

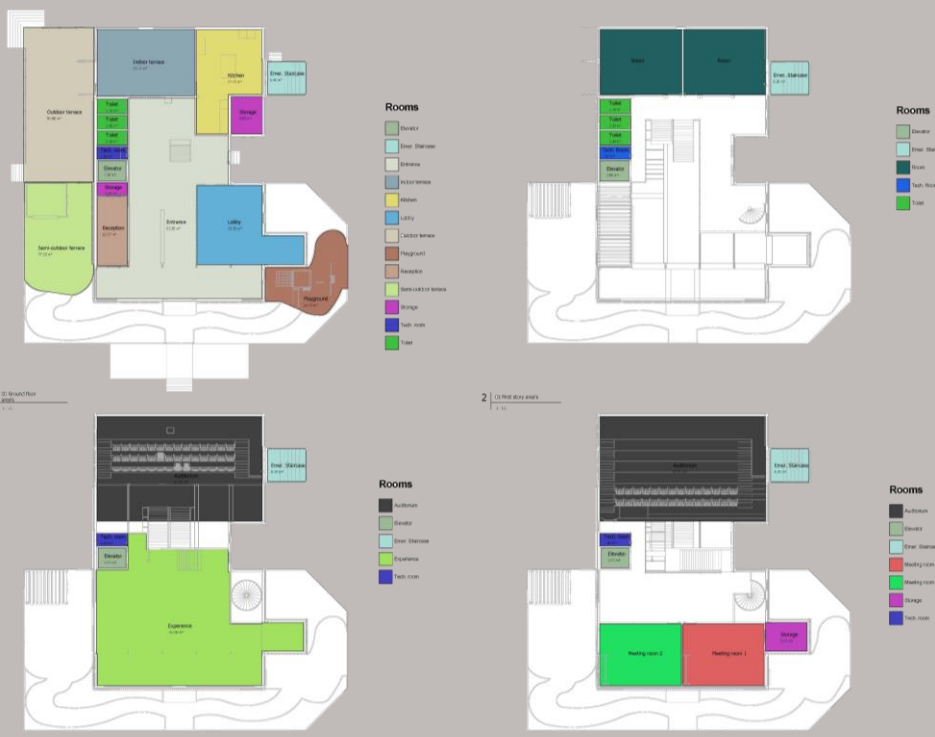
The Climate Ark

Gemeente Groningen
1/6 Architects



Open and inviting approach

The building consists of three parts: a covered part, a semi-covered part and an open part. The semi-covered part makes the approach of the covered area very attractive.



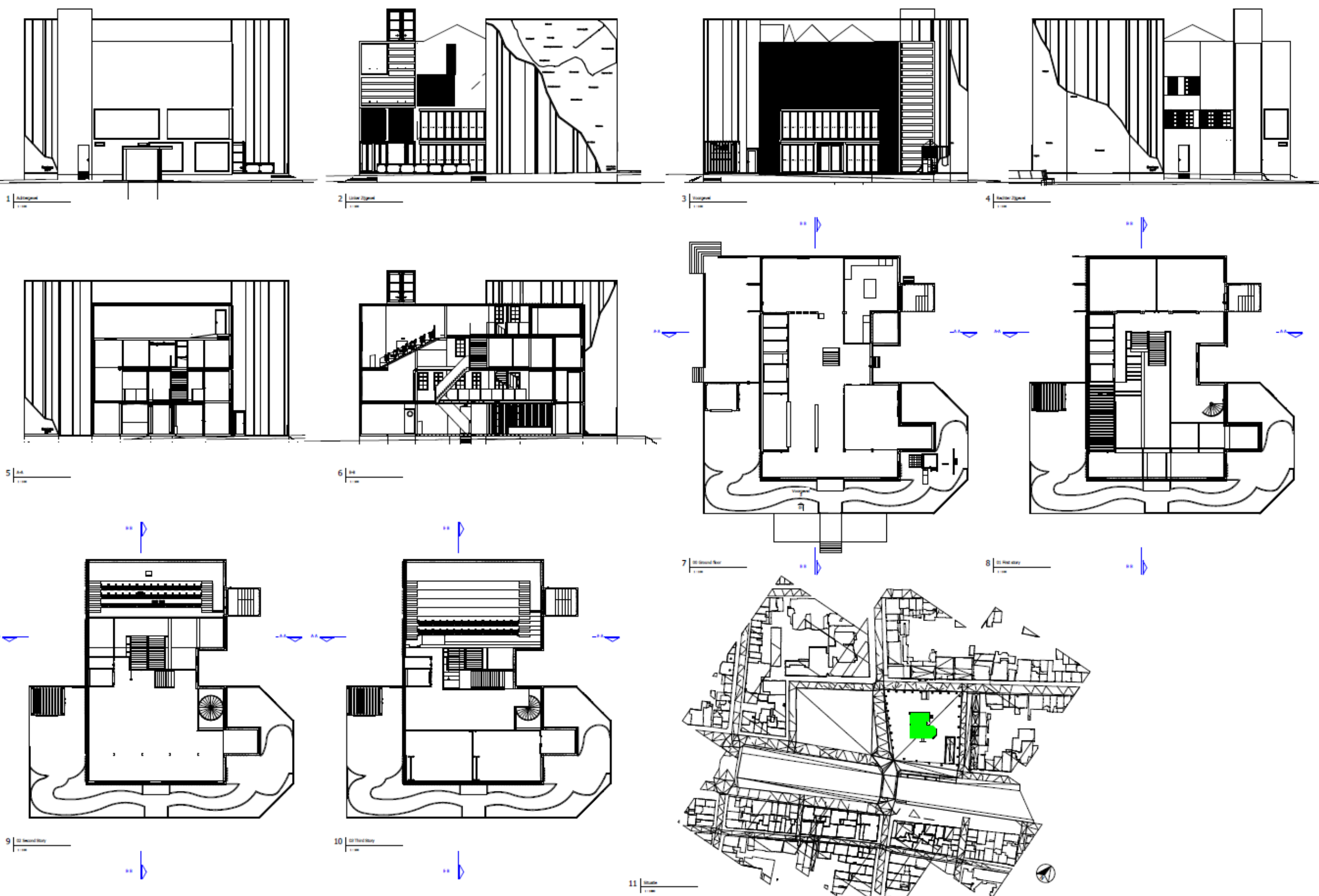
All functions integrated

The building has a centralized and balanced composition. The functions can be accessed via the staircase which is centrally located in the building.



Optimal use of natural daylight

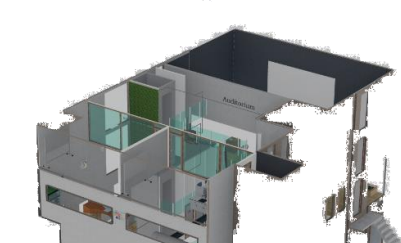
The large amount of façade openings make large amounts of natural light shine into the building. During hot summers, rotating and sliding louvers create a comfortable indoor climate.



