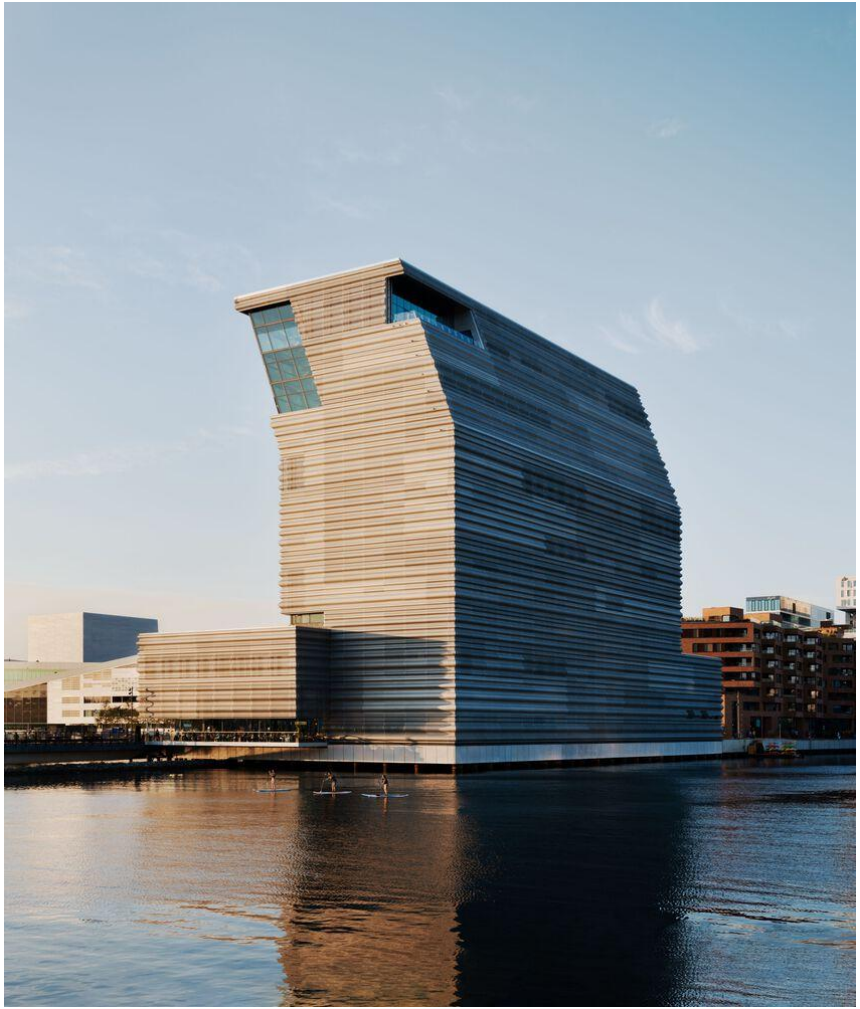
