

INDIAN INSTITUTE OF FOREST MANAGEMENT

A THESIS

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

By

SHIVANI S
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DEPARTMENT OF ARCHITECTURE
SCHOOL OF BUILDING AND ENVIRONMENT

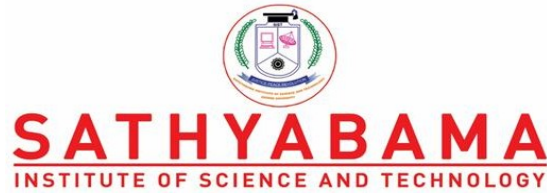
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CHENNAI - 600 119

NOVEMBER 2021



DEPARTMENT OF ARCHITECTURE

BONAFIDE CERTIFICATE

This is to certify that this Thesis Report is the bonafide work of SHIVANI S (37210034) who carried out the Thesis entitled "Indian Institute of Forest Management" under our supervision from July 2021 to November 2021.

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Dean and Head of the Department
Dr. DEVYANI GANGOPADHYAY

Submitted for Viva voce Examination held on **08/12/21**

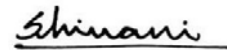
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DECLARATION

I, **SHIVANI S** hereby declare that the Thesis Report entitled “Indian Institute Of Forest Management” done by me under the guidance of **Ar.Ramkumar** (Internal Guide), **Dr.R.Arulmalar** (Internal Review Member) and **Ar.Saritha** (External Guide) Sathyabama Institute of Science and Technology is submitted in partial fulfilment of the requirements for the award of Bachelor of Architecture Degree.

DATE:06/12/21

A handwritten signature in cursive script, reading 'Shivani', written in black ink on a white background.

PLACE: Chennai

SIGNATURE OF THECANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **Sathyabama Institute of Science and Technology** for their kind encouragement in doing this Thesis and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. DevyaniGangopadhy**, Dean and Head of the Department, School of Building and Environment, Our Design Chair **Dr. Suresh Kuppuswamy**, Thesis Coordinator **Ar.SuryaRajkumar** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Thesis Internal guide **Ar.Ramkumar**, Internal Review member **Dr.R.Arulmalar** and External Guide **Ar.Saritha** their guidance, suggestions and constant encouragement which paved the way for the successful completion of my Thesis work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Architecture** who were helpful in many ways for the completion of the Thesis.

SHIVANI S

THESIS SYNOPSIS

THESIS – November 2021

Batch: 2017-2022

Register No: 37210034

Student Name: SHIVANI S

Thesis topic with thrust area and location	INDIAN INSTITUTE OF FOREST MANAGEMENT, VANDALUR
Thesis (Mention is it live proposal / hypothetical)	HYPOTHETICAL
Sponsoring Institute / agency for the proposed project	NONE
Design intent (Thrust Area) in Thesis	TO INTEGRATE INDOOR AND OUTDOOR SPACES IN THE CAMPUS
Challenges in Design	TO INTEGRATE LANDSCAPE INSIDE THE BUILDING, TO CREATE VIEWS FROM EACH CLASSROOM
Broad Design Program	ACADEMIC BLOCK : CLASSROOM, SEMINAR ROOM, COMPUTER CENTER, LIBRARY, ADMIN, FACULTY ROOM, LABORATORY, CONFERENCE ROOM LIVING : HOSTEL, STAFF QUARTERS, GUEST HOUSE OTHERS : PLAYGROUND, OAT, COMMERCIAL COMPLEX, FOOD COURT, SERVICE BLOCK.
Site location, Site area and Site Context	VANDALUR SITE AREA – 30 ACRES SITE CONTEXT – RESIDENTIAL, INSTITUTIONAL AND FOREST AREAS.
Identification of Case studies / Literature studies	IIFM BHOPAL, INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

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CHAPTER 1

INTRODUCTION

INTRODUCTION

Forests cover roughly one third of the world's land area and provide vital environmental services such as climate regulation, soil protection and water management. They also produce food and raw materials, which sustain hundreds of millions of people and support economies. But the world is changing. Temperature are predicted to rise, due to man-made climate change, and forests need to keep pace with this charge. To ensure they do, it is vital to conserve forest resources. A key aspect of active forest management is to ensure that regeneration of the species takes place within the conservation units. The study ensures that forest trees can survive, adapt and evolve under changing environmental conditions. It is vital to maintain the vitality of forests and to cope with pests and diseases.

AIM

The aim of the project is to design an campus for Forest Management to create an awareness on the importance of forest and its management. To design an campus with all facilities where the interior and exterior spaces are blended with the nature.

OBJECTIVES

To understand the various initiatives in protecting the flora of an suburban forest area and provide a platform to research on future scope of preservation and protection of forest through Indian Institute of Forest Management. To design a space for students and researchers to study more about the flora and its importance in the environmental system.

CHAPTER 2

LITERATURE CASE STUDIES

INDIAN INSTITUTE OF FOREST MANAGEMENT, BHOPAL

INDIAN INSTITUTE OF FOREST MANAGEMENT, BHOPAL.

Architect - Ar. Ananth Raje
Place - Bhopal
Year - 1989
Building - Institutional
Area - 160 Acres
Architectural Style - Modern

The design of Indian Institute of Forest Management (IIFM), Bhopal was inspired by the concept of continuity.

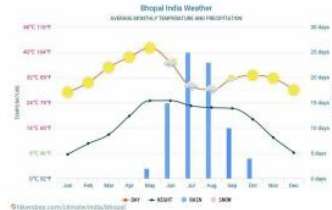
It is located in Nehru Nagar, in the southern west corner of the city of Bhopal. Situated on a hill that overlooks the Bhadhadra barrage.

The inspiration for the project came from the historical town of Mandu.

The natural vegetation is wild grass, which has been allowed to grow, augmented by rows and clumps of trees.

CLIMATE:

Bhopal has a hot and dry climate, except for a few months of winter and rains. Mean maximum reaching 41°C in the month of May and mean minimum touching 10°C in the month of January. Average humidity except in the months of June, July, August, September remain below 50%.



SITE:



The site is heavily contoured on two sides (West & South) with the third side having gradual slopes (East). The major axis of the site runs North-South on a relatively flat area with outcrops of two hillocks. The entire site is predominantly made of rocky terrain. The North-South axis connects the flattened lower lands on the Northside and the distant lakes on the Southside. The Western slopes open up the panorama of the city in the distance.

The bands to trees provide a deep buffer zone between the Academic complex and student residences. The water bodies are structured to create continuous vistas all over the site, carrying water in narrow channels to the areas containing trees and grass.

PLANNING :

Academic Zone

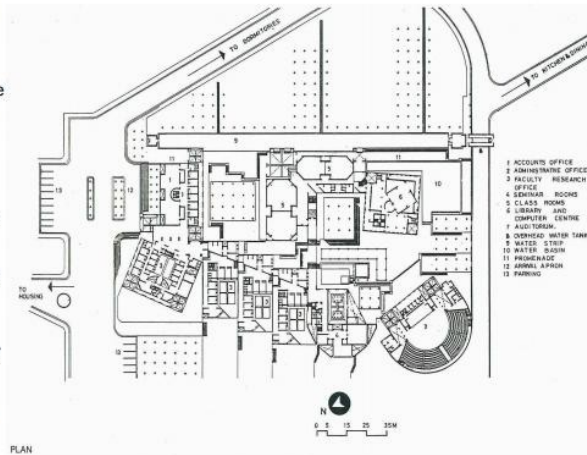
It is on this North-South axis that the main circulation spine is located.