Glass cube with two different patterns:
- The Groningen canals (province and city)
- Vertical beer bottles for reference to the waste in international waters



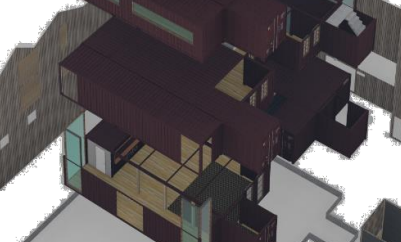
Green roof to decrease the heat island effect



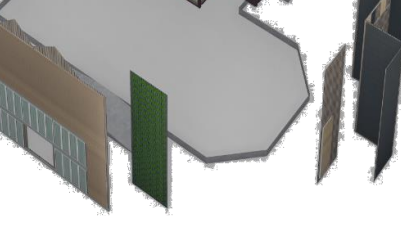
The furniture is mainly built out of renewable materials



The main structure is made of four stories of secondhand sea containers (10, 20 and 40 ft)



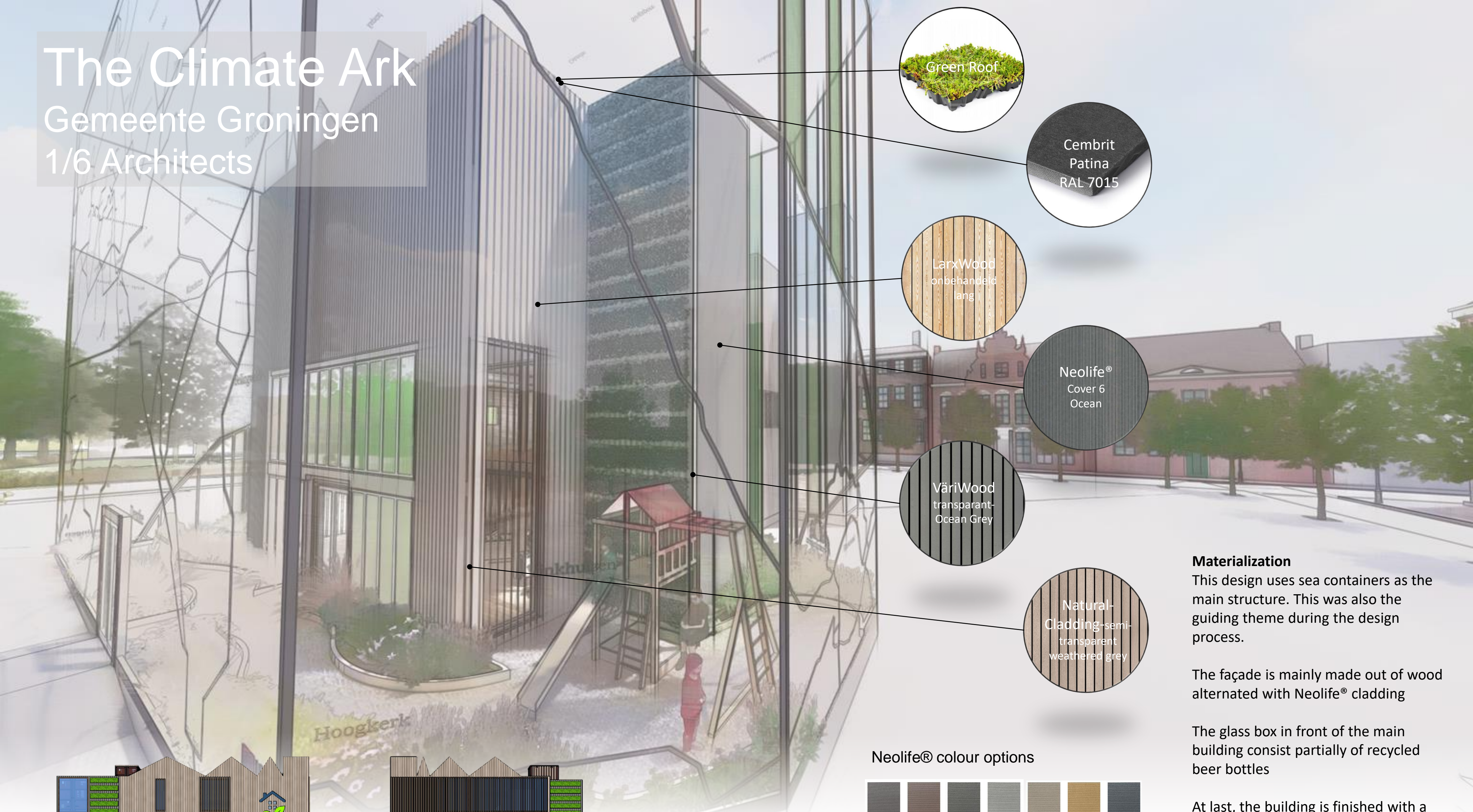
The façades are mainly built out of wood sometimes covered with algae panels to provide the building from energy



The foundation is built out of cast-in-place concrete

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Materialization
This design uses sea containers as the main structure. This was also the guiding theme during the design process.

The façade is mainly made out of wood alternated with Neolife® cladding

The glass box in front of the main building consist partially of recycled beer bottles

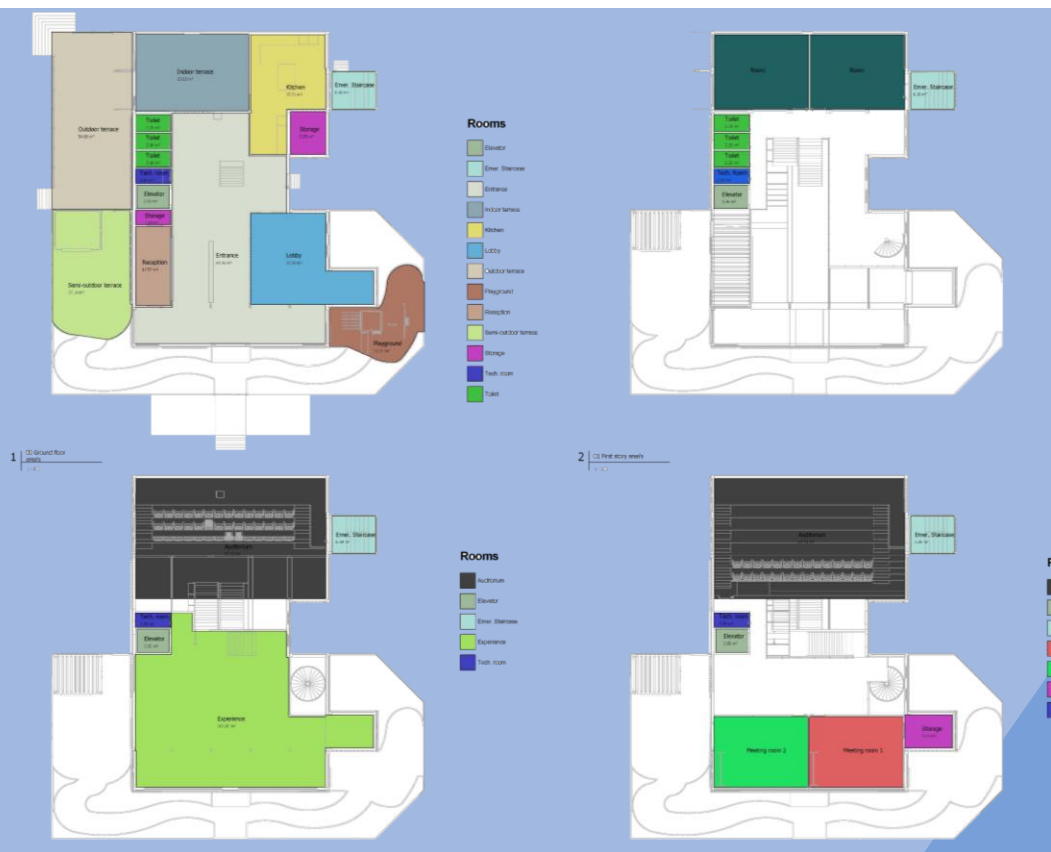
At last, the building is finished with a green roof

