

Design Brief – SEMSTER – V
NURSING HOME / SMALL HOSPITAL

Location : Ranital, Jabalpur

Plot Area: 2730 square meters

Total Bed Capacity: 30 beds (excluding ICU and casualty)

Objective :

Design a nursing home that caters to a range of healthcare services, including inpatient and outpatient care, emergency services, minor and major surgeries, and diagnostic facilities. The nursing home must provide a comfortable and functional environment for both patients and staff, adhering to healthcare regulations and best practices in medical design. The local bye-laws of the state of Madhya Pradesh (Bhoomi Vikas Adhinyam) shall be followed for allowance of floor area ratio and height of the building. NBC guidelines shall be used for designing.

Functional Requirements:

1. Inpatient Department (IPD):

- Private Wards: 6 rooms
- Semi-Private Wards: 6 rooms (2 beds each)
- General Ward(s) : combined or separate halls for male/female as per design
- Toilets : Separate male and female facilities for all wards, with accessibility considerations.

2. Outpatient Department (OPD):

- Consultation Rooms: 3 (for general and specialist doctors)
- Waiting Area: Comfortable seating with natural lighting and ventilation
- Pharmacy: Easily accessible from the entrance for both IPD and OPD patients
- Reception and Registration: Centralized with records storage.

3. Emergency Department:

- Casualty Beds: 4 beds with quick access to the emergency ward
- Minor Operation Theatre (OT): For small emergency procedures
- Emergency Ward: 5 beds for immediate care

- Ambulance Bay: Near the emergency entrance with direct access.

4. Operation Theatre Complex:

- Major OT : For general surgeries, equipped with sterilization and recovery rooms
- Pre-Op and Post-Op Rooms : Adjacent to the OT for patient preparation and recovery
- ICU (Intensive Care Unit) : 6 beds, with nursing station and monitoring equipment.

5. Diagnostic Facilities:

- Radiology Room: For X-ray and imaging services
- Pathology Lab: For blood tests and other diagnostics
- Ultrasound Room: With space for waiting and scanning area.

6. Support Areas:

- Nurses' Station: Centrally located with direct visibility to patient wards and easy access to all units
- Doctor's Resting Room: Equipped with basic amenities for short stays
- Storage Rooms: For medical equipment, linen, and supplies
- Laundry Room: For cleaning patient linens and staff uniforms.

7. Utility Areas:

- Central Sterile Supply Department (CSSD): For sterilizing instruments
- Kitchen & Dining- For staff and patient meals, adhering to hygiene standards
- Waste Disposal Area: Segregated for bio-medical waste and general waste management
- Toilets: Adequate toilet facilities for staff and visitors, with provisions for **differently-abled**.

Design Considerations:

1. **Circulation and Zoning** : Clear separation between public, semi-public, and restricted areas. Patient movement should be minimized for efficiency and comfort.
2. **Ventilation and Lighting** : Ensure natural ventilation and sufficient daylight in patient areas, while providing artificial lighting in OT and diagnostic zones.
3. **Accessibility**: Provide ramps, elevators, and accessible toilets to accommodate **differently-abled** patients and staff.

4. Hygiene and Infection Control: Use materials that are easy to clean and resistant to contamination in sensitive areas like OT, ICU, and diagnostic rooms.

5. Parking: Provision for staff and visitor parking, with a dedicated area for ambulances near the emergency department.

6. Landscaping: Create a healing environment with green spaces and courtyards visible from patient rooms.

Site Context:

- Ranital, Jabalpur: The site is centrally located in Jabalpur with easy access to the main roads and public transport. The newly constructed fly-overs passes near the site and there are road networks on two ends of the site. Consider the surrounding urban fabric and integrate the design with the local architectural context.



SITE DIMENSIONS : - 35 X 78 Meters. (Rectangular)

Address :- Near Ranital Chowk, Jabalpur

Deliverables for submission :

- Data collection
- Site Plan
- Floor Plans (with furniture layout)
- Sections and Elevations
- 3D Views / Front View
- Detailed area program with room sizes and descriptions



