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New Campus of Ambedkar University

Rohini Sector-3, Delhi, India

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New Campus of Ambedkar University

Rohini Sector-3, Delhi, India

BACHELOR OF ARCHITECTURE

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DEPARTMENT OF ARCHITECTURE AND PLANNING

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL

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New Campus of Ambedkar University

Rohini Sector-3, Delhi, India

Submitted by:

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9th Semester, 5th Year

UNDER THE GUIDANCE OF

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MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY

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CANDIDATE DECLARATION

The Thesis Project in the subject ARC 511, entitled "**New Campus of Ambedkar University, Rohini sctor-3, Delhi, India"**, is being submitted in partial fulfilment of the requirement for the award of degree of Bachelor of Architecture by the undersigned for evaluation. The matter embodied in this project is a record of my own work. If, in future, it is found that the above statement is false, then I have no objection to the withdrawal of Bachelor of Architecture Degree awarded to me by the Institute.

Date: 1st – 2nd Dec, 2025

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RECOMMENDATION

Based on the above declaration of the student, the undersigned recommends that the work submitted by the candidate may be considered for the final end term examination of the subject ARC-511, Thesis Project.

Date: 1st – 2nd Dec, 2025

Dr. Charumitra Kapshe
Thesis Guide

CERTIFICATION OF EXAMINATION

The Bachelor of Architecture Thesis Viva-Voce examination of Ms Priyadarshita Tiwari Scholar No.211110040, was held on 1/12/2025 to 2/12/25.

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ABSTRACT

This thesis proposes the comprehensive architectural design of the new Ambedkar University Delhi campus at Sector–3, Rohini, envisioned as a model for equitable, sustainable, and future-ready higher education infrastructure. The project is grounded in the institutional vision outlined in the RFP issued by the Public Works Department, Government of NCT Delhi, which frames the campus as a multi-disciplinary, socially inclusive, and environmentally responsive learning environment. Spanning 7.3 hectares with a permissible built-up area of 1,67,680 sqm, the design integrates institutional, residential, administrative, and shared facilities within the development controls of the MPD–2021, including the mandated 70:30 distribution between institutional and residential zones and an FAR of 2.25

The thesis explores campus-making as an interplay between nature, community, and knowledge systems, drawing from AUD's vision of non-hierarchical, collaborative, and socially just learning spaces. The proposed master plan emphasizes porosity, walkability, and cluster-based academic organisation, aligning with the RFP's programmatic brief comprising Schools, Centres, Central Facilities, and residential components for students, faculty, and staff. Spatial strategies prioritize shared resources, mixed-use academic clusters, and flexible pedagogical spaces to support AUD's interdisciplinary modes of learning.

Through the synthesis of programmatic complexity, urban context, environmental performance, and institutional ethos, this thesis develops a holistic design proposal that reimagines AUD Rohini as a contemporary, inclusive, and sustainable campus—one that nurtures collective engagement, self-growth, and community belonging while setting new benchmarks for public university architecture in India.

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Priyadarshita Tiwari
211110040

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CHAPTER I: DESIGN BRIEF

1.1 INTRODUCTION

Ambedkar University Delhi (AUD), established by the Government of the National Capital Territory (NCT) of Delhi in 2008, is dedicated to providing inclusive and high-quality higher education with a focus on the Social Sciences, Humanities, and Liberal Arts. Since 2012, AUD has been operating from its Kashmere Gate Campus, which is shared with the Indira Gandhi Delhi Technical University for Women. The university has gradually expanded its academic footprint, launching the Karampura campus in July 2016 and commencing operations at the Lodhi Colony campus in September 2017.

As of now, AUD accommodates approximately 1,973 students (undergraduate, postgraduate, and research scholars) across 11 Schools and 7 Centres, supported by a faculty strength of 152. These three campuses are projected to serve nearly 6,000 students by 2019. Looking ahead, the university is developing two new campuses—one in Dheerpur and another in Rohini—with a vision to enrol around 8,000 students and recruit 500 faculty and 500 staff members by 2022. Additionally, AUD aims to reach 10,000 more learners through part-time, continuing education, and blended learning initiatives supported by emerging technologies.

The new campus, located at Sector-3, Rohini in the DDA Phase-I Scheme, spans 7.3 hectares (18 acres) and is situated in the western part of Delhi. The site is well-connected, with the Outer Ring Road just 1 km away and the Madhuban Chowk and Rohini East metro stations nearby. The land has been allotted by the Delhi Development Authority, and the project is being developed by the Public Works Department (PWD), Government of NCT of Delhi.

Rohini Campus Details	
Location	Sector-3, Rohini, DDA Phase-I Scheme, Delhi
Plot Area	7.3 hectares (18 acres)
Topography	Plain
Zone/Subzone	Zone H / Subzone H8
Ward	Ward 53, North Delhi Municipal Corporation (Rohini E)
Address	Institutional Area, Sector 3, Rohini, Delhi – 110085
Site Connectivity	1 km from Outer Ring Road; near Madhuban Chowk & Rohini East Metro Stations (Red Line)
Land Allotment Agency	Delhi Development Authority (DDA)
Development Agency	Public Works Department (PWD), Government of NCT of Delhi

The Rohini campus is envisioned as a fully equipped academic ecosystem, featuring state-of-the-art infrastructure including an auditorium, convention centre, seminar and conference facilities, a library, cafeterias, a student centre, indoor and outdoor sports amenities, guesthouse, health centre, performance and exhibition areas, convenience and utility centres, and a crèche.

It will be home to several Schools and research centres—namely

Academic Schools	7 Schools: - Undergraduate Studies - Liberal Studies - Development Studies - Law, Governance & Citizenship - Business, Public Policy & Social Entrepreneurship - Education Studies - Human Studies & Culture & Creative Expressions
Research & Innovation Centres	9 Centres including: - Research Methods - Community Knowledge - Future Studies - South Asian Studies - Psycho Clinical Research - Early Childhood Education - Development Practice - Publishing - Women Studies - Innovation & Incubation Centre
Support & Public Facilities	Auditorium, Convention Centre, Seminar Halls, Library, Cafeterias, Guesthouse, Health Centre, Sports Facilities (Indoor/Outdoor), Display/Performance Areas, Crèche, Utility Centre

1.2 VALIDITY OF THE PROJECT

At the inauguration of the Karampura campus, Deputy Chief Minister Manish Sisodia highlighted a critical concern in Delhi's higher education landscape: out of the 2.5 lakh students graduating from schools each year, more than half are unable to secure admission in colleges. Many of these students either drop out, seek admission in institutions outside Delhi, or enroll in expensive private colleges.

To address this gap, the government proposed the development of two new campuses of Ambedkar University in Rohini and Dheerpur are scheduled to be operational by 2020. Mr. Sisodia, who also serves as the education minister, stressed the urgency of expanding capacity significantly rather than incrementally. He noted that a small increase of 10 to 100 seats annually would be insufficient to meet the needs of over 2.5 lakh school pass-outs—among them, nearly 16 lakhs from government schools. He urged university officials and faculty to ensure that while expanding, the institutions continue to uphold academic standards and remain affordable for all students.

1.3 CLIENT'S BRIEF

Anchored in AUD's mission of equity, social justice, and academic excellence, the design must cater to a wide spectrum of user groups while supporting interdisciplinary learning, collaborative research, and community engagement. The spatial program includes a mix of institutional, residential, recreational, administrative, and support facilities, designed not only for functionality but also to reflect AUD's progressive ethos and participatory spirit.

The campus will house several schools and centres, each with distinct academic focuses, alongside central facilities such as a library, auditorium, sports complex, health centre, and student support infrastructure. In addition, the client emphasizes the need for shared spaces that promote interaction, creativity, and well-being across disciplines and user categories.

This client brief serves as the foundational guideline for translating AUD's institutional vision into spatial reality—integrating programmatic needs, social values, and environmental sensitivity into a holistic and future-ready campus design.

Client's Brief		
S. No.	**Infrastructure**	**Proposed Area / No. of Students**
1	School of Undergraduate Studies	1000 Students
2	School of Liberal Studies	660 Students
3	Centre for Law and Governance	140 Students
4	School of Business, Public Policy and Social Entrepreneurship	565 Students
5	School of Educational Studies	510 Students
6	School of Human Studies	580 Students
7	School of Culture and Creative Expressions	20 Students
8	Administrative Block	3500 sq.m.
9	Student Centre	1000 sq.m.
10	Sports Centre	1000 sq.m.
11	Auditorium Complex	4000 sq.m.
12	Residential Complex	25% of Plot Area
13	Future Expansion	—

1.4 IDENTIFICATION OF USER GROUPS

The design of a university campus must be rooted in a deep understanding of its users—the people who will shape, occupy, and experience its spaces daily. At Ambedkar University Delhi (AUD), the proposed Rohini campus will serve a diverse and interconnected community, each with distinct spatial, social, and psychological needs. Identifying these user groups is essential to ensure that the campus responds meaningfully to patterns of use, behaviour, and interaction.

The primary user groups include undergraduate, postgraduate, and research students, who will form the academic core of the campus. Faculty members—both full-time and visiting—will engage in teaching, mentoring, and research, requiring a blend of private and collaborative workspaces. Non-teaching administrative staff and project personnel support the university's daily functioning and require efficient and accessible work environments.

Supporting services such as maintenance staff, security personnel, and utility workers are integral to the operation of the campus and must be provided with dignified and well-located service zones. The residential population, including students, faculty, and their families, introduces a layer of community living, while the presence of a crèche highlights the need for child-friendly environments.

In addition, the campus anticipates frequent engagement with external visitors—guest faculty, parents, researchers, and members of the local community—through seminars, exhibitions, performances, and public outreach. Vendors and retail workers also form a critical group, facilitating everyday campus life through food kiosks, convenience centres, and service outlets.

Comprehensive User Groups for AUD Rohini Campus	
User Group	**Description / Role**
Undergraduate Students	Primary user group; use academic clusters, hostels, student centres, and recreation spaces.
Postgraduate & Research Students	Engage in advanced studies and research; use labs, seminar rooms, studios, and specialized centres.
Faculty Members	Teaching and mentoring roles; require offices, lounges, housing, and academic collaboration spaces.
Administrative (Non-Teaching) Staff	Support university operations (HR, finance, planning, admissions, etc.); housed in the **Administrative Block**.
Project/Research Staff	Affiliated with research centres; need flexible office, IT infrastructure, and collaborative workspaces.
Maintenance & Utility Staff	Handle day-to-day operations like plumbing, electrical, horticulture, housekeeping, etc.; supported by a dedicated **Maintenance Office** and service zones.
Security Staff	Ensure safety and campus access control; positioned across entry gates, service roads, and student housing.
Visitors	May include parents, collaborators, speakers, contractors, etc.; access auditorium, exhibition areas, guest house, utility centre.
Guest Faculty & Transit Academics	Use the **Guest House** and **Faculty Transit Accommodation**; engage in teaching or collaborative events.
Children (Crèche Users)	Children of faculty, staff, or students; supported by the on-site **University Crèche** facility.
Community/Public Interface	Engage through open exhibitions, performances, or community outreach programmes; foster campus-community interaction.
Vendors / Retail Workers	Operate food kiosks, utility shops, banks, ATMs etc. within the **Convenience/Utility Centre**.
Sports & Cultural Participants	Use **indoor/outdoor sports facilities**, auditoriums, and performance spaces; includes students and outside invitees.

1.5 SOCIAL AND PSYCHOLOGICAL ASPECTS OF USER GROUPS

A successful campus design extends beyond fulfilling functional requirements—it must respond to the **social dynamics** and **psychological needs** of its diverse user groups. At Ambedkar University Delhi's proposed Rohini campus, the emphasis on equity, inclusion, and interdisciplinary engagement requires careful consideration of how spaces influence behaviour, emotions, and relationships.

1.5.1 Social Aspects

Socially, the campus is a microcosm of the broader society—bringing together students, faculty, staff, and visitors from diverse backgrounds, disciplines, and age groups. The design must support:

- **Interpersonal interaction and community building** through shared spaces such as courtyards, plazas, and student centres.
- **Interdisciplinary exchange** via flexible classrooms, common academic clusters, and informal learning zones.
- **Cultural expression and collective identity** through performance spaces, exhibition areas, and inclusive design features.
- **Accessibility and inclusion**, particularly for marginalized groups, by ensuring barrier-free design, gender-neutral facilities, and open public interfaces.

- **Shared living and learning** for residents (students and faculty), with well-integrated housing, recreation, and support facilities that promote social integration.

1.5.2 Psychological Aspects

Psychologically, the campus should nurture a sense of **belonging, comfort, autonomy, and inspiration**. The emotional and mental well-being of its users can be greatly influenced by:

- **Daylight, ventilation, and visual connection with nature**, which support mental clarity and reduce stress.
- **Safe and predictable circulation** with clear wayfinding and territorial clarity, reducing anxiety, especially for first-time users and children.
- **Spaces for reflection and retreat**, such as gardens, study pods, and quiet lounges, catering to the need for personal space.
- **Flexible and empowering learning environments**, where students feel respected, heard, and involved in shaping their academic journeys.
- **Dignified support zones** for staff and service workers, reinforcing their value and well-being within the campus ecosystem.

User-Centric Social and Psychological Insights for Campus Design

User Group	Social Aspects	Psychological Aspects	Design Implications
Undergraduate Students	Need peer interaction, a sense of belonging, and identity. First-time living away from home.	Sensitive to stress, peer pressure, social anxiety. Thrive in flexible, playful, informal learning spaces.	Common rooms, breakout zones, shared dining, informal seating clusters, vibrant hostel lobbies, active greenspaces.
Postgraduate/Research Students	Seek intellectual stimulation, autonomy, collaboration, and mentorship.	Value deep focus, inspiration, ownership of space, and quietude.	Semi-private research nooks, studios, bookable rooms, cafés with study zones, proximity to faculty & labs.
Faculty Members	Require professional interaction, prestige, and workspace autonomy.	Need mental calm, privacy for research, and quick transitions between teaching and reflection.	Day-lit faculty rooms, reading lounges, green terraces, acoustic control, flexible teaching spaces.
Administrative Staff	Seek structured workspaces, accessibility, task efficiency, and status parity.	Feel ignored if offices are in secondary or invisible zones; appreciate clear hierarchy in layout.	Ergonomic office clusters, clear signage, visible proximity to decision-makers (e.g. VC Office, Registrar, HR).
Maintenance & Utility Staff	Need dignity, inclusion, and discrete yet accessible service spaces. Often marginalized in design.	Psychological need for respect and rest space; work is physically tiring and spatially scattered.	Design hidden yet humane utility cores, service passages, breakrooms, changing rooms, and clear daylight access.
Security Personnel	Need clear sightlines, secure boundaries, and shelter during long shifts.	Require visibility, alertness, and physical comfort.	Security booths with visibility, shaded waiting zones, quiet alert space, surveillance integration.
Guest Faculty / Visitors	Seek hospitality, cultural exposure, academic exchange.	Need comfort, orientation, and impression of institutional identity.	Well-designed guest houses, digital wayfinding, orientation kiosks, transit-accessible academic blocks.
Community Members	Seek openness, safety, cultural participation, and shared ownership.	Need to feel welcome without feeling intrusive.	Public promenades, amphitheatres, community centres, open libraries, transparent campus edges.
Children (Crèche Users)	Need safety, play, and nurturing environment.	Sensitive to noise, harsh light, and unfriendly materials.	Soft finishes, courtyards, quiet interiors, sensory walls, visual supervision from all sides.
Vendors / Retail Staff	Seek footfall, visibility, and access to services. Often overlooked in zoning.	Need a sense of permanence, utility, and integration—not detachment.	Retail arcades on student pathways, shared services, shade structures, trash & water points.
Sports / Cultural Participants	Need collaborative energy, pride, and expression.	Thrive in celebratory, dynamic, and inclusive environments.	Open-air performance zones, art walls, music practice pods, mixed-gender changing rooms, barrier-free auditoriums.

1.6 SITE INTRODUCTION

The site for the new campus of **Ambedkar University Delhi (AUD)** is located in **Sector-3, Rohini**, within the **DDA Phase-I Scheme**, Delhi. It spans a total area of **7.3 hectares** (approximately **73,000 sqm**). The land is:

- Free from any **encumbrances**
- Clear of **overhead power lines**
- Readily accessible for development and integration with existing urban infrastructure

1.6.1 SITE FEATURES AND CONNECTIVITY

Feature	Details
Internal Division	Site is bisected by a 13.5 m wide public road (to remain accessible to public)
Connectivity - Road	1 km from Outer Ring Road
Connectivity - Metro	Near Madhuban Chowk and Rohini East Metro Stations (Red Line, Delhi Metro)
Surrounding Development	Located within a developed urban area; harmonizes with surrounding fabric
Utilities	External services (roads, sewerage, stormwater drainage) already laid by DDA
Access to Services	Campus utilities will connect to existing DDA infrastructure

1.6.2 SITE CONTEXT PLAN

The site is divided into **two major land parcels** due to a central **13.5 m wide public road**, necessitating a **campus design that maintains connectivity** across both sides while preserving **public access**. This feature should guide:

- **Zoning and circulation**
- **Security and accessibility strategies**
- **Design of pedestrian and vehicular linkages**

1.6.3 SOIL AND GROUND CONDITION

Investigation Type	Status
Soil Investigation	**Not yet conducted** – Consultant to appoint a qualified geotechnical agency for detailed investigation

Purpose	Soil report to guide planning, foundation design, and construction methodology

1.6.4 Hydrological Study

AUD engaged the **National Institute of Hydrology (NIH), Roorkee** to conduct a hydrological study for the Rohini campus site. The study assessed:

- **Quantity and quality of underground water**
- **Feasibility of sustainable drainage systems**
- **Recommendations for rainwater harvesting and aquifer recharge**
- **Drainage alignment with surrounding catchment patterns**

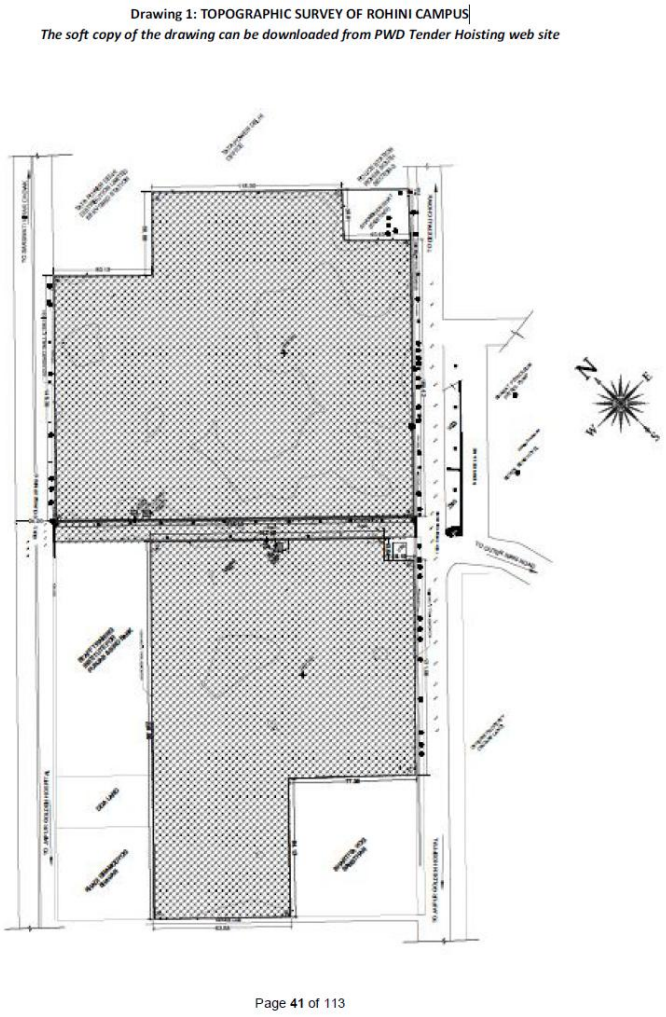

Figure 1 Topographic survey as per RFP document



Figure 2 Site and surroundings



Figure 3 Site dimensions

1.7 SPATIAL VISION

The AUD Rohini Campus is conceptualized as an **open, evolving ecosystem** — a space for nurturing ideas, facilitating interaction, and fostering transformation. The design should reflect progressive relationships between education, environment, and community.

1.7.1 University and Nature

Design Directive	Description
Environmental Sustainability	Central guiding principle — integrated into planning, pedagogy, and operation
Built-Open Synergy	Symbiotic relationship between buildings and landscapes
Green Building Standards	Must comply with GRIHA, IGBC, LEED, and BEE certifications
Self-sufficiency	Optimize energy, water, and material use (e.g., solar energy, RWH, waste recycling)
Passive Design	Locally adapted strategies for thermal comfort, daylighting, and ventilation

1.7.2 University, City, and Beyond

Design Directive	Description
Urban-Rural Continuum	Reflects engagement across rural and urban communities
Inclusive Edges	Design edges to be porous, interactive, and community-inclusive
Future-Oriented Urbanism	Go beyond current urban form — project visionary and resilient urban design

1.7.3 University and Community

Design Directive	Description
Open Campuses	Spaces should welcome neighborhood participation
Pluralism	Spaces that foster heterogeneity and shared usage
Digital Connectivity	Interlinked campuses through virtual hubs and communication platforms

1.7.4 University in Time

Design Directive	Description
Temporal Continuum	Connect past, present, and future in spatial language
Beyond Style	Move past stylistic mimicry — embed layered narratives through design

1.7.5 Spatial Experience and Identity

AUD's logo, representing *firmness, wisdom, dignity,* and *yearning for the sky*, is a metaphor for the design expression. The campus must reflect this ethos through a hierarchy-free, participatory, and vibrant space network.

Type of Space	Design Purpose
A. Spaces for Collective Engagement	Informal, spontaneous interaction zones (plazas, amphitheaters, commons)
B. Spaces for Self-Growth	Quiet, introspective environments supported by digital learning infrastructure
C. Spaces for Knowledge Dissemination	Open, ICT-enabled classrooms for dialogic, flexible pedagogy
D. Spaces for Community Living	Holistic residential environment with play, culture, and convenience spaces

1.7.6 Formal Expression

The architectural identity of the Rohini campus should:

- Harmonize with other AUD campuses
- Celebrate diversity through varied architectural vocabularies
- Integrate public art and spatial storytelling
- Use clusters and courtyards to articulate programmatic zones

1.8 SUSTAINABILITY GOALS

Goal	Description
1. Responsible Building Processes	Use resource-efficient construction, operation, and maintenance techniques
2. Eco-friendly Campus Infrastructure	Minimize pollution, waste, and energy use through intelligent design
3. Contextual & Locally Adaptive Design	Align with site conditions, regional ecology, and climate sensitivities
4. Certification-Ready Campus	Meet or exceed standards like **GRIHA, LEED, IGBC, BEE, ISO 14000**
5. Net-Zero Aspiration	Target energy and water self-sufficiency through integrated systems
6. Lifecycle & Performance-Oriented Planning	Design through **Life-Cycle Assessment (LCA)** to ensure sustainability over time

a) Energy Use

Category	Key Actions
Energy Conservation	- Efficient procurement standards - Low-energy design strategies
Energy Efficiency	- Thermal comfort through envelope design - Low-embodied energy materials
Renewable Integration	- Solar/alternative energy adoption - Targeting net-zero energy performance

b) Water Use

Category	Key Actions
Water Conservation	- Construction water-saving practices - Limit non-potable use
Water Efficiency	- Low-flow fixtures - Tap water access to reduce bottled water dependency
Recycling & Reuse	- Rainwater harvesting - Greywater reuse - Wastewater treatment systems
Net-Zero Aspiration	- Aim for net-zero water campus

c) Land Use and Space Optimization

Category	Key Actions
Campus Design Integration	- Adapt to local climate, geology, topography, and hydrology
Landscape Ecology	- Use native plant species - Promote biodiversity and green corridors
Spatial Harmony	- Preserve memory of the land
Open vs. Built Spaces	- Prioritize usable open spaces - Minimize unnecessary hardscaping

d) Material Flows and Waste Management

Category	Key Actions

Material Selection	- Preference for locally sourced, durable, repairable, and artisanal materials
Procurement Standards	- Evaluate lifecycle impacts of materials - Avoid high-embodied energy goods
Solid Waste Management	- Segregation at source - Recycling streams - Zero waste to landfill goal

1.9 CENTRAL FACILITIES AT CAMPUS LEVEL

Sl. No.	Infrastructure	Facilities	Proposed Area (sq.m.)
i)	Administrative Block	To house offices of the VC, PVC, Registrar, CoF, Deans of Functional Divisions (Academic Services, Student Services, AES, Planning, Research, International Partnerships) and other related offices – 50% of the total staff strength (50% of 230)	3500
ii)	Library and IT Complex	Will provide book-storage facilities, reading spaces with computer terminals and offices for library services and staff – 2 lakh books	10500
iii)	Auditorium Complex	To house an auditorium (500 persons), Committee / meeting / Seminar rooms of 50 (2 nos.)/150 (2 nos.) persons capacity	4000
iv)	Student Centre	To provide space for student related activities, reading rooms, Placement office, recreation rooms, indoor sports and lockers etc. (350 students)	1000
v)	Exhibition Centre	For exhibitions	500
vi)	Cafeteria	Canteen facilities for 350 Students/ Staff/ Visitors	2000
vii)	Convenience/ Utility Centre	Shopping Centre, Food Courts, Bank, ATM, Post Office, Book & Stationery stores, etc.	750
viii)	Faculty Centre/Club	Meeting halls for informal gatherings, dining rooms, indoor sports facilities, etc. – 100 persons capacity	500
ix)	Health Centre	With OPD facilities and 6 beds for emergencies.	250
x)	Covered Parking Block	Near the entrance with sitting space for drivers.	100
xi)	University crèche	Capacity for 50 children	250
xii)	Maintenance Office	For day-to-day maintenance of the entire campus. Will house electric sub-station; AC plant, lifts, civil, electrical, horticulture, plumbing, water supply, fire fighting and other services.	2000
xiii)	Sports Centre	The Sports Centre will have Indoor/Outdoor sports facilities	1000
xiv)	Basement Parking and service area	Parking and service area	31680

2.0 CLUSTER LEVEL FACILITIES

Clusters	Schools and Centres	Number of Students	Number of Faculty*	Admin Staff**	Project staff***
R. 1					
R1.1	School of Undergraduate Studies (SUS)	1000	65	32	30
R1.2	School of Liberal Studies (SLS)	660	44	22	
R1.3	Centre for Law and Governance	140	9	4	8
R1.4	Community Outreach Programme (COP)	-	3	2	8
R1.5	Centre for Publishing	-	3	2	8
	Sub-total	**1800**	**124**	**62**	**54**
R. 2					
R2.1	School of Business Public Policy and Social Entrepreneurship (SBPPSE)	**565**	38	19	32
R2.2	School of Educational Studies (SES)	510	34	17	
R2.3	School of Human Studies (SHS)	580	39	19	
R2.4	School of Culture and Creative Expressions (SCCE)	20	2	1	
R2.5	ACIIE	-	3	2	8
R2.6	CPCR	-	3	2	8
R2.7	CECED	-	3	2	8
R2.8	Centre for Women Studies	-	3	2	8
	Sub-total	**1675**	**125**	**56**	**36**
	Total	**3475**	**249**	**126**	**122**

***Faculty: Student Ratio (1:15)**

****Admin Staff is 1/2 of total faculty strength**

*****Project staff is 8 per centre + 1/4th per faculty**

Table 2: Facilities at Cluster Level (for 2 clusters)

Sl. No.	Infrastructure	Facilities	Total Proposed Area (sq.m.) for 2 clusters
i)	**Classrooms**	**Standard sizes of 30/60/120 students capacity (60% of the students strength)**	**10000**
ii)	Computer Labs./ IT / Research Rooms	To house Project staff, Research Fellows, PhD students, Classrooms, etc. 20% capacity of total students strength in modules of 50 persons each	5500
iii)	Committee Rooms	2 rooms of 75 capacity each with audio-visual and other conference facilities in each cluster	800
iv)	Faculty Rooms	Similar facilities in all faculty rooms i) 100% rooms for Regular & Visiting Faculty ii) 10% extra capacity for transit faculty from other AUD campus and from local institutes.	5000
v)	Faculty /Staff Lounge	Sitting and retiring spaces, changing rooms and pantry, etc. for 50 persons in each cluster	500
vi)	Staff Rooms	Servicing common facilities in the cluster – 25% of total staff strength	800
vii)	Utility Rooms	Photocopying/printing/scanning/pantry services for faculty and staff	800
viii)	Student Common Rooms	Reading rooms with computer terminals; recreation room / Indoor sports / lockers, etc. for a capacity of 100 students	
ix)	Security Office, Maintenance, Staff Offices	For round the clock security and maintenance	800
xii)	**Workshops/ Studios and Laboratories**	**Workshops, Studios and Laboratories (Some of these spaces might require specialized consultants with respect to design and operational needs of these studios)**	**22500**
		TOTAL AREA	**47550**

2.1 SCHOOL / CENTRE FACILITIES

Table 3: Facilities for each School / Centre (A total of 13 Schools/ Centres)

Sl. No.	Infrastructure	Facilities	Proposed Area (sq.m.)
i)	Dean/Director Office Complex	Dean's / Director's office, Visitors' lounge, Office for Dean's / Director's staff, Meeting room for 10 persons, Common facilities like pantry, bathrooms, etc	550
ii)	Documentation Centre	Photocopying, Project work	300
iii)	Store	Supplies and Stationary	150

2.2 RESIDENTIAL ZONE

Residential Allocation Strategy

User Group	Percentage of Total Residential Units	Design Intention
Faculty Housing	50%	Mix of apartment types with shared facilities
Staff Housing	30%	Smaller units with access to community spaces
Student Hostels	25%	Segregated by PG/UG with different occupancy models

Ratios: (Girls: Boys = 2:1)

(PG: UG = 1:1)

(PG: Single Occupancy)

(UG: Double Occupancy)

Table 4a: Facilities at Residential Colony and Hostels

Sl. No.	Houses (2/3/4/5/6 Type)	Students Hostel – 600 Rooms (D: Double Occupancy, S: single occupancy)			
	Faculty & Staff	Girls		Boys	
		UG (D)	PG (S)	UG (D)	PG (S)
Rohini	35/35/30/10/2	200	200	100	100
Total	112	200	200	100	100

Table 4b: Common facilities

Sl. No.	Infrastructure	Facilities
i)	Community Centre	With a multi-purpose Hall, indoor games and kitchen facilities, etc. (1500 sqm)
ii)	Guest House	A 10-room Guest House (750 sqm)
iii)	Faculty Transit Accommodation	A 20-room facility for Faculty with double room sets, attached to the Guest House using common facilities (1500 sqm)
iv)	Convenience Centre	Shops, Bank, ATMs, Post Office, etc. (500 sqm)

CHAPTER 2: LITERATURE REVIEW

2.1 TYPE OF INSTITUTION

According to the classification provided by national higher education survey frameworks, higher education institutions in India are grouped into three broad categories:

1. **University / University-Level Institutions**
   These include institutions established or incorporated under a Central Act, Provincial Act, or State Act, and recognized by the University Grants Commission (UGC) under the UGC Act, 1956. They may also include institutions recognized by the UGC in consultation with the concerned university. Such institutions are authorized to award degrees and conduct independent academic programs, research, and governance.

2. **Colleges / Institutions Affiliated or Recognised with a University**
   These institutions do not have independent degree-awarding status and are affiliated to or recognized by a parent university. They follow the academic framework prescribed by the university and their degrees are awarded through the affiliating body.

3. **Stand-Alone Institutions**
   These are institutions that are **not affiliated with any university** but are recognized by statutory bodies (such as AICTE, MCI, etc.) to offer diploma, certificate, or specific professional degree programs. Examples include polytechnics, nursing schools, and institutes of hotel management.

(EducationGovin)

2.2 AMBEDKAR UNIVERSITY DELHI (AUD) CLASSIFICATION

Ambedkar University Delhi (AUD) is a **University-Level Institution**, established by the **Government of NCT of Delhi** under an **Act of the Delhi Legislature** in 2008. As such, it falls under the first category and has the autonomy to grant degrees, develop independent academic structures, and operate multiple campuses including the proposed Rohini campus.

Basis for Comparison	College	University
Meaning	A college is an educational institution which offers degree and diploma courses to its students.	A university is an authorized educational and research institution that grants degree and diploma to its students, in the respective fields.
Affiliation	Colleges are either affiliated to a university or it is an autonomous body.	Universities do not require any affiliation from another university.
Research Program	Not offered by college.	Offered by the university.
Scope	Narrow	Wide
Number of courses offered	Limited	Myriad
Head	Dean or Director	Vice-Chancellor
Number of Enrolled students	Less, due to limited seats.	Comparatively higher.
Campus	Small	Large

(httpskeydifferencescom)

2.3 ASSESSMENT OF USER HAPPINESS IN CAMPUS OPEN SPACES

(assessment of user happiness in campus open spaces, 2019)

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City Space Architecture / UN-Habitat

The spatial design of university campuses has a profound influence on the emotional, psychological, and social well-being of their users. Research increasingly emphasizes the role of architecture not just in functionality, but in shaping the **happiness, satisfaction, and behavioral engagement** of students, faculty, and staff.

According to the study *"Assessment of User Happiness in University Campus Design"*, the design of built environments significantly impacts user experiences and their sense of happiness. The paper identifies that happiness on campus is closely related to the **quality of physical spaces**, availability of **green areas**, and opportunities for **social interaction**. It stresses that a campus should not only meet academic needs but must also promote **psychological comfort, aesthetic pleasure, and spatial variety**.

Key findings from the literature include:

- **Environmental Quality**: Users report higher satisfaction when campus environments are clean, well-ventilated, thermally comfort table, and acoustically appropriate.
- **Green and Open Spaces**: The presence of green areas, shaded courtyards, and outdoor seating significantly boosts psychological well-being and encourages informal interaction.
- **Social and Cultural Integration**: Spaces that allow for spontaneous encounters, collaborative work, and cultural activities foster a sense of belonging and happiness.
- **Functional Efficiency and Accessibility**: When buildings are easy to navigate, barrier-free, and well-zoned, users experience less stress and feel more empowered.
- **Personalization and Identity**: Campuses that reflect student culture, history, and institutional values through design tend to foster stronger emotional attachment.

The literature also highlights that **user happiness is a critical metric** for assessing the success of campus design and should be integrated into the early stages of planning. Quantitative surveys, as used in the referenced study, reveal that users tend to value **walkability**, **safety**, **visibility**, and **comfort** in both indoor and outdoor settings.

2.4 EVALUATING HEAT ISLAND EFFECT AT UNIVERSITY CAMPUS WITH REFERENCE TO LEED V4

(Alshimaa A. Farag)

Alshimaa A. Farag1, R.M. Doheim2, Samaa Badawi3

Urban Heat Island (UHI) is a critical environmental issue that affects thermal comfort, energy consumption, and health—especially in densely built environments like university campuses. The paper **"Evaluating Heat Island Effect at University Campus with Reference to LEED v4"** explores how campuses can **mitigate UHI** through **design strategies that align with LEED v4 standards**, emphasizing the dual goals of **environmental performance** and **user comfort**.

1. Understanding Heat Island Effect in Campuses

The UHI effect refers to the **increased temperature in urban areas compared to surrounding rural regions**, primarily caused by:

- Excessive hardscape surfaces (asphalt, concrete)
- Lack of vegetation and water bodies
- Heat-retaining materials and low reflectivity (low albedo)

In university campuses, this translates into **uncomfortable outdoor spaces**, **higher cooling loads**, and **reduced walkability**, which ultimately **impacts student health, productivity, and satisfaction**.

2. LEED v4 Strategies for UHI Mitigation

LEED v4 includes specific credits under **Sustainable Sites** to address UHI:

- **High SRI (Solar Reflectance Index) roofing** and **cool paving materials**
- **Use of vegetated (green) roofs** and **tree canopies**
- **Minimizing paved area exposure** and replacing it with permeable surfaces
- **Designing open, shaded courtyards** that reduce surface heat gain

The study stresses that achieving these LEED credits doesn't just benefit the environment—it directly enhances the **thermal experience** of students and staff using the campus daily.

3. Quantifying Performance

The paper uses **temperature measurements and material studies** on university grounds to evaluate the effectiveness of UHI reduction strategies. It reveals that:

- Surfaces with **higher SRI values** significantly reduce ground and air temperature.
- **Tree shading** reduces ambient temperature by up to 5–6°C in shaded zones.
- Students naturally prefer **shaded, green areas** for sitting, walking, and studying.

This supports the argument that **designing for thermal comfort** is just as important as academic space planning in a campus setting.

4. Design Relevance to AUD Rohini Campus

For the AUD Rohini campus, integrating LEED v4-aligned strategies to combat UHI offers multiple advantages:

- **Enhances student well-being** in outdoor courtyards, sports areas, and pathways.
- **Improves walkability and engagement**, encouraging interaction with the campus environment.
- **Reduces building energy loads** by lowering ambient heat around structures.
- Demonstrates a **visible commitment to sustainability**, aligning with AUD's inclusive and progressive vision.

Key recommendations for the design include:

- Use of **light-colored or reflective materials** for roads, rooftops, and pavers.
- Designing **tree-lined pedestrian corridors** and **shaded courtyards** between academic blocks.
- Incorporating **green roofs** on high-use buildings like the library or student centre.
- Reducing paved surface area and integrating **permeable paving** and bioswales.

2.5 STANDARDS

2.5.1 MASTER PLAN DELHI 2021

MPD-2021 modified upto 30/06/2021

Sl. No.	Category	Maximum			Other Controls
		Ground Coverage	FAR	Height	
4	University Campus including International Education Centre (IEC) – Large campus (10 ha and above) will be divided into following four parts: a) Academic including Administration (45% of total land area)	30%	[1][225]	37 m	1. Parking standard @ 1.33 ECS / 100 sq m of floor area. 2. Other controls related to basements etc. are given in the Development Code chapter. 3. Landscape plan to be prepared.
	b) Residential (25% of total land area)	1. Regulations for group housing shall apply. 2. The land shall be reserved for facilities as per residential norms.			
	c) Sports and Cultural activities (15%)	10%	15	26 m	
	d) Parks and Landscape (15%)	N. A.			

14.	University Campus and International Education Centre	A premise having an educational institution designed for instruction, examination, or both, of students in many branches of advanced learning, conferring degrees in various faculties, and often embodying colleges and similar institutions.	Educational Institution, Colleges, Residential Flat (for maintenance staff), Institutional Hostel, Retail Shops of area 20 sqm each (confectionery, grocery and general merchandise, books & stationery, chemist, barber, launderer, vegetable), Residential, Library, Bank Extn. Counter, Auditorium, Post Office Extn. Counter Facility, Canteen, Indoor Games Hall.

The total area of the Rohini plot of Ambedkar University Delhi (AUD) is **18 acres (73,000 sqm)**. According to the prevailing by-laws in Delhi, the plot area is divided as follows:

1. **70%** reserved for **Institutional use**
2. **30%** reserved for **Residential use**

The **current FAR (Floor Area Ratio)** applicable is **2.25**, allowing a **total built-up area** of **1,60,875 sqm** on the site.

In **Phase I**, approximately **85% of the permissible built-up area** will be developed, allocated as follows:

- **Institutional Areas:** 90,000 sqm
- **Residential Areas:** 46,000 sqm
- **Basement, Parking, and Service Areas:** 31,680 sqm

Total Built-up Area (Phase I): 1,67,680 sqm

In terms of height restrictions:

- **Maximum building height** for **institutional and administrative buildings** is **37 metres**
- **Maximum building height** for **sports and cultural activity buildings** is **26 metres**

(Master Plan Delhi- 2021)

E. Hostel / Guest House / Lodging & Boarding House / Dharamshala

Min. Plot size	500 sqm.
Maximum ground coverage	30%
Maximum floor area ratio	120
Maximum height	15 m.

(i) Parking to be provided @ 2 ECS per 100 sq.m. of built up area.
(ii) These norms shall not be applicable for Guest House under Mixed Use Regulations.

(Unified Building Byelaws Delhi-2016)

Annexure-2.

Plinth Area Norms for General Pool Residential Accommodation (GPRA) for Central Government employees

Scale of Amenities

S No	Category	Office	Drawing Room	Dining Room	Bed Rooms	Kitchen	Store	Number of Attendant's Unit	Utility Balcony	Toilets
1	Type-II	--	One	--	Two plus study	One	--	--	One	Two
2	Type-III	--	One	--	Two	One	--	-	One	Two
3	Type-IV	--	One	One	Three	One	-	One	One	Three
4	Type-V	--	One	One	Three	One	One	One	Two	Three
5	Type-VI	--	One	One	Four	One	One	One	Two	Three
6	Type-VII	One	One	One	Four	One	One	Two	Two	Four*
7	Type-VIII	One	One	One	Four	One	One	Two	Two	Four*
8	Attendant's unit	--	--	--	One	One	--	--	One	One

*One toilet (without bath) shall be provided attached with office.

Table 17.1: Minimum Setbacks (Other than Residential Plotted Development)

Sl. No.	Plot size (in sq.m)	Minimum Setbacks			
		Front (m)	Rear (m)	Side (m) (1)	Side (m) (2)
1	Upto 60	0	0	0	0
2	Above 60 & upto 150	3	1.5 (avg.)	-	-
3	Above150 & upto 300	4	2 (avg.)	-	-
4	Above 300 upto 500	4	3	3	-
5	Above 500 upto 2,000	6	3	3	3
6	Above 2,000 upto 10,000	9	6	6	6
7	Above 10,000	15	12	12	12
[1][Minimum Setbacks for integrated TOD schemes:					
	Plot / scheme size (in sq.m)	Minimum Setbacks			
		Front* (m) (for all edges facing a public ROW of 18 m+)	Rear (m)	Side (m) (1)	Side (m) (2)
		Setback to be handed back to local body as public roads (at least 20% of plot/scheme area)			
8	Above 3,000 upto 10,000	0	6	6	6
9	Above 10,000	0	12	12	12]

For Rohini plot of AUD is 18 acres (73,000 sqm),

Front Setback- 15m

Rear Setback- 12m

Side Setback- 12m

(Master Plan Delhi- 2021)

2.5.2 UNIFIED BUILDING BYELAWS DELHI 2016

8.4.3 Stairways

a. A staircase shall not be arranged around a lift shaft.

b. The staircase shall be ventilated to the atmosphere at each landing and a vent at the top; the vent openings shall be of0.5 sq.m in the external wall and the top. If the staircase cannot be ventilated, because of location or other reasons, a positive pressure 50 Pa shall be maintained inside. The mechanism for pressurizing the staircase shall operate automatically with the fire alarm. The roof of the shaft shall be 1 m above the surrounding roof. Glazing or glass bricks if used in staircase, shall have fire resistance rating of minimum two hour.

c. The minimum width of staircase shall be as table given below:

Table 8.1 Minimum width of staircase for different types of buildings (clear width excluding handrail and balustrade)

Type of Building	Minimum Width
Residential buildings (Group Housing)	1.5m
Hotel buildings	1.5m
Assembly buildings like auditorium, theatres, cinemas etc.	2.0m
Educational buildings up to 30 m in height Above 30 m	1.5m 2.0 m
Institutional buildings like hospitals etc.	2.0m
All other buildings including commercial	1.5m
Industrial building	1.5m

7.23.2 Educational Buildings (School/ Colleges)

a. Basement or cellar room may be designed, constructed, altered, converted or used for the purpose of study or instruction provided it meets fire safety requirements.

b. The minimum size of a cellar room, study room or room used for purposes of instruction shall be 5.5 m x 4.5 m and no part of such room shall be distant more than 7.5 m from an external wall abutting on the requisite open space. Every such room shall have minimum ventilation to the extent of 1/5th of its floor area.

c. A minimum of 1.0 sq.m of net floor space per student shall be provided. A central hall will not be counted in the accommodation, nor will a class room for cookery, laundry, manual instruction, drawing or science. The number of students in such building shall be calculated on this basis for the purpose of this clause.

d. Every assembly room, Fitness Centre/Multi-Gym shall have a clear height of 3.6 m except under a girder which may project 0.6 m below the required ceiling height. A clear internal height under balcony or a girder shall not be less than 3.0 m. A minimum room height for classroom in all schools and other institutions shall not be less than 3.6 m. The minimum head room under beams shall be 3 m.

e. Exit requirements shall conform to as mentioned in this chapter. No door shall be less than 1.2 m in width and 2.20 m in height. For Assembly room/ Auditorium no door shall be less than 2m in width and 2.2m in height.

f. Requirement of water supply, drainage and sanitary installation shall conform to table 9.1 to 9.6.

g. Playground shall be provided as per MPD norms/ lease conditions/ layout.

(Unified Building Byelaws Delhi-2016)

8.4.7 Ramps

a. The ramp to basement and parking floors shall not be less than 7.2 m wide for two way traffic and 4.0 m wide for one way traffic, provided with gradient of 1:10 for cars and 1:15 for heavy vehicles. At curved portions of the ramp or for circular ramps the slope should not be more than 1:12.

b. Ramp may also be provided in setback area which can be sloped considering unhindered movement of fire Engine and in no case the gradient shall be less than 1: 10.

c. All structural design/safety aspects as per latest BIS Codes & NBC, shall be complied along with consideration of weight of Fire Engine & its maneuverings.

d. The minimum width of the ramps in hospitals shall be 2.4 m for stretcher and not for vehicular movement In this case, handrails shall be provided on both sides of the ramp.

e. Ramps shall lead directly to outside open space at ground level or courtyards or safe place.

f. In basement one entry and exit shall be provided for the floor area of 10,000sqm for each basement and if the basement area is more than 10,000sqm. in each basement, one more entry & exit ramp should be provided.

g. For plots less than 3000sqm. car lift/s can be provided in place of ramp/s subject to the approval of the Fire Department. For plot/s above 3000sqm. Ramp/s are mandatory, if used for parking.

Minimum size of the car lift shall be as per NBC norms. The lift car width should be selected such that in case of emergency, while the automobile is in the car-lift, the driver should be able to open the automobile door and come out of the automobile.

(Unified Building Byelaws Delhi-2016)

9.3.6. Refuge Area

a. For buildings more than 24.0 m in height, refuge area of 15.0 sq.m or an area equivalent to 0.3 sq.m per person to accommodate the occupants of two consecutive floors whichever is higher shall be provided as under:

   i. For floors above 24.0 m and up to 39.0 m – One refuge area on the floor immediately above 24.0 m.

   ii. For floors above 39.0 m – One refuge area on the floor immediately above 39.0 m and so on after every 15.0 m.

b. The refuge area shall be provided on the periphery of the floor on a cantilever projection and open to air at least on one side protected with suitable railings.

c. Where if it is not possible to cantilever, a refuge area can be provided within the building as per DFS provision and it should be free from FAR.

(Unified Building Byelaws Delhi-2016)

2.5.3 NATIONAL BUILDING CODE OF INDIA 2016

9.3.12. **Fire Dampers**

a. These shall be located in conditioned air ducts and return air ducts/ passages at the following points:

   i. At the fire separation wall.

   ii. Where ducts/passages enter the central vertical shaft.

   iii. Where the ducts pass though floors.

   iv. At the inlet of supply air duct and the return air duct of each compartment on every floor.

b. The dampers shall operate automatically and shall simultaneously switch off the air-handling fans. Manual operation facilities shall also be provided. (Note: For blowers, where extraction system and duct accumulators are used, dampers shall be provided).

c. Fire/smoke dampers (for smoke extraction shafts) for buildings more than 24 m in height.

   i. For apartment houses in non-ventilated lobbies / corridors operated by fusible link / smoke detectors and with manual control.

   ii. For other buildings on operation of smoke detection system and with manual control.

d. Automatic fire dampers shall be so arranged as to close by gravity in the direction of air movement and to remain tightly closed on operation of a fusible link / smoke detector.

Note: *The use of type of detectors shall be to the satisfaction of Delhi Fire Service.*

(Unified Building Byelaws Delhi-2016)

2.11 Dry Riser — An arrangement of firefighting within the building by means of vertical rising mains not less than 100 mm internal diameter with landing valves on each floor/landing which is normally dry but is capable of being charged with water usually by pumping from fire service appliances.

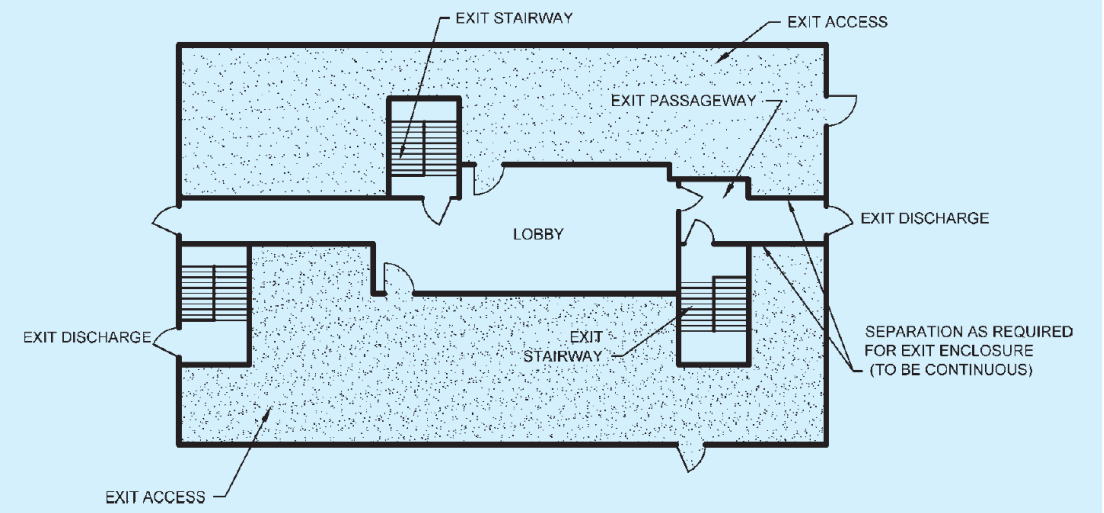


FIG. 1 COMPONENTS OF MEANS OF EGRESS

(National Building Code Of India-2016)

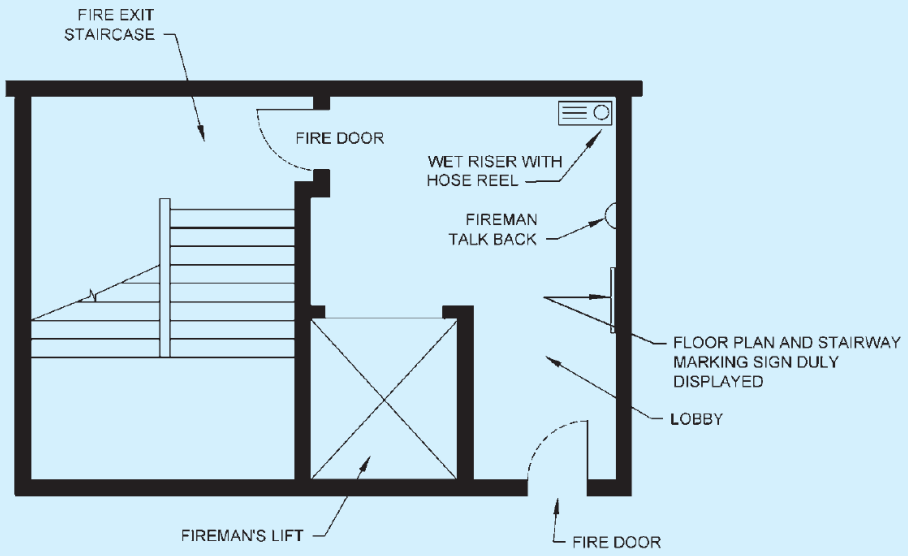
9.3.13. **Fire Tower**

a. Fire towers are escape routes for multistoried buildings and these shall be considered as the safest route for escape. Their number, location and size shall depend on the building concerned, and its associated escape routes. A fire lift, internal hydrant, hose reel etc. shall be providedin the fire tower.

b. In high rise buildings with over 8 stories or 24.0 m in height, at least 50% required means of egress shall preferably be a fire tower(s).

c. The fire towers shall be constructed of walls with a two hour fire resistance rating without openings other than the exit doorways, with platforms, landings and balconies having the same fire-resistance rating.

d. The area of the lobby shall be subject to a minimum of 6.0 sq.m area and such that no side of the lobby is less than 2.0 m.



(LAYOUT TO BE PLANNED AS PER PROJECT BASIS MEETING ALL THE REQUIRED DETAILS)

NOTES

1 Where such lobbies and staircase in the firefighting shaft are naturally ventilated/cross-ventilated, the shaft may not be enclosed and fire door need not be provided.

2 For all enclosed firefighting shaft, the shaft's lobby should have floor plan duly displayed for the information of fire fighters.

FIG. 2 TYPICAL FIRE FIGHTING SHAFT

(National Building Code Of India-2016)

2.64 Water Based Systems

2.64.1 *Hydrant System* — A distribution system having a network of piping installed underground/above-ground around and/or through inside of a building with internal and/or external hydrants fitted with landing valves at regular intervals according to the occupancy. The distribution system is connected to water supply system for firefighting.

2.64.2 *Automatic Sprinkler System* — A system of water pipes fitted with sprinkler heads at suitable intervals and heights and designed to actuate automatically, control and extinguish a fire by the discharge of water.

2.64.3 *Automatic Water Spray Systems* — A special fixed pipe system connected to a reliable source of fire protection water supply and equipped with water spray nozzles for specific water discharge and distribution over the surface or area to be protected. The piping system is connected to the water supply through an automatically actuated deluge valve which initiates flow of water. Automatic actuation is achieved by operation of automatic detecting equipment installed along with water spray nozzles. There are two types of systems namely high velocity and medium velocity systems.

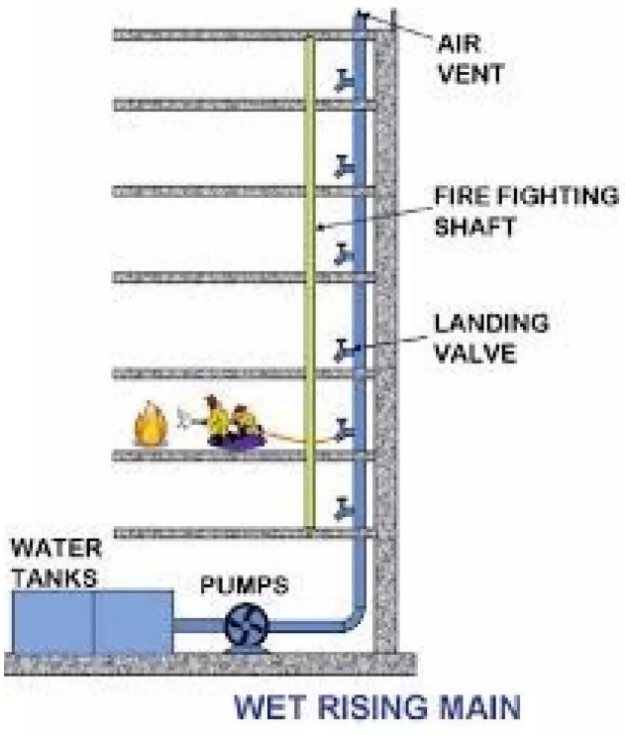
2.64.4 *Water Mist Systems* — A distribution system connected to a pumping and water supply system that is equipped with nozzles capable of delivering water mist to the part/entire enclosure or area, intended to control, suppress, or extinguish fire and is capable of meeting the specified performance requirements.

2.64.5 *Foam Protection System* — Firefighting systems where foam is made by mechanically mixing air with a solution consisting of fresh water to which a foaming agent (liquid concentrate) has been added. Firefighting foam is a stable aggregation of small bubbles of density lower than oil or water, and shows tenacious qualities for covering horizontal surfaces. There are three types of foam applications that is, low, medium and high expansion foams depending upon the application.

2.65 Wet Riser — An arrangement for firefighting within the building by means of vertical rising mains not less than 100 mm nominal diameter with landing valves on each floor/landing for firefighting purposes and permanently charged with water from a pressurized supply.

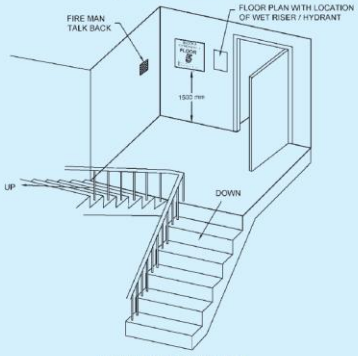
NOTE — For definition of other terms, reference shall be made to accepted standards [4(3)].

(National Building Code Of India-2016)





9A EXAMPLE OF A STAIRWAY MARKING SIGN
[FLOOR INDICATION BOARD]



9B STAIR SIGN PLACEMENT

NOTE — Block/Wing/Building name are to be project specific. Staircase shown as '3' is intending to show the number assigned to the staircase. All exits preferably to be assigned with number/identification enabling occupants/fire man to declare location/position.

