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UNDER THE GUIDANCE OF

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DEPARTMENT OF ARCHITECTURE AND PLANNING

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CANDIDATE DECLARATION

The Thesis Project in the subject ARC 511, entitled "**Institute Campus Design, Rohini, Delhi"**, 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 in withdrawal of Bachelor of Architecture Degree awarded to me by the Institute.

Date: 1st – 2nd Dec, 2025 **Bhargawee Alekar**

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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. Neha Kolhe**
Thesis Guide

CERTIFICATION OF EXAMINATION

The Bachelor of Architecture Thesis Viva-Voce examination of Ms Bhargawee Alekar Scholar No.21111020, was held on 1/12/2025 to 2/12/25.

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ABSTRACT

This thesis proposes a comprehensive architectural master plan for the **new Ambedkar University Delhi (AUD)** campus in Sector-3, Rohini. The project aims to design a sustainable, 7.3-hectare educational hub that integrates contemporary academic requirements with Delhi's architectural heritage. Key challenges addressed include the site's bifurcation by a public road and the preservation of existing vegetation. The design methodology synthesizes a literature review of Delhi's historical architecture with comparative analyses of institutional case studies. The resulting proposal targets GRIHA 5 Star and LEED Platinum standards, utilizing climate-responsive strategies and traditional spatial elements to create an inclusive, globally competent, and locally rooted urban campus.

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1. PROJEJECT OVERVIEW

1.1 PROJECT BRIEF

1.1.1 EXECUTIVE SUMMARY

A comprehensive proposal for the design and development of a new university campus for **Ambedkar University Delhi (AUD)** in Rohini, Delhi. The project, aims to create a modern, sustainable, and inclusive educational institution specializing in Social Sciences, Liberal Arts, and Humanities.

The proposed campus is situated on a 7.3-hectare plot in Sector-3, Rohini, a location with excellent metro and road connectivity. The design is mandated to adhere to the **Master Plan of Delhi (MPD)-2021** and achieve **GRIHA 5 Star/LEED Platinum** standards for environmental sustainability. Key objectives include optimizing land use for a total built-up area of 167,680 square meters, with a designated split of 70% institutional and 30% residential use.

A central focus of the project is the integration of **Delhi's rich cultural and architectural heritage** with modern, climate-responsive design principles. The campus will be planned as a "living testament" to this legacy, featuring elements inspired by traditional Indo-Islamic and Mughal architecture, such as courtyards, *jaalis*, and water features, while utilizing local and sustainable materials. The design addresses the unique challenge of a site bisected by a public road, aiming to create a cohesive environment that fosters community engagement and interdisciplinary learning. The final plan will be a model of contemporary, contextually relevant, and resilient campus design, aligning with AUD's core values of social equity and justice.

1.1.2 AIM OF PROJECT

The primary aim is to establish a cutting-edge, **sustainable (GRIHA 5 Star/LEED Platinum)** campus for Ambedkar University Delhi in Rohini. This proposal directly addresses the client's vision for an **expanded, inclusive educational environment**, **fostering interdisciplinary studies, community engagement, and a non-hierarchical** academic atmosphere reflecting AUD's core values.

1.1.3 OBJECTIVE OF PROJECT

The key objectives for the development of the new AUD Rohini campus include:

Sustainable Campus Development: To implement environmental sustainability across planning, design, and operations, targeting GRIHA 5 Star/LEED Platinum certification. This encompasses optimizing energy and water usage, efficient land utilization, and robust waste management strategies.

Creation of a Multi-Campus Network: To establish the Rohini campus as a central hub, integrating it with AUD's existing and proposed satellite campuses to form a cohesive multi-campus network.

Holistic and Inclusive Environment: To design an inclusive and holistic environment that fosters collective engagement, personal development, knowledge creation, and community living, ensuring universal accessibility for all, including persons with disabilities.

Integration with Surroundings: To establish positive interfaces with the immediate neighborhood and broader urban/rural contexts, thereby promoting social equity and justice.

Compliance with Regulations: To ensure strict adherence of all designs and development to the Master Plan of Delhi (MPD)-2021, local bye-laws, and all applicable statutory regulations and guidelines.

1.2 PROPOSING AGENCY

The proposing agency for this project is the Public Works Department (PWD), Government of N.C.T. of Delhi, specifically the Housing Project Division-IV. They are responsible for inviting bids for comprehensive consultancy services for the planning, designing, and development of the new campus

1.3 SITE DETAILS

Location – P427+P53, Institutional Area, Rohini sector 3, Delhi, 110085
Coordinates – 28°42'3.96"N , 77° 6'48.38"E
Area – 18 acres (73,000 sqm)
Key road- Naharpur Village road and Yogashram Marg



Figure 1 Google location of site

1.4 REQUIREMENTS

As per the RPF, the following table provides a comprehensive overview of the proposed area distribution, outlining the total plot size, permissible built-up areas, and specific allocations for institutional, residential, and service functions, as well as the designated land use zoning for the campus.

Category	Area (sqm)	Notes
Total Plot Area	73,000	7.3 hectares
Permissible Built-up Area	160,875	Based on FAR of 225
Proposed Built-up Area Distribution (85% of permissible)	167,680	Total Area (Phase 1)
Institutional Areas	90,000	
Residential Areas	46,000	
Basement, Parking, and Service Area	31,680	Not included in FAR
Land Use Zoning		
For Institutional use	70%	Of total plot area
For Residential use	30%	Of total plot area

Table 1 Design Requirements

(Public Works Department, 2018)

1.4.1 SERVICES ALREADY EXISTING ON SITE

Sewerage and storm water drainage: External services are already laid in Rohini by the Delhi Development Authority (DDA). The new AUD campus services are intended to connect to these existing external services

13.5-meter wide public road: A public road divides the AUD plot almost in the center. The campus development must account for this road, considering its continued accessibility to the neighboring population and maintenance agencies

1.4.2 RULES AND GUIDELINES

Master Plan of Delhi (MPD)-2021 Compliance: All planning and design must conform to the MPD-2021 guidelines and other relevant local bye-laws and statutory regulations

Maximum Permissible FAR: The Master Plan and building designs should utilize the maximum permissible Floor Area Ratio (FAR) for the 7.3-hectare plot, which is **2.25**, resulting in a total permissible built-up area of 160,875 sq.m

Green Building Standards: The campus must be designed to achieve **GRIHA 5 Star/LEED Platinum standards** for environmental and energy sustainability. This includes energy efficiency, water conservation, waste management, and the use of sustainable materials

Barrier-Free Design: Lifts and escalators, and the overall campus, must be designed to be barrier-free, incorporating relevant norms and provisions for Persons with Disabilities (PWD)

services and Infrastructural System: Efficient integration with form and function, considering sustainable practices

Use of Processed/Recycled Products: A minimum of 2% processed/recycled products from Construction and Demolition (C&D) waste should be used in non-sensitive structures Area Requirements

Institutional and Administrative Facilities are proposed to be built in the campus in three categories i.e. Central facilities at Campus level, Cluster level facilities and School level facilities. These facilities may be provided in the following manner: (Public Works Department, 2018)

CENTRAL FACILITIES

The Central Facilities at the Campus Level (Refer Table 1) will consist of Library & IT Complex, Auditorium / Convention Centre, Media Labs, Exhibition Centre, Student Centre, Cafeteria & Sports Centre etc. besides the Administrative Block. Since these common facilities will be utilized by all the Schools and Centers and will be operational 24x7, therefore their placement in the campus must be given due importance.

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

Table 2 Central Facility space requirement (Public Works Department, 2018) (heritage, n.d.)

CLUSTER LEVEL FACILITIES

Schools and Centers of the University are the primary arena for students and faculty for teaching and research activities. Schools having epistemic congruity will be housed in a cluster. This will enable the facilities and infrastructure to be shared amongst the School/Centre housed in it. Instructional spaces will not be exclusive to any of the schools and will be centrally managed.

The following clusters will accommodate Schools and Centres of the University. This formation of clusters will also enable intermixing of faculty and students of various schools and optimal utilization of common 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 3 schools and centers space requirement (Public Works Department, 2018)

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	800
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**

Table 4 Facility space requirement (Public Works Department, 2018)

SCHOOL / CENTRE FACILITIES

Although the Schools will be housed in a Cluster to share common facilities but each School will have its own distinct identity. Every School will have a Dean/Director's complex, Documentation Centre and Stores etc.

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

Table 5 office space requirement (Public Works Department, 2018)

RESIDENTIAL ZONE

The residential complex in Rohini will cover almost 25% of the plot area. Residential zone comprises of Student Hostels (Girls / Boys with Single and Double occupancy), Faculty Hostels and accommodation for Faculty and Staff. Spatial allocation of housing types should be imagined so as to promote a nonhierarchical way of living, allowing intermixing of faculty and staff housing along with common shared resources. Some of the common facilities proposed for residential area should include Community Centre, a Guest House, Faculty Transit Accommodation, Convenience Centre and Maintenance Offices and Substation etc.

i) **Faculty housing**: 50% of total strength

ii) **Staff housing**: 30% of total strength

ii) **Students hostel**: 25% of total strength

Ratios: (Girls: Boys = 2:1)

(PG: UG = 1:1)

(PG: Single Occupancy)

(UG: Double Occupancy)

Facilities at residential colony and hostels

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)

Table 6 Hostel and residential requirement (Public Works Department, 2018)

Common facilities

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 7 common facility requirement

2. LITERATURE REVIEW

2.1 INTRODUCTION

Modern urban university campuses are dynamic, integrated educational and urban environments. They seamlessly blend with the city, emphasizing their critical role in urban planning and their evolving connection with the urban fabric.

For the Ambedkar University Rohini campus, this evolving perspective demands an architectural design that extends beyond its immediate boundaries to actively engage with and contribute to Delhi's rich history, diverse culture, and vibrant art scene. The campus planning and design must thoughtfully incorporate these elements, fostering a unique environment that not only promotes learning and collaboration but also reflects the local ethos. Furthermore, in an urban context marked by specific climatic conditions, the design must integrate innovative environmental interventions. This ensures the campus is a catalyst for local development, a vibrant contributor to the broader urban ecosystem, and a model for sustainable, culturally attuned academic spaces, moving away from the insularity of traditional campus models.

The architectural and urban design of the Ambedkar University Rohini campus will embody a **"Living Palimpsest,"** a layered environment reflecting Delhi's profound historical and cultural depth while integrating with Rohini's contemporary urban fabric. This initiative seeks to transcend conventional campus models by fostering a dynamic, integrated educational and urban ecosystem. The campus will seamlessly blend with the city, its architectural footprint extending beyond its immediate confines to enrich Delhi's historical narrative and diverse artistic landscape. The aim is to create an environment that is both academically stimulating and a vibrant contributor to the city's ongoing evolution.

2.2 SCOPE

The architectural scope for a contemporary university campus necessitates a multi-scalar approach, ranging from its symbiotic relationship with the urban environment to the intricate details of individual user experience and environmental performance.

Macro-Level (Urban Integration & Master Planning): Strategically develop diverse open spaces with strong vehicular and pedestrian connections to adjacent urban areas for convenience and synergy. Apply **urban planning principles**—defining vistas, shaping skylines, creating viewpoints, and designing paths, edges, and landmarks—to integrate the campus within its urban context. Conceive the campus as a **"system of parts"** operating at a **"neighborhood scale"** for optimized **resource utilization and efficient mobility.** Thoughtful zoning of academic, residential, and recreational areas is crucial for **fluid connections and a harmonious campus rhythm**.

Micro-Level (Human-Centric Spaces & Sustainable Systems): Designing authentic "third places" fosters collaboration and social interaction through "productive collisions." Smart urban space utilization, often vertical and multifunctional, maximizes efficiency. Human-centric design prioritizes comfort via pedestrian paths, natural light, and ventilation. Climate-responsive design, using solar shading, passive ventilation, and local materials, lessens environmental impact and boosts thermal comfort. Green architecture integrates sustainable resource use, water conservation, and biodiversity features like green roofs and living walls.

Modern campus architecture is a holistic pursuit, integrating urban planning with human-centric design. It's about crafting interconnected ecosystems, where every design decision, from master plan to street furniture, enhances functionality, aesthetics, and experience. This demands a multidisciplinary

approach, blending urban design, landscape architecture, interior design, and environmental engineering for cohesive, adaptable, and effective campus environments.

2.3 PURPOSE

The primary purpose of this theoretical framework is to provide a guiding structure for the architectural design process, ensuring the new Ambedkar University Rohini campus transcends a mere collection of structures to become a thoughtfully conceived environment that deeply supports its institutional mission, vision, and values.

Functionality: The framework dictates adaptable, future-proof layouts for modular planning and multipurpose areas, evolving with institutional needs. It requires accommodating diverse academic, residential, and recreational demands, supporting formal and informal learning. Physical spaces must also seamlessly enhance digital learning environments.

Sustainability: The framework champions high environmental standards, specifically GRIHA 5, through climate-responsive design, efficient resource use, and natural integration. Strategies involve maximizing natural light and ventilation, using sustainable, local materials, and robust water conservation.

Community Engagement: The framework prioritizes creating spaces that foster community and belonging, encouraging social interaction and interdisciplinary collaboration through intentional design. It also examines the campus's relationship with the urban community, promoting shared interests and seamless integration.

A practical theoretical framework for Ambedkar University Rohini, integrating global best practices and local wisdom, ensures a robust, innovative, and culturally relevant architectural solution. This structured approach guarantees a functional, adaptable, resilient, and valuable campus, aligning with the Request for Proposal's desire for a "wide outlook, long term objectives."

2.4 THE CULTURAL SIGNIFICANCE - INTEGRATING DELHI'S ARTISTIC HERITAGE INTO CAMPUS DESIGN

2.4.1 INTRODUCTION

Delhi, a "site of seven cities," boasts a unique cultural landscape shaped by continuous historical layering. Archaeological findings indicate settlements from 2000 BCE (Ochre Colored Pottery) and 1200 BCE (Painted Grey Ware). Indian mythology mentions Indraprastha, the mythical capital of the Pandavas (c. 1400 BCE), possibly at Purana Qila. This layering of indigenous and external cultures forms a cultural palimpsest, where past and present interact. For BR Ambedkar University's design, this suggests integrating diverse historical and contemporary influences to create a campus that embodies Delhi's evolving and rich history.

Rohini Sector, a planned sub-city in North West Delhi, is the proposed site for BR Ambedkar University. Developed by the DDA in the 1980s, it houses diverse income groups and faiths. Unlike historical Delhi, Rohini lacks ancient heritage, its contemporary, multicultural identity posing a unique challenge for cultural integration. The university's design must reinterpret Delhi's historical and cultural narratives,

focusing on multiculturalism and historical continuity, while embracing its inhabitants' living heritage. (culture, n.d.)

2.4.2 EVOLUTION OF DELHI'S ART AND CULTURE

Delhi, a city steeped in antiquity and vibrant history, has served as a crucible for diverse civilizations and empires, each leaving an indelible mark on its architectural, artistic, and cultural landscape. The following table charts the significant periods in Delhi's rich past, highlighting the distinctive architectural developments, the flourishing of various art forms and cultural expressions, and their profound impact on the city's planning and urban fabric. From its mythical ancient roots to its modern cosmopolitan identity, this overview demonstrates how Delhi's heritage is a continuous narrative of synthesis, adaptation, and innovation. (heritage, n.d.) (unesco, n.d.)

Table 8 Historical Evolution of art and culture in Delhi timeline

Period/Era	Key Historical/Architectural Developments	Architectural Importance	Artistic & Cultural Contributions	Planning/Urban Impact
Ancient Roots	Indraprastha (mythical), Mauryan period archeological findings (c. 300 BCE), Ashoka inscriptions near Srinivaspuri. Tomara Rajputs built Lal Kot (1052 CE) , expanded into Qila Rai Pithora by Chauhan Rajputs.	Early fortified settlements, evidence of early Indian masonry and urban planning concepts. Lal Kot and Qila Rai Pithora represent early Hindu and Rajput fort architecture.	Early legends and foundational cultural narratives.	Early settlements and fortified structures forming initial urban cores.
Delhi Sultanate (13th - 16th Century CE)	Arrival of Islamic rule. Qutb-ud-din Aibak founded the Sultanate (1206 CE). Construction of Qutb Minar and Quwwat-al-Islam mosque.	Marked the introduction of Indo-Islamic Architecture, a blend of Persian, Islamic, and Indian influences. Qutb Minar is an iconic minaret, and Quwwat-al-Islam mosque is one of the earliest extant mosques in India.	Blending of Persian, Islamic, and Indian influences. Flourishing literature in Persian and Hindavi (early Hindi), e.g., Amir Khusro.	Introduction of new urban forms and monumental Islamic architecture.

Mughal Empire (16th - 19th Century CE)	Humayun's Tomb (high arches, double domes, precursor to Taj Mahal). Later Mughal structures like the Red Fort (intricate designs and ornamentation) (archi M. , n.d.) (testbook, n.d.).	Pinnacle of Indo-Islamic architecture, characterized by grand scale, symmetry, intricate marble inlay work, and elaborate gardens. Introduction of high arches and double domes. Red Fort is a prime example of Mughal fort architecture.	Rise of miniature paintings, marble carvings, textiles, with authentic schools established. City became a hub for artisans and poets. Grand landscaping (e.g., Roshan Ara Gardens). (archi M. , n.d.)	Development of grander urban spaces, forts, and planned gardens. City became a significant cultural and administrative center. (Mughal architecture, n.d.) (archi, n.d.)
Colonial Period (British Rule)	Introduction of a new architectural style combining colonial and Mughal elements (e.g., Rashtrapati Bhavan, utilitarian bungalows). (british, n.d.)	Emergence of Indo-Saracenic architecture, blending European classical and neoclassical styles with Indian motifs. Creation of monumental administrative buildings and planned residential areas.	Blend of European and Indian artistic influences, particularly in architecture.	Drastically changed planning with wider roads, vistas, and new administrative zones.
Post-Independence and MdernDelhi	Dynamic blend of the traditional and cosmopolitan.	Continued evolution with contemporary architectural styles coexisting with historical structures. Focus on modern infrastructure while xretaining heritage.	Melting pot of cultures, vibrant performing arts (dance, music, theatre), handicrafts, numerous museums, historic forts, and monuments.	Continuous urban expansion, planned sectors (like Rohini), and efforts to integrate modern infrastructure with historical preservation. City maintains its cultural heritage.

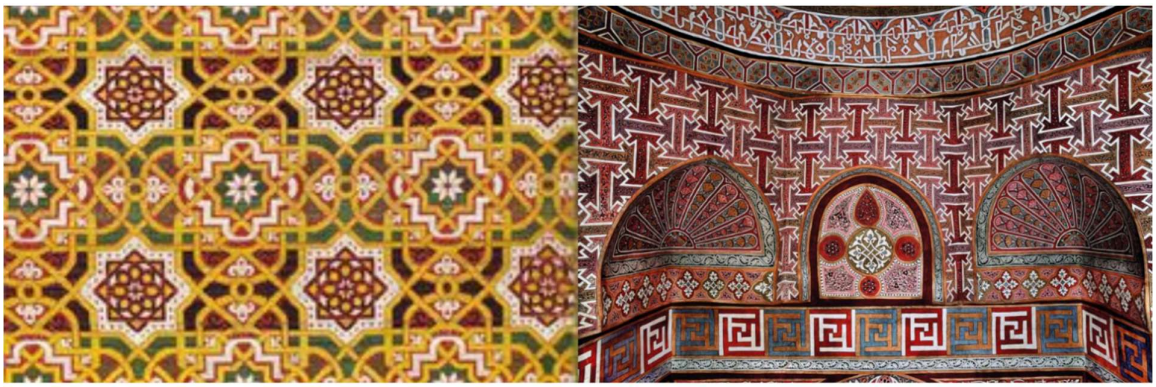


Figure 2 Delhi sultanate time period



Figure 3 Mughal empire time period



Figure 4 Colonial/British time period



Figure 5 Lutyens Delhi



Figure 6 Post colonial time period

2.4.3 ART AND CULTURAL LANDSCAPE OF ROHINI SECTOR

A. Demographics and Community Profile

Development and Design: Developed in the 1980s by the DDA, Rohini is a planned sub-city for all income groups.

Historical Context: Unlike older Delhi, it lacks deep historical roots or major archaeological sites.

Demographics: Rohini has a diverse demographic profile, with inhabitants from various faiths, religions, and linguistic backgrounds (Hindi, Punjabi, English).

Cultural Identity: Its cultural identity is shaped by its diverse population rather than a singular historical tradition.

University Design Implications: The university's design in Rohini must prioritize inclusivity and celebrate this contemporary diversity by creating spaces that cater to and facilitate interaction among various cultural backgrounds, languages, and traditions.

Outcome: This approach will foster a strong sense of belonging, reflecting modern, pluralistic India.

B. Existing Cultural and Artistic Infrastructure

Within **Rohini and its surrounding areas**, various active cultural centers contribute to the local cultural fabric.

Contemporary art galleries like Sydneyy Interiors & Arts and Exquisite Arts Studio showcase diverse art forms, including portrait, still life, abstract, and modern art.

These cultural centers engage in **community initiatives** by supporting **local artists and artisans,** showcasing diverse art forms, and collaborating with art institutions, thereby playing a crucial role in cultural preservation and dissemination.

Despite lacking ancient historical sites, Rohini possesses a tangible and active network of cultural centers, art spaces, and community organizations, representing the living, contemporary cultural pulse of the area.

The university **should engage with and leverage** this existing contemporary cultural infrastructure.

This engagement could involve establishing formal **partnerships with local cultural centers** for joint events, workshops, exhibitions, and community outreach programs.

The campus design could **incorporate flexible, multi-purpose spaces** conducive to hosting such collaborations, transforming the university into a central hub for **community-university cultural exchange** and a platform for showcasing local talent and traditions.

C. Unique Local Traditions and Contemporary Expressions

Delhi, particularly Rohini, blends traditional customs with cosmopolitan expressions, evident in its numerous fairs and festivals.

Religious and regional celebrations (e.g., Guru Purab, Durga Puja), annual events (e.g., Phoolkwalon-ki-Sair), and national commemorations are integral.

Rohini, though modern, benefits from its diverse population contributing broader Delhi and Indian traditions.

Contemporary expressions include modern art galleries and recreation clubs.

While Rohini lacks ancient artifacts, its diverse population carries a rich "invisible" cultural heritage: languages, festivals, crafts, and performance arts from across India.

The challenge is to materialize this intangible culture within the university campus.

University design can integrate these traditions through architectural motifs, dedicated spaces for celebrations and workshops, and the use of local materials and traditional construction techniques, creating a vibrant microcosm of India's living heritage.

2.4.4 BLENDING ART AND CULTURE WITH THE UNIVERSITY SITE

The design of BR Ambedkar University in Rohini presents a unique opportunity to create an institution that is both forward-looking and deeply rooted in Delhi's rich cultural heritage. This requires a strategic approach that blends historical narratives with contemporary needs and local context. (rohini, n.d.) (neighborhood, n.d.) (rohini c. h., n.d.) (ebsco, n.d.)

Integration of Cultural Heritage and Modern Architectural Design: This endeavor represents a significant challenge in contemporary urban development. A theoretical framework for this integration involves balancing a "conservation axis" and an "innovation axis" to preserve cultural integrity while embracing modern technologies and design principles.

Ecological Wisdom in Traditional Architecture: Traditional architectural cultures inherently possess "ecological wisdom," providing valuable references for modern design in material selection, spatial layout, and climate regulation. Examples include the thermal performance of Chinese cave dwellings and the material sustainability of Japanese wooden structures.

Architecture as a Cultural Reflection: Architecture profoundly reflects the values, beliefs, and traditions of the society that creates it. The "critical regionalism" movement advocates for integrating modern architecture with local cultural and environmental contexts, prioritizing site-specific adaptability and low-impact construction.

Key to Successful Integration: Effective cultural integration in design necessitates active community participation and thoughtful technological integration. Successful implementation enhances both the economic and social value of cultural heritage.

2.4.5 INTEGRATING CULTURES AND TRADITIONS INTO CAMPUS PLANNING

The design must thoughtfully integrate Delhi's rich cultural heritage and Rohini's contemporary diversity into its campus planning. This involves a multi-faceted approach that considers architectural language, material palette, artistic motifs, and the promotion of inclusivity. (ebsco, n.d.)

A. Multi-Period Integration Strategies

The campus design should consciously incorporate elements from Delhi's rich **and multi-layered architectural history**, creating a narrative through its built form. This approach aims to create a sense of **"layered authenticity,"** allowing students and visitors to physically experience Delhi's continuous history and cultural evolution. (ebsco, n.d.)

Architectural Language:

Ancient/Rajput: The design can integrate subtle **naturalistic motifs, geometric patterns, and traditional Indian structural forms.** This includes the use of **trabeate** (post-and-lintel) elements, which can be employed in conjunction with **arcuate** (arch-and-dome) construction, reflecting historical building practices. The campus can also reference **stepwells** (baolis), such as Agrasen ki Baoli, as both functional water features and aesthetically significant public spaces, recalling ancient Indian water management systems.



Figure 7 Naturalistic carved motifs and stepwell

Delhi Sultanate: Thoughtful integration of Indo-Islamic architectural features, including pointed arches, domes, and intricate jali screens (perforated stone screens), can be implemented. These elements serve practical purposes like providing privacy, controlling light, and facilitating natural ventilation, while also adding aesthetic depth and historical resonance. The characteristic use of red sandstone surfaces with white marble inlays from this period can be reinterpreted in contemporary material applications, maintaining visual continuity with the past.



Figure 8 Indo Islamic Domes and jails

Mughal: Principles of symmetrical layouts, grand yet inviting entrances, and the integration of geometrically planned gardens (inspired by Char Bagh designs) should be emphasized. These gardens can serve as central green spaces for contemplation, recreation, and community gathering, echoing the Mughal emphasis on holistic urban planning. Delicate ornamentation and calligraphy, prominent in Mughal art, can be subtly incorporated as decorative elements within modern contexts, adding layers of cultural richness. (Mughal architecture, n.d.) (archi, n.d.)



Figure 9 Symmetrical and Mughal inspired approach

British Colonial: A critical reinterpretation of colonial-era planning principles, such as wide avenues and axial planning, can be adopted, but with a decolonized aesthetic. This ensures that these elements serve a contemporary Indian identity rather than merely replicating a colonial past. The blend of Western and Indian motifs, as seen in the Rashtrapati Bhawan, offers a precedent for such synthesis, demonstrating how diverse influences can be harmonized.

Post-Independence/Modernist: The campus should embrace the spirit of contemporary Indian modernism, focusing on sustainable design, climate-responsive architecture, and innovative use of materials. This involves ensuring that the designs resonate deeply with local cultural characteristics and environmental needs, reflecting the contextual modernism seen in exemplary Indian institutions.

Material Palette: Prioritize the use of locally available and sustainable materials, such as brick, stone, and traditional plasters, while exploring innovative and contemporary applications for these materials. This approach aligns with the "ecological wisdom" inherent in traditional architecture, promoting environmental responsibility and local craftsmanship.

Artistic Motifs & Craftsmanship: Integrate traditional Indian crafts and artistic motifs into various aspects of the campus. This includes patterns from Meenakari and Kundan jewelry, zardozi embroidery designs, miniature painting styles, and stone/wood carving motifs, which can be incorporated into interior design, public art installations, and architectural detailing. These traditional forms can be contemporized by re-thinking their scale, using them to articulate a specific design intent, or applying them for purposes different from their traditional uses, ensuring their relevance in a modern setting.

B. Promoting Cultural Diversity and Inclusivity

Given Rohini's composite demographic profile, the university's design must actively promote cultural diversity and inclusivity, making the campus a true reflection of modern, pluralistic India.

Multicultural Spaces: Design flexible and adaptable spaces capable of hosting a wide array of cultural events, festivals, and celebrations representing the diverse communities present in Rohini and the broader Delhi region.[2] This includes dedicated or adaptable areas for religious observances, cultural performances (dance, music), and informal community gatherings. Such spaces could feature adaptable layouts, modular seating, and multi-purpose stages to accommodate various cultural expressions.

Language and Literature: Incorporate diverse linguistic elements in campus signage, public art installations, and library resources, reflecting the rich linguistic diversity of Delhi, which includes Hindi, Punjabi, English, Urdu, and Bengali.[2] Create inviting spaces for literary discussions, poetry readings, and storytelling, honoring Delhi's historical legacy as a significant center for poets and literary figures like Ghalib.[1] This could involve designated "poetry corners" or "storytelling amphitheatres."

Performance Arts Integration: Design state-of-the-art performance venues that can host traditional Indian dance forms such as Kathak, Bharatanatyam, and Bhangra, as well as various music genres including Carnatic, Hindustani, and ghazal.[2] These venues should be equipped with appropriate acoustics and infrastructure to support both traditional and contemporary performances, encouraging student and community participation.

Craft Workshops and Exhibitions: Establish dedicated workshops and exhibition spaces for traditional Indian arts and crafts, such as jewelry making, textile embroidery, and painting.[2] These spaces can facilitate hands-on learning, collaborative projects between students and local artisans, and public demonstrations, fostering the preservation and contemporary relevance of these crafts.

Community Engagement: Actively engage with local cultural centers and NGOs in Rohini for joint events, workshops, and outreach programs.[10] The campus can become a hub for community-university cultural exchange, inviting local artists, performers, and craftspeople to share their traditions, thereby enriching the campus environment and strengthening local ties.

Inclusive Public Art: Commission public art installations that reflect the diverse narratives, histories, and contemporary expressions of Delhi and its varied communities. These artworks can serve as visual anchors, promoting cross-cultural understanding and dialogue across the campus.

2.4.6 INFERENCES

Constructive Inference	Impacts on Campus Design
Embrace Delhi's Layered Cultural History	The campus design should reflect Delhi's continuous cultural evolution by integrating architectural elements like trabeate and arcuate forms, jali screens, courtyards, and symmetrical garden layouts in a contemporary, harmonious way. This creates a sense of "layered authenticity" and historical continuity within the built environment .
Prioritize Rohini's Contemporary Diversity and Inclusivity	Given Rohini's modern, planned origin and its composite, multicultural demographics, the campus design must actively celebrate this diversity. This can be achieved by designing flexible, adaptable spaces for various cultural events, festivals, and linguistic expressions, and by incorporating public art that reflects diverse narratives. Engaging with existing local cultural centers and NGOs in Rohini can further integrate the campus with the community's living heritage .
Integrate Ecological Wisdom and Sustainable Practices	Drawing from traditional architectural cultures, the design should prioritize sustainability and climate responsiveness. This includes the strategic use of locally available materials like brick and stone, designing for natural ventilation and shading, and incorporating traditional water management systems like stepwells (baolis) as functional and aesthetic features. This approach aligns modern design with environmental responsibility and local context .
Foster Experiential Learning and Cultural Engagement	Inspired by models like Kala Bhavana, the campus itself can become a "living museum" where art and culture are not just displayed but actively experienced and produced. This implies designing open-air studios, flexible performance venues, and dedicated workshops for traditional crafts, encouraging hands-on learning and blurring the lines between academic and cultural life .
Catalyze Cultural Preservation and Innovation	The university can position itself as a hub for revitalizing traditional Indian crafts and design. This involves integrating traditional craftsmanship into architectural detailing and interior design, and fostering collaborative projects between students and local artisans. The campus can become a platform for

	research into traditional wisdom and its contemporary application, potentially generating economic opportunities for local communities .

Table 9 Inferences of historical significance

2.5 HISTORICAL SIGNIFICANCE

architectural planning guidance for a new university campus in Rohini Sector, Delhi, emphasizing the integration of Delhi's rich architectural history with modern design principles. The vision is to establish a landmark institution that not only fosters academic excellence but also stands as a living testament to India's diverse architectural heritage. By synthesizing historical influences with contemporary innovations, the proposed campus aims to create an inspiring, sustainable, and culturally resonant environment, poised to become a model for future institutional development in the region.

2.5.1 INTRODUCTION

The establishment of a new university campus in Rohini, Delhi, presents a unique opportunity to craft an educational environment that is both forward-thinking and deeply rooted in its historical context. The overarching vision for this project is to create a landmark institution, a center of academic excellence that simultaneously serves as a living embodiment of Delhi's profound architectural legacy.

The objective is not to replicate historical styles superficially, but rather to delve into the underlying philosophical and functional principles that shaped these structures. By doing so, the campus can tell a compelling story, connecting students and faculty to their cultural roots and standing as a powerful symbol of contemporary Indian identity that respects its past while embracing the future.

2.5.2 DELHI'S ARCHITECTURAL TAPESTRY: HISTORICAL INFLUENCES

Delhi's architectural landscape is a rich chronicle of its many rulers and cultural shifts, offering a diverse array of styles and philosophies that can inform contemporary design.

Evolution of Delhi's Architectural Styles Delhi's architectural narrative spans millennia, marked by distinct periods:

Period	Key Characteristics	Notable Examples

Pre-Sultanate Era	Remnants of early forms, often rock-cut or simple structures.	Agrasen ki Baoli, Surajkund reservoir, Lal Kot, Qila Rai Pithora, vestiges of temples in Qutb complex.[15]
Delhi Sultanate (1206-1526 AD)	Early Indo-Islamic architecture, robust forms, intricate detailing, synthesis of styles.	Qutb Minar complex, Siri Fort, Tughlaqabad, Feroz Shah Kotla, numerous tombs.[15]
Mughal Empire	Grand scale, large bulbous onion domes, white marble and red sandstone, delicate ornamentation, expansive gardens, innovative water features.	Red Fort (Delhi), Taj Mahal (Agra).[15]
British Colonial Period (1757-1947 AD)	European styles (Neoclassical, Gothic Revival, Baroque), Indo-Saracenic blend, monumental urban planning, wide avenues, hexagonal road networks, high ceilings, arched entrances, red-brick walls.	Viceroy's House (Rashtrapati Bhawan), Secretariat Blocks, India Gate, Parliament House, St. Stephen's College, Indraprastha College for Women .
Post-Independence (1947-Present)	Shift to modernism, reinterpretation of principles through local conditions, emphasis on social/spatial values, nature-inclusive design, economic efficiency.	Indian Institute of Technology (IIT Delhi), Hall of Nations (demolished), Palika Kendra, Lotus Temple, Jawaharlal Nehru University (JNU).[12]

Table 10 Delhi's architectural timeline

2.5.3 KEY ARCHITECTURAL ELEMENTS AND MOTIFS

Delhi's architectural heritage is defined by several recurring elements and motifs, each with functional and aesthetic significance: (Mughal architecture, n.d.) (architecture, n.d.)

Courtyards: These central open spaces are fundamental to traditional Indian design, providing natural ventilation, ample light, and privacy, while also serving as social hubs.

Jaalis (Lattice Screens): Intricately perforated screens, typically made of stone or wood, were used to filter intense sunlight, minimize heat gain, maintain privacy, and facilitate airflow, contributing to passive cooling and creating dynamic light and shadow patterns.

Arches: Both false and true arches are prominent features. Beyond their structural stability, arches offer a charming aesthetic departure from straight lines, reducing the need for concrete lintels and enhancing corridors and verandahs.

Chhajja (Stone Cornice/Overhanging Eaves): A distinctive stone cornice or overhanging eave, often supported by conspicuous brackets, provides essential shade and is a common Indian architectural motif.

Chhatri (Rooftop Cupola): These decorative rooftop kiosks, often seen in Mughal and Indo-Saracenic styles, add visual interest and often serve as small pavilions.

Domes: Large, bulbous onion domes are a hallmark of Mughal architecture, signifying grandeur and often crowning significant structures.

Stepwells (Baolis): These unique Indian architectural solutions were designed for water management, providing access to groundwater through terraced steps and offering shaded communal spaces, particularly in arid regions.

Red Sandstone and White Marble: These materials are dominant in Mughal and British colonial architecture, chosen for their distinct aesthetic qualities and thermal properties.

Philosophies of Design Across Eras

The architectural evolution of Delhi reflects shifting philosophies:

Defense and Organic Growth: Old Delhi's irregular street patterns, narrow winding paths, and culs-de-sac were primarily shaped by defense needs, resulting in an organic, pedestrian-focused urban matrix.

Dominance and Exclusivity: British Colonial architecture, particularly Lutyens' Delhi, aimed to convey a sense of dominance and exclusivity. It favored a monumental, classical European idiom, although some Indian motifs were integrated for political reasons, often with a deliberate "toning down" of traditional ornamentation. This period saw a "stylistic admixture" rather than a deep cultural embrace.

Integrated Development and Indian Identity: Post-independence architecture marked a conscious "search for an Indian identity". This period moved beyond the imposition of colonial styles, reinterpreting modernist principles through local conditions and needs. There was a strong emphasis on social and spatial values, nature-inclusive design, and economic efficiency, as exemplified by the planning of Jawaharlal Nehru University.

For the Rohini campus, this historical understanding implies a directive to avoid a mere pastiche of historical elements. Instead, the design should draw inspiration from the fundamental principles that underpinned traditional Delhi architecture—its climate responsiveness, its intelligent spatial organization (e.g., the use of courtyards for community and environmental control), and its material honesty. These principles should then be reinterpreted using modern techniques and materials to achieve contemporary functionality and aesthetics (arch, n.d.) (htt) (traditional, n.d.) (britanica, n.d.)

2.5.4 PRINCIPLES OF HARMONIOUS INTEGRATION: HERITAGE MEETS MODERNITY

The architectural design for the Rohini campus must navigate the delicate balance between honoring Delhi's rich heritage and embracing the demands of modern functionality and sustainability. This requires a nuanced approach that transcends mere stylistic imitation. (britanica, n.d.)

Conceptual Approaches to Blending Traditional and Contemporary Design

Effective integration of heritage and modernity hinges on several key conceptual approaches:

Dialogue between Tradition and Innovation: Cultural preservation in architecture is not simply about restoring old facades; it represents a continuous and dynamic dialogue between memory and progress. This necessitates a deep understanding of the underlying design principles—such as proportion, scale, rhythm, and hierarchy—that have remained constant through time, rather than merely copying superficial aesthetic elements.

Contextual Integration: Successful design responds intimately to its unique cultural, geographic, and climatic context. This involves thoughtfully utilizing local materials, traditional forms, and familiar spatial arrangements that resonate with the inhabitants and make them feel connected to their surroundings.

Reinterpretation, Not Replication: The goal is to abstract and reinterpret traditional elements, extracting their essential character and functional wisdom, rather than simply replicating them. This allows for contemporary interventions that feel authentic and relevant, avoiding a sense of pastiche.

Sustainable Design Strategies Inspired by Traditional Indian Architecture

The blending of historical and modern design for the campus is not merely an aesthetic choice; it is fundamentally a sustainable one. Traditional Indian architecture offers a rich repository of climate-responsive solutions that, when reinterpreted with modern technology and materials, can achieve high levels of energy efficiency and environmental performance.

Passive Cooling: The campus design can extensively utilize passive cooling strategies, drawing from traditional wisdom. Elements such as courtyards, thick walls, lime plaster, and double-skin facades can significantly reduce heat gain and promote natural cross-ventilation, keeping interiors cool without heavy reliance on mechanical systems. Lime plaster, an ancient material, is particularly effective due to its breathability and natural insulation properties. (passive, n.d.)

Local Materials: Championing the use of indigenous materials and traditional construction techniques is crucial for sustainability and cultural authenticity. The selection of materials like red sandstone, terracotta, and lime plaster should be driven not only by their historical appearance but also by their inherent thermal properties and local availability, ideally sourced within a 100km radius to minimize environmental impact. This approach ensures the campus is environmentally responsible and cost-effective in the long run, contributing to Delhi's broader sustainability goals.

Water Harvesting and Recycling: Inspired by traditional *stepwells* and percolation pits, the campus should incorporate robust rainwater harvesting systems and greywater recycling facilities to conserve water resources

Solar Orientation and Daylighting: Buildings should be optimally oriented (e.g., north-south) and designed with strategically placed apertures, skylights, and cut-outs to control solar gain while maximizing natural illumination, thereby reducing the need for artificial lighting.

Green Roofs and Native Plants: Integrating green roofs for thermal insulation and extensive landscaping with native plant species will help purify the air, reduce water consumption for irrigation, and contribute to the campus's ecological balance.

2.6 BUILDING BYE- LAWS, REGULATION AND SPACE STANDARDS

2.6.1 MASTER PLAN DELHI 2021 – (2041) (AUTHORITY, 2021)

For a University Campus, the MPD-2021 specifies the following land distribution:

Academic including Administration: 45% of total land area

Residential: 25% of total land area

Sports and Cultural activities: 15% of total land area

Parks and Landscape: 15% of total land area

According to MPD 2021 the institutes can be defined by –

6.	College (including Professional College)	A premise having educational and playing facilities for students of under-graduate & post-graduate courses under a university. It includes all professional disciplines.	College, Residential Flat (For maintenance staff), Hostel, Retail Shops of area 20 sqm each (confectionery, grocery and general merchandise, books & stationery, chemist, barber, launderer, vegetable), Canteen, Bank Extension Counter, Auditorium, Indoor Games Hall, Swimming Pool, Playground, Post Office Counter facility.

Now referring to the development controls for educational facility the other parameters important for building structure are -

Sl. No.	Category	Maximum			Other Controls
		Ground Coverage	FAR	Height	
1	Vocational Training Centre (ITI/Polytechnic / Vocational/ Training Institute/ Management Institute/ Teacher Training Institutes etc.) / Research and Development centre.	35%	[1][225]	37 m	1. [2][Upto 30% of max. permissible FAR can be used for hostel accommodation for the students.] 2. Parking standard @ 1.33 ECS / 100 sq m of floor area. The areas earmarked for parking if misused liable to be municipalized / taken over by the authority. 3. Other controls related to basements etc. are given in the Development Code chapter.
2	General College				
3	Professional College (Technical)				

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.			

2.6.2 STANDARDS SPECIFIED BY RPF OF THE TENDER DOCUMENT– (SITE)

Based on the provided RFP document for the New Campus of Ambedkar University Delhi (AUD) at Sector-3, Rohini, Delhi-110085, here are the details regarding area and calculations, along with standardized provisions:

Project Overview and Site Details:

Name of Work: Comprehensive Consultancy Services for Planning, Designing and Development of New Campus of Ambedkar University Delhi (Phase-I works) at Sector-3, Rohini, Delhi-110085.

Project Location: Sector-3, Rohini, Delhi-110085.

Total Plot Area: 7.3 hectares (73,000 sqm).

Encumbrances: The site is free from all encumbrances, including overhead power lines.

Site Division: The 7.3-hectare plot is divided by a 13.5-meter-wide public road almost in the center. The new campus will be developed taking this road into account, considering it will remain a public road accessible to the neighboring population and maintenance agencies.