CASE STUDY OF Jabalpur Hospital & RESEARCH CENTRE

JABALPUR HOSPITAL & RESEARCH CENTRE was established in 1970 to provide affordable medical care in a professionally atmosphere and in the spirit of compassion, previously beyond the reach of the common man. Its aim was to provide high-quality medical services at reasonable cost. The multi-specialty 800 bedded Hospital is renowned for its Medical Expertise, Quality Diagnosis and Excellent Nursing care. The Hospital brings the parent Hospital supports the Jabalpur Institute of Health Sciences for nursing courses supported by a nursing facility. Specialties on the hospital a panel doctor include some of the most distinguished names in Indian Medical Profession. Jabalpur Hospital & Research Centre brings together a dedicated team of physicians, nurses and other healthcare professionals to provide the highest standards of medical treatment. Jabalpur Hospital & Research Centre provides a value-based medical treatment where the highest human qualities of empathy, compassion, dedication and sincerity are infused, with over a two and half decades of services, it has handled more than 3 lacs (over patient department, more than 20 lacs outdoor patient department, more than 1 lakh surgery and more than 400 bedded day surgery with a high degree of success. The overall impact of its activities has brought down the mortality rate in the region considerably. The hospital is committed to excellence and quality through the provision of specialized like best life-saving equipment at very highest standards of clinical skill and nursing care with a wide range of other features. The major services at the hospital include endoscopic surgery, cancer surgery, video laparoscopic surgery, neurosurgery, organ transplant surgery, maxillo-facial surgery, gynaecological surgery, plastic surgery, advanced orthopaedic surgery with using C-arm has been the prime focus of this department. With completion of a full range of facilities for treatment of neonatal, paediatrics and adult patients. The hospital has developed a critical care unit for intensive treatment of critically ill patients. For managing high-risk groups, 24*7 services of intensive have been made available.

STRUCTURE Conducted a photographic study of the site to determine the layout and location of the various buildings of the hospital. The number of floors of each building and the systems existing on each floor. It is necessary to integrate the proposed extension with the existing 5 stories hospital building. The structure system to comprise frame offering a maximum of exposure to natural light. Interior wall and floor work with vitreous ACJ and ceramic floor finish. Roof surface are Fibre Glass Insulation floor are marble and tiles and some finish with parrot black.

CONCEPT vertical pedestrian travel is by stair and lift, although at times this can be replaced for patients in wheel chairs and ambulances - the provision of ramp is essential.

FIRE FITTING SYSTEM Sprinklers are provided in every floor.

DEPARTMENT OF ENTAIL & HYGIENE WASTE SEGREGATION

RED BINS - For infected wastes which includes cotton gauzes, band, blood soaked cloth, catheters etc. The above waste will be burnt in incinerators.

YELLOW BINS - For body parts, body fluids, cytotoxic wastes, body waste etc. Apart from these RED and YELLOW wastes, no other items should be brought to the incinerators. If proper segregation of waste is not done the incinerator will not be able to function effectively. Therefore frequent maintenance which is very expensive.

WHITE BINS - For plastic wastes like IV bottles, IV tubing, syringes etc. The above waste will be sent for recycling scrap centre.

BLUE BINS - For all glass items.

BLACK BINS - For general wastes for eg. Disposable polythene bags, coffee cups, all sorts of paper, flower vases, incense etc. The above waste will be collected near the incinerator and will be sent incineration bins.

GREEN BINS - For food waste and kitchen waste. The above waste will be sent to Composting Bin.

HOUSE KEEPING, LINEN AND LAUNDRY DEPARTMENTS

The patient rooms and bedsheets equipment of patients should be routinely cleaned and disinfected, especially disinfection of environmental surfaces, beds, bed rails, bed side equipment and other frequently touched surfaces. Handle, transport and process used linen a manner that prevents contamination of clothing.

CLIMATE

Jabalpur, Madhya Pradesh, India has a broad subtropical climate with the following characteristics:

Temperature - The average temperature is around 23°C, but varies from 14°C in December to 19°C in May. May is the hottest month, and December is the coldest.

Season - Summer lasts from late March to June, and winter lasts from late November to early March.

Humidity - The southwest monsoon lasts from July to September, producing 800 mm (31 in) of rain. The average annual precipitation is nearly 1,500 mm (54 in).

Wind - The wind blows predominantly from the west, with an average speed of 7.8 m/s.

Clouds - The average relative humidity is 59.4%.

DEPARTMENT



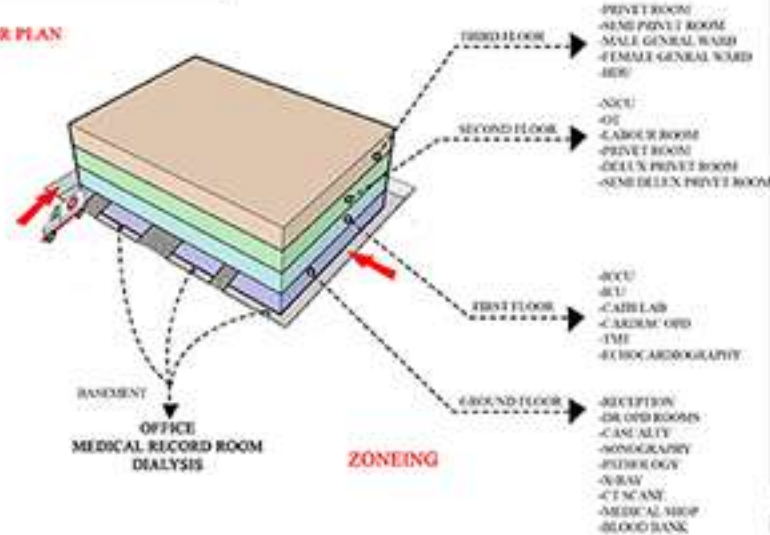
CONCLUSION

POSITIVE POINTS

JHRC is centrally located in city. Well planned areas and their lobby which do not obstruct the patients flow and separate fire exit routes. Good amount of temporary beds are provided for post operation patients. Separate parking for staff, doctors and visitors which is advantageous for emergency. The emergency casualty is located properly with the facility of resuscitation and trauma, patient rooms which is designed as per requirements. The planning of OPD and the admission reception area is ideal. The OPD is well planned with reception, X-ray.