FIG. 9 SIGN MARKING AND REQUIREMENT IN EXIT

Table 7 — (*Continued*)

Sl No.	Type of Building Occupancy	Type of Installation								Water Supply (litre)		Pump Capacity (litre/min)	
		Fire Exting-uisher	First Aid Hose Reel	Wet Riser	Down Comer	Yard Hydrant	Automatic Sprinkler System	Manually Operated Electronic Fire Alarm Systems (*see* Note 1)	Automatic Detection and Alarm System (*see* Note 2)	Under-ground Static Water Storage Tank Combined Capacity for Wet Riser, Yard Hydrant and Sprinklers per Set of Pumps	Terrace Tank over Respective Tower Terrace	Pump Near Underground Static Water Storage Tank (Fire Pump) with Minimum Pressure of 3.5 kg/cm^2 at Remotest Location	At the Terrace Tank Level with Minimum Pressure of 3.5 kg/cm^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2)	15 m and above but not exceeding 30 m	R	R	R	NR	R	R	R	R	150 000	20 000	(*see* Note 11)	NR
3)	Above 30 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(*see* Note 11)	NR
e)	**Hotels (A-6)**	R	R	R	NR	R	R	R	R	250 000	20 000	(*see* Note 12)	NR
EDUCATIONAL BUILDINGS (B) (*see* Note 16)													
1)	Less than 15 m in height												
	i) Ground plus one or more storeys	R	R	NR	NR	NR	R (*see* Note 4)	NR	NR	NR	10 000 (5 000) (*see* Note 6)	NR	450 (450) (*see* Note 6)
2)	15 m and above but not exceeding 24 m in height	R	R	NR	R	NR	R (*see* Note 4)	R	NR	NR	25 000	NR	900
3)	Above 24 m but not exceeding 30 m in height	R	R	R	NR	R	R (*see* Note 4)	R	NR	50 000	(5 000) (*see* Note 6)	(*see* Note 14)	NR
INSTITUTIONAL BUILDINGS (C) (*see* Note 16)													
a)	**Hospitals, Sanatoria and Nursing Homes (C-1)**												
1)	Less than 15 m in height with plot area up to 1 000 m^2												
	i) Up to ground plus one storey, with no beds	R	NR	NR	NR	NR	R (*see* Note 4)	R	NR	NR	(5 000) (*see* Note 6)	NR	(450) (*see* Note 6)

R – Required
NR – Not Required

NOTES

1 MOEFA System shall also include talk-back system and public address system for the occupancies given in the table for (d) (1) (iii) under A-5, (a) (1) (iv) and (a) (2) under C-1, and (a) (2) under D-1 to D-5, in all buildings 15 m and above in height, except for A-3 and A-4 occupancies where these shall be provided for buildings of height 24 m and above. These shall also be provided in car parking areas more than 300 m^2 and in multi-level car parking irrespective of their areas.

2 Automatic detection and alarm system is not required to be provided in car parking area. Such detection system shall however be required in other areas of car parking such as electrical rooms, cabins and other areas.

3 Buildings above 15 m in height are not to be permitted for occupancies A-1 and A-2.

4 Required to be installed in basement, if area of basement exceeds 200 m^2.

5 Required to be provided if basement area exceeds 200 m^2.

Table 7 — (*Concluded*)

6 Additional value given in parenthesis shall be added if basement area exceeds 200 m^2.

7 Required to be provided for buildings with more than two storeys (Ground + One).

8 Required to be provided for buildings with height above 15 m and above.

9 Sprinklers shall be fed water from both underground static water storage tank and terrace tank.

10 Provide required number of sets of pumps each consisting of one electric and one diesel pump (stand by) of capacity 2 280 litre/min and one electric pump of capacity 180 litre/min (*see* Fig. 11) (*see also* notes 22 and 23).

11 Provide required number of sets of pumps each consisting of two electric and one diesel pump (stand by) of capacity 2 280 litre/min and two electric pump of capacity 180 litre/min (*see* Fig. 12) (*see also* Notes 22 and 23).

12 Provide required number of sets of pumps each consisting of two electric and one diesel pump (stand by) of capacity 2 850 litre/min and two electric pump of capacity 180 litre/min (*see* Fig. 12) (*see also* Notes 22 and 23).

13 Lower levels in high rise buildings 60 m or above in height are likely to experience high pressure and therefore, it is recommended to consider multi-stage, multi-outlet pumps (creating pressure zones) or variable frequency drive pumps or any other equivalent arrangement.

14 Provide required number of sets of pumps each consisting of one electric and one diesel pump (stand by) of capacity 1 620 litre/min and one electric pump of capacity 180 litre/min (*see* Fig. 11) (*see also* Notes 22 and 23).

15 Required to be provided for buildings with more than one storey.

16 Buildings above 30 m in height not to be permitted for Group B, Group C, Group D and Group F occupancies.

17 The requirements given in this table for Group G Industrial Buildings are for small scale industry units. For other industries the requirements will have to be worked out on the basis of relevant Indian Standards and also in consultation with the local fire authorities.

18 Buildings above 18 m in height not to be permitted for G-1 and G-2 occupancies.

19 Buildings above 15 m in height not to be permitted for G-3 occupancies.

20 Buildings above 15 m in height not to be permitted for Group H and Group J occupancies. However, buildings above 45 m in height shall not be permitted for multi-level car parking (MLCP) occupancy.

(National Building Code Of India-2016)

2.5.4 SANITATION REQUIREMENTS

Table 9.6: Sanitation Requirements for Educational Occupancy

S.No	Sanitary Unit	Boarding Institution		Other Educational Institution	
		For Boys	For Girls	For Boys	For Girls
1.	Water Closet (W.C.)	One for every 8 pupils or part thereof	One for every 6 pupils or part thereof	One for every 25 pupils or part thereof	One for every 15 pupils or part thereof
2.	Ablution Taps	One in each W.C.	One in each W.C.	One in each W.C.	One in each W.C.
3.	Urinals	One per every 25 pupils or part thereof	--	One per every 20 pupils or part thereof	--
4.	Wash Basins	One for every 8 pupils or part thereof	One for every 6 pupils or part thereof	One for every 40 pupils or part thereof	One for every40 pupils or part thereof
5.	Baths	One for every 8 pupils or part thereof	One for every 6 pupils or part thereof	--	--
6.	Drinking Water Fountains	One for every 50 pupils or part thereof	One for every 50 pupils or part thereof	One for every 50 pupils or part thereof	One for every 50 pupils or part thereof
7.	Cleaner's Sink	One per Floor minimum	One per Floor minimum	One per Floor minimum	One per Floor minimum

Table 9.7 (contd.): Administrative Buildings

S.No	Sanitary Unit	For Males	For Females
1	Water Closet (W.C.)	One for every 25 persons or part thereof	One for every 15 persons or part thereof
2	Ablution Taps	One in each W.C.	One in each W.C.
3	Wash Basins	One for every 25 persons or part thereof	One for every 25 persons or part thereof
4	Baths with Shower	One on each floor	One on each floor
5	Bed pan washing sink	--	--
6	Cleaner's Sink	One per floor minimum	One per floor minimum
7	Kitchen sinks & dish Washers (where Kitchen is provided)	One for each floor	One for each floor
8	Urinals	Nil up to 6 persons 1 for 7-20 persons 2 for 21-45 persons 3 for 46-70 persons 4 for 71-100 persons From 101 to 200 persons add at the rate of 3%; for over 200 persons add at the rate of 2.5%	--

(Unified Building Byelaws Delhi-2016)

Table 9.11: Sanitation Requirements for Assembly Occupancy Buildings (Cinema, Theatres, Auditoria, etc.) Gender Ratio 50 Male:50 Female

Sl. No.	Sanitary Unit	For Staff		For Public	
		Male	Female	Male	Female
1.	Water Closet And Urinal	1WC+2 Urinals/150 2WC's+3Urinals/150-300 2WCs+4Urinals/301-450 3WCs+5Urinals/451-600 3WCs+7Urinals/601-900 1WC+1 Urinal for every 150 thereafter	3WCs/150 6WC's/151-300 9WCs/301-450 12WCs/451-600 14WCs/601-900 1WC every 100 thereafter	One WC for 15 persons. Two WCs for 16-35 persons. Urinal: Nil up to 6 persons 1 for 7-20 persons 2 for 21-45 persons.	One WC for 1-12 persons. Two WCs for 13-25 persons.
2.	Ablution Taps	One in each WC	One in each WC	One in each WC	One in each WC
3.	Wash Basins	One for every 200 persons or part thereof. For over 400 persons, add @ 1 per 250 persons or part thereof.	One for every 200 persons or part thereof. For over 200 persons, add @ 1 per 150 persons or part thereof.	One for 1-15 persons. Two for 16-35	One for 1-12 persons Two for 13-25 persons.
4.	Cleaner's Sink	One per floor, minimum.			
5.	Drinking Water Fountain	One per 100 persons or part thereof.			

Note: *For male-female calculation a ratio of 1: 1 shall be assumed.*

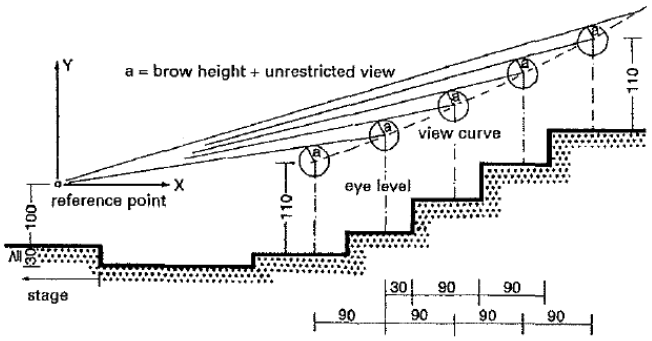
Table:-9.12: Sanitation Requirements for Assembly Occupancy Buildings (Art, Galleries, Libraries and Museums)

Sl. No.	Sanitary Unit	For Public		For Staff	
		Male	Female	Male	Female
1	Water Closet (WC)	One for 200 persons up to 400 persons. For over 200 persons, add @ 1 per 250 persons or part thereof.	One per 100 persons up to 200 persons. For over 200 persons add @ 1 per 150 persons or part thereof.	One for 15 persons. Two for 16-35 persons.	One for 1-12 persons. Two for 13-25 persons.
2	Ablution Taps	One in each WC	One in each WC	One in each WC	One in each WC
3	Urinals	One for 50 persons or part thereof	------	Nil up to 6 persons 1 for 7-20 persons 2 for 21-45 persons	-----
4	Wash Basins	One for every 200 persons or part thereof. For over 400 persons, add @ 1 per 250 persons or part thereof.	One for every 200 persons or part thereof. For over 200 persons, add @ 1 per 150 persons or part thereof.	. One for 1-15 persons. Two for 16-35	One for 1-12 persons Two for 13-25 persons.
5	Cleaner's Sink	One per floor, minimum.			

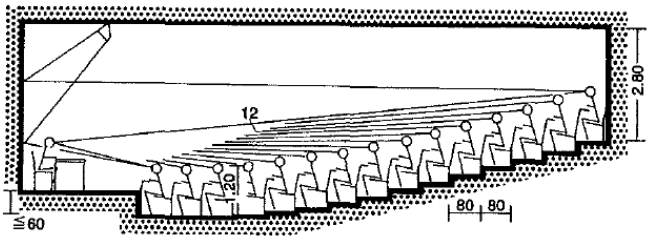
(Unified Building Byelaws Delhi-2016)

2.5.5 SPATIAL ARRANGEMENT FOR LECTURE THEATRES

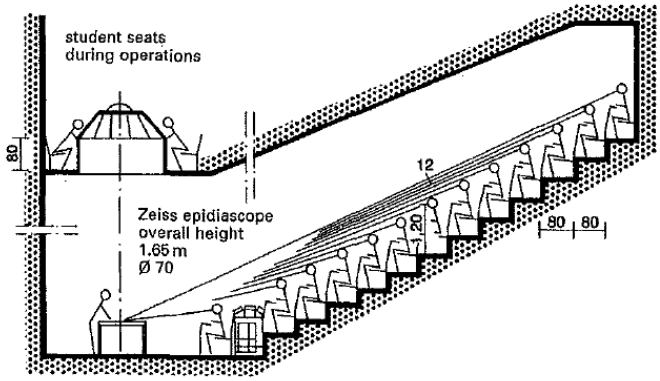
(Neufert, 1936)



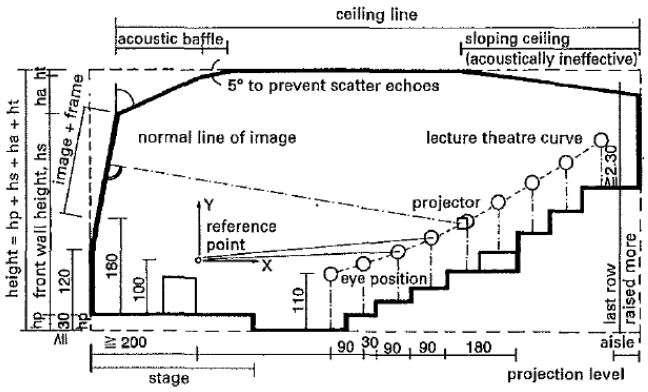
2 Geometrical determination of the listener curve



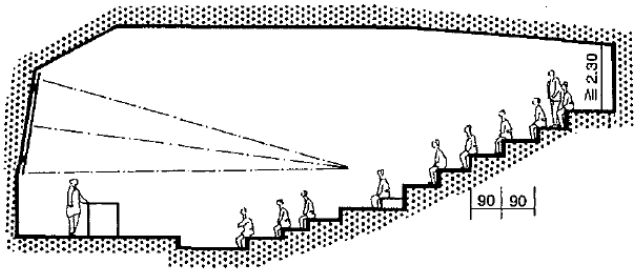
3 Normal lecture theatre design (humanities)



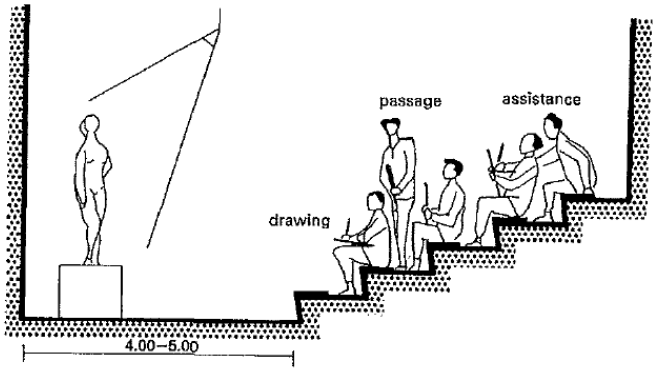
4 Lecture theatre for demonstrations on a bench (medicine)



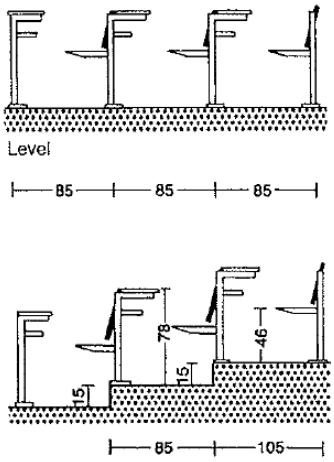
5 Longitudinal section through a lecture theatre



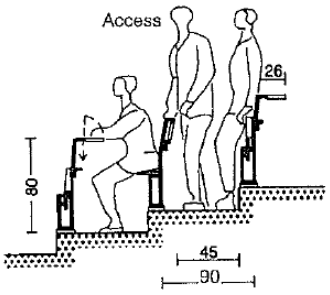
6 Steeply raked lecture theatre (natural sciences)



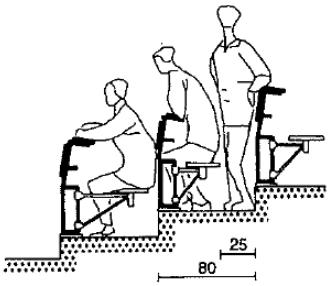
7 Steps in life drawing class with seated area of 0.65 m² per student (technical artistic subjects)



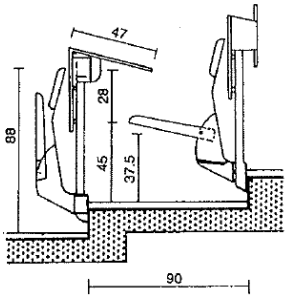
1 Lecture theatre seating



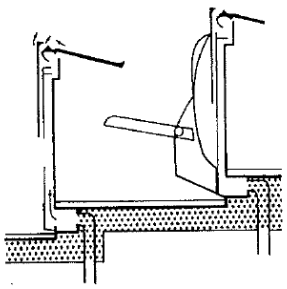
2 Seating arrangement with tip-up seats and desks



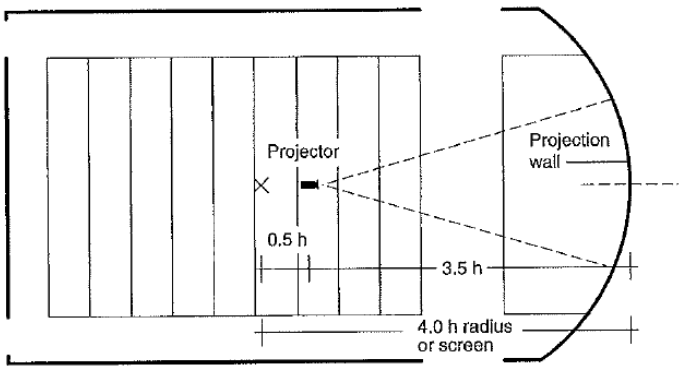
3 Arrangement with fixed desks and rotating seats (required space)



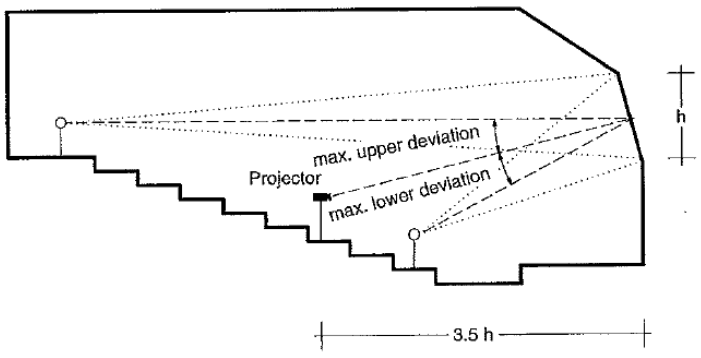
4 Lecture theatre seating /desk ventilation



5 Desk ventilation / air flow



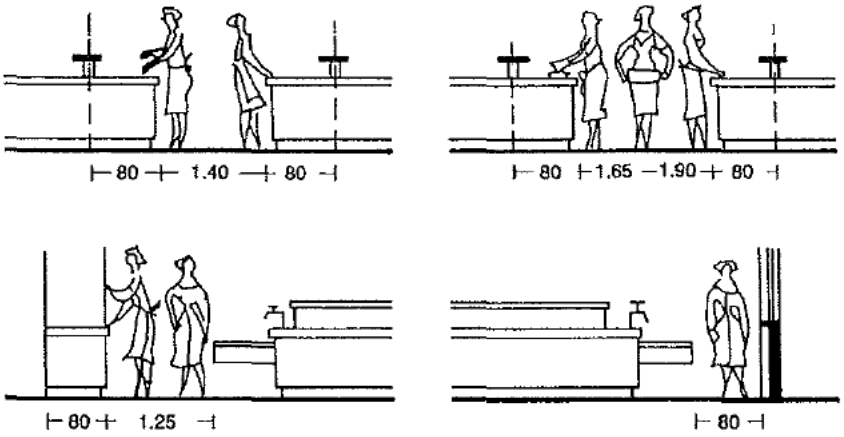
6 Layout of projectors, plan



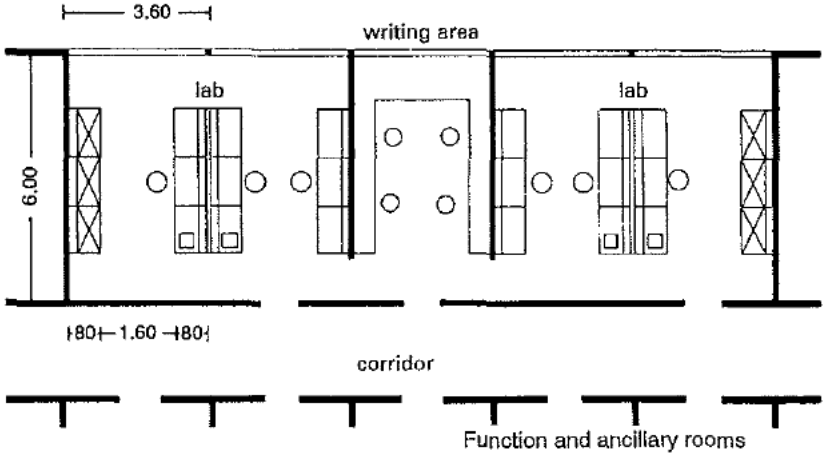
7 Layout of projectors, section, showing distribution of the angle of inclined view to places above and below the projectors

2.5.6 SPATIAL ARRANGEMENT FOR LABORATORIES

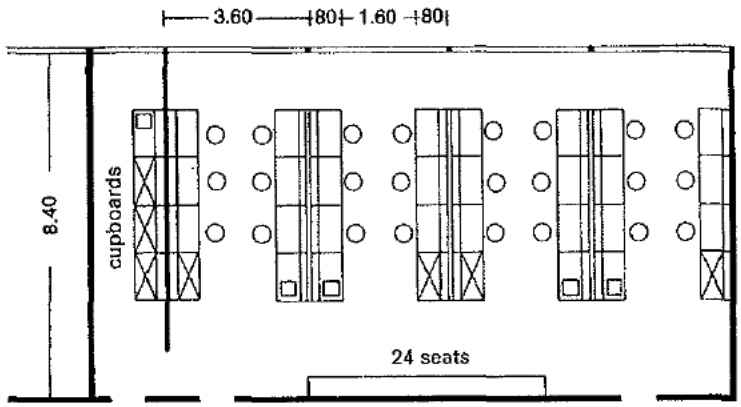
(Neufert, 1936)



1 Minimum passage width at workstations



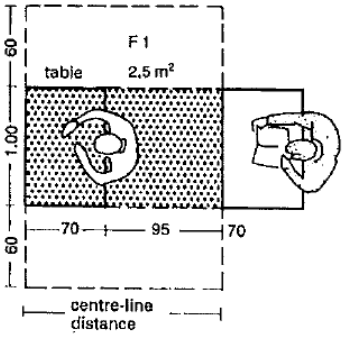
2 Research laboratory



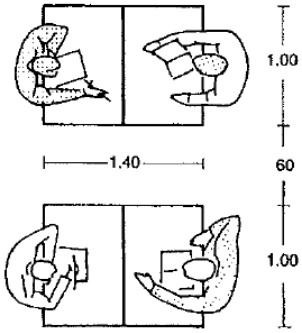
3 Teaching and practical laboratory

2.5.7 LIBRARY SPATIAL LAYOUT

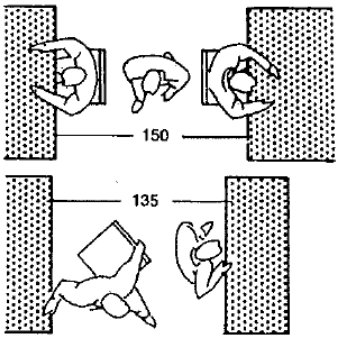
(Neufert, 1936)



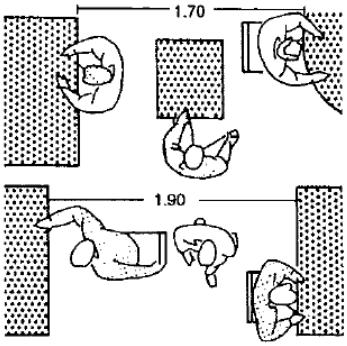
1 Space for a single workplace → 3



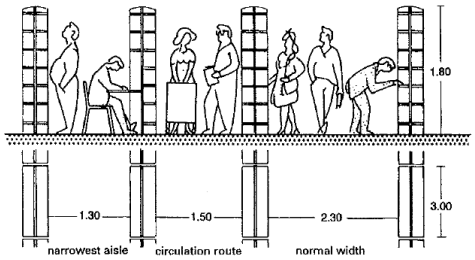
2 Minimum spacing between tables



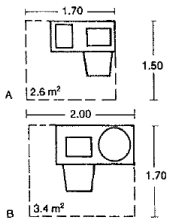
4 Minimum free room in reading area → 5



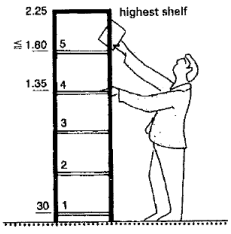
5 Transporting books between sitting and standing library users → 4



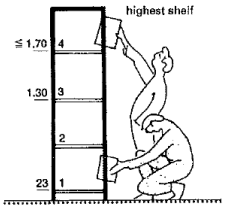
7 Minimum spacing



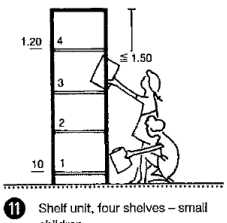
8 Microfiche reader workplace



9 Shelf unit, five shelves



10 Shelf height for schoolchildren



11 Shelf unit, four shelves – small children

2.5.8 DIMENSIONS FOR SPORTS FACILITY

(Neufert, 1936)

Playing Areas

Sport	Competitive sport				Leisure sport				Net	Goal / basket (m)
	Playing area dimensions (m)	Free space around sides (m)	Free space around ends (m)	Total area (m)	Playing area dimensions (m)	Free space around sides (m)	Free space around ends (m)	Total area (m)	Height (m)	W = width H = height
Football	45–90 × 90–120	1	2	46–91 × 92–122	68 × 105	1	2	69 × 107	—	W = 7.32 H = 2.44
Football, FIFA requirements	45–90 × 90–120	2	3.5	47–92 × 93.5–123.5	68 × 105	2	3.5	70 × 108.5	—	W = 7.32 H = 2.44
Rugby	68.4 × 100	2	12–23	70.4 × 123	68.4 × 100	2	12–23	70.4 × 123	—	W = 5.60 H = 3.00
Handball	55–65 × 90–110	1	2	56–66 × 92–112	60 × 90	1	2	61 × 92	—	W = 3.00 H = 2.00
Indoor handball	18–22 × 38–44	1	2	19–23 × 40–46	20 × 40	1	2	21 × 42	—	W = 3.00 H = 2.00
Hockey (field hockey)	—	—	—	—	55 × 91.4	2	4	57 × 95.4	—	W = 3.66 H = 2.14
Netball	25 × 60	1	2	26 × 62	25 × 60	1	2	26 × 62	—	net H = 2.50
Softball/ rounders	25 × 50–70	10	10	35 × 60–80	—	—	—	—	—	pole H = 1.50
Indoor cycle polo	9–11 × 12–14	0.5	0.5–1	9.5–11.5 × 13–15	—	—	—	—	—	W = 2.00 H = 2.00
Volleyball	9 × 18	2	3	11 × 21	9 × 18	2	3	11 × 21	2.43	—
Prellball	8 × 16	2	4	10 × 20	8 × 16	2	4	10 × 20	—	—
Schleuderball	—	—	—	—	15 × 100	8	30	23 × 130	—	—
Fistball	—	—	—	—	20 × 50	6	8	26 × 58	2.00	—
Basketball	15 × 28	1	1	—	—	—	—	—	—	3.05
Streetball	13–15 × 24–28	1 2	1 2	14–16 × 26–30	—	—	—	—	—	3.05

Type of sport	Usable playing area (net)				Additional unobstructed zone at the:		Unobstructed playing area with standard dimensions (gross)		Clear hall height[1]
	Permissible dimensions:		Standard dimensions:						
	length (m)	width (m)	length (m)	width (m)	sides (m)	ends (m)	length (m)	width (m)	(m)
Badminton	13.4	6.1	13.4	6.1	1.5	2.0	17.4	9.1	9[2]
Basketball	24–28	13–15	28	15	1[3]	1[3]	30	17	7
Boxing	4.9–6.1	4.9–6.1	6.1	6.1	0.5	0.5	7.1	7.1	4
Fistball	40	20	40	20	0.5	2	44	21	(7)
Football	30–50	15–25	40	20	0.5	2	44	21	(5.5)
Weight lifting	4	4	4	4	3	3	10	10	4
Netball	40	20	40	20	1[4]	2	44	22	7[5]
Hockey	36–44	18–22	40	20	0.5	2	44	21	(5.5)
Judo	9–10	9–10	10	10	2	2	14	14	(4)
Netball	28	15	28	15	1	1	30	17	(5.5)
Sports acrobatics	12	12	12	12	1	1	14	14	(5.5)
Gymnastics	52	27	52	27	—	—	52	27	8
Cycle football/ polo/gymnastics	12–14	9–11	14	11	1	2	18	13	(4)
Rhythmic gymnastics	13[6]	13[6]	13[6]	13[6]	1	1	15	15	8[2]
Wrestling	9–12	9–12	12	12	2	2	14	14	(4)
Roller hockey	34–40	17–20	40	20	—	—	40	20	(4)
Roller acrobatics/ dancing	40	20	40	20	—	—	40	20	(4)
Sports dancing	15–16	12–14	16	14	—	—	16	14	(4)
Tennis	23.77	10.97	23.77	10.97	3.65	6.4	36.57	18.27	(7)
Table tennis	2.74	1.525	2.74	1.525	5.63	2.74	14	7	4
Trampolining	4.57	2.74	4.57	2.74	4	4	12.57	10.74	7
Volleyball	18	9	18	9	5	8	34	19	12.5[2]

[1] nos in brackets: recommended; [2] for national events, 7 m is sufficient; [3] for spectator stands bordering the playing area, ideally 2 m; [4] additional space requirement for timers' table and reserves' bench (poss. in sports equipment room); [5] in a 3.3 m wide zone around the playing area (net), a uniform reduction to 5.5 m is permissible; [6] for national competitions 12 m.

1 Playing area dimensions for competitive sports use

2.5.9 GREEN BUILDING REQUIREMENTS

(Unified Building Byelaws Delhi-2016)

10.1 **Provisions and Applicability**

These provisions for green buildings are applicable on all plots more than 105 sq. m in size The green building provisions on various plot sizes are indicated in the table below:

Table 10.1-Provisions and applicability for various plot sizes (all use premises)

Category of Plot Sizes (sq.m.)	Category of Plot Sizes (sq.m.)	Provisions for Green Building (as per Clause 10.2)
I	up to105	Optional usage of 2 (a), 2(b).
II	105 to 500	1(a), 2(a),2(b), 4(a)
	500 to 1,000	1(a), 1(c), 2(a),2(b), 4(a)
	1,000 to 3,000	1(a), 1(c), 1(d), 2(a),2(b), 3(b), 4(a)
III	Above 3,000	1(a), 1(b), 1(c), 1(d), 2(a), 2(b), 3(a), 3(b), 4(a), 4(b)

Notes:

**The schemes/ projects formulated on the basis of provisions given in Master plan/ Zonal Development Plan will require approval as indicated:*

{Chapter 3 of these Bye-Laws, NBC (latest), ECBC 2007 or latest, BEE Star rating/ IGBC/ GRIHA Certification}

***EIA**- Environmental Impact Assessment Study Report, **ECC**- Environmental Clearance Certificate, **MoEF** – Ministry of Environment and Forest,**NBC** – National Building Code, **ECBC** – Energy Conservation Building Code, **BEE** – Bureau of Energy Efficiency, **LEED**– Leadership in Energy and Environment Design, **IGBC** – Indian Green Building Council, **GRIHA**– Green Rating for Integrated Habitat Assessment, **TERI** – The Energy and Resources Institute.*

The prevailing provisions of the above shall be applicable. However if there are any modification in the same, the modified provisions shall become automatically applicable.

1. Water conservation and management

    a. Rainwater Harvesting (by Recharge)

    b. Low Water Consumption Plumbing Fixtures

    c. Wastewater Recycle and Reuse

    d. Reduction of hardscape

2.Solar Energy Utilization

    a. Installation of Solar Photovoltaic Panels

    b. Installation of Solar Assisted Water Heating Systems

3.Energy Efficiency

    a. Low Energy Consumption Lighting Fixtures (Electrical Appliances – BEE Star and Energy Efficient Appliances)

    b. Energy Efficiency in HVAC systems

4.Waste Management

a. Segregation of Waste

b. Organic Waste Management

2.5.10 GRIHA RATING SYSTEM

GRIHA v.2019			
Section	**Criterion No.**	**Criterion Name**	**Maximum Points**
1. Sustainable Site Planning	1	Green Infrastructure	5
	2	Low Impact Design	5
	3	Design to Mitigate UHIE	2
2. Construction Management	4	Air and Soil Pollution Control	1
	5	Top Soil Preservation	1
	6	Construction Management Practices	2
3. Energy Efficiency	7	Energy Optimization	12
	8	Renewable Energy Utilization	5
	9	Low ODP and GWP Materials	1
4. Occupant Comfort	10	Visual Comfort	4
	11	Thermal and Acoustic Comfort	2
	12	Maintaining Good IAQ	6
5. Water Management	13	Water Demand Reduction	3
	14	Wastewater Treatment	3
	15	Rainwater Management	5
	16	Water Quality and Self-Sufficiency	5
6. Solid Waste Management	17	Waste Management-Post Occupancy	4
	18	Organic Waste Treatment On-Site	2
7. Sustainable Building Materials	19	Utilization of Alternative Materials in Building	5
	20	Reduction in GWP through Life Cycle Assessment	5
	21	Alternative Materials for External Site Development	2
8. Life Cycle Costing	22	Life Cycle Cost Analysis	5
9. Socio-Economic Strategies	23	Safety and Sanitation for Construction Workers	1
	24	Universal Accessibility	2
	25	Dedicated Facilities for Service Staff	2
	26	Positive Social Impact	3
10. Performance Metering and Monitoring	27	Commissioning for Final Rating	7
	28	Smart Metering and Monitoring	0
	29	Operation and Maintenance Protocol	0
Total Points			100
11. Innovation	30	Innovation	5
Grand Total Points			100 + 5

(httpswwwgrihaindiaorg)

2.5.10.1 IGBC GREEN CAMPUS

(httpsigbcinigbcgreencampus)

Checklist

IGBC Green Campus Rating System		New Campuses	Existing Campuses
Site Planning and Management		**25**	**25**
SPM MR 1	Green Features in the Campus Buildings	Required	Required
SPM MR 2	Soil Erosion Control	Required	Required
SPM Credit 1	Enhanced Green Features in the Campus Buildings	12	12
SPM Credit 2	Basic Amenities	1	1
SPM Credit 3	Site Preservation	2	NA
SPM Credit 4	Green Cover	4	4
SPM Credit 5	Heat Island Reduction, Roof & Non-roof	4	6
SPM Credit 6	Outdoor Light Pollution Reduction	1	1
SPM Credit 7	Universal Design	1	1
Sustainable Transportation		**7**	**7**
ST Credit 1	Pedestrian Network	2	2
ST Credit 2	Bicycle Network	2	2
ST Credit 3	Access to Sustainable Transportation	3	3
Water Conservation		**19**	**20**
WC MR 1	Rainwater Harvesting	Required	Required
WC Credit 1	Enhanced Rainwater Harvesting	6	6
WC Credit 2	Sustainable Landscape	2	2
WC Credit 3	Management of Irrigation Systems	2	2
WC Credit 4	Wastewater Treatment and Reuse	5	6
WC Credit 5	Optimise Water Use for Construction	1	NA
WC Credit 6	Water Performance Monitoring	3	4

Energy Efficiency		**21**	**24**
EE Credit 1	Eco-friendly refrigerants	1	2
EE Credit 2	Enhanced Energy Efficiency	7	8
EE Credit 3	Green Power	10	10
EE Credit 4	Energy Performance Monitoring	3	4
Material and Resource Management		**12**	**8**
MRM MR 1	Segregation of Waste, Post-occupancy	Required	Required
MRM Credit 1	Sustainable Building Materials	4	NA
MRM Credit 2	Use of Green Products & Equipment	3	3
MRM Credit 3	Handling of Waste Materials, During Construction	1	NA
MRM Credit 4	Dry Waste Management, Post-occupancy	NA	1
MRM Credit 5	Organic Waste Management, Post-occupancy	4	4
Health & Well-being		**8**	**6**
HWB MR 1	Tobacco Smoke Control	Required	Required
HWB Credit 1	Daylighting	2	3
HWB Credit 2	Control Indoor and Outdoor Pollutants	1	1
HWB Credit 3	Low VOC Materials	2	NA
HWB Credit 4	Health & Well-being Facilities	2	2
HWB Credit 5	Basic Facilities for Construction Workforce	1	NA
Sustainable Operation & Maintenance		**1**	**3**
SOM Credit 1	Green Audit	NA	2
SOM Credit 2	Green Education	1	1
Innovation in Design		**7**	**7**
ID Credit 1	Innovation in Design Process	4	4
ID Credit 2	GHG Inventorization and Mitigation Measures	2	2
ID Credit 3	IGBC Accredited Professional	1	1
_	**Total**	**100**	**100**

The threshold criteria for certification levels are as under:

Certification Level	New Campus & Existing Campus	Recognition
Certified	50 – 59	Best Practices
Silver	60 – 69	Outstanding Performance
Gold	70 – 79	National Excellence
Platinum	80 – 100	Global Leadership

IGBC Green Campus Rating System – Version 1.0

2.5.10.2 LEED RATING

(httpswwwusgbcorgleed)

LEED Rating System Criteria (LEED v4 – Building Design and Construction)

Credit Category	Description
1. Integrative Process	Encourages early analysis of energy and water systems to support informed design decisions.
2. Location and Transportation	Focuses on site selection to minimize transportation impacts (e.g., access to public transit, bicycle facilities, walkability, reduced vehicle use).
3. Sustainable Sites	Promotes responsible site development: open spaces, rainwater management, heat island reduction, and light pollution control.
4. Water Efficiency	Encourages water-saving fixtures, efficient landscaping, and reduction in potable water use for irrigation.
5. Energy and Atmosphere	Optimizes energy performance, encourages renewable energy use, commissioning of building systems, and monitoring-based commissioning.
6. Materials and Resources	Focuses on sustainable materials, waste reduction, life-cycle impacts, reuse, recycling, and sourcing of materials.
7. Indoor Environmental Quality	Addresses daylight, ventilation, acoustic comfort, thermal control, and use of low-emitting materials to support occupant health and productivity.
8. Innovation	Awards points for creative sustainable strategies beyond the established credits, including education and exemplary performance.
9. Regional Priority	Grants additional points for addressing geographically specific environmental priorities, as determined by the LEED system's regional credits map.

LEED Certification Levels

Points Earned (Out of 110)	Certification Level
40–49	LEED Certified
50–59	LEED Silver
60–79	LEED Gold
80+	LEED Platinum

2.5.10.3 BEE RATING SYSTEM

(Ministry of Power, n.d.)

The **Bureau of Energy Efficiency (BEE)** is a statutory body under the Ministry of Power, Government of India, responsible for promoting energy efficiency in buildings, appliances, and industrial operations.

For buildings, BEE has introduced the **Energy Performance Index (EPI)-based Star Rating System**, which evaluates the energy performance of commercial and institutional buildings, including universities.

Criteria	Details
Applicable Building Types	Office buildings, Hotels, Hospitals, IT parks, Retail malls, and Institutional buildings
Basis of Rating	Energy Performance Index (EPI): kWh/sqm/year – actual energy consumption per square metre
Climate Zones	India is divided into 5 climate zones: Composite, Hot & Dry, Warm & Humid, Temperate, Cold
Rating Scale	1 Star to 5 Star, based on the building's EPI compared to benchmark for its climate zone
Pre-requisites	- Centralized HVAC system (for applicable categories) - At least 12 months of energy data
Data Considered	Actual electricity bills (including diesel/generator backup), floor area, operating hours

2.5.10.4 ISO 14000

Published by: International Organization for Standardization (ISO)

Scope: Environmental Management Systems (EMS)

Purpose: Helps organizations improve their environmental performance through efficient resource use and waste reduction.

Key standards in the ISO 14000 family:

Standard	Title
ISO 14001:2015	Environmental Management Systems – Requirements with guidance for use
ISO 14004	General guidelines on principles, systems, and support techniques
ISO 14006	Guidelines for incorporating ecodesign
ISO 14031	Environmental performance evaluation

2.5.11 LIFE CYCLE ASSESSMENT (LCA) FRAMEWORK

LCA (Life Cycle Assessment) is a systematic methodology used to assess the **environmental impacts associated with all stages of a product's or building's life cycle**—from raw material extraction to disposal. It is widely used in green building certification systems (like LEED, GRIHA, IGBC) to evaluate the **ecological footprint** of materials, systems, and entire buildings.

Purpose of LCA in Campus Design

For a university campus like **AUD Rohini**, LCA helps in:

- Choosing **low-impact building materials**.
- Evaluating **construction methods and energy systems**.
- Reducing **embodied carbon**.
- Supporting **eco-labelling, EPDs (Environmental Product Declarations)** and compliance with **green building norms**.

LCA Phase	Description
1. Goal and Scope Definition	Define the purpose of the study, the system boundaries (e.g., building materials only vs. full construction and use), and the functional unit (e.g., 1 sqm built area).
2. Inventory Analysis (LCI)	Collect data on inputs (materials, energy, water) and outputs (emissions, waste, by-products) for each life cycle stage.
3. Impact Assessment (LCIA)	Translate inventory data into environmental impact categories such as:
	- **Global warming potential (GWP)** (CO_2 emissions) - **Ozone depletion** - **Acidification** - **Resource depletion** - **Water use**
4. Interpretation	Analyze results, identify hotspots, and recommend design improvements (e.g., switching materials, reducing transport).

LCA Stages in a Building's Life Cycle

Stage	Includes
1. Raw Material Extraction	Mining, harvesting, and transportation of raw materials (e.g., stone, cement, steel, wood).
2. Manufacturing	Energy, water, and emissions used in producing construction materials and components.
3. Construction	On-site energy, machinery use, material transport, waste generation.
4. Operation & Maintenance	Energy/water use, HVAC systems, repairs, retrofitting.
5. End-of-Life	Demolition, recycling, landfill, transportation of waste.

2.5.12 Applicable Green Building Norms and Sustainability Frameworks for Ambedkar University Delhi

In line with the vision of developing a sustainable and environmentally responsible campus, it is imperative to refer to relevant green building standards and frameworks. The selection has been made based on the institutional typology, climatic responsiveness, national compliance mandates, and long-term environmental goals of the university. The following norms are recommended:

1. GRIHA (Green Rating for Integrated Habitat Assessment)

Recommended as the primary framework

GRIHA is India's nationally accepted rating system, developed specifically for climate-responsive and resource-efficient buildings. It aligns well with public institutional projects such as AUD. GRIHA encourages passive architectural design, low-impact construction, and promotes self-sufficiency in energy and water usage.

Relevance to AUD:

- Climate-responsive design integration
- Solar passive strategies and renewable energy incorporation
- Efficient waste and water management
- Lifecycle cost reduction through sustainable materials
- Mandated in various government projects

2. IGBC (Indian Green Building Council) – Green Campus Rating

The IGBC Green Campus Rating System is designed for educational campuses with multiple buildings and integrated outdoor environments. It promotes environmentally responsible planning, resource efficiency, and user well-being.

Relevance to AUD:

- Suitable for large, multi-use university campuses
- Emphasizes pedestrian and bicycle-friendly planning
- Focus on ecological preservation and student well-being
- Integrates green landscaping, shaded pathways, and low-carbon mobility

3. BEE (Bureau of Energy Efficiency) Norms

The BEE's Energy Conservation Building Code (ECBC) and appliance star rating standards are essential for ensuring energy efficiency in institutional buildings.

Relevance to AUD:

- Mandatory for large public and institutional buildings
- Guides envelope design, HVAC systems, lighting, and equipment selection
- Supports energy modeling and compliance evaluation
- Enables reduced operational costs through high-efficiency systems

4. ISO 14001:2015 – Environmental Management Systems (EMS)

While not a design-stage requirement, ISO 14001 provides a comprehensive framework for managing the environmental impact of ongoing campus operations. It facilitates environmental policy implementation, performance tracking, and continual improvement.

Relevance to AUD:

- Useful for post-occupancy sustainability governance
- Enables systematic tracking of environmental performance
- Promotes policy-based integration of environmental goals in administration

5. LCA (Life Cycle Assessment) Framework

Life Cycle Assessment offers a scientific approach for evaluating the environmental impact of building materials and systems over their entire lifespan—from raw material extraction to disposal.

Relevance to AUD:

- Informs material selection and procurement strategy
- Encourages low-carbon, locally sourced, and recyclable materials
- Supports carbon footprint reduction and sustainable construction practices

6. LEED (Leadership in Energy and Environmental Design) *(Optional/Reference Use)*

LEED is a globally recognized certification system. While not essential for a public institution like AUD, it can be referred to for benchmarking best practices or in case of international funding or collaboration.

Relevance to AUD:

- Offers alignment with international sustainability benchmarks
- Can be used for comparative learning and performance evaluation

2.5.13 Provisions for Universal Design for Persons with Disabilities, Elderly and Children

(Unified Building Byelaws Delhi-2016) (National Building Code Of India-2016)

11.4 **Site Development**

Level of the roads, access paths and parking areas shall be described in the plan along with specification of the materials.

11.4.1 **Access Path / Walk Way**

Access path from plot entry and surface parking to building entrance shall be minimum of 1.8 m wide having even surface without any steps. Slope, if any, shall not have gradient greater than 5%. Selection of floor material shall be made suitably to attract or to guide visually impaired persons (limited to coloured floor material whose colour and brightness is conspicuously different from that of the surrounding floor material or the material that emits different sound to guide visually impaired persons; hereinafter referred to as "guiding floor material". Finishes shall have a non- slip surface with a texture traversable by a wheel chair. Curbs wherever provided should blend to a common level.

11.4.2 Parking

For parking of vehicles of persons with disabilities, the following provisions shall be made:

a. Surface parking for two car spaces shall be provided near accessible entrance/lift lobby for the persons with disabilities maximum travel distance of 30.0 m. In case the access is through lift, the parking shall be located within 30 m of the lift lobby.

b. The width and length of parking bay shall be minimum 3.6 m X 5.0m. The minimum width includes the transfer area beside the car with a minimum of 1200 mm. Two accessible parking spaceswith one shared transfer area are widely used and shall have a minimum width of 6m.

c. The information stating that the space is reserved for wheel chair users shall be conspicuously displayed.

d. Guiding floor materials shall be provided or a device, which guides visually impaired persons with audible signals, or other devices, which serves the same purpose, shall be provided.

e. Where there are two accessible parking bays adjoining each other, than 1200mm side transfer bay shall be shared by the two parking bays. The transfer zones, both on the side and the rear should have yellow or white cross – hatch road markings and connected to an accessible route 1200mm wide.

f. A minimum of one accessible designated parking space shall be provided in every parking area;

i) For up to 10 parking spaces, one designated accessible parking space shall be provided;

ii) For up to 25 parking spaces, two designated accessible parking space shall be provided;

iii) For up to 50 parking spaces, three designated accessible parking spaces shall be provided;

iv) For up to 100 parking spaces, four designated accessible parking spaces shall be provided;

v) For up to 200 parking spaces, six designated accessible parking spaces shall be provided;

vi) For over 200 parking spaces, six designated accessible parking spaces for 200 parking spaces and one for each additional 100 parking spaces shall be provided.

11.5 Building Requirements

The specified facilities for the buildings for persons with disabilitiesshall be as follows:

11.5.1 Approach to Plinth Level

Every building should have at least one entrance accessible to the **persons with disabilitiesand** shall be indicated by proper signage. This entrance shall be approached through a ramp together with the stepped entry.

a. Ramped approach:Ramp shall be finished with non-slip material to enter the building. Minimum width of ramp shall be 1.8 m. The landing shall have a level platform of not less than 1.5m. For minimum specification for Ramps see Table 11.1.

Table 11.1 : Minimum Specifications for Ramps

Level difference	Minimum gradient of Ramp	Ramp Width	Handrail on both sides	Comments
≥ 150 mm ≤ 300 mm	1:12	1200 mm	√	
≥ 300 mm ≤ 750 mm	1:12	1500 mm	√	Landings every 5 meters of ramp run.
≥ 750 mm ≤ 3000mm	1:15	1800 mm	√	Landings every 9 meters of ramp run.
≥ 3000 mm	1:20	1800 mm	√	Landings every 9 meters of ramp run.

Note : A ramp run with a vertical rise greater than 150 mm should have handrails that

- *are on both sides*
- *are placed at a height as per 11.5.3.*

11.5.2 Corridor Connecting the Entrance/Exit for persons with disabilities.

The corridor connecting the entrance / exit for persons with disabilitiesleading directly outdoors to a place where information concerning the overall use of the specified building can be provided to visually impaired persons either by a person or by signs, shall be provided as follows:

a. Guiding floor materials' shall be provided or device that emits sound to guide visually impaired persons.

b. The minimum width shall be 1.5 m.

c. In case there is a difference of level, slope ways shall be provided as specified in Table 11.1.

d. Handrails shall be provided for ramps/slope ways as per Handrails and Grab Bars (refer 11.5.3). The balusters/ railing shall not reduce the width of corridor.

11.7 Lifts

Wherever lift is required as per bye-laws, provision of at least one lift shall be made for the wheel chair user with the following cage dimensions of lift recommended for passenger lift of 13 person's capacity of Bureau of Indian Standards.

Table no 11.2- Desirable Lift size

Clear Internal width (minimum)	1.5 m min.
Clear Internal depth (minimum)	1.5 m min.
Entrance door width	0.9 m min.

a. A hand rail at height of 760mm and for other detailsrefer 11.5.3.

b. The lift lobby shall be of an inside measurement of 1.8 m x 1.8 m or more.

c. The time of an automatically closing door should be minimum 5 seconds and the closing speed should not exceed 0.25 m/ sec.

d. The interior of the cage shall be provided with a device that audibly indicates the floor, the cage has reached indicates that the door of the cage of entrance/exit is either open or closed.

11.13 AUDITORIUMS, CONCERT HALLS, SPORTS ARENAS AND SIMILAR SEATING

11.13.1 Designated Seating Areas for Wheelchair Users:

At least 1 percent of seats shall be designated as seating areas for wheelchairs users, with a minimum of two. For total seats exceeding 51, it is recommended to provide the designated seating areas in the following manner:

a) Total seats 51 to 100, minimum three designated seating areas for wheelchair users;

b) Total seats 101 to 200, minimum four designated seating areas for wheelchair users;

c) One additional seating area should be provided for every two hundred additional seats or part thereof.

These spaces should be integrated among other seats and allow two wheelchair users to stay together. It is recommended that the armrest on the seats at the end of the row lift up to allow people to transfer from the wheelchair onto a seat. To accommodate groups of wheelchair users, in an auditorium with fixed seats, a minimum of 15 seats shall be foldable or removable to increase the number of designated areas for wheelchair users when necessary.

Some seats should be wider in order to allow larger size people to sit properly.

13.4 Communication – Post / Telegraph / Telephone Facility

Table 13.9Development Controls for Communication Facilities

Sl.No	Category	Maximum			Other Controls
		Gr. Cov.	FAR	Height	
A	POST & TELEGRAPH				
1.	a. Post Office Counter (without delivery) b. Courier Service Office	No specific site reservation to be kept in the layout plan since permitted in all use zones/ under mixed use as per requirement, except in recreational use zone.			
2.	Telegraph Office (Booking & Delivery)				
3.	Head Post Office with Administrative Office & with/ without delivery office.	30%	120	26 mt.	1. Up to 15% of maximum FAR can be utilized for residential use of essential staff. 2. Parking standard @ 1.33 ECS / 100 sq. mt. of floor area. 3. Other Controls related to basements etc. are given in,Development Code, MPD - 2021
B	TELEPHONE				
4.	a. Telephone Exchange b. RSU (Remote Subscriber Units)	30% 30%	120 100	26 mt. 15 mt.	

13.6 Safety

Table 13.13Development Controls for Safety / Fire Facilities

Sl.No	Category	Maximum			Other Controls
		Gr. Cov.	FAR	Height	
1.	Fire Post	30%	120	26 mt.	1. Up to 25% of maximum FAR can be utilized for residential use of essential staff in fire station. 2. Parking standard @ 1.33 ECS/100 sq. mt. of floor area. 3. Up to 15% of maximum FAR can be utilized for residential use/hostel for essential staff and student accommodation, in Fire Training Institute/College. 4. Other controls related to basements etc. are given in Development Code , MPD - 2021
2.	Fire Station	30%	120	26 mt.	
3.	Disaster Management Centre	30% (on building area only)	120	26 mt.	
4.	Fire Training Institute/College	30%	120	26 mt.	

Dimensions and required information for Lift Installation in Building.

Carrying capacity of lift (person) number	Load(kg)	Lift speed	Dimension of lift well front depth(in cm.)	(Cm)	Leading pit entrance (cm)	Dimension of machine room	Clearance from top floor landing to machine room flooring cm	Imposed load in tones on top of lift well due to installation. it may be noted that figures do not include weight of the machine from floor and well etc.

1	2	3	4	5	6	7	8	9	10	11	12
4	272	Up to & including 1 m/s	175	115	70	140	230	275	245	450	6.5
6	408	Do	195	135	80	140	230	335	275	450	7.0
8	544	Up to & including 1 m/s	200	170	80	150	245	395	275	450	8.5
10	680	Up to & including 1.5 m/s	225	170	90	150	245	395	305	475	10.5
13	884	--do--	235	188	90	150	245	425	335	470	13.0
16	1088	--do--	235	205	105	150	245	520	335	480	15.0
20	1360	--do--	235	255	105	150	245	520	335	480	15.0

1.1.1 Area Requirements for Sub-Station for buildings

S.No	Total covered area(in sq.m)	Transformer capacity(in KVA)	Substation Size required(in sq.m)
1	2500	1 X 400	70
2	4500	1 X 630	70
3	8000	2 X 630	100
4	10,000	2 X 630	130
5	15,000	4 X 630	160
6	20,000	5 X 630	175
7	25,000	6 X 630	200
8	30,000	7 X 630	220

Notes:

1 For additional 1000 sq.mt. Covered area, a load of 90 KVA will come up with 150 KVA TR. Capacity at 60 % loading.

2. For additional of one transformer as per covered area, a space of additional 16 sq.m is to be provided.

3. In case of any deviation in space size due to unavoidable circumstance, the same shallbe considered with the approval of Electricity Board.

5. Installation of Solar Photo Voltaic Panel

The installation of Solar Photo Voltaic Power Plant is mandatory for residential and non

Residential Building in Delhi.

Table 11: Minimum area required for Installation of Solar Photo Voltaic Panel

S. No.	Building category	Plot area/ Ground Coverage		Capacity of SPV plant (in kilo watt peak	Area of Terrace required in % & Sqm.	
1.	Residential	105 -250 Sqm.	75%	1 KW p(spv)	20%	15 Sqm.
		250 -500 Sqm.		2 KW p (spv)	20%	30 Sqm.
		500-1000 Sqm.	50%	3 KW p (spv)	20%	45 Sqm.
		1000-3000 Sqm.		5 KW p (spv)	15%	75 Sqm.
		> 3000 Sqm.		10 KW p (spv)	15%	150 Sqm.
2.	Institutional	500-1000 Sqm.	30%	5 KW p (spv)	35%	75 Sqm.
		1000-3000 Sqm.		10 KW p (spv)	35%	150 Sqm.
		>3000 Sqm.		20 KW p (spv)	35%	300 Sqm.
3.	Government Buildings	500-1000 Sqm.	50%	5 KW p (spv)	30%	75 Sqm.
		1000-3000 Sqm.		10 KW p (spv)	15%	150 Sqm.
		>3000 Sqm.		20 KW p (spv)	20%	300 Sqm.

