EXERCISHUSET 2.0

SPACES FOR SPONTANEOUS SPORT

A master thesis by:

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in collaboration with:

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Examiner:

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INTRODUCTION

I became interested in the planned development on Heden and particularly on how the areas long history and identity of being a place for activity and sport can be preserved and strengthen. Today the sport is carried out on large fields (mainly football) and in the old exercise building (mainly ping pong) The fields are accessible to the public when clubs haven't reserved them and the exercise building is devoted almost exclusively to the ping pong club. This means that both the fields and the exercise building is devoted primarily to organized sports. Today research show that that people less and less are members of clubs and more and more do sport on their own and with friends, the term for this kind of activities is spontanious sport.

My thesis aim to give spaces for this kind of activity thus broadening the sporting spectra with more flexible spaces for various kinds of sport. If the agenda of the development on Heden is densifycation, the thesis aims to show an example of how sport can organize itself in denser urban way. The main approach to reach this result is by suggesting an approach where a variation of smaller spaces than the typical sport centre forms a dense cluster for activity. The focus is on creating a public building with low tresholds in the spirit of the trend towards more spontaneous activities.

MARCUS ABRAHAMSSON

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BACKGROUND

HEDEN:

The history of settlement in the area goes back to the 17th century, when the fortified city of Gothenburg was built and a highway was laid to the south gate of the city. During the 18th century there was little building in the area, which was used for military training, as pasture for the livestock of the people of the city and as gardens. The area developed in to an area for games, sport and an important public space for events and demonstrations as the military moved out. Since then the space has been devided between sport and parking and today discussions and investigations are made to see how he area can be strengthen and densified.

Heden in a Gothenburg context (1:5000)

Heden in the late 19th century, and open space shaped by everyday life.

HEDEN RESEARCH:

In the process of learning more about Heden, I met with different members of the city planning office and discussed the area, and the upcoming competition

SELECTED QUOTES FROM THE COMPETITION BRIEF

"To develop and give a clearer identity to Heden as a place of sporting and cultural activity"

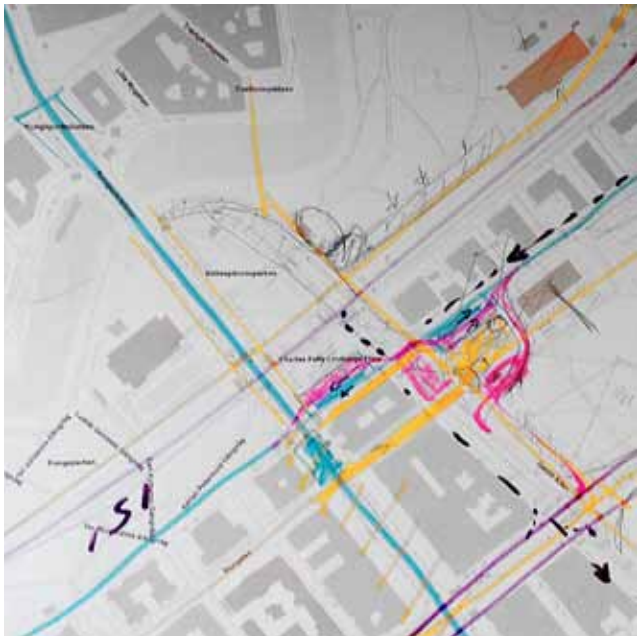
.

"To develop Heden as a resource for Gothenburg as an event city. To develop public transport nodes."

"To create a green lung with many meeting places, safe walks and cycle tracks, interesting places to visit and exciting places for play."

"Heden must also continue to contain areas of a robust character, i.e. durable, attractive and flexible areas for both everyday life and special events."

Images from some of the meetings taken to inform the thesis about Heden specific questions.



A sketch from the meeting with traffic planner Magnus Ståhl, cleraly showing the interest in the later chosen site.

SPORT TODAY:

Research show that people less and less are members of clubs and more and more do sport on their own and with friends. The term for this is spontaneous sport and a part of this tendence has to do with the fact that people feels that the approach in clubs is to serious.
In architecture today you can see that this trend is starting to rub of on the expression that architecture for sport take.
Today Heden is very much focused on football by having large fields sized and equipped for this purpose. In my approach towards the sporting facilities on Heden I aim to broaden the sporting spectra with more flexible areas for any kind of sport and also focus these areas on smaller spaces more fitted for many smaller groups doing sports together in a more dense way.

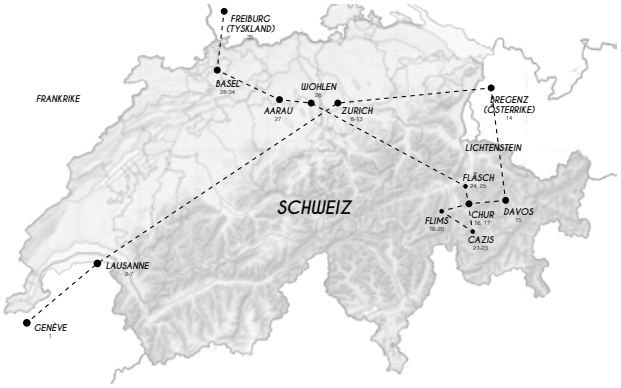
Some of the interesting activity architecure that has been built the last years.

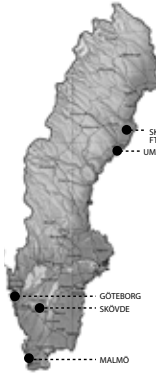
Diagrams showing how the shift from organized sport towards spontaneous sport and private gyms can look in percentage.

MATERIAL

PRE–STUDIES:

The thesis had a material prerequisit, I knew I wanted to construct the project in wood, simply beceause it's a key material towards sustainability. To learn more about wood construction I started in the fall to travel around to a number of seminars and lectures on wood construction all around Sweden.
This early choice of material led to a collaboration with a fellow student, Agnes Orstadius, who had decided to look in to wooden constructions in her engineer thesis.
We started our thesis period with a study trip to Switzerland to look at some interesting wood architecture and go to institutions working with wood. This collaboration has has driven the thesis, as you will discover, in to a direction where architectural intent and structural solutions are weaved together to form one response.





GÖTEBORG -
18 Augusti, Trä & Teknik Mässan
GÖTEBORG -
30 September, Trästad 2012
SKÖVDE -
23 oktober
MALMÖ -
26 oktober, Träriksdagen
UMEÅ -
21-22 november , Europes Most advanced Wooden architecture

STUDY VISIT

22-25 FEBRUARI
MARTINSONS, SKELLEFTEÅ

Tors 17 jan
2 Tour de Sauvabelin
3 EPFL & IBOIS
4 Rolex center
5 Local Architecture
6 Ecole à Bois
7 Origami Chapel

Fre 18 jan
8 ETH, Gramazio & Kohler Digital Fabrication Studio, träforsknings-avdelning
9 Tamedia Bldg
10 Calatrava Library

Lör 19 jan
11 Calatrava station
12 Leipzigrund Stadion

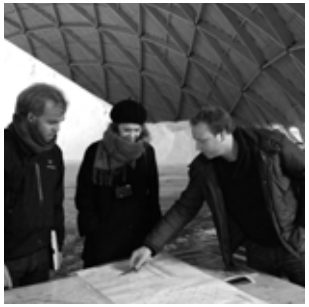
13 Frei + Saarinen & Xenix bar

Sön 20 jan
14 Kunsthaus Bregenz & Peter Zumthors modeller
15 Eishalle, Davos
16 Roman Ruins, Chur
17 Olgiati auditorium, Chur

Mån 21 jan
18 Gelbehaus, Flims
19 Olgiati Studio, Flims
20 Viamala bridge, Conzett, Flims
21 Kirsche (3 stones), Cazis
22 Cattle Market, Cazis

23 Atelier Bardill, Olgiati, Cazis
24 Betonghus, Deplazes, Fläsch
25 Wineyard G+K, Fläsch
26 Calatrava School, Wohlen
27 Market Hall, Aarau

Tis 22 jan
28 *Kunsthall HdM
29 *Gjutjärnsfasad, HdM
30 *Signal box, HdM
31 *Schaulager, HdM
32 Rehab, HdM
33 Saldome, 2
34 Vitra
35 Simhall, Freiburg

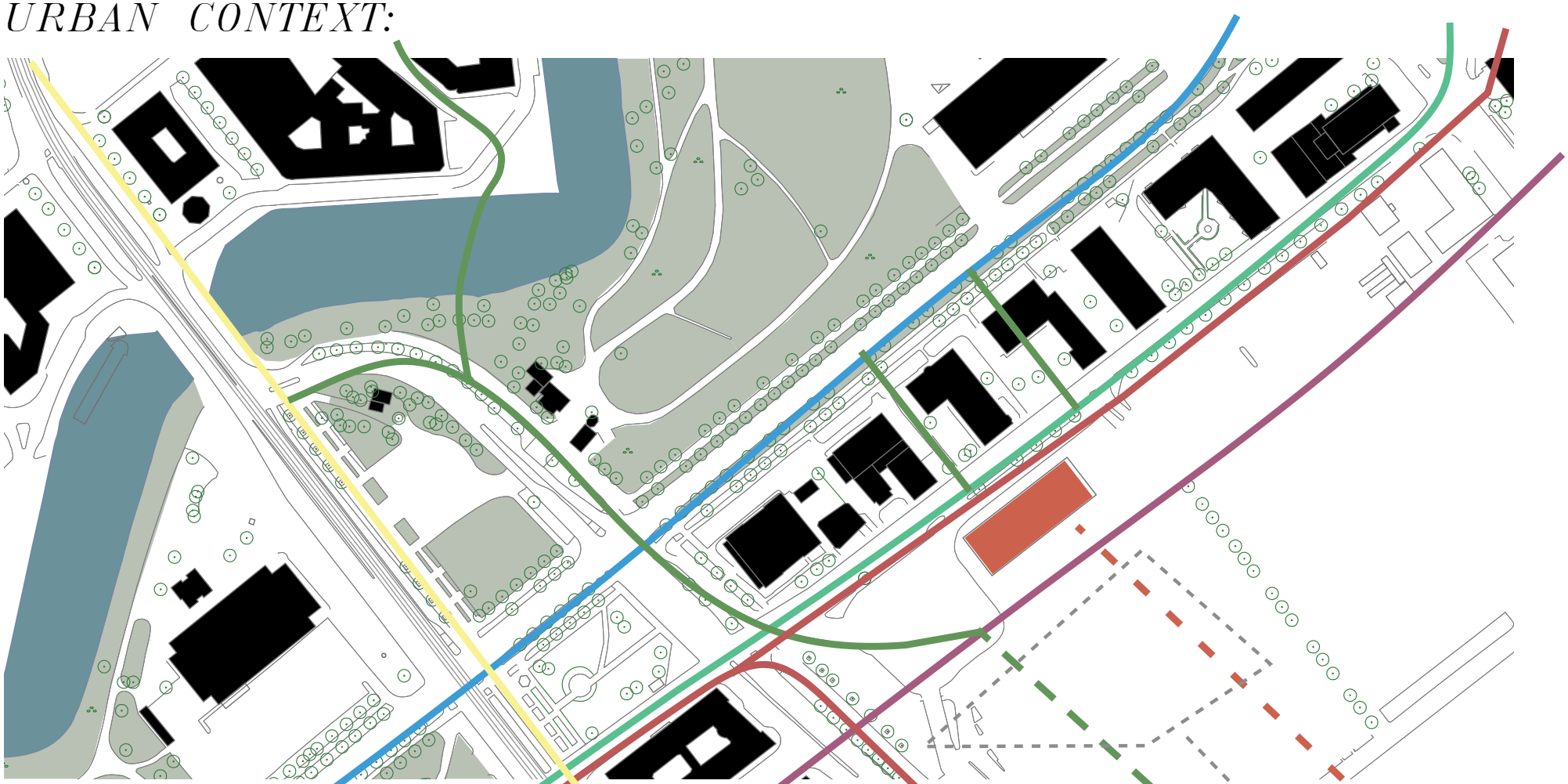


Top; Map and list over the trip to Switzerland.
Bottom; Map over study trips taken place in Sweden and images from different on site lectures.

PROJECT LOCATION:

The west corner of Heden is developing to a node in central Gothenburg. Trams and buses are moved to this point to take some of the pressure from Brunnsparken, Gothenburgs most trafficated node for public transport.
The fact that this is the point closest to the absolute centre of Gotheburg also suggests that it could be developed in to the future entrence point to Heden. In this corner lies the only building on Heden protected by the city from demolition, the old exercise building, built in 1876 as a space for sport and still today used for this purpose. How can the future development of Heden relate to this building and can it be extended to hold even more sqm for sporting? If the aim is to maximize the use of Heden by densification, by extending this building you keep its importance and role on Heden as the main building for sport.

URBAN CONTEXT:



NEW EAST WEST TRAMLINE

BUS LINES Commuting Buses from suburbs

EAST WEST BICYCLE PATH

STORGATAN a pedestrian axis under development

KUNGSPORTS AVENYEN Gothenburgs main boulevard

BUS LINES Commuting Buses from suburbs

NEW PEDESTRIAN PATHS created by closing Södra Vägen and new bridges

PROJECT LOCATION

FLEXIBLE SPACE FOR EVENTS

MAIN QUESTIONS:

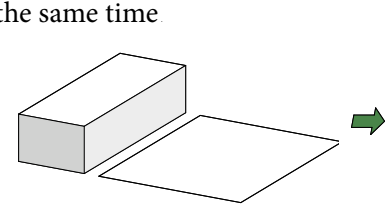
If the goal is to densify Heden, how does one densify sport?

