Living Tradition: Vernacular Heritage of Bushehr

Moments in Motion: Urban Life in Bushehr

03

GreenHealth Center

Designing a Sustainable Medical Complex

Shiraz University Design Studio 2015-2016

Supervisors:

Prof. Hassan Fallah, Prof.Amin Habibi,

Acknowledgment:

Special thanks to **Eng. Ayub Niazi** for his valuable guidance and support during the project.

How This Project Reflects My Strengths:

Sustainable Design Approach: This project demonstrates my ability to integrate sustainability from the early stages of design. Passive solar strategies such as recessed glazing, sun-shading elements, and natural ventilation are employed to enhance energy efficiency in a hot and humid climate.Creating Functional and Harmonious Layouts: Creating seamless transitions between indoor and outdoor spaces.

Technical Competence in Sustainable Systems: The design reflects a strong command of technical detailing, including the use of biophilic elements like sky terraces and green balconies, as well as materials and façade systems that support thermal performance and occupant well-being

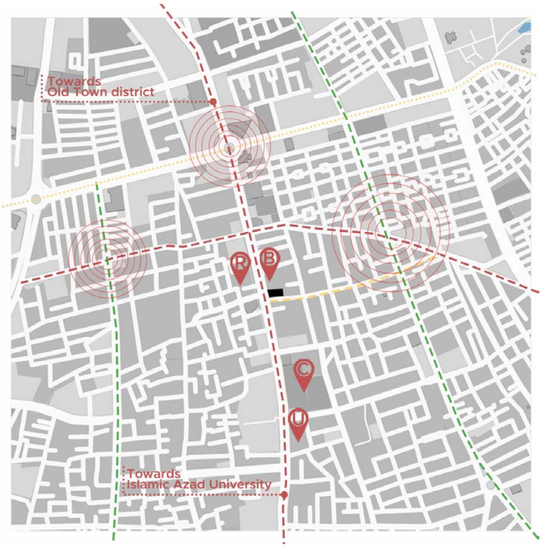
Designing for Complex Programs: Balancing diverse programmatic needs—such as medical offices, retail units, and parking—within a vertical structure showcases my ability to organize complex spatial relationships while maintaining clarity and user accessibility.

Project Overview:

GreenHealth Center is a medical complex in Bushehr, A twelve-story mixed-use building combining health-care and commercial functions. It includes two commercial floors, three parking levels, and medical offices and clinics above. The architecture features staggered glass cladding, recessed windows, and balconies with integrated greenery. Sky terraces and a landscaped rooftop courtyard promote biophilic and sustainable design, while passive solar strategies enhance indoor-outdoor connectivity and climate responsiveness.

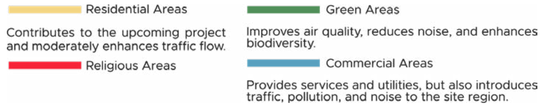
Site Analysis: (28°58'20.4"N 50° 50'10.4"E)

The site, centrally located in Bushehr, spans a 1,200-square-meter rectangular plot. It borders Sangi Street, a major thoroughfare, to the north, and Daying Street, a secondary road, to the south. The surrounding area is characterized by commercial, residential, and religious structures.staggered glass cladding, recessed windows, and balconies with integrated greenery. Sky terraces and a landscaped rooftop courtyard promote biophilic and sustainable design, while passive solar strategies enhance indoor-outdoor connectivity and climate responsiveness.

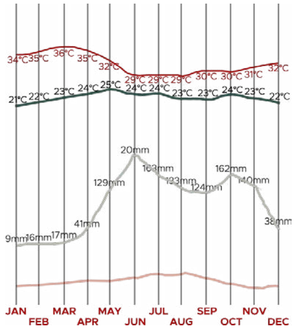


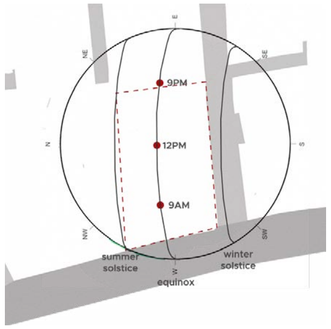
Nearby Land Usage:

The site is in a residential area with moderate traffic, good for connectivity. Nearby green spaces improve air quality, reduce noise, and support biodiversity. However, nearby commercial districts increase traffic, pollution, and noise. These districts offer services but impact the site's environment and acoustics.



Climate Study Seasonal Patterns and Impacts





Climate Graphs:

MAX AVG. TEMP. :	36°C on March
MIN AVG. TEMP. :	21°C on January
Summer Season:	Warm, dry, longer days.
Cols Aeason:	Cold, wet, shorter days.
MAX Rainfall:	JUNE
MIN Rainfall:	JANUARY
MAX Wind Speed:	August to September 15 km/h

Analysis

The design should incorporate sufficient shading—through architectural devices or natural vegetation—to block direct heat and control temperature, ensuring a cooler environment within the site.

