

MICHA GERGARD

A tall, modern building with a glass facade and a red metal structure, likely the Ciba building in Zurich. The building is shown from a low angle, emphasizing its height. The sky is overcast and grey. The building has a complex, multi-layered facade with a grid of windows and a prominent red metal structure on the left side. The base of the building is visible, showing a dark, solid structure with some internal details visible through the glass.

MASTERARBEIT
THEMA C: RE-USE CIBA

FRÜHLING 2020

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ETH ZÜRICH

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MASTERARBEIT FS20

THEMA C
«RE-USE CIBA»

RE - USE

For almost a century the bau K-26 served as a warehouse. To carry a huge excess amount of weight the building was constructed in a massive mushroom pillar structure out of reinforced concrete. This construction allowed for large areas without horizontal reinforcement. For maximum efficiency all the access structures like elevators and stairs were placed along the facade. I wanted to work with these massive columns which to me are the essence of the existing building. By removal of the facade the structure which slumbered inside of this building is revealed to the outside. Two existing elevator shafts were kept as well, preserving the main characteristics of the building.

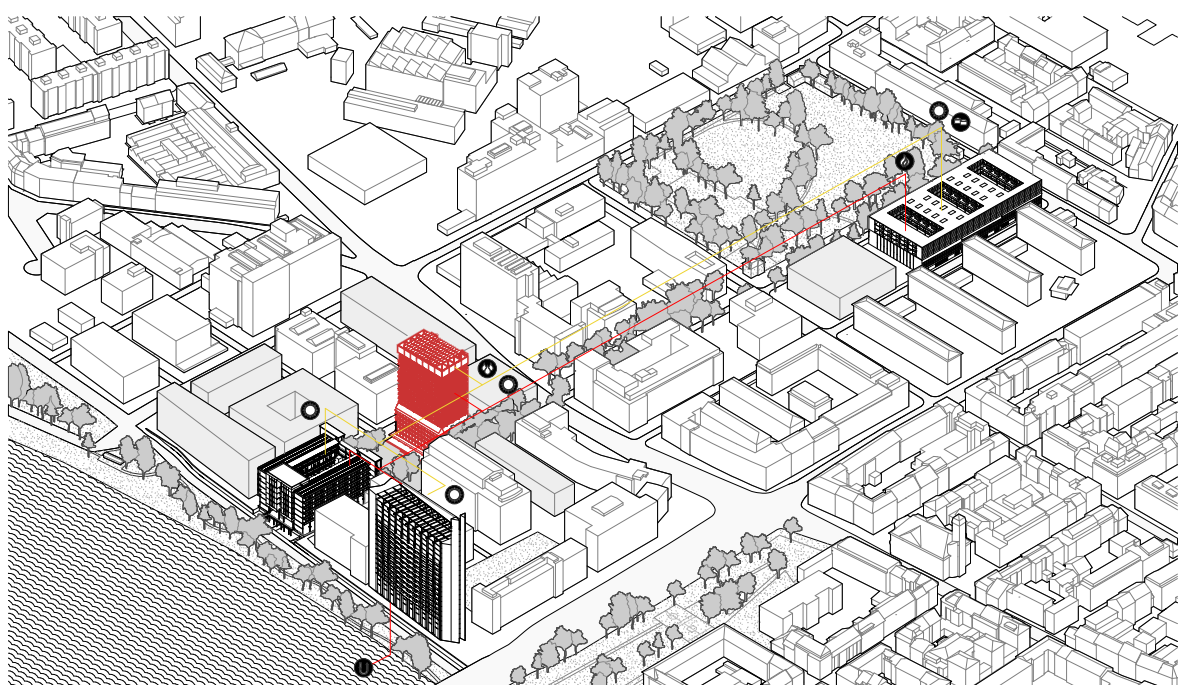
LIGHT AND HEAVY

The existing building presented a unique opportunity in its massiveness. It was built to carry and is thus immensely over dimensioned. To make full use of this potential multiple stories in a lightweight steel construction are added on top of the existing building. The goal is to achieve a strong contrast between the two parts of the building whilst using similar structural and visual elements. The facade and a portion of the floor is partially cantilevering and partially hung by cables which are redirected to the core by a large truss on the roof. A shifted canopy blends the existing and the smaller new parts of the building together. In this in between space large water tanks which serve as seasonal heat storage are fed by sun collectors on the roof.

LAYERING

The structure of the building corresponds with the program. the ground floor is public and incorporates cafés, retail, and daycare. The upper floors of the existing building serve as co-working spaces. The extension houses apartments. Three standard floors incorporate different apartment sizes. On some of the floors, public spaces and workshops serve the residents. The rooftop and the in between terrace house technical installations and sun collectors which warm up the tanks in the in between space. The rest of the roof is covered with small garden plots.

The lower part of the building is oriented towards a place while the upper part has free sight over the river. The elevator shafts on the building are oriented towards the new train station and the old industrial quarter and serve as backbone.



THE MACHINE

The extension of the building augments itself on top of the building like a virus. The theme of the exposed structure is accompanied by exposure of other technical aspects of the building. Fully glazed facades offer a view inside the building. The two elevator shafts reveal the means of transportation and the trusses on the roof show how the facade is carried. In the existing part the wiring is visible and in the new part the steel structure and a sprinkler system are exposed. Both terraces incorporate technical aspects of the building with leisure. In the apartments rotatable walls sliding doors and other functions make the spaces more customizable. The goal of these measures is to offer a stronger relationship to the building. Various interactions with the building should promote a closer co-living with the building itself and offer an ideological counterpart to the individual.

INSIDE-OUT

The circulation of the building is inverted. As the existing elevator shafts serve the extension, a new access is created in the core. A 45 degrees tilted stairway breaks the strict geometry of the columns. Two additional cores in the middle flank a public space and house additional elevators, restrooms, and other facilities. Most of the columns along the facade are already braced. With the removal of the existing facade parts of the floor are removed as well to bring more light into the center. The few intact columns along the facade are braced as well for aesthetic reasons. Two additional staircases to the sides give more options for vertical movement. The aim of the layout is to give as much freedom to the individual offices as possible whilst maintaining a clear structure.