Area Allocation and Permissible Built-Up Area:

Land Use Allocation (as per prevalent by-laws in Delhi):

Institutional Use: 70% of the plot area

Residential Use: 30% of the plot area

Current FAR: 225

Total Permissible Built-up Area at Rohini plot: 160,875 sqm

Broad Utilization of Permissible Built-up Area (Approx. 85%):

Category	Proposed Area (sqm)	Remarks
Institutional Areas	90,000	
Residential Areas	46,000	
Basement, Parking, and Service Area	31,680	Built-up area not included in FAR
Total Area (Phase 1)	167,680	

Table 11 area statement as per RPF

Programmatic Brief - Facilities and Proposed Areas:
The campus facilities are categorized into Central, Cluster, and School/Centre levels.
Central Facilities at Campus Level:

Infrastructure	Facilities	Proposed Area (sqm)
Administrative Block	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 230 total staff strength)	3500
Library & IT Complex	Book-storage facilities, reading spaces with computer terminals and offices for library services and staff (2 lakh books)	10500
Auditorium Complex	Auditorium (500 persons), Committee / meeting / Seminar rooms (2 nos. of 50 persons / 2 nos. of 150 persons capacity)	4000
Student Centre	Space for student activities, reading rooms, Placement office, recreation rooms, indoor sports and lockers etc. (350 students)	1000
Exhibition Centre	For exhibitions	500
Cafeteria	Canteen facilities for 350 Students/Staff/ Visitors	2000
Convenience/Utility Centre	Shopping Centre, Food Courts, Bank, ATM, Post Office, Book & Stationery stores, etc.	750
Faculty Centre/Club	Meeting halls for informal gatherings, dining rooms, indoor sports facilities, etc. (100 persons capacity)	500
Health Centre	OPD facilities and 6 beds for emergencies.	250
Covered Parking Block	Near the entrance with sitting space for drivers.	100
University Crèche	Capacity for 50 children	250
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
Sports Centre	Indoor/Outdoor sports facilities	1000
Basement Parking and Service Area	Parking and service area	31680

Table 12 Area standard 1

Cluster Level Facilities (for 2 clusters):

Infrastructure	Facilities	Total Proposed Area (sqm) for 2 clusters
Classrooms	Standard sizes of 30/60/120 students capacity (60% of the students strength)	10000
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
Committee Rooms	2 rooms of 75 capacity each with audio-visual and other conference facilities in each cluster	800
Faculty Rooms	Similar facilities in all faculty rooms (100% rooms for Regular & Visiting Faculty, 10% extra capacity for transit faculty from other AUD campus and from local institutes).	5000
Faculty/Staff Lounge	Sitting and retiring spaces, changing rooms and pantry, etc. for 50 persons in each cluster	500
Staff Rooms	Servicing common facilities in the cluster (25% of total staff strength)	800
Utility Rooms	Photocopying/printing/scanning/pantry services for faculty and staff	800
Common Student Rooms	Reading rooms with computer terminals; recreation room / Indoor sports/lockers, etc. for a capacity of 100 students	800
Security Office, Maintenance, Staff Offices	For round the clock security and maintenance	800
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

Table 13 Area standard 2

School/Centre Facilities (for each of 13 Schools/Centres):

Infrastructure	Facilities	Proposed Area (sqm)
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
Documentation Centre	Photocopying, Project work	300
Store	Supplies and Stationary	150

- Residential Zone Requirements:

Faculty housing: 50% of total strength

Staff housing: 30% of total strength

Students hostel: 25% of total strength

Ratios: Girls:Boys = 2:1 , PG:UG = 1:1

Occupancy: PG: Single Occupancy , UG: Double Occupancy

- Common Facilities for Residential Area:

Infrastructure	Facilities
Community Centre	Multi-purpose Hall, indoor games and kitchen facilities, etc. (1500 sqm)
Guest House	A 10-room Guest House (750 sqm)
Faculty Transit Accommodation	A 20-room facility for Faculty with double room sets, attached to the Guest House using common facilities (1500 sqm)
Convenience Centre	Shops, Bank, ATMs, Post Office, etc. (500 sqm)

2.6.3 DELHI DEVELOPMENT AUTHORITY 2016 (DDA) – (DDA, 2016)

Under DDA 2016 Rohini sector of Delhi is a well-planned sector in Delhi. And according to it the definition a university can be defined as-

b. **Educational Buildings:** These shall include any building used for school, college, coaching centers (for students more than 20) or day-care purposes for more than 8 hours per week involving assembly for instruction, education or recreation.

Basement –

8.4.5 **Basements**

a. Basement will be permitted within the setback lines subject to clearance from Authority/ concerned local body/ any other departments concerned, and Delhi Fire Service. Where there are no setbacks, basement should be permitted after leaving 2.0 m and where there is setback of 6m and above, it should be after leaving required 6.0 m from plot boundary (as per provisions of development control norms of MPD).

b. Each basement shall be separately ventilated. Vents with cross-sectional area (aggregate) not less than 2.5 percent of the floor area spread evenly round the perimeter of the basement shall be provided in the form of grills or breakable stall board lights or pavement lights or by way of shafts. Alternatively, a system of air inlets shall be provided at basement floor level and smoke outlets at basement ceiling level. Inlets and extracts shall be terminated at ground level with stall board or pavement lights as before, but ducts to convey fresh air to the basement floor level have to be laid. Stall board and pavement lights should be in positions easily accessible to the fire brigade and clearly marked 'SMOKE OUTLET' or 'AIR INLET' with an indication of area served at or near the opening.

c. The staircase of basements shall be of enclosed type having fire resistance rating (Refer NBC Part 4, Fire and Life safety). The staircase shall be situated at the periphery of the basement to be entered at ground level only, from outside open air. The staircase shall communicate with basement through a lobby with self-closing doors with fire resistance rating as per relevant NBC code mentioned above.

Exits –

7.6 **Types of Exits**

7.6.1 An exit may be doorway, corridor/passage to an internal staircase or an external staircase, or a fire tower or a fire escape staircase or to a verandah and/or terraces that have access to the street. An exit may also include horizontal exit leading to an adjoining building at the same level.

7.6.2 Lifts/escalators and revolving doors shall not be considered as exits.

7.9 **Capacity of Exits:**

The capacity of exits (staircase, ramps and doorways) indicating the number of which persons could be safety evacuated through a unit exit width of 0.5 m shall be as given below in table 7.2

Table 7.2 Number of Occupants per unit Exit width

S.No	Group of Occupancy	Number of occupants		
		Stairways	Ramps	Doors
1	Residential	25	50	75
2	Educational	25	50	75
3	Institutional	25	50	75
4	Assembly	40	50	60
5	Business	50	60	75
6	Mercantile	50	60	75
7	Industrial	50	60	75
8	Storage	50	60	75
9	Hazardous	25	30	40

Table 7.3 Occupant Load

S.No	Group of Occupancy	Occupancy Load, Floor Area in m2/ Person
1	Residential	12.5
2	Educational	4
3	Institutional	15 (See note 1)
4	Assembly	
	a. With fixed or loose seat and dance floors b. Without seating facilities including dining rooms	0.6 (See note 2) 1.5 (See note 2)
5	Mercantile	
	a.) Street floors and sales basements b.) Upper sales Floor	3 6
6	Business and Industrial	10
7	Storage	30
8	Hazardous	10

Means of access –

8.2 **Means of Access**

To be read along with 'Means of Access, clause 2.0.4.j.(iv)'of these building bye laws.

a. A building shall abut on a street or upon spaces directly connected from the street by a hard surface approach road; width of the approach road is 18.0 m ROW (7.5 m ROW for the Redevelopment Areas/ Rehabilitation Colonies/ Special Area/ Village [Lal Dora/ Firni]/ Extended Lal Dora).

Parking Space –

8.3 **Parking Spaces**

a. The parking spaces shall be provided as per the provisions of MPD or Zonal Plan as prevalent. The location of parking spaces shall be well ventilated.

b. In case of high-rise buildings parking would be permitted at any or all of the following:

i. Open Area : 23 sq.m per E.C.S

ii. Basements : 32 sq.m per E.C.S

iii. Stilts: 28 sq.m per E.C.S

iv. Podium: 28 sq.m per E.C.S

v. Roof top:28 sq.m per E.C.S

Stairway

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

d. The minimum width of treads without nosing shall be 0.3m. The treads shall be constructed and maintained in a manner to prevent slipping. The maximum height of riser shall be 0.15 m in the case of other buildings and shall be limited to 15 risers per flight.

e. For Handrails and Grab Bars refer 11.5.3. The balusters/ railing shall not reduce the width of staircase.

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

Ramps –

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.

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.

Corridors

7.11.2 **Minimum Width Provisions for Passageway/Corridors** (clear width excluding handrail and balustrade)

The width of corridor/passageway/foyer as the case may be, shall be determined such that it shall accommodate the entire population of the floor subject to minimum width depending upon the class of occupancy as under:-

a. Residential buildings (low rise), dwelling unit type 1 m for single loaded and 1.5 m for double loaded.

b. Residential buildings, e.g., hostels, group housing etc. 1.5m for single loaded and 1.8m for double loaded.

c. Assembly buildings like auditorium theatres and cinemas 2.0 m.

d. All other buildings like commercial, institutional and hotels 1.5 m for single loaded and 1.8m for double loaded.

Educational building –

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.

Minimum setback –

x. The minimum setbacks shall be as given in the following table:

S.No.	Plot size (in sq.m.)	Minimum Setbacks (in meter)			
		Front	Rear	Side(1)	Side(2)
1	Below 100	0	0	0	0
2	Above 100 and up to 250	3	0	0	0
3	Above 250 and up to 500	3	3	3	0
4	Above 500 and up to 2000	6	3	3	3
5	Above 2000 and up to 10000	9	6	6	6
6	Above 10000	15	9	9	9

2.6.4 NATIONAL BUILDING CODE 2016 – (Standards, 2016)

Anthropometrics and requirements for accessibility in built environment for elders and persons with disability

According to NBC 2016 the standards for specially abled people are set according to there disability.

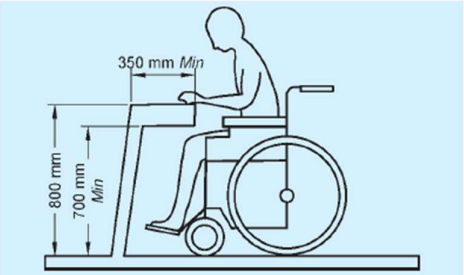


FIG. 13 NECESSARY SPACE UNDER COUNTER OR STAND FOR EASE OF WHEELCHAIR USERS

B-1.1.1.4 *Clear floor space for wheelchair user*

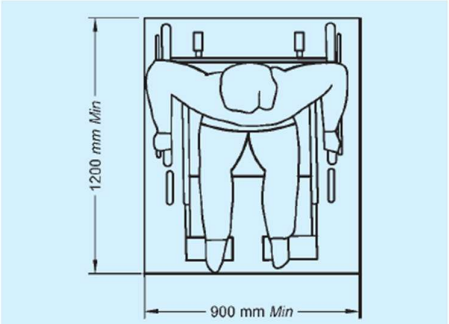


FIG. 14 CLEAR FLOOR SPACE

B-1.1.1.5 *Circulation dimensions*

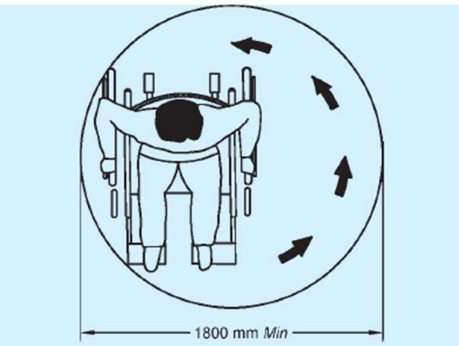


FIG. 15 PREFERRED COMFORTABLE TURNING RADIUS

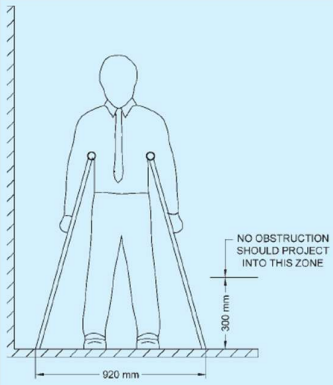
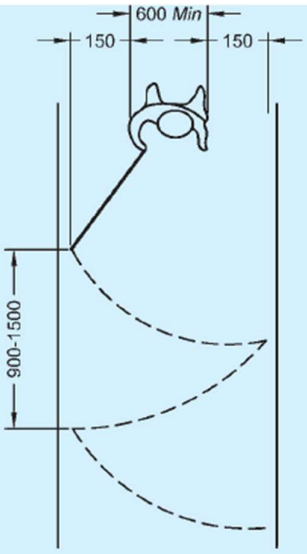


FIG. 16 PASSAGEWAY REQUIRED FOR PEOPLE WHO USES WALKING AIDS

B-1.1.3 *Space Allowance for White Cane Users*

Fundamental dimensions are vital for accessibility, impacting facility usability for everyone, regardless of physical ability. Meticulous consideration during design and construction is essential, moving beyond basic compliance. Prioritizing these aspects creates truly inclusive environments, welcoming individuals with diverse impairments. This fosters independence, dignity, and equal opportunity, enriching the experience for all users and paving the way for an equitable society.



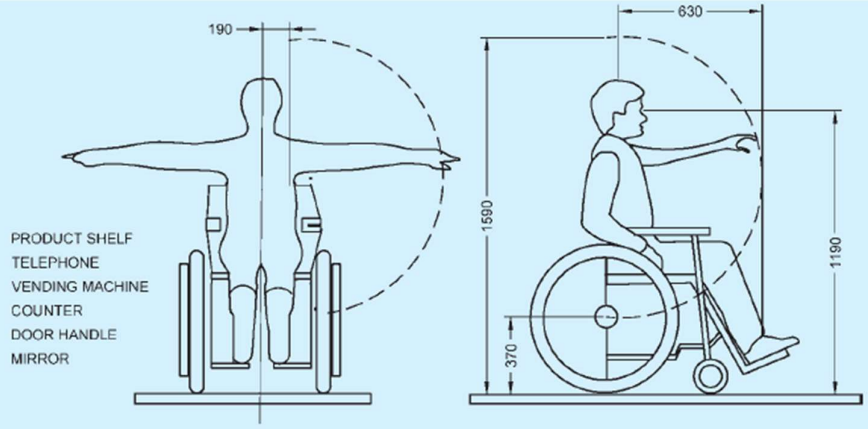
All dimensions in millimetres.

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

c) Walkways, halls, corridors, passage ways, aisles, or other circulations spaces shall have clear headroom to minimize the risk of accidents.

d) Adequate space allowance should be made considering that the radial range of white cane is a band of 900 mm wide (*see* Fig. 17).

e) Any obstacle above 300 mm cannot be detected by the white cane. If there are projections above this height then the same has to be treated in accordance with **B-2.6.2**.



All dimensions in millimetres.

FIG. 18 RANGE OF REACH OF WHEELCHAIR USER

The maximum forward reach without obstruction is 1 200 mm from the floor and the minimum forward reach without obstruction is 400 mm from the floor as shown in Fig. 19.

The maximum side reach without obstruction is 1 300 mm from the floor and the minimum side reach is 250 mm as shown in Fig. 21.

B-1.4.3 *Height of Controls*

a) Height of controls from floor level : 400 mm - 1 200 mm

b) Height for switches (power) : 400 mm - 500 mm

c) Height for switches (lights) : 800 mm - 1 200 mm

d) Height of door handles : 800 mm - 1 100 mm

e) Opening controls for windows : 800 mm - 1 100 mm

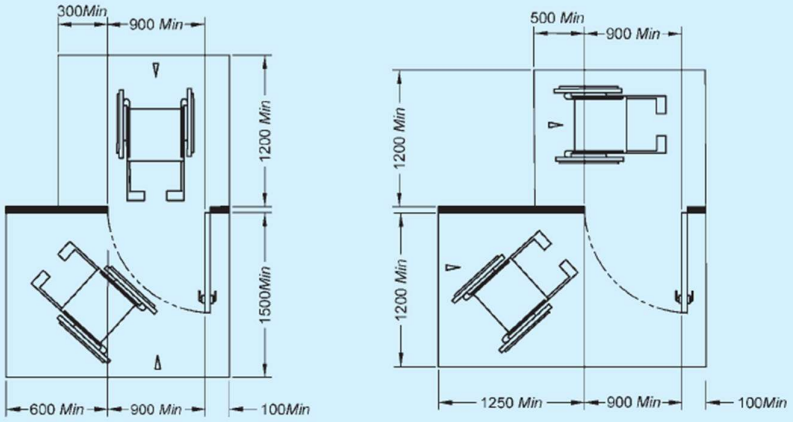
f) Space required under the counter for wheelchair footrest : 350 mm deep

B-1.4.4 *Entrance/Exit Door*

a) Minimum width of entrance/ exit door (*see* Fig. 43) : 900 mm

b) Minimum front approach doorways space (*see* Fig. 44 and Fig. 45) : 600 mm

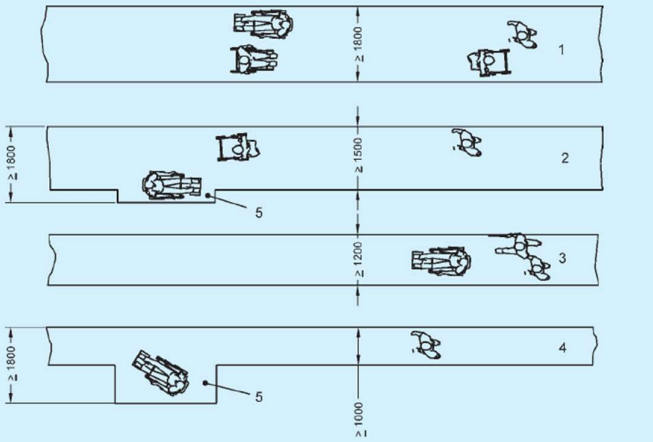
c) Minimum latch side approach doorways space (*see* Fig. 44) : 1 250 mm



44A FRONT APPROACH 44B LATCH SIDE APPROACH

All dimensions in millimetres.

FIG. 44 MANOEUVRING SPACE NEEDED BY WHEELCHAIR USERS TO APPROACH DOORS



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.

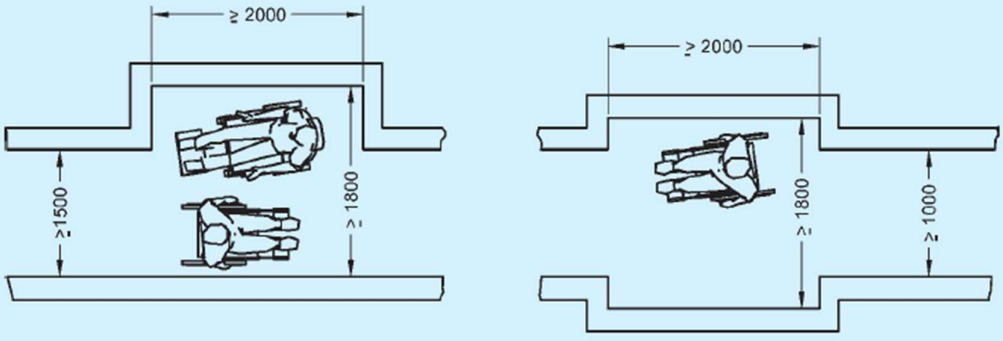
FIG. 26 DIFFERENT SURFACE WIDTHS OF THE PATH DEPENDING ON TRAFFIC

B-2.2.2 Width of the Walkway/Pathway

B-2.2.2.1 The unobstructed width of the pathway shall be,

a) not less than 1 800 mm for two-way traffic (*see* key 1 of Fig. 26); which may be reduced to a minimum of 1 500 mm, provided that a passing and turning space of at least 1 800 mm × 2 000 mm should be provided for every 25 m (*see* keys 2 and 5 of Fig. 26); and

b) not less than 1 200 mm for one-way traffic (*see* key 3 of Fig. 26); which may be reduced to a minimum of 1 000 mm, provided that a passing and turning space of at least 1 800 mm × 2 000 mm should be provided for every 25 m (*see* keys 4 and 5 of Fig. 26).



All dimensions in millimetres.

FIG. 27 EXAMPLES FOR PASSING PLACES FOR WHEELCHAIR USERS

B-2.2.2.2 *Passing space for wheelchair users*

A path whose surface width is less than 1 800 mm (*see* **B-2.2.2.1**) and whose overall length is more than 50 m, shall be provided with a passing place or places. Passing places should be a maximum of 25 m apart. This does not apply to a landing forming part of a sloped path, a ramp, steps or a stair.

Passing place for two people using wheelchairs shall be a minimum width of 1 800 mm for a minimum length of 2 000 mm (*see* examples in Fig. 27).

B-3 DESIGNATED ACCESSIBLE PARKING SPACE

B-3.1 Location of Parking

The designated accessible parking spaces that serve a building shall be located as near as possible to the main entrance, and the distance from the accessible parking space to the main entrance shall not be more than 30 m. In case the access is through lift, the parking shall be located within 30 m of the lift lobby. Kerb ramp from parking space to an adjacent higher pedestrian path shall be provided in accordance with **B-3.6**.

Where indoor parking is provided, a suitable passenger lift or separated pedestrian ramp shall be installed to provide access from the parked vehicle to the principal entrance of the building or buildings served by the car parking.

B-3.2 Number of Designated Accessible Parking Spaces

The following minimum requirements concerning the number of parking places shall apply:

a) A minimum of one accessible designated parking space shall be provided in every parking area;
b) For up to 10 parking spaces, one designated accessible parking space shall be provided;
c) For up to 25 parking spaces, two designated accessible parking space shall be provided;
d) For up to 50 parking spaces, three designated accessible parking spaces shall be provided;
e) For up to 100 parking spaces, four designated accessible parking spaces shall be provided;
f) For up to 200 parking spaces, six designated accessible parking spaces shall be provided; and
g) 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.

B-3.4 Car Park Entrance and Parking Controls

The car park entrance shall have a height clearance of at least 2 600 mm.

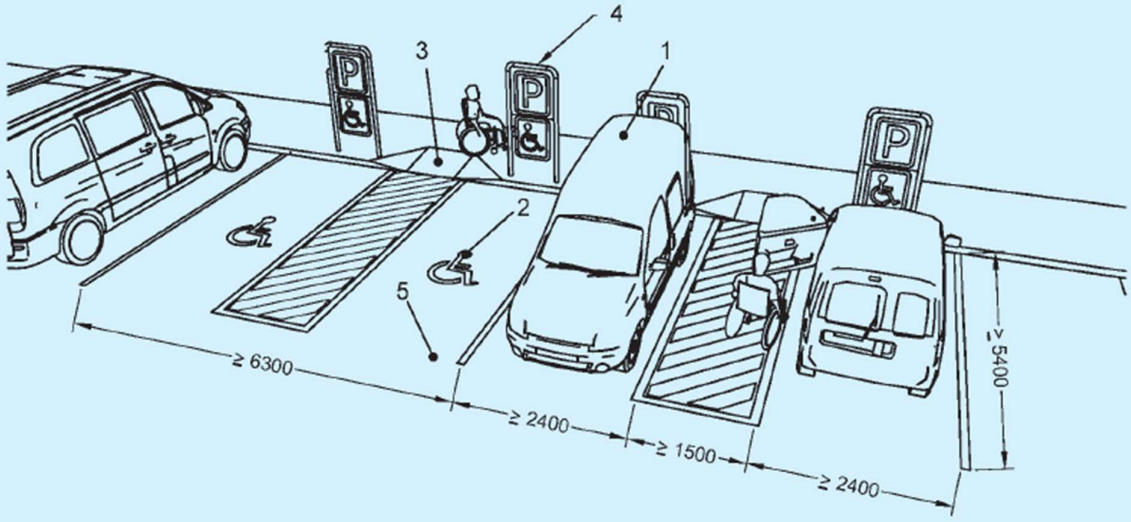
If payment machine is provided, it shall provide all control at the height between 800 mm and 1 000 mm (*see* **B-7**).

Access to the machine shall be level along an accessible route and easy to operate. The machine shall be located so that it does not create a hazard or barrier for persons with disabilities.

B-3.5 Accessible Car Parking Space Dimensions and Surface Requirements

The accessible car parking space shall meet the following requirements:

a) The minimum width of the parking space for a car shall be 3 900 mm and the minimum length shall be 5 400 mm. This minimum width includes the transfer area beside the car with a minimum of 1 500 mm.
b) Two accessible parking spaces with one shared transfer area are widely used and shall have a minimum width of 6 300 mm (*see* Fig. 38).
c) It shall have a firm, level surface without aeration slabs.
d) Wherever possible, it shall be sheltered.
e) The transfer zones, both on the side and the rear should have yellow or white cross-hatch road markings (*see also* Fig. 38).



Key
1 Minimum unobstructed height for vans 2 600 mm
2 Symbol of accessibility
3 Kerb ramp
4 Signage, including symbol of accessibility
5 Firm ground

All dimensions in millimetres.

FIG. 38 ACCESSIBLE PARKING SPACES ACCESSIBLE PARKING SPACES WITH ONE SHARED TRANSFER AREA

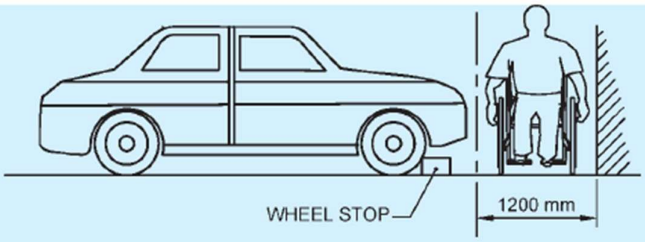
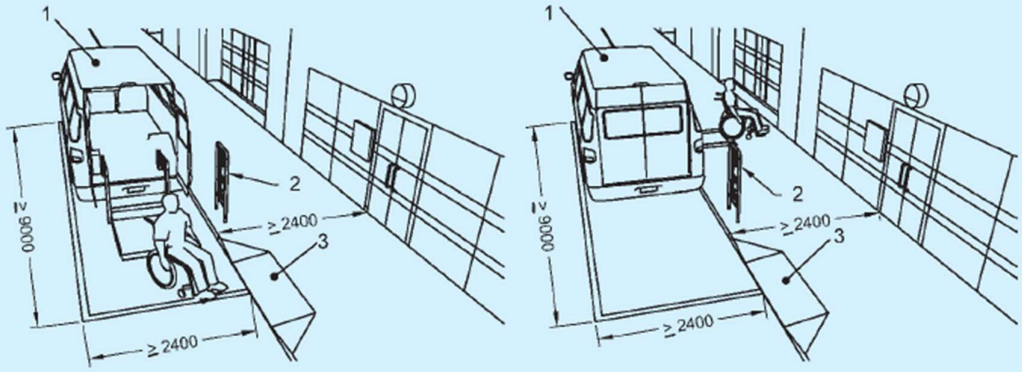


FIG. 39 ACCESSIBLE ROUTE WIDTH FOR WHEELCHAIR USERS TO PASS BEHIND A PARKED VEHICLE

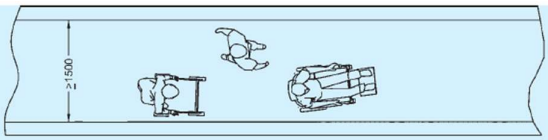


Key

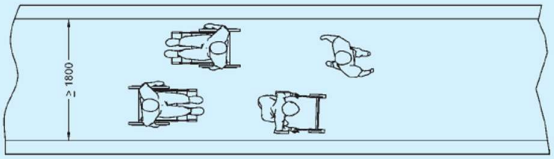
1 Minimum unobstructed height — 2 600 mm
2 Signage, including symbol of accessibility
3 Kerb ramp

All dimensions in millimetres.

FIG. 40 PARKING SPACE ALONG A FOOTPATH/SIDEWALK



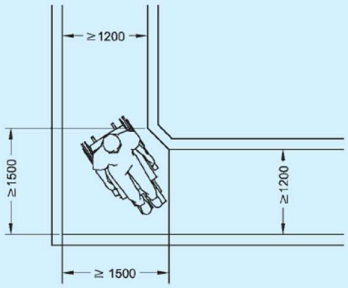
41A MINIMUM UNOBSTRUCTED WIDTH OF CORRIDOR



41B PREFERRED CORRIDOR WIDTH

All dimensions in millimetres.

FIG. 41 DIFFERENT CORRIDOR WIDTHS DETERMINED BY THE INTENSITY OF USE



All dimensions in millimetres.

FIG. 42 SPACE REQUIRED FOR 90° TURN

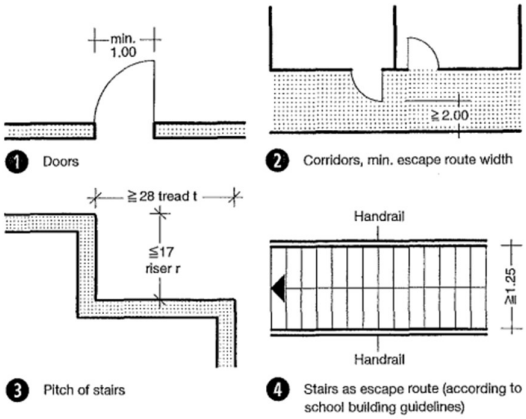
Table 10 Requirements for Ramp

(*Clause* B-6.2.2)

Sl No.	Level Difference	Maximum Gradient of Ramp	Ramp Width mm	Handrail on Both Sides	Other Requirements
(1)	(2)	(3)	(4)	(5)	(6)
i)	150 mm to 300 mm	1:12	1 200	√	—
ii)	301 mm to 750 mm	1:12	1 500	√	Landings after every 5 m of ramp run
iii)	751 mm to 3 000mm	1:15	1 800	√	Landings after every 9 m of ramp run
iv)	More than 3 000 mm	1:20	1 800	√	Landings after every 9 m of ramp run

2.6.5 NEUFERT (blackwell)

Some basic standard of spaces are specified in the Neufert book of standards particularly for some important space and some circulation space dimensions.



❶ Doors ❷ Corridors, min. escape route width

❸ Pitch of stairs ❹ Stairs as escape route (according to school building guidelines)

Circulation and escape routes

Horizontal and vertical access routes are normally also emergency escape routes. Escape routes must have a clear width of min. 1.00 m/150 people but min. width of corridors in classroom areas is 2.00 m, or 1.25 m with up to 180 people. Stairs in classroom areas must be 1.25 m wide, other escape routes 1.00 m wide. Max. length of escape routes: 25 m measured in a straight line from the stairwell door to the farthest work place, or 30 m in an indirect line to the centre of the room. Capacity of stairs dependent on number of users and average occupancy, e.g. stair width: 0.80 m for each 100 people (min. 1.25 m, but not wider than 2.50 m).

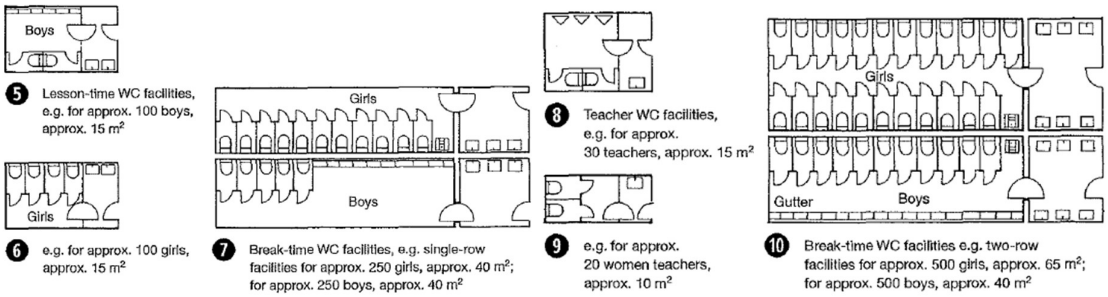
Doors → ❶

These may open inward or outward. Outward opening doors should not endanger pupils and project max. 20 cm into the escape route. → ❷.

Stairs, ramps → ❸ – ❹

The pitch of stairs is to be based on length of pace: 2 riser + tread = 59–65 cm. Ramps ≦6% gradient.

Washroom space



❺ Lesson-time WC facilities, e.g. for approx. 100 boys, approx. 15 m²

❻ e.g. for approx. 100 girls, approx. 15 m²

❼ Break-time WC facilities, e.g. single-row facilities for approx. 250 girls, approx. 40 m²; for approx. 250 boys, approx. 40 m²

❽ Teacher WC facilities, e.g. for approx. 30 teachers, approx. 15 m²

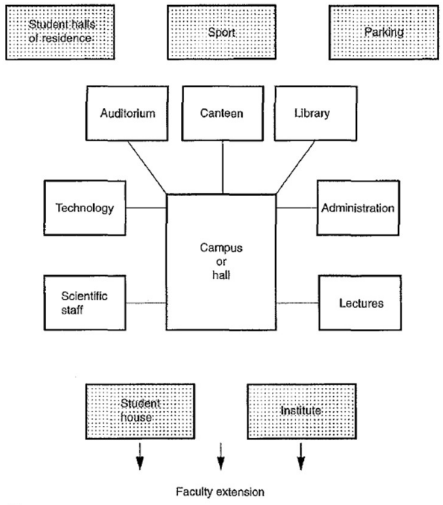
❾ e.g. for approx. 20 women teachers, approx. 10 m²

❿ Break-time WC facilities e.g. two-row facilities for approx. 500 girls, approx. 65 m²; for approx. 500 boys, approx. 40 m²

Context	Form	Separation boys/girls	Location	Use	Notes
class WC	toilets with lobby	no	near a classroom	during lesson	possibly for preschool and school kindergarten, poss. 2 WCs and lobby
lesson WC	toilets	yes	accessible from corridor or hall	several classes during lesson	each classroom without WC should be max. 40 m distance (incl. stairs) from lesson WC
break WC	toilets	yes	accessible from schoolyard or hall	for classes during the break	WCs at ground level, not in centre of building, accessible from break areas
teacher WC	toilets	ladies/gents	for teachers or administration	during the break	possibly linked to staff cloakroom

12 Recommended WC facilities

Related to zoning and planning of spaces certain examples is given to guide the planning process-

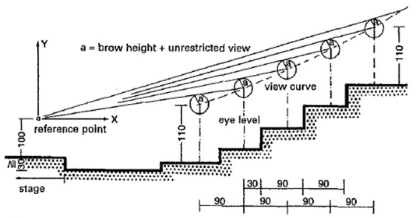


1 Scheme of university facilities

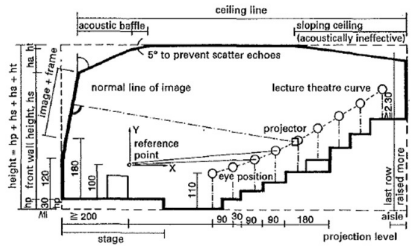
Central university facilities include: great hall, event hall, administration, deanery and student union. Also prominent are libraries, canteens, sports facilities, car parks and student residences (→ p. 167).

Basic space requirements for all subjects

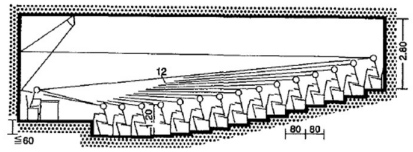
Lecture theatre for basic and special lectures, seminar and tutorial rooms (partially with PC workplaces) for detailed instruction of the course material, specialised libraries, rooms for scientific assistants, conference and examination rooms.



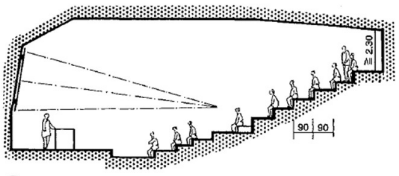
2 Geometrical determination of the listener curve



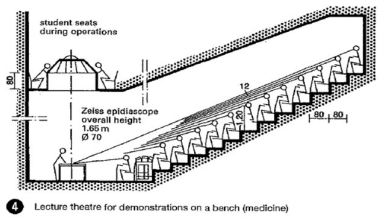
5 Longitudinal section through a lecture theatre



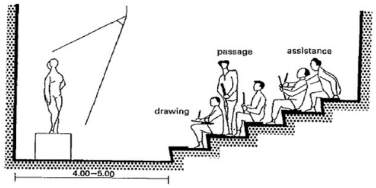
3 Normal lecture theatre design (humanities)



6 Steeply raked lecture theatre (natural sciences)

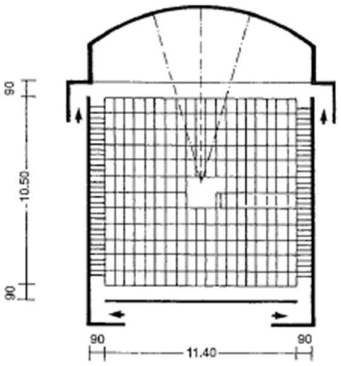


4 Lecture theatre for demonstrations on a bench (medicine)



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

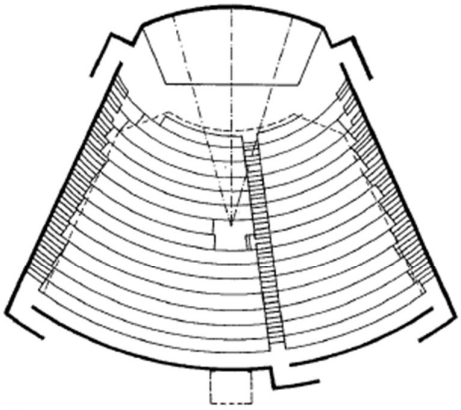
Lecture theatres-



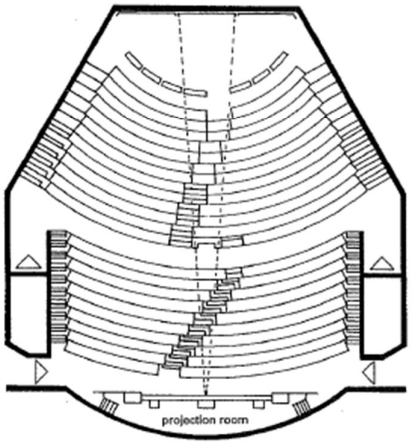
1 Rectangular lecture theatre with 200 seats

Larger lecture theatres for central lectures are preferably accommodated in auditorium buildings, and smaller lecture theatres for specialist lectures in institute or seminar buildings. Access to the lecture theatre is best separated from the research facilities, with the shortest possible route from outside to the back of the lecture theatre (in the case of raked seating, entrances behind the uppermost row, or in larger lecture theatres also at the side at middle height → 3). Lecturers enter the lecture theatre at the front, from the preparation room, and experimental apparatus can be rolled into the theatre. Common lecture theatre sizes are 100, 150, 200, 300, 400, 600, 800 seats. Lecture theatres with up to 200 seats, ceiling height approx. 3.5 m can be integrated into an institute building; larger theatres should ideally have their own building.

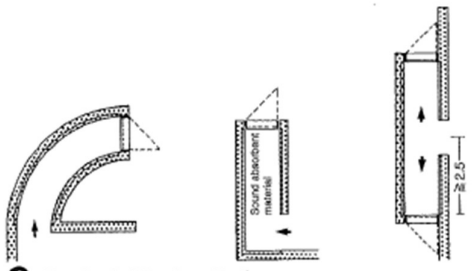
Experiment benches should be easily changeable, on wheels and suitable for laboratory work. Media connections are required.



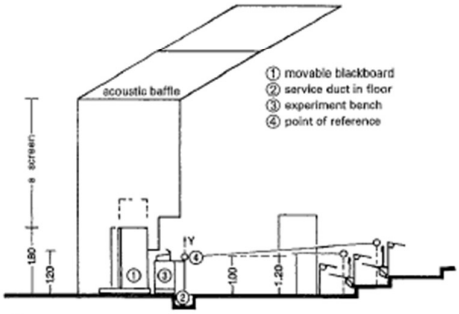
2 Trapazoidal lecture theatre with 400 seats



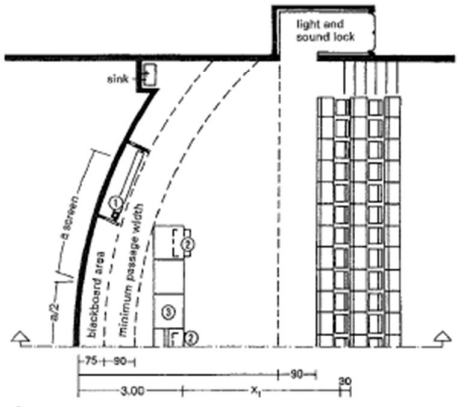
3 Lecture theatre with 800 seats



4 Floor plans for light and sound booths

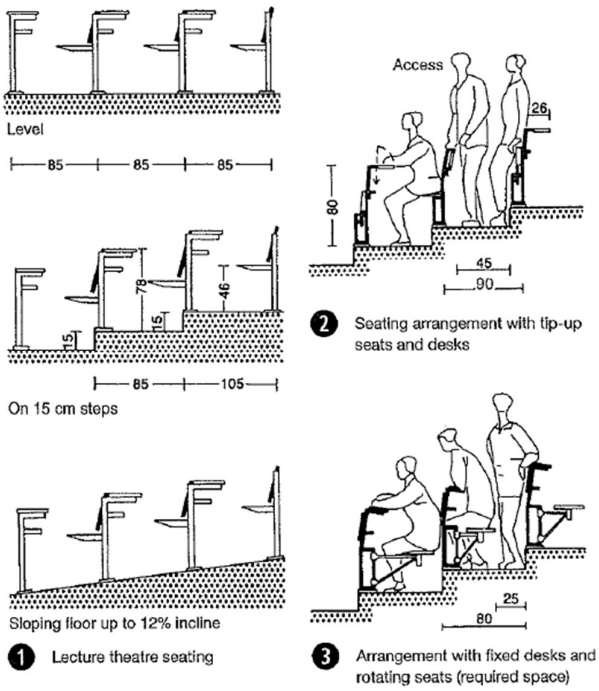


5 Longitudinal section → 6



6 Plan of podium area

Seating in lecture theatres-



❶ Lecture theatre seating

❷ Seating arrangement with tip-up seats and desks

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

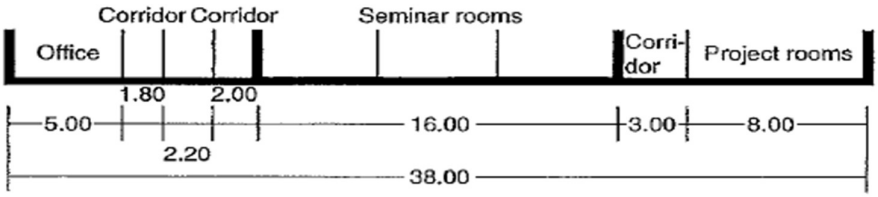
Lecture theatre seating

Combined units with tip-up or slewing seat, backrest and desk (with shelf or hook for case or bag), mostly fixed mounting → ❶ – ❸. Arrangement is according to subject, number of students and type of tuition: from light (slide shows, electro-acoustic facilities) to heavy. Some lecture theatres (surgery, internal medicine, physics) have raked (rising) rows of seating → ❶. The space requirement per student depends on type of seating, desk depth and floor pitch. Per student (including all walking areas in larger lecture theatres in a cramped situation), the space requirement is 1.10 m^2, in smaller lecture theatres and in a normal situation 0.80–0.95 m^2.

Projection, boards, acoustics, lighting:

Projection screens and black-/whiteboards can be designed as segmented surfaces, or fixed to a straight back wall. Wall boards in many sections, mostly vertically sliding, manual or mechanical, can be dropped down below the projection area. Wheeled boards or screens are also possible.

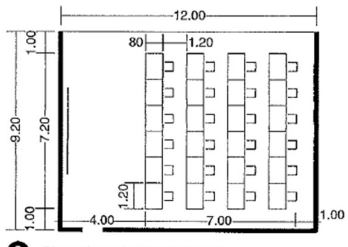
Speech should reach the listener as uniformly as possible, with no disturbing echo. Suspended ceilings will aid reflection and absorption. Rear walls should be clad with sound-absorbing material, other walls flat. Light intensity in windowless lecture theatres: 600 lx.