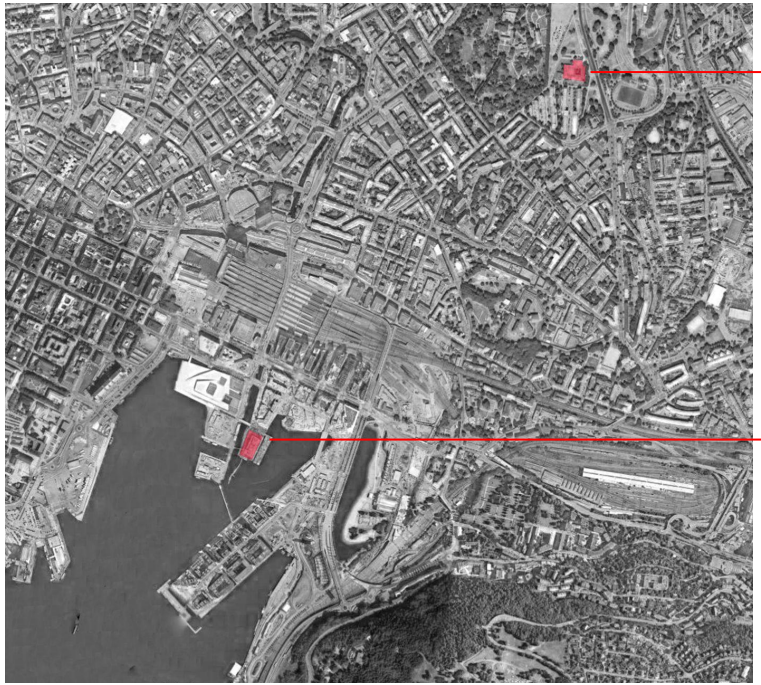
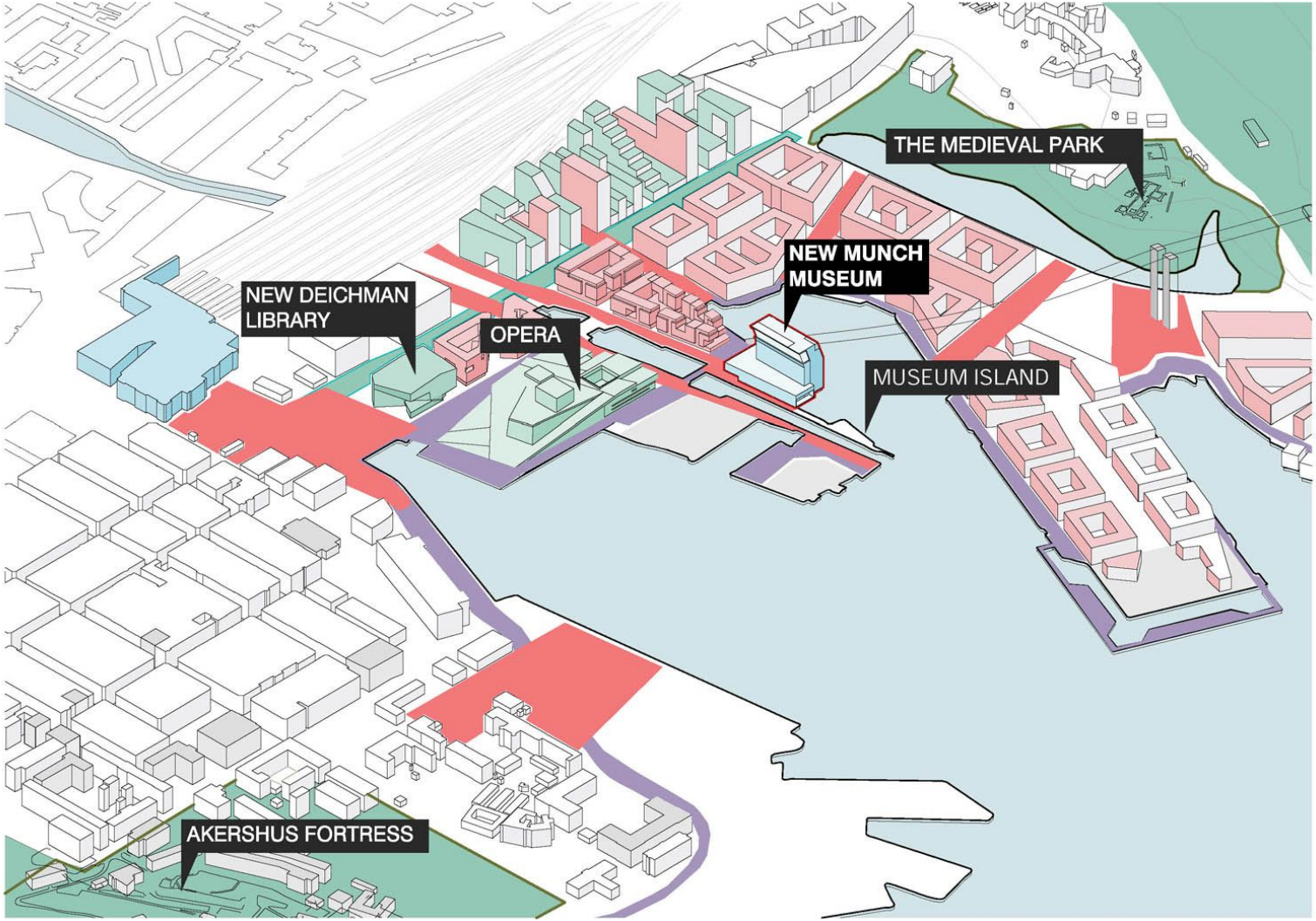
