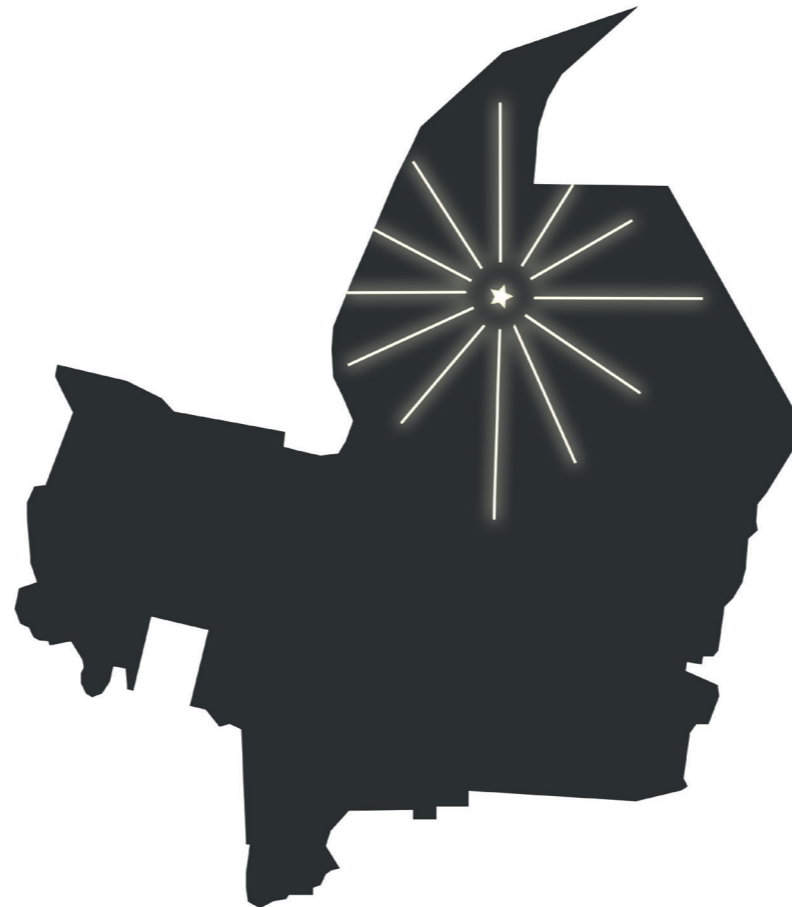


Future visions for Healthcare, housing and work ARK263
Master's programme course Autumn 2020
Chalmers School of Architecture

The Polar Star

TROSSÖ VÅRD CENTRAL



curated by

G14

**Maha Sobhy
Johanna Gimfjord Nielsen**



Task

This year's Healthcare studio focused on the design of a Healthcare centre by Kungsplan in Kalskrona. The client is Region Blekinge that is in need of new premises and has the intention to raise a new building to meet the new space needs.

Region's Blekinge vision is to **create an attractive, health-promoting and sustainable center with a human-centric approach.** The city of Kalskrona wants to **create a high-quality contemporary architecture addition**, that will add value to the baroque city plan and strengthen the entrance to the city.

The new building will host a permanent medical and child care unit, and a women's care, Rehabilitation and dental care units that could possibly change function in the future, within 4500 sqm and for 10'500 listed patients.

Sustainability have to be an integral part of the design since the beginning. The SDG's tackled in this project are n.3 Good Health, n. 7 Clean Energy, n.11 Sustainable cities and communities, n.12 responsible consumption, n.13 protect the planet.

Moreover the design has to challenge topics such as e-health, post-covid design, elastic units, flexible structure, separation of flows, space efficiency, spaces for teaching and learning, and shared public areas.

Site

City

Kalskrona is characterized by its marine history. The character of the city is defined by its present archipelago and various forms of naval base facilities.

The city was founded in 1680 and was one of the most modern and efficient naval bases of that time. The city was built due to its strategic location, in the middle of the Baltic Sea Empire following a grid plan.

Since 1998, the City of War Karlskrona has been on the UNESCO World Heritage List.

Kungsgatan is the main axis of the city, that will be converted into a completed pedestrian street.

Area

Kungsplan is located in the northern part of Trossö, in Karlskrona. The area borders in the west towards kv. Holmdahl, which partly consists of culturally and historically valuable buildings from the 19th century.

Towards the east, Kungsplan borders the Fribergska house and the bathhouse, both from the early 20th century; these are good and valuable examples of Art Noveau architecture. South of Kungsplan the Hoglands Park is located, which is one of the country's best-preserved 19th-century parks. An important tram railway crosses through the plot and must be considered as heritage. The site is about 1600m2. (see site plan page 5).

Analysis and Interpretation

In the baroque plan of Kalskrona the city block is a strong element that is repeated several time. The city block is a building concept that was deeply rooted in the first roman military clusters, with their walls surrounding and protecting a more private space, this was later on translated as the building itself enclosing a space, so defensive walls became facades. And This is a characteristic of many baroque cities, that we should take into consideration. (1)

A tram rail crosses throught the plot as well as many pedestrian flows. As in the case of the Hoglands park, Trossö citizens like to cross through the spaces and take shortcuts whenever it is available. Therefore we want to maintain the same concept when crossing through Kungsplan. (2)

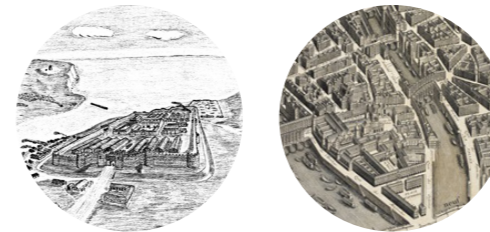
The site is subjected to flooding. the closest point to the water is the harbour in the north which constitutes the major threat to the building, while the other waterfronts are more far away and on the south the city rises. (4)

Moreover, the plot has very small possibility of future expansion, due to the closeness to the buildings. the small area where we can construct is already restrictive in itself. Thus having a grid structure that enables future expansion might not be the best solution, because having inside structural elements already constitutes a constraint, perhaps having a complete open floor could give much more freedom. (3)

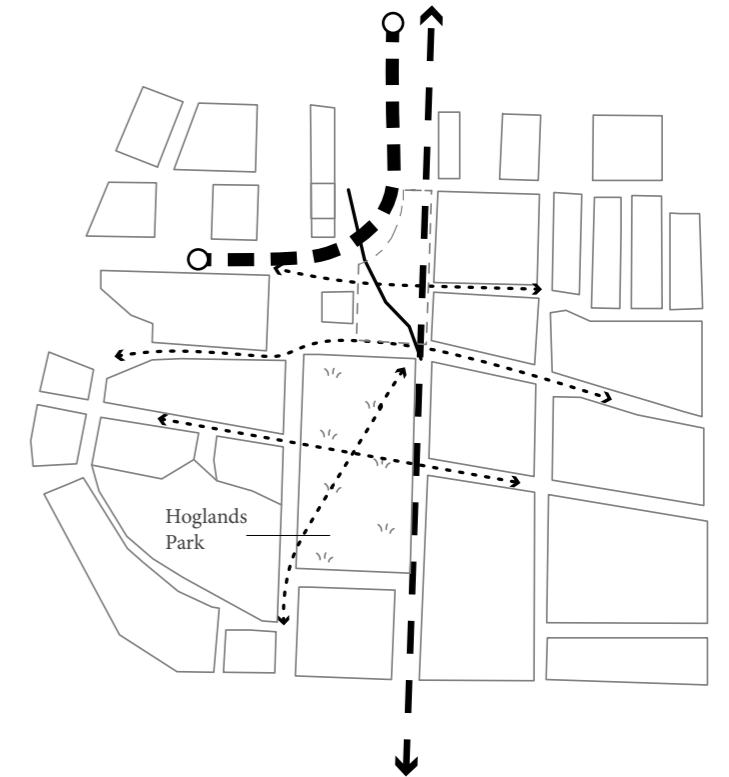
Our vision

Our vision is to create a polar star. A polar star in the northern hemisphere is always located to the north and has served as a guiding point for ages.

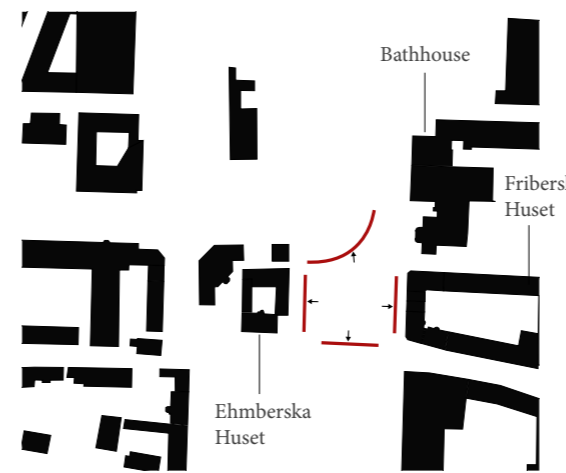
We imagine this center having the same function; **a glowing point in the north of Trossö, guiding you towards a healthy life.**



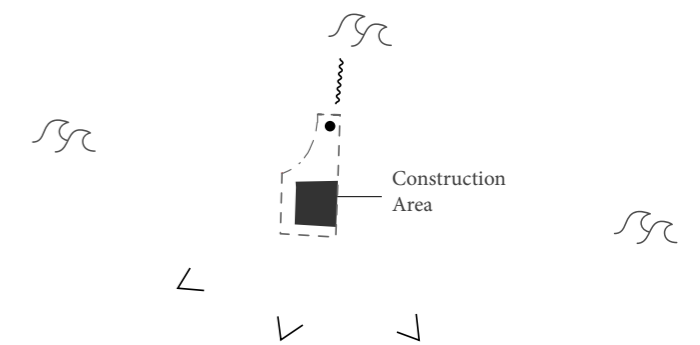
(1) city block analysis



(2) flows analysis

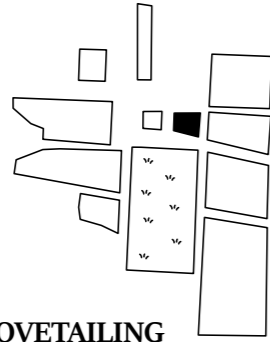


(3) structure analysis



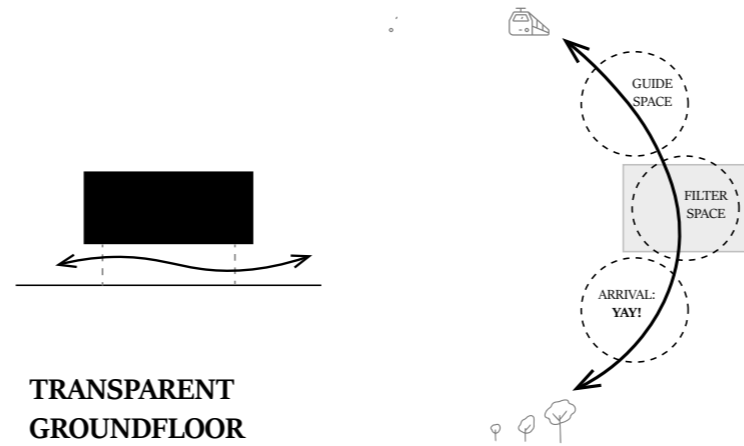
(4) flooding analysis

SITE & CONTEXT



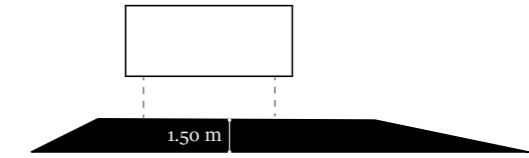
DOVETAILING

Enhancing the baroque plan by adding another piece to the puzzle, and by reinterpreting the city block in a contemporary way.



TRANSPARENT GROUND FLOOR

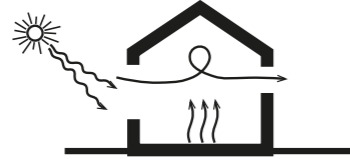
The smallest footprint will be used in order to ensure the continue of flows and use the building as a gate and as a space that can be crossed.



ELEVATED PLATFORM

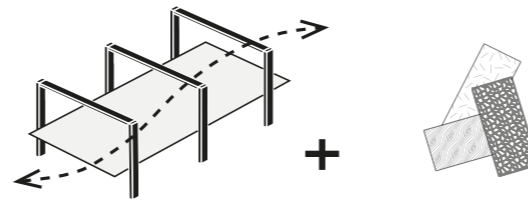
To solve the height problem, a platform that characterizes the whole site will be designed, directly at 1,20 m.