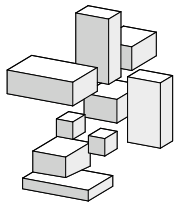
And more specifically in the extension of Exercishuset, how can I make the shift from organized to spontanious sport?

STRATEGIES TO DESIGN FOR DENSE SPONATNIOUS

DIVISION FROM LARGE TO SMALL

1, The project aims to adress this question by a strategy where the division of space goes from large to small thus giving better possibilities for people to gather in smaller more spontianisously managebale groups. The same strategy also deals with creating spaces suited for a larger variety of sports going on at the same time.

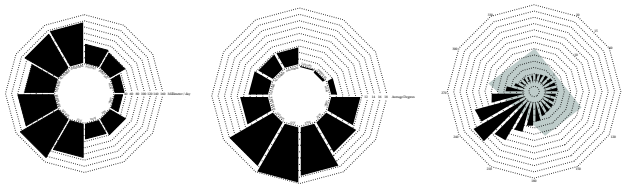




Left; London Olympics center court. 8 x 15 meter with a minimum of 9 meter ceiling heght.
Right; Ping Pong in a basement, not perfect condidtions but still as fun. Conclusion, it is importent to question the measurement requirements when aiming for a denser result.

CREATE SEMI CLIMATIZED SPACES TO PROLONG THE SEASON

2, In Gothenburg it rains a lot and research show that the will to go out and do sports drops with low temperatures, heavy rain and windy condidtions. To provide better spaces for spontanious sport the project will be climatized.

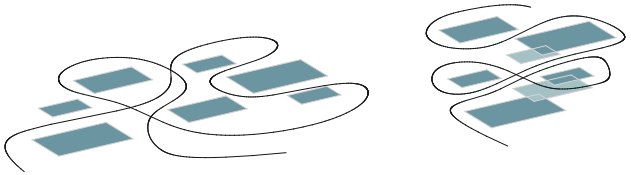


PRECIPITATION TEMPERATURE WIND

The Lanterns project by Atelier Oslo in Sandnes Norway. creates a meeting place and a node in the Sandnes by simple means just giving protection from the rain and light.

MAKING CIRCULATION A PART OF A VERTICAL PUBLIC PATH

3, Low threeshholds and accesible inclinations, the spaces should work like a stacked public park, and be a part of a urban pathway, where activities are carried out on surfaces that are not bookable but rather encourage people to interact and use the space freely as public space.



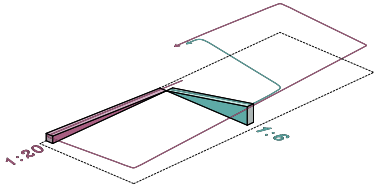
Guggenheim New York, a spiraling circulation takes the visitor through all the spaces showing art. The circulation becomes an architectural point of its own.

STRUCTURAL DESIGN CONCEPT:

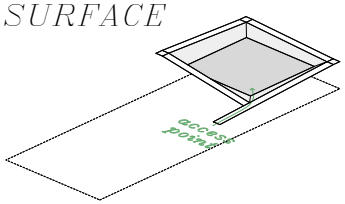
Circulation, Plans and a Facade are the three functions that the project consists of. The process have very much been focused on bringing these together in a uniformed way, where they are all integrated as one.

The solution became to use the principles of a folded plate structure that hangs in a load bearing facade that stands on the existing buildings brick walls.

VERTICAL CIRCULATION

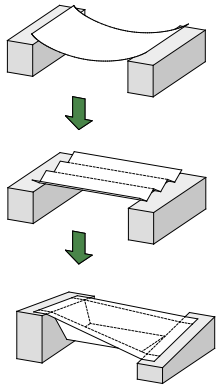


SPORT SURFACE



CIRCULATION + SURFACE

FOLDED PLATE STRUCTURE

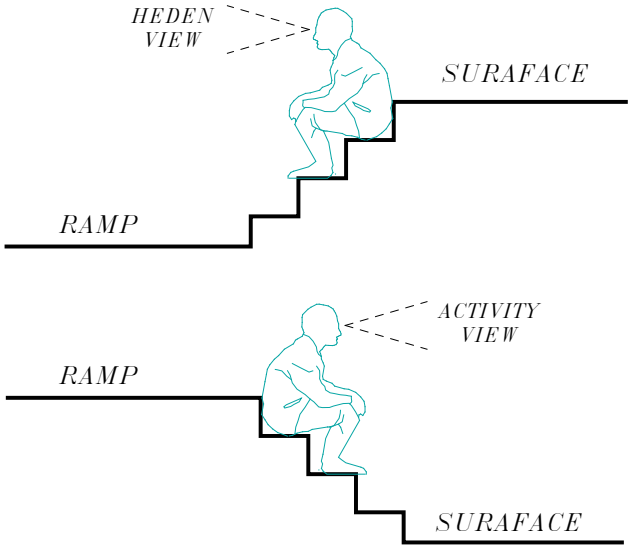


THE UNIT:

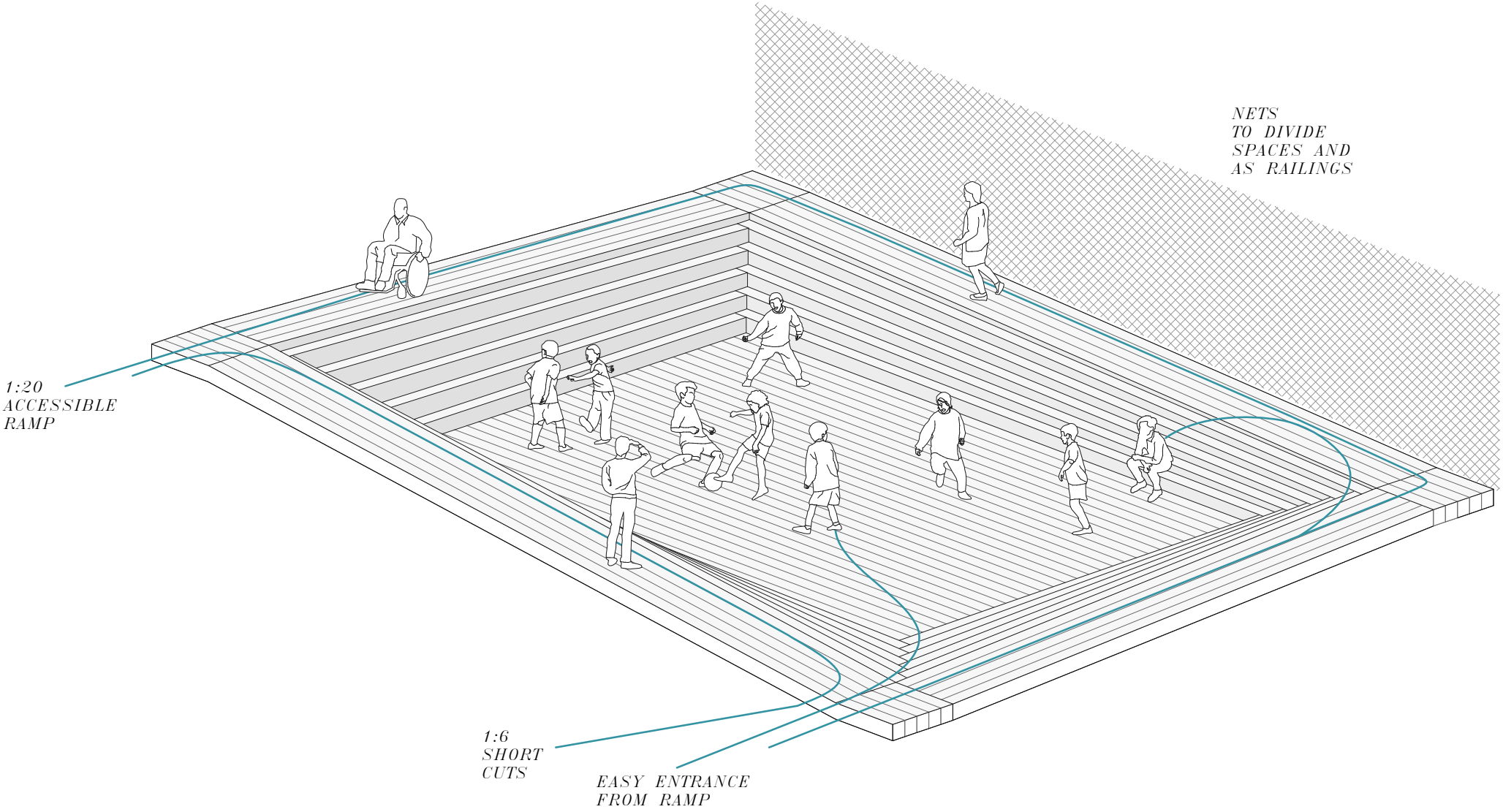
The aim when creating the spaces for activity has been to maximize the interaction and social play between strangers meeting over play and activity.

To do this the unit contains multiple layers of spaces to interact

The boarder to the sport surface the oblique surface creates a sittable stair.
This is a social zone that every sport surface has, it is attemptet to work as a place where people can blend in to activity on the actual surface by first watching and then joining in.



ABOVE; Diagram showing how the oblique surface can work both in giving view out towards Heden and in, looking at the activity.



LAYERS OF INTERACTION

RAMP –

PASSING BY

RAMP –

WATCHING FROM
A DISTANCE

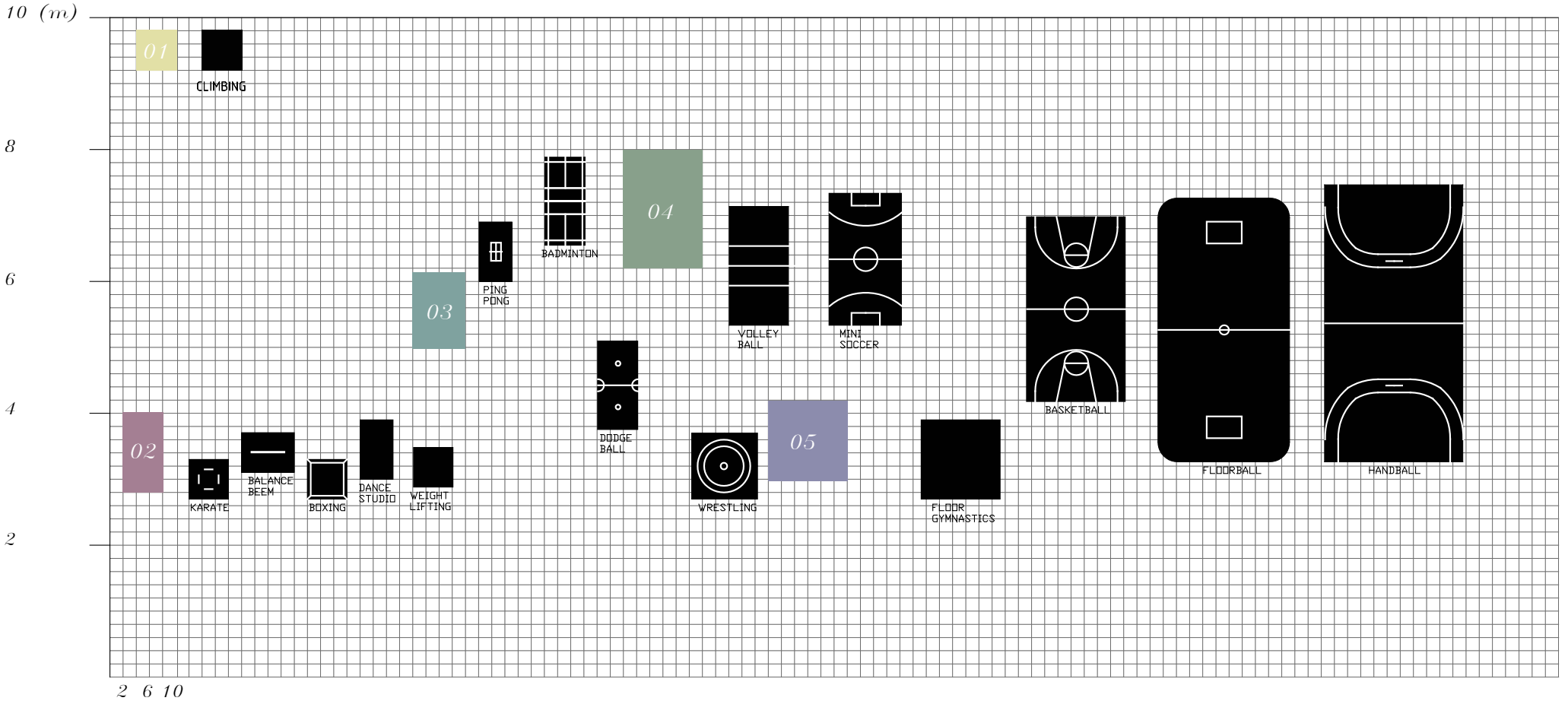
OBLIQUE SURFACE

GETTING READY
TO JOIN IN

SURFACE –

PLAYING

PROGRAM ANALYSIS:



	TYPE 01	TYPE 02	TYPE 03	TYPE 04	TYPE 05
SIZE	b3500 d7500 h10000+	b3500 d7500 h3000	b7500 d10000 h5000	b7500 d10000 h7000	b7500 d10000 h5000
ACTIVITIES	Climbing	Childrens Play Dance PingPong Weight Lifting	Ball sports in Smaller groups Childrens Play Dance PingPong Weight Lifting	Ball sports in Larger groups Group Training Play Gymnastics	Ball sports "Half Court" Wrestling Gymnastics Play Dance in large Groups