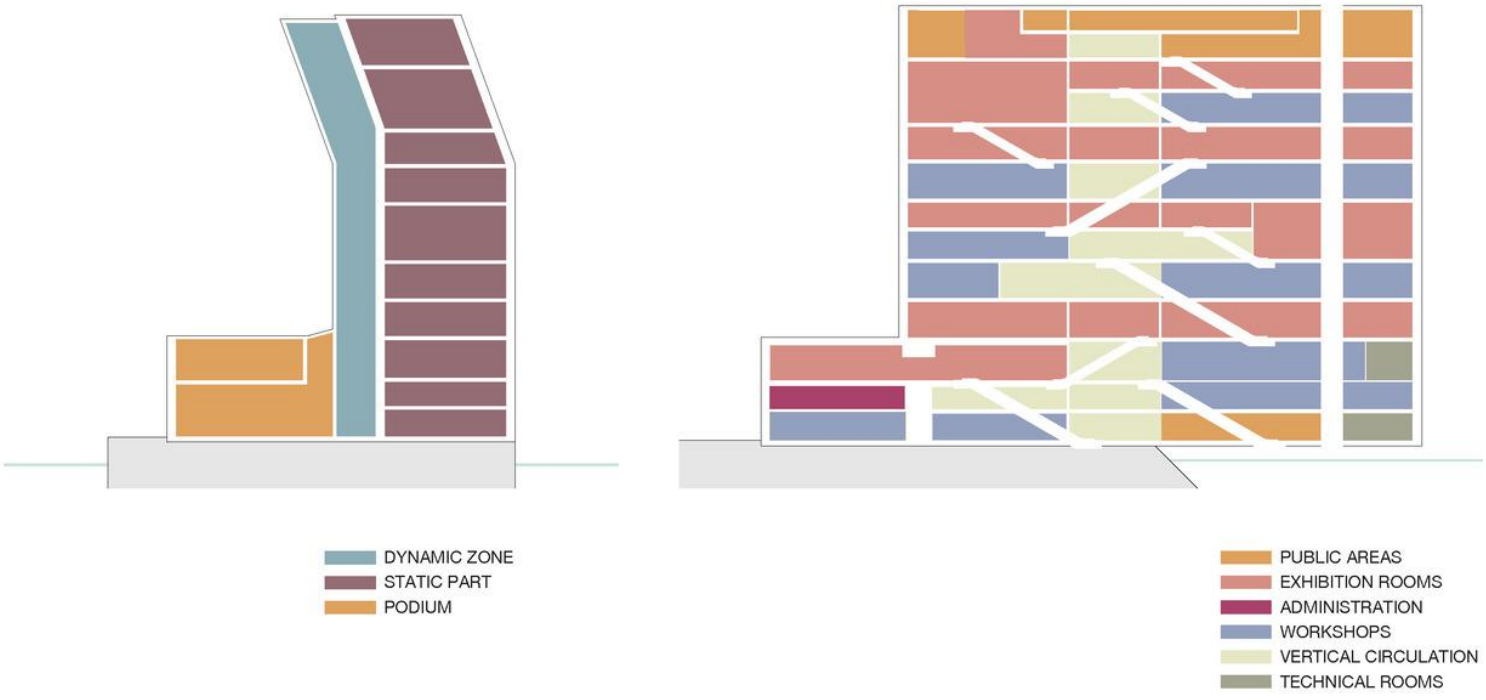
# Munch Museum