FUTURE-PROOFING & SUSTAINABILITY



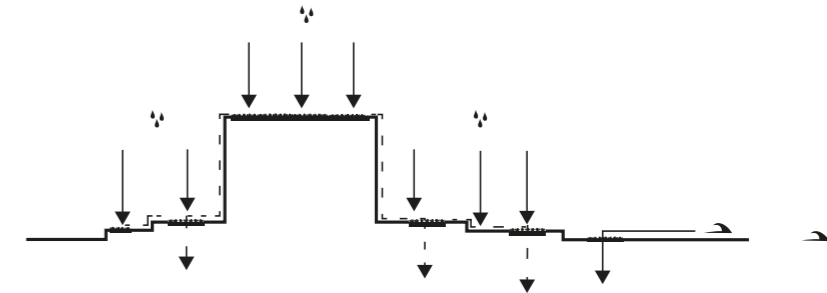
PASSIVE DESIGN

Providing the building with good ventilation, an optimized orientation, good insulation, high-performance windows and biomass heating.



FREE-PLAN STRUCTURE + DURABLE MATERIAL

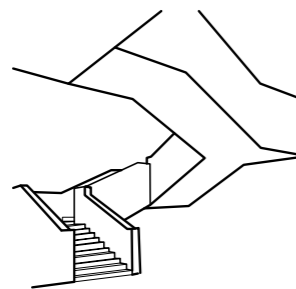
The combination of a free-plan structure together with the use of durable materials for construction and surfaces, can ensure both flexibility and durability in the long-term.



URBAN SPONGES

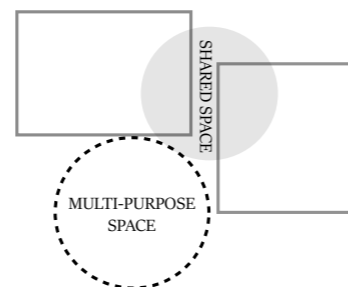
Green "terraces" along the platform and a green roof can help absorb both rainwater and flooding water.

BRIEF, LOGISTICS & HEALTH PROMOTION



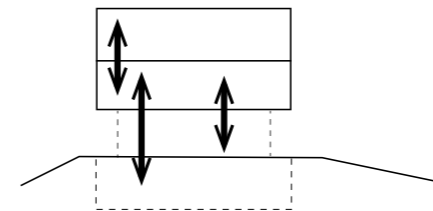
ACTIVE ARCHITECTURE

Active architecture can be a good tool to design the building to promote health in an indirect way.



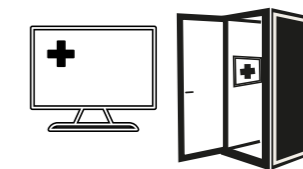
MAXIMIZATION OF SPACE

Merging shared spaces between the different departments and creating multi-purpose areas can help to use the space more efficiently.



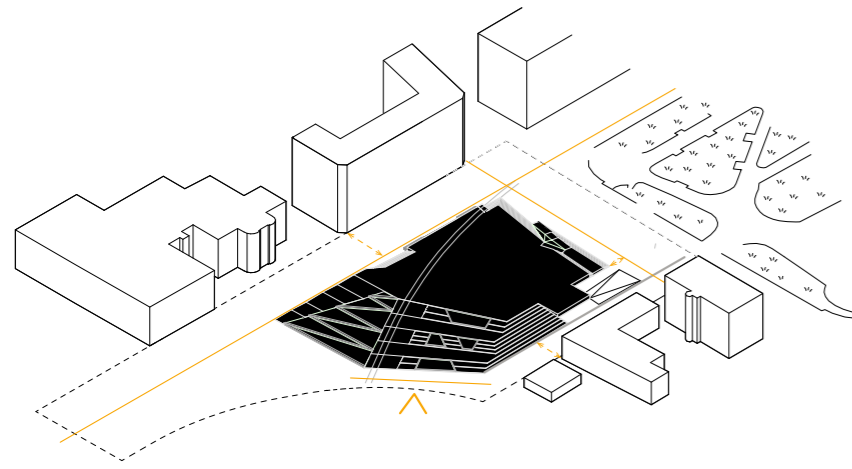
VERTICAL FLOWS

Vertical separation of the different flows: staff, delivery, patient.



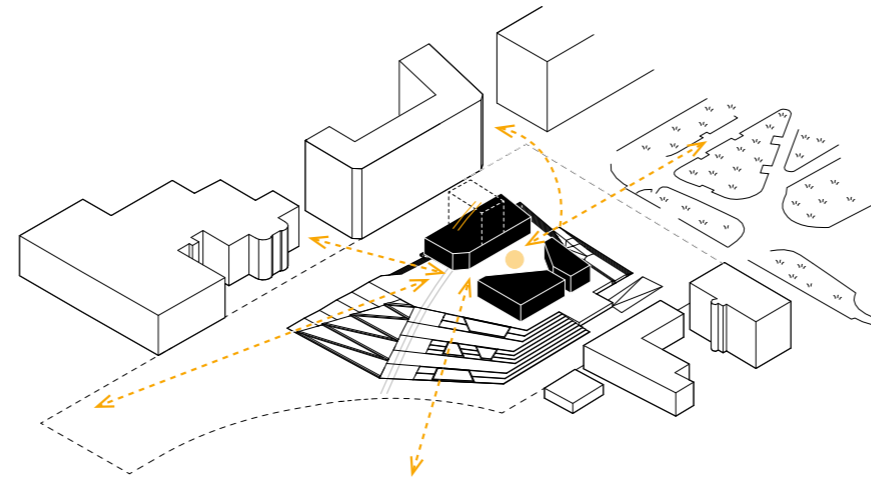
DIGITAL ACCESS

Self check-in areas, consultation hubs and telemedicine services will be provided as part of the invisible agency.



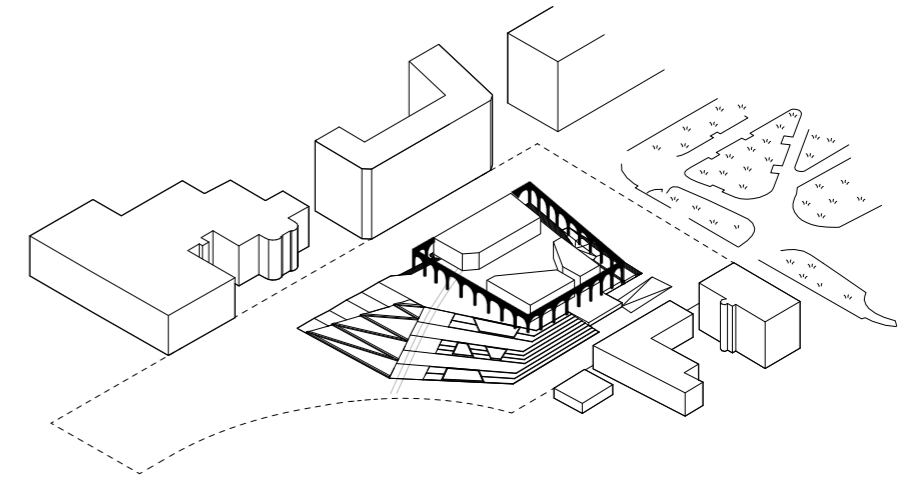
01 Elevated square

In order to prevent future flooding of the building, the ground at the site is raised with a soft transition to the height of 1.2m. The shape of the raised platform is made with respect to surrounding streets. The existing rails are kept at the same space, but elevated to the height of the platform, guiding people from the train station.



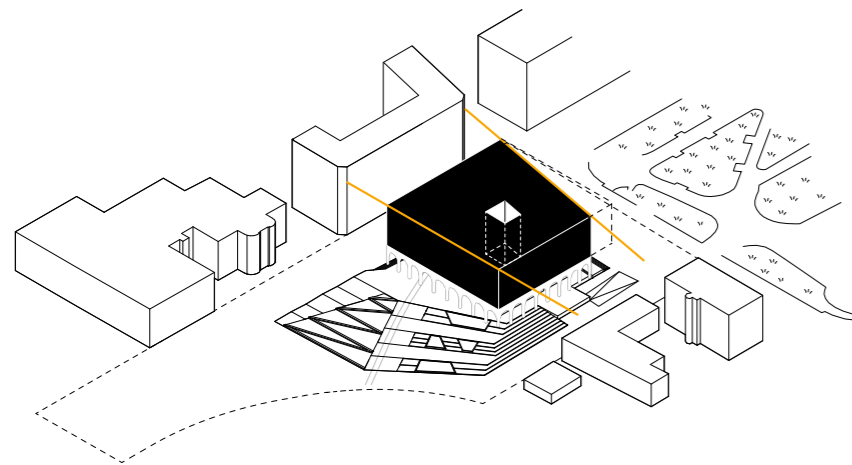
02 Accessibility

On top of the created platform are three smaller volumes with shapes inspired by the baroque grid. The rails inside the volume are raised to function as a sculptural piece. Ramps and stairs in different lengths are implemented from multiple directions to make the site inviting.



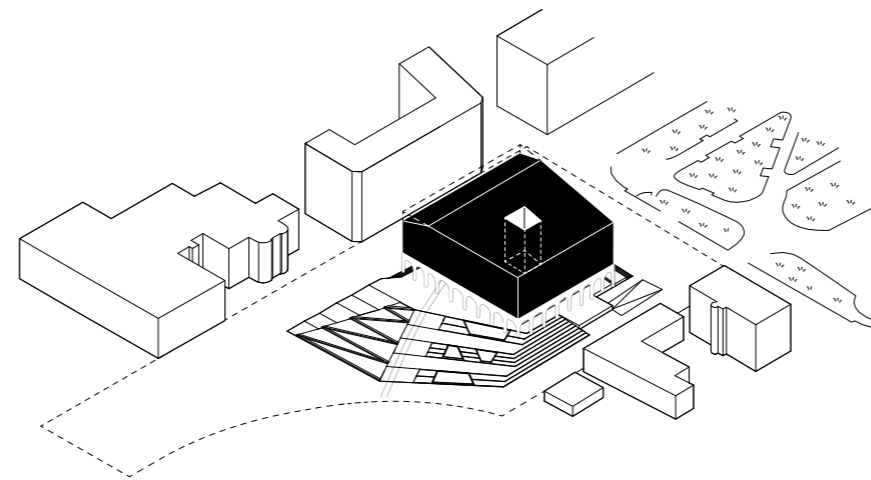
03 Portico

To define and give the site a public feeling, inspired by a market space, a series of arches, a so called portico is surrounding and supporting the volumes and structure above.



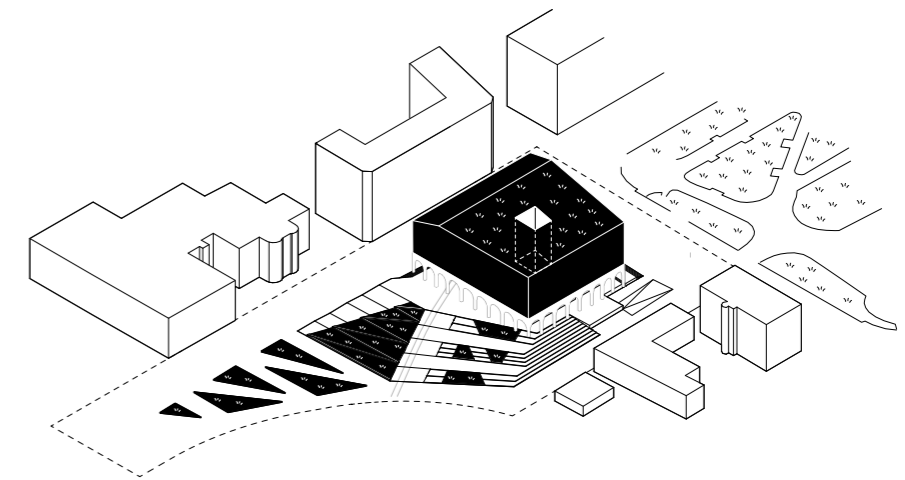
04 Baroque grid

The larger volume placed above contains the health departments. The volume is shaped to continue the existing baroque grid and connect the neighbour blocks, working as a missing piece in the urban puzzle.



05 Break down volume

The upper east side of the volume will be cut off to create a rooftop, and let Fridbergska dominate in scale. An opening is created in the core going through all floors to spread light through the building.



06 Urban sponges

For day water management, green areas are placed at the site, starting from the buildings roof and stretching through the area, functioning as urban sponges.