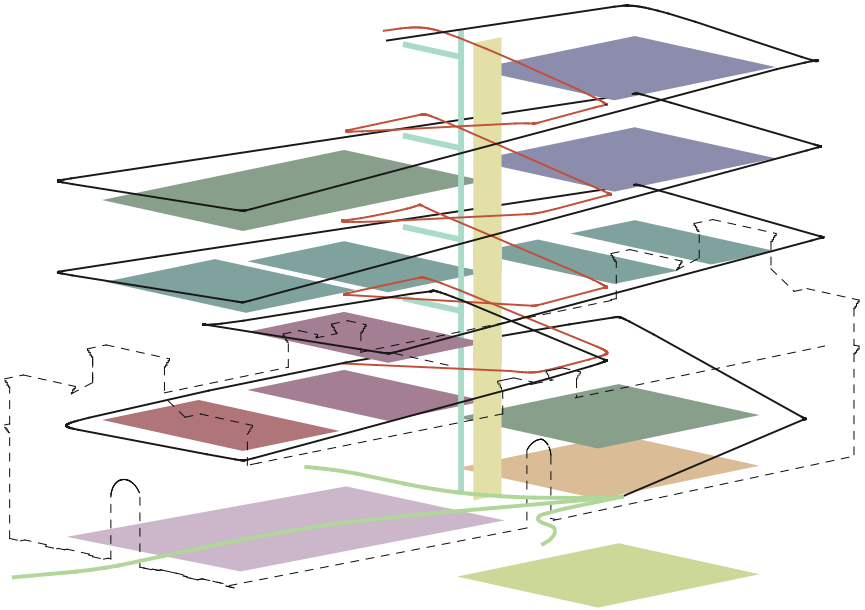
PROGRAM:

4 x Space type 01.....100 m2
4 x Space type 02.....320 m2
1 x Space type 03.....200 m2
1 x Space type 04.....120 m2

Circulation.....400 m2
Elevator.....16 m2
Changing Rooms 120 m2
Technical Space.....50 m2
Storage/ Tech Space.....200 m2

Ground Floor.....580 m2

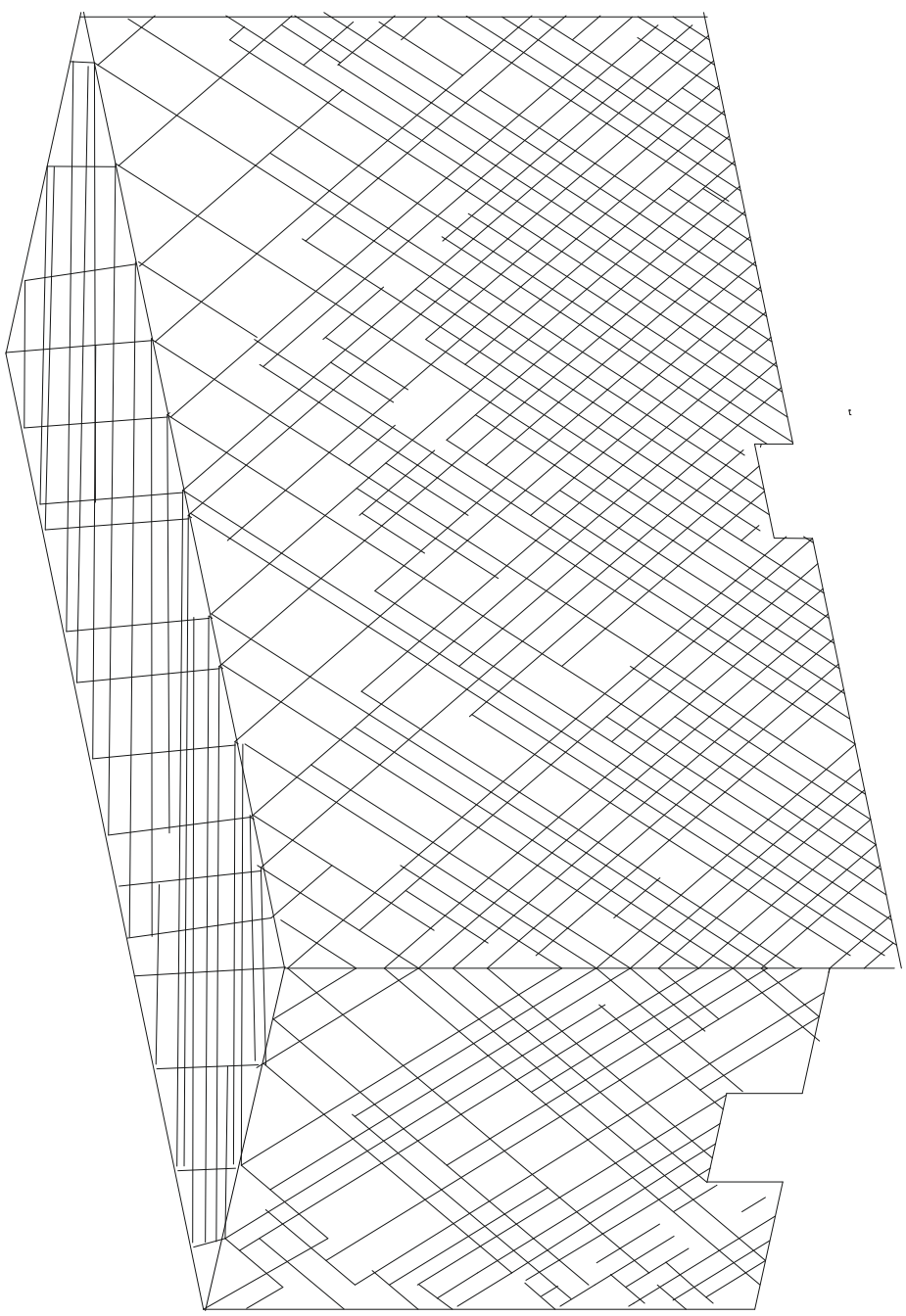
PROGRAMATIC ORGANISATION:

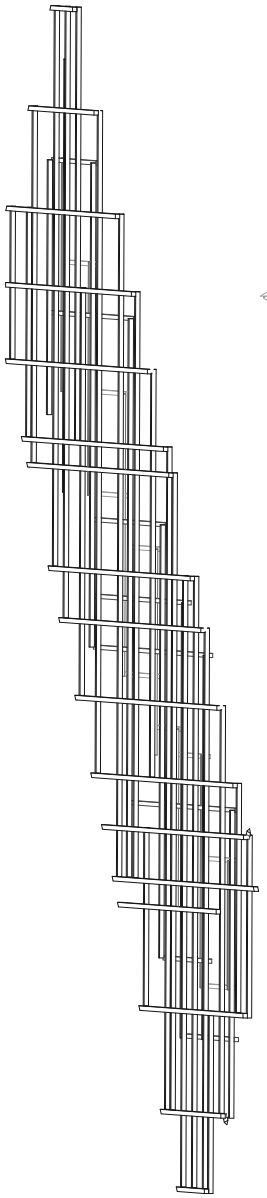


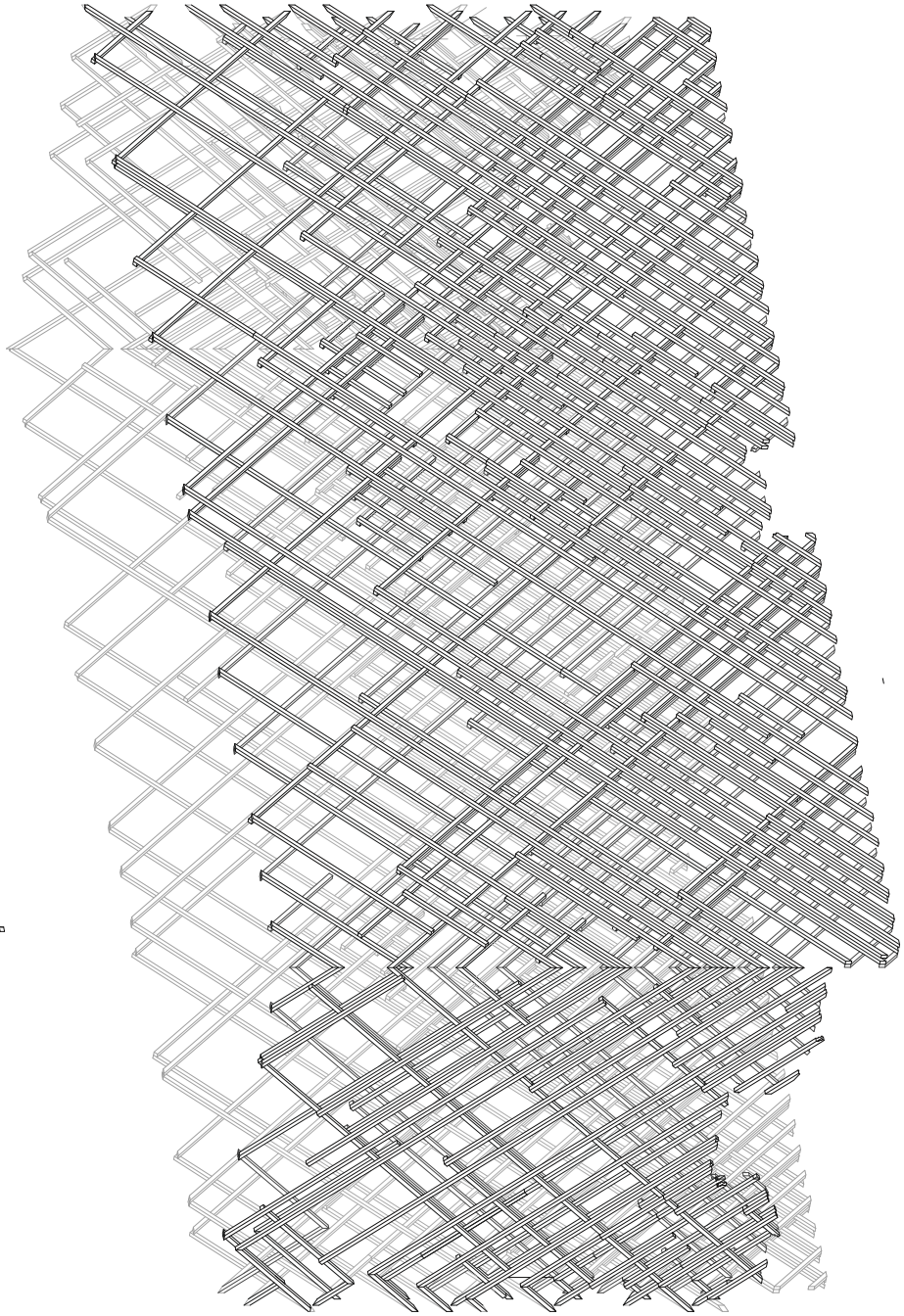
FURNISHED COMMON SPACE
CHANGING ROOMS
ELEVATOR
RAMP 1:20
RAMP SHORT CUTS 1:6
GROUND FLOOR OPEN SPACE