Table 7 Key Accessibility Issues

(*Clause* 13.3.3)

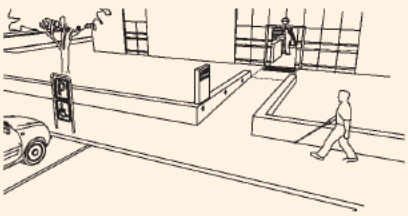
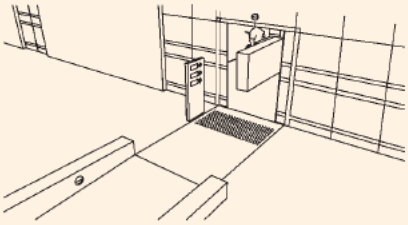
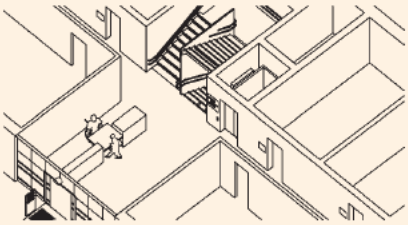
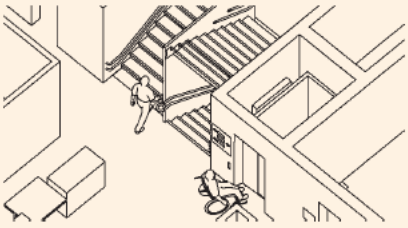
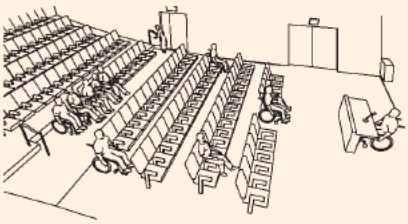
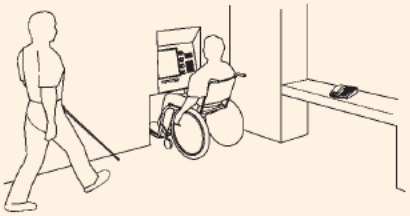
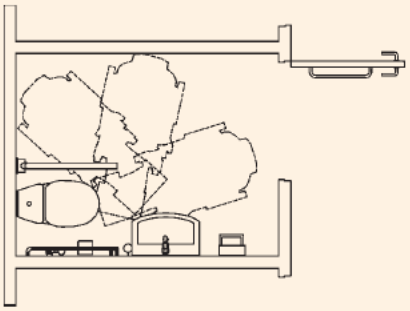
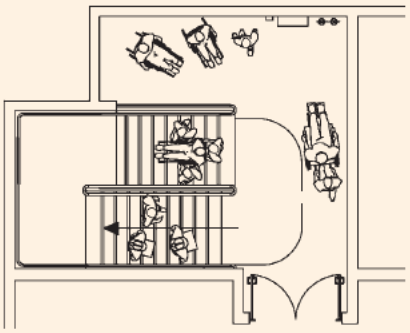
Sl No. (1)	Key Accessibility Issues (2)	Example (3)
i)	Equitable approach to a building, for example designated parking, clear pedestrian routes separate from vehicles and cyclists, no steps or obstacles, short distances from parking and public transport, good signage, good lighting and good contrast	
ii)	Equitable entry *via* the same entrances, for example easy to locate main entrances, no steps or obstacles, wide openings, adequate manoeuvring space in front of the door, low operating forces, good signage, good lighting and good visual contrast	
iii)	Equitable use of the same paths in horizontal circulation, for example no steps or obstacles, adequate manoeuvring space, wide door openings, easy to operate doors, resting places, clear layout, good signage, good lighting and good visual contrast	
iv)	Equitable access to the same paths in vertical circulation, for example safe stairs, spacious lifts with easy operation, good signage, good lighting and good visual contrast	
v)	Equitable use of the same rooms, for example ample circulation space and different seating possibilities, good acoustics and hearing enhancement systems, good lighting and good visual contrast	

Table 7 — (*Concluded*)

(1)	(2)	(3)
vi)	Equitable use of the same equipment and facilities, for example easy to understand and operate, adequate manoeuvring space and operating height, information *via* two senses	
vii)	Equitable use of toilet and sanitary facilities, for example good signage, adequate manoeuvring space, good transfer options, well-placed equipment, easy operation	
viii)	Equitable means of egress, concepts for emergency planning, for example no steps or obstacles, fire protected lifts, good signage, good lighting, good visual contrast, good fire safety, protection and evacuation, accessible means of egress	
ix)	Important information *via* two senses or more, for example visual, audible and tactile	

(National Building Code Of India-2016)

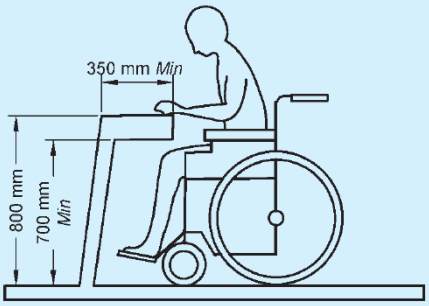


FIG. 13 NECESSARY SPACE UNDER COUNTER OR STAND FOR EASE OF WHEELCHAIR USERS

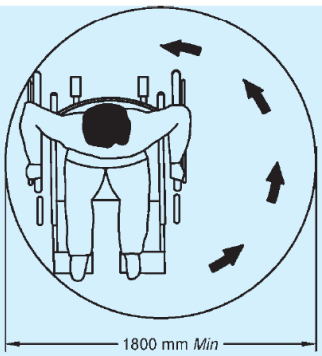


FIG. 15 PREFERRED COMFORTABLE TURNING RADIUS

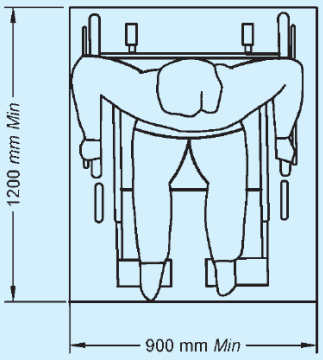


FIG. 14 CLEAR FLOOR SPACE

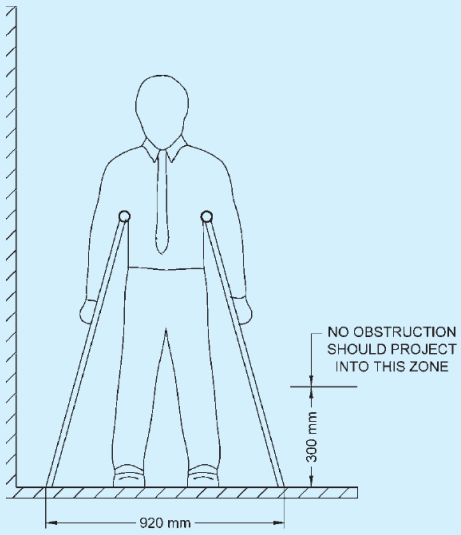
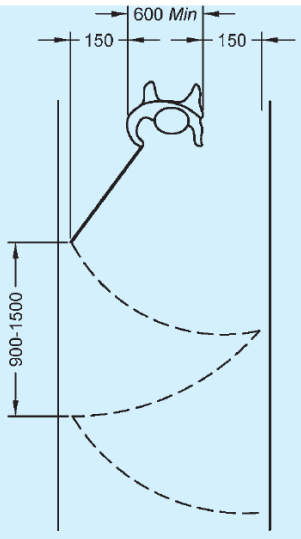


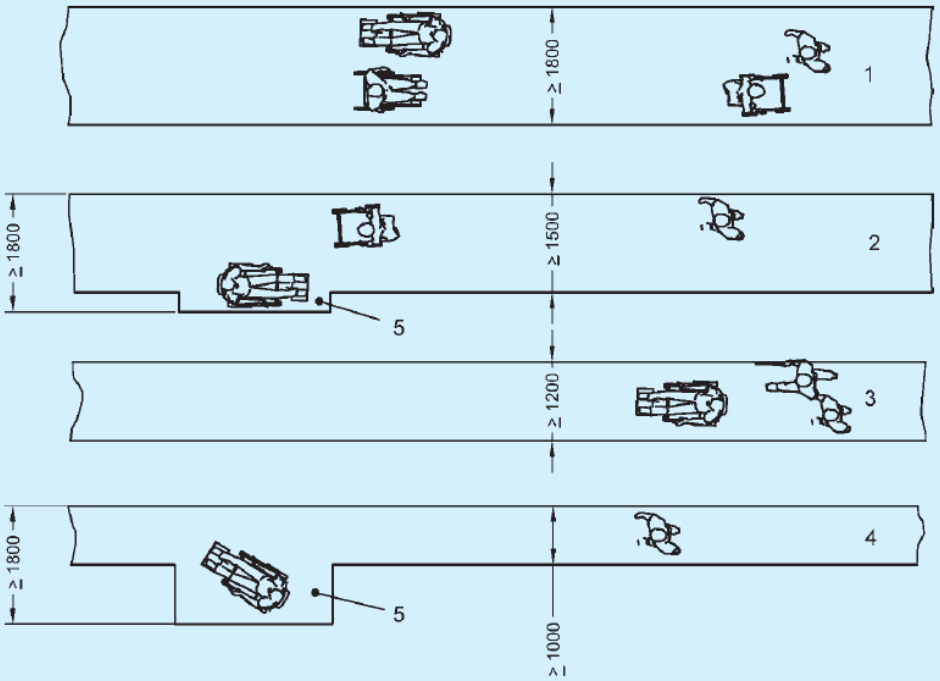
FIG. 16 PASSAGEWAY REQUIRED FOR PEOPLE WHO USES WALKING AIDS



All dimensions in millimetres.

FIG. 17 SPACE ALLOWANCE (RADIAL RANGE) FOR PEOPLE USING WHITE CANES

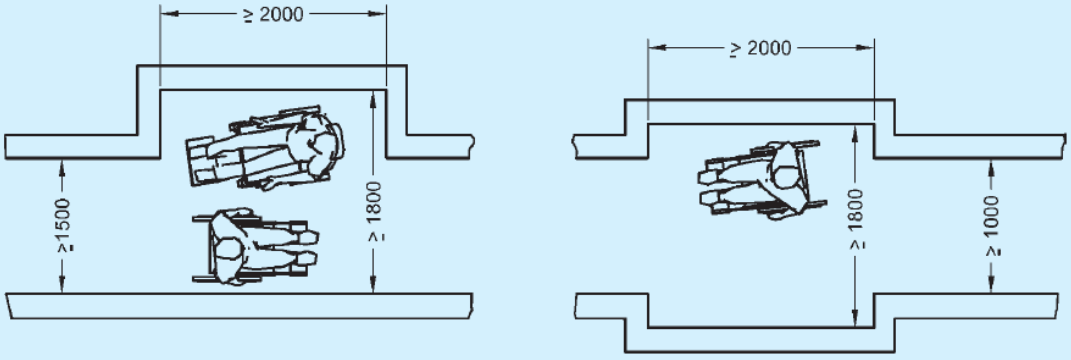
(National Building Code Of India-2016)



Key
1 and 2 For two-way traffic
3 and 4 For one-way traffic
5 Passing and turning space every 25 m (only acceptable for wheelchair users under exceptional circumstances)

All dimensions in millimetres.

FIG. 26 DIFFERENT SURFACE WIDTHS OF THE PATH DEPENDING ON TRAFFIC



All dimensions in millimetres.

FIG. 27 EXAMPLES FOR PASSING PLACES FOR WHEELCHAIR USERS

(National Building Code Of India-2016)

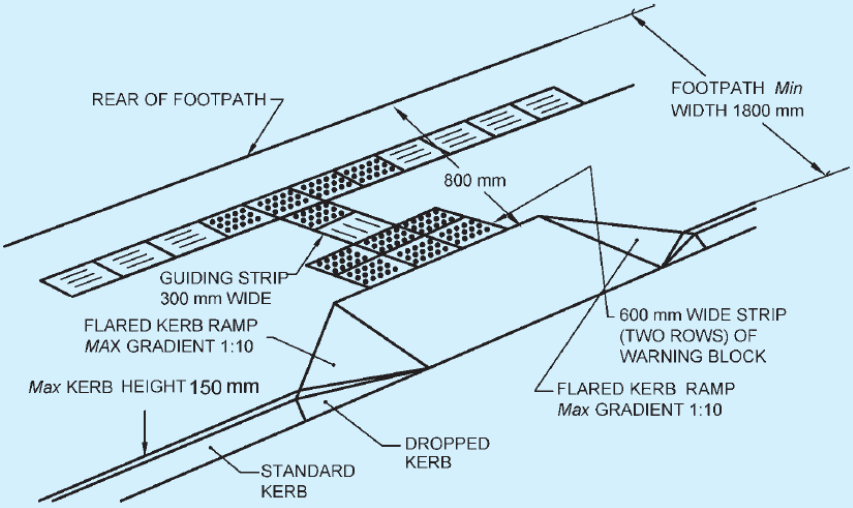


FIG. 29 KERB EXTENSION AT STREET INTERSECTION

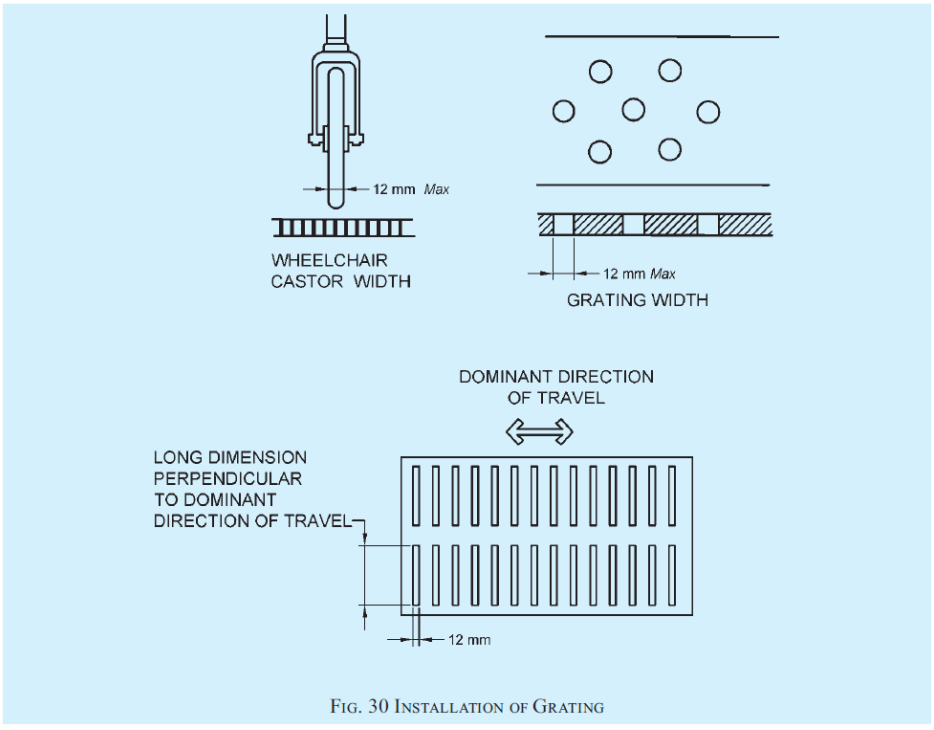
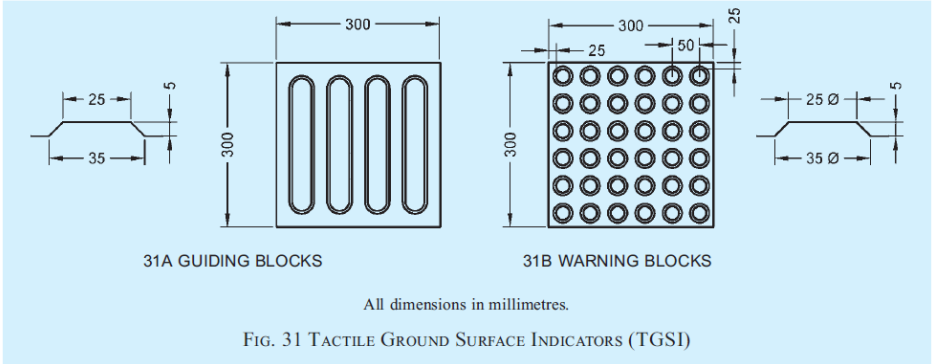


FIG. 30 INSTALLATION OF GRATING



All dimensions in millimetres.

FIG. 31 TACTILE GROUND SURFACE INDICATORS (TGSI)

2.5.14 Parking NORMS

(National Building Code Of India-2016)

ANNEX A

(*Clauses* 10.1 *and* 10.4)

OFF-STREET PARKING SPACES

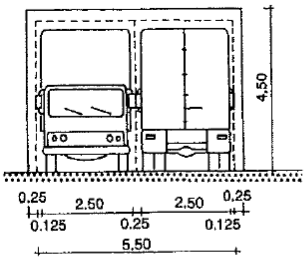
A-1 The off-street parking spaces shall be as given in Table 9.

Table 9 Norms for Off-Street Parking Spaces

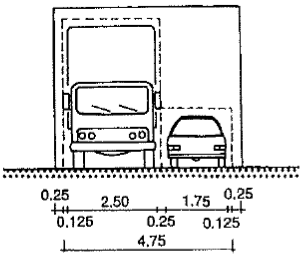
(*Clause* A-1)

Sl No.	Occupancy	One Car Parking Space for Every				
		Population Less than 50 000	Population Between 50 000 and 200 000	Population Between 200 000 and 1 000 000	Population Between 1 000 000 and 5 000 000	Population Above 5 000 000
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Residential a) Multi-family	—	—	a) 2 tenements having built-up area 101 to 200 m^2	1 tenement of 100 m^2 built-up area	a) 1 tenement of 75 m^2 built-up area
				b) 1 tenement of built-up area above 200 m^2		b) ½ tenement of built-up area above75 m^2
	b) Lodging establishments, tourist homes and hotels, with lodging accommodation	12 guest rooms	8 guest rooms	4 guest rooms	3 guest rooms	2 guest rooms
ii)	Educational (*see* Note 1)	—	—	70 m^2 area or fraction thereof of the administrative office area and public service areas	50 m^2 area or fraction thereof of the administrative office area and public service areas	35 m^2 area or fraction thereof of the administrative office area and public service areas

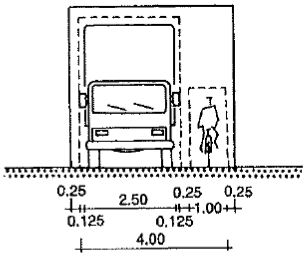
Space required at reduced speed (≦40 km/h)



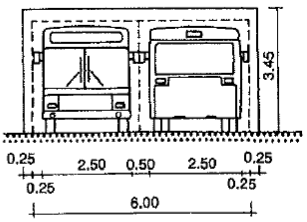
⑩ Truck/truck



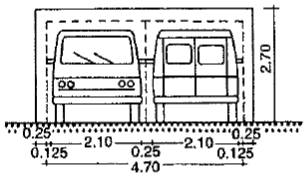
⑪ Truck/car



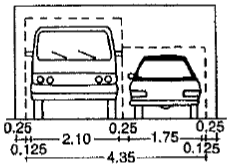
⑫ Truck/bicycle



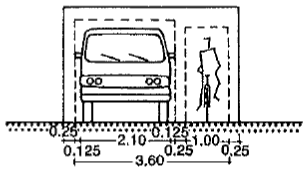
⑬ Bus/bus



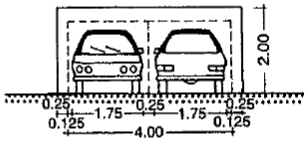
⑭ Van/van



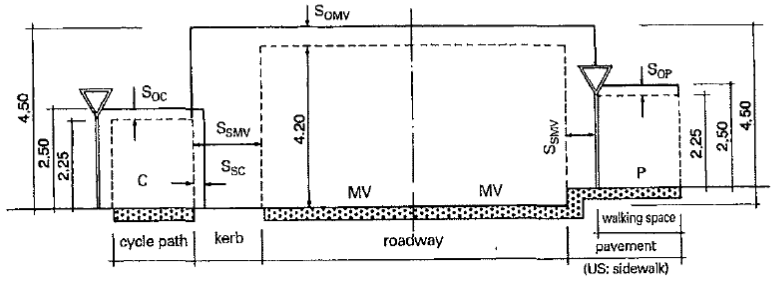
⑮ Van/car



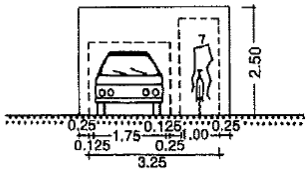
⑯ Van/bicycle



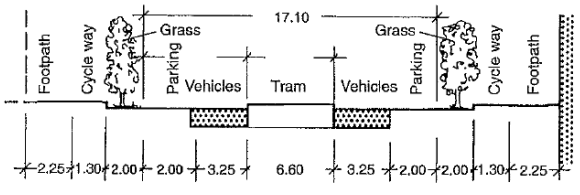
⑰ Car/car



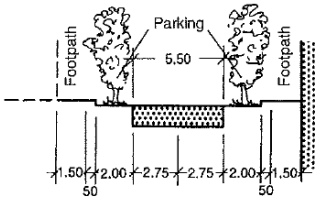
⑱ Dimensions of clear space/traffic space for vehicles



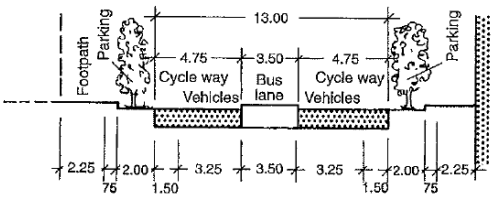
⑲ Car/bicycle



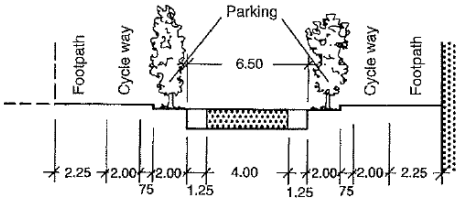
❷ Pedestrian and cyclist area separated from road and parking by grass strips; tram on its own track bed



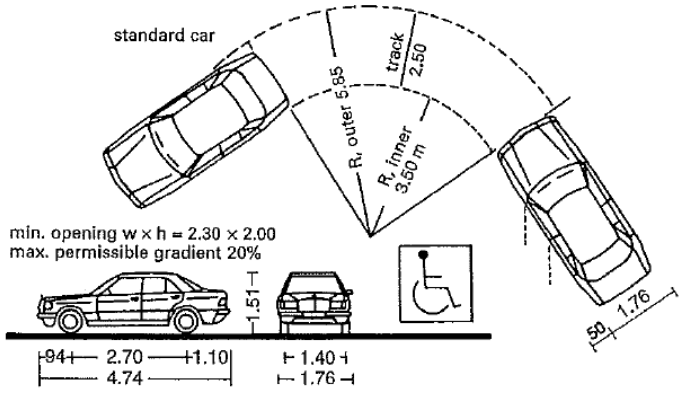
❸ Feeder road, carriageway designed for encounters of trucks with reduced speed; drivable side strip in case larger vehicles meet



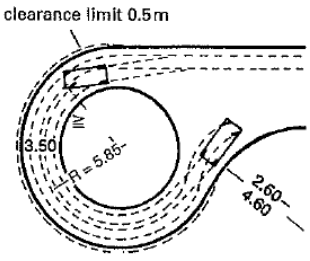
❹ Cycle way near the road has advantage at crossings; bus lane in middle of road



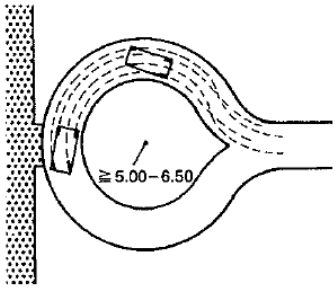
❺ Feeder road, carriageway designed for encounters of cars with reduced speed; drivable side strip in case larger vehicles meet



❶ Standard car

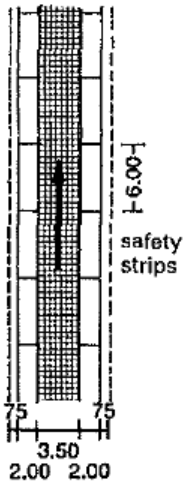


❷ Turning circle of a car

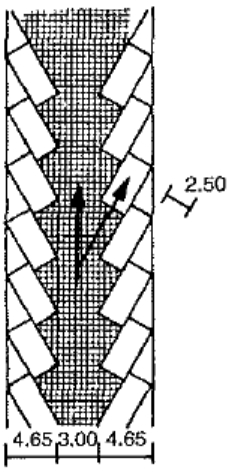


❸ Entrance drive, car turning circle radius ≧5–6.50 m

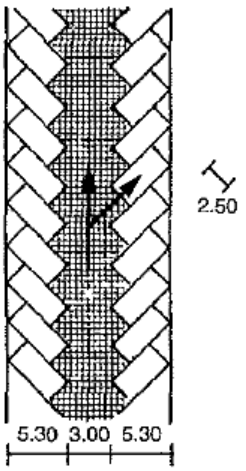
(Neufert, 1936)



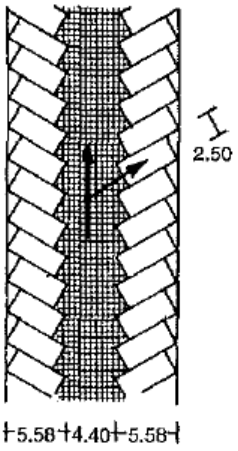
1 Parking parallel to the road



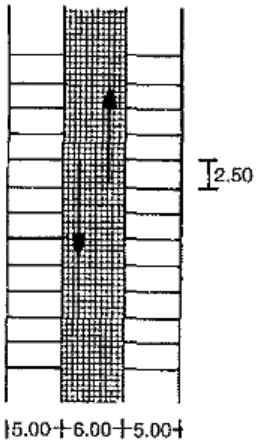
2 30° oblique parking and exiting is simple, but one-way traffic only



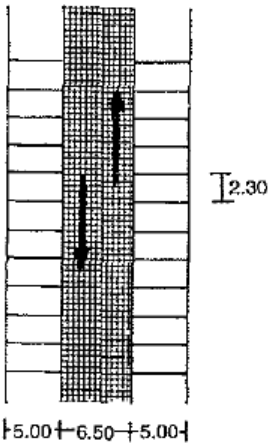
3 45° oblique parking, one-way traffic only



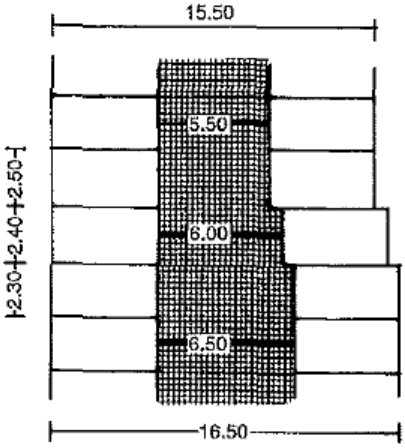
4 60° oblique parking, one-way traffic only



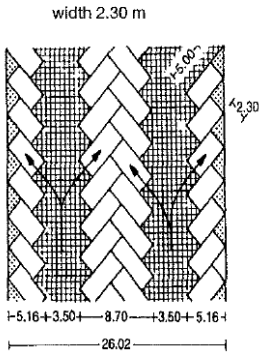
5 90° parking and exiting is possible in both directions. Access width 5.50 m for increased manoeuvring



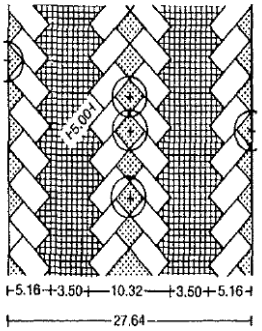
6 90° parking and exiting is possible in both directions. Parking space width 2.30 m



7 Parking spaces and access widths



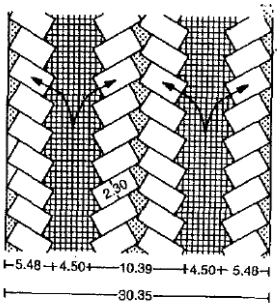
8 45° parking, one way traffic only



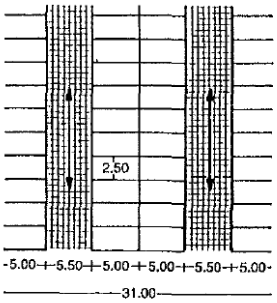
9 Parking, one way traffic only (leaves space for planting)

Arrangement of garage parking spaces to the access. At an angle of:	Required access width (in m) for a garage parking space width of:		
	2.30	2.40	2.50
90°	6.50	6.00	5.50
75°	5.50	5.25	5.00
60°	4.50	4.25	4.00
45°	3.50	3.25	3.00
up to 30°	3.00	3.00	3.00

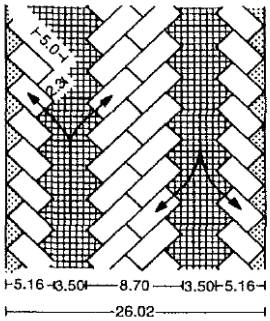
13 Access width. (Parking space 2.50 m wide is standard. This value should if possible always be complied with in public areas)



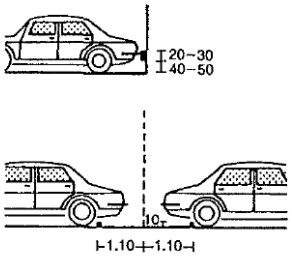
10 60° parking, one way traffic only



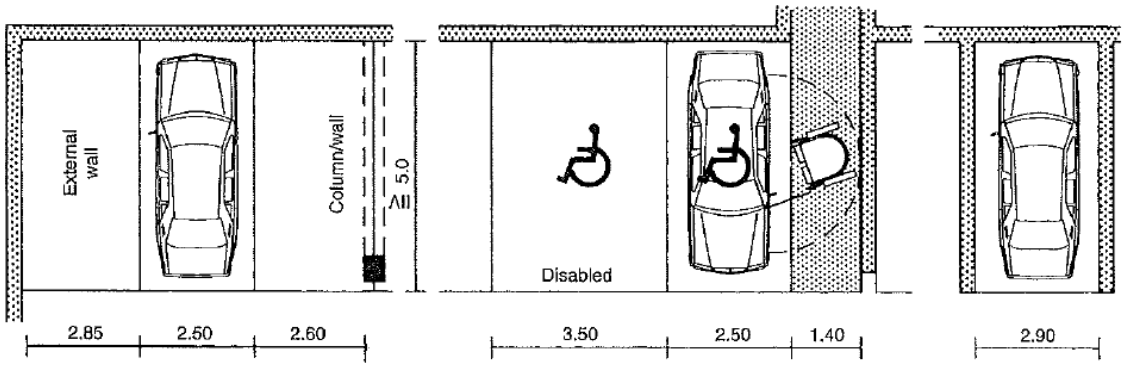
11 90° parking, access 5.50 m wide, parking space 2.50 m wide



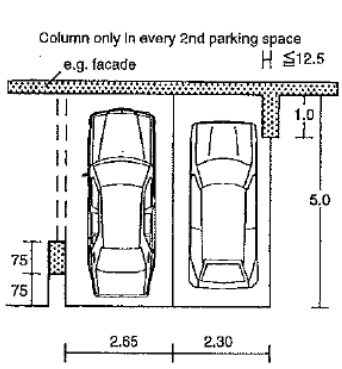
14 Oblique parking layout



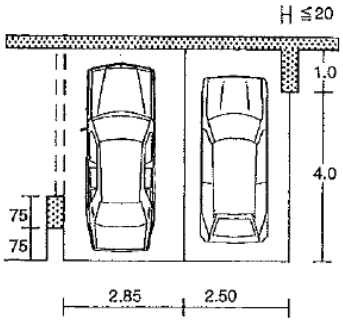
15 Transverse bumpers and impact buffers



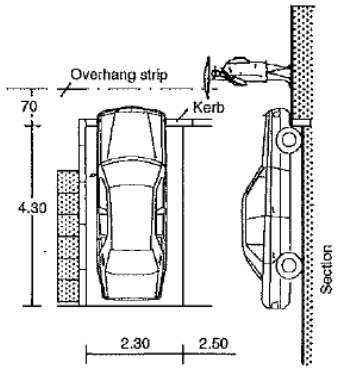
1 If parking spaces are bordered by pillars or walls, then the width is increased



2 Reductions are possible in private buildings



3 Comfortable parking and exiting



4 With kerb border

(Neufert, 1936)

3.1 LOCATION

The Site is in Sector 3, Rohini, Delhi 110085. Rohini is predominantly a residential area planned for 8,50,000 population. This Scheme was planned in 1980. Rohini sub-city is divided into more than 50 Sectors of which ‘Sector 3’ is the biggest Sector. Sector 3 is divided into three parts:- Residential area, Institutional area, and Commercial area.

Address	Institutional Area, Sector 3, Rohini, Delhi, 110085
Coordinates	28.6969° N, 77.1104° E
Zone	H
Subzone	H8
Ward	53 North Delhi Municipal Corporation Rohini E
Site Area	18 Acre
Building Typology	Institution
Topography	Plain

Client	The Ambedkar University Delhi
Funding	Government of NCT of Delhi
Land Allotment	Delhi Development Authority
Development Agency	Public Work Department

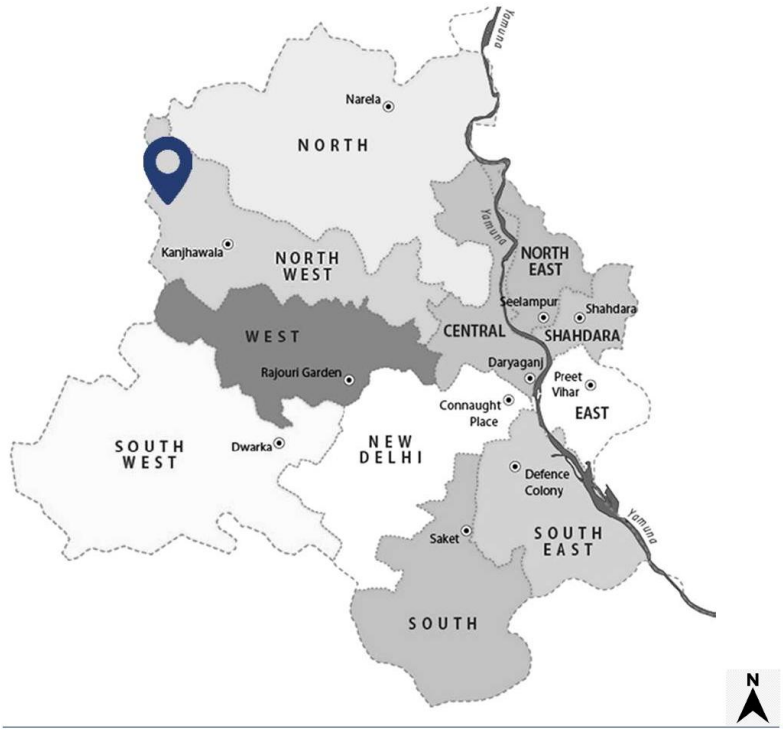


Figure 4 location of the site

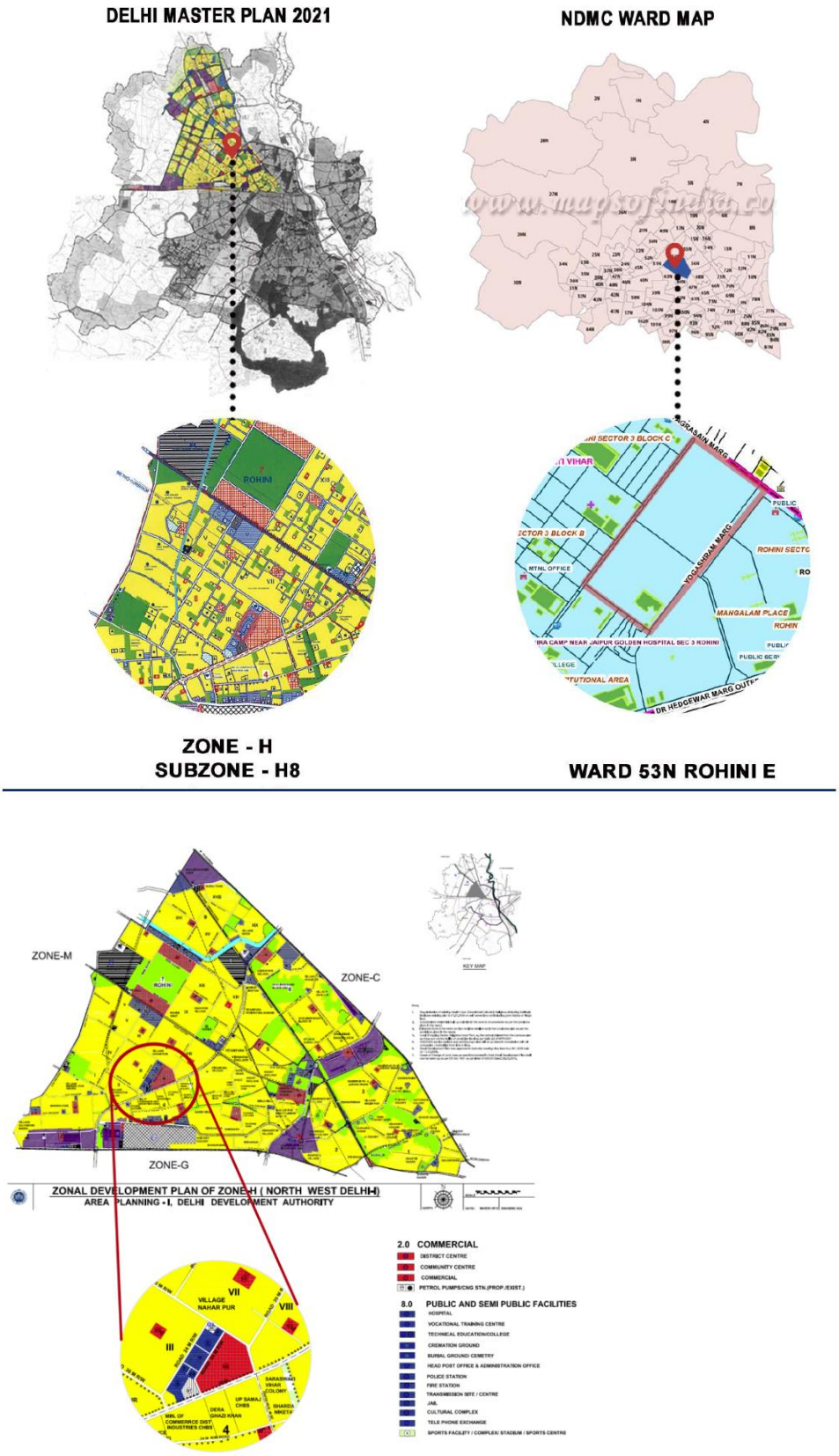


Figure 5 Landuse map



Figure 6 Site visit



Figure 7 Site



Figure 8 Site boundary



Figure 9 Road 20m wide in between plots

3.2 ACCESSIBILITY & URBAN CONTEXT

1. The site is well connected to - Outer Ring road - 0.6 km
2. Metro station - Rohini East - 2.4 km , Rohini West - 3.1 km , Pitampura - 3.1 km
3. New Delhi Railway Station - 15 km
4. IGI International Airport - 19.6km
5. Bus stands nearby are Pushpanjali Enclave Bus Stand, Kali Mandir Bus Stand,

Naharpur Village Bus Stand, Rohini Sector -7 Bus Stand.

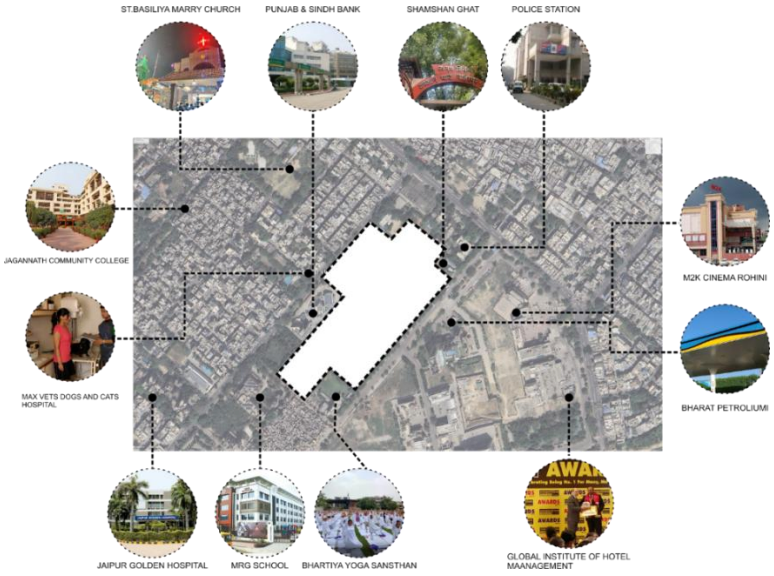


Figure 10 Site Proximity



legends

Nearest Metro Station
Rithala- 2.8 km
Rohini West- 2 km

Nearest Railway Station
Khera Kalan Station- 6.9 km
New Delhi Station- 15 km
Old Delhi Station- 21.7 km

Nearest Airport
Indira Gandhi International- 19.6 km

Bus Stop
Site Boundary

N

Figure 11 Site Location with Connectivity

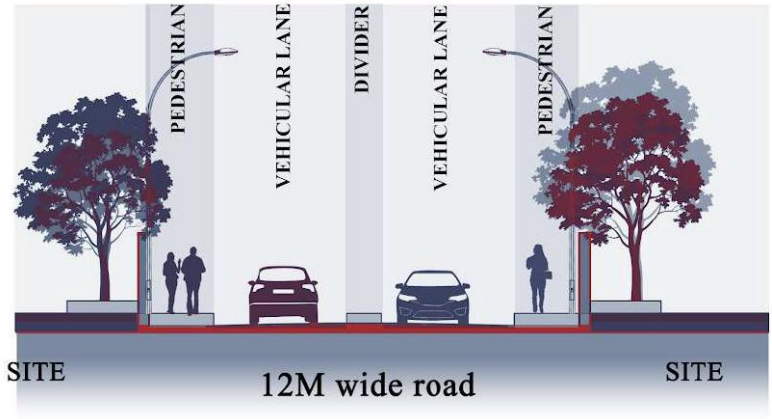


Figure 12 Street Section AA'

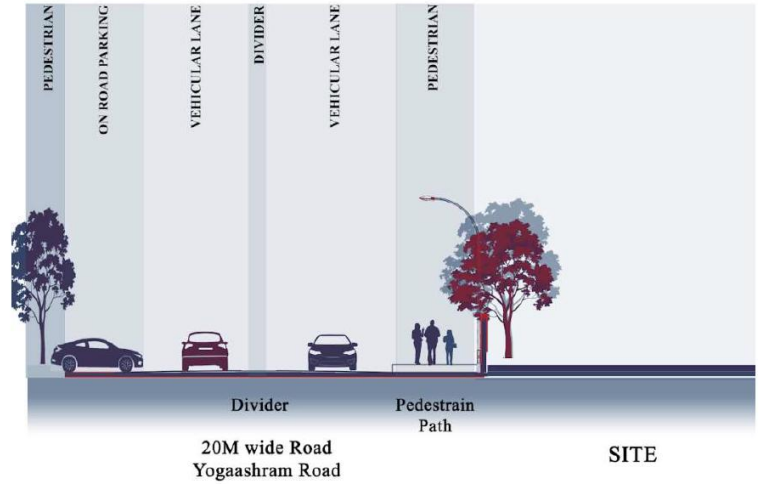


Figure 13 Street Section CC'

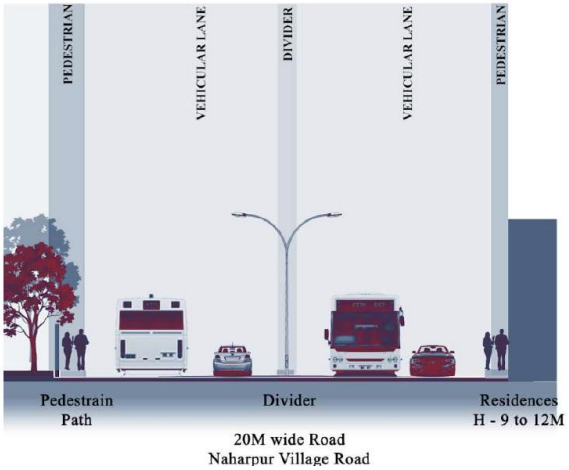
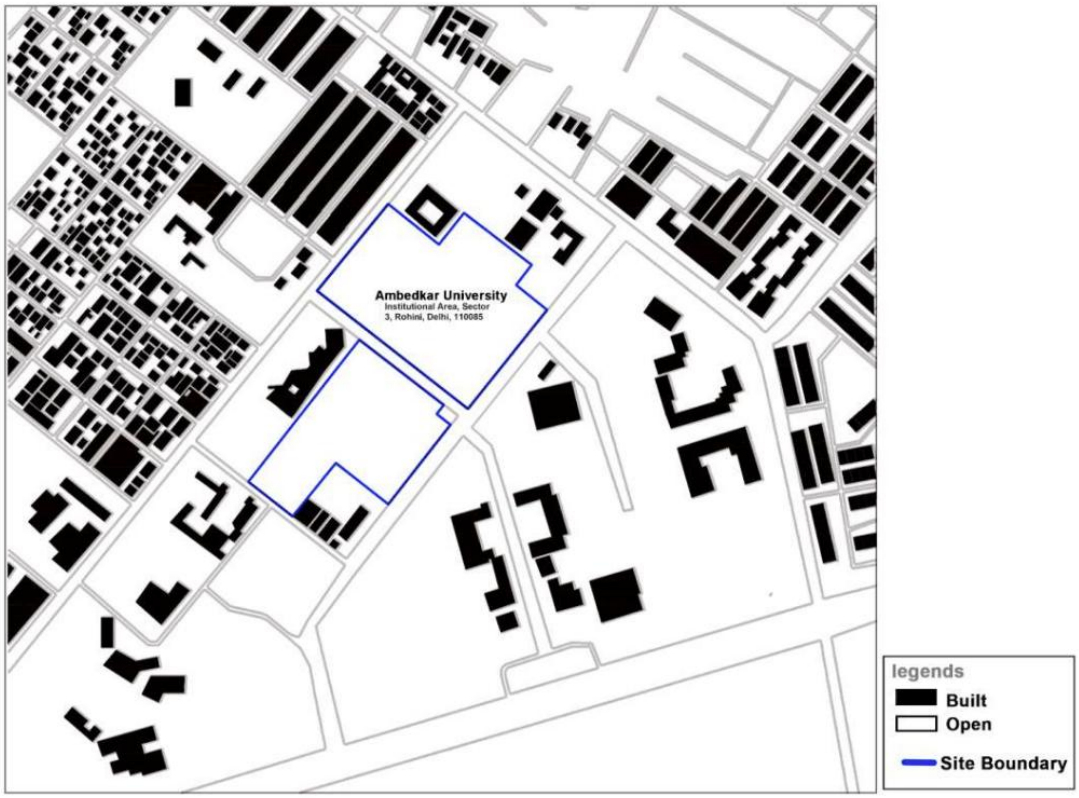


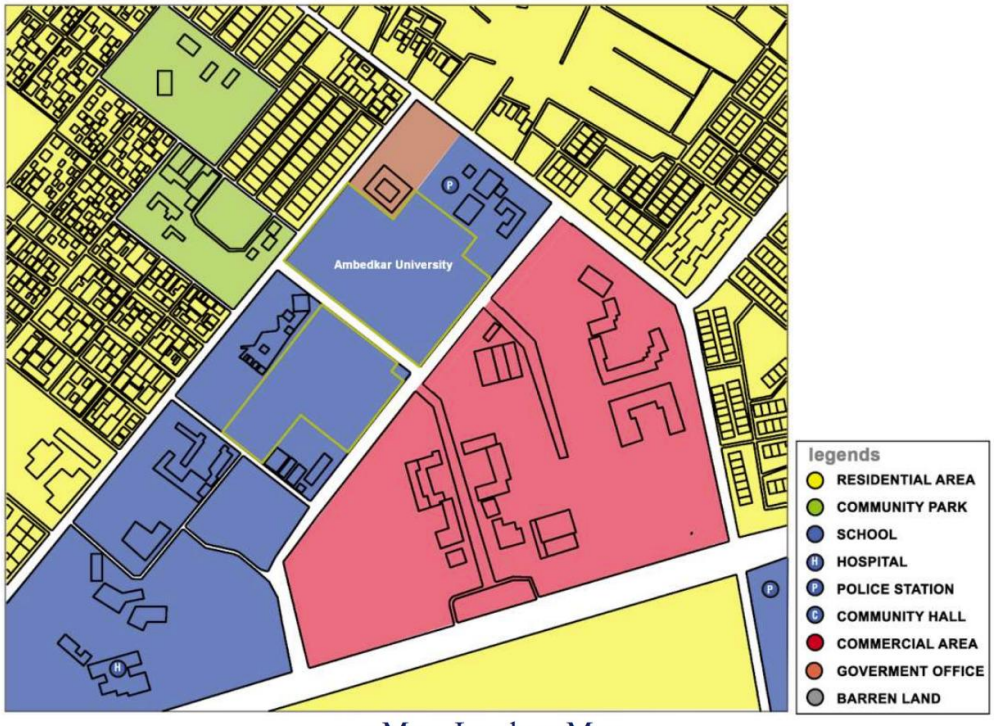
Figure 14 Street Section BB'

Yogashram Marg is 20 m wide road and segregates the institutional and commercial areas. The road has parking lanes for the commercial area and wide footpaths along the institutional boundary. Naharpur road is 20m wide and segregates the residential and institutional areas.



Map: Nolli's Map

Figure 15 Built and Open Space



Map: Landuse Map

Figure 16 Site surrounding by land use

3.3 SITE CONSTRAINTS

Road passing through Ambedkar University has a fish market on it presently which leads to unwanted foul smell for the existing surroundings and the passing by.



Figure 17 Fish Market in front of site



Figure 18 Dirt near site boundary

3.4 TOPOGRAPHY

Coordinates 28.6969° N, 77.1104° E

Maximum elevation: 251 m

Minimum elevation: 206 m

Average elevation: 217 m

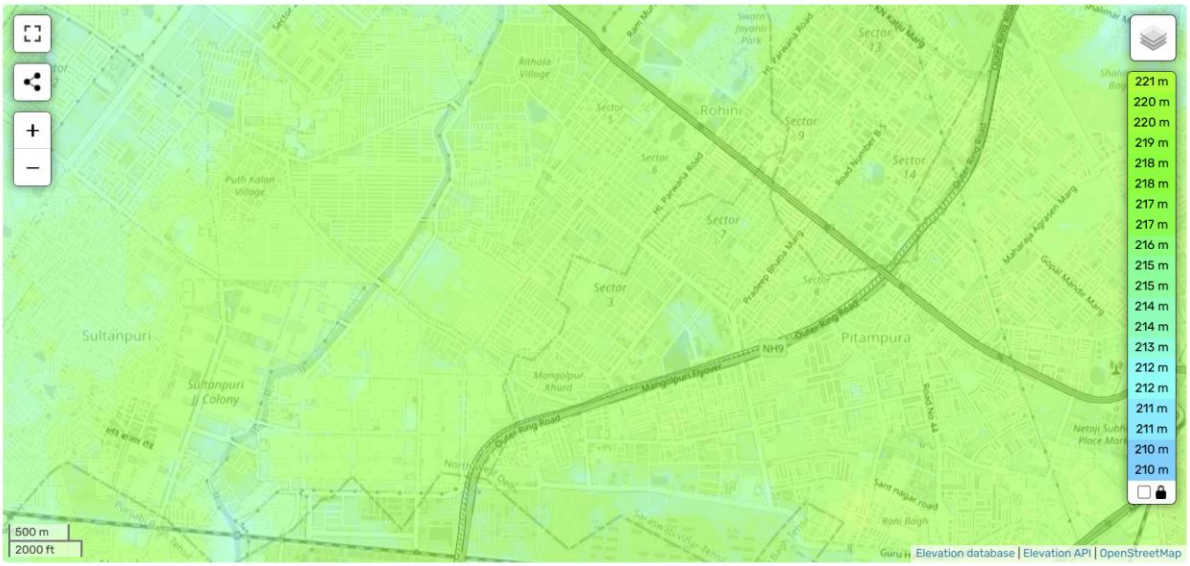


Figure 19 Topography map

The site is full of wild shrubs and grass. The topography of the site is flat. There are no levels on the site which makes it an ideal site.

Trees on the periphery of the site-

- Neem
- Bauhinia
- Peepal
- Mango

3.5 CLIMATOLOGY

Latitude: 28.7061° N

Longitude: 77.1029° E

Weather Conditions

A monsoon influenced humid subtropical with high variation between summer and winter temperatures and precipitation.

Season	Months	Temperature	Humidity	Precipitation
Summer	April – June	Hot	Very low - Normal	Low
Monsoon	July - September	Pleasant	High – Very high	Heavy
Autumn	October - November	Warm	Very low – Low	Very Low
Winter	December - January	Cold	Low	Low
Spring	February - March	Warm	Very low – Low	Good

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	13.5 °C (56.3) °F	16.9 °C (62.4) °F	22.5 °C (72.6) °F	29.2 °C (84.5) °F	32.7 °C (90.9) °F	33 °C (91.3) °F	29.9 °C (85.8) °F	28.7 °C (83.7) °F	27.8 °C (82.1) °F	25.4 °C (77.7) °F	20.5 °C (69) °F	15.4 °C (59.7) °F
Min. Temperature °C (°F)	7.7 °C (45.8) °F	10.6 °C (51) °F	15.2 °C (59.4) °F	21 °C (69.8) °F	25.3 °C (77.6) °F	27.6 °C (81.6) °F	26.6 °C (79.9) °F	25.8 °C (78.5) °F	23.9 °C (75.1) °F	19.2 °C (66.5) °F	14.2 °C (57.5) °F	9.3 °C (48.7) °F
Max. Temperature °C (°F)	20 °C (68) °F	23.5 °C (74.4) °F	29.8 °C (85.7) °F	36.7 °C (98.1) °F	39.6 °C (103.3) °F	38.2 °C (100.8) °F	33.7 °C (92.6) °F	32.3 °C (90.1) °F	32.2 °C (90) °F	31.8 °C (89.3) °F	27.4 °C (81.3) °F	22.2 °C (72) °F
Precipitation / Rainfall mm (in)	23 (0.9)	33 (1.3)	20 (0.8)	14 (0.6)	20 (0.8)	74 (2.9)	208 (8.2)	183 (7.2)	99 (3.9)	13 (0.5)	5 (0.2)	8 (0.3)
Humidity(%)	67%	60%	47%	29%	32%	46%	71%	77%	71%	55%	54%	61%
Rainy days (d)	2	3	3	3	4	7	15	15	8	2	1	1

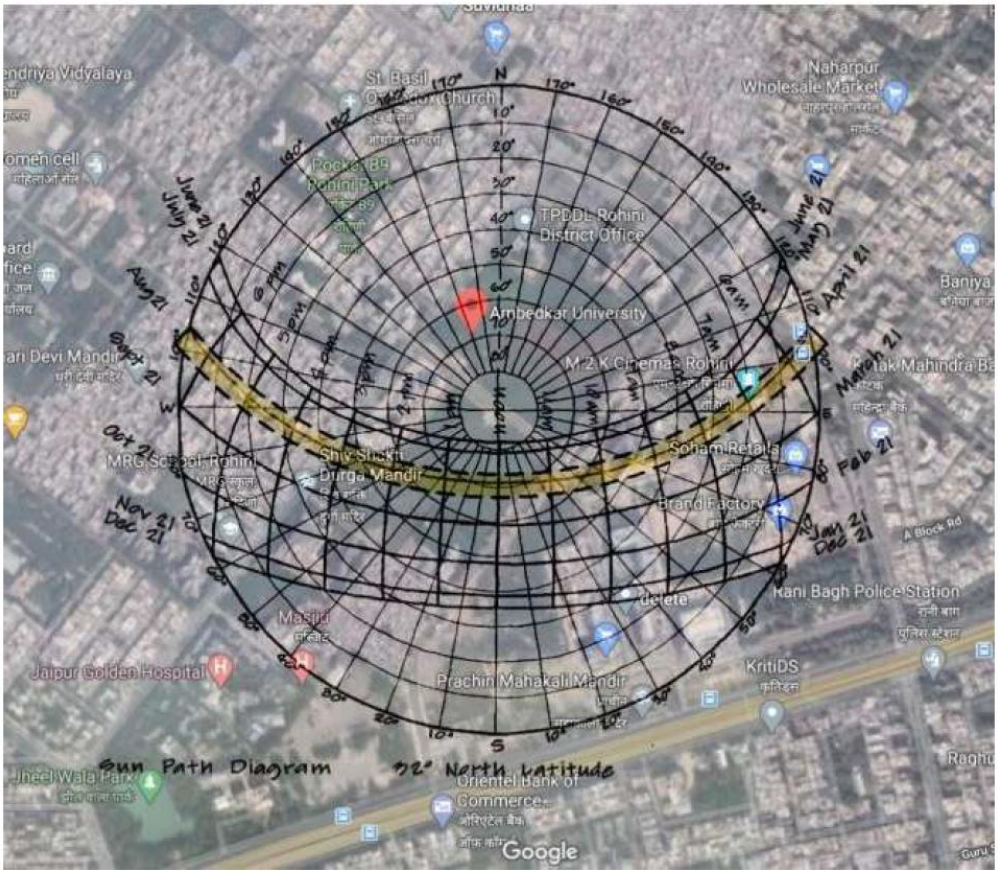


Figure 20 Sun path diagram

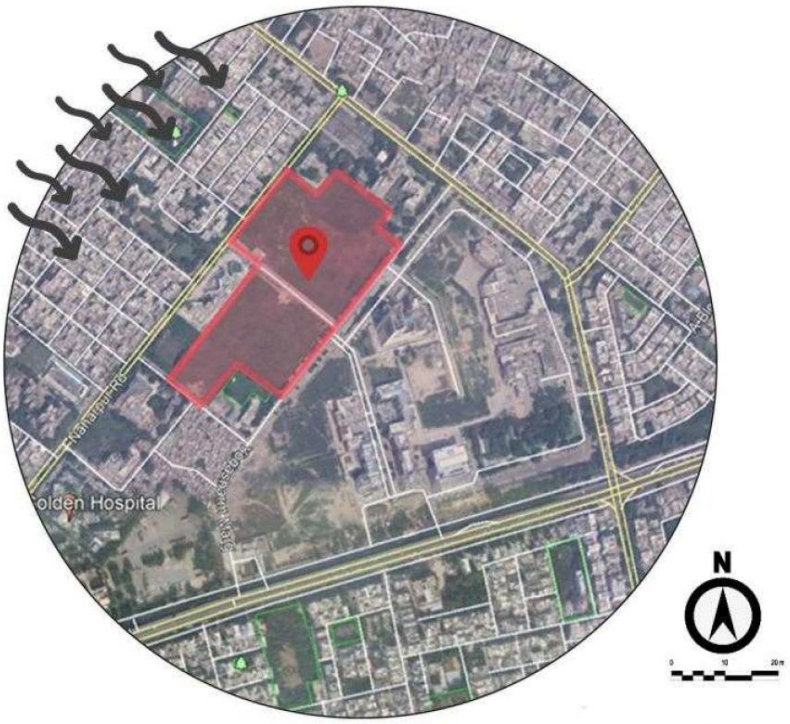


Figure 21 NW Wind Direction

3.6 MOVEMENT

The major vehicular movement is along the Outer Ring Road as well as the commercial area nearby the Ambedkar University. Naharpur Road is majorly used by the Police Staff as well as Jaipur Golden Hospital users (Doctors, Staff or Patients/Visitors) along with the local residents of Sector - 3. Traffic light also has its impact in ensuring smooth traffic movement.