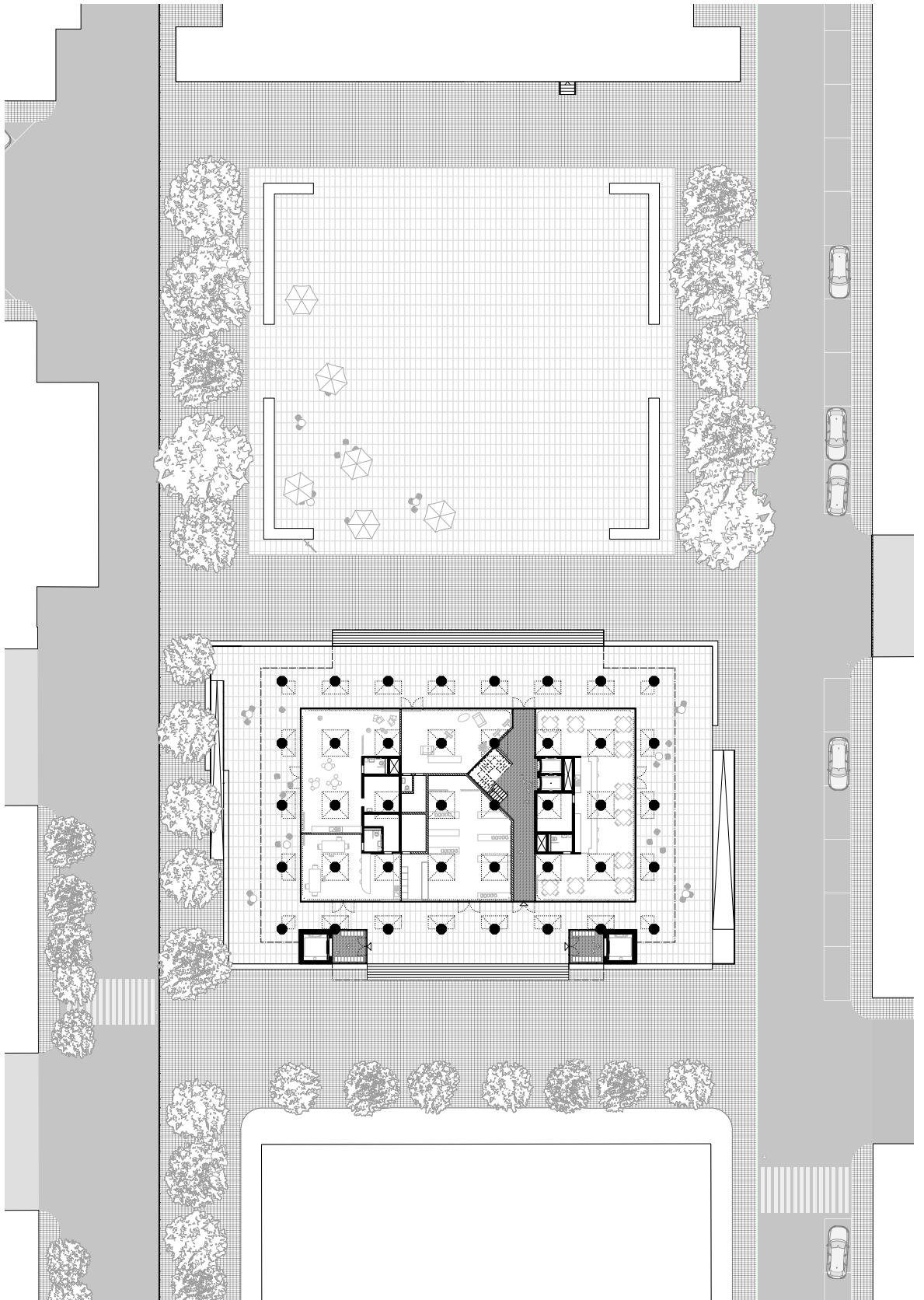
DIAGONAL GRID

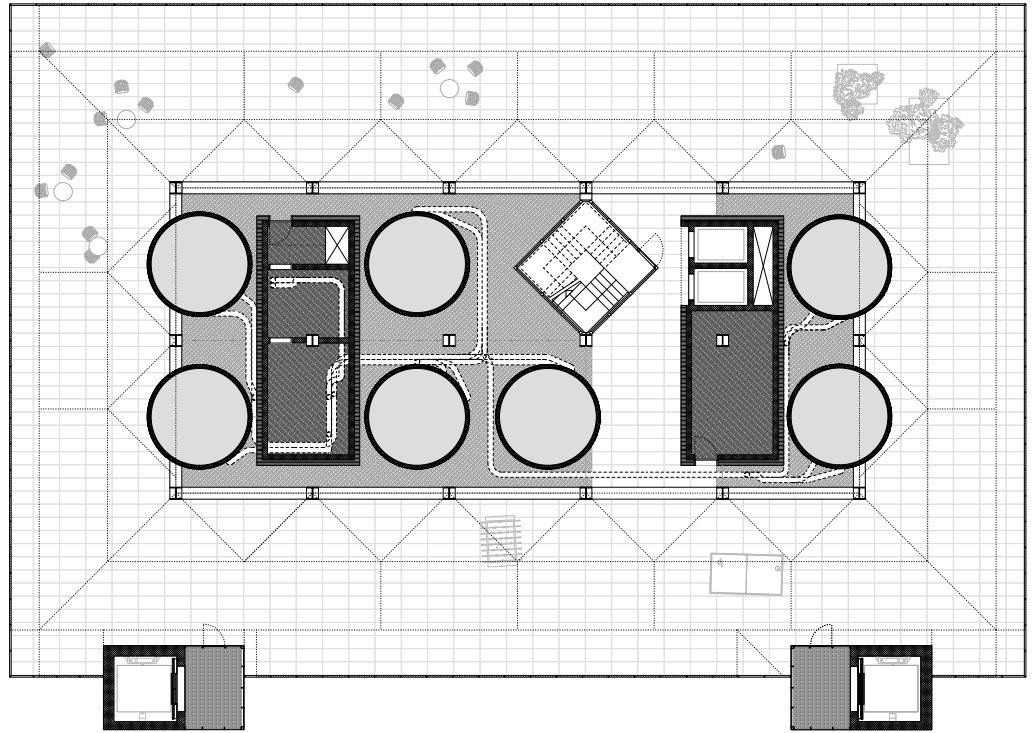
The diagonal grid was chosen for two main reasons. Just as in the existing building, the elongated elevator shafts grant access to the floors from outside of the main volume. Because of the depth of the volume a core scheme was still the best solution

for the building. Access to the flats still happens from a collective point in the middle where the stairwell is located. The best way to quickly access the middle and join the two elevators is by turning 45 degrees. The resulting structure resembles the vaults of the mushroom pillars more closely. This unusual frame makes new spatial configurations possible and was the incentive for the inclusion of new elements like swinging walls which make the structure experienceable. Another result of the twist are several different shaped chambers which are pieced together like a Tangram game.

