

Conceptual Explanation

Urban Context

The Pljevlja Hospital has been designed in desire to blend seamlessly into the natural environment, given its location on the slope of the mountains.

The building has been oriented to maximize the views of the surrounding forest, while also being easily accessible from the city.

The main entrance is situated in the crossroad of Lovćenska and Save Kovačevića. Both roads connects city centre to surrounding cities. The intersection that is created by these roads has a important potential for the main entrance of the new hospital. The connection with the existing facility is also essential for the decision.

To respect and integrate the scale of the Pljevlja; building mass of the proposed building has been designed accordingly.

There are some typical solutions for hospital with impatient wards. But in many case "cluster systems are working more efficiently, in terms of operating system. As a architectural piece, hospitals are mostly shaped by wards' decisions.

In this project, ward units are considered as "linear clusters", to adapt its location both for preserving valuable trees and forest view. Those so called "linear clusters" are situated in parallel rotation to Save Kovacevica, having its main entrance and visitor traffic from Lovcenska.

This decision brings fragmental identity for the mass and facades which is intended to blend into the city' scale. With its sloped roof with modern interpretation it blends even more in to Pljevlja in urban context

Interior Organization

Hospital's organization is provided by two main corridors perpendicular to ward clusters. One of these corridors that is almost in the middle of the building and it serves as "main logistic corridor". Food distribution, changing of bed linens and othe logistical matters would be running on that corridor.

This very corridor also separates inpatient and outpatient needs.

The corridor that is attached to main entrance facade serves to inhabitate visitors and mostly out patients to have surgery in polyclinic units.

Inner gardens in ground floor habitates existing trees and proposed landscape to sustain natural life as well as the terrace gardens on the first floor.

At the basement floor ,kitchen, laundry and Hvac units are placed with an outside access from city level 796.

Wards are linearly clustered from 10 beds to 20 beds. Ward units have both forest and city view. Operating theaters, ICU unit and Maternity ward are situated on top of eachother and connected via separate elevator.

Overall, the architectural organization of the Pljevlja hospital prioritize functionality, patient comfort, safety, and sustainability while incorporating the latest technologies and creating a welcoming environment for patients and their families.



Description of Selected Materials

Materials of the hospital are selected in accordance with the main concept of the design which intends to blend to existing urban fabric.

In addition to this intention, other main concerns are ecological and sustainability in terms of natural awareness and economical facts.

Exterior

The surface with most quantity is the facade of the building. Facade is made of plaster with thick grains. It brings clean and neat finishing to the building. With its fragmented mass composition, surfaces creates dynamic appearance having in my the intention of blending the existing urban fabric.

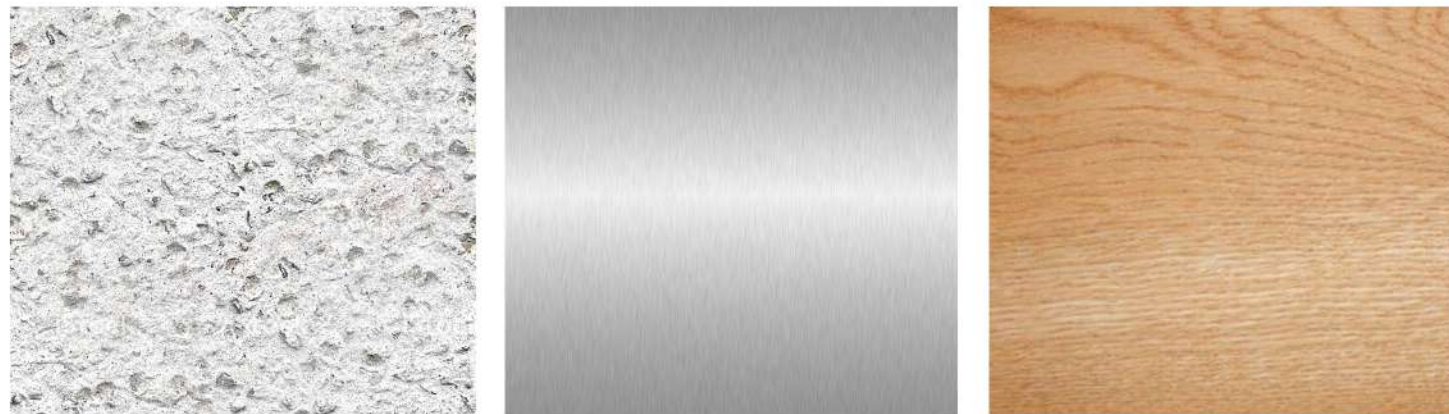
Aluminium window frames is considered to have contrary composition with thick grained stucco surfaces. It is also thought to have better insulation for hard winter conditions.

Roof panels are considered as metal sheets with coherent colour scheme similar to facade surfaces.

All surfaces of the facade are designed with durable materials to obtain easy maintenance. Considering economic facts and hardship of the logistics matters, Materials that can be sourced locally and have a low environmental impact should be prioritized.

The use of sustainable materials in construction is critical in reducing the carbon footprint of a building. The green roofs of the hospital are designed to blend seamlessly into the surrounding landscape while also providing ecological benefits, such as absorbing rainwater, regulating temperature, and reducing the urban heat island effect.

Reinforced concrete carcass system is to be used in the design having column spacing from ward units' dimensions.



Interior

General interior concept is to have clear and simple surfaces for better maintenance. Durable materials are selected for corridors to have long lasting spaces.

Wooden cladding is designed in common areas such as lounge and waiting areas for warmer ambiance.

General concerns for interior look :

Safety: Safety is the most important factor to consider when selecting interior materials for a hospital. Materials should be non-toxic, non-flammable, and resistant to bacteria, viruses, and other pathogens.

Cleanliness: Hospitals require a high level of cleanliness to prevent the spread of infections. Materials should be easy to clean and disinfect, and should not absorb liquids or odors.

Durability: Hospitals are high-traffic environments, so materials should be able to withstand heavy use and frequent cleaning without showing signs of wear and tear.

Acoustics: Hospitals can be noisy environments, so materials that absorb sound and reduce echo can help create a more peaceful and calming atmosphere for patients.

Some specific material options to consider for a hospital interior include:

Flooring: Vinyl, linoleum, or rubber flooring are durable and easy to clean.

Wall coverings: Paint, wallpaper, or vinyl wall coverings are easy to clean and can be designed to fit with the hospital's overall aesthetic.

Ceilings: Suspended ceilings made of acoustic tiles can help reduce noise and are easy to replace if damaged.

Furniture: Chairs and other furniture should be easy to clean and resistant to stains and odors.

Countertops: Non-porous materials like quartz, solid surface, or stainless steel are durable and easy to clean.

Principles of energy efficiency and ecological solutions

The principles of energy efficiency and ecologically acceptable solutions are applied in a variety of manners. In the proposed architectural design these manners are used to have ecological effect to create sustainability both for natural and economical facts.

