

MULTI SPECIALITY HOSPITAL

A THESIS

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Architecture degree

By

AVINASH B

(39210013)



**DEPARTMENT OF ARCHITECTURE
SCHOOL OF BUILDING AND ENVIRONMENT**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY (DEEMED TO BE UNIVERSITY)
Accredited with Grade "A++" by NAAC | 12B Status by UGC | Approved by AICTE
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119**

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BONAFIDE CERTIFICATE

This is to certify that the Thesis Report is the bonafide work of **Avinash B (39210013)** who carried out the Thesis entitled "**MULTI SPECIALITY HOSPITAL**" under our supervision from December 2024 to May 2024.

Internal Guide
Ar. Shruthi Natarajan

Internal Review Member
Ar. Mohana Gopiraj

External Guide
Ar. Maheshwaran

Dean and Head of the Department
Dr. DEVYANI GANGOPADHYAY

Submitted for Viva voce Examination held on

Internal Examiner

External Examiner

DECLARATION

I, **AVINASH B** hereby declare that the Thesis Report entitled “Multi Speciality Hospital” done by me under the guidance of **Ar.Shruthi Natrajan** (Internal Guide), **Ar.Mohana Gopiraj** (Internal Review Member) and **Ar.Maheshwaran** (External Guide) Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Architecture Degree.

DATE:

PLACE: Chennai

SIGNATURE OF THECANDIDATE

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AVINASH B

THESIS SYNOPSIS

- Multispecialty hospitals are pivotal in delivering comprehensive healthcare services to diverse patient populations.
- The thesis aims to conceptualize and propose a sustainable and patient-centric design for a multispecialty hospital.
- Emphasis is placed on integrating innovative architectural solutions, sustainable practices, and patient-centered care models.

Outline key design principles to guide the development of the multispecialty hospital, including:

- Patient-Centric Design: Prioritize patient comfort, privacy, and accessibility throughout the facility.
- Sustainability: Integrate energy-efficient systems, renewable energy sources, and water conservation measures.
- Flexibility: Design adaptable spaces that can accommodate evolving healthcare technologies and treatment modalities.
- Collaboration: Foster interdisciplinary collaboration and communication among healthcare providers through efficient spatial layout and technology integration

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1.INTRODUCTION

1.1 INTRODUCTION

In the dynamic landscape of healthcare architecture, the design of multi-specialty hospitals stands as a testament to innovation, functionality, and human-centricity. These architectural marvels are not merely buildings but intricate ecosystems meticulously crafted to harmonize the complexities of medical care with the nuances of spatial design. The conception and realization of a multi-specialty hospital demand a delicate balance between the artistry of architecture and the science of healthcare delivery.

At the heart of every multi-specialty hospital lies a profound commitment to providing comprehensive, integrated healthcare services across a spectrum of medical disciplines. From emergency care to specialized surgeries, from diagnostic imaging to rehabilitation, these institutions cater to a diverse array of healthcare needs under one roof, offering patients a seamless continuum of care that transcends traditional boundaries.

The architectural design of a multi-specialty hospital serves as the cornerstone of its functionality, efficiency, and patient experience. Every element, from the layout of clinical departments to the selection of materials, lighting, and spatial configurations, is meticulously planned to optimize workflow, enhance patient comfort, and foster healing environments conducive to recovery.

Innovative design principles play a pivotal role in shaping the identity of multi-specialty hospitals, reflecting their commitment to excellence, sustainability, and patient-centered care. From the integration of advanced medical technologies to the incorporation of biophilic elements that connect patients with nature, modern hospital architecture embodies a holistic approach to healing that extends beyond the confines of conventional medical practice.

Moreover, multi-specialty hospitals serve as dynamic hubs of medical innovation, research, and education, fostering collaboration among healthcare professionals, researchers, and educators. Through the creation of interdisciplinary spaces, simulation labs, and research facilities, these institutions nurture a culture of continuous learning and discovery, driving advancements in medical science and improving patient outcomes.

As we embark on a journey to explore the intricacies of multi-specialty hospital architecture, we delve into a world where design meets healing, where form meets function, and where innovation meets compassion. Through a comprehensive examination of design principles, case

studies, and emerging trends, we unravel the symbiotic relationship between architecture and healthcare, laying the foundation for a new era of patient-centered design in the built environment.

1.2 NEED OF THE PROJECT

The demand for creative infrastructure solutions, changing healthcare dynamics, and urgent societal needs all come together to give rise to the architectural idea for a multispecialty hospital. Several strong reasons motivate this project, all of which highlight how vital it is to build cutting-edge healthcare facilities capable of handling the complex issues facing the industry today:

Growing Healthcare Demands: As the world's population ages and grows, there is a growing need for all-encompassing healthcare services that include a variety of medical disciplines. By providing integrated treatment under one roof and reducing the need for patients to navigate different healthcare facilities for their diverse medical requirements, multi-specialty hospitals play a crucial role in satisfying these expanding healthcare needs.

Improved Patient Experience: Comfort, convenience, and accessibility are major issues for patients in traditional hospitals. Multispecialty hospitals may significantly enhance the entire patient experience by emphasizing architecture that is specifically designed to meet the needs of patients. This covers things like calming surroundings, simple navigation, and facilities that encourage relaxation and well-being.

Optimizing Operational Efficiency: In addition to being good for patients, well-designed hospitals are necessary for healthcare providers to effectively provide high-quality care. Multispecialty hospitals with thoughtful design maximize productivity, simplify patient routes, and promote easy communication between medical staff. Better patient outcomes, shorter wait times, and more staff satisfaction follow from this.

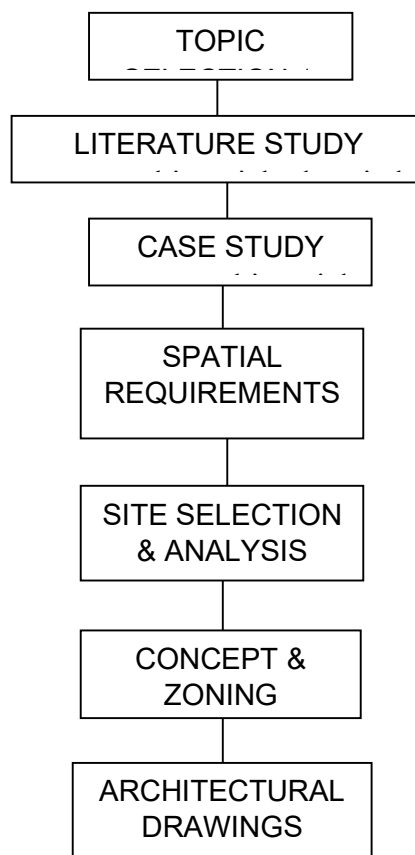
Integration of Advanced Technologies: Hospital infrastructure must change in response to the revolutionary changes in healthcare delivery brought about by the quick advances in medical technology. To offer the best possible patient care and operational efficiency, multispecialty hospitals must incorporate telemedicine capabilities, digital health solutions, and a wide range of innovative medical equipment into their architectural design.

Encouragement of Interdisciplinary Collaboration: Multidisciplinary teams, support personnel, and medical professionals frequently need to work together to provide effective patient care. Multispecialty hospitals, with their shared spaces, interdisciplinary clinics, and collaborative work areas that promote teamwork, communication, and knowledge exchange, offer the perfect setting for this kind of collaboration. Important.

1.3 AIM AND OBJECTIVE

A multispecialty hospital should be designed to prioritize patient care, staff well-being, and operational efficiency. The aim is to create a patient-centric layout that enhances comfort, privacy, and accessibility for all patients. The hospital should foster clinical excellence by integrating advanced medical technology and facilities. Staff well-being should be prioritized through ergonomic workstations, comfortable break areas, and natural light. The hospital should optimize workflow, implement robust safety measures, promote sustainability, foster community engagement, and ensure flexibility and adaptability. A healing environment should be created using natural elements and universal accessibility. Aligning architectural design with these aims can help the hospital fulfil its mission of providing high-quality healthcare services.

1.4 METHODOLOGY



2 LITERATURE STUDY

2.1 SITE SELECTION

The selection of a multispecialty hospital site is crucial for its success and accessibility to patients. Factors to consider include accessibility, size and zoning, demographics and population density, visibility and presence, utilities and infrastructure, natural environment, amenities and services, community impact, future growth and development, and cost and feasibility.

Accessibility is essential for ensuring the hospital is easily accessible to patients, staff, and emergency vehicles. The site should be near major roads, highways, and public transportation facilities, with no significant transportation barriers. The site should also be appropriately zoned for healthcare facilities and comply with local regulations and building codes.

Demographics and population density should be considered to ensure the hospital effectively serves its target patient population. A high visibility and prominence within the community can enhance brand recognition and attract patients. Access to essential utilities, such as water, electricity, gas, and telecommunications, should be ensured. The site should also consider nearby amenities and services that complement the hospital, enhancing the overall patient experience.

Future growth and development trends in the area should be considered, and the cost and feasibility of acquiring and developing the site should be evaluated. By considering these factors, architects can identify the most suitable location for a multispecialty hospital, ensuring its success and sustainability.

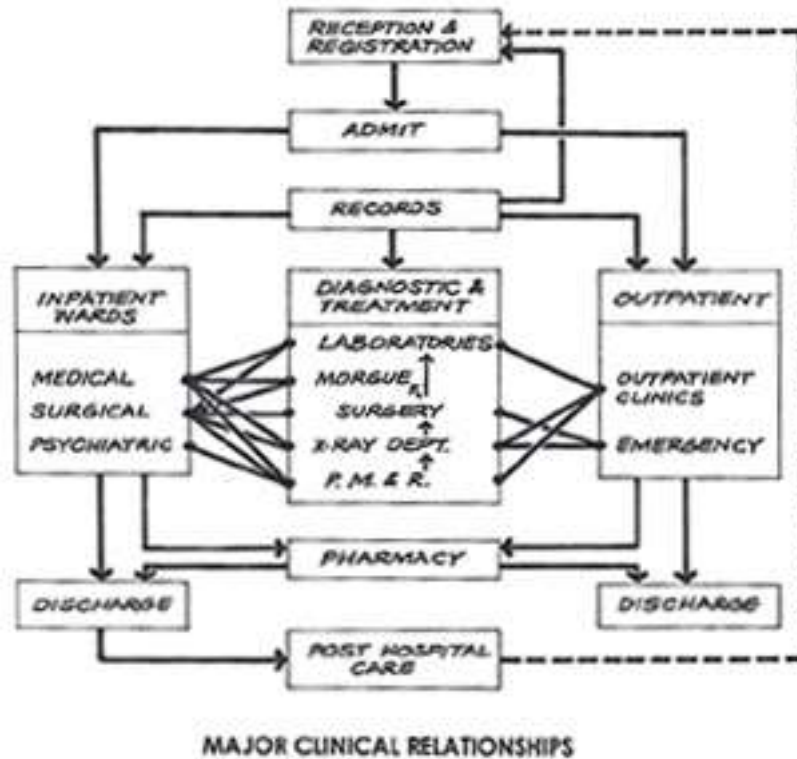
2.2 SITE PLANNING :

Site planning for a multispecialty hospital involves organizing the physical layout of the hospital buildings, parking areas, landscaping, and infrastructure to optimize functionality, efficiency, and patient experience. This involves conducting a thorough site analysis to understand the site's characteristics, dividing the site into functional zones to accommodate different hospital functions and departments efficiently. Designing a logical and efficient circulation system for vehicles, pedestrians, and emergency vehicles within the site is crucial to minimize congestion and ensure smooth traffic flow. Allocate sufficient space for parking facilities to accommodate patients, visitors, staff, and service vehicles, with options for covered or underground parking.

Building orientation optimizes natural light exposure, ventilation, and energy efficiency, ensuring thermal comfort and indoor air quality. Integrating landscaping and green spaces throughout the site creates a healing environment and enhances the aesthetic appeal of the hospital. Efficient distribution of utilities and infrastructure is planned, with utility connections and service entrances strategically located to minimize disruption to hospital operations.

Incorporating emergency preparedness measures into the site plan ensures the hospital can respond effectively to emergencies and disasters. Implementing security measures, such as

controlled access points, security checkpoints, and surveillance cameras, enhances visibility and deters criminal activity. Integrating sustainable design principles and resilience strategies into the site planning process minimizes environmental impact and enhances long-term resilience.



2.3 ZONING :

Site zoning for a multispecialty hospital involves dividing the site into distinct areas or zones to accommodate different functions and activities efficiently. Here's a breakdown of common zoning considerations in architecture for a multispecialty hospital:

Clinical Zone :

- This zone comprises the main hospital buildings housing various clinical departments and specialty units.
- Subzones may include outpatient clinics, inpatient wards, intensive care units (ICUs), operating theatres, diagnostic imaging facilities, and laboratories.
- Organize clinical departments based on patient flow and functional relationships to optimize efficiency and patient care.

Administrative Zone :

- Designate an area for administrative offices, staff support services, and hospital management functions.
- Subzones may include administrative offices, conference rooms, staff lounges, and employee facilities such as locker rooms and break areas.
- Locate administrative areas in close proximity to clinical departments for efficient communication and coordination.

Service Zone :

- Allocate space for support services essential for hospital operations, such as pharmacy, central sterile processing, dietary services, and laundry facilities.
- Ensure convenient access to clinical areas while minimizing disruptions to patient care.
- Consider the efficient flow of materials, supplies, and equipment between service areas and clinical departments.

Public Zone :

- Designate areas accessible to patients, visitors, and the general public, including entrances, waiting areas, lobbies, and circulation corridors.
- Create welcoming and comfortable spaces with ample seating, natural light, and views of greenery or artwork.
- Provide amenities such as information desks, restrooms, retail shops, cafes, and spiritual care spaces to enhance the patient and visitor experience.

Support Zone :

- Reserve space for support functions that facilitate hospital operations, such as maintenance, facilities management, security, and parking.
- Subzones may include mechanical rooms, storage areas, loading docks, security offices, and parking facilities for staff and visitors.
- Ensure efficient circulation routes for service vehicles and emergency access while minimizing conflicts with pedestrian and vehicular traffic.

Green Zone :

- Integrate green spaces, landscaping, and outdoor amenities to promote healing, relaxation, and wellness.
- Designate areas for gardens, courtyards, walking paths, and therapeutic landscapes that provide opportunities for patients, visitors, and staff to connect with nature.
- Incorporate sustainable landscaping practices, such as native plantings, rain gardens, and permeable surfaces, to enhance biodiversity and mitigate environmental impacts.

Emergency Zone :

- Establish designated areas and facilities for emergency response and disaster preparedness.
- Include spaces for ambulance drop-off, triage, decontamination, mass casualty management, and helipad operations.
- Ensure clear signage, wayfinding, and access routes for emergency vehicles and personnel during crisis situations.

Expansion Zone :

- Reserve land for future expansion and development to accommodate the hospital's growth and evolving healthcare needs.
- Plan for phased construction and infrastructure upgrades to minimize disruptions to ongoing hospital operations.
- Anticipate future changes in medical technology, healthcare delivery models, and patient demographics when planning expansion areas.

By zoning the site effectively, architects can create a well-organized and functional environment for a multispecialty hospital that supports efficient operations, enhances patient care, and promotes healing and well-being.

2.4 OUT PATIENT DEPARTMENT :

Designing the Outpatient Department (OPD) for a multispecialty hospital requires careful consideration of patient flow, functional requirements, and amenities to ensure efficient operations and a positive patient experience. Here are key architectural considerations for designing the OPD:

Reception and Waiting Area :

- Design a spacious and welcoming reception area where patients can check in, register, and wait for their appointments.

- Provide comfortable seating, adequate lighting, and clear signage to help patients navigate the space easily.
- Consider separate waiting areas for different specialties to minimize congestion and maintain patient privacy.

Consultation Rooms :

- Allocate consultation rooms for physicians, specialists, and other healthcare providers to conduct patient assessments, examinations, and consultations.
- Ensure each consultation room is equipped with essential medical furniture, equipment, and technology for patient evaluation and diagnosis.
- Incorporate privacy measures such as soundproofing and visual barriers to ensure confidentiality during consultations.

Procedure Rooms :

- Include procedure rooms for minor treatments, diagnostic procedures, and outpatient surgeries that do not require hospitalization.
- Equip procedure rooms with specialized medical equipment, monitoring devices, and surgical instruments as needed for specific procedures.
- Design the layout to optimize workflow and infection control practices, with easy access to supplies, waste disposal, and handwashing facilities.

Diagnostic Facilities :

- Integrate diagnostic facilities such as radiology, laboratory, and imaging services within or adjacent to the OPD for convenient access by patients and clinicians.
- Provide dedicated areas for diagnostic equipment such as X-ray machines, ultrasound scanners, and blood sample collection stations.
- Ensure efficient patient flow between consultation rooms and diagnostic areas to minimize wait times and facilitate timely diagnosis and treatment.

Specialty Clinics :

- Allocate space for specialty clinics and departments within the OPD to accommodate the diverse medical needs of patients.

- Designate separate areas or zones for different specialties such as cardiology, orthopedics, dermatology, ophthalmology, etc., with appropriate signage for easy identification.
- Customize each specialty clinic to meet the specific requirements of the medical specialty, including equipment, furnishings, and patient amenities.

Support Spaces :

- Include support spaces such as nursing stations, medication dispensing counters, and patient education areas to facilitate clinical care and patient education.
- Provide adequate storage space for medical supplies, equipment, and patient records to ensure efficient operations and compliance with regulatory requirements.
- Incorporate staff workstations and communication systems to enable collaboration and coordination among healthcare providers within the OPD.

Accessibility and Universal Design :

- Ensure the OPD is accessible to patients with disabilities by incorporating features such as ramps, elevators, and accessible restrooms.
- Designate parking spaces close to the OPD entrance for patients with mobility challenges, and provide wayfinding signage with universal symbols for easy navigation.