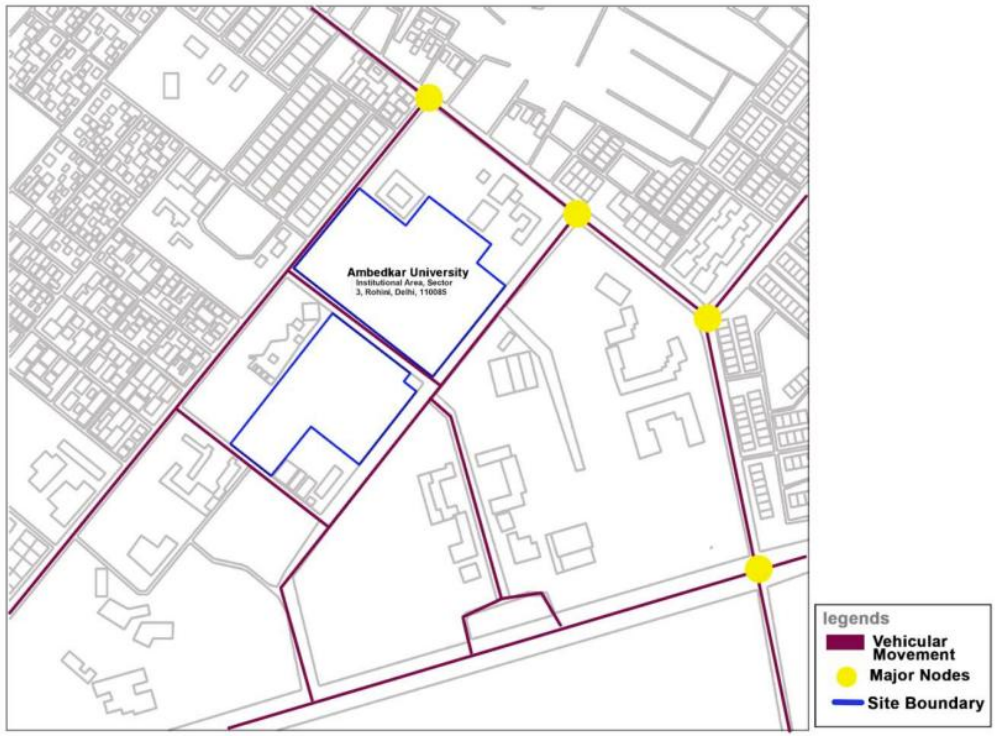


Figure 22 Vehicular Movement

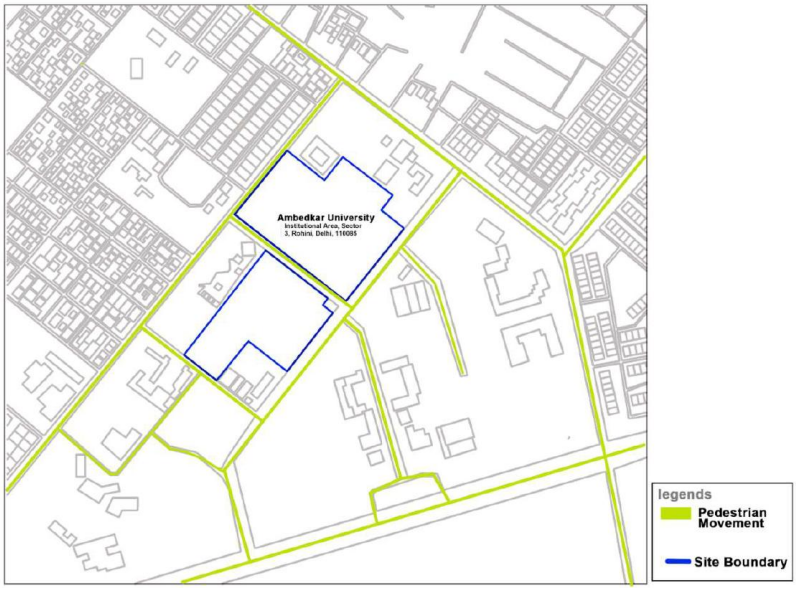


Figure 23 Pedestrian Movement

Pedestrian movement is along the both sides of the site, local residents are the major users. Street hawkers also participate on these pedestrian walkways.

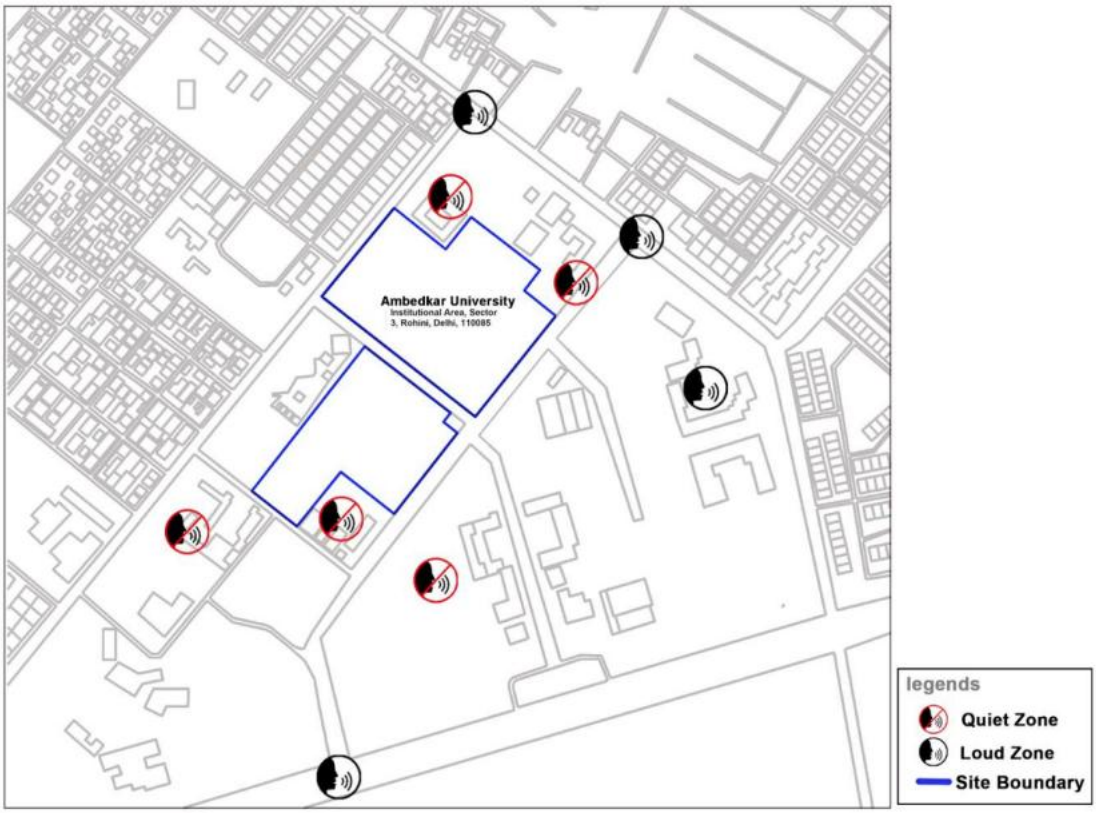


Figure 24 Noise Analysis

Most of the noise is observed along the nodes connecting the Outer Ring Road.

3.7 SERVICES ON THE SITE

- Electricity Supply Conditions: TATA Power Delhi Distribution Limited and BSES ensure that there is a regular and continuous supply of electricity throughout the day.
- Sewage Discharge Conditions: The sewerage collected through drains from the different localities is treated. Supplementary Drain carries only the treated water from Rohini and Rithala STP before it falls into the Yamuna River.
- Stormwater Management: As such, there is no provision of stormwater management nearby our site and its surroundings. The collected rainwater is linked with Badli Bawana Nahar which is a major source of freshwater in Rohini.
- Water Supply Conditions: Delhi Jal Board ensures that there is a regular and continuous supply of water throughout the day.

3.8 CONCLUSIONS FROM THE SITE STUDY

Inferences

- Parking: The parking should not be too far or not visible to the visitor entering the site.
- Noisy and quiet zone: Noisy areas like entrance, parking and auditorium are also clubbed together to stop noise spread to the whole site.

- Site context and analysis: Existing site features and surroundings are most responsible for the planning of the site and buildings. This way the quality of the design is enhanced.
- Climatic Factors: Buildings are oriented to achieve the best out of the climatic factors of the site. Most of the spaces should be designed to extract daylight and natural ventilation.
- The classrooms should be such oriented that the daylight enters from the right of the blackboard/whiteboard. Library should have north diffused light.

3.9 PHYSICAL REQUIREMENTS

Institutional Buildings

	Course Duration	No. of Students/Year	No. of Faculty	
School Of Undergraduate Studies		987	65	
BA Honors in History	3 Year	47		BA History programme introduces students to sources like archaeological evidence, inscriptions, coins, maps, historical biographies and autobiographies, paintings, historical monuments etc. and their role in history-writing.
BA Honors in Mathematics	3 Year	47		The core courses in Mathematics will cover abstract algebra, real analysis, numerical analysis, probability and statistics, differential equations, linear optimization, number theory and cryptography.Tutorials, lab sessions, workshops and seminars are some of the pedagogical hallmarks of the programme.
BA Honors in Sociology	3 Year	47		the multiple dimensions of power and domination—the economic, cultural, religious and symbolic—provide students with a rich appreciation of the interlocking aspects of social life that produce enduring inequalities and marginalizations.
BA Honors in Economics	3 Year	47		The aim is to expose students to multiple perspectives within the discipline and also be familiar with the social, historical, and political dimensions of economics.
BA Honors in English	3 Year	47		attempts to impart to the students an understanding of literature as a cultural and linguistic practice and arm them with tools to dismantle accepted and forced hierarchies in literary and cultural practices.
BA Honours in Psychology	3 Year	47		enable students to work in varied fields where they are required to engage with human beings in different contexts.
BA Honours In Social Sciences And Humanities	3 Year	47		It allows students to explore three disciplines/ disciplinary areas of the School in some depth over three years while obtaining the wider benefits of a liberal arts education.
			Faculty:Student Ratio 1:15	

	Course Duration	No. of Students/Year	No. of Faculty	
School Of Liberal Studies		660	44	
MA Economics	2 Years	66		The programme draws on different theoretical perspectives and traditions within the discipline, brings in perspectives from outside the discipline on contemporary social phenomenon, and uses creative pedagogical approaches to offer a well rounded training.
MA History	2 Years	66		Skills acquired through the programme shall serve programme graduates well not only in academic but in such careers as journalism, publishing, educational administration, museum/archive management, tourism/heritage management and government service (among others).
MA Sociology	2 Years	66		students develop a reflexive awareness of the historicity of the social and the ability to locate the history of the discipline within the sociology of knowledge production.
MPhil Mathematics	3 Years	20		An MPhil student is also expected to present a paper/ research work at a conference as part of the pre-submission requirement of their dissertation.
MPhil History	2 Years	12		An MPhil student is also expected to present a paper/ research work at a conference as part of the pre-submission requirement of their dissertation.
PhD Mathematics	3 Years	20		The PhD programme in aims to produce research scholars,
PhD Sociology	3 Years	20		The PhD programme in aims to produce research scholars,
PhD in History	2 Years	15		The PhD programme in aims to produce research scholars,
PhD Economics	2 Years	15		The PhD programme in aims to produce research scholars,

	Course Duration	No. of Students/Year	No. of Faculty	
Centre for Law and Governance		140	9	
BA in Law and Politics	3 Years	40		The programme is oriented towards those interested in deepening their understanding of law towards a career in research, teaching and legal practice
MA Law, Politics and Society	2 Years	10		The programme is oriented towards those interested in deepening their understanding of law towards a career in research, teaching and legal practice

	Course Duration	No. of Students/Year	No. of Faculty	
School of Business Public Policy and Social Entrepreneurship		565	38	
Bachelor Of Business Administration	3 Years			They are encouraged to form clubs and societies so that, they are able to discuss and deliberate specific concurrent issues. Industry visits and Internship Fairs are organised, which form an important input for overall development.
Master of Business Administration	2 Years			They are encouraged to form clubs and societies so that, they are able to discuss and deliberate specific concurrent issues. Industry visits and Internship Fairs are organised, which form an important input for overall development.
MBA - IEVD	2 Years			The MBA – IEVD programme is a hands-on and practice oriented

School of Educational Studies		510	34	17	
MA Education	2 Years	53			an attempt to bring together the elements of both liberal and professional preparation of educators.
MA Education (Early Childhood Care & Education)	2 Years	53			an attempt to bring together the elements of both liberal and professional preparation of educators.
Continuing Professional Development	6 Months	30			
PhD in Education	3 Years	10			enhance the existing literature in the field with high quality research.

	Course Duration	No. of Students/Year	No. of Faculty	
School of Human Studies		580	39	
MA Gender Studies	2 Years	53		The pedagogies of teaching and learning employed at Gender Studies are intended to inculcate a feminist sensibility in our students, in ways that balance academic rigour with intellectual freedom.
MA Psychology (Psychosocial Clinical Studies)	2 Years	53		The Programme uses many innovative teaching methods and styles in addition to lectures, such as seminars, workshops, film analyses, case studies, clinical vignettes and role playing. An attempt is made to make the classroom experience immersive, reflective, and reflexive. Fieldwork is also a component of some of the courses.
PhD Psychology	5 Years	4		help to hone the skills of future practitioners to ask searching questions in clinical and cultural domains.
MPhil Psychoanalytic Psychotherapy	3 Years	20		The MPhil programme in Psychoanalytic psychotherapy hopes to attend, in a small but significant way, to this huge lacuna in the field of mental health care.
PhD Women And Gender Studies		10		help to hone the skills of future practitioners to ask searching questions in clinical and cultural domains.

	Course Duration	No. of Students /Year	No. of Faculty	
School of Culture and Creative Expressions		20	2	
MA Film Studies		5		a historical and theoretical understanding of film, the programme also tries to promote film-making practice through courses and workshops as necessary
MA Literary Art		5		It hopes to produce writers who are self-directed and have a unique individual literary voice.
MA Visual Art		5		The Visual Art programme is a practice based programme designed to enable the student to develop an engaged and critical art practice.
MA Performance Studies		5		It focuses on the pervasiveness of performance as a central element of social and cultural life, including not only theatre and dance but also such forms as rituals and practices of everyday life, avant--garde performance art, popular entertainment, sports, political demonstrations and potentially any instance of expressive behaviour or cultural enactment.

3.10 INTANGIBLE CONSIDERATIONS

- Bring the community into the planning process through an integrated design process.
- Provide an interior environment that is visually comfortable and stimulating by integrating natural and artificial lighting, eliminating glare, and incorporating colors that stimulate or soothe, depending on the space function.
- Use a day lighting analysis tool to integrate lighting systems, controls, and materials that reflect or absorb light.
- Outdoor Circulation Building Orientation and Entrances17- Structure should be sited and designed to support, enhance and activate common outdoor space.
- Incorporation of exterior circulation elements and gathering spaces is encouraged, including:
    - Freestanding Arcades
    - Arcades connected to buildings
    - Courtyards/Plazas
    - Roof terraces
    - Exterior circulation at multiple levels of a building
    - Linkages to existing buildings, including covered walkways and bridges

- Relationship of Interior to Exterior at Ground Floor Building- Primary entrances (typically adjacent to streets and quadrangles) should be carefully located; pedestrian circulation around and potentially through the building should also be considered
- The relationship of the building to the campus open space network and useable open space is critical; facades of buildings fronting on major open spaces.
- Typical ways to designate entries include:
    - Incorporation of a canopy or other feature to mark the entry.
    - Articulation of entries as a vertical element.
    - Orientation of building entries toward the major axis or primary open space.
    - Horizontal articulation of entries with arcade elements.
    - Transparent and open ground floors are to be provided to increase the interaction
    - between inside and outside.
- The ground floors of new buildings should be designed according to the following:

- Ground floor spaces should house active uses, for instance, classrooms and class laboratories.
- Multiple entries should be incorporated to activate ground floor facades
- A hierarchy of building entries (primary, secondary, service etc.) should be reflected in the design of the façade.

● Massing and Articulation-

- Divide large buildings into smaller components to reduce the overall scale.
- Incorporate smaller-scale elements on lower levels to provide a human scale.
- Minimize blank walls at the ground floor and encourage active uses and ample fenestration.
- Reduce building mass to mediate scale and provide transitions to open spaces and adjacent buildings.
- Express the structural frame clearly to reduce the apparent scale of the building.
- Express circulation elements as separate components.

● Building Materials and Color Palette-

- Ensuring long-term durability and ease of maintenance.
- Providing textural variety.
- Minimizing vandalism.

CHAPTER 4: CASE STUDY AND DESK APPRAISAL

4.1 NATIONAL INSTITUTE OF FASHION TECHNOLOGY, DELHI

4.1.1. Institutional Overview

- **Established:** 1986 by the Ministry of Textiles, Government of India
- **Architects:** Gautam Bhatia followed by Stein Doshi & Bhalla
- **Location & Area:** Hauz Khas, Delhi; approximately 3 acres (11,650 sqm) WikipediaScribd

4.1.2. Master Plan & Spatial Organization

- Designed to resemble a **traditional Indian village square**, featuring a **central sunken courtyard ("Kund")**, open amphitheatre, terraces, bridges, and interconnected walkways Scribdwww.slideshare.net.
- **Zoning strategy:**
    - Academic blocks on one side,
    - Administration and amenities centrally located,
    - Hostel block at the rear
- Circulation separates **pedestrians inside** (around the courtyard) from **vehicular traffic** (basement parking).



Figure 25 Visit to NIFT Delhi

NIFT DELHI

CAMPUS MAP



OLD BUILDING 1

GROUND FLOOR
- Accessory Design Department
- Eton Lab
- Dept. of Fashion Technology: Faculty
- Garment Construction Lab

1st FLOOR
- Knitwear Design Department
- Textile Design Department
- Fashion Communication Mac Lab
- Server Room
- Dept. of Fashion Technology: Computer Lab
- Foundation Programme: Computer Lab

2nd FLOOR
- Fashion Design Department
- Legal Office
- Mechanical Lab
- IT Department
- Dept. of Fashion Technology: Mechatronic and IOT Lab

3rd FLOOR
- Leather Design Department
- Garment Construction Labs

OLD BUILDING 2

GROUND FLOOR
- Canteen

1st FLOOR
- Department of Fashion Management Studies
- Department of Fashion Communication
- Photo Studio
- Pupul Jayakar Hall

2nd FLOOR
- Administration Head Office
- SDAC RIC

3rd FLOOR
- Library
- National Resource Centre

NEW BUILDING

GROUND FLOOR
- NIFT Foundation of Design Innovation (NFDI)
- Foundation Programme Classes
- Sitting Lounge

1st FLOOR
- Pattern Making Lab-2 103
- Department of Fashion Technology:
  - Garment Construction Lab -1 102
  - Pattern Making Lab 101
- Director's Room

2nd FLOOR
- Department of Knitwear Design
  - Art Room -203
  - Pattern Making Lab 202
  - Garment Construction Lab 201
- Exhibition Hall 2
- Foundation Programme Classes

3rd FLOOR
- Masters of Design Class 2
- Sarojini Naidu Hall
- Exhibition Hall 3
- Foundation Programme Classes

4th FLOOR
- Kamaladevi Chattopadhyay Hall
- Room No 18 AHL
- Centre of Excellence for Khadi
- Foundation Programme Classes

LEGEND

- Medical Room
- Parking
- Recreational Space
- Gates
- Seating Space
- Kund
- Computer Labs
- Stationery
- Foyer
- Canteen
- Library
- Amphitheatre

(httpswwwbehancenet)

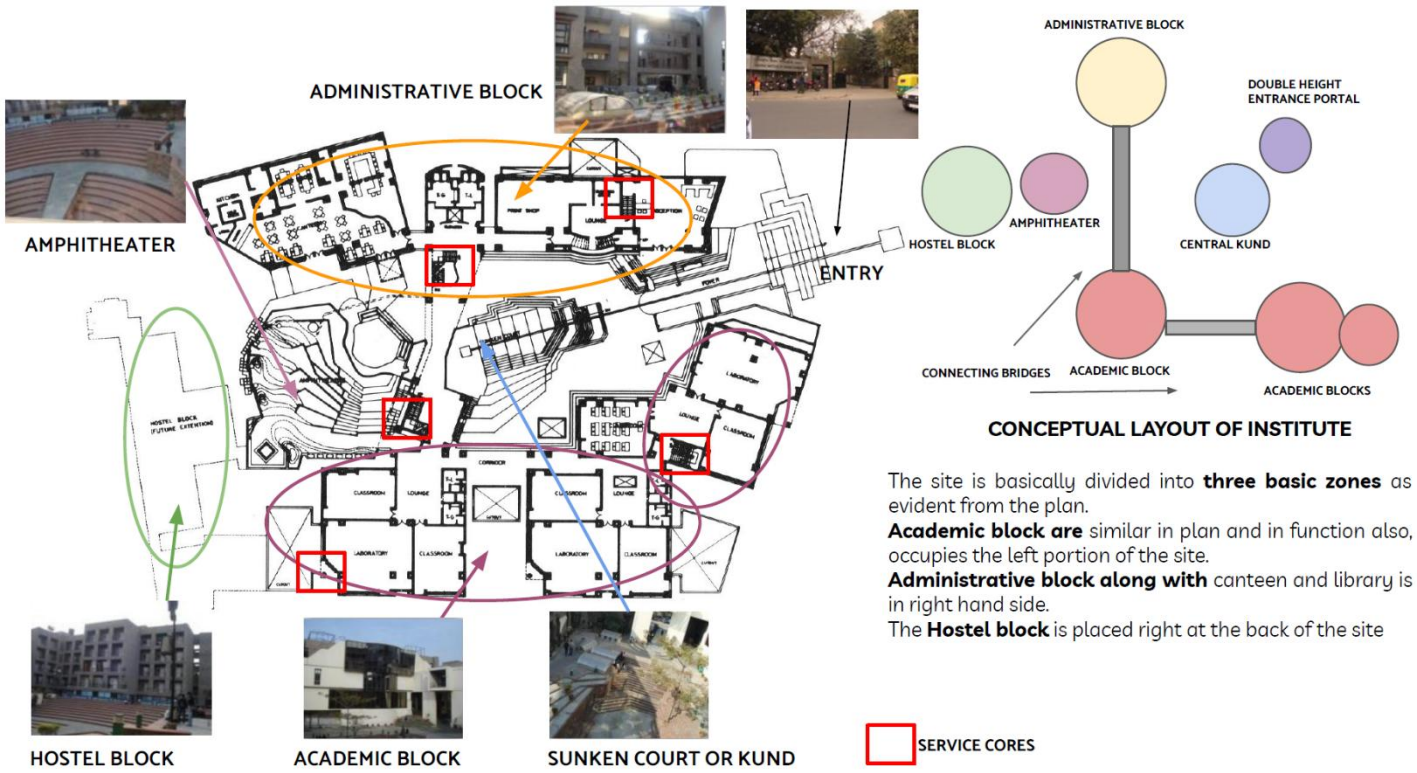
4.1.3 Orientation

The building layout is oriented along the **Northwest–Southeast (NW–SE) axis**, optimizing exposure to **sunlight and prevailing breezes**. This alignment supports passive design strategies by enabling effective solar access and natural ventilation.

Key design considerations include:

- **Building blocks follow the site geometry**, with peripheral lines aligned parallel to site boundaries.
- **Internal courtyards and block placements** are shaped around visual axes and pedestrian movement.
- Despite environmental considerations, **certain openings for light and ventilation were compromised for aesthetic goals**, potentially impacting comfort.
- **Windows in academic blocks face NW and SE**, which can result in excessive **daytime heat gain and glare**, especially during summer months.

4.1.4 Zoning



4.1.5 Ground Floor Details





Administrative Block

Ground Coverage=2892 Sq Mts. (25%)





Labs In The Way Due To Insufficient Space



The front court separated from amphitheatre by terraced academic wing becomes culturally appr.
and climatically comfortable outdoor space

The irregular lines of the plot bind the irregularly growing blocks.
different blocks acquire different shapes and forms depending upon the functions they are accommodating.
Permeability of the blocks, due to accessibility from all the sides makes the site totally traversed.
The building blocks are concentrated around the sunken court thus generating activity and creating lively environment.



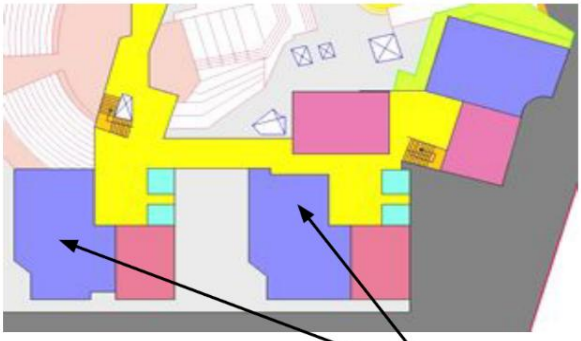
The exterior covers the activity happening inside giving privacy

ACADEMIC BLOCK

The whole complex forms a vibrant composition with a double height entrance to the reception
the academic blocks are connected through different systems of circulation overlooking the central court.

Double height reception with a large glazed waiting hall and this reception is overlooked through the exhibition area

Academic facilities have been provided in the areas joined together in the form of a cluster the cluster comprises of lobby lecture rooms laboratories and toilets.





LECTURE ROOMS

Space in between the labs and toilets acts as lounge/lobby - an interaction space which is quite large enough so actual space is being used by the faculty members.

LABORATORIES



Fashion design demands extravagant gaps to handle sprawling fabric and numerous accessories they require larger tables, space for mannequins so there is a complaint of space due to increase in number of students.



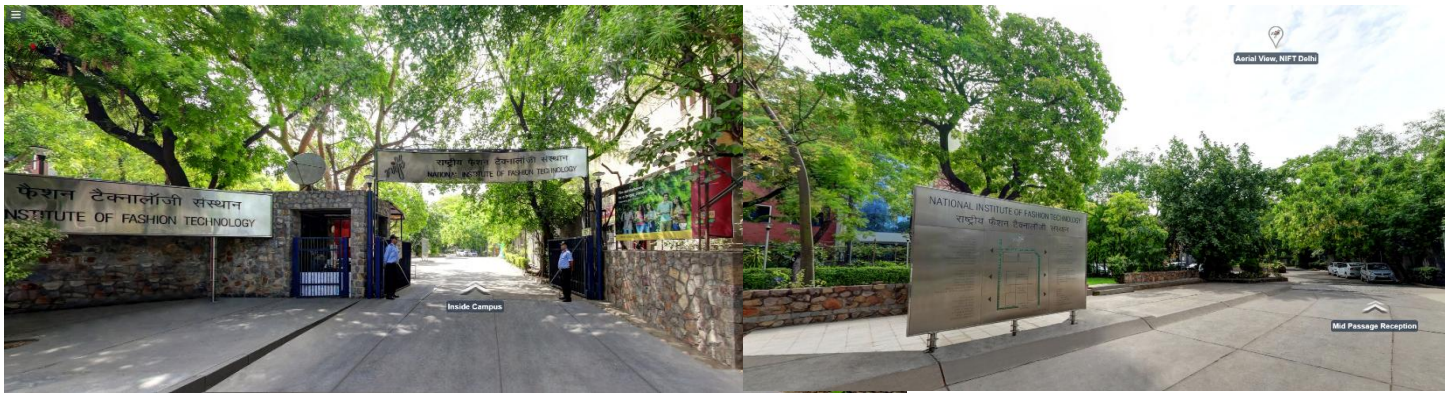
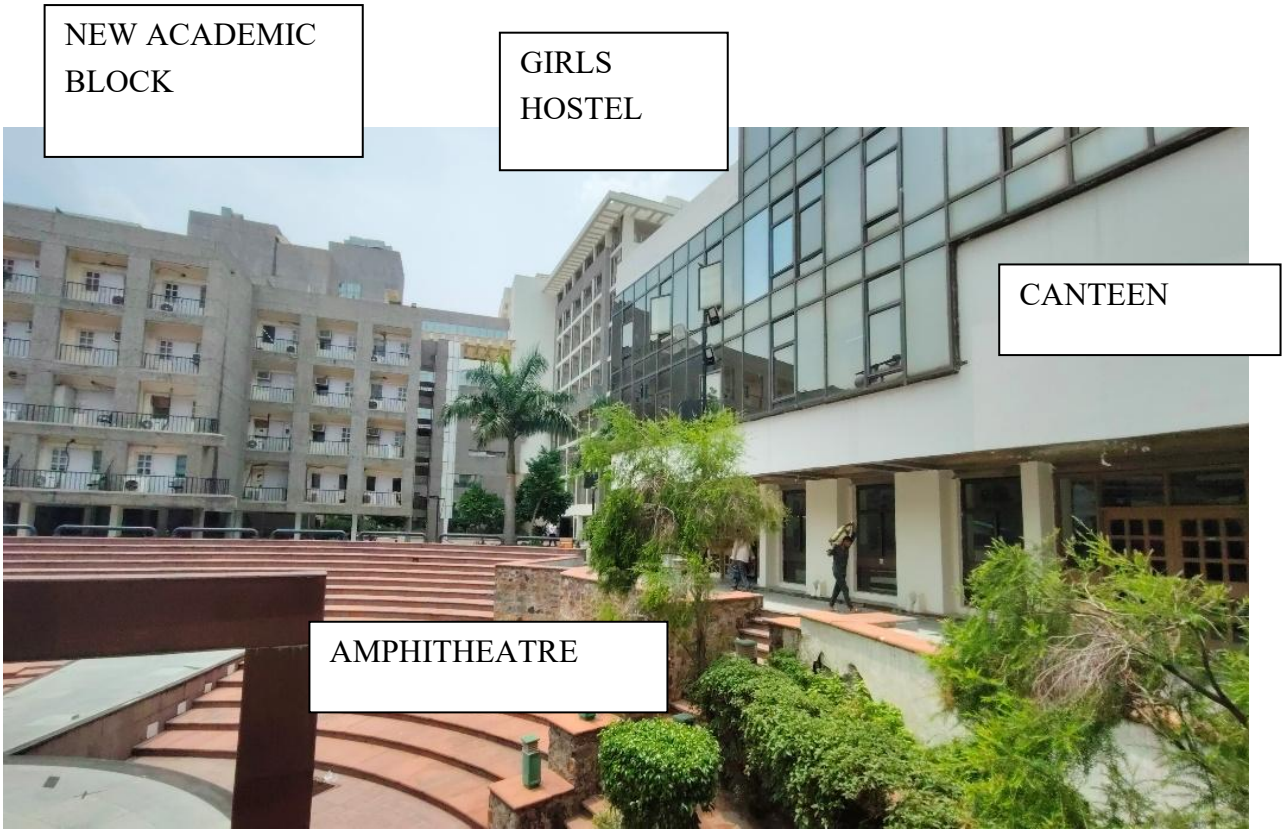


Figure 27 Entrance



Figure 26 Admin block



4.1.6 Amphitheatre

It is mainly designed to accumulate the persons for fashion shows as it helps the students to keep a contact with the changing friends. The nift amphitheatre is too much a topic of controversy and criticism. it has not been constructed as it was designed. it was supposed to have the stage floating in the water body below. But the direction of the stage has also been changed, without taking into consideration the orientation of the sun, i.e. seating of the audience and stage exchanged their seats during construction. Total seating capacity is for 300 students, which is not large enough for large gatherings. it creates an inwardly bazar, livened up by designed displays and movements of students as well as visitors through entire space.



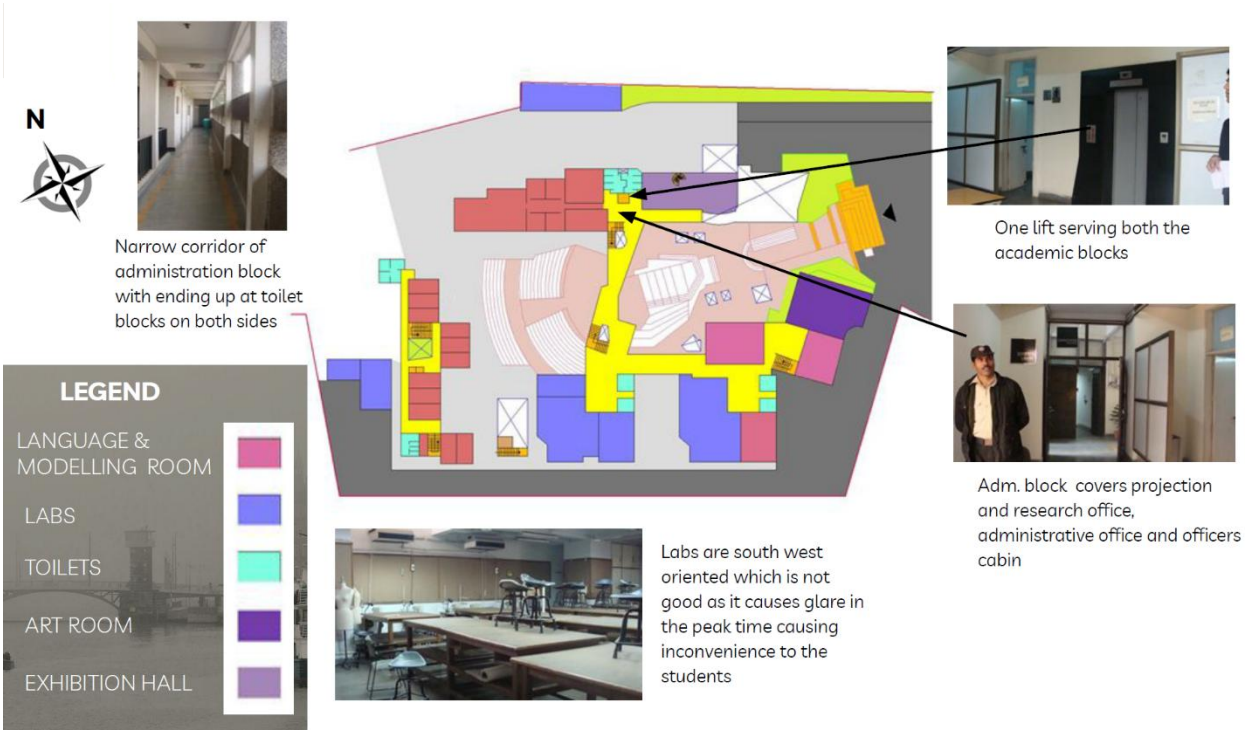




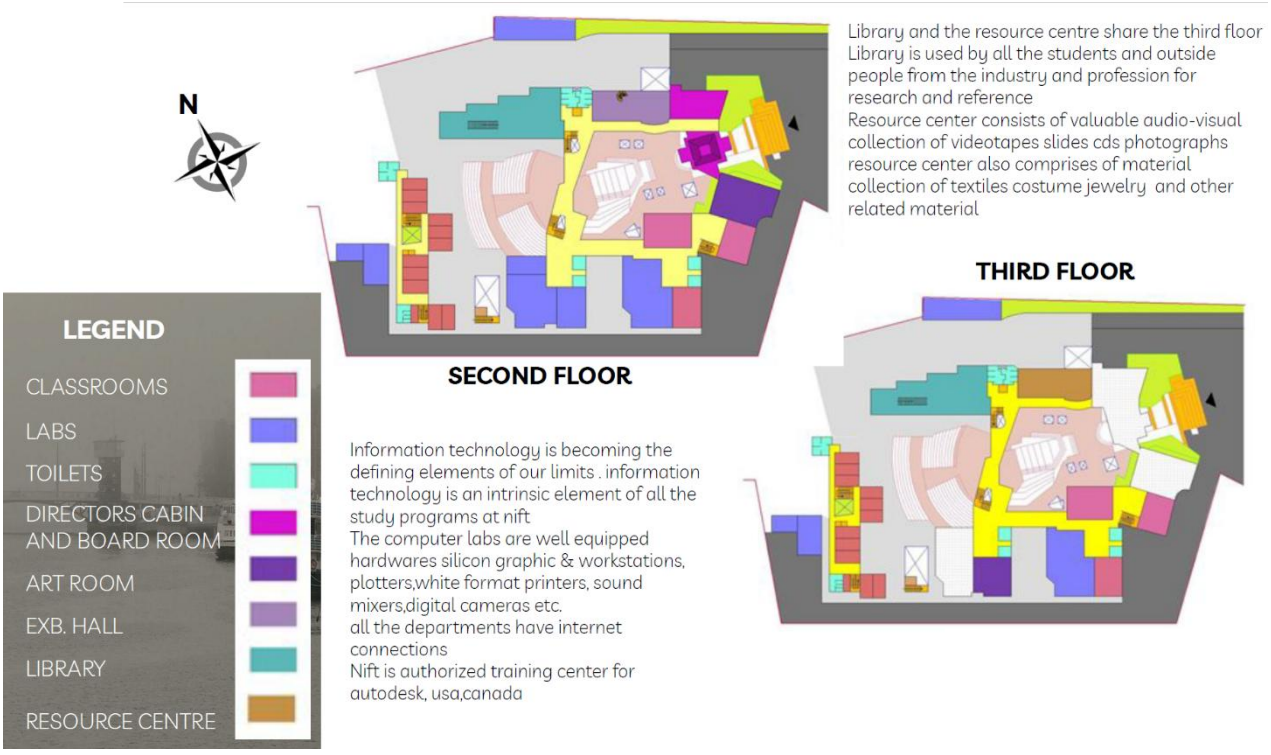


Basement is well lighted by using the skylights covered by fibre sheet which can be seen in central court

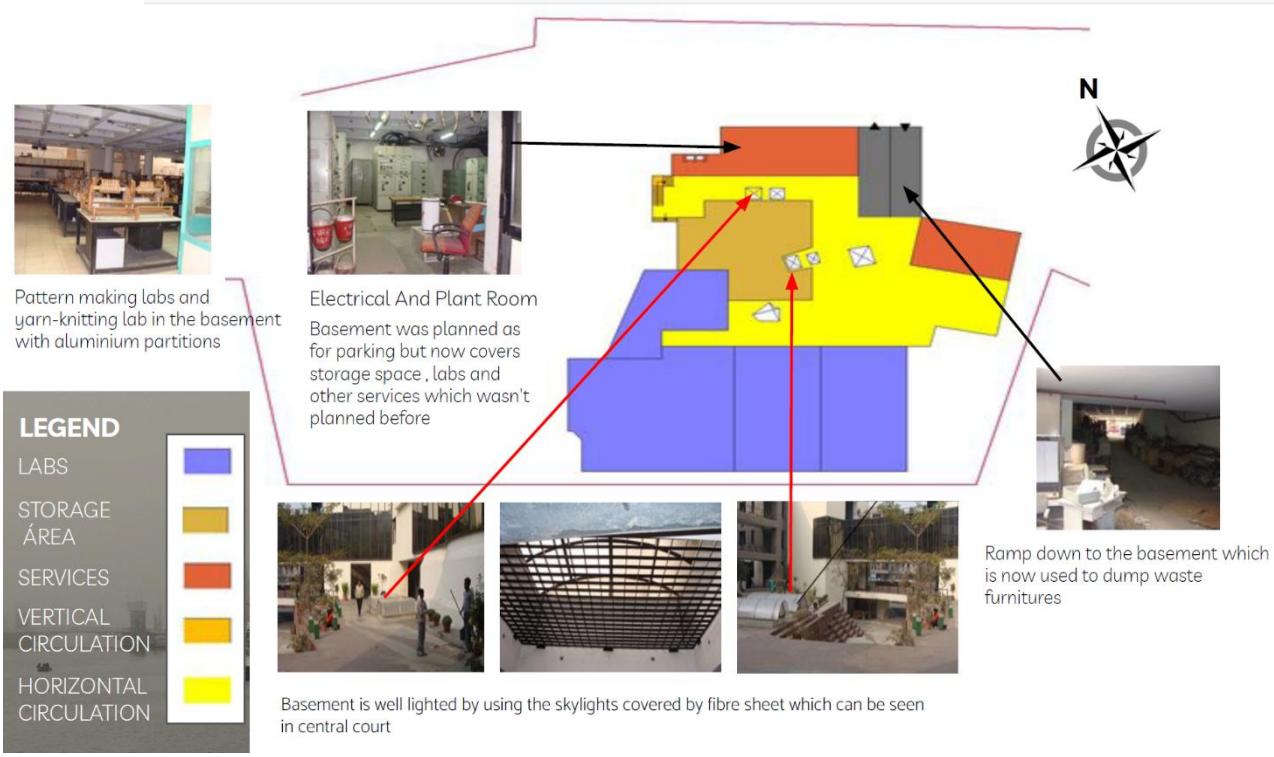
4.1.7 First Floor Details



4.1.8 Second and Third Floor Details



4.1.9 Basement Details



4.1.10 Material Palette

1. Structural System

- Reinforced concrete (RCC) frame with brick walls provides structural stability and flexibility in layout

2. Exterior Cladding & Façade

- The plinth and parts of the wall feature random rubble stone masonry, which blends with Delhi's heritage context.
- The façade is finished in grey-coloured grit aggregate with jagged grooves, creating a dynamic interplay of texture and light.
- Reflected/float glass and steel-framed screened glazing are used selectively to emphasize transparency and modernism in administrative zones.





3. Fenestration

- The project incorporates architectural jharokhas—traditional projecting windows reinterpreted in glass and steel—to create a fusion of modern expression and climatic responsiveness, though glazing to the NW–SE direction has received criticism for glare and heat gain.

4. Floor Finishes

- A variety of finishes demarcate different functional areas:
    - Reception: Black granite and white marble checkerboards
    - Corridors: Kota green and Jaisalmer yellow stone
    - Classrooms & Labs: Plain cement finish
    - Exhibition Halls: Chip flooring
    - Open plaza and amphitheatre: Rough natural stone

5. Roofing

- Waffle slab system (1.7 m × 1.7 m modules) provides column-free interiors (~6.85 sqm) and thermal insulation through thicker roof depth



4.1.11 Area Statement

SPECIFICATION	NO.	AREA IN SQ.M	TOTAL AREA IN SQ.M
COMPUTER LAB			
AUDIOVISUAL ROOM FOR 50 PEOPLE	1	175	175
LIBRARY FOR 40,000 BOOKS	1	300	300
AUDITORIUM FOR 300 PEOPLE	1	450	450
RESIDENTIAL FACILITIES			
DORMITORY- DOUBLE ROOM	50	17.5	875
COMMON ROOMS & RECREATIONAL	1	150	150
STAFF ACCOMODATION			
CARETAKERS APARTMENT	1	85	85
STAFF QUARTERS	4	100	400
CLASSROOM – FOR 30 STUDENTS			
FASHION DESIGNING	3	20	60
GARMENT MANUFACTURING TECHNOLOGY	3	20	60
APPAREL MARKETING & MERCHANT	3	20	60

SPECIFICATION	NO.	AREA IN SQ.M	TOTAL AREA IN SQ.M
LABORATORIES			
PATTERN MAKING LAB	2	160	320
MACHINE LAB	4	160	640
ART ROOM G.M.T	2	160	320
SEMINAR ROOM 30 PEOPLE	1	120	120
DYEING WORKSHOP	1	125	125
PHOTOGRAPHY STUDIO + DARK ROOM	1	100	100
STORAGE SPACE	1	6	6
LOCKER SPACE	1	8	8
ENTRANCE HALL/ WAITING/ RECEPTION	1	100	100
EXHIBITION HALL	1	200	200
BUSINESS OFFICE	1	35	35

SPECIFICATION	NO.	AREA IN SQ.M	TOTAL AREA IN SQ.M
ADMINISTRATION			
EXECUTIVE DIRECTORS OFFICE + TOILET	1	100	100
OFFICERS CABIN	9	25	225
CONFERENCE ROOM 20 PEOPLE	1	132	132
REGISTRATION OFFICE	1	25	25
CASHIER	1		
ADMISSION OFFICE	1	50	50
PROJECT & RESEARCH	1	80	80
PANTRY	1	62	62
STAFF ROOM	1	100	100
BOARD ROOM 22 PEOPLE	1	125	125
STORE/ RECORD ROOM	1	12	12
FACULTY ROOM 22 PEOPLE	1	132	132
SITE AREA- 11,650 SQ.M			
TOTAL BUILT AREA- 13,570			
INTAKES- 300 STUDENTS			

4.1.12 Inferences

1. Climatic Orientation and Passive Design Strategies

NIFT buildings are aligned along the Northwest–Southeast axis, allowing optimal exposure to natural daylight and prevailing wind patterns. For AUD, a similar approach should be adopted by orienting buildings to minimize heat gain and maximize ventilation. Incorporating shading devices, recessed openings, and climate-responsive fenestration will enhance user comfort throughout the year, especially in Delhi's semi-arid conditions.

2. Campus Spine and Connectivity

The NIFT campus is structured around a prominent pedestrian spine that connects key academic zones. This organizational principle fosters spatial clarity and intuitive movement. In the AUD campus, a central north-south pedestrian corridor can function as the primary artery, linking academic blocks, library, administration, and student facilities while reinforcing visual and functional coherence.

3. Academic and Learning Spaces

The academic blocks at NIFT feature modular layouts and ample daylighting, enhancing flexibility and energy efficiency. For AUD, it is recommended to adopt similar modularity in classrooms, studios, and seminar spaces to accommodate evolving pedagogical needs. Open-plan studios with operable partitions and natural lighting should be prioritized to support transdisciplinary learning.

4. Integration of Landscape and Built Environment

NIFT effectively utilizes landscaped courtyards as interactive and transitional spaces. These green pockets not only improve microclimatic conditions but also serve as informal learning zones. For AUD, landscape courtyards interspersed across academic and residential zones can support peer interaction, recreational use, and introspection, aligning with the vision of a holistic learning environment.

5. Material Palette and Sustainability

The material usage at NIFT comprises exposed concrete, grit finishes, and local stone, contributing to both aesthetic coherence and thermal regulation. AUD should adopt a sustainable material palette with low embodied energy, including fly ash bricks, lime plaster, and indigenous stones. Use of local materials will also ensure contextual appropriateness and ease of maintenance.

6. Functional Zoning

NIFT demonstrates clear zoning between academic, administrative, recreational, and residential components, minimizing functional overlap and promoting operational efficiency. This principle is critical for the AUD campus, where clear demarcation of public, semi-public, and private zones will facilitate better user experience and security.

4.2 CEPT UNIVERSITY, AHMEDABAD

4.2.1 Location:

CEPT University is situated within the Kasturbhai Lalbhai Campus on University Road, Navrangpura, Ahmedabad, Gujarat – 380009.
The site lies at geographical coordinates: 23°02′15″N, 72°32′59″E.
The terrain demonstrates a slight general slope towards the northwestern corner, allowing for natural surface drainage and strategic campus planning.

4.2.2 Connectivity:

The campus is well-connected through multiple modes of public and private transportation:

- Ahmedabad Airport: Approx. 11 km
- Ahmedabad Railway Station: Approx. 4 km
- Municipal Bus Stand: Within 300 meters
- Bus Rapid Transit (BRT) Corridor: Just 1.1 km away

These connections provide ease of access for students, faculty, staff, and visitors, supporting regional and intercity mobility.

4.2.3 Nearby Landmarks and Institutional Context:

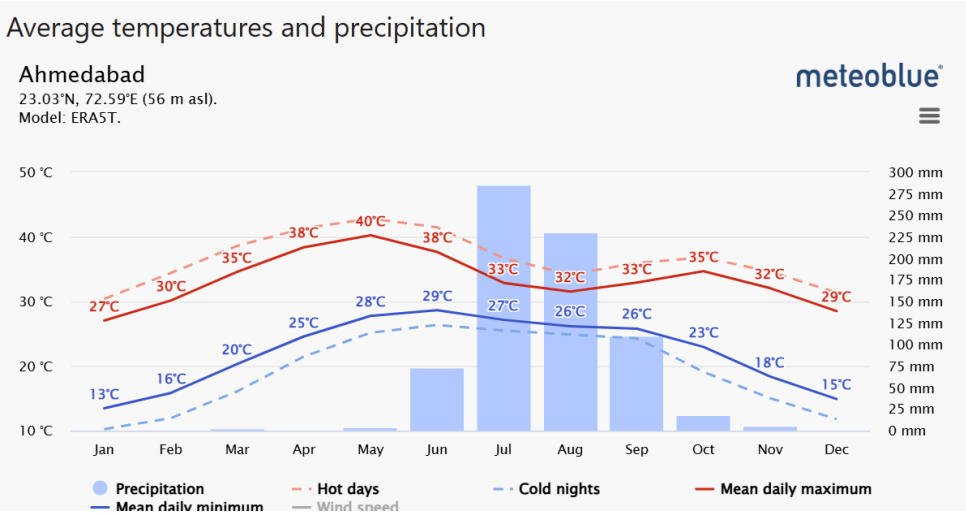
The CEPT campus is located within a dense academic and institutional zone, surrounded by prestigious institutions and cultural landmarks:

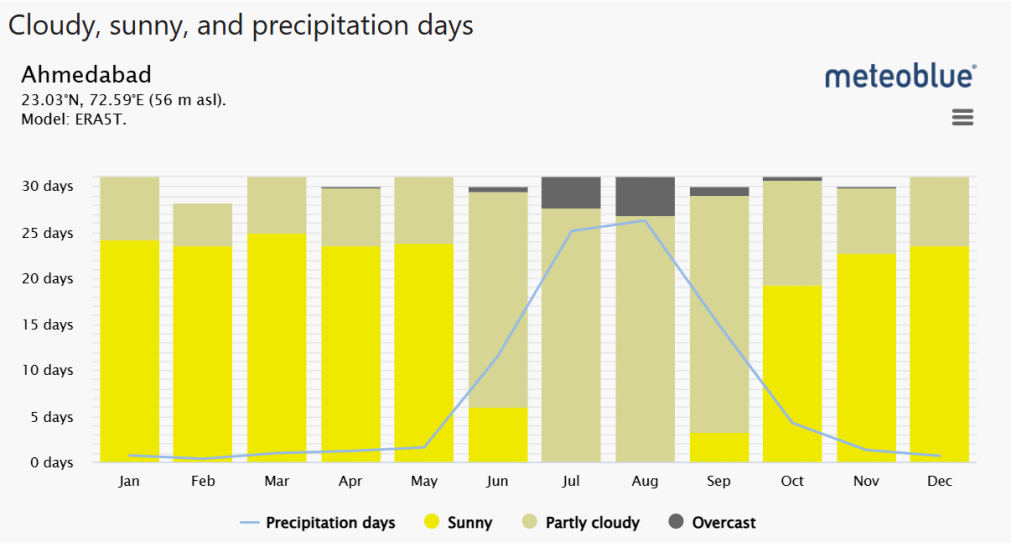
- Indian Institute of Management (IIM), Ahmedabad – 3.1 km
- University of Gujarat – 1.1 km
- Amrit School of Management – 230 m
- School of Engineering and Applied Sciences – Located to the east
- M.G. Science Institute and L.M. College of Pharmacy – Located to the south
- Amadavad ni Gufa (cultural landmark and gallery) – In close proximity



Figure 28 Cept Plan

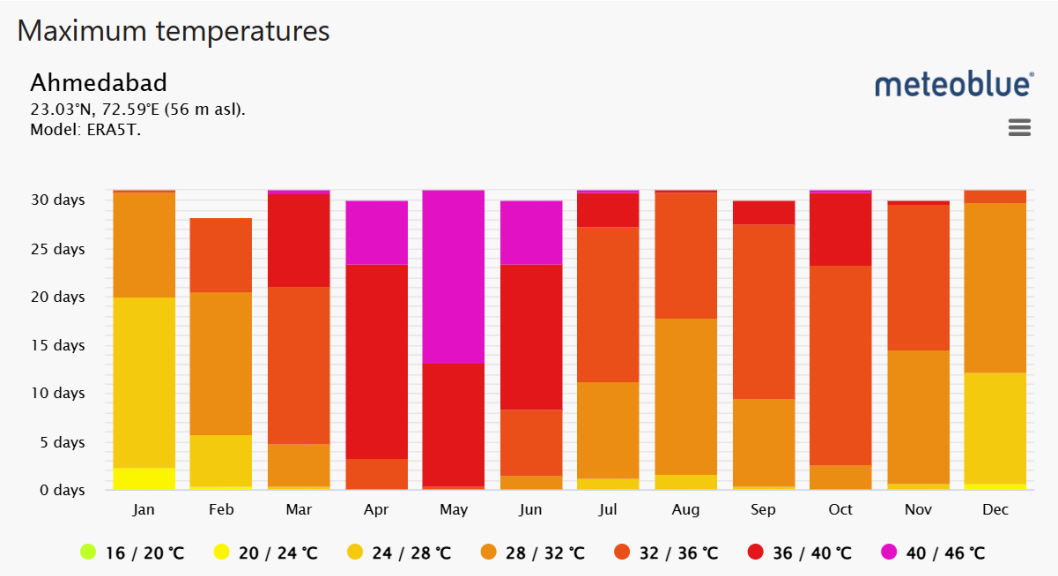
4.2.4 Climatic Analysis

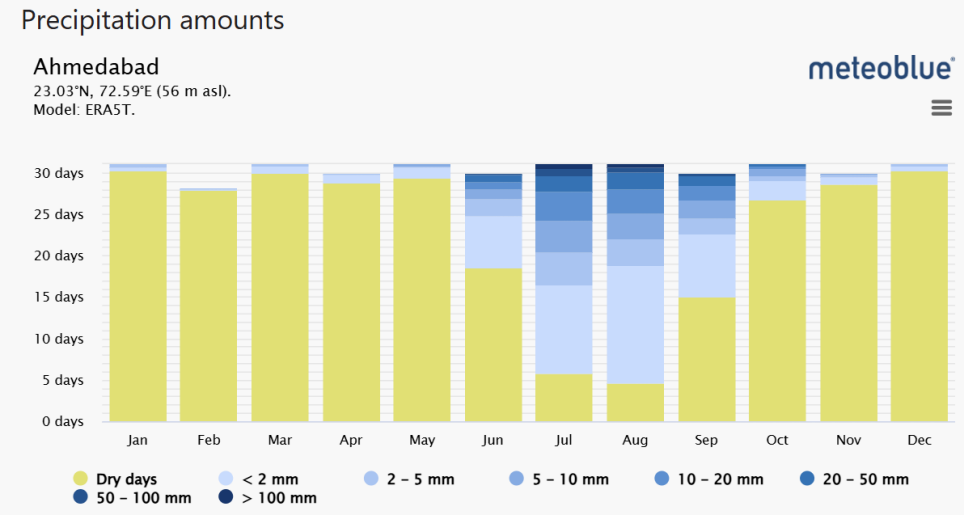


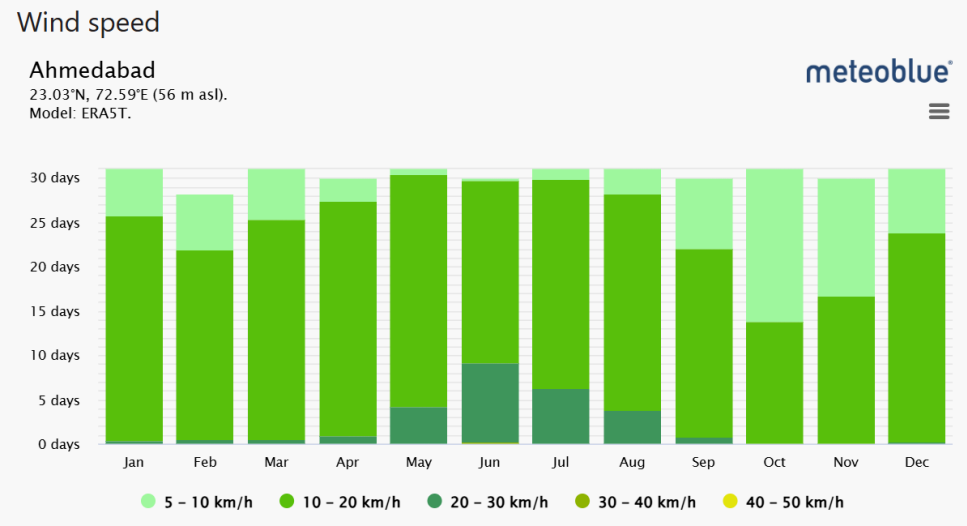


Ahmedabad experiences a **Hot and Semi-Arid Climate**, classified just below the threshold for a tropical savanna climate. The city witnesses three distinct seasons: **Summer**, **Rainy (Monsoon)**, and **Winter**.