One of the most common applications of energy efficiency principles is in building design and construction. Buildings that are designed to be energy-efficient can use up to 50% less energy than conventional buildings. This can be achieved through the use of passive design strategies such as natural ventilation, daylighting, and thermal mass, as well as the use of energy-efficient materials and systems like high-performance windows, insulation, and HVAC systems.

Lighting: Lighting can be a major source of energy consumption in a hospital. Consider using natural lighting where possible, such as through skylights or windows, and install energy-efficient lighting fixtures.

Inner gardens and terrace gardens helps to have natural light and ventilation to desired rooms and corridors.
The surface on top of ward corridors are to be controlled manually to provide ventilation.

HVAC systems: Heating, ventilation, and air conditioning (HVAC) systems can account for a significant portion of a hospital's energy consumption. Consider using high-efficiency HVAC systems that incorporate heat recovery and demand-controlled ventilation.

The hospital also features green roofs, which help to reduce the urban heat island effect and provide a natural habitat for wildlife.

Considering alternative energy solutions, energy efficiency can be achieved through the use of renewable energy sources, such as solar and wind power, and the implementation of energy-efficient technologies.

Water conservation: Hospitals consume a lot of water, so it's important to incorporate water-efficient fixtures and appliances. Consider using low-flow faucets, toilets, and showerheads, and using recycled or harvested rainwater for irrigation.

Building envelope: The building envelope refers to the exterior of the building, including the walls, roof, and windows. A well-designed envelope can help to reduce energy consumption by minimizing heatloss or gain. Considered using high-performance insulation, triple-paned windows, and cool roofs.

Materials: Consider using sustainable materials such as FSC-certified wood, recycled materials, and low-emitting finishes. Use durable materials that require little maintenance and are easy to clean and disinfect.

Landscaping: Incorporate native plant species and drought-tolerant landscaping to reduce water consumption and promote biodiversity.

Permeable surfaces designed in the hardscapes of the site such as terraces and walkways.

Resource conservation is another key application of sustainability principles is in the conservation of natural resources. This includes the development of recycling programs, the use of sustainable materials in products, and the promotion of circular economy models. By conserving resources, we can reduce waste and promote a more sustainability.

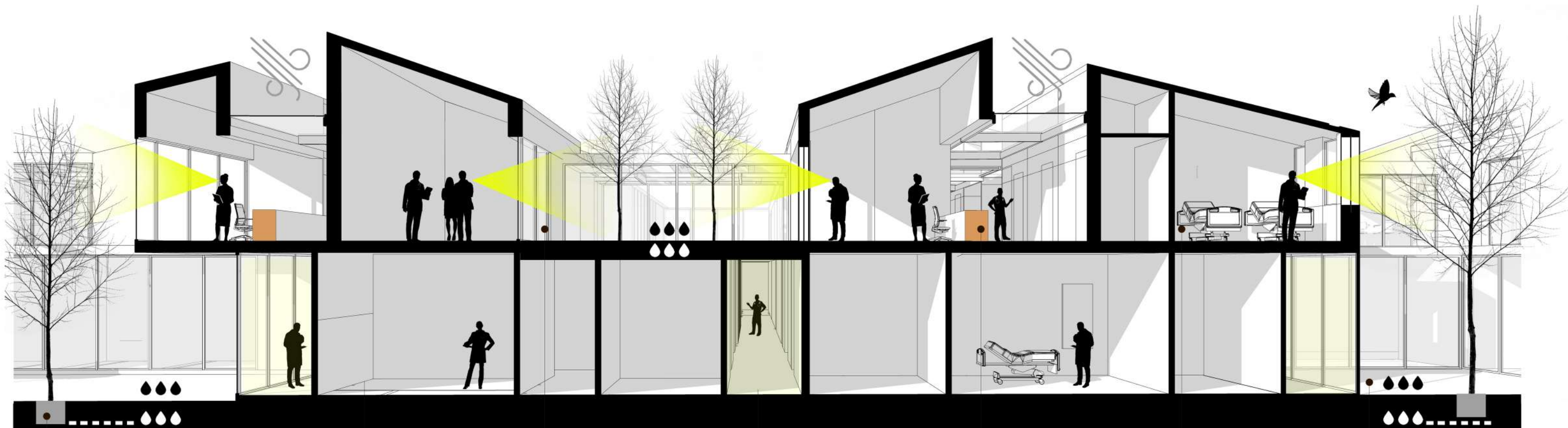


Table of Squaremeter Analysis of the Project

1.st FLOOR

9.01	GENERAL INTERNAL MEDICINE INPATIENT	420m ²
9.02.1	CORONARY UNIT	130m ²
9.02.2	GENERAL INTERNIST INTENSIVE CARE	130m ²
9.03	INTERNAL MEDICINE CARDIOLOGY	265m ²
9.04	SURGICAL WARD	800m ²
9.05	NEUROLOGY UNIT	260m ²
9.06	PEDIATRICS INPATIENT UNIT	396m ²
10	GYNECOLOGICAL INPATIENT WARD	280m ²
	RESERVE AREA	85m ²
16.05	AIR CONDITIONING PLANT	110m ²

GROSS FLOOR AREA: 4525m²

GROUND FLOOR

01	MAIN ENTRANCE AND ADMINISTRATION	425m ²
02	URGENT TREATMENT CENTRE	200m ² (+40m ² ambulances)
03	3 POLYCLINIC DIAGNOSTIC SERVICE:	
	Surgery and orthopaedics	65m ²
	Gastroenterological clinic	65m ²
	Urology	41m ²
	Internal medicine diagnostics	111m ²
	ENT clinic	72m ²
	Ophthalmological diagnostics	45m ²
	Neurology and psychiatry	45m ²
	Dermatology	45m ²
	Paediatric diagnostics	52m ²
	Gynaecological diagnostics	38m ²
	Common rooms for polyclinic diagnostics	72m ²
04	X-RAY DIAGNOSTICS	320m ²
05	CENTRAL LABORATORY	285m ²
06	SURGICAL BLOCK WITH INTENSIVE CARE	480m ²
B	FACILITY FOR TREATING INFECTIOUS DISEASES	138m ²
G	MEDICAL WASTE TREATMENT	99m ²
E	MEDICAL GAS FACILITY	46m ²
I	MORTUARY BUILDING	89m ²

GROSS FLOOR AREA: 4615m²

1.st BASEMENT FLOOR

07	PHYSICAL MEDICINE SERVICE	120m ²
08	HOSPITAL PHARMACY	135m ²
11	OBSTETRICS INPATIENT WARD	250m ²
12	MATERNITY WARD	237m ²
13	CENTRAL STERILISATION	234m ²
14	HISTOPATHOLOGY LABORATORY EX TEMPORE	48m ²
15	CENTRAL STAFF CHANGING ROOM	190m ²
16	TECHNICAL PREMISES FOR HVAC	170m ²
B	FACILITY FOR TREATING INFECTIOUS DISEASES	256m ²
D	HOSPITAL KITCHEN	285m ²
H	LAUNDRY ROOM	200m ²
	TECHNOECONOMIC AREA	743m ²