Healing Environment :

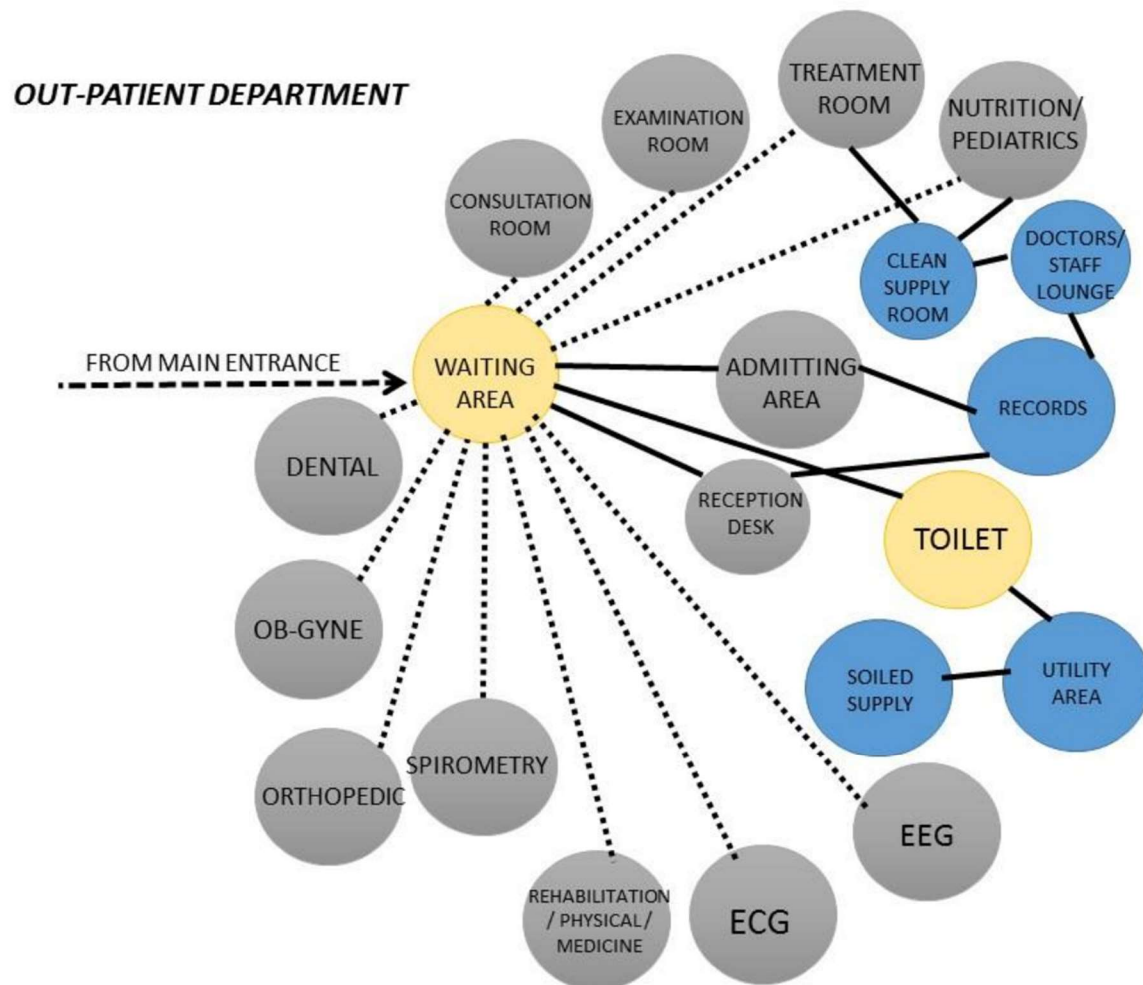
- Enhance the ambiance of the OPD with natural light, soothing colors, and artwork to create a calming and healing environment for patients.
- Incorporate indoor plants, greenery, and views of nature to promote relaxation and well-being during the patient's visit.

Technology Integration :

- Integrate technology infrastructure such as electronic health record (EHR) systems, telemedicine capabilities, and patient self-service kiosks to enhance efficiency and communication within the OPD.
- Provide charging stations and Wi-Fi access for patients and visitors to stay connected during their visit.

Infection Control Measures :

- Implement infection control measures such as hand hygiene stations, air filtration systems, and designated isolation rooms to prevent the spread of infections within the OPD.
- Design the layout and furniture placement to facilitate social distancing and minimize close contact between patients in waiting areas and consultation rooms.



By incorporating these architectural considerations into the design of the Outpatient Department, architects can create a functional, patient-centered environment that supports efficient healthcare delivery and promotes positive outcomes for patients and staff alike.

2.5 RADIOLOGY DEPARTMENT :

Designing a radiology department for a multispecialty hospital requires careful planning to ensure efficiency, patient comfort, and safety. Here's a conceptual outline for the architecture:

Location :

Ideally, the radiology department should be centrally located within the hospital for easy access from various departments. It should also have provisions for a separate entrance for emergency cases.

Layout:

The department can be divided into different zones:

- Reception and waiting area: Spacious and comfortable waiting area with seating, reception desk, and registration kiosks.
- Imaging rooms: These should include X-ray, CT scan, MRI, ultrasound, and mammography rooms, each equipped with the necessary machinery and shielding.
- Control rooms: Adjacent to each imaging room for technicians to operate the equipment safely.
- Consultation rooms: For physicians to discuss results and treatment plans with patients.
- Staff areas: Locker rooms, break rooms, and offices for radiologists and technicians.
- Support facilities: Storage for supplies, equipment maintenance area, and IT infrastructure for managing images and data.

Safety : Incorporate lead-lined walls, doors, and windows in imaging rooms to contain radiation exposure. Clear signage and safety protocols should be prominently displayed.

Technology Integration :

Ensure compatibility with the latest imaging technologies and allow for future upgrades. Consider integrating Picture Archiving and Communication Systems (PACS) for digital image storage and retrieval.

Patient Experience :

Design the space to minimize anxiety and discomfort for patients. This could include calming decor, privacy screens, and ample lighting.

Accessibility :

Ensure that the department is easily accessible for patients with disabilities, including wheelchair ramps, handrails, and spacious exam rooms.

Ventilation and HVAC:

Install proper ventilation systems to maintain air quality and temperature control, especially in MRI rooms where equipment generates heat.

Efficiency:

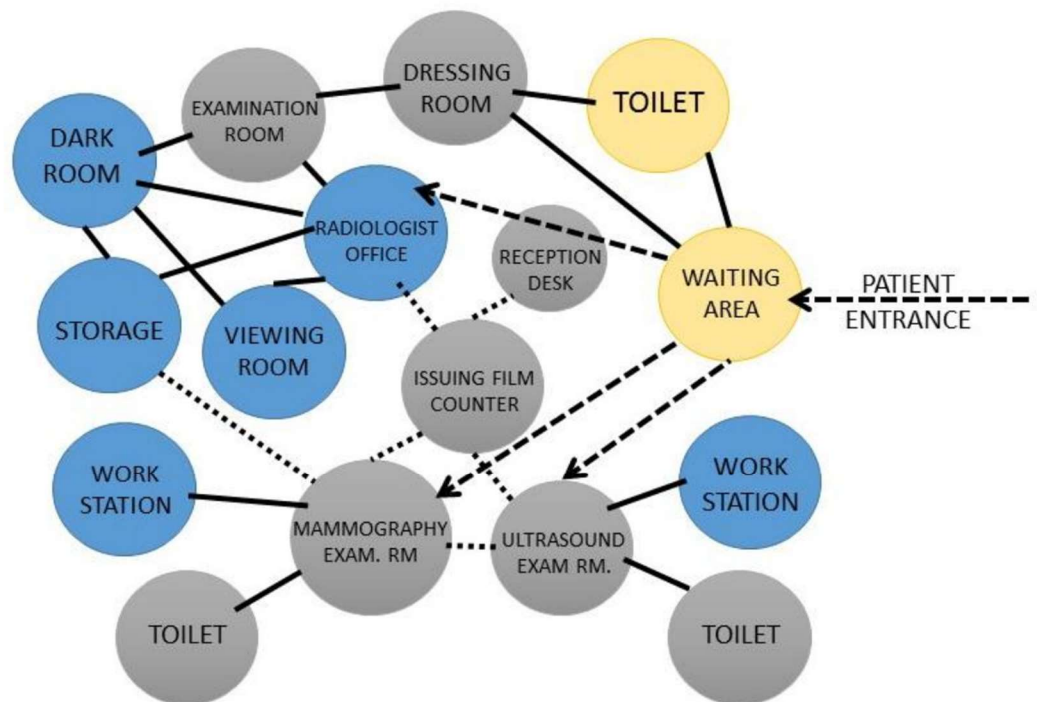
Optimize the layout to facilitate smooth patient flow and minimize wait times. Design workflows that reduce unnecessary steps for staff and maximize equipment utilization.

Flexibility:

Design the space with modular elements that can be easily reconfigured to accommodate changes in technology or workflow.

Regulatory Compliance:

Ensure that the design complies with all relevant regulations and standards, including those set by medical associations and government agencies.

RADIOLOGY DEPARTMENT

2.6 PATHOLOGY DEPARTMENT :

Designing a pathology department for a multispecialty hospital involves creating a space that supports the accurate and efficient analysis of patient samples while prioritizing safety, hygiene, and workflow optimization. Here's a conceptual outline for the architecture:

Location and Layout:

Similar to the radiology department, the pathology department should be strategically located within the hospital for easy access from different departments. It should be designed with separate zones for various activities:

Reception and waiting area: A welcoming space for patients and caregivers with seating, reception desk, and registration kiosks.

Sample collection area: Designated space for collecting and processing patient samples, including blood draws, tissue biopsies, and other specimens.

Laboratory rooms: These should include sections for histology, microbiology, hematology, and clinical chemistry, each equipped with specialized equipment and workstations.

Pathologist's offices: Private offices for pathologists to review and interpret results, consult with colleagues, and communicate with other healthcare providers.

Support facilities: Storage for reagents and supplies, equipment maintenance area, and administrative offices.

Safety and Hygiene:

Implement measures to ensure the safety of staff and patients and prevent contamination of samples:

Design laboratory spaces with proper ventilation systems and fume hoods to remove hazardous fumes and airborne particles.

Install appropriate biosafety cabinets and equipment for handling infectious materials.

Incorporate features such as non-porous surfaces, easily cleanable materials, and designated handwashing stations to maintain hygiene standards.

Workflow Optimization:

Design the layout to facilitate a smooth workflow and minimize turnaround times for sample processing and analysis:

Arrange workstations and equipment in a logical sequence to support the sequential steps of sample processing, analysis, and reporting.

Minimize the need for staff to backtrack or cross paths by optimizing the flow of samples through the laboratory.

Incorporate automation and robotics where possible to streamline repetitive tasks and increase throughput.

Technology Integration:

Ensure that the department is equipped with state-of-the-art laboratory equipment and information systems to support accurate and timely analysis:

Invest in advanced diagnostic instruments, such as automated analyzers and digital imaging systems, to enhance the efficiency and accuracy of testing.

Implement Laboratory Information Management Systems (LIMS) for tracking samples, managing data, and generating reports.

Patient Privacy: Design the space with consideration for patient privacy and confidentiality, particularly in areas where sensitive information is discussed or displayed.

Accessibility: Ensure that the department is accessible to patients with disabilities, including wheelchair ramps, handrails, and accessible restroom facilities.

Regulatory Compliance: Ensure that the design complies with all relevant regulations and standards, including those related to laboratory safety, medical waste management, and patient confidentiality.

2.7 INPATIENT DEPARTMENT :

Designing the inpatient department for a multispecialty hospital is a complex endeavor that involves integrating various architectural elements to ensure efficient patient care, staff workflow, and safety. Let's delve into the detailed aspects of such a design:

Layout and Space Planning :

- The layout should be designed to accommodate different specialties, such as cardiology, orthopedics, neurology, etc. Each specialty may require specific equipment, facilities, and patient care protocols.

- Space planning involves allocating areas for patient rooms, nursing stations, doctor consultation rooms, treatment rooms, and support services like pharmacies and diagnostic centers.

- Efficient circulation routes should be planned to minimize patient transport time and staff movement. Separation of public and private areas, such as lobbies/waiting rooms and patient care zones, is essential.

Patient Rooms :

- Patient rooms should prioritize comfort, privacy, and functionality. Each room should have adequate space for a bed, medical equipment, storage, and a restroom.
- Consideration should be given to patient comfort features like adjustable lighting, temperature control, entertainment options, and views of nature if possible.
- Accessibility standards must be met to accommodate patients with disabilities, including wheelchair accessibility and appropriate bathroom facilities.

Medical Facilities :

- Specialized medical facilities such as operating rooms, procedure rooms, and imaging centers need to be integrated into the design.
- These areas should be designed to meet stringent healthcare standards, with proper ventilation, infection control measures, and access to medical gases and utilities.
- Isolation rooms may be necessary for patients with contagious diseases, equipped with negative pressure systems to prevent the spread of infections.

Nursing Stations :

- Nursing stations should be strategically positioned to provide visibility and access to patient rooms while maintaining privacy.
- These stations should be equipped with computers, communication devices, medical supplies, and ergonomic furniture to support efficient patient care documentation and coordination among staff members.

Support Services :

- Ancillary services like pharmacies, laboratories, and imaging centers should be seamlessly integrated into the inpatient department design, with easy access for both patients and staff.
- Waiting areas for patients and their families should be designed with amenities such as comfortable seating, restrooms, and refreshment facilities.

Safety and Security :

- Safety measures such as access control systems, surveillance cameras, and emergency response protocols should be implemented throughout the department.
- Compliance with fire safety regulations is paramount, including proper exits, fire-rated construction materials, and smoke detection systems.

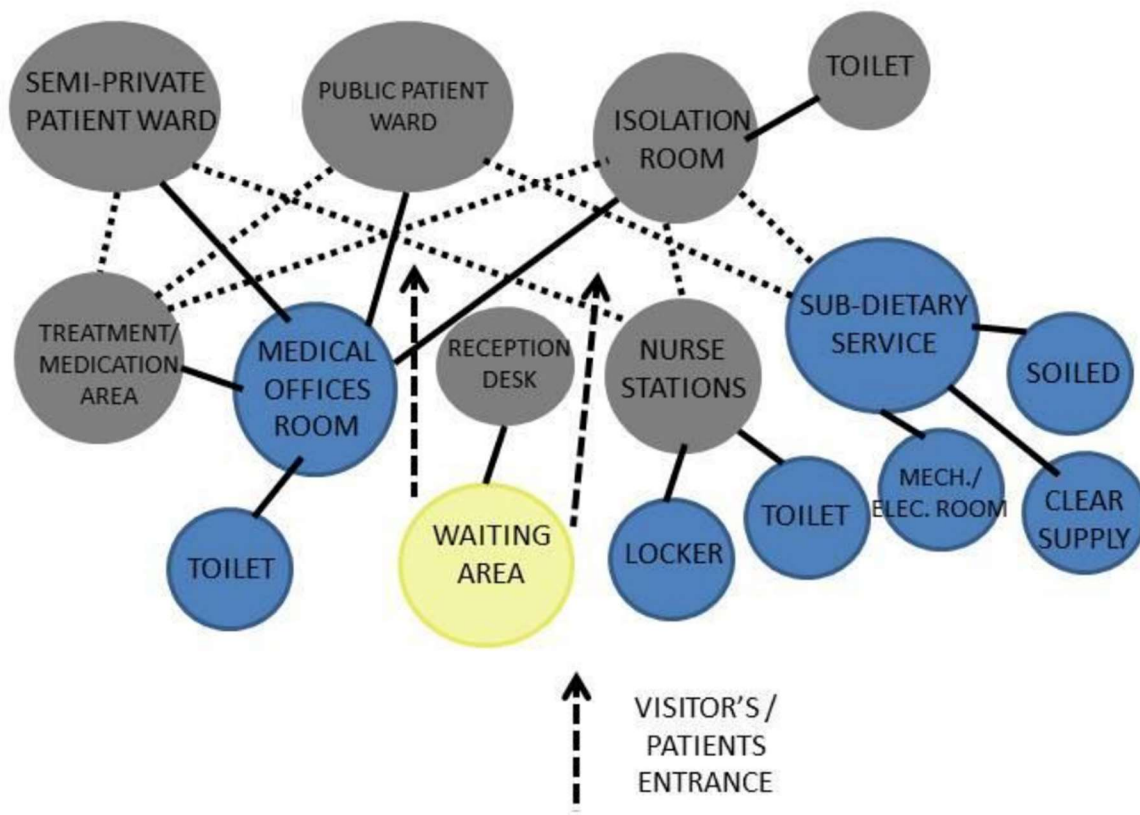
Aesthetic and Environmental Factors :

- Incorporating elements of biophilic design, such as natural light, indoor plants, and views of nature, can promote healing and well-being for patients and staff.
- Materials and finishes should be selected for durability, ease of cleaning, and resistance to microbial growth to maintain a hygienic environment.
- The architectural design should reflect the hospital's branding and create a cohesive aesthetic throughout the inpatient department.

Future Flexibility :

- Designing for future flexibility involves anticipating changes in technology, medical practices, and patient demographics.
- Modular construction and flexible layouts can accommodate future expansion or modifications to meet evolving needs.

IN-PATIENT NURSING WARD DEPARTMENT



2.8 MATERNITY WARD :

Designing a maternity ward within a multispecialty hospital requires special attention to the unique needs of expecting mothers, newborns, and their families. Here's a detailed overview of considerations for architectural design:

Layout and Space Planning:

The layout should provide a welcoming and comforting environment for expecting mothers and their families.