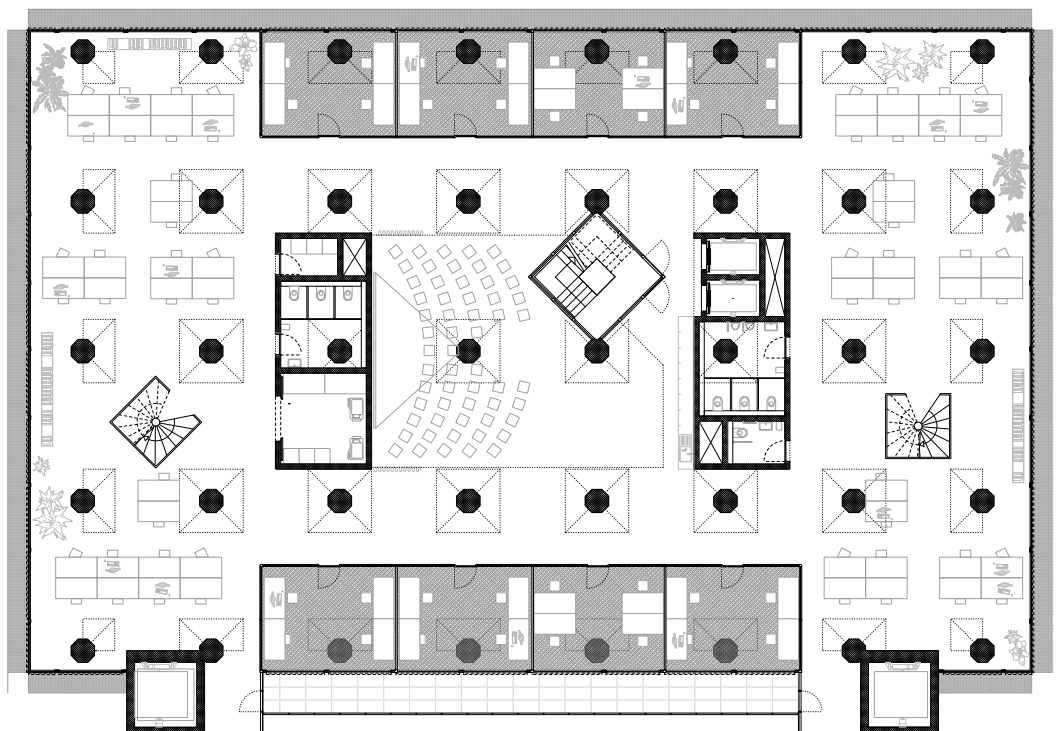
ENERGY AND CLIMATE SYSTEM

The load bearing capacity of the building is also used as an advantage by the energy and climate system. Solar thermal energy is stored in several heavy seasonal heat storage tanks in months of excess. A decentral ventilation system with heat regain balances the somewhat inefficient glass facades and lowers the heating demand to a 1/6 minimum of 35 000 kWh a year (Source: Ubakus heating demands calculator). Solar and internal gains can be used as an advantage in winter and filtered out in summer. The water tanks are dimensioned to store an equivalent amount of heat in potential energy of the water temperature and carry a total of 300 tons of water. Several elements like brise soleil, marcisoletts and curtains protect the inhabitants against sunshine. On top of the extension a smaller tank supplies the whole building with warm water. A total of 163 000 kWh in warm water are used during the year. Thanks to the frequent use of the water, the tank, which covers a maximum span of 5 days, carries only 30 tons of water. The roof is covered in 700 m² of sun collectors which produce 270 000 kWh annually. The office part in the existing building produces a lot of heat during the day and does not need to be comfortable during nighttime. Ventilation flaps allow these spaces to be ventilated. The existing part of the building is disjoint from the seasonal tank and is supplied with grid heat from our groups system. This grid heat also serves as a backup for the extension. All excess heat can be fed back into the grid. All electric energy is obtained from external sources.