SITE PLAN

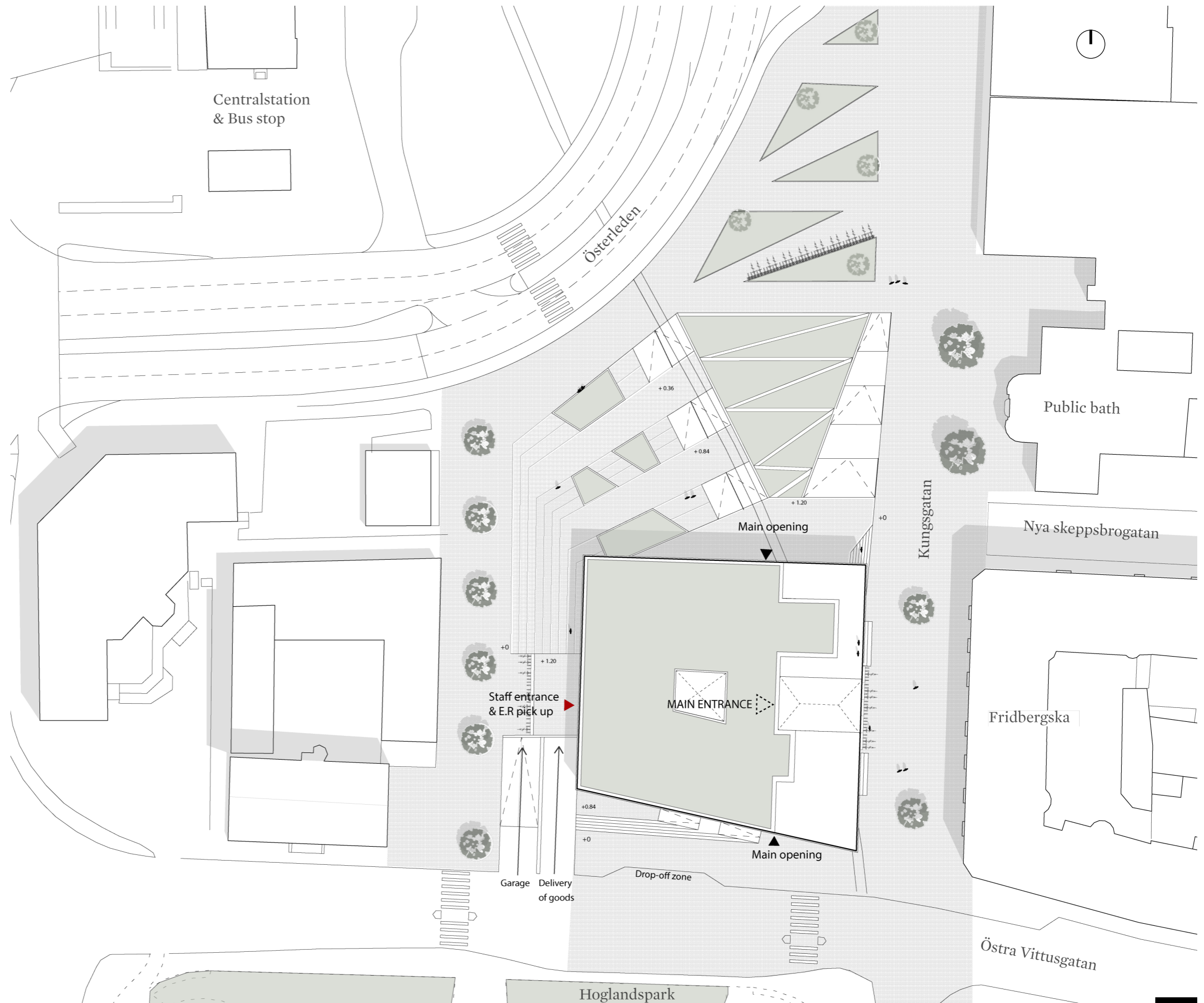
// LET THE "POLAR STAR" GUIDE YOU //

The proposed building is placed within the urban grid with a distance towards Fridbergska and Ehrnbergsgården. On the east side of the building is Kungsgatan, the main axis of Trossö. The building and platform is shaped to not disturb the flow of that street, and keep a continuation all the way from Stortorget in the south to the waterfront in the north. The parking area on the west side of the building is relocated to make Kungsplan as car-free as possible, providing a space for people rather than cars.

The elevated platform on the site is shaped to invite the pedestrians to enjoy and explore the proposed building and learn about health. The platform offers a smooth transition to the elevated area, providing shared landings between stairs and ramps. spread out through the given plot are the urban sponges, creating a continuation of greenery from hoglands park and up to the waterfront. The distributed green areas are enclosed with a seatable edge, inviting users pedestrians for a moment of pause.

The building's main entrance is placed in the heart of the building in connection to a main opening that goes through the ground floor. The entrance is visible through the arches from all directions, and reachable with various ramps and stairs.

Deliveries of goods and pick ups from the ambulance is made from the south west corner of the platform. Since the platform is elevated to 1.2m it is possible to unload directly to the platform. Next to the delivery area is a ramp which leads down to the garage.





VIEW FROM THE STATION

THE PROGRAM

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The original brief contains a medical care unit (792 sqm), a women's care unit (301 sqm), a child care unit (109 sqm), a Rehabilitation unit (359 sqm), a dental care unit (527 sqm) and common areas (503 sqm). To this, new activities shall be added to the program together with technical (800 sqm) and communication areas, for a total of 4500 BTA. This brief has been challenged based on different themes: e-health, post-covid design, space efficiency, spaces for teaching and learning, and shared public areas.

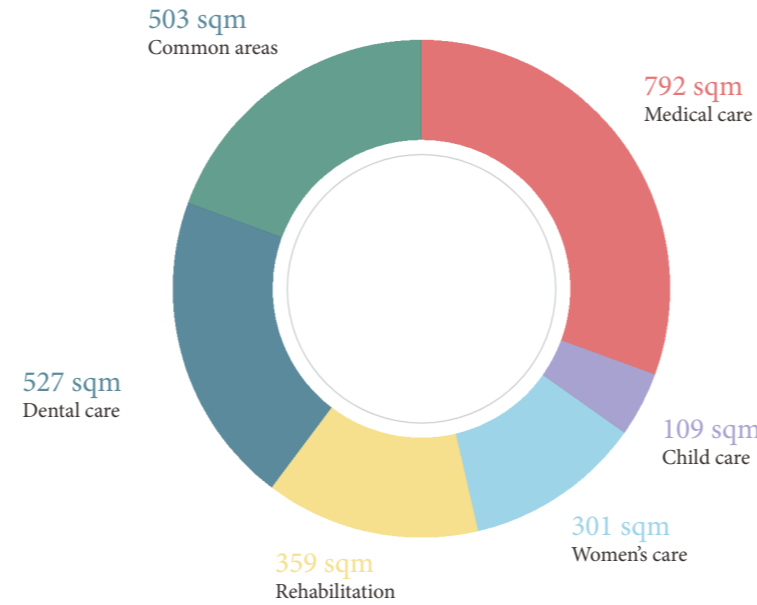
It is particularly true in this pandemic era that digital health have been widely diffused. We are expecting more home visits and telemedicine services in the future. This could lead to a reduction in the examination rooms, staff for reception, patients check-in, nursing stations and waiting areas. Moreover, in the actual state of fact, a study from Örebro claims that the presence of patients in treatment rooms is only 20% of the total opening hours. This means, **we should wear our invisible agency goggles and make a better management of the rooms.**

This resulted in a modified structure of the units. Instead of every department having their own reception, sampling area and office, we have joined them and shared them between the departments instead. Rooms that are not used very frequently are combined, and rooms that could be used for public activities have been made accessible even after opening hours. In addition to the given program we have an outdoor gym on the rooftop, a health hub, a cafeteria and a meditation room accessible for patients, staff and public.

The number of examination rooms has been reduced and a new time schedule is proposed. The proposal consists of longer opening hours so the healthcare services becomes accessible for everyone regardless of your occupation. The staff will work in shifts of 6 h a day, which will give more free time. In this way it is possible to offer 33 more opening hours and the treatment rooms can be used for double the amount of time. The health hub is available 24/7. In this space, the public will be able to look up any health issues or questions, leave a sample, order medicine, book an appointment or have a digital meeting with a doctor. This will encourage people to do more regular check-ups and be more self healing. Self check-up could also reduce the physical visits to a doctor by 20 - 30 %. The combination of a new time schedule, health hub and digital meetings allow for a reduction in number of examination rooms by 50%, especially in the medical care unit.

The final brief consists then in 365 sqm for medical care, 121 sqm for child care, 207 sqm for women's care, 338 sqm for rehabilitation, 380 sqm for dental care, and 1373 sqm dedicated to common areas, including a staff floor, and additional activities, for a total BTA of 4396 sqm.

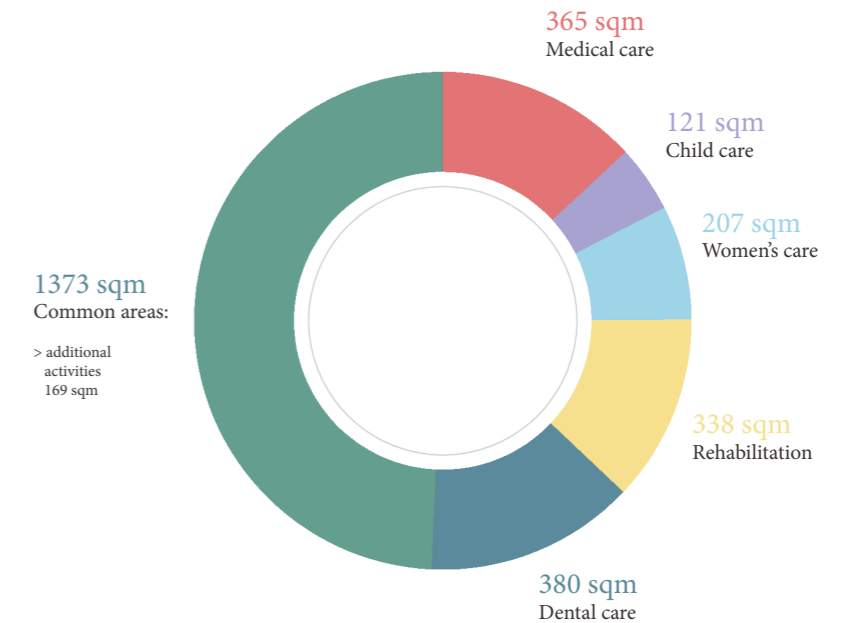
OLD BRIEF



Total

$$2591 \text{ sqm} + \text{technical/communication} = 4500 \text{ sqm}$$

NEW BRIEF



Total

$$2784 \text{ sqm} + \text{technical communication} 225 \text{ sqm} 1365 \text{ sqm} = 4396 \text{ sqm}$$

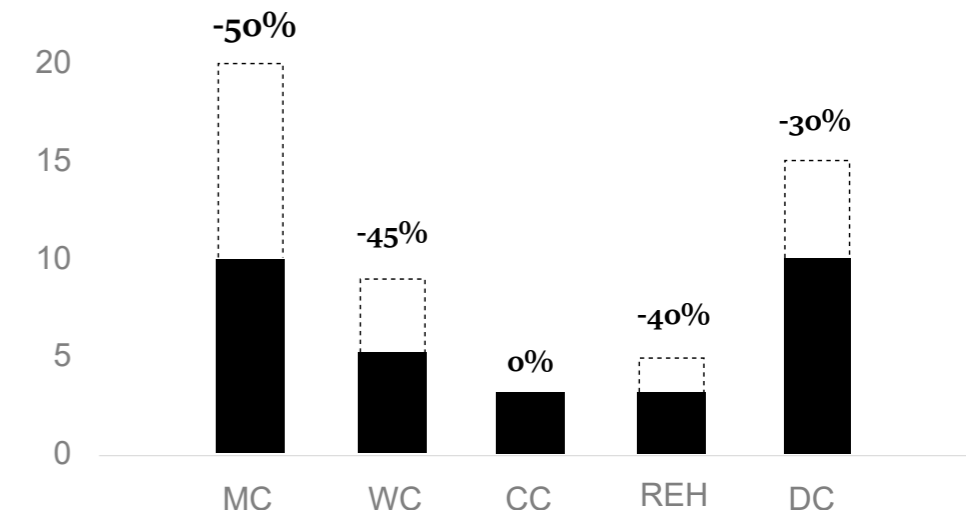
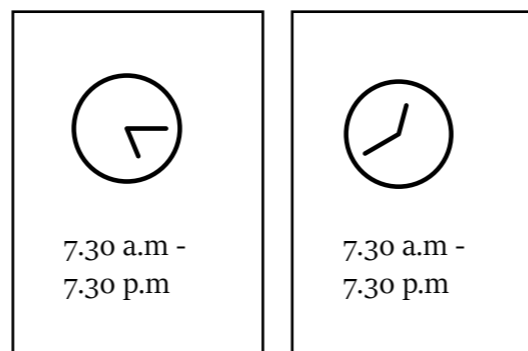
TIME MANAGEMENT

MON-SAT:-

s1 7 a.m - 1 p.m

s2 1 p.m - 8 p.m

examination rooms:

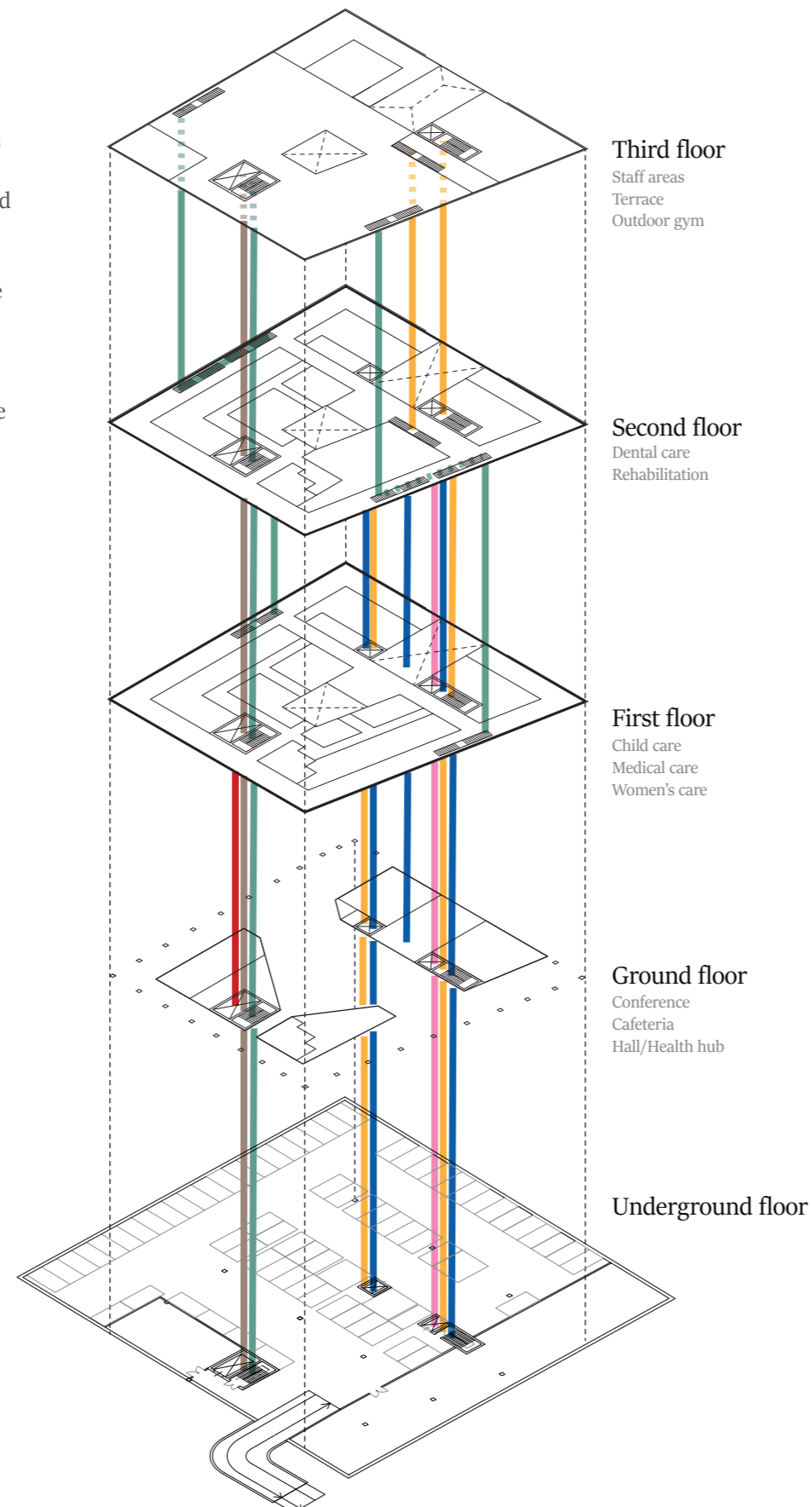


FLOOR PLANS CONCEPT

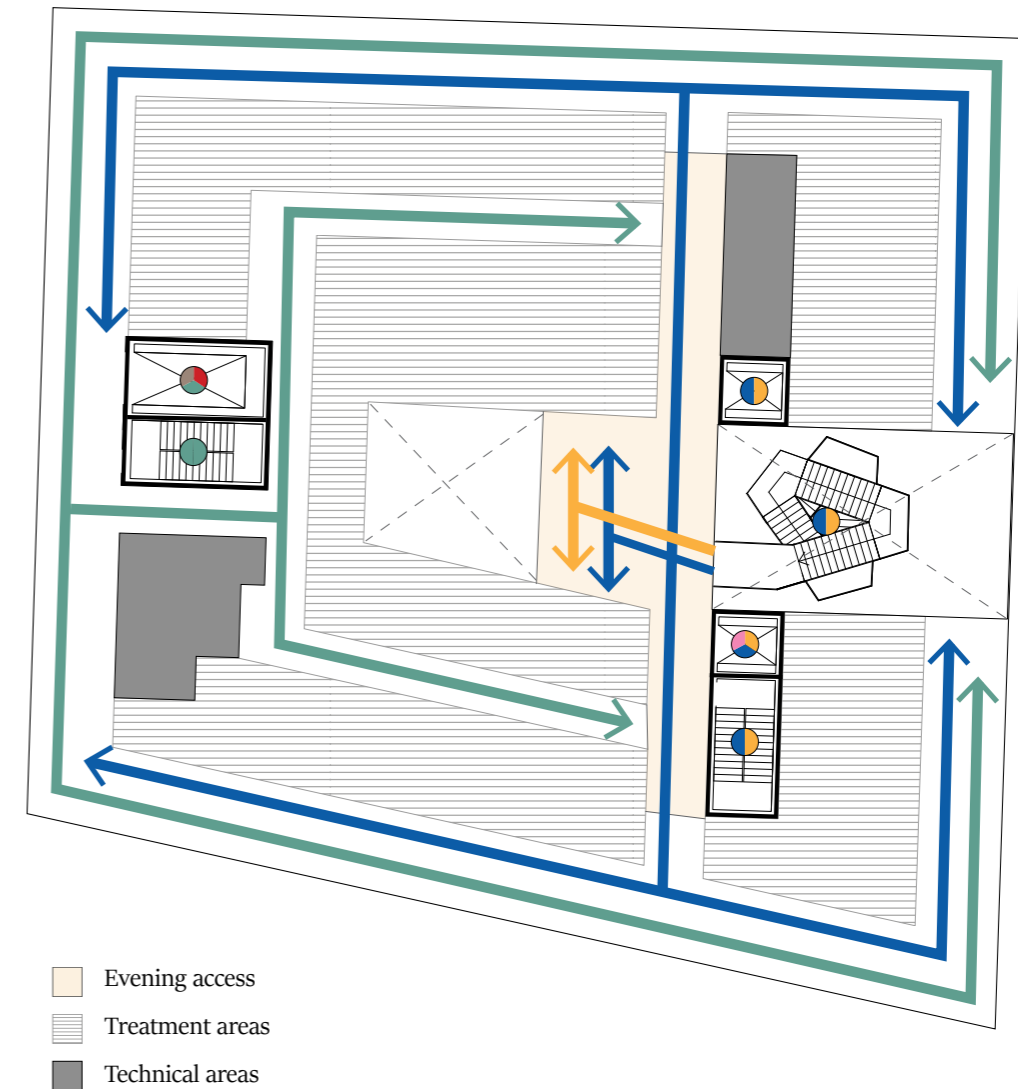
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> VERTICAL FLOWS

The floors inside the building are connected vertically with one larger elevator for goods and staff and two smaller ones, of which one has the possibility to be closed off for infectious patients only. In connection to the elevators there are two emergency staircases and a larger sculptural staircase, shaped as a star, placed in the entrance hall. The last mentioned staircase is only for patients and is the main staircase to the two departments floors. To make the wayfinding easy for the patient, every crossing then only offers two options, up or down, left or right depending on which department to visit. Along the facades of the upper floors are stairs connecting the staff floors to the department floor, making it easy for the staff to move around in between the floors.



Typical Floor



^ HORIZONTAL FLOWS

To separate the flows each department floor has an external corridor for patients and internal a corridor for staff. The treatment rooms can be accessed from both corridors. The rooms that are inhabited for a longer period of time are placed in connection to the winter garden in the center of the building. The inner corridors host light pockets to the winter garden where the staff can have a short break, or a visual relief moving through the building.

The placement of the external corridor, waiting room and treatment rooms in this proposal are inverted compared to a traditional healthcare center. The corridor and waiting area placed along the facade instead of treatment rooms. Treatment rooms are used for shorter periods of time by patients and staff, and does therefore not demand direct daylight. Instead the daylight reaches the room through semi-transparent walls from the outer corridor. The communication areas which often can be very dark and confined will instead be bright and open and spread light through the building easier.

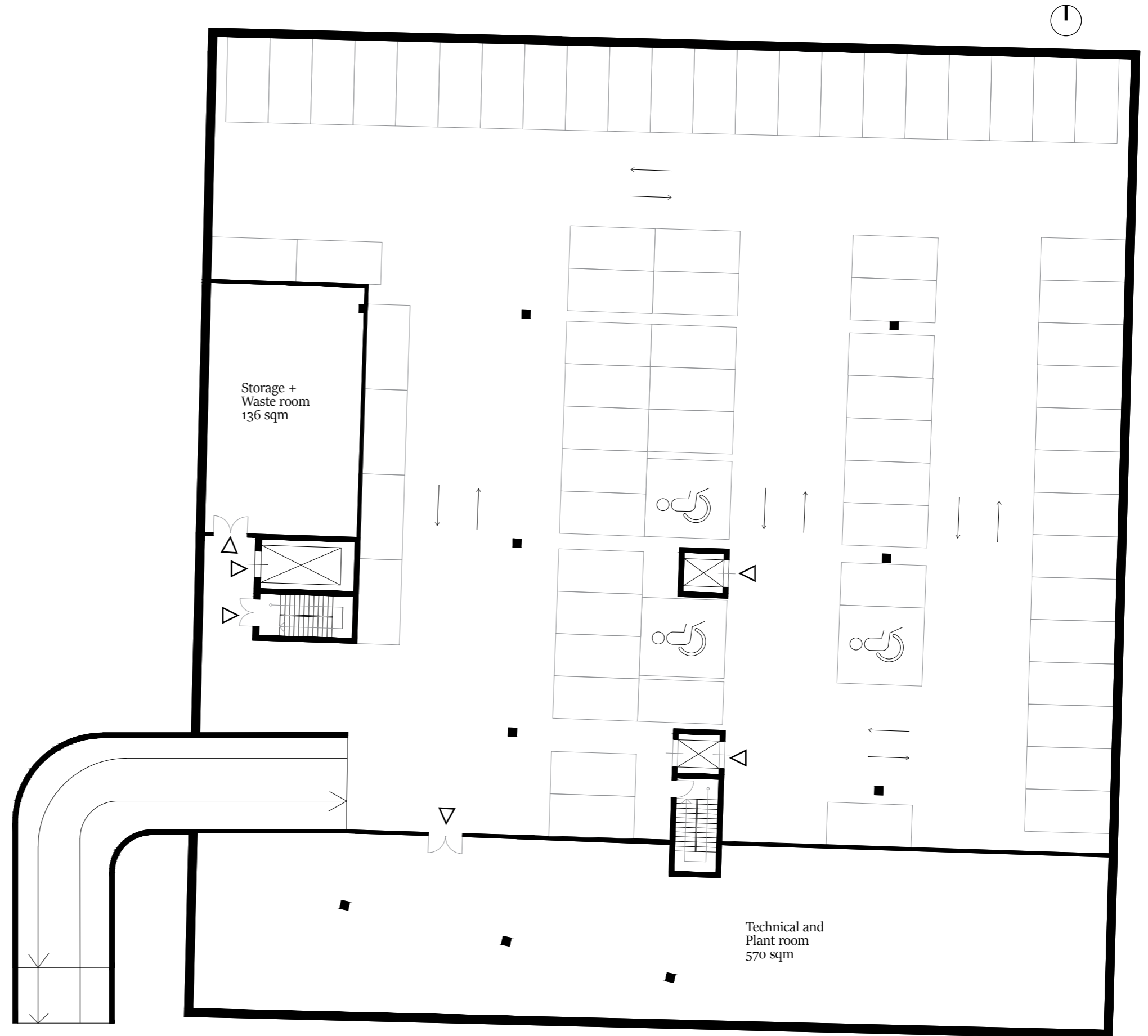
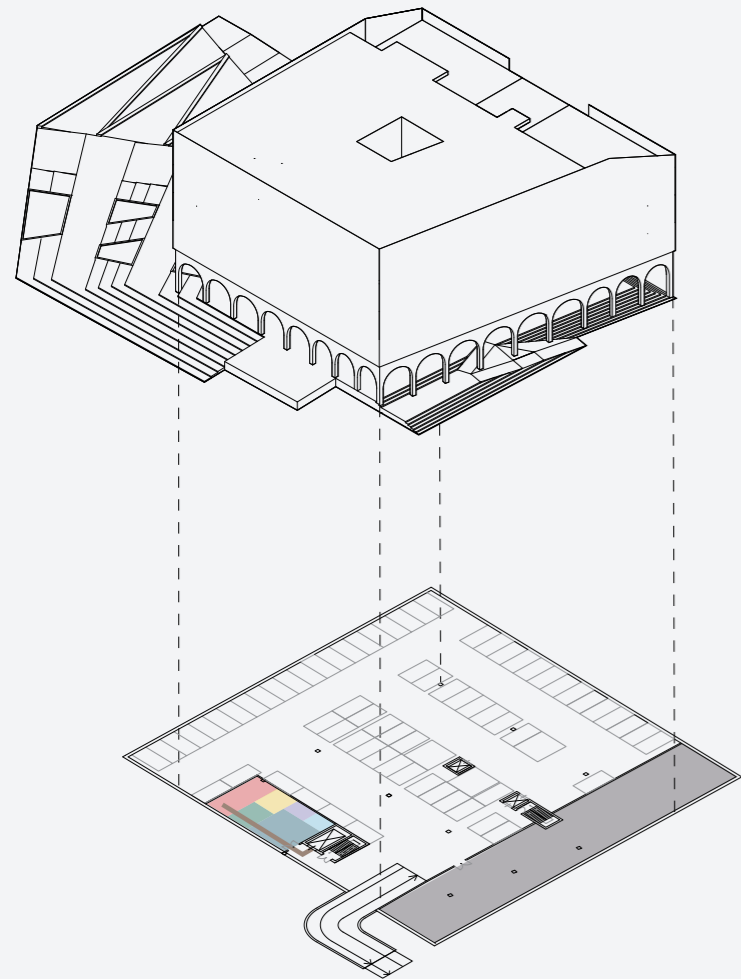
The waiting areas are spread out along the facade to minimize gatherings in one small room. The space provides a view towards the city or waterfront as a distraction for possible anxiety before an appointment and bathrooms are placed in every corner of the waiting area. After opening hours there is a possibility to close off the core for evening access for public functions.

