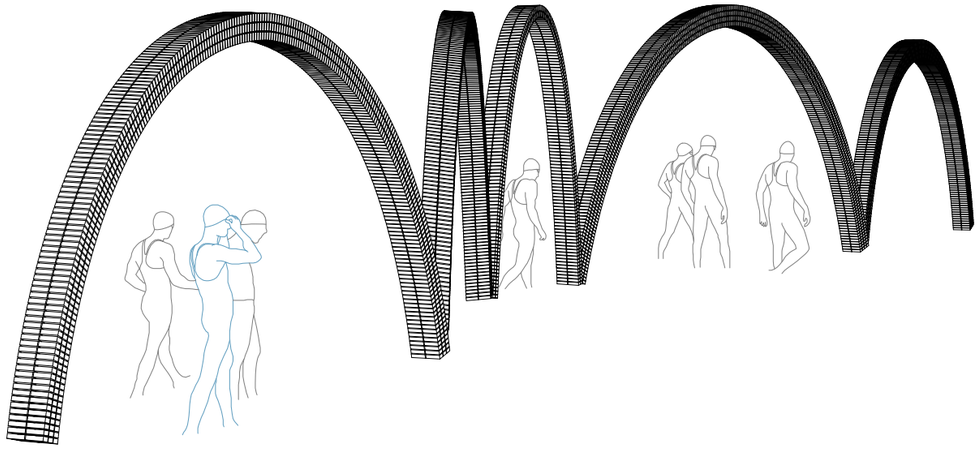
brick lanes

A swimming center for bringing the sport into the urban environment



MARIA JOHANSSON

brick lanes

A swimming center for bringing the sport into the urban environment

a master thesis project

Maria Johansson
Matter Space Structure studio, Spring 2014
Chalmers University of Technology
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Supervisor : Daniel Norell

CHALMERS

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VIEW TOWARDS SMALL POOL

INTRODUCTION

The Brick Lanes is a proposal for a new swimming centre for Upsala Simsällskap, the main swimming club in Uppsala. The club was founded in 1796 and by that it is considered as the world's first swimming club that is still active today. Nowadays, they have their activities mainly in the arena at Fyrishov, but do also have a smaller swimming hall in Gottsunda. These are owned by the municipality and the club finds it difficult to get enough practice times for the pool. By building a new arena in another situation the club can decide itself how the pool should be used and by that attract more people to the swimming sport and create an arena optimal for the club activities.

The new swimming centre is an arena with focus on the sport and how to create the best conditions for practicing and performing in the pool. In that way, it is important to give good functional properties to the building but maybe even more important to create an arena that can represent the club members on a psychological level and make them feel proud of their arena.

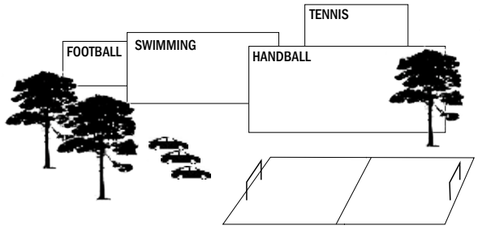
The proposed plot for the new arena is a part of a densification and expansion of the city in the north-east part. An old power line has been removed and that opens up for the opportunity to create better connections between the different areas. In this development an important issue is the creation of more significant main streets within the city, in this project referred to as "urban boulevards". The plot is situated where these two developments meet, along the new boulevard Vaksalagatan and in the border between the housing area (Östra) Sala Backe and the commercial center Gränby. This creates opportunities for making the swimming centre a part of an interesting urban environment. By that, the club can show its activities for new people and make more people interested in the sport.

An important tool to achieve this has been to work with how the building manifests itself in this situation and how it can be a part of both an urban street life but also be a positive contribution for the people living in the area. The idea of working with a building that has two sides, one towards the street and one towards a courtyard, answers to this question and makes it also possible to work with more or less private spaces for the swimmers.

In this urban environment it is also crucial to work with the institutional identity for the swimming centre to make it differ from the buildings in the surrounding. The strength and power of a swimmer together with the slender movement of the body in the water has been the inspiration for working with a brick structure throughout the building. A structure made out of brick arches that create interesting spaces of different scale and direction, which can be made differently depending on the activities. The structure also creates a layering effect in the building going from public spaces to more private ones.

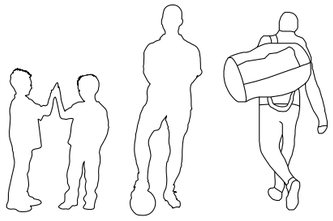
That makes the Brick Lanes a swimming centre that honors the sport of swimming and also contributes to an interesting mixed-use environment in the north-east part of the city.

BACKGROUND : SPORT IN THE CITY



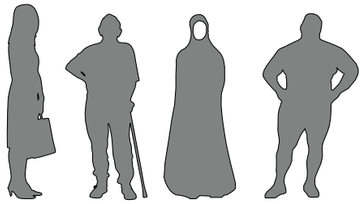
TENDANCIES

The swimming centre built in a sport cluster, often close to nature and isolated from non-sport activities



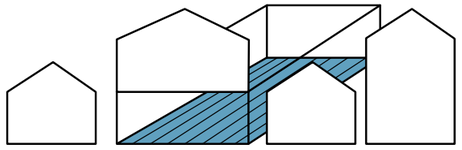
ACTIVE PEOPLE

An increased need to make people do more exercising to avoid health problems. Primarily concerns people that does not take part in the



NON-ACTIVE PEOPLE

range of activities that exists today. Therefore it is of great importance to attract new people to the sport centres.



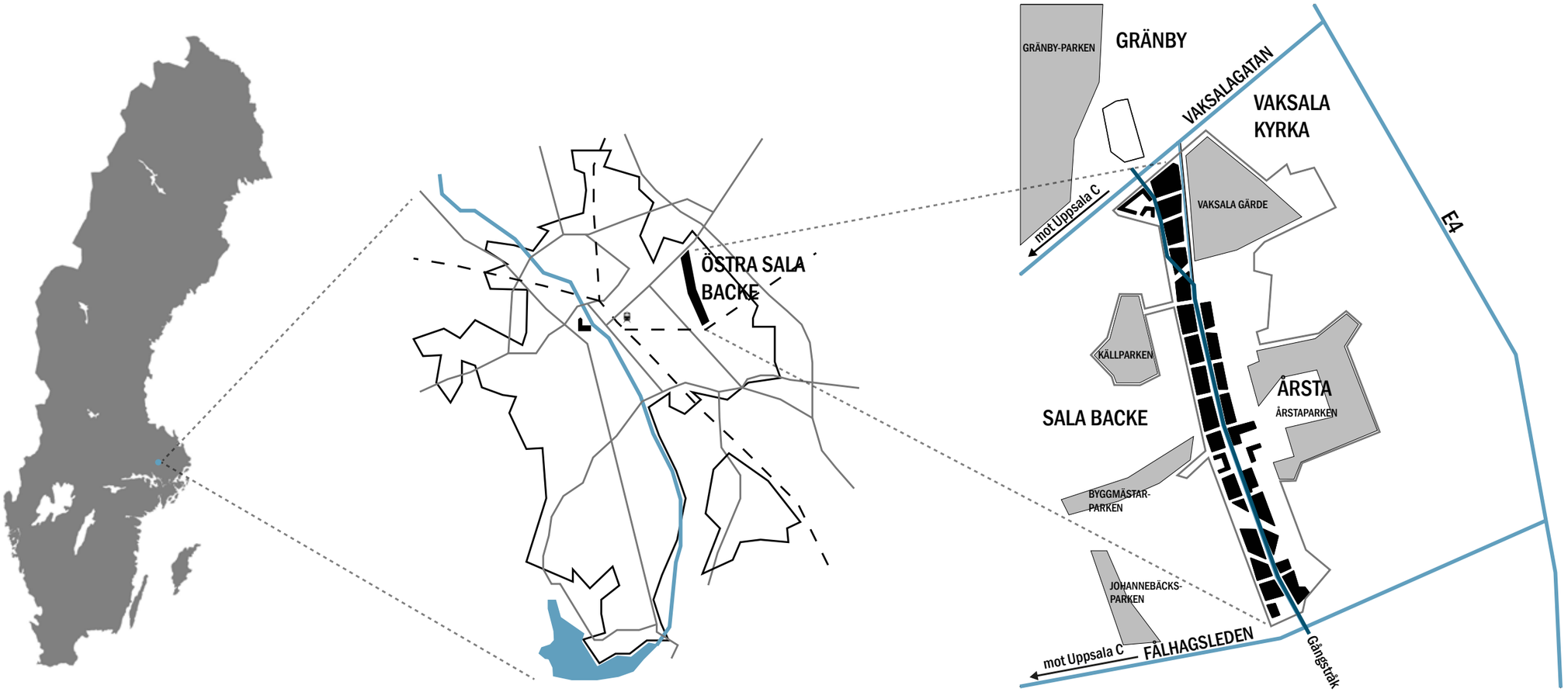
SOLUTION

A swimming centre in an urban area that can attract and be visible for different kinds of people and contribute to a mixed-use environment.