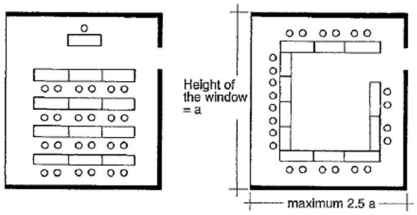
❷ Section → ❶: column-free pre-stressed concrete floor boards supported on the external walls

Service rooms for lecture theatre Every lecture theatre should have a directly accessible side room. This has no fixed function and can be used as a storage room. Sufficient preparation area should be provided next to all lecture theatres featuring experiments, positioned at the same level and with a short route to the podium. Guideline for the min. size: for rectangular plan lecture theatre, approx. 0.2-0.25 m2/seat; trapezoidal plan 0.15-0.18 m2/seat; natural science and pre-clinical subjects 0.2-0.3 m2/seat. Areas for storage and staff rooms are necessary for the proper operation of a lecture theatre building: a room for technical staff to maintain the facilities; for cleaning staff; storeroom for replacement parts, light bulbs, fluorescent tubes, black-/whiteboard, clothing etc. Min. size per room 15 m2; space required for all side rooms min. 50-60 m2.

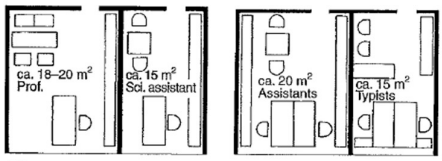
Computer rooms-



❸ Dimensions of a computer room



❹ Dimensions of seminar rooms with natural ventilation



❺ Basic equipment for service rooms

Computer room
The size of the computer room is related to the number and size of the computer desks, which depends on the size of the displays.

General tuition rooms
Seminar rooms, usual sizes: 20, 40, 50, 60 seats; mobile double tables, width 1.20 m, depth 0.60 m, space required per student 1.90–2.00 m.
Variable arrangement of the tables for tutorial and group work. If there is free ventilation from only one external wall, the depth of the room should not exceed 2.5 × clear ceiling height.

Offices for scientific personnel → ❺
professor 20–24 m^2
scientific assistant 15 m^2
assistant 20 m^2
secretary 15 m^2 (double occupation 20 m^2)

Cloakroom and WC facilities
Rough estimate for both together: 0.15–0.16 m^2/seat
Faculty and open-access libraries (→ Libraries pp. 247 ff.)
Storage for 30 000–200 000 vols on open-access shelves.

2.6.6 ISO 14000 – (14000)

ISO in Brief: ISO stands for the International Organization for Standardization, with 160 national standards institutes as members. It develops over 18,000 standards that offer practical tools for sustainable development across economic, environmental, and societal dimensions. These standards facilitate trade, spread knowledge, and share technological advancements and good management practices. ISO standards are developed by experts from various sectors, including industry, government agencies, testing laboratories, consumer associations, and academia, and represent an international consensus.

ISO and the Environment: ISO has a multi-faceted approach to addressing environmental needs. This includes:

Developing the ISO 14000 family of environmental management standards, applicable to any organization in public or private sectors.

Helping with climate change challenges through standards for greenhouse gas accounting, verification, emissions trading, and measuring product carbon footprints.

Creating normative documents to encourage the inclusion of environmental aspects in product design.

Offering a wide range of standards for sampling and test methods for specific environmental challenges, such as monitoring air, water, and soil quality, noise, radiation, and controlling dangerous goods transport. These standards also serve as a technical basis for environmental regulations in some countries.

Environmental Management and Sustainability: Organizations and stakeholders worldwide are increasingly recognizing the importance of environmental management, socially responsible behavior, and sustainable growth. ISO International Standards provide a framework for consistent environmental management practices, supporting the sustainability of organizations, products, and services. These standards are technically credible, fulfill stakeholder needs, facilitate uniform requirements, promote efficiencies, support regulatory compliance, and enhance investor confidence.

ISO/TC 207, Environmental Management: This technical committee is responsible for developing and maintaining the ISO 14000 family of standards. It was established in 1993 in response to the "sustainable development" challenge articulated at the 1992 United Nations Conference on Environment and Development. ISO/TC 207 has a large and diverse membership, with national delegations from over 100 countries participating. The committee also maintains relationships with over 30 international organizations as liaison members.

Scope of ISO/TC 207's Work: The work of ISO/TC 207 covers areas such as environmental management systems, environmental auditing, environmental performance evaluation, environmental labeling, life cycle assessment, environmental communication, environmental aspects of product design and development, environmental aspects in product standards, terms and definitions, greenhouse gas management, and measuring the carbon footprint of products.

Overview of the ISO 14000 Family of Standards:

Standard/Series	Primary Focus	Key Description and Purpose
ISO 14001	Environmental Management Systems (EMS)	The world's most recognized framework for EMS, helping organizations manage their environmental impact and demonstrate sound environmental management. Widely adopted globally.
ISO 14004	Environmental Management Systems (Guidance)	Complements ISO 14001 by providing additional guidance and useful explanations for EMS implementation.
ISO 19011	Auditing Management Systems	Provides guidance on principles of auditing, managing audit programmes, conducting audits, and auditor competence. Useful for both EMS and quality management system audits.
ISO 14031	Environmental Performance Evaluation	Provides guidance on how an organization can evaluate its environmental performance. Addresses the selection of suitable performance indicators and can be used for internal and external reporting.
ISO 14020 series	Environmental Labels and Declarations	Addresses various approaches to environmental labels and declarations, including eco-labels (Type I), self-declared environmental claims (Type II), and quantified environmental information (Type III). Aims to provide truthful and accurate information for informed purchasing decisions.
ISO 14040 standards (e.g., ISO 14040, ISO 14044)	Life Cycle Assessment (LCA)	Tools for identifying and evaluating the environmental aspects of products and services from "cradle to grave". Provides guidelines on the principles and conduct of LCA studies to reduce overall environmental impact.
ISO 14064 parts 1, 2, 3	Greenhouse Gas (GHG) Accounting and Verification	International standards providing clear and verifiable requirements to support organizations and proponents of GHG emission reduction projects.
ISO 14065	GHG Validation and Verification Bodies	Specifies requirements to accredit or recognize organizational bodies that undertake GHG validation or verification using ISO 14064 or other relevant standards.
ISO 14063	Environmental Communication	Provides guidelines and examples for environmental communication, helping companies link to external stakeholders.
ISO Guide 64	Environmental Aspects in Product Standards	Provides guidance for addressing environmental aspects in product standards, useful for standards developers, designers, and manufacturers.

ISO 14045 (Upcoming)	Eco-efficiency Assessment	Will provide principles and requirements for eco-efficiency assessment, relating environmental performance to value created. Establishes a methodological framework for eco-efficiency assessment.
ISO 14051 (Upcoming)	Material Flow Cost Accounting (MFCA)	Will provide guidelines for general principles and framework of MFCA, a management tool to promote effective resource utilization and reduce material costs.
ISO 14067 (Upcoming)	Carbon Footprint of Products	Will provide requirements for the quantification and communication of greenhouse gases associated with products.
ISO 14069 (Upcoming)	GHG Quantification and Reporting for Organizations	Will provide guidance for organizations to calculate the carbon footprint of their products, services, and supply chain.
ISO 14005 (Upcoming)	Phased EMS Implementation	Will provide guidelines for the phased implementation of an EMS to facilitate adoption by small and medium-sized enterprises.
ISO 14006 (Upcoming)	Eco-design	Will provide guidelines on eco-design.
ISO 14033 (Upcoming)	Quantitative Environmental Information	Will provide guidelines and examples for compiling and communicating quantitative environmental information.
ISO 14066 (Upcoming)	Competency for GHG Validators and Verifiers	Will specify competency requirements for greenhouse gas validators and verifiers.

Table 14 ISO 14000 brief

Environmental and Economic Benefits: The ISO 14000 standards, used independently or together, offer significant tangible economic benefits such as reduced raw material/resource use, reduced energy consumption, improved process efficiency, reduced waste generation and disposal costs, and utilization of recoverable resources. These economic benefits are associated with distinct environmental benefits, contributing to sustainable development and the "triple bottom line".

PDCA Cycle: The ISO 14000 family is designed to be implemented according to the Plan-Do-Check-Act (PDCA) cycle, which underlies all ISO management system standards. The document provides tables classifying various ISO 14000 standards according to their optimal place within the PDCA cycle.

3. SITE INVENTORY

3.1 LOCATION –

The Site is located 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.

Category	Detail
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

Table 15 location details

3.2 SITE IMAGES AND INFORMATION

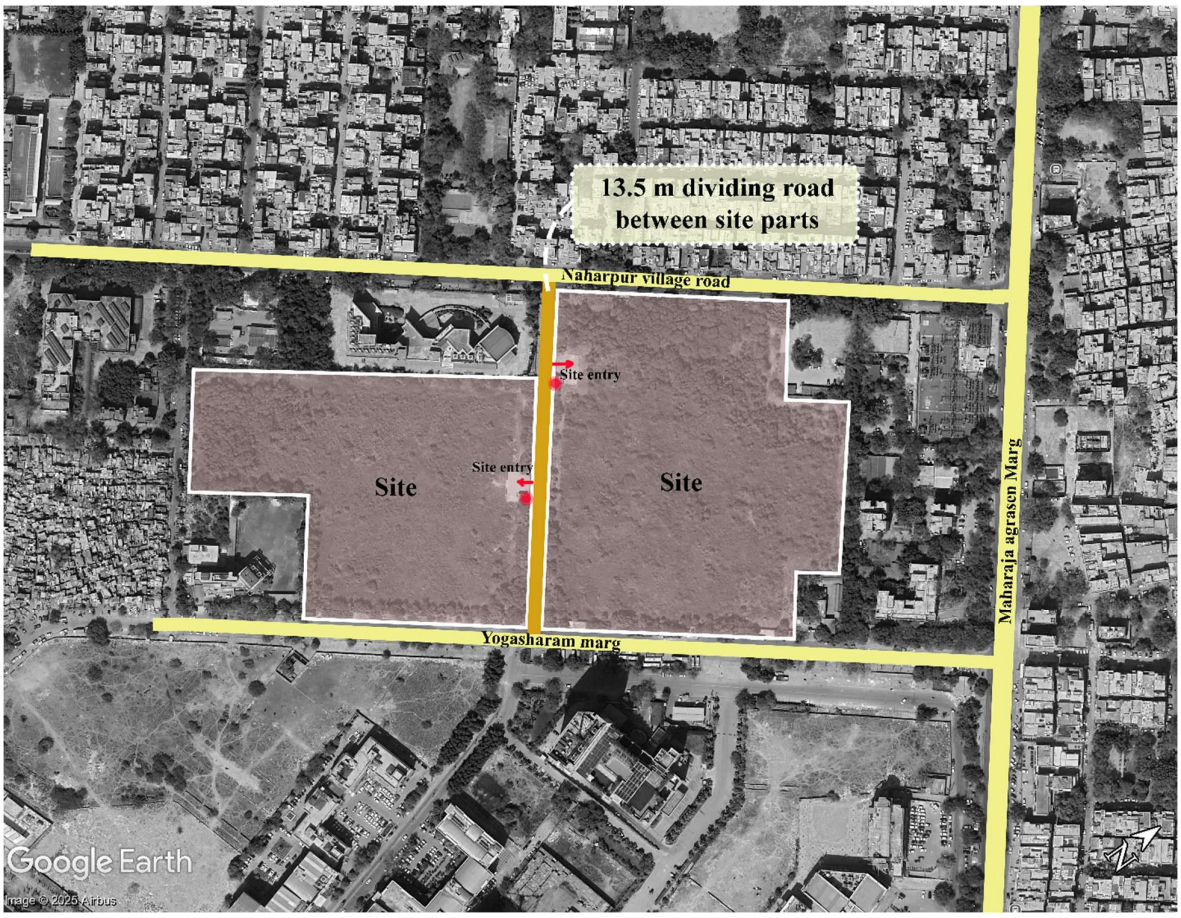


Figure 10 Site plan



Figure 11 site images

The two entry points are highlighted in the plan so both the sites are gated with 13.5 m road dividing them. In the site plan given above two red points shows the places where the two images are taken.

3.3 DETAILED SITE ANALYSIS

3.3.1 EXISTING SITE CONDITION AND ACTIVITY –

Site Division and Connectivity

The 18-acre site is uniquely bisected by a **13.5-meter-wide road**, splitting it into two distinct parcels of **10 acres and 8 acres**. This division is a fundamental characteristic that will significantly influence any future development, requiring careful consideration for connectivity and shared infrastructure between the two halves. The presence of **pre-installed street lights** on this dividing road is a notable advantage, as it provides a baseline for nighttime visibility and safety.



Figure 12Site division road

Lush Greenery: A Challenge and an Opportunity

One of the most striking features of the site is its abundant natural vegetation. It's **fully covered with lush green trees and long grass**. While this natural beauty offers aesthetic appeal and environmental benefits, it also presents a significant **challenge for tree preservation**. Any development plan will need to meticulously identify and protect existing mature trees, potentially requiring innovative design solutions to integrate them into the new landscape rather than clearing them. This also highlights an opportunity to brand the development as eco-friendly and biophilic.



Figure 13 Vegetation inside site

The Dynamic Dividing Road: A Hub of Activity

The 13.5-meter road that bisects the site isn't just a physical divider; it's also a **vibrant hub of local activity**. The most interesting aspect is the **evening fish market** that regularly sets up here. This informal market indicates a strong local presence and a potential for integrating **community-oriented spaces** or considering the impact of this activity on future residents. Understanding the peak hours and operational footprint of this market will be crucial for any design that borders this road.

Yogashram Marg: An Underdeveloped Frontier

In stark contrast to the development elsewhere, the area at the **backside of the site, along Yogashram Marg, is noticeably underdeveloped and poorly maintained**. This side currently presents a less appealing frontage due to its unkempt nature and the presence of **waste collectors at the corner turning of the road**. This suggests a need for significant infrastructure and aesthetic upgrades on this side if it is to become a primary access point or showcase for the new development. It also points to potential challenges with waste management in the immediate vicinity that may need to be addressed.



Figure 14 Yogashram marg

Naharpur Village Road: The Developed Advantage

Conversely, the **Naharpur Village Road** offers a more promising outlook. This side of the site benefits from being **well-developed with existing facilities**, indicating established infrastructure and a more organized environment. Its further connection to **Maharaja Agrasen Road** is a significant advantage, providing excellent accessibility to a wider network and potentially reducing the need for extensive new road infrastructure on this side. This road could serve as a primary access point, leveraging its existing development and connectivity.



Figure 15 Naharpur village road

Poor Drainage: An Environmental and Practical Concern

A critical issue impacting the site's immediate surroundings is the **poorly managed and uncleaned drainage system**. The presence of **open drains where all waste is collected** poses significant

environmental and practical concerns. This not only creates an unsightly and unhygienic environment but also carries risks of waterlogging, foul odors, and health hazards. Any development will need to incorporate robust and effective drainage solutions that go beyond the site boundaries to address this existing problem and ensure a healthy living environment. This could involve collaborating with local authorities for a comprehensive drainage overhaul in the vicinity.



Figure 16 Poor drainage and unhealthy site condition

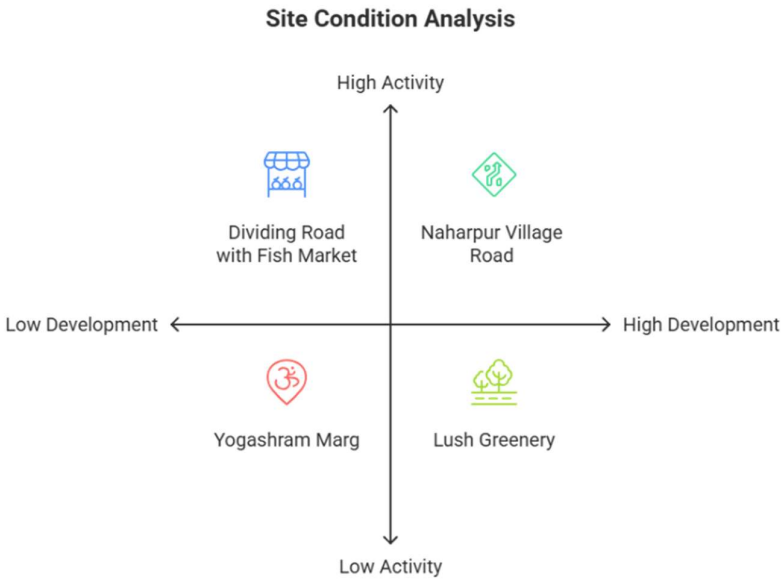


Figure 17 Site condition analysis





Site visit images

3.3.2 MACRO SITE ANALYSIS

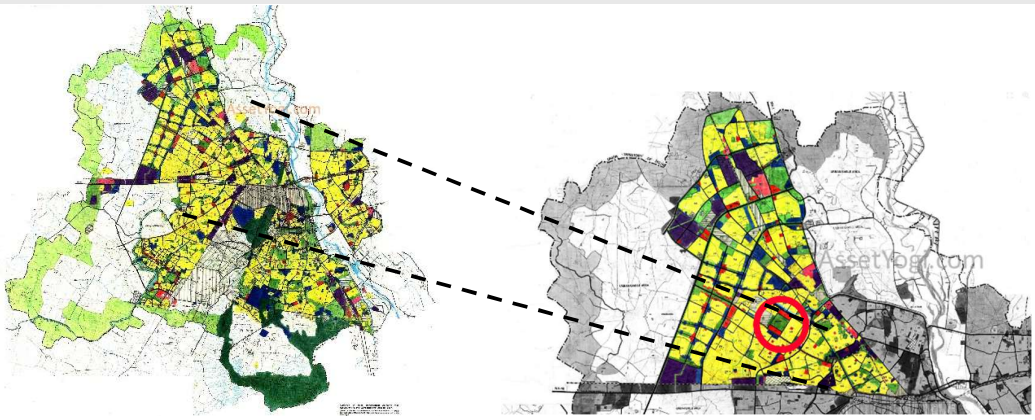


Figure 18 DDA master plan rohini sector

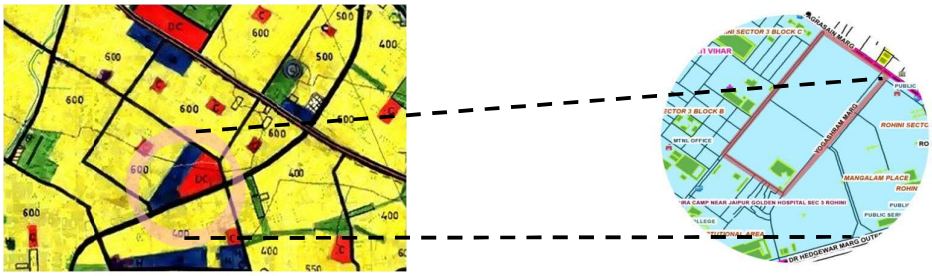


Figure 19 Sector H, site location (2041)

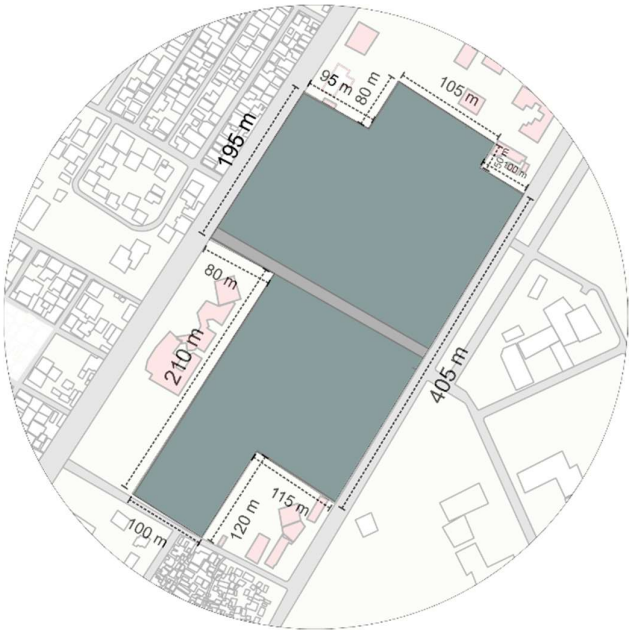


Figure 20 site Dimension

CONTEXTUAL ANALYSIS

The project site's strategic location within a vibrant community is central to its design. Proximity to educational institutions and healthcare facilities ensures convenient access to quality education and prompt medical attention. This integration fosters a symbiotic relationship with surroundings, blending seamlessly with the urban fabric. By prioritizing user-centricity, the design leverages these amenities to create a highly livable and supportive environment, enhancing daily life.

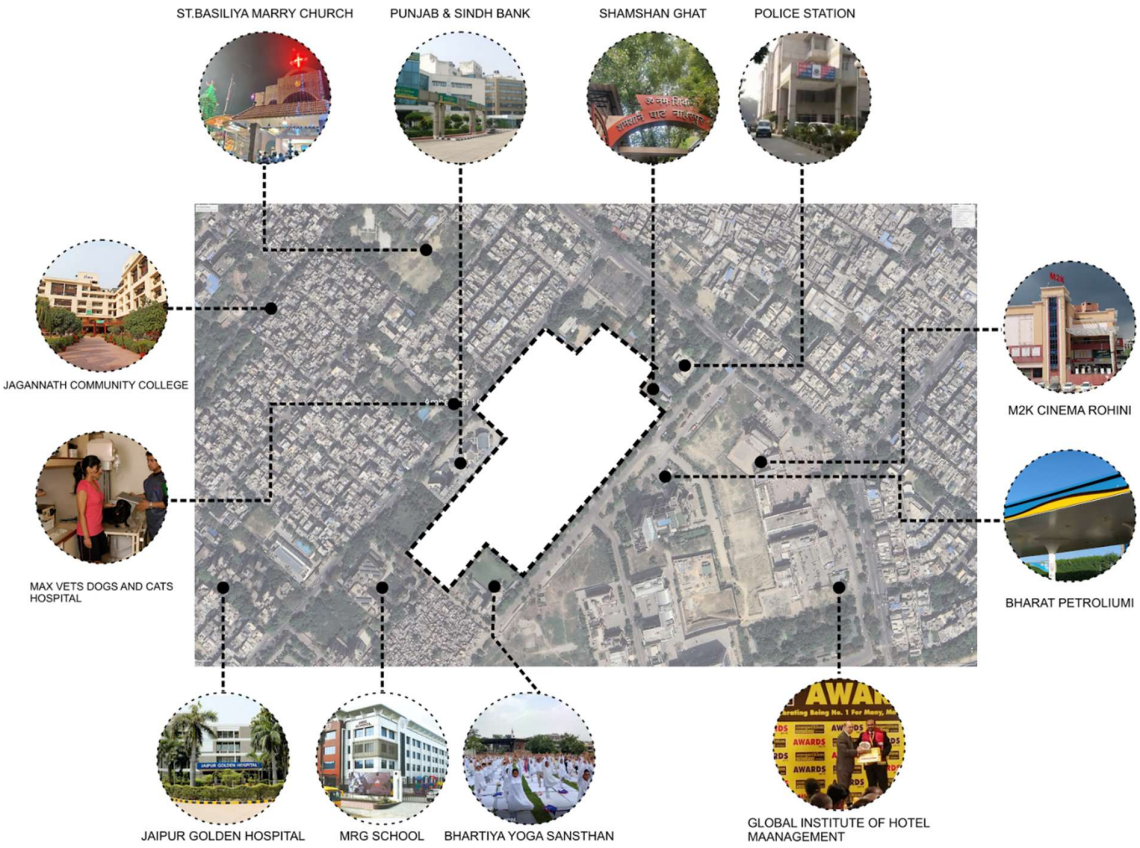


Figure 21 Contextual analysis

Name	Distance
Staff Training Centre Punjab And Sind Bank,	750 m
Shamshan ghat	600m
Rohini police station	550m
M2k cinema	750m
Bharat petrol pump	750m
DDA	1km

Bhartiya yoog sansthan	1km
Jaipur golden hospoital	1km
MRG School	750m
MTNL office	150 m
Jagganath community centre	1 km
seven sea hotel	500m
Power house	300m

Figure 22 Proximity table

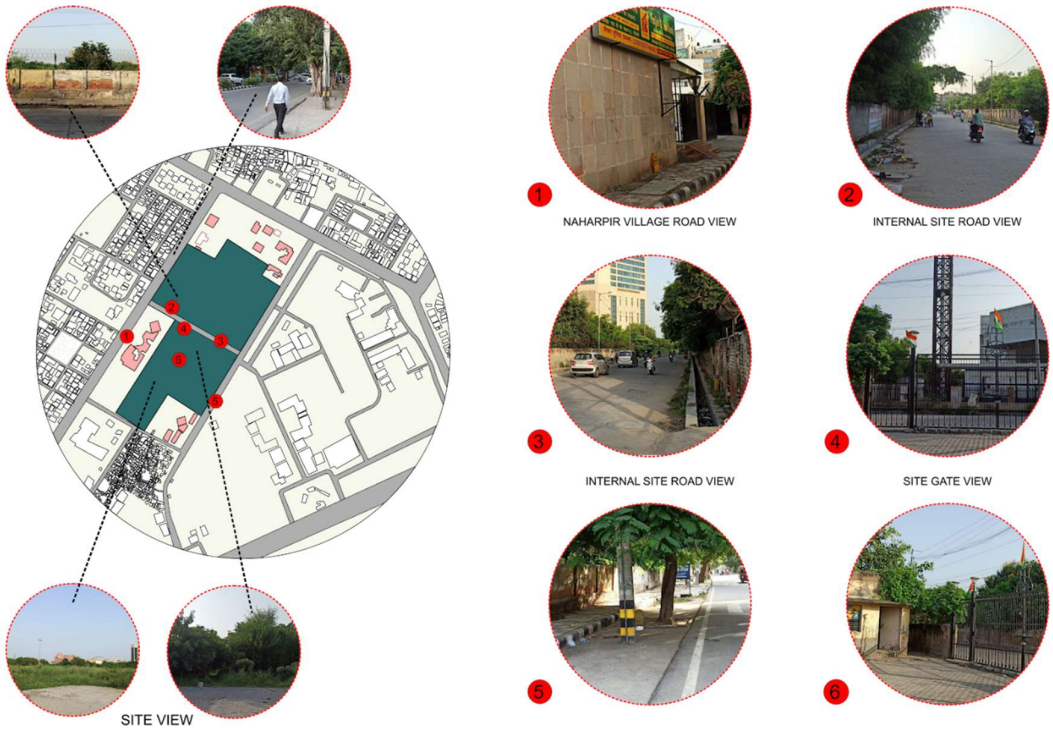


Figure 23 site surrounding

Demographic Analysis of Rohini - (IQ, n.d.)

Zone	Holding capacity	Existing population	Holding capacity
	MPD 2001	**2001**	**2021**
Dwarka		597	1300
Rohini III		96	160
Rohini IV & V		198	820
Narela		179	1620
Sub total	**3222**	**1070**	**3900**

Area (2020)	2.07 km²
Population (2020)	54989
Population Density	26585 people per km²
Male Population	29369
Female Population	25620

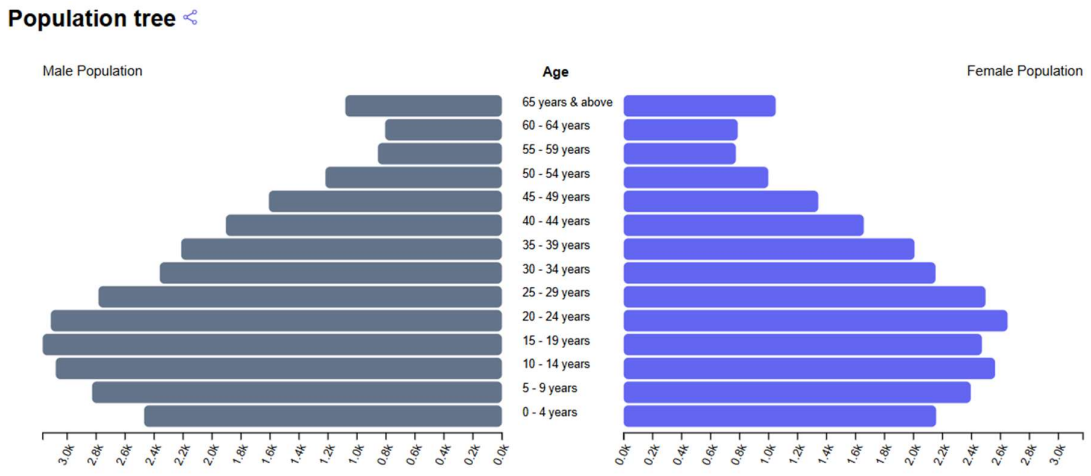


Figure 24 Demographic data of Rohini sector 3

Inferences -

Accommodate High Demand: The significant existing population and projected growth in Rohini Sector 3 and surrounding areas necessitates designing campus facilities with ample capacity and adaptable spaces for a large influx of students, faculty, staff, and potential community users.

Target Young Adult Needs: With a high concentration of the population in the 15-39 age group (especially 20-29 years), the design must prioritize:

Modern, flexible academic spaces and advanced technological infrastructure.

Vibrant student centers, diverse recreational facilities, and social gathering areas.

Contemporary residential options (hostels, faculty housing) tailored for young adults.

Prioritize Community Integration: The dense local population and the university's "open campus" vision demand designs that:

Offer publicly accessible facilities and green spaces for community use.

Consider mixed-use elements (e.g., cafes, retail) to foster interaction.

Strategically manage and potentially integrate existing local activities like the evening fish market on the dividing road.

Integrate Robust Sustainability: Given the high population density and existing regional environmental challenges (like groundwater quality), the design must strongly adhere to:

Net-zero energy consumption targets and maximization of renewable energy.

Comprehensive water conservation (rainwater harvesting, recycling) and efficient waste management systems.

Green building certifications (GRIHA 5 Star/LEED Platinum).

Plan for Scalable Growth: The overall population growth trends in Rohini require the campus design to incorporate flexibility and modularity for future expansion of academic, residential, and infrastructural components.

Connectivity & movement analysis –

The site's strategic location offers unparalleled connectivity crucial for the university's success. Proximity to major arterial roads ensures efficient vehicular access. Seamless integration is further bolstered by excellent access to public transport, particularly the Delhi Metro. This vital interconnectedness enhances accessibility, strengthens the campus's urban integration, and broadens its reach across the city.

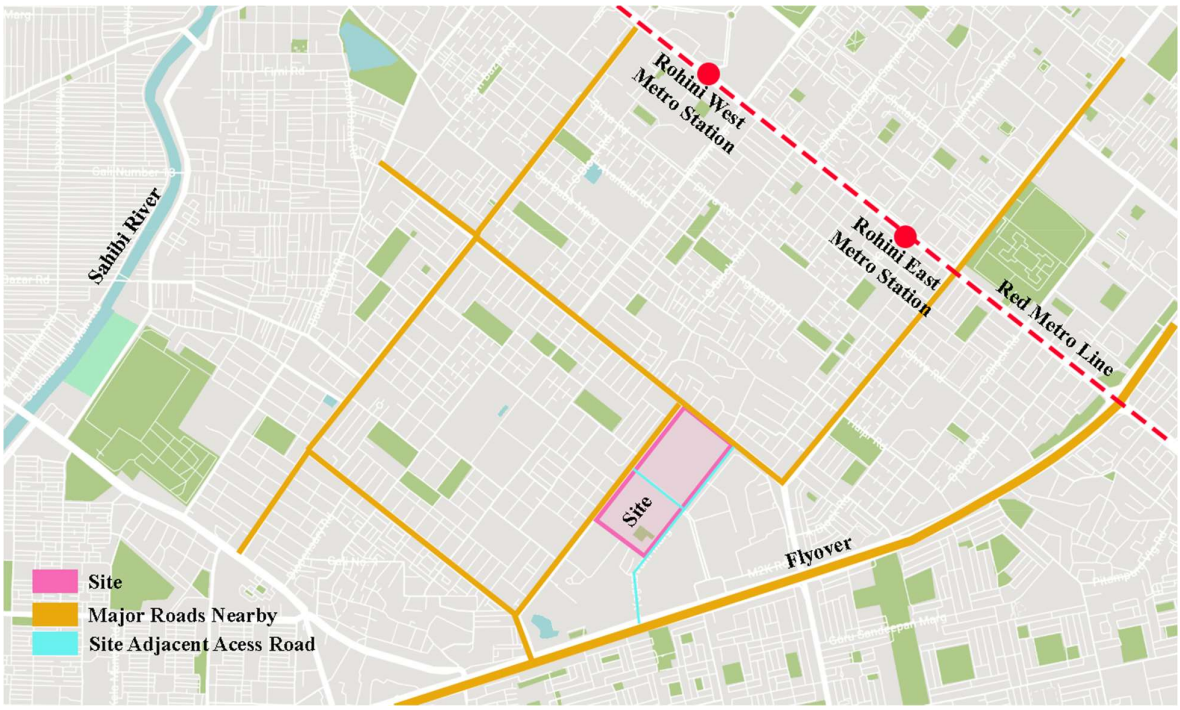


Figure 25 Major roads around site

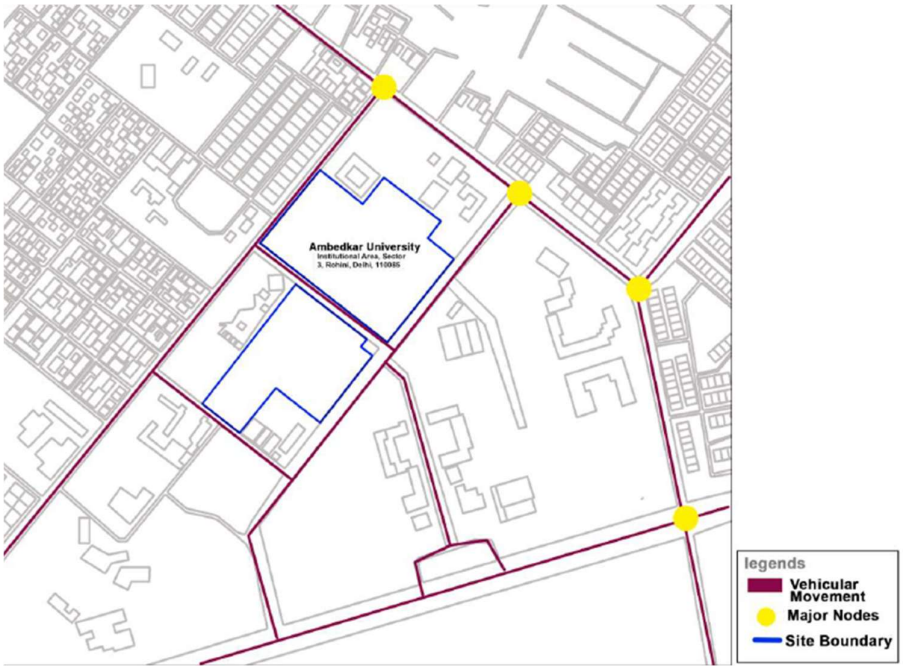


Figure 26 Vehicular movement

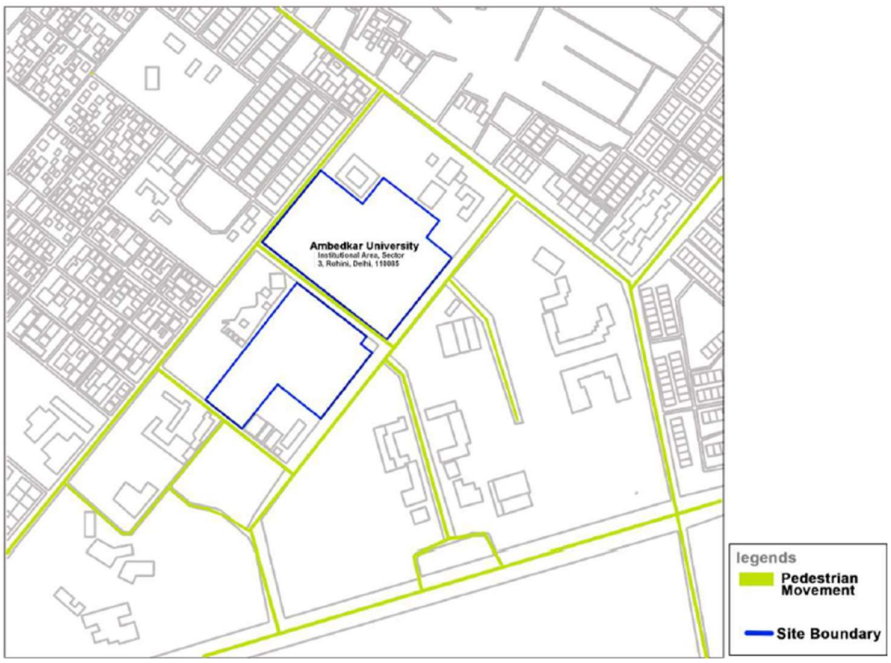


Figure 27 Pedestrian movement

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

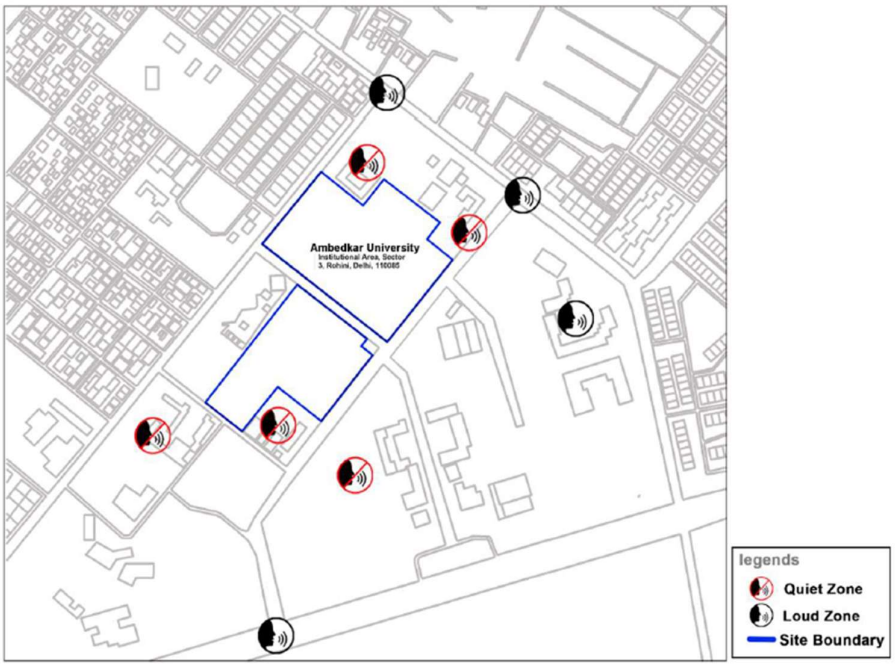


Figure 28 noise analysis

- **Inferences –**

Strategic Zoning for Noise & Function:

- Place noise-generating or less sensitive areas (parking, administration) along loud perimeters and the dividing road.
- Locate quiet, critical academic and residential zones deeper within the site to minimize noise intrusion.
- Employ acoustic design to buffer noise.

Optimized Vehicular Flow & Parking:

1. Utilize multiple major road access points to distribute traffic and reduce congestion.
2. Design an efficient internal circulation system and ample, potentially multi-level, parking.
3. Separate service routes from main pedestrian paths for safety.

Prioritize Pedestrian & Public Transport:

- Create direct, safe pedestrian links to Rohini East and West Metro Stations.
- Develop a comprehensive, shaded internal pedestrian network and integrate cycling lanes with ample parking to promote sustainable mobility.

Integrate Divided Site Effectively:

- Address the 13.5m public road dividing the site with solutions like pedestrian bridges or underpasses for seamless campus connectivity.
- Design permeable edges to foster positive interaction with local community activities (like the fish market) while ensuring campus security.

3.3.3 MICRO SITE ANALYSIS –

- Existing Vegetation -

The site is characterized by a rich and abundant natural landscape, currently **fully covered with lush green trees and long wild grasses**. A preliminary identification of tree species present on the site includes:

- **Calcutta Bamboo**
- **Stargoose Berry**
- **Bauhinia Tree**
- **Neem Tree**
- **Black Locust Tree**
- **Mango Tree** (located outside the site boundary)

This existing verdant cover, while contributing to the site's natural beauty, presents a significant **challenge for preservation** during the planning and development of the new university campus. Careful consideration will be required to integrate these natural elements into the design, aiming to minimize disturbance and leverage their environmental benefits.

- Topography –
  - Coordinates 28.6969° N, 77.1104° E
  - Maximum elevation: 251 m
  - Minimum elevation: 206 m
  - Average elevation: 217 m

There are no existing trees on the site. 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

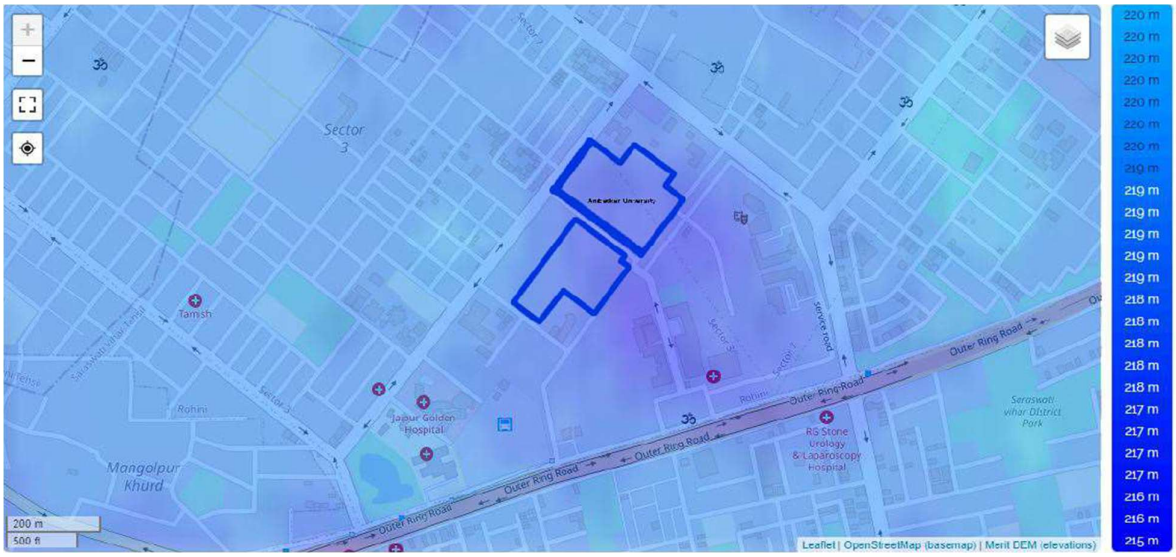


Figure 29 Elevation analysis

- Soil type –

  The soil in Rohini, Delhi, is predominantly light-textured, with sandy and loamy soils being common. Specifically, the Delhi series soils are described as very deep, somewhat excessively drained soils formed from wind-modified material weathered from granitic rocks.

3.3.4 SWOT ANALYSIS –

SWOT Analysis: Ambedkar University Delhi Campus Site, Rohini Sector 3

Strengths (Internal Factors - Advantages)

- **Established Boundary Wall:** A pre-built boundary wall by the authority saves significant initial construction time and cost, and immediately defines the site perimeter.
- **Proximity to Outer Ring Road:** Approximately 1 km away, offering excellent regional road access.
- **Metro Connectivity:** Close proximity to Rohini East and Rohini West Metro Stations on the Red Line ensures excellent public transport accessibility for students, faculty, and staff.
- **Existing External Utilities**: External roads, sewerage, and storm water drainage are already laid in Rohini by DDA, allowing the campus to connect to established services.
- Young Local Demographic: The high concentration of young adults (15-39 years) and children (0-14 years) in Rohini Sector 3 provides a strong, growing potential student and staff base locally.