Separate areas should be designated for antenatal, labor, delivery, postnatal, and neonatal care.

Space planning should include private rooms for labor and delivery, postpartum recovery rooms, nurseries, and support areas such as nursing stations, consultation rooms, and family waiting areas.

Labor and Delivery Rooms:

Labor and delivery rooms should be spacious enough to accommodate medical equipment, support persons, and provide comfort to the mother during childbirth.

Consideration should be given to features like adjustable lighting, temperature control, birthing aids, and privacy curtains or screens.

Integration of medical gases, monitoring equipment, and emergency response systems is essential for safe childbirth.

Postpartum Recovery Rooms:

Postpartum recovery rooms should provide a comfortable and private space for mothers to rest and bond with their newborns.

Each room should have space for a bed, baby bassinet, seating for family members, and a private bathroom with facilities for postpartum care.

Incorporating amenities like breastfeeding support, baby care stations, and educational materials for new parents can enhance the experience.

Neonatal Care Unit (NICU):

If the hospital offers neonatal care services, a dedicated NICU should be included in the maternity ward design.

NICU rooms should be equipped with specialized medical equipment for premature or critically ill newborns, as well as facilities for parents to stay close to their babies.

Consideration should be given to infection control measures, noise reduction, and privacy for families during their stay in the NICU.

Family Waiting and Support Areas:

Designated waiting areas should be provided for families, equipped with comfortable seating, refreshments, and amenities like restrooms and play areas for siblings.

Consultation rooms should be available for discussions between medical staff and families, ensuring privacy and comfort during sensitive conversations.

Safety and Security:

Safety features such as secure access controls, surveillance cameras, and emergency response systems should be integrated into the design to ensure the well-being of patients, newborns, and staff.

Special attention should be given to infection control measures to prevent the spread of infections among vulnerable populations like newborns.

Aesthetic and Environmental Considerations:

Soft, soothing colors and natural materials can create a calming atmosphere conducive to relaxation and healing for mothers and families.

Access to natural light and views of nature can help reduce stress and promote well-being for patients and staff in the maternity ward.

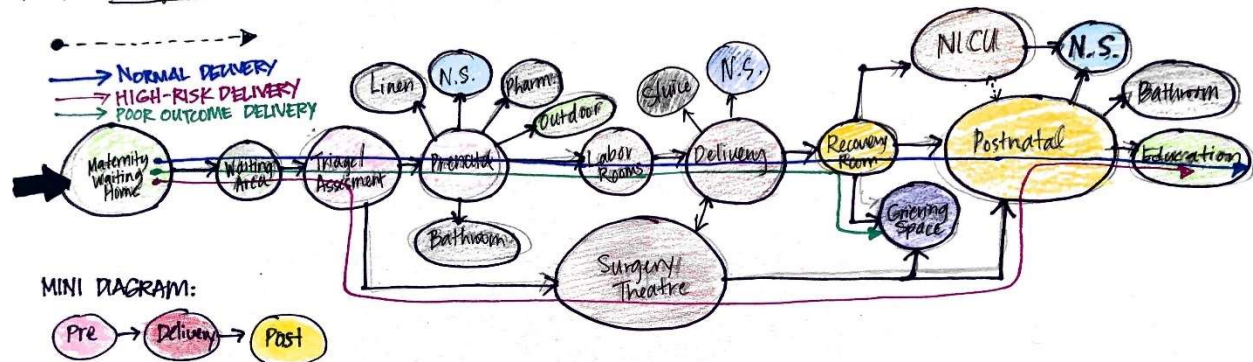
Flexibility and Future Expansion:

Designing with flexibility in mind allows for future modifications or expansion of the maternity ward to accommodate changes in patient volumes, medical technology, or healthcare practices.

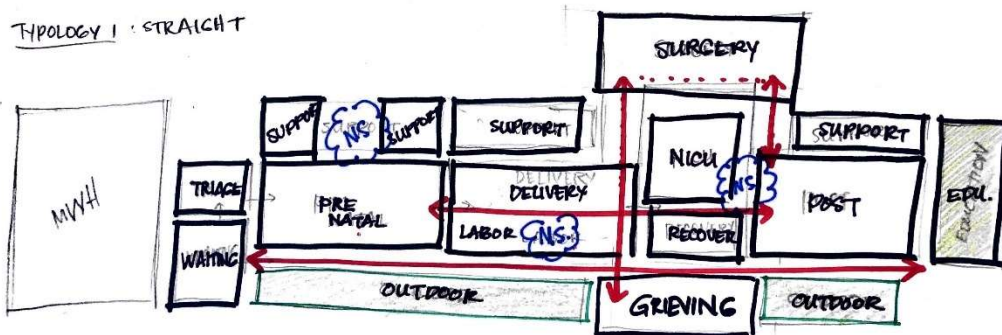
Modular construction techniques and flexible room layouts can facilitate easy adaptation to evolving needs without major disruptions to hospital operations.

By incorporating these considerations into the architectural design of the maternity ward, designers can create a supportive and nurturing environment that promotes the health and well-being of expecting mothers, newborns, and their families within the context of a multispecialty hospital. Collaboration between architects, healthcare professionals, and facility managers is crucial to ensure that the design meets the functional requirements and regulatory standards of the healthcare facility.

Typology 1: Straight Path



Typology 1: STRAIGHT



2.9 DIALYSIS UNIT :

Designing a dialysis unit within a multispecialty hospital requires careful planning to ensure the comfort, safety, and efficiency of patients undergoing dialysis treatment. Here's a detailed exploration of the architectural considerations for a dialysis unit:

Layout and Space Planning :

- The layout should facilitate a smooth patient flow from check-in to treatment and discharge.
- Allocate space for reception and waiting areas, consultation rooms, treatment stations, staff workstations, and support facilities such as bathrooms and utility rooms.
- Design the layout to ensure privacy for patients during treatment while allowing staff visibility and easy access for monitoring.

Treatment Stations :

- Dialysis treatment stations should be designed for comfort and efficiency, with considerations for patient accessibility and ergonomic design of chairs or beds.
- Each station should have space for dialysis machines, medical supplies, and equipment, as well as provisions for patient monitoring and emergency response.
- Ensure adequate space between treatment stations to maintain patient privacy and accommodate medical staff during procedures.

Water Treatment and Dialysis Machines :

- Designated areas should be provided for water treatment systems and dialysis machines, with proper ventilation and drainage to ensure safe operation.
- Adequate space should be allocated for maintenance access and storage of consumables and spare parts.

Patient Amenities :

- Provide amenities such as TVs, Wi-Fi, and reading materials to enhance the patient experience during treatment.
- Comfortable seating, adjustable lighting, and temperature control can help improve patient comfort during dialysis sessions.

Infection Control:

- Implement infection control measures such as antimicrobial surfaces, hand hygiene stations, and strict cleaning protocols to minimize the risk of infection transmission.
- Design ventilation systems to maintain clean air circulation and minimize the spread of airborne contaminants.

Staff Work Areas:

- Design work areas for medical staff, including nurses' stations, charting areas, and storage for medical supplies and equipment.
- Ensure visibility and communication between staff members to facilitate collaboration and efficient patient care.

Emergency Response :

- Design emergency response systems, including alarm systems, emergency exits, and equipment for cardiac arrest or other medical emergencies.
- Ensure staff are trained in emergency procedures and that equipment is easily accessible and regularly maintained.

Accessibility and Universal Design :

- Ensure that the dialysis unit is accessible to patients with disabilities, with features such as ramps, handrails, and accessible restrooms.
- Incorporate universal design principles to accommodate patients with varying needs and mobility levels.

Privacy and Dignity :

- Design the unit to uphold patient privacy and dignity, with private spaces for consultations and changing areas.
- Ensure that noise levels are kept to a minimum to create a calm and soothing environment for patients undergoing treatment.

Flexibility and Scalability :

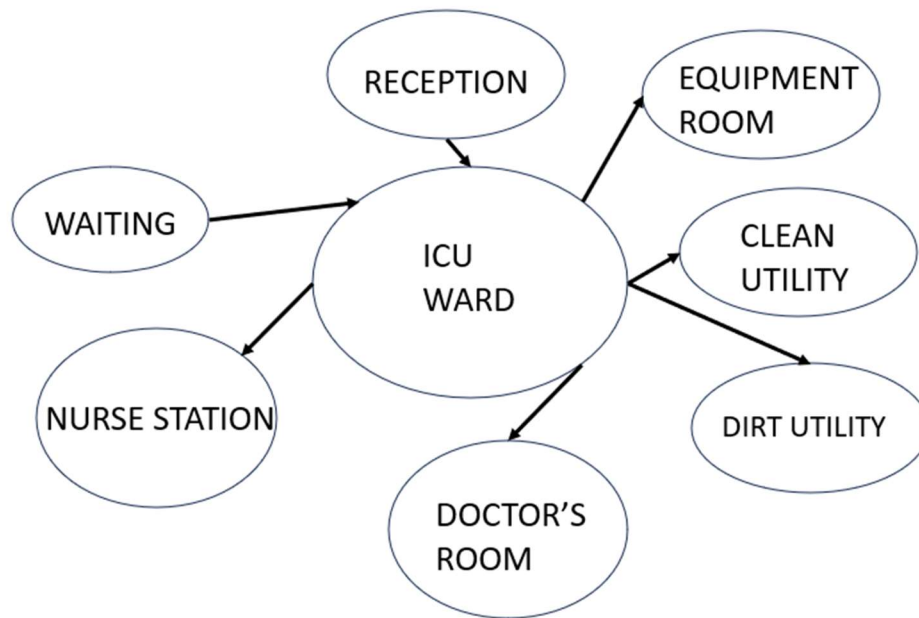
- Design the dialysis unit with flexibility to accommodate changes in patient volume, technology, and treatment modalities.
- Consider modular construction or flexible room layouts to allow for future expansion or reconfiguration of the unit.

By incorporating these architectural considerations, designers can create a dialysis unit within a multispecialty hospital that meets the unique needs of patients undergoing dialysis treatment while ensuring the efficient operation of the facility and the safety and well-being of patients and staff. Collaboration between architects, healthcare professionals, and facility managers is essential to ensure that the design meets regulatory standards and provides a supportive environment for patients undergoing dialysis treatment.

2.10 INTENSIVE CARE UNIT :

Designing the Intensive Care Unit (ICU) within a multispecialty hospital is a critical aspect of healthcare architecture, as it involves creating a specialized environment to provide life-saving care to critically ill patients. Here's a detailed exploration of the architectural considerations for an ICU

ICU



Layout and Space Planning:

The layout should facilitate efficient patient monitoring, access to medical equipment, and staff workflow.

Allocate space for patient rooms, nursing stations, medication rooms, consultation areas, and support facilities such as utility rooms and storage areas.

Design the layout to allow for easy access to each patient room while maintaining privacy and confidentiality.

Patient Rooms:

ICU patient rooms should be spacious enough to accommodate medical equipment, staff, and visitors while providing comfort and privacy for the patient.

Each room should be equipped with monitoring devices, life support equipment, and medical gas outlets.

Design features such as adjustable lighting, temperature control, and soundproofing to create a healing and calming environment for patients.

Nursing Stations:

Nursing stations should be strategically located to provide visibility and access to patient rooms while allowing for efficient communication and collaboration among staff members.

Equip stations with computers, communication devices, and medical supplies to support patient care documentation and coordination.

Medical Facilities:

Integrate specialized medical equipment such as ventilators, cardiac monitors, infusion pumps, and dialysis machines into the design.

Designate areas for medical procedures, examinations, and surgeries, ensuring proper ventilation and infection control measures.

Include isolation rooms for patients with contagious diseases, equipped with negative pressure systems to prevent cross-contamination.

Support Services:

Allocate space for ancillary services such as pharmacies, laboratories, and imaging centers, ensuring easy access for both patients and staff.

Design waiting areas for patients' families with amenities such as comfortable seating, restrooms, and refreshment facilities.

Safety and Security:

Implement security measures such as access control systems, surveillance cameras, and emergency response protocols.

Ensure compliance with fire safety regulations, including adequate exits, fire-rated construction materials, and smoke detection systems.

Aesthetic and Environmental Factors:

Incorporate elements of biophilic design to promote healing and well-being, such as natural light, indoor plants, and views of nature.

Choose materials and finishes that are durable, easy to clean, and resistant to microbial growth.

Ensure that noise levels are kept to a minimum to create a calm and soothing environment for patients.

Flexibility and Future Expansion:

Design the ICU with scalability in mind to accommodate future changes in technology, medical practices, and patient volumes.

Allow for modular construction and flexible layouts that can adapt to evolving needs over time.

By considering these architectural factors, designers can create an ICU within a multispecialty hospital that provides the highest level of care for critically ill patients while ensuring the safety, comfort, and well-being of both patients and staff. Collaboration between architects, healthcare professionals, and facility managers is essential to ensure that the design meets the functional requirements and regulatory standards of the healthcare facility.

2.11 OPERATION THEATRE :

Designing operation theatres (OTs) in a multispecialty hospital is a critical aspect of healthcare architecture, as it involves creating specialized environments for surgical procedures across various medical specialties. Here's a detailed exploration of the architectural considerations for planning operation theatres:

Layout and Space Planning:

The layout should facilitate efficient patient flow, surgical team movement, and access to medical equipment.

Allocate space for operating rooms, scrub areas, sterile corridors, pre-operative and post-operative recovery areas, and support facilities such as equipment storage and staff lounges.

Design the layout to ensure clear segregation between sterile and non-sterile areas to minimize the risk of surgical site infections.

Operating Rooms:

Operating rooms should be spacious enough to accommodate surgical teams, medical equipment, and support personnel while providing a sterile environment for surgical procedures.

Each operating room should be equipped with specialized surgical lights, anesthesia equipment, surgical tables, monitors, and other essential equipment.

Incorporate features such as laminar airflow systems, anti-static flooring, and smooth, easy-to-clean surfaces to maintain sterility and prevent infection.

Scrub Areas and Sterile Corridors:

Designated scrub areas should be provided for surgical team members to perform hand hygiene and don sterile surgical attire before entering the operating room.

Sterile corridors should be designed to allow for the movement of sterile equipment and supplies between different areas of the hospital without compromising sterility.

Pre-operative and Post-operative Areas:

Pre-operative and post-operative areas should be designed to provide comfort and privacy for patients undergoing surgical procedures.

Recovery rooms should have space for patient beds, monitoring equipment, and facilities for nursing care.

Design features such as adjustable lighting, temperature control, and privacy curtains to enhance patient comfort and recovery.

Medical Facilities:

Integrate specialized medical equipment such as anesthesia machines, surgical instruments, imaging devices, and patient monitoring systems into the design.

Designate areas for medical procedures, examinations, and consultations, ensuring proper ventilation and infection control measures.

Support Services:

Allocate space for support services such as sterilization rooms, equipment storage, and waste disposal facilities, ensuring easy access for staff and minimizing disruption to surgical procedures.

Design waiting areas for patients' families with amenities such as comfortable seating, restrooms, and refreshment facilities.

Safety and Security:

Implement security measures such as access control systems, surveillance cameras, and emergency response protocols to ensure the safety of patients, staff, and visitors.

Ensure compliance with fire safety regulations, including adequate exits, fire-rated construction materials, and smoke detection systems.

Aesthetic and Environmental Factors:

Incorporate elements of biophilic design to promote healing and well-being, such as natural light, indoor plants, and views of nature.

Choose materials and finishes that are durable, easy to clean, and resistant to microbial growth.

Ensure that noise levels are kept to a minimum to create a calm and focused environment for surgical procedures.

By considering these architectural factors, designers can create operation theaters within a multispecialty hospital that provide optimal conditions for surgical procedures across various medical specialties while ensuring the safety, comfort, and well-being of patients and staff.

OPERATION THEATRE



2.12 ACCIDENT AND EMERGENCY DEPARTMENT :

Designing the Accident and Emergency (A&E) department in a multispecialty hospital is crucial as it serves as the first point of contact for patients requiring urgent medical care. Here's a detailed exploration of the architectural planning considerations for an A&E department:

Layout and Space Planning :

- The layout should facilitate efficient patient flow, rapid assessment, and treatment of patients with varying degrees of urgency.
- Allocate space for triage areas, treatment rooms, resuscitation bays, observation areas, consultation rooms, imaging facilities, and support services such as pharmacies and laboratories.

- Design the layout to ensure clear pathways for patient transport, staff movement, and access to medical equipment and supplies.

Triage Areas:

- Triage areas should be strategically located near the entrance to the department to allow for rapid assessment of patients' medical conditions and prioritization of care.

- Designate separate areas for different levels of urgency, such as immediate, urgent, and non-urgent cases, to streamline patient flow and optimize resource allocation.

Treatment Rooms and Resuscitation Bays:

- Treatment rooms should be equipped with essential medical equipment, including examination tables, monitoring devices, and emergency supplies, to provide prompt medical intervention.

- Resuscitation bays should be designed to accommodate advanced life support equipment and a multidisciplinary team for the management of critically ill or injured patients.

- Incorporate features such as crash carts, defibrillators, and emergency medication storage to ensure readiness for medical emergencies.

Observation Areas :

- Observation areas should be provided for patients requiring extended monitoring or further evaluation before disposition.

- These areas should be equipped with patient beds, monitoring devices, and facilities for nursing care, ensuring patient comfort and safety during observation periods.

Consultation Rooms and Imaging Facilities:

- Consultation rooms should be available for medical staff to conduct further assessments, discuss treatment plans, and communicate with patients and their families.

- Imaging facilities such as X-ray rooms, CT scanners, and ultrasound machines should be conveniently located within the department to facilitate prompt diagnostic evaluation.

Support Services:

- Allocate space for support services such as pharmacies, laboratories, and medical records, ensuring seamless coordination of patient care within the department.