Neolife® colour options



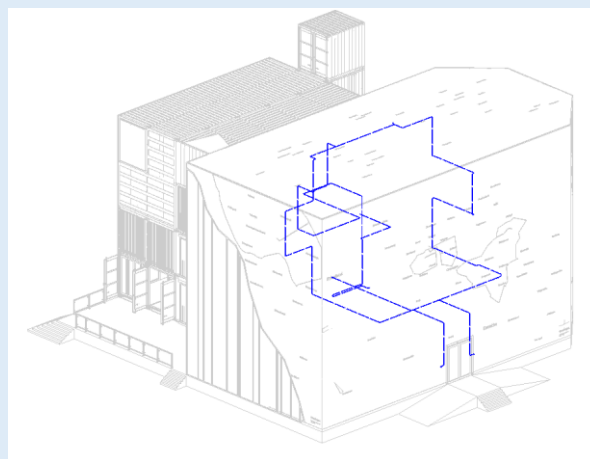
Functions Floorplan

The building has a balanced and centralized composition. The building is four floors high and has several rooms which contains several functions. The main functions on the ground floor are the lobby, the reception and the catering. When you go up to the first floor you enter the exposition space and the living lab. Then you can choose two directions. The first one leads to a spiral staircase which goes up two floors to the education floor where the auditorium and meeting rooms are located. The second staircase, which is located directly next to the one to the first floor, goes up one story to the experience room.



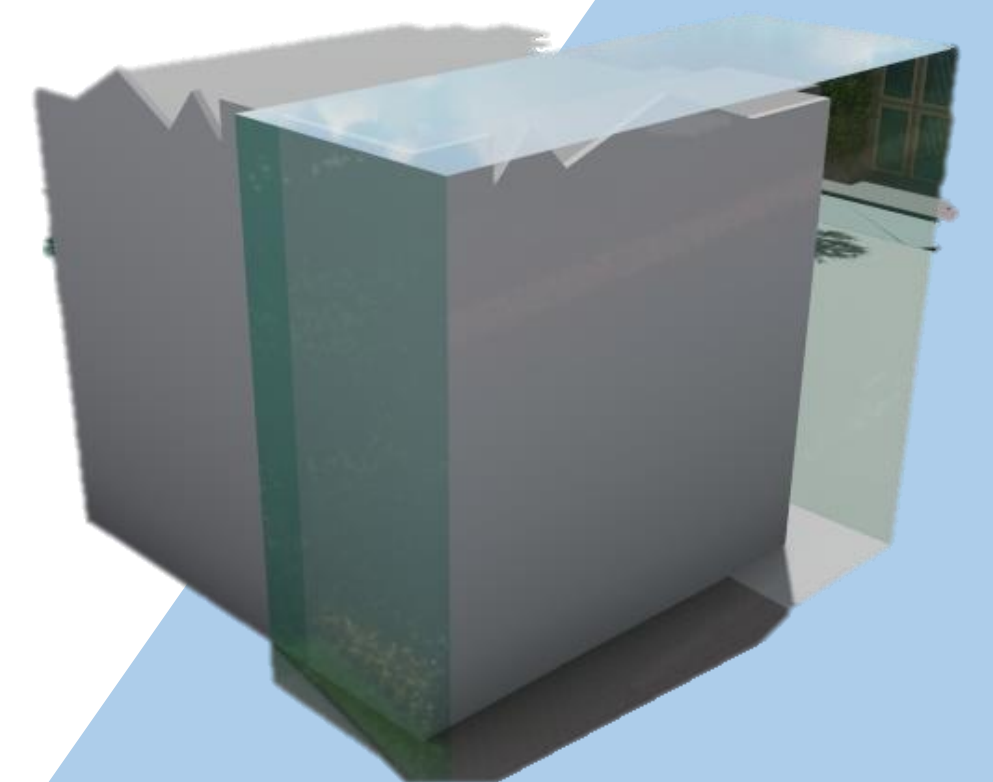
Functions Water Hydrating System

The columns and beams of the containers have to remain in place. Those are the main construction of the building. To make those beams more aesthetic there are placed planters on top of them. These plants will be hydrated by rainwater. There is an piping system through the entire building that provides the plants every rainy day of water



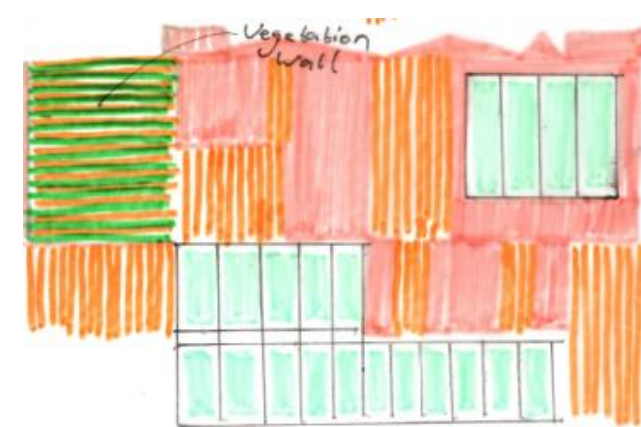
Shape and footprint

The designed building has a centralized and balanced composition. The footprint has on the east-side some subtractions. On the west- and south-side of the building the footprint is flat to make optimal use of the sun. In addition the building has a spatial composition of a box intersecting with a box referring to a greenhouse which characterizes the sustainability goal of the building