GROSS FLOOR AREA: 3150m²
UNDERGROUND TECHNICAL AREAS 1740m²

2.nd BASEMENT FLOOR

CARPARK AREA (145 car)	4840m ²
VERTICAL CIRCULATION AND TECHNICAL AREAS	1415m ²

UNDERGROUND TECHNICAL AREAS 6255m²

3.rd BASEMENT FLOOR

CARPARK AREA (160 car)	5572m ²
VERTICAL CIRCULATION AND TECHNICAL AREAS	683m ²

UNDERGROUND TECHNICAL AREAS 6255m²

TOTAL GROSS FLOOR AREA 12290m²
TOTAL UNDERGROUND TECHNICAL AREAS 14250m²

GROUND FLOOR: 9742m²
ROOF GARDENS: 1211m²

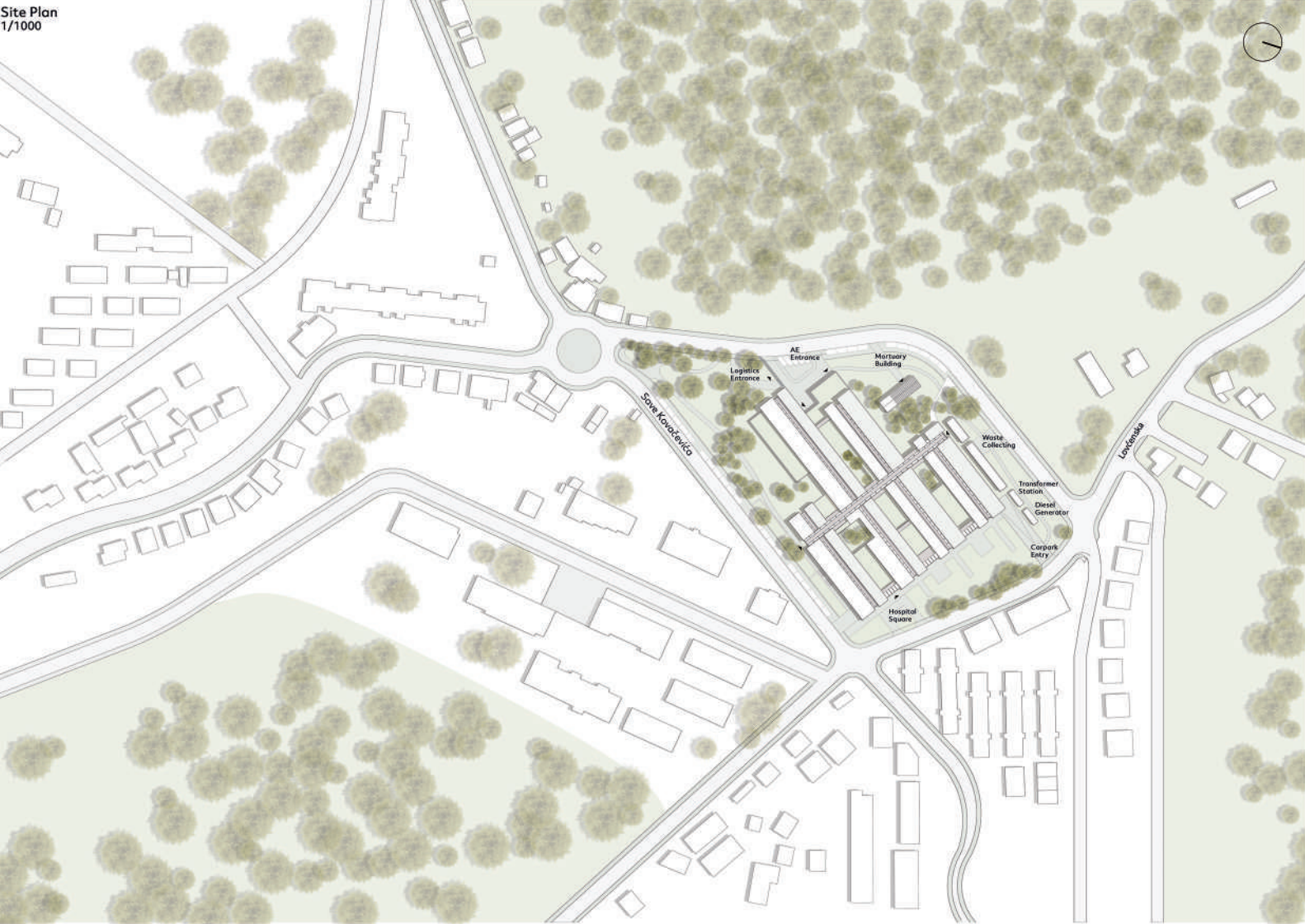
TOTAL GREEN AREAS: 10953m²

Framework Assessment of the Investment

	Gross Area (m²) :	Unit Price (Euro) :	Total Price (Euro) :
HOSPITAL AREAS (1st basement, ground and 1st floors)	14.030	1.400,00	19.642.000,00
UNDERGROUND PARKING AREAS (2nd and 3rd basement floors)	12.510	450,00	5.629.500,00
LANDSCAPING AREAS :			
GROUND FLOOR LANDSCAPING AREAS:	9.742	150,00	1.461.300,00
ROOF GARDENS LANDSCAPING AREAS:	1.211	100,00	121.100,00
		TOTAL :	26.853.900,00



Site Plan
1/1000



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Integrating the Urban Fabric



Inner Organization

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Inner gardens in ground floor habitats existing trees and proposed landscape to sustain natural life as well as the terrace gardens on the first floor.

At the basement floor, kitchen, laundry and Hvac units are placed with an outside access from city level 796.

Wards are linearly clustered from 10 beds to 20 beds. Ward units have both forest and city view.

Operating theaters, ICU unit and Maternity ward are situated on top of eachother and connected via separate elevator.



Intersection of the Urban Spines



Building Envelope

The surface with most quantity is the facade of the building. Facade is made of plaster with thick grains. It brings clean and neat finishing to the building.