NEGATIVE POINTS

The hospital is developed step by step that's why there are some drawbacks in the planning and parking in the main area because it is a small parking scope in front of the hospital the hospital is located in crowded area this area is a busy traffic area. Only the blood required for emergency department is to be brought from the blood bank which is outside other part of building block which is not feasible in case of any emergency. The services area occupy more space and the travelling distance is increased.



LOCATION



SUBJECT: **DESIGN - V**

SHEET TITLE: **CASE STUDY
JABALPUR HOSPITAL AND
RESEARCH CENTER
JABALPUR M.P.**

DATE: _____

SCALE: _____

REMARK: _____

CHECKED BY: _____

DESIGNED BY: _____



ROLL NO - 0230AR221002

SEMESTER - V

NURSING HOME

"Nursing Home" means any establishment or premises used or intended to be used, for the reception and accommodation of persons suffering for any sickness, injury or infirmity, whether of body of mind and the providing of treatment or nursing or both for them and includes a maternity home or convalescent home

BASIC REQUIREMENTS FOR 30 BED NURSING HOME PLANNING 2730 Sqmt

Circulation areas such as corridors, staircases
 Entrance Area
 Pharmacy (Dispensary)
 IPD
 OPD
 Clinic
 Nursing Services
 Laboratory
 DIAGNOSTIC SERVICES
 Radiography
 Ultrasound
 ECG
 General Ward Facilities
 Private Wards
 Intensive Care Unit (ICU)
 Operation Theatre
 Disposal Room
 Physiotherapy
 Ambulance Zone
 Service Zone

MINIMUM AREA REQUIREMENT

- Entrance Zone
1. Entrance hall with Enquiry counter with cash counter and records area - 28 sq.m
 2. Pharmacy - 17.5sq.m
 3. Ambulatory Zone
 4. Medical clinic - 17.5 sq.m
 5. Waiting area 21 sq.m
 6. Surgical clinic - 17.5 sq.m
 7. Casualty and emergency care (optional) 17.5 sq.m
 8. Treatment and dressing 21 sq.m
 9. Injection room (optional) 17.5 sq.m
 10. Nursing station for with clean and dirty utility - 17.5 sq.m
 11. Diagnostic zone (optional)
 12. Pathology - Laboratory space 17.5 sq.m
Toilet room 3.5 sq.m
 13. Radiology - Radiography room 17.5 sq.m
Toilet room 3.5 sq.m
 14. OPERATION THEATER - area 10.5 sq.m
 15. Recovery room with 2 beds 21 sq.m
 16. Corridor space in the clean zone should have minimum width of 3.7sq.m
 18. Operation Theatre - 35 sq.m
 19. Scrub up and gowning 10.5 sq.m
 20. Instrument sterilisation 10.5 sq.m
 21. Theatre pack preparation area with sterile storage 10.5 sq.m Dirty utility 10.5 sq.m
 22. Laundry Dirty 30 sq.m
 23. Cooking area 28 sq.m
 24. Garbage collection 3.5 sq.m
 25. Space for storage of oxygen cylinders:
 26. Generator
 27. Medical store 10.5 sq.m
 28. Medical records room 10.5 sq.m
 29. Administrator and nursing-in-charge office 10.5 sq.m
 30. Nurses changing/duty room with toilet 10.5 sq.m
 31. Doctors' duty room with toilet 10.5 sq.m

BUILDING GUIDELINE

HOSPITAL BUILDING COVERAGE - 25%

HEIGHT LIMIT

The maximum height of building shall not exceed 1.5 times the width of road abutting plus the front open spaces

BASEMENT - Every basement shall be in every part at least 2.5 m. in height from the floor to underside of the roof slab or ceiling and with maximum height not more than 4.5 m.

FIRE FITTING - To minimize deaths and losses. Minimum level of preparedness & planning can do it. Without identification of risk & vulnerability, only knowledge of hazards is of no use. Normal procedures are insufficient to handle grave situations

LIFT - Internal measurements: The internal dimensions of the lift should be at least 1400 mm wide by 2400 mm deep.

