Healthcare architecture



Infectious Diseases and Pulmonology Hospital, Tuberculosis Dispensary, and related facilities

- PRESENTATION -

Introduction



Introduction

We present our proposal for the Infectious Diseases and Pulmonology Hospital Complex with deep conviction in architecture's power to shape healing environments. Our design responds to the urgent need for spaces that are not only medically advanced but also humane, adaptable, and resilient. The new building will consolidate the specialties of Infectious Diseases, Pneumology, and Phthisiology, which are currently dispersed across three locations, operating in distinct buildings. It supports national public health strategies by addressing communicable diseases through prevention, early detection, and coordinated response.

The project comprises an Infectious Diseases and Pulmonology Hospital, a Tuberculosis Dispensary, outpatient clinics, and supporting public health services. Each component is conceived as part of an integrated ecosystem—physically connected, yet functionally distinct to ensure safety and clarity in patient flows. The hospital will include areas for inpatient and day care, outpatient services, a TB dispensary, diagnostic services, an OR with two operating rooms, and an ER with distinct patient flow for degistive or pulmonary infectious patients. It will also feature educational spaces such as conference and study rooms.

Central to our approach is the principle of segregated circulation—staff, patients, and visitors move along separate paths, minimizing cross-contamination risk. Negative-pressure zones, adaptable treatment wards, and modular ICU units are embedded in a flexible grid that can expand or reconfigure in response to future outbreaks or evolving medical practices.

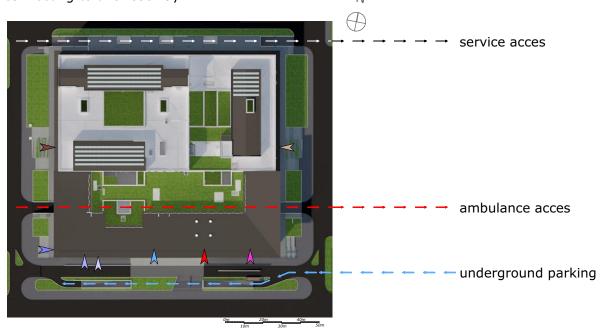
Natural light, open courtyards, and green roofs define the spatial experience. We designed every ward and waiting area to benefit from natural light, supporting mental well-being and accelerating recovery.

The hospital will host a minimum of 268 inpatient beds, which could be extended to 295 beds, if needed, 20 day-care beds and 11 beds in intensive care unit, resulting in a total capacity ranging between 299 and 326 beds.

Site and acces details

Site details

The site is situated in the western sector of the urban area of a medium-sized town, with its southern boundary fronting a vehicular thoroughfare. Access for motor vehicles is facilitated via two intersections connecting to this roadway.



Total area of the site: $35\ 051.00\ m^2$ Site area availabale for the project: $27\ 029.00\ m^2$ Footprint: $9\ 725.23\ m^2$

Total gross floor area: 49 601.98 m²

main hospital acces

➤ infectious respiratory patient acces

➤ infectious digestive patient acces

educational ward acces

➤ ambulatory acces

> pediatric TB acces

→ adult TB acces

Buildable area/site area: 40% Built area/site area: 33.96%

Internal circulation routes have been strategically designed around the perimeter of the proposed building to support functional and operational needs.

These include:

- A service yard located on the northern side of the plot, with dedicated access;
- **Ambulance access points** integrated into the southern building wings, ensuring direct and efficient emergency ingress and egress;
- Access to underground parking, positioned on the southern side of the site;
- Parking spaces distributed along the eastern and western perimeters of the parcel.

This layout ensures efficient vehicular flow, functional zoning, and optimal service accessibility within the site boundaries. Pedestrian access and circulation paths where designed to reduce cross contamination risks.

The main acces of the hospital is located on the south facade, from where patients are directed towards the ER, or other specific wards. Infectious respiratory patients can acces the building on the west facade, and infectious digestive patients on the east facade.

The TB dispensary is situated on the south-west corner fo the building, with three distinct acces points, for pediatric and adult patients, and one for direct contacts.

Volume configurations

Volumetric description

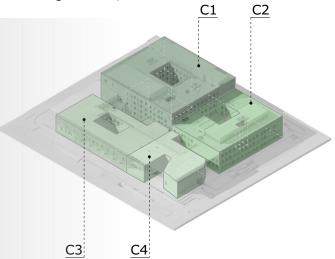
The monoblock building is structurally divided in 4, as in the first scheme, with 6 fire compartments, separated as in the second scheme. To assure natural light for patient rooms and treatment areas, and also for public spaces of the hospital we created several courtyards and lightcourts, as in third scheme.