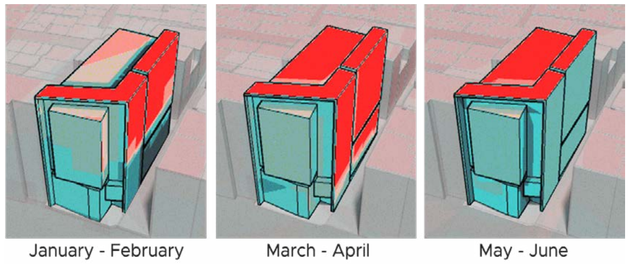
Implementing effective rainwater harvesting and drainage systems is essential for managing water during the month of June and the surrounding period. environment within the site.

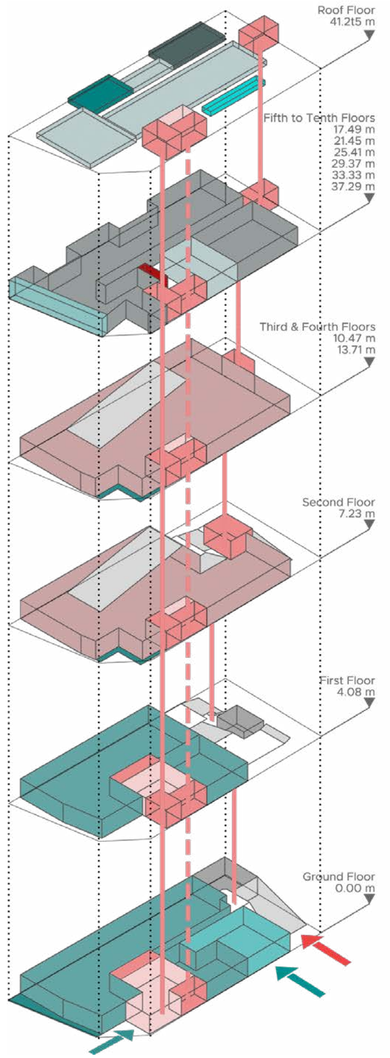
Calculation of Solar Radiation

Through the utilization of Autodesk Revit and Autodesk CFD software, simulations were conducted to obtain hourly values for solar radiation incident on the external surfaces of a bvuilding. These values were further decomposed into their constituent components: direct radiation, diffuse radiation, direct reflected radiation, and diffuse reflected radiation.

The analysis of these simulated values enabled the determination of optimal placements for photovoltaic (PV) panels, double-skin facades (DSF), solar water heating systems, and solar disinfection facilities.