Weaknesses (Internal Factors - Disadvantages/Limitations)

- **Site Division by Public Road:** The 13.5m public road bisecting the 7.3-hectare site creates a physical and functional division (10 acres and 8 acres), complicating master planning, internal connectivity, and security.
- **Extensive Existing Vegetation:** Being "fully covered with lush green trees and long grass" poses a significant challenge for tree preservation during construction, potentially limiting layout flexibility or increasing costs for integration.
- **Poor Local Drainage Management:** The existing drainage near the site is "not properly managed and not cleaned," with open drains collecting waste, presenting an immediate environmental and aesthetic challenge that needs to be addressed in the design.
- **Existing Noise Sources**: "Loud Zones" are identified along main roads and, crucially, on the dividing road (due to the evening fish market), requiring significant noise mitigation strategies for academic and residential areas.

Opportunities (External Factors - Potential for Growth/Advantage)

- **High Local Demand for Education:** The large and growing young adult population in Rohini presents a significant local market for university enrollment.
- **University's Vision for Community Integration:** The AUD's explicit vision to create "open campuses" that share infrastructure with neighborhood communities aligns well with the high local population density, creating opportunities for mutually beneficial interaction (e.g., shared sports, cultural events).
- **Emphasis on Sustainability:** The clear mandate for a "Net Zero Energy" campus, GRIHA 5 Star/LEED Platinum standards, and sustainable practices (water harvesting, waste recycling) provides an opportunity to create a pioneering, environmentally responsible institution.
- **Developed Surrounding Areas:** The "Naharpur Village Road" side is developed with all facilities, providing a strong, functional frontage and connection to a major arterial road (Maharaja Agrasen Road).

Threats (External Factors - Potential Challenges/Risks).

- **Impact of Local Activity (Fish Market):** The evening fish market on the dividing road, while unique, could pose challenges related to sanitation, traffic congestion, and noise, potentially conflicting with a university environment if not managed carefully.
- **Waste Management Challenges:** The existing poor drainage and waste collection on Yogashram Marg could lead to broader environmental and public health concerns that the university might need to address or advocate for improvements on a larger scale.
- **Pressure on Public Infrastructure:** While the site has good access, the increasing population density in Rohini could lead to greater strain on shared public infrastructure (roads, utilities), potentially affecting the campus if not adequately upgraded by authorities.

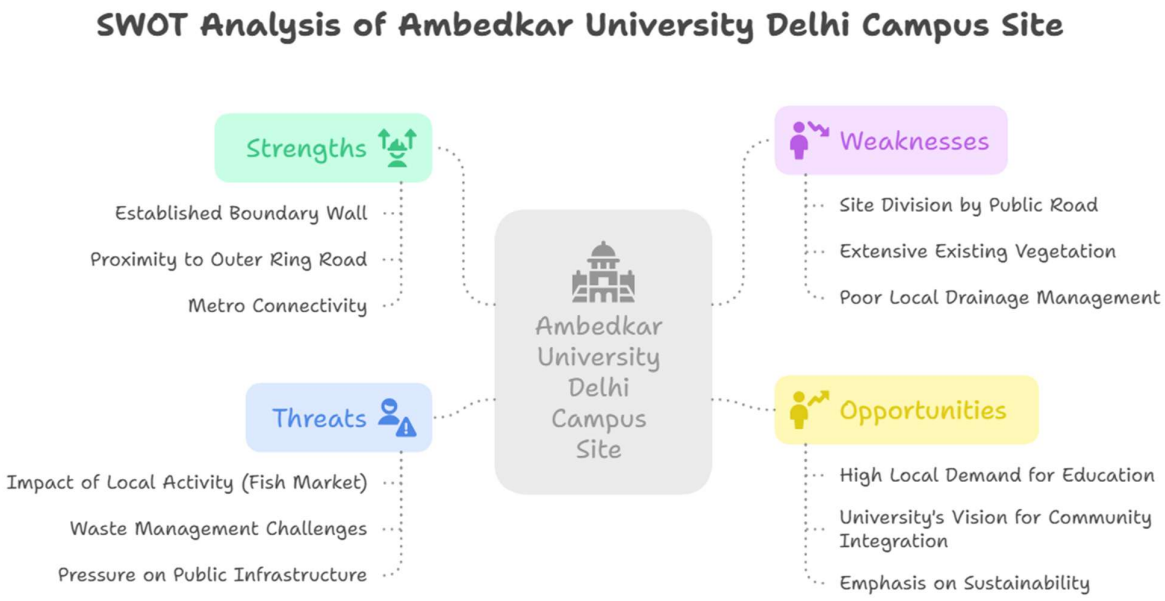


Figure 30 SWOT analysis

3.3.5 CLIMATIC ANALYSIS

Rohini, located in North West Delhi (28.7383°N, 77.0822°E) at 216.2 meters above sea level, experiences a distinct continental climate. Its flat terrain and landlocked position, bordered by the Yamuna River and other states, contribute to extreme seasonal variations, including hot summers and cold winters. This climate is primarily influenced by its proximity to the Himalayas and the Thar Desert.

The following table summarizes the geographical coordinates and elevation of Rohini, Delhi:

Location	Coordinates (Latitude, Longitude)	Elevation (meters)	Elevation (feet)	District	Union Territory	Country
Rohini	28.7383°N, 77.0822°E	216.2	709.3	North West Delhi	Delhi	India

Table 16 location data

- Overview of climate and seasons –

- **Winter (Dec-Feb):** Cool days, cold nights (avg. 14°C, drops to 3-4°C). Moderate humidity, medium precipitation, mist/fog.
- **Spring (Feb-Mar):** Warm days, cool nights (avg. 20-25°C). Low to moderate humidity, moderate precipitation. Good for natural ventilation.
- **Summer (Apr-Jun):** Long, scorching, very hot (avg. 25-45°C, can exceed 45°C). Very low to moderate humidity, low precipitation. May is hottest. Requires robust cooling.
- **Monsoon (Jul-Mid-Sep):** Hot, humid, heavy precipitation (avg. 29°C). South-Western winds from Arabian Sea. August is wettest. Humidity control is important.
- **Autumn (Late Sep-Nov):** Transition season. Warm days, cool nights (29°C to 21°C). Pleasant conditions, low humidity. Allows for reduced energy demands.

  Delhi's five distinct seasons, including long, hot summers and short, mild winters, create significant thermal stress for university infrastructure, necessitating high energy consumption for cooling and heating. The monsoon's heavy rain and high humidity demand robust drainage, waterproofing, and indoor humidity control. Conversely, pleasant Spring and Autumn offer natural ventilation opportunities. This seasonal understanding is crucial for university design, operations, and resource management.

Season	Months	General Climate Description	Typical Average Temperature Range (°C)	Key Climatic Characteristics
Winter	December - February	Cool days, cold nights	5°C to 25°C	Moderate humidity, medium precipitation, mist/fog
Spring	February - March	Warm days, cool nights, pleasant	20°C to 25°C	Low to moderate humidity, moderate precipitation
Summer	April - June	Hot to very hot, scorching	25°C to 45°C	Very low to moderate humidity, low precipitation
Monsoon	July - Mid-September	Hot, humid, pleasant during rains	29°C to 35°C	High to very high humidity, heavy precipitation
Autumn	Late September - November	Warm days, cool nights, pleasant	20°C to 30°C	Low humidity, low precipitation

Table 17 Season data

- **Temperature Profile-**

Month	Average High (°C/°F)	Daily Mean (°C/°F)	Average Low (°C/°F)	Record High (°C/°F)	Record Low (°C/°F)
Jan	21.1/70	14.4/58	7.8/46	32.5/90.5 3	9.0/48.2 7
Feb	25.6/78	18.3/65	10.6/51	34.1/93.4 3	N/A
Mar	31.1/88	23.3/74	15.6/60	40.6/105.1 3	N/A
Apr	37.2/99	29.4/85	21.1/70	45.6/114.1 3	N/A
May	40.6/105	32.8/91	25.0/77	47.2/117.0 3	N/A
Jun	40.0/104	33.9/93	27.8/82	46.7/116.1 3	N/A
Jul	36.7/98	31.7/89	27.2/81	45.0/113.0 3	N/A
Aug	35.0/95	31.1/88	26.7/80	42.0/107.6 3	N/A
Sep	35.0/95	30.0/86	25.6/78	40.6/105.1 3	N/A
Oct	33.9/93	26.7/80	19.4/67	39.4/102.9 3	N/A
Nov	28.3/83	20.6/69	12.8/55	36.1/97.0 3	N/A
Dec	23.3/74	15.6/60	8.3/47	30.0/86.0 3	N/A

Table 18 Temperature data

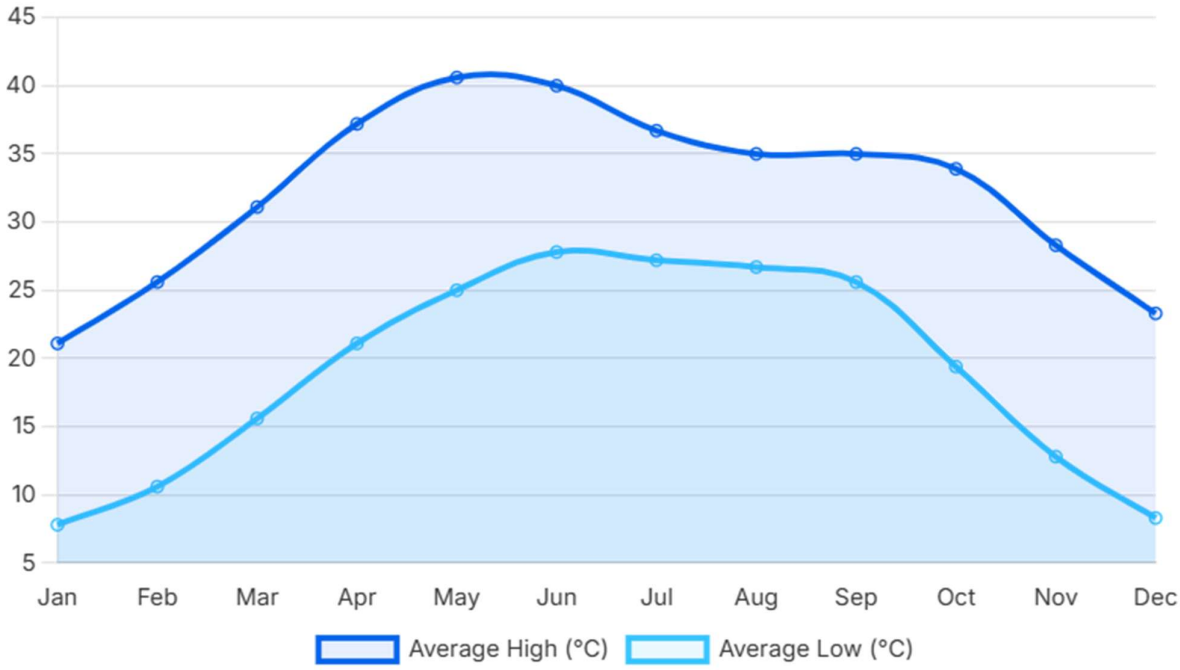


Figure 31 Temperature analysis

Rohini experiences a dramatic swing in temperatures, from scorching summer highs to chilly winter lows, demanding robust architectural and HVAC solutions.

- **Precipitation and Rainfall**

Month	Average Precipitation (mm/inches)	Number of Wet Days (days with >0.1mm rainfall)
Jan	19/0.75 9	3
Feb	20/0.8 9	3
Mar	15/0.6 9	3
Apr	21/0.8 9	1
May	25/1.0	3
Jun	70/2.8	5

Jul	237/9.3	14
Aug	235/9.3	14
Sep	113/4.4	7
Oct	17/0.7	2
Nov	9/0.4	1
Dec	9/0.4	1
Annual	790/31.1 [9]	57

Table 19 precipitation data

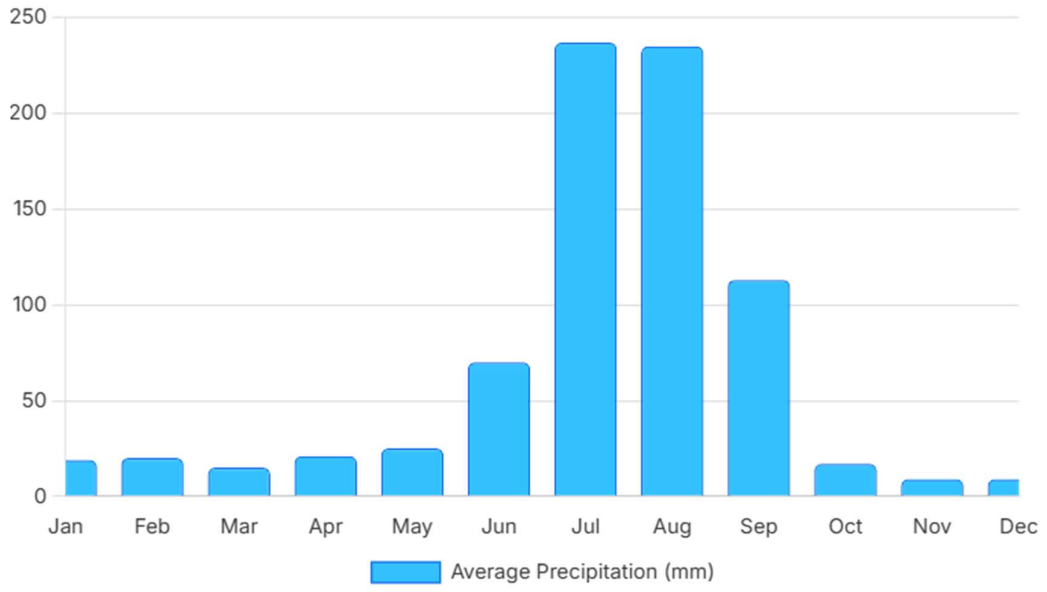


Figure 32 precipitation grap

A staggering 87% of the annual rainfall occurs during the monsoon, highlighting a critical need for effective water management and harvesting systems.

- **Humidity and Dew Point –**

Month	Average Relative Humidity (%)	Average Dew Point Temperature (°C/°F)	Interpretation
Jan	63 11	7.4/45.2 11	A bit dry
Feb	55 11	7.7/45.9 11	A bit dry
Mar	47 11	10.5/50.8 11	Very comfortable
Apr	34 11	11.4/52.5 11	Very comfortable
May	33	14.2/57.5	Comfortable
Jun	46	20.2/68.4	Humid
Jul	70	24.7/76.4	Muggy
Aug	73	24.6/76.3	Muggy
Sep	62	21.5/70.6	Very humid
Oct	52	15.7/60.2	Comfortable
Nov	55	11.4/52.6	Very comfortable
Dec	62	8.4/47.2	A bit dry
Annual	54.3		14.8/58.6 11

Table 20 Humidity analysis

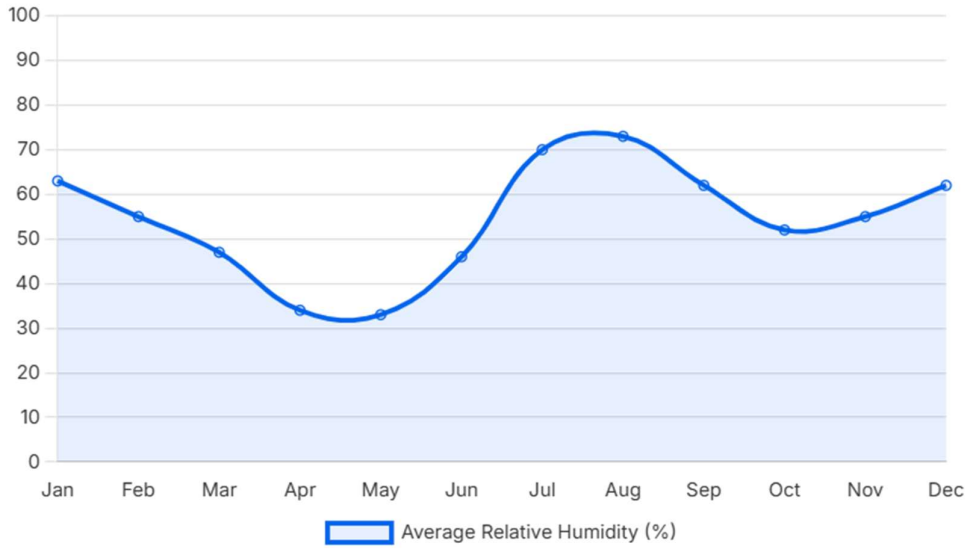


Figure 33 humidity graph

Humidity skyrockets during the monsoon, creating "muggy" conditions that require effective dehumidification for a healthy indoor environment.

- **Wind Patterns**
- **Summer (April-June):** Hot, dry continental winds locally known as "Loo" blow from the West Asian mainland, significantly increasing the "feel-like" temperature due to their high temperature and dryness.
- **Monsoon (July-September):** Moisture-laden South-Western winds arrive from the Arabian Sea, marking the onset of the humid season.
- **Autumn (October-November):** The wind direction typically begins changing from South-Westerly to North-Westerly.
- **Winter (December-January):** Chilly North-Western winds from the Himalayas sweep across the Northern Plains, making days feel colder despite sunshine.The distinct seasonal shifts in prevailing wind directions are paramount for optimizing passive ventilation and building orientation strategies.

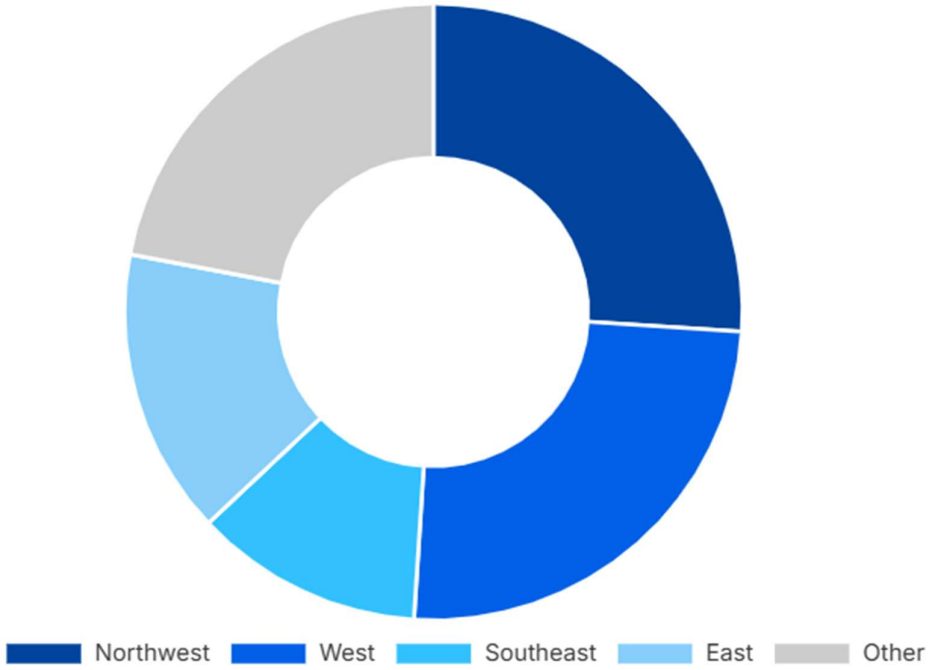


Figure 34 wind graph

Winds predominantly from the West and Northwest shape the campus microclimate. Building orientation can leverage these for passive cooling while mitigating hot summer "Loo" winds.

- **Solar Radiation and Insolation**

Month	Average Daily Global Horizontal Irradiance (kWh/m²-day)
Jan	~4.5-5.0
Feb	>5.0
Mar	>5.0
Apr	>5.0, up to 7.5
May	>5.0, up to 7.5
Jun	~3.9-5.0

Jul	~3.9-5.0
Aug	~3.9-5.0
Sep	~3.9-5.0
Oct	~4.5-5.0
Nov	~4.0-4.5
Dec	~4.0-4.5
Annual Average	6.14

Table 21 Solar radiation

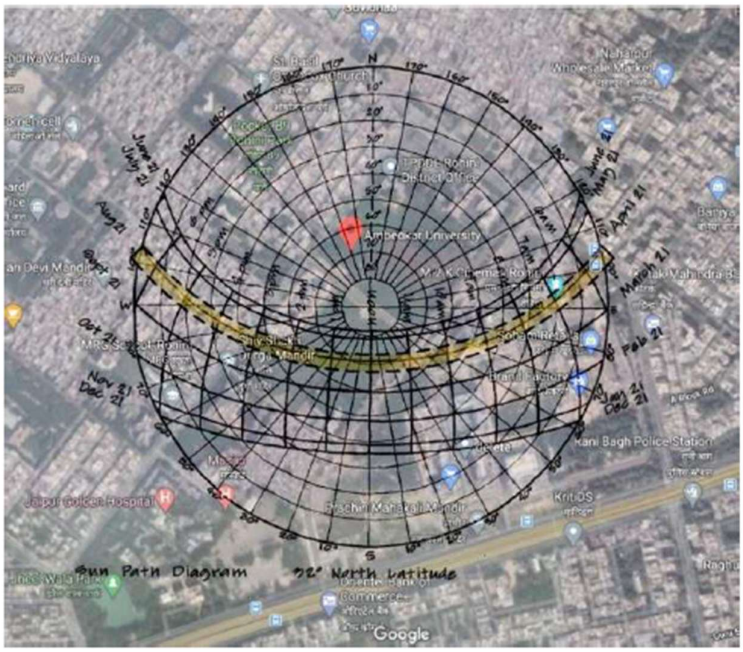


Figure 35 sunpath analysis

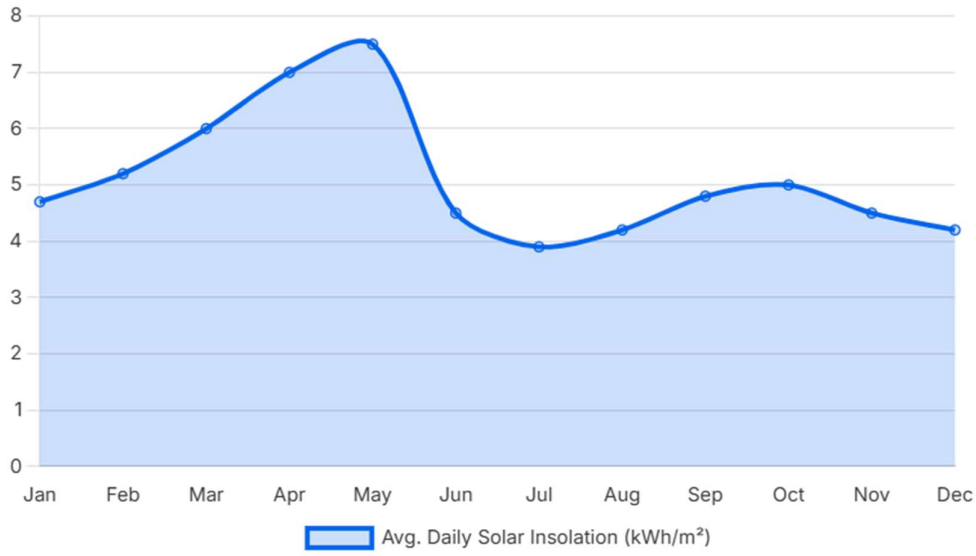


Figure 36 Solar radition graph

High solar radiation throughout the year presents a prime opportunity for renewable energy, though designs must account for a significant dip during the cloudy monsoon season.

- **Daylight Hours –**

Month	Average Day Length (Hours: Minutes)	Average Sunrise Time (Approx.)	Average Sunset Time (Approx.)
Jan	~10:50	~7:10 AM	~5:50 PM
Feb	~11:25	~6:50 AM	~6:15 PM
Mar	~12:05	~6:20 AM	~6:40 PM
Apr	~12:50	~5:45 AM	~7:00 PM
May	~13:20	~5:30 AM	~7:10 PM
Jun	~13:30	~5:30 AM	~7:20 PM
Jul	~13:25	~5:40 AM	~7:15 PM
Aug	~13:00	~5:55 AM	~6:55 PM

Sep	~12:20	~6:15 AM	~6:25 PM
Oct	~11:35	~6:35 AM	~5:45 PM
Nov	~10:50	~6:55 AM	~5:20 PM
Dec	~10:45	~7:05 AM	~5:20 PM

Table 22 Daylight hours

Delhi's substantial variation in daylight hours (over 13.5 hours in summer to under 11 hours in winter) directly influences campus design. Maximizing daylighting through architectural strategies is crucial for reducing energy consumption in summer. Shorter winter days will increase reliance on artificial lighting, while twilight data can optimize outdoor activity scheduling and exterior lighting for safety and efficiency.

- **Extreme Weather Events –**

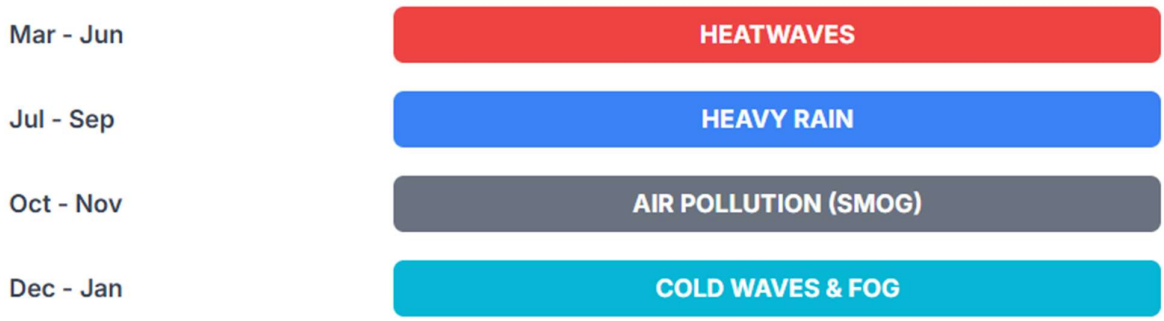


Figure 37 weather condition

Due to global climate change, India, particularly Delhi, is experiencing more frequent and intense extreme weather. Global surface temperatures increased by 1.1°C from 1880-2022, with India showing a similar warming trend since 1901. This warming raises the likelihood and severity of extreme temperature events like heatwaves and cold waves.

- **Conclusion –**
- **Climate Profile:** Rohini, Delhi, has a continental climate with hot, dry summers, transitioning to hot and humid during monsoons. Winters are cool to cold, influenced by Himalayan winds. High solar insolation offers renewable energy potential.

- **Implications for BR Ambedkar University:**

  Optimize building design for thermal comfort and energy efficiency.

  Implement effective water management and rainwater harvesting.

  Integrate solar power to reduce carbon footprint.

  Develop preparedness strategies for extreme weather events (heatwaves, cold waves, heavy rainfall, air pollution).

- **Climate Resilience & Sustainability:**

  Integrate climate resilience into university planning and operations for resource security and operational continuity.

  Continuous monitoring of climatic parameters and adapting infrastructure based on evolving climate trends is crucial.

  Utilize data platforms like NITI Aayog's India Climate & Energy Dashboard (ICED) for ongoing assessment and future climate-adaptive strategies.

3.3.6 CLIMATE-RESPONSIVE DESIGN STRATEGIES –

Optimal Orientation and Massing for Delhi's Climate

Delhi experiences extreme climatic conditions, characterized by hot, dry summers often exceeding 40°C, cold winters, significant dust, and a monsoon season. Therefore, initial design decisions regarding building orientation and massing are paramount. Optimal orientation typically involves minimizing exposure to direct solar gain, particularly from the east and west, favoring a North-South axis for primary facades. Compact building forms with reduced surface area-to-volume ratios can help minimize heat gain, while strategic massing can create self-shading elements, further mitigating solar radiation.

Further details on the shape, design, structure, and orientation of built masses, along with climatic solutions, are outlined below:

- **Building Orientation:**
  - **North-South Axis Preference:** Buildings should primarily be oriented with their longer facades facing North and South. This minimizes exposure to the intense East and West sun, which is crucial for reducing solar heat gain during hot periods.
  - **Wind Alignment:** The longer axis should also be aligned perpendicular to the prevailing winds to maximize natural airflow and facilitate cross-ventilation throughout the building, especially beneficial for cooling. Buildings can be oriented at an angle between 0° to 30° with respect to the prevailing wind direction to optimize airflow.
  - **Winter Sun Harnessing:** For optimal passive heating during Delhi's colder winters, facades can be oriented slightly east of south (approximately 15° east of south) to capture morning and afternoon sun, aiding in internal warming.

- **East-West Protection:** East and West facades, which receive harsh low-angle sun, must be heavily protected through strategic design elements such as buffer spaces, deep shading devices, or solid walls.

- **Building Form and Massing:**
  - **Compact Forms:** Employ compact building forms with a low surface area-to-volume (S/V) ratio. This strategy is highly effective in extreme climates (both hot and cold) as it minimizes the external surface exposed to heat gain or loss, thereby improving thermal efficiency. A square plan is generally more thermally efficient than a rectangular one for cooling.
  - **Courtyard Integration:** Incorporating central courtyards within building blocks is a highly effective passive cooling strategy for Delhi's composite climate. Courtyards create shaded microclimates, promote stack effect ventilation, and enhance natural light penetration into deeper building areas without direct solar gain.
  - **Mutual Shading and Clustering:** In multi-building campuses, strategic clustering and arrangement of built forms can provide mutual shading for adjacent buildings and outdoor spaces. This reduces overall heat gain and offers protection from cold winds during winter months, contributing to a more comfortable microclimate across the site.
  - **Thermal Buffers:** Service cores, stairwells, and other less frequently occupied spaces can be strategically positioned on facades most exposed to harsh solar radiation (e.g., East/West) to act as thermal buffers, shielding occupied spaces from direct heat transfer.
  - **Low-Rise Development:** A relatively dense, low-rise development pattern can be beneficial for covering outdoor areas and providing mutual shading, further reducing radiation-exposed surfaces and protecting from dust.

Climatic Condition	Architectural Element/Strategy	Specific Solution Details	Benefits
Hot, Dry Summers (>40°C)	**Orientation**	Longer axis North-South; minimize East-West exposure.	Reduces direct solar gain, minimizes heat absorption.
	Massing/Form	Compact forms (low S/V ratio), square plans, courtyards. Clustering for mutual shading.	Minimizes heat gain, creates shaded microclimates, enhances thermal efficiency.
	Shading Devices	Deep verandahs, overhangs, Jaalis (perforated screens).	Blocks harsh sunlight, reduces glare, provides transitional zones, diffuses light.

	Materials	High thermal mass (local stone, brick, concrete). Light-colored exterior palettes. Proper insulation.	Absorbs heat slowly, moderates indoor temperatures, reflects sunlight, reduces heat transfer.
	Ventilation	Maximized cross-ventilation. Courtyards for stack effect and shorter wind paths. Jaalis for air velocity increase.	Promotes passive cooling, allows hot air escape, brings in cooler air.
	Water Features	Strategically placed ponds, fountains.	Evaporative cooling, enhances microclimate, adds humidity.
Cold Winters	**Orientation**	Slightly east of south (approx. 15°) for primary facades.	Maximizes morning and afternoon solar heat gain.
	Massing/Form	Compact forms (low S/V ratio) to minimize heat loss. Dense, low-rise clustering.	Retains internal heat, protects from cold winds.
	Materials	High thermal mass materials to retain absorbed heat. Proper insulation. Cozy textiles indoors.	Stabilizes indoor temperatures, reduces heat loss, provides physical warmth.
	Heating Solutions	Radiant floor heating, energy-efficient central heating, electric fireplaces. Layered lighting.	Ensures thermal comfort, creates warm ambiance.
Monsoon Season	**Protection**	Overhangs, canopies, pergolas.	Shields outdoor spaces and building facades from rain.
	Materials	Water-resistant materials (teak, rattan, waterproof fabrics). Water-resistant flooring (ceramic, terracotta, sealed concrete, treated stone). Quick-dry synthetics.	Prevents moisture damage, easy to clean, durable.
	Moisture Management	Proper drainage systems, strategic ventilation, dehumidifiers in problem areas. Breathable storage.	Prevents dampness, mold, and electrical hazards.

	Structural Integrity	Design to mitigate thermal stress on glass windows and door hinges. Protection for electrical systems.	Prevents cracking/shattering, maintains seal integrity, ensures electrical safety.
Dust	**Protection**	Reduced radiation-exposed surfaces. Jaalis.	Minimizes dust ingress and accumulation.

Table 23 Climate resilent design ideas

4. Case Studies –

4.1 LIVE CASE STUDIES –

4.1.1 NIFT DELHI –

- Principal Architect - B.V Doshi
- Structural Consultant -Himanshu Parikh
- Site Area - 11650 sq.mt. (i.e approx. 3 acres)
- Total Built-up Area - 13570 Sq.mt
- Project Cost - 8.5 million
- Project Year – 1990





Figure 38 NIFT Delhi case study

Location –

The NIFT Campus Is Located At gulmohar park Near Green park metro station In New Delhi's Hauz Khas institutional area. It is easily accessible from Aurobindo Marg Or Balbir Saxena Marg. Nearest metro is hauz khas. The access is through a plot reserved for zonal green now handled to NIFT on the condition that no building shall be constructed on this part.

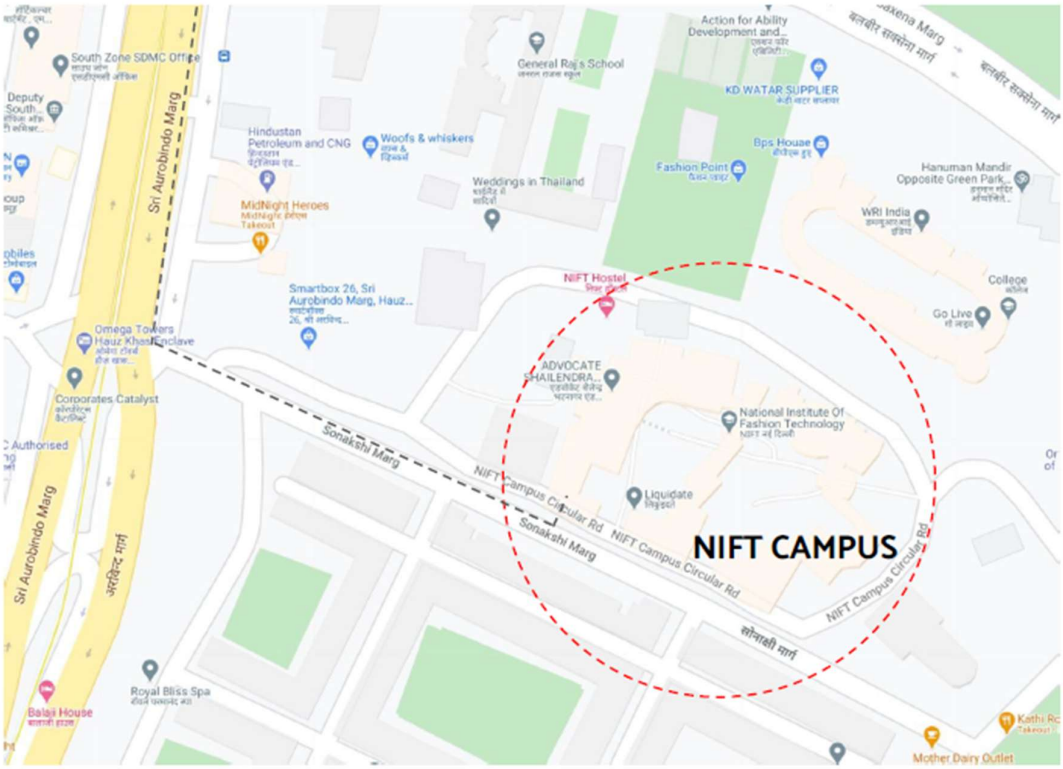


Figure 39 Nift location map

The building covers almost the entire site leaving very less green area. The plan follows the site boundary with a setback of 6m maintaining its character. The opening are designed such that they maintain a visual unity in their form and proportion. Academic clusters have been grouped together to form units comprising class rooms, labs, common lobby, and service spaces.

F.A.R	1
GROUND COVERAGE	25%
BASEMENT	UP TO 50% OF TOTAL AREA
MAX.HEIGHT	15M FROM THE GROUND

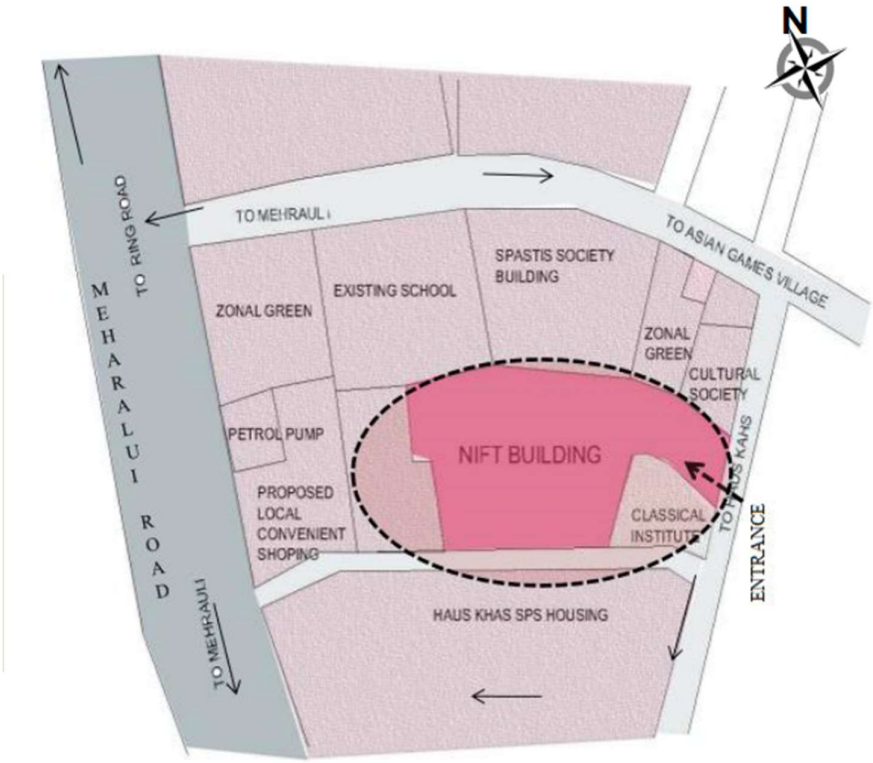


Figure 40 NIFT boundary

Design Ideology –

The NIFT campus becomes a village square growing organically over time to become a theatre, the scene for unfolding drama of day to day life. For the central kund like court, wide casually aligned steps, water-channels, green areas, over-looking terraces and bridges emerge as elements of space making to recreate fashion and design activities. The campus was divided into different blocks set

around a kund connected to the basement. The solid, semi-open punctured facades are juxtaposed with variable convex and flat glazed facade. With terraces and constantly changing reflected light, the court and the terraces become an ideal place to discover ever new settings.

Architects drew inspiration from traditional Indian designs, blending them with contemporary styles. Concepts from bazaars, stepwells, and kunds were incorporated to create more engaging public spaces.

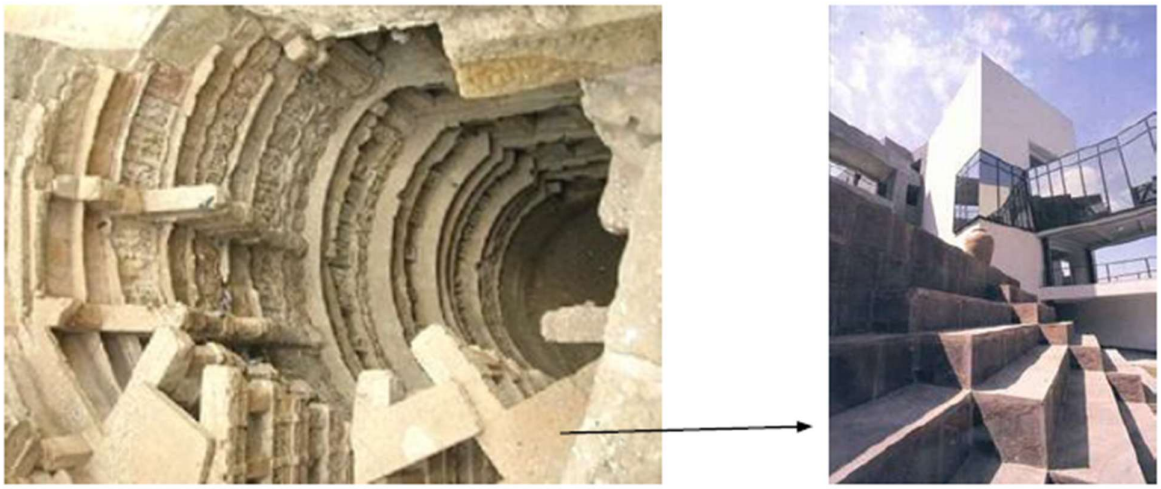


Figure 41 Stepped well design ideology

- The site was flat land; levels are architect's creation, charging overall site contours.
- Functions are properly segregated, with building blocks placed in zones determined by function character.
- Planning revolves around two courts: a sunken cover with a stepped kund and an amphitheatre.
- Despite lacking substantial landscaped green areas apart from zonal green, the institute feels richly landscaped.
- Two types of circulation: pedestrian and vehicular.
- An inner road leads to the main car park, where vehicular traffic ends.
- Pedestrian movement within the campus creates a lively feel.
- Entry to the campus is from two sides: front and back.
- Upon entering, the security cabin is to the left, a green patch is in front, and the internal road leads to the main entrance and basement.

- The building's long sides are aligned along the NW and SE axis, allowing good sun exposure and breeze.
- Different blocks of the building complex are placed according to site lines, with all peripheral building lines parallel to the site lines.
- Openings for light and ventilation have been sacrificed for aesthetic considerations rather than climatic comfort.
- Windows in the academic block are provided towards NW and SE, leading to glare and heat during the day.

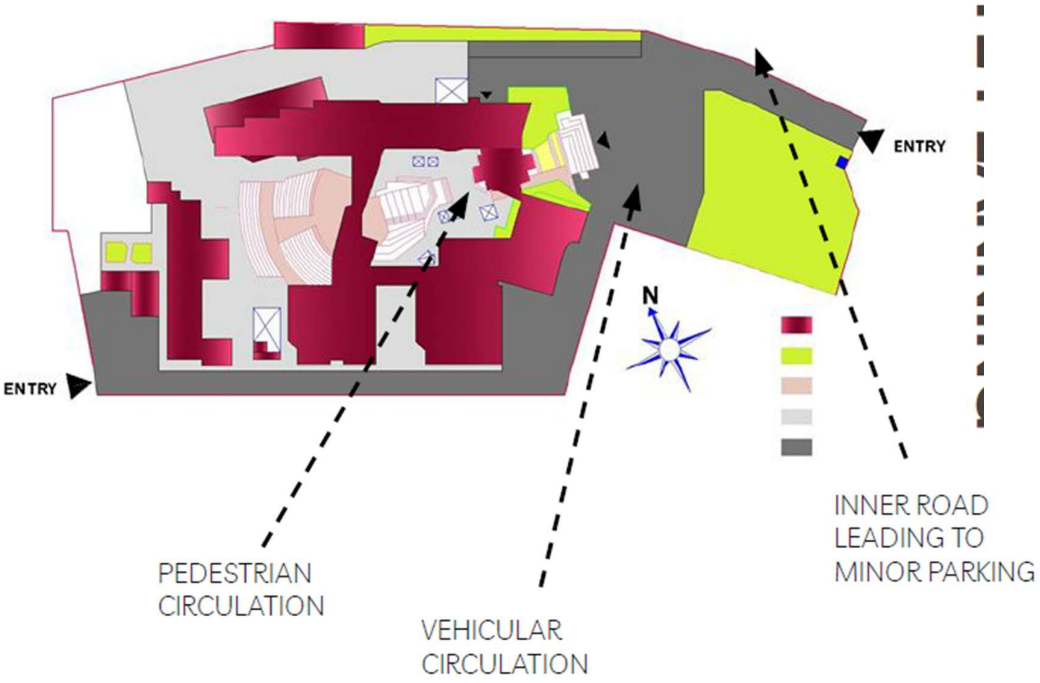


Figure 42 Zoning of NIFT delhi



Figure 43 Nift features

The site is basically divided into **three basic zones** as evident from the plan. **Academic block are** similar in plan and in function also, occupies the left portion of the site. **Administrative block along with** canteen and library is in right hand side. The **Hostel block** is placed right at the back of the site.