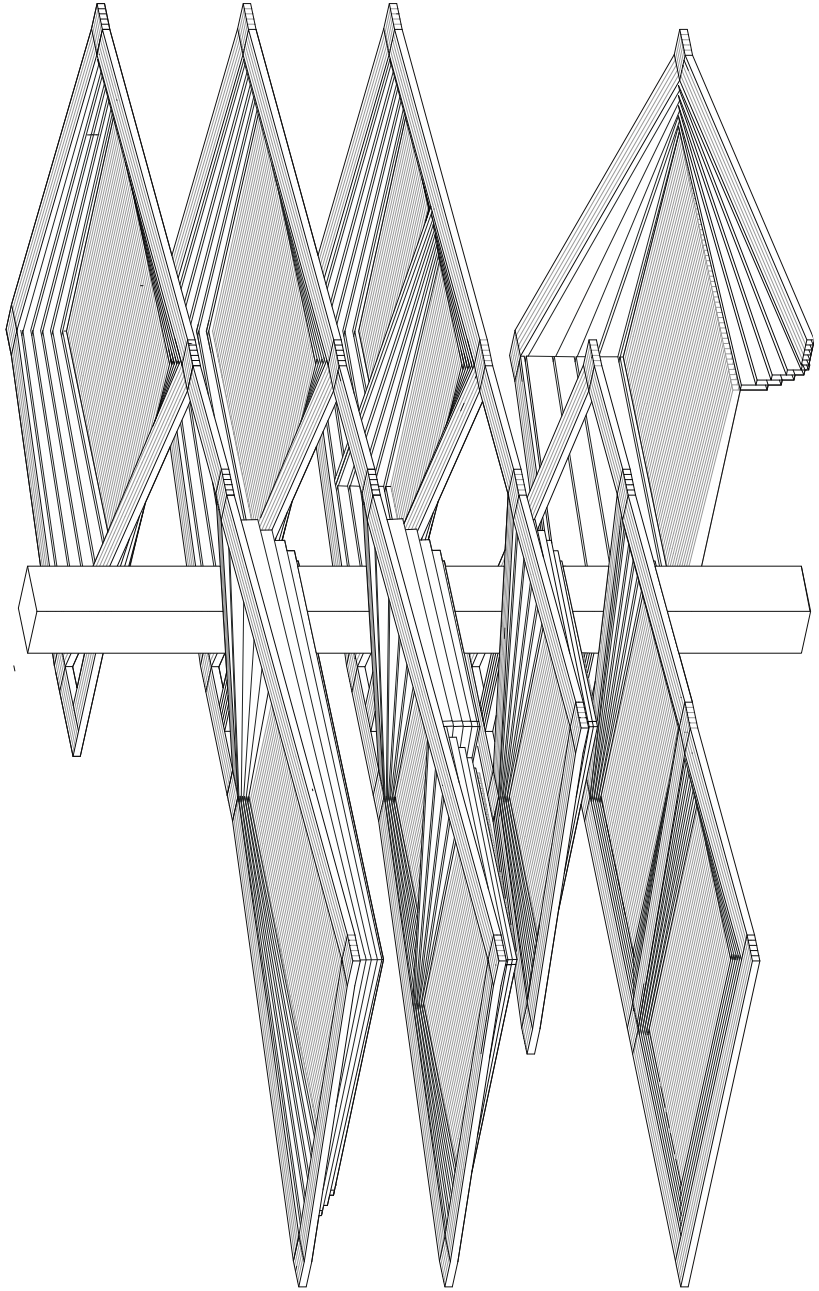
TYPE 01
TYPE 02
TYPE 03
TYPE 04
TYPE 05
MAIN ENTRY POINTS
STORAGE/TECH SPACE

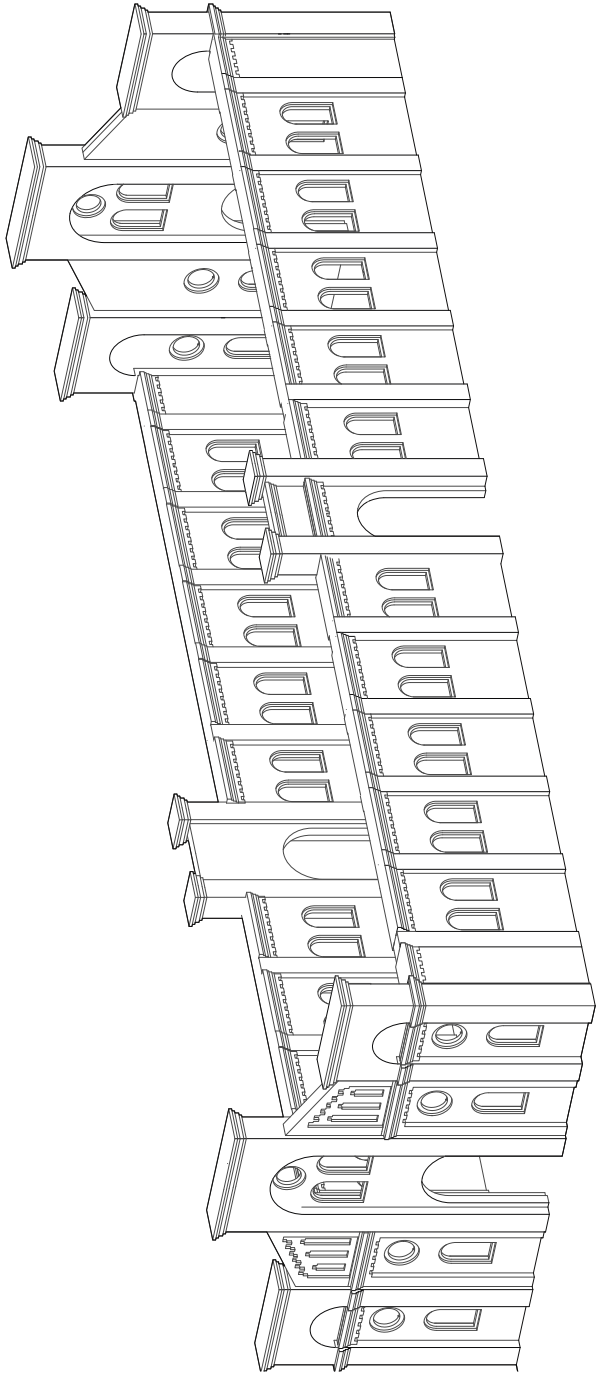
PROJECT LAYERS











SKIN:

To be able to see the activity and vice versa the facade is wrapped with a single glass facade with a division reacting to the pattern of the load bearing structure.

The Skin is put on the outside of the bearing wooden facade to protects the wood. As the great Austrian wooden architect Hermann Kaufmann said:

"The bones of your body, is not on the outside for a reason"

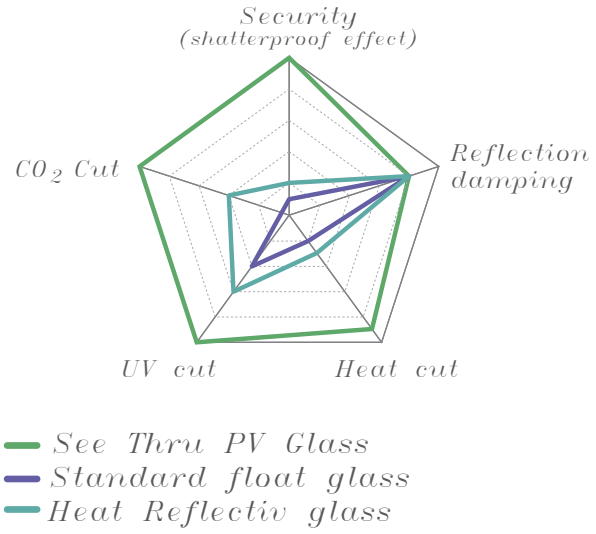
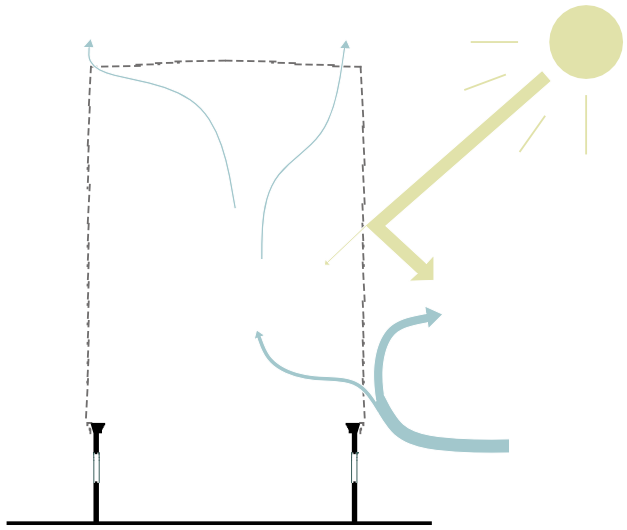


Diagram showing the abilities of the glas when appying transparent photo voltaic film.

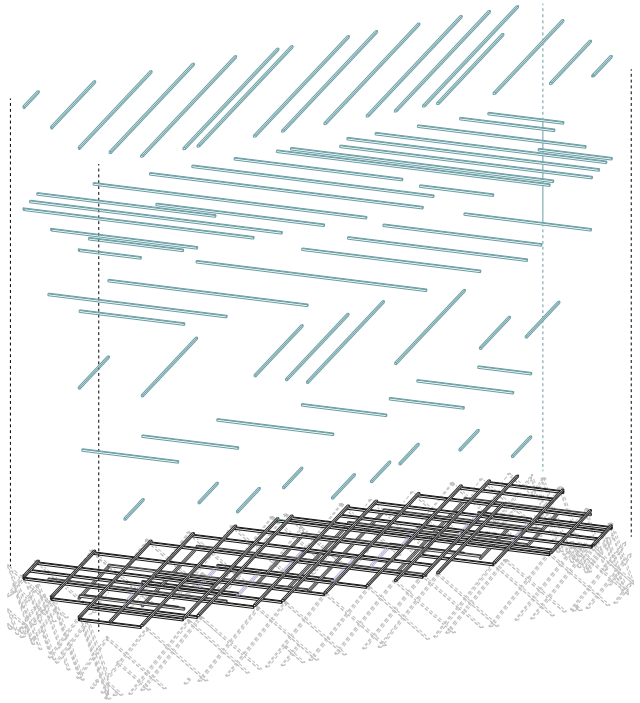


The skin naturally ventilates the building and the heat from the sun goes in to the photo voltaics.

ROOF:

OPTIMIZED BEAM GRID ROOF

The Roof has the same, logic as the facade. It has 6 layers forming a beam grid that thickens as the load carriage increases towards the middle creating a constructional height of 800mm.

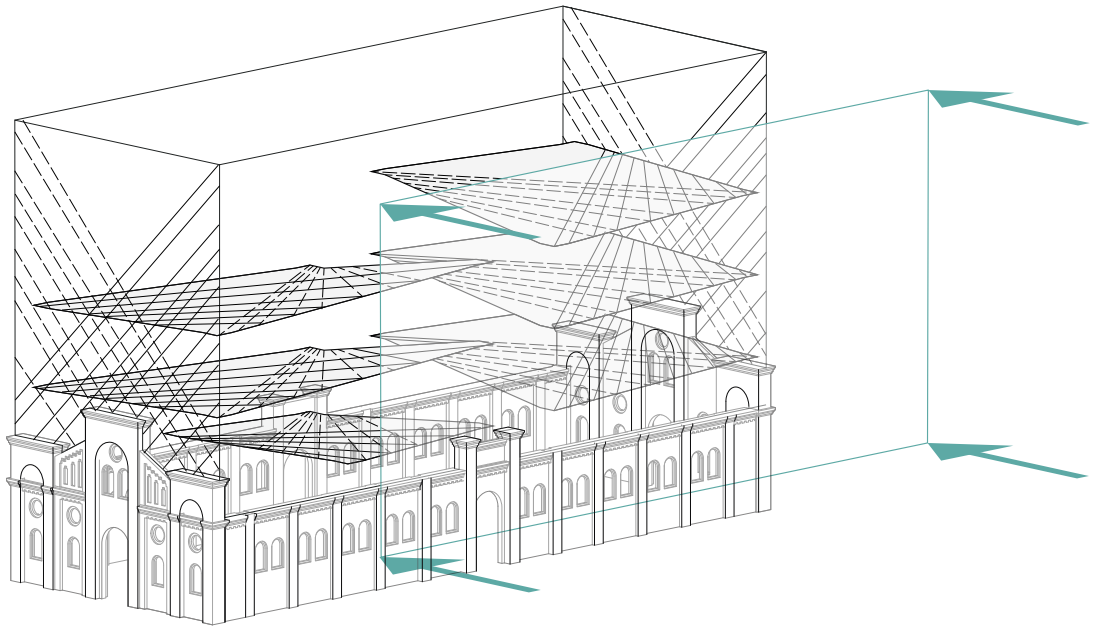


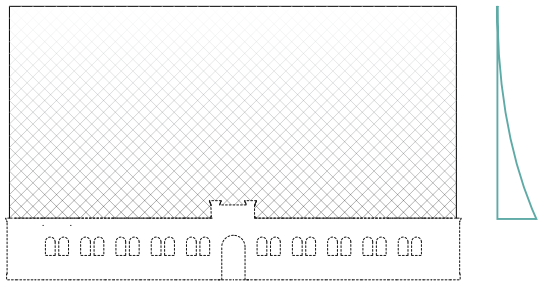
Left; The different layers making up the roof beam grid.

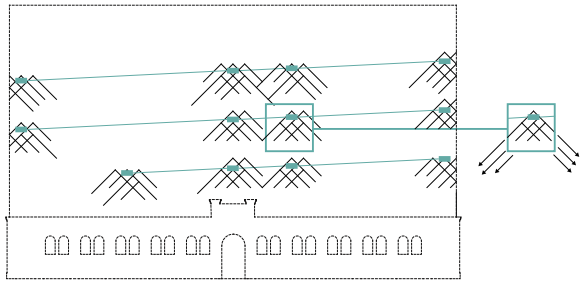
FACADE:

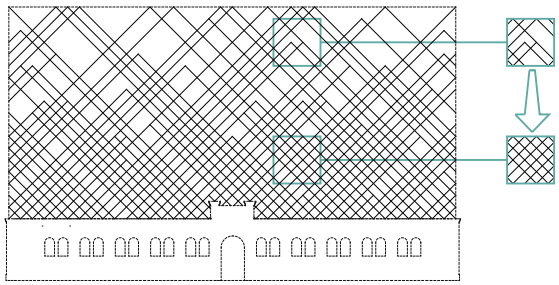
It In order to use the good compression characteristics of the brick in Exercishuset, the facade carries the load of the extension. It does this by a layered facade of glulam beams. The form a web of structure that starts out intense closest to Exercishuset matching the intensity of the highly ornamented brick facade and dissolves towards the sky.

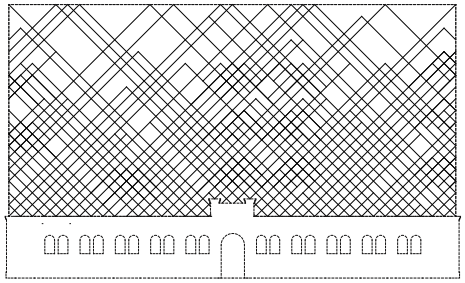
Top Left, An even facade would be loaded unevenly since the dead loadis greatest at the bottom.
Top Right;The gradient from sparse to dense makes the material work more efficiently at the top while still responding to the need for a a short buckling lenght at the bottom.
Mid Left, Locally adding members where the ramps are secured.
Mid Right;The result is maximally utulised facade and slender facade.
Above: The long side take the forces down to the facade. The gavels works with horizontal stability and the ramps inside spreads the forces.