- Design waiting areas for patients' families with amenities such as comfortable seating, restrooms, and refreshment facilities.

Safety and Security:

- Implement security measures such as access control systems, surveillance cameras, and emergency response protocols to ensure the safety of patients, staff, and visitors.

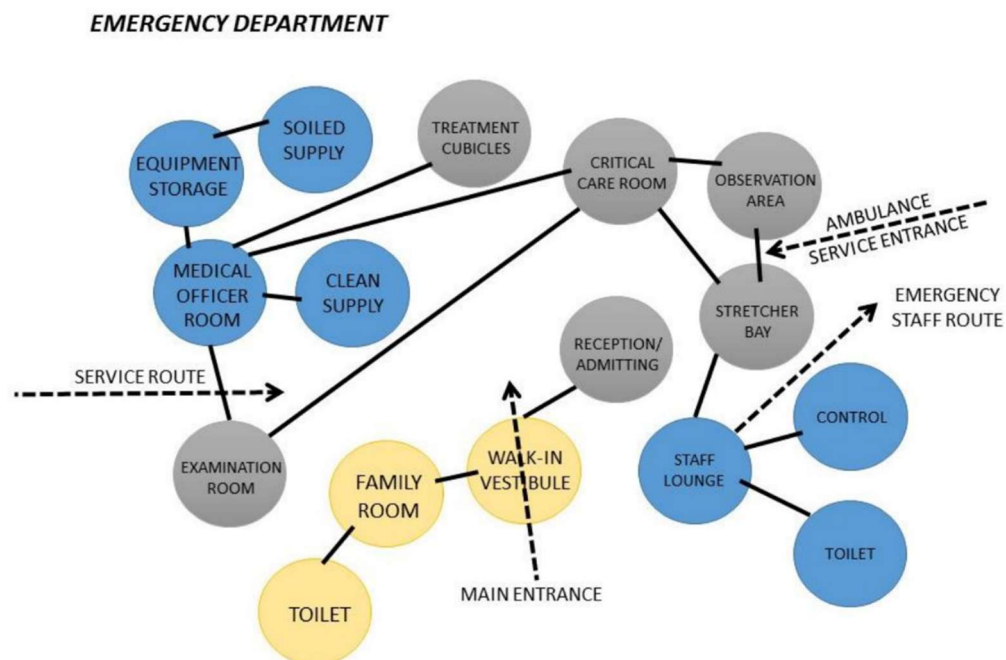
- Ensure compliance with fire safety regulations, including adequate exits, fire-rated construction materials, and smoke detection systems.

Aesthetic and Environmental Factors:

- Incorporate elements of biophilic design to promote healing and well-being, such as natural light, indoor plants, and views of nature.

- Choose materials and finishes that are durable, easy to clean, and resistant to microbial growth.

- Ensure that noise levels are kept to a minimum to create a calm and focused environment for patient care.



2.13 MORTUARY :

Designing a mortuary within a multispecialty hospital involves creating a respectful and functional space for the dignified handling of deceased patients. Here's a detailed exploration of the architectural considerations for planning a mortuary:

Layout and Space Planning:

The mortuary should be located in a discreet area of the hospital, separate from patient care areas, to maintain privacy and dignity.

Allocate space for body storage units, autopsy rooms, viewing areas for families, refrigeration units, and support facilities such as washing and preparation areas.

Design the layout to ensure efficient workflow for mortuary staff and compliance with health and safety regulations regarding the handling of deceased individuals.

Body Storage Units:

Body storage units, also known as cold chambers or refrigeration units, should be designed to accommodate multiple bodies while maintaining appropriate temperature and humidity levels to preserve the integrity of the deceased.

Ensure that the storage units are easily accessible for mortuary staff to retrieve and prepare bodies for autopsy or viewing.

Autopsy Rooms:

Autopsy rooms should be equipped with specialized equipment and facilities for post-mortem examinations, including autopsy tables, sinks, and storage for instruments and specimens.

Design the rooms to allow for proper ventilation and containment of biological hazards, with easy-to-clean surfaces and appropriate disposal systems for biohazardous waste.

Viewing Areas for Families:

Provide designated viewing areas where families can pay their respects to the deceased in a private and dignified setting.

Design the viewing areas with comfortable seating, subdued lighting, and decor that fosters a sense of reverence and tranquility.

Washing and Preparation Areas:

Designate separate areas for washing and preparing the deceased for viewing or burial, with facilities for embalming, dressing, and grooming.

Ensure that these areas are equipped with appropriate fixtures and equipment for handling and preserving the deceased with care and respect.

Support Services:

Allocate space for support services such as administrative offices, storage for funeral supplies and equipment, and facilities for mortuary staff, including changing rooms and restrooms.

Design waiting areas for families with amenities such as comfortable seating, restrooms, and refreshment facilities.

Safety and Security:

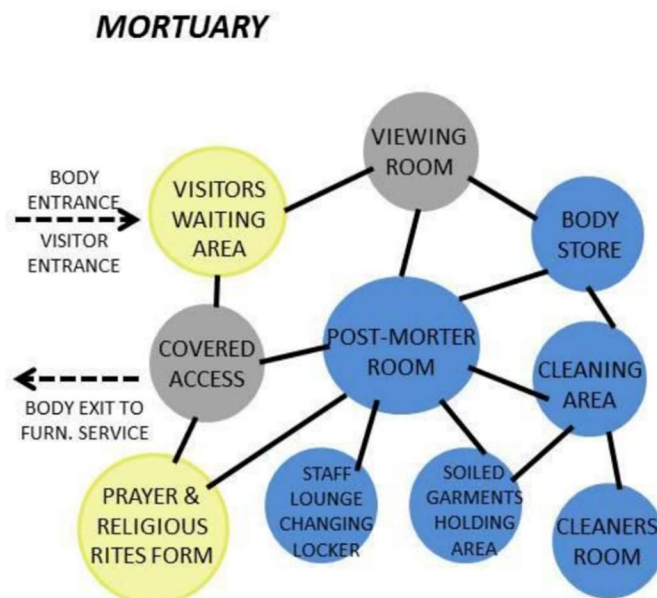
Implement security measures such as access control systems, surveillance cameras, and restricted entry to ensure the safety and security of the mortuary staff and facilities.

Ensure compliance with health and safety regulations, including proper handling and disposal of biohazardous materials and adherence to infection control protocols.

Aesthetic and Environmental Factors:

Although the primary focus of a mortuary is functionality and respect for the deceased, considerations can be made for creating a calm and dignified environment through appropriate lighting, colors, and decor.

Choose materials and finishes that are durable, easy to clean, and resistant to microbial growth to maintain a hygienic environment.



2.14 CSSD :

Designing a Central Sterile Services Department (CSSD) within a multispecialty hospital is crucial for ensuring the safe and efficient sterilization of medical equipment and supplies. Here's a detailed exploration of the architectural considerations for planning a CSSD:

Location and Layout :

- The CSSD should be centrally located within the hospital to facilitate easy access from various departments while maintaining proper workflow and infection control.
- Allocate space for distinct areas such as decontamination, preparation, sterilization, storage, and distribution.
- Design the layout to ensure a unidirectional flow of dirty (contaminated) and clean (sterile) items to minimize the risk of cross-contamination.

Decontamination Area:

- This area is where dirty medical instruments and equipment are received, cleaned, and prepared for sterilization.
- Designate space for manual cleaning sinks, ultrasonic cleaners, mechanical washers, and drying cabinets.
- Ensure proper ventilation and drainage systems to manage hazardous chemicals and biohazardous materials safely.

Preparation Area:

- In this area, cleaned and decontaminated items are inspected, assembled, and packaged before sterilization.
- Allocate space for workbenches, inspection tables, and packaging stations equipped with sealing machines and labeling devices.
- Design the area to facilitate efficient organization and workflow for staff members preparing items for sterilization.

Sterilization Area :

- This is where sterilization processes such as autoclaving, ethylene oxide (EtO) sterilization, or hydrogen peroxide gas plasma sterilization take place.
- Provide space for sterilization equipment such as autoclaves, sterilization chambers, and associated machinery.
- Ensure proper ventilation, exhaust systems, and safety measures to manage heat, steam, and hazardous gases generated during the sterilization process.

Storage Area:

- Sterile items awaiting distribution should be stored in dedicated storage areas to prevent contamination.
- Designate space for shelving units, storage cabinets, and carts with appropriate airflow and temperature controls.

- Ensure that storage areas are organized and labeled to facilitate easy retrieval of sterile items when needed.

Distribution Area:

- Sterile items are dispatched from this area to various departments within the hospital.
- Provide space for packing and loading stations, as well as holding areas for ready-to-use sterile supplies.
- Ensure proper tracking and documentation of distributed items to maintain inventory control and traceability.

Support Services :

- Allocate space for support services such as administrative offices, staff break rooms, and utility rooms for equipment maintenance and storage.
- Design waiting areas for CSSD staff with amenities such as seating, restrooms, and refreshment facilities.

2.15 KITCHEN :

Designing a kitchen within a multispecialty hospital is essential for providing nutritious meals to patients, staff, and visitors while adhering to strict hygiene and safety standards. Here's a detailed exploration of the architectural considerations for planning a hospital kitchen:

Location and Layout:

The kitchen should be centrally located within the hospital to facilitate efficient meal distribution to various departments and units.

Allocate space for distinct areas such as food preparation, cooking, cold storage, dishwashing, and waste management.

Design the layout to ensure a smooth flow of ingredients, food items, and kitchen staff to minimize congestion and improve productivity.

Food Preparation Area:

This area is where ingredients are received, inspected, prepared, and portioned for cooking.

Provide space for workstations, cutting tables, food processors, and other equipment necessary for food preparation.

Designate separate areas for raw and cooked food to prevent cross-contamination.

Cooking Area:

This is where food is cooked, heated, and finished before serving.

Allocate space for cooking equipment such as ovens, stoves, grills, and steamers, as well as ventilation hoods and fire suppression systems.

Ensure proper ventilation to remove cooking odors, smoke, and grease from the kitchen environment.

Cold Storage:

Cold storage areas are essential for storing perishable ingredients, prepared meals, and food items requiring refrigeration or freezing.

Provide space for walk-in refrigerators, freezers, and reach-in refrigerators, with adequate shelving and organization for easy access and inventory management.

Ensure that temperature controls are in place to maintain food safety and prevent spoilage.

Dishwashing Area:

This area is where dirty dishes, utensils, and kitchen equipment are washed, sanitized, and dried.

Allocate space for dishwashing machines, sinks, drying racks, and storage for clean dishes and utensils.

Design the area to facilitate efficient dishwashing processes and comply with hygiene standards.

Waste Management:

Designate areas for waste disposal, recycling, and composting to minimize environmental impact and promote sustainability.

Provide adequate space for waste bins, dumpsters, and compactors, with proper segregation and disposal procedures for different types of waste.

Staff Facilities:

Allocate space for staff facilities such as changing rooms, lockers, restrooms, and break rooms to ensure the comfort and well-being of kitchen staff.

Designate areas for staff training, meetings, and administrative tasks to support professional development and communication within the kitchen team

3 CASE STUDY

3.1 LITERATURE CASE STUDY :

3.1.1 FORTIS HOSPITAL, MOHALI :

Total Area : 8.22Acre

Built up Area :40,000sq.m

Architect : Kaplan Mc Laughlin Diaz. California

Site Context :

The Site is Located in sec62,phase VII, S.A.S Nagar,Mohali.

Surrounding:

The approach to the site is from a 24m wide road running all around the site.It has PSEB building on one side and the PUDA building on opposite side.

Accessibility :

Near to bus stand,it just 14km from the airport,9km from bus stand & 12km from railway station.



Fig 3.1 Site plan of Fortis Hospital, Mohali

Site Analysis :

The linear proportions of the site 3:1 have brought out the linear plan of the buildings. Two entrance are being provided on the longer side. The building faces North-East, the most favourable orientation, care has been taken to the place the curved surface of the building out to that direction to get the maximum exposure to the glare free light.

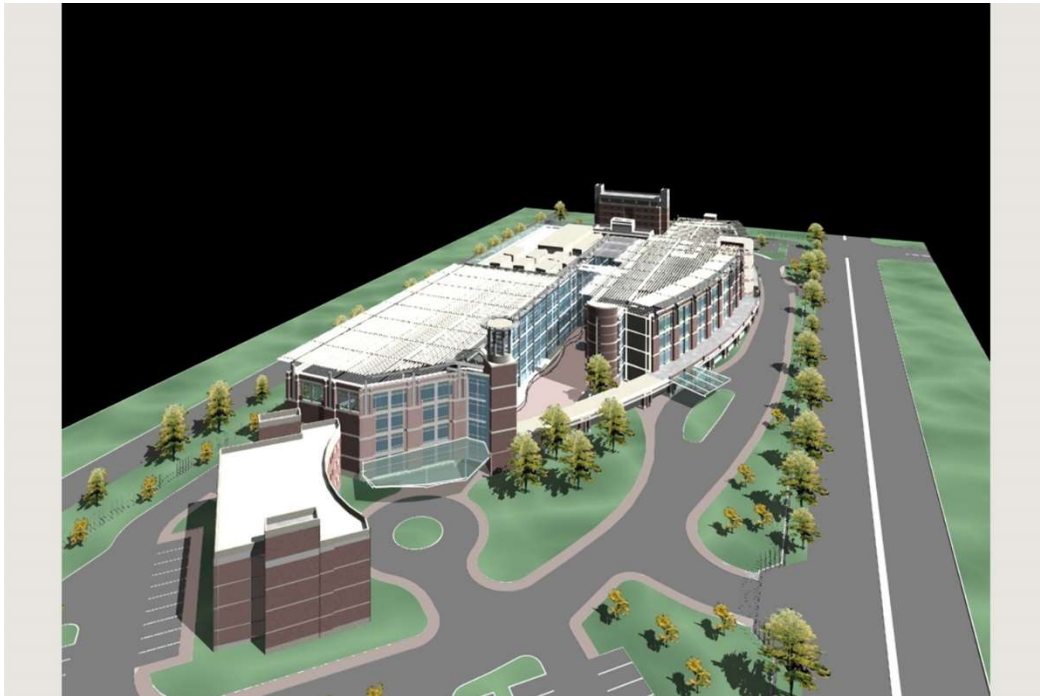


Fig 3.2 Model of Fortis Hospital, Mohali

Zonning Building Level :

Block A - Emergency Area

Block B - IPD

Block C - Diagonstics & Lab

Block D - OPD, Rehab Center

Horizontal Circulation :

- Main spinal cord of the hospital 2.45m wide.
- Another 2.45m wide singly located corridor runs through out the length of block C&D along a landscape courtyard.
- Basically the inter department circulation is governed by 2.45m wide & departmental by 1.8m wide corridor.