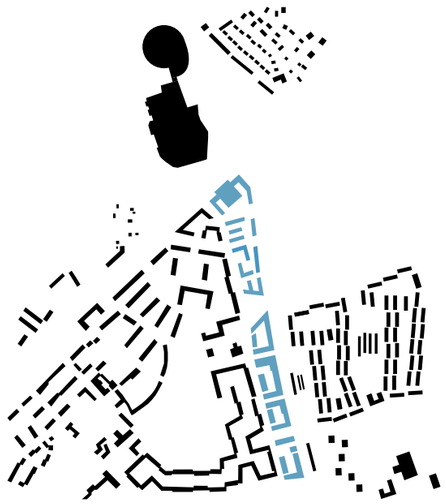
BACKGROUND : ÖSTRA SALA BACKE

Östra Sala Backe is an area in the north-east part of Uppsala, situated between the housing areas Sala Backe and Årsta. It used to be a strip for a former power line that now has been removed. That makes it possible for a new development of the area. The municipality of Uppsala has plans to densify the area and loosen up the border between Sala Backe and Årsta. They plan for mostly housing units, together with small shops and other activities along the transformed urban boulevard Fyrislundsgatan and also partly along the local street Johannebäcksgatan.

In the northern part Östra Sala Backe is also connected to the development of Vaksalagatan into a boulevard, with buildings along its sides and the establishment of a new tram line and a developed bus system. North of Vaksalagatan, the shopping mall Gränby is situated, where there are plans to build a new bus station. Further plans also involve developments north of the shopping mall with a new sport arena and additional shopping area, together with housing. The plot for the swimming centre is situated in the border between Östra Sala Backe and Gränby which makes it important in connecting the two areas.

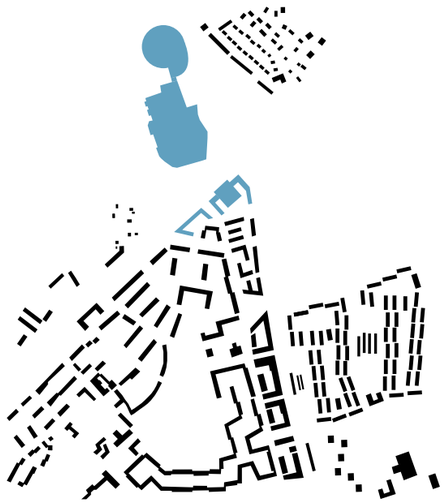


CONCEPT : AREA



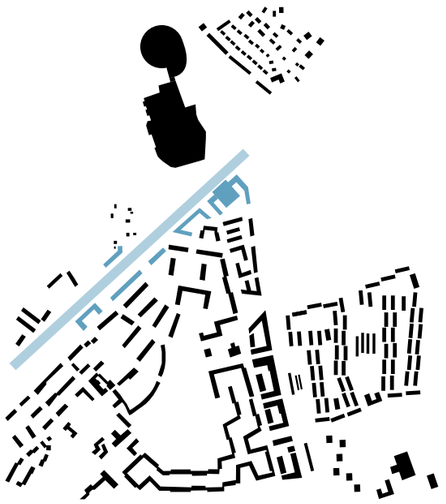
GOAL FOR ÖSTRA SALA BACKE

Strengthen the east-west links between Årsta and Sala Backe

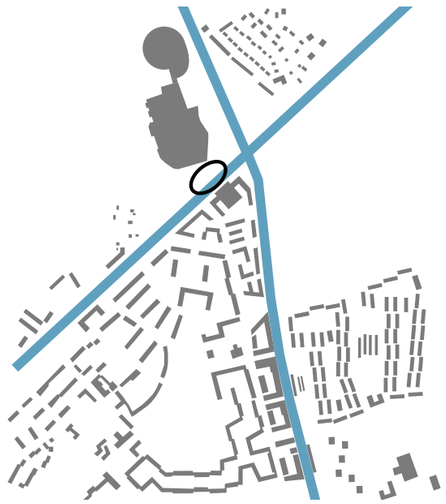


GOAL FOR THIS PROJECT

Strengthen the south-north links between Östra Sala Backe and Gränby

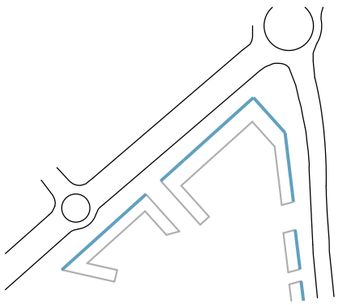


Be a part of making Vaksalagatan into a urban boulevard



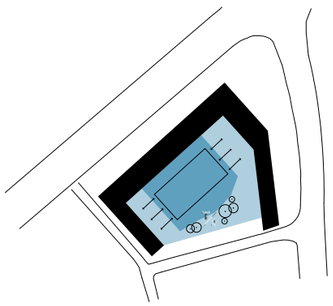
Be a part of a new public transport hub

CONCEPT : BLOCK



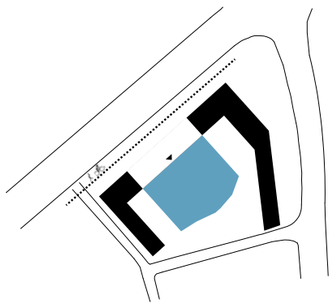
NOISE PROBLEMS

Closed facades towards the streets create a silent courtyard

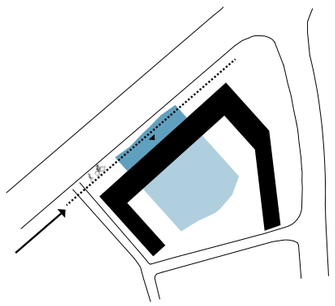


THE COURTYARD

Courtyard with space for a 50 meter swimming pool and two different characters; one with enhanced contact with the housing/offices and one open green area for working out/relaxing

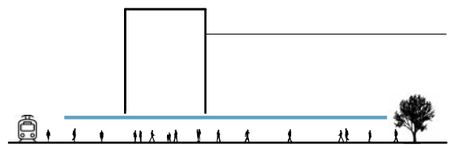


CLASSICAL WAY: SQUARE



THIS PROJECT: IN THE STREET

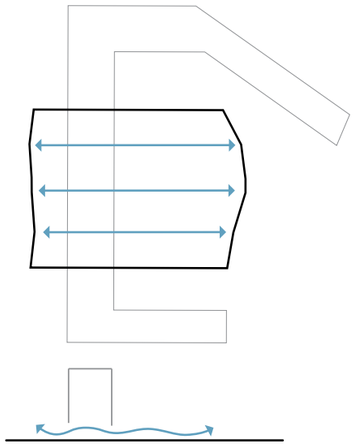
The building extends into the street to enhance the pedetrian area across the road and be visible from distance



LOW SCALE AND HIGH SCALE

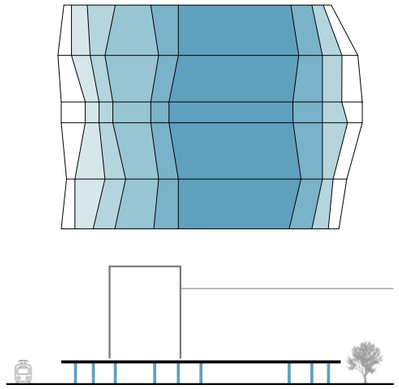
The swimming hall scale connects to the urban street life, while the other buildings in the block have the same scale as the buildings in the neighbourhood

CONCEPT : BUILDING



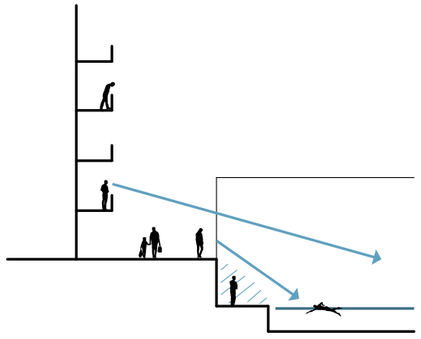
STREET - COURTYARD

A direction that enchances the important connections and breaks the clear 50 meter direction in the swimming hall