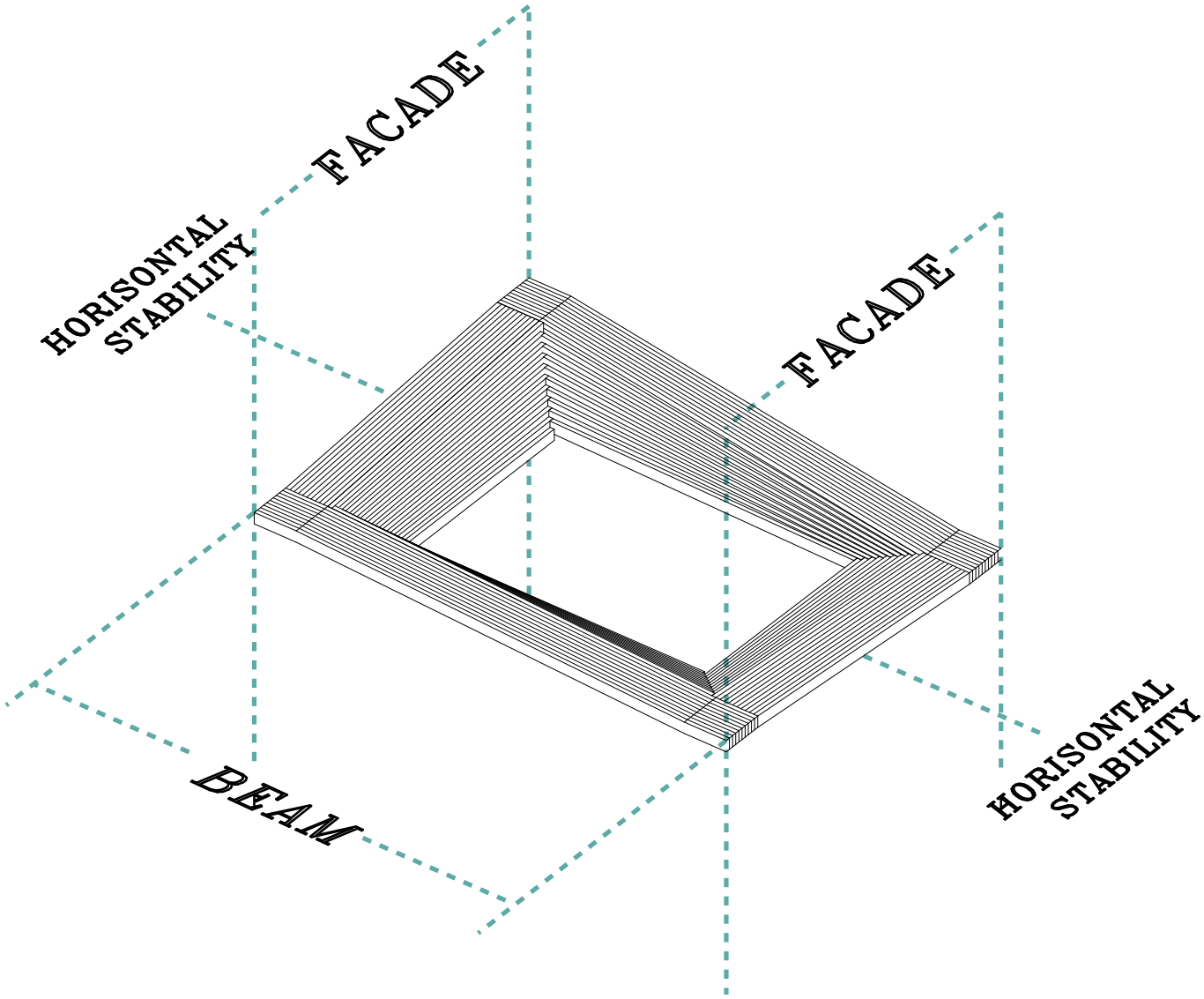






RAMPS & SURFACES:

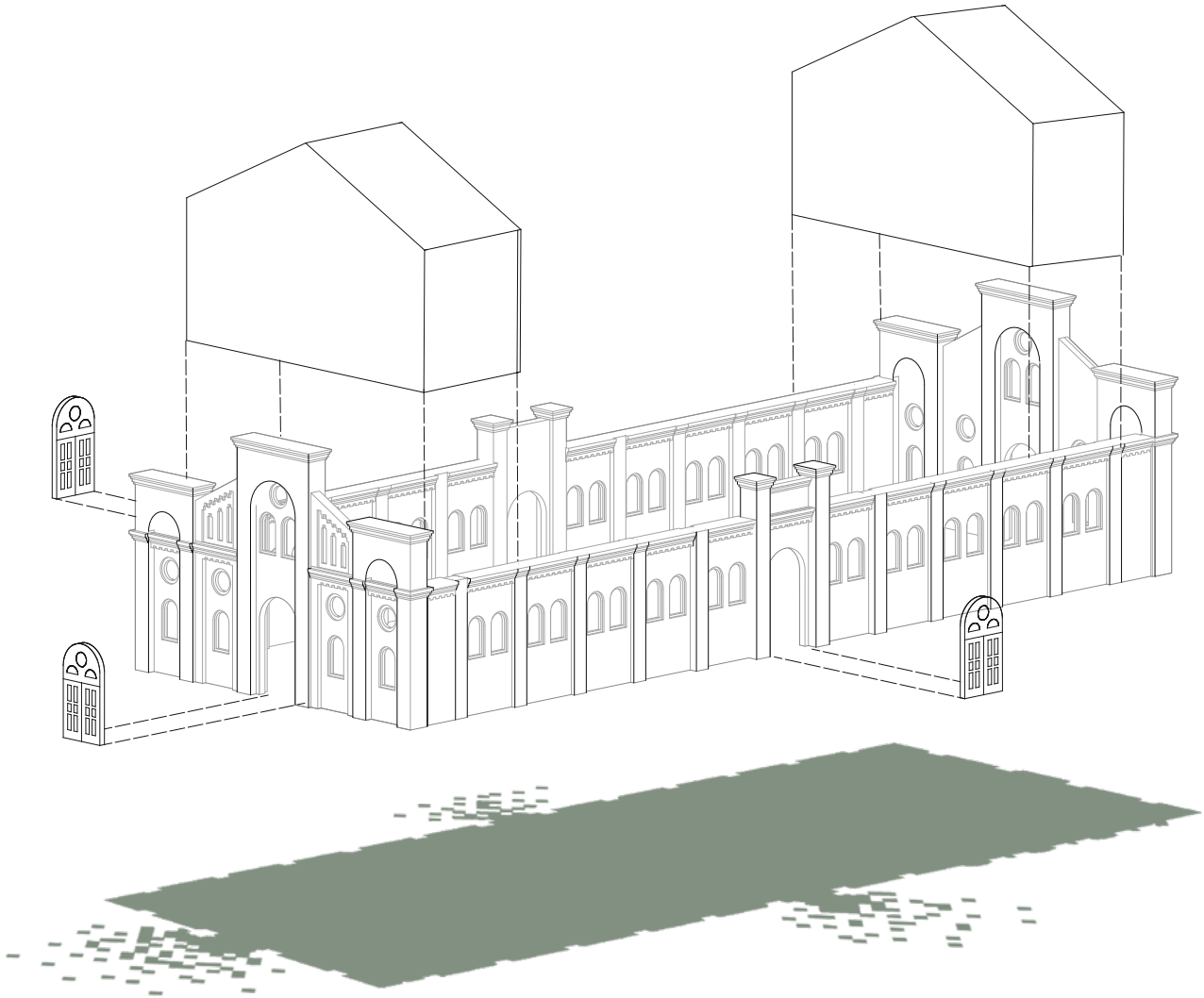
Floors: Each playing field functions as a structural frame. The sides reaching across the width of Exercishuset act as beams and carry the load into the walls. They can be thin since they are given structural height from their folds. The sides of the frames that run along the long sides stabilize the building horizontally, carrying shear forces into the gable walls.
The ramp: The ramp distributes the loads from the floor linearly along the facade, allowing a more even expression of the facade and additional horizontal stability.



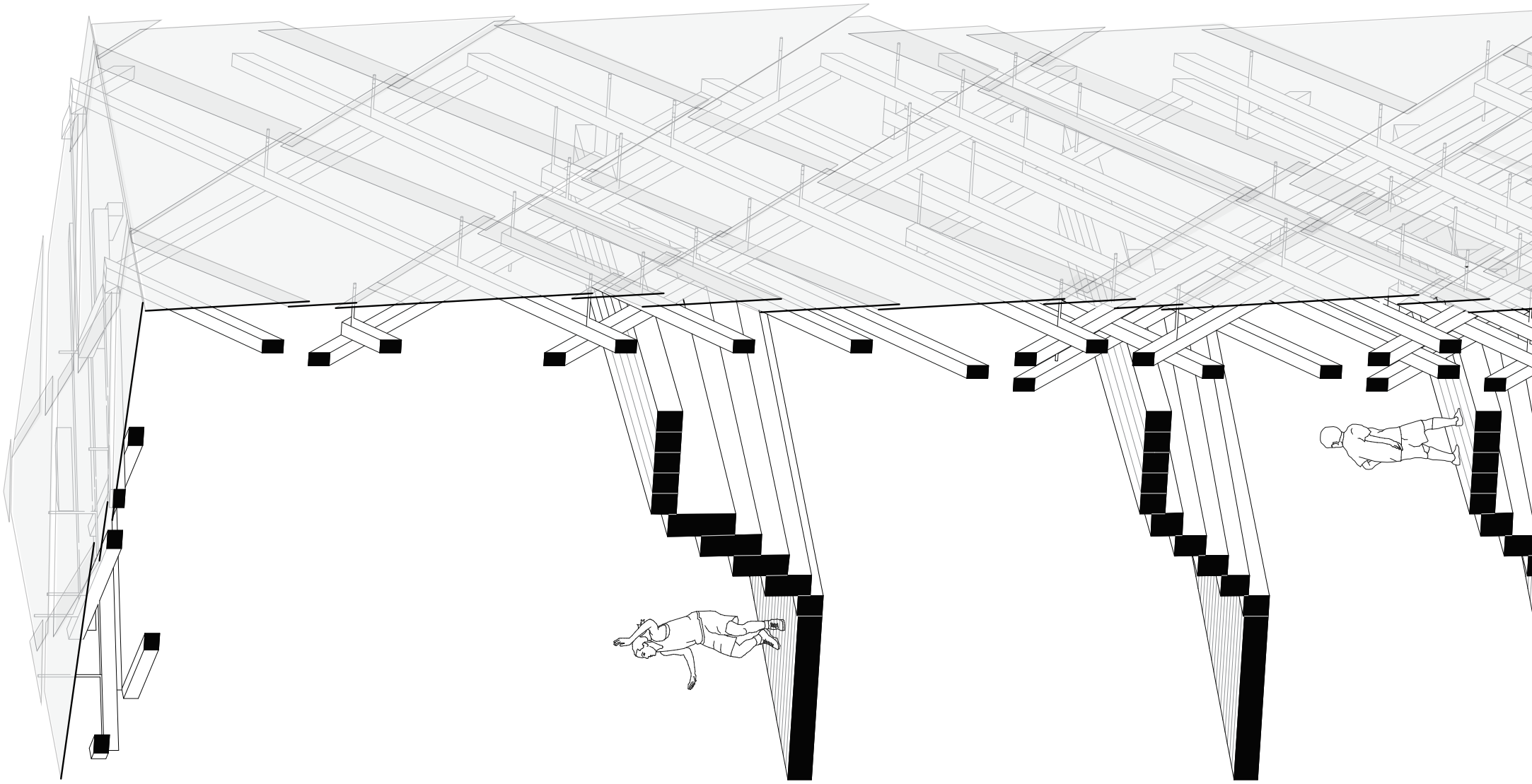
Top; Diagram showing the different roles of the Unit making it in

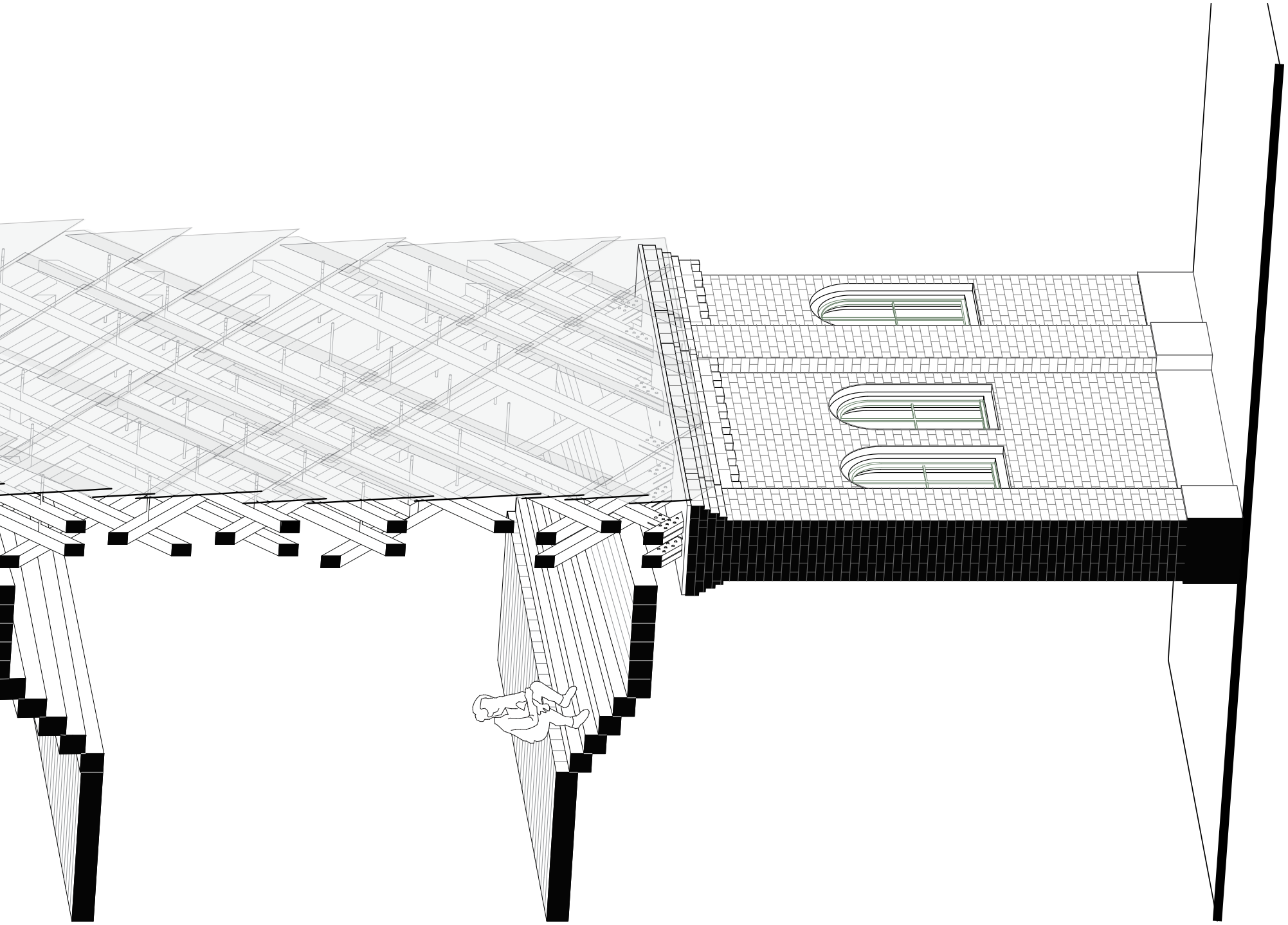
EXERCISHUSET:

The existing building is fairly closed with no insight in to the building, To transform it in to a more public building the existing openings, one at each side replaced with glass doors. The inside is made open to serve as public space for markets and such.