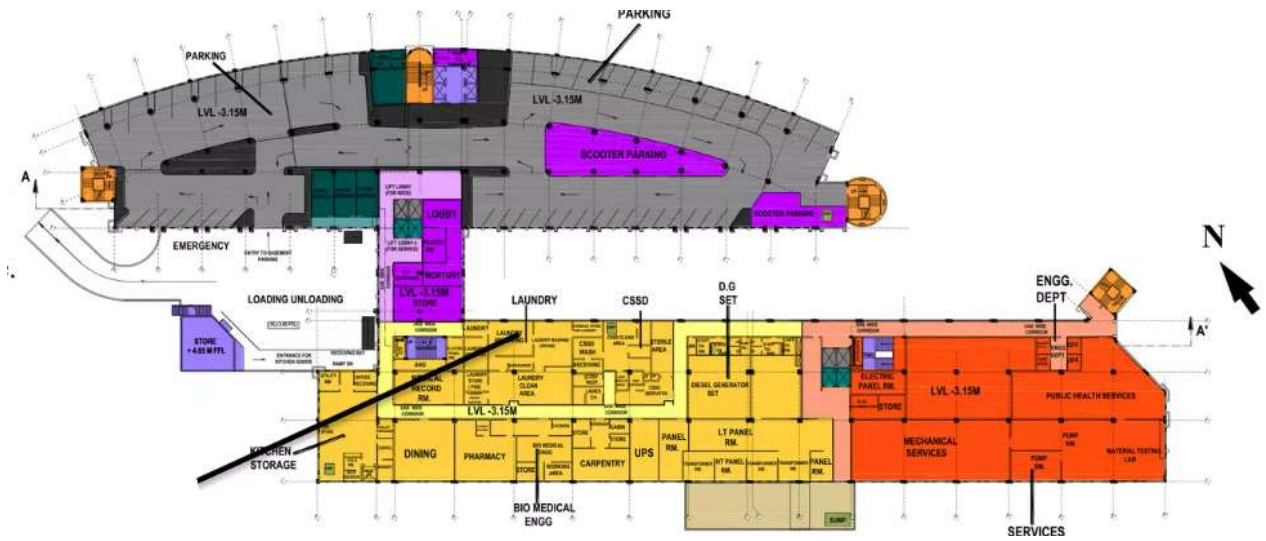
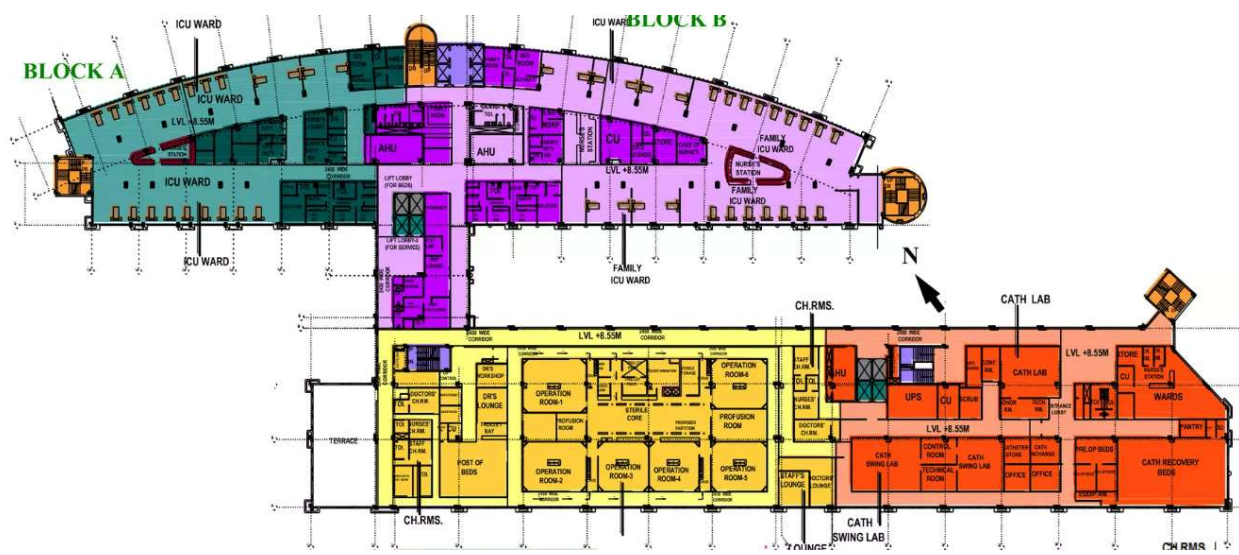
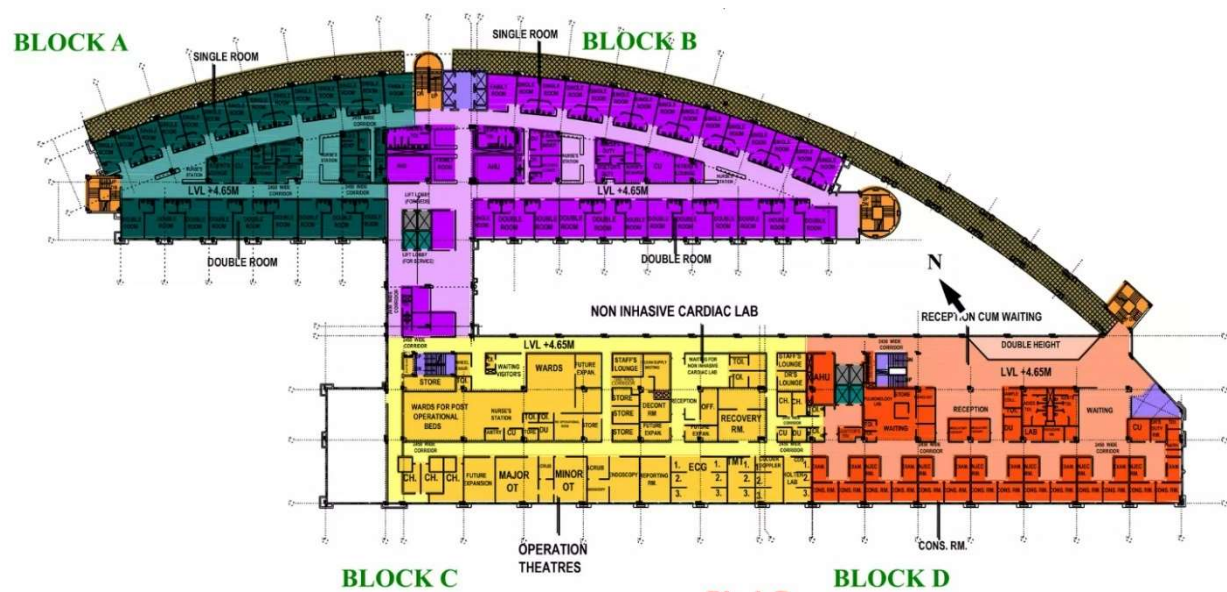


Fig 3.3 Basement Floor Plan



Fig 3.4 Ground Floor Plan



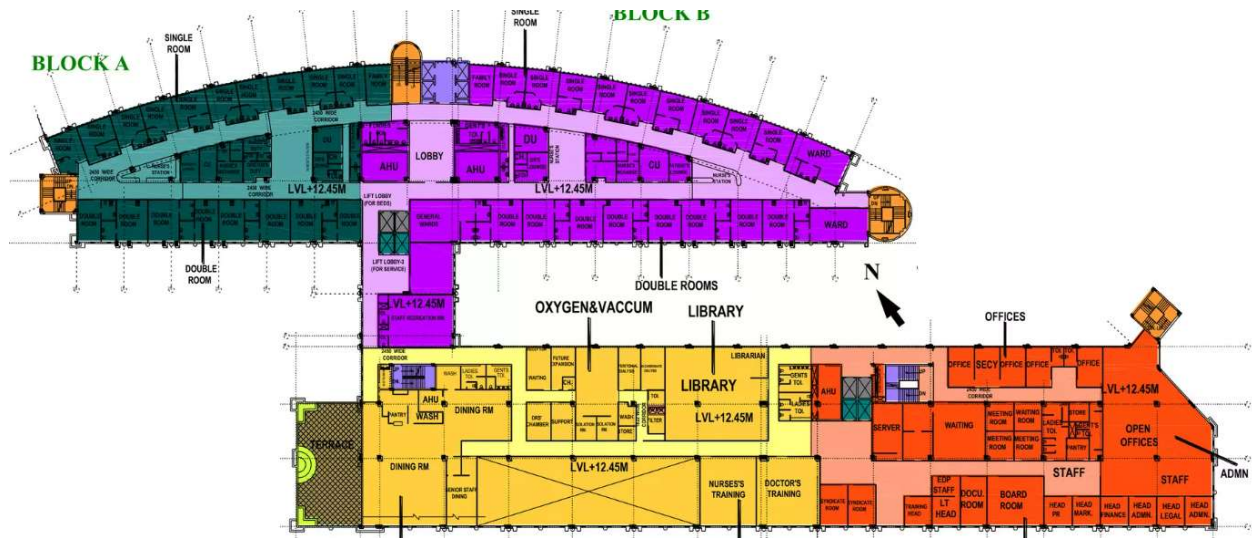


Fig 3.7 Third Floor Plan

Landscaping :

- A stepped landscaped courtyard between the two building of the hospital enabling the patients to look down on the greenery, not making them sick.
- Shaping like circular, curvilinear forms are used to provide unity and harmony at the site level.

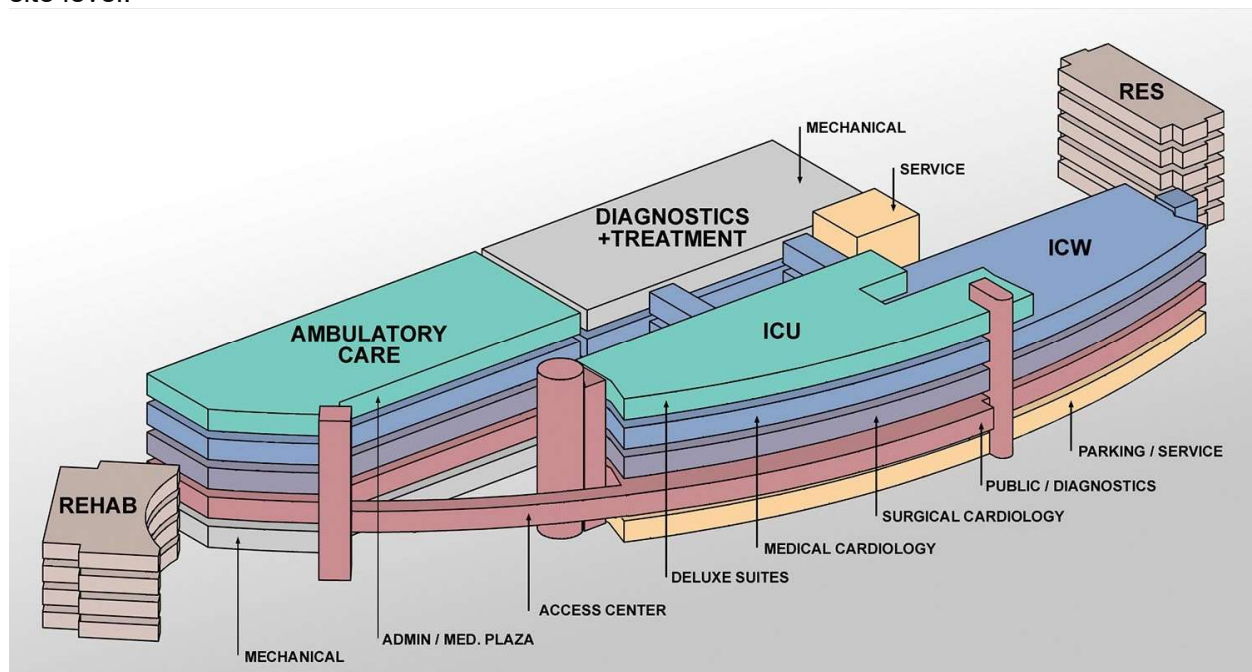


Fig 3.8 Vertical Zoning

3.1.2 FORTIS HOSPITAL GURGAON :



Fig 3.9 Fortis Hospital Gurgaon

Total Area - 11acre

Builtup Area - 65,961 sqm

Architect - Rajinder Kumar Associates, NewDelhi

Site Location :

Sector-44,opposite to Huda city centre, Gurugram, Haryana

Accessibility :

- Gurgaon railway station is 9.7 KM away
- Nearest B.S is 6.6 KM via mehraull Gurgaon road.
- HUDA city centre: 400 m via sector road
- HUDA city centre bus-top is 120 m
- IGT airport is 120 KM

Total Entries/Exit in Site :

- OPD entry- a lower ground floor
- Maternity entry- at upper ground floor
- Emergency entry- a lower ground floor
- Service entry- at upper ground floor

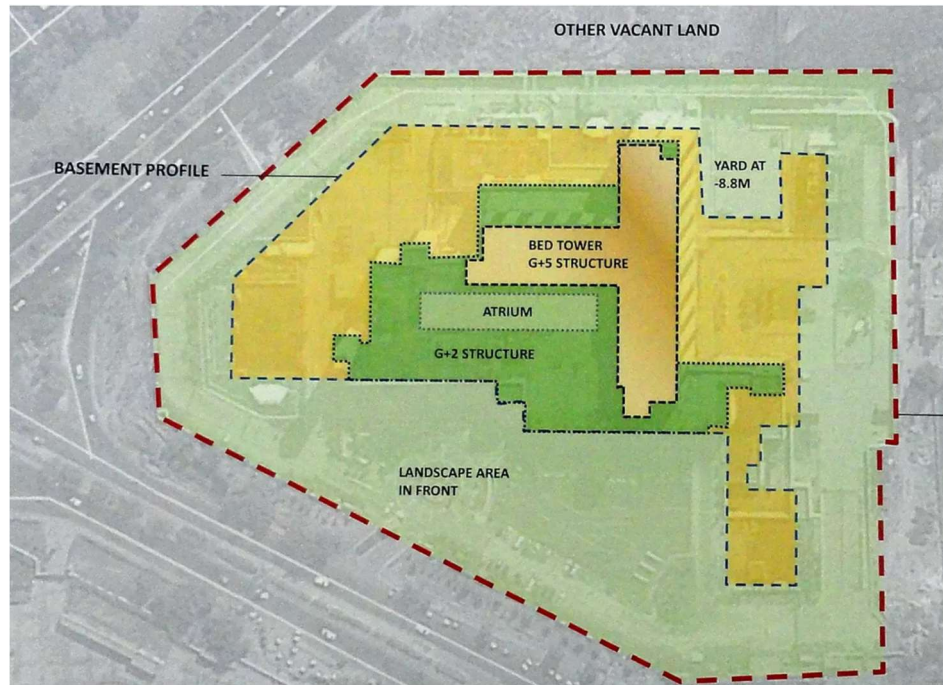


Fig 3.10 Site Layout

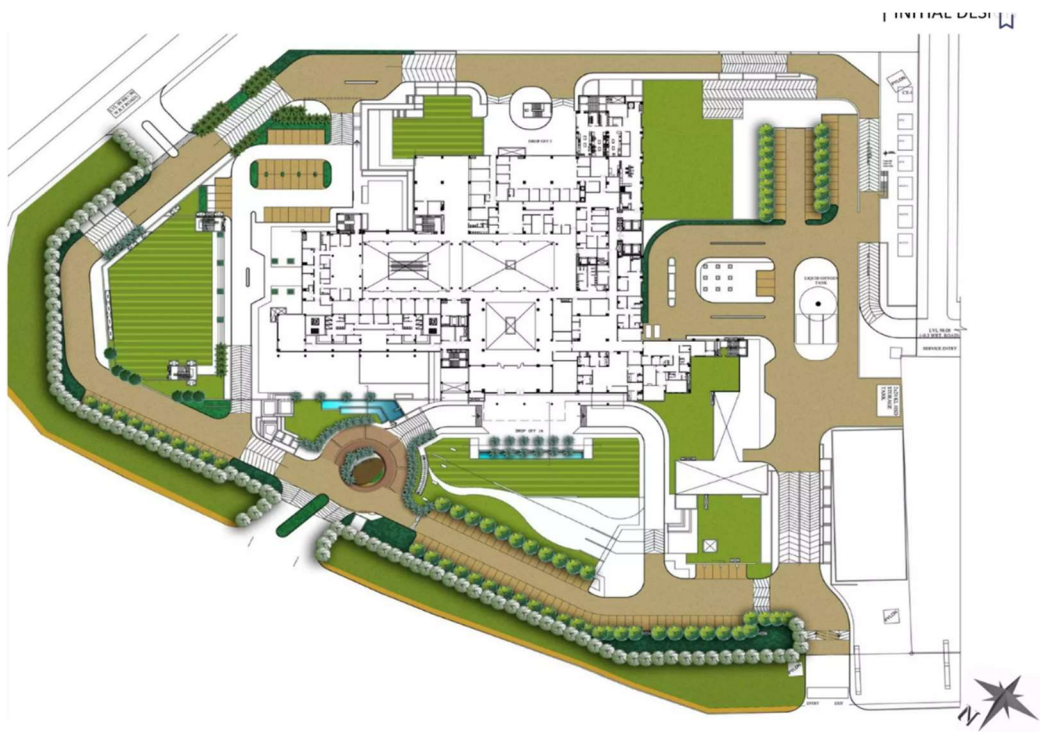


Fig 3.11 Site Plan

Design Concept :

- Improved & independent entry experience to the building provides flexibility for future expansion and medical disciplines.
- Independent entrance provides opportunity for separate or upscale branding.
- Family centered care is achieved by creating a welcoming, and healing environment focused on comfort and convenience for the patient and family
- Perimeter placement or corridor admit natural light in most areas & offers orienting views to the outdoors.
- Healing garden planned at the south – west corner to provide a calm & peaceful environment

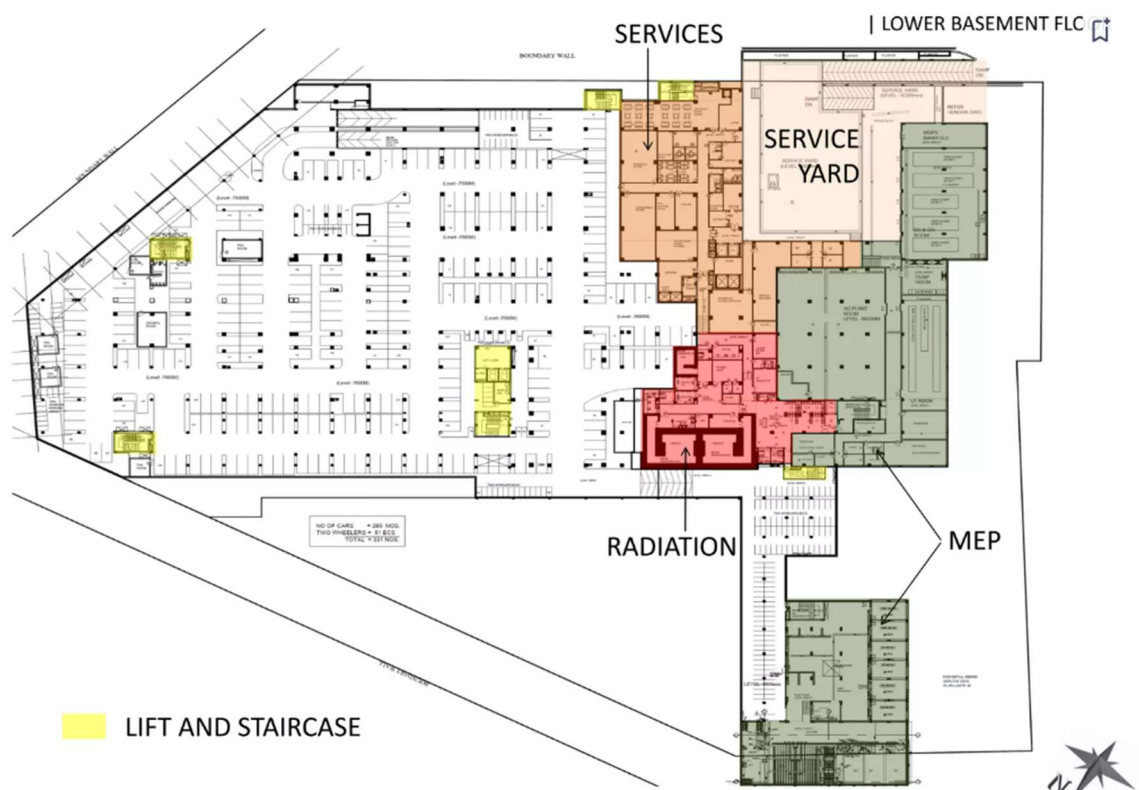
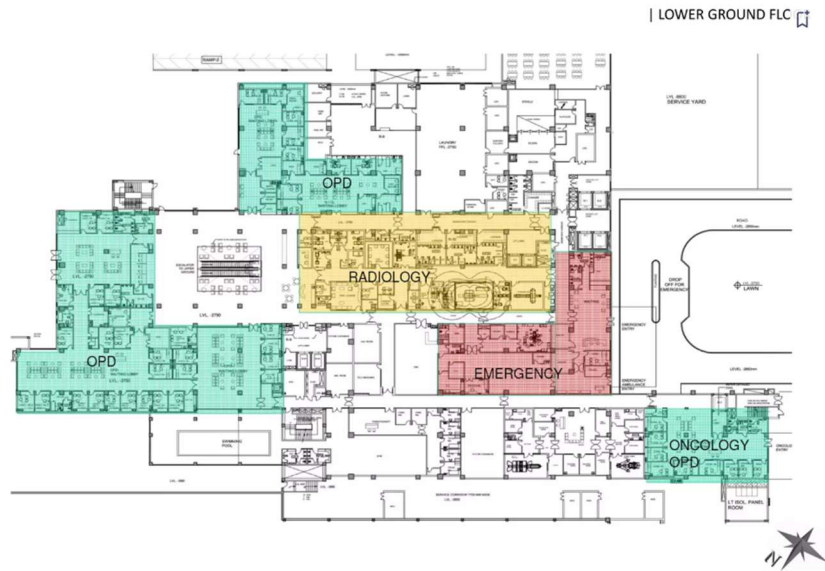