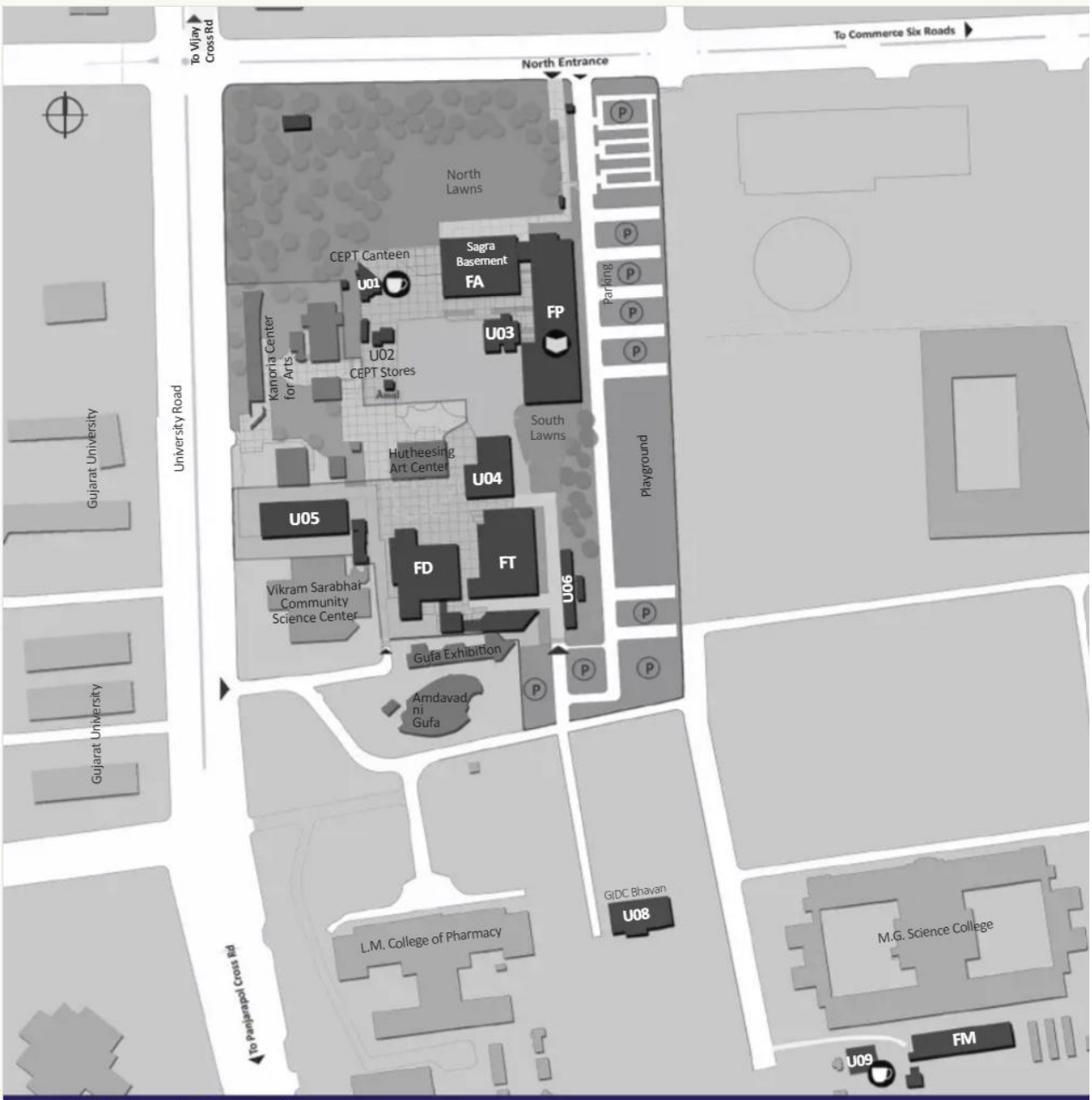
- The climate remains **extremely dry** for most of the year, with the exception of the monsoon period.
- **Summer** lasts from **March to June**, during which temperatures peak.
    - The **average maximum summer temperature** is approximately **42°C**.
    - The **average minimum temperature** during this period is about **24°C**.







- The **southwest monsoon** brings a **humid climate** from **mid-June to mid-September**, offering relief from the intense summer heat.
- During **winter** (November to February), the **average maximum temperature** is around **30°C**, and the **average minimum** drops to approximately **13°C**.
- **Cold northerly winds** contribute to a **mild chill** in January.
- The **average annual rainfall** is **800 mm**, with **maximum precipitation occurring in August**, typically spread over **15 days**.



CEPT University Campus Map

Key (This list includes the common facilities on the campus.):

FD (Faculty of Design)
- Center for Advanced Research in Building Science & Energy (CARBSE)

FM (Faculty of Management)
- Center for Urban Equity (CUE) - FM 102
- Computer Tutorial Lab - FM 202,3
- Performance Assessment System (PAS) Project Center - FM 107
- CEPT Research & Development Foundation (CRDF) - FM 201
- Faculty of Technology (FT) Project Office Center - FM 103
- Crèche - FM 106
- CEPT Cafeteria - U09

FP (Faculty of Planning)
- Administration Area - FP 223
- Auditorium - FP 103
- CEPT Computer Lab - FA 101
- Library - FP 201

FT (Faculty of Technology)
- Geomatics Computer Lab - FT 111

U01: CEPT Canteen

U02: Amul Parlor
- Stationary
- Print Shop (Siddhi)

U03: Workshop

U04 (NBO Block): University Labs

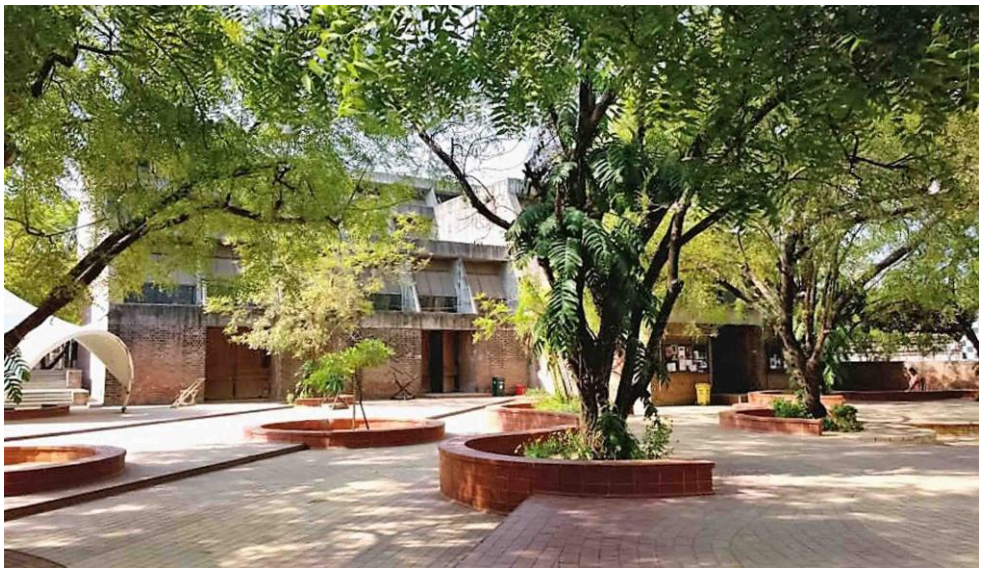
U05: Fab Lab
- Metal & Wood Workshop
- Design Innovation & Craft Resource Center (DICRC)

U06 (University Staff Office: USO)
- Help Desk
- Student Services Office (SSO)
- UG, PG, Doctoral, Diploma & Certificate and Exchange Offices
- Outreach Services Office (OSO)

4.2.5 Response to climate

To mitigate excessive heat buildup on campus, CEPT University employs a scattered planning approach. This strategy incorporates small landscape patches and intermediate open spaces—such as jury courts, interaction areas, and passages—between building blocks.

- These intermediate open zones act as thermal buffers, facilitating cross ventilation and dissipating heat.
- Openings in the north ensure cooler inflow of air, while larger projections on the south façade provide shading, reducing solar gain.
- This planning not only improves thermal comfort but also enhances social interaction and flexible spatial usage.

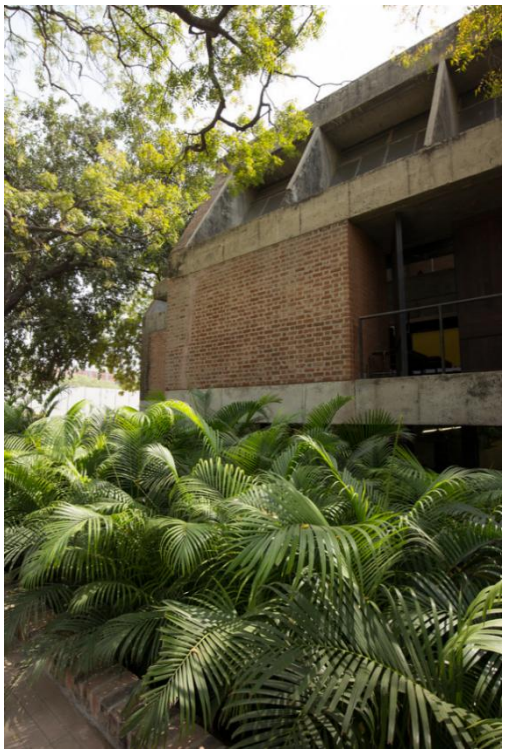




To further reduce heat gain, buildings at CEPT are designed with major openings oriented towards the north. This orientation takes advantage of the diffused and soft natural light from the north, which minimizes thermal ingress while enhancing indoor daylight quality.

- Inclined windows are strategically designed to maximize the penetration of natural light without glare.
- This approach ensures well-lit interiors while reducing the reliance on artificial lighting, thus promoting energy efficiency.

These passive design strategies contribute significantly to creating a climatically responsive campus suitable for the hot and semi-arid climate of Ahmedabad.







To mitigate heat gain and improve indoor thermal comfort, **large projections are strategically placed on the south-facing façades** of the buildings at CEPT University. These overhangs:

- **Shade the building envelope** during the hottest parts of the day when solar intensity from the south is highest.
- **Minimize direct solar radiation** from entering indoor spaces, effectively reducing internal heat buildup.

This passive shading measure is especially critical in Ahmedabad's **hot and semi-arid climate**, where solar protection on southern sides significantly enhances energy performance and user comfort.

4.2.6 Design Philosophy Implemented

CEPT University encourages student and faculty engagement by incorporating numerous informal seating areas throughout the campus. These are strategically positioned within courtyards and plazas, creating flexible zones for discussion, reflection, and collaboration.

Additionally, the play of levels is used as a design strategy to integrate seating at varying heights and platforms. This spatial layering not only activates transitional areas but also contributes to the dynamic character of the built environment, fostering spontaneous interactions and a sense of community within the academic setting.







CONNECTION BETWEEN DEPARTMENTS

BRIDGES CONNECTING FA AND FP

OPEN SPACES -> INTERCONNECTIVITY OF SPACES

INTERMEDIATE OPEN TO SKY SPACES

ARCHITECTURE DEPARTMENT SOUTH VIEW



BALCONIES OF STUDIOS (INSIDE)



BALCONIES OF STUDIOS

4.2.7 Landscaping



PALM PLANTS

- The campus is full of neem trees, which were planted over the years since the initial phase to make the hot Ahmedabad climate cooler.
- The trees provide a perpetual changing pattern of light and shade.

NEEM TREES TO PROVIDE SHADE AS WELL AS TO ABSORB HEAT



SOUTH SIDE OF FA SHADED BY NEEM TREES



PROPER SHAPED LANDSCAPING OF HERBS WHEREVER POSSIBLE



LIGHT AND SHADOW THROUGH TREES

4.3 LILAVATI LALBHAI LIBRARY, CEPT UNIVERSITY, AHMEDABAD

4.3.1 Architectural Vision

Designed by RMA Architects and situated at the heart of the CEPT University campus originally planned by B.V. Doshi, the Lilavati Lalbhai Library is conceptualized as a central academic hub. Strategically located at a neutral central point with equal access from all cardinal directions, the library fosters interdisciplinary interaction among faculty and students across various departments. This neutrality of orientation symbolizes inclusivity and shared academic identity within the campus.



4.3.2 Design Philosophy and Integration

The architecture respects and reinforces the existing CEPT campus narrative through:

- **Formal alignment** with adjacent campus structures
- **Sectional modulation** that embeds parts of the structure into the earth
- **Material authenticity** aligned with the established campus language

The building is harmoniously integrated into the existing spatial and material context, yet maintains a distinct contemporary identity suited to its function as a dynamic academic repository.

A. ***Building data: volumetry, massing, number of units, surface in square metres, etc.***

The Library is composed of a ground floor, two upper floors and three basements.

From the campus, it is perceived as a two-storey building featuring a heavy concrete base with deep-punched entrances and windows, two rows of vertical louvres and a thin zinc roof.

Once inside, a second facade appears composed of lightweight white baseboard and glass, and the lower floors become visible.

The Library's is 10.09m tall and 11.8m deep. Its footprint covers 26 x 27m, i.e. 702m². The ground floor is 550m², and total floor including walls is 2788m².

Number of seats	Basement 1	8	The library holds	Basement 1	9,400 books
	Mezzanine 1	24		Mezzanine 1	9,500 books
	Mezzanine 2	8		Mezzanine 2	10,500 books
	Basement 2	88		Basement 2	23,500 books
	First floor	73		Basement 2	59,000 books
	Second floor	44		*Total:*	*111,900 books*
	Total:	*273 seats*			

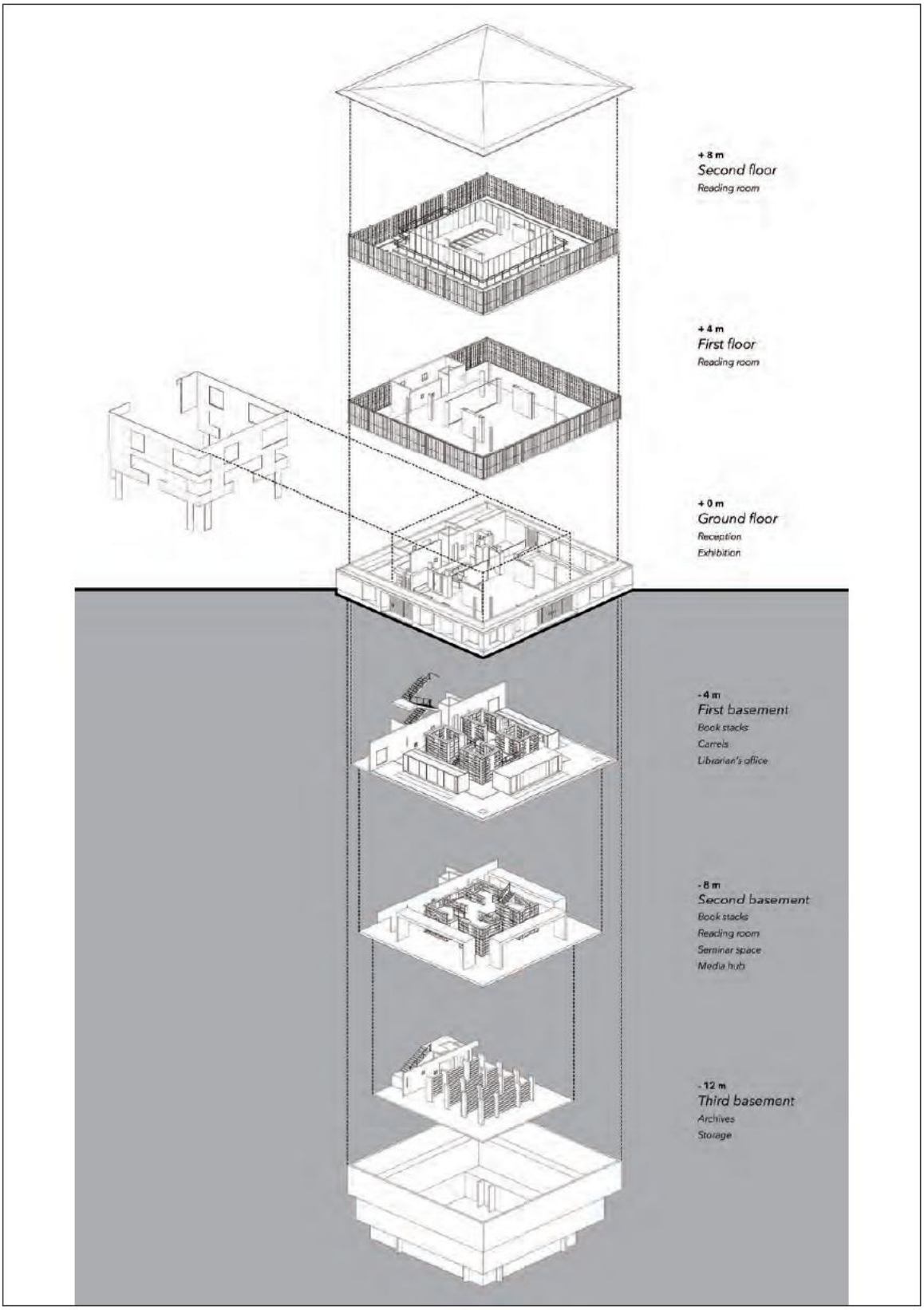


Figure 29 Exploded axonometric drawing

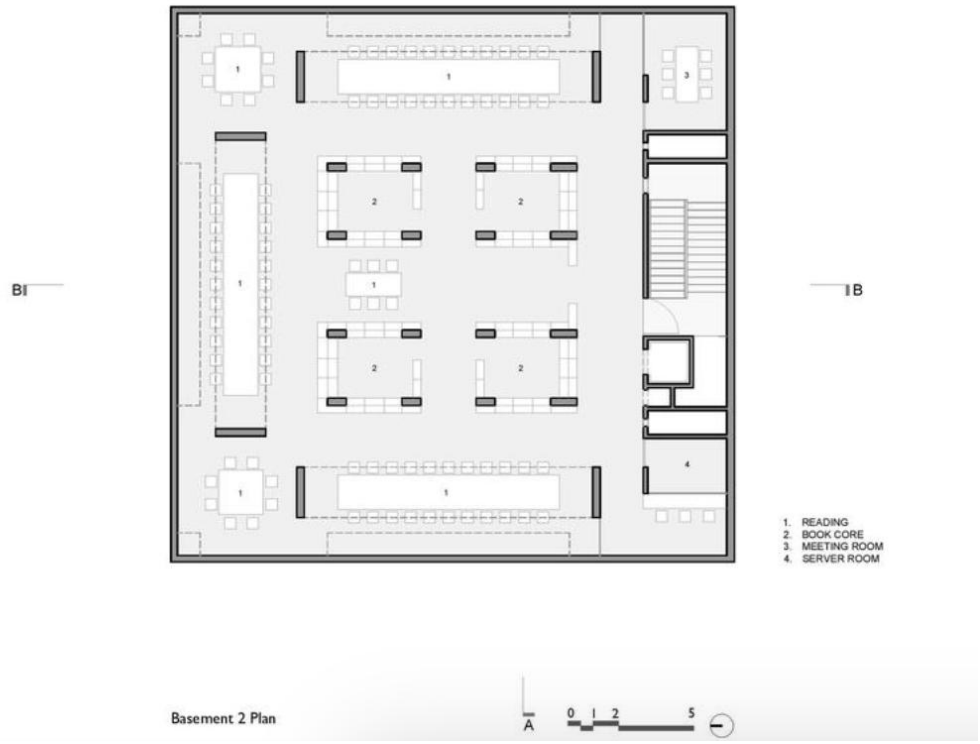


Figure 30 Basement 2 plan

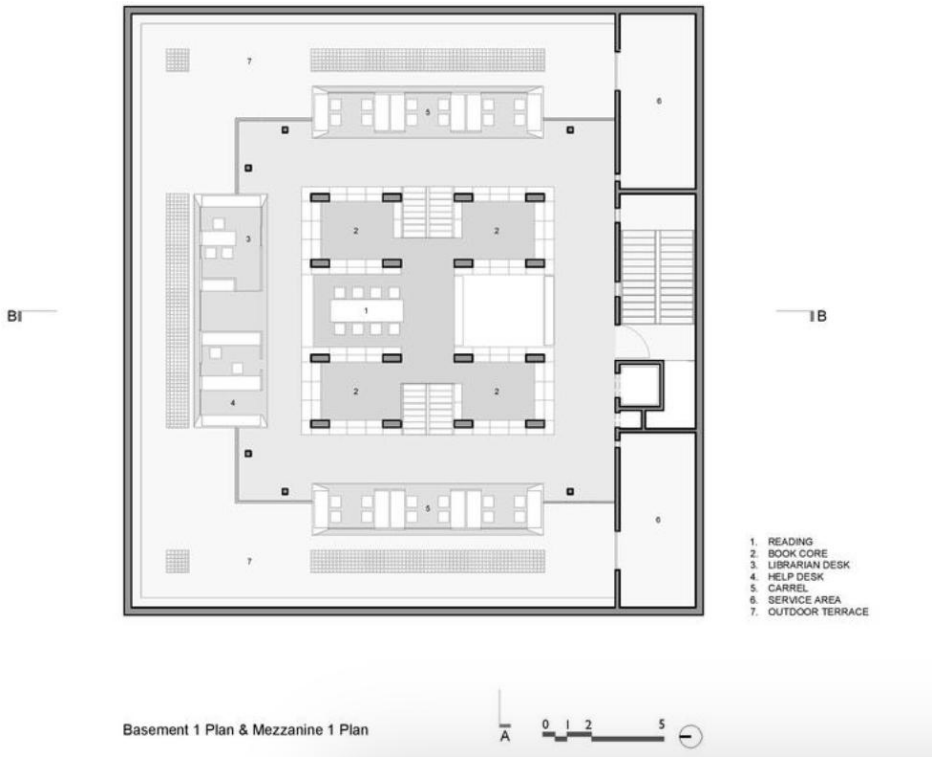


Figure 31 Basement 1 and Mezzanine Plan

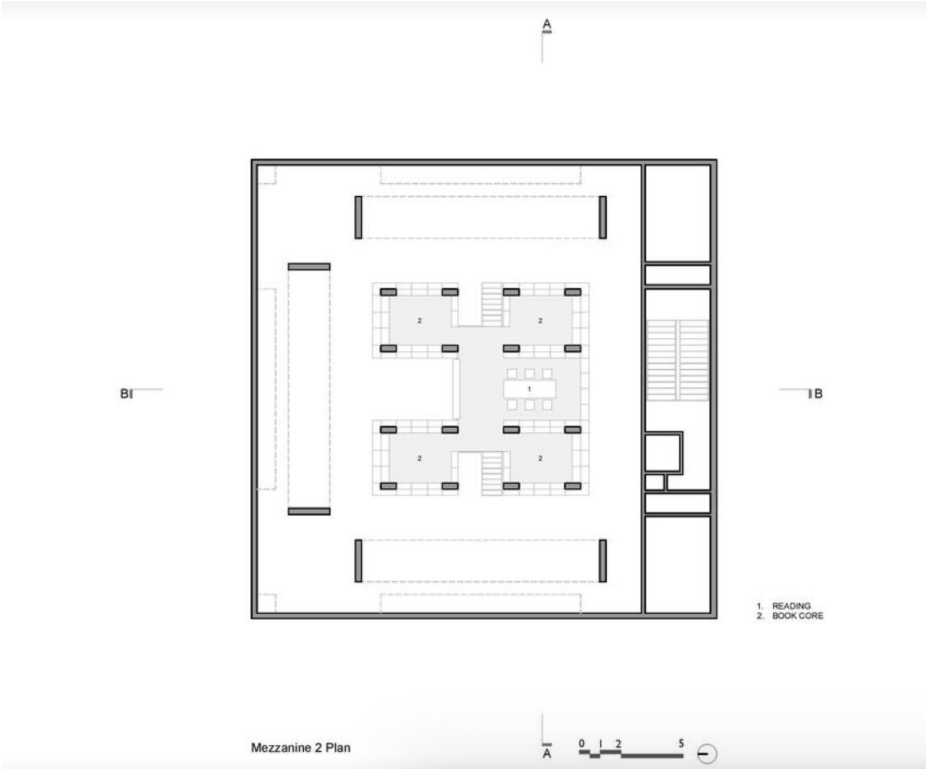


Figure 32 Mezzanine 2 plan

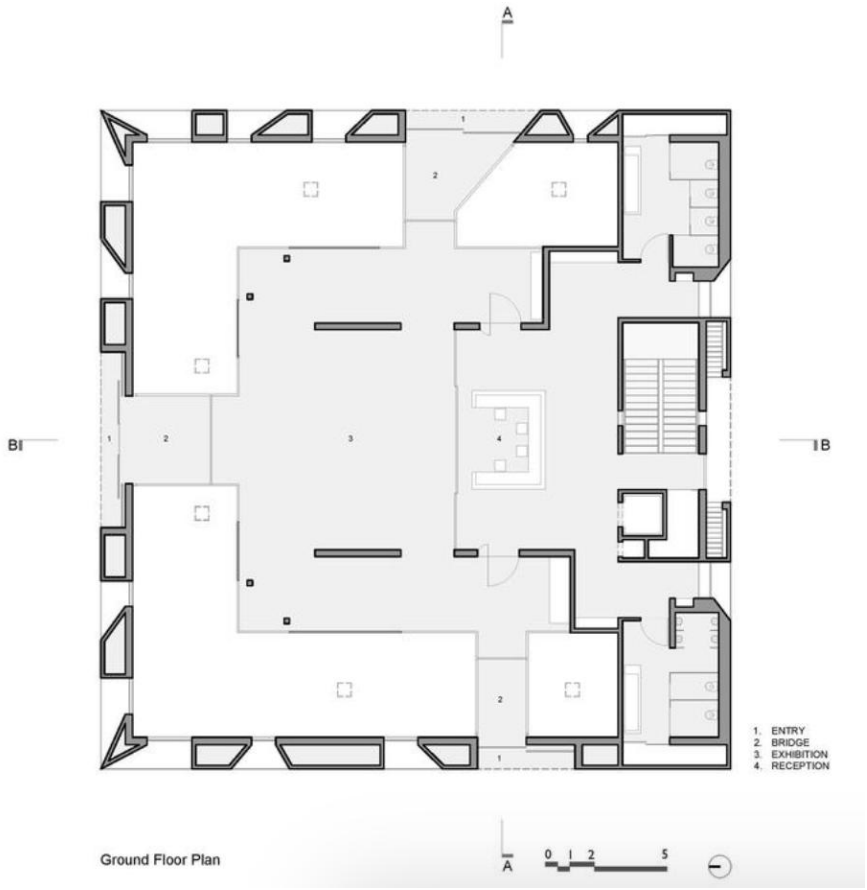


Figure 33 Ground Floor Plan

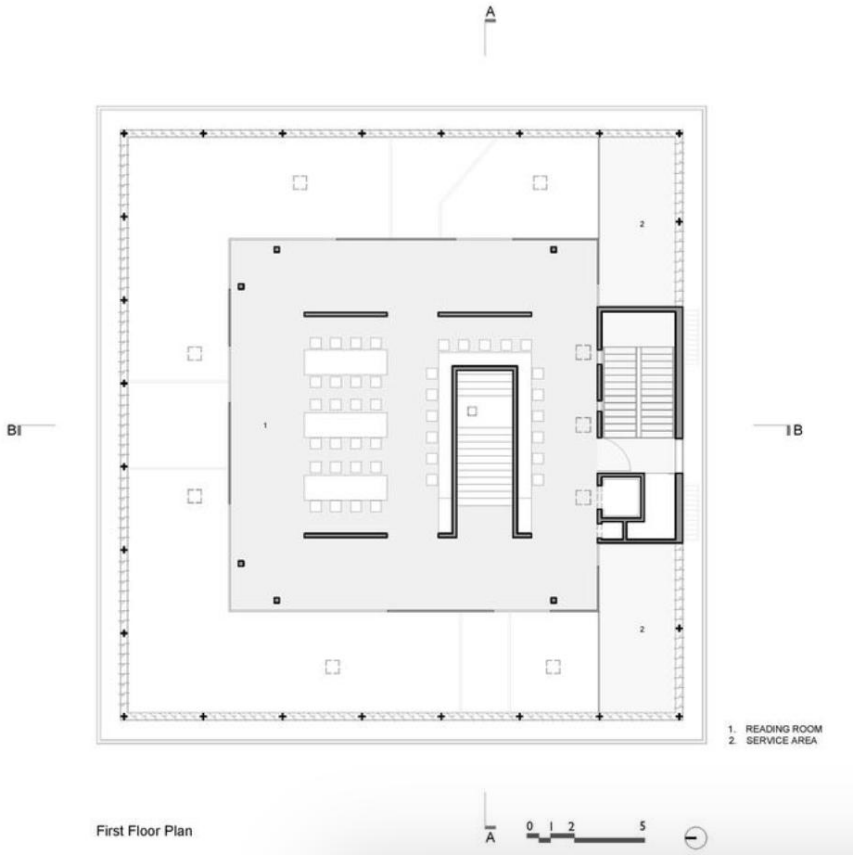


Figure 34 First Floor Plan

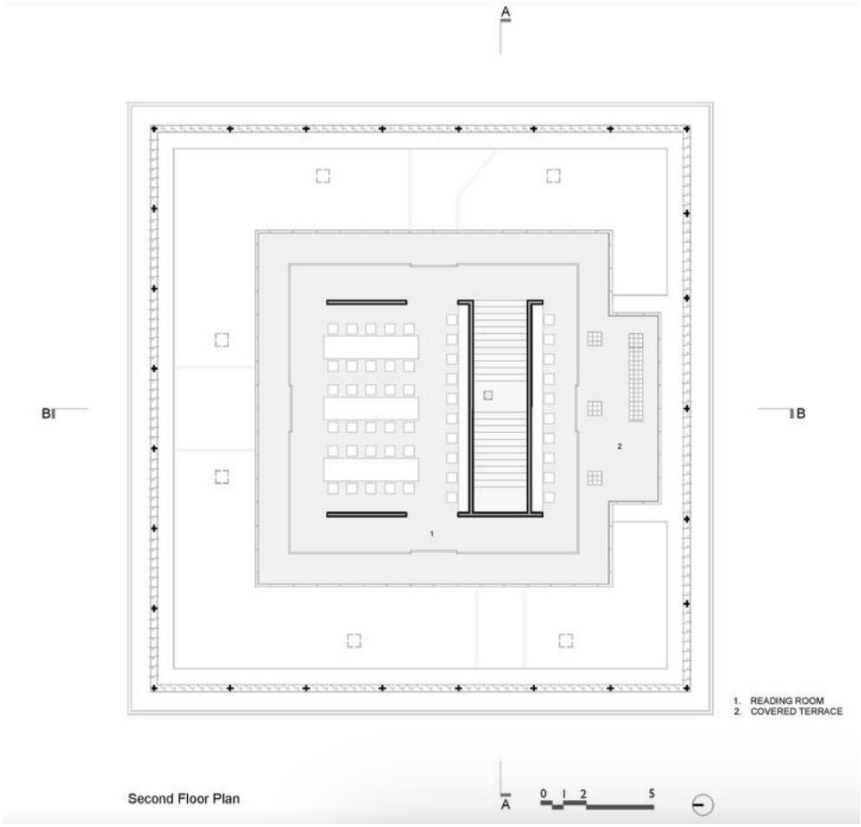


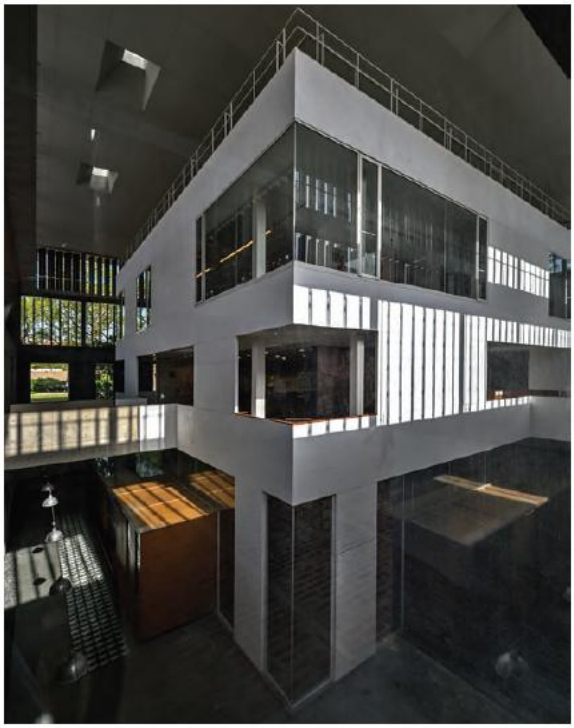
Figure 35 Second Floor Plan

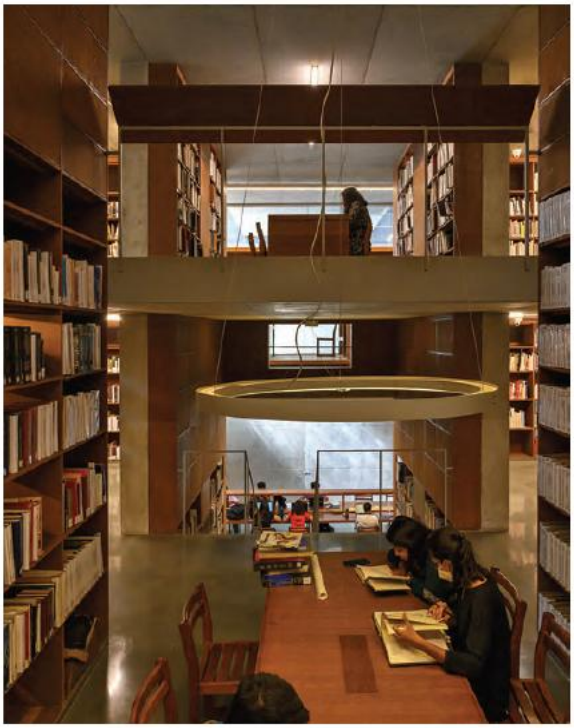


From the campus, the library is perceived as a two-storey building featuring a heavy concrete base with deep-punched entrances and windows, two rows of vertical louvres and a thin zinc roof.



Once inside, a second facade appears composed of lightweight white baseboard and glass, and the lower floors become visible.

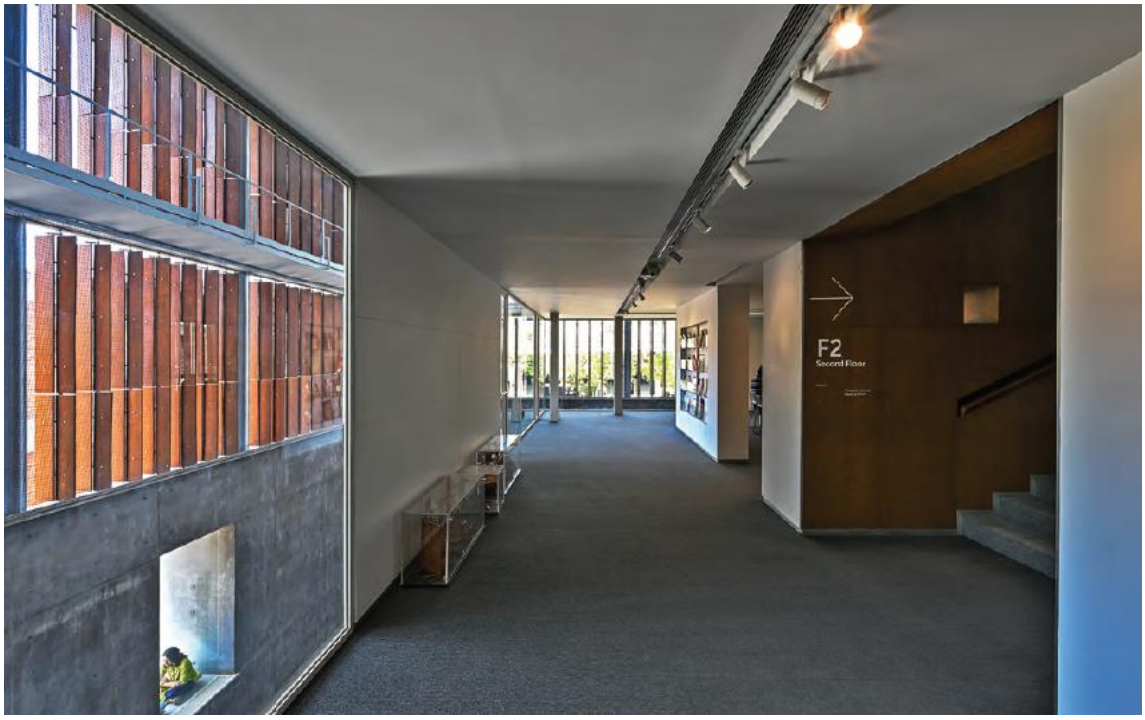




The double-skin approach, coupled with the operable louvres that can be set at five different angles and the reflective insulated zinc roof, make the building well-suited to the hot arid climate.



In addition to the client's brief, the architect proposed to create an exhibition/multipurpose space on the ground floor.



Both upper floors have open study spaces and a large stair connecting the first and second floor that can be used as a gathering space, small auditorium or projection space.





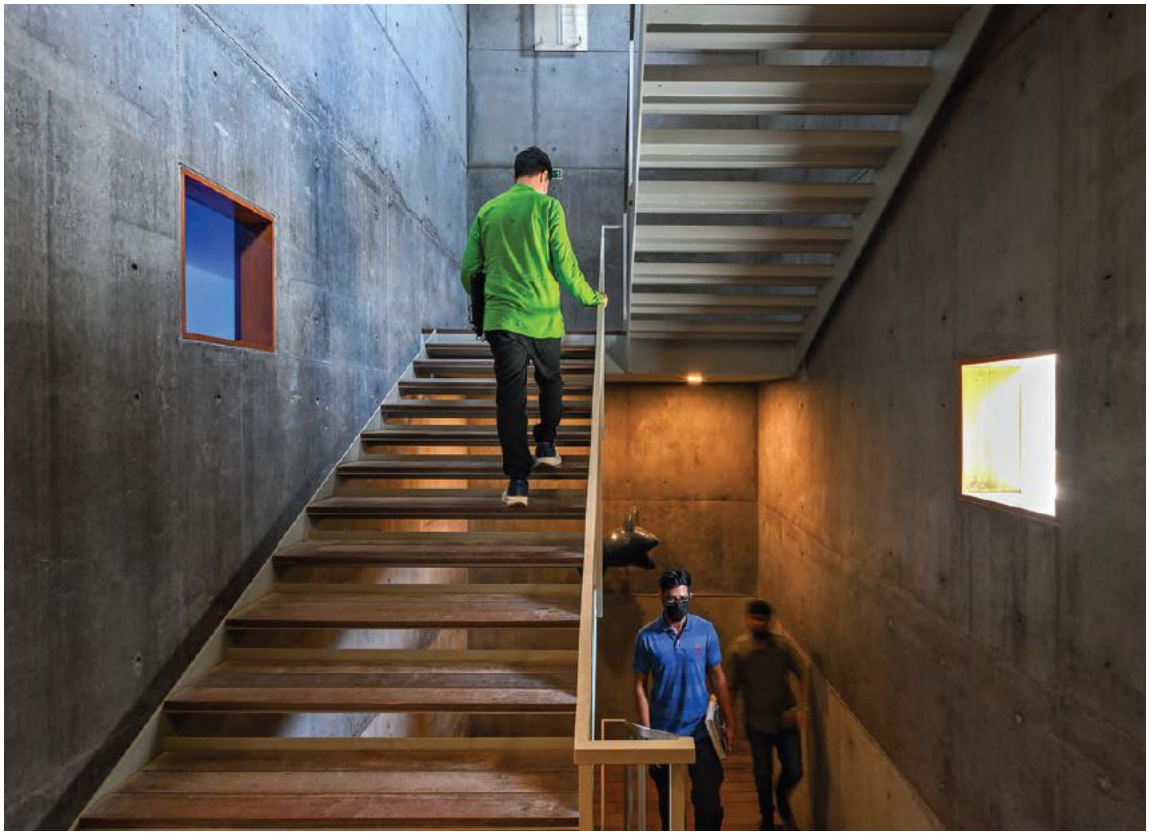
The lower levels are pleasant because the architect created alternating mezzanines and a setback between the Library's outer and inner skins, allowing light to pour deep into the building.



Detail of the glass skylights



Circulation is fluid between floors, and the basement levels' peripheral circulation around the stack cores and up and down the mezzanine is playful and successful.



4.3.3 Inferences from Case Study: CEPT University, Ahmedabad

1. Campus Planning & Spatial Integration

- The **campus is arranged along a clear N–S spine**, which connects academic, administrative, and social spaces. This axial organization enhances orientation, walkability, and visual continuity.
- The **scattered building layout** promotes fluid movement and offers **visual porosity**, helping blend built and open environments.
- Integration with the **existing urban and institutional context** is carefully considered, ensuring CEPT feels connected to its surroundings rather than isolated.

2. Climate-Responsive Design

- Buildings employ **passive strategies** to counter Ahmedabad's hot and dry climate:
    - **Sun-shading projections** on the south façades
    - **North-facing openings** to allow diffused daylight

    - Use of **earth-bermed structures** (e.g., library) for thermal insulation
    - **Manual louvers** to control ventilation and glare
- **Open-to-sky courts and landscape buffers** between buildings aid in temperature regulation, cross-ventilation, and evaporative cooling.

3. Materiality & Architectural Expression

- Use of **locally sourced materials** like exposed brick, concrete, and stone reinforces a tactile, grounded aesthetic.
- **Material honesty** promotes a sense of identity and reduces maintenance needs over time.
- Subtle modulation of levels and transitions fosters a **layered spatial experience** without visual or physical monotony.

4. Social and Academic Interactions

- CEPT offers a wide variety of **informal seating zones**—within courtyards, steps, shaded edges—encouraging organic conversations, peer learning, and relaxation.
- **Studios and classrooms open onto terraces and balconies**, extending learning into semi-outdoor realms.
- Multi-use spaces like **jury courts and exhibition galleries** enhance engagement beyond curriculum, creating a vibrant campus culture.

5. Library as a Central Node

- The **Lilavati Lalbhai Library** acts as both an **academic repository and a demonstration of sustainable design**.
- It reflects a pedagogical shift from prescriptive learning to **choice-based, open education models**, aligning built form with academic philosophy.

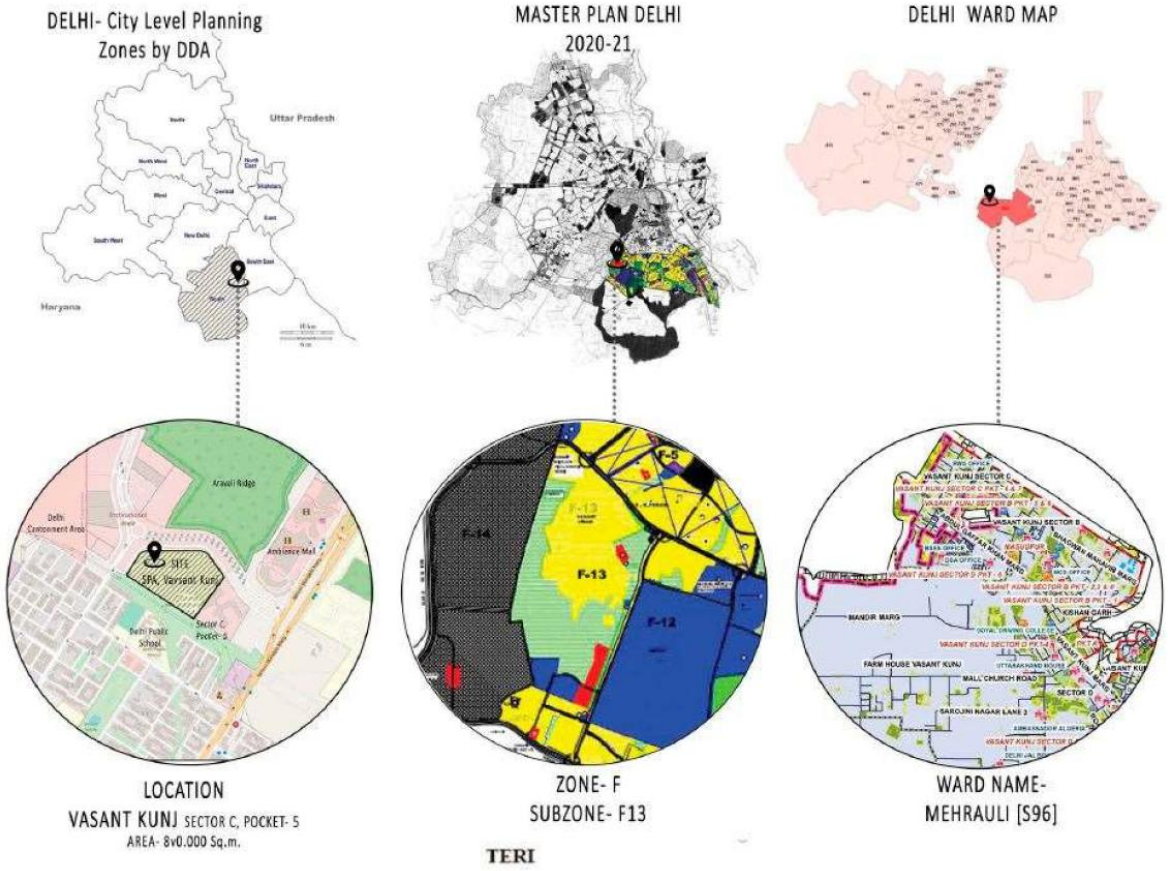
Key Takeaways for AUD Campus Design

- **Pedestrian-oriented and flexible planning** should be prioritized.
- **Passive cooling and shading strategies** must be embedded in the design language.
- Embrace **landscape as a spatial connector** and not just as peripheral green.
- Foster spaces that **encourage interdisciplinary interactions**—formally and informally.
- Use the **library and public nodes** as community anchors that express the university's eth

4.4 SCHOOL OF PLANNING AND ARCHITECTURE, VASANT KUNJ (DESK APPRAISAL)

(Winning Proposal by DADA Partners, Gurgaon, Haryana) Competition Hosted by School of Planning and Architecture | Site Area: 20 Acres | Type: Campus Urban Design Proposal

The site was characterized by topographic peculiarities produced by a history of mining and dumping soil creating natural water bodies and steep slopes in various parts. In the Academic zone, each department has its own courtyard. Thus although block making up the academic buildings are MODULAR in nature; their organization and orientation results in clusters that have a CLEAR IDENTITY of their own. There is in this way a unity of form without loss of sense of identity.



4.4.1 Site Context

The School of Planning and Architecture (SPA) campus is located approximately 4.5 km from the Yellow Line Metro Transit Station and 1.0 km from the Bus Rapid Transit (BRT) Line. To support accessibility, an alternate bus shuttle service is proposed to connect surrounding institutions and campuses, including SPA itself.

The new SPA campus is strategically positioned amidst a variety of land uses:

- To the north, it is bordered by Bio-Diversity Park and other institutional zones.

- To the east, it adjoins the Grand Hotel and Vasant Kunj Malls.
- To the south, it is adjacent to Vasant Kunj DOA Housing.

This diverse context offers a unique opportunity for the campus to adopt an environmentally integrated approach while also building a strong institutional identity for the Vasant Kunj South Campus area.

4.4.2 Location Details

- The site is located near 45 m wide Nelson Mandela Road and is connected via a service road.
- It is in close proximity to major institutions like JNU, DU South Campus, TERI University, IIT, and Delhi Airport.
- The nearest metro access is the Chhatarpur Metro Station (Yellow Line), which is within 2 km of the site.
- Nelson Mandela Road (8-lane) links the site to the Outer Ring Road, Mahipalpur, and Mehrauli Road.
- The site is:
    - 17 km from the existing SPA ITO Campus
    - 10–15 km from Connaught Place
    - 2 km from NH-8 and New Delhi Railway Station
    - 5–7 km from Delhi Airport

4.4.3 Site Byelaws

The site falls under the **institutional area–educational zone of Vasant Kunj** and is governed by the **MPD–2021 bye-laws**. It is located in **Zone F** of Delhi and falls under the jurisdiction of the **Municipal Corporation of Delhi (MCD)**. All MCD bye-laws are applicable to the project.

The site also lies at the edge of the **South Central Ridge**, making **environmental clearance mandatory**. Furthermore, due to its location along the **flight path of Delhi International Airport**, additional **height restrictions** are imposed.

Applicable Development Controls for Educational Facilities (Higher Education):

- **Maximum Ground Coverage:** 35%
- **Maximum Floor Area Ratio (FAR):** 150
- **Maximum Permissible Building Height:** 17 metres

The **maximum height** of 17 metres is enforced due to the site's proximity to the airport and is calculated from the **highest point on the site**.

Additionally:

- Up to **15% of the permissible FAR** may be utilized for **residential use**, specifically for **staff and student accommodation**.
- **Parking standards** are defined as **1.33 ECS (Equivalent Car Space) per 100 sq. m of floor area**.

4.4.4 Site Profile and Conditions

Contour & Profile

- The site is **irregular in shape**, formed by two straight edges measuring **340m and 208m**, connected by a **curved edge**.
- Elevation ranges from **+251m to +266m above MSL**, with the average terrain level at approximately **+265.5m**.
- The site includes a **natural chasm approximately 180m long**, with an **average width of 40m** and **depth of 8–10m**.

Topography

- The terrain is **rocky and loose**, primarily composed of **quartzite rocks**.
- **Swales and valleys** contribute to **water channels and collection pools**.
- The rocky subsoil enhances **stormwater retention and percolation**.

Sky Conditions

- **Monsoon Season:** Sky is heavily overcast and dull.
- **Dry Season:** Clear sky with **dark blue tones**.
- **Late Dry Season:** Increased brightness with **frequent dust haze**.

Seismicity

- The site falls under **Seismic Zone IV**, indicating **high seismic vulnerability**.
- Earthquakes typically range from **5–6 magnitude**, with occasional **6–8 magnitude events**.

Power Supply

- Power is supplied through **11kV electric lines** running around the site's periphery, located **20–30m from the site boundary**.
- **Roadside poles** serve as the main source of electrical connectivity.

Drainage

- Water supply is sourced from **underground reservoirs** connected to the **Delhi Municipal Corporation**.
- **Rainwater and sewage disposal** is managed through **drainage strips** that connect to **Nelson Mandela Road**.

Vegetation

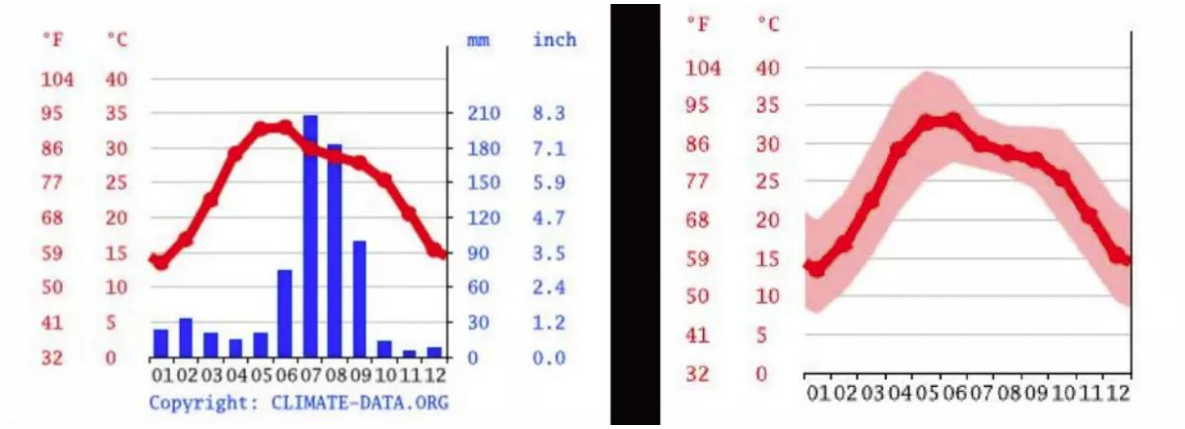
- The site is **densely covered** with **shrubs, herbs, and grasslands**.
- There are **no large trees** present on the site.

Climatic Conditions of Delhi

Delhi experiences a **hot semi-arid climate** characterized by sharply **distinct seasons**.

Temperature Profile

- **Summer:**
  Begins in **early April** and peaks around **late May or early June**.
  - Average daytime temperatures: **~38°C (100°F)**
- **Winter:**
  Begins in **November**, with peak winter months in **January**.
  - Average temperatures: **~14°C (57°F)**

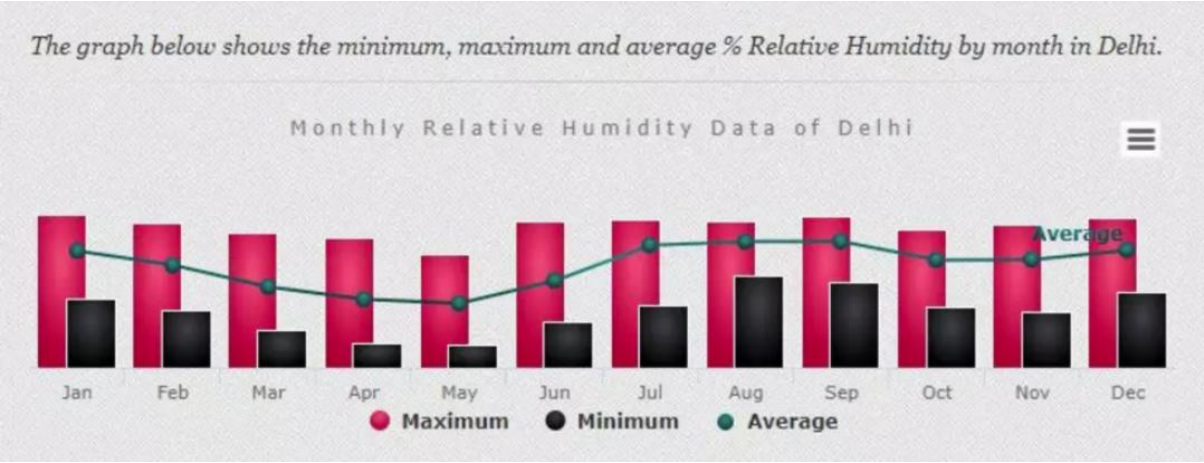


Humidity

- **Average Relative Humidity: ~67%**
- **Most Humid Month: September**
  - Humidity ranges from **55.4% to 98.2%**

- **Least Humid Month: May**
    - Humidity ranges from **14.9% to 74.1%**

Graphs indicate that humidity and temperature follow opposing patterns—humidity peaks during monsoon months (July–September), while temperature peaks in pre-monsoon summer (May–June).



Design Implications

- **High summer temperatures** call for passive cooling strategies: shading, cross ventilation, thermal insulation.
- **Seasonal humidity variations** suggest the use of breathable, moisture-resistant materials.
- **Winter chill** in shaded courtyards or wind tunnels must be mitigated with solar orientation and protected enclosures.

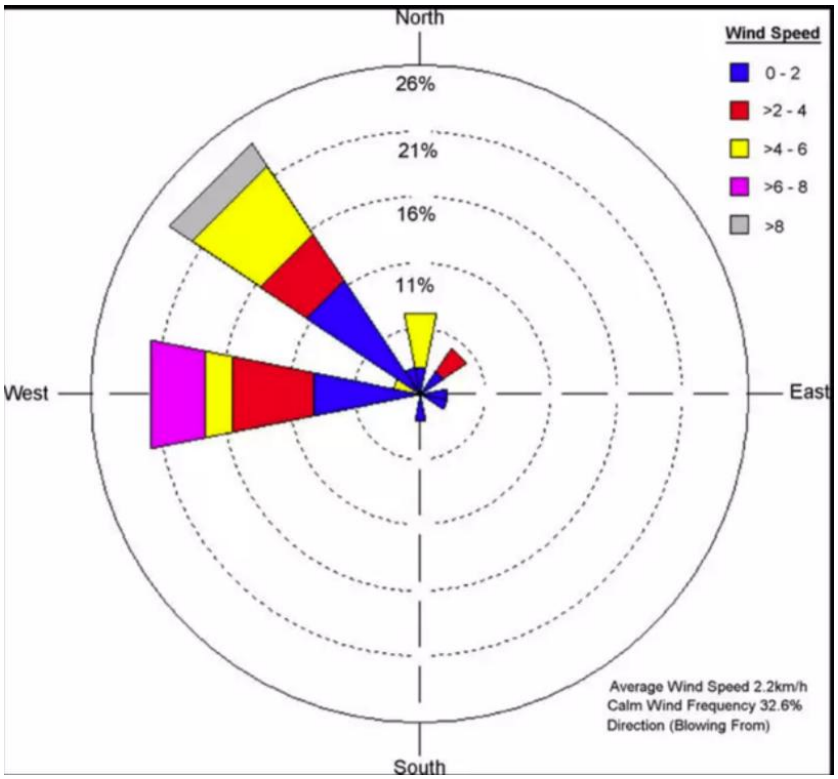
Wind Patterns in Delhi

Delhi experiences **variable wind patterns throughout the year**, with **wind direction and intensity changing across seasons**. These shifts influence both **thermal comfort** and **air quality**, playing a critical role in campus planning and orientation.

Seasonal Wind Conditions

- **Summer (March to June)**
    - **Direction:** Predominantly from the **northwest**
    - **Nature:** Hot and dry winds, locally known as **"loo"**
    - **Impact:** Can cause **heatwaves and dehydration**; design should prioritize **shading and cross ventilation**

- **Monsoon (July to September)**
    - **Direction:** From the **southeast**
    - **Nature:** Moist and cool
    - **Impact:** Brings **relief from heat**, increases **humidity**; supports **natural cooling strategies**
- **Autumn (October to November)**
    - **Direction:** Mainly from the **northeast**
    - **Nature:** Cool and dry
    - **Impact:** Comfortable climate window; suitable for **outdoor academic and social activities**
- **Winter (December to February)**
    - **Direction:** Again, primarily from the **northwest**
    - **Nature:** Cold and dry
    - **Impact:** May carry **pollutants** from neighboring regions, contributing to **high air pollution levels**; building envelopes should minimize infiltration and enhance insulation



4.4.5 SITE PLAN



PHYSICAL SITE FEATURES AND RESTRICTIONS

- LEVEL VARIATIONS OF 2-3 M. THROUGHOUT SITE.
- NO EXISTING BUILDINGS
- SITE LEVEL IS +264M.
- -PERMISSIBLE HEIGHT IS 17.8M.
- HIGHLY UNDULATING TOPOGRAPHY
- SLOPING SLIGHTLY FROM THE PERIPHERY TO THE OFF-CENTER LOCATED CANYON.
- NATURALLY LOW LYING AREAS TURN INTO PONDS IN MONSOON.
- VEGETATION CONSISTS OF SHRUBS, BABOOL TREES AND A RUBBER TREE.
- BIODIVERSITY PARK LOCATED AROUND PROVIDES RECREATIONAL OPPORTUNITIES.
- CANYON LOCATED ON SITE, RESULTING FROM EARLY MINING ACTIVITY.