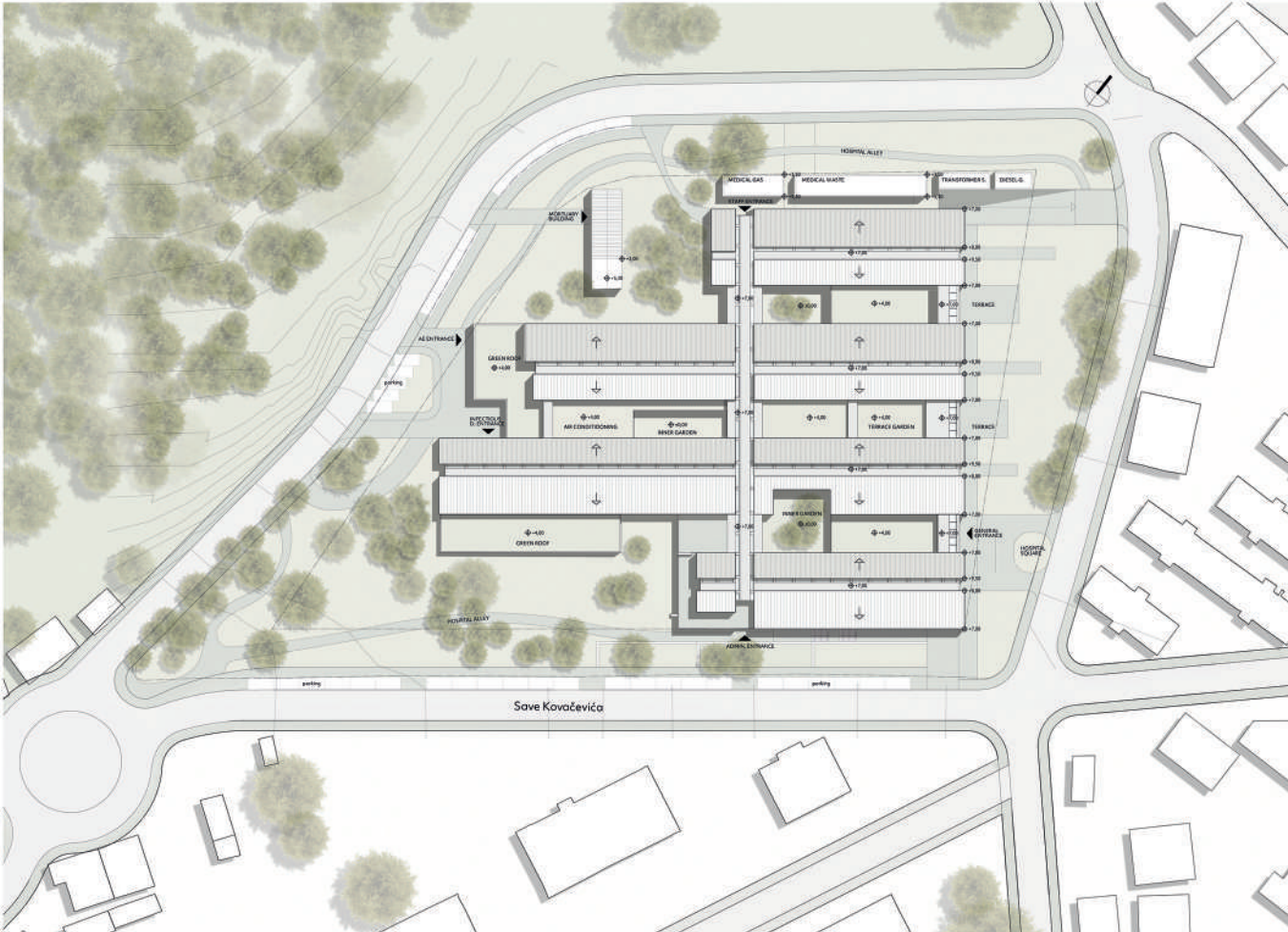
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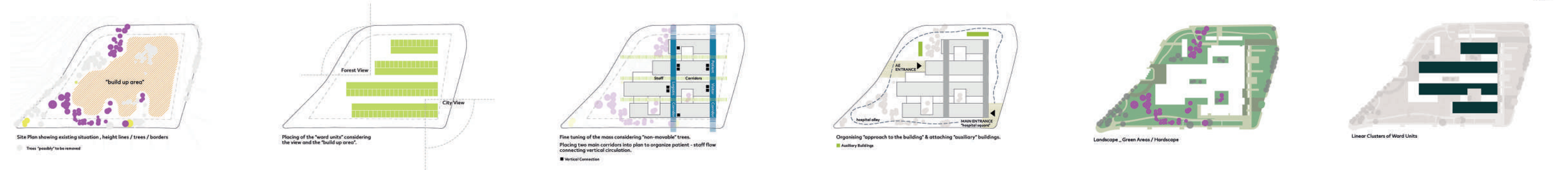
Considering economic facts and hardship of the logistics matters, Materials that can be sourced locally and have a low environmental impact should be prioritized.

Reinforced concrete carcass system is to be used in the design having column spacing from ward units' dimensions.