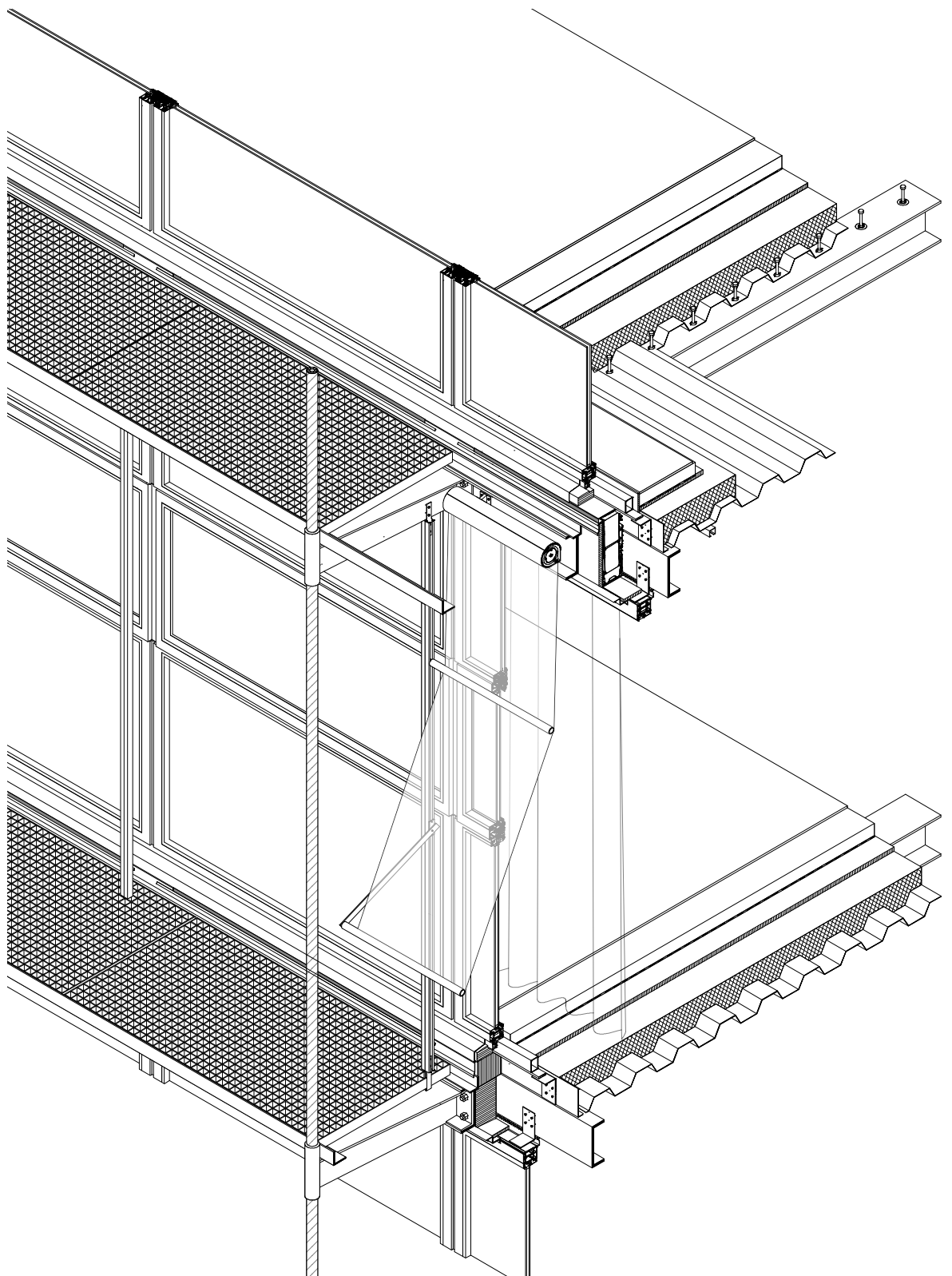


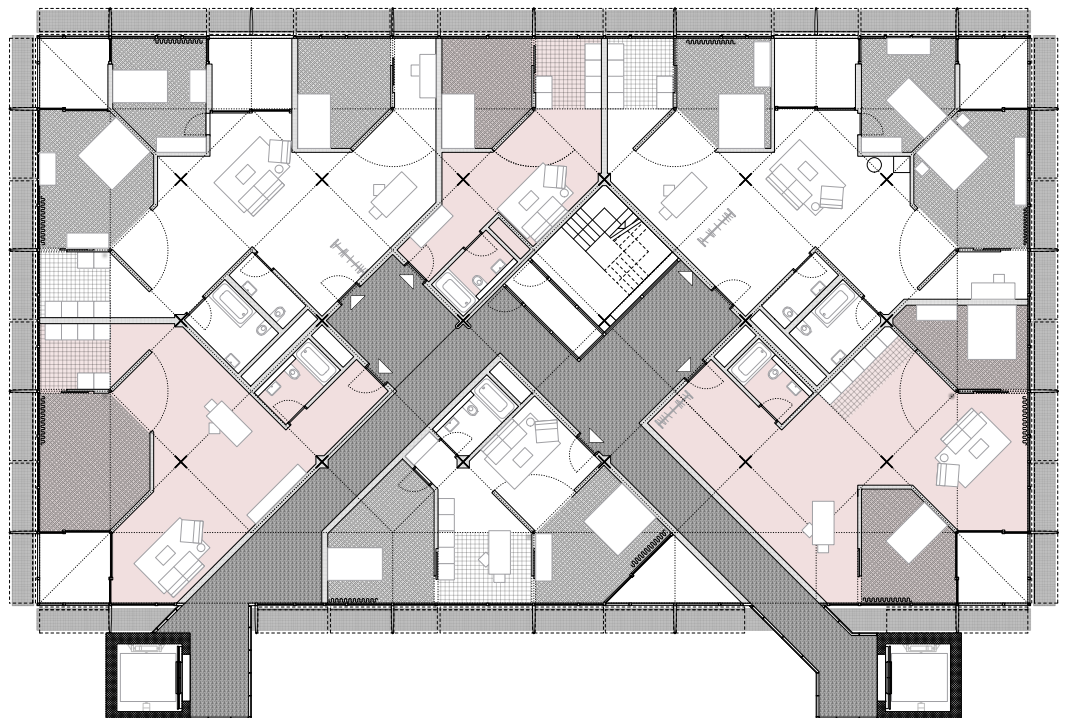
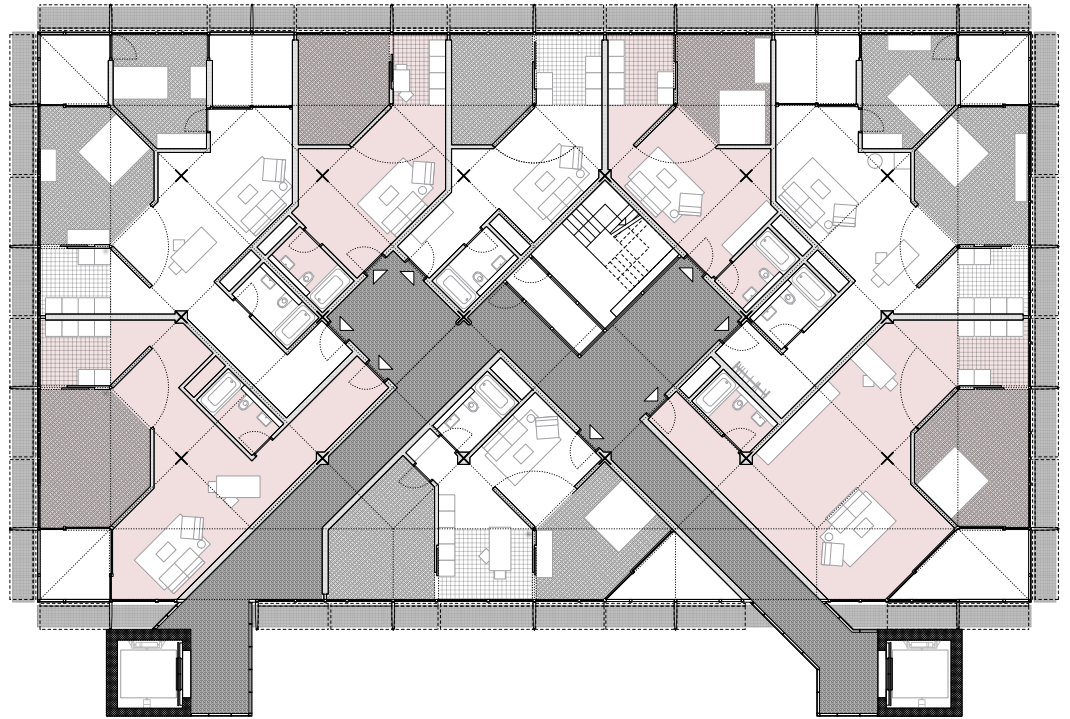