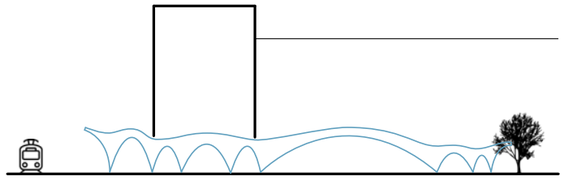
LAYER: PUBLIC - PRIVATE

Tool to enhance the important difference between public and private, and thereby blur the direction and visual connection in the building



HEIGHT: PUBLIC - PRIVATE

Height differences in the building creates a clearer difference between public and private



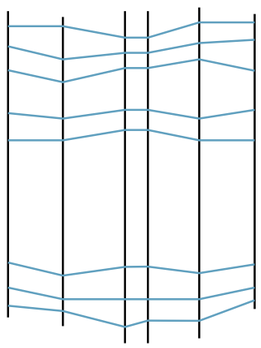
CHARACTER

A building with an own identity in the urban environment that represents the swimming sport

CONCEPT : SPACES

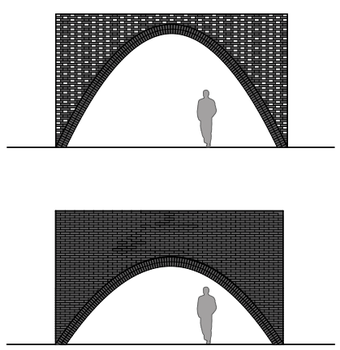
BRICK ARCHES

Arches in compression that make the brick work in its optimal way



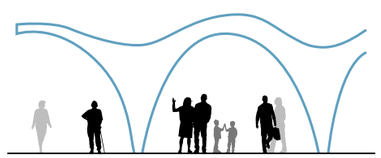
DIFFERENT DIRECTIONS

Two different directions for the arches makes it possible to shape the rooms in different ways and give each space certain direction



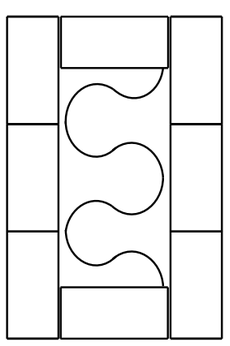
DIFFERENT CHARACTERS

Arches and walls with different qualities like transparency, size, insulation, absorption etc.



OUTDOOR ARCHES

Create assembling places outdoors and make the border to the hall less difficult to pass



THE SMART MATERIAL

A “complete” material that can work as load-bearing, façade and surface material, and can be re-used