In place of a continuous narrow corridor, individual set back lobbies are made as stop-off places for desirable interaction.

The buildings which form the academic court area: the Larger classroom, Smaller classroom, Library, Auditorium and Seminar rooms.

The scale of building forming the court is such that no building except the library will be more than 2 stories.

The Library considering its growth over a period of time may become a four-storey building giving a strong focus and anchor psychologically and physically to the academic court.



The Auditorium for 540 persons is planned for multipurpose activities speech, music, film or slide projection and holding an indoor Badminton or Table tennis tournament, For this reason, the part of the seating is on a flat area with removable chairs and part on the permanent tiers.

The auditorium will be acoustically treated and will have space for green rooms, switchgear, chair storage, etc.

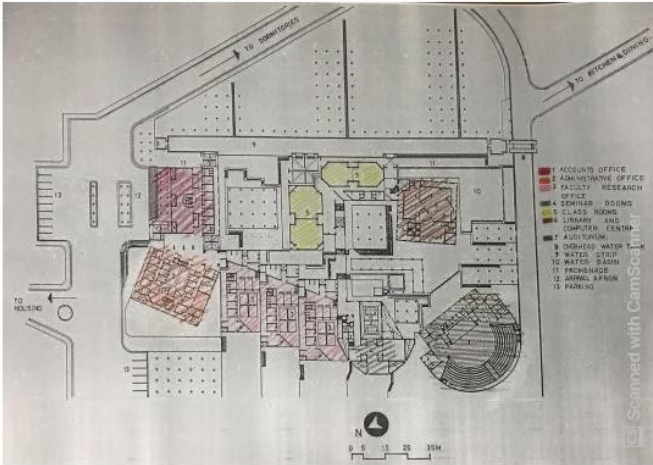
The Seminar rooms are considered a community of rooms having differently sized to house students from 15 to 40 in numbers.

This variety of sizes offers the possibility of engaging the room simultaneously for an appropriate number of students.

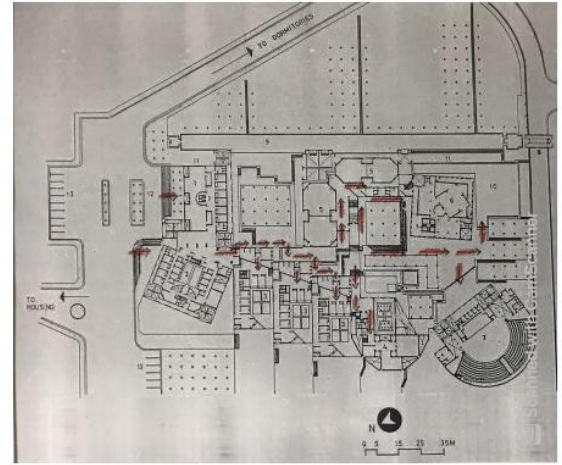
Hill site crowned by the academic complex offers considerable possibilities for compact cohesive grouping of buildings which is mainly the "Work-Zone." The "Core-Zone" is composed of Auditorium-Library and the academic court while the "Living-Zone" provides students Residences (Dormitories) Kitchen-Dining areas and any other spaces for group meetings.



PLATE 2.1



PLAN SHOWING THE MAJOR SPACES INSIDE THE ACADEMIC BLOCK



PLAN SHOWING THE ACCESS INSIDE THE ACADEMIC BLOCK



LIVING ZONE

Students Dormitories are located at the Southern tip of the Academic Complex. It is based on a concept of the house for 8 students sharing the bathroom facility.

Each house has a living room at the terrace level such as to capture the view of the distant lakes on the Horizon. The living room forms the "Social Centre" for each group of students whereas a bed-cum-study room forms a "Cell" for isolation and study for the individual student.

All Dormitories are oriented towards the lakes on the side of Southern slopes of the land and are in close proximity of the library in the Academic Complex.

The rows of trees between the student Dormitories and the Academic complex help create a buffer zone besides creating shaded walkways connecting other groups of Dormitories.

The rooms of the Dormitories are based on a general bay of 9'-6". 9" load-bearing walls and one-way concrete slabs across smaller span help keep the cost down besides offering rapidity of construction.

The external walls will be covered with stonecrete plaster between bands of thin stone slabs. This esthetic will be coherent with the esthetic of the Academic Complex.

It also consists of Kitchen and a space for meetings.

OPENINGS

Amphitheatres, Grounds, Parks.

The Amphitheatre, with a capacity of 750, is planned for multipurpose activities - speech, music or film. The seating is partly on flat area with removable chairs and partly on permanent tiers.

Built in concrete, the building's interiors interact with the exteriors through a medium of concrete arched skin that seems to wrap around, standing lightly along the periphery giving the overall building a certain lightness of form.

The facade displays a variety of textures in concrete and stone. Walls are clad with stone in shades of green and yellow grey.

The magnificence of the clear sky is brilliantly framed through the circular rings supported on the arches, carefully and precisely as one would stack cards.

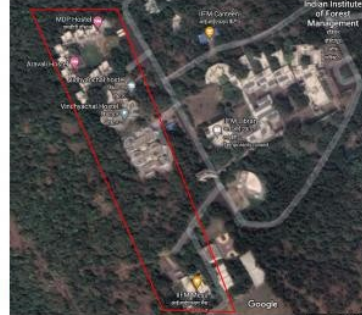


PLATE 2.1

INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

Architect - Ar. Achyut Prakash Karvinde
Place - Kanpur
Year - 1963
Building - Institutional
Area - 1038 Acres
Architectural Style - Modern

Indian Institute of technology is located in Kanpur, Uttar pradesh.

IIT - Kanpur is located on the grand trunk road, 15 km west of Kanpur city.

CONCEPT AND IDEOLOGY:

The residential campus is planned and landscaped with a hope for environmental freedom.

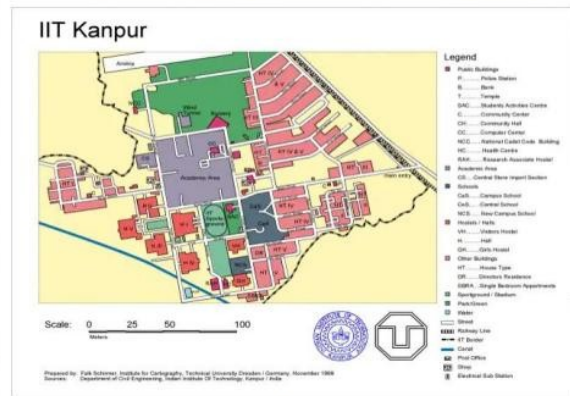
Halls of residences, faculty and staff houses and community buildings surround the central academic area to provide flexibility in movement and communication.

Care pedestrian island which consist of lecture halls surrounded by landscaping and water body forming the main focus of the campus.