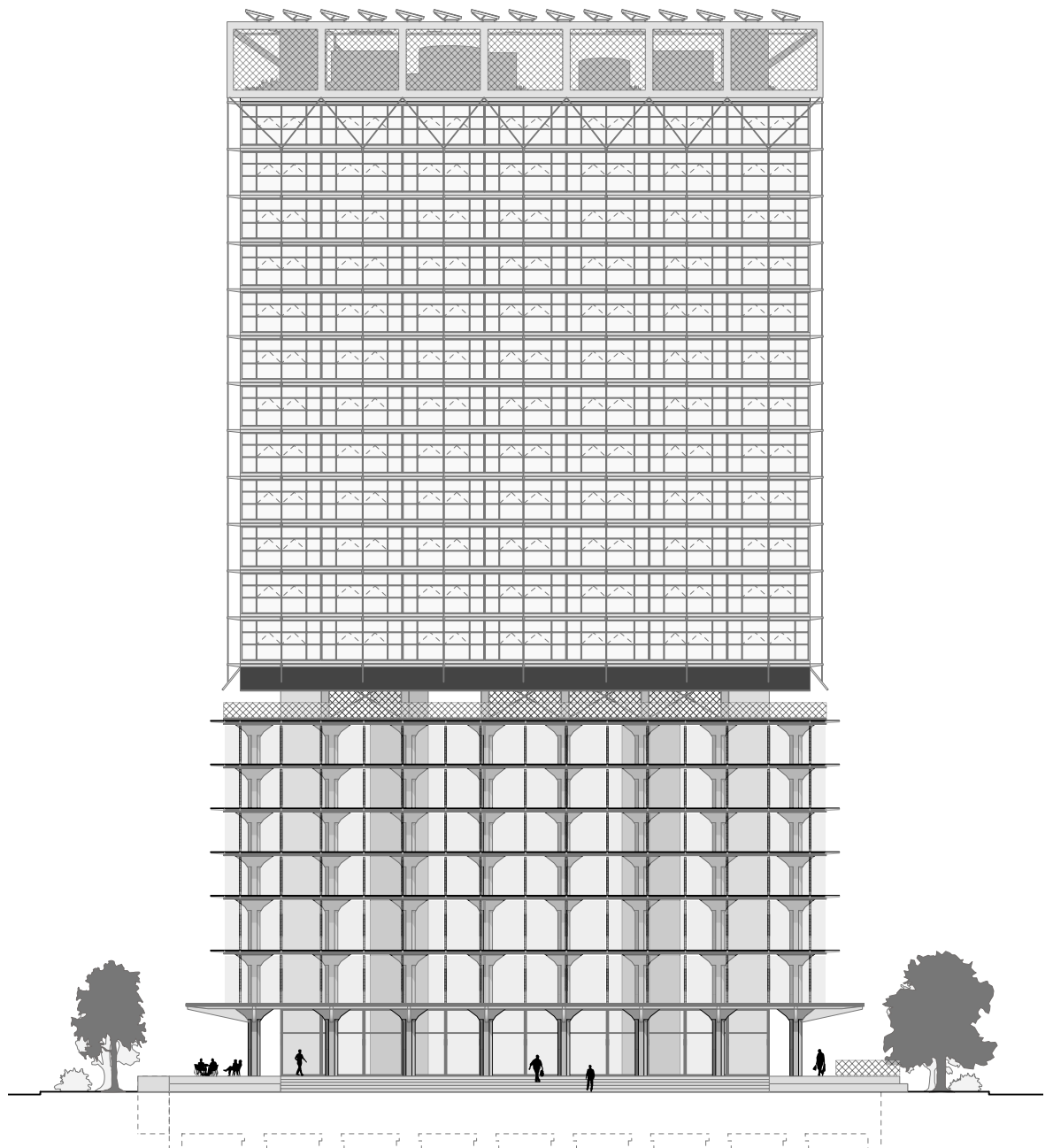
Floorplan Rooftop

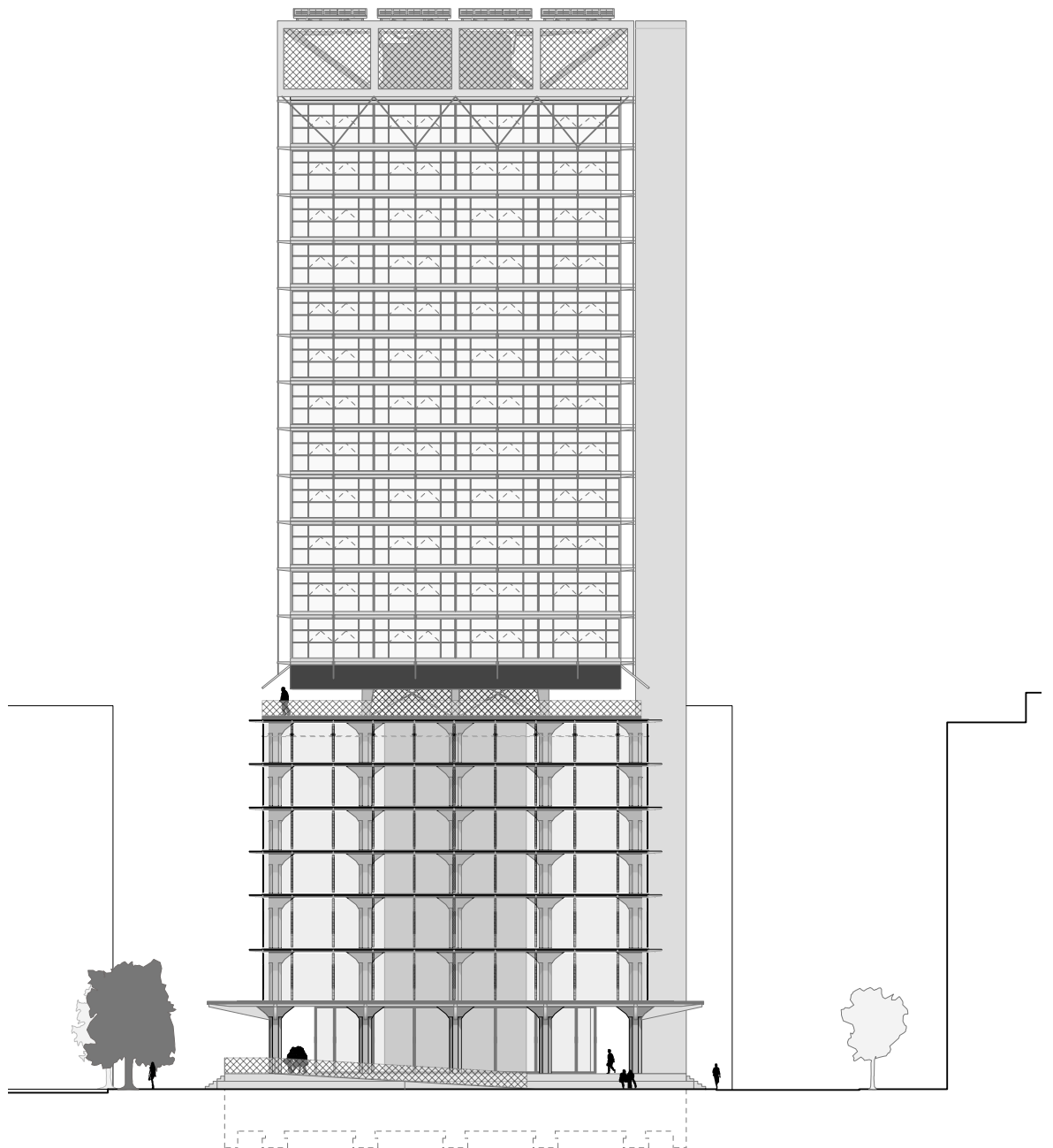


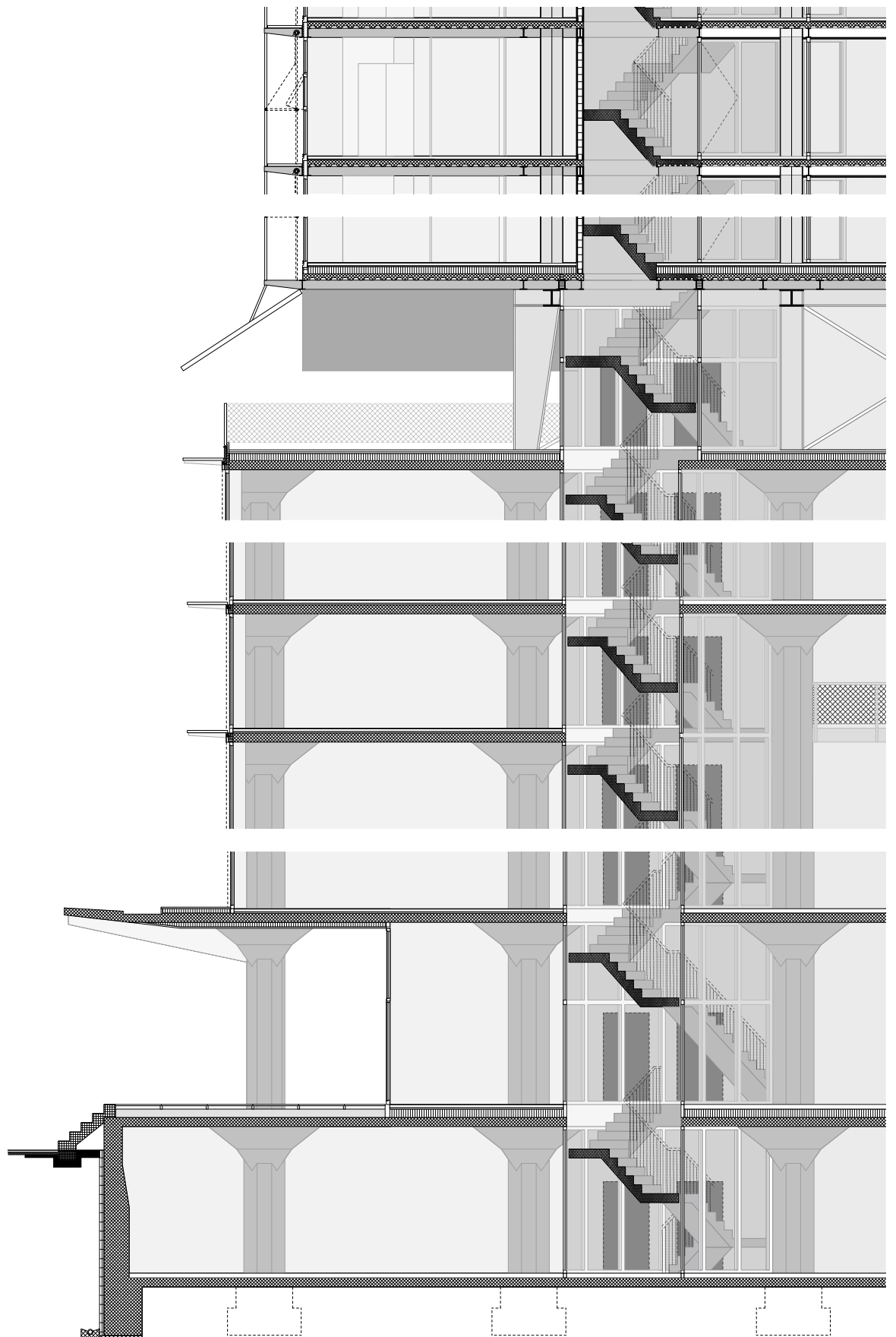