PROGRAMS

POOL AREA

LOCKER ROOMS

LOBBY

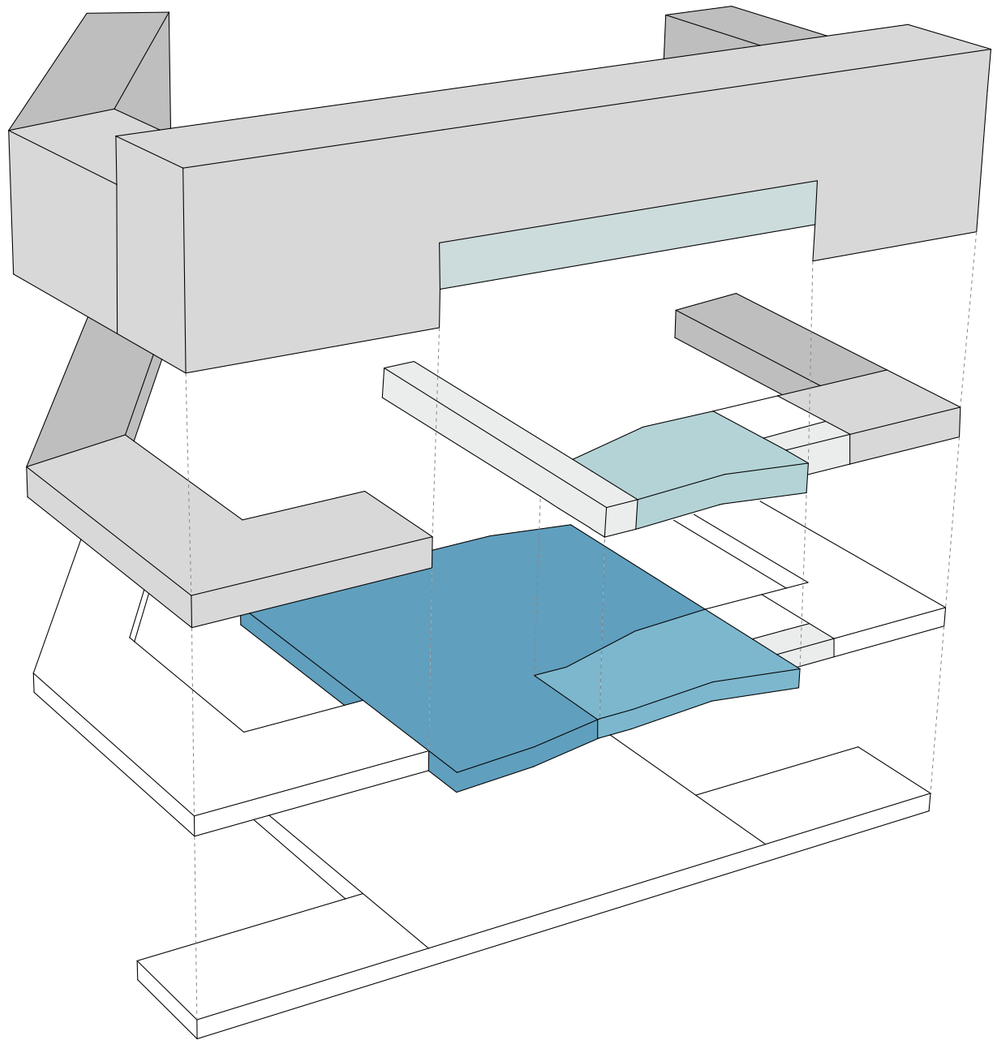
GYM

HOUSING

OFFICES

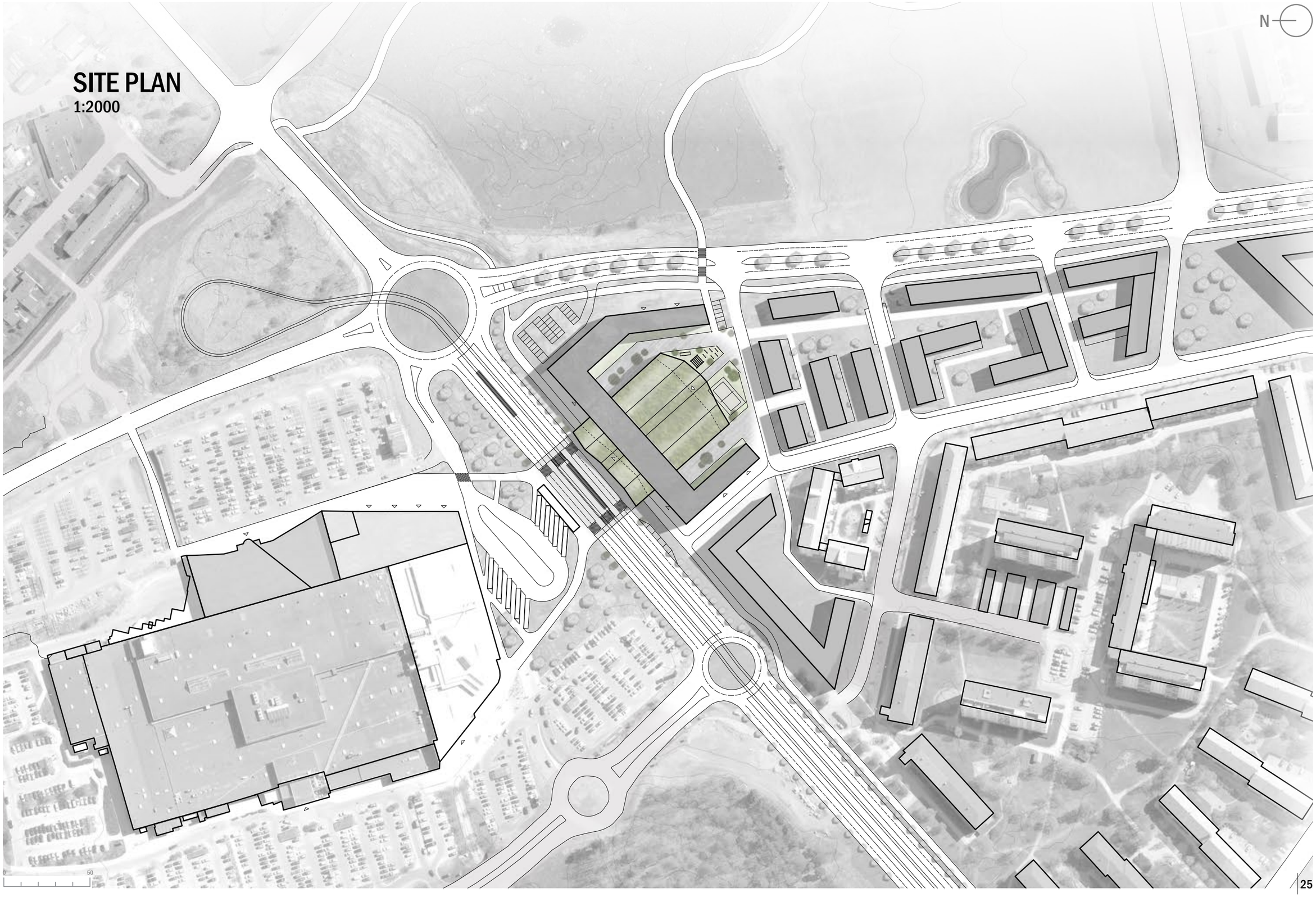
COMMUNICATION

SERVICE AREAS



VIEW TOWARDS ENTANCE

SITE PLAN
1:2000



AXONOMETRY

GYM, OFFICES and HOUSING

Directly above the lobby, the gym is situated with a direct contact to the green roof above the swimming hall. Further above there are office spaces in the higher volume, with separate lobbies in direct contact to the street level. Around the courtyard, there are housing units in the lower levels.

THE ROOF

The roof is built up by a steel beam structure, and a load bearing profile sheet of steel as a secondary structure. The green sedum roof makes a pleasant fifth facade for people in the higher buildings surrounding the courtyard and enhances the feeling of the building being a part of the ground. For the half-arches stretching out in the street and in the courtyard, there is a need for an extra steel structure to bring the vertical load to the ground.

GROUND FLOOR

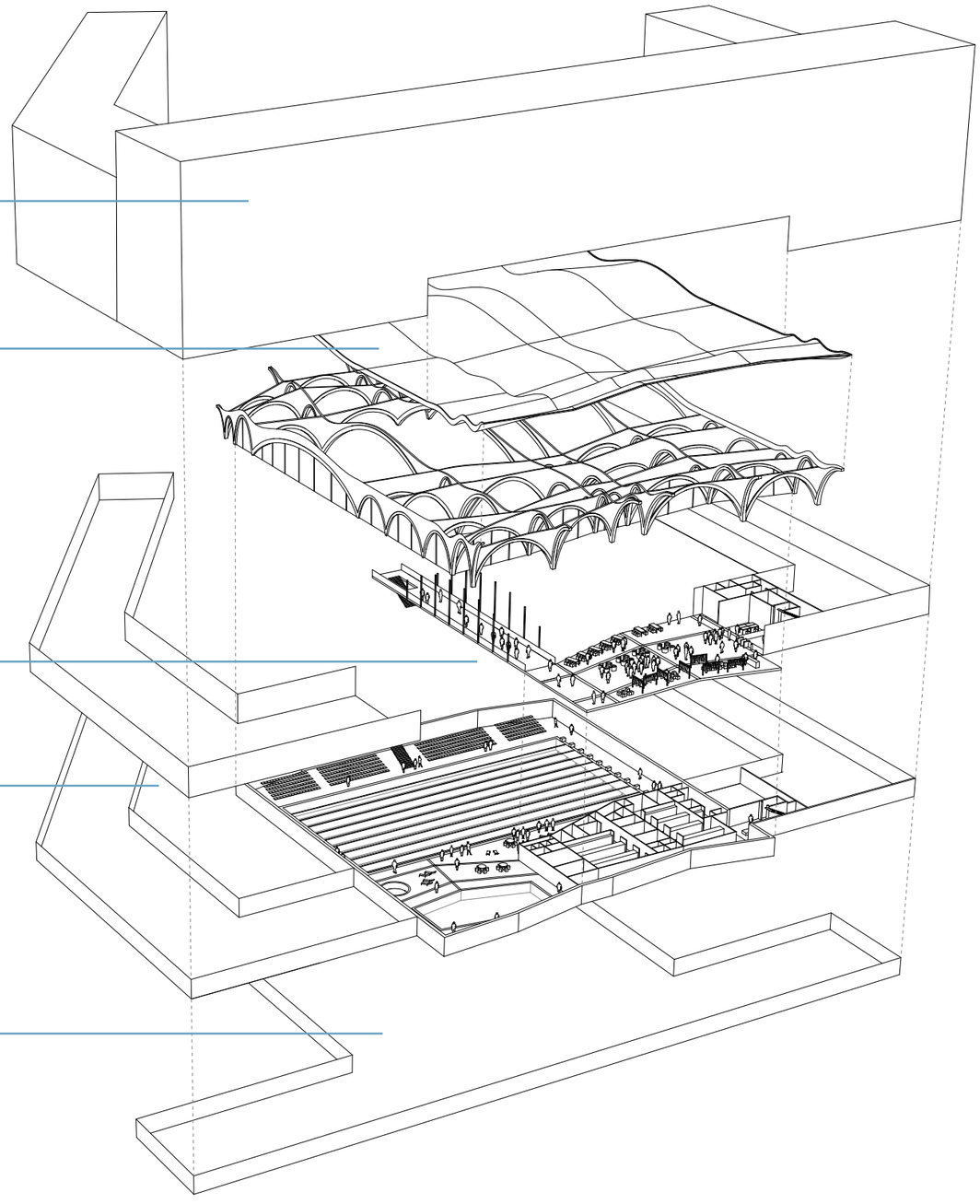
The ground floor is characterized by its openness in all directions, both towards the street and the courtyard. The lobby is a hang out area for visitors to both the swimming centre and the gym, as well as for the people working and living in the area. From the lobby you also have direct access to the bridge over the pools, an area for parents to watch their kids and an entrance point for audience during competitions.

FLOOR -1

The swimming area is situated one level below the ground floor which gives the swimmers a more private environment. On this level the most private rooms, for example the locker rooms, are also situated. The use of window-less walls towards the ground also makes it possible to give a good acoustic climate in the hall with the use of brick that can absorb noise.