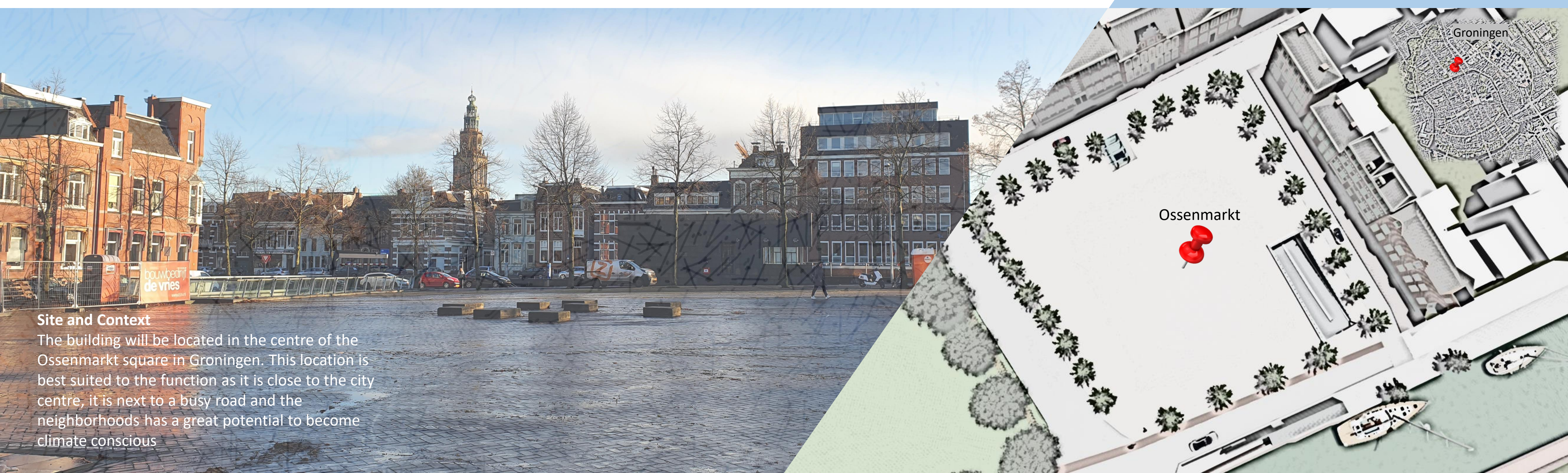
Shape of the openings and façade

When you take a look at the rooftops of the buildings next to the Ossenmarkt square. You'll notice that the more you walk clockwise through the square, the bigger the angle of the rooftops becomes. This is one element that is also used in the design of the building.



Site and Context

The building will be located in the centre of the Ossenmarkt square in Groningen. This location is best suited to the function as it is close to the city centre, it is next to a busy road and the neighborhoods has a great potential to become climate conscious





The Climate Ark

DESIGN FOR THE NEW CLIMATE
DESIGN CENTRE IN GRONINGEN

Introduction

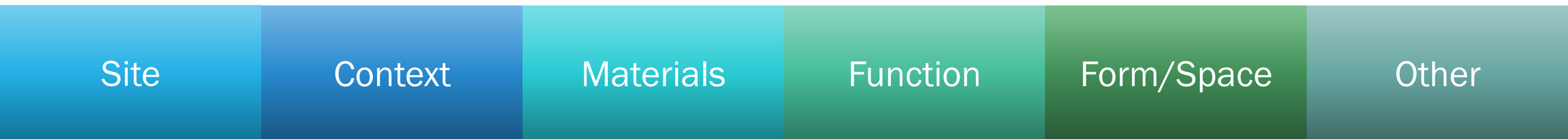
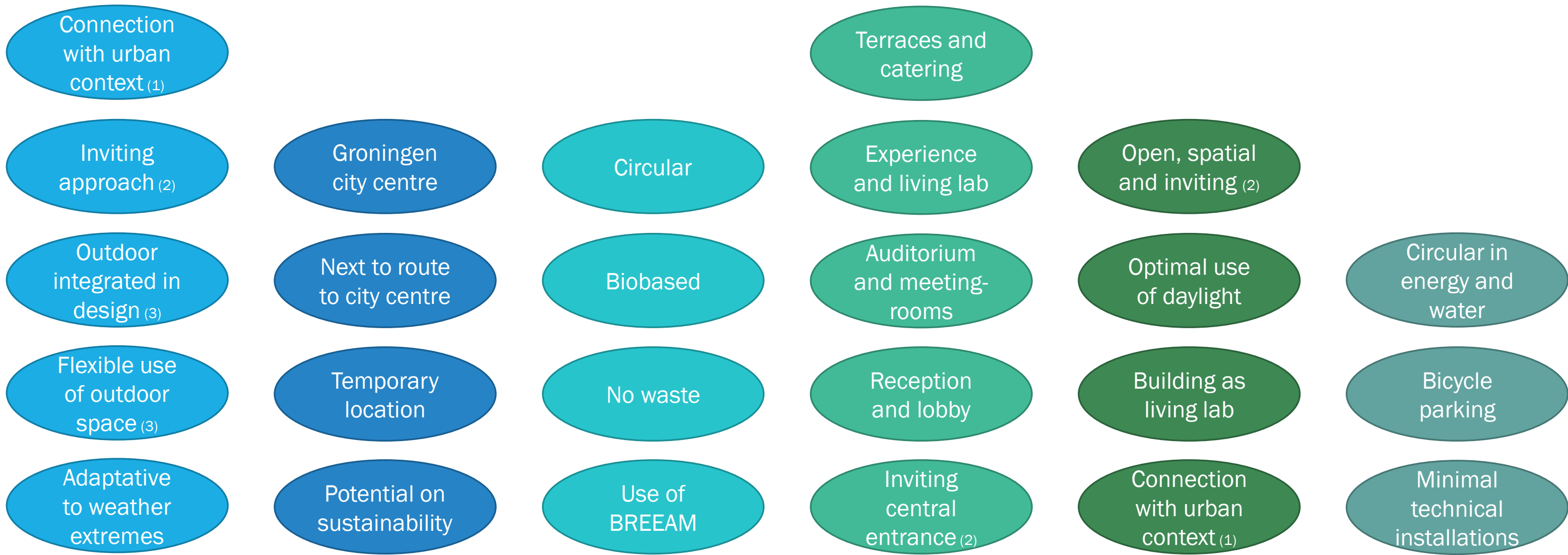
Sustainability becomes an increasingly important concept every year. The earth is heating up and if we don't fight this, the earth will become unlivable within a few hundred years.

In Groningen, we have also to do something against this. For years Groningen has been missing from the list of most sustainable cities in the Netherlands (regarding to independence)

The new Climate Design Centre Groningen has been designed to raise awareness among the inhabitants. In Groningen students are already working on many projects regarding to sustainability. They also test and organize activities. These can be exhibited at the new Climate Design Centre.