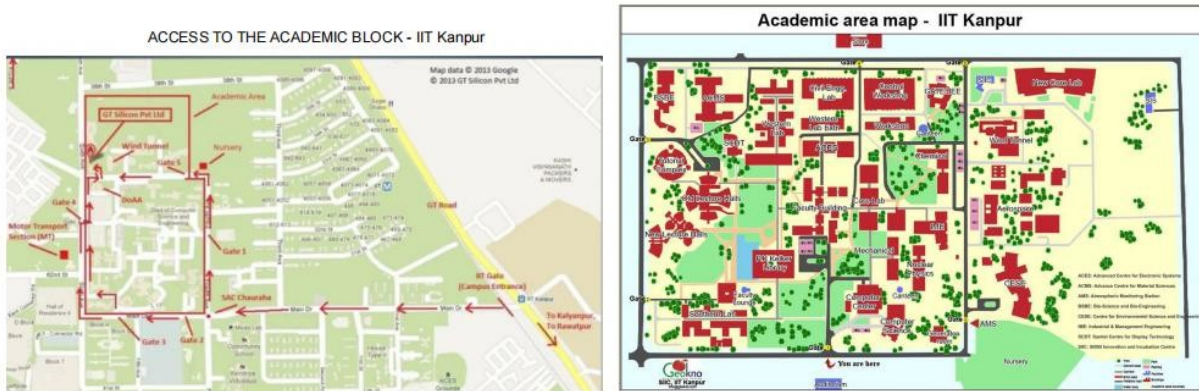
The academic area is well connected by a long corridor which links all the major buildings.

Conventional type of buildings were designed as isolated islands of departments.

Activities which standards which students and faculties share are designed to encourage meeting and interaction.



SITE PLAN



The IITK campus occupies a 1038 acre area.

The academic complex is located centrally at the site and free from traffic noise.

Academic buildings: 13 departments, pk kelkar library, computer centres faculty offices, laboratories and administrative buildings.

Around 7000 students, 390 faculty, and 1000 staff members (and their families) reside on campus.

No. of buildings - 108

10 boys hostel and 2 girls hostel.

With sports complex, housing for faculty.

The site is flat with the canal on one side and transportation route on the other side.

Pedestrian and vehicular traffic are completely segregated.

P.K KELKAR LIBRARY:

It is a four - storied building (covered area of 5730 sq.m)

Basement - 700 sq.m
Ground floor - 700 sq.m
First floor - 1630 sq.m
Second floor - 2700 sq.m

Staff strength - 40

It is a framed structure based on grid. The whole building is built in R.C.C with a brick facade.

Exposed bricks were used which reduces the maintenance, costs and enhances aesthetic appeal.



RESIDENTIAL CAMPUS:

The residential campus is planned and landscaped with a hope for environmental freedom.

Halls of residence, faculty and staff houses and community buildings surround the central academic area to provide flexibility in movement and communication.

Three types of buildings are provided, Hostel for students, apartments and houses for faculties.



STAFF QUARTERS



HOSTEL



STAFF HOUSES

SPLIT LEVEL CORRIDOR SYSTEM:



- Minimize the walking distance, improving connectivity
- Create spatial expansion
- Give the impression of one large space hence space is used as a tool
- Elevated pedestrian walkway
- Sheltered and yet openness
- Protection from hot sun yet allowing breezes.



MATERIALS:

In Kanpur, the local availability of high quality brick and the prevalent labour and construction practices made Kanvinde go for reinforced concrete for structural frames and bricks as infill's.

Reinforced - concrete post-and-slab construction, with a series of flats slab floors and flat roof-slab carried on concrete columns or posts.



- AUDITORIUM



- COMPUTER CENTRE

CHAPTER 3

DATA COLLECTIONS AND STANDARDS

STANDARDS

MINIMUM ROAD WIDTH - 7.2m

MAXIMUM HEIGHT - 18.3M

FSI - 2.0

SETBACKS - 6m (every side)

OSR - 10%

MINIMUM CORRIDOR WIDTH - 2.0m

PARKING

- 1 car space for every 100 sq.m and 1 two-wheeler space for every 30 sq.m of floor area.

- 50 % of the car spaces shall be provided in the front area abutting the road so as to act as a recessed parking area for the drop/pickup for students.

- Internal road width: Single way - 3m

Double way - 7m

- Slope of parking spaces shall be not more than 4% in any direction.
- Gradient for the ramps in parking spaces shall not be steeper than 1:8
- The clear headroom (between floor and beam bottom) shall be minimum 2.2 meters in parking spaces.

SANITATION

	BOYS	GIRLS
W.C	1 / Every 40	1 / Every 25
URINALS	1 / Every 20	-
WASH BASIN	1 / Every 40	1 / Every 40
CLEANING SINK	1 / Floor	1 / Floor
TAPS	1 / W.C	1 / W.C

ELECTRICAL ROOM

- The electrical room with RCC roof shall have clear floor area 6m * 4m with a vertical clearance of 2.75m.
- A clear space of 10m * 4m or 5m* 5m. Open to the sky shall be provided preferably at the main entrance.

- The transformers shall be located only in the periphery of the ground floor, observing suitable clearances.

DIFFERENTLY ABLED

- Minimum width of ramp shall be 1800mm with maximum gradient 1:12. Length of ramp shall not exceed 9.0m.
- The minimum width of stairways shall be 1350 mm, riser - 15mm, tread - 30mm with 12 risers on a flight.
- The minimum toilet size shall be 1500mm * 1750mm, door shall be 900mm and shall swing out.
- The lift lobby shall be of an inside measurement of 1800mm * 2000mm or more.

STAIRWAYS

Minimum width of staircase is 2 m.

MINIMUM TREAD - The minimum width of tread shall be 300mm. In case of spiral staircase, it shall have the above minimum tread width at the outer end.

MAXIMUM RISER - The maximum height of riser shall be 150mm and it shall be limited to 15 per flight.

The minimum headroom in a passage under the landing of a staircase shall be 2.2m. The clear headroom in any staircase shall be 2.2m.

STRUCTURES IN SETBACK SPACES

- Sun-shades not exceeding 0.6m
- Motor room of area not exceeding 2 sq.m each and height not exceeding 1.8m
- A Compound wall of height not exceeding 2.0m
- Watchman booth not exceeding 2.5m * 2.5m, height not exceeding 3m.
- Vehicular entry and exits to site is 2 no.s (i.e. one entry or one exit); provided that an additional gate for every 50 meters frontage

BATHROOMS AND WATER CLOSETS

The height of a bathroom or water closets measured from the surface of the floor to the lower point in the ceiling bottom of slab shall not be less than 2.1m. The area of a bathroom shall not be less than 1.4 sq.m. with a minimum width of 1.0m. The floor area of water closet shall be 1.0 sq.m. with a minimum width of 0.9m. If bath and water closet are combined, its floor area shall not be less than 2.4 sq.m. with a minimum width of 1.2m.