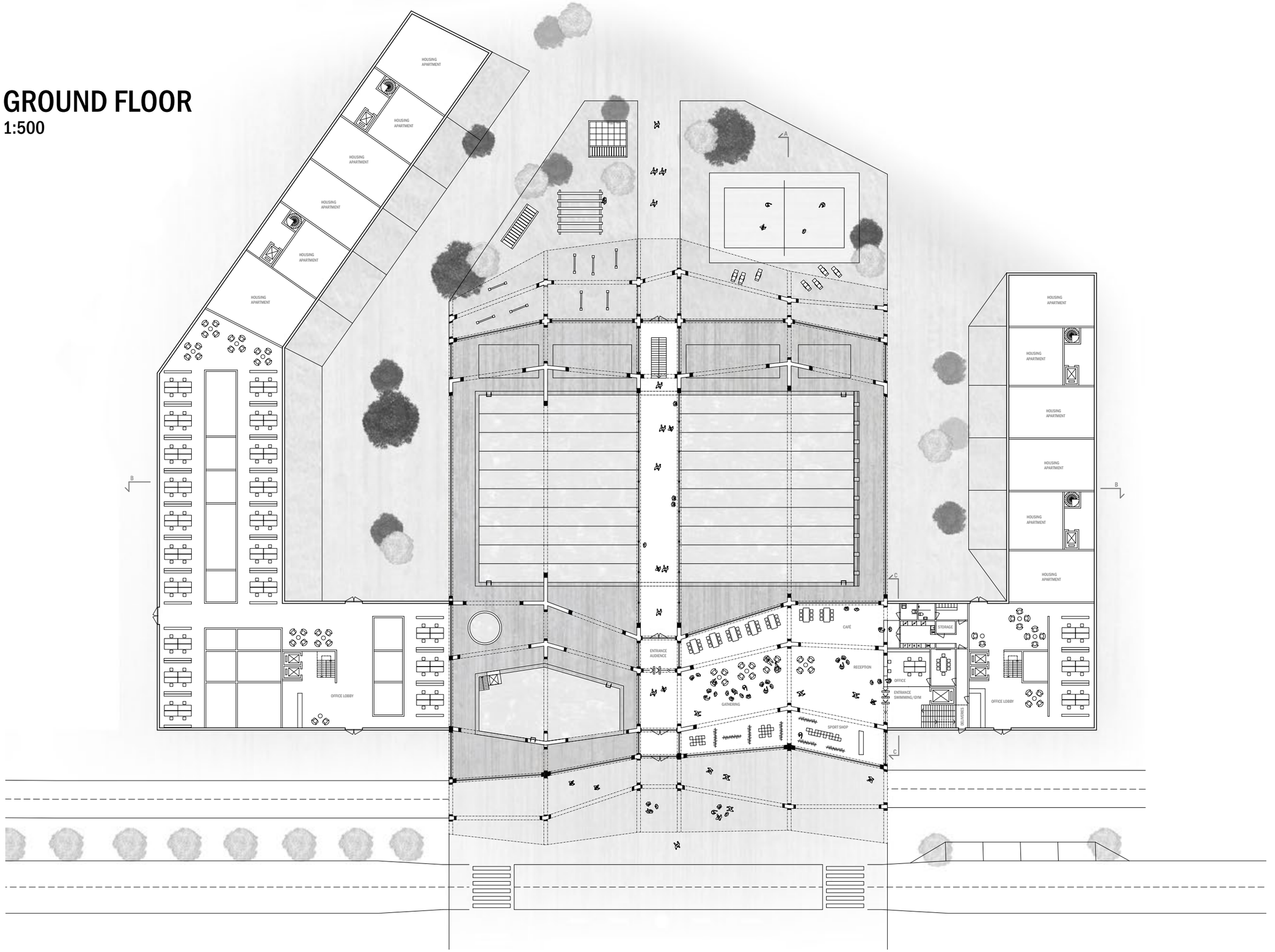
THE BASEMENT

The building share the installation spaces with the offices which enables an energy exchange. Especially in the summer, the need for cooling in the offices can be coordinated with the heating need in the swimming hall.



