

HOXX

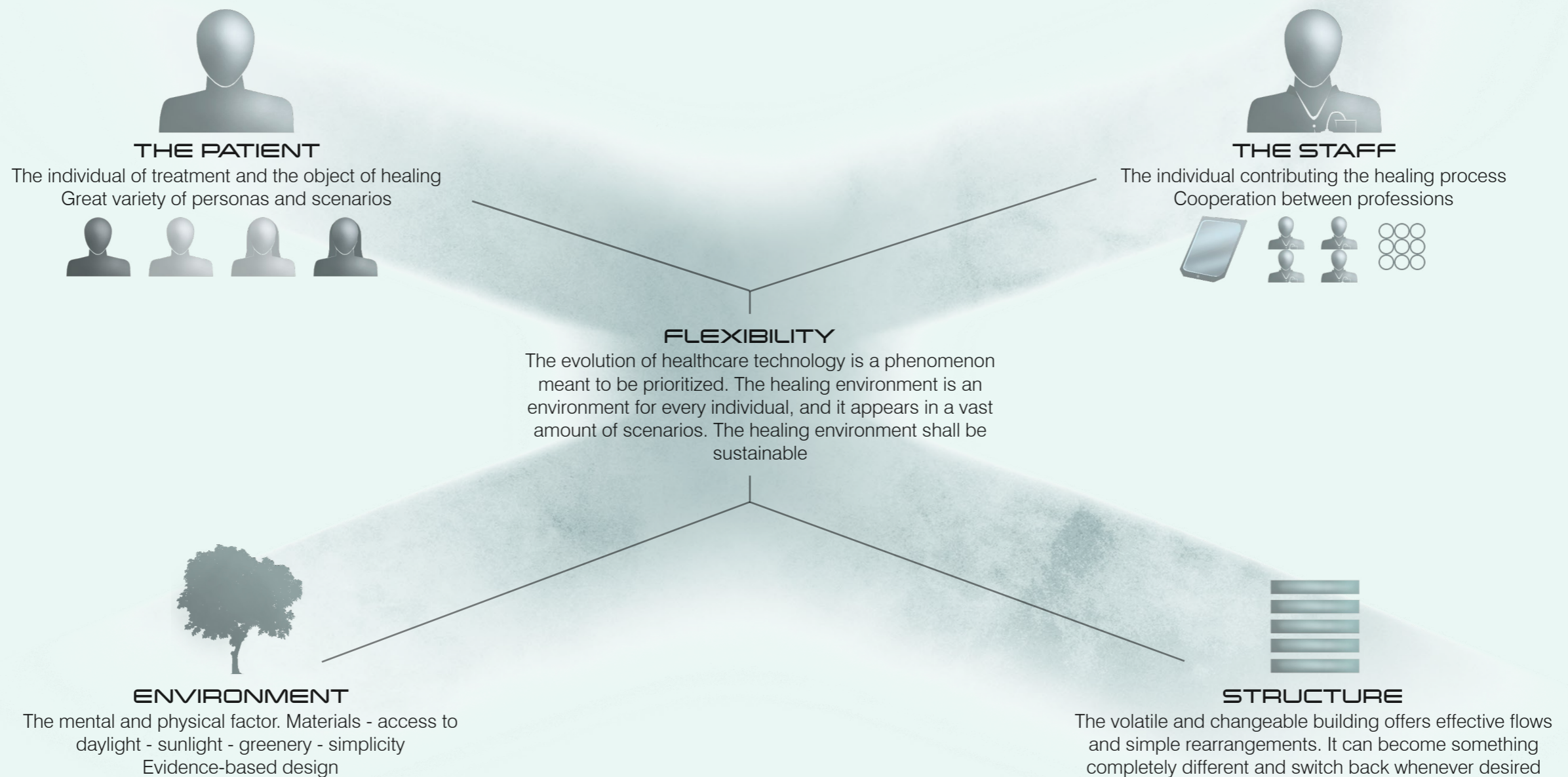
THE FUTURE OF HEALTHCARE

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The Hospital of 2022

Situated in Frihamnen, Gothenburg, on a site in full development.

On a site to be colonized with modern housing, commercial systems, sustainable green recreation areas and effective flow conditions. These factors will be forming the foundation of what the hospital of Frihamnen will be standing for. The new district of Frihamnen will be realized divided through multiple phases, the hospital standing right in the starting phase. These phases have a timeline which stretches to the unknown, which combined with the evolution of healthcare technology, demands a building of flexibility.



VISION

THEME 1
HISTORY OF HEALTHCARE



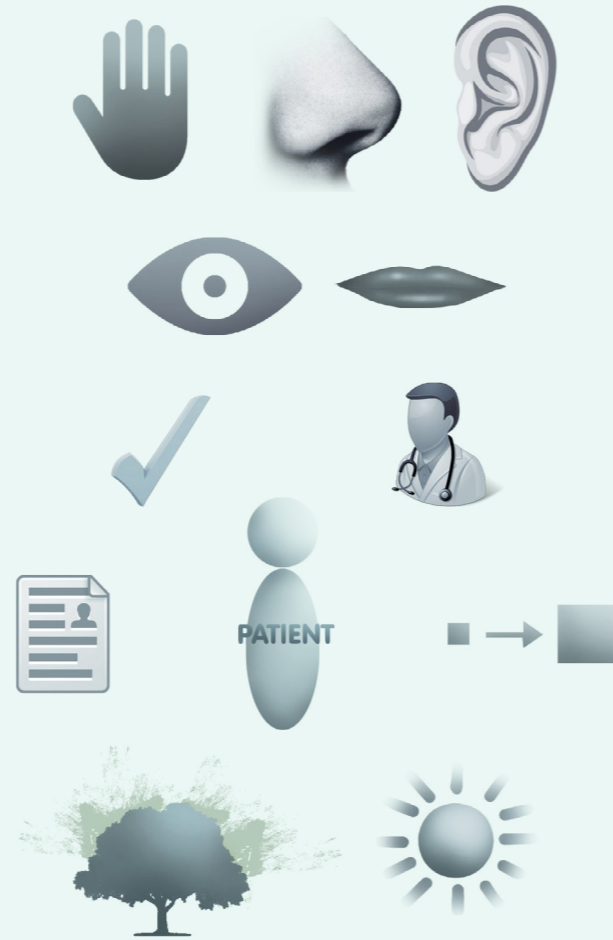
- The evolution of the patient's situation and the structuring of the future hospital. How much has the standard hospital changed and what is a necessary change for the time right now?
- Is the building and its functions prepared for future changes and alterations?

A hospital built and optimised for today and tomorrow. The hospital was and is a symbol of health, knowledge and a forum for exchanging this knowledge. Though the perception of the hospital was different many years ago, and will be necessary to improve in a modern hospital

THE STRUCTURE OF THE HOSPITAL



THEME 2
PATIENT-CENTRED CARE



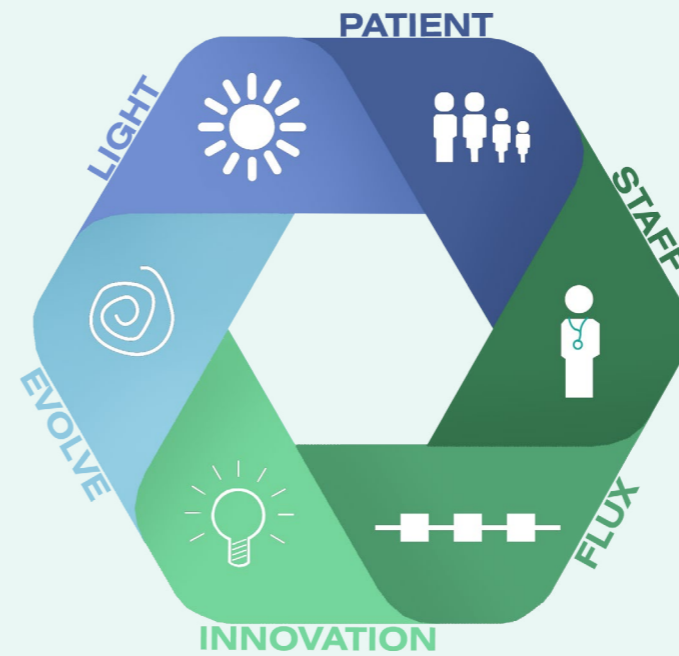
- How do you improve connection and efficiency between the staff and the patient?
- The sustainable aspects, covering the hospital overall environment as well as its physical interior and exterior, affects both the patient's and the staff's physical and mental well being

Giving the patient a clearer sense of control by granting more choices regarding the healing process. Working with the patient rather than for the patient. A simple, light and clear interior division will help to achieve this and also a good working environment and flows for the medical staff

THE PATIENT AND THE STAFF



THEME 3
EVIDENCE-BASED DESIGN



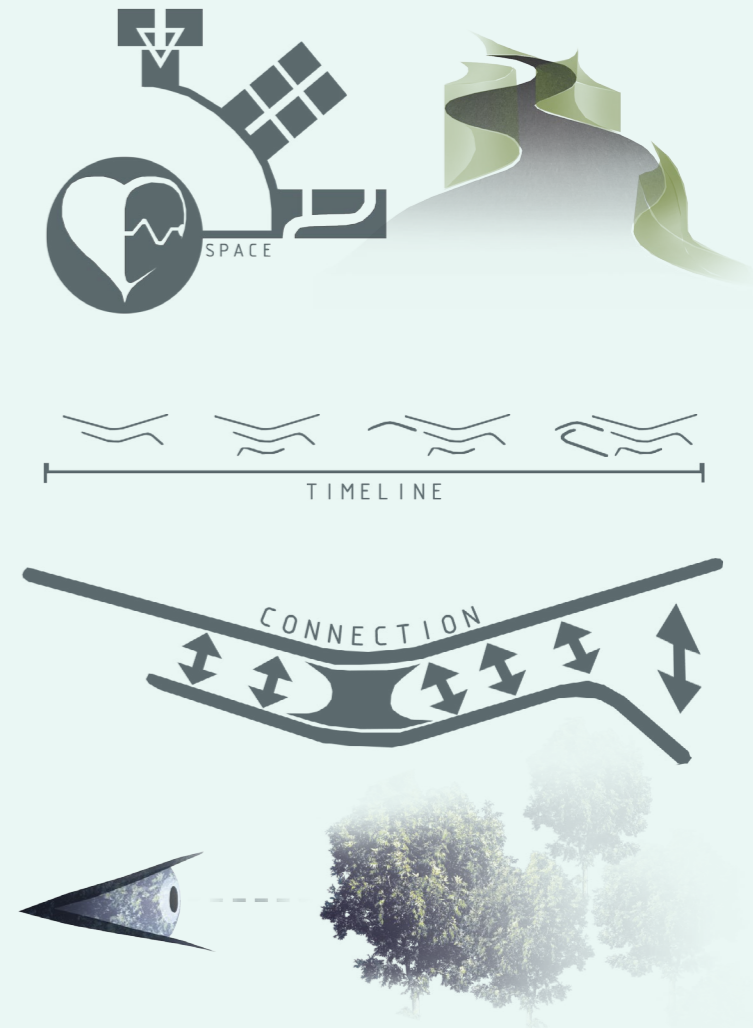
- A structure planned for the future needs these essential parts to be both sustainable and efficient. The hospital will outlive its content and equipment technology and therefore withstand the changes time will impose on
- Combining the most rewarding results from the studies of healthcare history, patient-centred care, evidence-based design and sustainability, this creates the starting point for the structuring of the modern hospital
- Though the most influential parts will be involving daylight, sunlight, insight, greenery, simplicity and sustainable organisation. Seeing the building's structure and planning as the main concept will make the working process innovative

The modern hospital should take all these factors into account. The daylight, possible insight angles, elements of greenery such as trees and plants and also simple solutions and arrangements of these factors.

THE SUSTAINABLE ENVIRONMENT



THEME 4
SUSTAINABILITY



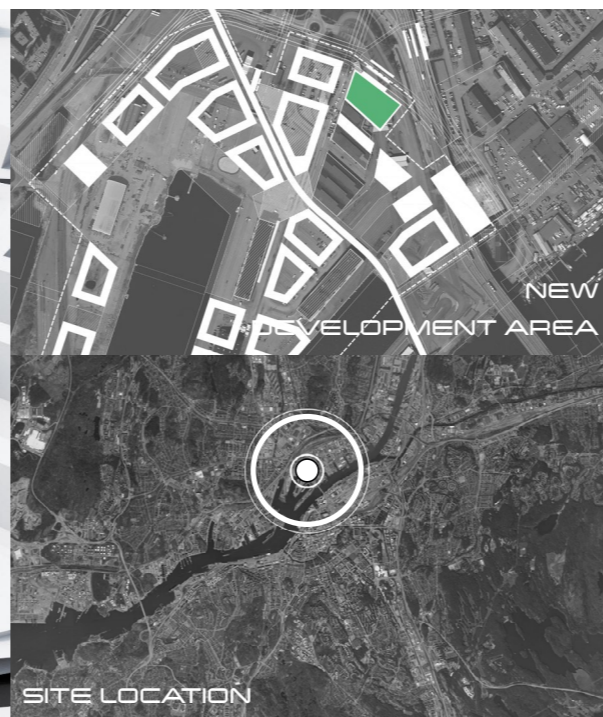
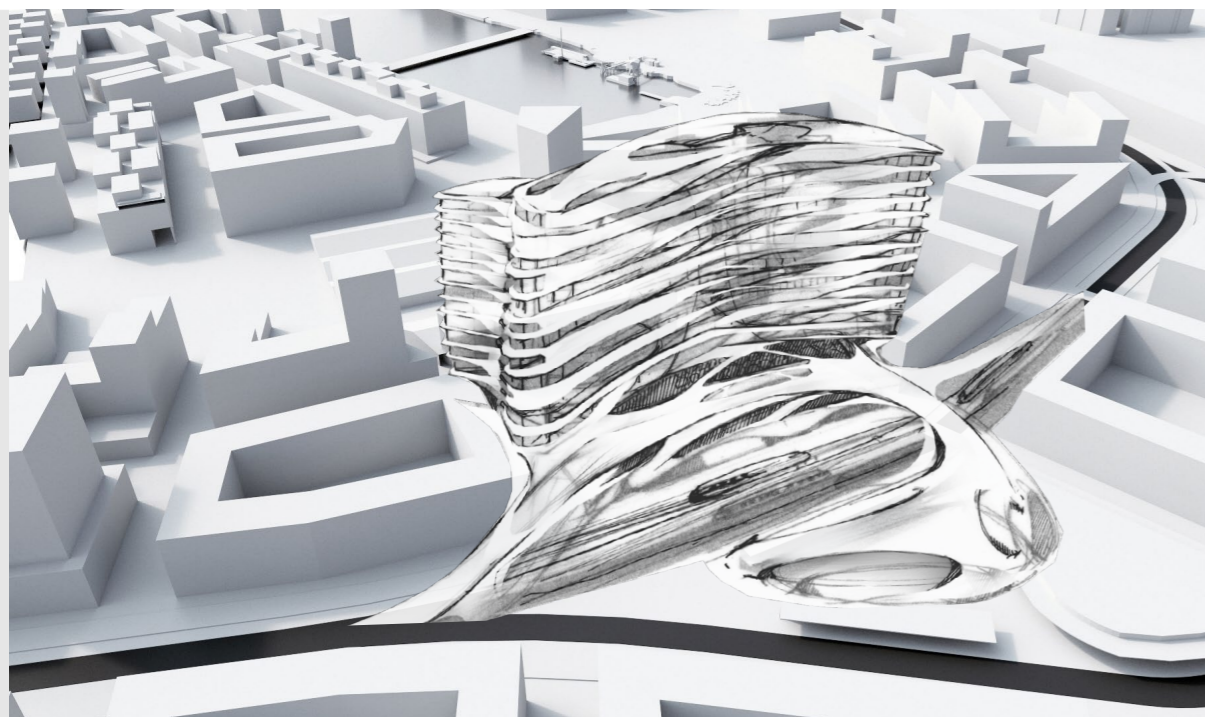
- A conscious working and merging of materials, flows, connections and organisations will create sustainable elements which will collaborate with each other to build a flexible plan layout

The plan and flow structure is the most important factor in the modern hospital. Future-proofed and prepared to rearrange its contents. No matter how many floors or functions it will house, it will still be an easy challenge to overcome

FLEXIBILITY AND DEFINITION



ESSENTIAL CONCLUSIONS



FRIHAMNEN
CONSTRUCTION PHASES

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4 EASTERN SIDE
- PHASE 5

The construction phases of frihamnen are all dependent on the new traffic situation and bridge, which is also mainly the reason for this. As the tram, car and goods traffic will be a big part of the site, the hospital need to have simple yet flexible solutions for this.