AUDITORIUM

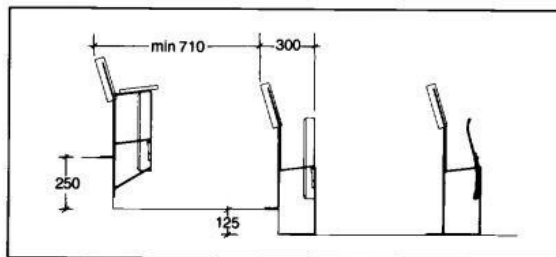
SEATING MINIMUM DIMENSIONS:

Back to back distance between rows of seats - 750

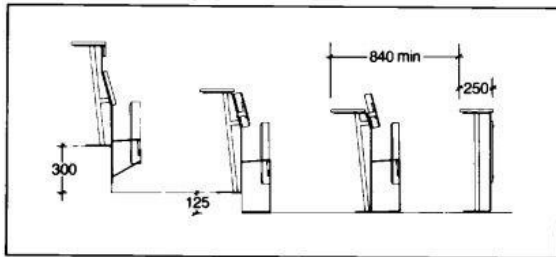
Width of seats, linked, without arms - 460

Width of seats with arms - 500

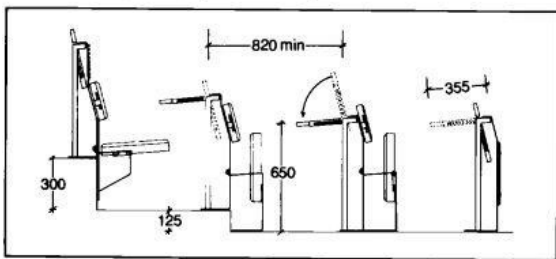
Unobstructed vertical space between seats - 300



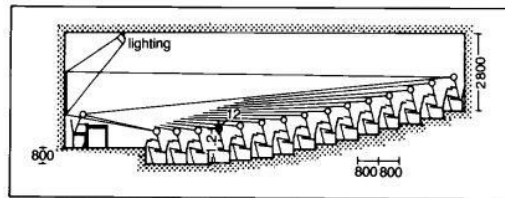
1 Fixed seating with tip-up seats



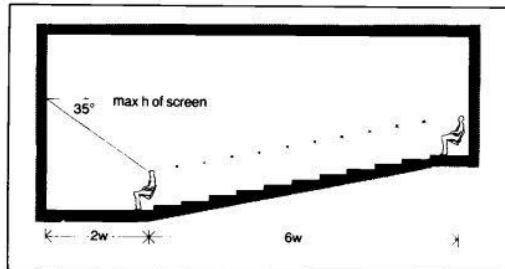
2 Fixed seating with tip-up seats & writing shelf



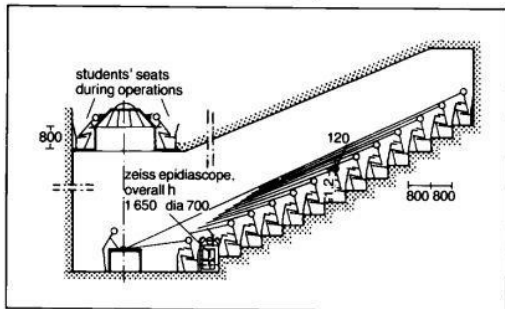
3 Fixed seating with tip-up seats & retractable shelving



5 Section through orthodox lecture theatre



6 Preferred viewing distances for cinema projection



7 Lecture theatre with demonstration table (surgical clinic)

Fig 3.1 standards of an auditorium

AREA STATEMENT

COURSES

PGDFM - 2 yrs (120 students/yr) = 240

PGDSM - 2 yrs (60 students/ yr) = 120

FPM (Fellow Programme Management) - 4 yrs (8 students/ yr) = 32

M.Phil - 1 yr (20 students/ yr) = 20

P.H.D - 3 to 6 yrs (25 students) = 25

Certificate Course on Chartered Forestry - 4 months

Training:

MDP (Management Development Programme) - 2 to 3 weeks

ADMINISTRATIVE BLOCK

Reception - 20 sq.m

Waiting Area - 45 sq.m (30 persons)

Accountant office - 25 sq.m

Conference room - 75 sq.m (40 persons)

Counsellor office - 10 sq.m

Staff Lounge - 45 sq.m (20 persons)

Director office - 35 sq.m

Assistant Director office - 30 sq.m

Dean office - 28 sq.m

Toilet:

Male - 1.4 sq.m

Female - 1.4 sq.m

Disabled - 3.5 sq.m

ACADEMIC BLOCK

HOD room - 15 sq.m

Office room - 20 sq.m

Faculty room - 8 sq.m

Faculty research office - 50 sq.m

Seminar room - 220 sq.m

Computer centre - 150 sq.m

Classrooms:

Type 1 - 85 sq.m

Type 2 - 45 sq.m

Type 3 - 30 sq.m

Library - 300 sq.m

Laboratory - 180 sq.m

Toilet:

Male

W.C - 1.4 sq.m (7 no.s)

Urinals - 12 no.s

Wash Basin - 5 no.s

Female

W.C - 1.4 sq.m (10 no.s)

Wash Basin - 6 no.s

Disabled - 3.5 sq.m (2 no.s)

Multipurpose hall - 1200 sq.m (700 Persons)

LIVING BLOCK

Hostel rooms:

4 Sharing - 40 sq.m

Bathroom - 3 sq.m (2 no.s)

2 Sharing - 25 sq.m

Bathroom - 3 sq.m (1 no.s)

Mess Hall - 750 sq.m (400 persons)

Kitchen - 250 sq.m

Store - 25 sq.m

VIP rooms - 25 sq.m (10 no.s)

VIP lounge - 55 sq.m

Dining hall - 70 sq.m

Kitchen - 30 sq.m

Staff Quarters:

Individual House - 10 no.s

Apartment - 25 Units

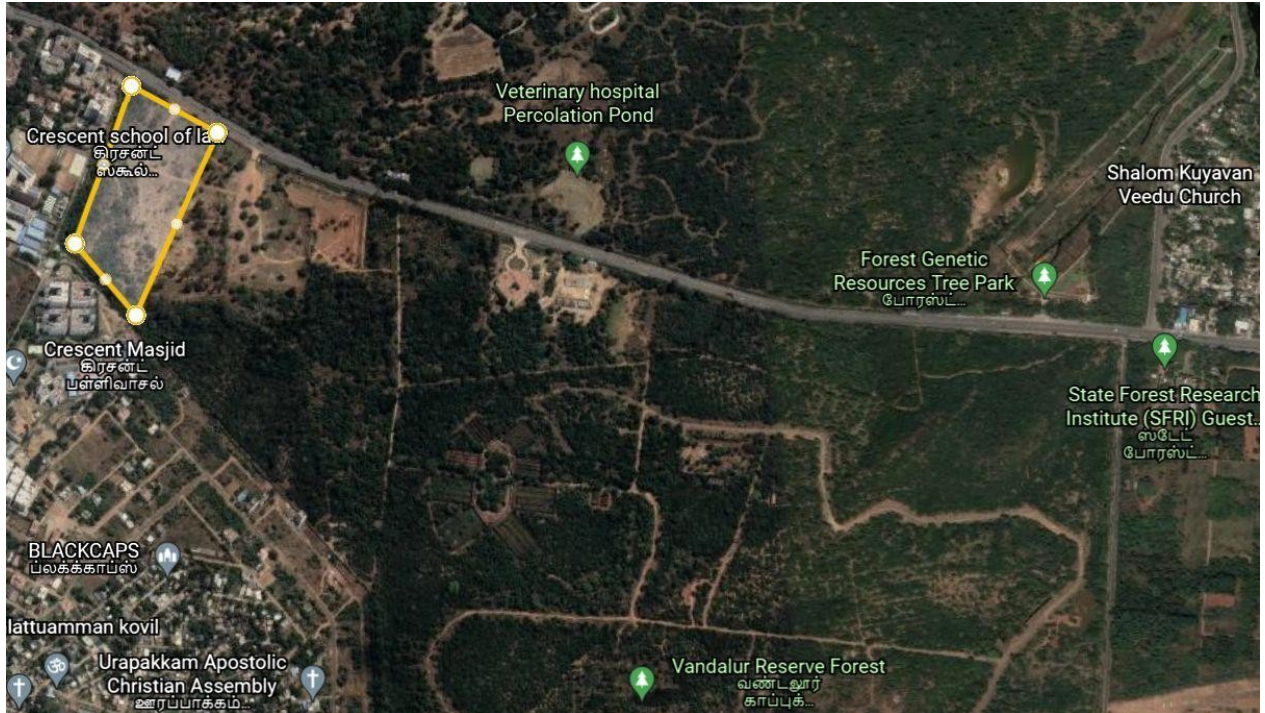
AMENITIES

Health care center - 350 sq.m

Commercial Complex - 100 sq.m

CHAPTER 4

SITE STUDY AND ANALYSIS



LOCATION - Kelambakkam-Vandalur road, Tamilnadu.

DISTRICT - Kancheepuram

CLIMATE - Hot and Humid

GOVT. TYPE - Municipality

SITE AREA - 30 Acres

NEIGHBOURHOOD CONTEXT

New mofussil bus terminus - 1km

Tambaram Railway station - 6.8 km

Guduvancheri Railway station - 5.2 km

Vandaloor Zoo - 1.2 km

Crescent Institute of Science and Technology - 0.7 km

One health hospital - 1.2 km

Advanced Institute for Wildlife Conservation - 0.4 km

Forest Genetic Resources tree park - 1.2 km

State Forest Research Institute - 1.4 km

- Vandalur is a census town and residential locality in southern part of the metropolitan city of Chennai. It serves as the southern gateway to Chennai city.

- The neighbourhood is served by Vandalur Railway station of the Chennai Suburban Railway network.

- Vandalur reserve forest is a protected area located in the suburb of Vandalur in the Southwestern part of Chennai, about 30 km from the city centre.

- It is bordered by the grand southern trunk road in the west and suddhananda bharathi street on the northern and the eastern sides, and is intersected by the Vandalur-kelambakkam road on the southern side.

JUSTIFICATION AND FEASIBILITY

- Vandalur serves as the southern gateway to Chennai city. It forms the junction of the vandalur-kelambakkam road, connecting the grand southern trunk road (GST) with old mahabalipuram road (OMR).

- New mofussil bus terminus has been proposed near the site.

- There are many institutions in the vicinity and there's no Indian institute for forest management.

- The site is near Vandalur reserve forest and nearby there are research centers for forestry and Institute for wildlife conservation.

- The context of the site responds to the institution since, there are many institutions near the site.

- The site has a good road network connectivity for all types of vehicles to access from the outer ring road.

SITE ANALYSIS

SITE ANALYSIS:

CLIMATE

-The climate is warm humid for most of the year and partially wet and tropical during monsoons.
-Average annual temperature is 27.9 °C

TOPOGRAPHY

Gradual slope with minimal drop, almost flat land.

WIND DIRECTION

The predominant prevailing winds are from southeast to northwest with average speed of 9.5km/hr.

PRECIPITATION

The annual amount of precipitation in Chennai is 1291mm.

VEGETATION

Land with partial ground cover of wild trees and grass. Most suitable form of vegetation is deciduous and evergreen trees and shrubs.

ACCESS

Primary site road - 22 m width
Secondary site road - 6 m width

SOIL TYPE

Alluvial soil

UTILITIES

Power poles at 10m distance along the north edge of the site.
The site receives electricity from Kattankulathur substation - 7.5 km
Water supply from Kāmbakkam water tank which is at 3 km distance.

SITE ZONING REGULATIONS

MINIMUM ROAD WIDTH - 7.2m
MAXIMUM HEIGHT - 18.3M
FSI - 2.0
SETBACKS - 6m (every side)
OSR - 10%