Structural description

The building features a reinforced concrete frame structure with localized shear walls, supported on a raft foundation.

Expansion joints in both principal directions divide the structure into four independent segments, designated as C1, C2, C3, and C4, as illustrated in the adjacent diagram.

Three technical ducts are integrated beneath the raft foundation, detailed in cross-sectional views on page 14.



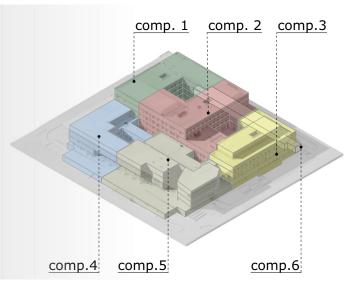
Fire compartments

The building is subdivided into 6 fire compartments in accordance with applicable fire safety regulations. Each compartment is designed to limit the spread of fire and smoke, ensuring safe evacuation.

Vertical and horizontal separations are constructed using non-combustible materials with continuous firestopping at all penetrations.

Doors within fire barriers are fire-rated and self-closing. Given the presence of non-ambulatory occupants, the design implements a progressive horizontal evacuation strategy.

All mechanical, electrical, and plumbing (MEP) systems are designed to maintain fire compartment integrity through appropriate fire-rated enclosures and system isolation features.

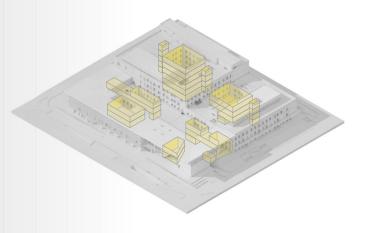


Courtyards and lightcourts within the building

Access to natural light and open space improves staff morale and supports the mental well-being of both patients and healthcare workers.

Strategic displacement helps define circulation routes and departmental zones. As shown in floor plans, the layout was designed with staff rooms oriented to main courtyards to distribute daylight deep into the building, and to create a buffer zone from external noise, to maximize productivity and well-being.

The intelligent displacement of courtyards and lightcourts is not merely aesthetic—it enhances patient recovery, staff performance, operational functionality, and environmental sustainability.



Circulation path configurations

Patient and Staff Circulation Path Concept

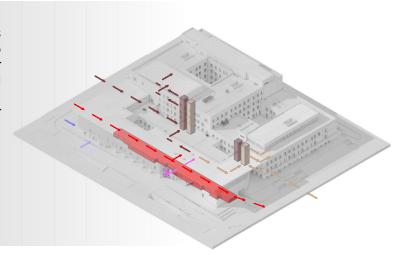
In our hospital design, patient and staff circulation paths are carefully orchestrated to ensure infection control, operational efficiency, and a dignified experience for all users. Movement paths are physically and functionally segregated across three primary circulation systems: patient, staff, and logistics.

Patient Circulation Path:

Patients enter through a triage-controlled access point where they are screened and directed to distinct zones—infectious, non-infectious, or suspected cases. Vertical circulation is separated for contagious patients, minimizing overlap. Outpatients are directed to the dispensary or diagnostic services.

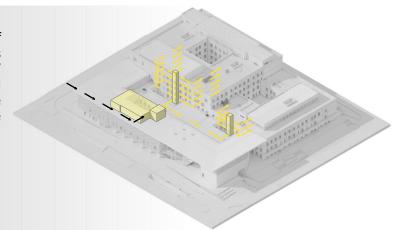
Emergency Circulation Path:

Ambulances have a separate access route leading directly to a decontamination and assessment bay. Critical cases move through dedicated lifts into high-security treatment areas.



Staff Circulation Path:

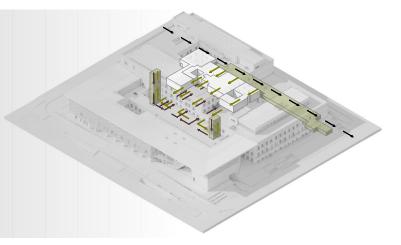
Staff circulate through a separate network of back corridors and service cores. Staff zones include clean entry points with gowning/ decontamination rooms, and dedicated vertical shafts. Shift transitions and rest areas are isolated from patient environments to reduce cross-contamination risks.