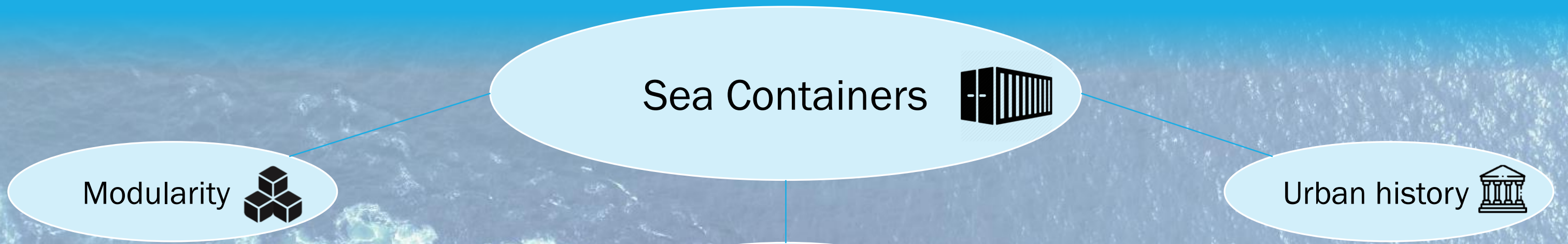


Demands





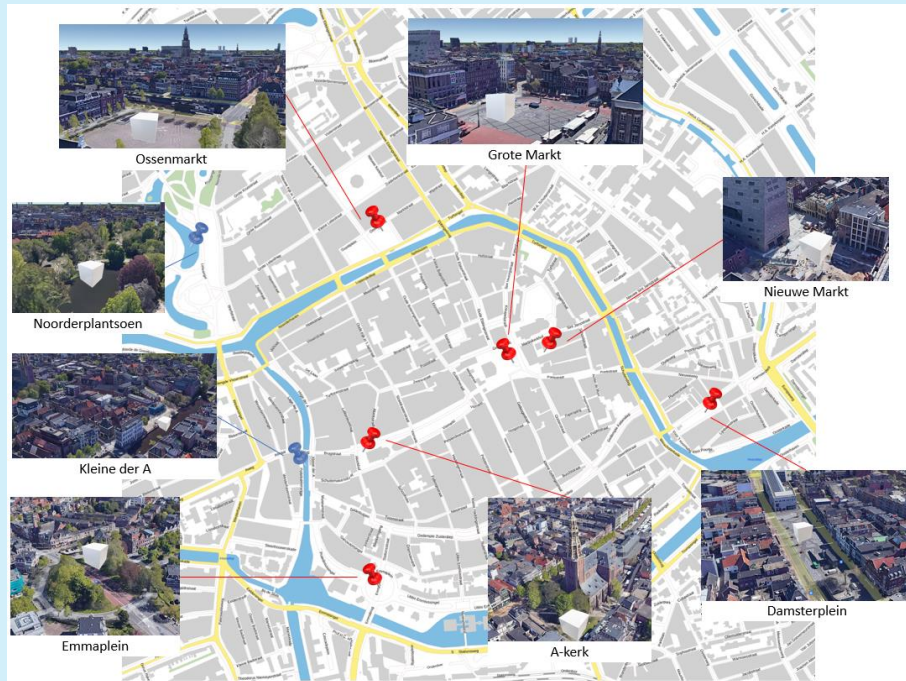
Guiding theme



Design – exterior site, context & form



Context & Site



Several locations have been analysed before finding the best location for the new Climate Design Centre. The Ossenmarkt square turned out to be the best location regarding to the program of demands.

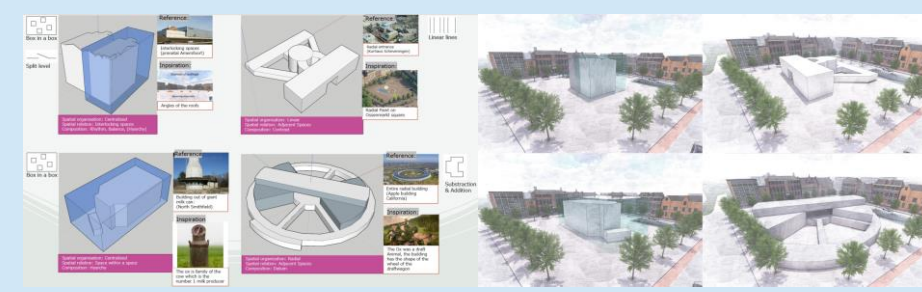
Form



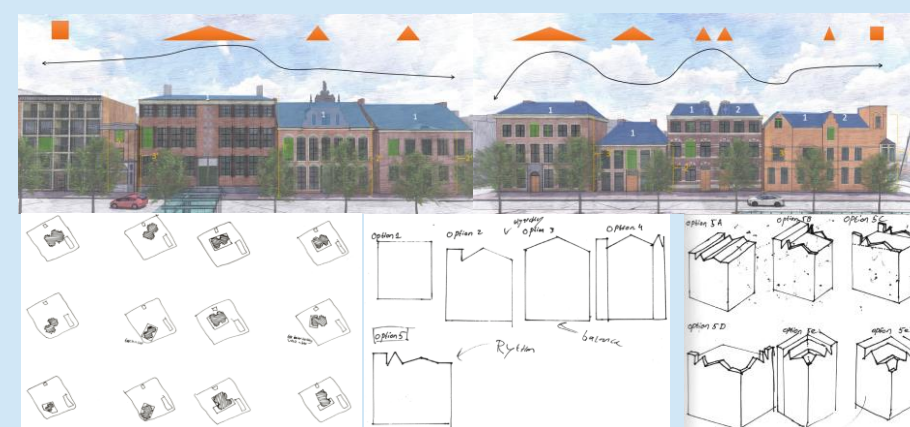
The guiding theme of this design has become building with sea containers. A reference study has been done about this topic and some of those elements are also used in the design of the Climate Design Centre.



The Ossenmarkt is a square which is located only 400 metres from the Grote Markt, the heart of Groningen. The Ossenmarkt has a lot of people passing by every day and has an underground parking lot.



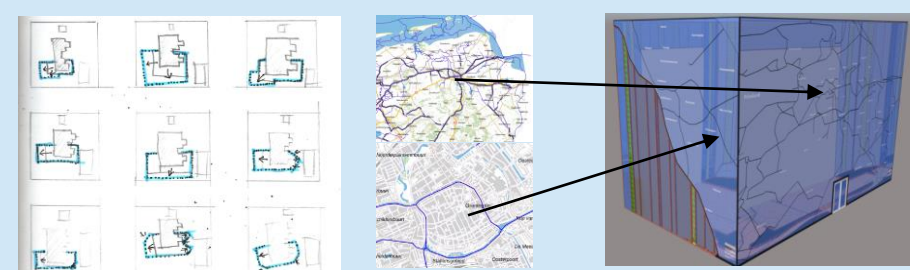
In one of the first stages of the design process, there is been experimented with some spatial relations and compositions.



One noticeable thing about the buildings next to the square is that the roof slope is getting bigger walking clockwise through the square. This is one element that is also used in the new design.

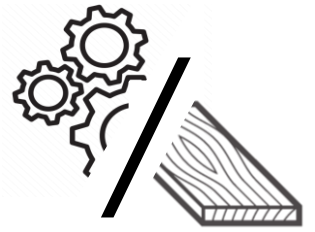


The context of the Ossenmarkt is quite old. It has a lot of landmarks but the Ossenmarkt itself remains still quite empty.



The glass, intersecting box has some cracks on the front sides. These cracks represent the Groningen waterways anno 2022 and 1963.

Design – exterior function & material



Function



A Climate Design Centre is quite a new concept. The Sustainability Centre in Assen is an example of what it should look like.

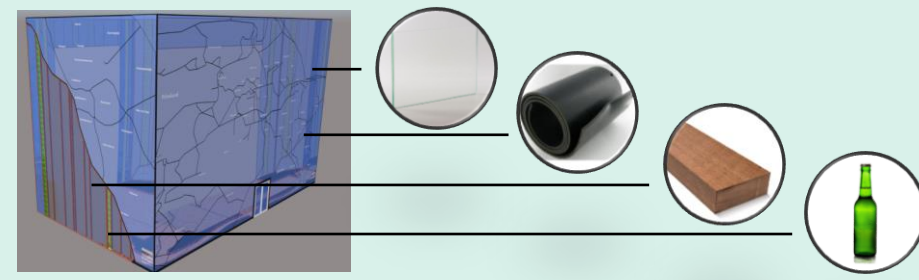
Material



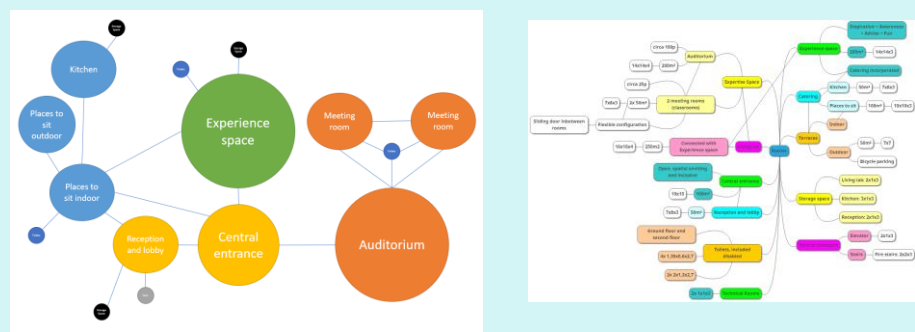
The buildings next to the Ossenmarkt square are all made out of brick. The colours of these bricks vary per building.