LEGAL - Government land
Authority CMDA

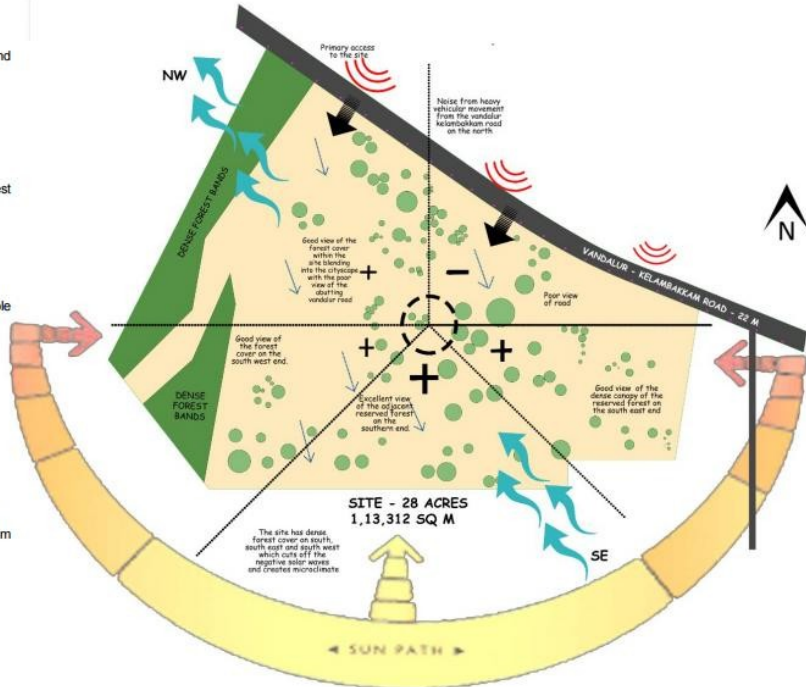


PLATE 4.1

CHAPTER 5

ARCHITECTURAL DESIGN



PLATE 5.1

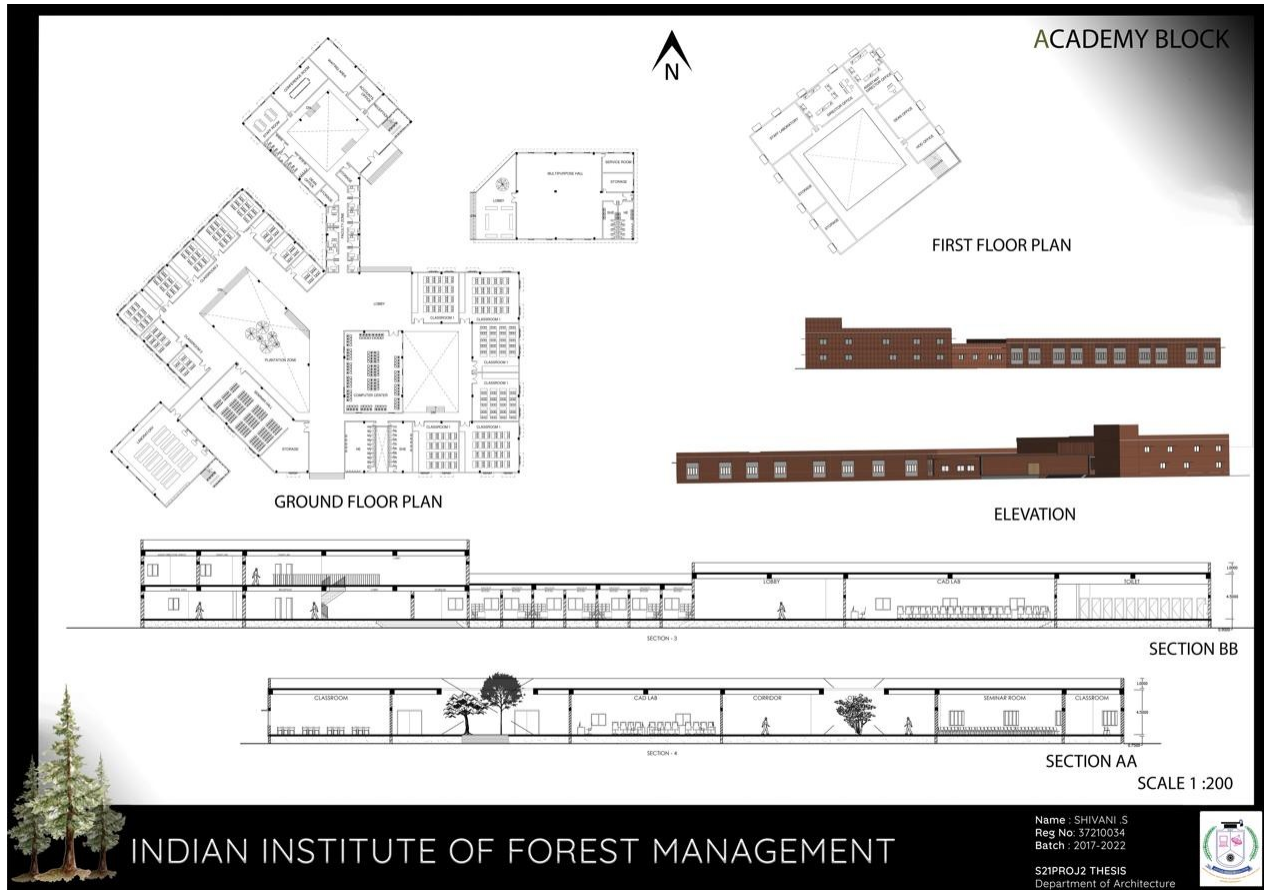