Fig 3.12 Basement Plan



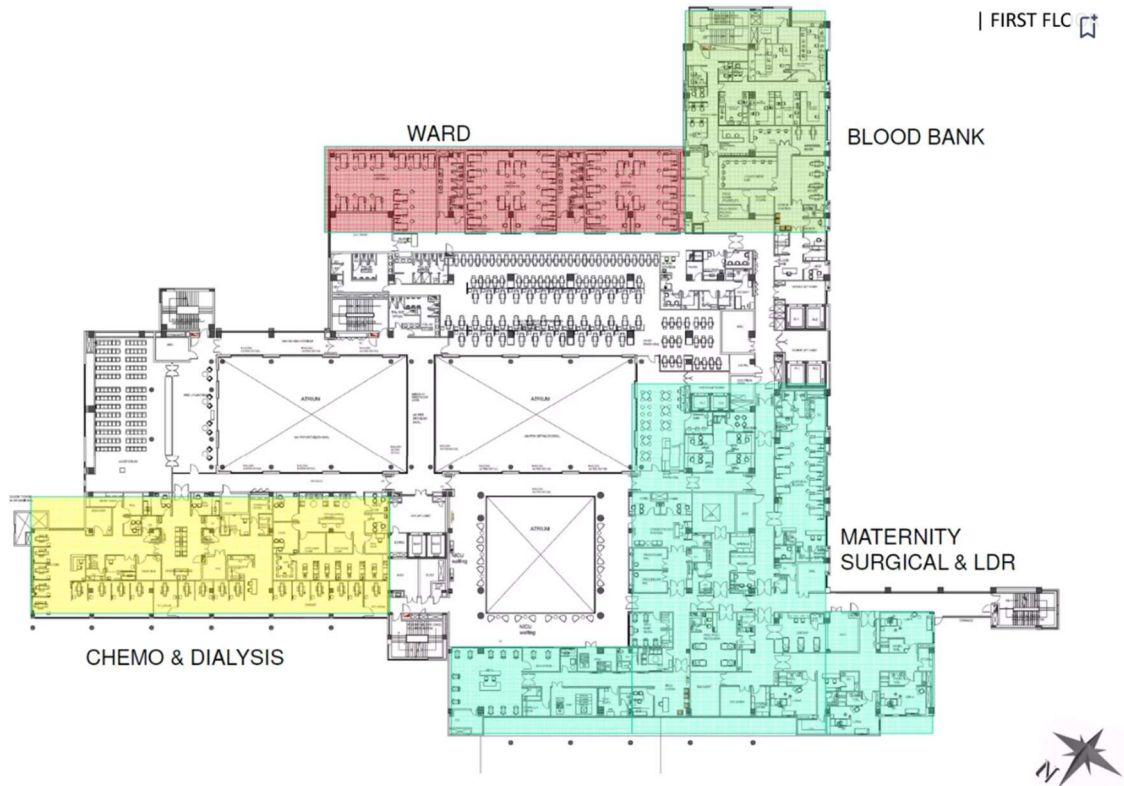


Fig 3.15 First Floor Plan

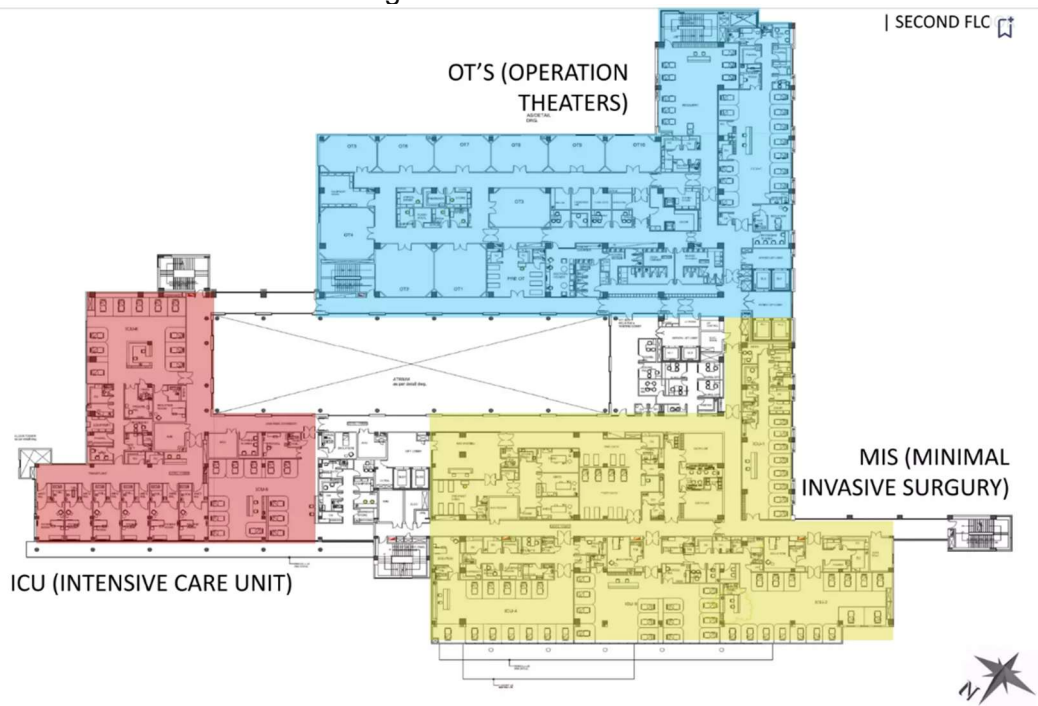


Fig 3.16 Second Floor Plan

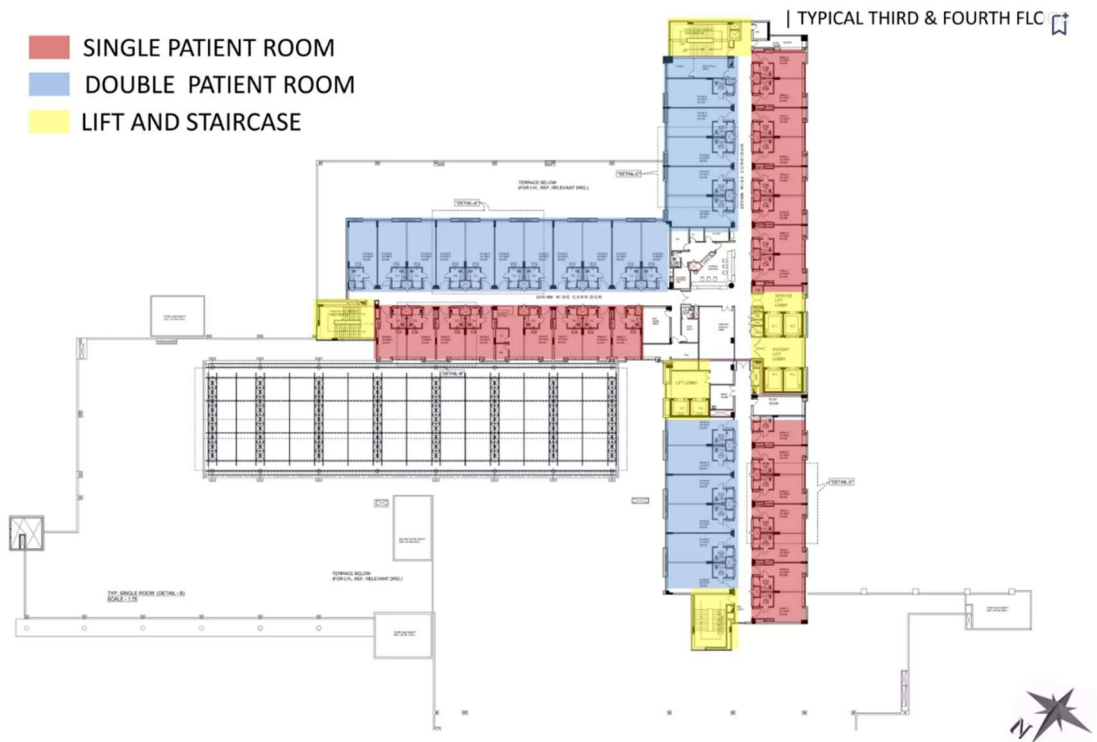


Fig 3.17 Third & Fourth Floor Plan

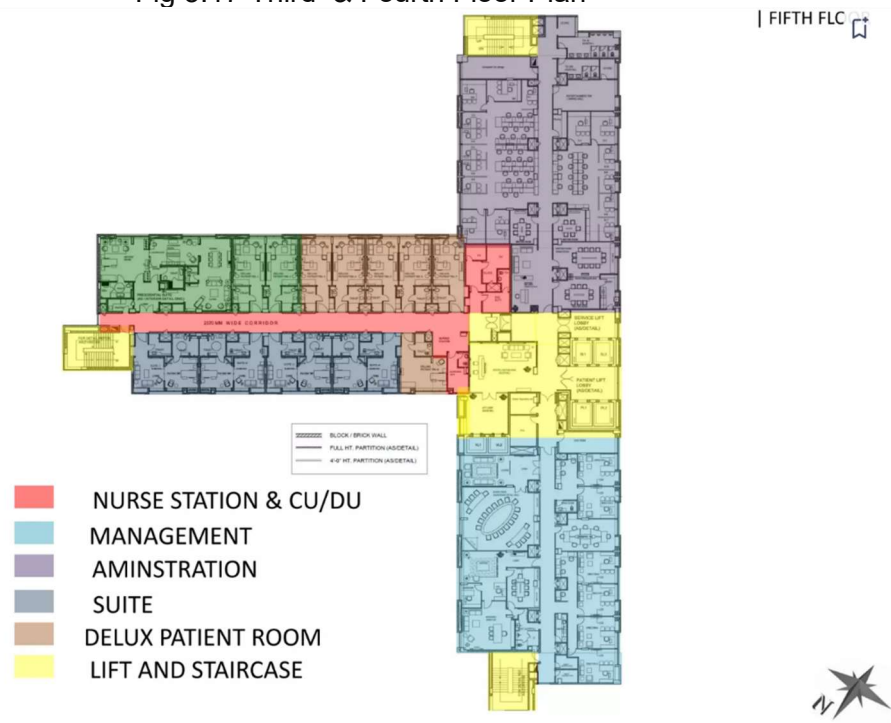


Fig 3.18 Fifth Floor Plan

New Trend :

-The Hospital should incorporate new trends lie wellness, technology and creates a Gen Next Medical Center which sets new standard for healthcare focusing on healing & nurturing robust health

-HEALING GARDEN

-NATURAL LIGHT

-At the south corner is a quiet & sun filled healing garden for patient, recuperation & areas of respite for staff and families

-All major areas in the hospital will have natural light for healthy and sustainable environment.

TERI GRIHA Rating :

Air- conditioned area: 26,254 sq.m

Non- Air-conditioned area: 44,612 sG.m

Energy consumption reduction: 33% reduction in energy consumption compared

EPL: 154 KWHY sq.m/year

Renewable energy installed on site:

Rated capacity of solar PV installed on site is 25Kp

TERI GRIHA provisional rating: 4 stars

Strategies Followed :

-Sustainable site planning,

-Reduction in water consumption

-Reduction in energy consumption

-Renewable energy technologies installed on site.

-Use of low energy materials.

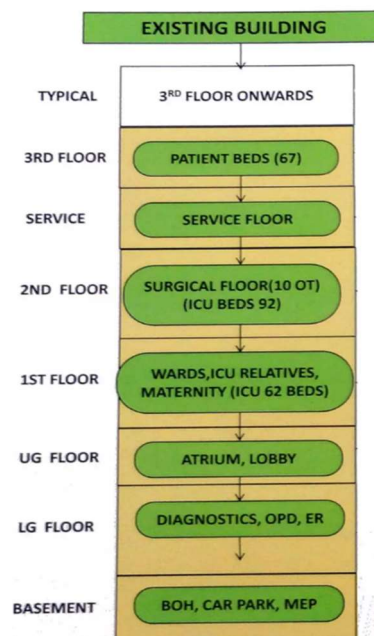


Fig 3.19 Vertical Zoning

3.1.3 FORTIS HOSPITAL AMIRITSAR :



Fig 3.20 Fortis Hospital, Amritsar

Total Plot area -3.3 acre

Architect -Arvid gupta and associates, New Delhi

Site Location :

At bypass road 1km from vivekchowk, Amritsar.

The building faces north-east direction.

It is 152 beded multispeciality Hospital,

Architecture Feature:

-Simple facade with cubical form of outlook

-Plastered finish wall with 2 projecting out Yellow sandstone massing.

-Horizontal and vertical bands of same are used as highlighters in all three main entrance,

-Enclosed in wall provided with the fire resistant doors, there is no ramp, one dumb waiter lift for linen movement between CSSD and laundry.

Services :

-Bio medical room

-Mainfold room

-Air conditioning

-Water storage

-water treatment

-Compressed liquid oxygen

-Steam boilers

-Fire fighting

- Power generators
- CSSD
- Mortuary



Fig 3.21 Site plan

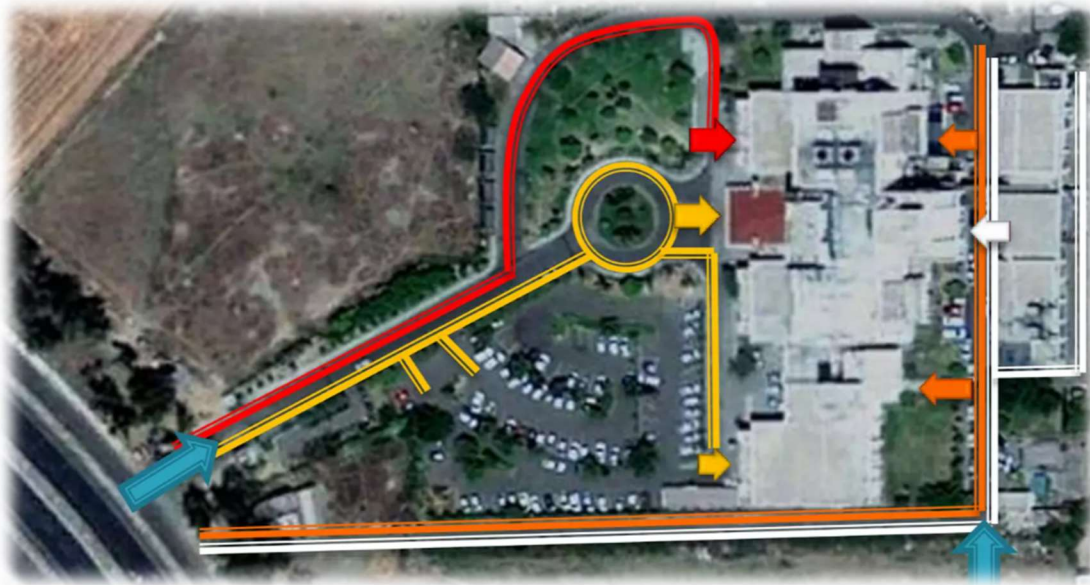


Fig 3.22 Site Circulation

- There is common entry to casual and emergency
- Segregated entry for services and doctors, staff
- Three main entrance in front emergency,
- IPD,
- OPD
- Rear entrance for staff, kitchen services,
- Two fire exist

ZONING :

Macro level site is divided into three zones:

- Parking
- Landscaping
- Building block

Micro level:

- emergency,
- IPD,
- OPD,
- Service block

3.2 LIVE CASE STUDY :

KALAINAR CENTENARY SUPER SPECIALITY HOSPITAL, GUINDY :

INTRODUCTION :

Kalingar Centenary super speciality hospital is located on Guindy. It was inaugurated in June 15, 2023 by Tamil Nadu Chief Minister Thiru M.K Stalin. It is first started planning approach for 500 beds and then consideration of people health & population then it was designed for 1000 beds with 10 operation theatre.



Fig 3.23 KCSSH, Guindy



Introduction :
Kalaingar Centenary super speciality hospital is located on Gunder. It was inaugurated in June 15, 2025 by Tamil Nadu Chief Minister Thiru N.K. Stalin. It is the first started planning approach for 500 beds and then consideration of people health & population thereby, it was designed for 1000 beds with 10 operation theatre.