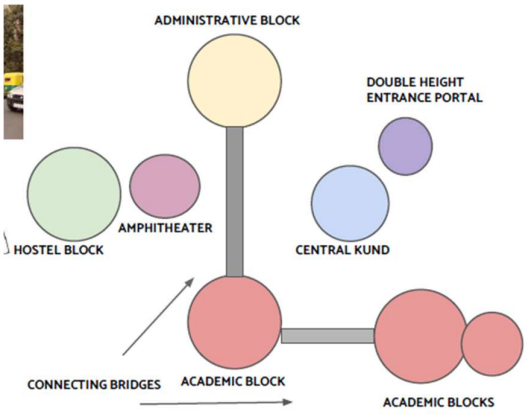


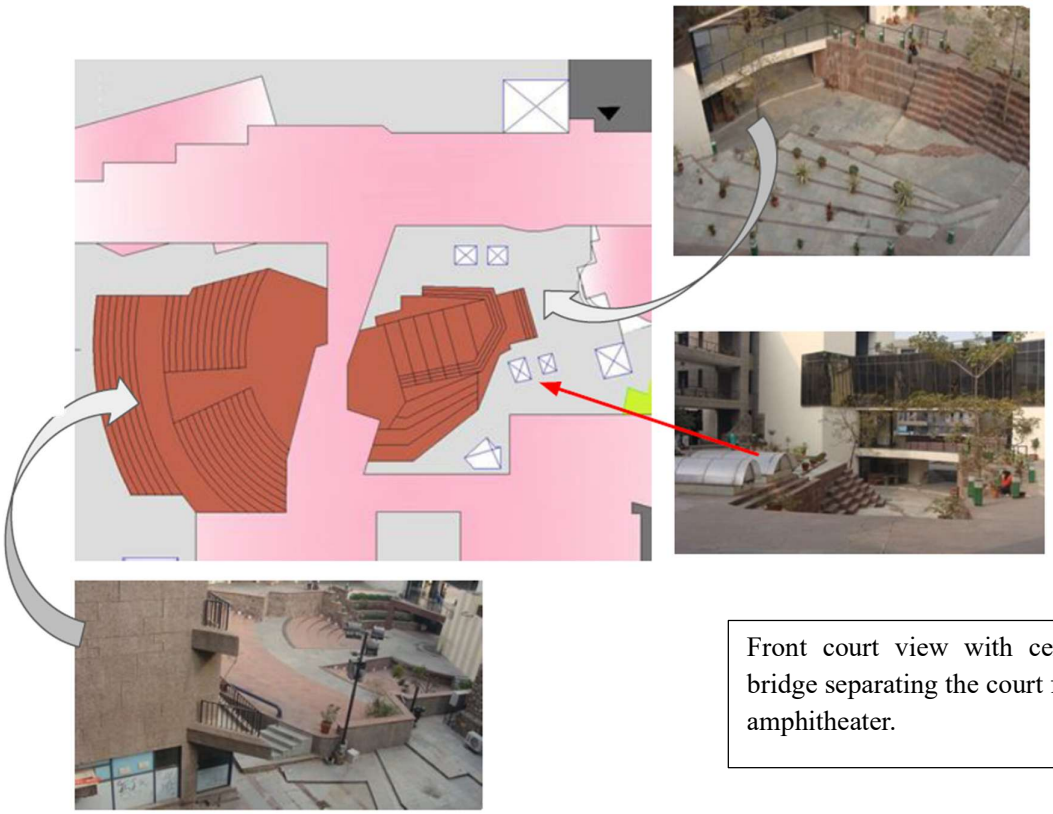
Figure 44 bubble diagram



Figure 45 Ground floor location of places

Amphitheatre –

- **Purpose:** Primarily designed for fashion shows, helping students connect with changing trends.
- **Controversy and Criticism:**
    - Not constructed as initially designed.
    - The stage was supposed to float in the water body below.
    - The direction of the stage was changed without considering sun orientation, leading to the audience and stage positions being swapped during construction.
- **Capacity:** Total seating capacity of 300 students, which is not large enough for big gatherings.
- **Atmosphere:** Creates an inward-facing bazaar, energized by design displays and the movement of students and visitors throughout the space.



Front court view with central bridge separating the court from amphitheater.

Amphitheatre view from administrative block's balcony.

Figure 46 Amphitheatre plan



Figure 47 Ground floor



Figure 48 first floor



Figure 49 Second floor

Circulation

Circulation forms a major space for channeling. the architect has treated it with a very elaborate network of corridors, steps,lobbies,staircases,lounges,bridges andterraces A unique experience in going through the bridge and watching the court below gives the view of all the happening in the campus the components of circulation are three level walkways with a cross breeze flowing to stand and gaze staircases evolving out of free flowing cut-outs, indicative of design forms. staircases leading to the terraces which are intended to be used by the students during their leisure time Open as well as glass screened bridges separating the court from amphitheatre court not only remain as movement path but also double up as the catwalk for the fashion shows which can be viewed over from the class rooms, corridors,library as well as the administrative block total no. of 5 staircases are provided serving the academic and administration block and 2 lifts, each in both the wings.



Figure 50 Vertical circulation



Figure 51 Horizhontal circulation

Parking –



Figure 52 Parking area

Both covered and open parking was planned but the basement is not used for the purpose and used for the workshop purpose Surface parking has been provided along with the paved access of the building One side is flanked by staff car parking and other by visitor parking





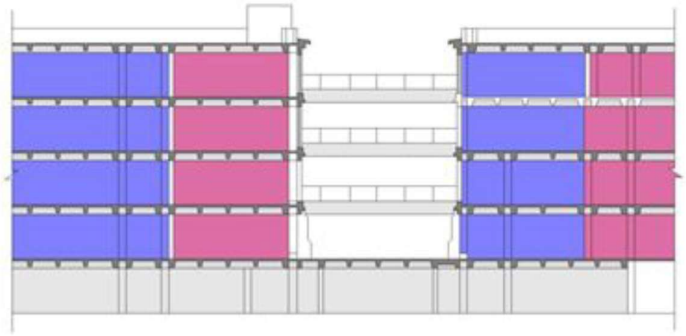


Figure 53 parking area images and section

Conclusion

The idea is to create a relationship between the built & the unbuilt spaces. There are evidences of blend of traditional and contemporary architecture. Aesthetics are cared for, sometimes at the stake of comfort if not function. The site is well-segregated into various zones w.r.t the functions. circulation spaces are minimized to obtain efficiency in desig

4.1.2 CEPT AHMEDABAD –

LOCATION: Gujarat University area, Ahmedabad

Architect: B V Doshi

Areaofthesite:12.5acres

Site

The site is located in the Kasturbhai Lalbhai Campus in Navrangpura a western suburb of Ahmedabad It lies within a zone occupied by other educational institutions. Being at the edge of this zone, it is also immediately proximal to some residential localities which adjoin. The site about 12 5 acres, measuring about 300 metres North South and about 150 metres East West. It is roughly rectangular, with extensions on the eastern side at the northern and southern ends for vehicular parking and on the southern side (Hussain Doshi Gufa.

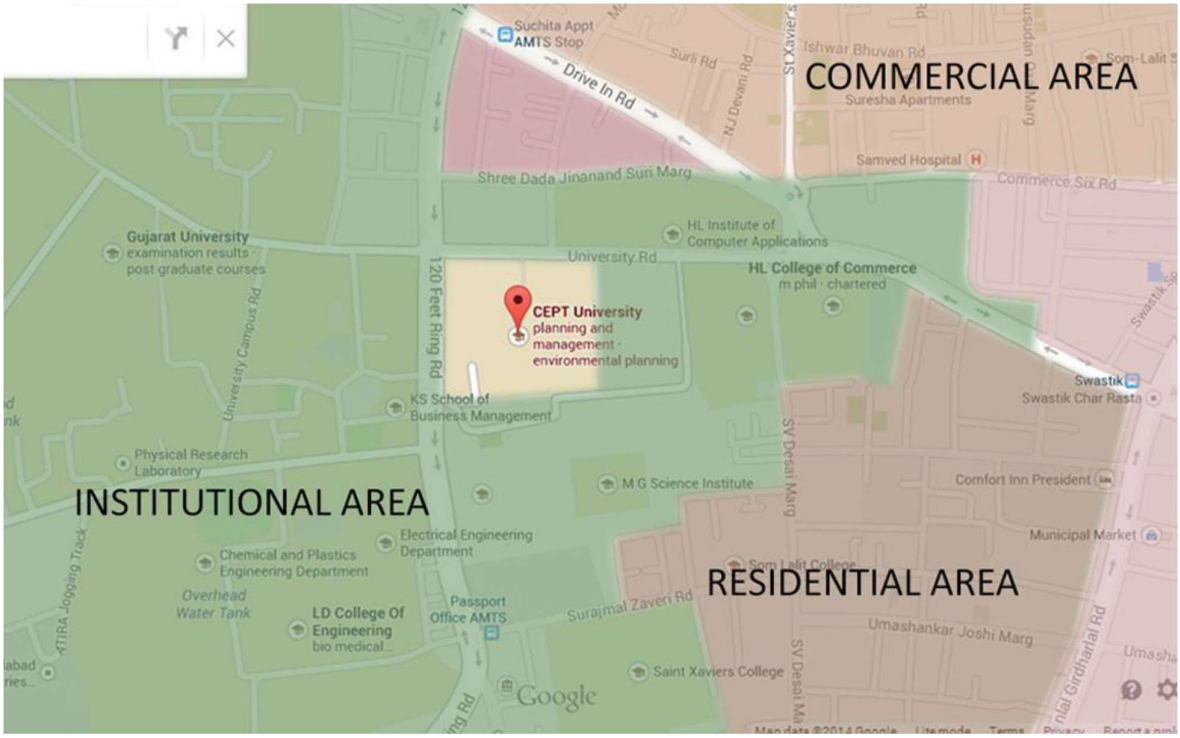


Figure 54 CEPT Ahmedabad location

ACADEMIC FRAMEWORK OF CEPT

Campus is of four different schools

1. School of planning

2. School of architecture

3. School of building science and technology

4. School of interior design

INTAKE

B.Arch. -30

M.Arch (Theory and design) -20

M.Arch (landscape) -20

M.Phil.(Architectural and settlement conservation)-20

M.Arch (Urban Design) -20

M.Arch (Architectural & settlement conservation) -20

Features

- The school building is set back 100 ft from the main road and shielded by trees to create a serene atmosphere inside the campus and is hardly visible from the main road
- Emphasis on open flexible spaces with hardly any doors Creation of a proper working environment facilitating faculty and students to have free scope to learn and teach anywhere Exposed local materials for low cost, easy expansion and maintenance
- The design is intended to be close to nature and experiment the designing skills, play with levels etc Since the land was earlier a brick kiln, the site was undulated and gave opportunity to play with levels•
- There are inclined skylights on top of the studios, perpetually letting in natural light into the spaces
- The studio spaces have bay spaces facing the exterior, creating semi private spaces which are yet totally open to the exteriorspaces where the individual can be alone with nature even int he environment of a studio.

Approach

- Main access on the northern side
- Two entrances on the southern side
- Two entrances on the western side

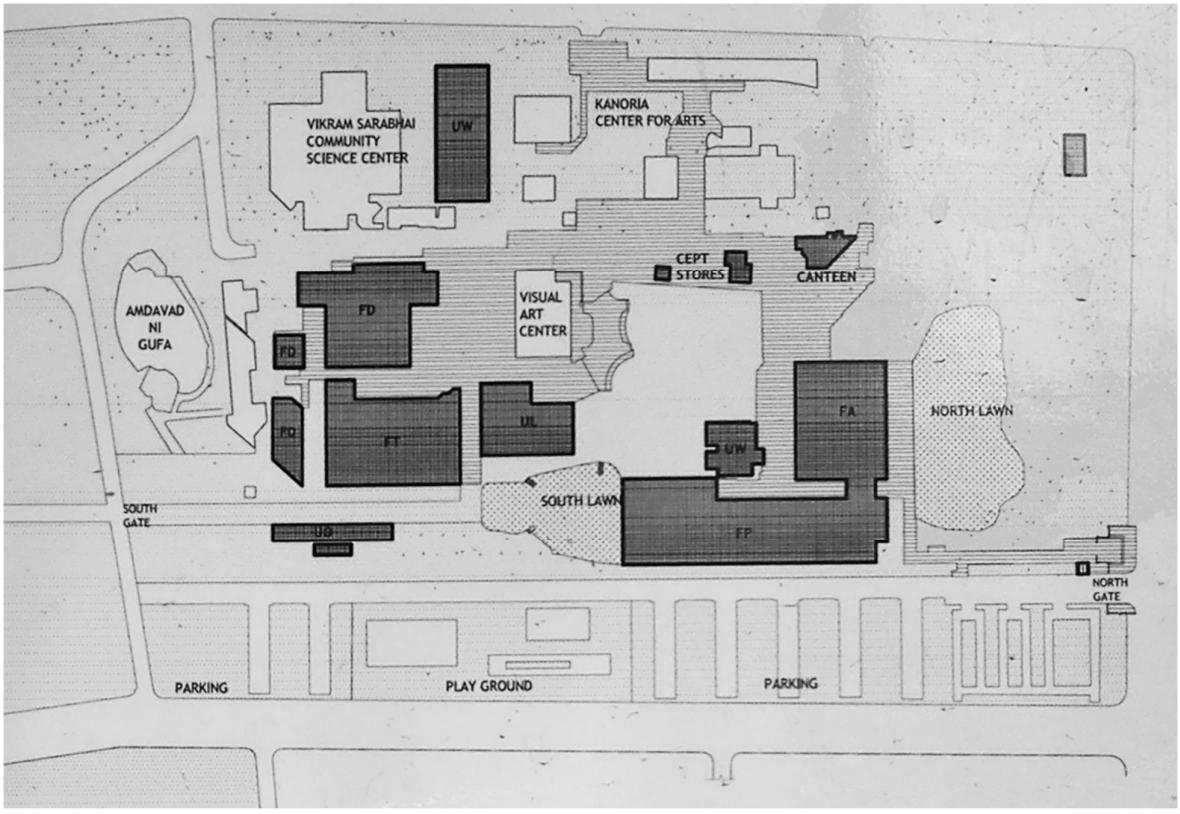


Figure 55 site plan

- The built form begins with parallel walls, a recurring feature in CEPT buildings, supporting flat floor slabs.
- The campus planning centers around a central court, with built structures on the sides and a green area providing noise protection from traffic.
- The architect incorporated uneven contours into the plan, transforming a potential drawback into an enjoyable spatial experience.
- The building
- is simple, with architectural elements clearly expressing their functions.
- The volumes and voids create visually exciting spaces.
- The building's simple horizontal lines blend well with the site.
- It is a two-story building with a split-level basement.
- The design integrates thermal comfort and natural sensibility.





Figure 56 Features of cept

Entrance-

- The complex is entered via a long axis that terminates at a blank wall, requiring a turn, a descent down brick-paved steps, and another turn to access the main, slowly rising flight of steps leading to the library's framed entrance.

- To the right of the library's axis is a double-story studio block, perpendicular to it.
- The main administrative block is approached informally and indirectly, highlighting the change in direction and the campus's informal character.
- Small structures for the wood workshop and TV room help define the space.
- The building forms are arranged around a courtyard, accessible from all sides, with open spaces flowing into each other through well-designed transition areas.
- Individual buildings are entered from the common court around which they are arranged.
- Vehicles are restricted to a parking space at the periphery, while the campus is pedestrian-friendly.



Figure 57 Entrance Area

Basement –

The basement serves as a dynamic, multipurpose hub within the campus. Its design is unique, with rising contours on one side and steps leading to the central courtyard on the other, effectively eliminating the need for north and south walls. This versatile space hosts a variety of activities, including cultural programs, fests, exhibitions, and indoor games.

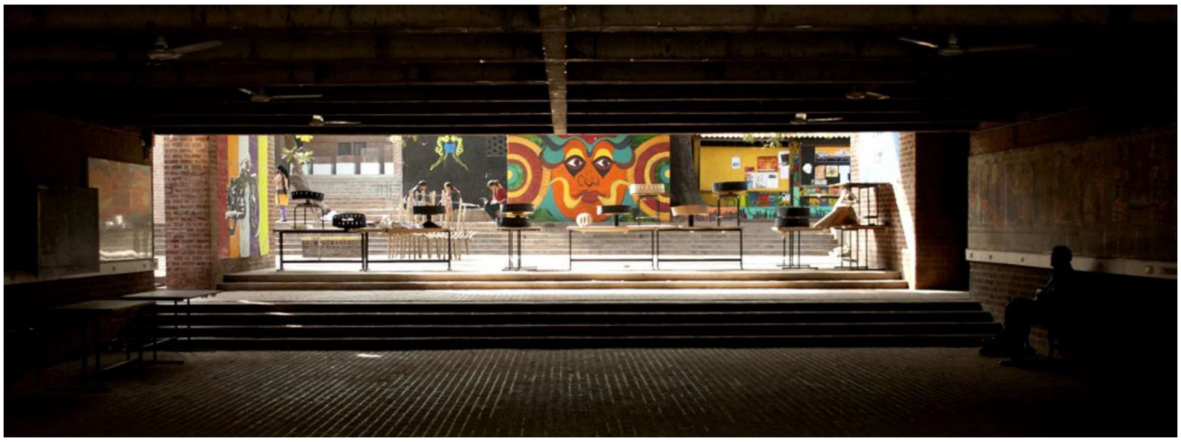


Figure 58 Basement area

The central Courtyard-

- The central court combines paved and unpaved areas, with some sections shaded by trees.
- All entrances connect to the courtyard via pedestrian pathways.
- The courtyard is a high-traffic area for circulation and interaction.
- The courtyard has expanded organically with the addition of informal seating.
- The court has a large unpaved area that lacks grass or vegetation.
- It serves as a venue for cultural activities, reading, games, and meetings.



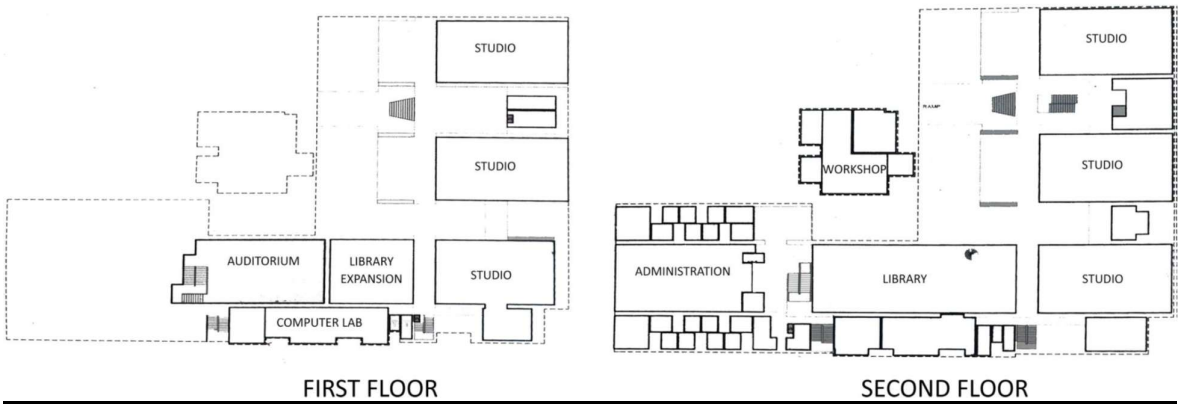
Figure 59 Central courtyard

Studios-

- The studios have large openings that connect to the surrounding greenery.
- Panels at the sides allow students to display important and useful sheets.
- All studios are stacked vertically, with adjacent lecture rooms.
- Common interaction zones are provided between studios of different year levels.
- The studios are designed with consideration for climatic needs and user comfort.
- The building section and double-height studios are well-conceived to facilitate airflow.
- The building is oriented along the East-West axis with openings on the North and South, and thick walls on the East and West to mitigate hot sun exposure.

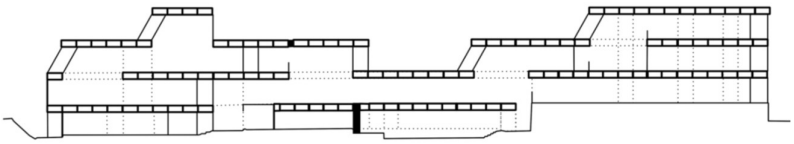


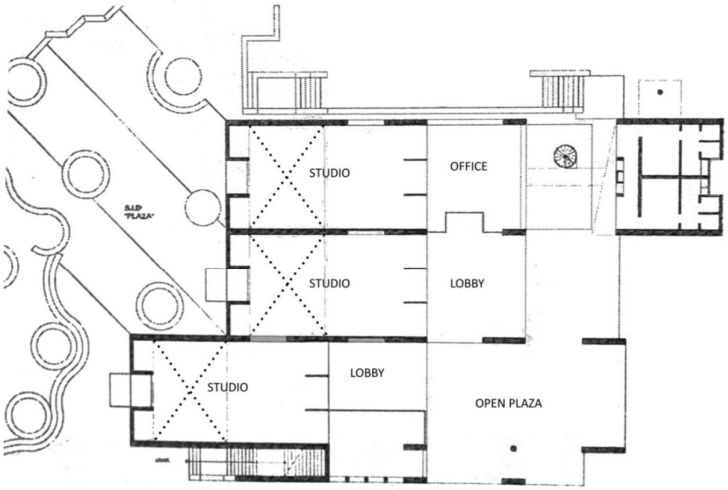
Main block-



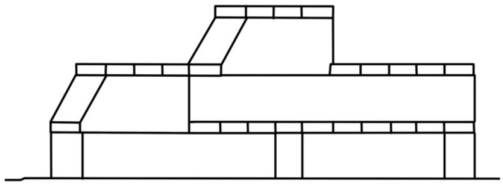
FIRST FLOOR SECOND FLOOR

Integrating Divergent Needs
School of Planning, Library, Administration.
The School of Planning Studio bay starts reflecting the effect of different and divergent needs on a growing campus and shifts away from the clear definition of the "classical object" of the Architecture block and moves toward being an assembly of different pars serving different functions that are however unified by a continuity of the language/ grammar set by the first exemplary object. The Hong-block' contains different functions, connecting different ground levels that are negotiated by a series of flights of steps leading gradually to the 'citadel' Administration, faculty rooms and the Library.





Condensation
School of Interior Design
The School of Interior Design building uses three equal bays of a lesser span (3-part) making its interior spaces more contained and confined. The shifting forward of one bay arrests the transverse continuity of the grouping, while also partially defining the open space to its north. On the south side, the shift, along with closing in of parts of the semi-open spaces for use as office and work space and differentiation of the other sub – functions and circulation makes the middle bay a crossing point for all persons within this grouping – making it akin in behaviour to a court yard in a house.



SECTION

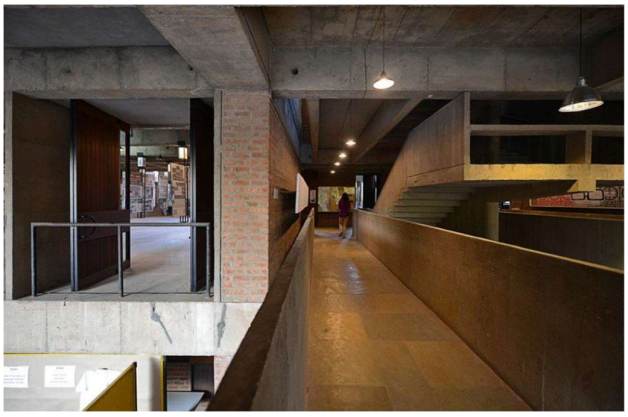
Indoor Circulation-

- The building's circulation is complex due to numerous level changes and staircases at varying heights.

- Corridors are minimal and short.
- All areas within the building are visually interconnected.

Outdoor Circulation-

- The campus has pedestrianized circulation.
- Vehicular access is restricted to the campus periphery.
- Enclosed spaces with numerous trees provide ample shade and comfort for building access.



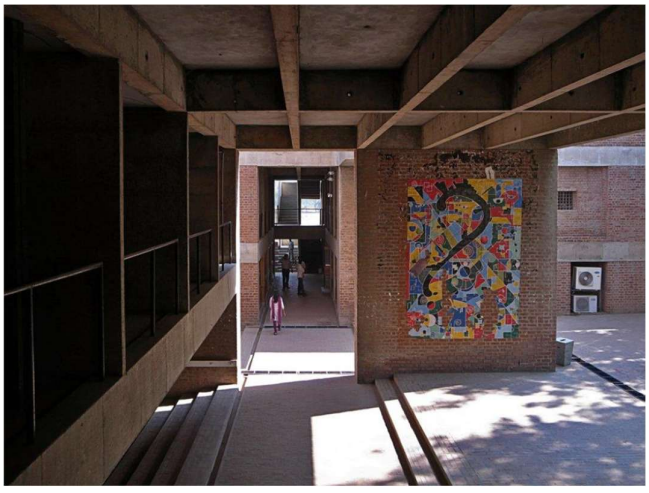
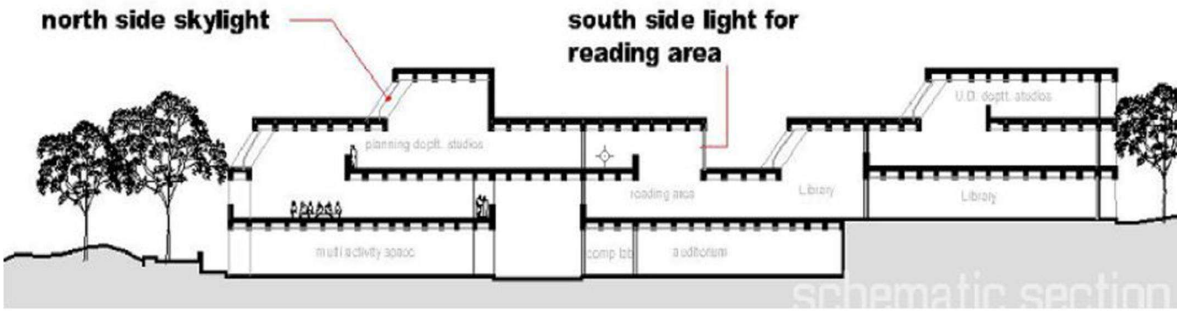


Figure 60 Circulation

Ventilation-

- The campus has pedestrianized circulation.
- Vehicular access is restricted to the campus periphery.
- Enclosed spaces with numerous trees provide ample shade and comfort for building access.

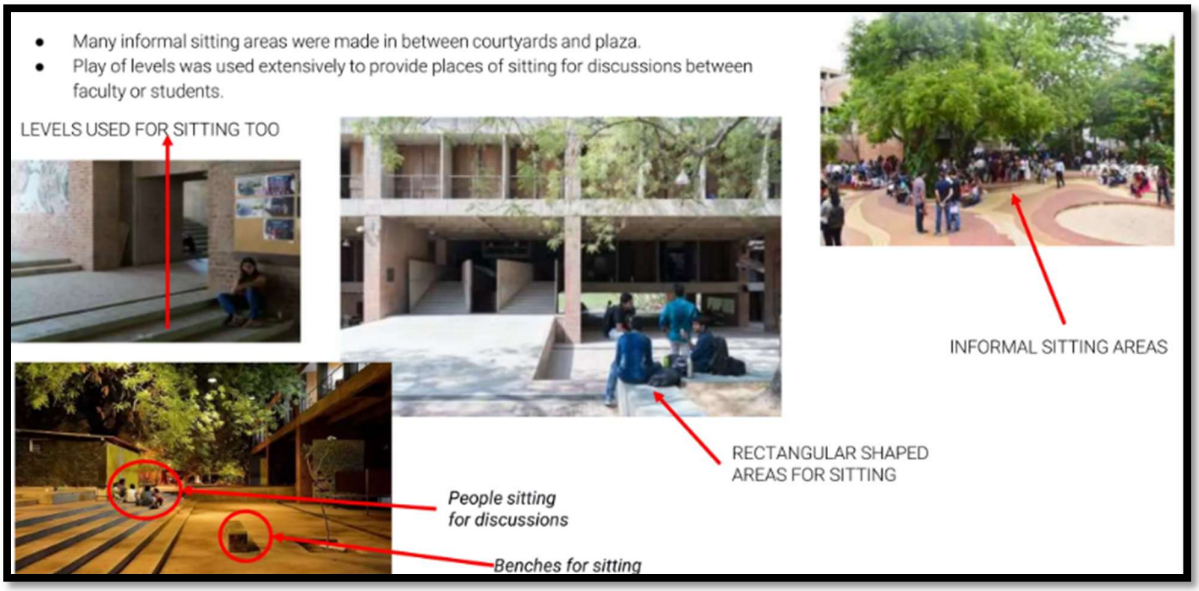
- The parallel walls create an open tube of space, aligned North-South, blocking off the East and West.
- The north side is taller to maximize north light, while the south side is lower to block harsh direct radiation.
- This creates a double-height north side and a single-height south side.
- This difference in section heights forms a combined volume that emphasizes the directionality established by the parallel walls in the plan.

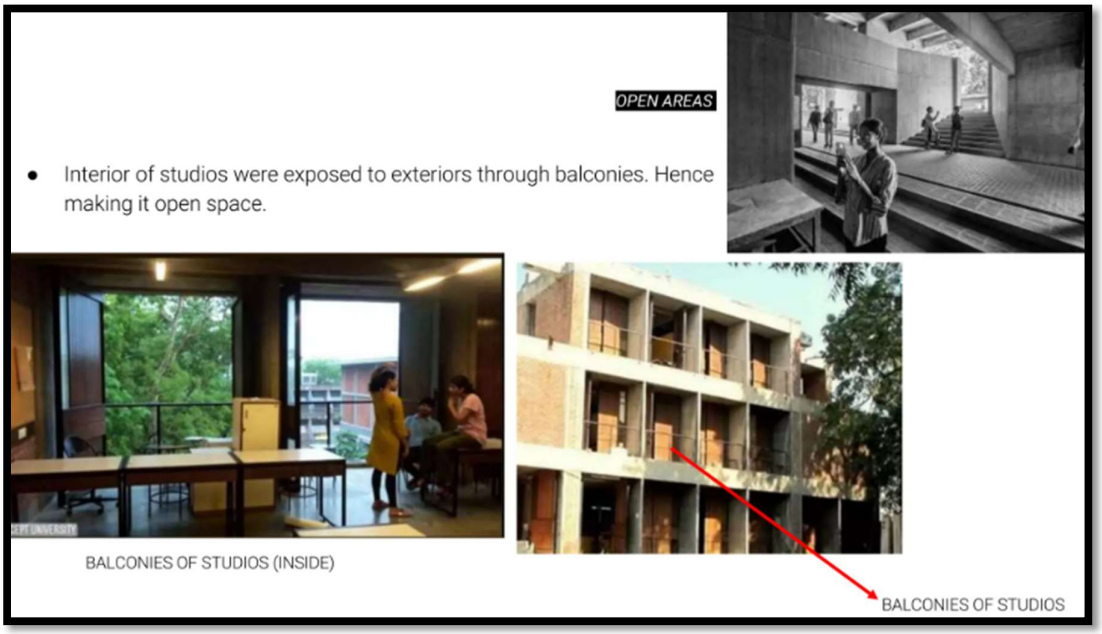


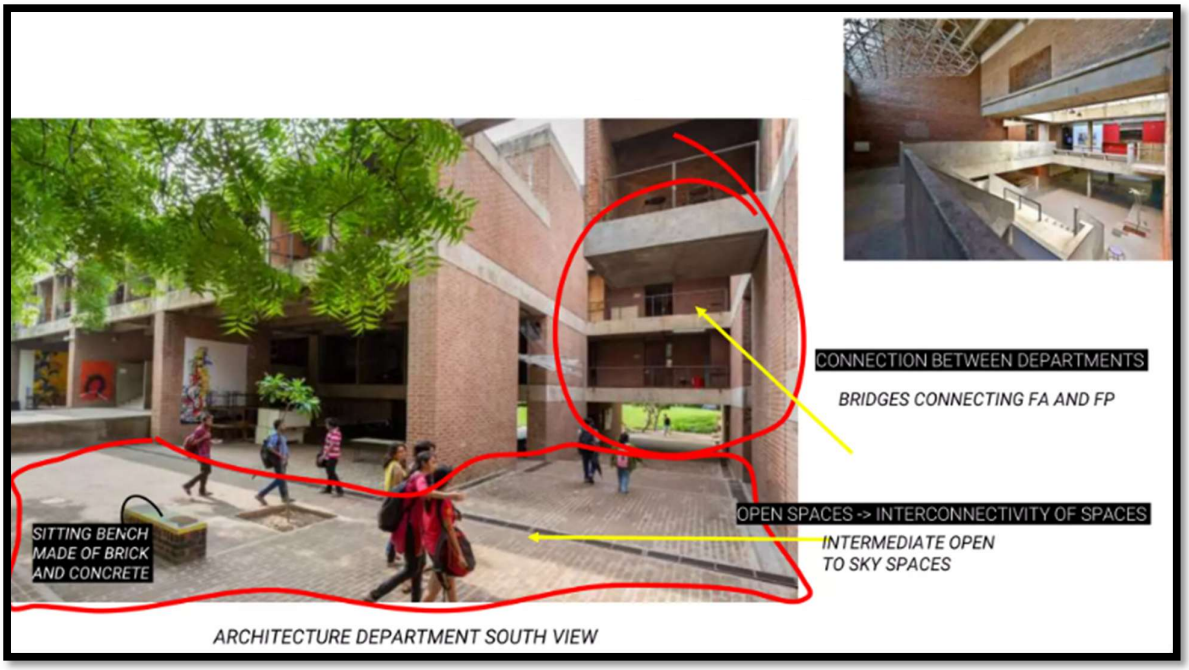
Activities -

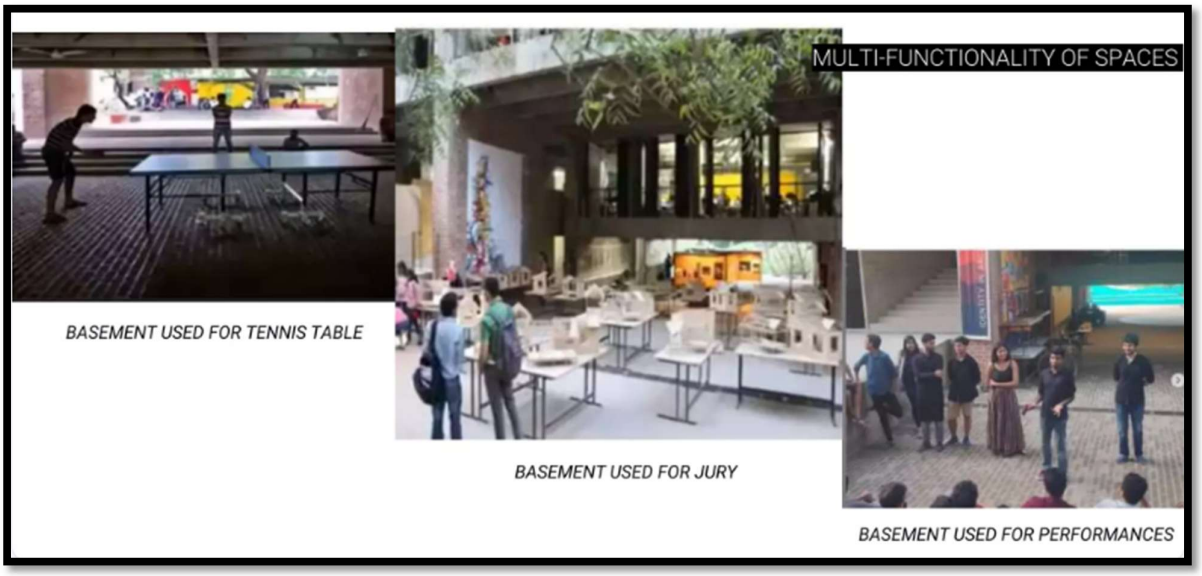


Design philosophies –






CONNECTION BETWEEN DEPARTMENTS
BRIDGES CONNECTING FA AND FP
OPEN SPACES -> INTERCONNECTIVITY OF SPACES
INTERMEDIATE OPEN
TO SKY SPACES
SITTING BENCH
MADE OF BRICK
AND CONCRETE
ARCHITECTURE DEPARTMENT SOUTH VIEW


MULTI-FUNCTIONALITY OF SPACES
BASEMENT USED FOR TENNIS TABLE
BASEMENT USED FOR JURY
BASEMENT USED FOR PERFORMANCES

Rainwater –

The roof features inverted channels culminating in large water spouts, which serve as a prominent visual element of the building's design.



Infrences –

- Beams and floors that are extendable and easy to maintain.
- An open space with hardly any doors, promoting the free exchange of ideas and unrestricted teaching and learning.
- Increased use of interaction and transition areas such as corridors, galleries, courts, and foyers throughout the campus.
- Structural obstruction-free ground floors, making spaces multifunctional and active zones on campus.
- Buildings looking inward create a livelier environment.
- Easy circulation ensures all buildings are easily accessible.
- Informal interaction spaces with trees and seating provide relaxing and calm areas.
- Combined studios at two levels positively and negatively affect the environment.



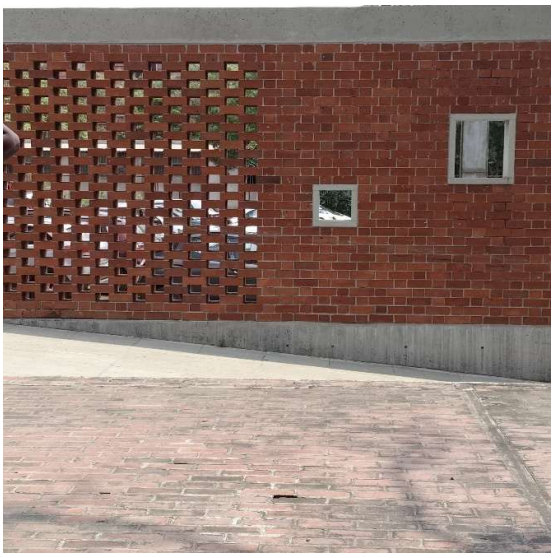






Figure 61Site images

4.2 DESK APPRAISAL

4.2.1 INDIAN INSTITUTE OF MANAGEMENT BANGALORE (IIMB) – (IIMB, n.d.) (2, n.d.)



Figure 62 IIM B location

Campus Statistics:

- Site Area: 38.1 HA
- Total Built-up Area: 9.3 HA
- Floor Area Ratio (F.A.R): 0.26
- Ground Coverage: 5.93 HA (15.6%)
- Student Capacity: 700
- Faculty: 100
- Residents: 1636

LOCATION

Bangalore, located in the heart of the Mysore Plateau in southeast Karnataka, features a generally flat topography. However, the western parts of the city are hilly. The highest point, Vidyaranyapura Doddabethahalli, reaches 962 meters and is situated in the city's northwest.

Geographic Location and conditions –

Bangalore experiences a tropical savanna climate characterized by distinct wet and dry seasons. Thanks to its high elevation, the city generally enjoys a moderate climate throughout the year. However, occasional heat waves can lead to uncomfortable summer conditions.

Winter temperatures rarely fall below 14°C, and summer temperatures seldom exceed 36°C. January is the coolest month, with an average low temperature of 15.1°C, while April is the hottest, with an average high temperature of 35°C.

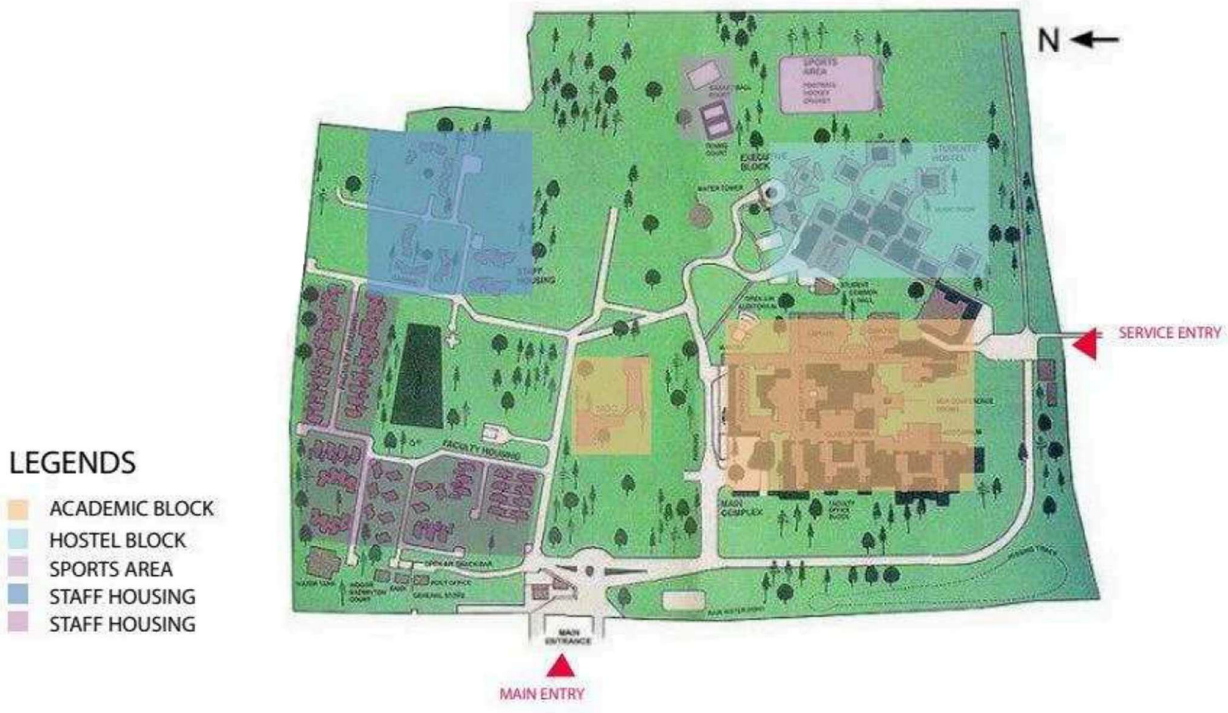


Figure 63 MAster paln

Campus Entrances:

The campus features three distinct entrances:

- **Main Entrance:** Provides access to staff housing and educational spaces.
- **Second Entrance:** A smaller entry point, exclusively for staff housing.
- **Service Entry:** Located on the southern side road, for service vehicles.