BASEMENT LEVEL

The basement floor is accessible through a double ramp to allow simultaneous movements in both directions. This is done also to avoid congestion of cars in front of the ramp that is close to the street.

It hosts a large technical area of 570 sqm where a biomass boiler could be possibly placed. The biomass used to heat the building could be in an initial stage the wood waste produced during the construction of the building; then later on powered by neighboring waste.

It provides parking for both the healthcare center and the Smoke restaurant for a total of 73 parking lots. The Smoke's workers/clients can access directly the outdoor by taking the larger elevator. This elevator is also used for delivery of goods that are then placed in the storage closed to it, while the other two elevators are for patients to access directly the hall of the healthcare center.



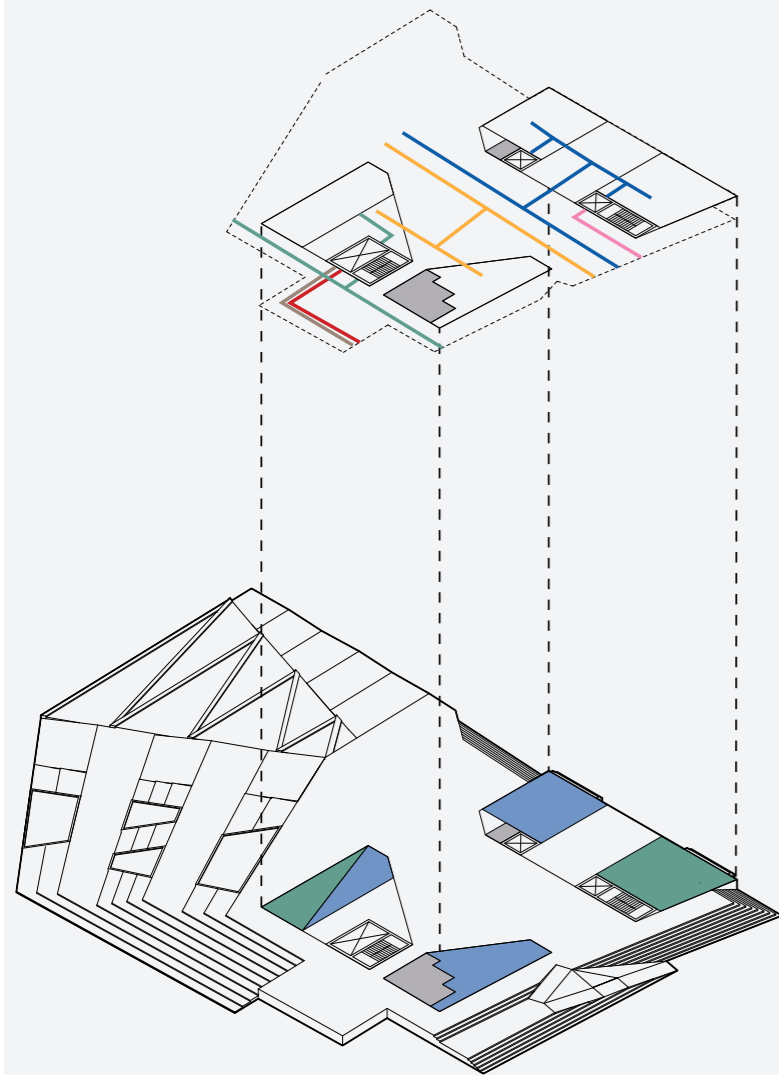
GROUND FLOOR

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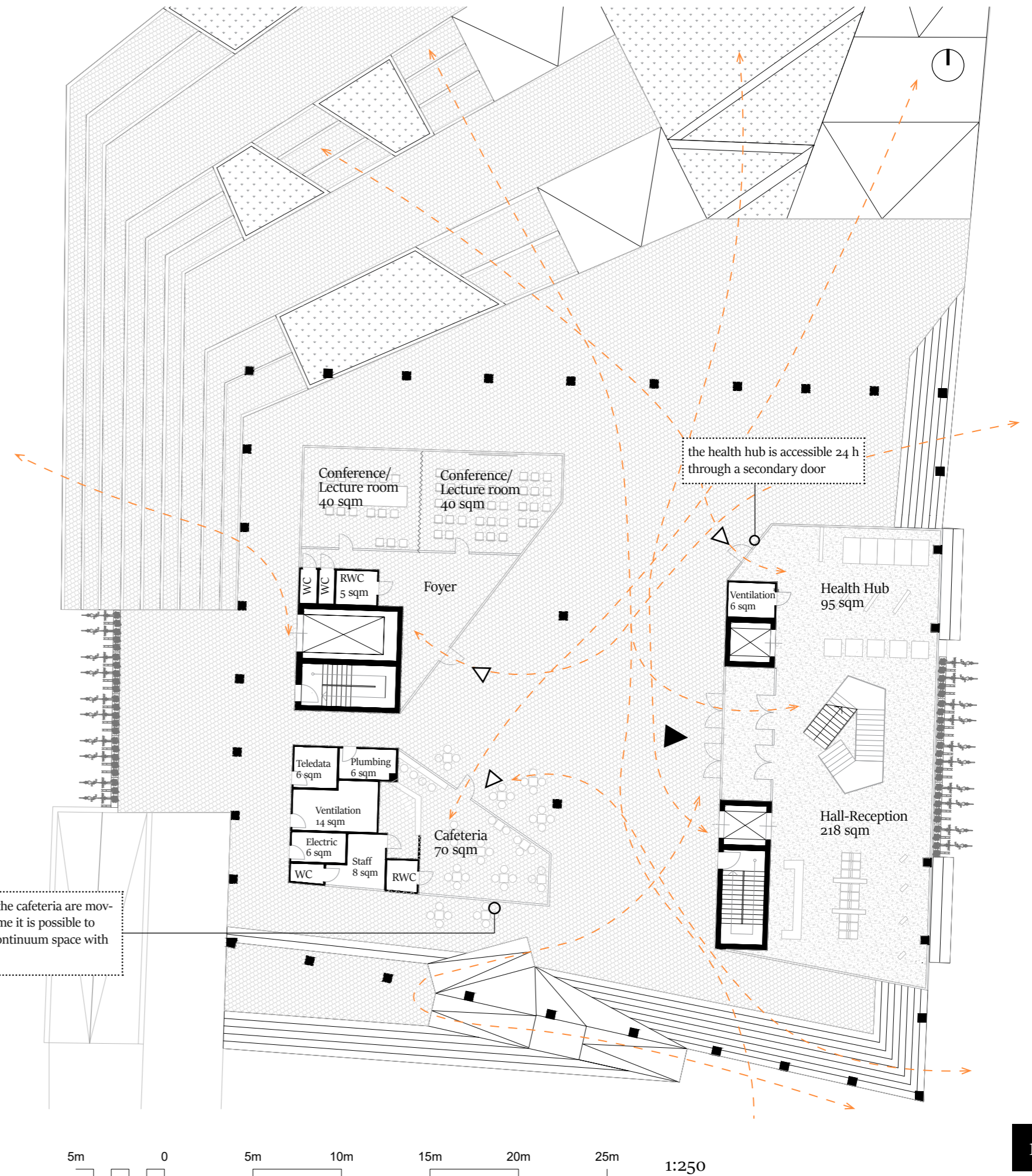
The groundfloor is a dynamic space that hosts 2 conference rooms, a cafeteria, the health hub, and a big hall-reception area.

The conference rooms are used by the staff for their own meetings, but when this spaces are not used they become lecture rooms for the citizens for teaching and learning about health topics.

The cafeteria is placed right in front of the Hoglands Park to offer an interesting view, while the entrance and hall of the healthcare are looking towards Friberska, where a triple height glazed space with a sculptural staircase allow the view from different levels.



- Common areas Healthcare
- Additional activities
- Emergency
- Delivery
- Staff
- Patients
- Infection
- other activities



The glass partitions of the cafeteria are movable. During summertime it is possible to open-up and create a continuum space with the flow of people.

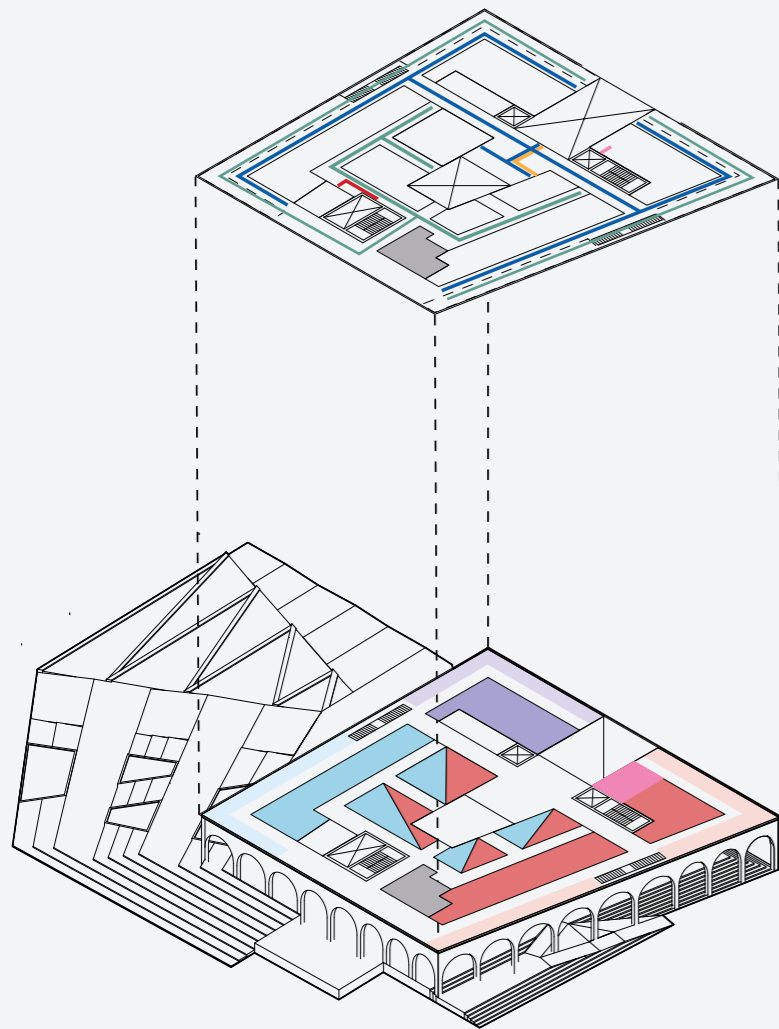
FIRST FLOOR

The first floor hosts the medical care, women's care and child care units.