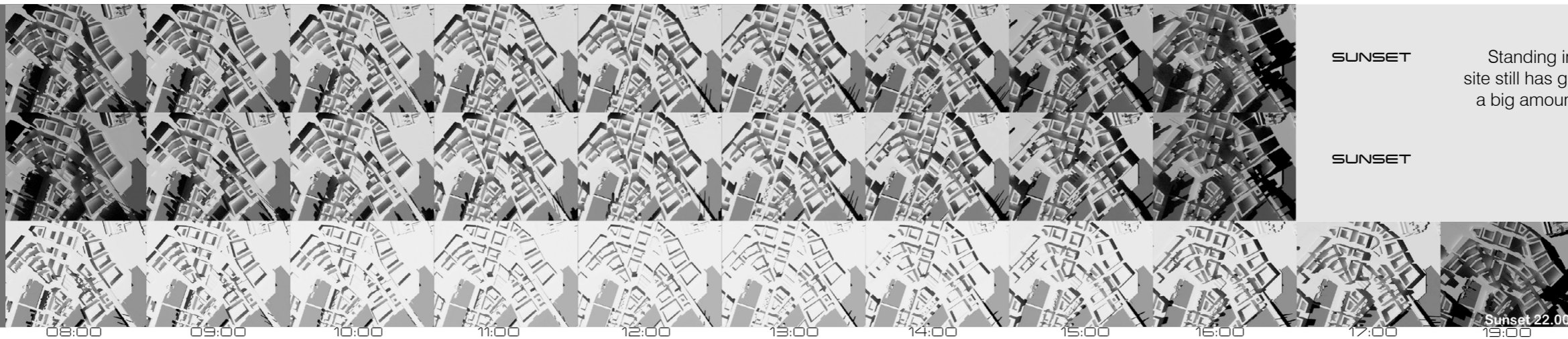
NEW BRIDGE AND
NEW TRAFFIC
FLOWS

SUN STUDY OF FRIHAMNEN

OCTOBER 2016
SUNRISE 07:00

MARS 2016
SUNRISE 06:30

JULY 2016
SUNRISE 03:45



SUNSET

Standing in quite a narrow space the site still has great possibilities to absorb a big amount of sunlight, with the right structure and form

SUNSET

SUNSET

Sunset 22.00...



TRAMS

GOODS

CARS

AMBULANCE

COMBINED FLOWS

The new tram situation and the construction of the new bridge will make a starting point for all the main flows covering Frihamnen.

Placing the reception for goods and freight on the north side enables an undisturbed path for its traffic. It also moves away from the ambulances traffic flow which is placed on the northwest side.

The main road through the site of HOX Hospital is a one way road, which will lead to a clean passage to and from the entrance area, on the north side.

An important opportunity is that ambulance traffic have possibilities of driving directly to the backside of the hospital, if their direction originates from the center of Gothenburg.

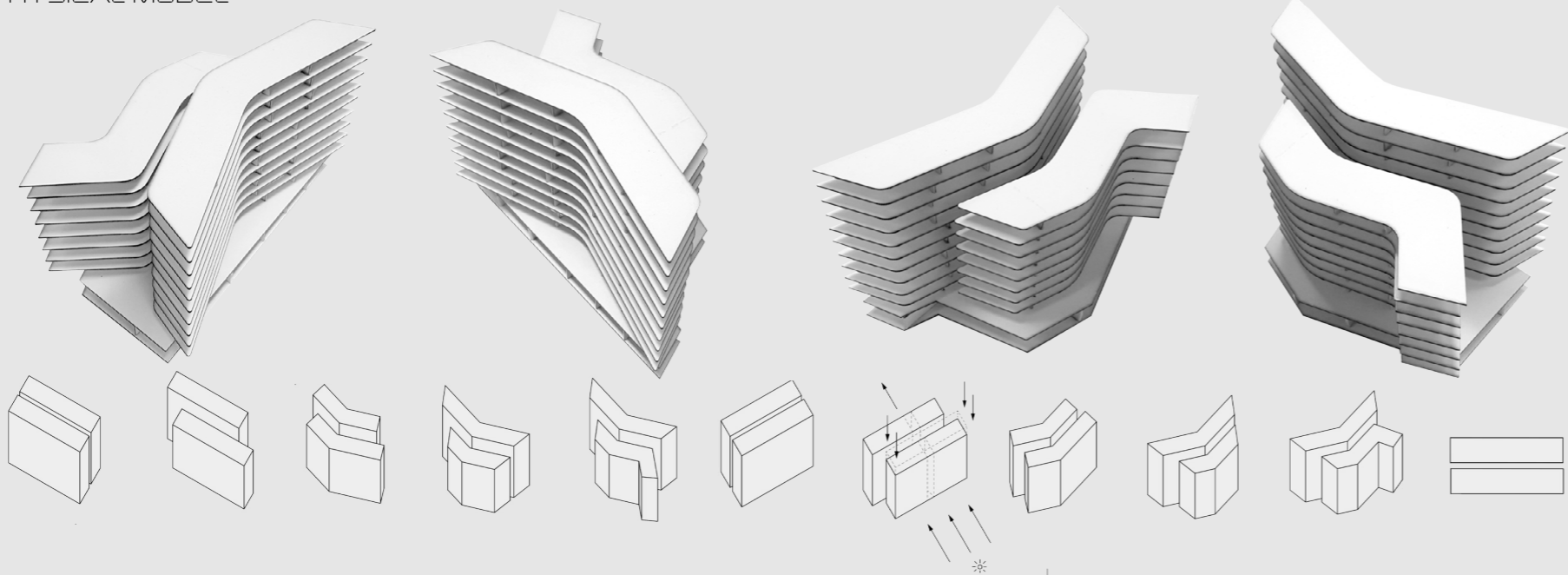
HOX CONCEPT

FLEXIBILITY

LIGHT

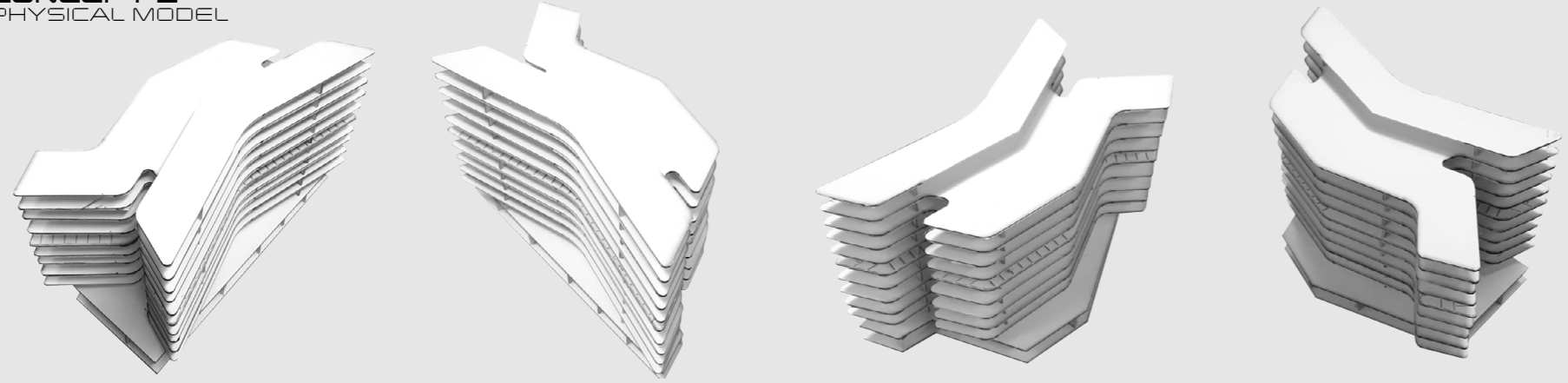
SIMPLICITY

CONCEPT 1 PHYSICAL MODEL



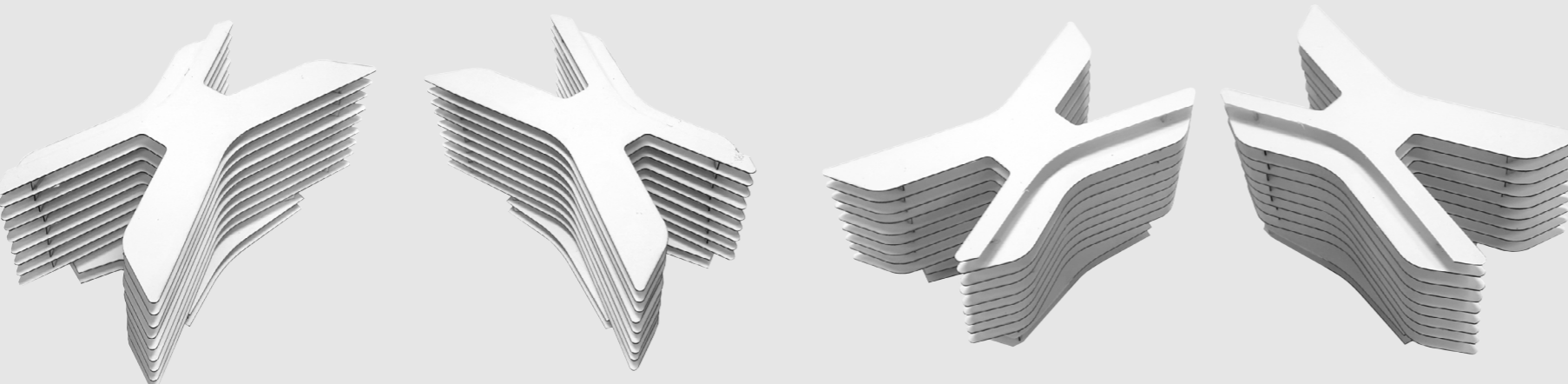
- The first form, which evolved through the work with site analysis, sun studies, insight calculations and flow planning, originated as two slim volumes processing its site. One key factor was keeping the light in mind when structuring every corner of the form. Though this first form was built almost solely on these elements, and was less focused on interior flows.
- The curvature of each wing represents the clarification of the entrance side, back side and as mentioned, the daylight and sunlight.

CONCEPT 2 PHYSICAL MODEL



- The second form, the phase where the interior took its place. Factors like insight, flows and site were considered, though a great amount of light and flexibility were still missing
- The department program and scheme for vertical communication may have been well executed in this form, but somewhere HOX had lost its former potential

CONCEPT 3 PHYSICAL MODEL



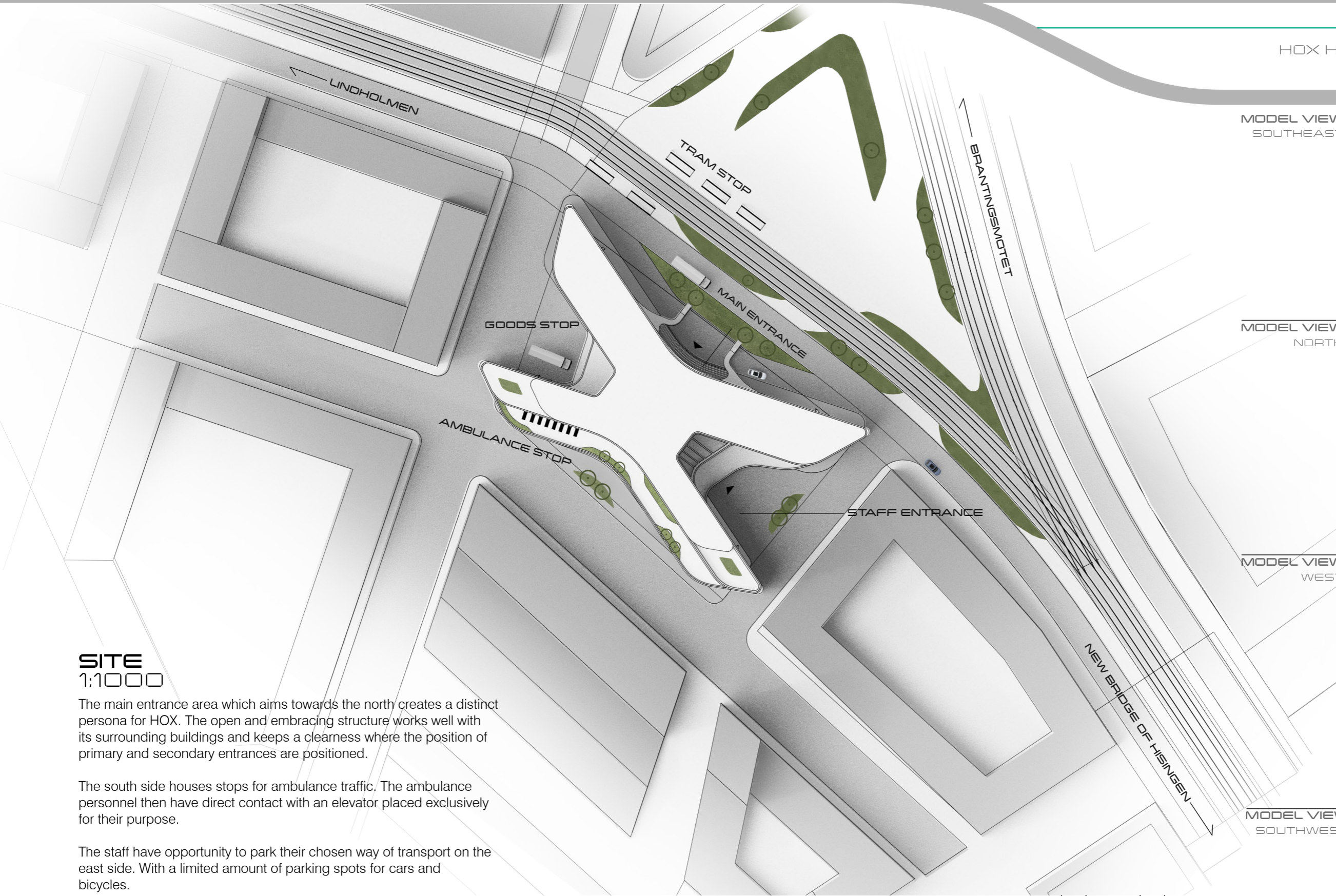
- The third form. Well functioning light conditions, flows, communication, insight but greatest of all, the flexibility. With this form HOX Hospital achieved great adaptability through the possibility of exchanging its "wings" to other forms of purpose
- One big added change was the relocation of the main entrance, which in this case moved from elevated floor 1 back to the ground floor. This would simplify both the entrance and the main communication for the whole hospital activity
- In this phase HOX sprawled out and made the final sprint to find itself in its almost finished form. The rooftop would create a well angled terrace and engender even more views with daylight and direct sunlight. Also the short sides of the form were now handling the insight factors well