Directions to IIM Bangalore:

- **From Bangalore International Airport:** IIM Bangalore is approximately 45 kilometers from Bangalore International Airport.
- **From City Railway Station:** IIM Bangalore is around 13 kilometers from Bangalore City Railway Station.
- **From City Centre (MG Road):** The IIMB campus is situated at the "10th Km" mark from the city center.

Important Note for Visitors from City Centre: If you pass Apollo and Fortis Hospitals on your right, you will need to make a U-turn to reach the IIMB entrance.

Site Zoning –

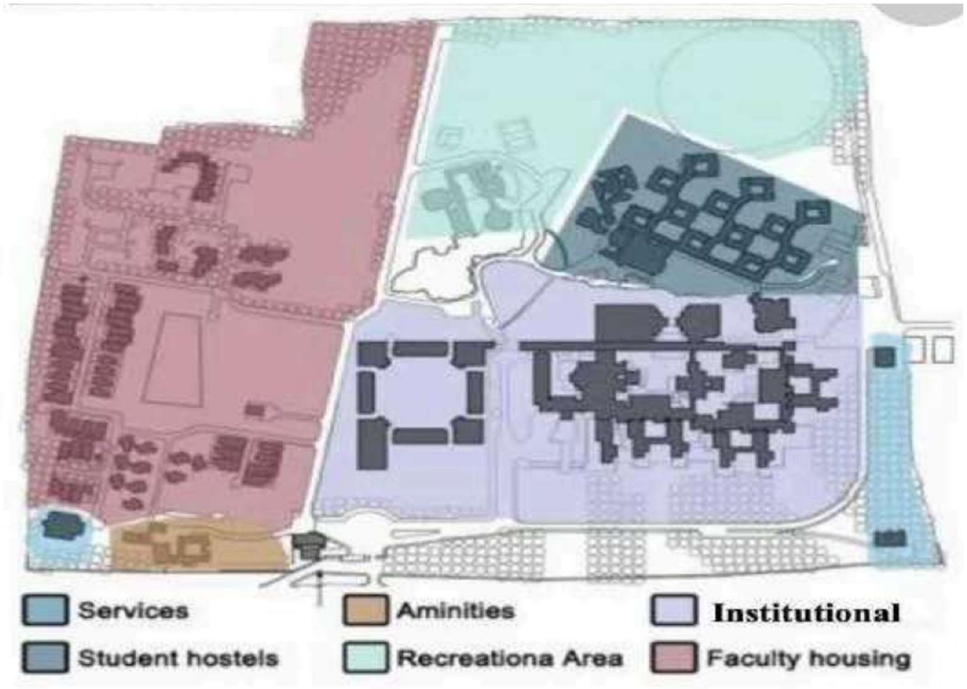


Figure 64 Zoning

The site is divided into two distinct zones: the northern half for staff housing and the southern half for the educational block.

The staff housing area is further segmented into two sectors, one for teaching staff and another for non-teaching staff.

The educational block encompasses the administrative and library facilities, as well as dormitories located on its southern sides. This entire zone is enveloped by a protective layer of greenery, which serves to mitigate unwanted noise from the road and visually separate it from the surrounding areas.

Activity Pattern –

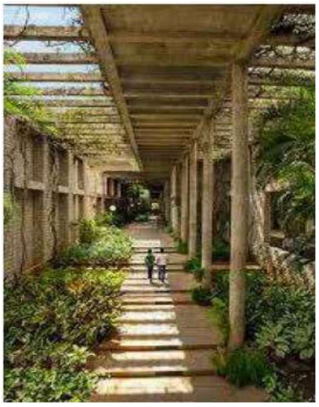
During the day, activities are focused on academic and administrative areas. There is increased utilization of interaction and transition spaces throughout the campus, such as corridors, galleries, courts, and foyers. Activities typically flow between classrooms, the library, the computer center, canteens, and student dormitories. At night, activity shifts towards the library, hostel blocks, and courtyards**.**

Design Ideas –

- **Architectural Inspiration:** The IIMB complex, 54,000 sq mt on 100 acres, is inspired by the 16th-century town of Fatehpur Sikri, envisioned by Akbar.
- **BV Doshi's Vision:** Architect BV Doshi translated this vision into an interconnected system of corridors, courtyards, and external spaces, designed for future expansion.
- **Doshi's Originality:** Although often introduced as a protégé of Le Corbusier and Louis Kahn, Doshi's design for IIMB powerfully refutes this, showcasing his original and creative talent.
- **Design Principles:** The IIMB design demonstrates Doshi's impeccable understanding of scale, proportion, and light, with light playing a pivotal role.

"Glocal" Campus: Doshi merged the courtyards of Fatehpur Sikri with the gardens of Bangalore to create a "glocal" campus, conceiving green corridors for academic exchanges.





- The IIM Bangalore main building's character changes throughout the day and seasons due to light, shadow, and the interplay of walls and openings.
- High corridors, providing access to classrooms and offices, offer a heightened spatial experience with varying degrees of openness (fully open, partly covered, or with pergolas) and modulated widths for seating.
- The design connects students and faculty to nature by juxtaposing built space with the landscape, creating an "uncertain sequence of events" and "beautifully amorphous space."
- Unlike contemporary buildings with deterministic environments, the IIM Bangalore campus disrupts the linearity of time.
- The architecture resists a clear image, prioritizing the experience of traversing its "in-between spaces" over formal clarity, though the plan can be grasped over time.
- Frequent changes in scale and breaks in the corridor's form, along with landscape integration, enhance the spatial experience and create soft, loosely defined edges.



Themes & variation; Solids and Voids –

- The IIM campus design prioritizes "in-between" spaces to integrate new functional demands over time.
- A recent Mindspace Architects block demonstrates the plan's capacity for growth.
- Avoiding a single center allows new spaces to merge seamlessly with the original layout.
- The design's foundation lies in the intentional orientation, sequence, hierarchy, and relationships of voids.
- These open-to-sky and semi-open areas create a "code" for adding, editing, or altering functional spaces without compromising the original concept.

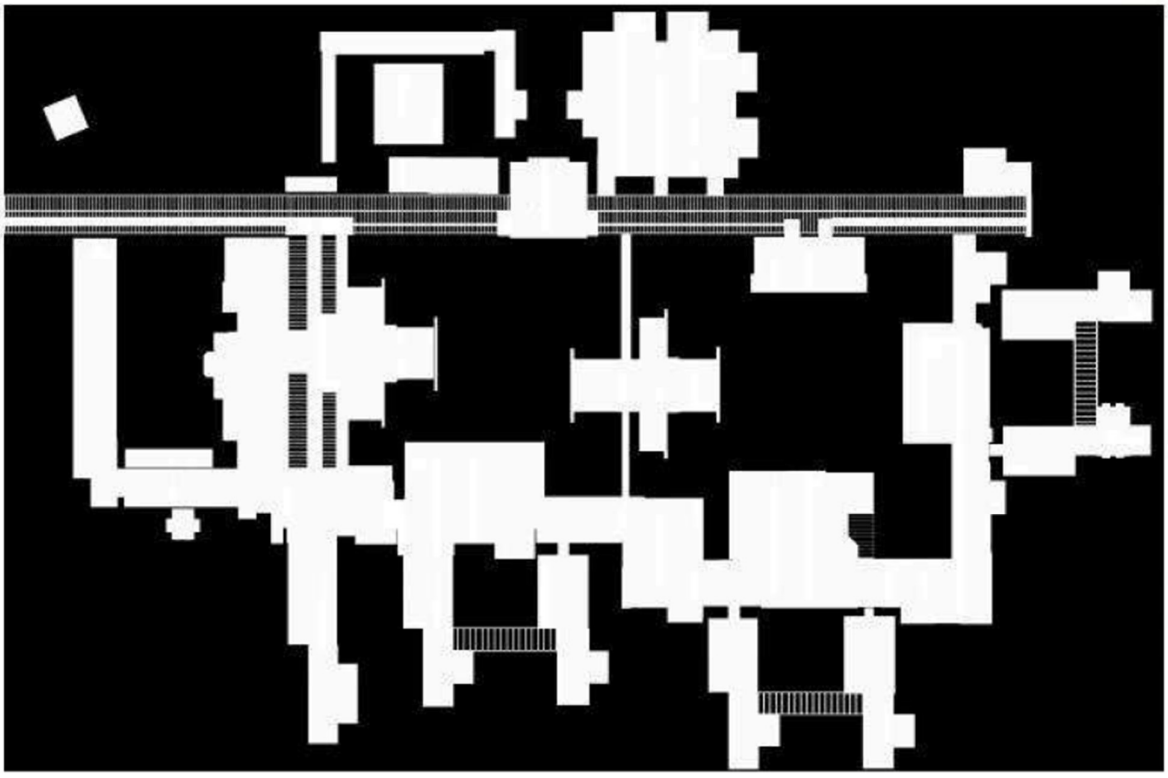
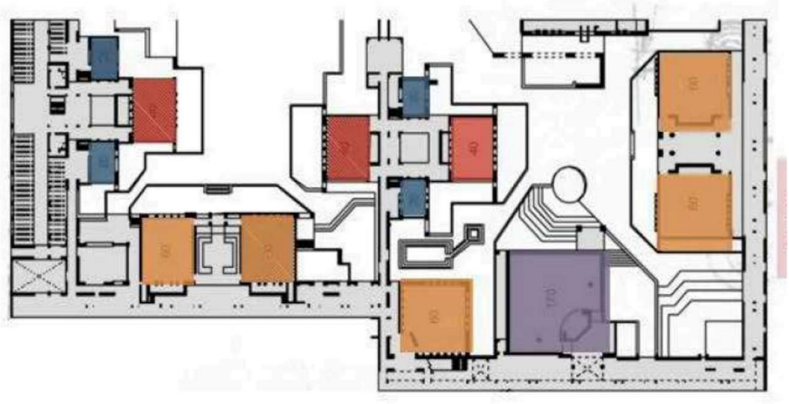


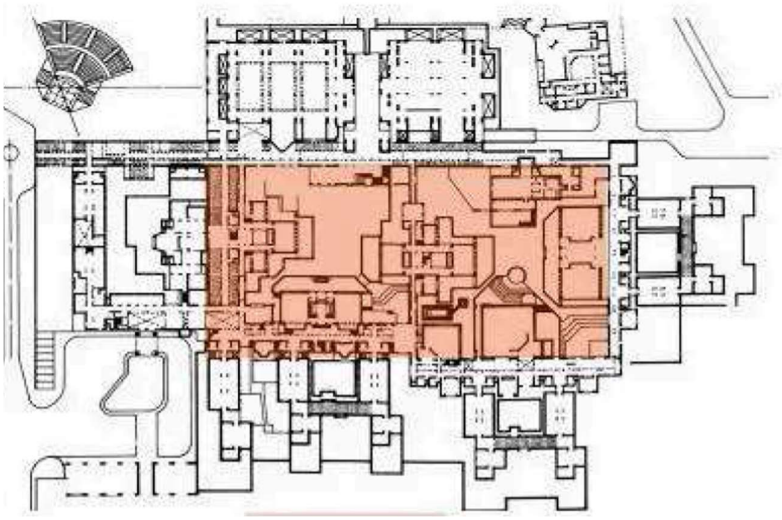
Figure 65 OPen to closed spaces analysis

Classrooms –

Classrooms are arranged in clusters of two or three around open and semi-open courts, which interlink them. This informal arrangement encourages students to use these areas as interactive spaces for discussions and socializing.

Access to classrooms is not direct from main movement spines or corridors. Instead, a common space acts as a pause point before students enter classroom activities. These "in-between" spaces feature built-in seating and notice boards, encouraging students to linger.

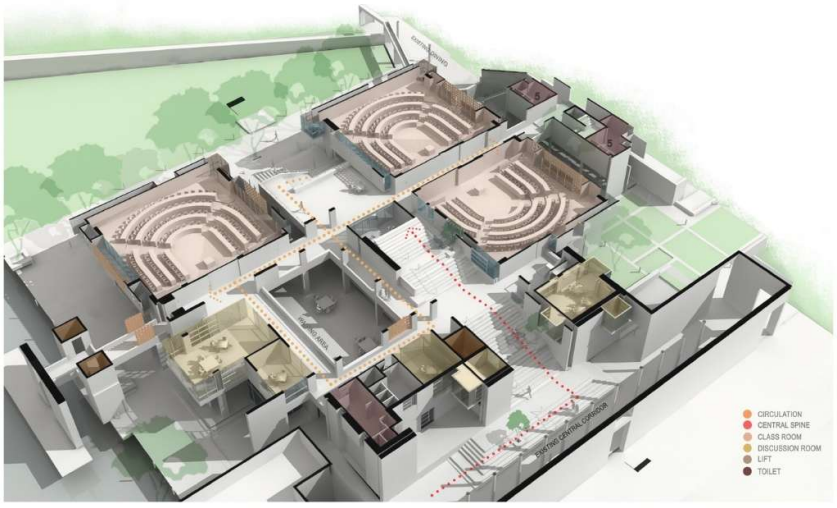




The integration of interior and exterior elements is evident, demonstrating the co-existence of life, art, and architecture. The corridors feature varied widths, intentionally designed to accommodate informal seating.

These corridors, designed with the Indian community environment in mind, are a study in rhythm and composition. They also provide access to classrooms and administrative offices.

The elevated corridors vary in their overhead coverage, ranging from fully open to partially enclosed with skylights or shaded by pergolas, all designed to enhance the sense of space.



FIRST FLOOR | ISOMETRIC VIEW



Figure 66 Classroom section detail



Figure 67 classroom section detail 2

IIMB Library Redefined by Vishwanath Associates

Project Overview:

- Size: 55,000 sq.ft. across 3 floors
- Seating Capacity: 250
- Project Cost: Rs. 5.4 Crores

- Context: A reimagined library within a large, esteemed institutional campus, catering to students, faculty, and researchers 24 hours a day.

Recognition:

- This project, located in India, won the WA Award Cycle 36.

Key Personnel:

1. Principal Architect: V. Vishwanath



- Declining footfall in the library on a renowned institutional campus.
- Objective: Revitalize space, enhance technical capabilities, and improve relevance for Gen Y users.
- Remodelled library integrates modern comforts with existing heritage architecture.
- Design includes dedicated areas: discussion rooms, formal/informal reading zones, retiring areas, laptop bays, digital displays, and flexible spaces.
- Strategic use of colour in acoustics, AI interventions, faculty work pedestals, and seating to improve attention span and reduce boredom.





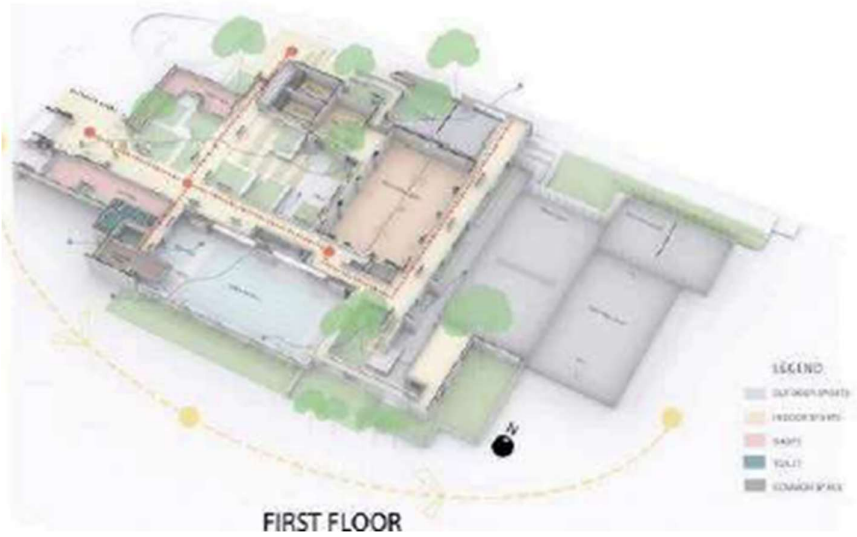
Planning –

The sporting facility integrates wide steps and platforms that serve dual purposes: hosting cultural activities and seamlessly connecting the building to the surrounding landscape. The core concept behind

the design is to foster a serene relationship between the building, its occupants, the site, and nature. This is achieved by encouraging both formal and informal interactions within common areas accessible to both staff and students. The material palette, primarily stone and concrete, was chosen to harmonize the new structures with existing elements, creating a cohesive visual language. Additionally, all sports facilities within the complex comply with international standards.



GROUND FLOOR



FIRST FLOOR

Materials used –

Hand-chipped Grey Granite: This is a predominant material, locally sourced, giving the campus its distinctive robust, earthy, and tactile aesthetic. It's used for the walls and contributes to the building's thermal mass, helping to keep interiors cool.

Exposed Concrete: Used for structural elements, frames, and sometimes lattices and pergolas, providing a modernist contrast and contributing to the clean lines and contemporary feel of the buildings.

Kota Stone: Used for flooring, both in rough and polished finishes, adding to the natural and durable material palette.

Lush Vegetation/Greenery: While not a "construction material" in the traditional sense, Doshi considered plants and landscaping an integral part of the architecture. Creepers, trees, and other plants are woven into the design, providing shade, enhancing the microclimate, and softening the hard edges of the stone and concrete.

Lime Plaster: Though not as dominant as granite or concrete, lime plaster is also mentioned in some newer constructions within the campus, contributing to a tactile, rooted feel and ensuring durability and low maintenance.





Hostels-

Ground coverage = 444 sq .m

No. Of floors = 3

Built up area(one block)= 1332 sq.m

No. Of blocks= 12

Total built up area= 15,984 sq.m

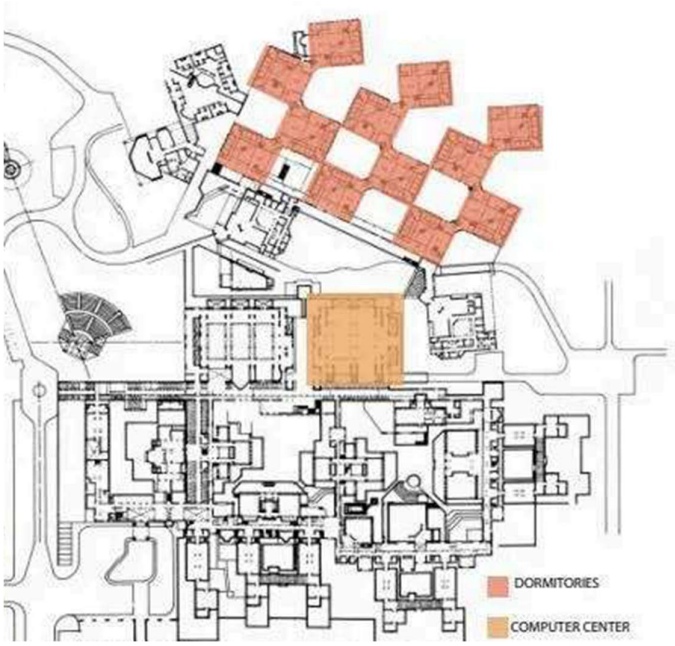
No. Of rooms per floor= 16

Capacity per room= 1

Total capacity= 576

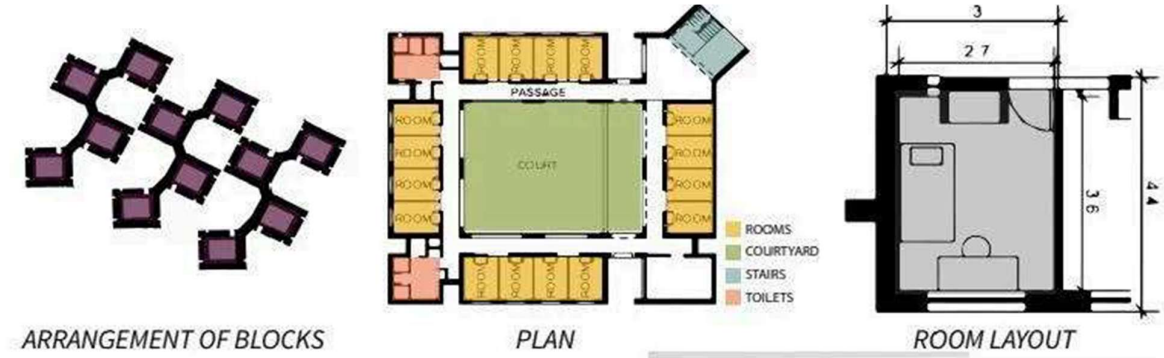
Carpet area(one unit)= 9.3 sq.m

Area/student= 27.7 sq.m



Proximity to Classrooms: Hostels are a short walk from classrooms.

- Courtyard Design: Each block has an internal courtyard (for residents of that block) and an external courtyard (shared with other blocks).
- Courtyard Functionality: Courtyards are interactive spaces for various activities and provide light and ventilation.
- Floor Capacity: Each floor is designed for a community of 12 people.



Inference –

Inspired by Indian Heritage: Draws from traditional Indian cities (e.g., Fatehpur Sikri) with courtyards and interconnected spaces.

Modernist Principles: Uses clean lines, exposed concrete, and functional zoning.

"Living Labyrinth" Concept: Designed as an open, fluid network of corridors and courtyards to encourage exploration and interaction.

Climate-Responsive: Uses local grey granite and exposed concrete for thermal comfort.

Natural Ventilation & Light: Thick walls, shaded walkways, and large openings maximize natural airflow and sunlight.

Integrated with Landscape: Blurs boundaries between buildings and lush greenery, using trees and water features.

Sustainability Focus: Incorporates solar power, rainwater harvesting, and wastewater treatment.

Promotes Interaction: Interconnected spaces foster community and informal learning.

Openness & Fluidity: Aims for an environment "without boundaries" for free exchange of ideas.

Functional Zoning: Clear areas for academics, hostels, and administration.

Pedestrian-Centric: Prioritizes walking within the campus, limiting vehicular access.

Modular & Adaptable: Design allows for future growth and flexibility.

4.2.2 SCHOOL OF PLANNING AND ARCHITECTURE, VASANT KUNJ

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 blocks 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.

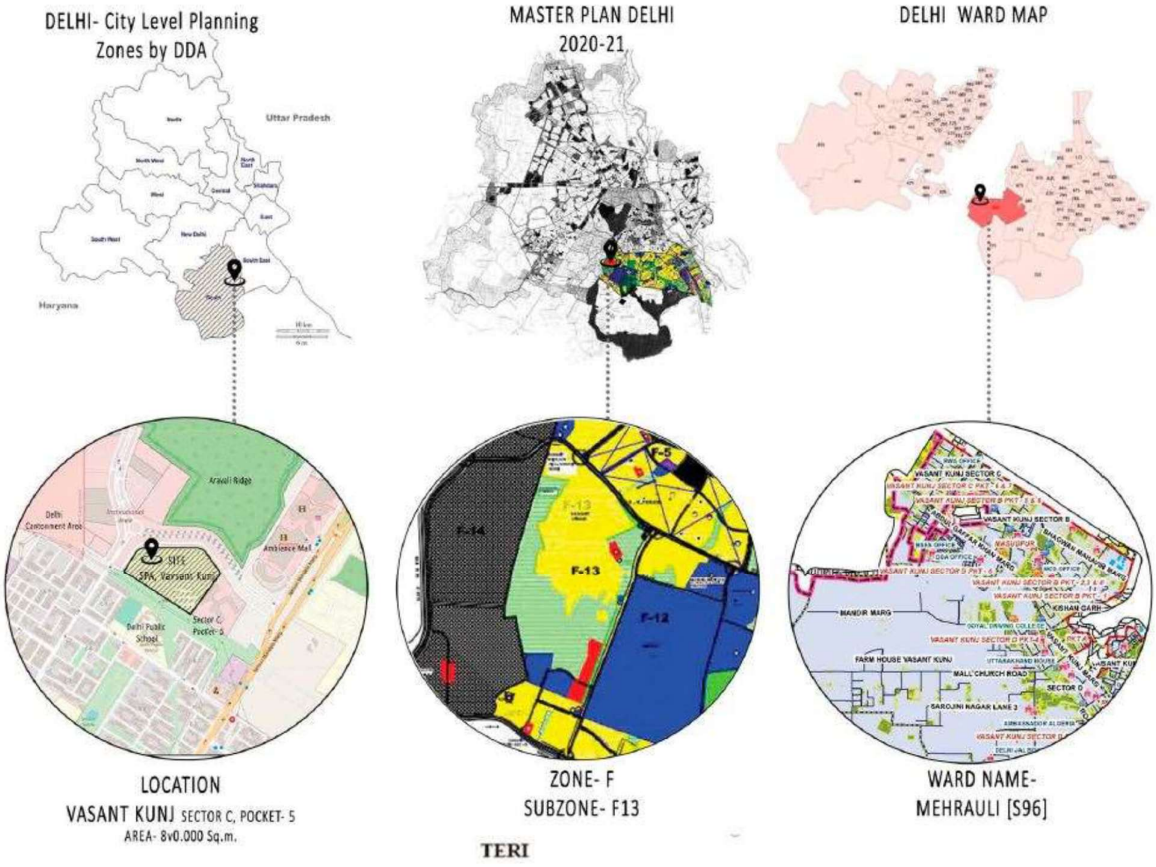


Figure 68 Spa Vasti kunj, location



Figure 69 master paln



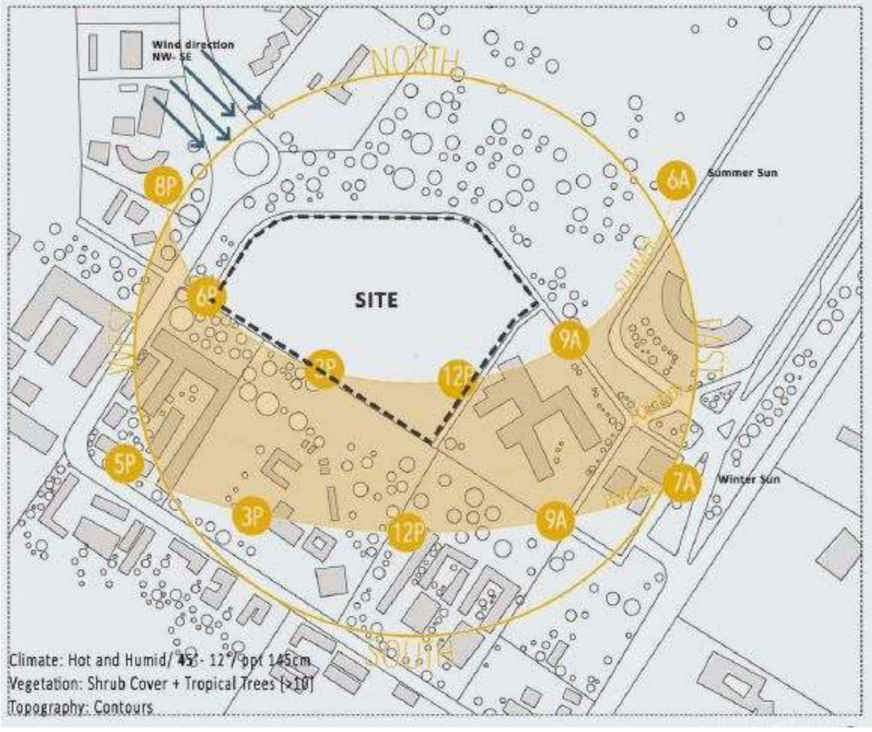


Figure 70 Sun path

Building Program –

1. Academic

- Pg department
- Ug architecture
- Art studio
- Workshops

2. Cultural

- Auditorium
- Media library
- Campus centre
- Public gallery

3. Residential

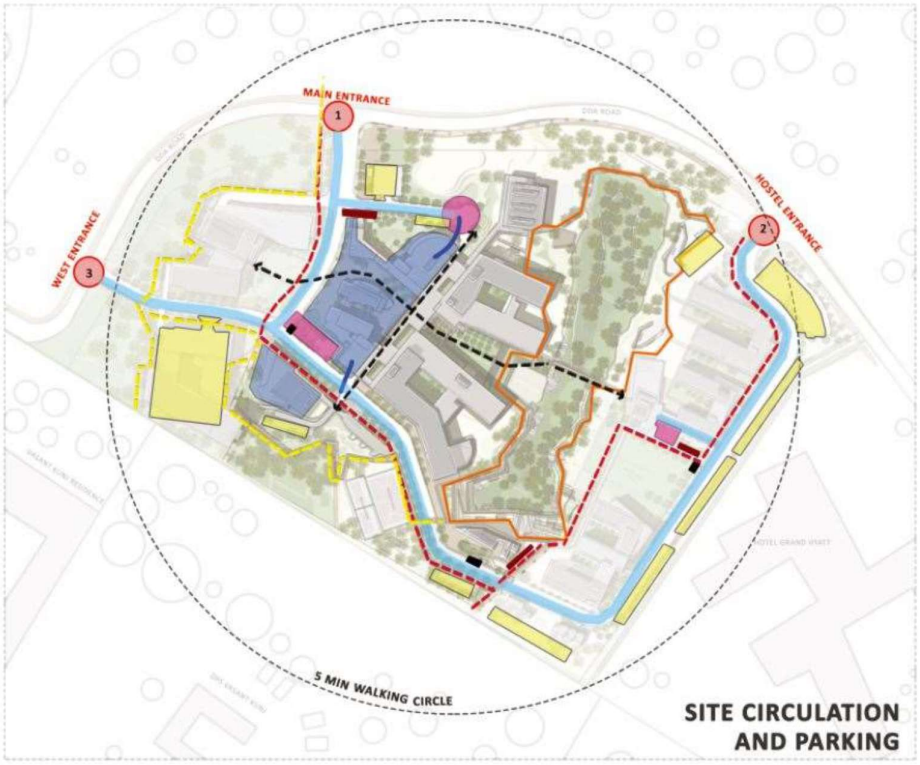
- Pg boys and girls hostel
- Senior hostel
- Ug hostel
- Guest hour

4. Recreational

- Cafeteria
- Health centre and gym
- Student centre



Figure 71 Zoning of SPA VAstikunj



SITE ACCESS

SITE PATH

PEDESTRIAN PATH

CYCLE PATH

WOODLAND
WALKING PATH

CANYON PATH

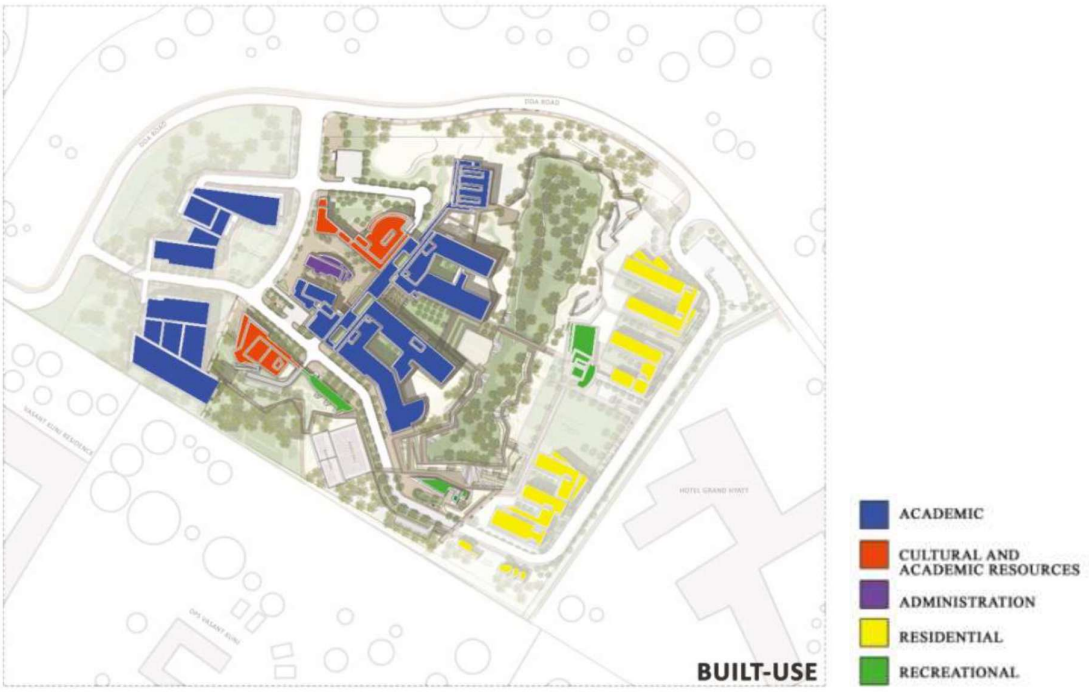
CYCLE STAND

SHUTTLE STOPS

DROP-OFF ZONE

BASEMENT PARKING

SURFACE PARKING


BUILT-USE
ACADEMIC
CULTURAL AND ACADEMIC RESOURCES
ADMINISTRATION
RESIDENTIAL
RECREATIONAL

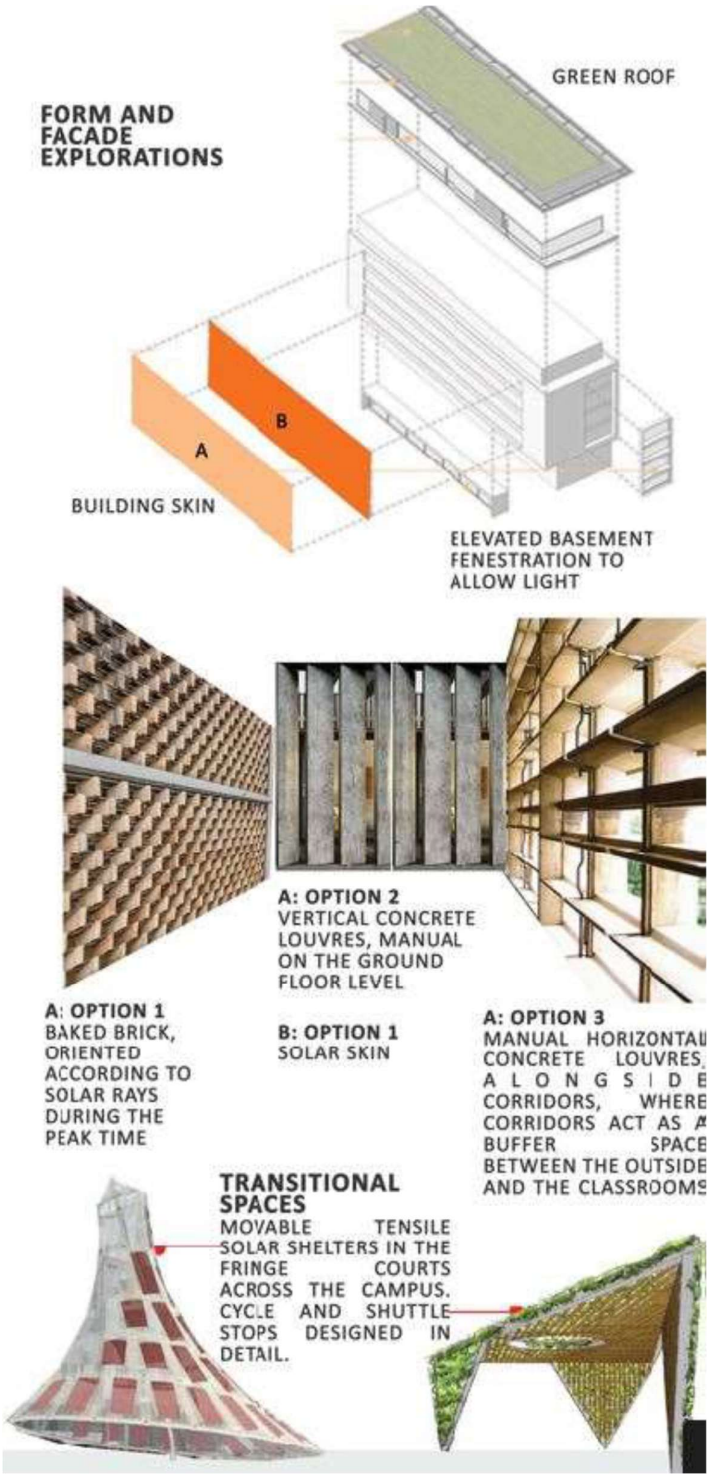
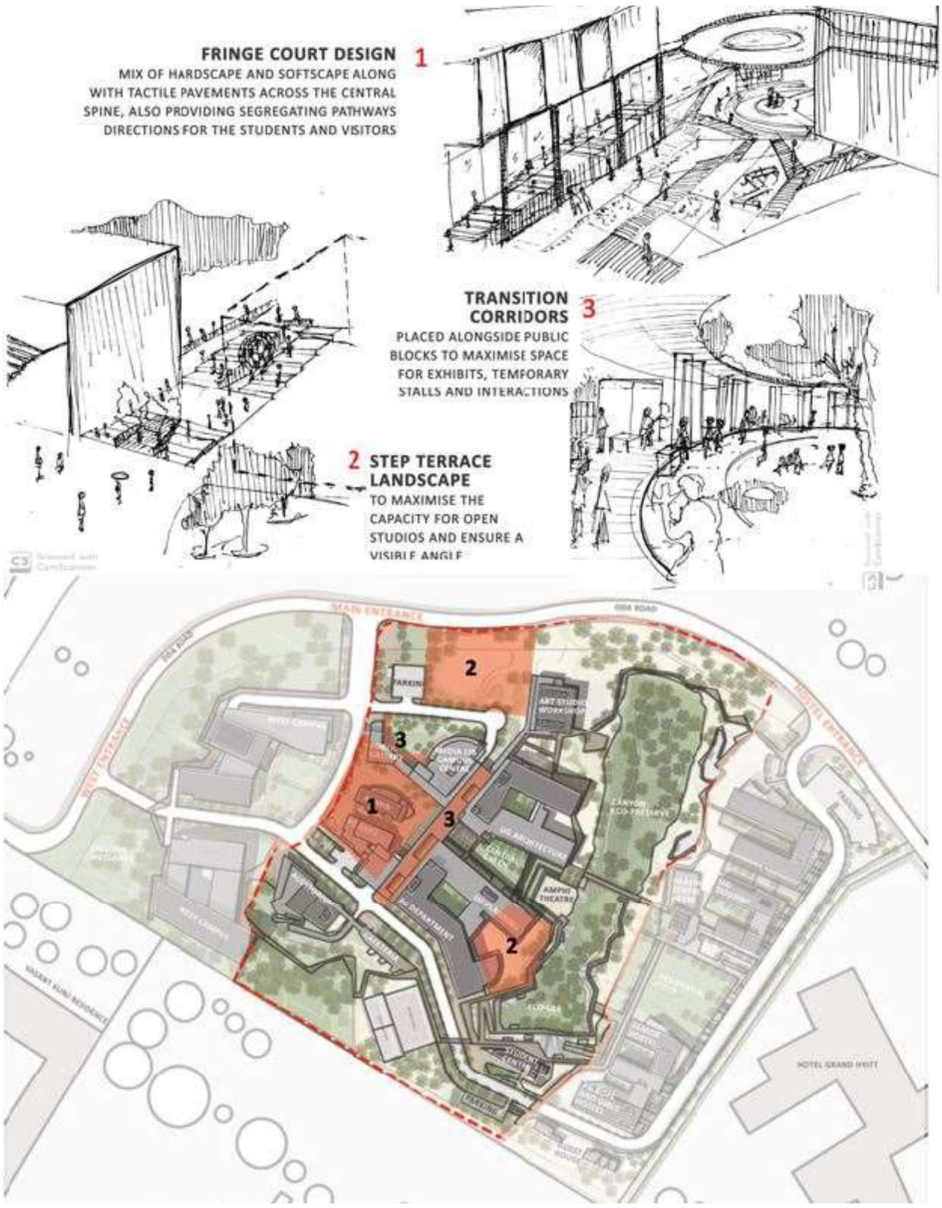


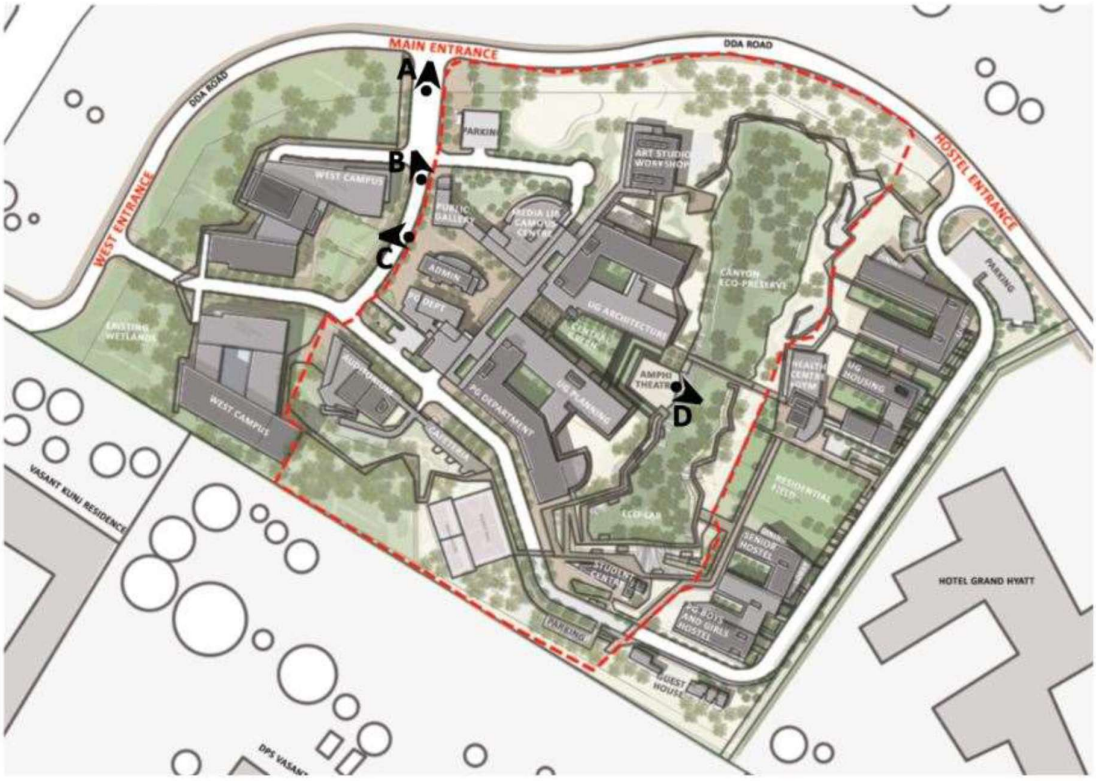
Figure 72 Facade details

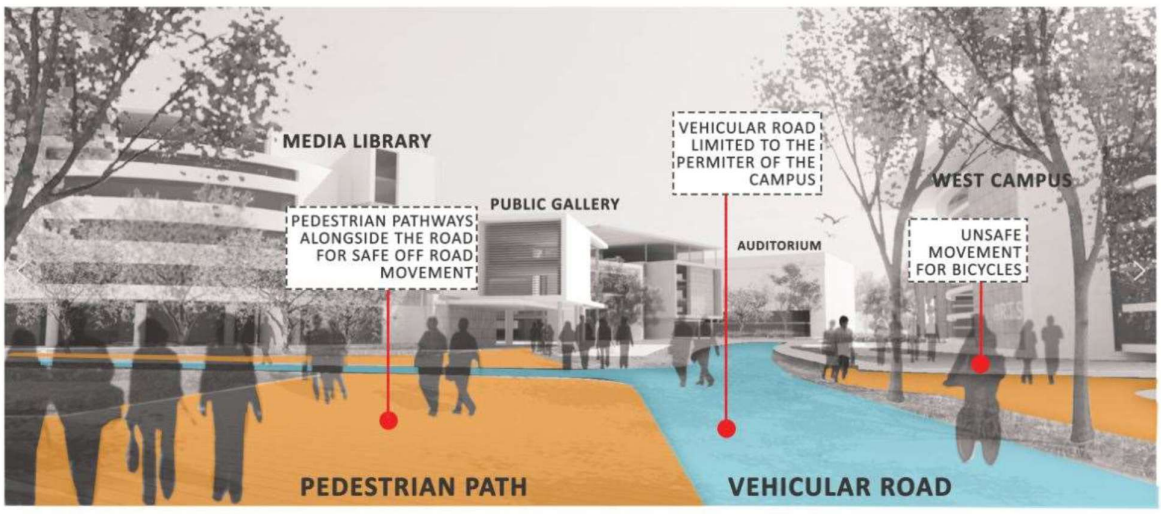


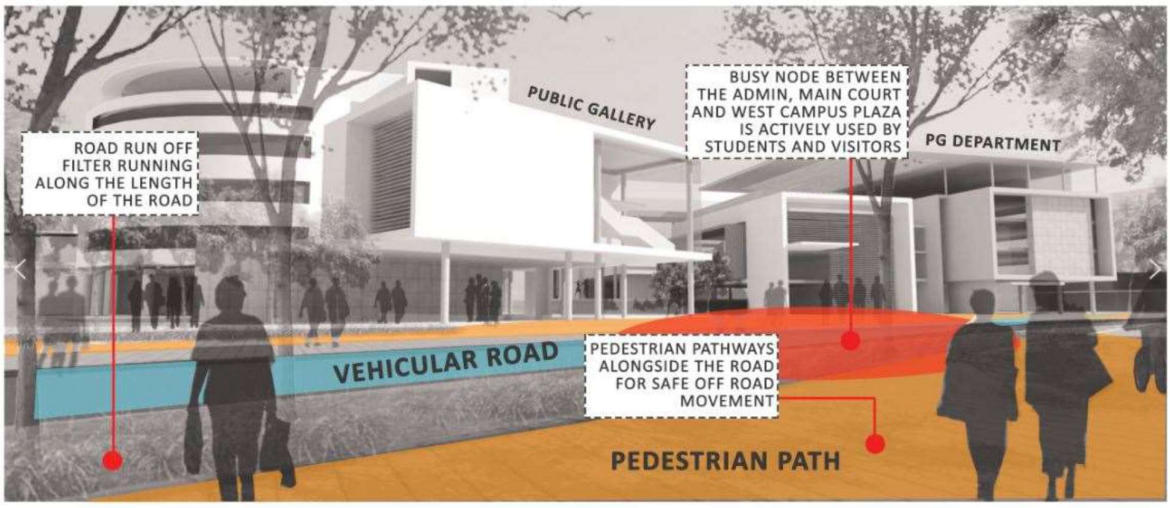
Key features –

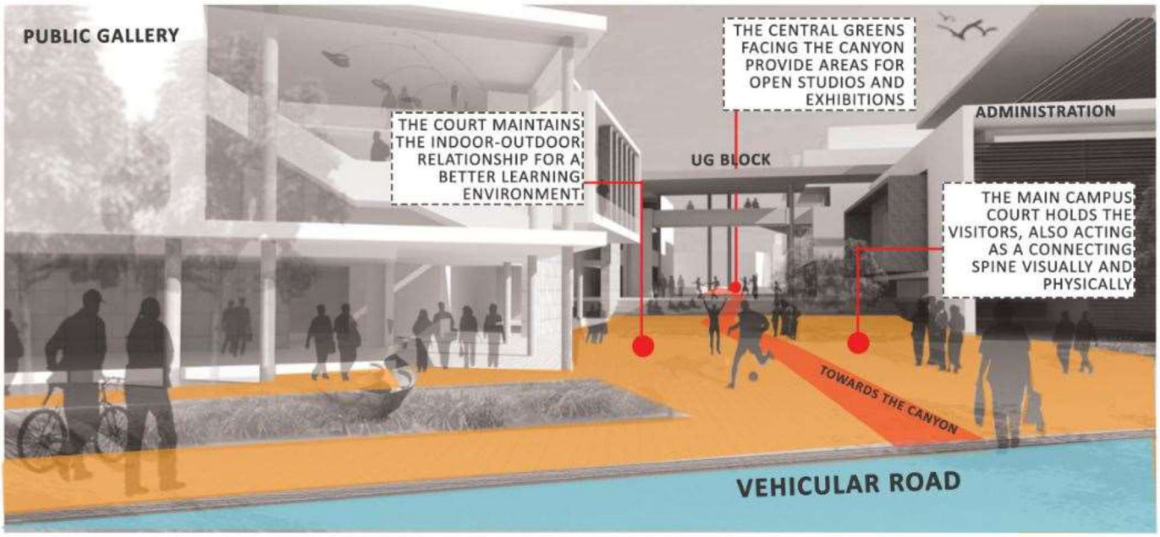
- Fringe court landscape- Designed to merge other spaces into canyon and to provide an opportunity for an open Art Studio or Exhibition.
- City Edge Landscape- Huge setback from road provides a frame as edge. Also, provide space for Bike and walking trails along the edge.
- The spaces in and around buildings are designed to promote trans-disciplinary learning where students will find opportunities to interact and exchange views
- with fellow students and visitors and contemplate in quiet, inspiring spaces within the natural environment.