Floorplan Basement



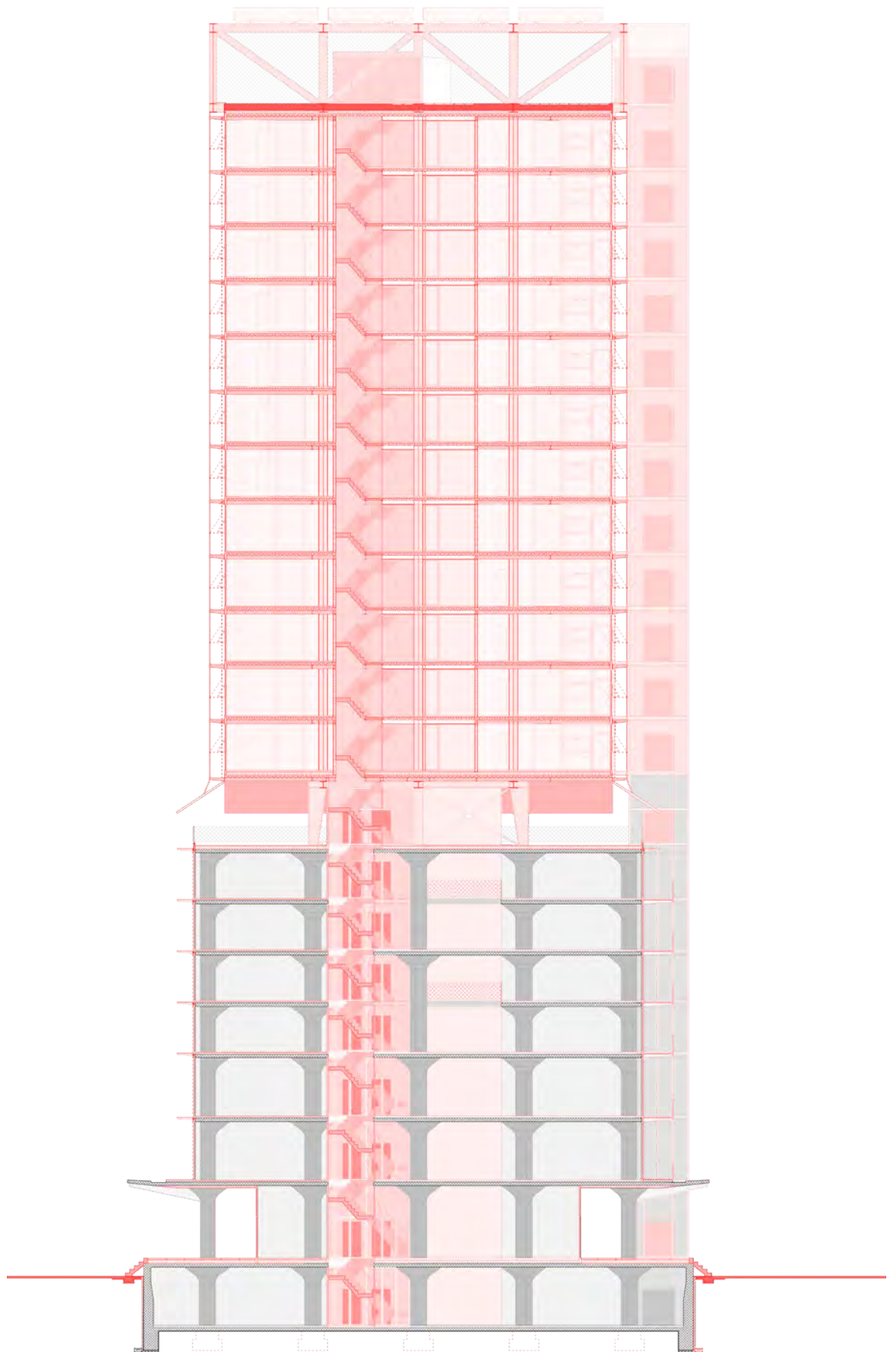




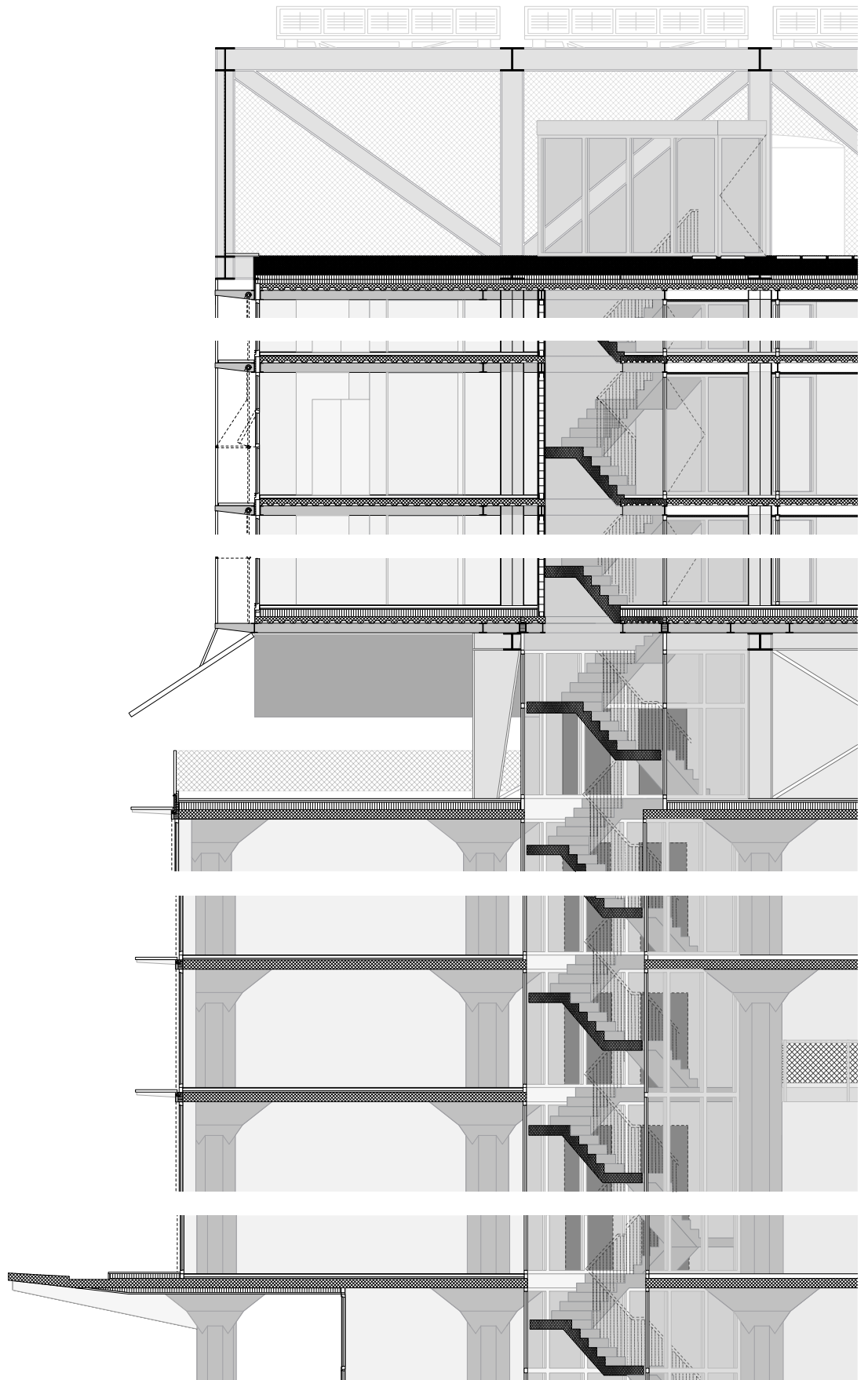




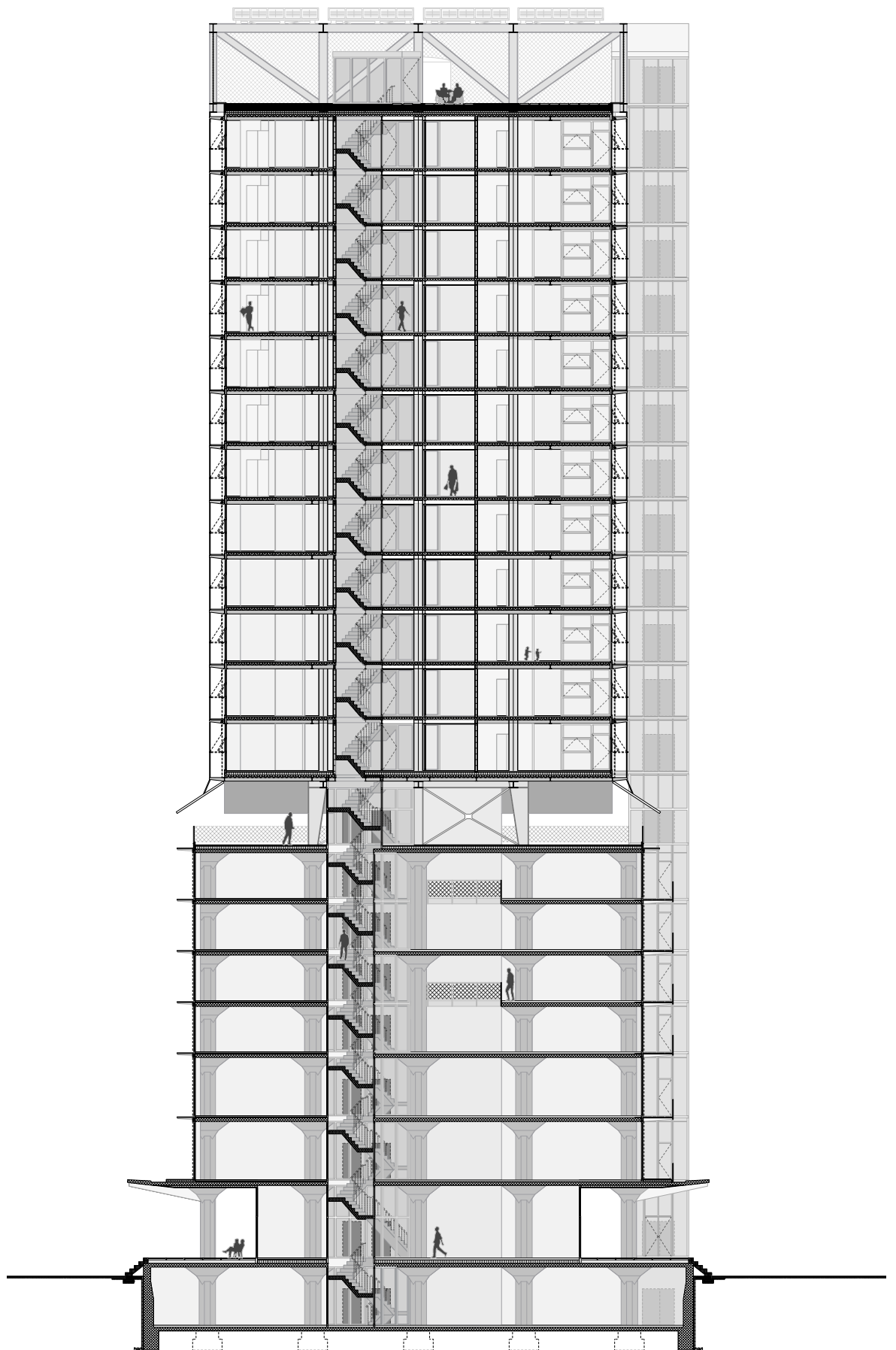