Formation of the Building Mass

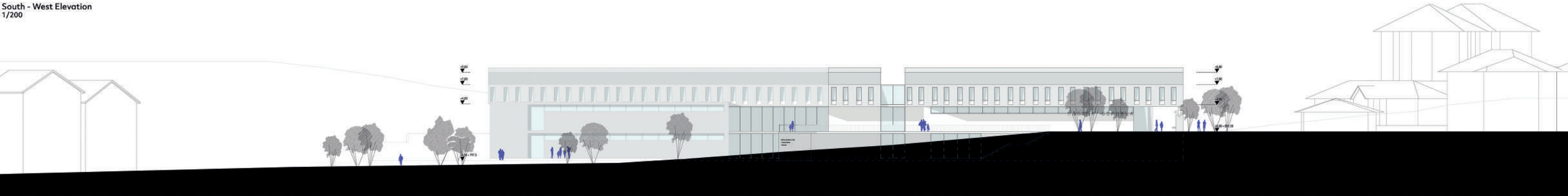
Site Plan
1/500

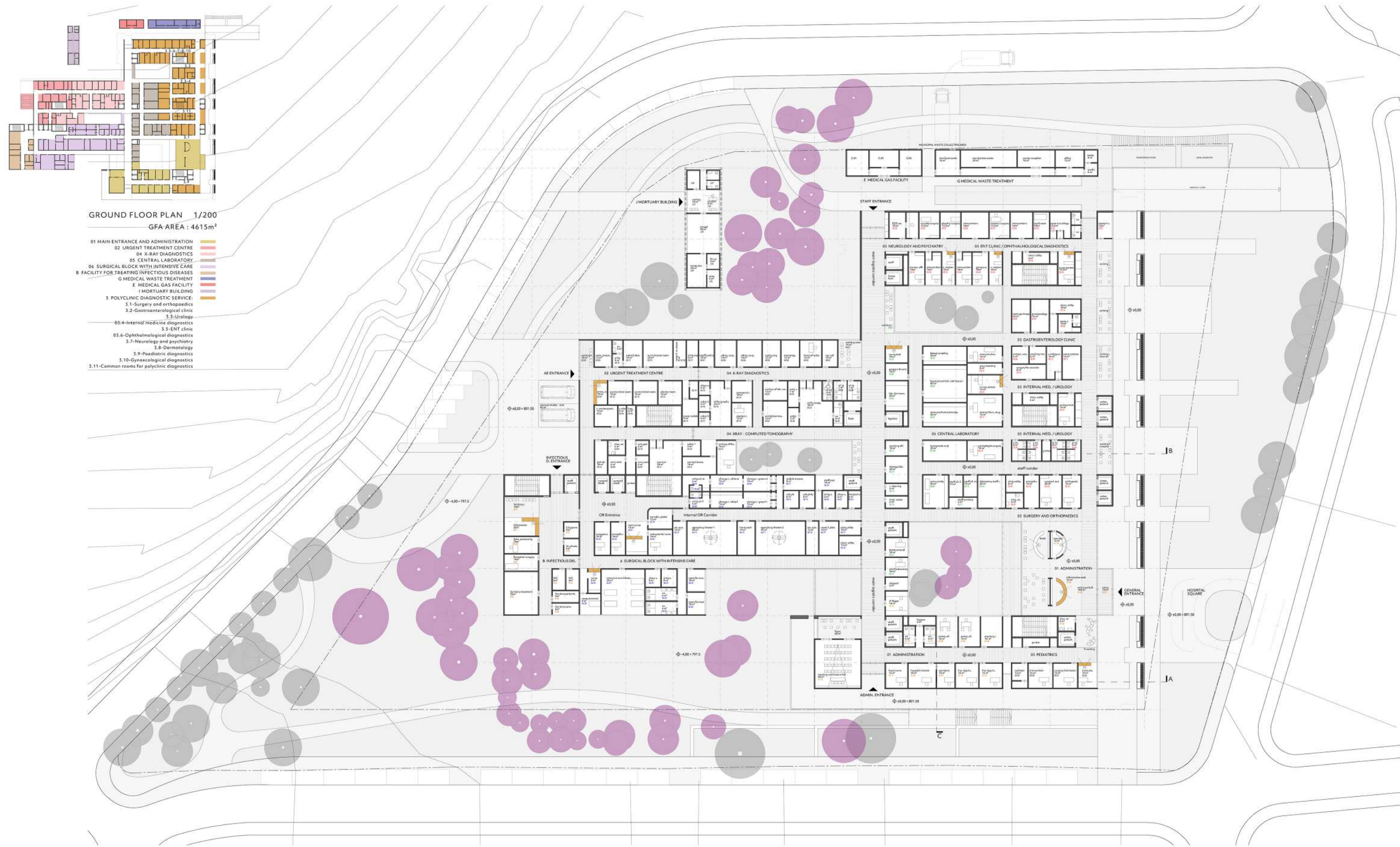


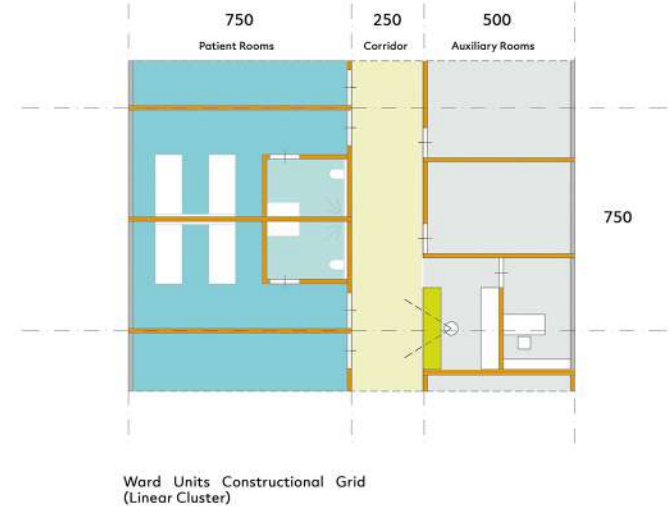
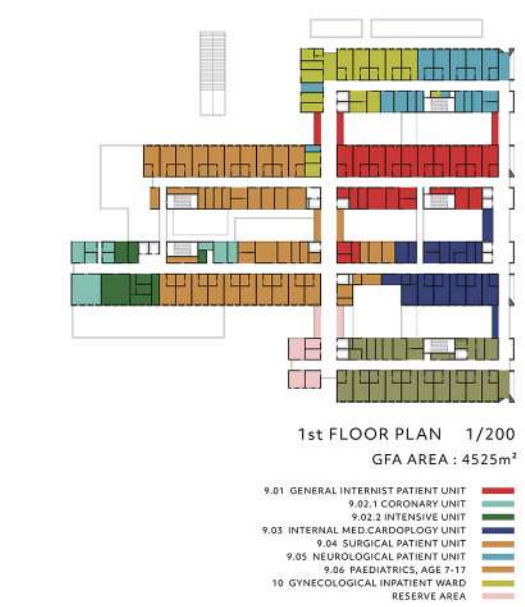
North - East Elevation
1/200



South - West Elevation
1/200





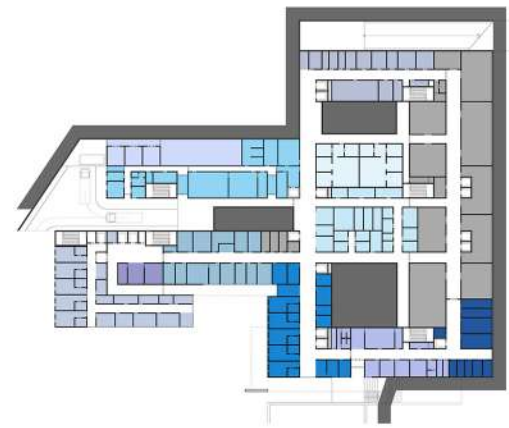




Mortuary Building

Urgent Treatment Entrance

Ambulance Parking

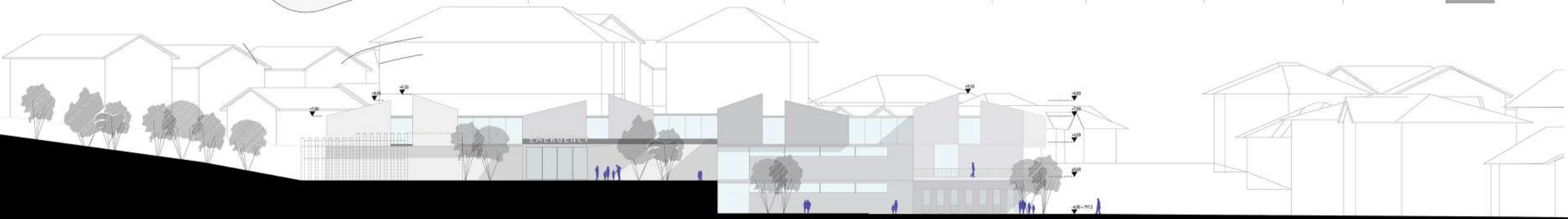


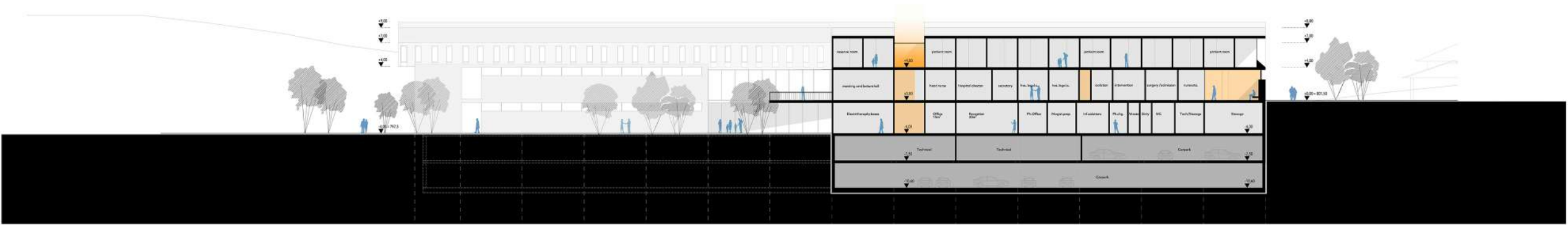
1st BASEMENT FLOOR PLAN 1/200
GFA AREA : 3150m²
TECHNOECONOMIC AREA: 1740m²