The Ossenmarkt is surrounded with some private and some public buildings. Underneath the square is a parking lot.



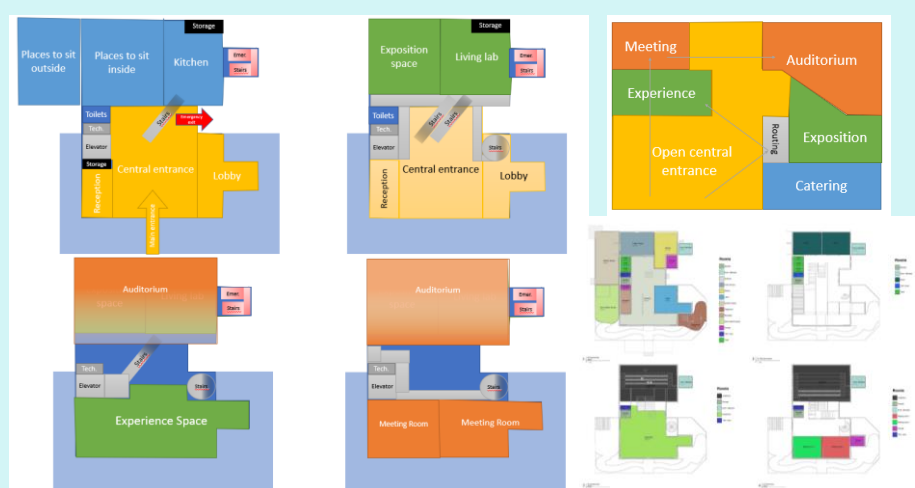
The back of the glass box will be made out of vertical strips made out of glass or recycled beer bottles. The sill will be made out of wood.



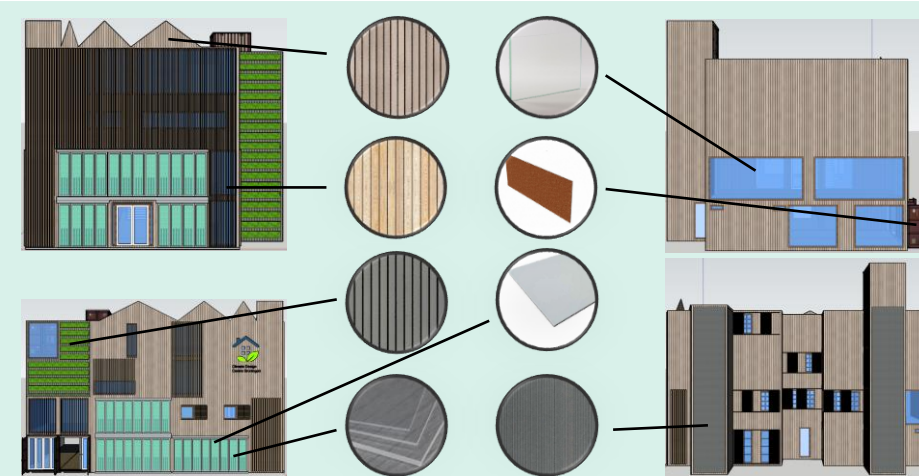
Regarding to previous projects and the Program of Demands, the sizes of the spaces has approximately been defined. Routing has not been taken into account.



There has been done a study to different local wood types. The skin of the main building will be covered by the wood to give the building a better look. The wood will be intermittent by algae panels and green walls.



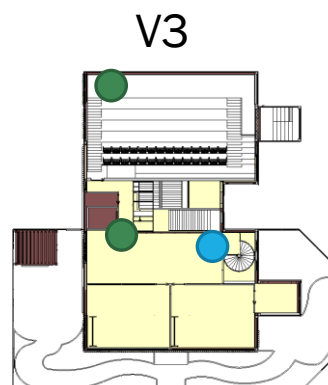
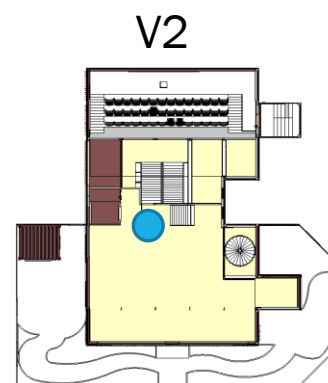
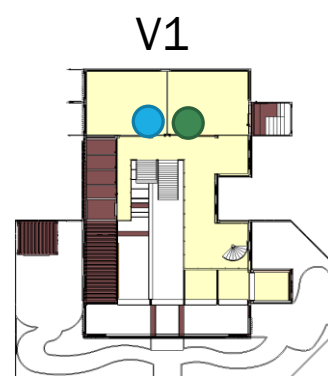
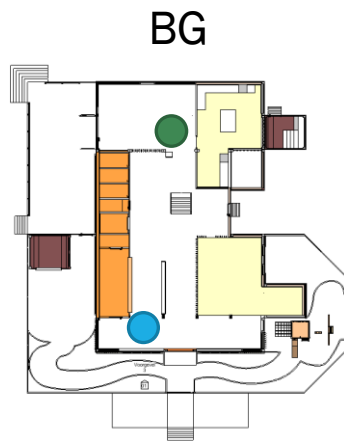
The floor plan has been filled with the functions that has to fit into the building. In this stage the routing has been taken into account. The floor plan has also been worked out to a definitive version which is in miniature presented in the right corner.



The main skin, as mentioned before, will cover the industrial looking sea containers which remain visible on the inside of the building.



Design - interior



When you enter the main part of the building, you enter the atrium, also known as the heart of the building. On the left you'll find the reception which is located into a container that has kept its skin. On the right you'll find the lobby where you can relax or take a break. When you walk straight behind the staircase, you will find the catering with an indoor and an outdoor terrace.

On the first floor you'll find the exposition room and the living lab. You can visit these rooms or you can go up one floor to the experience room where new products will be tested and designed.