Above, Diagram showing the changes made to the existing

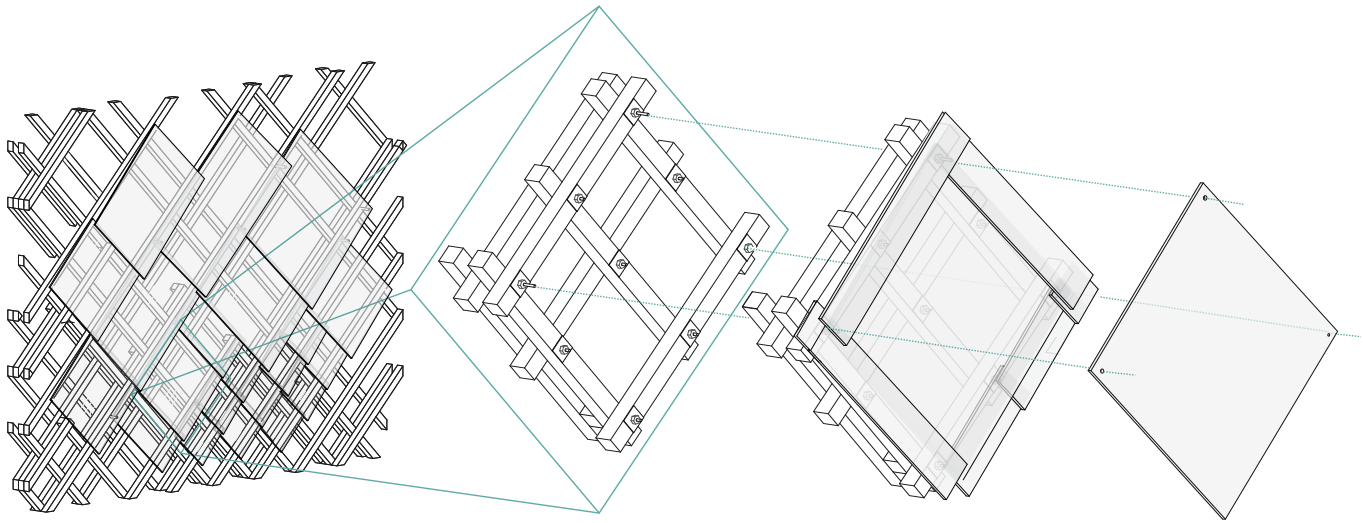




SHINGLED GLAS PANELS:

Single re enofrced glas are mounted on the load bearing facade following the same pattern as the the diagrid of the facade.

The glass is mounted in three corners leaving the bottom one. This way the result is that now bult are shing directly, only throught the glass.

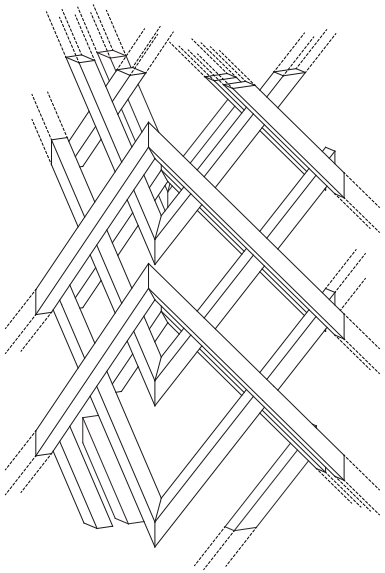


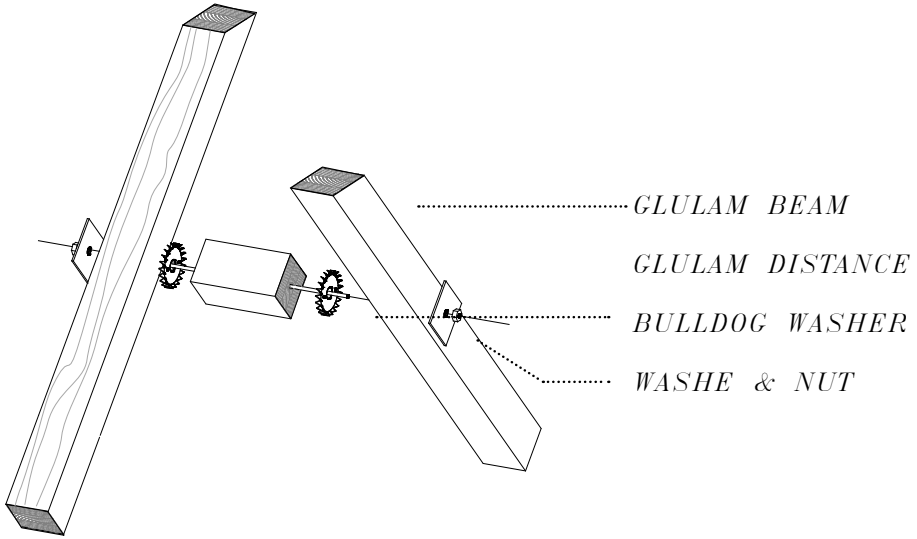
Above; Exploded axonometri showing the different parts that makes up the facade and how the glass is connected.

BEAM CONNECTIONS;

SIMPLE & ROBUST
CONNECTIONS.

The members of the facade connects at the point where they intersect, simply by being screwed together with a bulldog washer for torsion stability.
Where they don't have direct contact with the member in the layer behind a short glulam beam is used as distance.

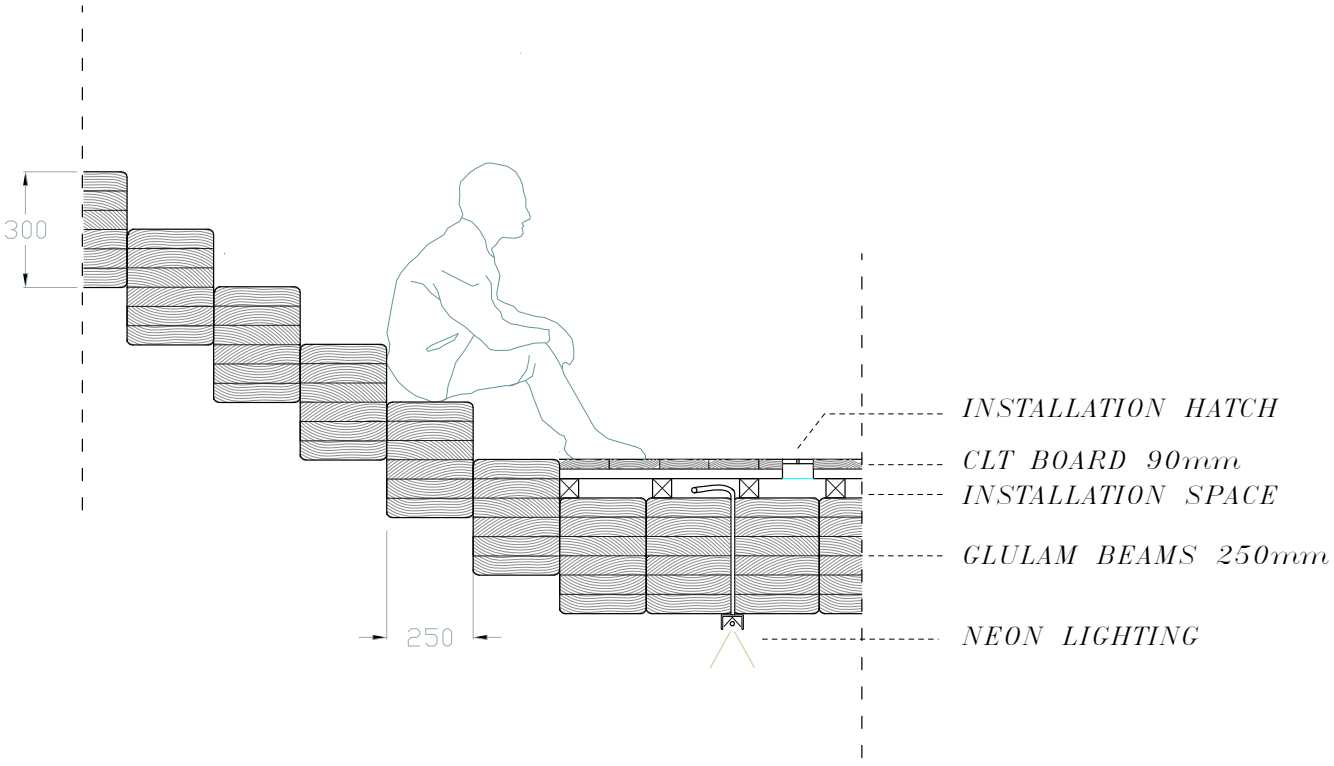




Left; Diagram showing how the corner beams meet eachother
Right; Exploded axonometri showing the different parts that connects the glulam beams in the facade and the roof.

SPORT SURFACE:

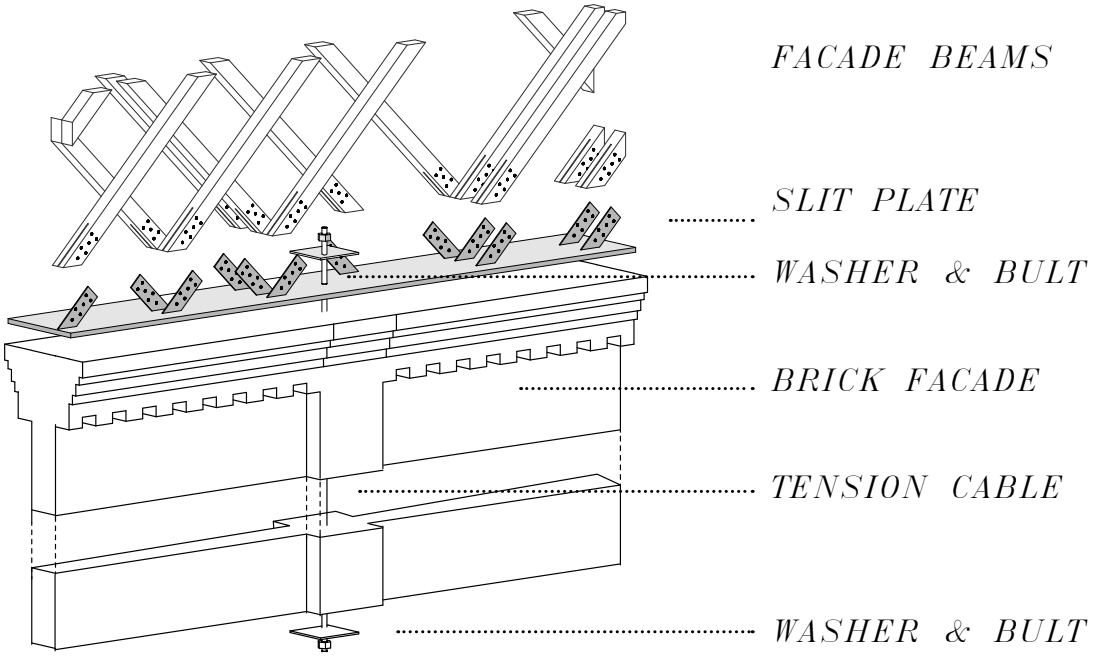
The whole structure ias made bu glulam beams in a widht of 250 mm and variyng heghts. However, the actual surface is raised to fit installattions,