SOUTHEAST VIEW

NORTH VIEW

WEST VIEW

SOUTHWEST VIEW



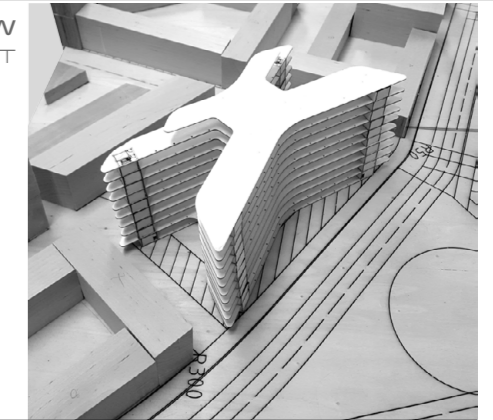
SITE
1:1000

The main entrance area which aims towards the north creates a distinct persona for HOX. The open and embracing structure works well with its surrounding buildings and keeps a clearness where the position of primary and secondary entrances are positioned.

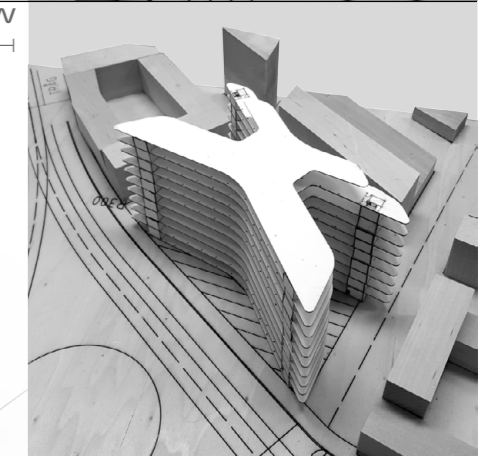
The south side houses stops for ambulance traffic. The ambulance personnel then have direct contact with an elevator placed exclusively for their purpose.

The staff have opportunity to park their chosen way of transport on the east side. With a limited amount of parking spots for cars and bicycles.

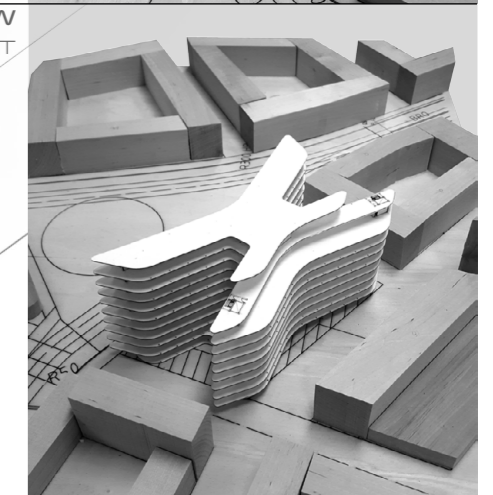
MODEL VIEW
SOUTHEAST



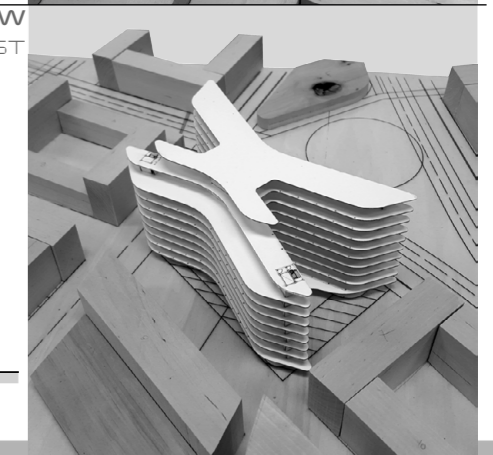
MODEL VIEW
NORTH



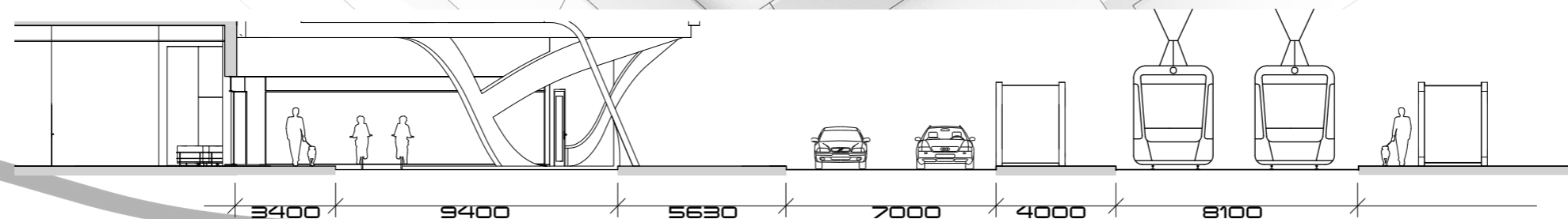
MODEL VIEW
WEST



MODEL VIEW
SOUTHWEST



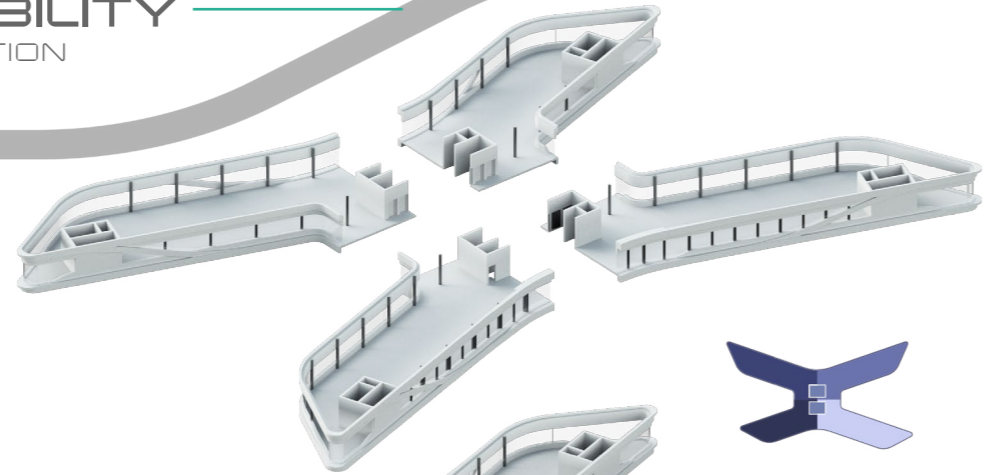
1:200
ENTRANCE SECTION



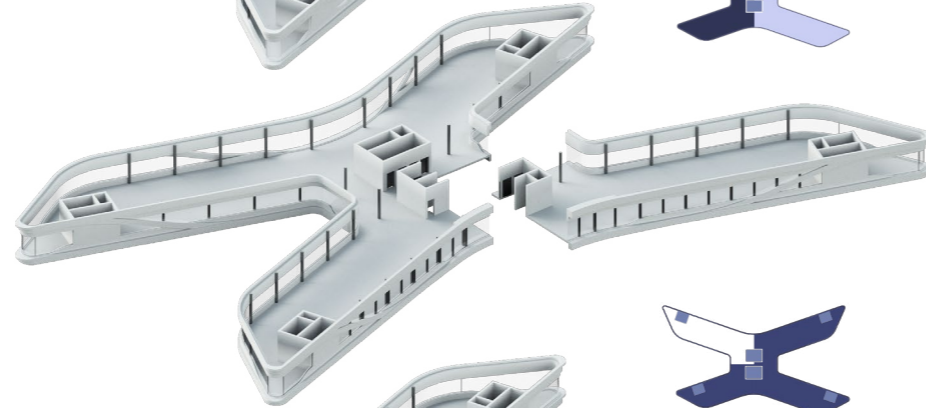
SUSTAINABLE FLEXIBILITY

HOX STRUCTURE AND CONSTRUCTION PRINCIPLE

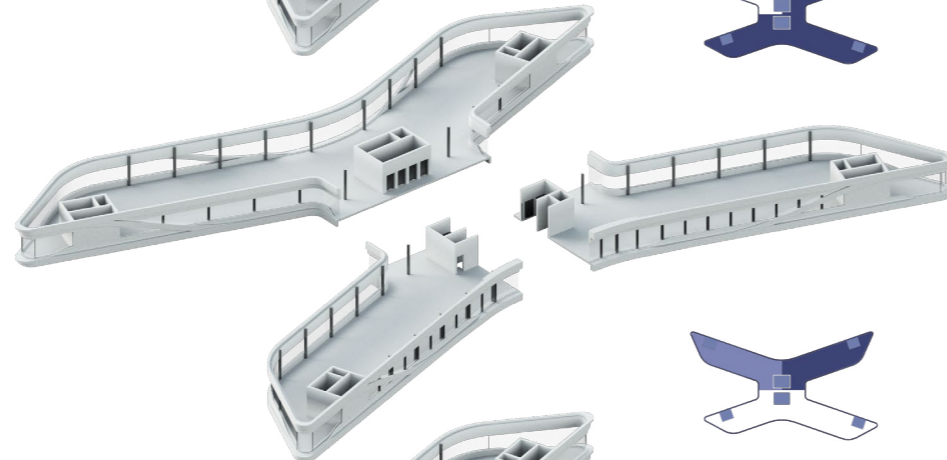
FOUR 1-WING DEPARTMENTS
FOUR DEPARTMENTS ON ONE FLOOR
ENABLES MANY VARIETIES FOR INTERIOR
STRUCTURE



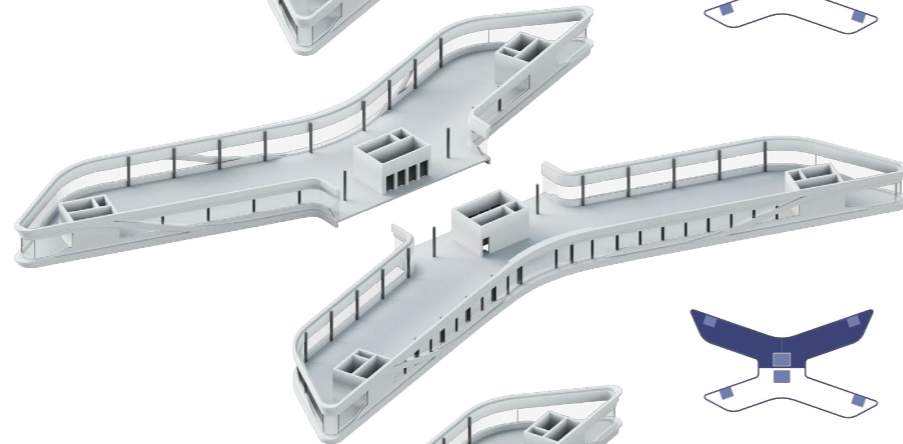
3-WING + 1 WING
ONE LARGE 3 WING DEPARTMENT
WITH POSSIBLE DOUBLE CONNECTION
THE THE 1 WING DEPARTMENT



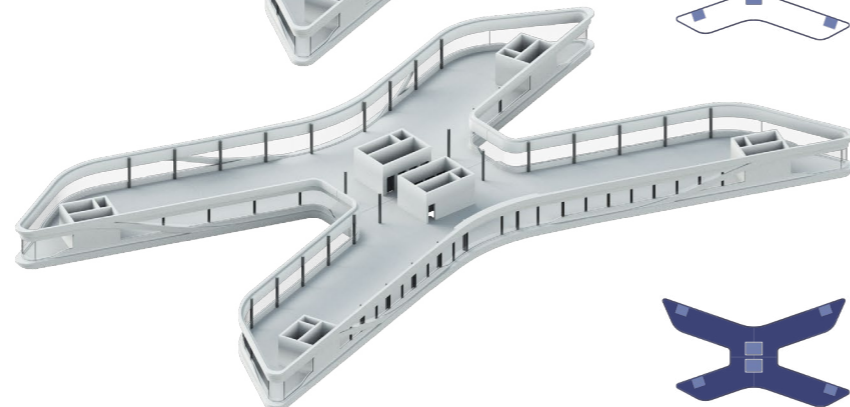
2-WING + 1-WING + 1-WING
ONE LARGE DEPARTMENT
2 SMALL