PLATE 5.2

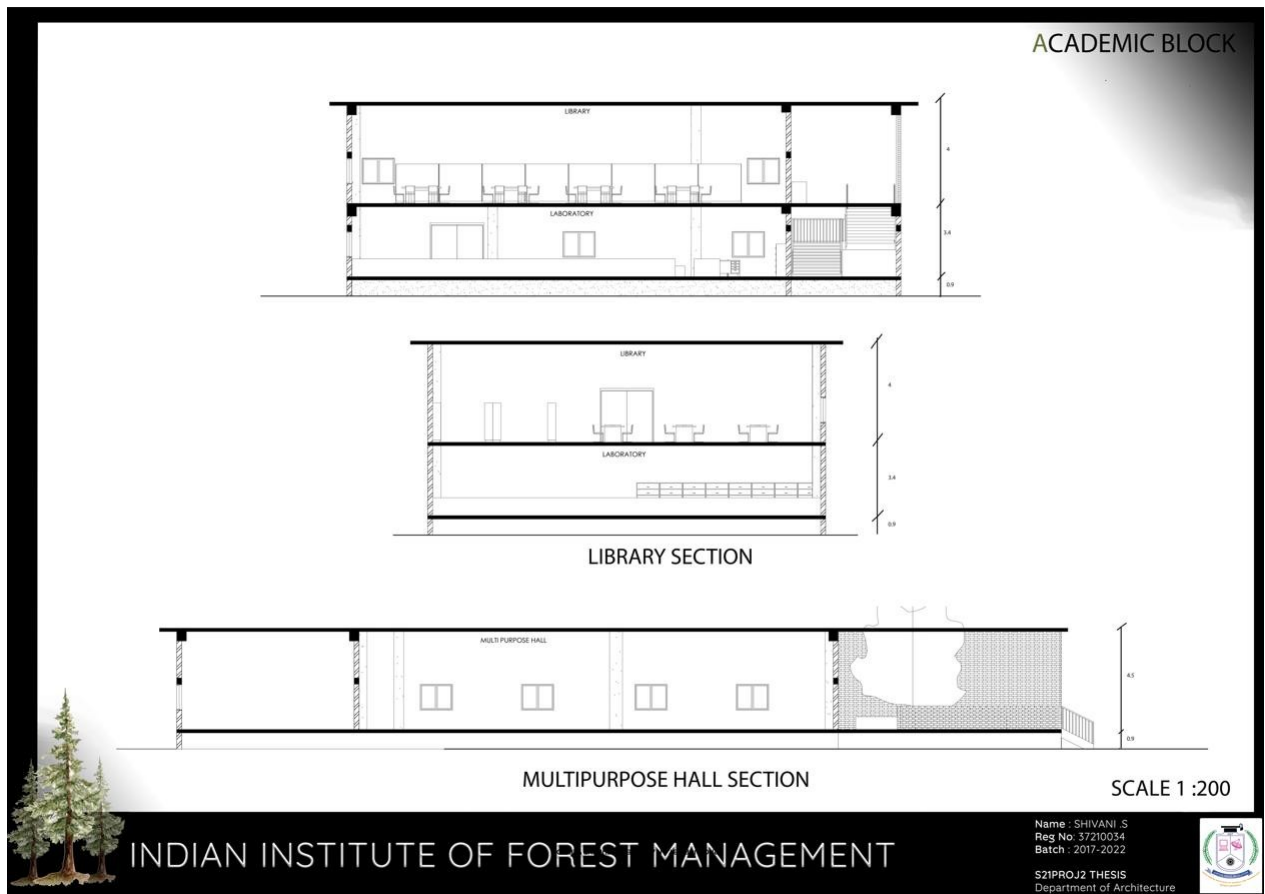


PLATE 5.3

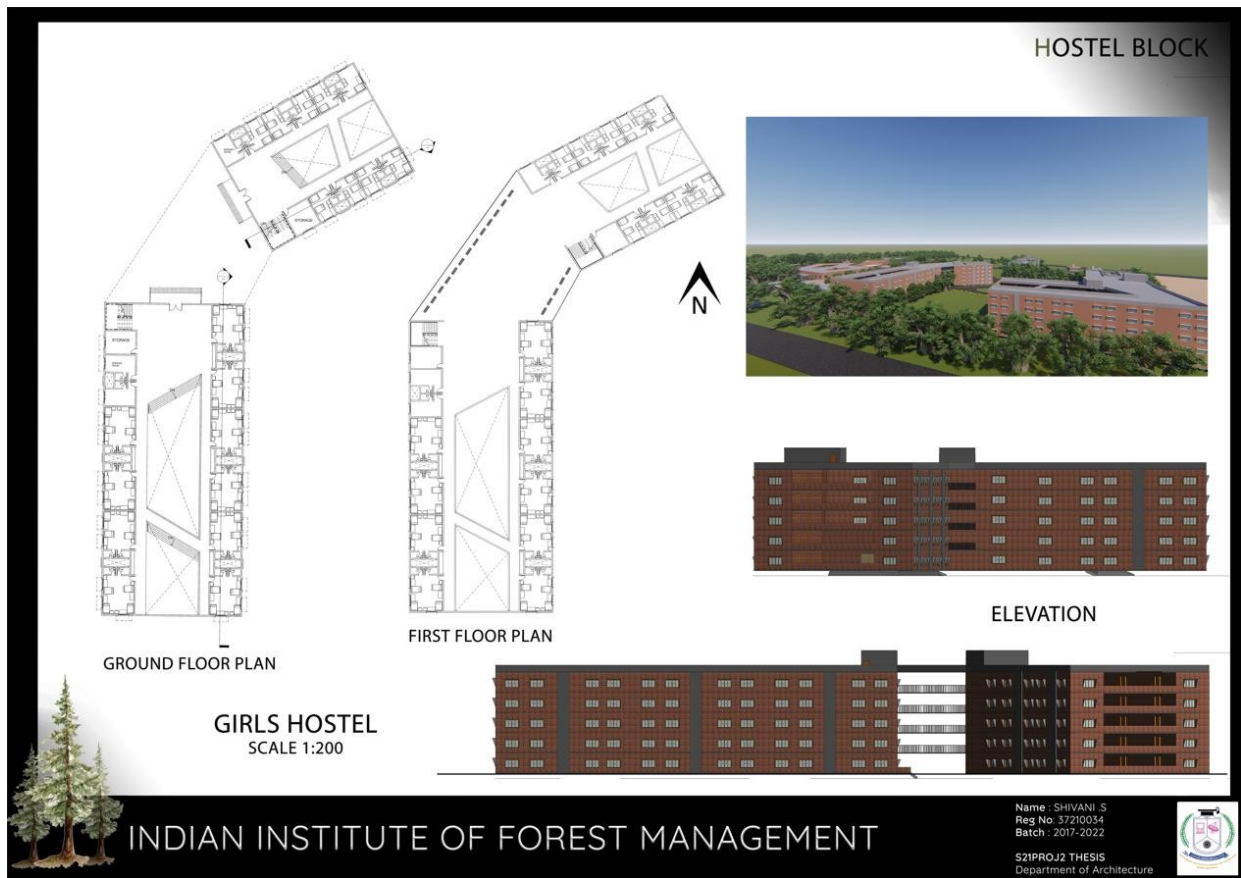


PLATE 5.4

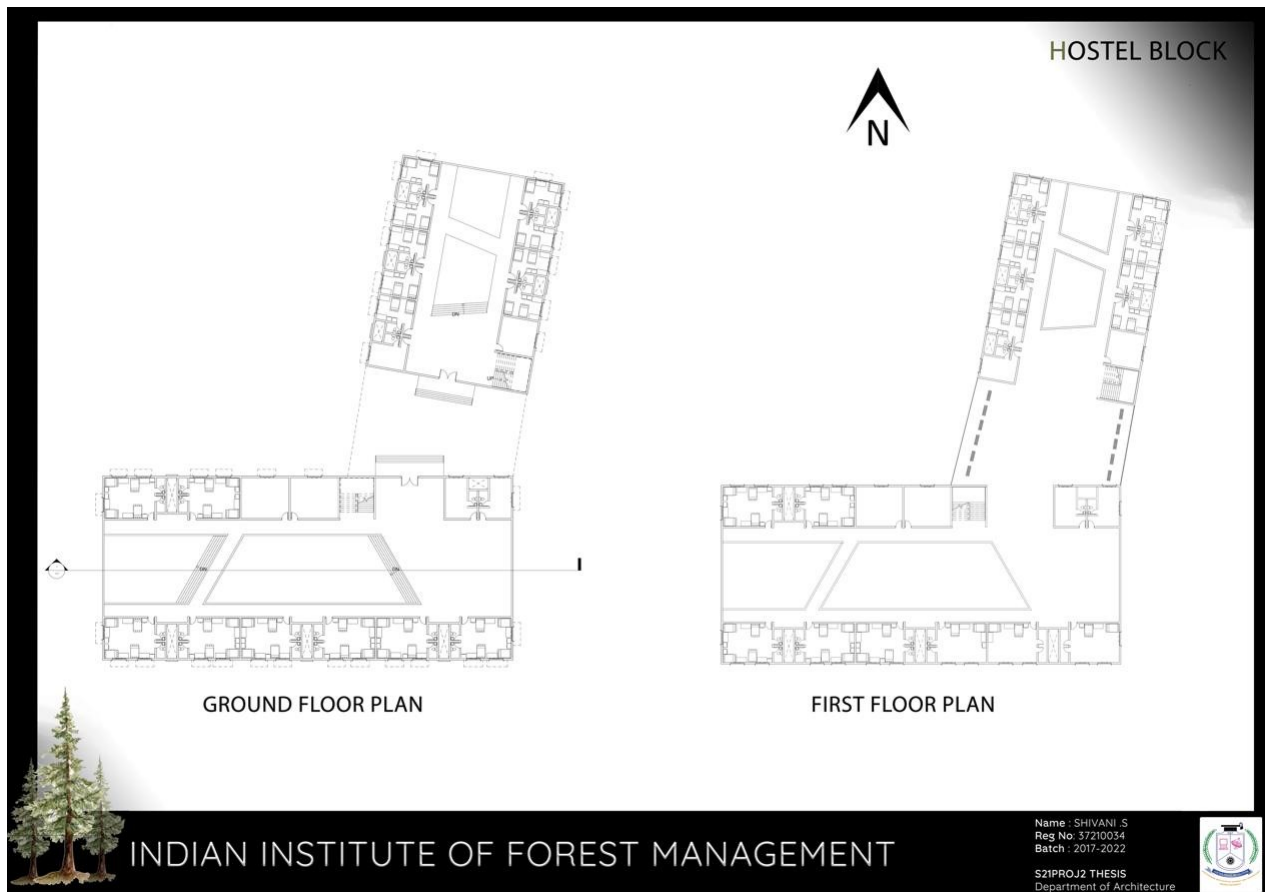


PLATE 5.5