- 07 PHYSICAL MEDICINE SERVICE
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- 11 OBSTETRICS INPATIENT WARD
- 12 MATERNITY WARD
- 13 CENTRAL STERILISATION
- 14 HISTOPATHOLOGY LABORATORY EX TEMPORE
- 15 CENTRAL STAFF CHANGING ROOM
- 16 TECHNICAL PREMISES FOR HVAC
- B FACILITY FOR TREATING INFECTIOUS DISEASES
- D HOSPITAL KITCHEN
- H LAUNDRY ROOM



South - East Elevation
1/200





FUNCTIONS DIAGRAM

LEVEL 1

- Gynecological Hospital Unit
- Neurological Patient Unit
- General Internal Patient Unit
- Surgical Patient Unit
- Intensive Care Unit
- Coronary Unit
- Internal Medicine Cardiology Unit
- Pediatrics (age 7-17) Unit
- Reserve Area

GROUND FLOOR

- Entrance Hall
- Hospital Administration
- Pediatrics
- Internal Medicine
- Gastrology
- Urology
- Orthopedics
- Ophthalmic Clinic
- Ent Clinic
- Neurology & Psychiatry
- Central Laboratory
- Operational Unit
- X-Ray Diagnostics
- Urgent Treatment
- Infectious Diseases
- Mortuary Building
- Medical Gases
- Waste Treatment Facility

LEVEL B1

- Hospital Pharmacy
- Physical Medicine Service
- Obstetrics Inpatient Ward
- Maternity Ward
- Histopathology
- Infectious Diseases
- Hospital Kitchen
- Central Sterilization
- Hospital Laundry
- Staff Changing
- Technical Areas

LEVEL B2

- Car Park
- Vertical Circulation

LEVEL B3

- Car Park
- Vertical Circulation

CIRCULATION ORGANIZATION

LEVEL 1

GROUND FLOOR

LEVEL B1

LEVEL B2

LEVEL B3

SUSTAINABILITY PRINCIPLES



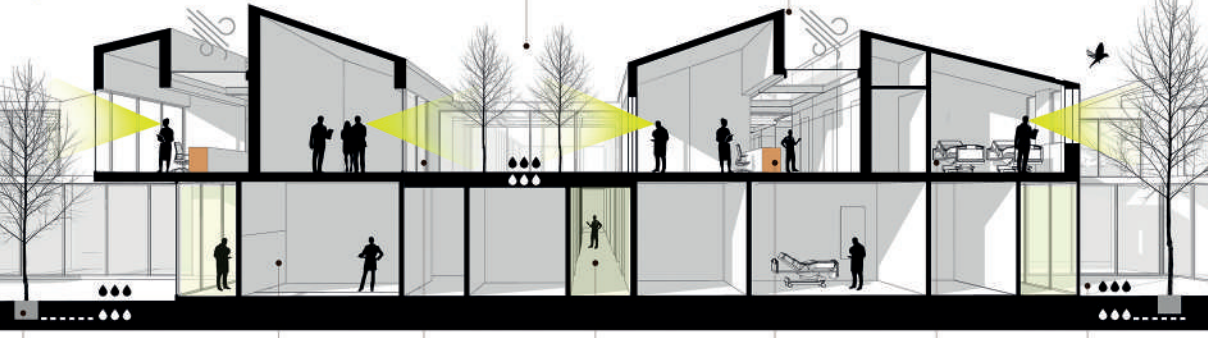
ward units are placed so that every room is able to get benefit from the direct daylight
'solar panels' are to be replaced to the rooftops

Roof Gardens provides nicer view both for patients are staff
It is possible to use the gardens as outside lounge areas

Corridors' roof system is convertible to have natural air inside the hospital for ventilation



Roofs' surfaces are design to harvest rainwater for possible usage as 'graywater' for the building



Inner Gardens are to keep existing trees and they serve as water harvesting grounds

Surgery Room

Green roofs keep the building envelope cool and breathable

Staff Corridors are designed to separate different traffic inside the hospital

Nurse Station

Ward Unit

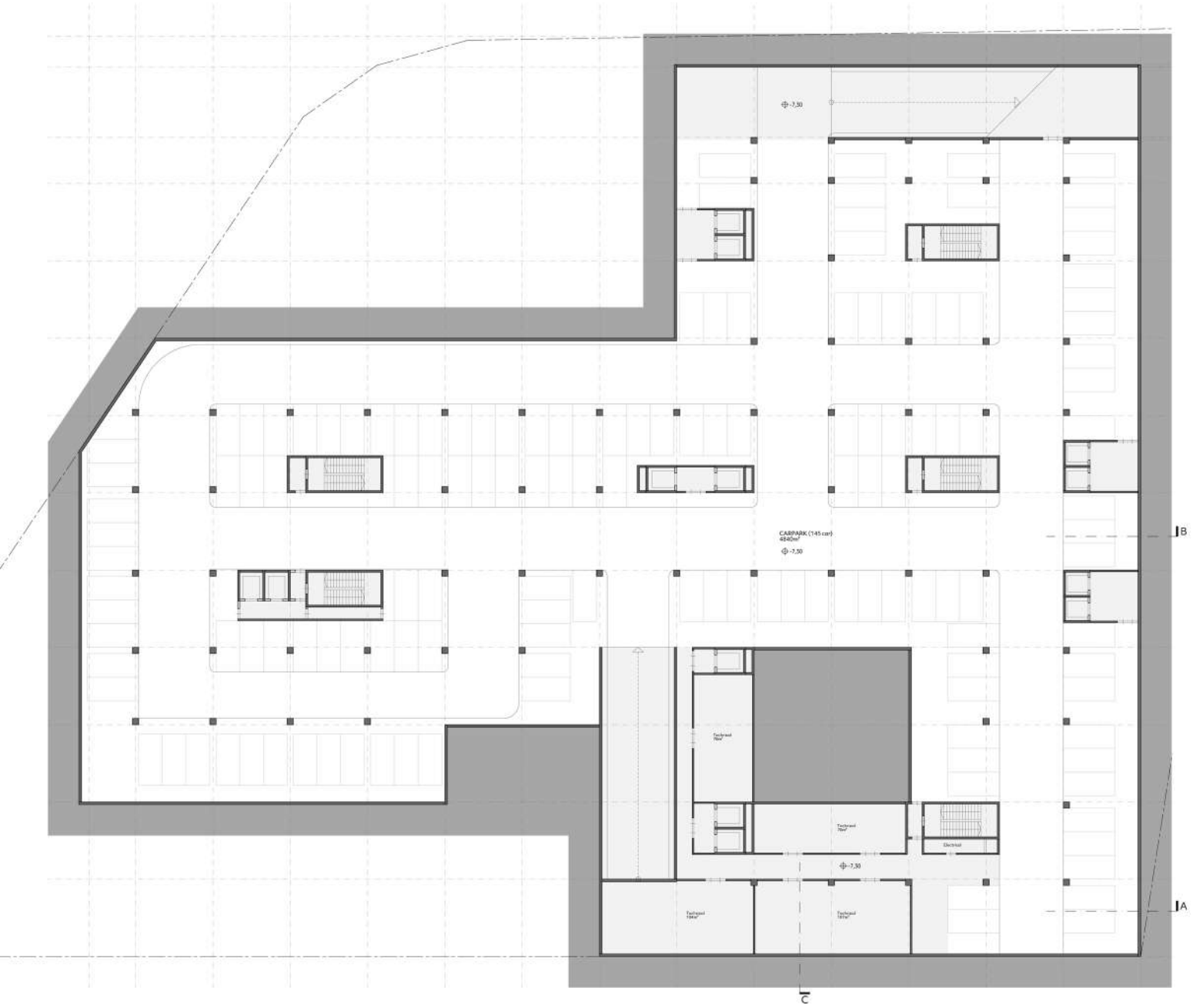
Permeable surfaces helps to drain water naturally and helps natural life to survive