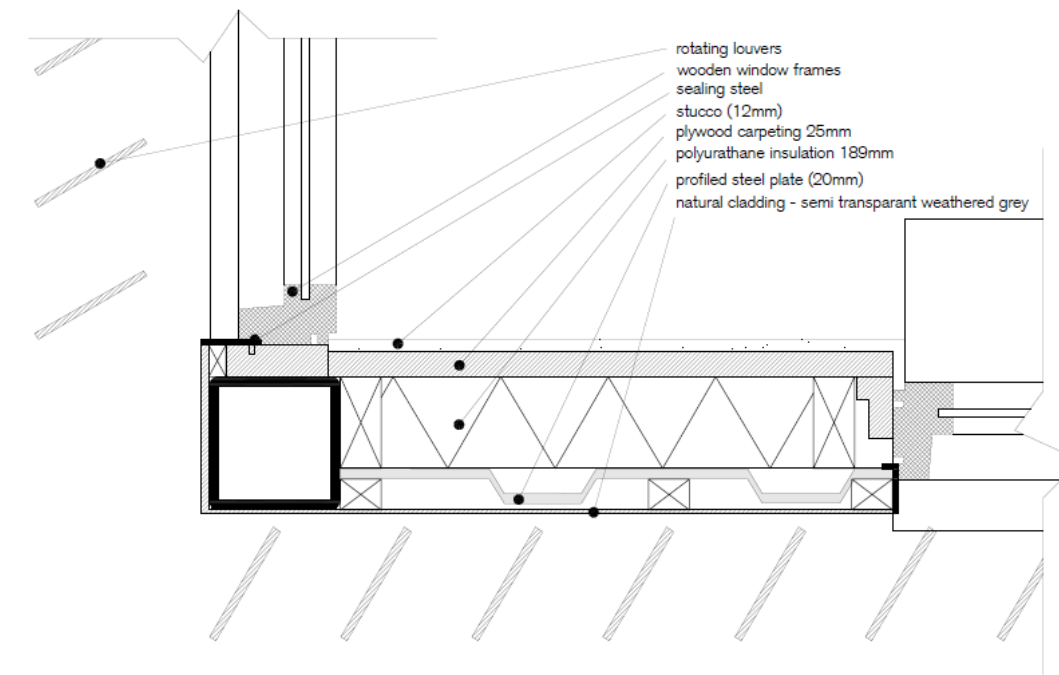
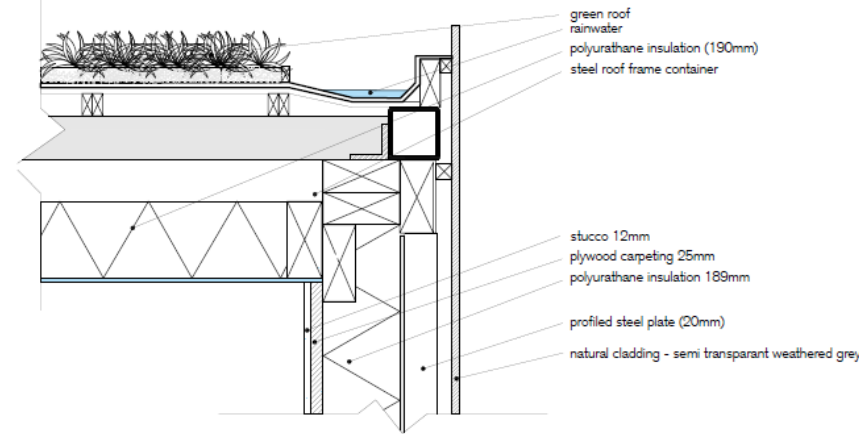
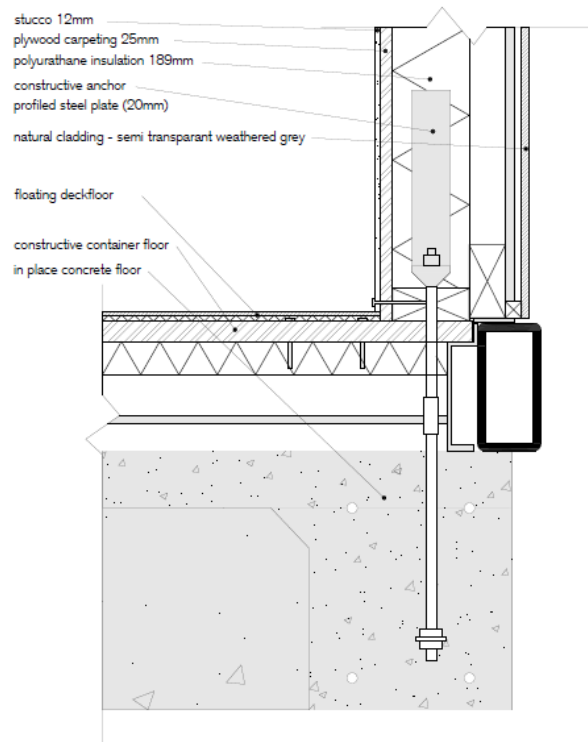
On the last floor you'll find the meeting rooms and the auditorium. Here you can follow lectures or show your findings to the world. The building as itself is a living lab as well. Everywhere through the building you'll find plants which get their water by rain through a piping system from the roof to the structural floor.

The amount of daylight will be regulated by rotating or sliding louvers which are placed on every window that is situated to the east, south or west.

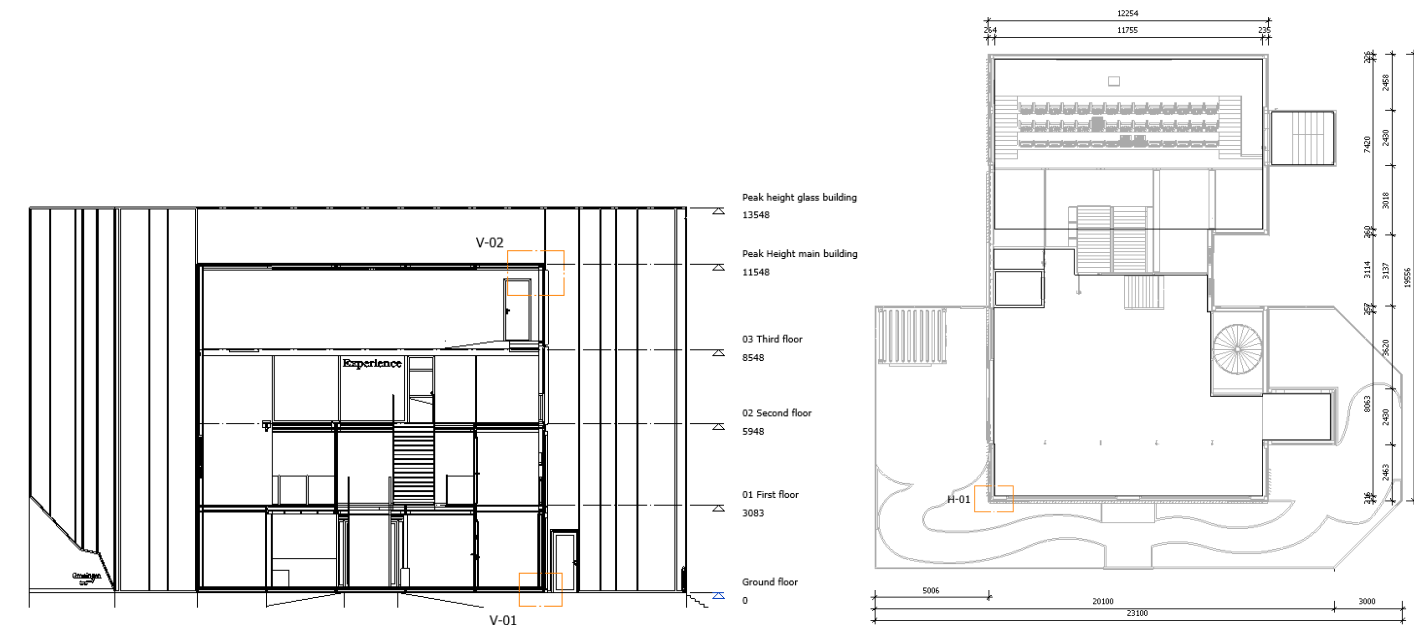
In case of emergency people can leave the building by using the emergency staircase in the north-east part of the building.