Noora Valkamo
Yanghua Weng

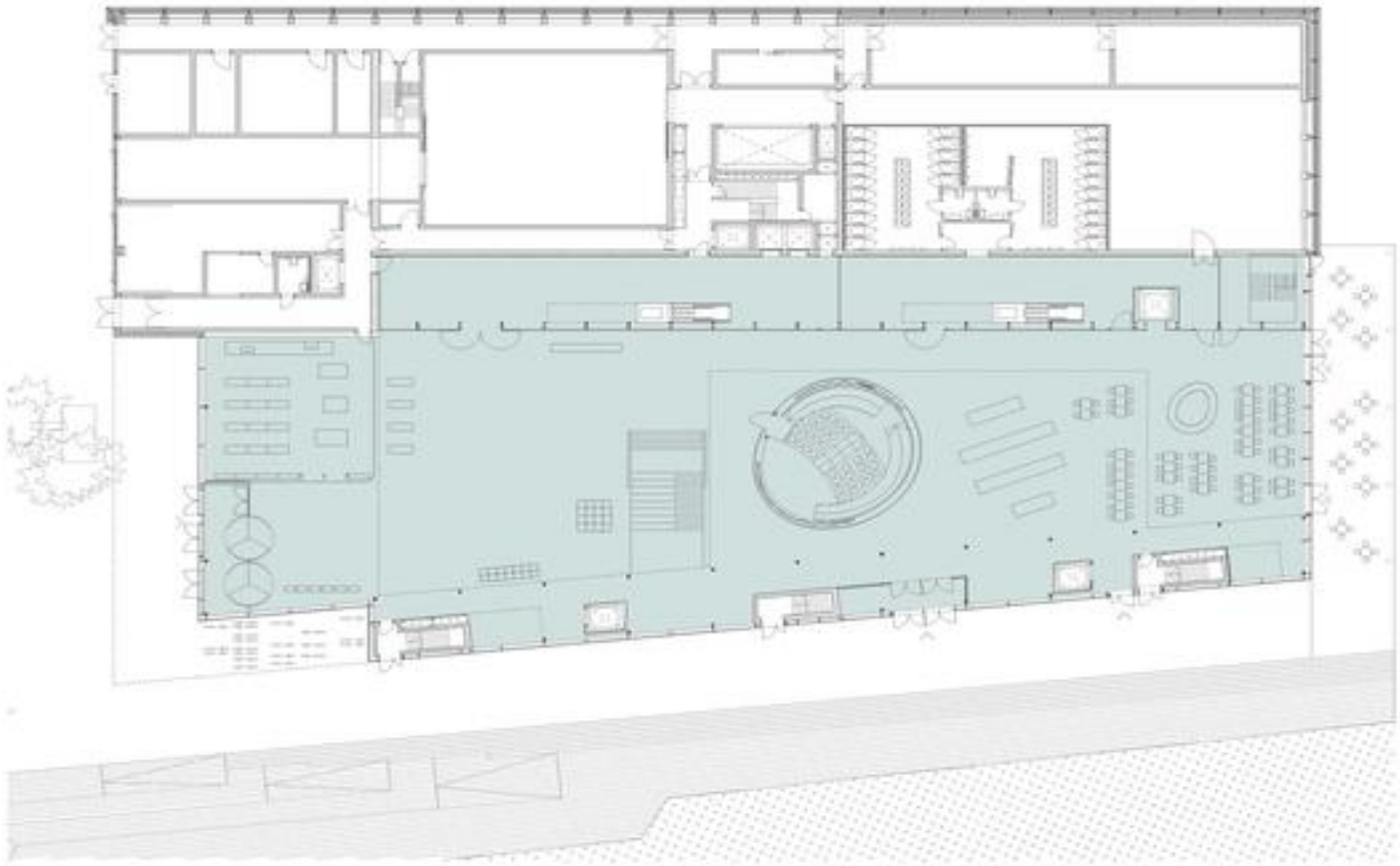



Old Munch Museum
New Munch Museum


THE MEDIEVAL PARK
NEW MUNCH MUSEUM
NEW DEICHMAN LIBRARY
OPERA
MUSEUM ISLAND
AKERSHUS FORTRESS

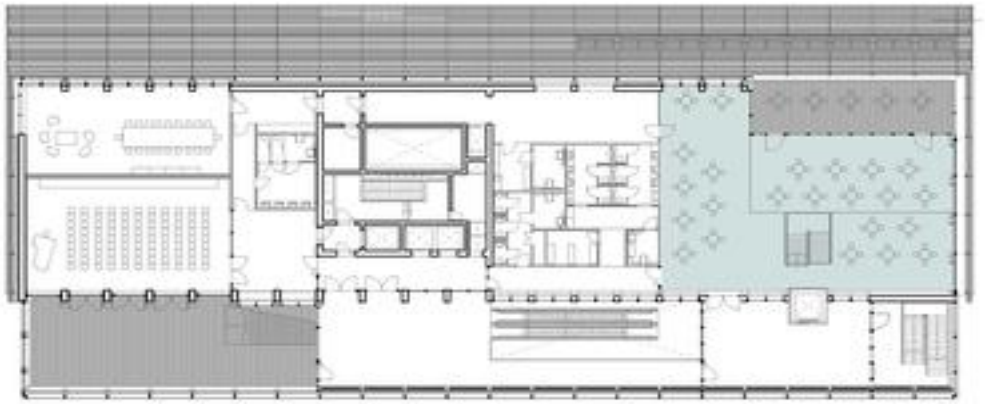



Program distribution diagram.