Section Basement and Terrace



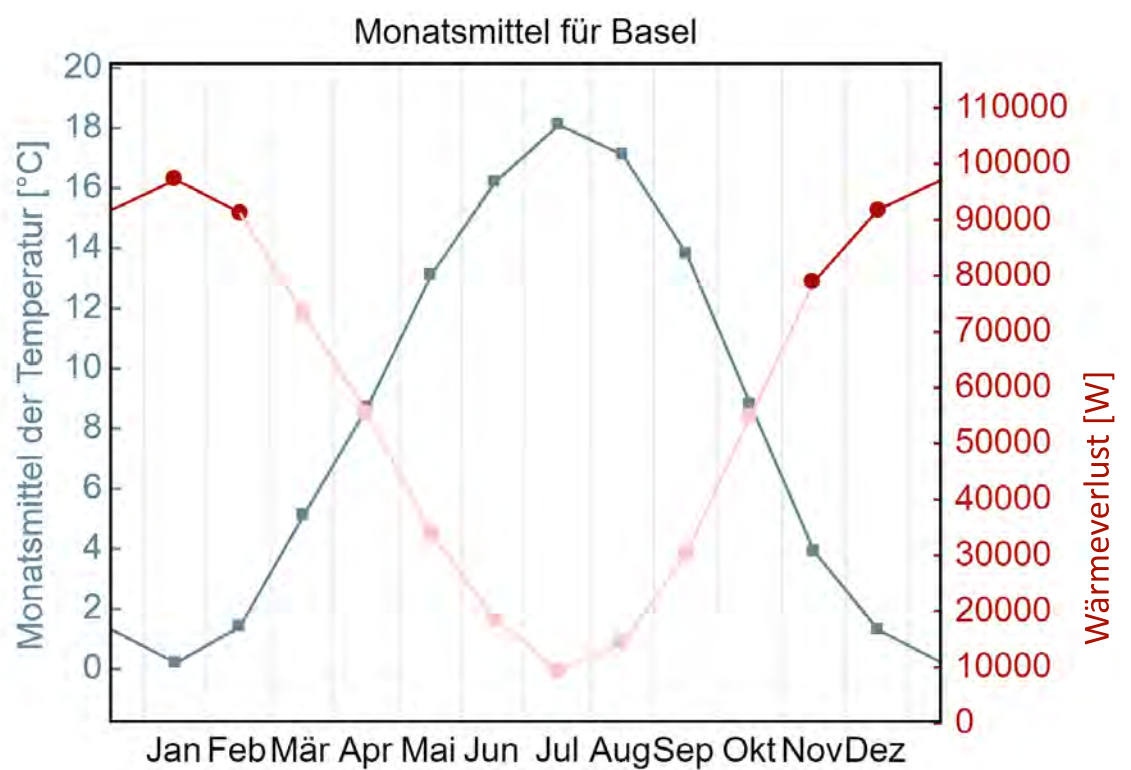
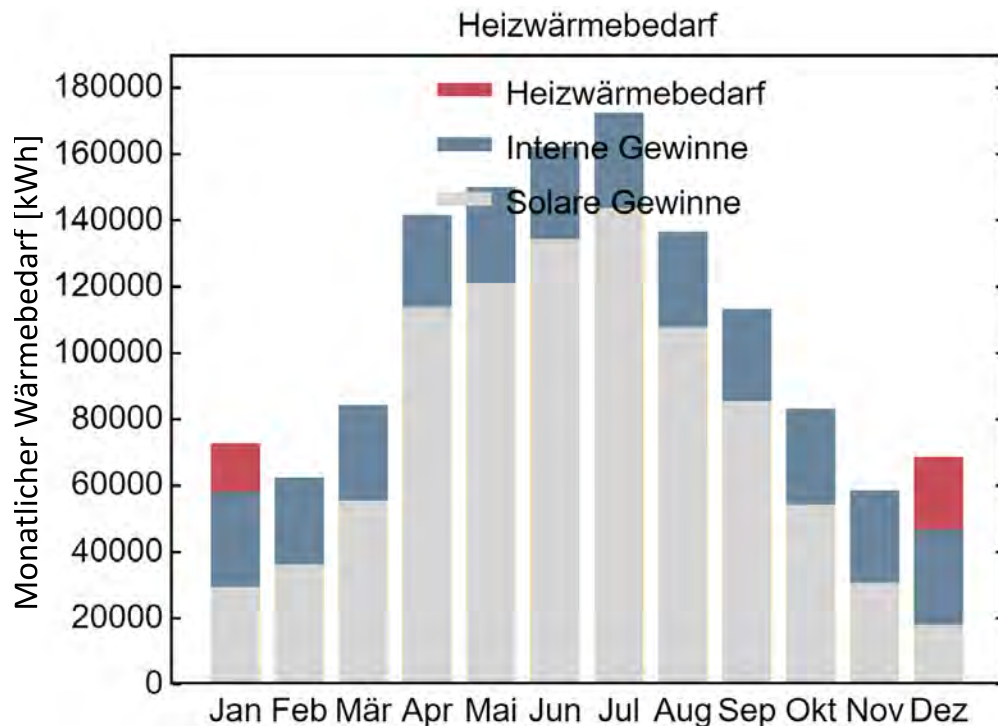
Building Crosssection