Support and Supply Circulation Path:

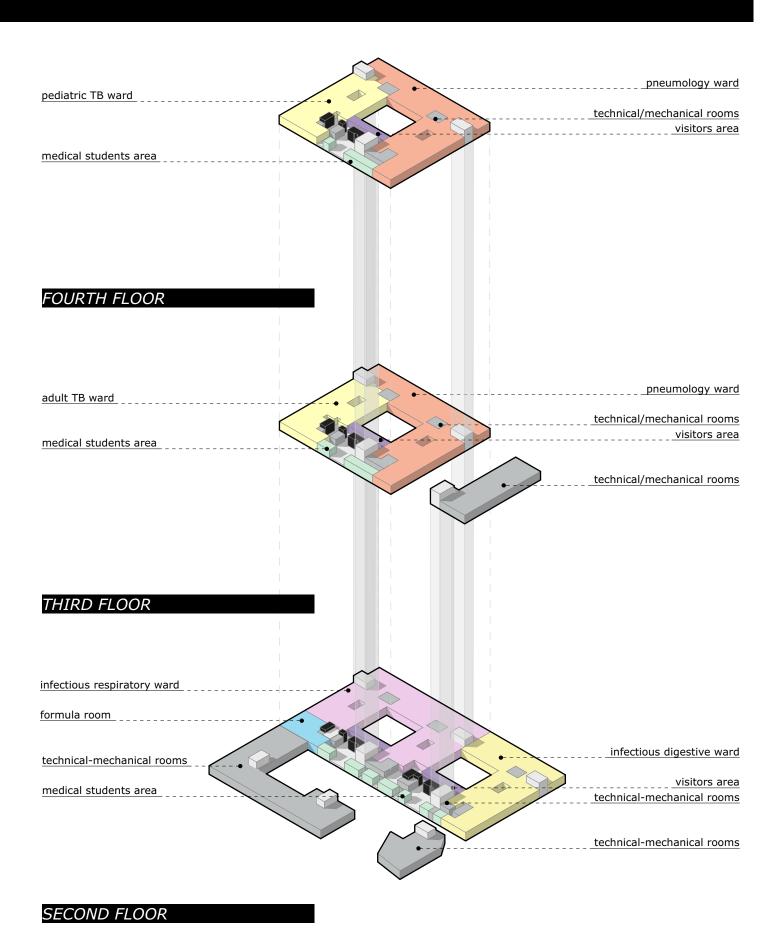
Sterile and non-sterile goods, waste, laundry, and food follow a fourth, logistics-only circulation path.

This zoning system ensures every user moves within clearly defined risk environments, guided by signage, spatial cues, and access control. Clean/dirty separation, air handling, and visibility across these flows are embedded in the hospital's structural logic.