RAMP - Width: The minimum width for a hospital ramp is 2.4 meters. Stretcher ramps, which are used to move hospital beds and stretchers, can be 900 mm, 1000 mm, 1200 mm, or 1500 mm wide. Multiple widths can be joined together to create a custom width

STAIRCASE - The minimum width for a hospital staircase is 2.4 meters

MOS - Front 12m side -7.5m

AREA REQUIREMENT - minimum 1 hectare

BUILDING SPECIFICATION

Floor Height

The height of all the rooms in the hospital should not be less than 3.00m and not more than 3.65m.

Floors and Walls

The architectural finishes in hospitals shall be of high quality in view of maintenance of good hygienic conditions. All wards should have dado to height of 1.2m. In other areas of critical zone, tiling should be provided upto a height of 1.2m.

Doors

The minimum door width for patient use shall 86cms. The minimum width of doors to rooms used by hospital inpatients transported in beds/trolleys shall be 1.2m. Height of doors should be not less than 2.13metres

Windows

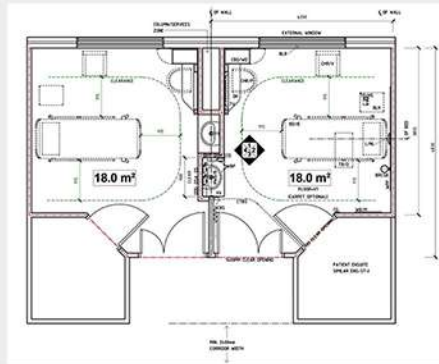
Wards and rooms for the admission of light and air shall have one or more apertures such as windows opening directly to the external air or into an open verandah. The minimum aggregate areas of such opening, excluding doors, inclusive of frames shall be not less than 20 percent of the floor area in case such apertures are located in one wall and not less than 15 percent of the floor area in case such apertures are located in two opposite walls at the same sill level.

Corridor

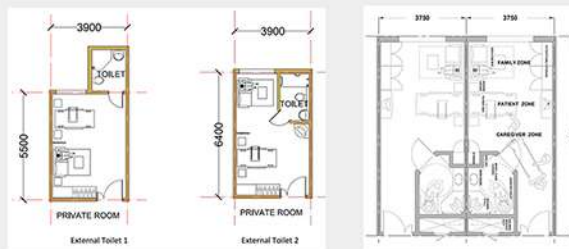
Minimum public corridor width shall be (1.52 metres). Work corridors less than (1.82 metres) long may be (1.22 metres) wide.

Water Supply

Arrangement shall be made to supply 350 litres of potable water per day, per bed.



INPATIENT UNIT DIAMENTION



PRIVET ROOM TYPE - 1 PRIVET ROOM TYPE - 2

FIRE AND LIFE SAFETY



- Classification of buildings based on occupancy, from fire safety point of view
- Demarcation of fire zone
- Types of building construction
- Openings in fire resistant walls and floors
- Electrical installations
- Escape lighting and exit signage
- Air conditioning, ventilation and smoke control
- Heating
- Glazing
- Surface interior finishes
- Fire Command Centre (FCC)

- General exit requirements
- Occupant load
- Egress components
- Exit access
- Exit
- Exit discharge
- Compartmentation
- Smoke control
- Gas supply
- Hazardous areas, gaseous, oil storage yard, etc
- Fire Officer
- Fire drills and fire orders

- Requirements for fire fighting installations
- Maintenance of firefighting installation and systems