Construction

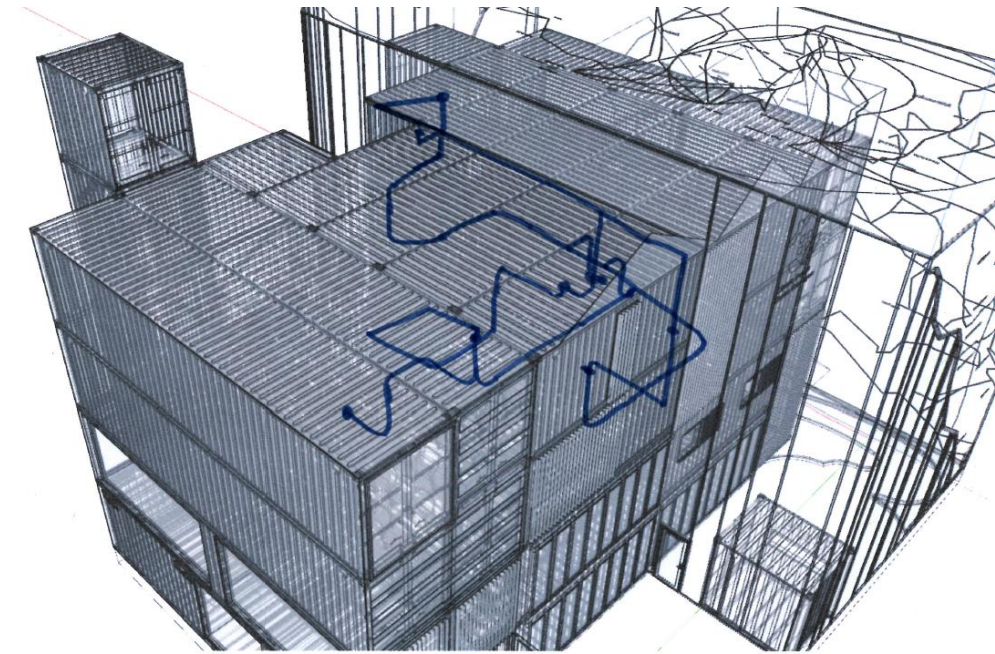
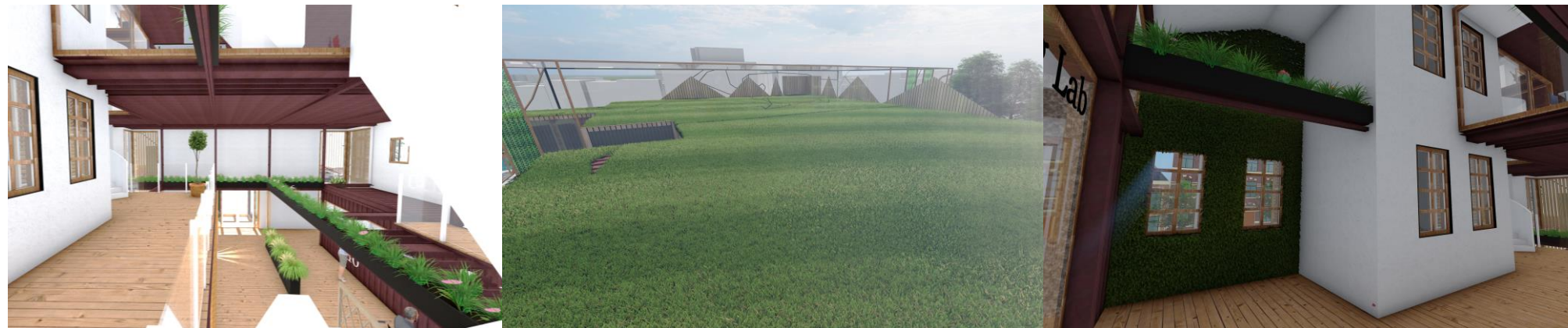


The main construction of the building will remain the one of the sea container. Every beam of column that has been removed has to be compensated with another one. Containers on the ground floor are connected to an in place concrete floor using anchors. The main construction of the roof of the container will also remain intact. On the roof there will become a green roof. A rim still will be welded on the outside of the façade opening to seal the profile at the top and bottom. The sills themselves will be made out of painted meranti wood.





Sustainability

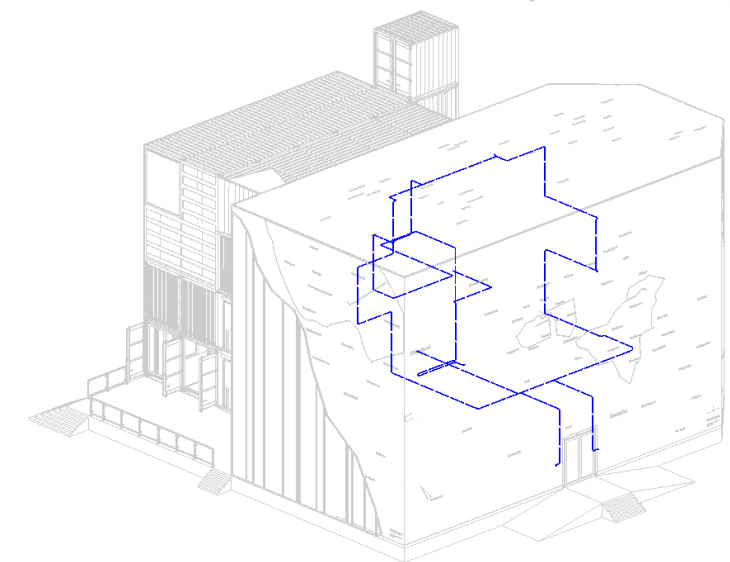
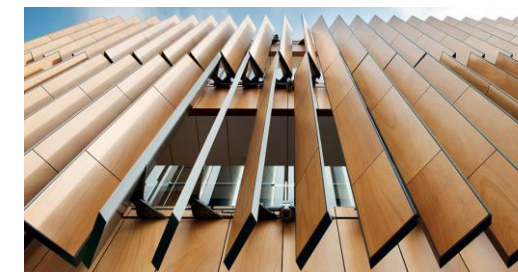


One of the demands of the design was that the building itself has to be climate adaptative, circular or biobased as well.

In order to achieve this, green walls and planters to bridge the beams have been used a lot in this project. Also the rainwater will be used for those planters. A piping system is going through the entire building: through the walls and through the roofs.

Another element that will be used in this building are algae panels. In Hamburg is already built a building with these panels. Some of the advantages of these panels are that those absorb CO₂, they produce biomass and they regulate the interior atmosphere of the building.

The last sustainable element that will be mentioned in this process book are the rotating louvers. These louvers will be placed on the west, south and east side of the building. This makes that the sun won't heat up the building to much and the inside climate will be comfortable.





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