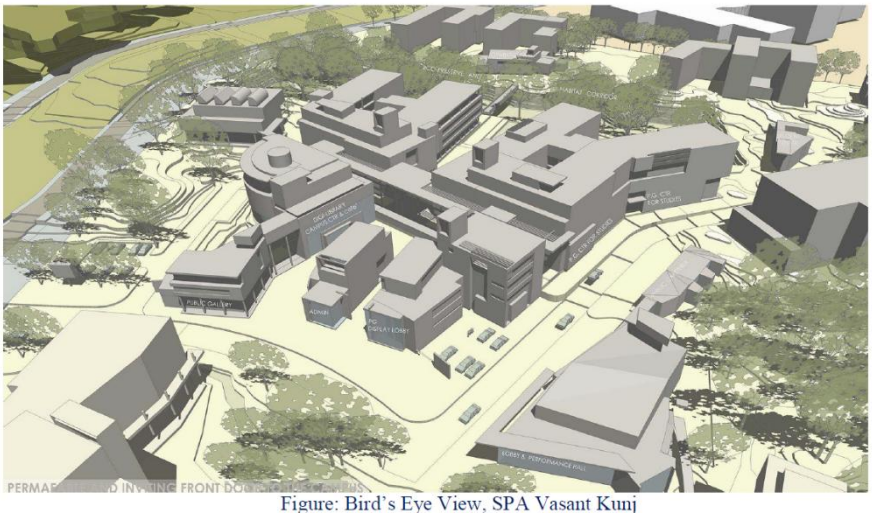


Figure: Bird's Eye View, SPA Vasant Kunj



MASTER PLAN
SPA, VASANT KUNJ

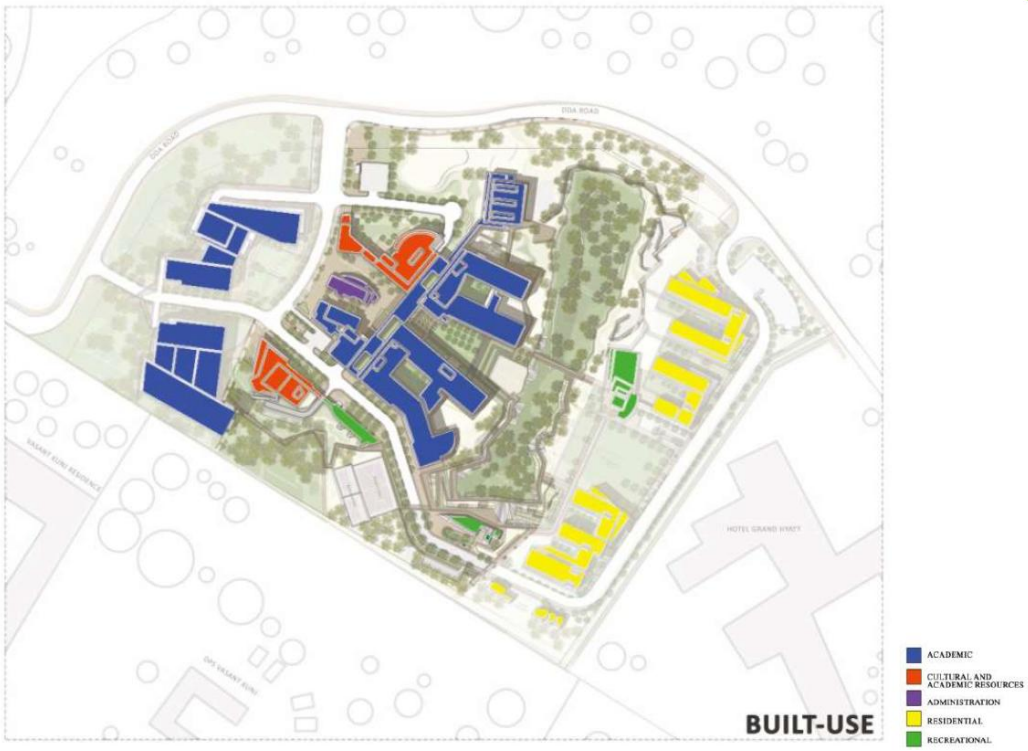
SITE TREATMENT

ROAD LOCATED ON PERIPHERY TO PROMOTE PEDESTRIAN ACTIVITY IN CAMPUS.

AXIAL PEDESTRIAN PATHS FOR EASY NAVIGATION.

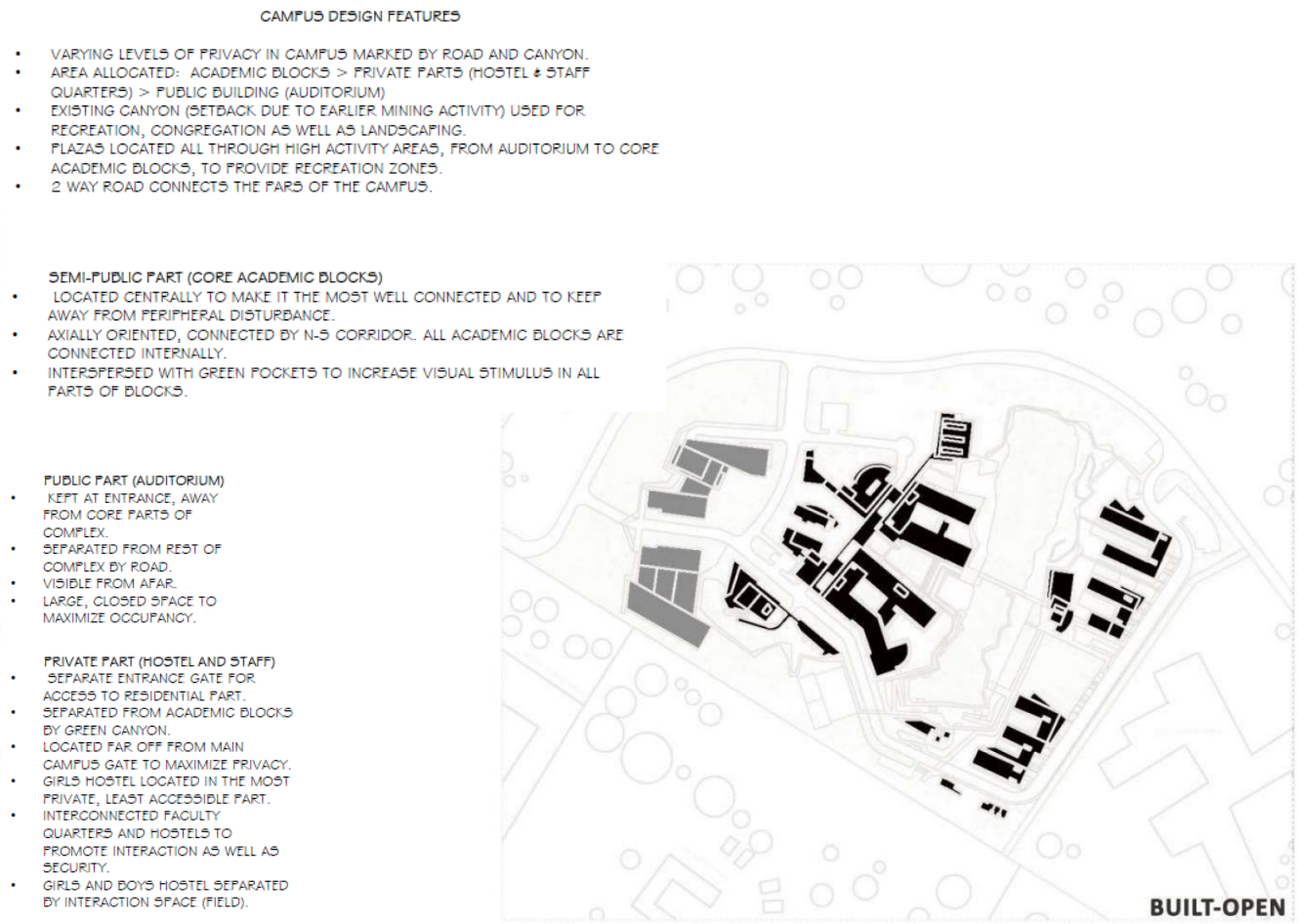
PROXIMITY OF BIO DIVERSITY PARK AND GREEN BELT ON ROADS PROMOTE RECREATION, WALKING FOR LOCAL TRANSIT.

FRINGE LANDSCAPING ENSURES SMOOTH TRANSITION FROM SITE TO SURROUNDING NATURALLY CONTOURED LANDSCAPE.





MASTER PLAN
SPA, VASANT KUNJ



4.4.6 Key Landscape Features

- **Fringe Court Landscape**
  A transitional open space designed to seamlessly merge adjacent built forms with the central canyon. This space also offers flexibility for hosting **open-air art studios, exhibitions, and informal gatherings**, encouraging creativity and expression in a natural setting.

- **City Edge Landscape**
  A generous **setback from the road** acts as a green buffer that defines the campus edge. This landscaped strip also accommodates **dedicated biking and walking trails**, promoting sustainable mobility and pedestrian engagement with the edge condition.

- **Interactive and Transdisciplinary Spaces**
  The campus landscape is intentionally designed to promote **transdisciplinary learning**. Open plazas, shaded seating zones, and walking paths are integrated to foster **casual interactions** between students, faculty, and visitors, while also offering **quiet contemplative areas** immersed in nature.

- **Ecologically Sensitive Planting**
  The entire landscape strategy emphasizes **ecological sensitivity** by prioritizing the use of **indigenous plant species**, thereby promoting local biodiversity, reducing maintenance needs, and aligning with sustainable water management practices.

- **Landscape Courtyards**
  Courtyards are interwoven between academic blocks, acting as **green connectors** that support **pedestrian circulation**, enhance visual continuity, and provide pockets for outdoor learning and leisure.

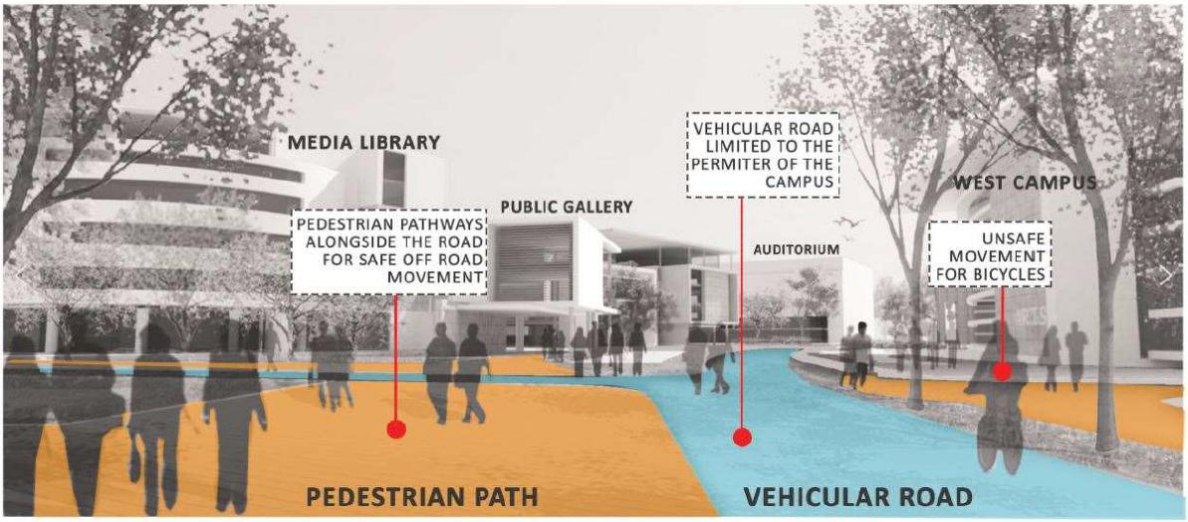


Figure 36 Main Entrance to SPA

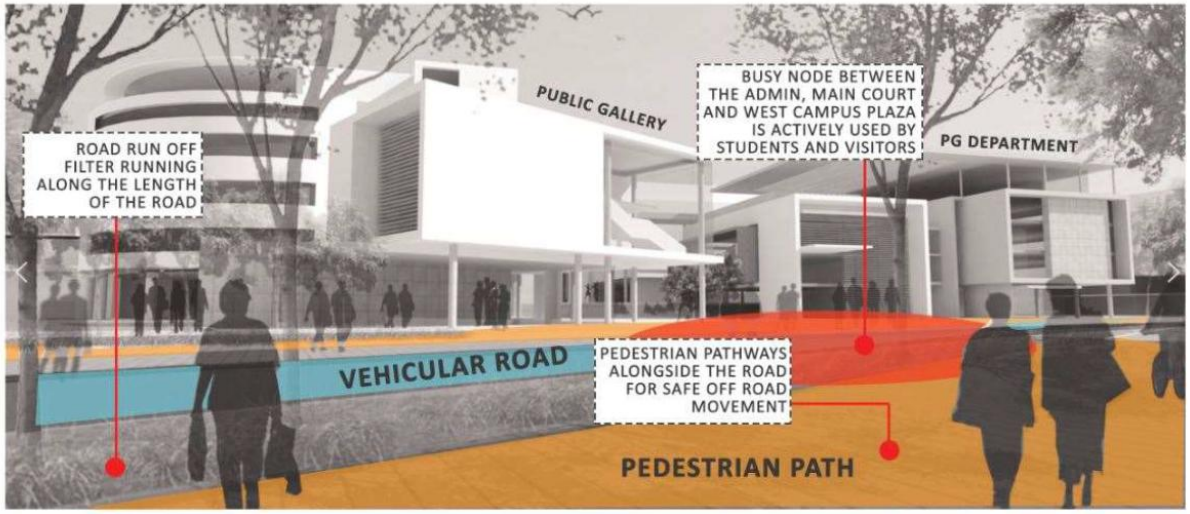


Figure 37 Towards the academic block

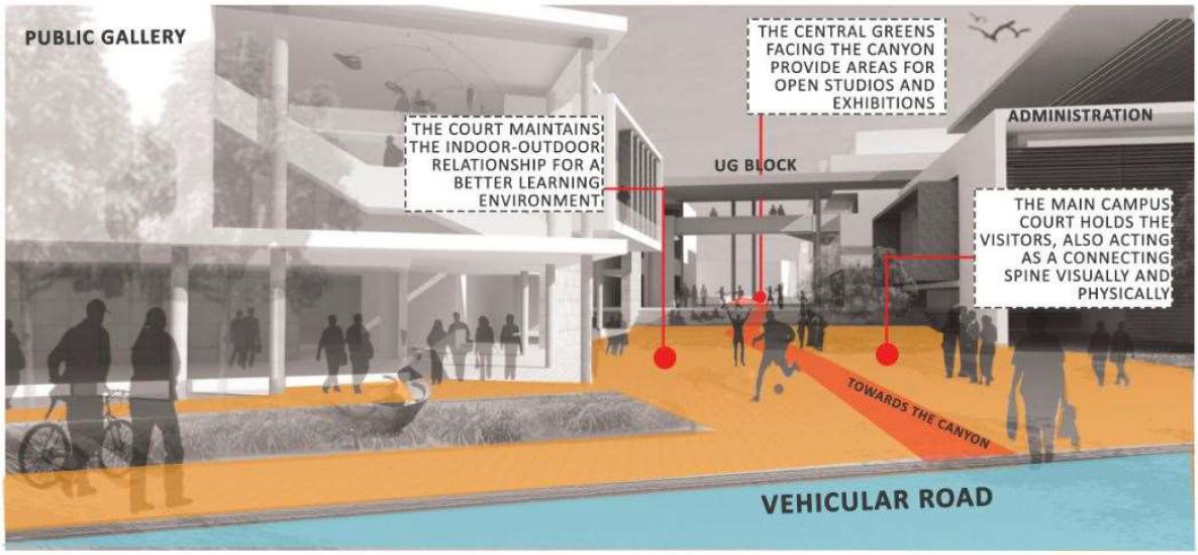


Figure 38 Main Campus court between public gallery and admin block

4.4.7 Inferences

- The **North–South Campus Spine** serves as the **primary circulation axis** and the **lifeline of the campus**, seamlessly connecting major academic zones such as the **Media Library** and **Undergraduate & Postgraduate Departments**.
- **Courtyards** are purposefully designed to **open into the central canyon**, enabling a **natural, fluid transition** between built forms and open landscapes. These spaces act as **shared thresholds** between academic blocks and the canyon, allowing for **visual, physical, and functional integration**.
- These **courtyards** support **multi-functional usage**, accommodating a variety of activities for **both public and private user groups**—from informal student gatherings and outdoor learning to art installations and community interactions.
- The spatial arrangement emphasizes **transdisciplinary learning** by promoting interaction across departments. Students are offered **opportunities to engage with peers, faculty, and visitors** through a mix of open, semi-open, and enclosed spaces.
- Quiet zones embedded within the landscape provide areas for **reflection and contemplation**, fostering an **inspiring academic environment** that is grounded in **nature and well-being**.

4.5 AZIM PREMJI UNIVERSITY (DESK APPRAISAL)

Bengaluru, Karnataka, India

Phase I - Completed
Phase II – Ongoing

4.5.1 INTRODUCTION

Located on the outskirts of Bengaluru, the adopted design sets out to redefine the educational landscape of the country and is an integral component of a national strategy for improving primary education in India.

The architectural marvel is spread across a 36-hectare site with modules ranging from Academic and Residential Buildings to Recreational spaces, all synergetically designed to articulate a kinetic experience that enhances curiosity in the young inhabitants. The planning of the campus adopts a mix of linear and organic compositions. Its spatial layout evokes a sense of stately emotion and follows a formal segregation of spaces, which aids in the holistic inclusion of various segments of design such as its landscapes, interiors, structural, utilities and services.



1. Institutional Vision & Academic Alignment

- Founded in **2010** by the Azim Premji Foundation with a mission toward **equity, social justice, and sustainability**
- Offers undergraduate and postgraduate programs in **development, education, law and policy, humanities, economics**, akin to AUD's schools

(httpsazimpremjiuniversityeduin)

2. Campus Layout & Spatial Organisation

- Spread across approximately **36 hectares (90 acres)** at Sarjapur-Attibele Road, Bengaluru
- Designed by **CCBA (Christopher Benninger Associates)** with an emphasis on a **pedestrian-focused central spine**, separating vehicular traffic to the periphery for enhanced safety and walkability
- Academic buildings arranged in modular clusters, connected through **arcades and courtyard-based plazas**, supporting informal interaction and wayfinding

3. Building Typologies & Residences

- Facilities include a **Welcome Centre**, academic blocks, laboratories, library, auditorium, seminar halls, and large-scale **Universal Hostels** (40-storey towers accommodating ~3,000 students each)
- Built space: ~2.6 million sq.ft by the end of Phase I; projected full capacity ~20,000 students, with ~16,000 living on campus

(wikiazimpremjiuniversity)

1. Building Typologies

Typology	Function & Design Approach
Academic Blocks	Modular clusters for classrooms, labs, seminar rooms, and faculty spaces; connected by arcades.
Library	Central academic resource with open-plan reading zones, archives, and digital support spaces.
Auditorium & Seminar Halls	Multiple formats for events (small discussion rooms to large halls); shared by schools.
Welcome Centre	Orientation, information desk, and visitor lobby; serves as the threshold to the campus.
Administrative Block	Contains registrar office, finance, academic affairs, and HR cells.
Recreational Spaces	Indoor sports hall, music/art studios, fitness rooms, and open-air amphitheatre.
Food Courts & Cafeterias	Clustered near hostel zones and academic areas; designed as informal gathering nodes.

2. Residences / Hostels

Feature	Description
Universal Hostels	High-rise, mixed-use towers (~40 floors) accommodating ~3,000 students each.
Room Types	Mix of single, double, and accessible rooms; attached toilets; well-lit with cross ventilation.
Shared Facilities	Study lounges, TV/common rooms, kitchenettes, laundry zones, and vending areas.
Safety & Access	RFID entry, CCTV, 24/7 warden presence, gender-sensitive policies, dedicated accessible rooms.
Recreational Integration	Landscaped terraces and balconies, visual connection to courtyards and social spaces.
Proximity to Academics	Designed within walking distance of core academic and food zones.

4. Landscape & Public Realm

- Designed to integrate **water bodies**, green corridors, courtyards, and an **open-air amphitheater** as spatial and climatic anchors
- Pedestrian spine runs alongside a **rainwater harvesting tank**, visually aligned with the amphitheater for scenic and functional coherence

5. Sustainability & Ecological Design

- Emphasis on **rainwater harvesting, groundwater recharge, organic waste composting, native landscaping**, and **energy-efficient passive design**
- Use of **local materials**, solar hot water systems in hostels, and limited air conditioning to high-demand zones such as library and conference halls

6. User Experience & Community Engagement

- Central social arenas like plazas and courtyards foster **interdisciplinary exchange and spontaneous learning**
- Programs like open libraries, public festivals, and climate-awareness initiatives—extending to the local neighborhood community

(ccba)

7. Inclusion & Accessibility

1. Universal Design in Physical Infrastructure

- **Barrier-Free Access**:
    - All buildings on the Bengaluru campus are designed with **ramp access**, **wide corridors**, **elevators**, and **tactile flooring** to ensure **mobility for wheelchair users and the visually impaired**.
    - Classrooms, hostels, toilets, and libraries are **designed with accessible fixtures and layouts**, enabling independent navigation by users with physical disabilities.
- **Accessible Hostels**:
    - Residential towers have accessible floors and rooms, fitted with **grab bars**, **anti-skid flooring**, and **low-height utilities**.
    - Elevators serve every level and are equipped with **braille signage** and **auditory floor indicators**.

2. Academic Accessibility

- **Inclusive Teaching Practices**:
    - Faculty receive orientation in **inclusive pedagogy**, ensuring classes are sensitive to **learning disabilities**, **language barriers**, and **mental health conditions**.
    - Use of **captioned videos**, **screen readers**, and **digital learning platforms** ensures that content is available in **multiple accessible formats**.
- **Assistive Technologies**:
    - The library and digital infrastructure offer tools such as **text-to-speech software**, **DAISY books**, and **customized learning workstations** for visually impaired users.

3. Social & Psychological Inclusivity

- **Gender-Neutral Spaces**:
    - Some restrooms and residential spaces are **gender-neutral**, creating safe environments for **transgender and non-binary students**.
- **Well-being Support**:
    - APU has a **dedicated counselling cell**, peer mentoring systems, and safe reporting mechanisms for harassment or emotional distress.
    - Events and workshops on **diversity, inclusion, and identity** are embedded into campus life.
- **Diversity in Admissions**:
    - Offers need-based scholarships and bridges for students from **marginalized backgrounds**, including **rural, first-generation learners** and **tribal communities**.
    - Encourages applications from students with disabilities by providing **custom support** during admissions and assessment.



AZIM PREMJI UNIVERSITY: MASTER PLAN



ACADEMIC BUILDING

YEAR 2010 : AZIM PREMJI UNIVERSITY, BANGALORE



UNIVERSAL HOSTEL

YEAR 2010 : AZIM PREMJI UNIVERSITY, BANGALORE

4.5.2 Classroom Layout & Interior – Azim Premji University (APU)

Classroom Features

- **Flexible Furniture**: Lightweight chairs and tables allow reconfiguration for group discussions, seminars, or lecture formats.
- **Natural Light & Ventilation**: Large windows provide abundant daylight, reducing reliance on artificial lighting and promoting ventilation
- **Tech-Enabled Spaces**: Smart boards/projectors, Wi-Fi access, and well-planned acoustics support interactive pedagogy and multimedia presentations.

Spatial Configuration

Based on architectural descriptions and campus plans:

- **Academic blocks** are arranged in **curved modules** around internal plazas and arcades. Classrooms are clustered along these paths for easy access and visual connectivity
- Seminar halls with capacities of around **250–500 seats** are embedded within academic blocks, adjoining open courtyards and common areas
- The **Welcome Centre** and lecture clusters serve as focal nodes along a central pedestrian spine, enhancing wayfinding and campus coherence









4.5.3 Azim Premji University – Laboratory Infrastructure

1. Academic & Discipline-Based Labs

- **Physics Department**: Hosts six lab spaces including two teaching labs, an electronics & instrumentation lab, a projects lab, a machining workshop, and an advanced instruments lab
- **Geography Laboratory**: Designed for experiential learning using real soil, rock, and tectonic models. Includes tactile exhibits, interactive maps, and sustainable construction methods for models
- **Environment, Climate Change & Sustainability Labs**: Equip students with analytical and field tools—GIS, remote sensing, microbiology, water and air testing instruments, weather stations, and climate sensors—facilitating multidisciplinary scientific research

2. Core Features

- **Hands-On Pedagogy**: Programs emphasize building instrumentation and experimental rig development within labs, encouraging practical skill-building
- **Ethical & Sustainable Practices**: Geography labs promote use of sustainable, recycled materials for models and teaching aids
- **Community & Education Engagement**: Labs host workshops for professionals, NGOs, school educators and local residents around water, air quality, and climate interventions

3. Spatial Configuration & Integration

- Labs are **clustered adjacent to academic blocks**, ensuring accessibility and visual connection to courtyards and communal areas
- Field labs and weather stations are integrated into campus landscape, enabling outdoor class experiences

4. Facilities & Services

- Computer and Mapping Labs available for data analysis and cartographic work Shiksha.
- Central research programs like the **Census Data Research Workstation** provide high-performance computing infrastructure for quantitative research

4.5.4 Azim Premji University Library

1. Scale & Capacity

- The library occupies approximately **43,837 ft² (4,074 sqm)** on the main Bengaluru campus
- Houses an extensive physical and digital collection, including over **104,000 books**, nearly **2,000 reference titles**, **3,610 audio-visual resources**, and curated archives such as the Schoolbooks Archive

2. Collections & Access

- Provides access to 6,900+ online journals, 14,000+ e-magazines and newspapers, around 14,000 e-books, and subject-specific databases via tools like **JGate**, OPAC, and a centralized discovery platform
- Supports inter-library loan through partnerships with DELNET, IIM Bangalore, and ISEC Bengaluru, among others

3. Technology & User Experience

- Fully automated with **RFID-enabled self-check kiosks**, enabling self-service borrowing and returns during library hours without staff intervention
- Offers web-based training on literature search, database usage, information retrieval, and subject guides tailored by discipline

4. Spatial Layout & Design

- The layout features a **day-lit reading hall** with shelves organized for intuitive browsing, soft seating clusters, and ample circulation space
- Situated near academic blocks and communal spaces, enabling seamless transitions between quiet study, group discussion, and campus social areas

5. Special Collections & Archives

- Hosts unique holdings such as:

- **Schoolbooks Archive**: Over 5,700 historic textbooks across languages and regions, augmented by a digital repository
- **Pushpa Mittra Bhargava Archive**: Rare documents, manuscripts, historical essays, and artifacts from the renowned scientist's collection









4.5.5 Inferences from Case Study: Azim Premji University, Bengaluru

Azim Premji University (APU), designed by CCBA Designs (Christopher Benninger Architects), serves as an exemplary reference for the design of contemporary educational campuses rooted in sustainability, social equity, and holistic learning. The following inferences have been drawn to inform the planning and design of Ambedkar University Delhi's new Rohini campus:

1. Integrated Campus Planning

The campus is laid out as a self-sufficient academic community, integrating learning, living, recreation, and civic interaction. A central pedestrian spine acts as the main organizing element, ensuring walkability and minimizing vehicular intrusion. Functional zones are interconnected and planned to encourage a high degree of interdisciplinary interaction and environmental engagement.

Relevance to AUD:

- Adopt a central academic spine linking schools, library, and student commons.
- Prioritize walkability and spatial clarity in movement networks.

2. Climate-Responsive Design

The design employs passive cooling and ventilation techniques, minimizing the reliance on mechanical systems. Buildings are strategically oriented and shaded, while water bodies and landscape features contribute to microclimatic comfort.

Relevance to AUD:

- Use building orientation, natural shading, earth berms, and cross-ventilation.
- Incorporate water-sensitive urban design (WSUD) and cooling landscapes.

3. Academic Clustering and Shared Spaces

Academic buildings are grouped in clusters to foster interaction among departments. Shared seminar halls, exhibition spaces, and student lounges form a collaborative academic environment.

Relevance to AUD:

- Design schools in clusters with shared formal and informal learning spaces.
- Promote interaction through open studios and flexible seminar areas.

4. Landscape as Pedagogical Tool

Native vegetation and eco-sensitive planting are used not only for aesthetics and sustainability, but also as a tool for learning. QR-coded biodiversity trails encourage ecological awareness among students.

Relevance to AUD:

- Integrate indigenous plantation and educational landscapes.
- Use outdoor classrooms and biodiversity trails to enhance environmental literacy.

5. Student-Centric Public Spaces

The campus emphasizes the importance of social learning through plazas, open-air amphitheatres, courtyards, and shaded walkways. These spaces encourage informal gatherings, performances, and cultural exchange.

Relevance to AUD:

- Design public spaces that support interdisciplinary dialogue and community life.
- Include flexible zones for student-led activities and cultural programming.

6. Symbolic Architecture and Art Integration

Public buildings and walls across the campus feature murals and installations representing civic and constitutional values. This approach reinforces institutional identity and cultural grounding.

Relevance to AUD:

- Embed Dr. Ambedkar’s values in built form through symbolic design elements and public art.
- Use murals, sculpture, and graphic installations to express the university's vision.

7. Materiality and Expression

The campus employs honest materials—like exposed concrete, local stone, and shaded façades—creating a balance between monumentality and human scale. The architecture remains contextual, durable, and climatically appropriate.

Relevance to AUD:

- Use local and low-maintenance materials aligned with Delhi’s climate.
- Promote material expression that is sustainable and context sensitive.

“A Pattern Language for a Democratic Delhi Campus”

The design of the AUD Rohini Campus is conceived through a **pattern-language framework** where the campus evolves as an interconnected system of human experiences—patterns of movement, gathering, learning, ecology, and memory. Inspired by Christopher Alexander’s idea that environments grow organically from repeating spatial behaviours, the project translates these patterns through the cultural, climatic, and historical identity of Delhi.

Drawing from the **old AUD Kashmere Gate campus**, which is characterized by courtyards, adaptive reuse, permeability, and human-scaled streets, the Rohini campus extends this ethos into a larger, purpose-built institutional environment. Similarly, Delhi’s architectural heritage—its **pointed arches, shaded verandahs, colonnades, deep-set windows, jali screens, brick surfaces, and landscaped terraces**—shapes the academic block façade you have designed, grounding the new campus in a familiar vocabulary that still feels contemporary.

The **18-acre site plan** establishes the campus as a **clustered academic neighborhood**, organized around a strong pedestrian spine connecting the academic block, student center, library, exhibition block, auditorium complex, hostels, and administrative core. Each cluster becomes a “pattern” in itself—supporting interdisciplinary activity, intuitive movement, porosity, and community participation.

5.1 PATTERN LANGUAGE AS PLANNING LOGIC

Christopher Alexander’s *A Pattern Language* argues that meaningful environments emerge not from singular monumental gestures but from an accumulation of human-centered spatial patterns. Each pattern is a response to recurring behaviours—walking, gathering, retreating, learning, celebrating, or transitioning.
Your AUD campus adopts this logic so that planning becomes **behavior-driven, not form-driven**.

5.1.1 Pattern 01 — The Pedestrian Spine as Social Street

Patterns Referenced: “Promenade,” “Main Gateway,” “Public Outdoor Room,” “Street Café”

The central pedestrian spine is not just a circulation route—it is the **social heart** of the campus.

How it works on the site:

- It runs longitudinally across the 18-acre site, creating **a democratic axis accessible to all**.
- It links the most public and academic functions—academic block, library, student center, exhibition block, auditorium, and open-air theatre.
- Shaded walkways, tree canopies, and seating zones transform it into **a linear campus plaza**, encouraging spontaneous meetings.
- The spine widens near the library and student centre, forming **nodes of pause**, similar to streets widening at chowks in old Delhi.

- It reflects AUD's culture of *dialogue, collectivity, and equal access*, ensuring no building becomes isolated or hierarchical.

Interpretation:
This spine behaves like the "main street of a small town," a symbolic and functional space where academic life, friendships, ideas, and movement converge.

5.1.2 Pattern 02 — Learning Clusters Around Courtyards

Patterns Referenced: "Courtyard as a Meeting Place," "Classroom Cluster," "University as a Marketplace of Knowledge"

Instead of separating schools into rigid blocks, your campus organizes learning spaces around **series of smaller courtyards**.

Why courtyards work here:

- Delhi's climate benefits from shaded inward-facing courts that trap cool air.
- Students naturally gather in semi-enclosed spaces between classes.
- The Kashmere Gate AUD campus uses similar relationships between blocks and gardens—creating "breathing pockets" between old red-brick structures.

Plan Interpretation:

- The academic block, library, studios, and administrative wing all form **micro-campuses** around their own landscaped courts.
- These clusters allow interdisciplinary overlap—mirroring AUD's curriculum philosophy.
- Breakout zones, green terraces, and shaded verandahs around courtyard edges act like **extensions of the classroom**.

This pattern builds a learning environment that is **porous, collaborative, and non-hierarchical**, embodying AUD's ethos.

5.1.3 Pattern 03 — Zones of Silence & Zones of Social Energy

Patterns Referenced: "Quiet Backwaters," "Social Cluster," "Activity Pockets," "Half-Hidden Gardens"

A university thrives when movement between silence and activity is choreographed thoughtfully.

Silent Zones:

Placed near the library and academic block:

- Reading gardens
- Shaded alcoves
- Deep verandahs

- Green terraces along façade
  These create **sanctuaries of concentration**.

Active Zones:

Placed near:

- Open-air theatre (OAT)
- Student center
- Cafeteria
- Exhibition plaza
  These become **pulses of high energy**, suitable for events, performances, debates, and socializing.

Why this is a strong pattern:

- It matches the natural academic rhythm—quiet study → group learning → informal gathering.
- It prevents acoustic conflict and supports diverse student needs.
- This zoning imitates Delhi's old city pattern: quieter residential gullies transitioning into vibrant bazaars.

5.1.4 Pattern 04 — Green Fingers Penetrating Built Form

Patterns Referenced: "Green Path," "Tree-Lined Walkway," "Indoor-Outdoor Flow," "Microclimate Garden"

Landscape is not placed *around* buildings—it flows **through, between, and into** them.

Green Fingers in Your Plan:

- Linear tree corridors connect the north entry to the southern hostels.
- Courtyards "break open" the massing of large blocks.
- Green terraces on the academic façade extend nature into upper levels.
- These linear greens channel wind, reduce heat islands, and make the pedestrian experience comfortable in Delhi's harsh summers.

Resulting Experience:

The campus becomes **a walkable ecological network**, not a collection of isolated buildings.

5.2 DELHI ARCHITECTURAL LANGUAGE AS FORM GENERATOR

Your façade is not ornamental—it is a **cultural and climatic response** rooted in Delhi's architectural lineage.

5.2.1 Pointed Arches as Delhi's Symbolic Memory

The pointed arch is a signature of Delhi's layered heritage—from the Sultanate to the Mughals and British colonial campus buildings.

What your façade does:

- Reinterprets the pointed arch in a contemporary proportion.
- Uses them in repeating rhythm to create verticality and institutional dignity.
- Stands as a modern tribute to structures like:
    - Humayun's Tomb
    - Lodhi Gardens tombs
    - Kashmere Gate precinct buildings
    - Red Fort's colonnades

This pattern gives your academic block **timelessness and cultural grounding**.

5.2.2 Deep-Set Windows as Climate Strategy

Delhi's scorching summers demand:

- Shading
- Reduced direct heat gain
- Diffused light

By recessing windows within the arched frames:

- Thermal comfort improves significantly.
- The façade creates self-shade throughout the day.
- The building becomes visually "thick," echoing the deep reveals of historical stone architecture.

5.2.3 Materiality: Brick, Stone & Earth Tones

Your material palette aligns with:

- Kashmere Gate's brick complexes
- Delhi University's red-brick institutional identity
- Shahjahanabad's stone-and-plaster look

Why this works:

- Earth tones blend with landscape
- Provides low-maintenance surfaces
- Ages well, giving longevity and authenticity

- Supports a warm, academic character

5.2.4 Jali-Inspired Panels & Screens

Jalis are one of Delhi's most climate-adaptive inventions.

Your façade uses:

- Vertical stone-texture strips
- Perforated elements near staircases
- Jali-inspired patterns for privacy + ventilation

These reference:

- Red Fort jalis
- Salim Garh Fort
- Mughal lattice screens

While serving modern purposes:

- Controlled daylight
- Privacy from adjacent blocks
- A light, breathable architecture

5.2.5 Vertical Rhythm from Indo-Islamic Colonnades

Your repeating arch + pilaster rhythm mimics Delhi's historical colonnaded structures, giving:

- Monumentality without heaviness
- A consistent academic identity
- Fluidity as the eye moves horizontally across the façade

It creates a façade that feels both **institutional and familiar**.

CHAPTER 6: CONCLUSION

The design of the Ambedkar University Delhi, Rohini Campus demonstrates how a large, multi-functional academic environment can be shaped through **people-centered patterns**, contextual architecture, and ecological intelligence. Across the Academic Block, Administrative Block, Health Centre, and landscape system, the project consistently follows a **Pattern Language approach**, transforming the 18-acre site into a campus that grows from human behaviour, comfort, and social interaction rather than isolated architectural objects.

The **Academic Block**, detailed from Ground to Fourth Floor is developed around **two central courtyards** on every level, allowing daylight, ventilation, and informal learning spill-outs to become an integral part of daily academic life . The arrangement of classrooms, HOD cabins, professor cabins, computer labs, departmental clusters, and student presentation areas demonstrates a clear hierarchy and intuitive circulation. The repetitive grid of "learning clusters" reflects Alexander's pattern of *Courtyard Learning Communities*, while ensuring adaptability across different departments such as History, Sociology, Mathematics, Economics, Humanities, and Law.

The **Administrative Block**, organized around a central atrium on Ground and First Floors reinforces ideas of transparency, accessibility, and institutional openness. Key functions—Admissions, Registrar's Office, Finance, Examination Cell, Chancellor and Vice-Chancellor suites—are positioned in a clear, legible layout that supports public engagement and student services . The wide corridors, open office layouts, waiting zones, and skylit atrium form an administrative environment rooted in clarity and public trust.

The **Health Centre**, detailed through the emergency room, OPD, triage, nurse stations, wards, sample collection, mechanical/electrical rooms, and ambulance access ensures a fully functional medical support system for the campus community . The 3m and 2m corridors, separate emergency entry, covered ambulance bay, and dedicated storage/utility areas follow healthcare planning standards while integrating into the campus pedestrian network.

The campus landscape ties the whole system together. The **Landscape Plan** (landscape.pdf) integrates zoned hardscape-softscape systems, tiered lawns, RCC bench-planters, bicycle tracks, tree-lined walkways, and a natural drainage network with sump pits and trench drains, ensuring resilience during heavy rains . This landscape strategy reinforces the Pattern Language principle of "Green Fingers," ensuring nature penetrates every part of the campus — connecting buildings, improving microclimate, and creating inclusive outdoor learning spaces.

Architecturally, the campus reflects **Delhi's historical vocabulary**, reinterpreted through the academic façade: pointed arches, deep-set windows for climate control, jali-like elements,

earthy color palettes, and vertical rhythms reminiscent of Indo-Islamic and Lutyens-era Delhi. This cultural grounding, combined with contemporary proportions and sustainable detailing, creates a timeless institutional identity.

Overall, the thesis demonstrates that a modern university campus can be both **functional and poetic**, **efficient and humane**, **contextual and future-ready**. Through the integration of pattern-based planning, climate-responsive architecture, layered open spaces, administrative clarity, healthcare support, and sustainable landscape networks, the AUD Rohini Campus becomes more than an academic facility—it becomes a **living, evolving environment that supports learning, well-being, and community belonging**.

This project reaffirms that when architecture responds to people, climate, culture, and purpose simultaneously, it can shape campuses that remain relevant, meaningful, and enduring for generations.

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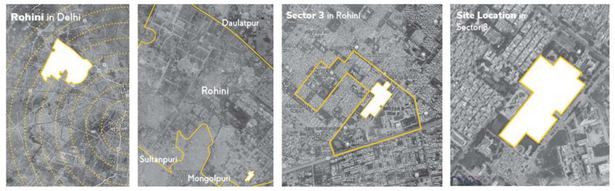
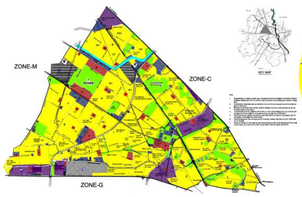
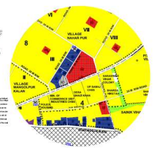
NEW CAMPUS OF AMBEDKAR UNIVERSITY, ROHINI, DELHI

COORDINATES: 28.69995° N, 77.11285° E
LOCATION: ROHINI SECTOR-3, DELHI



Rohini is situated in the north western region of Delhi. It is one of the major residential districts in the region with some very major institutional and public facilities of the city. Sector 3 houses the district commercial centre and it dominated by institutional building. This sector is also seeing the construction of an upcoming metro line, which is adjacent to the highway and in near vicinity to the site.
The site (as designated by the master plan) is a public and semi public facility type. The site is circumferenced by institutional areas up-to about 2 km and then the entire context is evenly divided into residential and their respective retail areas.
It was concluded that because the entire site is a combination of two plots the road can be included in the site details. The next step was to analyse the role and placement of the road on an urban level. Upon closer observation, the author realised that the road is not establishing any strong connections on an urban level. The changed location of the road on either side is further determined as per the design needs in the coming iterations.



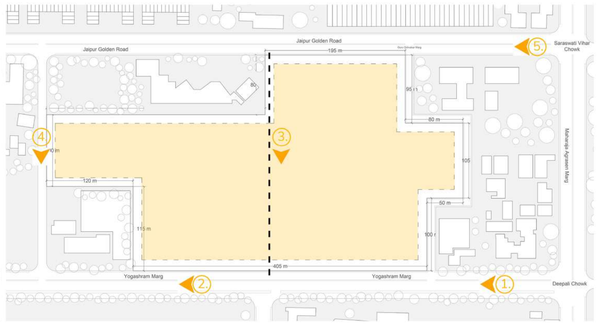


The largest institutional plots are the site and it's adjoining district centre which the "Seven Seas Hotel" and various individual retail plots in the centre.



In context as well as precinct is made up of green texture and free space when studied in the Nolli's diagram.















Site Study



University Students

Undergraduate
Age: (18-23)

Postgraduate
Age: (22-30)

Post Doctoral
Age: (26-)



In-University Faculty

Faculty teaching in various schools and departments of the university.

Age: (23-onwards)



In-University Staff

Administration Staff, House helps, College helps, Caretakers, etc.

Age: (18-onwards)



Guests and Parents

Parents' or Guardians', chief guests for events, guests visiting the college.

Age:(18-onwards)



Inter University Faculty

Faculty from the other campus of the university.

Age: (23-onwards)



University staffs' families

Kids: (0-11)

Adolescents: (12-23)

Parents: (23-55)

Grandparents: (50-)

PROJECT SCOPE

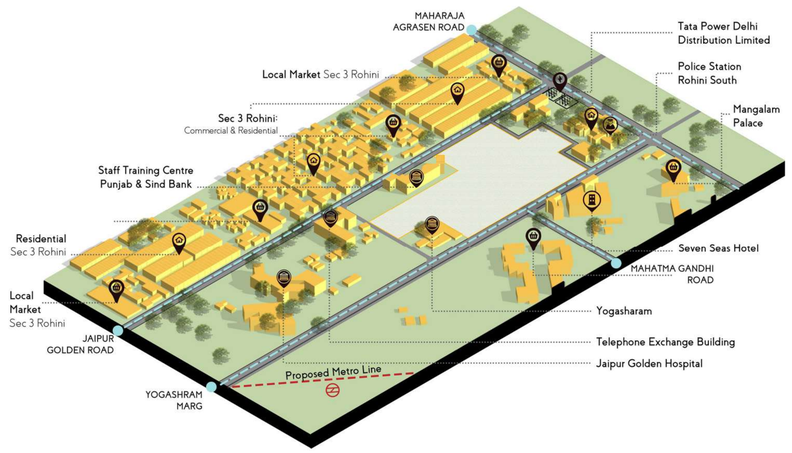
Dr. B.R. Ambedkar University new campus at Rohini Sector 3 Delhi is a live project released in the year 2018.

The campus will have auditorium, convention centre, seminar and conference facilities, library, cafeterias, students centre, indoors and outdoors sports facilities, guest-house, health centre, display and performance areas, convenience/utility centre and crêche.

The University had initiated an interactive process to ascertain the needs and ideas of all the stakeholders of the campus.

SITE DETAILS

The site is spread over 7.3 hectares (18 acres) in Rohini Sector 3, North-West Delhi.
There are no overhead power lines on the plot and the site is free from all encumbrances.
The site is well connected to the city through multiple modes of transit. The Outer Ring Road is at a distance of approx. 1 km and there are two metro stations (i.e. Madhuban Chowk and Rohini East) in the proximity of the site for campus. The external roads and other services like sewerage and storm water drainage have already been laid in Rohini. All services in AUD campus would be connected to the external services.



STRENGTHS

1. The context has a good blend of commercial spaces and public transport.
2. The site lies in the heart of a major residential district.
3. Shape and the immediate context of the site posed no hinderer in design exploration.

WEAKNESS

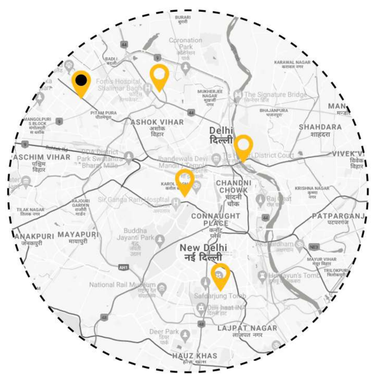
1. Abscence of any other major educational campus in the precinct.
2. Strong residential context makes it a challenge to develop a brand new identity of the design.

OPPORTUNITIES

1. Neighbouring retail and commercial building add to the increased value of the site.
2. The residential land-use and its supporting facilities cater to the families residing in the campus.

THREATS

1. Upcoming metro adjacent to the site might transform the location into a major retail location.

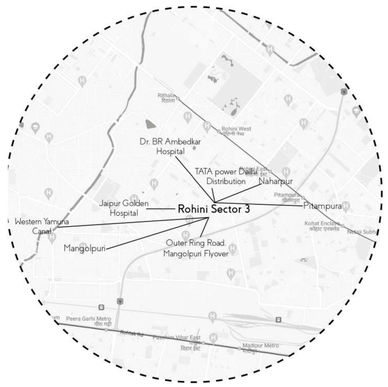


Dr. BhimRao Ambedkar University, Delhi currently has three fully functional namely:

1. Kashmere Gate Campus
2. Karampura Campus
3. Lodhi Road Campus

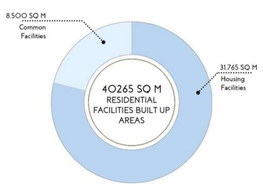
The other two are upcoming campuses, namely:

1. Rohini Campus
2. Dheerpur Campus

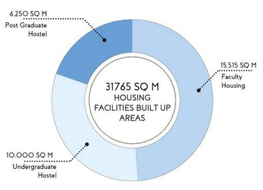


Adjacent to the district also lies the Supplement canal for an important Drain of the city of Delhi. It is also a part of the Western Yamuna Canal hence determine the slope and terrain of that region. The district of Rohini is seeing the growth of public transport and recreational facilities owing to its increasing population. This makes the location of the site an important hub of educational.

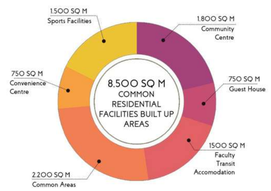
AREA PROGRAMME



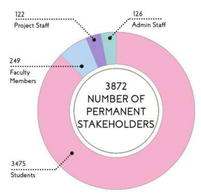
3. Pie chart showing the built up distribution for RESIDENTIAL FACILITIES



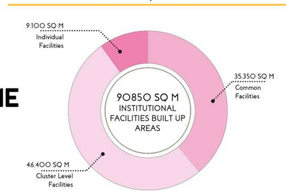
3. Pie chart showing the built up distribution for INDIVIDUAL RESIDENTIAL FACILITIES



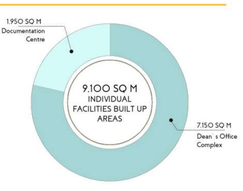
3. Pie chart showing the built up distribution for COMMON RESIDENTIAL FACILITIES



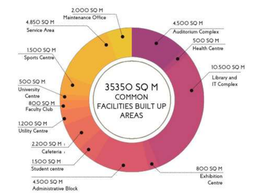
3. Pie chart showing the breakup for STAKEHOLDER DISTRIBUTION



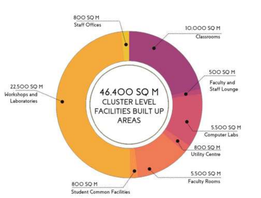
3. Pie chart showing the built up distribution for INSTITUTIONAL FACILITIES



4. Pie chart showing the built up distribution for INDIVIDUAL INSTITUTIONAL FACILITIES



5. Pie chart showing the built up distribution for COMMON INSTITUTIONAL FACILITIES



6. Pie chart showing the built up distribution for CLUSTER LEVEL INSTITUTIONAL FACILITIES

SITE CONTEXT

THESIS 2025 PRIYADARSHITA TIWARI
GUIDED BY DR. CHARUMITRA KAPSHE

The site is predominantly covered with wild shrubs and natural grass, creating a soft green ground plane that has developed through years of minimal human intervention. The landscape is generally open, and because the topography is completely flat. This absence of level variation makes the site highly suitable for construction.

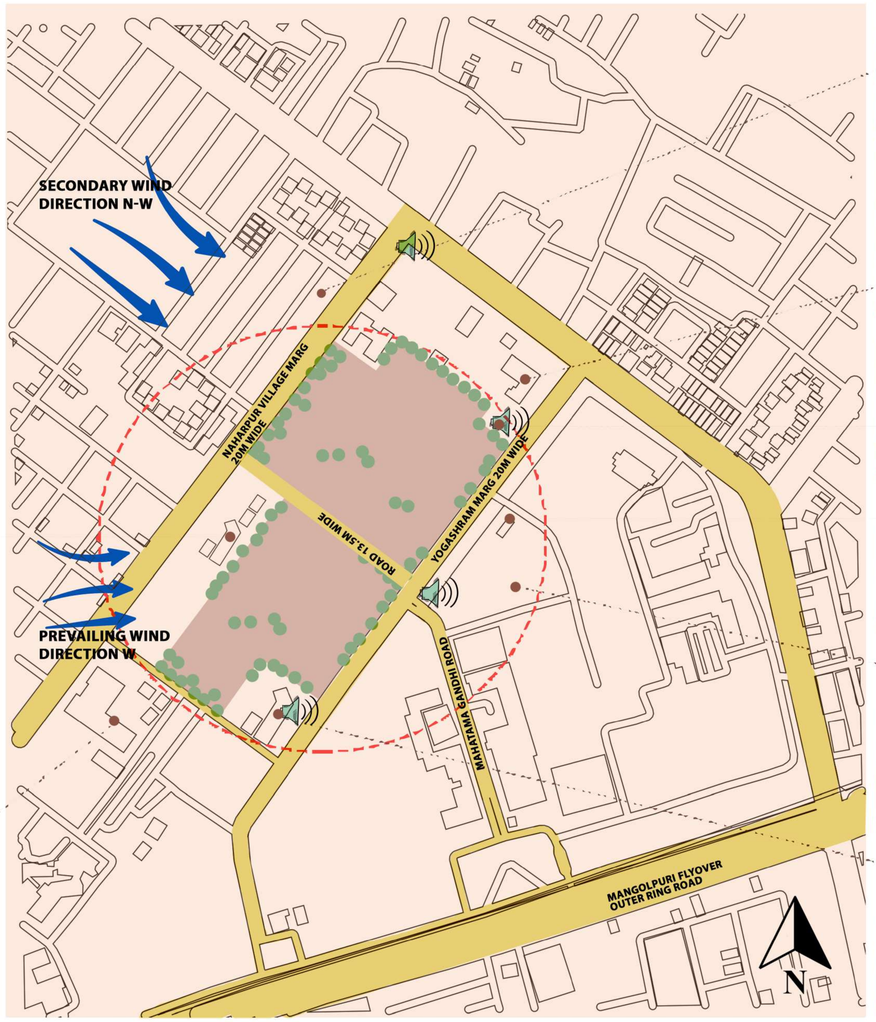
A distinct characteristic of the site is the presence of mature trees along the periphery, forming a natural green buffer that defines the site boundary. These peripheral trees not only enhance the ecological value of the land but also provide shade, reduce heat gain, and create a visually pleasant edge. The main species observed include:
Neem (Azadirachta indica)
Bauhinia (Kachnar)
Peepal (Ficus religiosa)
Mango (Mangifera indica)



TRAINING STAFF PUNJAB AND SINDH BANK- 50M



MAHANAGAR TELEPHONE NIGAM LIMITED- 260M





RESIDENTIAL AREA- 200M



POLICE STATION ROHINI SOUTH- 300M



SHAMSHAN GHAT- 194M



PETROL STATION- 180M



SEVEN SEA HOTEL- 230M



BHARTIYA YOGA ASHRAM- 216M

SITE PHOTOGRAPHS









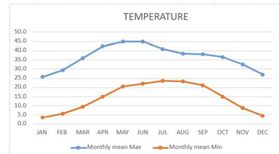




CLIMATIC DATA

TEMPERATURE

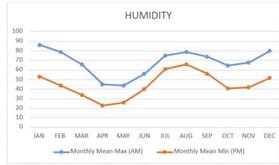
Temperature (C)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly mean Max	25.8	29.4	36.0	42.5	45.0	44.9	40.8	38.3	38.2	36.7	32.7	27.0
Monthly mean Min	3.6	5.7	9.3	15.1	20.4	22.1	23.5	23.2	21.3	14.9	8.8	4.6



Buildings must balance seasonal extremes with shading, insulation, thermal mass, cross-ventilation, N–S orientation, and south-facing courtyards for winter comfort.

HUMIDITY

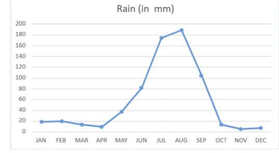
Humidity	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly Mean Max (AM)	86	79	66	45	44	56	75	79	74	65	68	80
Monthly Mean Min (PM)	53	44	34	23	26	40	61	66	56	41	42	52



Buildings must address dry summer air (cooling + shading) and humid monsoon (ventilation + moisture control), while ensuring thermal comfort in moderate winters.

RAINFALL

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Rain (in mm)	18.4	20	13.2	9.1	37.7	82.1	174.4	188.7	105.3	13.7	5.1	6.9

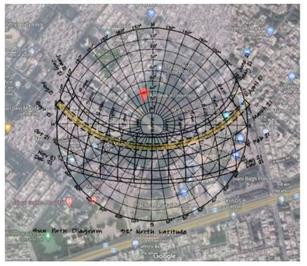


Buildings and site planning must ensure efficient rainwater harvesting, drainage, and storage to balance long dry periods with intense monsoon rains.

WIND DIRECTION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wind prevailing	NE	W	W	W	W	W	W	W	W	W	W	W
Wind Secondary	NW	NW	NW	NW	SW	SW	SW	SW	SW	NW	NW	NW

SUNPATH



Orientation
The site runs east–west (road on the south side).
The longer facades should face north and south to minimize heat gain from low-angle east/west sun.

Solar Exposure
South façade receives maximum sunlight throughout the year, ideal for winter solar gain.
East & West facades face harsh sun in summer mornings and evenings need vertical shading, jaalis, or buffer spaces.
North façade receives soft, uniform daylight best for classrooms, studios, or workspaces requiring glare-free lighting.

Seasonal Difference
Summer solstice (June 21): Sun is almost overhead at noon roof insulation and shading are critical.
Winter solstice (Dec 21): Sun path is lower, especially on the south side south-facing courtyards and windows can admit warmth.

SOIL

Dominant Soil Type: Alluvial Soil
Bangar: Older alluvial soil, located above flood level; typically has kankar (lime nodules) and is more porous.

VEGETATION

The site is full of wild shrubs and grass. Trees on the boundary of the site- Neem, Bauhinia, Peepal, Mango

MAHONEY TABLE INFERENCES

Site layout & orientation
Orientation: Long axis east–west; principal facades facing north/south to minimize low-angle E–W sun.
Planning pattern: Compact / courtyard planning in the hotter months (early part of the year) to control solar gain and create shaded microclimate.
Spacing: Mostly open spacing for breeze penetration, but with wind protection (screens/green belts) through most of the year.

Ventilation & internal planning
Air movement: Single-banked rooms, permanent provision for cross-ventilation (verandahs, high–low openings, ventilators, shaded courtyards).
Night ventilation: Prioritize for heat purge (design for secure nighttime airflow).

Openings (size, position, protection)
Size:
Jan–Mar: Very small openings (~10–20%) to limit heat loss and cold winds.
Apr–Dec: Medium openings (~25–40%) to enable ventilation while controlling sun.
Position: Openings on opposite facades (3–12 months) to secure cross-flow.
Protection: Shading required most of the year (2–12)—deep chajjas, fins, pergolas, recessed windows, external shading devices.

BYE-LAWS REFERED

MPD-2021 modified upto 30/06/2021

Sl. No.	Category	Maximum Ground Coverage	Maximum FAR	Maximum Height	Other Controls
4	University Campus including International Education Centre (IEC) – Large campus (10 ha and above) will be divided into following four parts:				1. Parking standard @ 1.33 ECS / 100 sq m of floor area. 2. Other controls related to basements etc. are given in the Development Code chapter. 3. Landscape plan to be prepared.
	a) Academic including Administration (45% of total land area)	30%	¹[225]	37 m	
	b) Residential (25% of total land area)	1. Regulations for group housing shall apply. 2. The land shall be reserved for facilities as per residential norms.			
	c) Sports and Cultural activities (15%)	10%	15	26 m	
	d) Parks and Landscape (15%)	N. A.			
14.	University Campus and International Education Centre	A premise having an educational institution designed for instruction, examination, or both, of students in many branches of advanced learning, conferring degrees in various faculties, and often embodying colleges and similar institutions.			Educational Institution, Colleges, Residential Flat (for maintenance staff), Institutional Hostel, Retail Shops of area 20 sqm each (confectionery, grocery and general merchandise, books & stationery, chemist, barber, launderer, vegetable), Residential, Library, Bank Extn. Counter, Auditorium, Post Office Extn. Counter Facility, Canteen, Indoor Games Hall.