SUBJECT

DESIGN - V

SHEET TITLE

DATA COLLECTION FOR NURSING HOME

SOURCE - IS 15902 (2010): GUIDELINES FOR NURSING HOME

DATE -

SCALE -

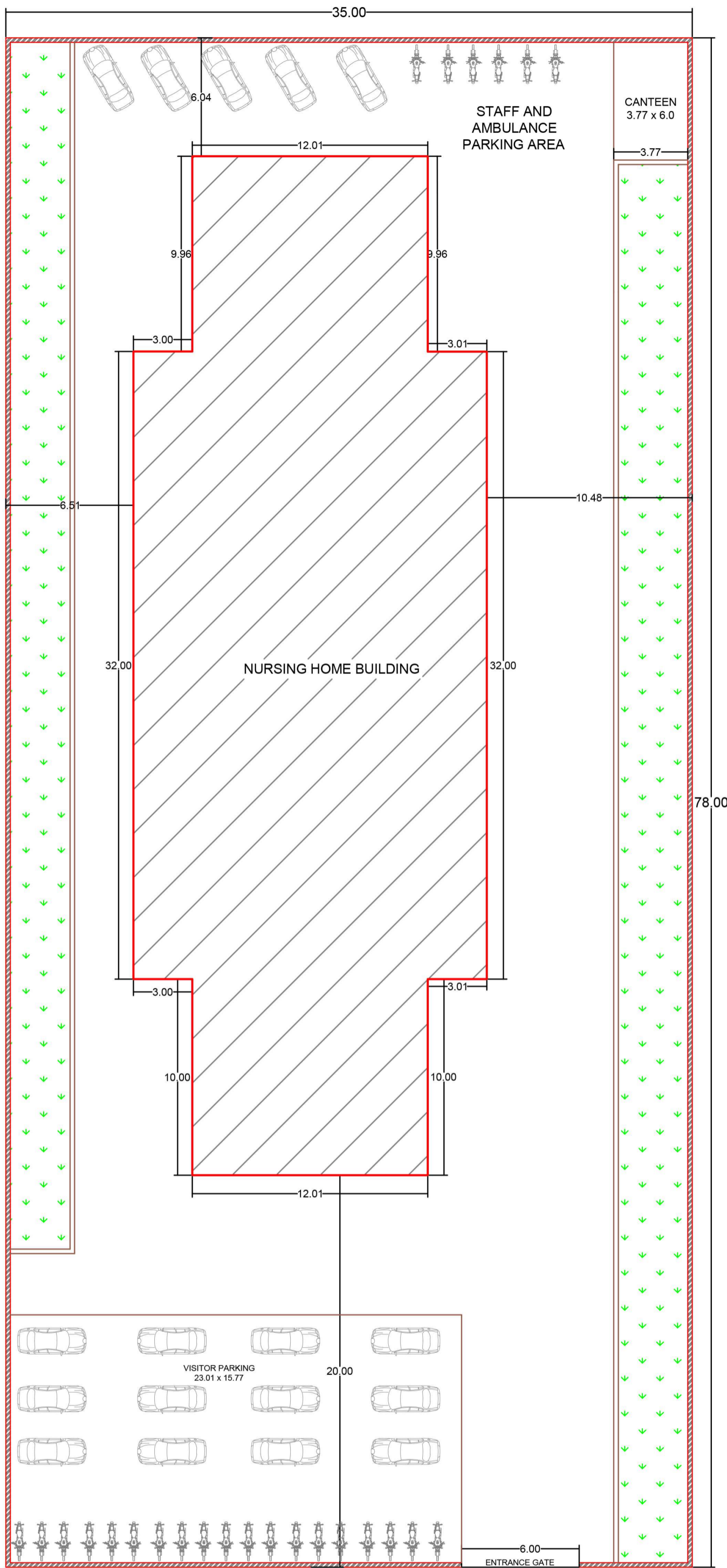
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ORIENTATION -