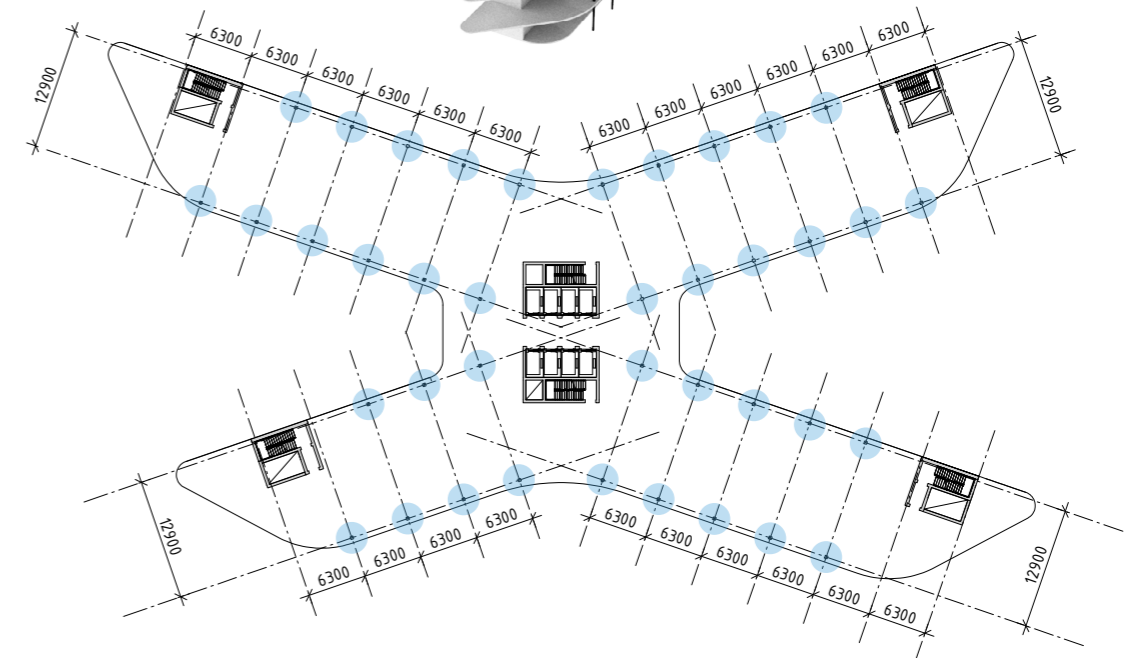
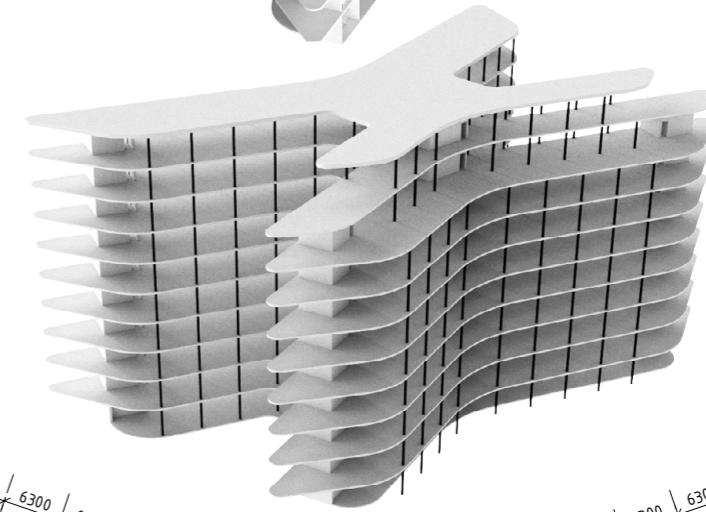
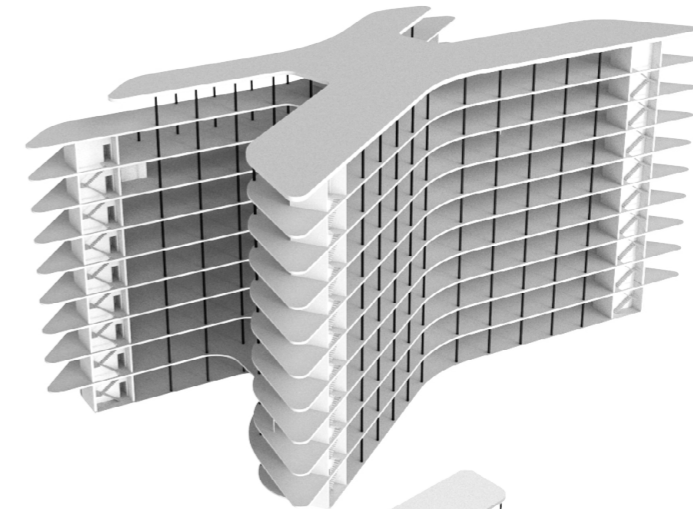
2-WING DEPARTMENT
EFFECTIVE SEPARATION
TWO LARGER DEPARTMENTS



GENERAL FORM
MULTIPLE/ONE DEPARTMENT

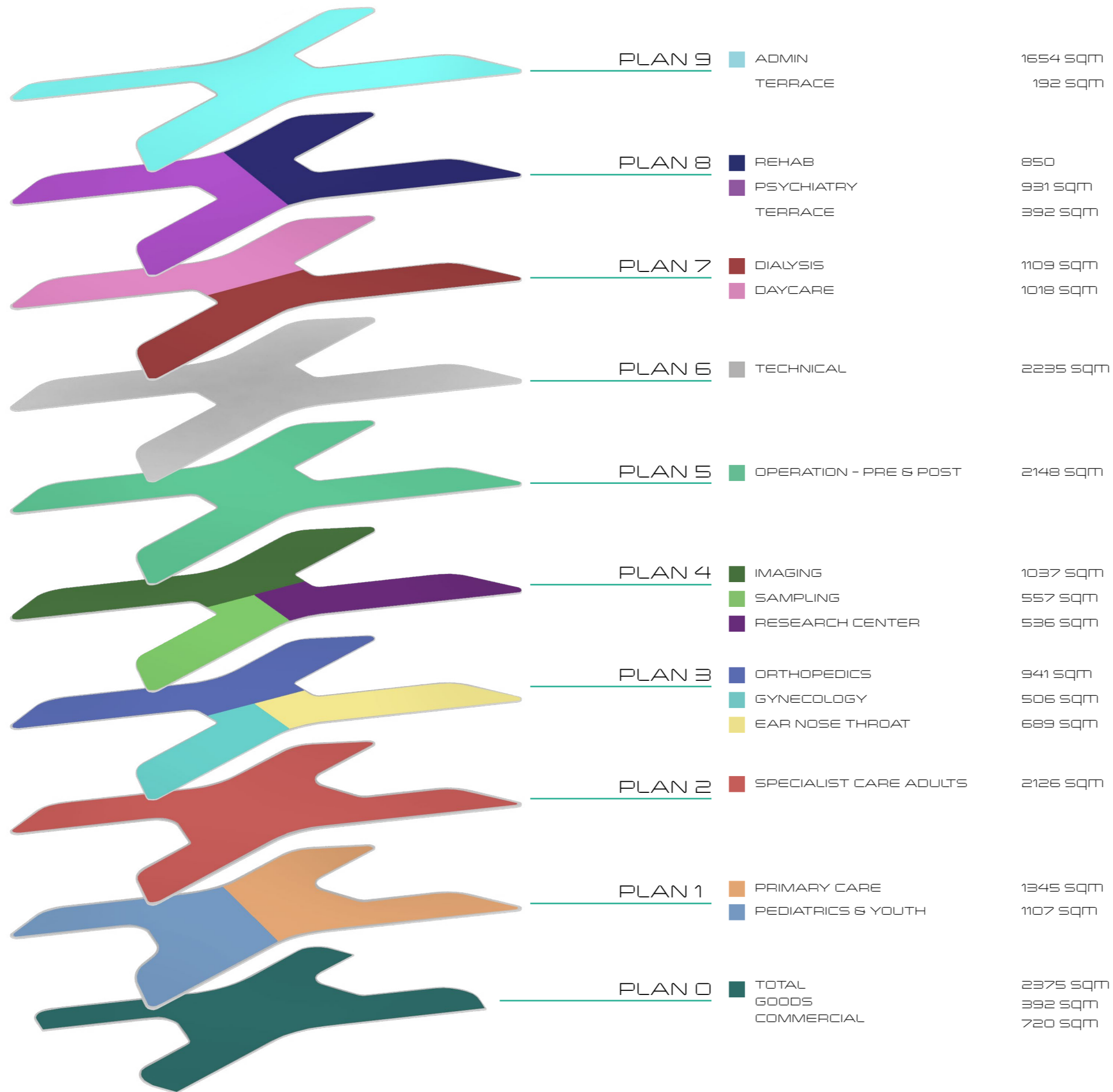


CONSTRUCTION MODEL SLABS AND PILLAR PLACEMENT



DISTANCE BETWEEN PILLARS 13 METERS
ENABLES FREE AND FLEXIBLE INTERIOR SPACE FOR
EXTREMELY STRAIGHTFORWARD MODIFICATION

HOX DEPARTMENTS

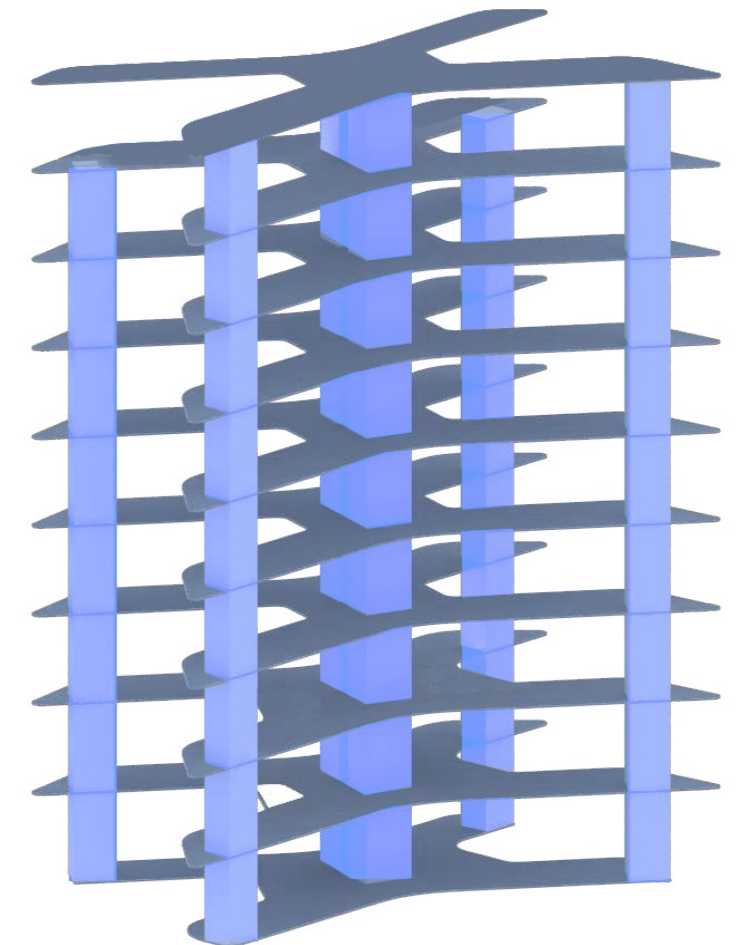


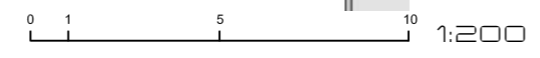
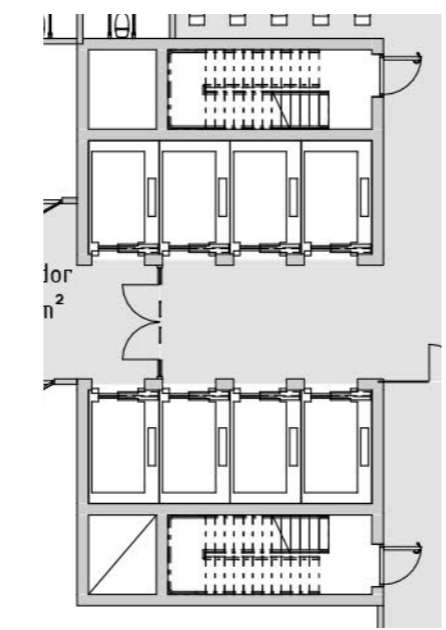
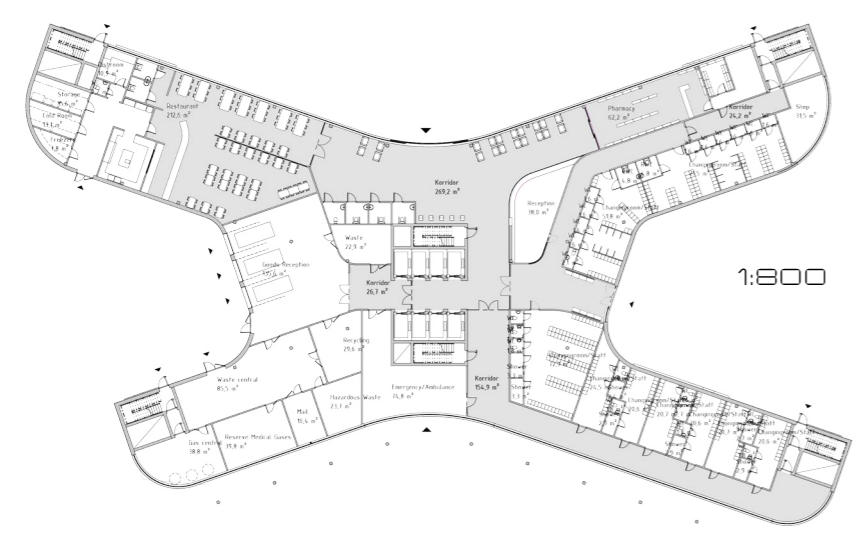
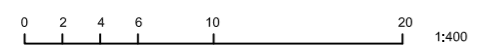
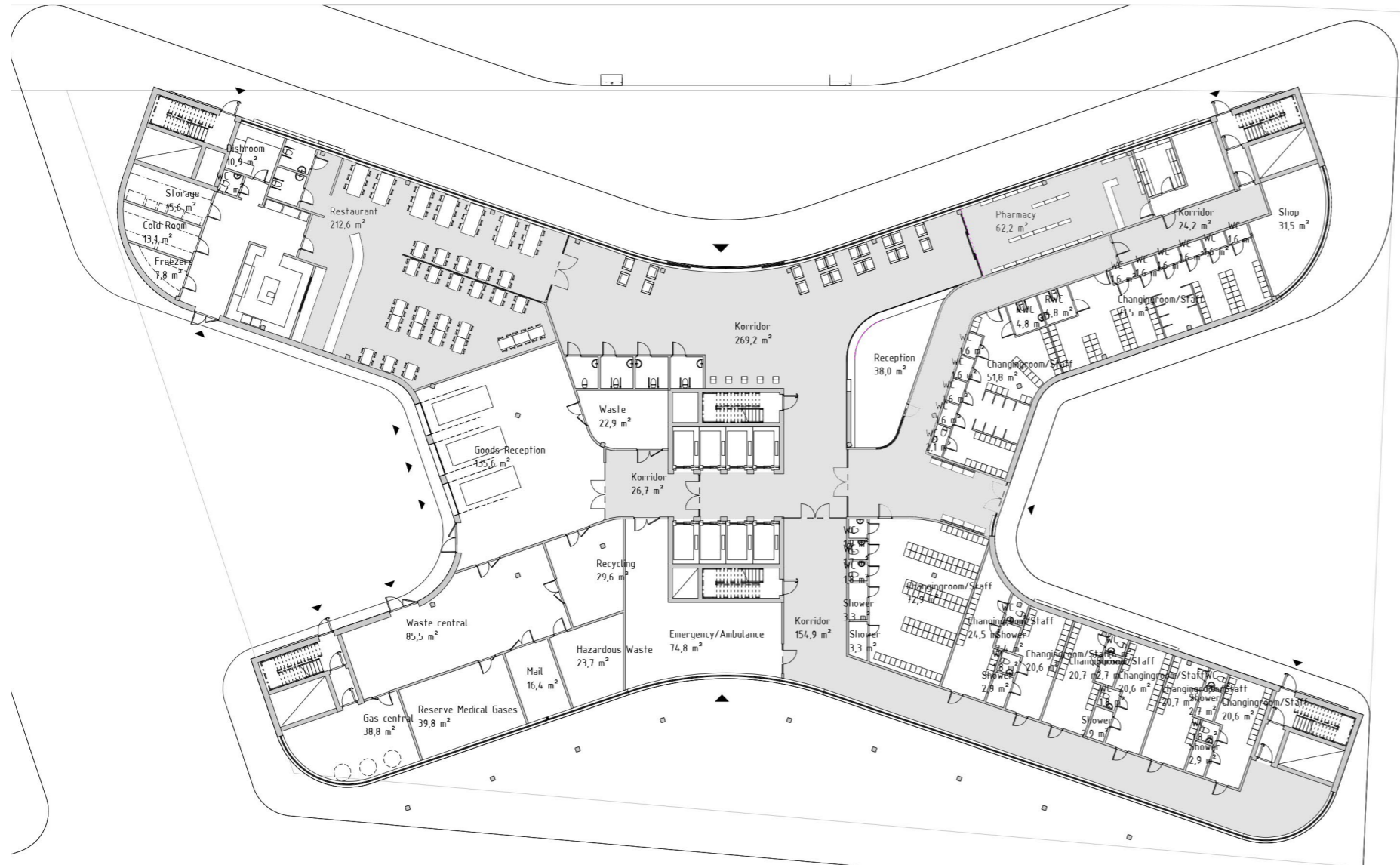
GROSS AREA
24 055 sqm