General Logistics Corridor at the First Floor

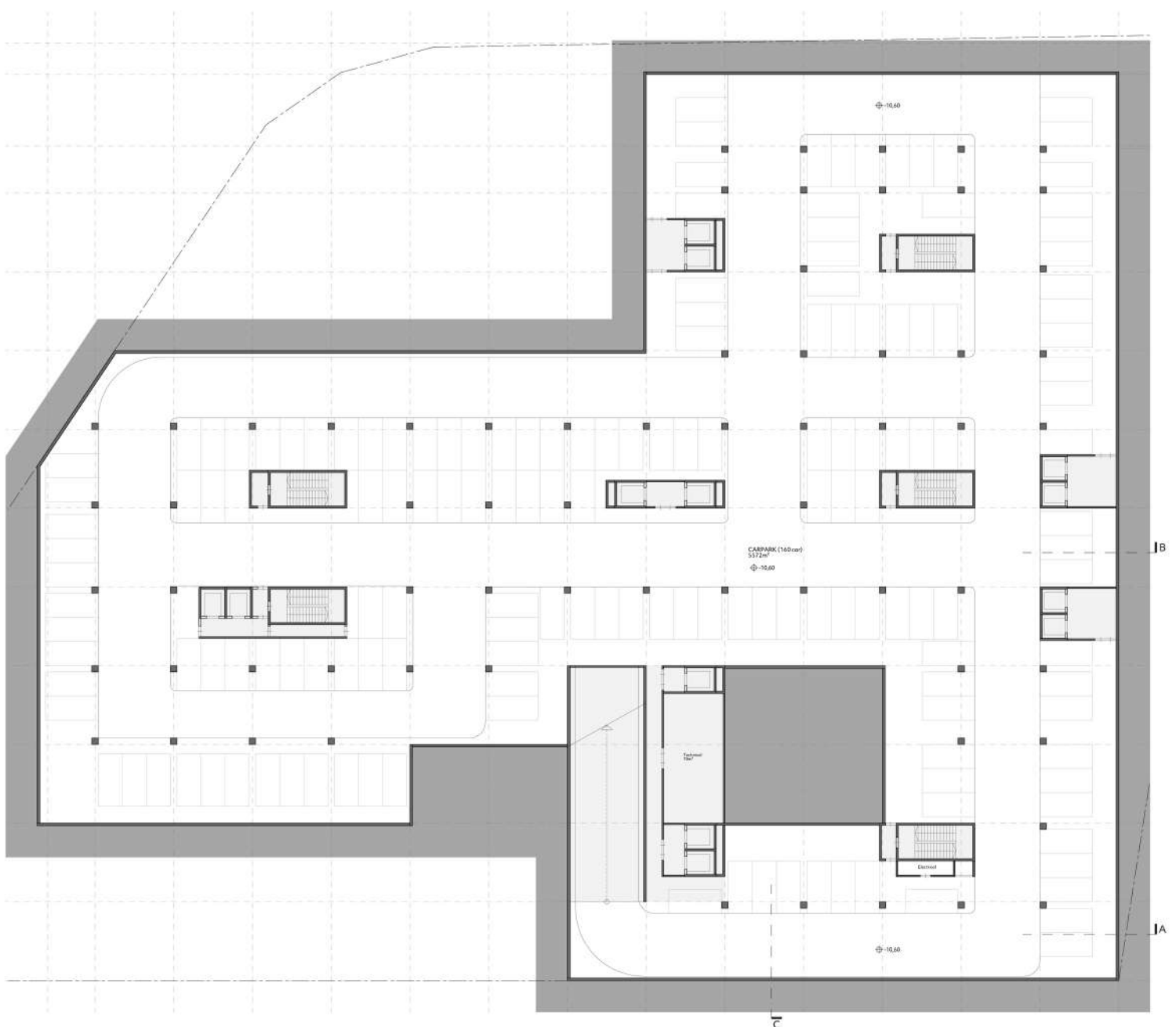


Main Entrance Ground Floor



2nd BASEMENT FLOOR PLAN 1/200
FLOOR AREA : 6255m²

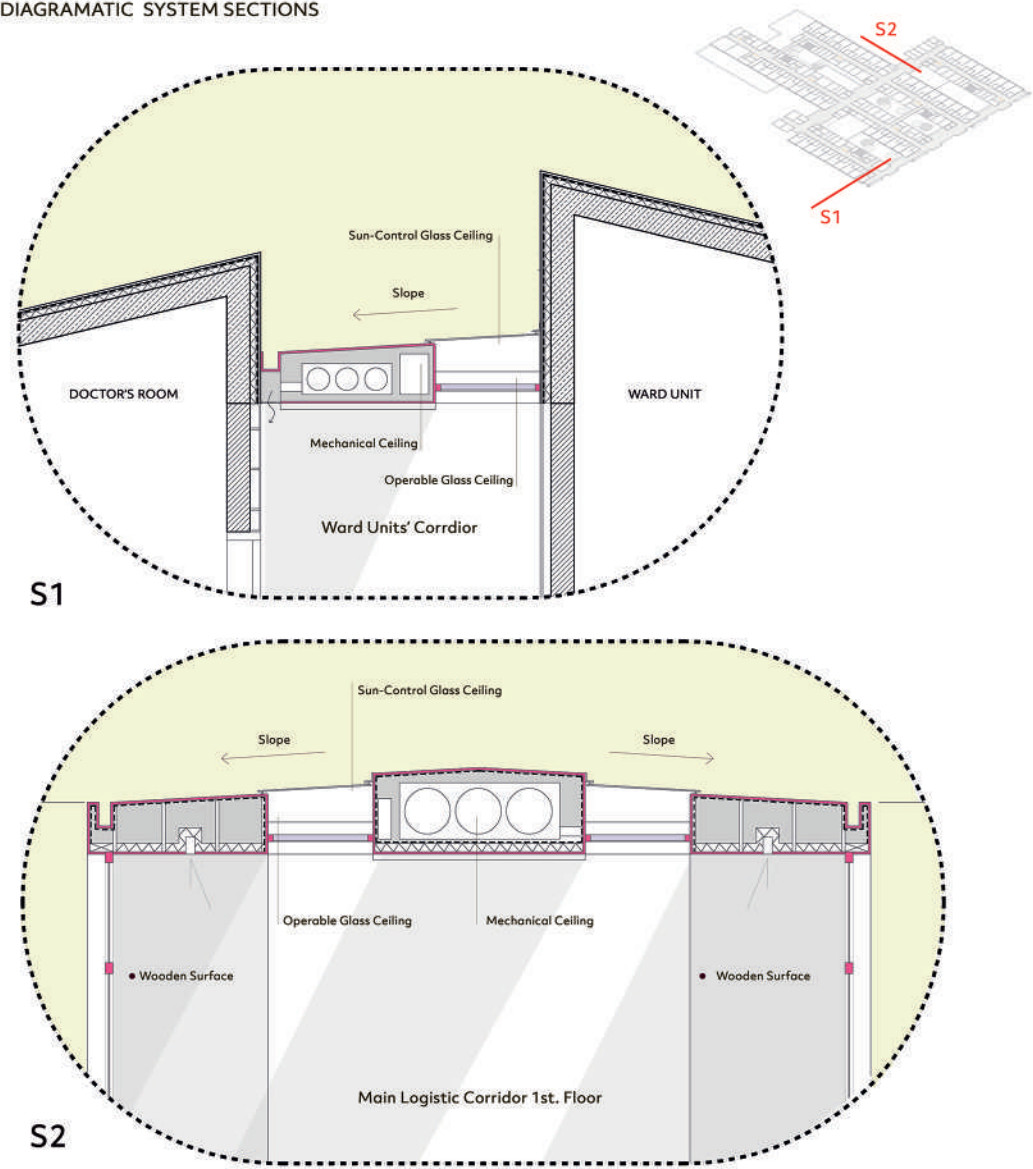
CARPARK AREA
VERTICAL CIRCULATION AND TECHNICAL AREAS



3rd BASEMENT FLOOR PLAN 1/200
FLOOR AREA : 6255m²

CARPARK AREA
VERTICAL CIRCULATION AND TECHNICAL AREAS

DIAGRAMATIC SYSTEM SECTIONS