ROLL NO - 0233AR221002

SEMESTER - V



SUBJECT

DESIGN - V

SHEET TITLE

SITE PLAN OF NURSING HOUSE

AREA STATEMENT

TOTAL PLOT AREA 35x78-2730 SQMT

30% COVERAGE-819 SQMT

USED COVERAGE-29.89%- 816 SQMT

FAR - 1.5%

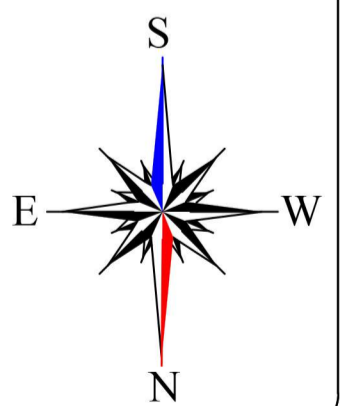
USED FAR -0.89%

SCALE -

REMARK -

CHECKED BY -

ORIENTATION -



FRONT ROAD

ROLL NO - 0233AR221002

SEMESTER - V

SUBJECT

DESIGN - V

SHEET TITLE

GROUND FLOOR PLAN

AREA STATMENT

TOTAL PLOT AREA 35x78-2730 SQMT

30% COVERAGE-819 SQMT

USED COVERAGE-29.89%- 816 SQMT

FAR - 1.5%

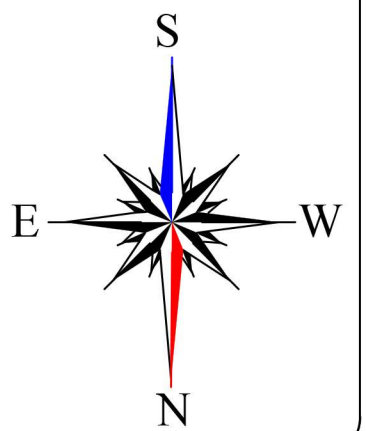
USED FAR -0.89%

SCALE -

REMARK -

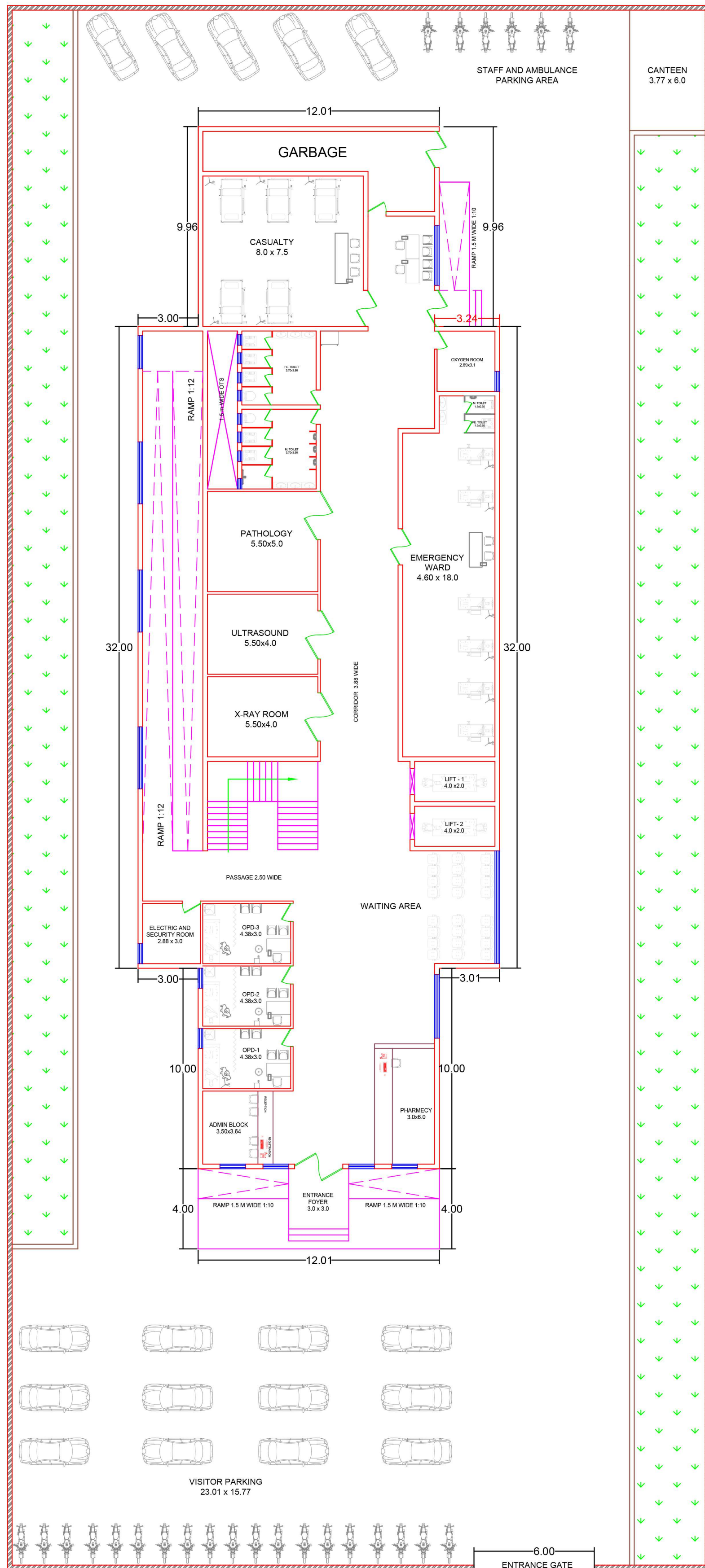
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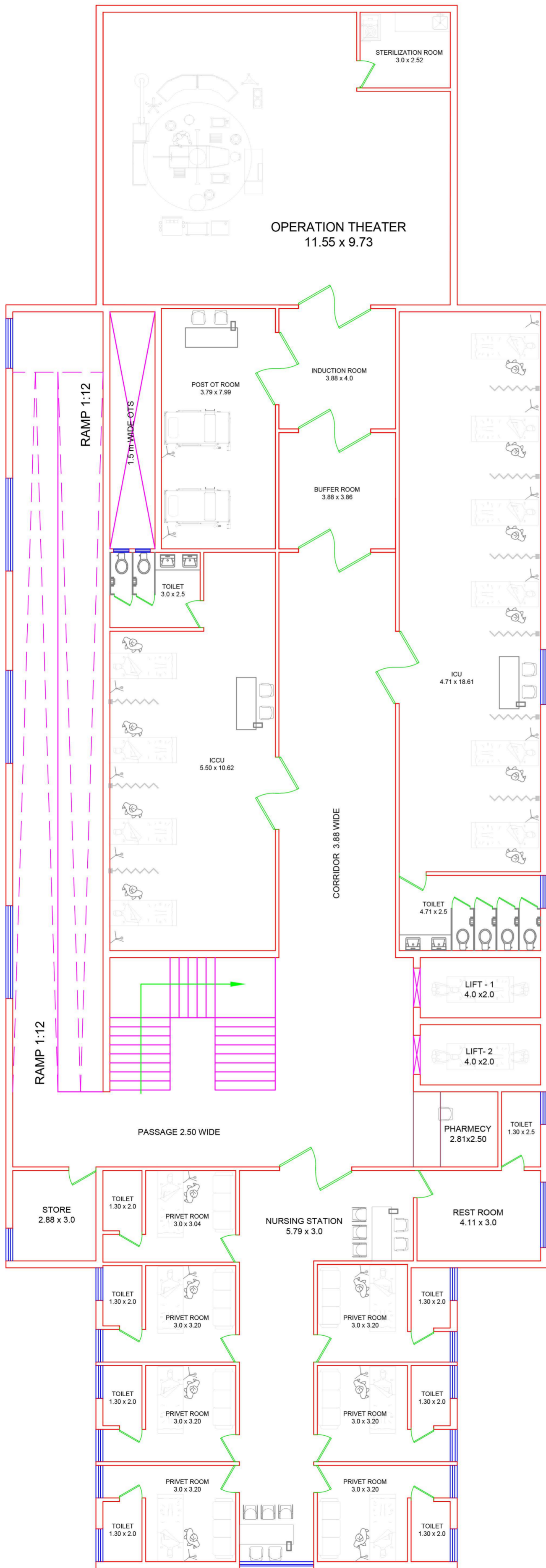