HOX Hospital is mainly divided in two parts, one more public ground floor and the hospital floors above. The main reason for this is that it's essential keeping a clear line between what is clean hospital area and what is not.

MAIN COMMUNICATIONS

ELEVATORS & STAIRS
STAIRS ON CORNERS MAINLY CATEGORIZED AS FIRE ESCAPES





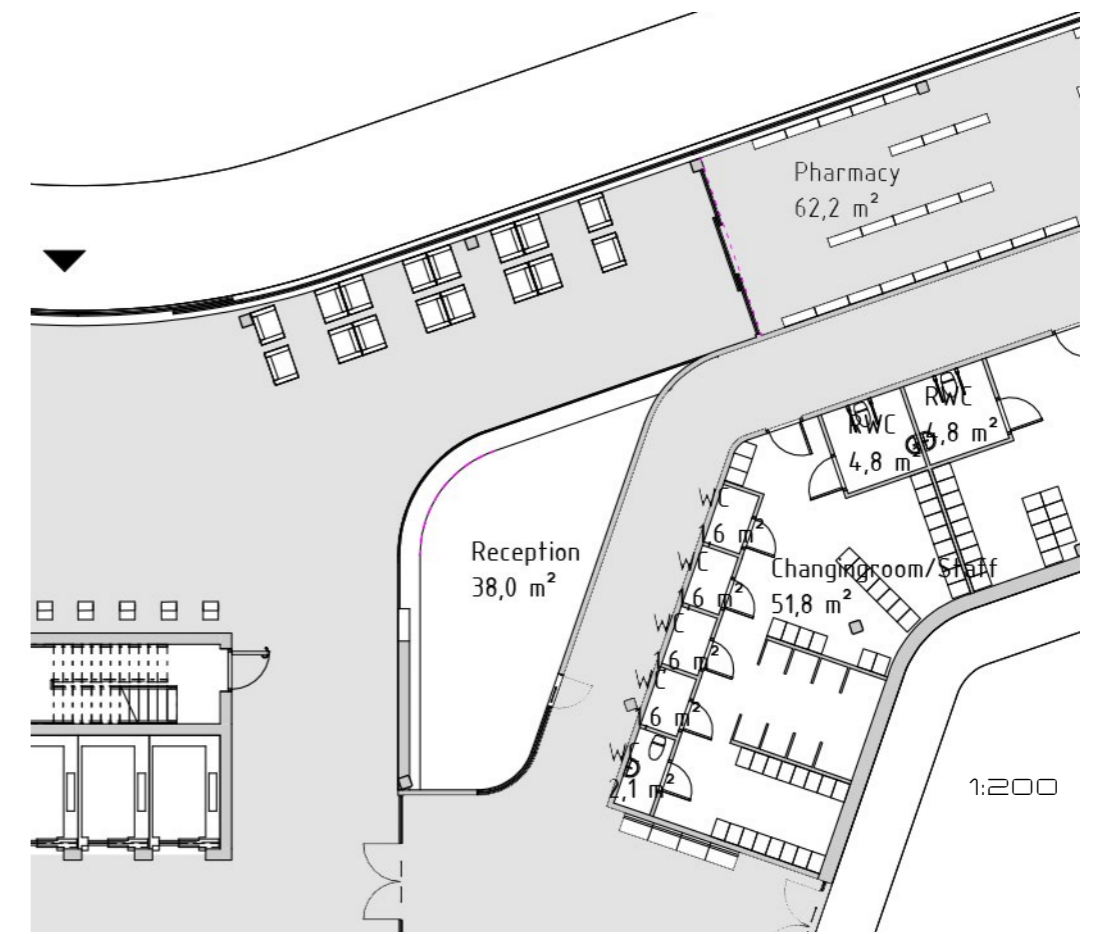
PLAN 0
MAIN ENTRANCE
 GOODS - COMMERCIAL - CHANGING ROOMS

After being guided by the angle of the north wings you find yourself in the main entrance area of HOX Hospital. Just as all the other hospital floors there is straight visibility and passing of light rays from your back, front, left and right side. In close proximity to the main entrance you find the reception which with its configuration is designed to guide and simplify your waypath.

Behind the reception on the south side, a big amount of changing rooms are placed. As the staff can enter HOX from both the main and secondary entrance, their path is always similar.

Goods and ambulance departments are concentrated on the north and west side. Though the goods traffic is separated from the ambulance traffic to create even more legibility when arriving and departing.

1:400



1:200

PLAN 2
ADULT SPECIALIST CARE
 GENERAL FLOOR PLAN

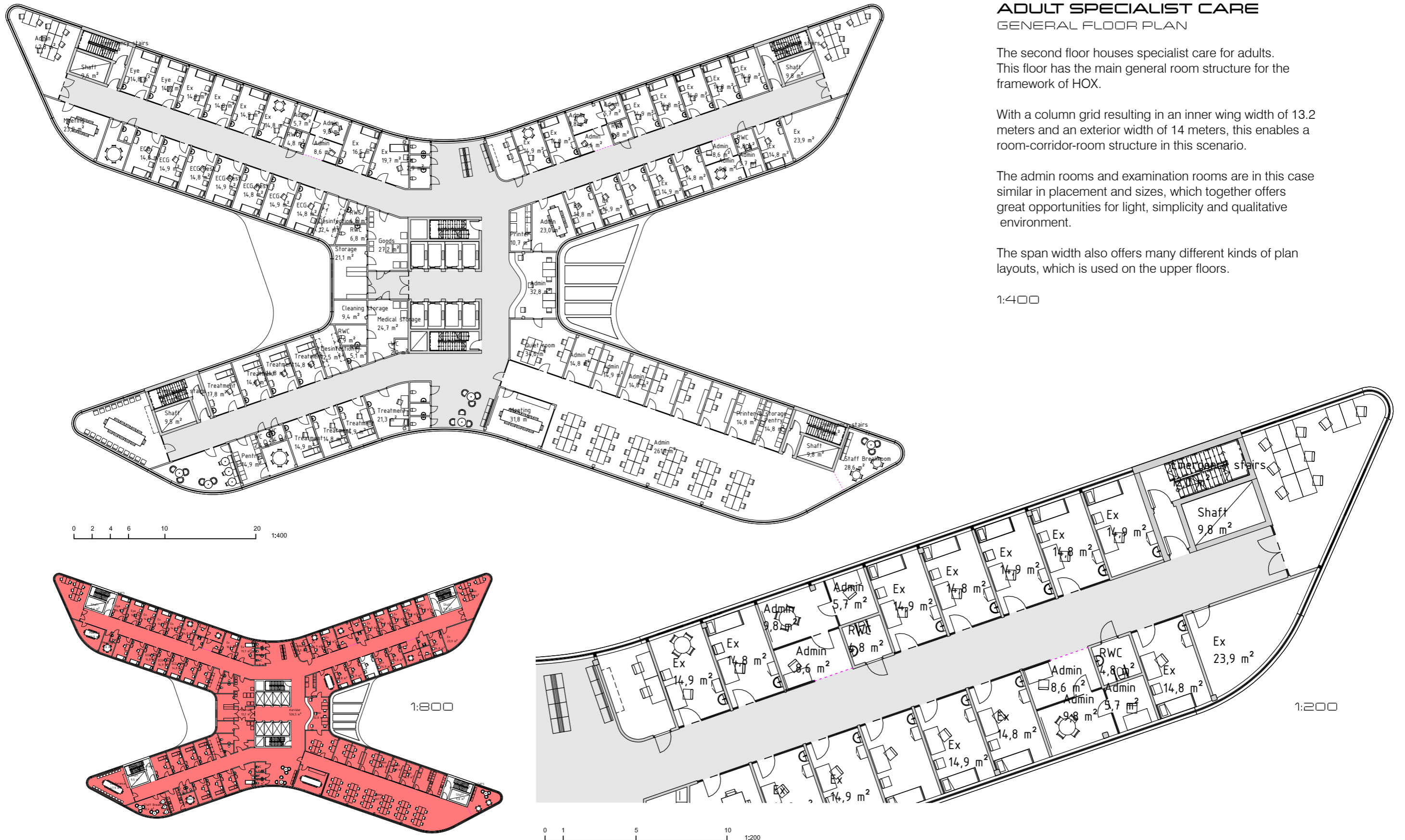
The second floor houses specialist care for adults. This floor has the main general room structure for the framework of HOX.

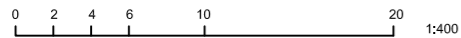
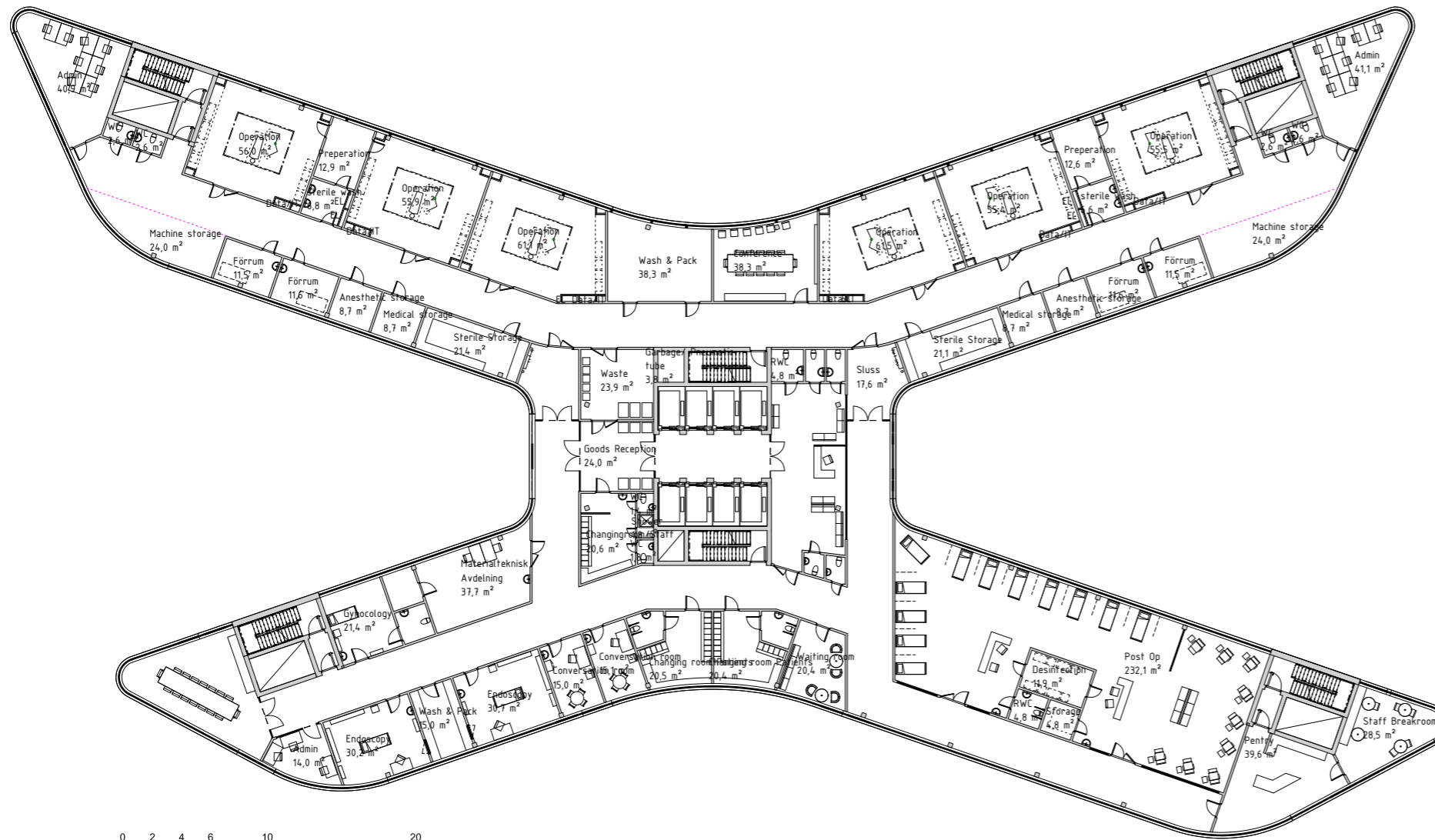
With a column grid resulting in an inner wing width of 13.2 meters and an exterior width of 14 meters, this enables a room-corridor-room structure in this scenario.

The admin rooms and examination rooms are in this case similar in placement and sizes, which together offers great opportunities for light, simplicity and qualitative environment.

The span width also offers many different kinds of plan layouts, which is used on the upper floors.