- Landscaping to be ecologically sensitive using the majority of INDIGENOUS SPECIES of flora.
- LANDSCAPE COURTYARDS intersperse the blocks also connecting the pedestrian movement.









Inference

- The courts open directly into the canyon, facilitating an easy transition.
- These courts are designed for multi-purpose use, serving both public and private groups.
- The spaces around the buildings are created to encourage interdisciplinary learning.
- Students can interact and exchange views with peers and visitors.

- Quiet and inspiring spaces within the natural environment are available for contemplation.
-

4.3 COMPARATIVE ANALYSIS OF CASE STUDIES

Aspect	NIFT Delhi	CEPT Ahmedabad	IIM Bangalore	SPA Vasant Kunj
Architect	B.V. Doshi	B.V. Doshi	B.V. Doshi	Not specified in document
Site Area	11,650 sq.mt. (approx. 3 acres)	12.5 acres	38.1 HA (approx. 94 acres)	20 Acres
Location/Context	Hauz Khas institutional area, New Delhi. Easily accessible from Aurobindo Marg, near Green Park metro. Building covers almost entire site.	Gujarat University area, Ahmedabad. Located at the edge of an educational zone, proximal to residential areas. Set back 100 ft from main road, shielded by trees.	Bangalore, tropical savanna climate. Site divided into northern (staff housing) and southern (educational) halves. Enveloped by greenery to mitigate noise.	Vasant Kunj, Delhi. Site characterized by topographic peculiarities from mining and soil dumping, creating natural water bodies and steep slopes.
Original Topography	Flat land; levels created by architect.	Undulated (earlier brick kiln site); architect played with levels.	Generally flat topography.	Topographic peculiarities with natural water bodies and steep slopes.
Design Ideology/Concept	Campus as a "village square" growing organically; central kund-like court; concepts from bazaars, stepwells, and kunds to create engaging public spaces.	Emphasis on open, flexible spaces with minimal doors; close to nature; experiment with designing skills; play with levels.	Inspired by 16th-century Fatehpur Sikri; interconnected system of corridors, courtyards, and external spaces; "glocal" campus merging courtyards with gardens; "living labyrinth" of "in-between spaces."	Academic blocks are modular but organized into clusters with clear identities; fringe court landscapes merge spaces into a canyon; spaces designed to promote trans-disciplinary learning.
Zoning/Layout	Academic block (left), Administrative block + canteen +	Four different schools (Planning, Architecture, Building Science	Site divided into two distinct zones: northern half for staff	Academic, Cultural, Residential, and Recreational

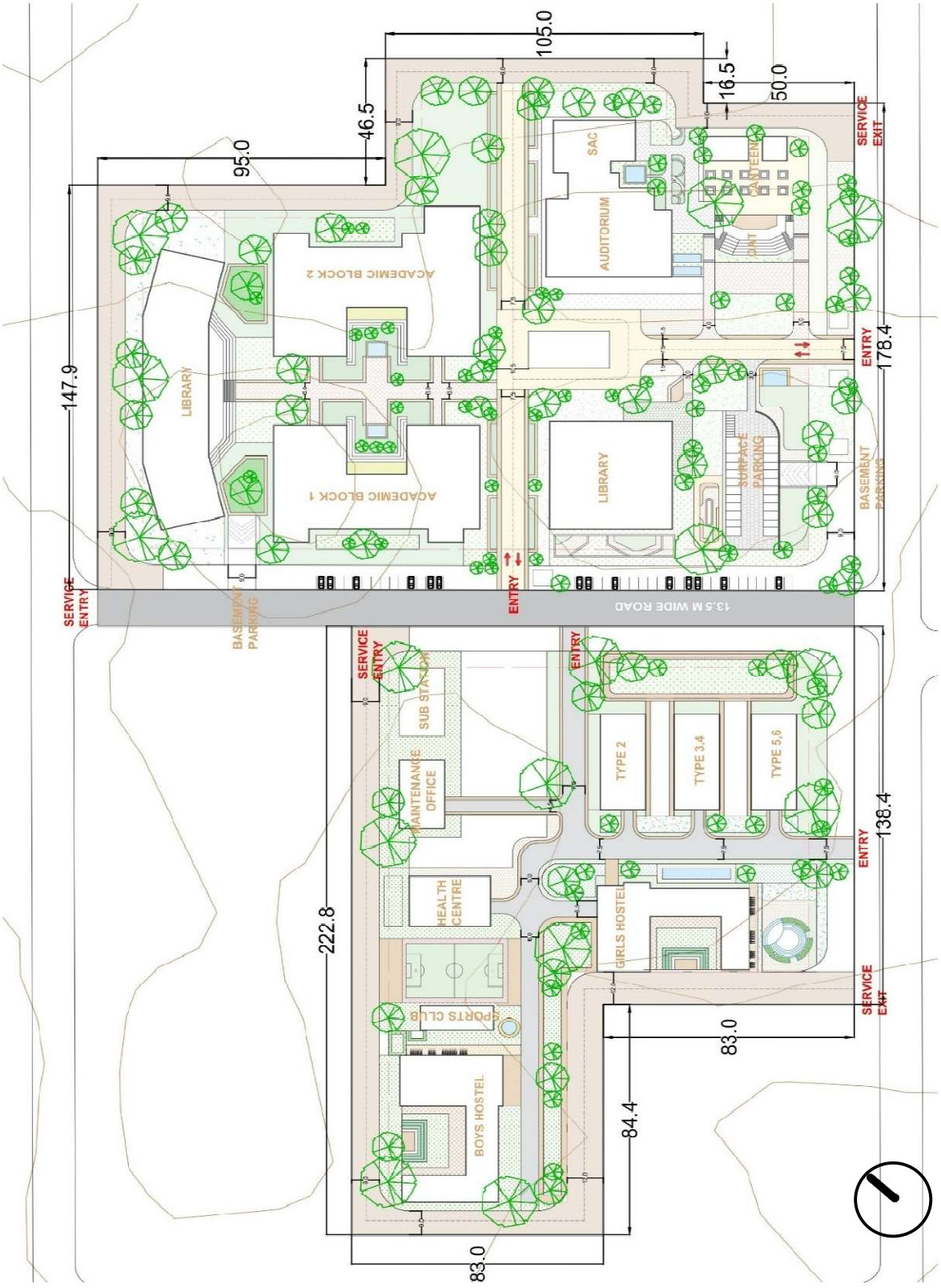
	library (right), Hostel (back). Functions properly segregated into zones.	and Technology, Interior Design). Campus centers around a central court, with built structures on the sides and a green area for noise protection.	housing, southern half for educational block. Classrooms arranged in clusters around open and semi-open courts. Clear functional zoning.	facilities. In academic zone, each department has its own courtyard. Academic blocks are modular but form clusters with clear identities.
Circulation (Pedestrian/Vehicular)	Inner road leads to main car park where vehicular traffic ends; pedestrian movement within campus creates a lively feel. Elaborate network of corridors, steps, lobbies, staircases, lounges, bridges, and terraces.	Pedestrian-friendly circulation; vehicular access restricted to the campus periphery. Indoor circulation is complex due to numerous level changes and staircases; minimal and short corridors.	Pedestrian-centric approach; vehicular access limited to the periphery. High corridors provide access to classrooms and offices, offering a heightened spatial experience with varying degrees of openness. Indirect access to classrooms.	Landscape courtyards intersperse blocks, connecting pedestrian movement. Huge setback from the road provides space for bike and walking trails along the edge.
Key Architectural Elements/Features	Central kund-like court with wide steps, water channels, green areas, and overlooking terraces; amphitheater; solid, semi-open punctured facades juxtaposed with variable convex and flat glazed facades; three-level walkways; open and glass-screened bridges.	Inclined skylights for natural light in studios; bay spaces facing exterior creating semi-private areas; parallel walls supporting flat floor slabs; two-story building with split-level basement; central courtyard (paved and unpaved); inverted roof channels for rainwater.	Interconnected system of corridors and courtyards; high corridors with varying overhead coverage (open, skylights, pergolas); built-in seating in "in-between" spaces; internal and external courtyards in hostels; sporting facility with wide steps and platforms.	Departmental courtyards; fringe court landscapes designed to merge spaces into a canyon; courts open directly into the canyon; huge setback from the road.

Material Palette	Not explicitly detailed, but implied blend of traditional and contemporary.	Exposed local materials for low cost, easy expansion, and maintenance.	Hand-chipped grey granite, exposed concrete, Kota stone for flooring. Lush vegetation considered an integral part of architecture. Lime plaster mentioned in newer constructions.	Not explicitly detailed, but ecologically sensitive landscaping using majority indigenous flora species.
Climate Responsiveness	Openings designed for aesthetic considerations rather than climatic comfort, leading to glare and heat. Building's long sides aligned along NW and SE axis.	Oriented along East-West axis with openings on North and South; thick walls on East and West to mitigate hot sun exposure. North side taller to maximize north light, south side lower to block harsh direct radiation.	Uses local grey granite and exposed concrete for thermal comfort. Thick walls, shaded walkways, and large openings maximize natural airflow and sunlight.	Not explicitly detailed, but emphasis on integrating with the natural environment.
Sustainability Features	Not explicitly mentioned.	Rainwater harvesting (inverted channels).	Incorporates solar power, rainwater harvesting, and wastewater treatment.	Ecologically sensitive landscaping using majority indigenous flora species.
Interaction Spaces	Central court, corridors, bridges, terraces, amphitheater. Creates an inward-facing bazaar energized by design displays and	Central court (high-traffic area for circulation and interaction), transition areas (corridors, galleries, courts, foyers), informal seating areas with trees.	Corridors, galleries, courts, foyers, common spaces acting as pause points before classrooms. Hostels designed with internal and external	Departmental courtyards, spaces in and around buildings designed to promote trans-disciplinary learning, quiet and inspiring spaces

	student movement.		courtyards for interaction.	within the natural environment.
Inferences/Lessons Learned	Blend of traditional and contemporary architecture; aesthetics sometimes prioritized over comfort; well-segregated zones; circulation spaces minimized for efficiency.	Open spaces promote free exchange of ideas; increased use of interaction and transition areas; structural obstruction-free ground floors make spaces multifunctional; inward-looking buildings create livelier environments; easy circulation.	Inspired by Indian heritage and modernist principles; "living labyrinth" concept encourages exploration; climate-responsive design; integrated with landscape; promotes interaction and openness; clear functional zoning; modular and adaptable for future growth.	Courts open directly into canyons for easy transition and multi-purpose use; spaces encourage interdisciplinary learning and contemplation within nature.

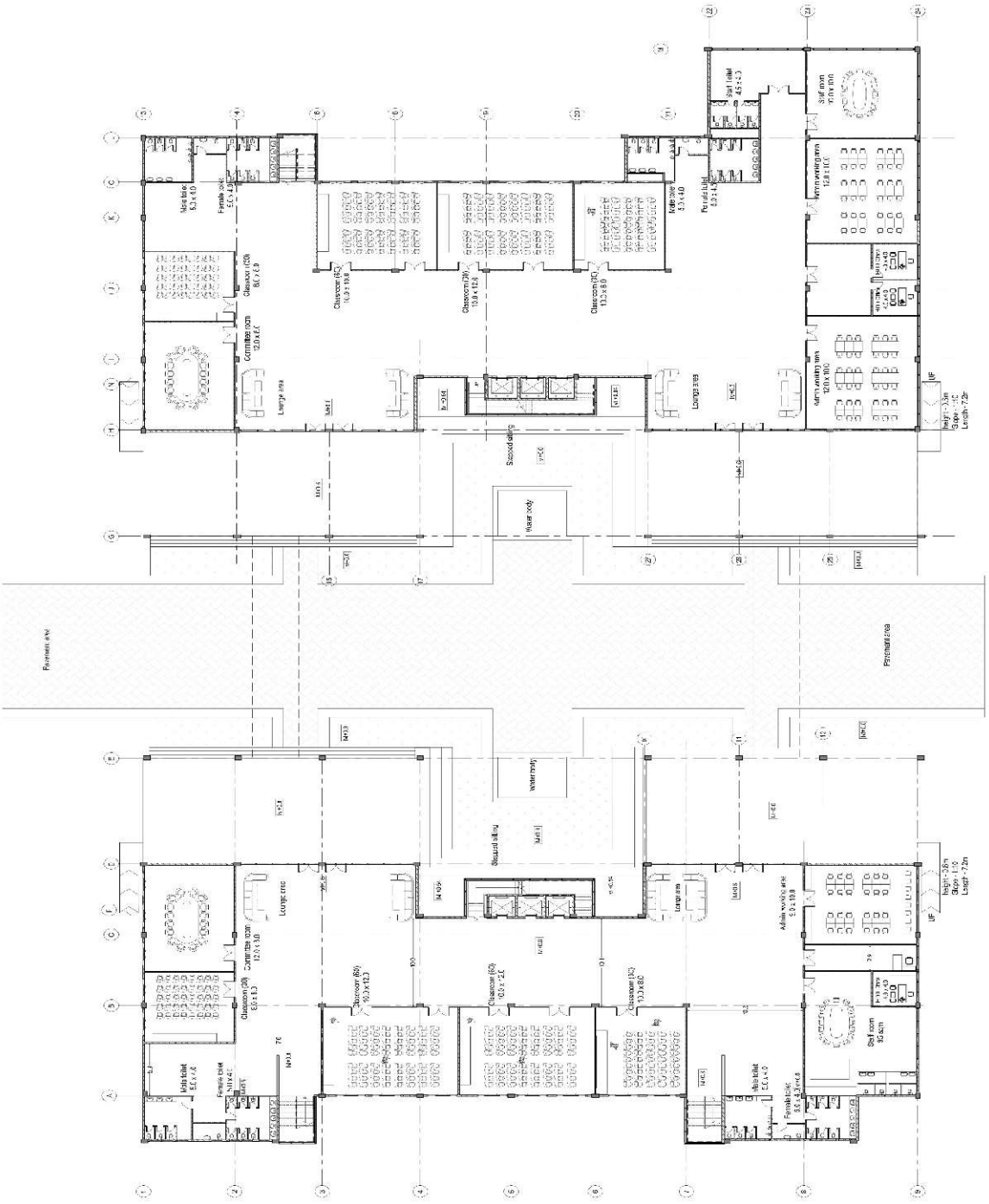
5. Floor plans –

5.1 Site plan

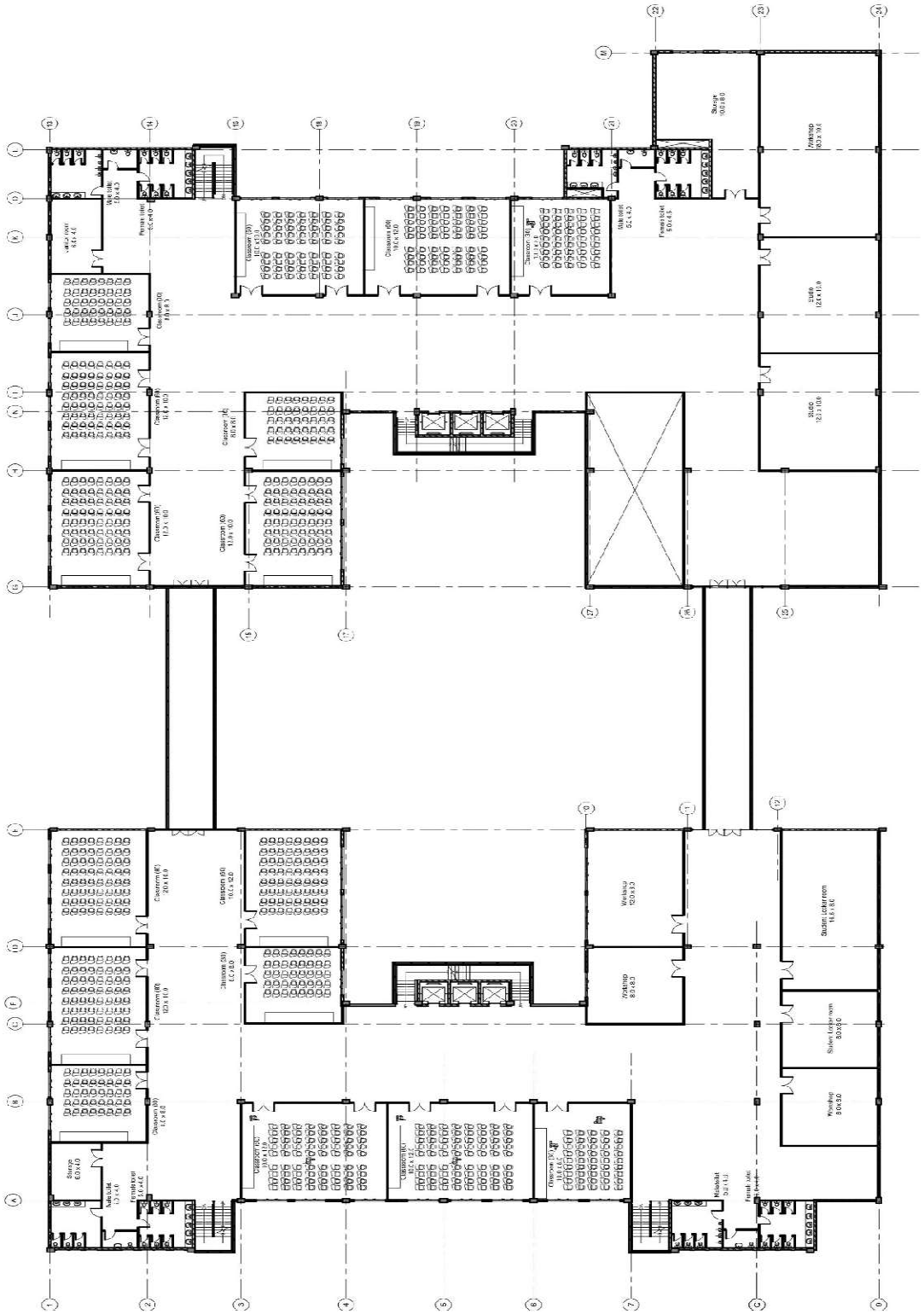


5.2 Academic block

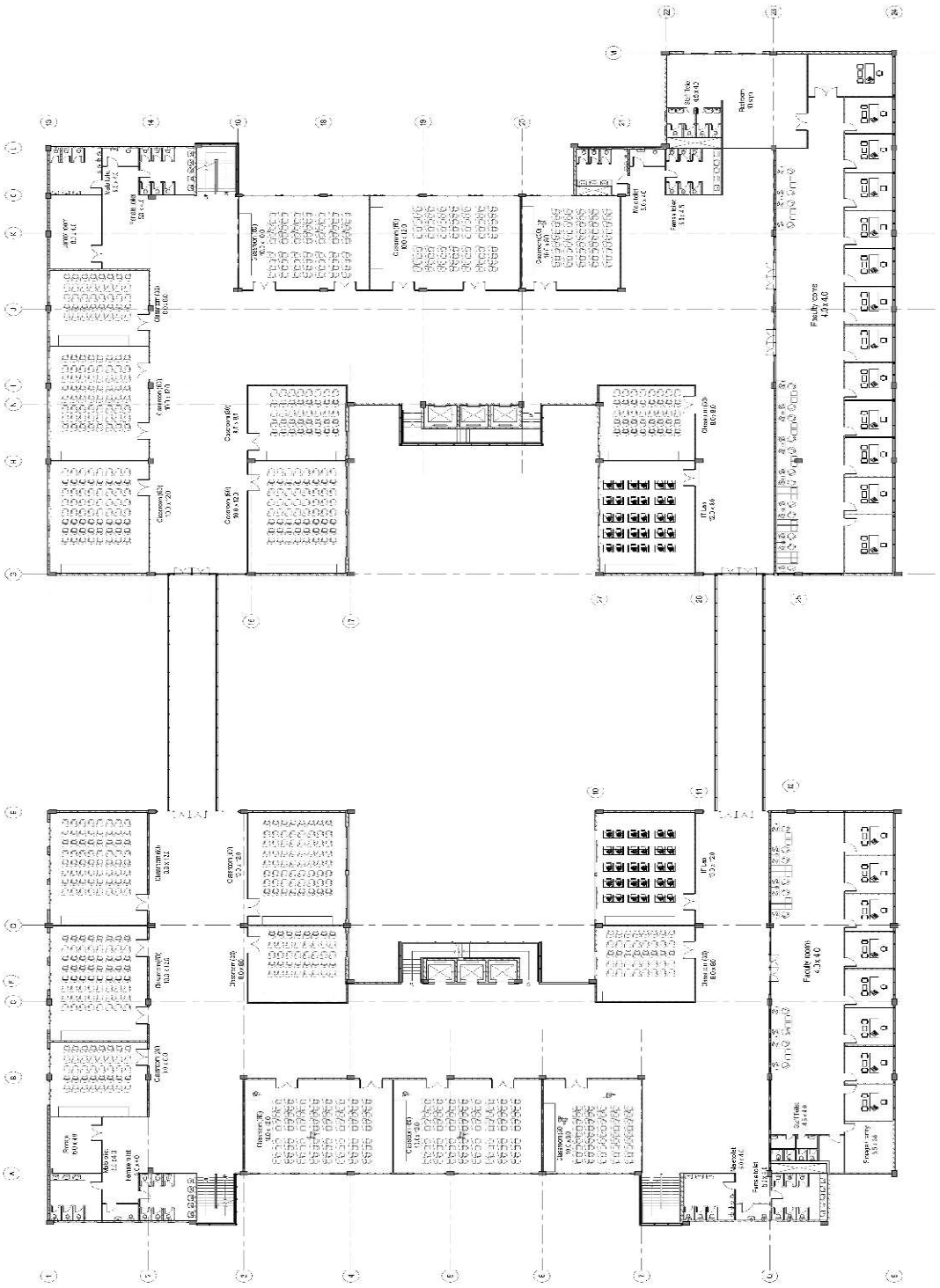
Ground floor



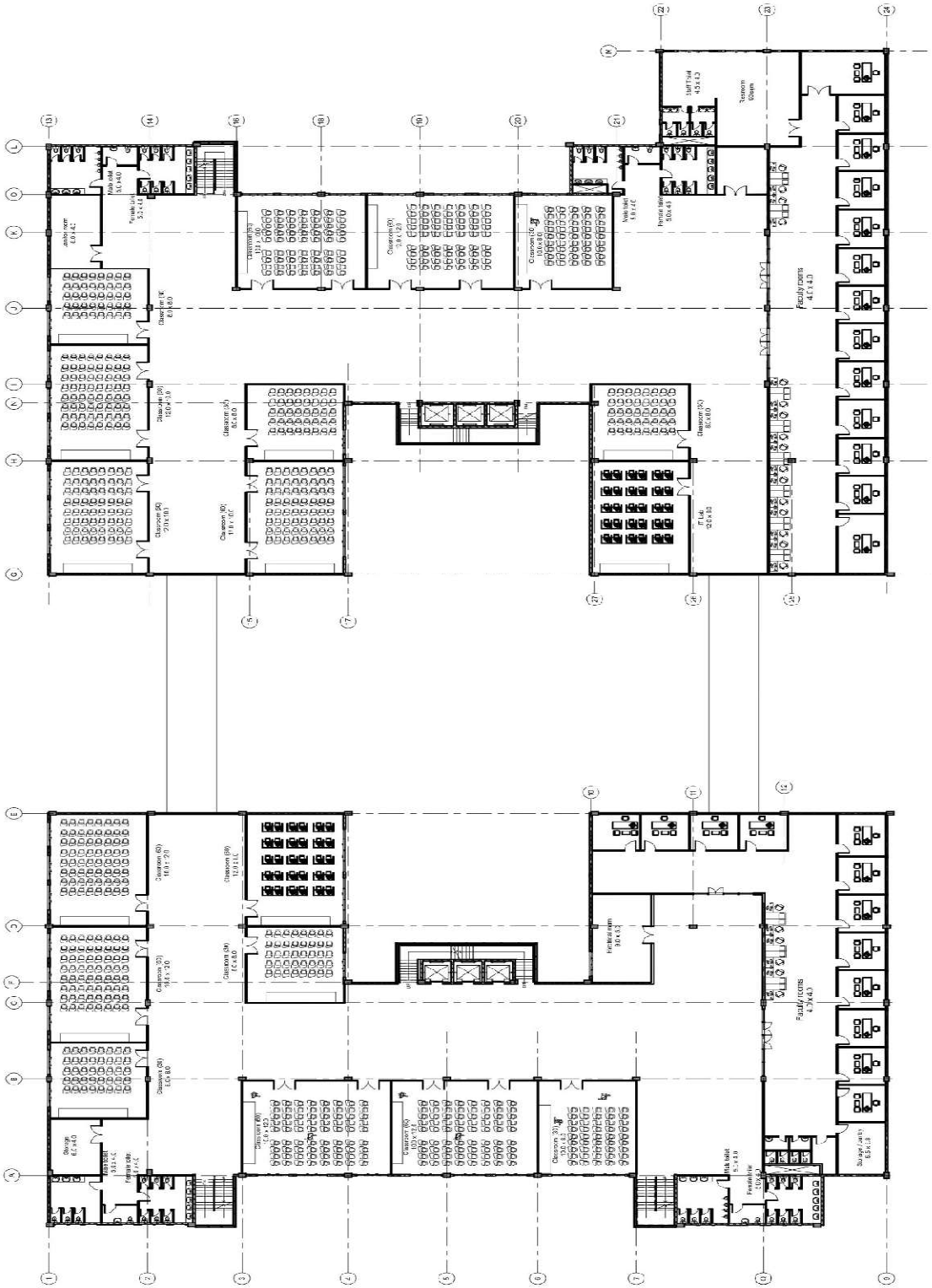
First Floor



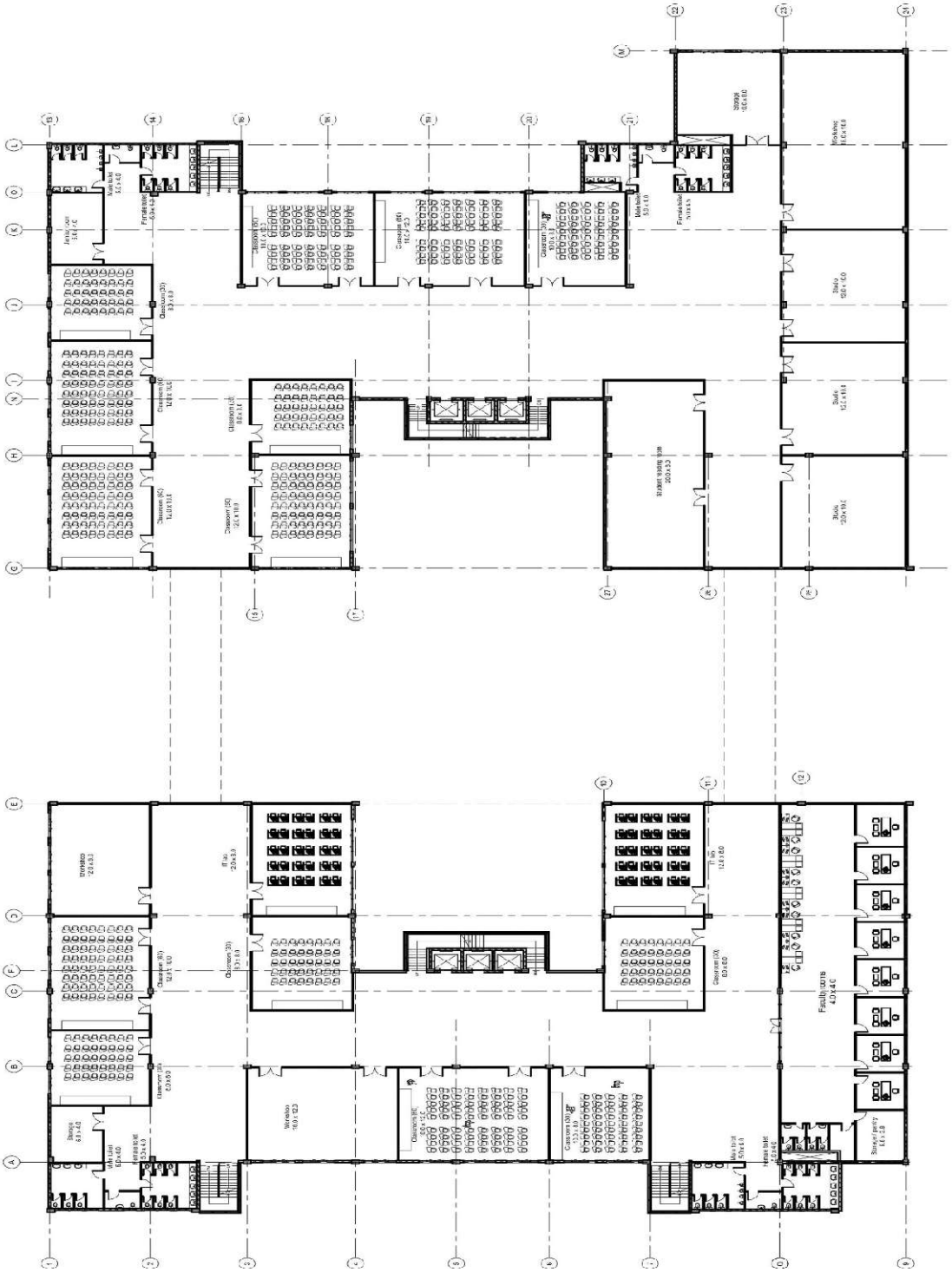
Second floor



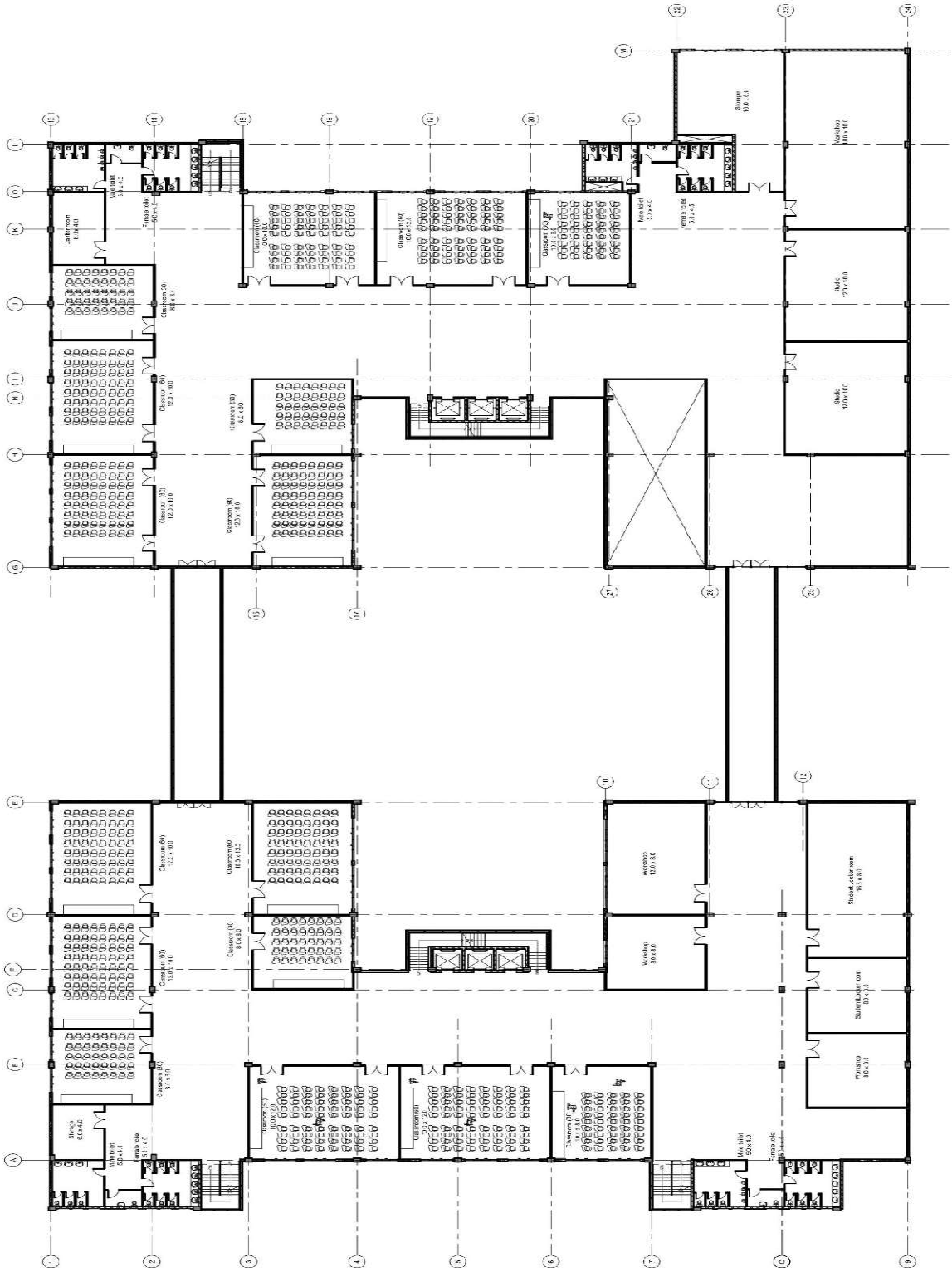
Third floor



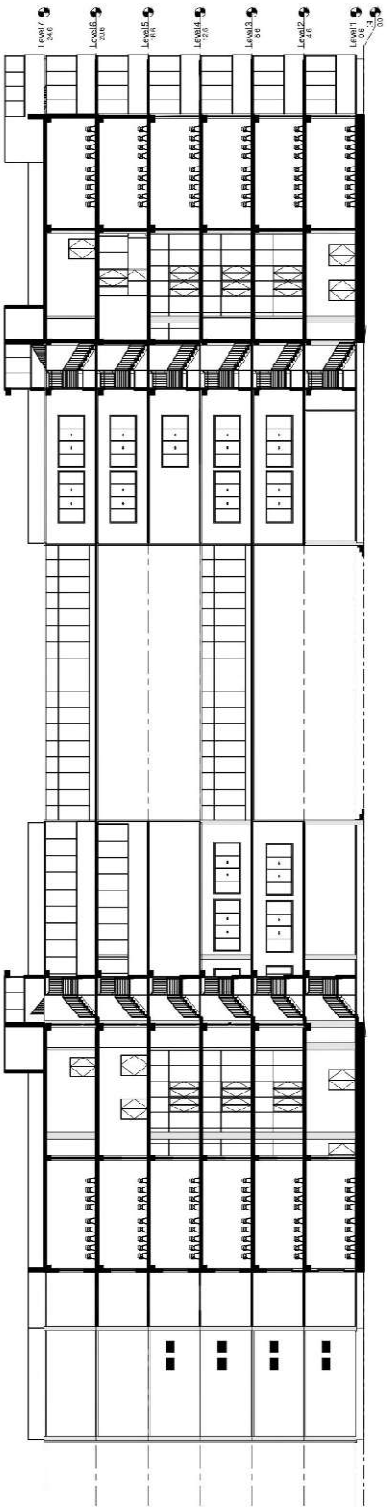
Fourth floor



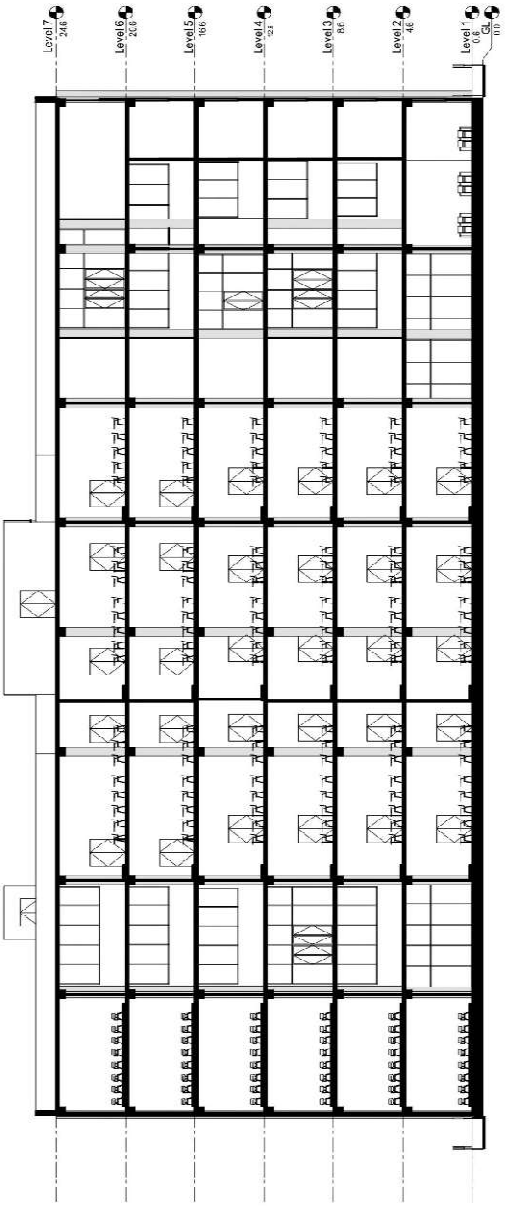
Fifth floor



Sections



Section - 1
1:200



Section - 2
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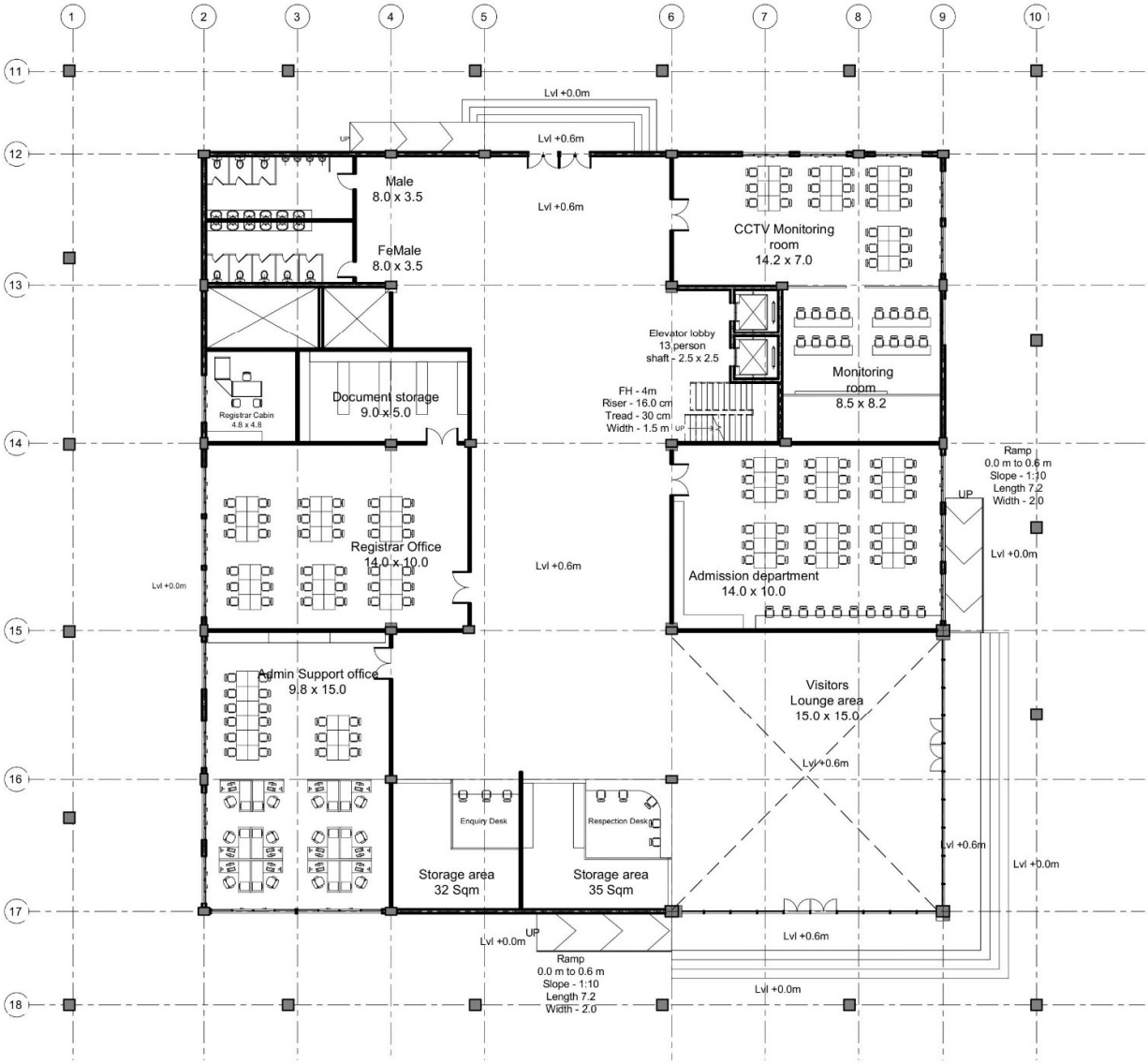
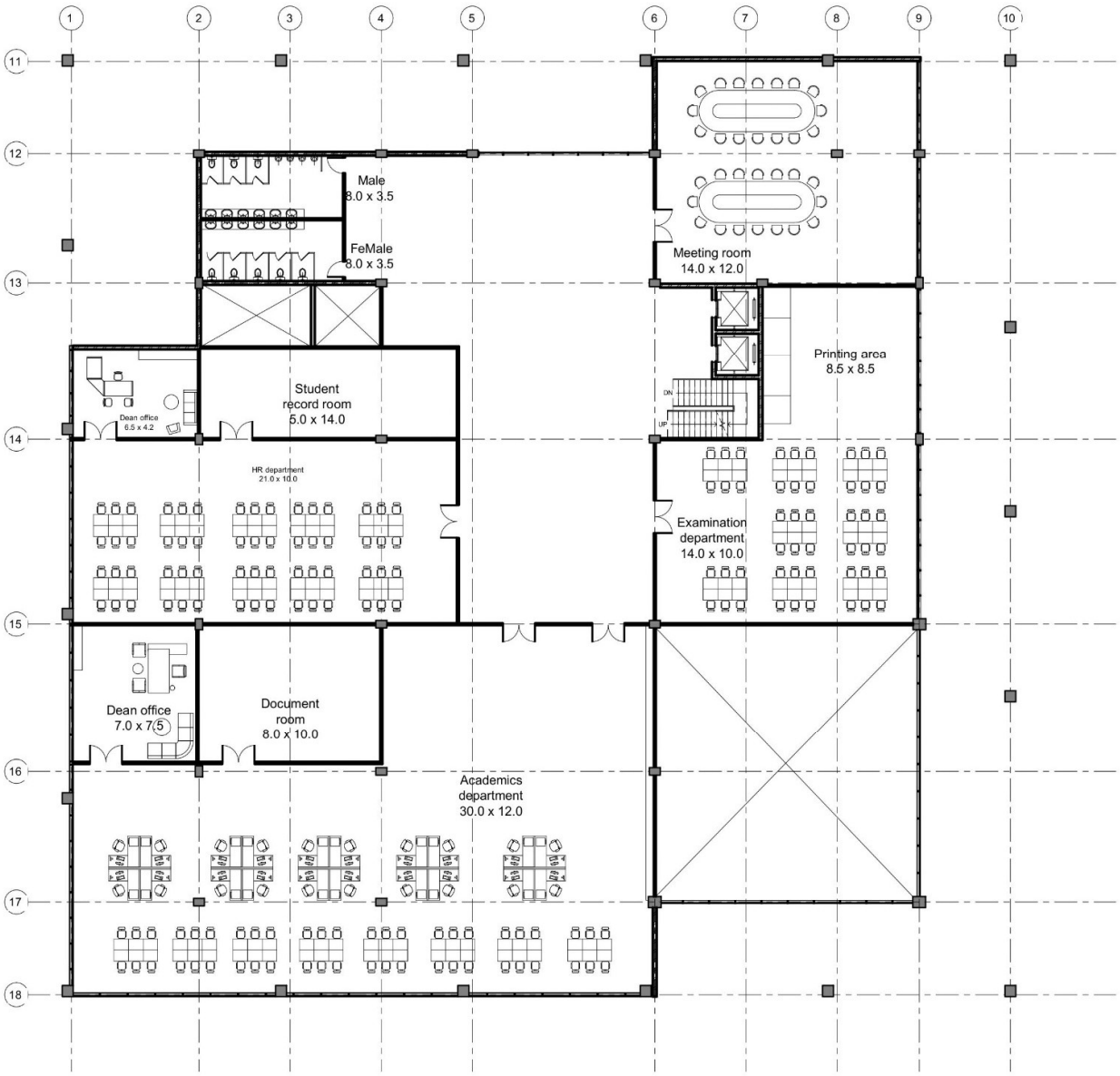
5.3 Admin