ROLL NO - 0233AR221002

SEMESTER - V



GROUND FLOOR PLAN



FIRST FLOOR PLAN

SUBJECT

DESIGN - V

SHEET TITLE

FIRST FLOOR PLAN

AREA STATMENT

TOTAL PLOT AREA 35x78-2730 SQMT

30% COVERAGE-819 SQMT

USED COVERAGE-29.89%- 816 SQMT

FAR - 1.5%

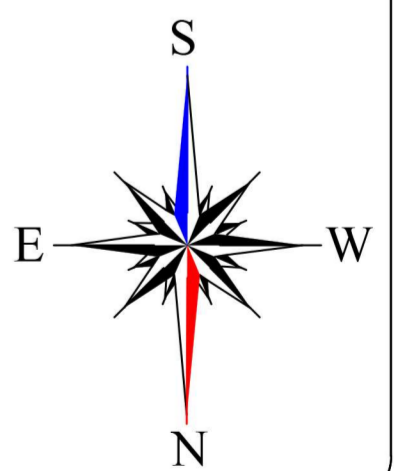
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SCALE -

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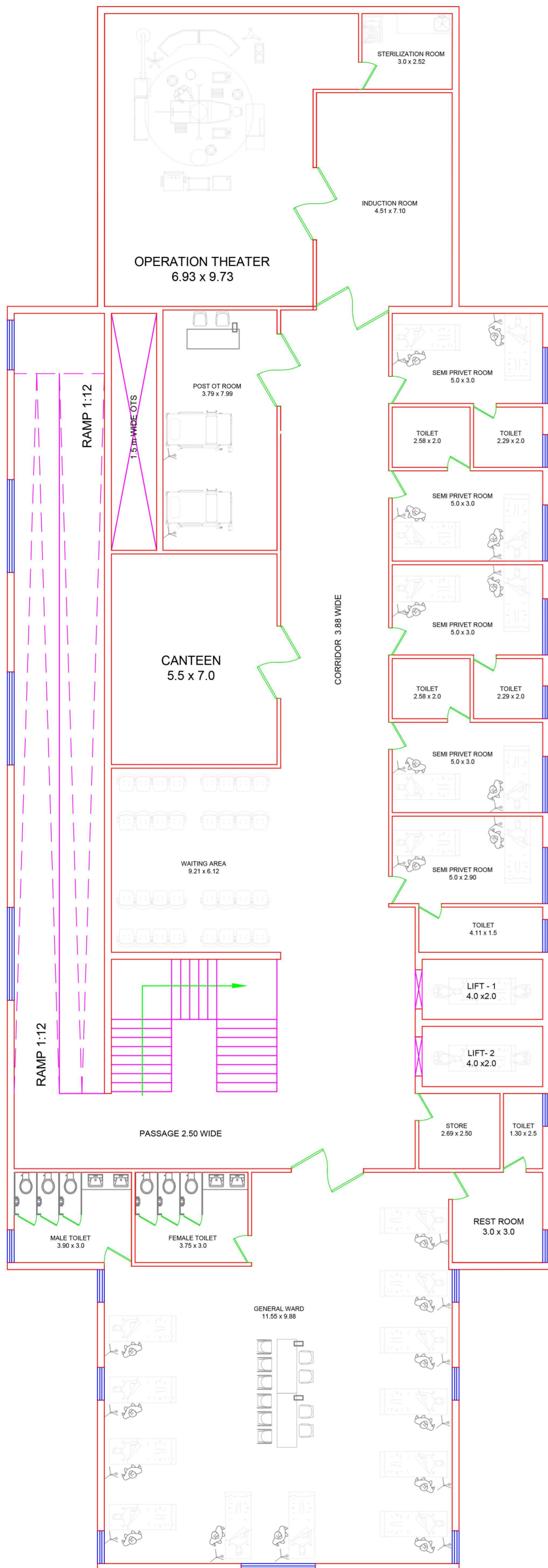
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ROLL NO - 0233AR221002