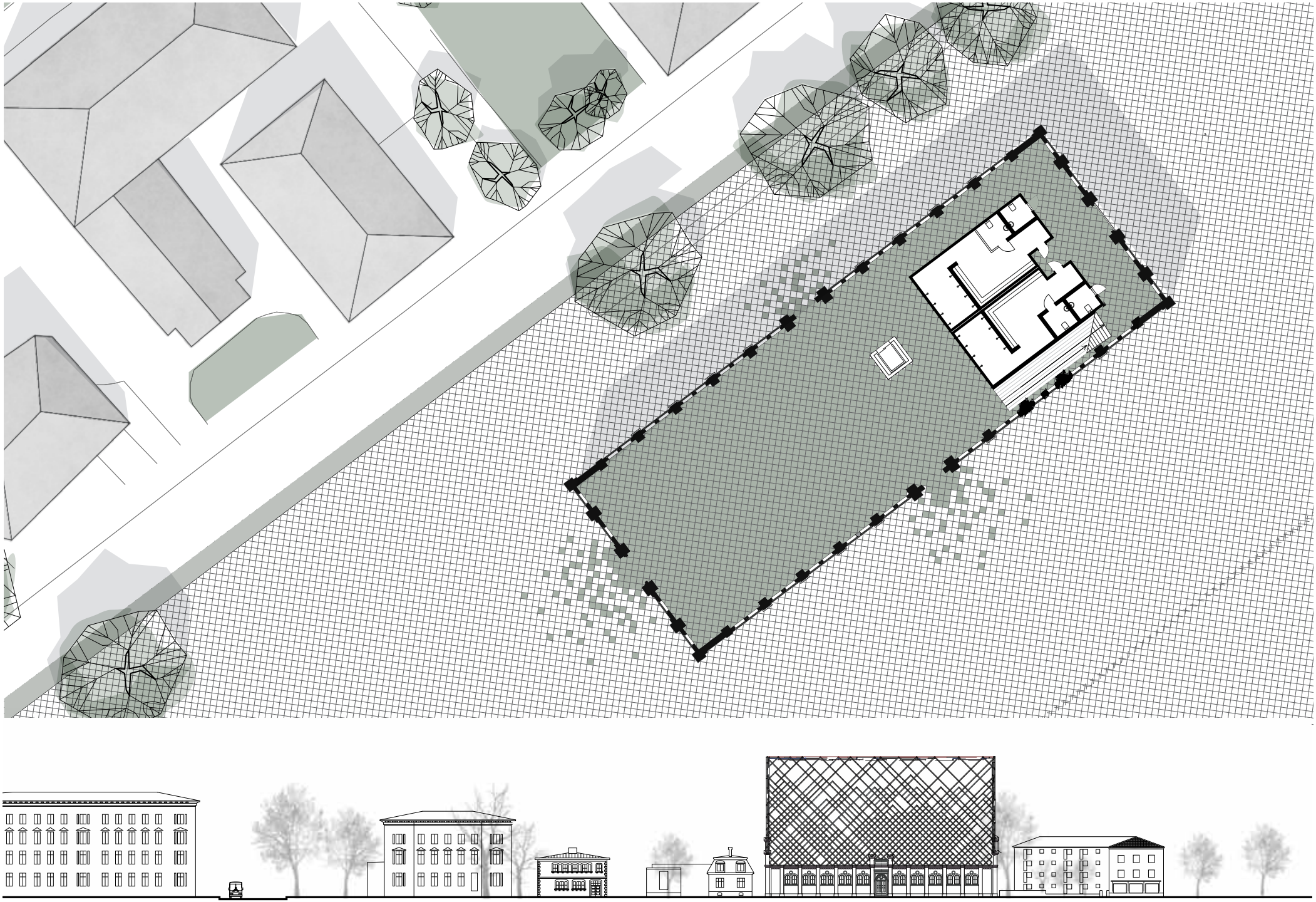


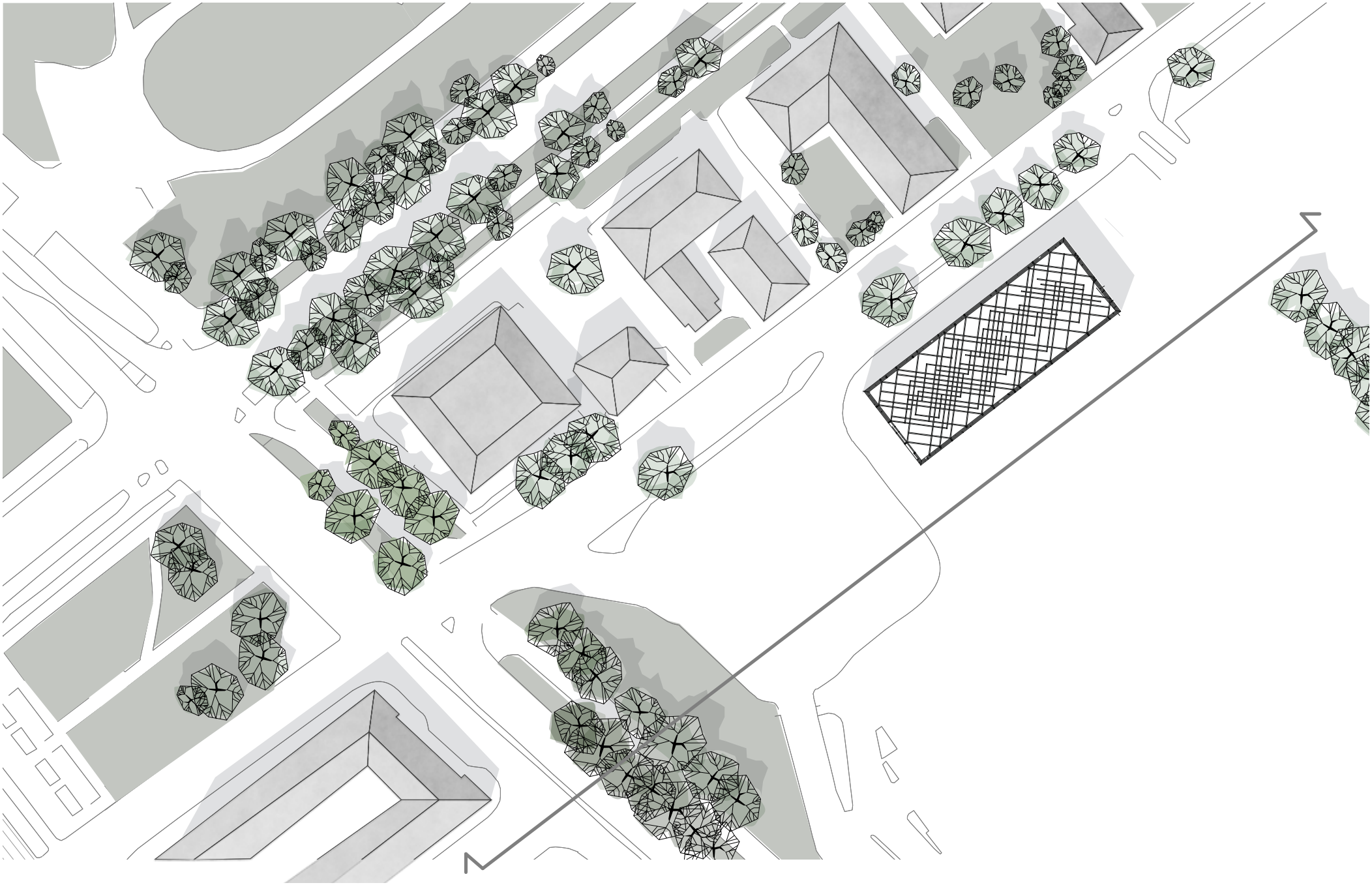
SHINGLED GLAS PANELS:

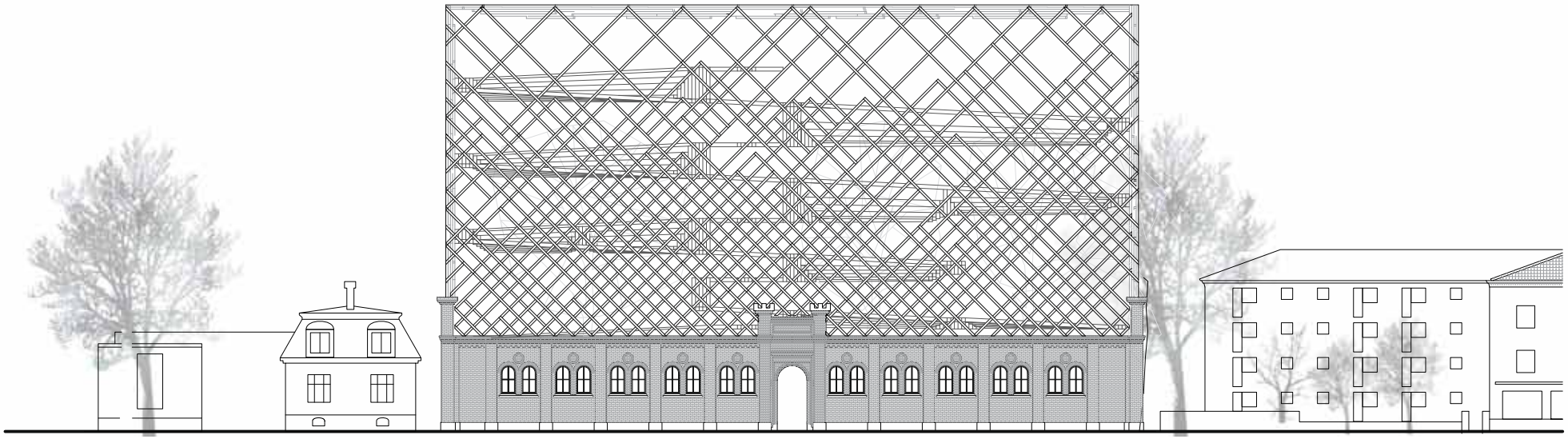
USING THE EXISTING AS AND ANCHOR

The extension is anchored in the existing buildings heavy brick facade by tension cables running through the brick pillars and connecting under the building. This way the brick facade is used in its most optimal way as a foundation by using its excellent compression strength and weight.