Glass Ceilings have been further detailed to show "possible" feasible application example. Heat and water insulation would be provided along with the sun-control. Ceilings' surfaces are minimized to have optimal climate control and to obtain space for electro-mechanical channels.



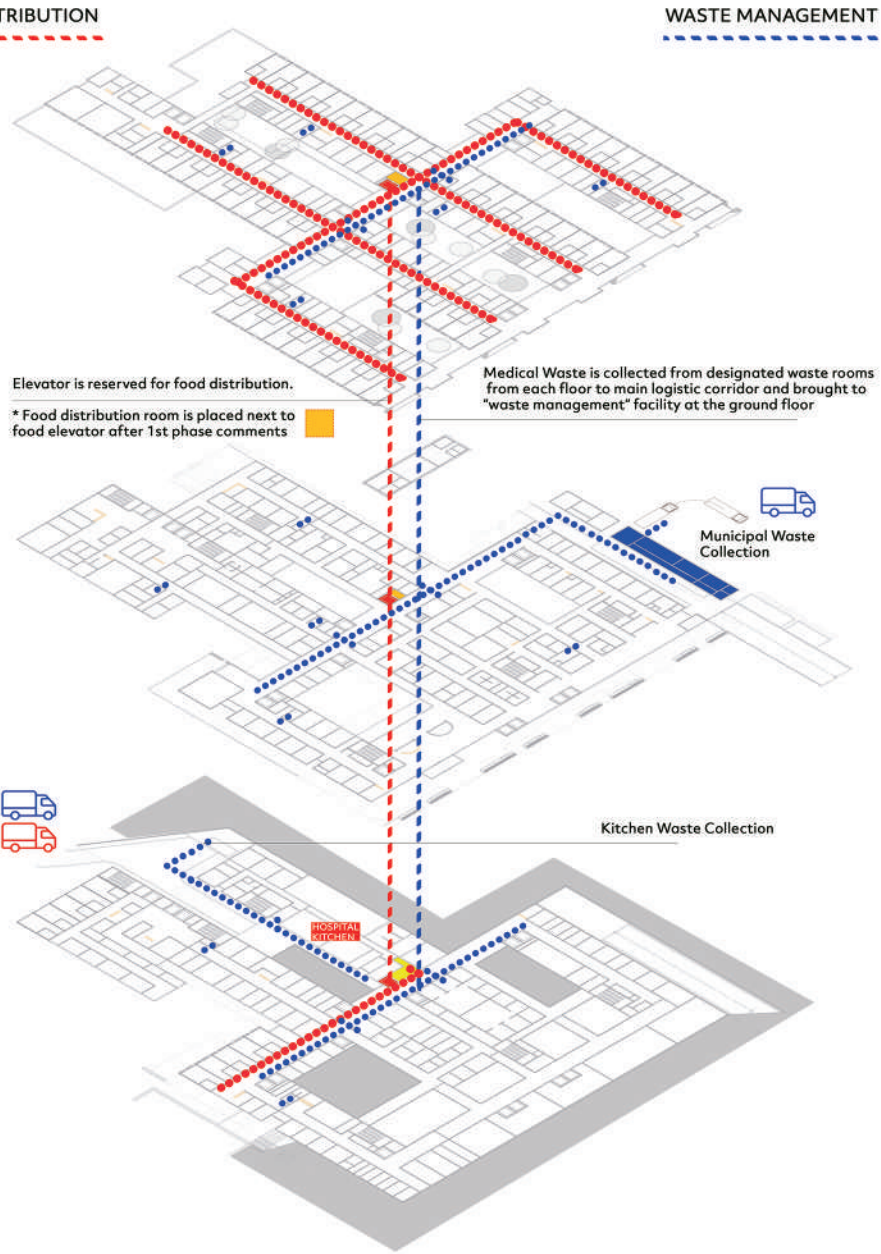
Wards' Corridor

FOOD DISTRIBUTION

1F

GF

B1



WASTE MANAGEMENT

"ICU - ER" CONNECTION

1F

GF

B1



Maternity Ward Facade