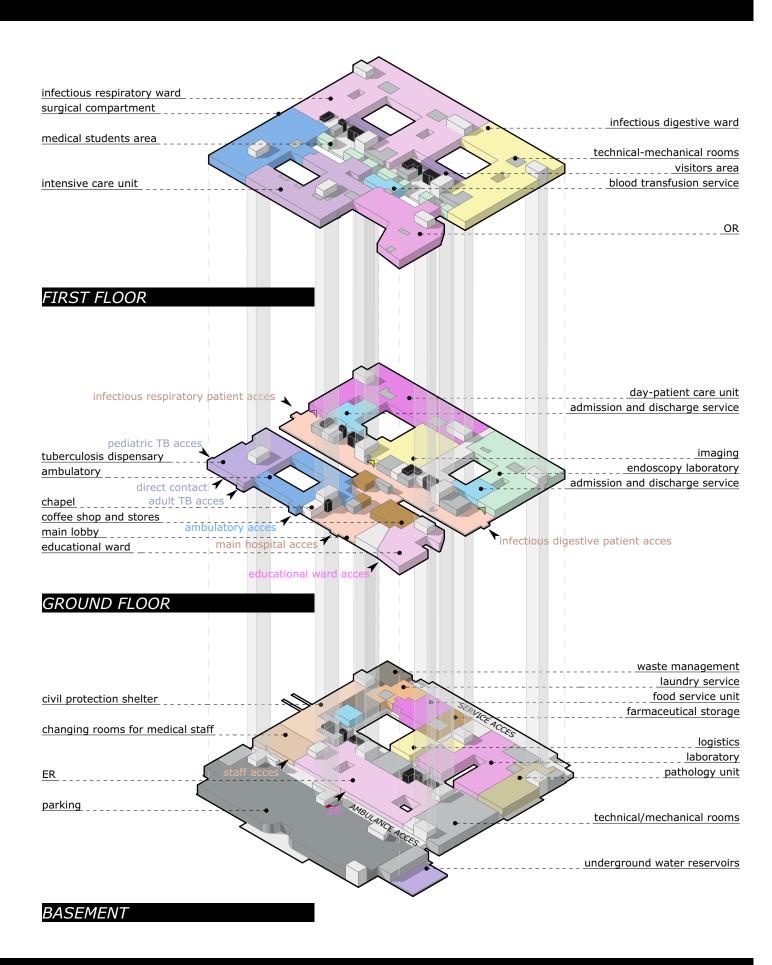


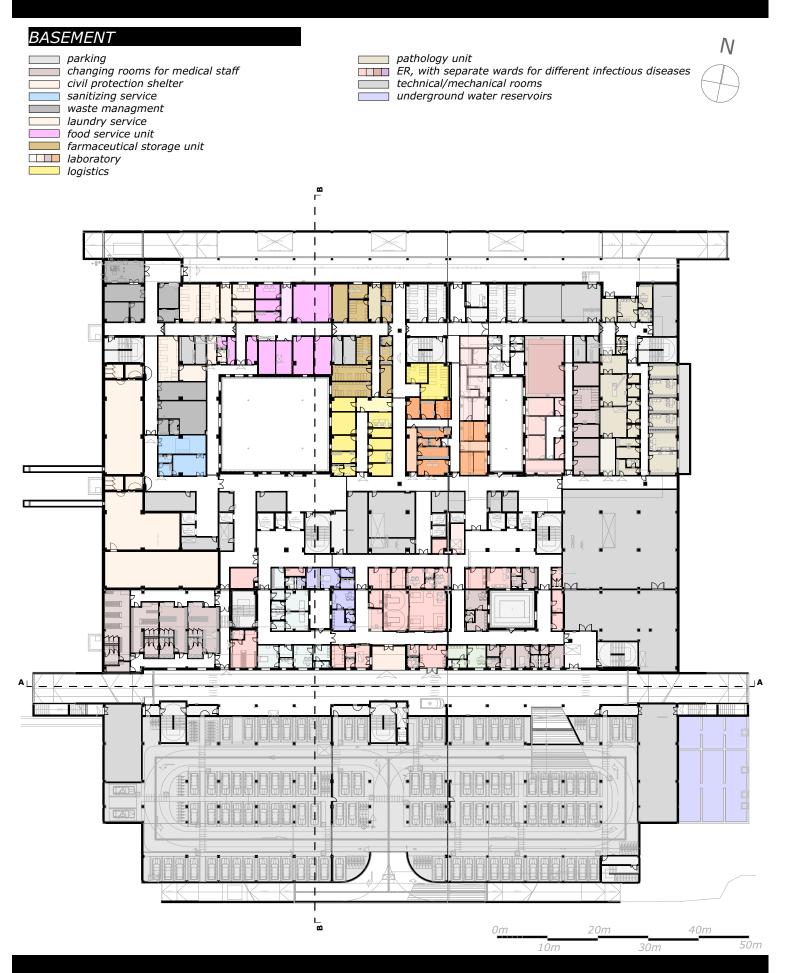
The result is a safe, legible, and resilient flow system-one that protects both patients and staff, while supporting the highest standards of infection prevention and care delivery.