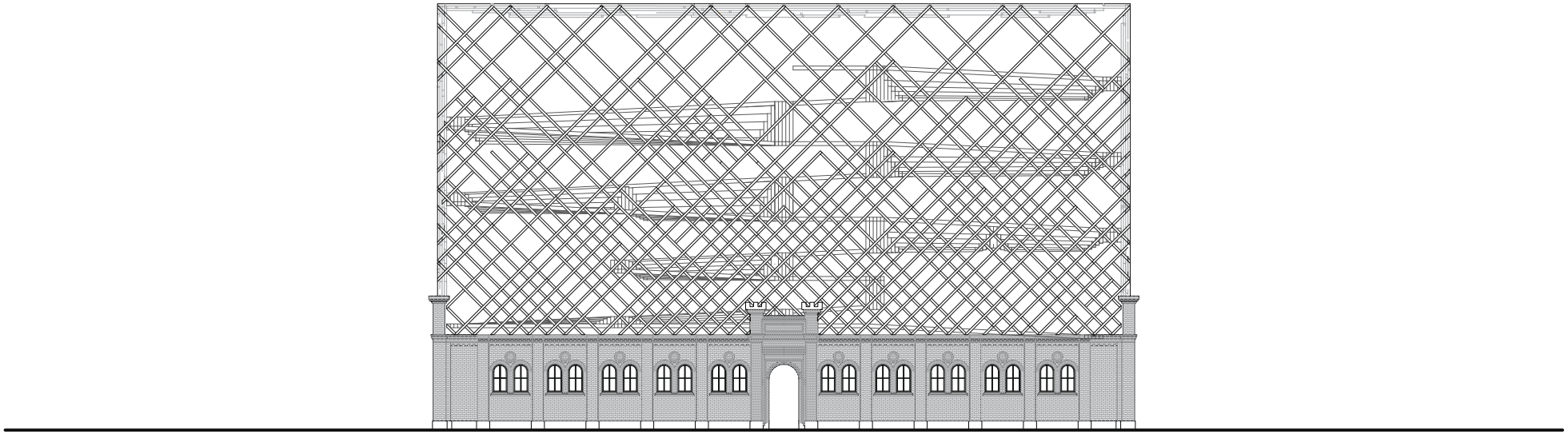




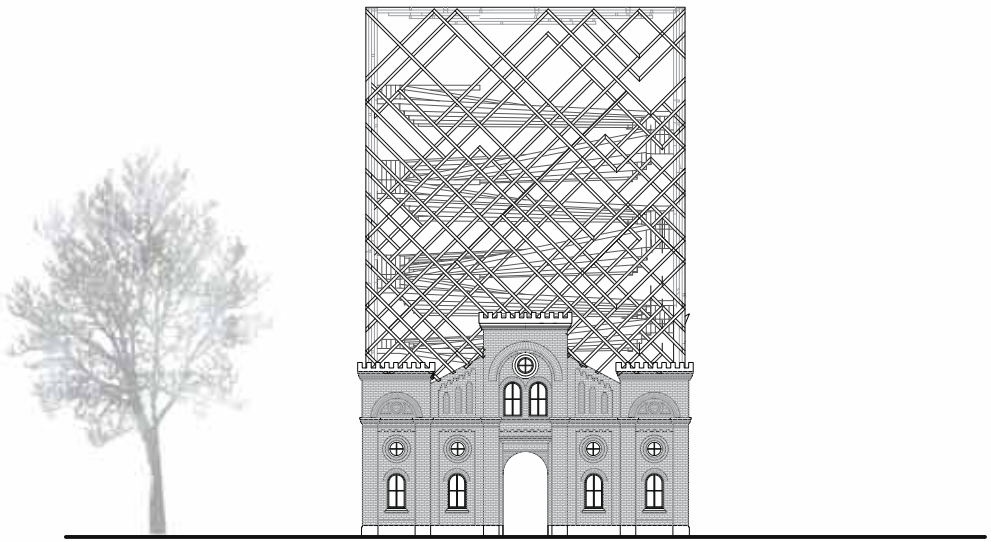




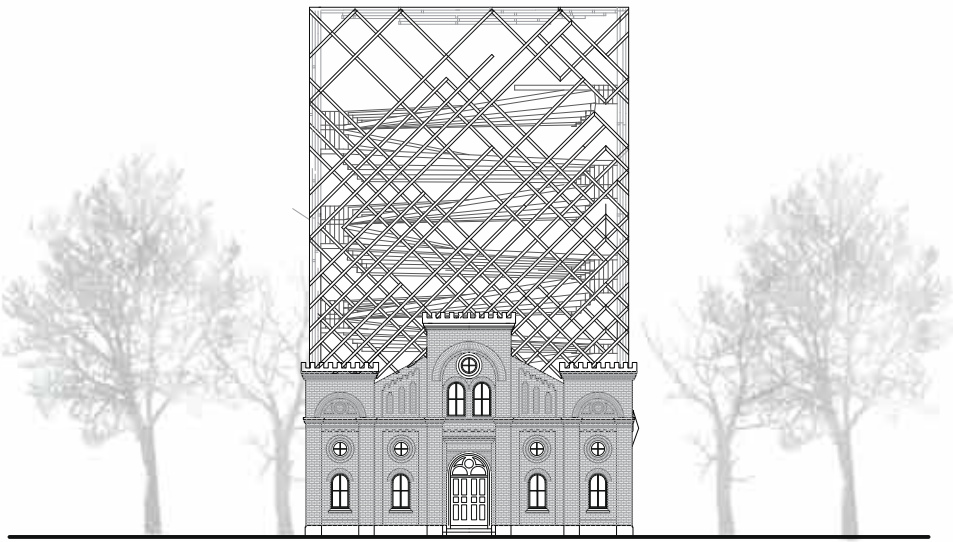
HEDEN – SOUTH EAST FACADE



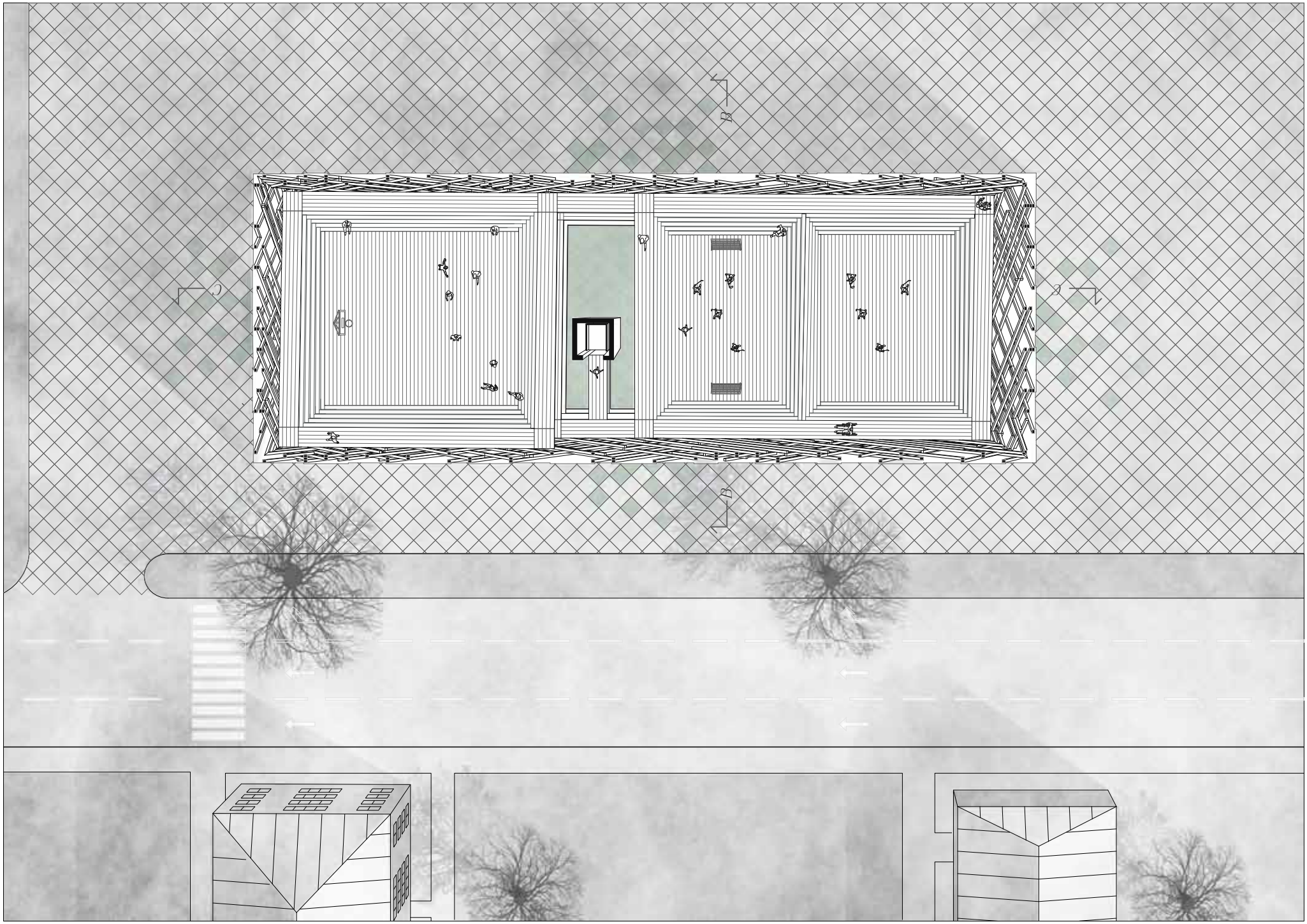
PARKGATAN – NORTH WEST FACADE



SÖDRA VÄGEN – SOUTH
WEST FACADE



NORTH EAST FACADE
1:200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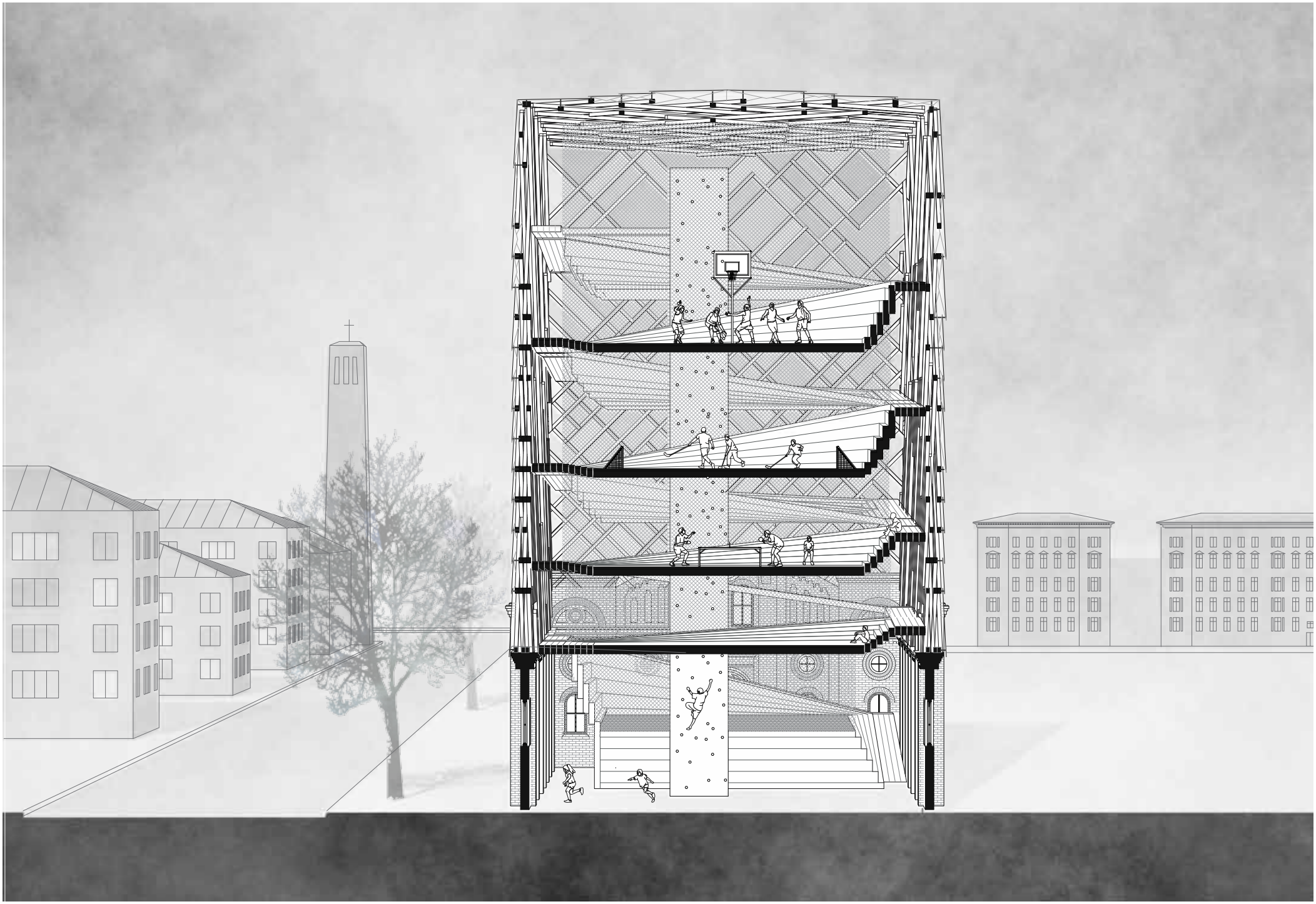

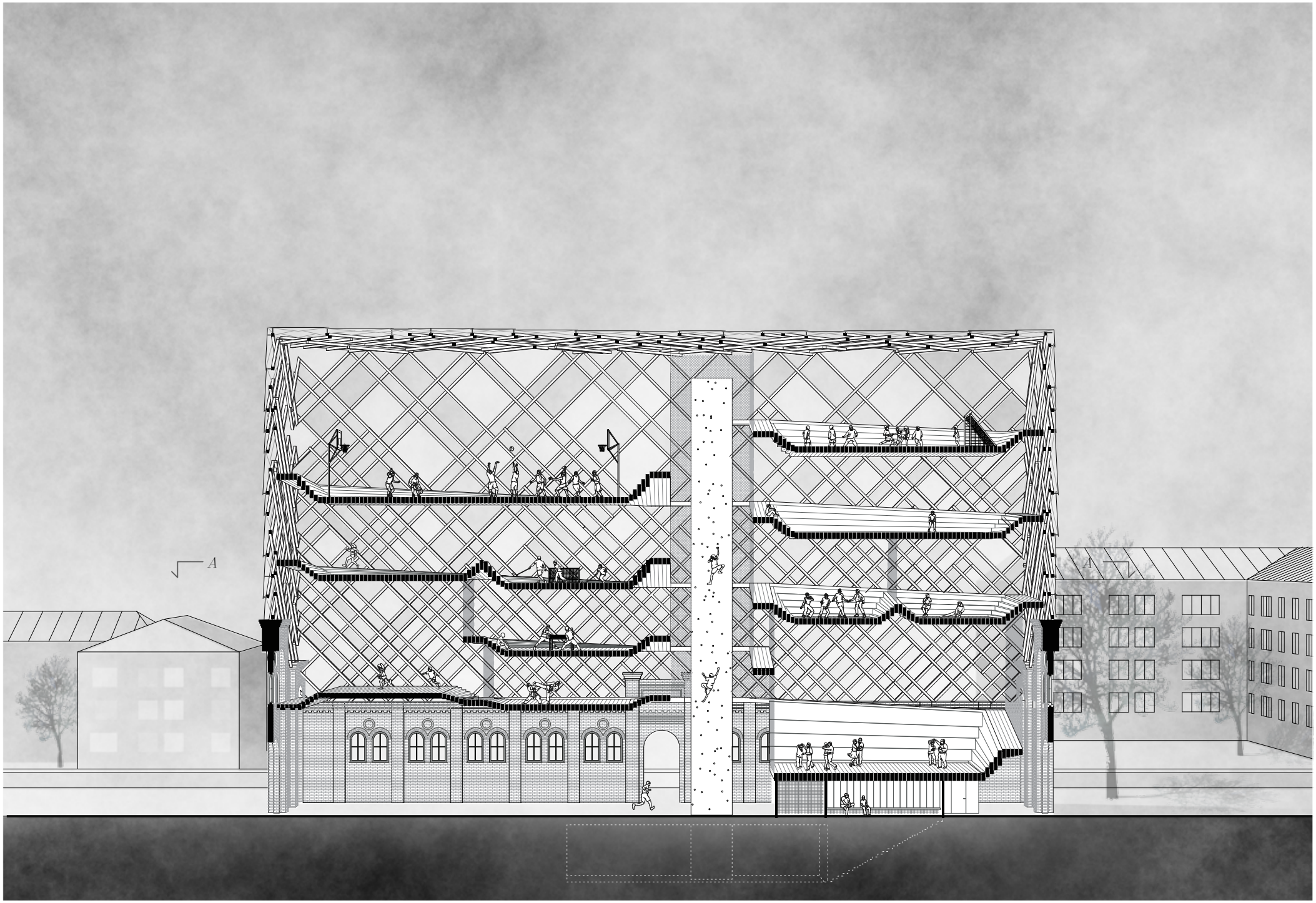
A
A