lowered to form an entrance to the building, while also connecting the context. Over the mass, a route leads up to the roof terrace on the third level.

The interior of the horizontal connection features a spiralling route that circles around a condensed mass of commercial space, to which on different levels of the building, the context is connected. An exception is made to connect the Beurs metrostation with the Binnenwegplein, by using a diagonal line.

The section clearly shows the internal spiralling route that connects the different levels of the horizontal connection and also the lowered square to get to the level of the neighbouring metrostation Beurs.
On basement level, the building connects to the existing metro station of Beurs.

The ground floor connects the building to both Binnenwegplein in the north, as well as the Westblaakhof in the south. It also provides a route from the new Coolplein.

The first floor, the spiralling route goes up the building, as well as the exterior route.

The second floor is the route under the mushroom construction and the interior route lines up with the commercial space inside.

Both routes end at the third floor: the exterior route on the terrace and the interior route in the middle of the horeca square.
POCKETS

Isovist study of the building in its context
The resulting viewing lines from the building

ERASMUS BRIDGE
EUROMAST
BINNENWEG
MAASTOWER
NOORDERILAND
WILLEMSBRIDGE
TIMMERHUIS
WEENA
MARKTHAL
THE ROTTERDAM
KOP VAN ZUID

This study shows the different views one has from the building. This has been done on every single story in the building, resulting in an isovist map that the building has to offer.

POCKETS

If placed to connect different floors to each other
The pockets are placed on different levels in the building, according to what can be seen from this height. They are slightly rotated to focus on different parts of Rotterdam. In this way, facing a view towards a particular highlight of Rotterdam works both ways: there is a visual connection to the highlight, but when located at the highlight, one could also see the building’s watching eye.

Lungs of the building
The roof forest, along with the pockets, form the lungs of the building. Air is pre-cooled or pre-heated by the forest on the roof, and is subsequently distributed to the floors of the building through the air shafts. The building distributes the air, where it enters the next level, 1 floor above or below, further cleaning it before delivering it to the walls.

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Meeting place

The pockets connect different floors and therefore also different zones of the building. They provide meeting places between different people during the day for breaks, a break or even dinner.

Vertical green

Since the pockets act like the lungs of the building, green can be added to the roof forest and provide a pleasant place to hang around. It can also be used for vertical farming, where the same office spaces can grow their own lunch, or schools can teach about food.

Climate concept summer

In summer, air enters the building through the roof forest, where it gets pre-cooled by the forest itself before getting conditioned by the climate cascade. Air is distributed through the rest of the building by the vertical shafts and corridors. The basement is used to cool the first floor. The pockets and horizontal connection are used to extract hot air from the building, and during the night, it is used for night ventilation.

In winter, air enters the building through the roof forest, where it gets pre-heated by the greenhouse before getting conditioned by the climate cascade. Air is distributed through the rest of the building by the vertical shafts and corridors. The pockets and horizontal connection are used as a central way of ventilation and depending on the orientation, another location and time of day, the pockets are used to further warm the air. Heat is recovered from the extracted air and is used for the climate cascade.

Different characters

All the pockets have their own character. For instance, the pocket connecting the offices with leisure will feature a more industrial aesthetic with brick walls, such as a sports lounge area.

Climate concept winter

Different characters

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Pocket detail roof 1:5

Air enters the pocket through a small triangular opening, which slowly heats the air as it gains in volume. In summer, there is a tendency to let as much air in as possible.

Pocket detail floor 1:5

For the exhaust of the air, the pocket makes use of the central exhaust funnel. Air flows from the pocket.
The concept of the vertical city uses the surroundings of the building in Rotterdam as inspiration for the program. Different areas such as the Bijlmermeer district are translated into the new Coolse Poort building. The Bijlmermeer area has been developed into a residential, leisure, and commercial zone. The vertical city will have everything that one finds in a regular horizontal city.

With the pixel approach, the building can easily change the functions of its pixels, thereby providing flexibility and can adapt to future needs.

The concept of the vertical city uses the surroundings of the building in Rotterdam as inspiration for the program. Different zones such as the Bijlmermeer, witte de with and het park are translated into the new Coolse Poort building as commercial, leisure and leisure zones. The vertical city will have everything that one finds in a regular horizontal city.

Vertical city concept

Proposed program

Stronger market for housing

Stronger market for commercial and hotel program

Proposed program

Impression of the rooftop garden

Impression of the entrance

Impression of the rooftop garden

Impression of the rooftop garden

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On the 18th floor there is an elementary school, which uses the roof garden as playground.

In the top floors, dwellings are located in such a way that they have at least 2 hours of sun every day.

The building also features a gym, that stretches over multiple floors, connected by a pocket.

On the lower floors, there are offices in many forms. From closed units to open floors, where anyone could just plug in their computers and work.

From basement level, commercial space is located within the spiralling route, which ends on the third floor terrace.

At the third floor, there is an elevated terrace on both sides of the building, ensuring a spot in the sun during the entire day.

Around the leisure floors in the building, a green route featuring plants and trees goes up and under the cantilevered spaces.

At the top floors on the north-east part of the building, hotel rooms offer magnificent views over the Rotterdam skyline.

The roof hosts three different kinds of gardens. The first one is similar to a neighbourhood playground and is also used by the school. In the weekends the whole floor acts as a community centre. The second rooftop is dedicated to farming and is the shared garden of the dwellings. The last roof has a lounge area and offers the best views over Rotterdam.

The roof forest on top of the central core is a greenhouse forest as the main air intake for the building. In summer, the greenhouse can be opened to let air run through, which ensures the greenhouse effect even in winter.

North facade
East facade
South facade
West facade