Axonometric functional scheme



Axonometric functional scheme

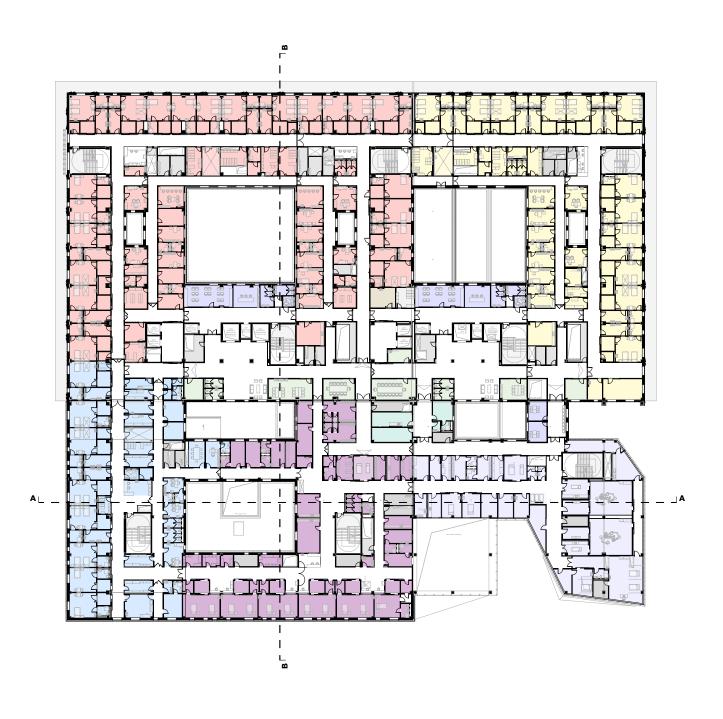






FIRST FLOOR surgical compartment infectious respiratory ward (30 beds) infectious digestive ward (17 beds) OR (2 operating rooms) intensive care unit blood transfusion service technical/mechanical rooms visitors area medical students area







SECOND FLOOR

formula room

infectious respiratory ward (40 beds)

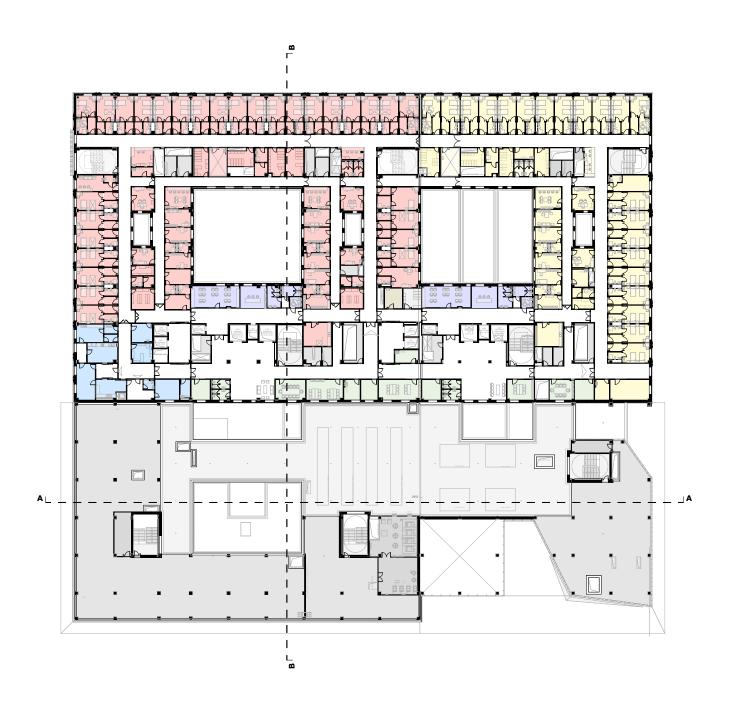
infectious digestive ward (40 beds)

□ technical/mechanical rooms

visitors area

medical students area



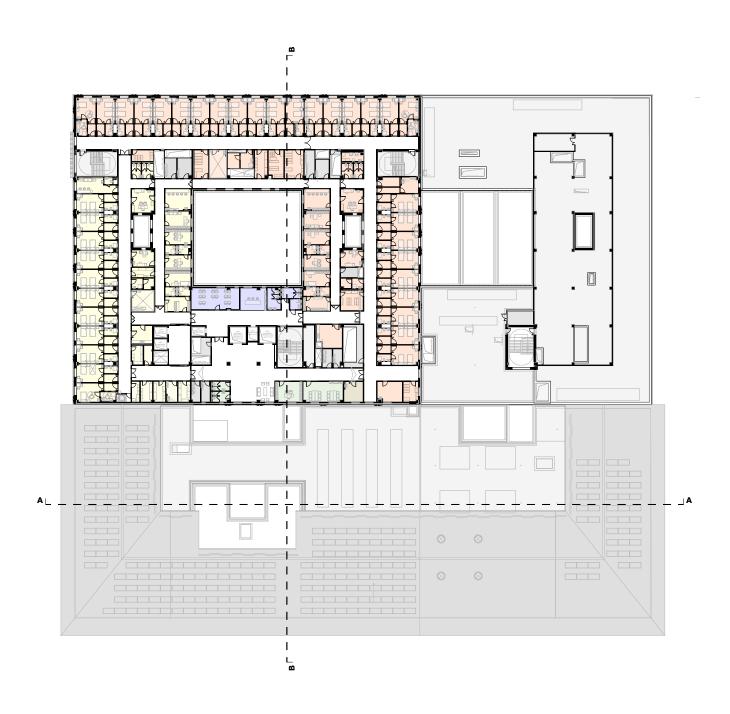


THIRD FLOOR

pulmonology ward (50 beds)
adult TB ward (20 beds)
technical/mechanical rooms
visitors area