Approach :
The site has two entry and exit. The internal road surrounds the whole building and reduces the traffic to main entry, emergency entry and service entry.

Entry & Waiting Area :
It has double-height entry with glass facades. In entry lobby was designed with waiting area on both side at the one side reception desk was placed. At the entry of the lobby there was statue was placed over there.

SITE CIRCULATION :



Red - In-patients entry
Yellow - Outpatients entry

Parking :

There is car parking in the basement floor it has the capacity of 70 cars. There is also car parking at exit gate. There is two wheelers parking in side of the building it has the capacity of 50 two wheelers.



Basement Floor



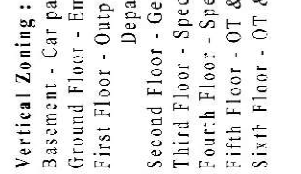
Ground Floor



First Floor



Second Floor



Vertical Zoning :

- Basement - Car parking
- Ground Floor - Emergency Department
- First Floor - Outpatient Department
- Second Floor - General Wards
- Third Floor - Special Wards
- Fourth Floor - Special Rooms
- Fifth Floor - OT & ICU
- Sixth Floor - OT & ICU



Outpatient Department :
It is located in first floor. There is separate waiting area and the corridor also used as waiting corridor. The size of the corridor is more than 4M.

Inpatient Department :
It is located in second floor it is ward and third floor has special room. It has separate waiting area all the rooms are well ventilated.



Vertical Core :

Staircase - All blocks
Lift - 10 lifts
Ramps - Connects to all floor.

Courtyard :

It has center courtyard which gives natural ventilation and lighting to all the blocks.

Intensive Care Unit :

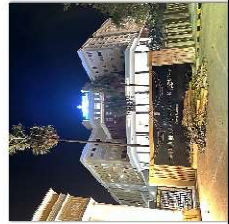
It is 6 ICU in two floors. ICU 1-2 in sixth floor and 4-6 in seventh floor which is easy access to operation theatres.

Operation Theatre :

Totally it has 12 OT's. 5 in sixth & 5 in seventh floor.

Analysis :

1. Site zoning and site circulation is good with separate entry and exit for all.
2. It is user-friendly building with good connectivity to all the floor with proper sign boards.
3. Sufficient number of lifts and staircase.
4. There is no possibility for future expansion in site.
5. There is separate waiting area but corridor is also used as waiting area.
6. There is huge centre courtyard which provides sufficient natural lighting and ventilation.
7. The floor has proper zoning as our patient stopped in first floor itself. It controls the movement of people.



4 SITE STUDY AND ANALYSIS

4.1 SITE STUDY :

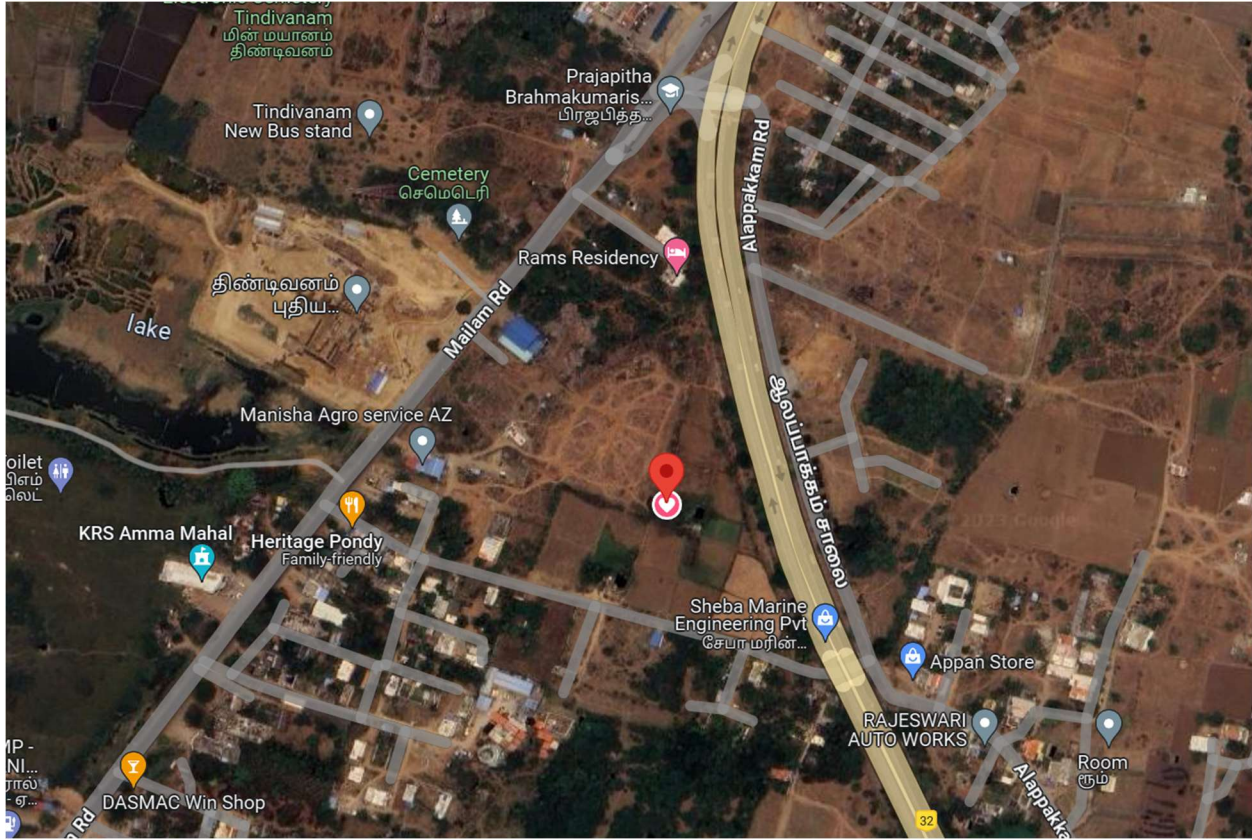


Fig 4.1 Site Location & Surroundings

Site Location : Tindivanam

Site Co-ordinates : 12°14'11"N 79°39'44"E

Area : 5.7 Acres

About Site :

Tindivanam is a town located in the Viluppuram district of the Indian state of Tamil Nadu. It is situated approximately 120 kilometers southwest of Chennai, the capital city of Tamil Nadu. Tindivanam serves as a significant junction connecting various cities and towns in the region.

The proposal for multi-speciality hospital in Tindivanam considering the population of Tindivanam taluk approx 5lakhs as per census 2011.As per IPHS based on the assumption of the annual rate of admission as 1:50 ratio (1per 50 population). The no of beds req as per population approx 150 bed recomended.



5 ARCHITECTURE DESIGN

5.1 CONCEPT :

Passive Design Principles:

Incorporate passive design strategies to minimize energy consumption. Orient the building to maximize natural daylighting while minimizing solar heat gain. Utilize shading devices, high-performance glazing, and thermal mass to regulate indoor temperatures.

Solar Orientation:

Ideally, the longest sides of the building should face north and south, with the main entrance facing either east or west. This orientation helps to maximize exposure to daylight while minimizing direct solar heat gain, especially in regions with hot climates.

Wind Patterns:

Understanding prevailing wind patterns is essential for natural ventilation and passive cooling. Orienting the building to capture prevailing breezes can enhance natural airflow and reduce reliance on mechanical ventilation systems.

Site Context:

Consider the surrounding environment, including nearby buildings, landscape features, and topography. Analyse potential obstructions to sunlight and prevailing winds, as well as opportunities for views and access to outdoor spaces.

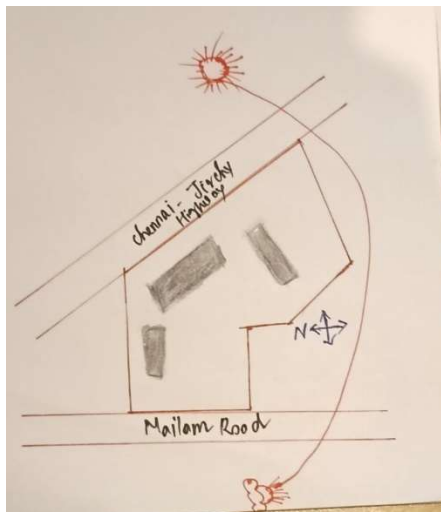
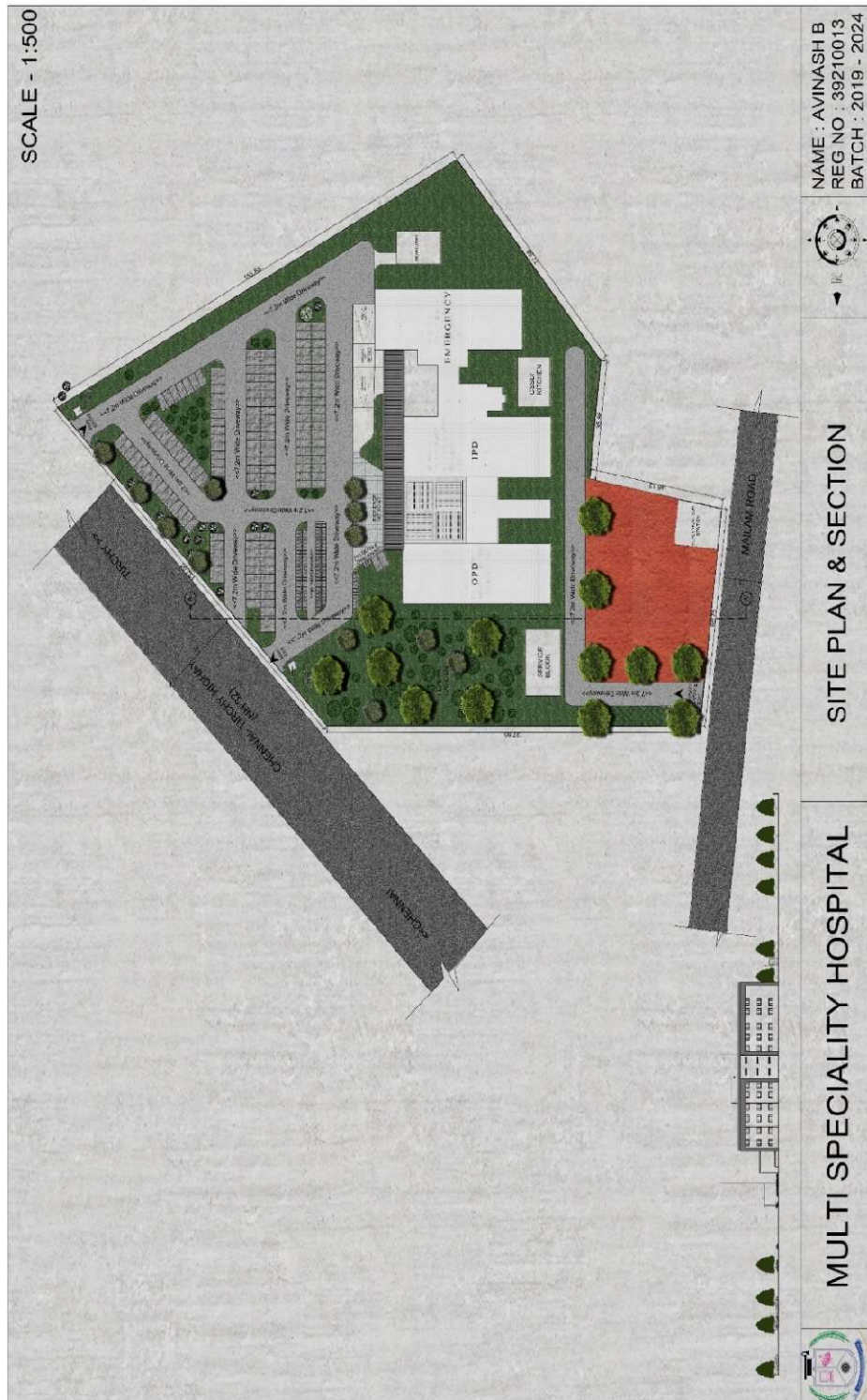