1:400





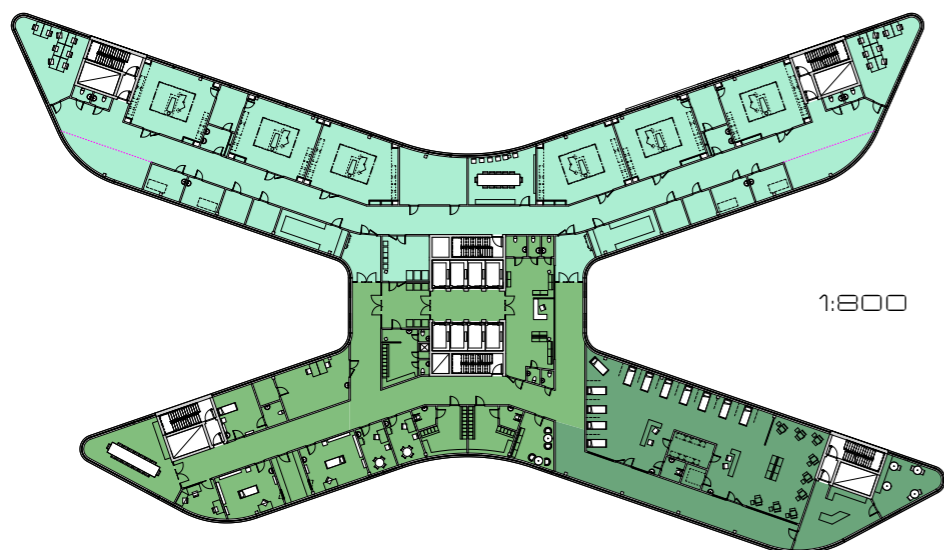
PLAN 5 OPERATION

Floor 5 houses the whole operation department for HOX Hospital. Great light capacity, clear contact to outside and a calming professional atmosphere.

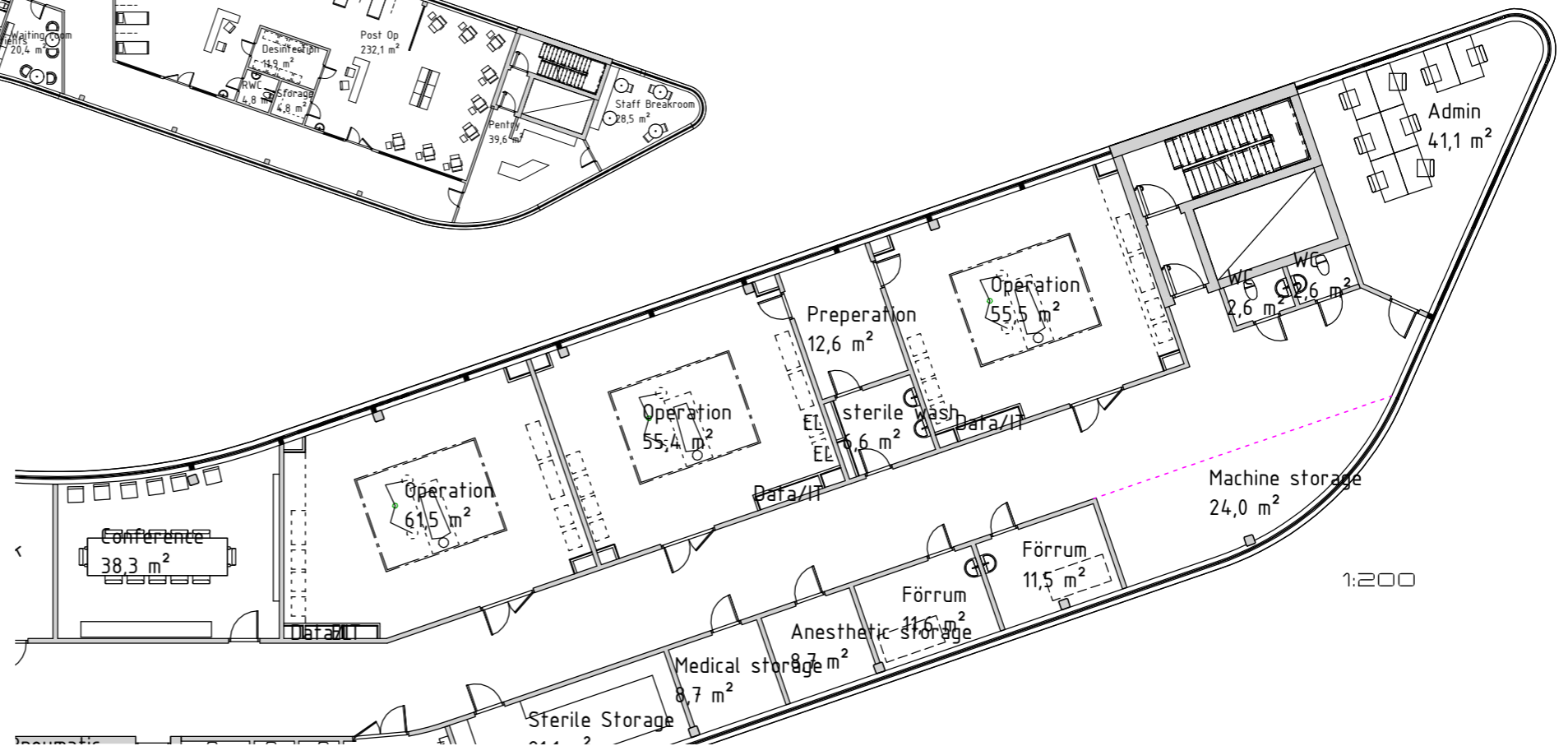
Once it is your time you will step into pre and post section with changing rooms right outside the initial waiting room. The changing rooms are situated in the very center of the department with all necessary functional examination rooms on the wings. Next to the changing room there will also be a separate waiting room stationed before going to the sterile department.

The sterile department is composed by six full sized operation theatres with support-functions in close proximity. By placing all theatres on the north wings the floor achieves great rationality, also by concentrating pre-and post operation on the south wings.

1:400

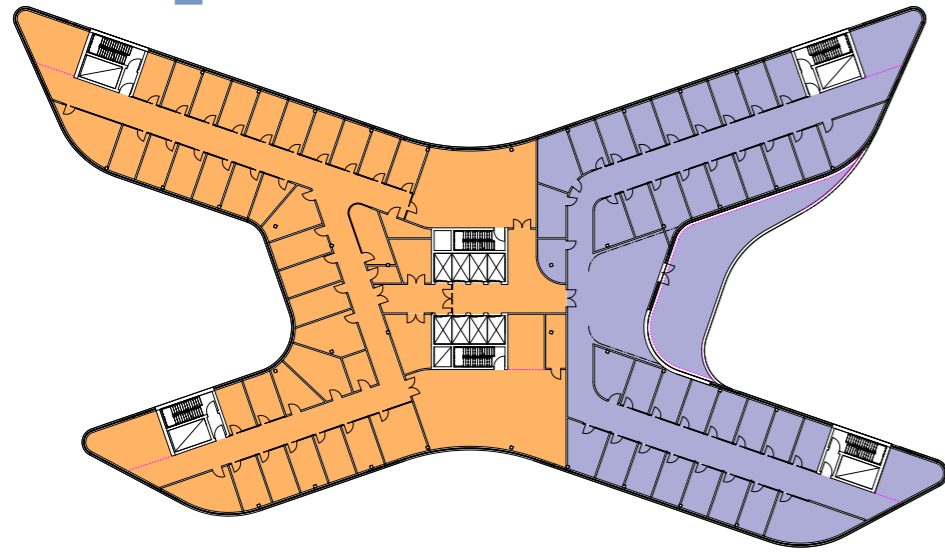


1:800

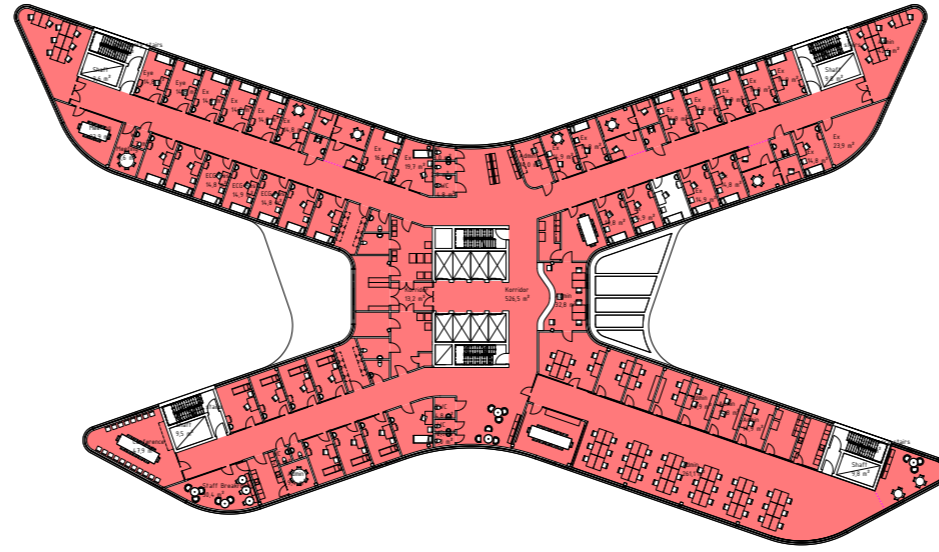


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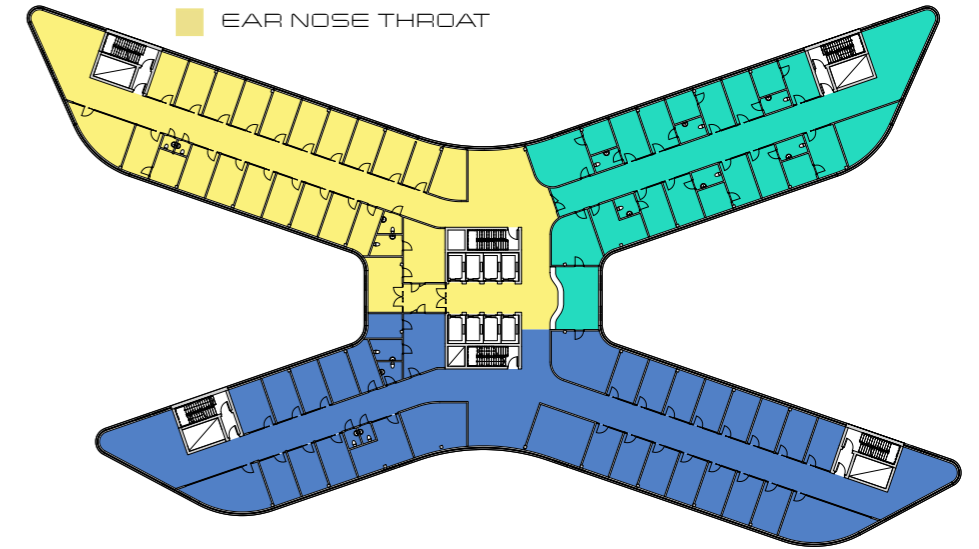
PLAN 1 PRIMARY CARE
PEDIATRICS & YOUTH



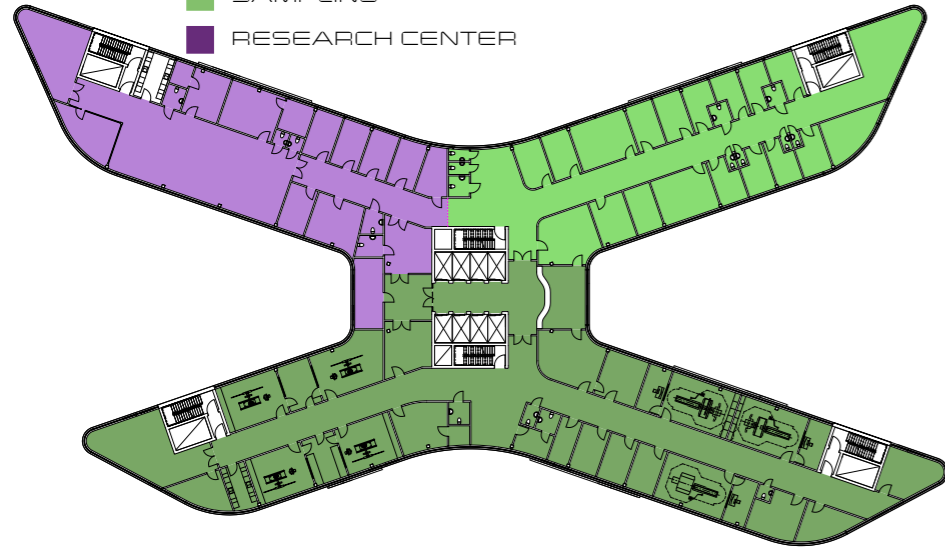
PLAN 2 SPECIALIST CARE ADULTS



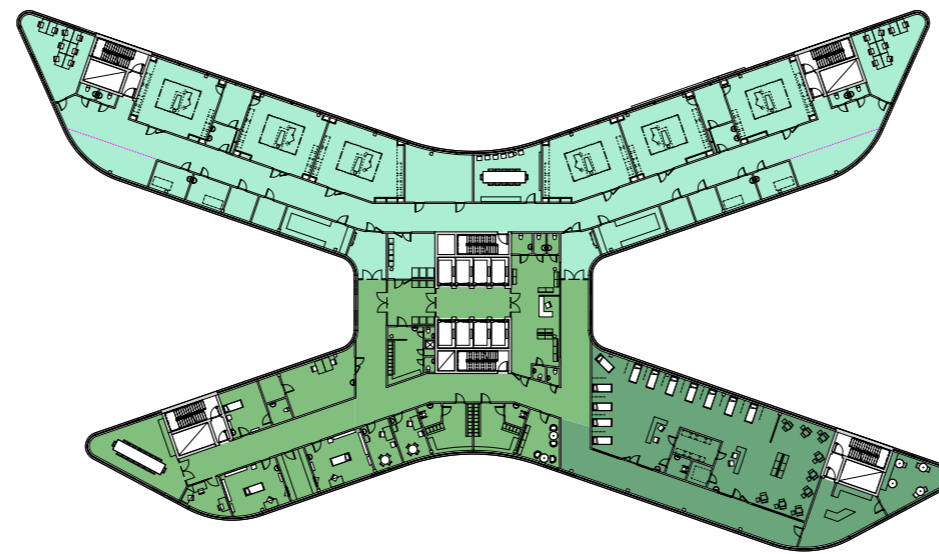
PLAN 3 ORTHOPEDICS
GYNECOLOGY
EAR NOSE THROAT