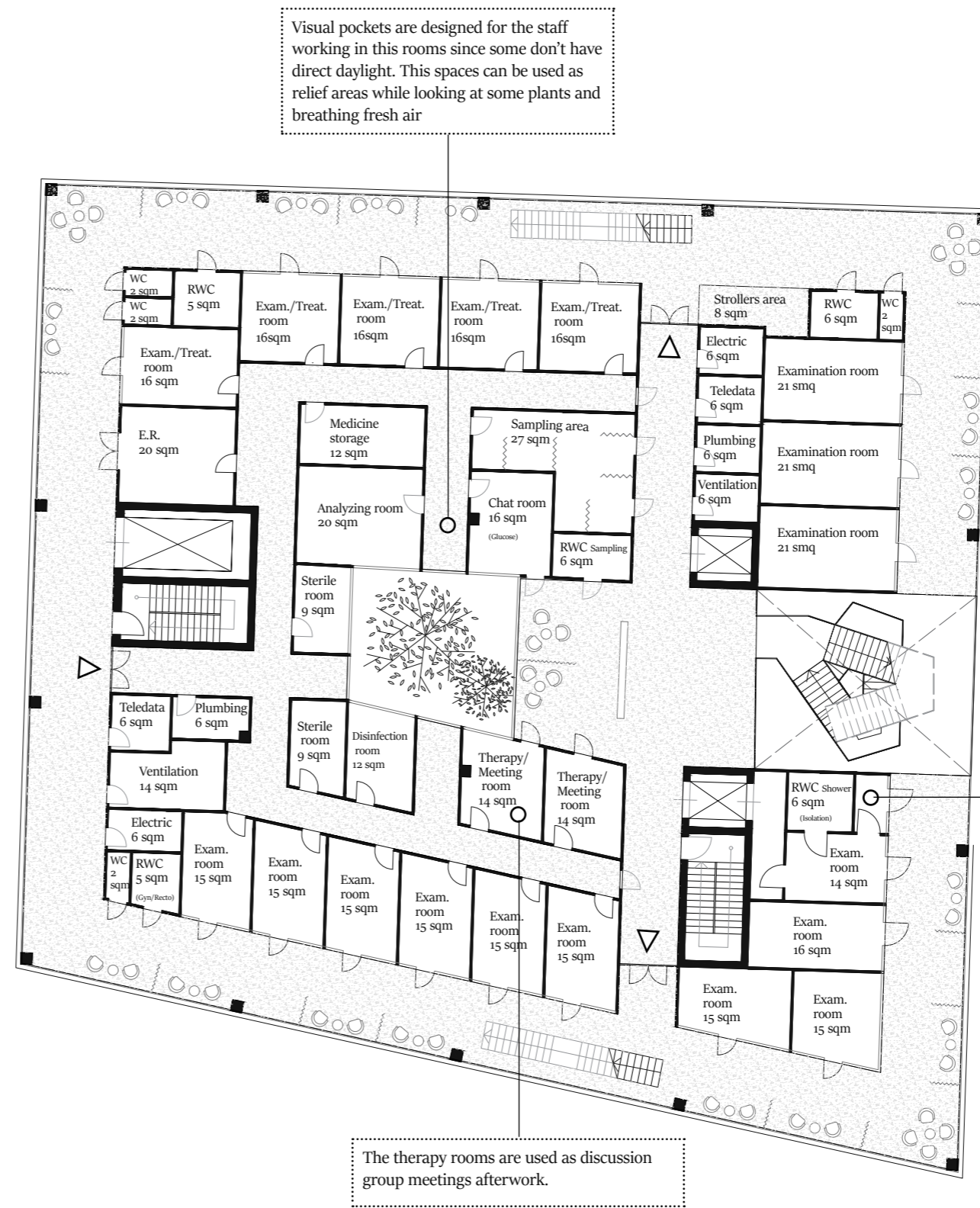
The medical unit is constituted by 10 examination rooms, a Therapy room, an emergency room, a medicine storage and a sterile room. The disinfection room is shared with the women's care as well as the sampling and analyzing area.

The child care is constituted mainly by 3 examination rooms, and a strollers area that is shared with the women's care.

The women's care is then equipped with 5 treatment rooms, a chat room for glucose check and a therapy room.



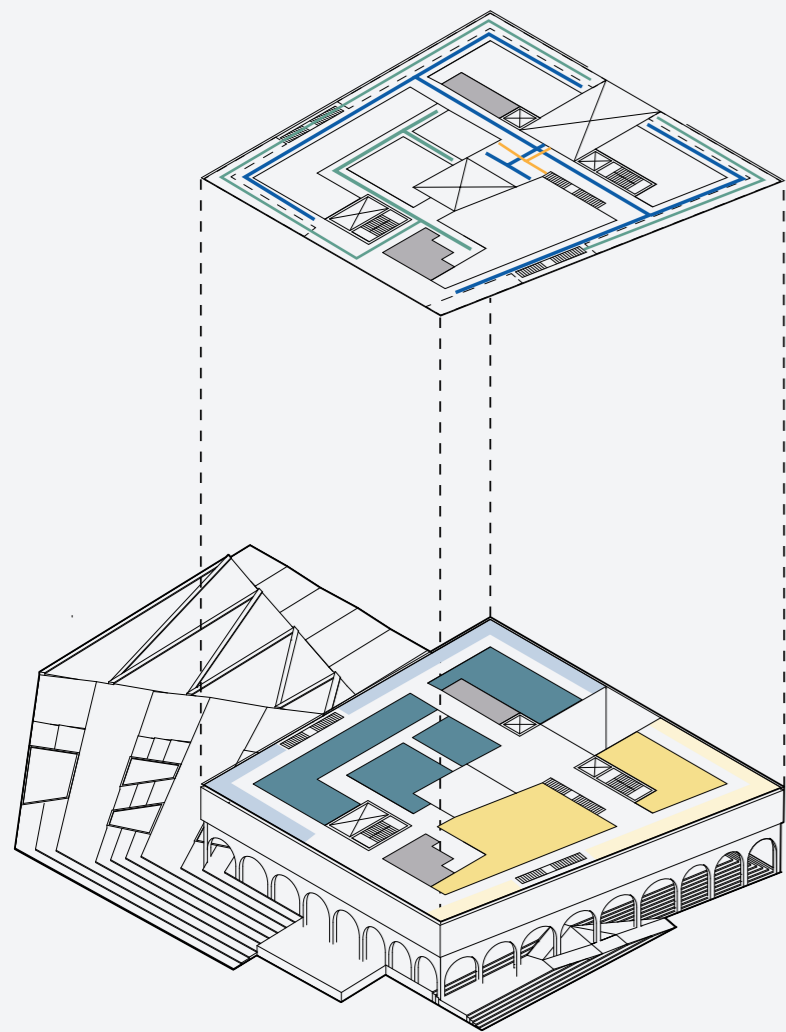
- Medical care
- Women's care
- Child care
- Emergency
- Staff
- Patients
- Infection
- other activities



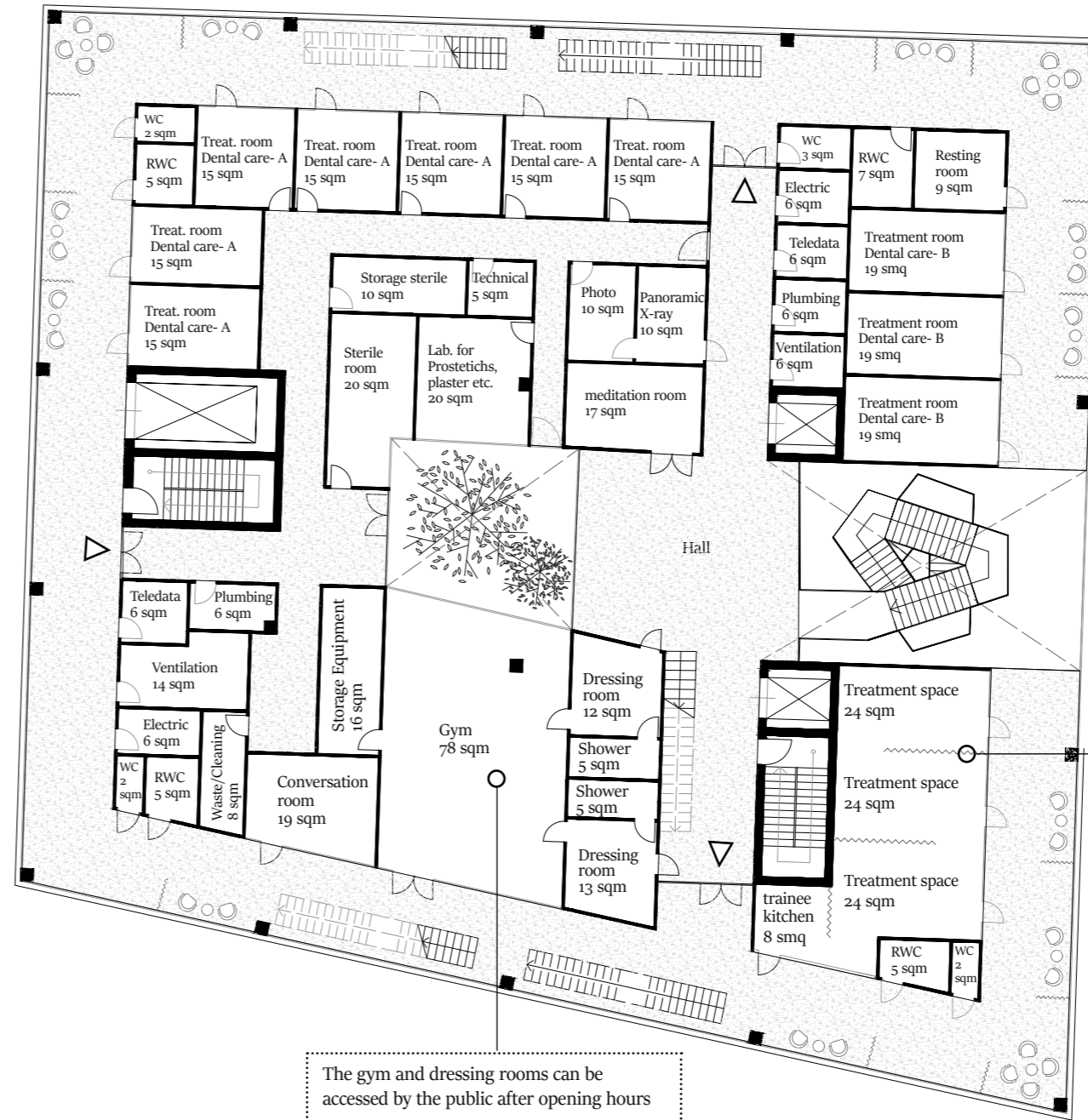
SECOND FLOOR

The second floor hosts the dental and rehab departments, and an additional meditation area. The Dental department has ten treatment rooms of two typologies spread along the waiting areas. Lab, X-ray and technical rooms are placed further in with connection to the inner corridor.

The Rehab department has four treatment rooms that can be joined to create a larger treatment area. Along the corridor is a conversation room and gym with connection to the winter garden. The gym together with the meditation area is open for the public after opening hours.