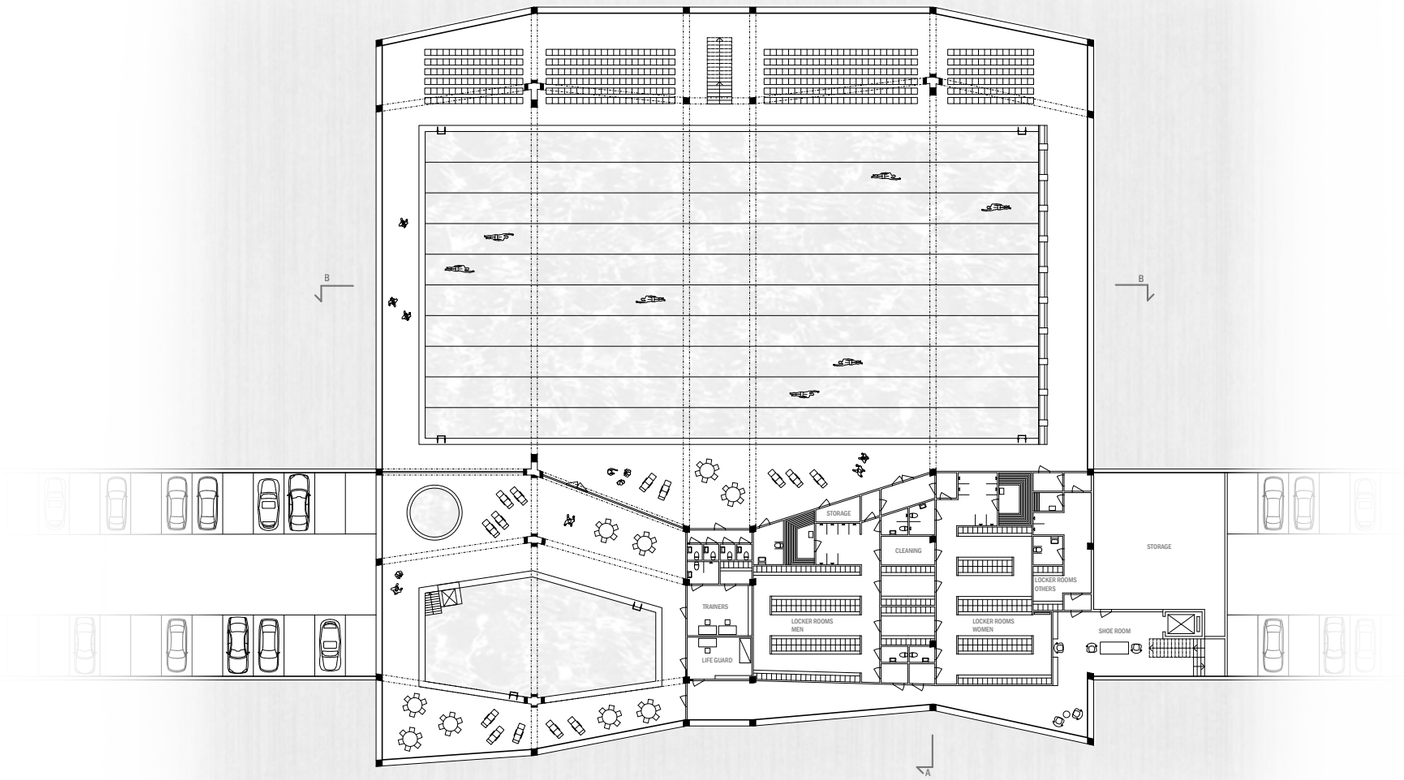
GROUND FLOOR

1:500



FLOOR -1

1:500



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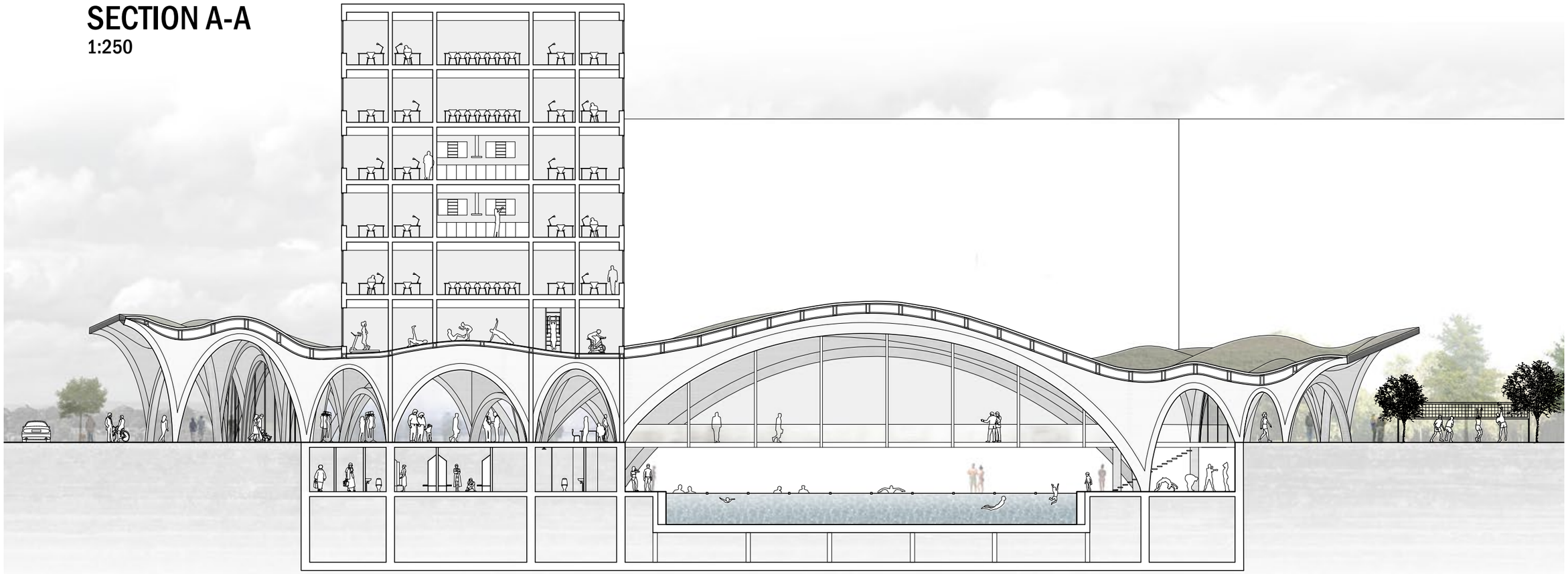
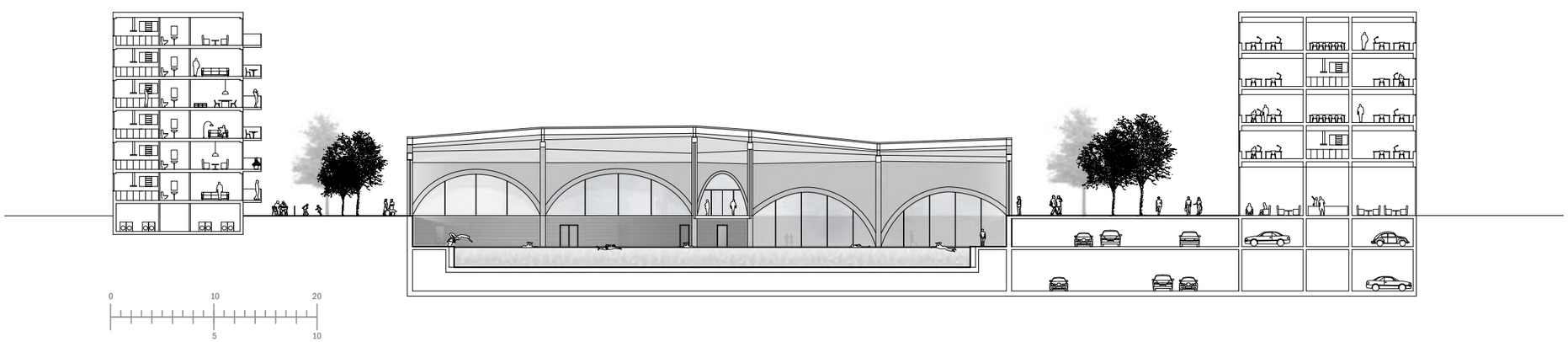
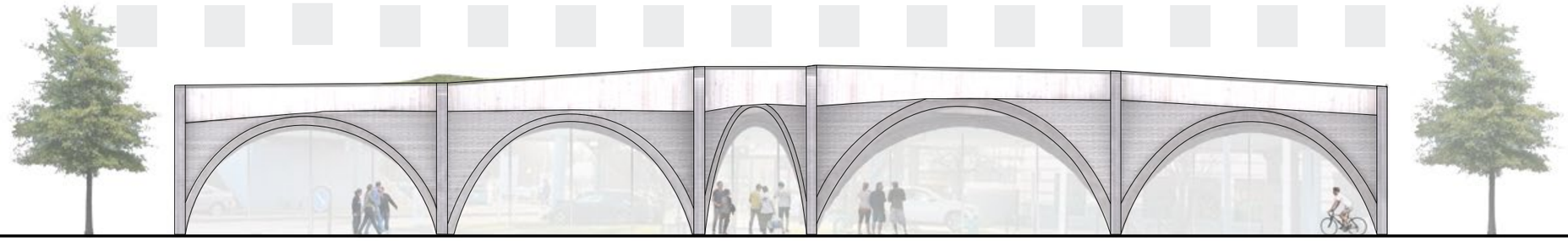
SECTION A-A
1:250



SECTION B-B
1:500



ELEVATION NW
1:250



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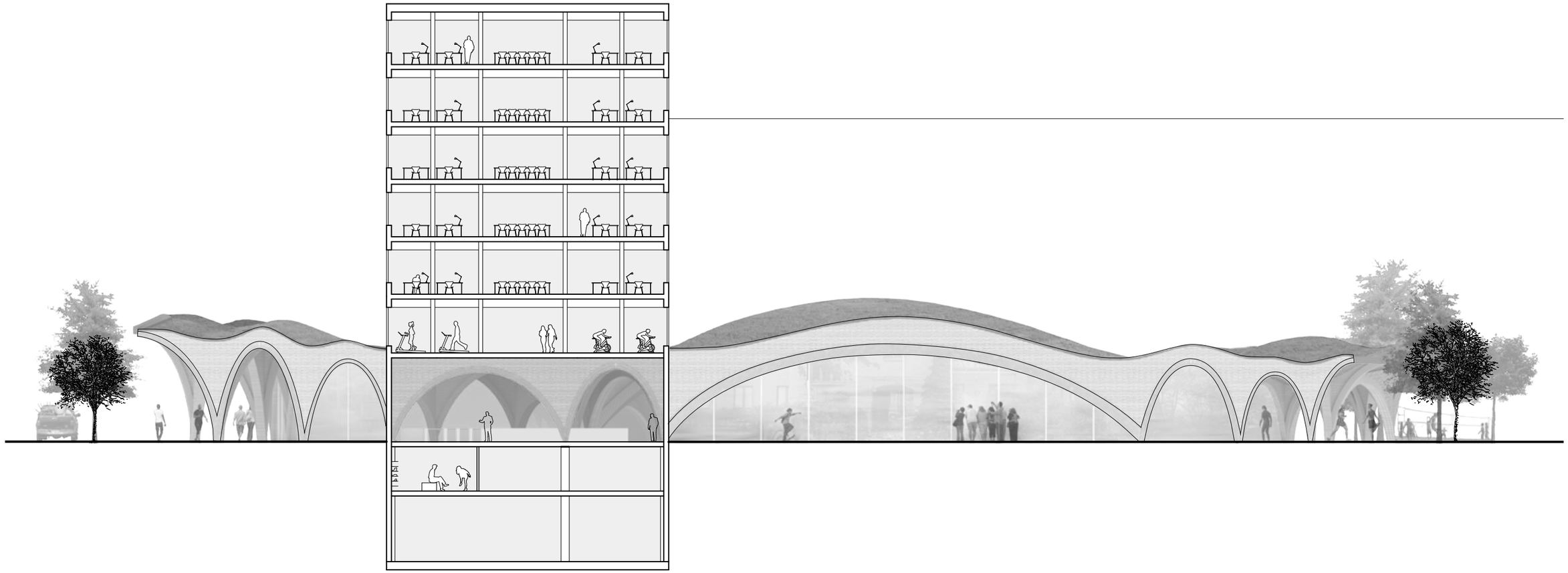
ELEVATION SW / SECTION C-C

1:250



0 5 10

VIEW TOWARDS COURTYARD

THE ARCHES : IDENTITY

The sport of swimming is a sport with a focus on the body and how it works together with the water. The optimal motion is as slender as possible to avoid friction in the water but still a powerful one to cross the surface and move forward. Therefore, it has been an important question to work with a structure that represents this feeling and can be one with the swimmers.

The swimmers also spend many hours in this arena and put a lot of effort into develop. In that case the detailing and precision is of great importance and the building should answer to this part of the sport and represents a workmanship that can compete with the swimmers.

Brick arch construction,
Columbus USA

Segmented vault of earth blocks,
Auroville India 1995

Brick arches and double-curved roof in Vapor Aymerich by Lluís Muncunill, Terrassa Spain 1909

Concrete arches in Tama Art University Library by Toyo Ito, Tokyo 2007

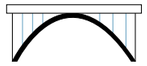
THE ARCHES: SPACES

STRUCTURE

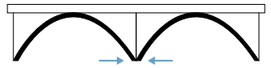
Columns - Open

Wall - Closed

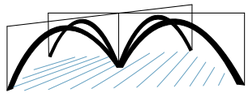
Arch - Half open, optimal use of brick in compression



An arch that acts in compression and takes down the vertical load from the roof via the wall.

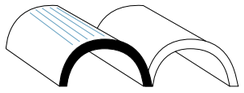


Two elements support each others in 2d.

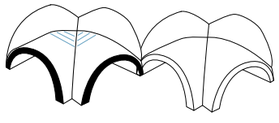


Four elements meet in one point, attention on the wall and the landing/floor. Enhances the focus down towards the pool area.

Barrel Vault



Groin Vault



Examples of classical use of the arch in a vault structure that acts in 3d. Gives attention towards the middle of the room and the roof. Enhances the focus up towards God.

DIRECTION

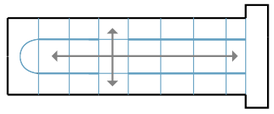
The use of arches makes it possible to shape the different spaces and give them certain character.