SEMESTER - V



SECOND FLOOR PLAN

SUBJECT

DESIGN - V

SHEET TITLE

SECOND FLOOR PLAN

AREA STATMENT

TOTAL PLOT AREA 35x78-2730 SQMT

30% COVERAGE-819 SQMT

USED COVERAGE-29.89%- 816 SQMT

FAR - 1.5%

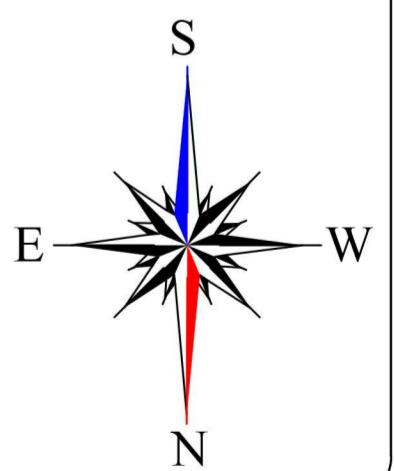
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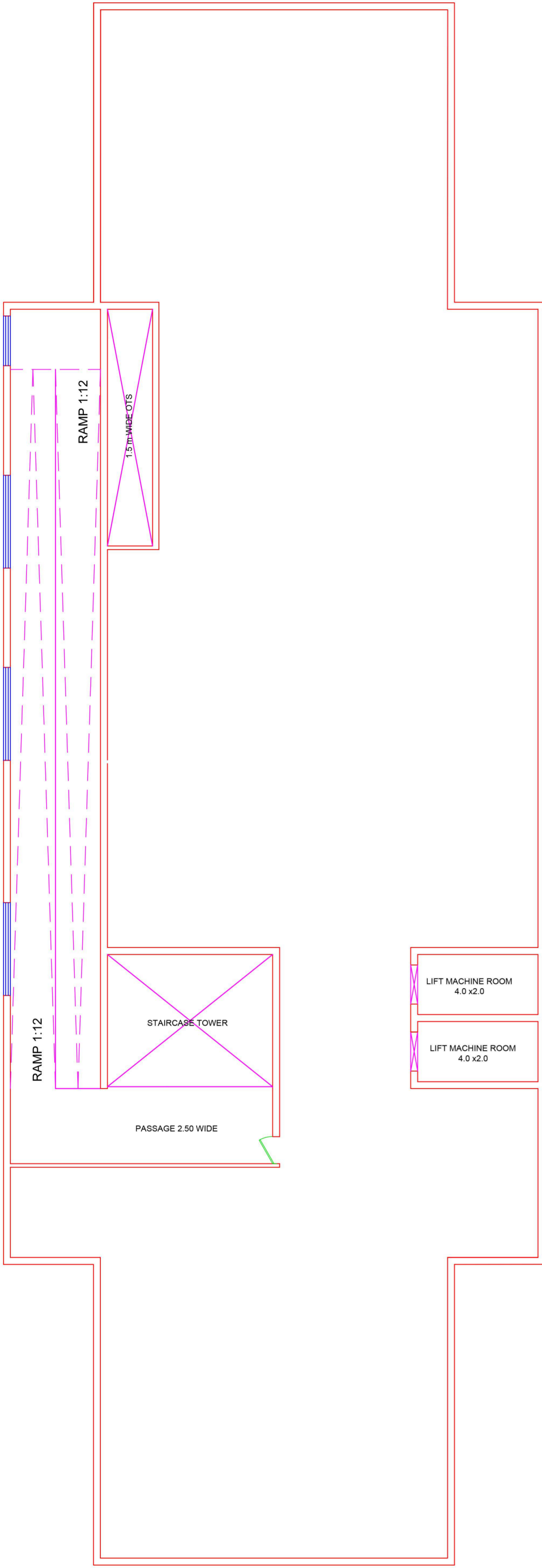
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ROLL NO - 0233AR221002

SEMESTER - V



TERRACE FLOOR PLAN

SUBJECT

DESIGN - V

SHEET TITLE

SECOND FLOOR PLAN

AREA STATMENT

TOTAL PLOT AREA 35x78-2730 SQMT

30% COVERAGE-819 SQMT

USED COVERAGE-29.89%- 816 SQMT

FAR - 1.5%

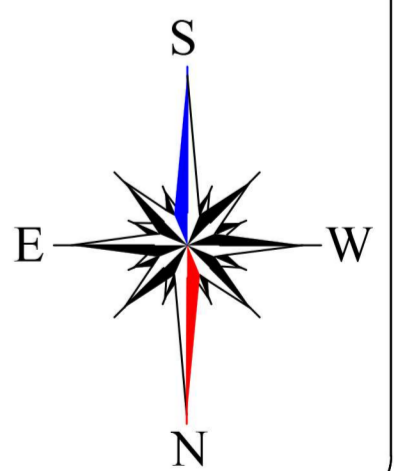
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