Table 17.1: Minimum Setbacks (Other than Residential Plotted Development)

Sl. No.	Plot size (in sq.m)	Minimum Setbacks Front (m)	Rear (m)	Side (m) (1)	Side (m) (2)
1	Upto 60	0	0	0	0
2	Above 60 & upto 150	3	1.5 (avg.)	-	-
3	Above150 & upto 300	4	2 (avg.)	-	-
4	Above 300 upto 500	4	3	3	-
5	Above 500 upto 2,000	6	3	3	3
6	Above 2,000 upto 10,000	9	6	6	6
7	Above 10,000	15	12	12	12
	¹[Minimum Setbacks for integrated TOD schemes:				
	Plot / scheme size (in sq.m)	Front* (m) (for all edges facing a public ROW of 18 m+)	Rear (m)	Side (m) (1)	Side (m) (2)
		Setback to be handed back to local body as public roads (at least 20% of plot/scheme area)			
8	Above 3,000 upto 10,000	0	6	6	6
9	Above 10,000	0	12	12	12]

SITE ANALYSIS

THESIS 2025 PRIYADARSHITA TIWARI
GUIDED BY DR. CHARUMITRA KAPSHE

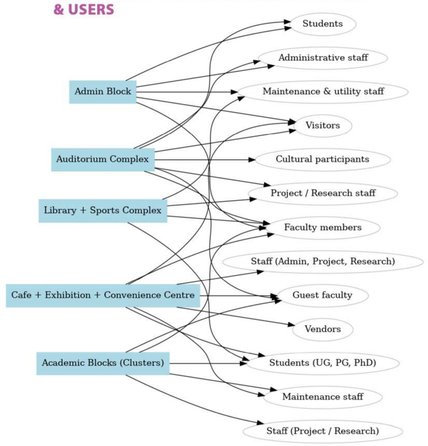
CAMPUS AS A CITY – PATTERNS FOR LIVING – LEARNING COMMUNITY

THE AMBEDKAR UNIVERSITY ROHINI CAMPUS IS ENVISIONED AS A LIVING CITY – INTERCONNECTED THROUGH SOCIAL, LIVING AND CULTURAL NEEDS. DRAWING FROM ALEXANDER CHRISTOPHER'S A PATTERN LANGUAGE (1977), A SPECIFIC PATTERN LANGUAGE HAS BEEN CREATED FOR AUD CAMPUS.

USER GROUP FOR THE CAMPUS

User Group	Description / Role
Undergraduate Students	Primary user group; use academic clusters, hostels, student centres, and recreation spaces.
Postgraduate & Research Students	Engage in advanced studies and research; use labs, seminar rooms, studios, and specialized centres.
Faculty Members	Teaching and mentoring roles; require offices, lounges, housing, and academic collaboration spaces.
Administrative (Non-Teaching) Staff	Support university operations (HR, finance, planning, admissions, etc.); housed in the **Administrative Block**.
Project/Research Staff	Affiliated with research centres; need flexible office, IT infrastructure, and collaborative workspaces.
Maintenance & Utility Staff	Handle day-to-day operations like plumbing, electrical, horticulture, housekeeping, etc.; supported by a dedicated **Maintenance Office** and service zones.
Security Staff	Ensure safety and campus access control; positioned across entry gates, service roads, and student housing.
Visitors	May include parents, collaborators, speakers, contractors, etc.; access auditorium, exhibition areas, guest house, utility centre.
Guest Faculty & Transit Academics	Use the **Guest House** and **Faculty Transit Accommodation**; engage in teaching or collaborative events.
Children (Crèche Users)	Children of faculty, staff, or students; supported by the on-site **University Crèche** facility.
Community/Public Interface	Engage through open exhibitions, performances, or community outreach programmes; foster campus-community interaction.
Vendors / Retail Workers	Operate food kiosks, utility shops, banks, ATMs etc. within the **Convenience/Utility Centre**.
Sports & Cultural Participants	Use **indoor/outdoor sports facilities**, auditoriums, and performance spaces; includes students and outside invitees.

RELATIONSHIP BETWEEN BUILDING BLOCKS & USERS



USER- CENTRIC SOCIAL AND PSYCHOLOGICAL INSIGHTS

User Group	Social Aspects	Psychological Aspects	Design Implications
Undergraduate Students	Need peer interaction, a sense of belonging, and identity. First-time living away from home.	Sensitive to stress, peer pressure, social anxiety. Thrive in flexible, playful, informal learning spaces.	Common rooms, breakout zones, shared dining, informal seating clusters, vibrant hostel lobbies, active greenspaces.
Postgraduate/Research Students	Seek intellectual stimulation, autonomy, collaboration, and mentorship.	Value deep focus, inspiration, ownership of space, and quietude.	Semi-private research nooks, studios, bookable rooms, cafés with study zones, proximity to faculty & labs.
Faculty Members	Require professional interaction, prestige, and workspace autonomy.	Need mental calm, privacy for research, and quick transitions between teaching and reflection.	Day-lit faculty rooms, reading lounges, green terraces, acoustic control, flexible teaching spaces.
Administrative Staff	Seek structured workspaces, accessibility, task efficiency, and status parity.	Feel ignored if offices are in secondary or invisible zones; appreciate clear hierarchy in layout.	Ergonomic office clusters, clear signage, visible proximity to decision-makers (e.g. VC Office, Registrar, HR).
Maintenance & Utility Staff	Need dignity, inclusion, and discrete yet accessible service spaces. Often marginalized in design.	Psychological need for respect and rest space; work is physically tiring and spatially scattered.	Design hidden yet humane utility cores, service passages, breakrooms, changing rooms, and clear daylight access.
Security Personnel	Need clear sightlines, secure boundaries, and shelter during long shifts.	Require visibility, alertness, and physical comfort.	Security booths with visibility, shaded waiting zones, quiet alert space, surveillance integration.
Guest Faculty / Visitors	Seek hospitality, cultural exposure, academic exchange.	Need comfort, orientation, and impression of institutional identity.	Well-designed guest houses, digital wayfinding, orientation kiosks, transit-accessible academic blocks.
Community Members	Seek openness, safety, cultural participation, and shared ownership.	Need to feel welcome without feeling intrusive.	Public promenades, amphitheatres, community centres, open libraries, transparent campus edges.
Children (Crèche Users)	Need safety, play, and nurturing environment.	Sensitive to noise, harsh light, and unfriendly materials.	Soft finishes, courtyards, quiet interiors, sensory walls, visual supervision from all sides.
Vendors / Retail Staff	Seek footfall, visibility, and access to services. Often overlooked in zoning.	Need a sense of permanence, utility, and integration—not detachment.	Retail arcades on student pathways, shared services, shade structures, trash & water points.
Sports / Cultural Participants	Need collaborative energy, pride, and expression.	Thrive in celebratory, dynamic, and inclusive environments.	Open-air performance zones, art walls, music practice pods, mixed-gender changing rooms, barrier-free auditoriums.

A SENSORY PATTERN LANGUAGE

Primary users: Students, Faculty, Visitors

- Landmark vistas & view corridors → reduce anxiety, fast legibility.
- South courts as "shadow clocks" → time sense, campus rhythm.
- Cluster color/material codes → identity for schools/depts.
- Overlooks & corners for scanning → social safety, watchfulness.
- Glare-free study niches → visual comfort for long tasks.
- Seasonal shade choreography → novelty without disorientation.

Primary users: Students, Researchers, Performers, Visitors

- Tree belts as acoustic edges → soften city noise.
- Lively/quiet pocket zoning → choose your arousal level.
- Whisper galleries & soft walls → intimate talk, low effort.
- Water/clock/bell soundmarks → shared time & belonging.
- Back-of-house sound curtains → protect study cores.
- Event-time sound spill plans → joy without chaos.



Primary users: Students, Faculty, Researchers, Staff, Visitors

- Publicness gradient (clear cues) → right-place decisions.
- Sunlight beacons at nodes → intuitive wayfinding.
- Porous circulation lounges → bump-into learning.
- Choice of refuge/engage seats → self-tuning arousal.
- Threshold markers (material/plant) → memory of routes.
- Morphable study settings → adapt to task/energy.

Primary users: Everyone; esp. neurodivergent & visually-impaired users

- Textured wayfinding (underfoot/hand) → independent navigation.
- Thermal nooks (sun/stone/wood) → micro-comfort choices.
- Soft-lined decompression pods → down-regulate stress quickly.
- Handrail/edge tactility → subtle guidance cues.
- Rain-safe grip surfaces → monsoon confidence.
- Honest, aging materials → trust via patina.

Primary users: Students, Faculty, Visitors, Vendors

- Central canteen as commons → democratic mixing.
- Rotating regional stalls → cultural exchange & pride
- Night study window & pantries → care after hours.
- Edible landscapes (herbs/fruit) → micro-harvest rituals.
- Inclusive menus & allergy zones → safety + dignity.
- Festival cookouts in courts → tradition & bonding.

Primary users: Students, Faculty, Visitors, Vendors

- Scent wayfinding (herb bands) → place memory anchors.
- Monsoon petrichor courts → seasonal joy & recall.
- Bloom calendar & shaded arbors → gentle mood lifts.
- Curated food-smell spill → social magnet near plazas.
- Biofilters & compost gardens → clean air, purpose.
- Fragrance-free quiet zones → accessibility & consent.

DELHI ARCHITECTURAL LANGUAGE

Reinterprets the pointed arch in a contemporary proportion.

Uses them in repeating rhythm to create verticality and institutional dignity.

Delhi's scorching summers demand:
Shading
Reduced direct heat gain
Diffused light

Materiality: Brick, Stone & Earth Tones
Kashmere Gate's brick complexes
Delhi University's red-brick institutional identity

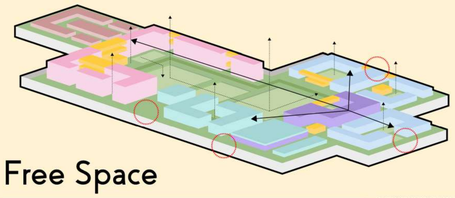
Jali-Inspired Panels & Screens
Vertical stone-texture strips
Perforated elements near staircases



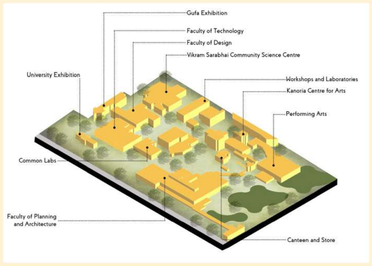


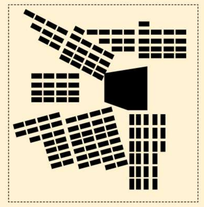


CAMPUS LAYOUT

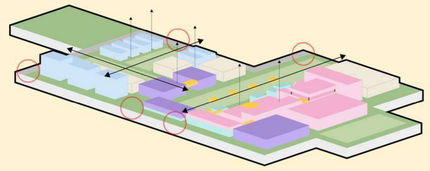


Free Space

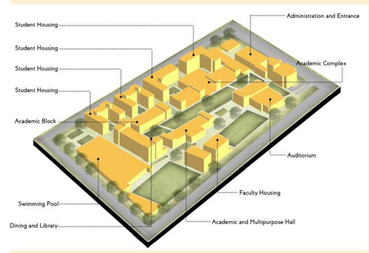


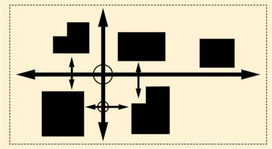


CEPT UNIVERSITY, AHMEDABAD

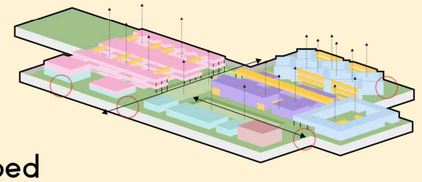


Branch Shaped

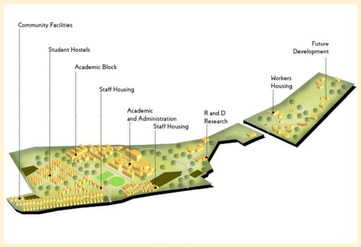


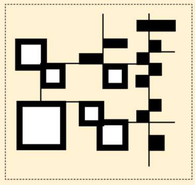


ASHOKA UNIVERSITY, HARYANA



Grid Shaped





IIT, GANDHINAGAR, GUJARAT

CONCEPT

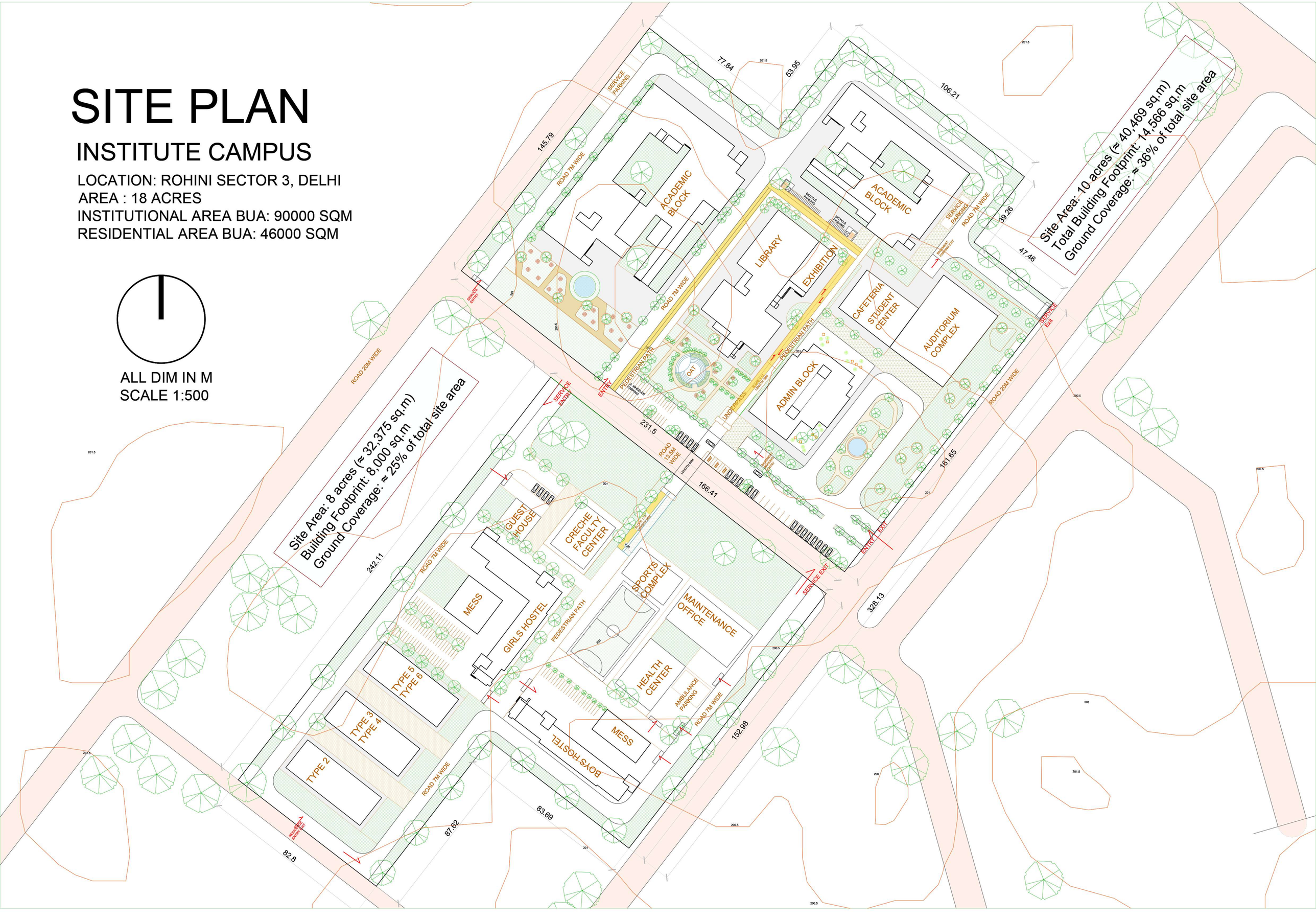
THESIS 2025 PRIYADARSHITA TIWARI
GUIDED BY DR. CHARUMITRA KAPSHE

SITE PLAN

INSTITUTE CAMPUS

LOCATION: ROHINI SECTOR 3, DELHI
AREA : 18 ACRES
INSTITUTIONAL AREA BUA: 90000 SQM
RESIDENTIAL AREA BUA: 46000 SQM

ALL DIM IN M
SCALE 1:500



BASEMENT PARKING LAYOUT

ACADEMIC BLOCK
ACADEMIC BLOCK
AUDITORIUM COMPLEX
ADMIN BLOCK
GUEST HOUSE
CRECHE FACULTY CENTER
SPORTS COMPLEX
MAINTENANCE OFFICE
MESS
GIRLS HOSTEL
PEDESTRIAN PATH
ROAD 7M WIDE
ROAD 7M WIDE
ROAD 20M WIDE
ROAD 13.5M WIDE
LENGTH 40M
SERVICE PARKING
SERVICE PARKING
BICYCLE PARKING
BICYCLE PARKING
120 BIKE
80 CAR
2- WHEELER PARKING
SERVICE ENTRY
SERVICE ENTRY
ENTRY
SERVICE EXIT
ENTRY
EXIT
SERVICE Exit
BASEMENT PARKING EXIT LVL00
BASEMENT PARKING ENTRY LVL00
30M RAMP SLOPE 1:8
30M RAMP SLOPE 1:8
SLOPE 1:12 LENGTH 30M
LVL-4.0
LVL-4.0
145.79
106.21
61.33
112.24
39.26
47.46
231.5
166.41
161.65
328.13
200.5
200.5
200.5
201
201
201
201
125

HARDSCAPE

Category	Location / Use	Material	Specification / Finish	Remarks / Design Intent
Paved Plaza / Courtyards	In front of **Academic Block**, **Library**, and **Student Centre**	**Kota stone / Natural sandstone pavers**	25–30 mm thick, non-slip, laid in random rectangular pattern	Durable, elegant, low maintenance surface for pedestrian congregation
Pedestrian Pathways	Connecting all major blocks	**Concrete interlocking pavers (grey / red tones)**	60 mm thick over sand bed	Uniform visual rhythm and easy replacement
Cycle Track	Connecting hostels to academic area and underpass	**Exposed aggregate concrete**	100 mm thick, color band demarcation	Skid-resistant, durable for light vehicular use
Vehicular Driveways / Parking	Service entry, guest house, and parking zones	**Concrete block paving (M40 grade)**	80 mm thick, high-strength interlock	Reduces heat gain, allows surface drainage
Steps & Tiered Lawns	Amphitheatre and open lawn areas	**RCC steps with turf infill**	Riser 150–180 mm, tread 450–600 mm	Soft integration of landscape and seating
Seating Benches	Plazas, shaded walkways	**RCC or brick base with wooden / stone top**	Polished sandstone or precast concrete seat	Durable, blends with natural materials
Gazebo / Pergola Structure	Near cafeteria and lawns	**MS frame with wooden / bamboo slats**	Powder-coated finish	Provides shade and architectural focus
Street Furniture	Along pedestrian and cycle paths	**MS bollards, litter bins, signage poles**	Black powder coat / matte finish	Durable, cohesive visual language
Boundary Wall / Fencing	Along periphery	**Masonry wall with MS railing on top**	1.8 m high, plaster finish	Combines security with visual openness
Lighting Fixtures	Pathways, lawns, and plazas	**LED bollards & pole lights**	0.9 m bollards / 4 m poles, warm white light	Energy efficient, uniform illumination

ZONING

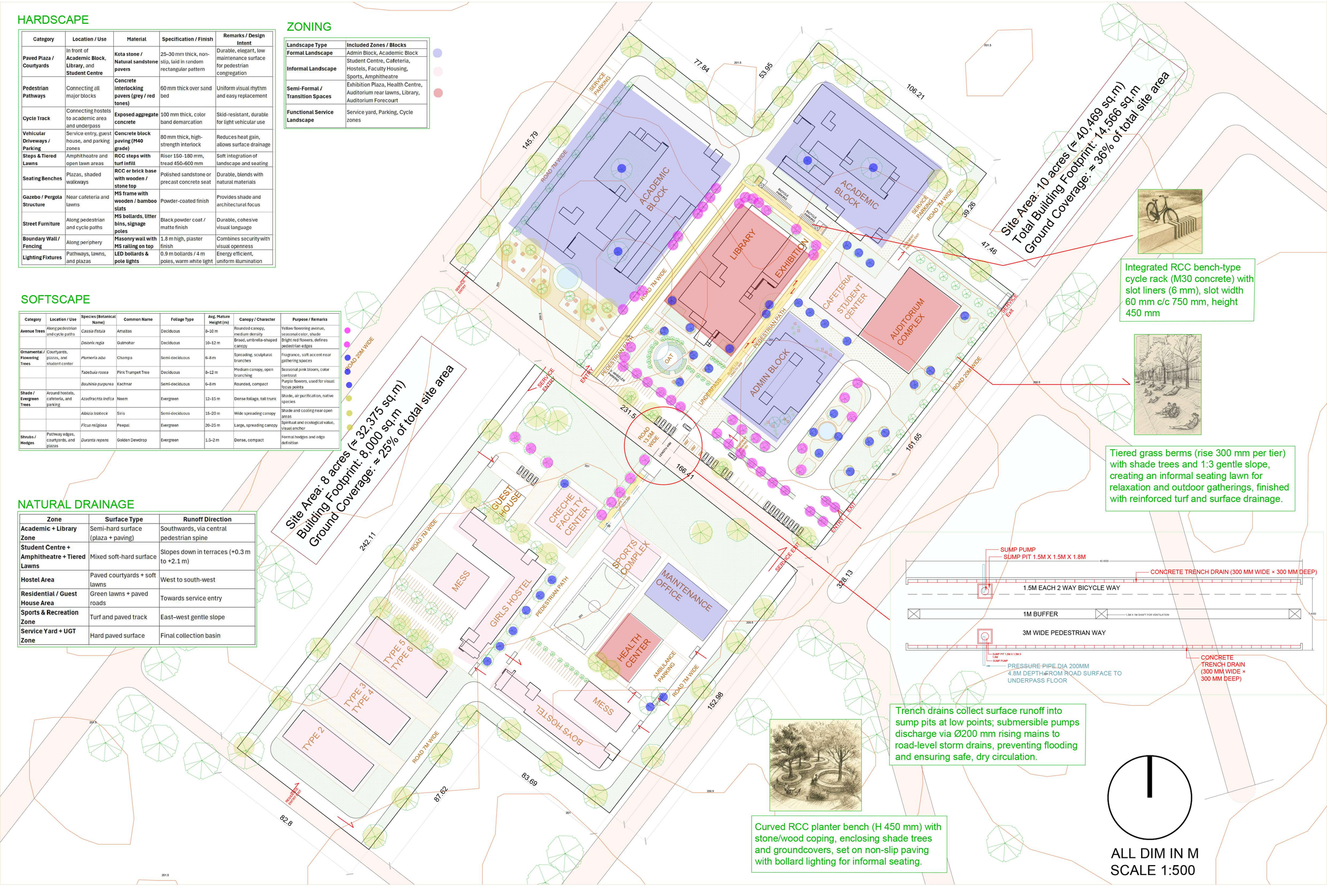
Landscape Type	Included Zones / Blocks
Formal Landscape	Admin Block, Academic Block
Informal Landscape	Student Centre, Cafeteria, Hostels, Faculty Housing, Sports, Amphitheatre
Semi-Formal / Transition Spaces	Exhibition Plaza, Health Centre, Auditorium rear lawns, Library, Auditorium Forecourt
Functional Service Landscape	Service yard, Parking, Cycle zones

SOFTSCAPE

Category	Location / Use	Species (Botanical Name)	Common Name	Foliage Type	Avg. Mature Height (m)	Canopy / Character	Purpose / Remarks
Avenue Trees	Along pedestrian and cycle paths	*Cassia fistula*	Amaltas	Deciduous	8–10 m	Rounded canopy, medium density	Yellow flowering avenue, seasonal color, shade
		Delonix regia	Gulmohar	Deciduous	10–12 m	Broad, umbrella-shaped canopy	Bright red flowers, defines pedestrian edges
Ornamental / Flowering Trees	Courtyards, plazas, and student center	*Plumeria alba*	Champa	Semi-deciduous	6–8 m	Spreading, sculptural branches	Fragrance, soft accent near gathering spaces
		Tabebuia rosea	Pink Trumpet Tree	Deciduous	8–12 m	Medium canopy, open branching	Seasonal pink bloom, color contrast
		Bauhinia purpurea	Kachnar	Semi-deciduous	6–8 m	Rounded, compact	Purple flowers, used for visual focus points
Shade / Evergreen Trees	Around hostels, cafeteria, and parking	*Azadirachta indica*	Neem	Evergreen	12–15 m	Dense foliage, tall trunk	Shade, air purification, native species
		Albizia lebbeck	Siris	Semi-deciduous	15–20 m	Wide spreading canopy	Shade and cooling near open areas
		Ficus religiosa	Peepal	Evergreen	20–25 m	Large, spreading canopy	Spiritual and ecological value, visual anchor
Shrubs / Hedges	Pathway edges, courtyards, and plazas	*Duranta repens*	Golden Dewdrop	Evergreen	1.5–2 m	Dense, compact	Formal hedges and edge definition

NATURAL DRAINAGE

Zone	Surface Type	Runoff Direction
Academic + Library Zone	Semi-hard surface (plaza + paving)	Southwards, via central pedestrian spine
Student Centre + Amphitheatre + Tiered Lawns	Mixed soft-hard surface	Slopes down in terraces (+0.3 m to +2.1 m)
Hostel Area	Paved courtyards + soft lawns	West to south-west
Residential / Guest House Area	Green lawns + paved roads	Towards service entry
Sports & Recreation Zone	Turf and paved track	East–west gentle slope
Service Yard + UGT Zone	Hard paved surface	Final collection basin



OVER HEAD TANK CALCULATIONS

Overhead water tanks are sized for ½-day storage, ensuring an 8-hour operational buffer.
Residential blocks use 135 lpcd, Institutional blocks 45 lpcd, per NBC 2016.

Block / Zone	Basis (from RFP)	Daily Demand	OHT = ½ × Demand (KL)
Academic Block	2,085 students + 175 faculty (day-use 45 lpcd)	(2,260×45)= 102 KL	34
Library & IT	350 users (45 lpcd)	15.7 KL	5.2
Student Centre	350 users (45 lpcd)	15.7 KL	5.2
Cafeteria / Food Court	350 diners + kitchen (45 lpcd + margin)	15.7 + 5 ≈ 21 KL	7
Auditorium	500 seats (45 lpcd)	22.5 KL	7.5
Exhibition / Gallery	Public flow (approx.)	15 KL	5
Admin Block	115 staff (45 lpcd)	5.2 KL	1.7
Health Centre	OPD + 6 beds (135 lpcd for inpatients, 45 lpcd for OPD)	~8 KL	2.7
Sports Complex	300 users + showers (45 lpcd)	13.5 KL	4.5
Girls' Hostel	600 beds × 135 lpcd	81 KL	27
Boys' Hostel	300 beds × 135 lpcd	40.5 KL	13.5
Guest House	20 pax × 135 lpcd	2.7 KL	0.9
Faculty Housing	112 units × 4 pp × 135 lpcd = 60,480 L	60 KL	20

Type	Capacity (KL)	Approx. Size (L × B × H in m)	Mounting Height	Serves	Design Notes
Central OHT (Academic Zone)	**100 KL**	**6.0 × 5.5 × 3.0**	**15–18 m**	Academic Block, Library, Admin, Student Centre, Café	Twin-compartment RCC tank on tower at high contour (201.5 m).
Residential OHT (Hostel + Faculty Housing)	**70 KL (45 + 25 clubbed)**	**5.5 × 4.2 × 3.0**	**12–15 m**	Boys' Hostel, Girls' Hostel, Faculty Housing, Sports Complex	Located near residential zone midpoint (shared supply); dual outlet mains for housing & hostel branches.
Fire Terrace Tanks (each tall block)	**25 KL each**	**3.0 × 2.8 × 3.0**	**Roof level (≈ +45 m)**	Academic, Hostel, Admin Towers	Separate from domestic line; dedicated for hose reel/sprinkler

UNDERGROUND WATER TANK CALCULATIONS

TOTAL DAILY DEMAND

Category	Daily Demand (KL)
Academic + Admin + Library + Student Centre + Café	102 + 5.2 + 15.7 + 15.7 + 21 ≈ **160 KL**
Residential (Hostels + Faculty Housing + Guest House)	81 + 40.5 + 60 + 2.7 ≈ **185 KL**
Health Centre + Sports + Exhibition etc.	8 + 13.5 + 15 ≈ **36 KL**
Total Domestic Demand	**≈ 381 KL/day → Round off to 400 KL**

Add **15% for losses & future expansion** → Domestic = 460 KL/day (≈ 0.46 ML)

FIRE-FIGHTING DEMAND (NBC 2016)

Hydrant + Hose Reel Tank: 300 KL
Sprinkler Reserve (if applicable): 100 KL (optional for large blocks)
→ Fire Storage = 300–400 KL

TOTAL UGT CAPACITY

Tank Compartment	Capacity (KL)	Function
Domestic Tank	**≈ 460 KL**	Supplies drinking, flushing, irrigation
Fire Tank	**≈ 300 KL**	Dedicated firefighting storage (hydrants, hose reels)
TOTAL UGT CAPACITY	**≈ 760 KL (0.76 ML)**	Divided into two compartments

Tank Section	Volume (KL)	Approx. Size (L × B × H in m)
Domestic Compartment	460	12.0 × 9.5 × 4.0
Fire Compartment	300	10.0 × 7.5 × 4.0
Total Combined Footprint	—	**≈ 22.0 × 10.0 × 4.0 m (outer dimension)**

TERRACE (ROOF) WATER TANKS PER BLOCK

Block	Roof storage needed	HDPE tank configuration
Academic Block	**17 kL**	**3×5 kL + 1×2 kL** (=17 kL)
Library & IT	**2.5 kL**	**1×2 kL + 1×0.5 kL**
Student Centre	**2.5 kL**	**1×2 kL + 1×0.5 kL**
Cafeteria / Food Court	**3.5 kL**	**1×2 kL + 1×1.5 kL**
Auditorium	**4 kL**	**2×2 kL** *(or 1×3 kL + 1×1 kL)*
Exhibition / Gallery	**2.5 kL**	**1×2 kL + 1×0.5 kL**
Admin Block	**1 kL**	**1×1 kL**
Health Centre	**1.5 kL**	**1×1.5 kL**
Sports Complex	**2.2 kL**	**1×2 kL + 1×0.5 kL** (≈2.5 kL, small buffer)
Girls' Hostel	**13 kL**	**2×5 kL + 1×3 kL**
Boys' Hostel	**7 kL**	**1×5 kL + 1×2 kL**
Guest House	**0.5 kL**	**1×0.5 kL**
Faculty Housing (cluster)	**10 kL**	**2×5 kL**

Standard vertical HDPE tank sizes

- **0.5 kL:** Ø 0.85 m × H 0.90 m
- **1.0 kL:** Ø 1.05 m × H 1.15 m
- **1.5 kL:** Ø 1.22 m × H 1.25 m
- **2.0 kL:** Ø 1.35 m × H 1.35 m
- **3.0 kL:** Ø 1.55 m × H 1.60 m
- **5.0 kL:** Ø 1.85 m × H 1.90 m

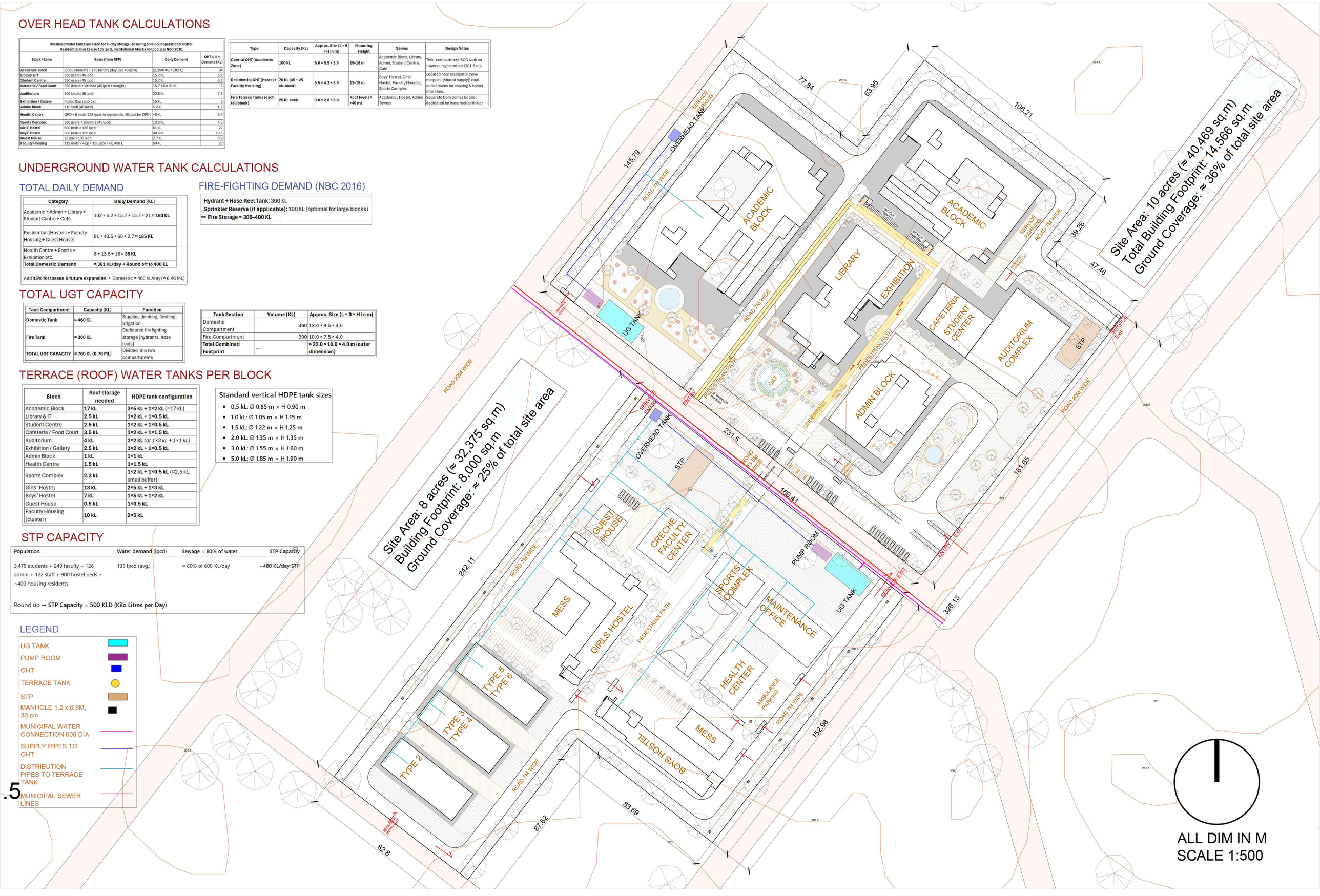
STP CAPACITY

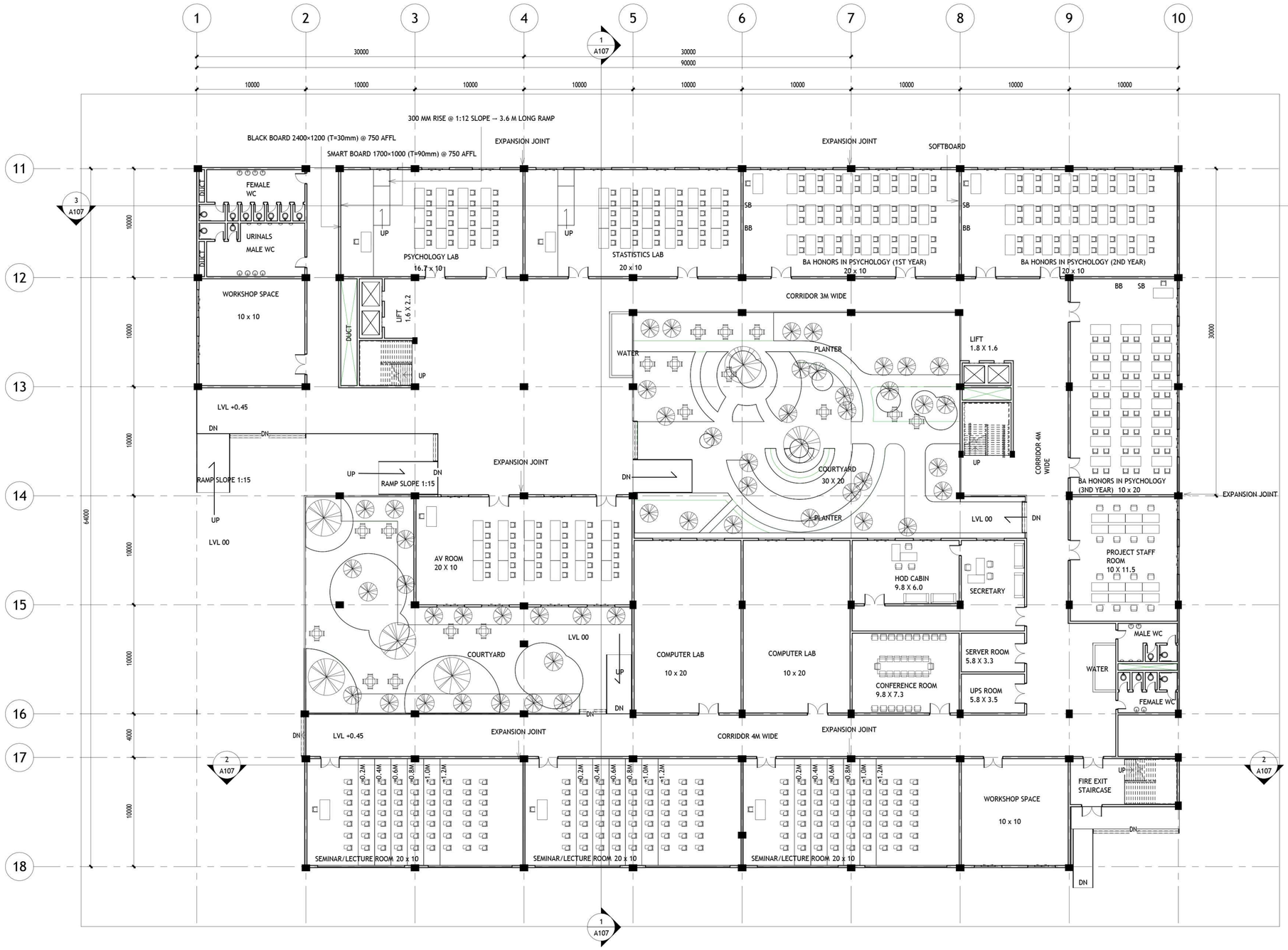
Population	Water demand (lpcd)	Sewage = 80% of water	STP Capacity
3,475 students + 249 faculty + 126 admin + 122 staff + 900 hostel beds + ~400 housing residents	135 lpcd (avg.)	≈ 80% of 600 KL/day	~480 KL/day STP

Round up → **STP Capacity = 500 KLD (Kilo Litres per Day)**

LEGEND

- UG TANK
- PUMP ROOM
- OHT
- TERRACE TANK
- STP
- MANHOLE 1.2 x 0.9M, 30 c/c
- MUNICIPAL WATER CONNECTION 600 DIA
- SUPPLY PIPES TO OHT
- DISTRIBUTION PIPES TO TERRACE TANK
- MUNICIPAL SEWER LINES





AREA STATEMENT

Sr. No.	Space / Room Name	Dimensions (m)	Area (sq.m.)
1	Psychology Lab	20 × 10	**200**
2	Statistics Lab	20 × 10	**200**
3	**BA Hons Psychology (1st Year)**	20 × 10	**200**
4	**BA Hons Psychology (2nd Year)**	20 × 10	**200**
5	**BA Hons Psychology (3rd Year)**	20 × 10	**200**
6	AV Room	20 × 10	**200**
7	Computer Lab 1	10 × 20	**200**
8	Computer Lab 2	10 × 20	**200**
9	HOD Cabin	9.8 × 6.0	**58.8**
10	Secretary Cabin	6.0 × 6.0	**36**
11	Project Staff Room	11 × 6	**66**
12	Conference Room	9.6 × 7.3	**70.1**
13	UPS Room	5.8 × 3.5	**20.3**
14	Server Room	5.8 × 3.3	**19.1**
15	Workshop Space	10 × 10	**100**
16	Workshop Space	10 × 10	**100**
17	Seminar / Lecture Room 1	20 × 10	**200**
18	Seminar / Lecture Room 2	20 × 10	**200**
19	Seminar / Lecture Room 3	20 × 10	**200**
20	Seminar / Lecture Room 4	20 × 10	**200**

TOTAL GF AREA 4100 SQM

ACADEMIC BLOCK

Date 30-11-25

Scale 1 : 200

N



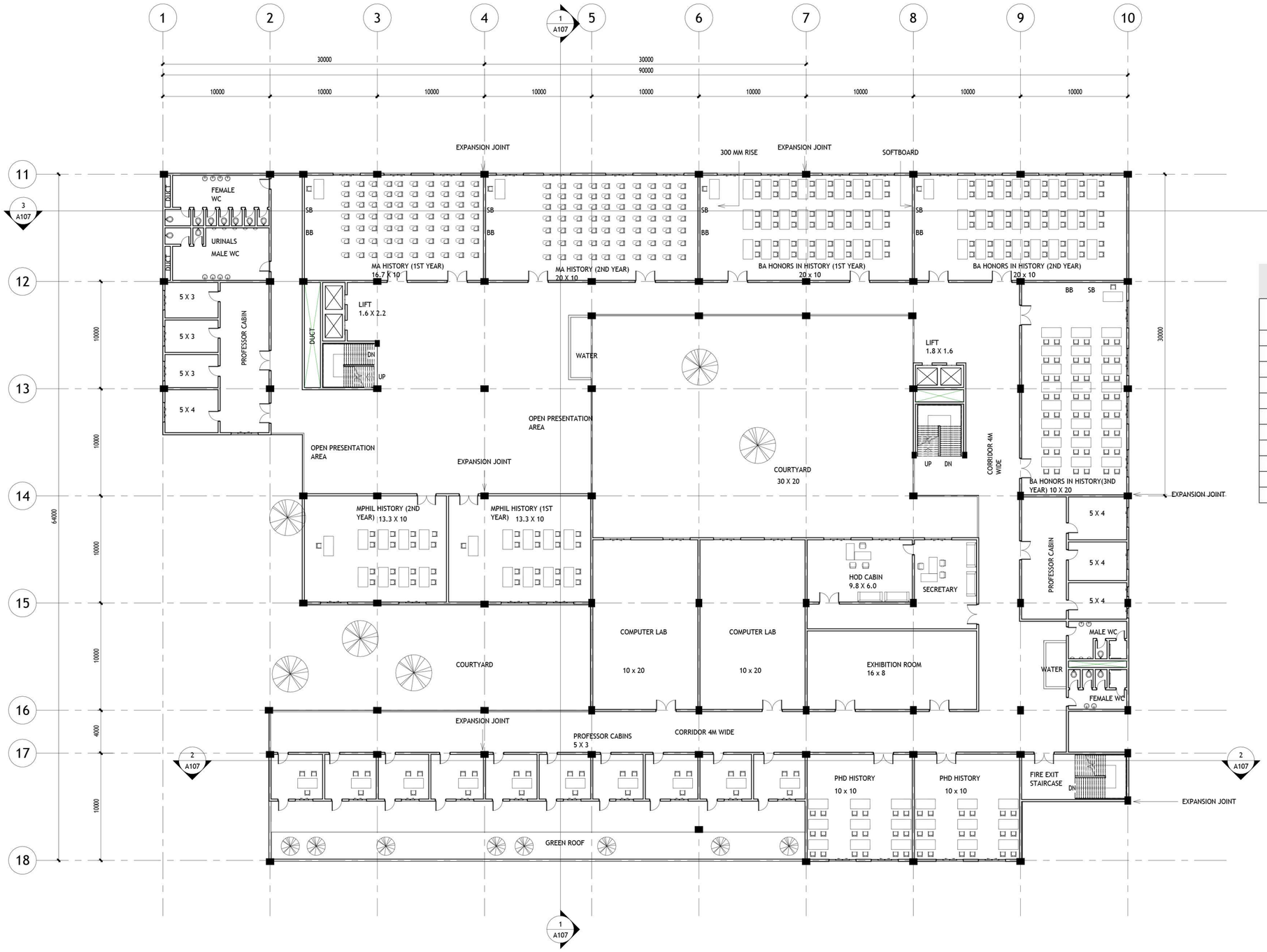
Key Site Plan

GROUND FLOOR PLAN

Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A101



AREA STATEMENT

TEACHING SPACES

Sr. No.	Space / Room	Dimensions (m)	Area (sq.m.)
1	MA History (1st Year)	20 × 10	**200**
2	MA History (2nd Year)	20 × 10	**200**
3	BA Hons History (1st Year)	20 × 10	**200**
4	BA Hons History (2nd Year)	20 × 10	**200**
5	BA Hons History (3rd Year)	20 × 10	**200**
6	BA Hons History (End Year)	20 × 10	**200**
7	MPhil History (1st Year)	13.3 × 10	**133**
8	MPhil History (2nd Year)	13.3 × 10	**133**
9	PhD History Room 1	10 × 10	**100**
10	PhD History Room 2	10 × 10	**100**
11	PhD History Room 3	10 × 10	**100**

COMPUTER & EXHIBITION SPACES

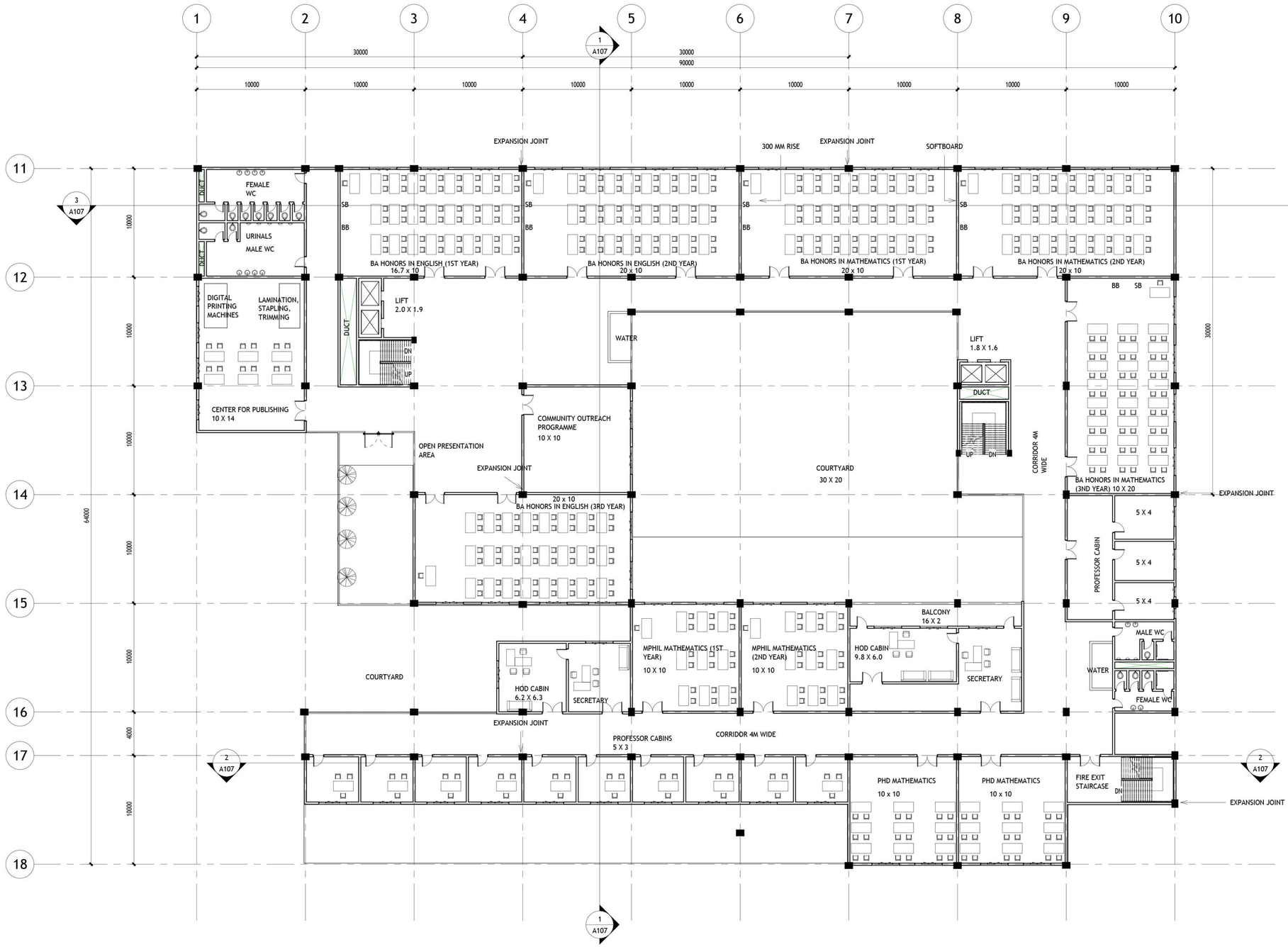
Space	Dimensions	Area
Computer Lab 1	10 × 20	**200**
Computer Lab 2	10 × 20	**200**
Exhibition Room	15 × 8	**120**

FACULTY SPACES

Space	Dimensions	Area
HOD Cabin	9.8 × 6.0	**58.8**
Secretary Room	6 × 6	**36**
Professor Cabins (10 units)	5 × 3 each	**15 each → 150 total**
Professor Cabins (right side, 3 units)	5 × 4 each	**20 each → 60 total**

TOTAL GF AREA 4200 SQM

ACADEMIC BLOCK	N	 Key Site Plan	FIRST FLOOR PLAN	Drawn by: Priyadarshita Tiwari Guided by: Dr. Charumitra Kapshe
Date: 30-11-25	Scale: 1 : 200			A102



AREA STATEMENT

TEACHING SPACES

Sr. No	Space	Dimensions (m)	Area (sq.m.)
1	**BA Hons – English** (1st Year)	20 × 10	200
2	BA Hons – English (2nd Year)	20 × 10	200
3	BA Hons – English (3rd Year)	20 × 10	200
4	**BA Hons – Mathematics** (1st Year)	20 × 10	200
5	BA Hons – Mathematics (2nd Year)	20 × 10	200
6	BA Hons – Mathematics (3rd Year)	20 × 10	200
7	**MPhil Mathematics** (1st Year)	10 × 10	100
8	MPhil Mathematics (2nd Year)	10 × 10	100
9	**PhD Mathematics** Room 1	10 × 10	100
10	PhD Mathematics Room 2	10 × 10	100
11	PhD Mathematics Room 3	10 × 10	100

SPECIAL / PROGRAM SPACES

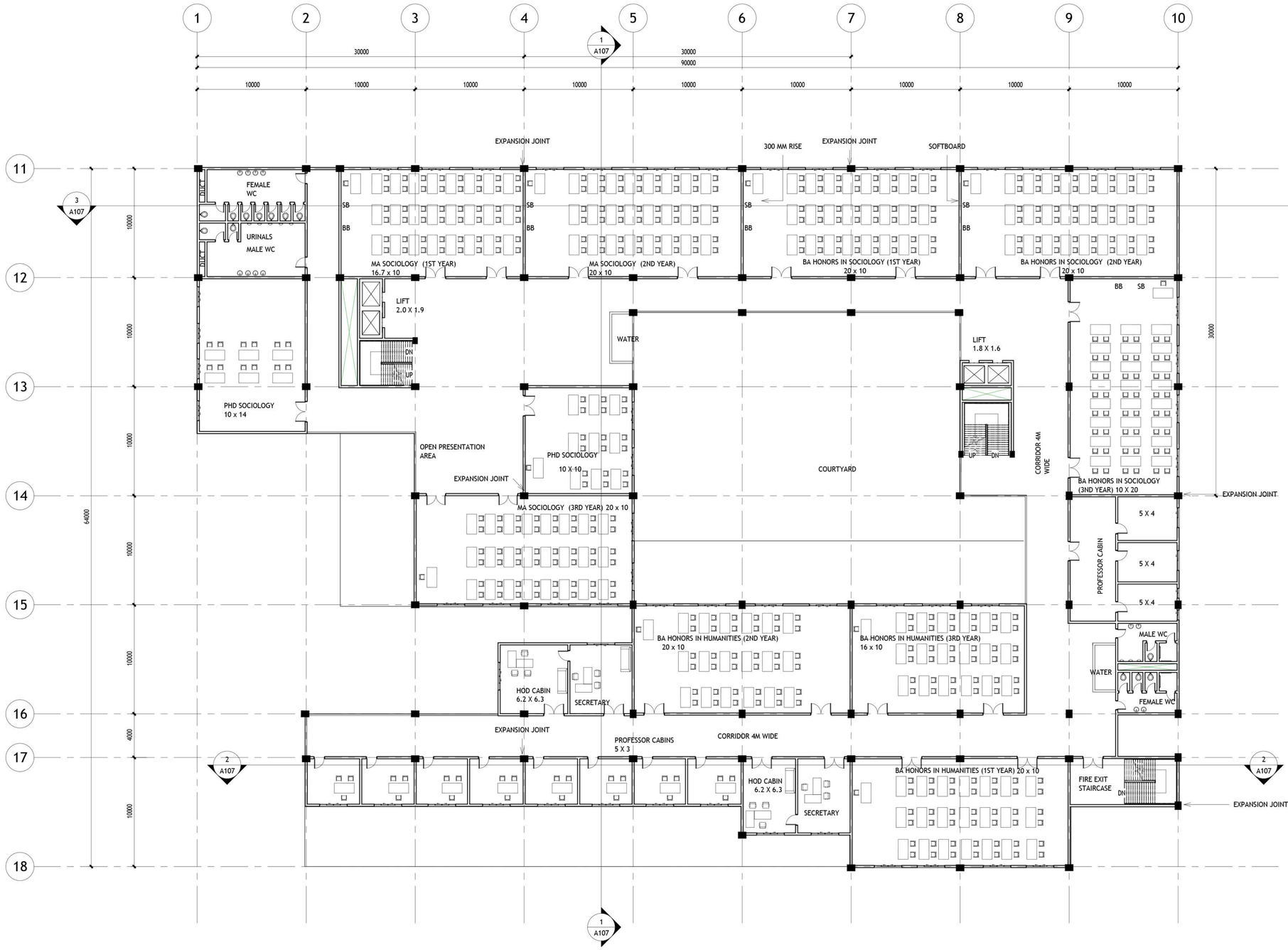
Space	Dimensions	Area
Center for Publishing	10 × 14	140
Community Outreach Programme	10 × 10	100

FACULTY SPACES

Space	Dimensions	Area
HOD Cabin 1	9.8 × 6.0	58.8
HOD Cabin 2	5.8 × 6.3	36.5
Secretary Room	6 × 6	36
Professor Cabins (10 units)	5 × 3.3 each	165 total
Professor Cabins (Right, 3 units)	5 × 4 each	60 total

TOTAL GF AREA 4000 SQM

ACADEMIC BLOCK	N	Key Site Plan	SECOND FLOOR PLAN
Date 30-11-25	Scale 1 : 200		Drawn by Priyadarshita Tiwari Guided by Dr. Charumitra Kapshe A103