Fig 5.1 Orientation of Building

5.2 SITE PLAN :



5.3 GROUND FLOOR PLAN :

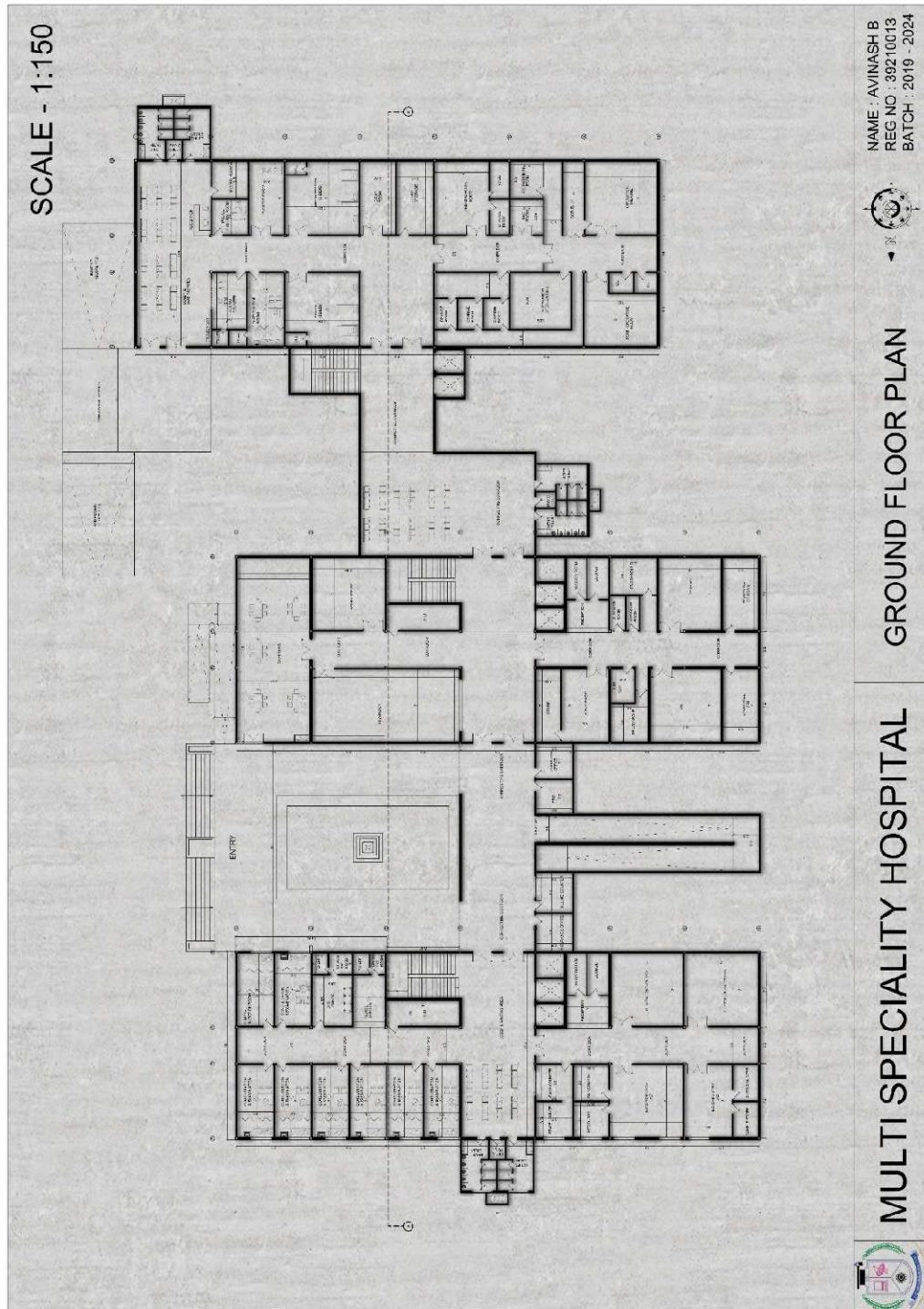


PLATE 4 : GROUND FLOOR PLAN

5.4 FIRST FLOOR PLAN :

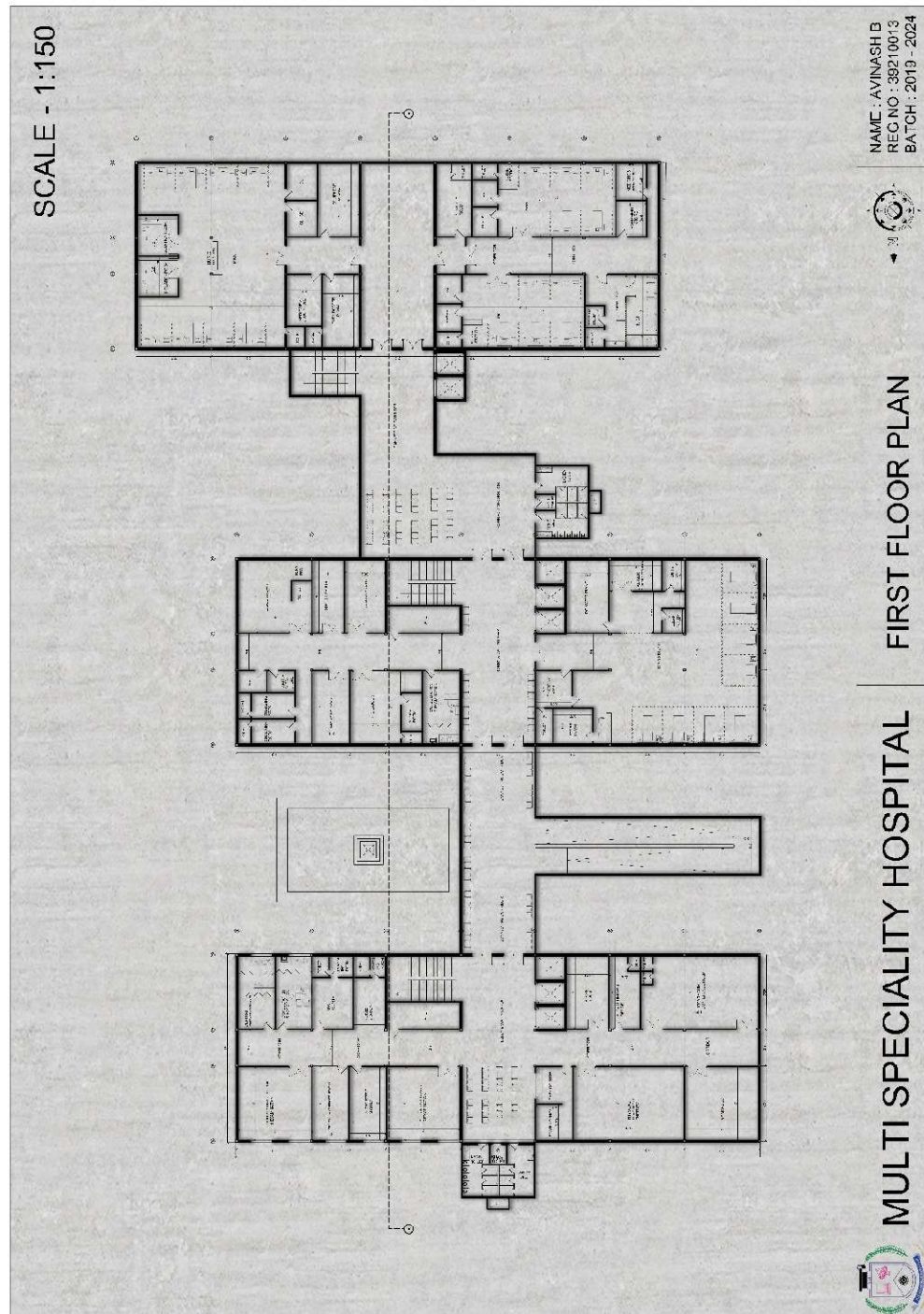


PLATE 5 : FIRST FLOOR PLAN

5.5 SECOND FLOOR PLAN :

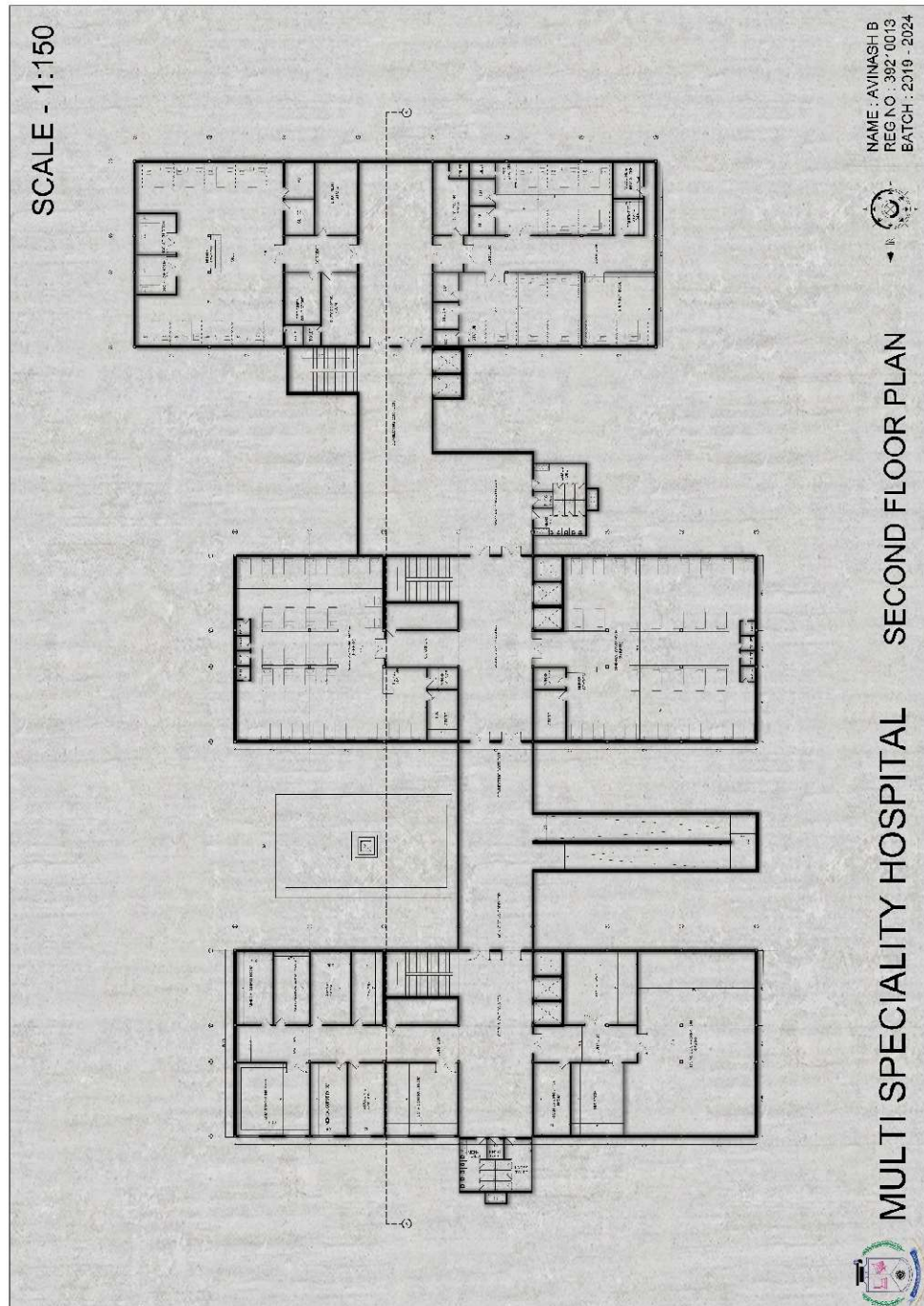


PLATE 6 : SECOND FLOOR PLAN

5.6 THIRD FLOOR PLAN :

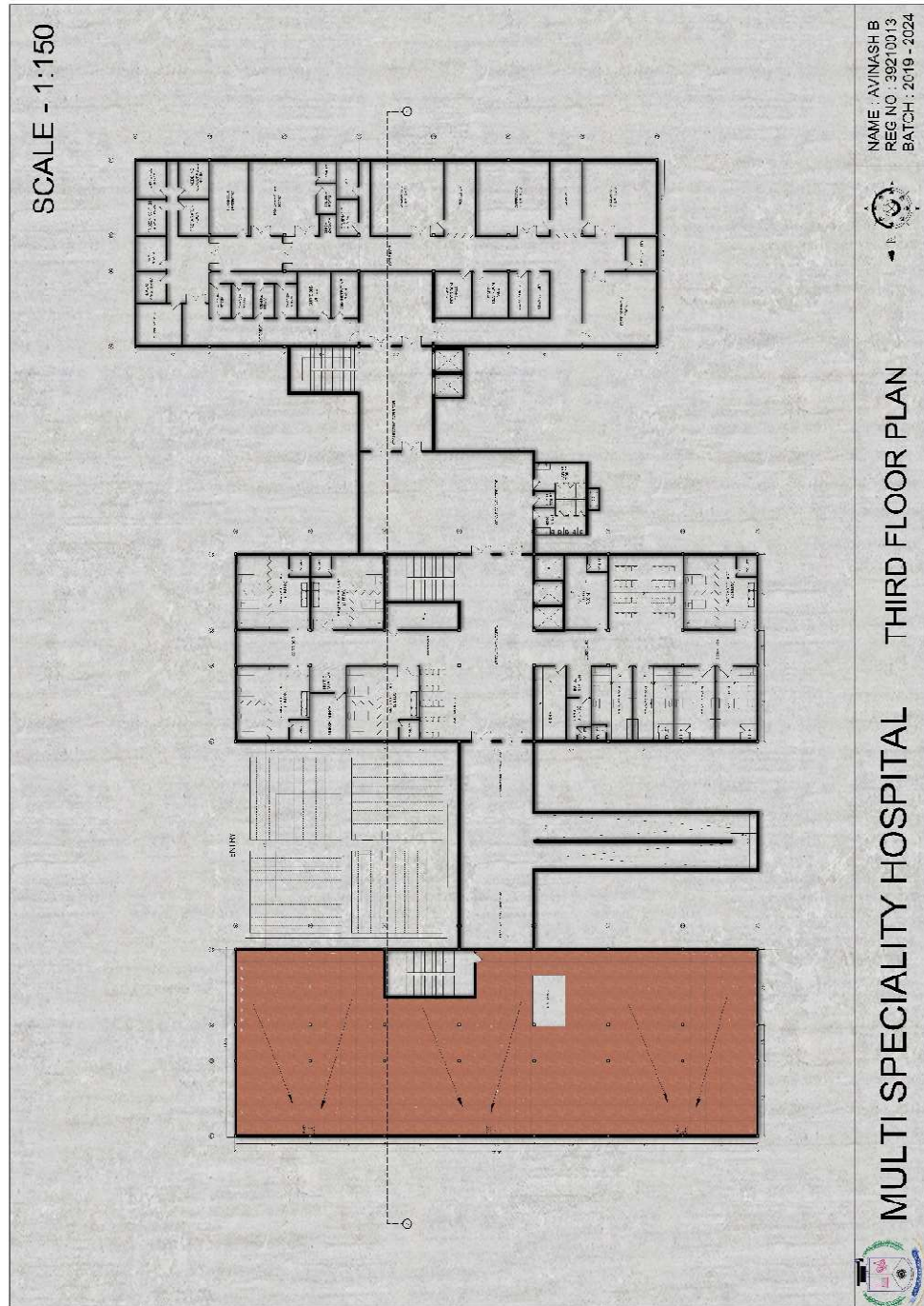


PLATE 7 : THIRD FLOOR PLAN

5.7 TERRACE FLOOR PLAN :

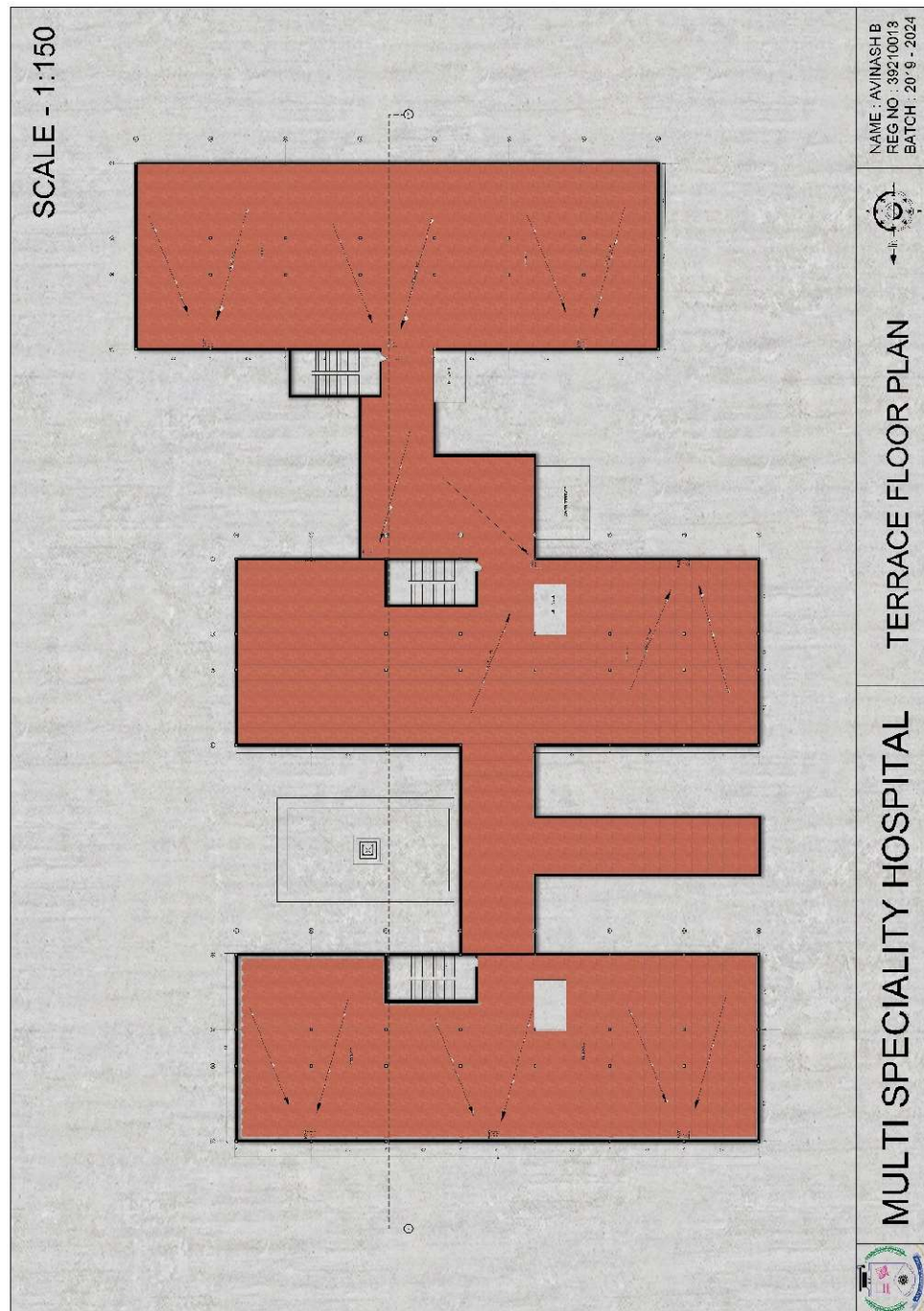


PLATE 8 : TERRACE FLOOR PLAN

5.8 ELEVATION AND SECTION :

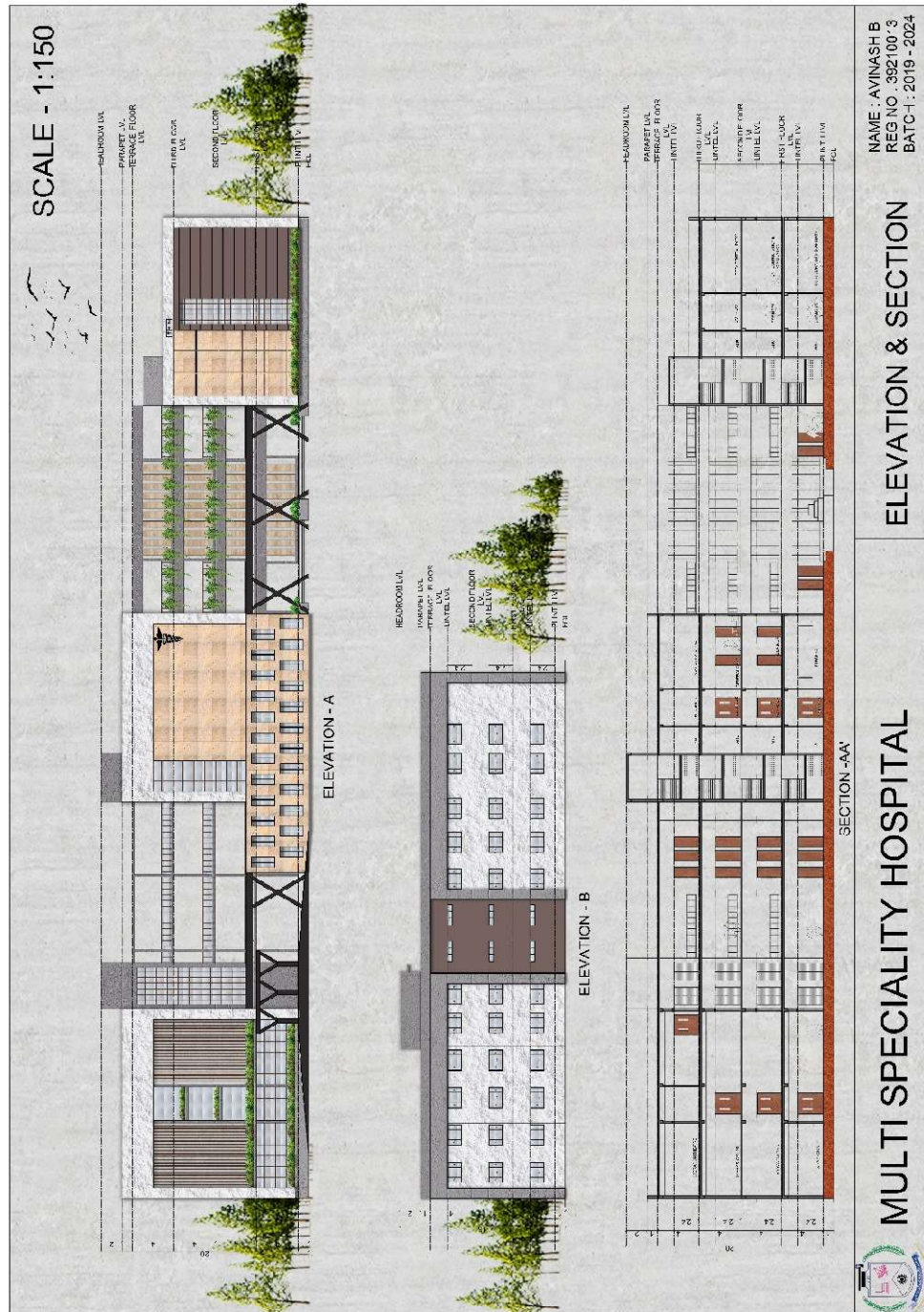


PLATE 9: ELEVATION AND SECTION

6 REFERENCE

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