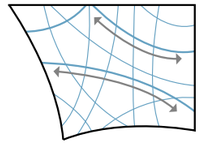
ex. Typical Church floor plan

The arches and vaults create one clear direction towards the altar, while there is also another more diffuse direction perpendicular to the nave, if you turn your head. This is also the type of direction that you can feel in a normal right-angled space.

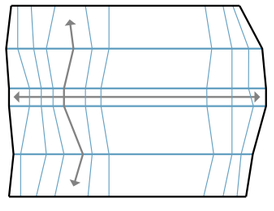
ex. Tama Art University Libary

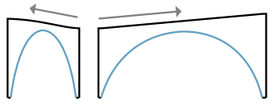
In this case the arches create many different directions, some more clear because of the use of glass walls and regular walls. The overall feeling is very open, where the furniture plays an important role in defining the spaces more clearly.





In the swimming centre, there are two different kinds of arches; the ones perpendicular to the street are straight, while the ones parallel to the street have different directions. They are the key arches in creating layers going from public to private and create a more diffuse feeling through the building.

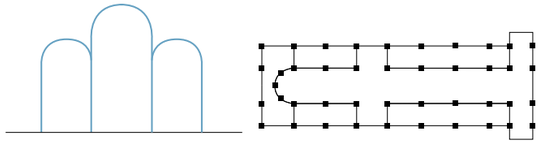




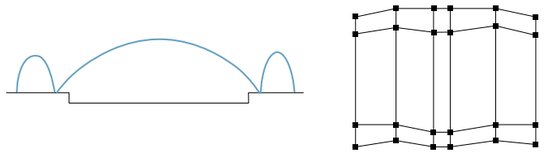
SCALE

The building is characterized by its arches that creates different spaces through the building, and by that different layers.

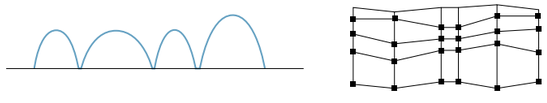
The inspiration comes from classical church spaces where a common situation is to divide the room into a nave and side aisles.



In the same way, the 50 m swimming pool space represents the main hall, while there are more narrow spaces along its sides.



In the lobby the different spaces are more equal in hierarchy, even if some are bigger gathering spaces while others act as more narrow passages.



THE ARCHES: BRICK

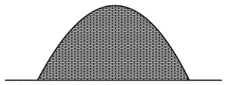
The choice to work with brick as a main material in the building is mainly because of its diverse usages throughout the whole building. It behaves in a good way as the main structural material, and at the same time act as the facade material and is also very suitable for a non-slip floor material.

In a swimming hall there is a strong demand on the materials to resist the high levels of moisture in the rooms. In this matter, the brick is good at collecting the moist and not make it affect the material. The brick properties also involve the ability to store heat and can by that even the need of heating in the hall.

In a longer term the production and usage of brick is good in a sustainable way, compared to other structural materials as concrete and steel. It also becomes more beautiful the older it gets and is therefore very attractive as a reused material. That further enhances its sustainable qualities.

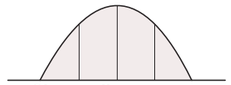
The usage of brick in the swimming centre is also the key in working with the wall and the arch and gives them specific properties that can adjust to the different spaces in the building. You can find some examples of that in the pictures below.

WALL BELOW ARCH



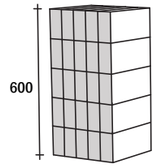
Wall of brick,
more or less transparent

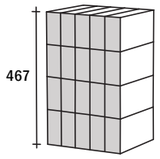
Complete open opening

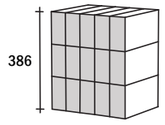


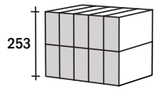
Glass wall

ARCH: WIDTH

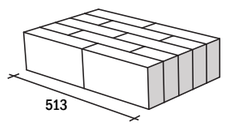




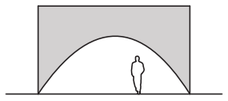




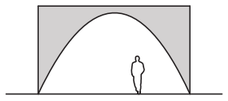
ARCH: HEIGHT



WALL ABOVE ARCH: SPACE

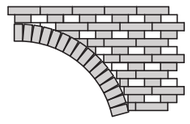


A shape that creates
a more closed border
between spaces

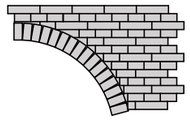


A shape that creates
a more open border
between spaces

WALL ABOVE ARCH: TRANSPARANCY

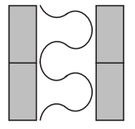


A transparent brick wall
that gives a hint anout the
area behind, creates a
diffuse border

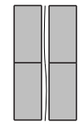


A closed brick wall that
enhances the opening
below the arch, gives also
more stability to the arch

WALL ABOVE ARCH: IN BETWEEN



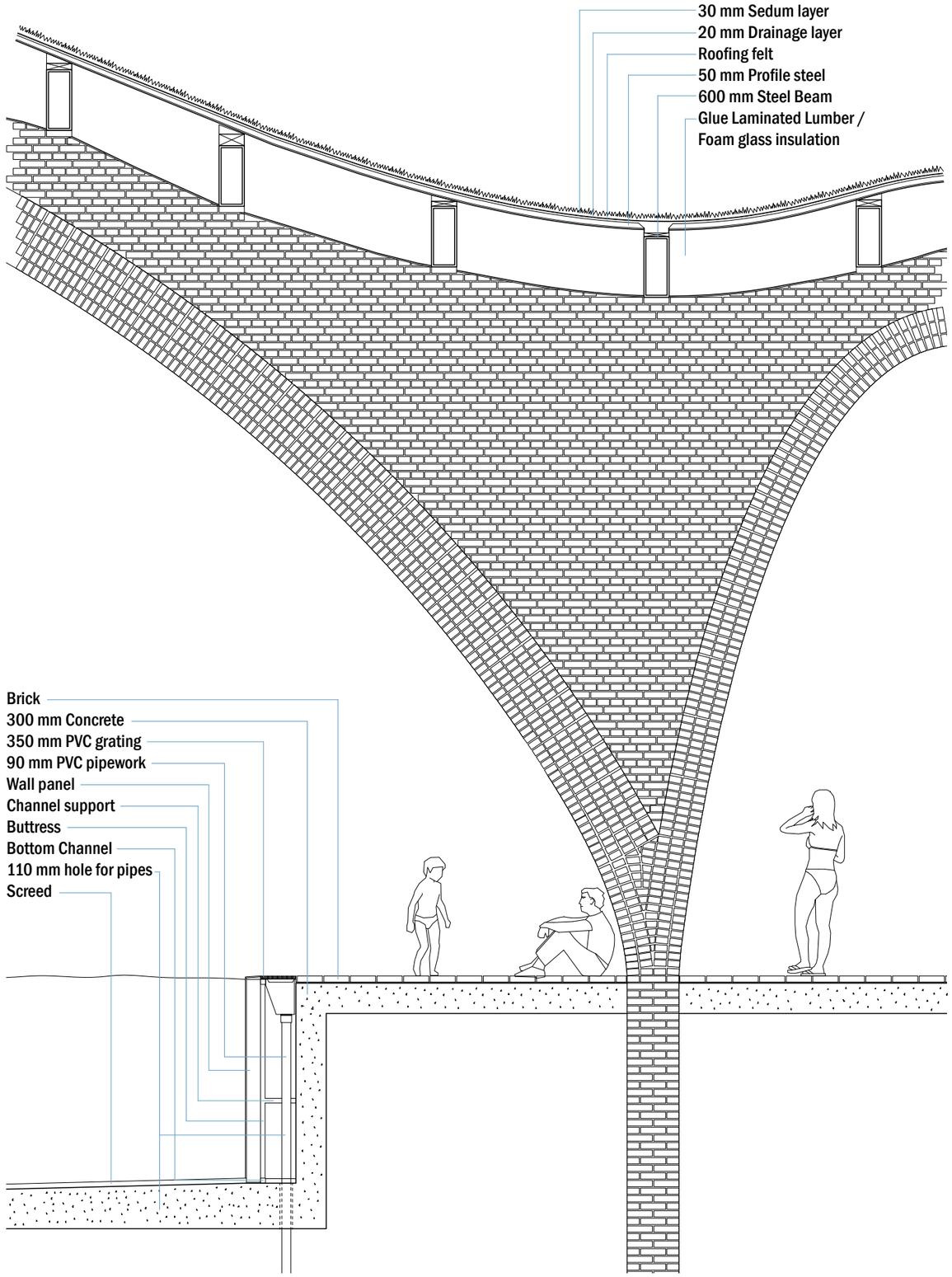
A 513 mm wall that in-
cludes insulation or sound
abosorbation between
brick walls, preferable used
between in the facades