AREA STATEMENT

TEACHING SPACES

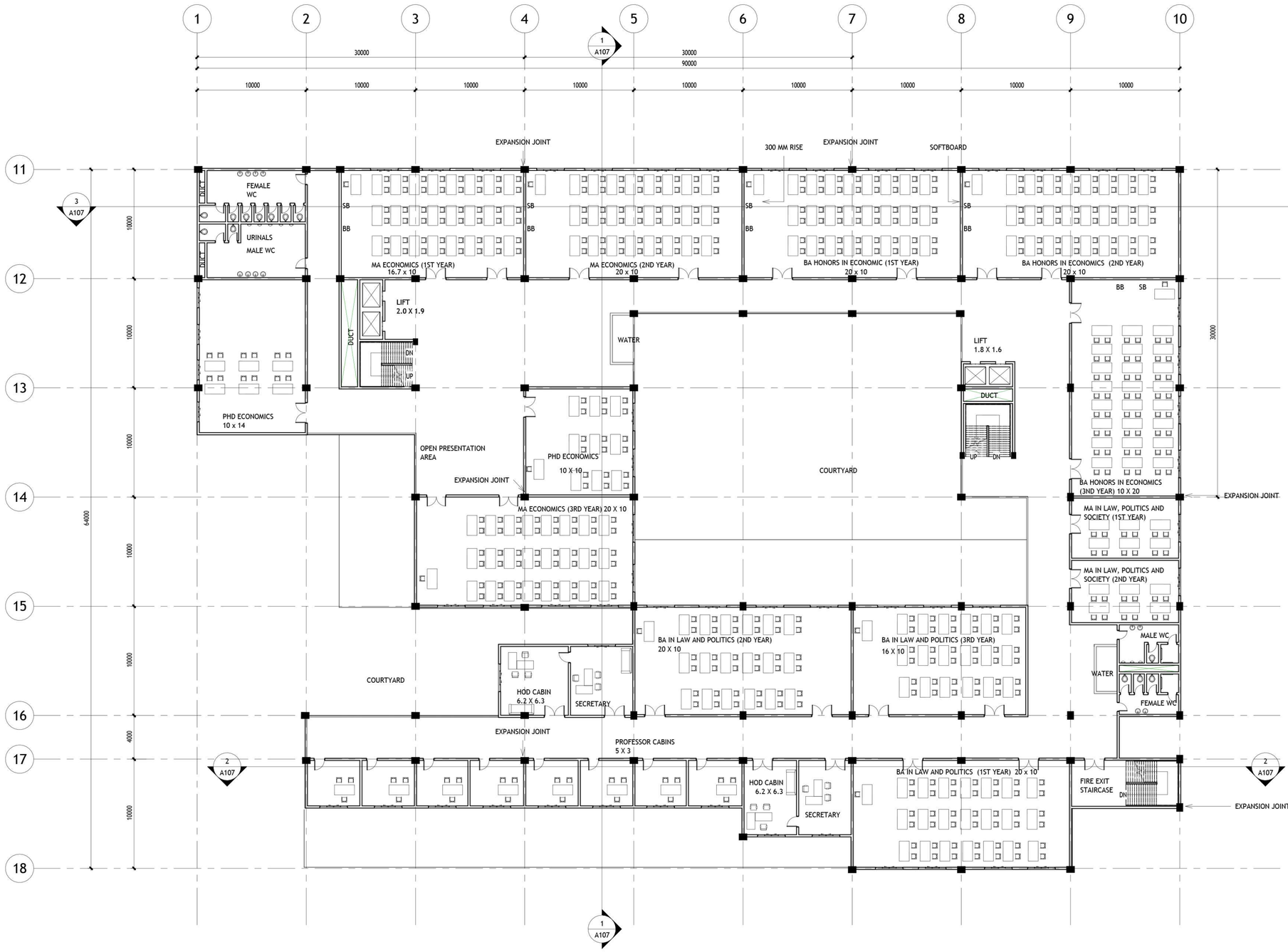
Sr. No	Space	Dimensions (m)	Area (sq.m.)
1	**MA Sociology** (1st Year)	16.7 × 10	**167**
2	MA Sociology (2nd Year)	20 × 10	**200**
3	**BA Hons Sociology** (1st Year)	20 × 10	**200**
4	BA Hons Sociology (2nd Year)	20 × 10	**200**
5	BA Hons Sociology (3rd Year)	20 × 10	**200**
6	MA Sociology (3rd Year)	20 × 10	**200**
7	**PhD Sociology** Classroom	10 × 11.5	**115**
8	PhD Sociology Research Room	10 × 14	**140**
9	**BA Hons in Humanities** (1st Year)	20 × 10	**200**
10	BA Hons in Humanities (2nd Year)	20 × 10	**200**
11	BA Hons in Humanities (3rd Year)	16 × 10	**160**

FACULTY SPACES

Space	Dimensions	Area
HOD Cabin (Left)	6.2 × 6.2	**39.1**
HOD Cabin (Right)	6.2 × 6.3	**39.1**
Secretary Room (Left)	6 × 6.3	**37.8**
Secretary Room (Right)	6 × 6.3	**37.8**
Professor Cabins (10 units)	5 × 3 each	**15 each → 150**
Professor Cabins (Right side, 3 units)	5 × 4 each	**20 each → 60**

TOTAL GF AREA 3725 SQM

ACADEMIC BLOCK	N	Key Site Plan	THIRD FLOOR PLAN	Drawn by	Priyadarshita Tiwari
Date 30-11-25	Scale 1 : 200			Guided by	Dr. Charumitra Kapshe
					A104



AREA STATEMENT

TEACHING SPACES

1	**MA Economics** (1st Year)	16.7 × 10	**167**
2	MA Economics (2nd Year)	20 × 10	**200**
3	**BA Hons Economics** (1st Year)	20 × 10	**200**
4	BA Hons Economics (2nd Year)	20 × 10	**200**
5	BA Hons Economics (3rd Year)	10 × 20	**200**
6	MA Economics (3rd Year)	20 × 10	**200**
7	**PhD Economics** Classroom	10 × 11.5	**115**
8	PhD Economics Research Room	10 × 14	**140**
9	**BA in Law & Politics** (1st Year)	20 × 10	**200**
10	BA in Law & Politics (2nd Year)	20 × 10	**200**
11	BA in Law & Politics (3rd Year)	16 × 10	**160**
12	**MA in Law, Politics & Society** (1st Year)	10 × 10	**100**
13	MA in Law, Politics & Society (2nd Year)	10 × 10	**100**

FACULTY SPACES

Space	Dimensions	Area
HOD Cabin 1	6.2 × 6.2	**39.1**
HOD Cabin 2	6.2 × 6.3	**39.1**
Secretary Room 1	6 × 6.3	**37.8**
Secretary Room 2	6 × 6.3	**37.8**
Professor Cabins (10 units)	5 × 3 each	**15 each → 150**
Professor Cabins (3 units)	5 × 4 each	**20 each → 60**

TOTAL GF AREA 3725 SQM

ACADEMIC BLOCK

Date 30-11-25

Scale 1 : 200

N



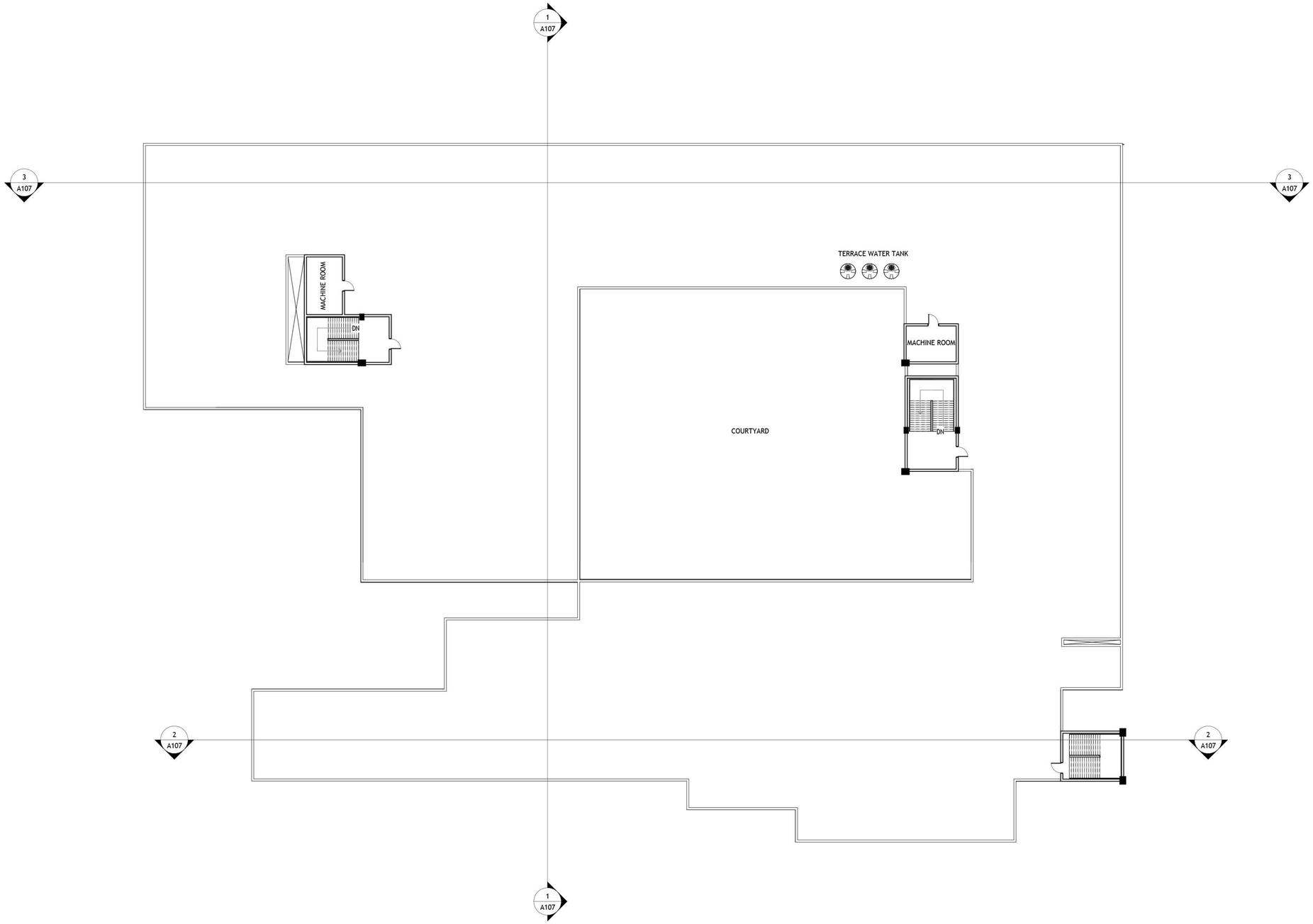
Key Site Plan

FOURTH FLOOR PLAN

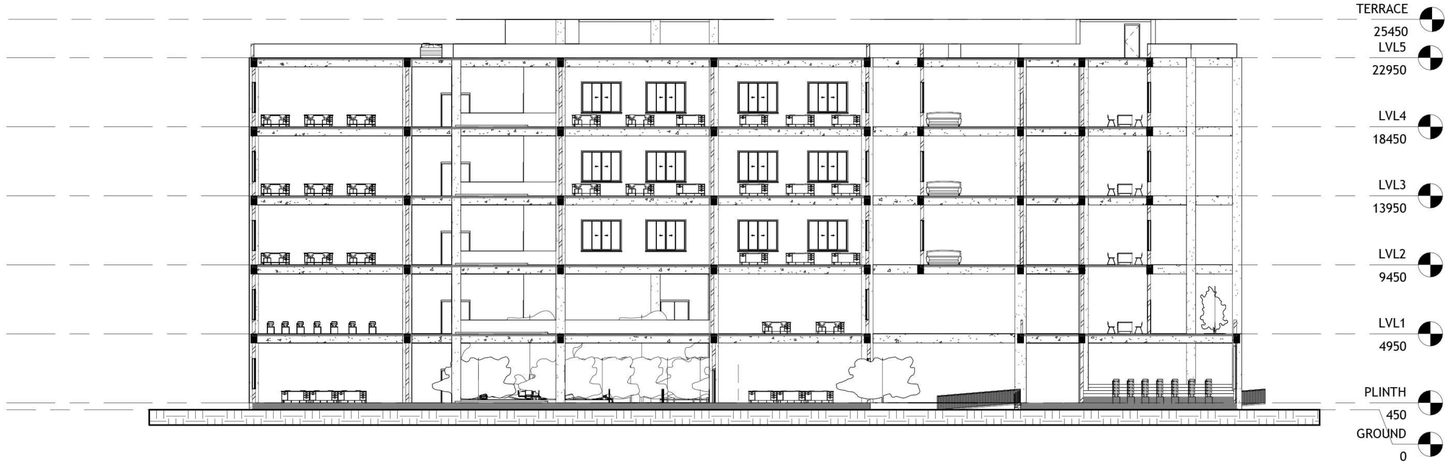
Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A105



ACADEMIC BLOCK	N	 Key Site Plan	MUMPTY PLAN	Drawn by: Priyadarshita Tiwari
Date: 30-11-25	Scale: 1 : 200			Guided by: Dr. Charumitra Kapshe
				A106



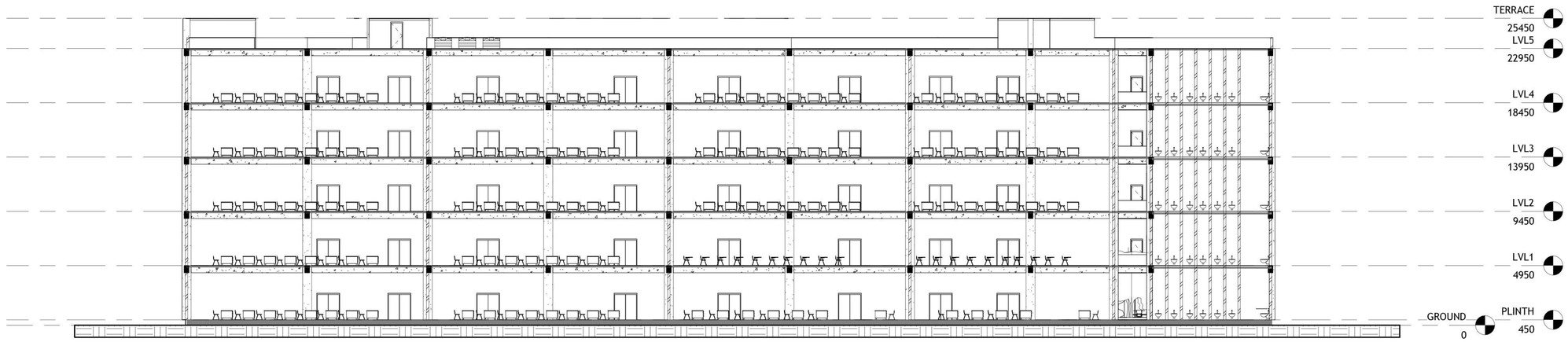
1 Section

1 : 200



2 Section 2

1 : 200



3 Section 3

1 : 200

ACADEMIC BLOCK

Date 30-11-25

Scale 1 : 200



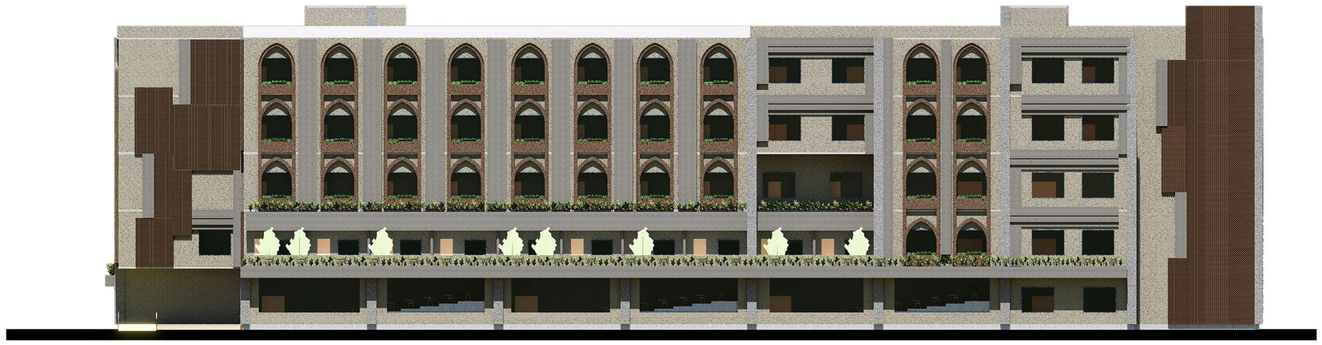
Key Site Plan

SECTIONS

Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A107



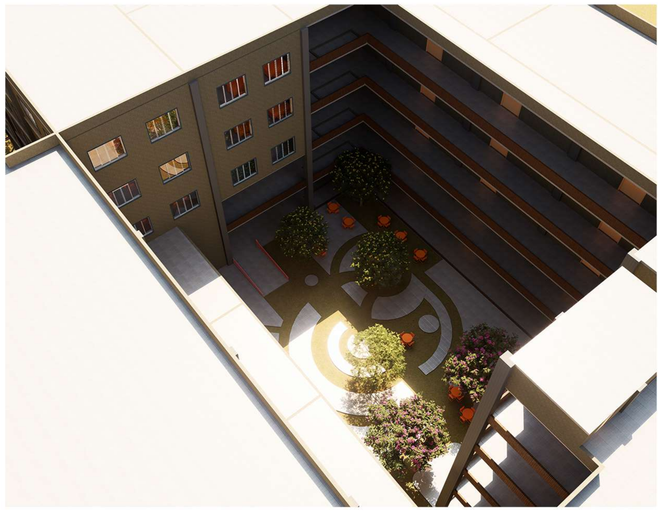


ELEVATIONS





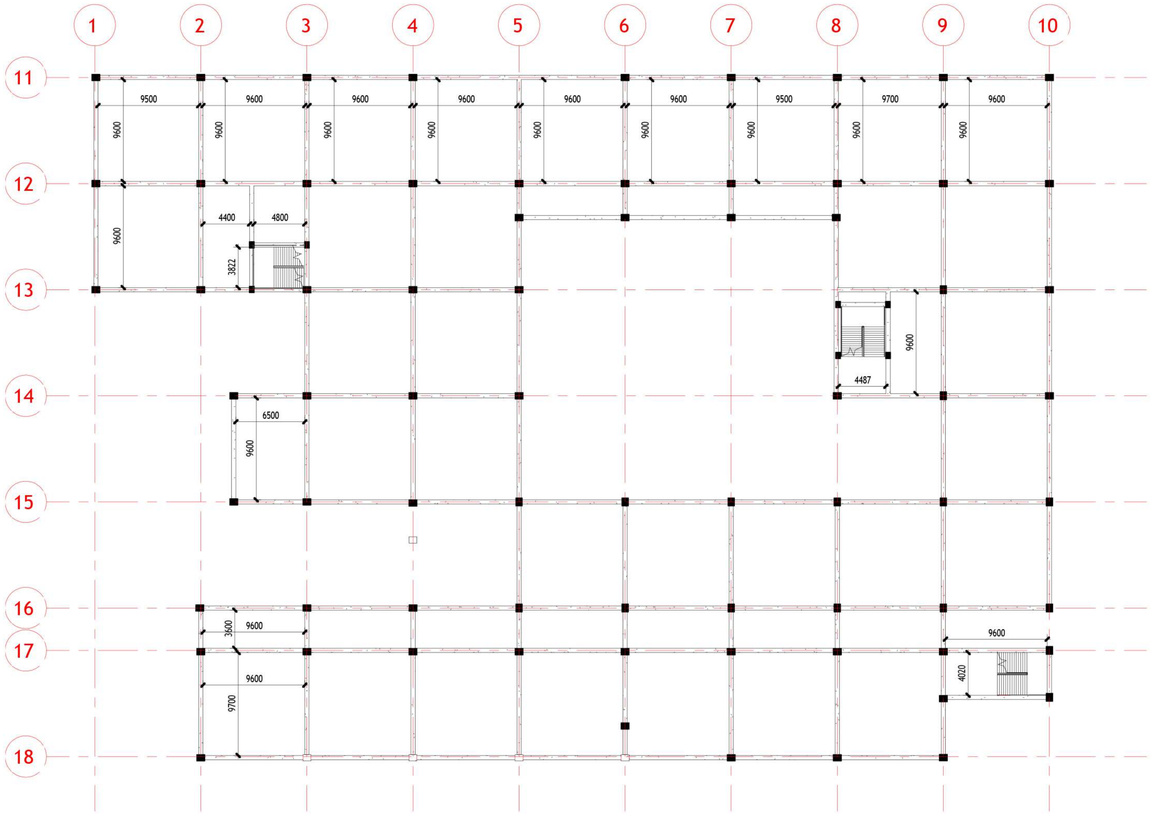




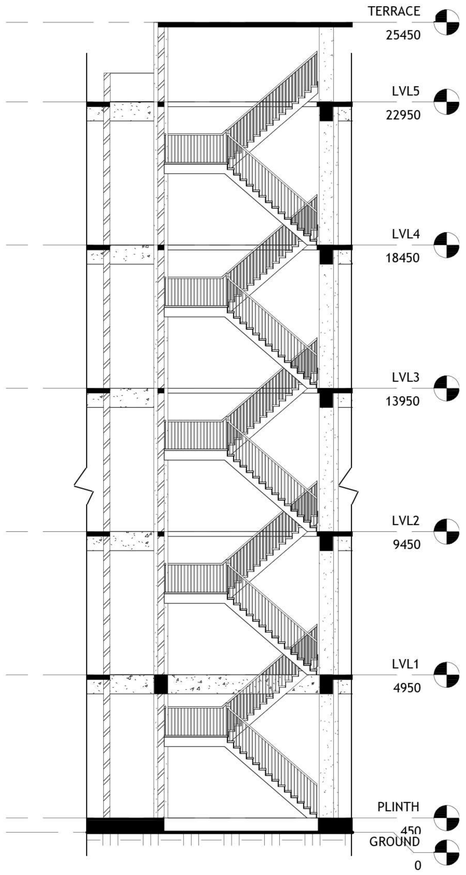




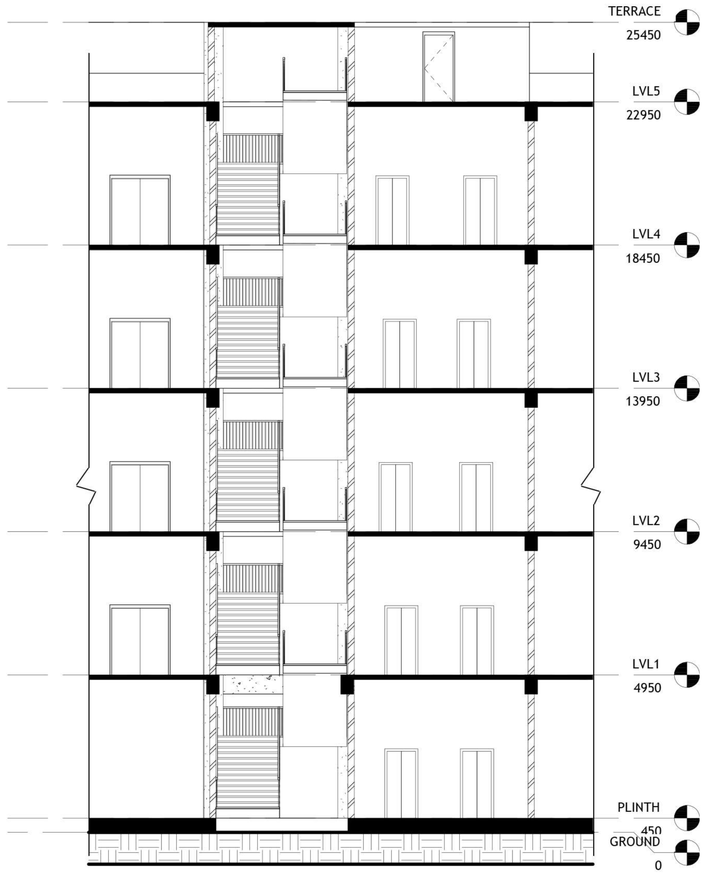
ACADEMIC BLOCK			ELEVATIONS AND RENDERS	Drawn by: Priyadarshita Tiwari
				Guided by: Dr. Charumitra Kapshe
Date: 30-11-25	Scale: 1:200	Key Site Plan		A108



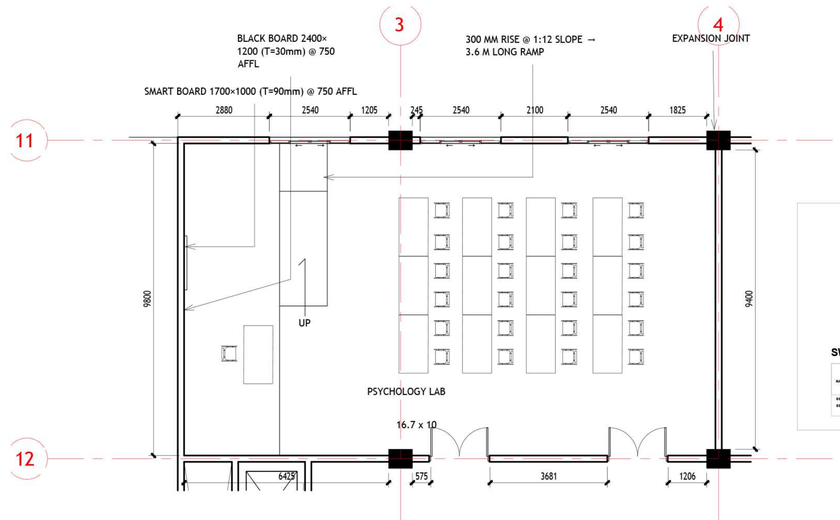
A
SLAB AND BEAM PLAN
1 : 300



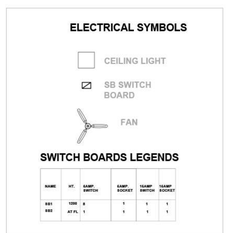
B
Section BB
1 : 100



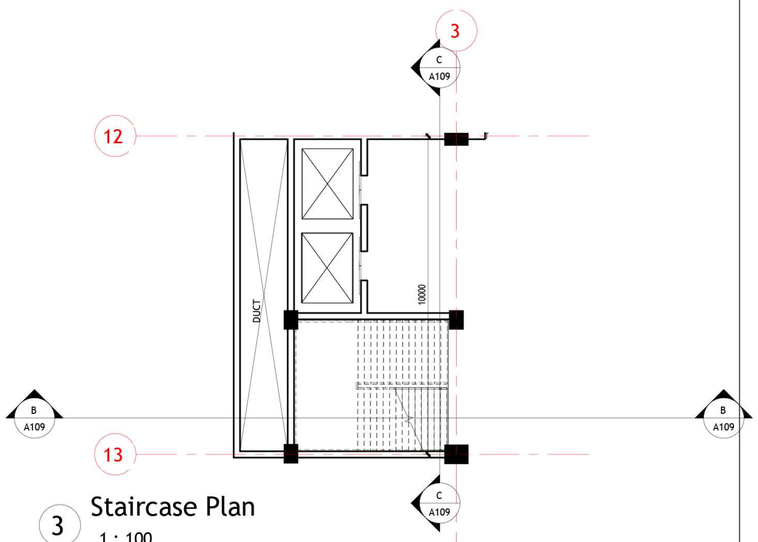
C
Section CC
1 : 100



D
BRICKWORK
1 : 100



3
Electrical Layout
1 : 100



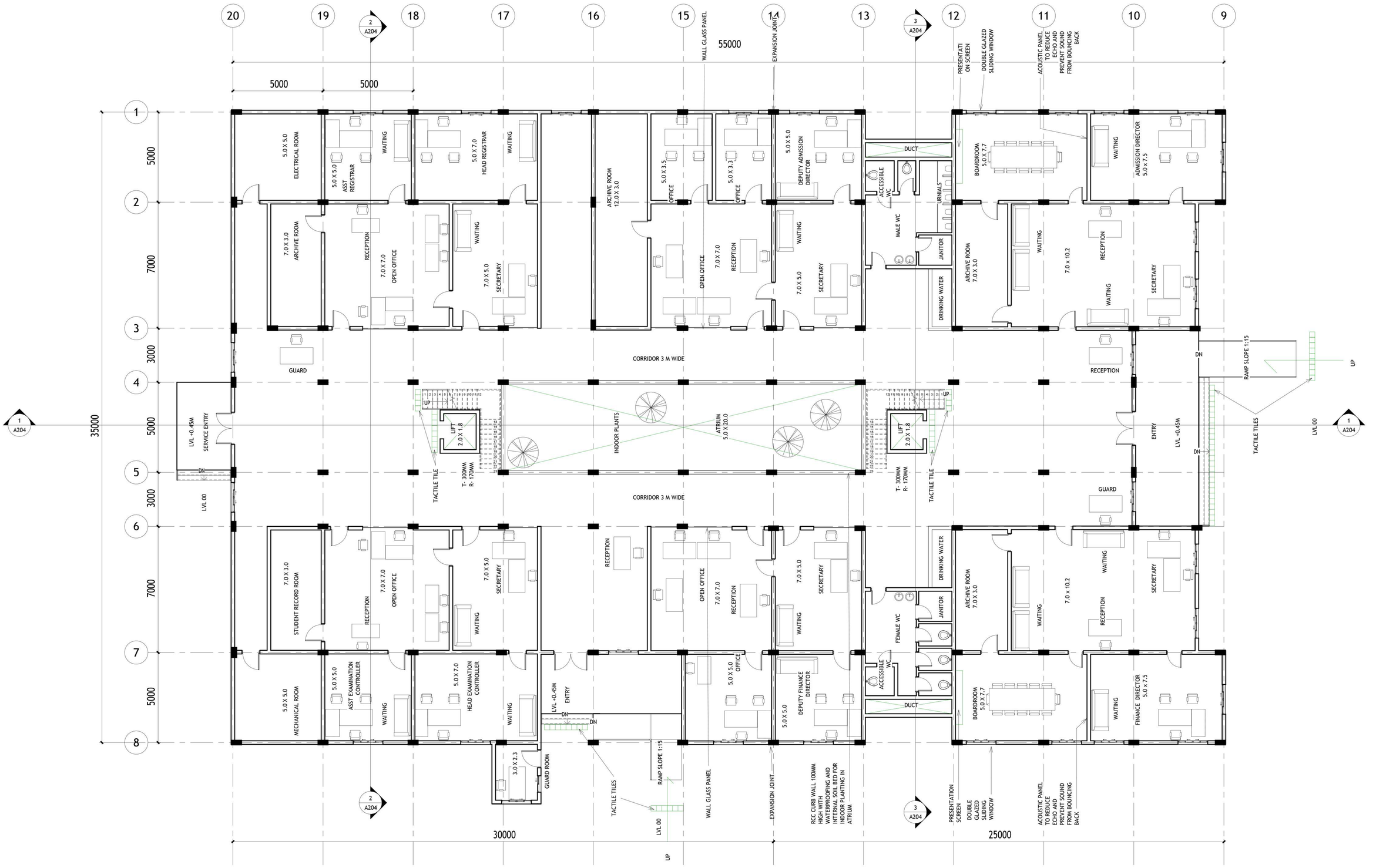
3
Staircase Plan
1 : 100

ACADEMIC BLOCK			WORKING DRAWING
Date 30-11-25	Scale As indicated	Key Site Plan	

Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A109



ADMIN BLOCK

Date 30-11-25

Scale 1 : 100

N



Key Site Plan

GROUND FLOOR PLAN

Drawn by PRIYADARSHITA TIWARI

Guided by Dr. Charumitra Kapshe

A201

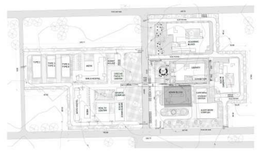


ADMIN BLOCK

Date 30-11-25

Scale 1 : 100

N



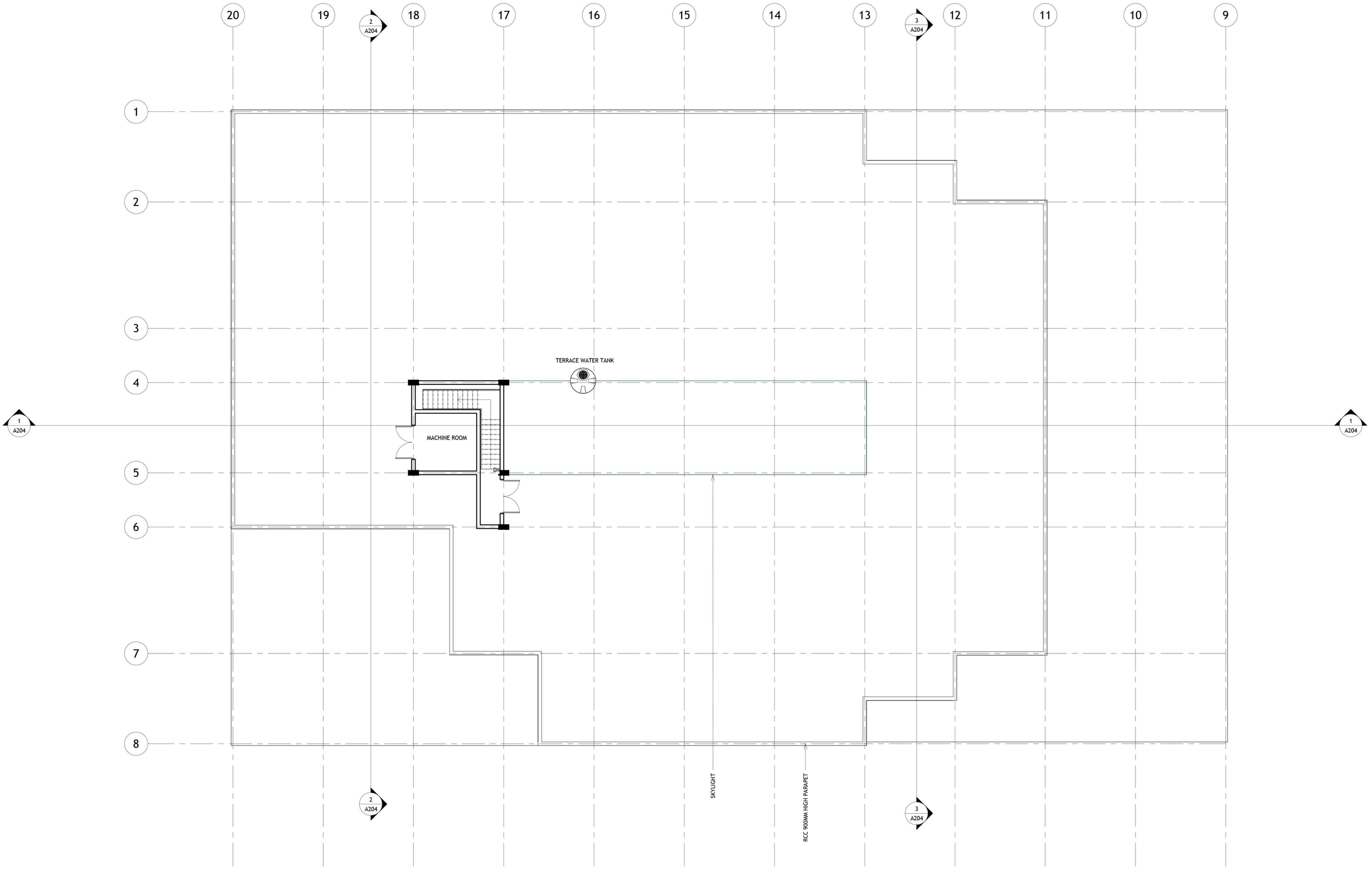
Key Site Plan

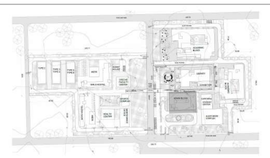
FIRST FLOOR PLAN

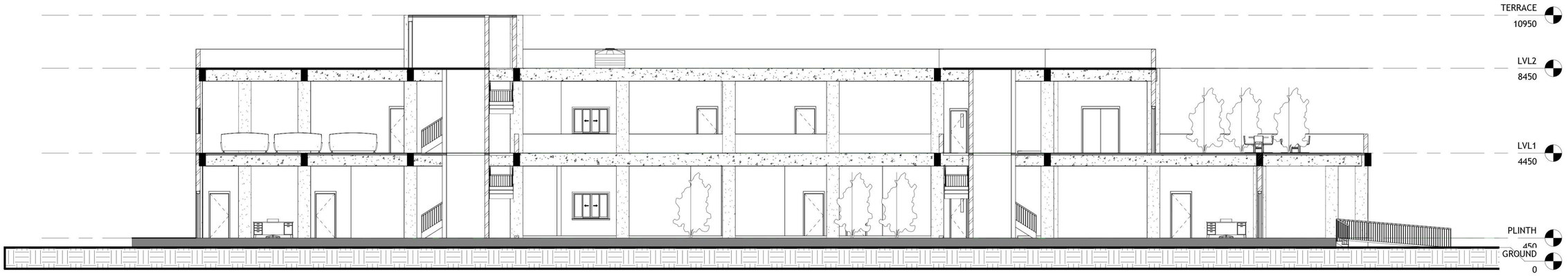
Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A202



ADMIN BLOCK	N	 Key Site Plan	MUMPTY PLAN	Drawn by: Priyadarshita Tiwari
Date: 30-11-25	Scale: 1 : 100			Guided by: Dr. Charumitra Kapshe
				A203



1 Section 2
1 : 100



2 Section 3
1 : 100

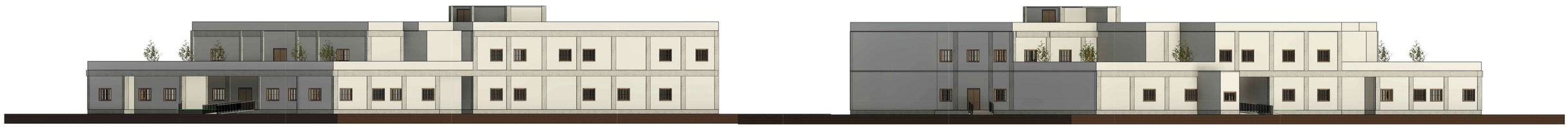


3 Section 4
1 : 100

ADMIN BLOCK			SECTIONS	Drawn by: Priyadarshita Tiwari
				Guided by: Dr. Charumitra Kapshe
Date: 30-11-25	Scale: 1 : 100	Key Site Plan		A204

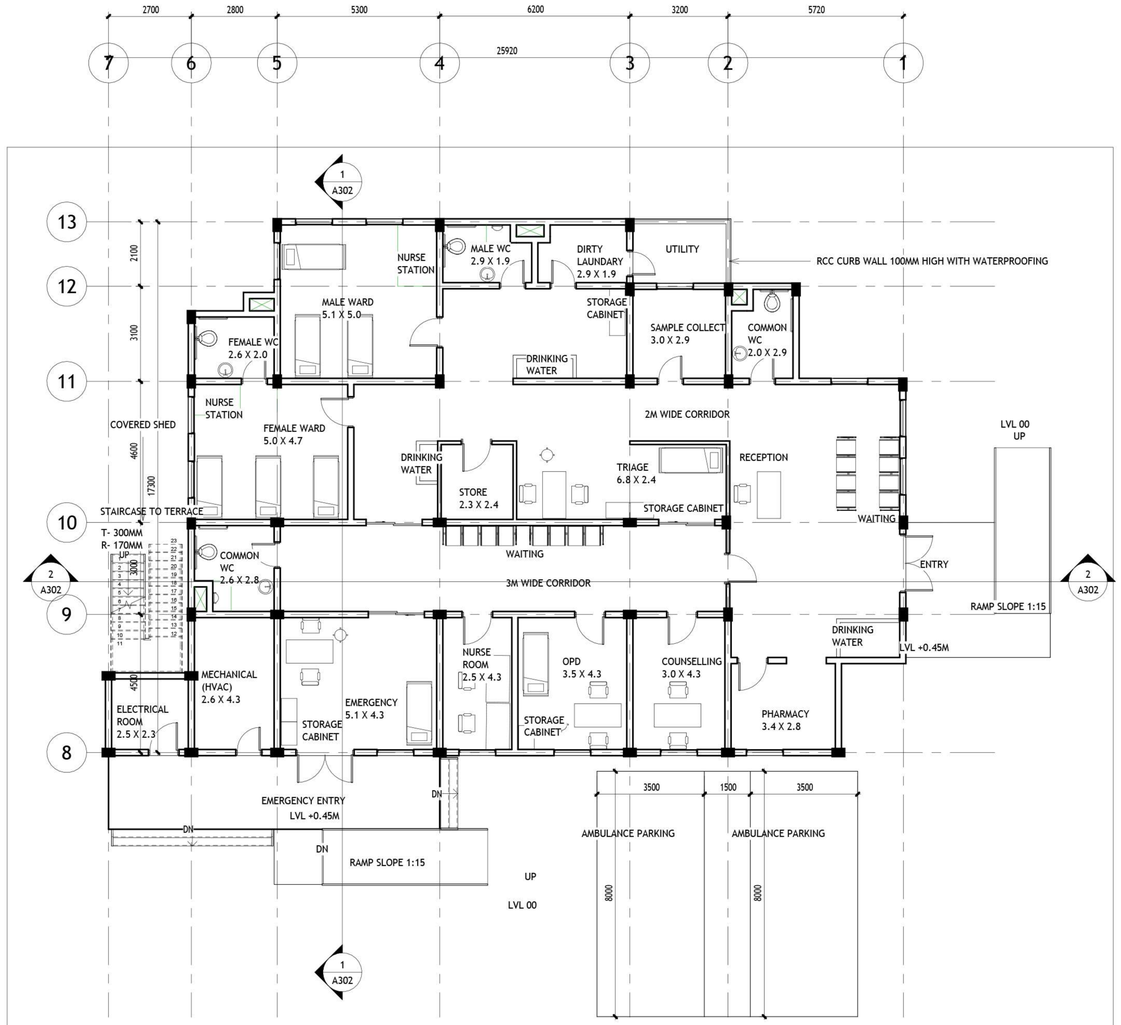


1 ELEVATION
1 : 100



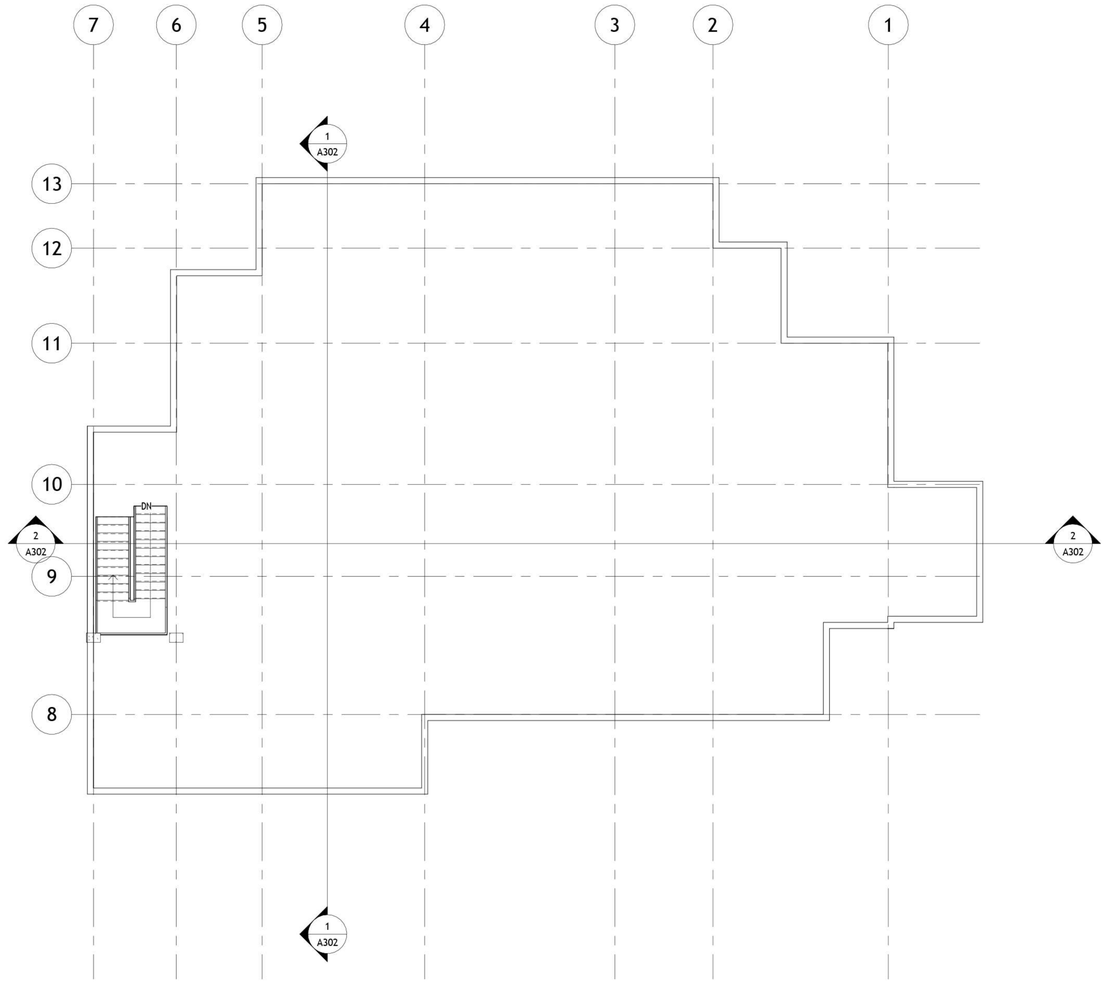
3 VIEWS

ADMIN BLOCK			ELEVATIONS AND VIEWS	Drawn by: Priyadarshita Tiwari
				Guided by: Dr. Charumitra Kapshe
Date: 30-11-25	Scale: 1 : 100	Key Site Plan		A205



1 GROUND FLOOR

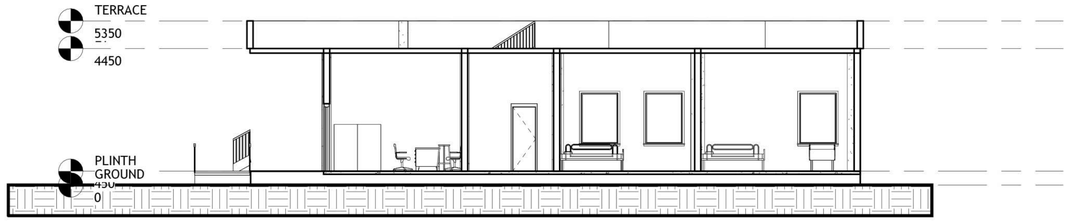
1 : 100



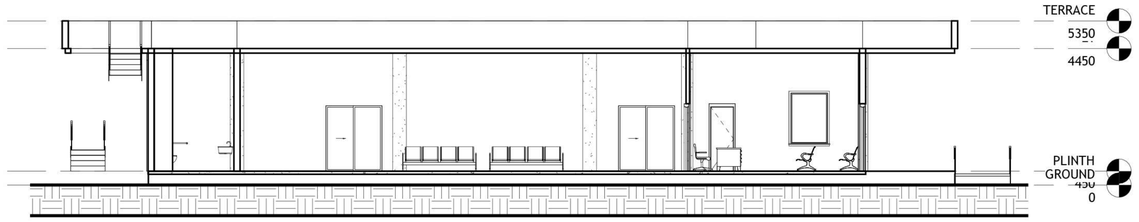
2 TERRACE

1 : 100

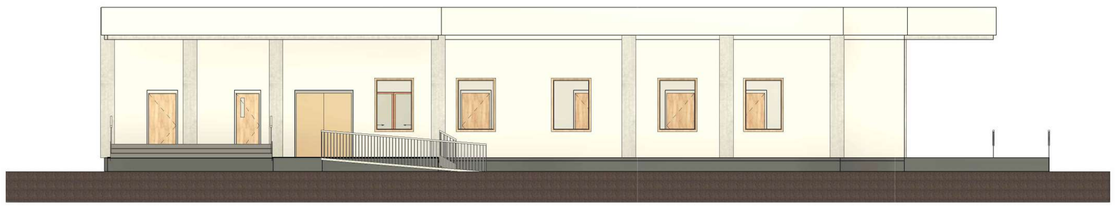
HEALTH CENTER	N	 Key Site Plan	FLOOR PLANS
Date 5-10-25	Scale 1 : 100		Drawn by Priyadarshita Tiwari Guided by Dr. Charumitra Kapshe A301



1 Section1
1 : 100



2 Section 2
1 : 100





3 ELEVATIONS
1 : 100





4 VIEWS

HEALTH CENTER			SECTIONS AND ELEVATIONS	Drawn by: Priyadarshita Tiwari
				Guided by: Dr. Charumitra Kapshe
Date: 5-10-25	Scale: 1 : 100	Key Site Plan		A302

10 1 3 2 27 6 7 8 9

63700

7400 6100 5700 9000 6400 9000

11 12 13 14 15 22

10000 8800 26800 7000 11000

19200

2 A404

1 A404

1 A404

UP DN

UP DN

LIFT
1.6 X 2.2

QUIET READING

DUCT

MALE WC

FEMALE WC

DISABLE WC

WASH

WASH

WASH

PERFORMANCE ART

PSYCHOLOGY

GENDER STUDIES

LAW AND SOCIETY

POLITICS

AHU ROOM

SOCIAL SCIENCE AND HUMANITIES

2 A404

LIBRARY AND EXHIBITION

N

Date 30-11-25

Scale 1 : 100



Key Site Plan

SECOND FLOOR PLAN

Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A403

26 24 23

10 1 3 2 27 5 6 7 8 9

63700

7400 6100 5700 10300 9800 9000 6400 9000

19200

11 12 13 14 15 20

10000 8800 7000 11000

1 A204

EDUCATION

ECONOMICS

UP DN

LIFT
1.6 X 2.2

UP DN

QUIET READING ROOM

DUCT

MALE WC

FEMALE WC

DISABLE WC

WASH WASH WASH

ACQUISITIONS & CATALOGUING
(TECH. PROCESSING)
OPEN OFFICE

1 A203

PERIODICALS READING HALL
(JOURNALS, RESEARCH PAPERS,
MAGAZINES)

FILM STUDIES AND VISUAL ART

ARCHIVES & RARE BOOKS

AHU ROOM

DIGITAL LIBRARY

MATHEMATICS

STUDY ROOMS

1 A202

LIBRARY AND EXHIBITION

N

Date 30-11-25

Scale 1 : 100



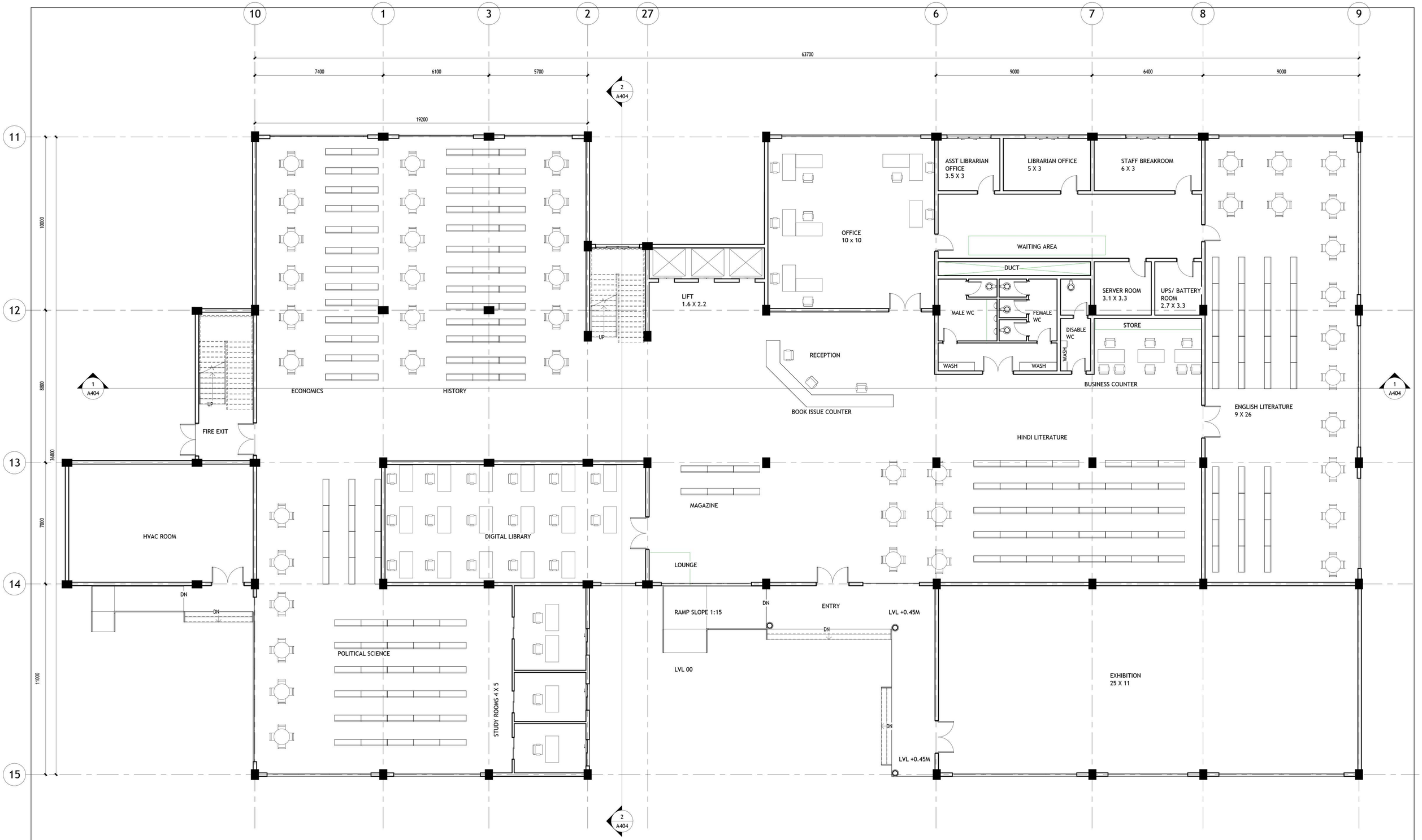
Key Site Plan

FIRST FLOOR PLAN

Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A402



LIBRARY AND EXHIBITION

N

Date 30-11-25

Scale 1 : 100



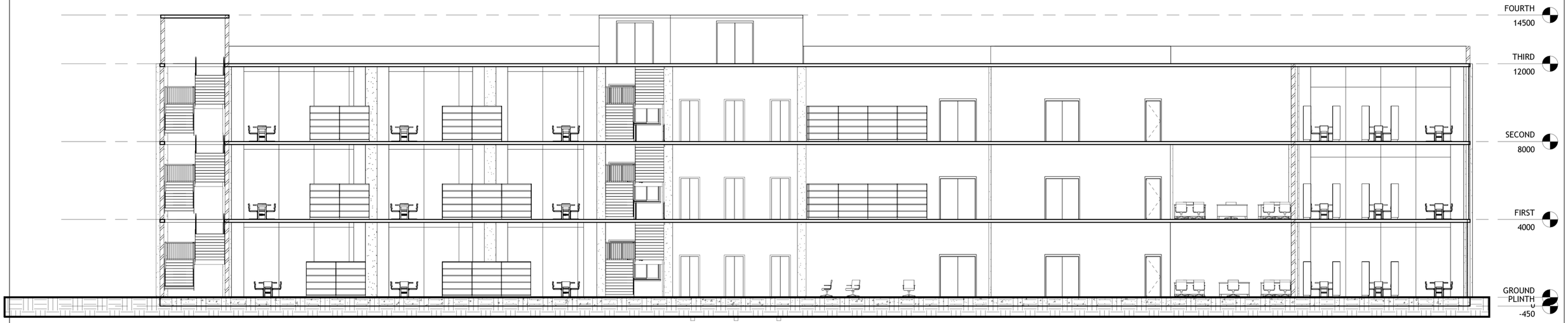
Key Site Plan

GROUND FLOOR PLAN

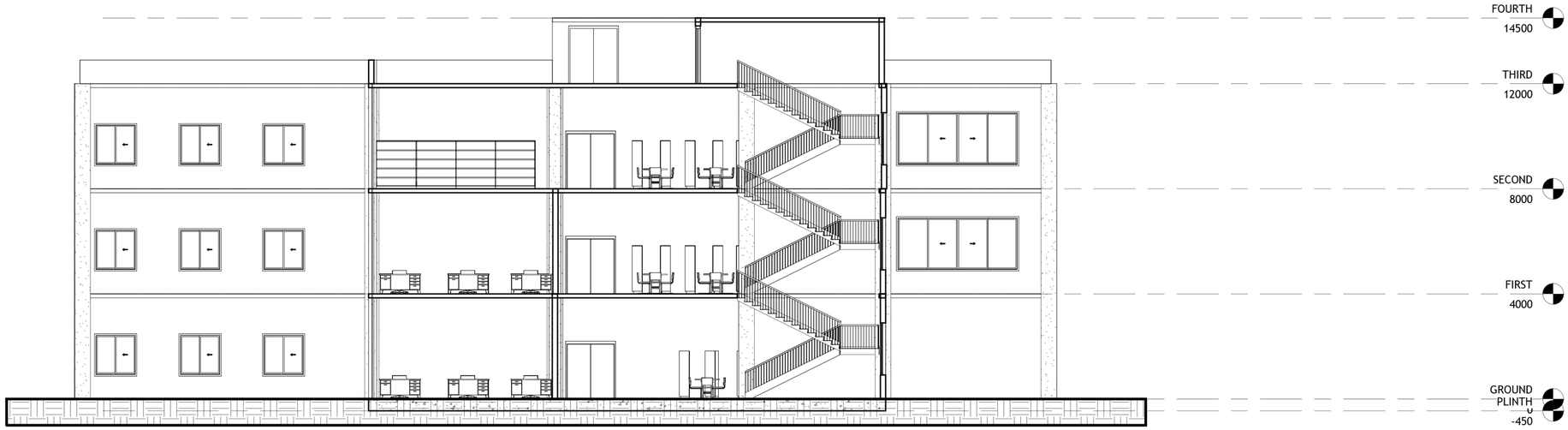
Drawn by Priyadarshita Tiwari

Guided by Dr. Charumitra Kapshe

A401



1 Section 1
1 : 100



2 Section 2
1 : 100

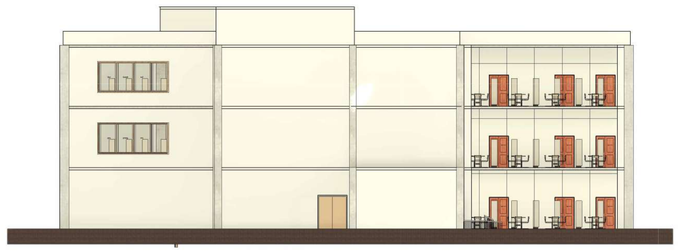
LIBRARY AND EXHIBITION			SECTIONS	Drawn by: Priyadarshita Tiwari
				Guided by: Dr. Charumitra Kapshe
Date: 30-11-25	Scale: 1 : 100	Key Site Plan		A404













1 Elevation
1 : 200

2 VIEWS

LIBRARY AND EXHIBITION			ELEVATIONS AND VIEWS	Drawn by: Priyadarshita Tiwari
				Guided by: Dr. Charumitra Kapshe
Date: 30-11-25	Scale: 1 : 200	Key Site Plan		A405

N
SCALE 1:250