 ☐ medical students area





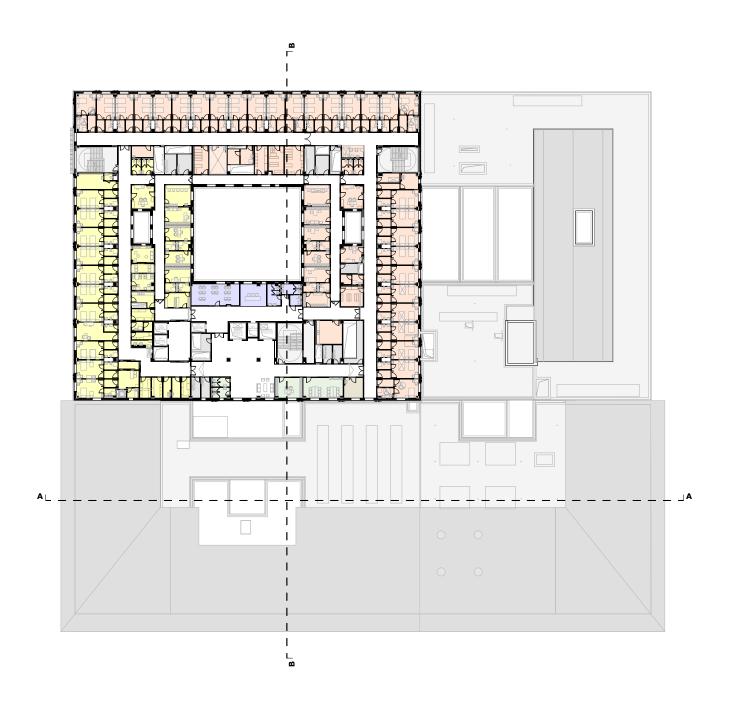
FOURTH FLOOR

pulmonology III ward (50 beds)
pediatric TB ward (10 beds)
technical/mechanical rooms

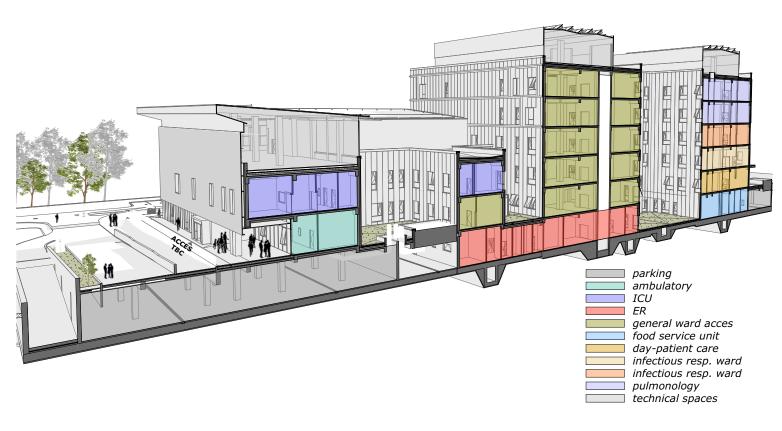
visitors area

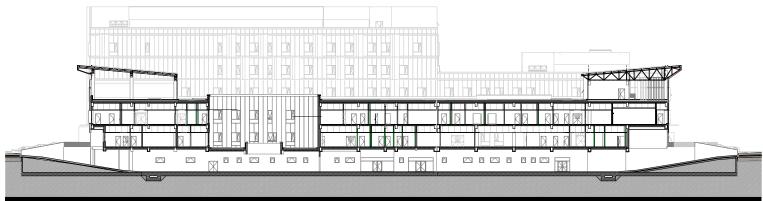
 ☐ medical students area



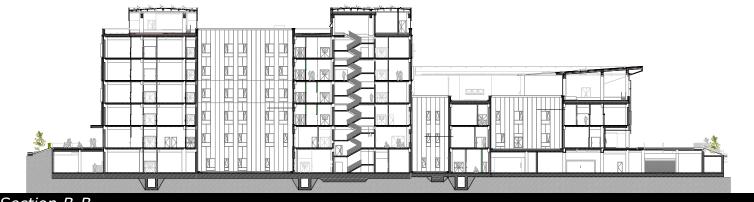


Sections





Section A-A



Section B-B



Elevations









Rendering





Rendering





Thank You!