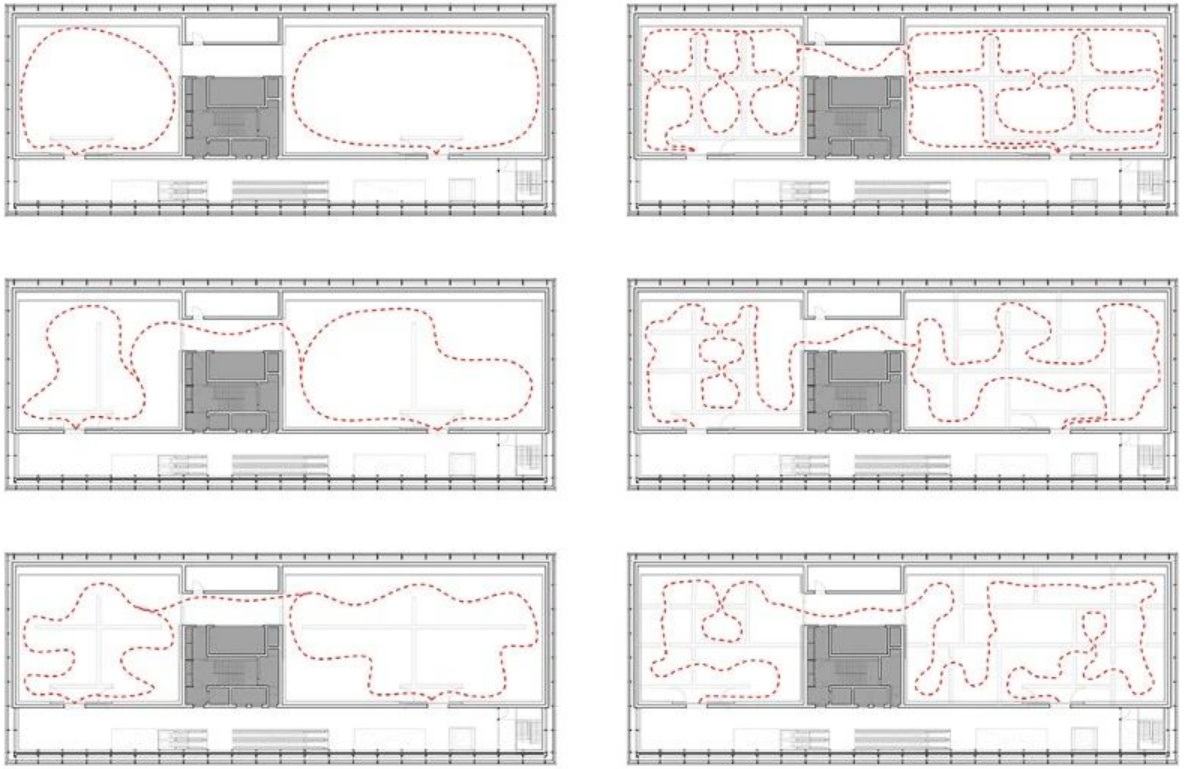
Ground floor

Typical exhibition floor

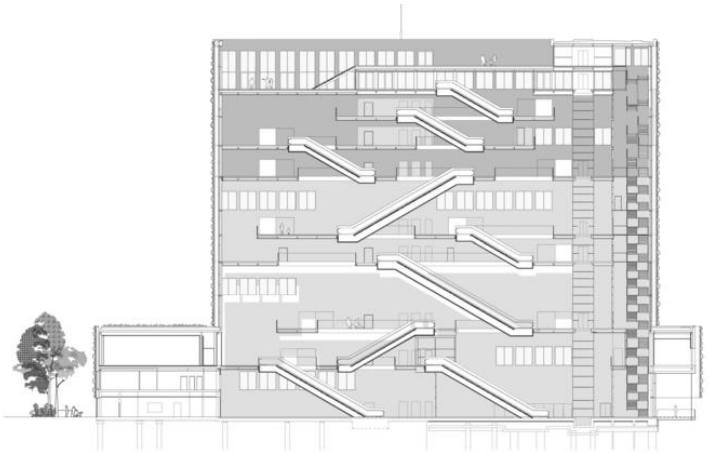


Top floor

# Circulation diagram of the exhibition spaces




Paths and exhibition hall types



Longitudinal section



Cross section


Oslo new skyline.

# *“Munch exhibits paintings, art and sustainability”*

Munch is a **climate driven building**.

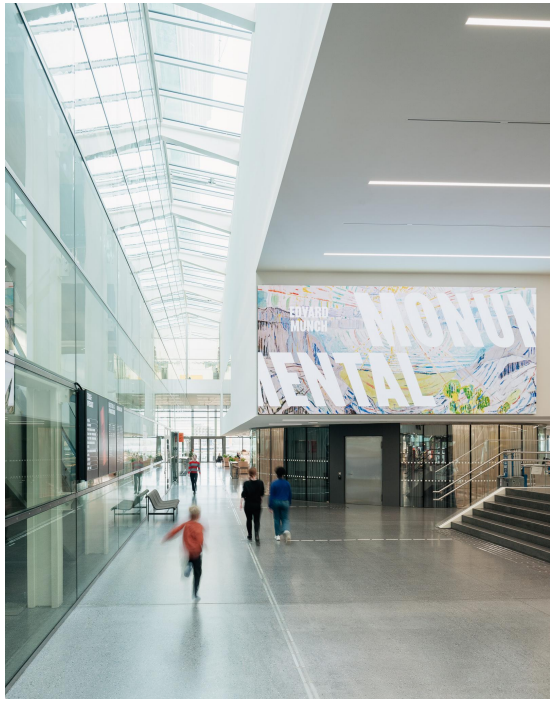
It has been planned in accordance with the **FutureBuilt criteria**. Such buildings must at least halve their greenhouse gas emissions compared to conventional modern buildings in relation to transport, energy consumption and choice of materials.

It’s a climate neutral building (still not negative).

Architects worked closely and intensively with a team of experts to select **materials that are recycled** (recycled steel and lowcarbon concrete).

Sustainability can also be seen in its’ **prioritize in public space**: podium as an extension of a public space and lobby as a public multiserving area. These spaces are also easy to navigate.

It has also been sustainable during Covid-19 because its’ linearity separates visitor flows and offers a continuous path through the gallery space.



# Sustainability in Munch’s architecture

- compact shape
- recycled steel and lowcarbon concrete structure that is designed to last for 200 years
- passive measures: heat recovery ventilation, extremely well-insulated windows and excellent insulation
    - two-zone-structure features airlocks to control temperature and humidity at the points of transition between the dynamic and static zones