- Rehabilitation
- Dental care
- Staff
- Patients
- other activities



The treatment spaces have foldable walls between them, making it possible to create a larger treatment space

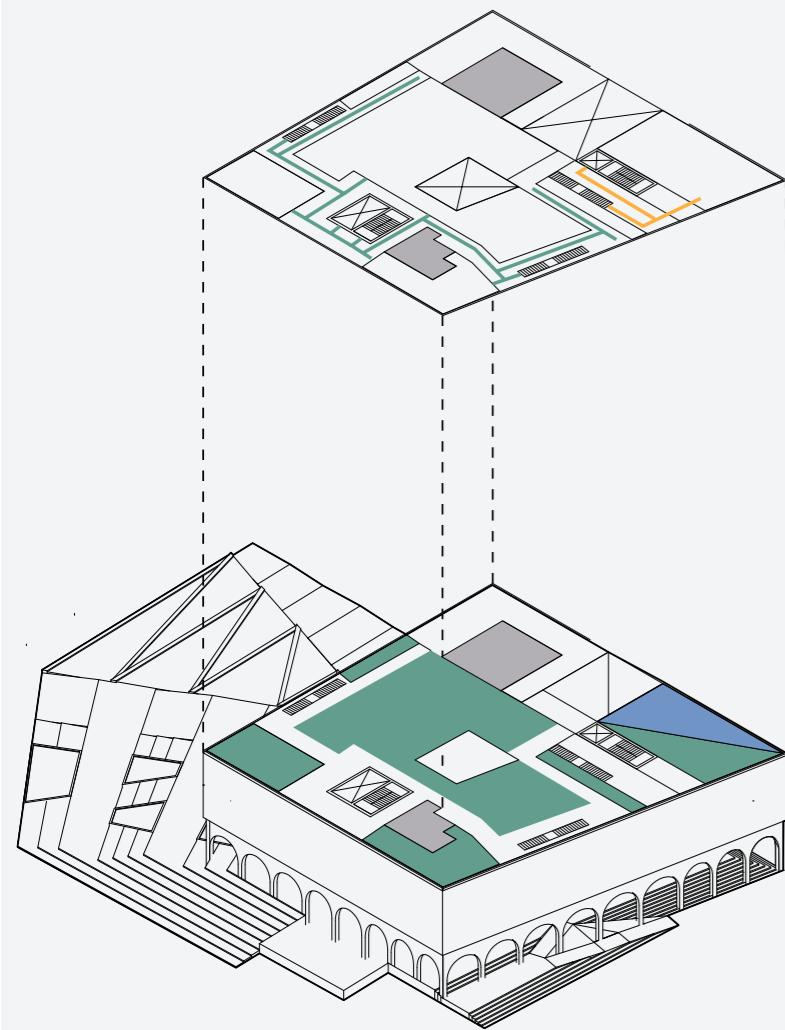
The gym and dressing rooms can be accessed by the public after opening hours



THIRD FLOOR

The third floor is shared for the staff from every department. By separating the administrative area from the patient area makes it possible to provide working areas with different pace and social context. A collective staff area creates a space to exchange experience between departments or discuss different cases.

The floor contains dressing rooms, two conference rooms, 12 smaller rooms for digital meetings, a fika space and an outdoor terrace. The terrace contains an outdoor gym to make it easier for the staff to be active.

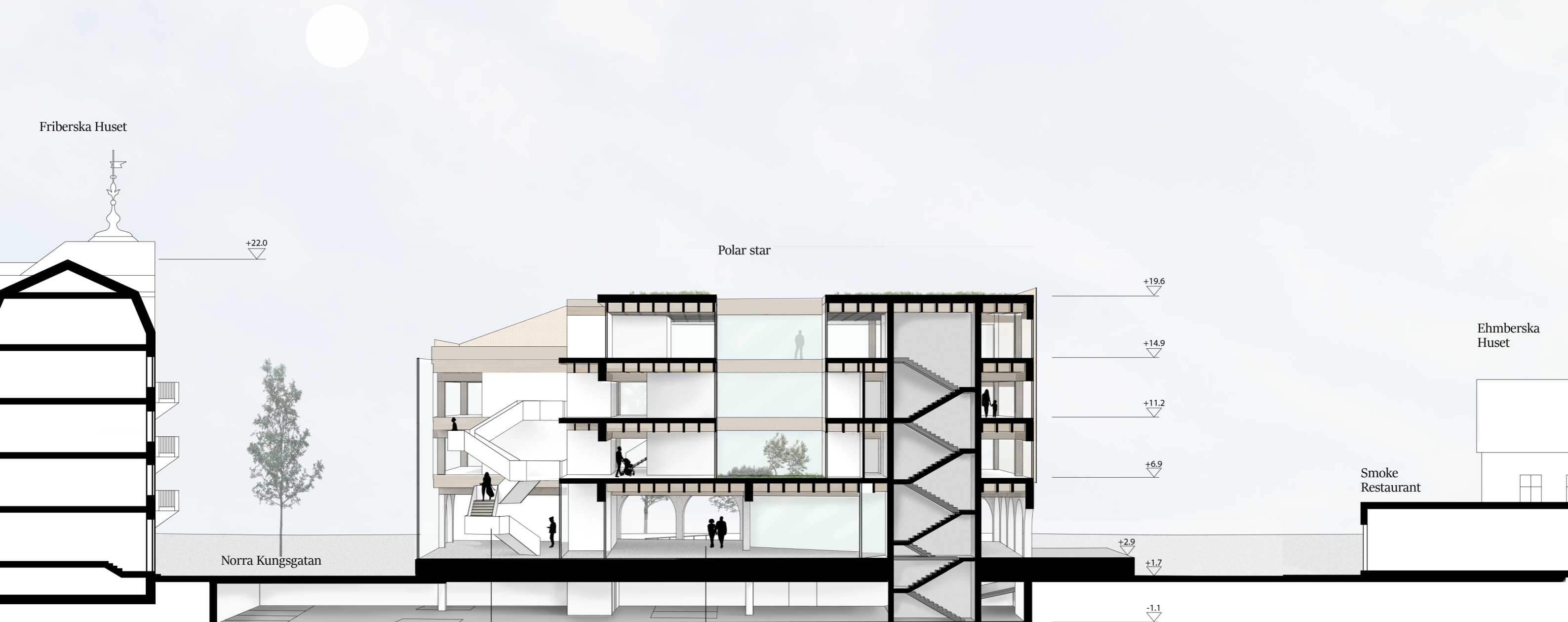


- Common areas staff
- Additional activities
- Staff
- other activities



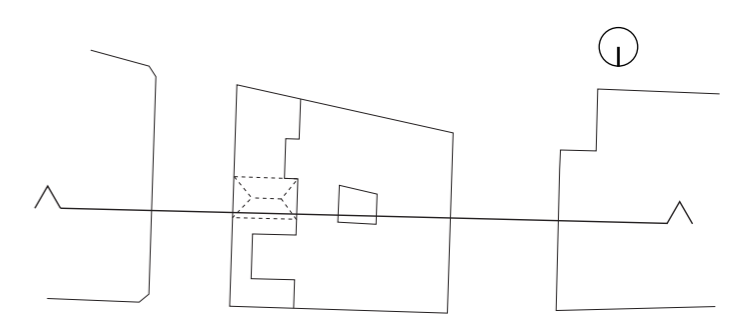
EAST-WEST SECTION

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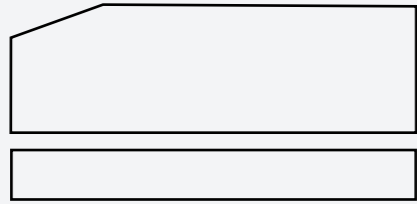
The sculptural staircase is one part of the active architecture in the healthcare center, leading the users up through the building in shape of a star.

A large opening through the groundfloor connects Kungsplan with Hoglandpark and offers a open public space



ELEVATIONS

The facades are conceived as two separate blocks with different languages.



The lower block that represents the public groundfloor is characterized by arched shapes and a grey natural stone material, that could be any local stone.

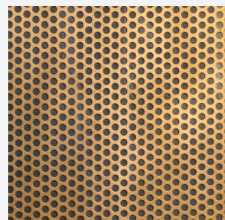
The upper block has a more rational character with regular openings. The two central wider openings are designed to let the staircases be visible from outside. The stairs together with the cut of the building shape looks like going down towards Friberska and so optically redirect to it. The smaller openings resemble the internal visual pockets in the facade, they become cuts where you can enjoy a fully uninterrupted view.

This block is surrounded by a second skin made of perforated copper panels. Copper blends really well with the surroundings, it has been used a lot when it comes to dealing with the historical context, and it's a material that can be recycled again and again without any loss of performance and quality. The second skin allows for continuous views all around the waiting areas and a shining effect at night.

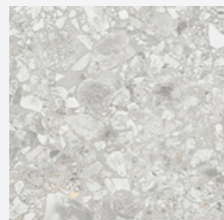
The choice of color, grey stone and golden copper, stems from the baroque surroundings.