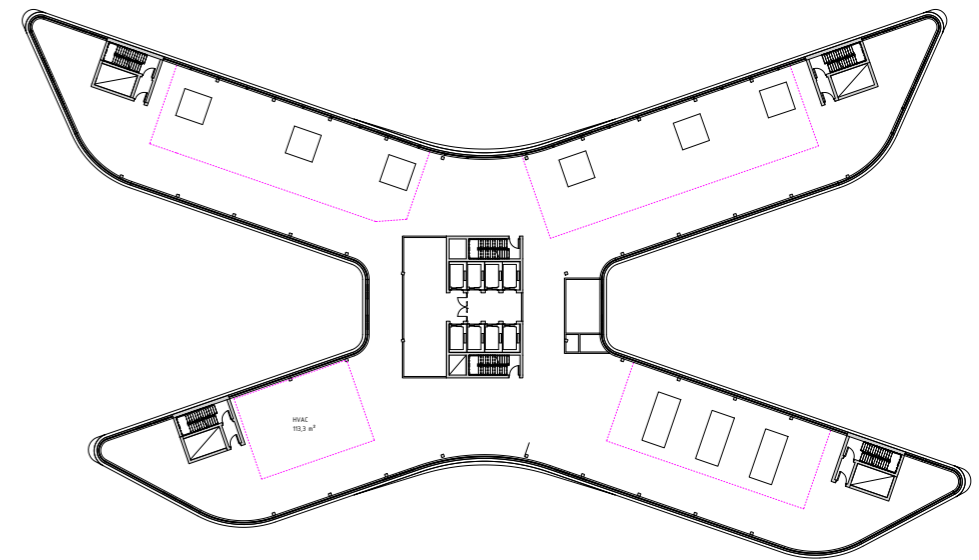
PLAN 4 IMAGING
SAMPLING
RESEARCH CENTER



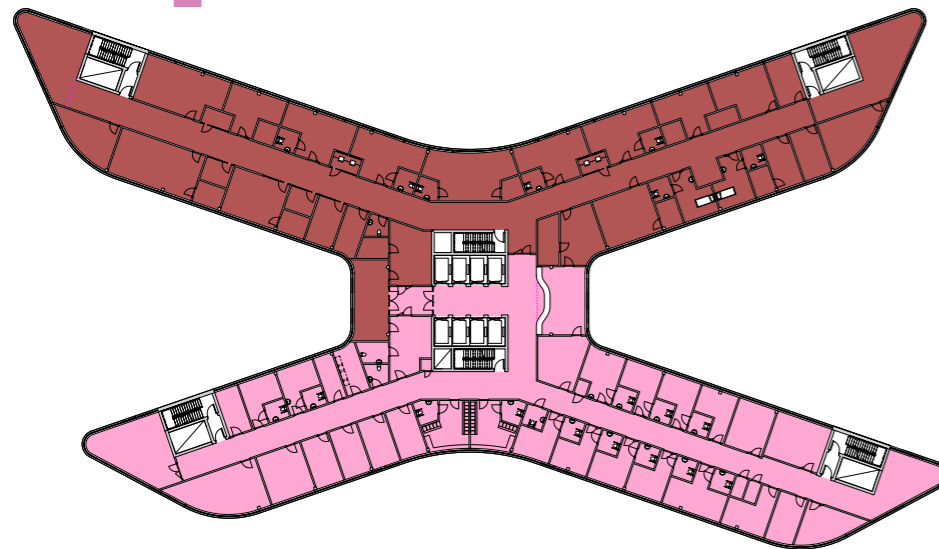
PLAN 5 OPERATION - PRE & POST



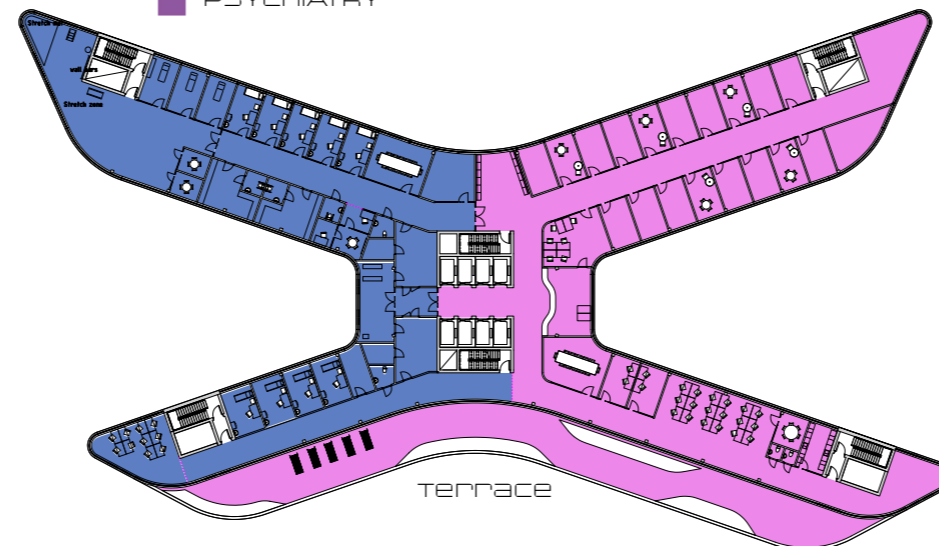
PLAN 6 TECHNICAL



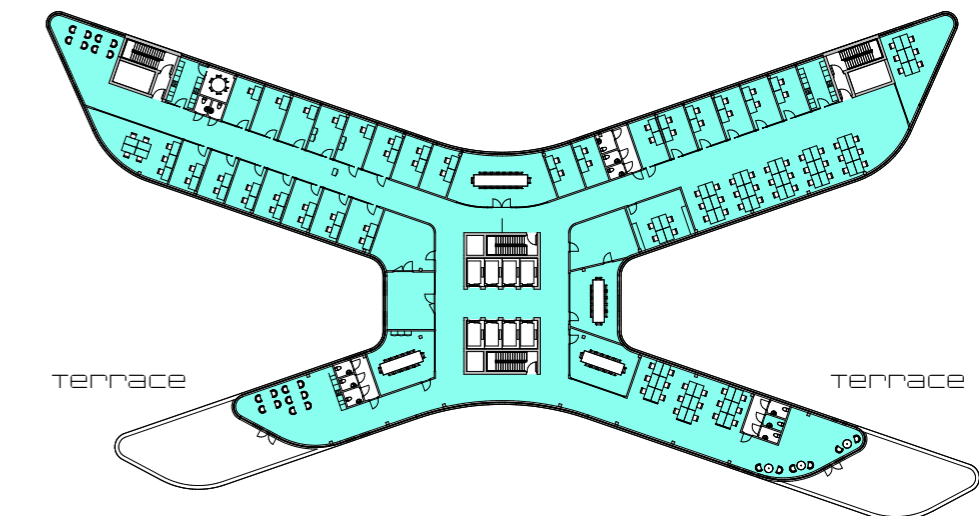
PLAN 7 DIALYSIS
DAYCARE

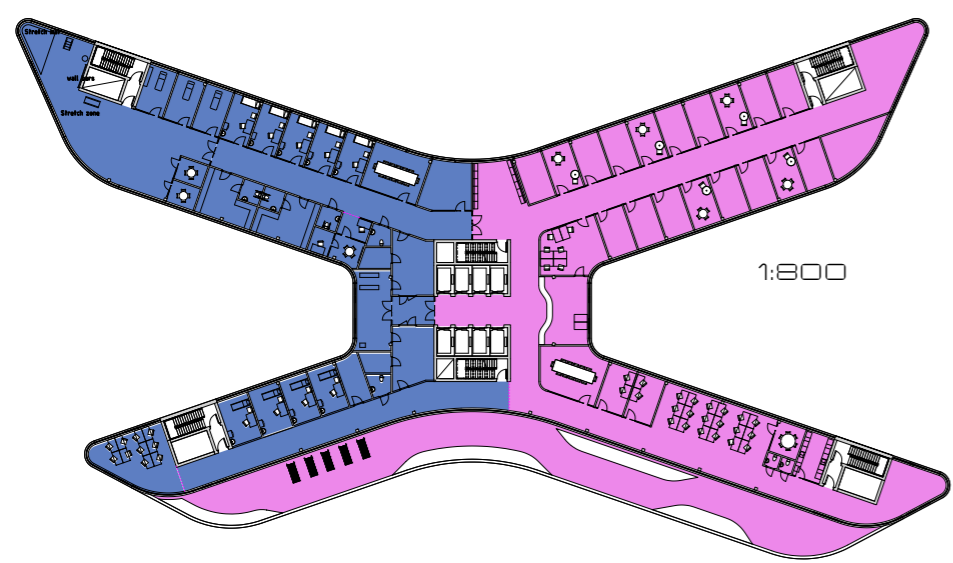
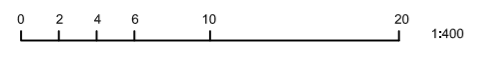
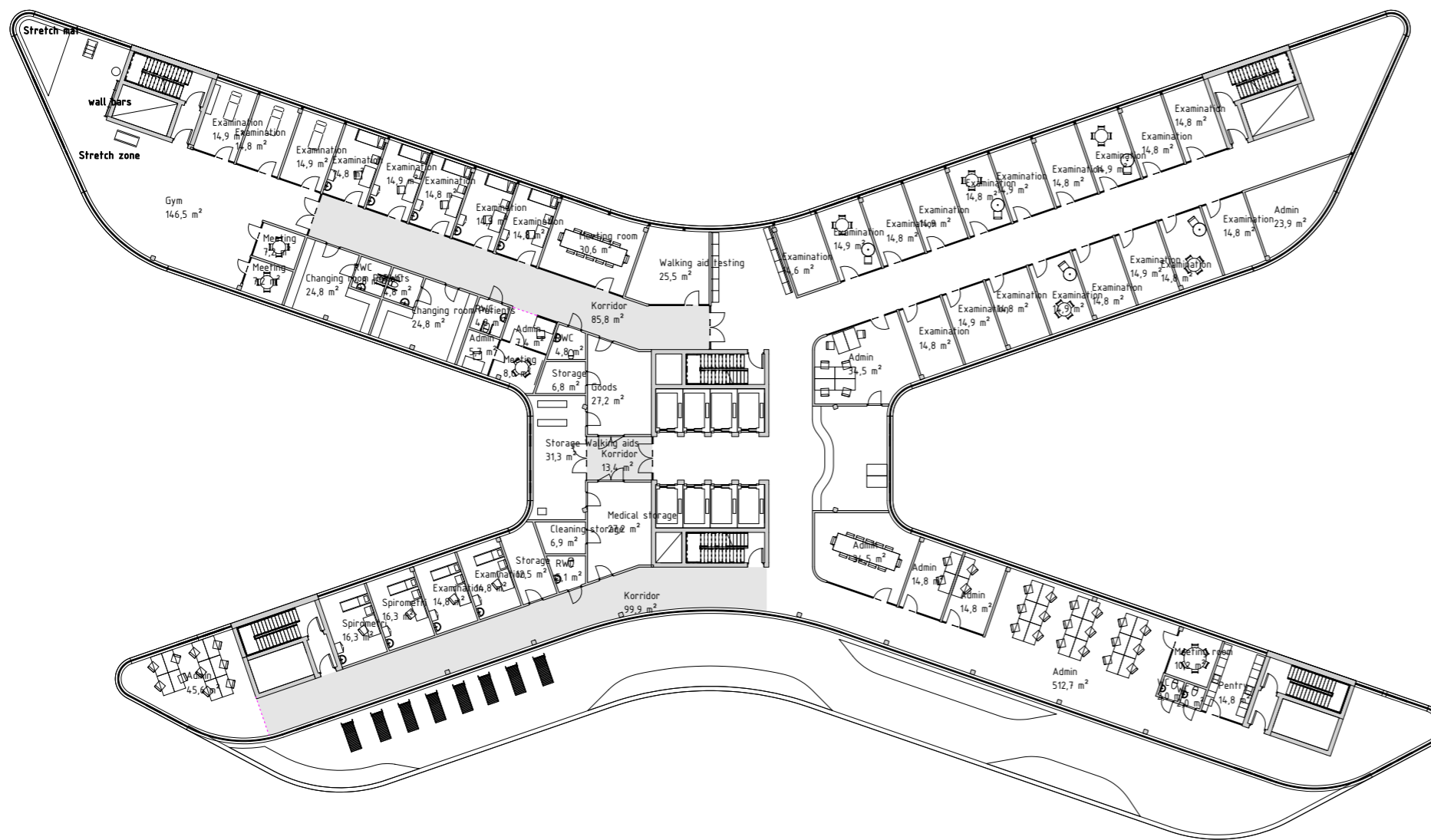


PLAN 8 REHAB
PSYCHIATRY

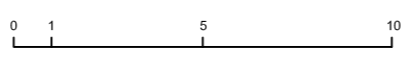
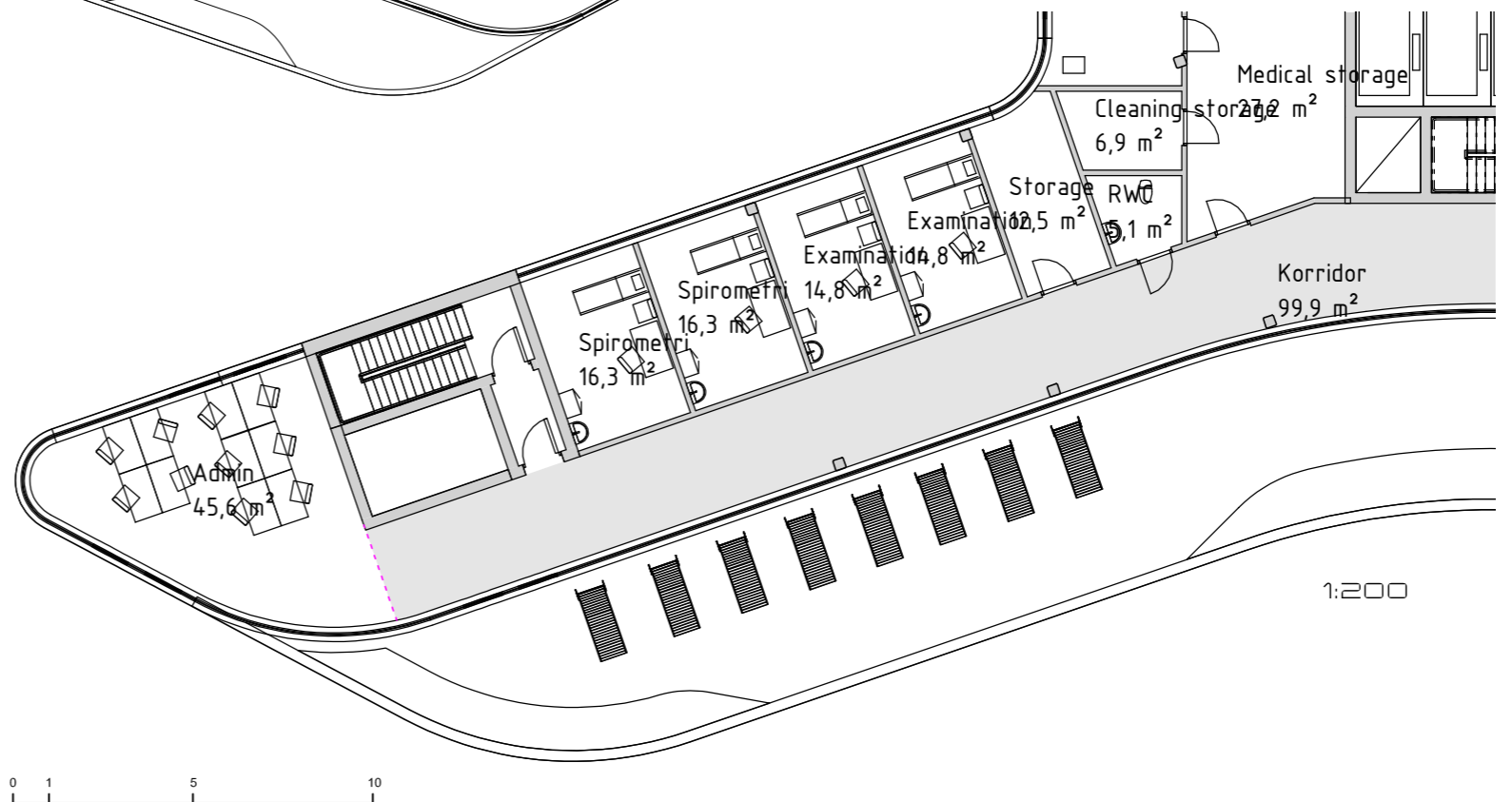


PLAN 9 ADMIN





1:800



PLAN 8
REHAB & PSYCHIATRY
 + TERRACE

The 8th floor houses a cooperation between rehabilitation and the psychiatry department. The rehab department is focused on the northwestern wings while the psychiatry is focused on the other two.