      -> energy saving and natural ventilation in the dynamic zone due to the openings

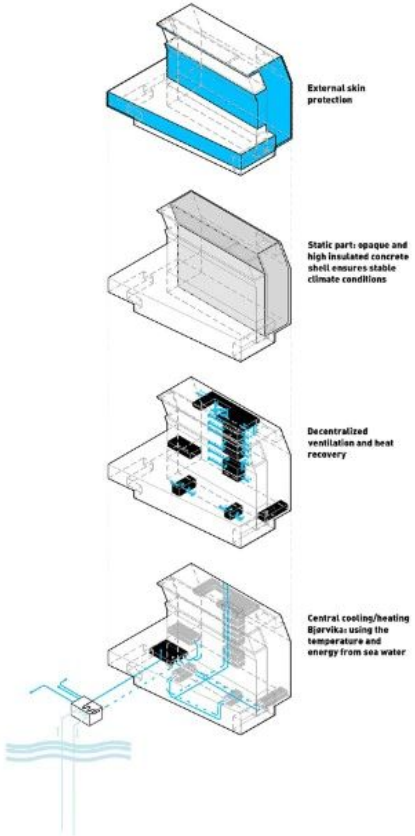
      -> controlled conditions in the structural exhibition zone

External skin: protection

Static part: high insulated concrete shell
-> stable climate condition

Decentralized ventilation and heat recovery

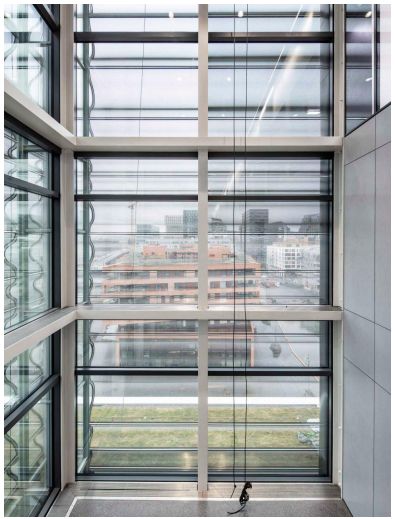
Central cooling and heating using the
energ from the sea water

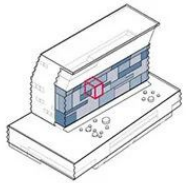


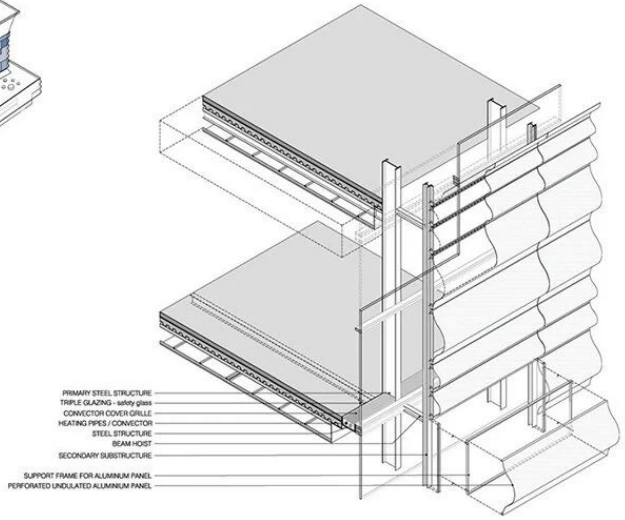
Facade is made out of **recycled pierced aluminium panels** with varying levels of transparency to help to avoid excessive temperature change.

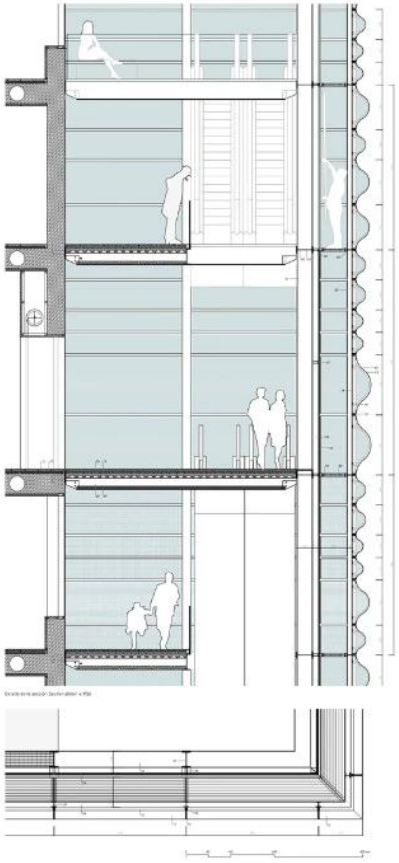
In addition to the panels there are low-carbon concrete and incorporated natural ventilation which together allows a visibly permeable structure and accomplish functional requirements such as **climate conditions, energy technology, maintenance and daylight**.