A 263 mm wall with
absorbation layer,
preferable used in the
swimming hall or lobby
to reduce noice levels

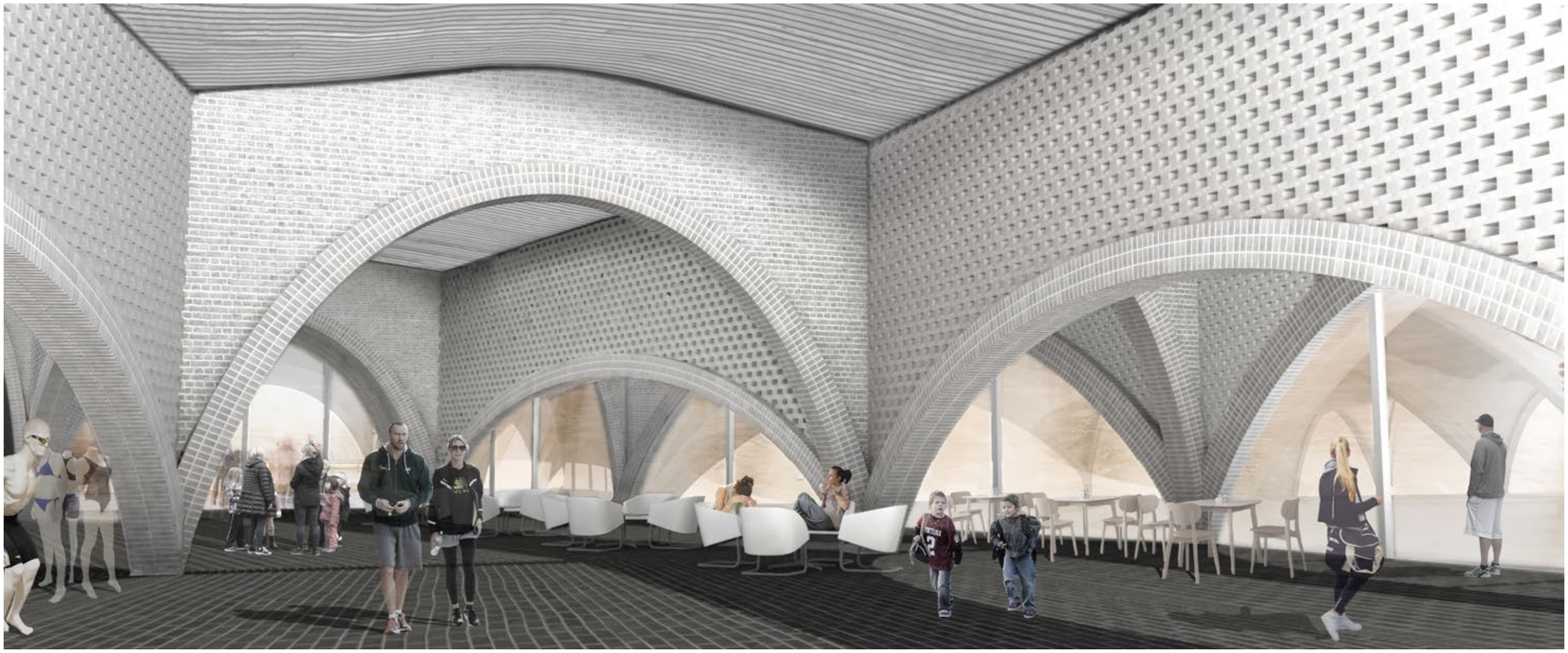
DETAIL SECTION

1:50



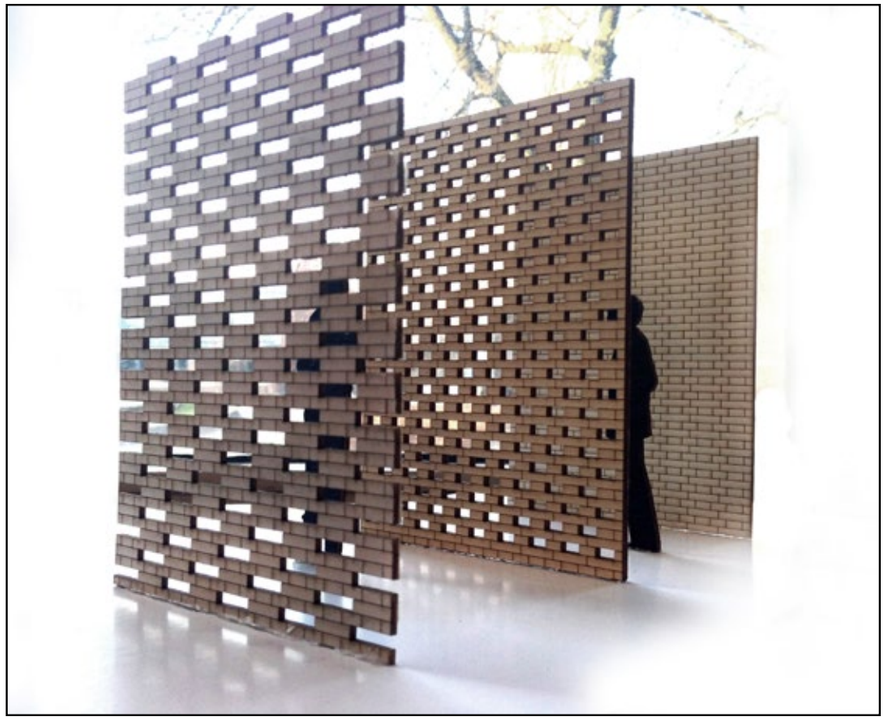
0 1 2

VIEW IN LOBBY



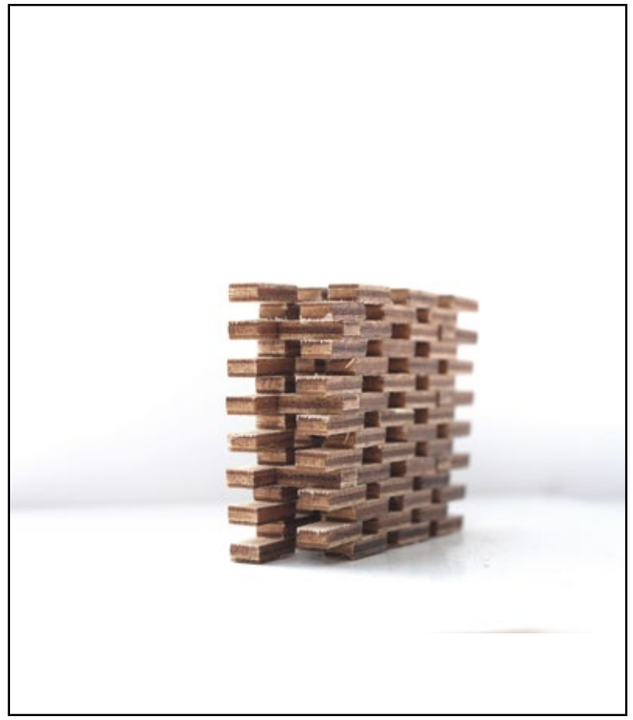
VIEW TOWARDS 50 M POOL

MODEL PHOTOS : CONCEPT



LAYERS

ARCHES

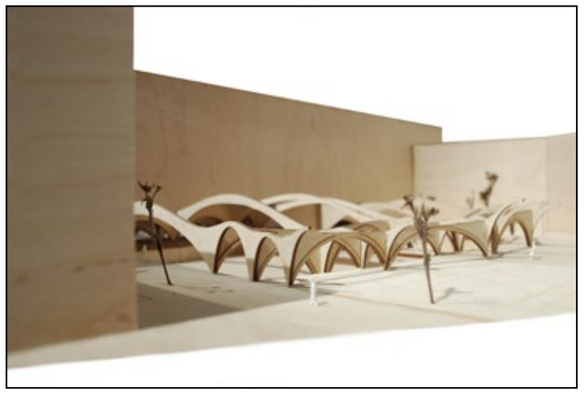


PROPERTIES WALL

MODEL PHOTOS : BUILDING








MODEL PHOTOS : SITE

special thanks to

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brick lanes

MARIA JOHANSSON