Both departments are sharing a common terrace facing the south. The terrace also enables the light to travel even further into the plan structure, giving light and fine examination, consultation and administration rooms.

On the northeast tip in the rehab department the patients have access to a full-equipped rehabilitation gym with day- and sunlight from all directions

1:400

SECTIONS

MATERIALS

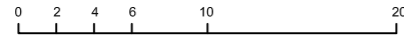
DETAIL

STRUCTURE



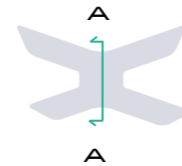
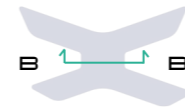
SECTION A - A

1:400



SECTION B - B

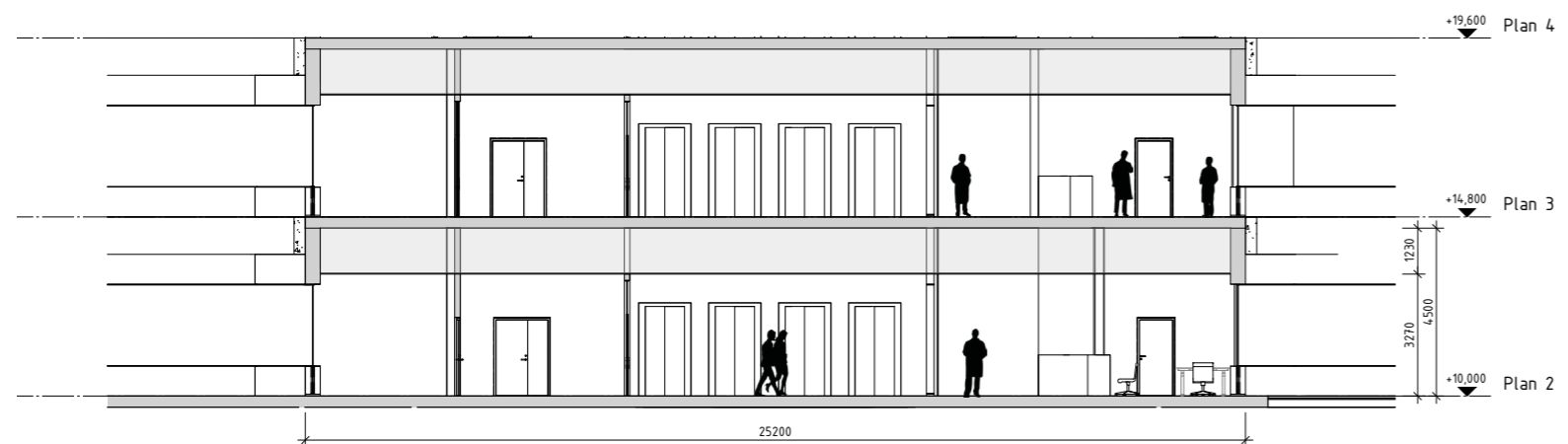
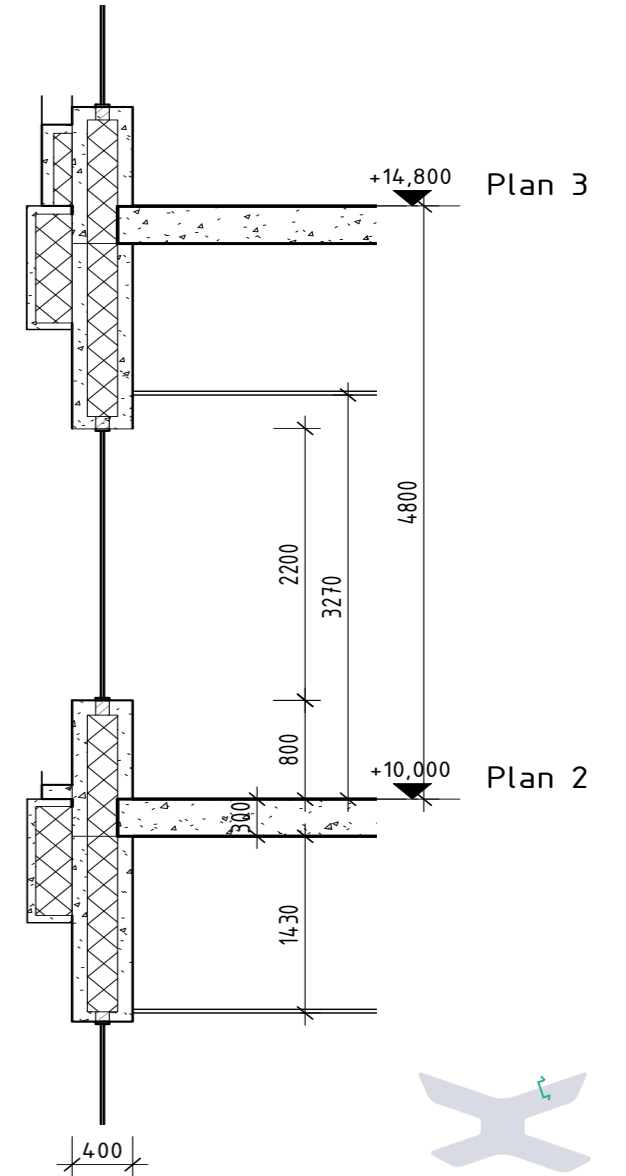
1:800



DETAIL

NO SCALE

The facade and exterior wall structure builds on the sandwich-element standard. Facade details such as the wavy parts are lightweight concrete elements



LONG SECTION 1:2000

ELEVATION

1:200

Each general floor is made up of a height of 4.8 meters. This allows the hospital a flexibility to be ready for any technical future healthcare changes. The ceiling height of 1.2 meters makes enough space for any technical solutions. The final free height lands at just about 3.3 meters

This standard provides the hospital the option, if needed, to add additional operation theatres on any given floor.

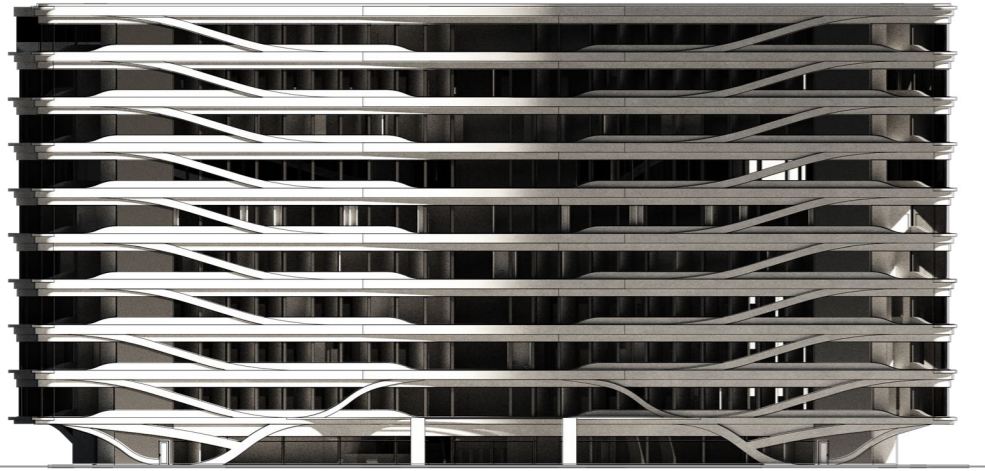


FACADE

MATERIALS

DETAIL

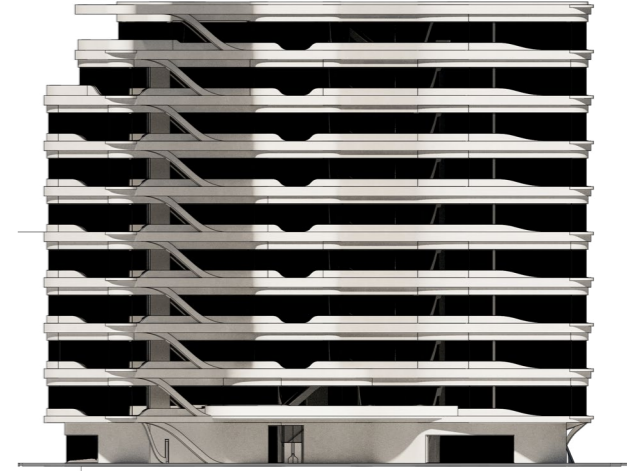
STRUCTURE



NORTH FACADE 1:800



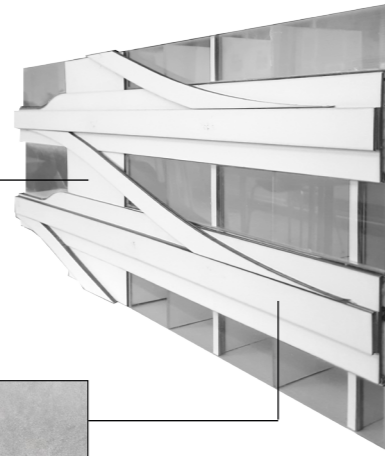
SOUTH FACADE 1:800



EAST FACADE 1:800

HOX great possibilities of transforming and rearranging its contents is characterized in its facade. Wavy lightweight concrete elements relieves the heavy structure of the white concrete finish. The dark grey metal sheets also gives a lighter character to the structural vertical communication.

The exterior design continues its flows into HOX interior. Here you can see a resemblance of the wavy exterior elements in the ceiling. The ceiling design is also meant to resemble a human's muscle tissue, and with this type of design, it can also be used as a guiding tool to make the wayfinding much easier



PHYSICAL MODEL OF FACADE



WEST FACADE 1:800

MATERIAL SELECTION

WHITE TREATED CONCRETE

BLACK & GREY METAL SHEETS COLLABORATES WITH WINDOW AND CONCRETE STRUCTURE

WINDOW GRID AND MULLIONS UTILIZE THE SAME MATERIAL FINISH AS EXTERIOR METAL SHEETS

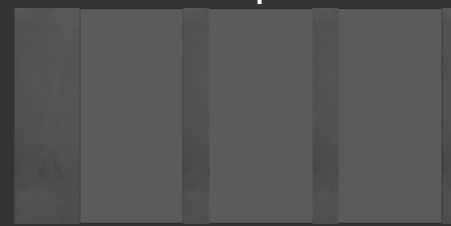
HOX CUSTOM CEILING DESIGN RESEMBLES THE BODY'S MUSCLE TISSUE



EXTERIOR



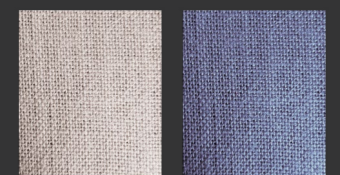
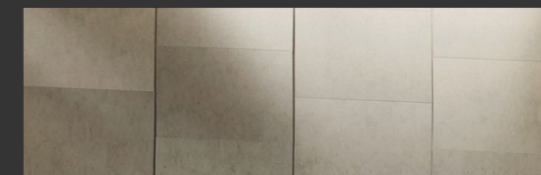
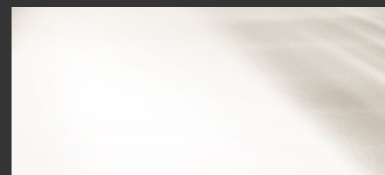
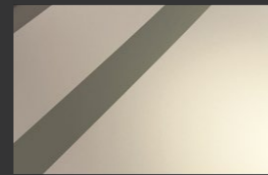
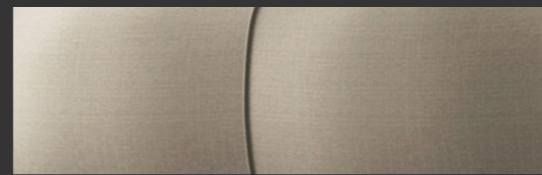
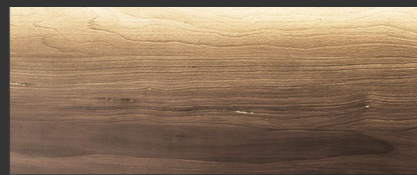
EXTERIOR



CEILING DESIGN



INTERIOR



WOODEN PANELS DARK WOOD VENEER

LIT WOODEN PANELS MAINLY PRESENT IN ENTRANCE AREA AND WAITING ROOMS

INTERIOR FURNITURE WHITE BEIGE GREY

INTERIOR FLOORING WHITE WHITE + CONTRAST-STRIPES COLOR - GREEN & BLUE

INTERIOR COATED STONE FLOORING HEAVY CHARACTER LIGHT COLOR & REFLECTION ENTRANCE-BASED

OFFICE & EXAMINATION WALL TEXTILE MATERIAL WISE WHITE MARINE BLUE



EXTERIOR

HOX+
FRIHAMNEN

SELF CHECK-IN



MAIN ENTRANCE





WAITING ROOM - SPECIALIST CARE ADULTS

HOX

"HOX genes are a group of related genes that control the body plan of an embryo along the head-tail axis. The HOX proteins determine the type of segment structures such as legs, arms, antennas and wings that will form on a given segment. HOX proteins thus confer segmental identity, but do not form the actual segments themselves"