The west side of the façade is dynamically designed and the most challenging point with regard to energy consumption. The solution here is to modify the placement of the corrugated panels with different degrees of perforation and to use glass with different G-values (solar heat) in the outer façade.







01 facade structure: inner column (main structure) 380x190mm

02 facade structure: outer column - HEB 120

03 facade structure: steel beam - 380 x 150 mm

04 facade structure: external beam - L shaped profile

05 intersection of vertical and inclined columns

06 c.w. aluminum transom

07 c.w. aluminum transom - fixed height = 2.40 m

08 c.w. aluminum mullion

09 triple glazed insulated unit with krypton filling

10 structural "tie" element for horizontal loads

11 aluminum grating 25 x 3 mm, 34.3 mm on centre

12 external skin: curved perforated aluminum sheets dimensions: a: 3000 x 510 (640mm), b: 3000 x 680 (640mm), c: 3000 x 1020 (1240mm), d: 3000 x 1360 (1580mm)

13 curved panels substructure: curved stiffeners (20/30/40 x 10 mm)

14 curved panels substructure: vertical stiffeners (60 x 10/15 mm)

15 curved panels substructure: horizontal stiffeners (80 x 51 mm)

16 horizontal support

17 L-shaped corner panel

18 polished concrete floor

19 steel deck h=140mm

20 steel structure IPE 220 with fire protection paint

21 floating wooden floor

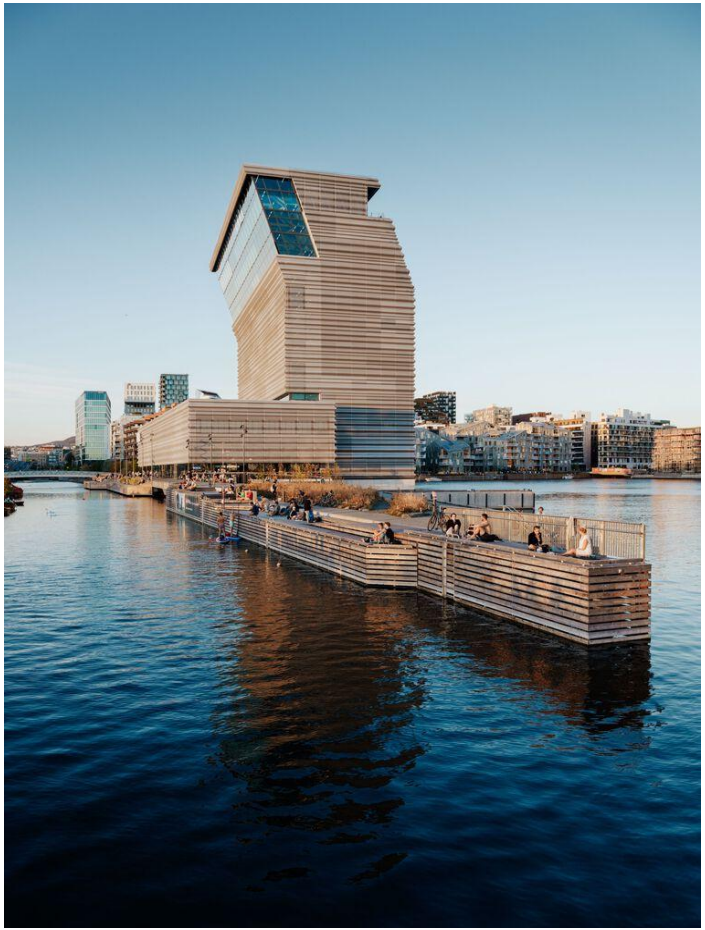
22 reinforced concrete slab

23 ceiling with acoustic materia

Facade detail

Inspiration behind the facade is from Munch’s paintings.


Sone
30
Sone



# Thanks!