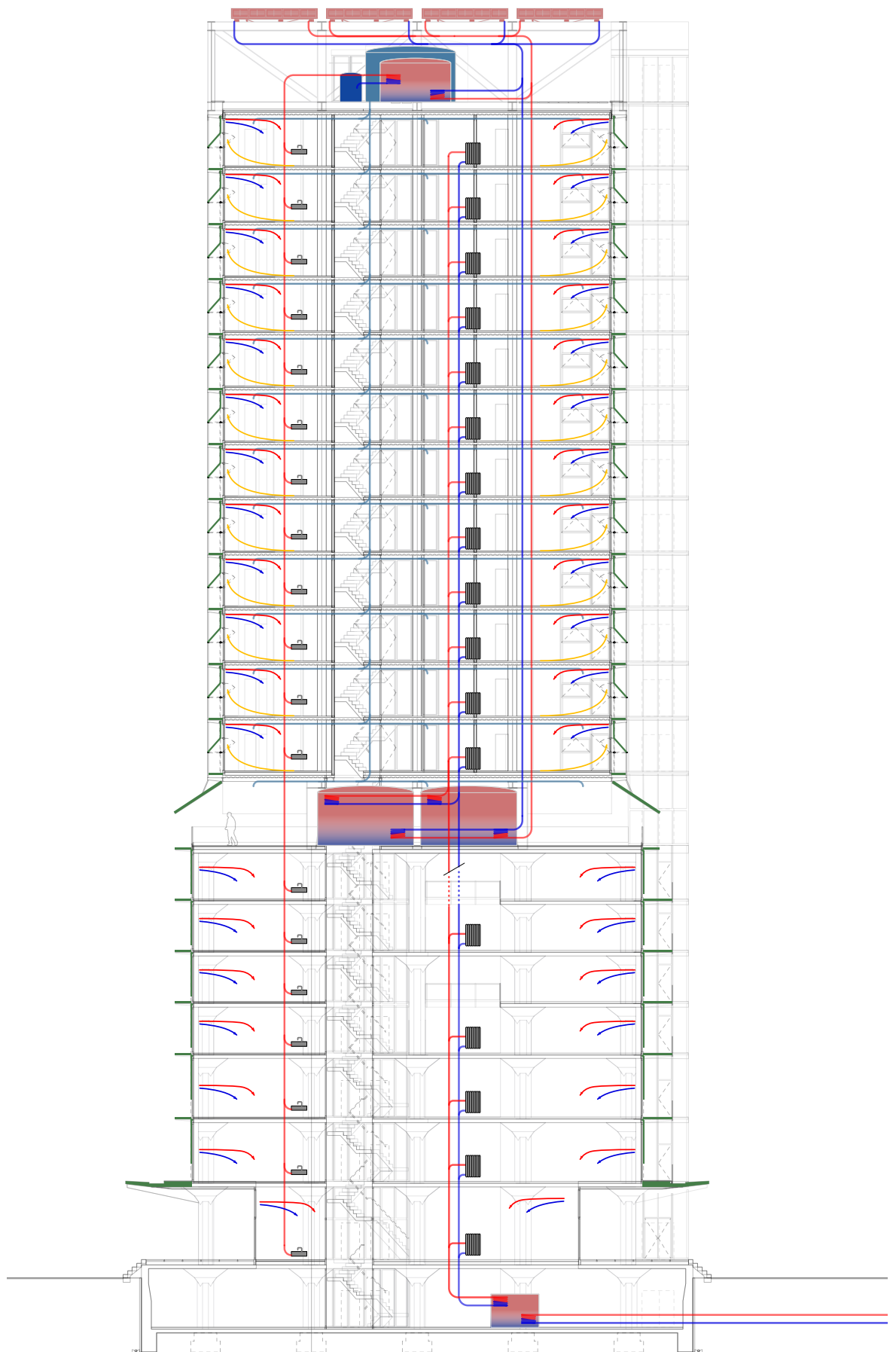


Section Basement, Terrace And Rooftop



Building Crosssection





Scheme Energy and Climate System