Daylight Duration Average



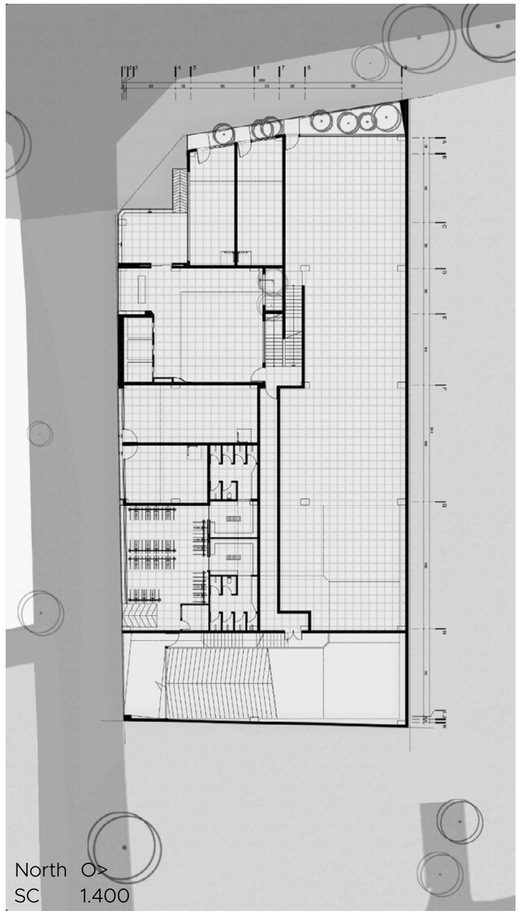


Functional Exonometry

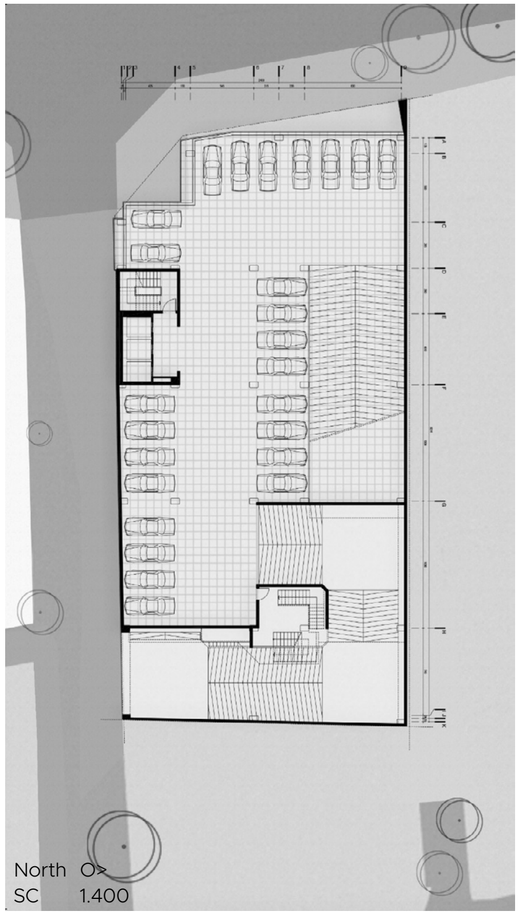
Illustrates the spatial organization of key functions—commercial, medical, circulation, and green zones—within the building's vertical layout.

The ground floor serves as the main entry point, offering an entrance lobby, information desk, retail space, and essential facilities like bike storage, lockers, showers, and gray water systems. The second to fourth floors are dedicated to parking, providing convenient vehicle storage. Floors five to ten house office spaces designed for flexible and productive work environments. The roof accommodates sustainable installations, including solar heaters and desalination units, supporting the building's eco-friendly goals.

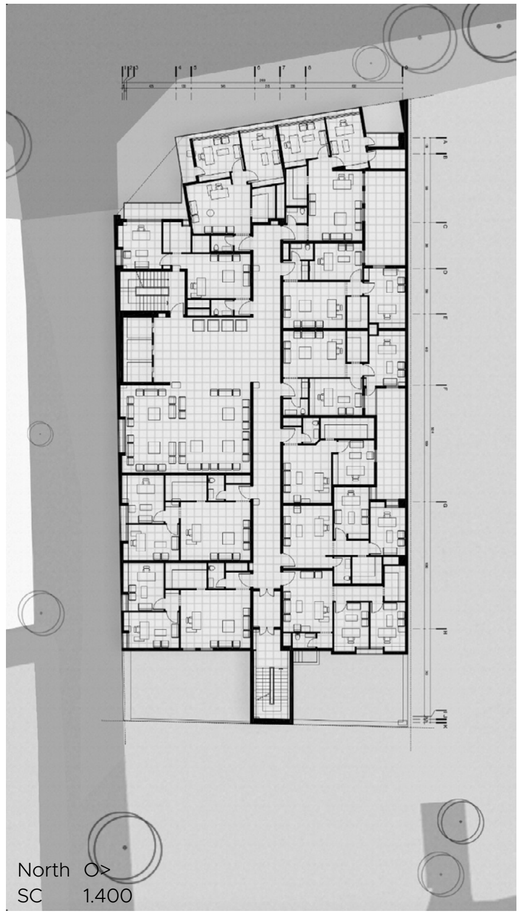
- Public Access
- Welcome/Information
- Bike Access
- Bike Room/Shower/Locker
- Vehicle Access
- Elevator
- Stair
- Parking
- Gray Water Facilities
- Healthcare Unit
- Facade Space
- Social Space
- Solar Heating Facilities
- Solar Water isinfection



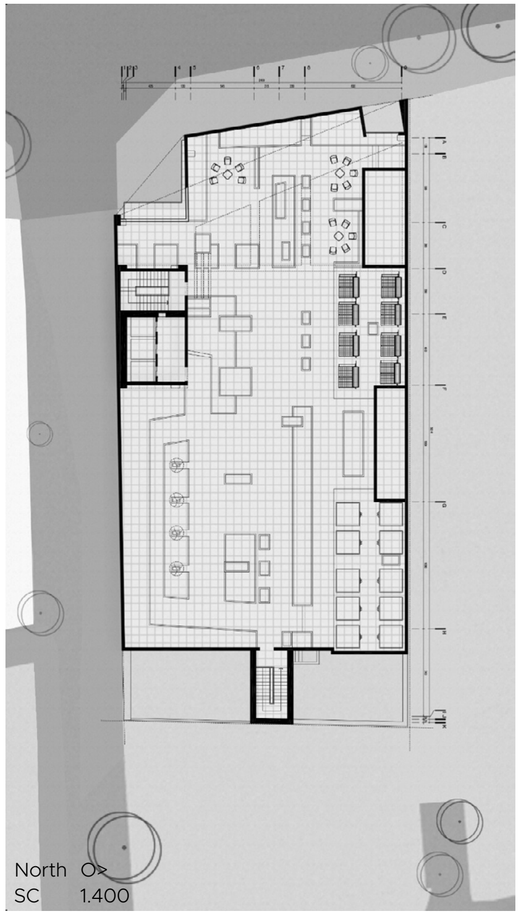
Ground Floor Program: Entry, Retail & Facilities



Parking Layout - Levels 2 to 4



Office Level Functional Layout - Levels 5 to 10



Roof Plan: Solar Heater & Desalination Units