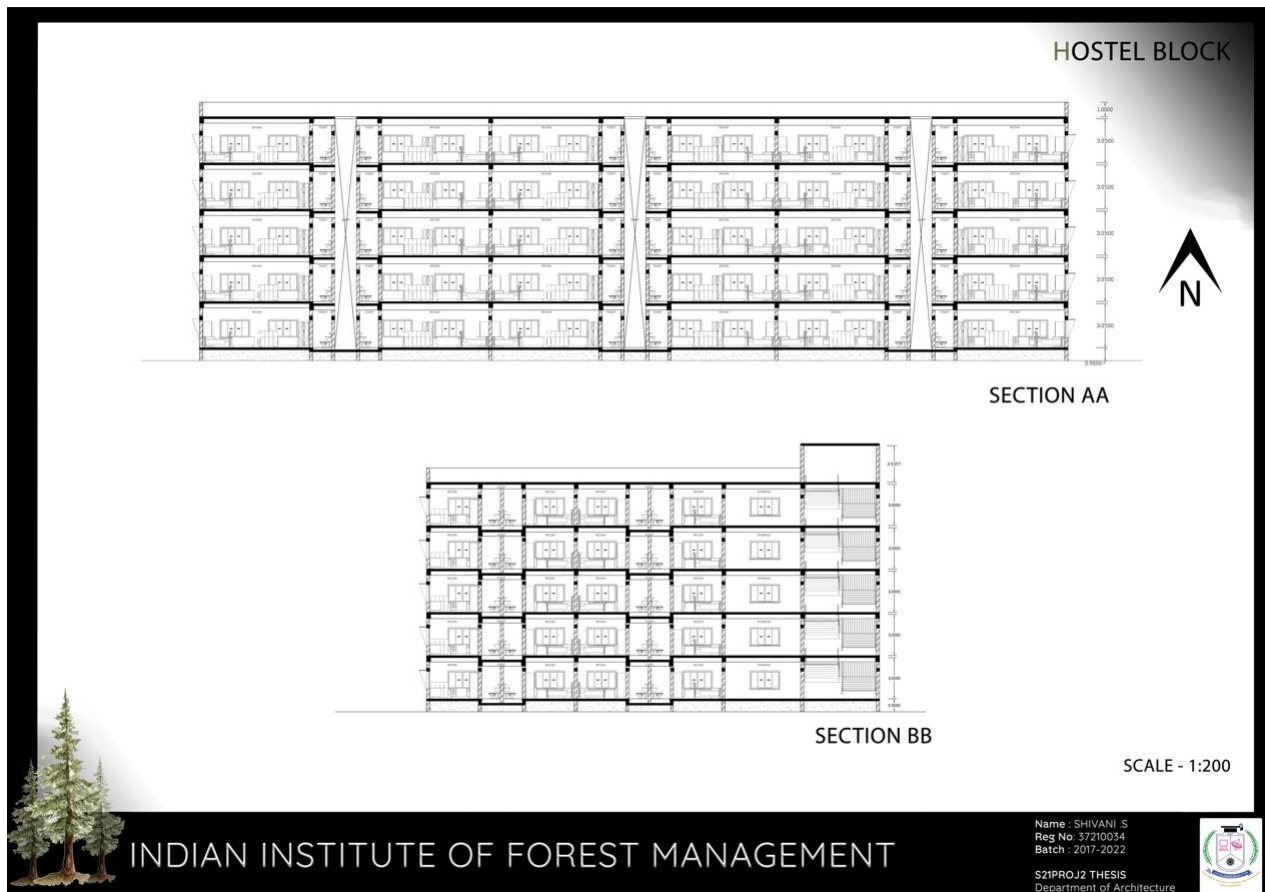


PLATE 5.6

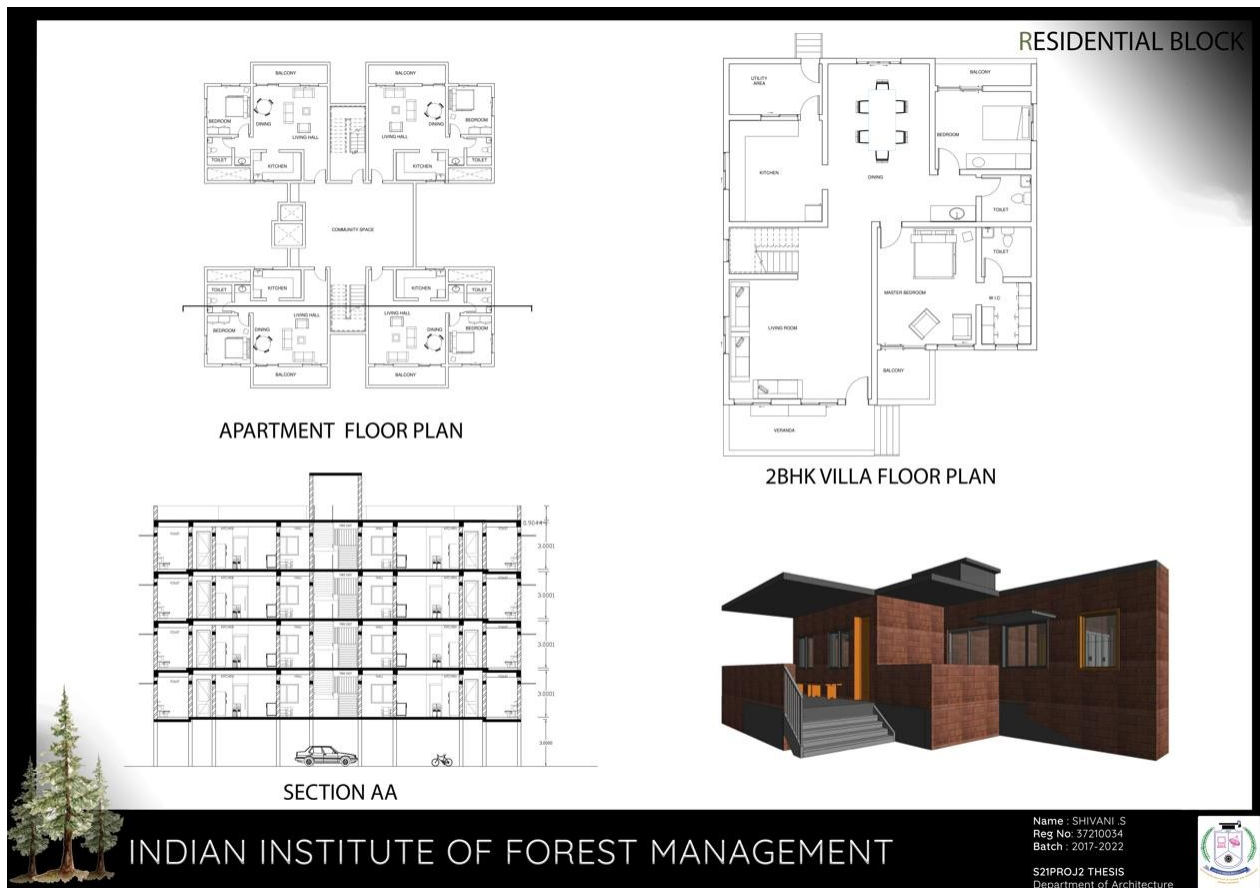


PLATE 5.7



PLATE 5.8

CHAPTER 6

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