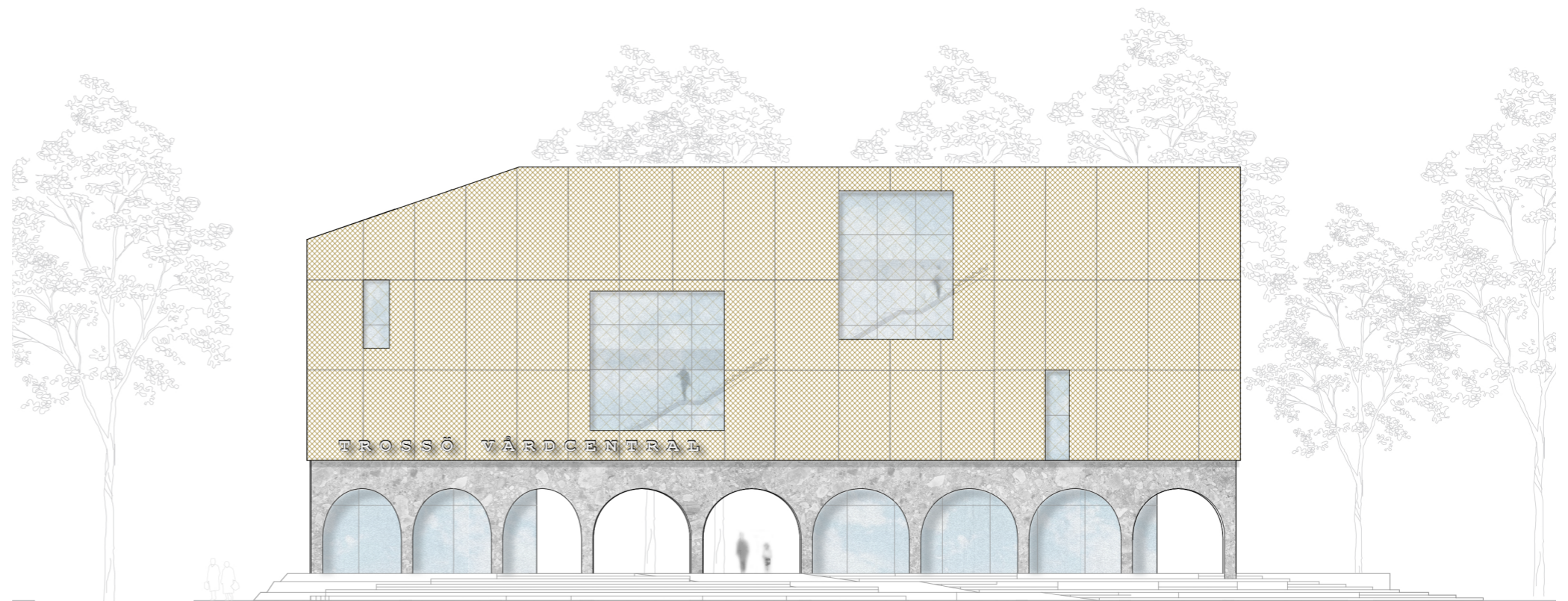
Glass



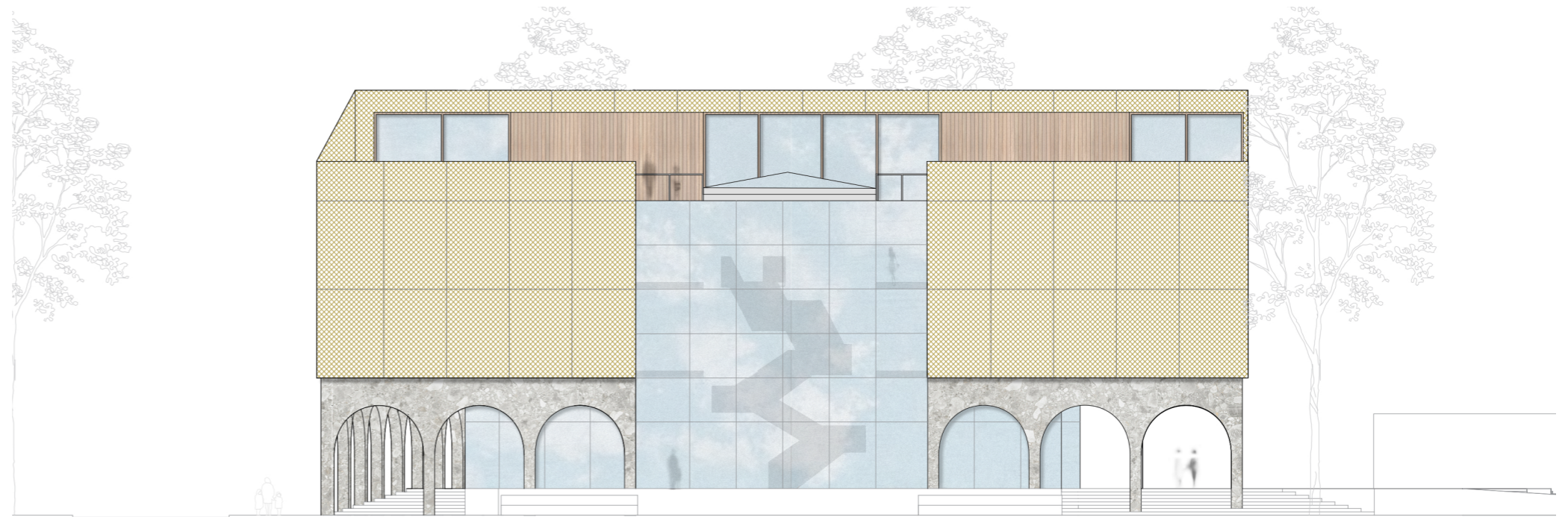
Perforated Copper



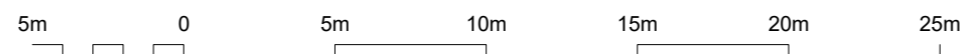
Stone



North Facade

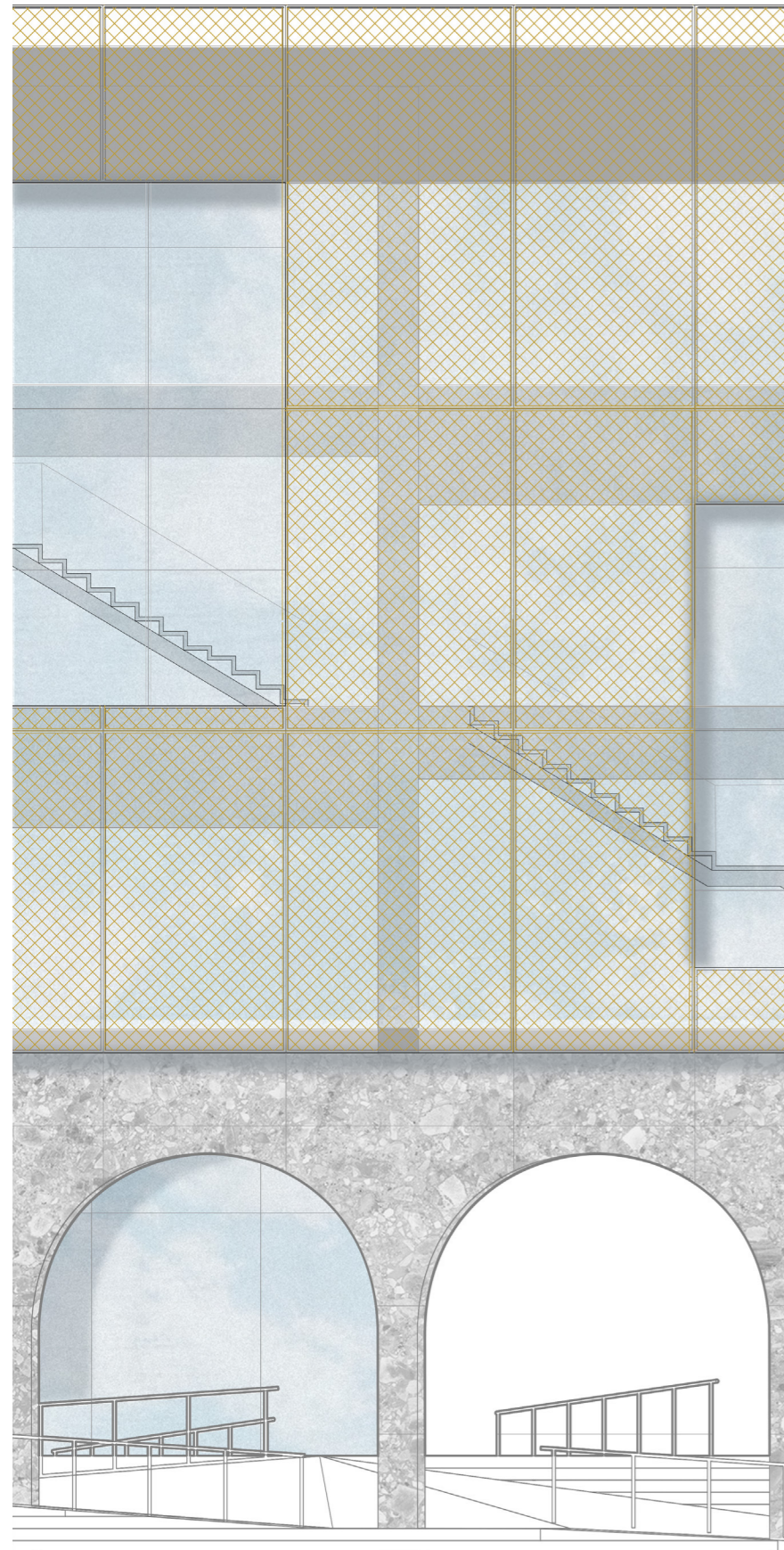


East Facade

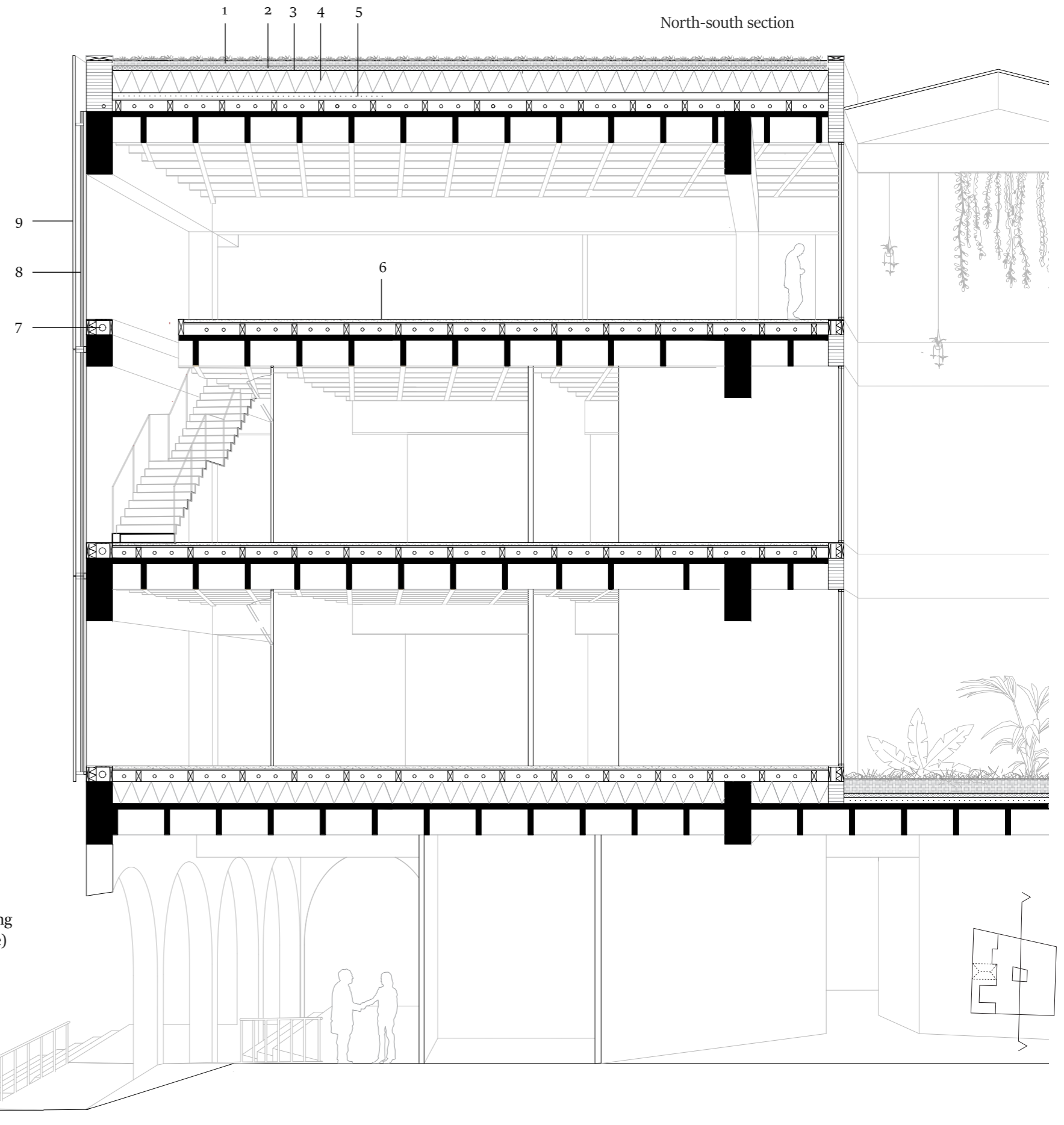


1:250

South Facade



North-south section



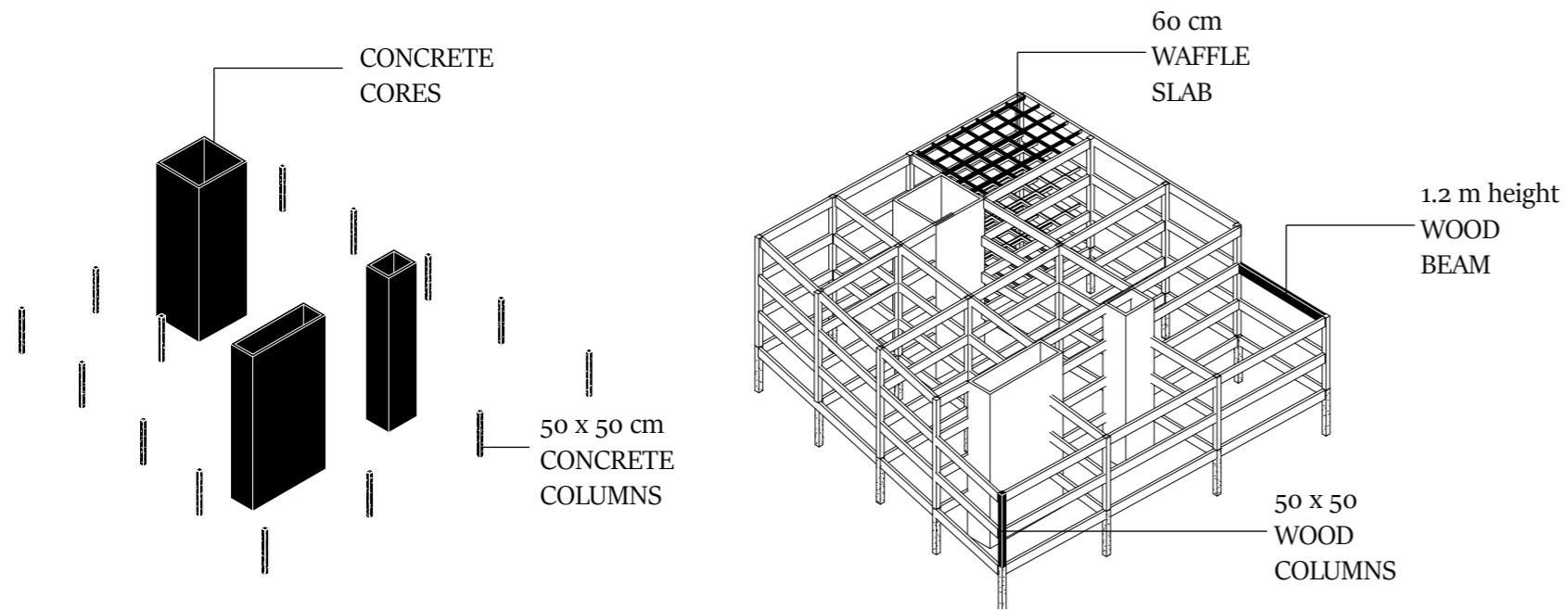
1. Green Roof
2. Gravel
3. Waterproof sheath
4. Rockwool insulation
5. Concrete screed
6. Terrazzo floor
7. Radiator
8. Triple glass
(50% air and 50% Argon filling
for an improved performance)
9. Perforated copper panels

1m 0 1m 2m 3m 4m 5m 1:50

DETAIL

▼ STRUCTURE

The structure consists of three vertical cores and concrete columns that start from the basement and go all the way up to the ground floor. Wooden beams connect these columns, following a very large grid, waffle slabs cover these large spans. On the three upper floors, the columns are in wood instead, and the same beams system is repeated for all the floors. This makes everything above ground floor in timber. The structure allows for open floorplans that can be redesigned without many constraints.



▼ INTERIOR PALETTE

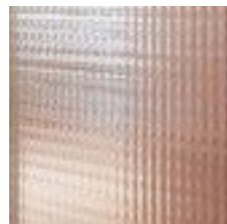
The materials used for the interiors are chosen based on criteria of durability, easy-cleaning, and covid-friendly. In particular for the infectious aluminium surfaces could be used to minimize the spread of the virus.



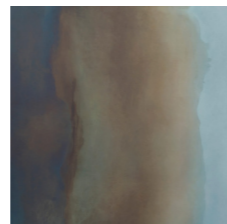
Terrazzo



Wood



Frosted glass



Aluminium surface



VIEW FROM THE CORRIDOR



VIEW FROM THE PARK