Ground Floor



First Floor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Student
record room
5.0 x 14.0
Dean office
6.5 x 4.2
HR department
21.0 x 10.0
Examination
department
14.0 x 10.0
Dean office
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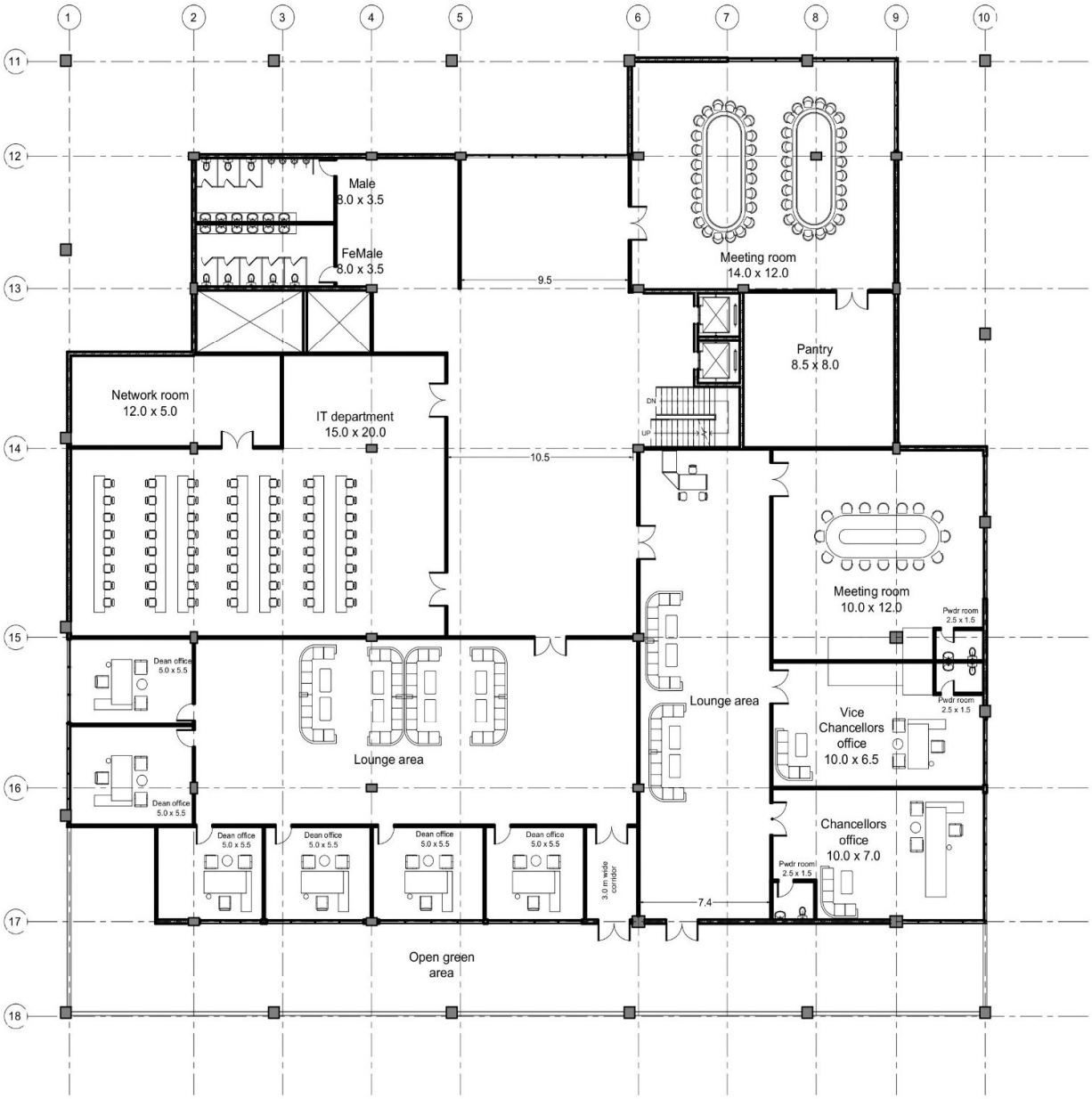
Document
room
8.0 x 10.0
Academics
department
30.0 x 12.0

Second Floor



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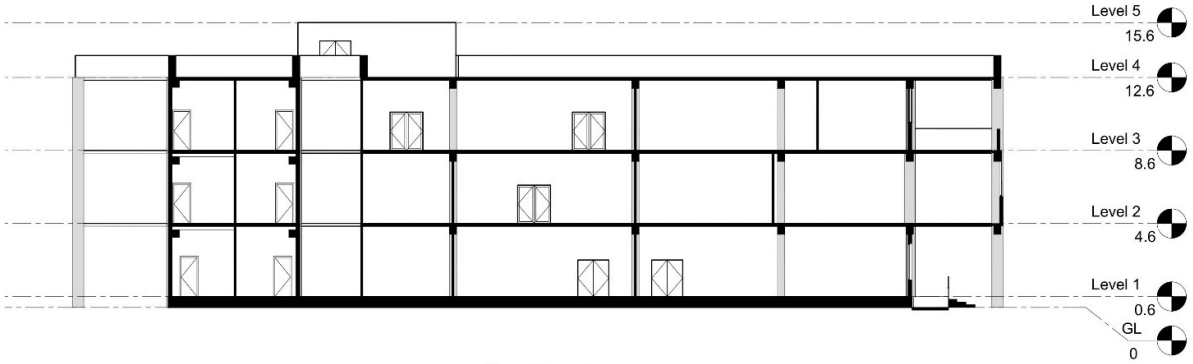

Section 1
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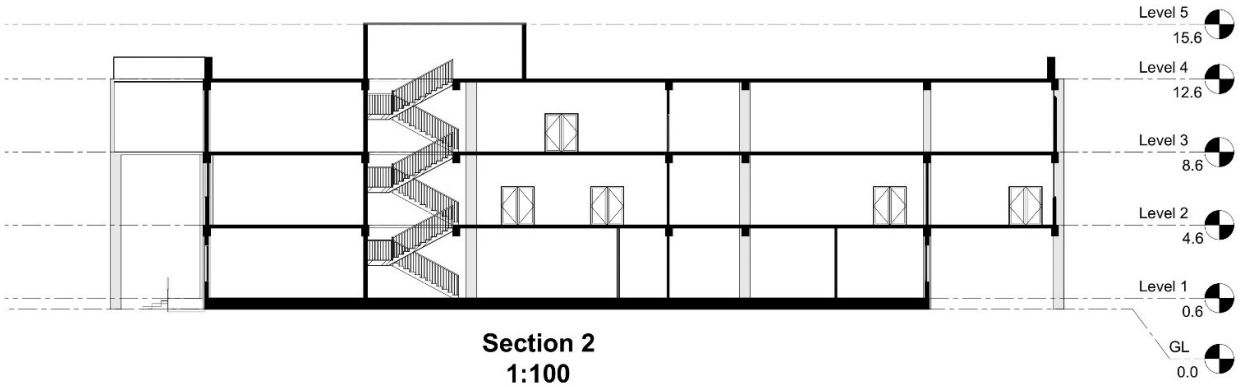
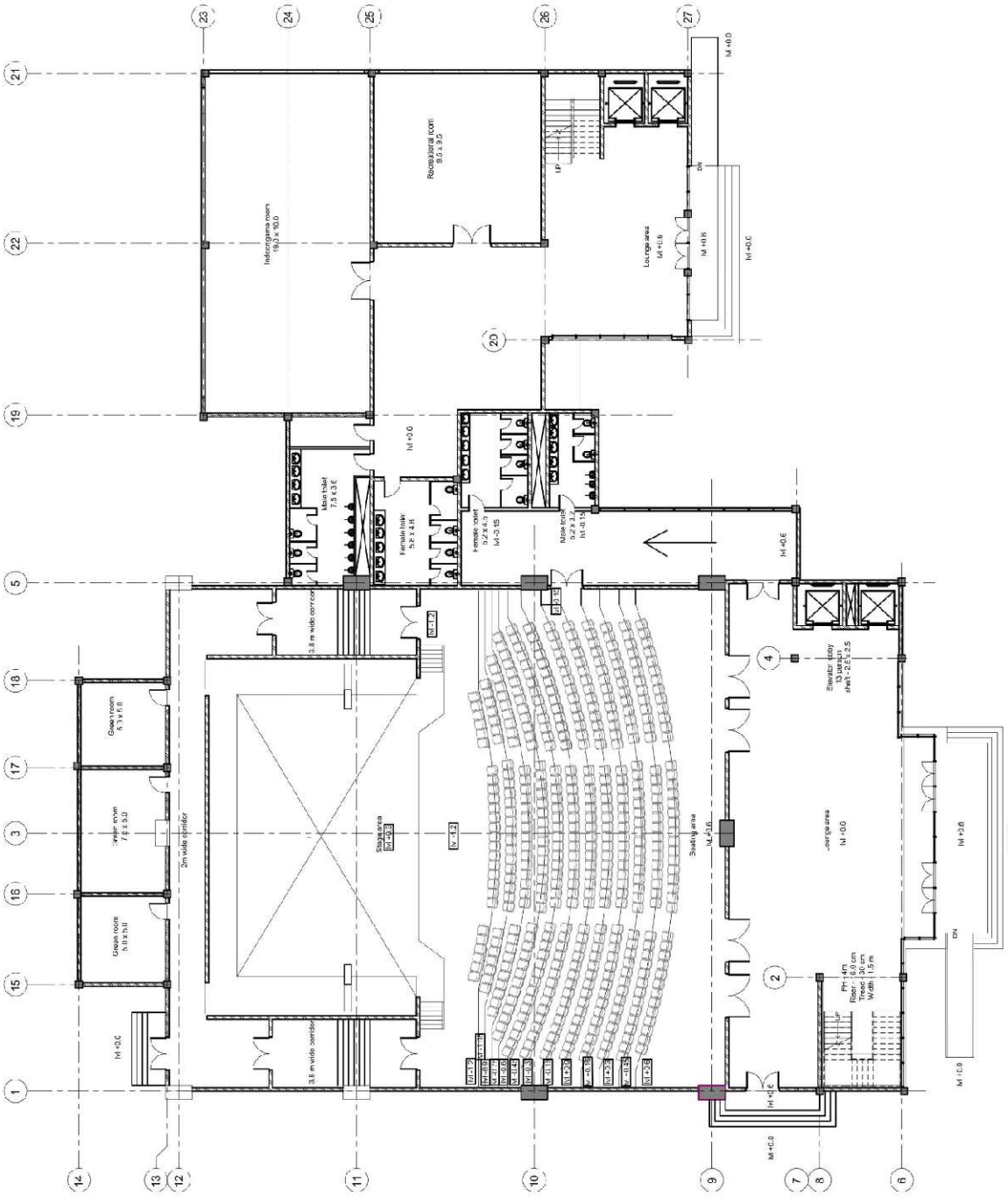


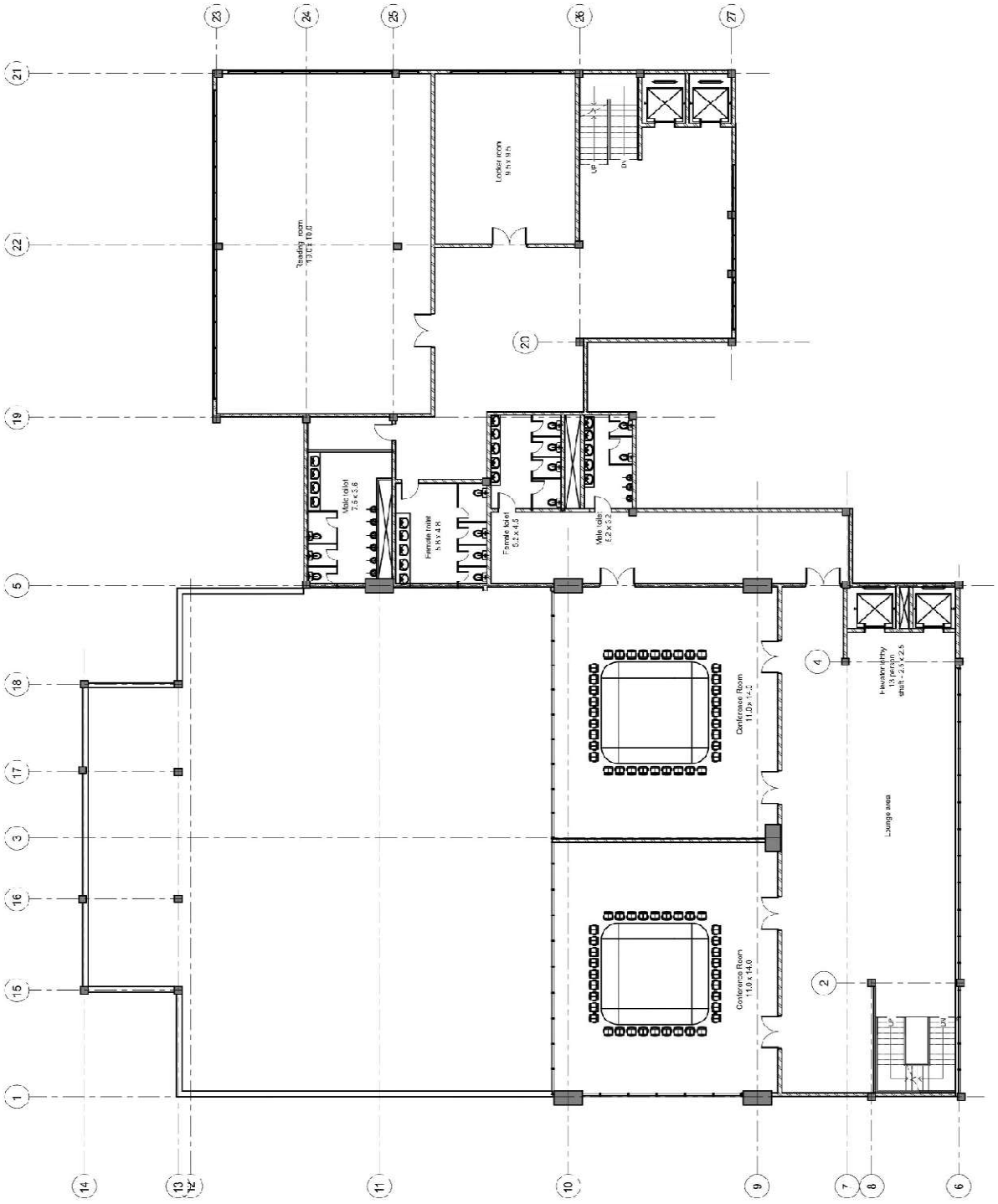
Section 2
1:100

5.4 Auditorium and student activity center

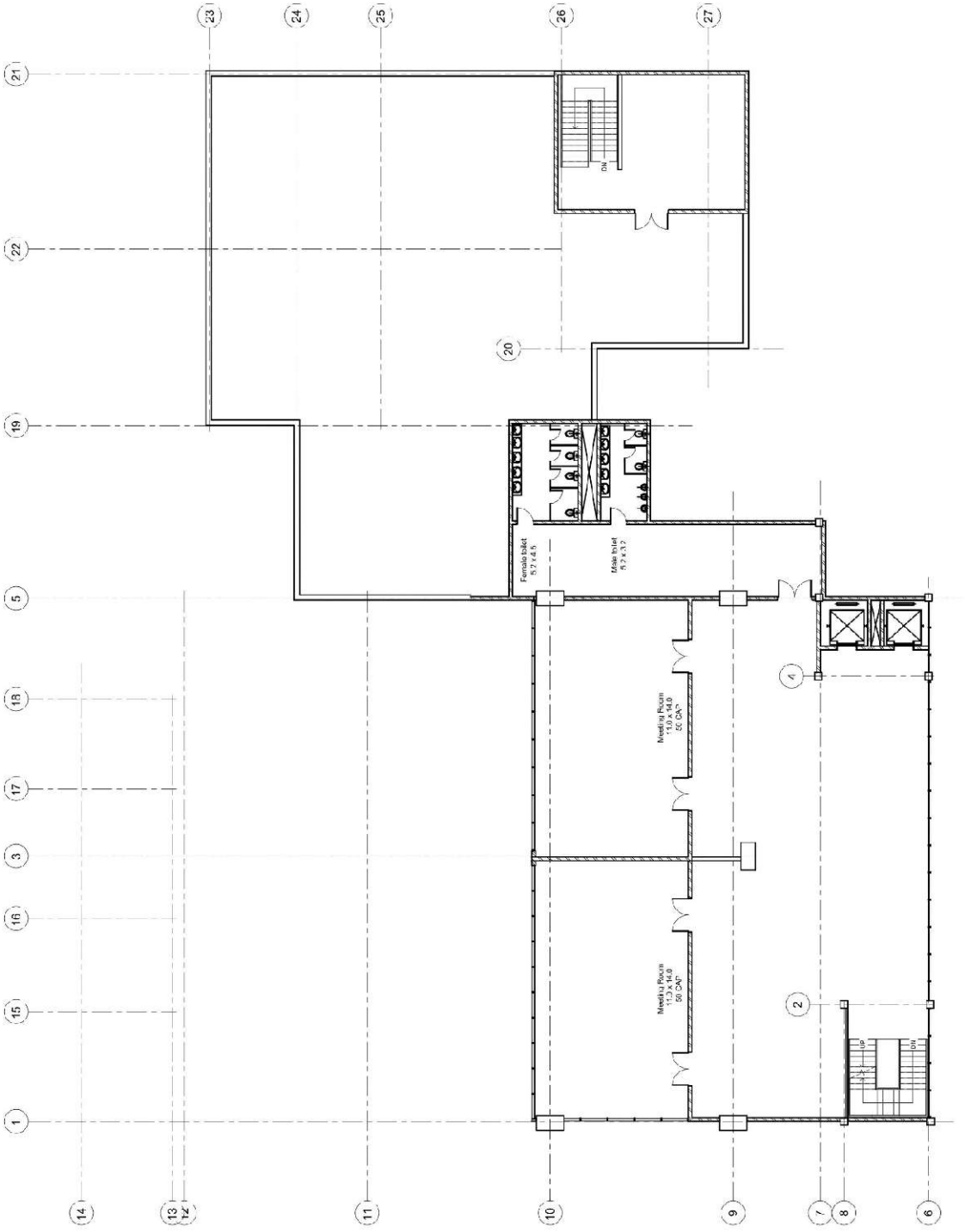
Ground floor



First floor

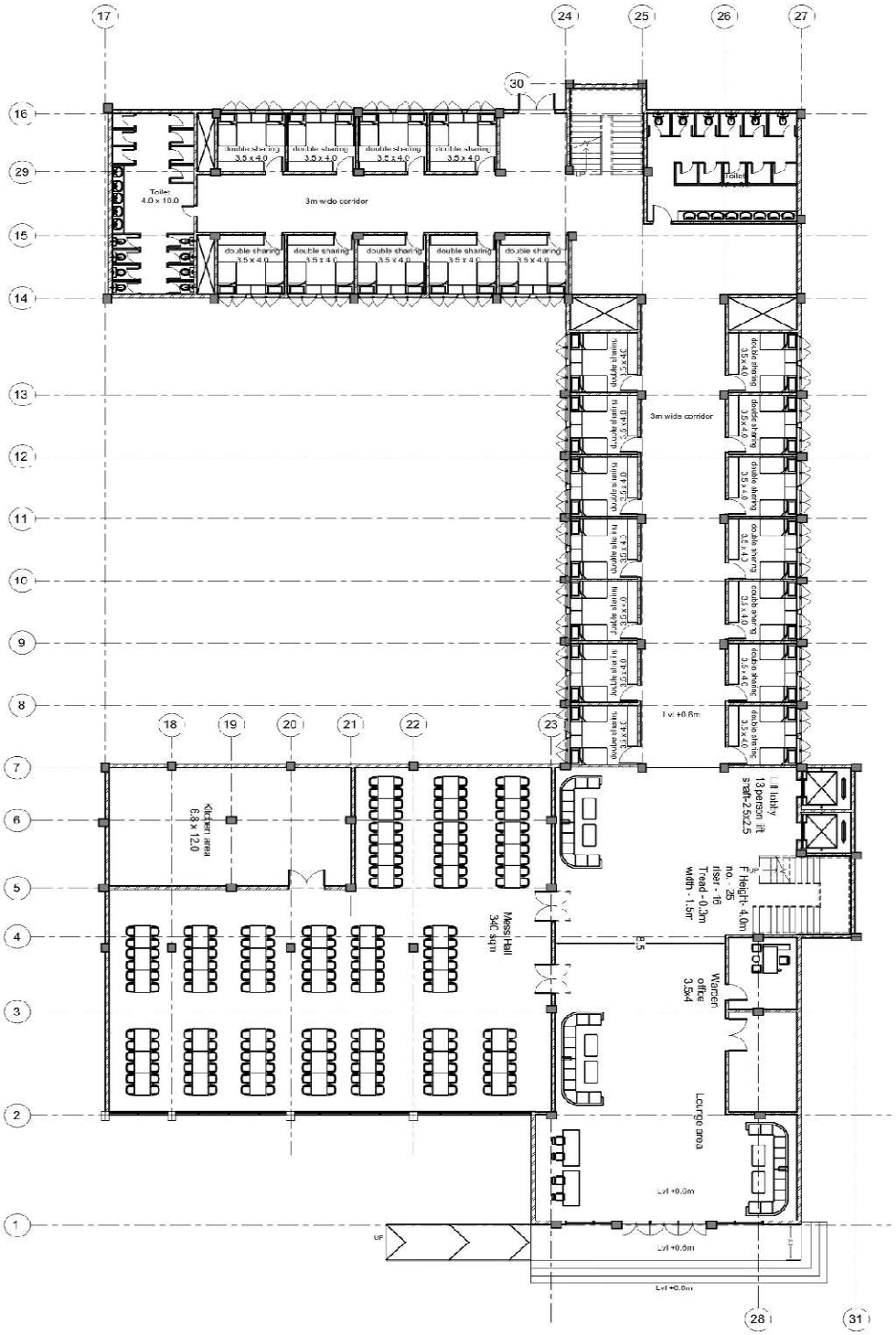

Reading room
Locker room
Male toilet
Female toilet
Female toilet
Male toilet
Conference Room
Conference Room
Lounge area

Second floor

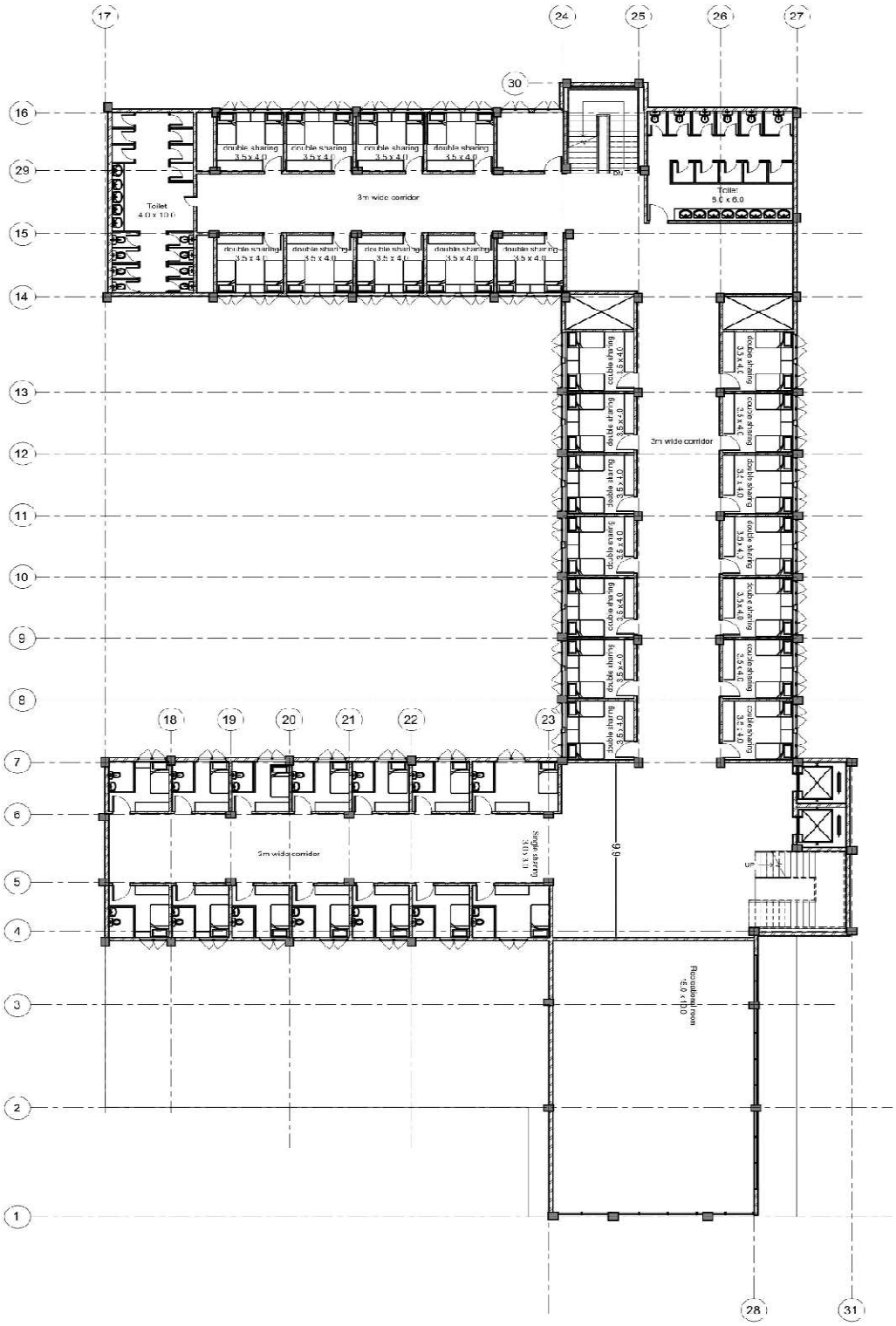


5.5 Hostel

Ground floor



First Floor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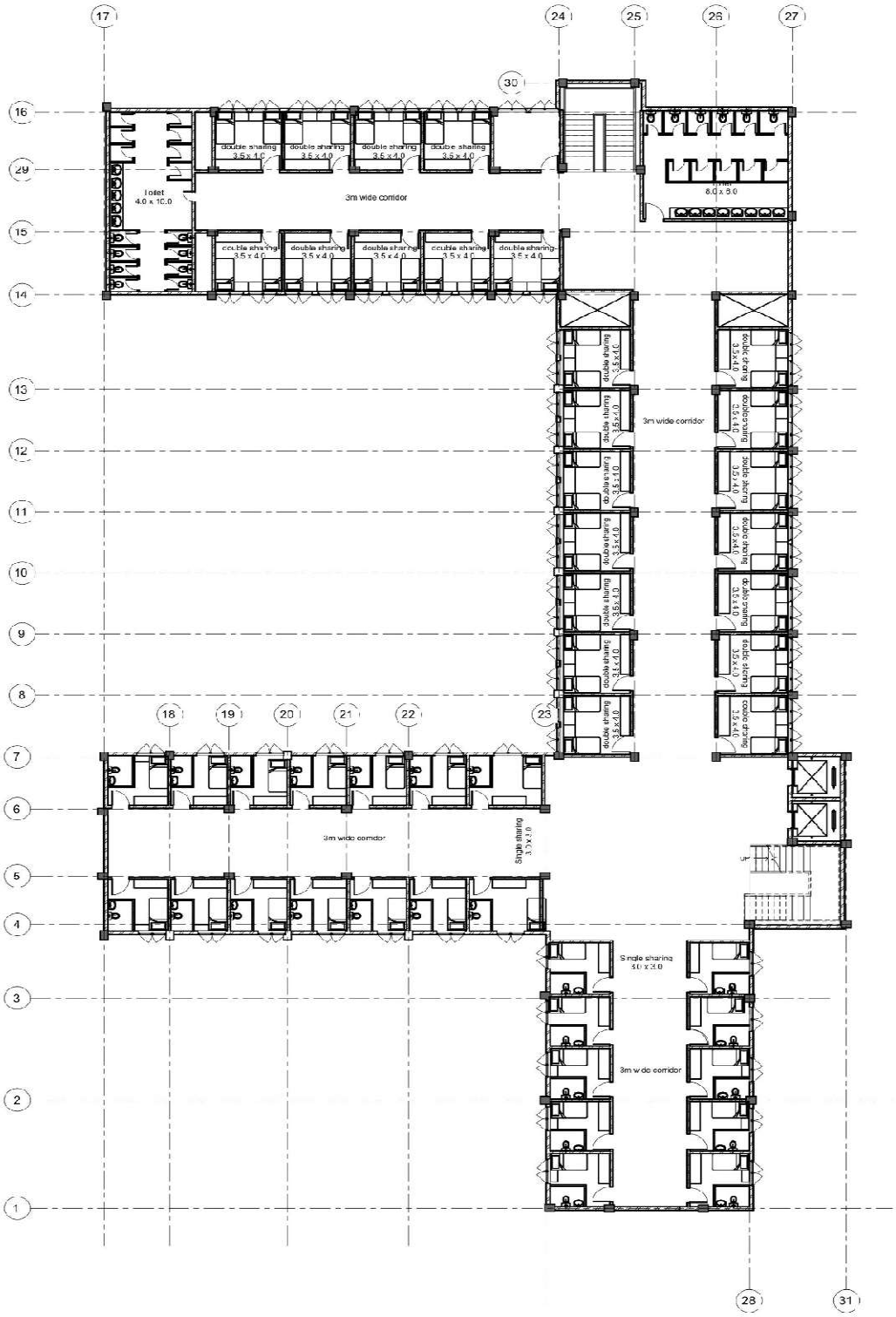
7
6
5
4
3
2
1
18
19
20
21
22
23
28
31
double sharing
3.5 x 4.0
Toilet
4.0 x 10.0
3m wide corridor
Toilet
5.0 x 6.0
single sharing
3.0 x 3.0
UP
Reception room
7.0 x 10.0

Second floor



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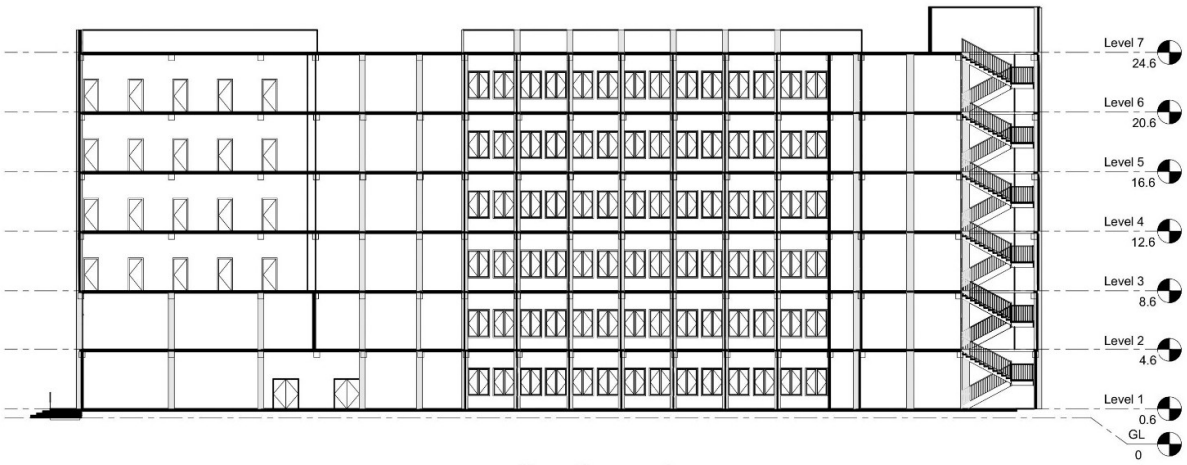

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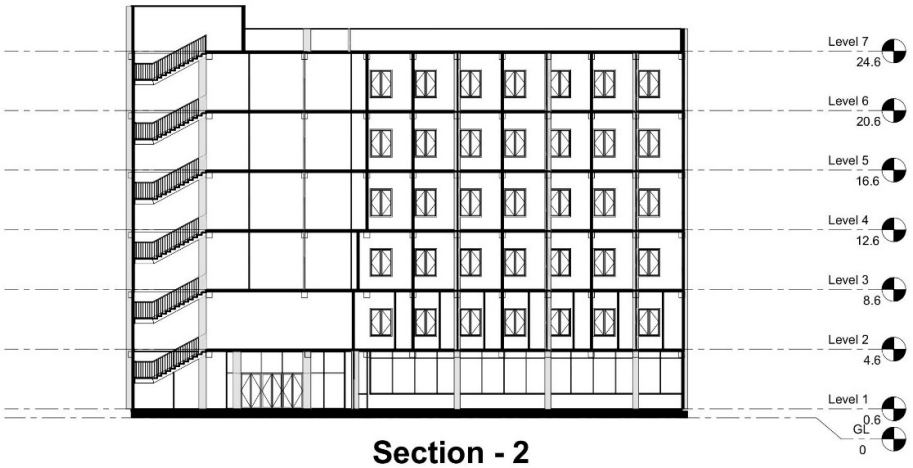

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UNIVERSITY CAMPUS DESIGN

B.R AMBEDKAR UNIVERSITY
SECTOR-3, ROHINI, DELHI

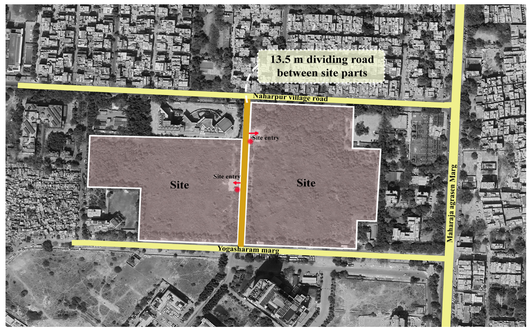
SITE LOCATION AND DETAIL



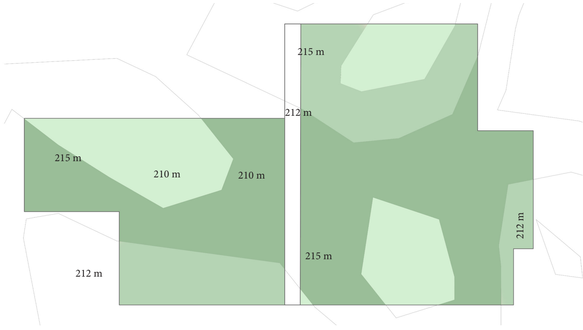
Category	Detail
Address	Institutional Area, Sector-3, Rohini, Delhi, 110085
Coordinates	28.6969° N, 77.1104° E
Zone	H
Subzone	H8
Ward	53 North Delhi Municipal Corporation Rohini E
Building Typology	Institution
Topography	Plain
Client	The Ambedkar University Delhi
Funding	Government of NCT of Delhi
Land Allotment	Delhi Development Authority

Total site area - 18 Acres
FAR - 2.5
Ground Coverage - 40 percent max
Height restrictions - 37 meters

MICRO SITE ANALYSIS

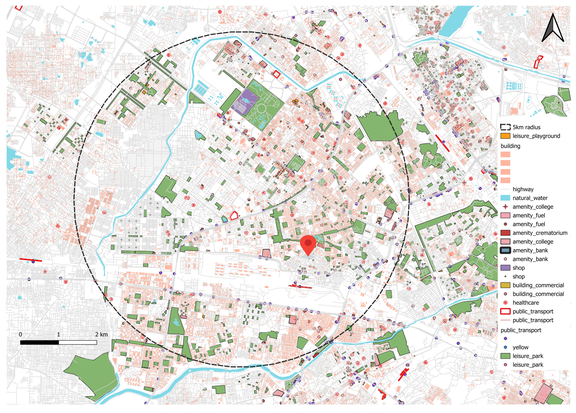


Major roads adjecent to site and and site access



Contour map of the site having the highest contour of 215m and lowest of 210m. the site is mostly flat

MACRO SITE ANALYSIS



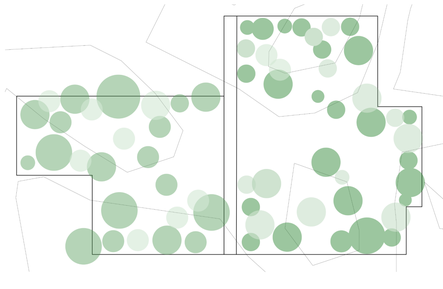
Proximity map within 5km of site



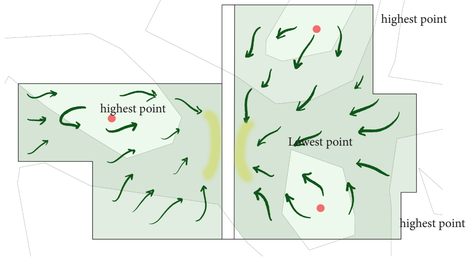


Dr. BhimRao Ambedkar University, Delhi currently has three fully functional namely:
1. Kashmere Gate Campus
2. Karampura Campus
3. Lodhi Road Campus

The other two are upcoming campuses, namely:
1. Rohini Campus
2. Dheerpur Campus

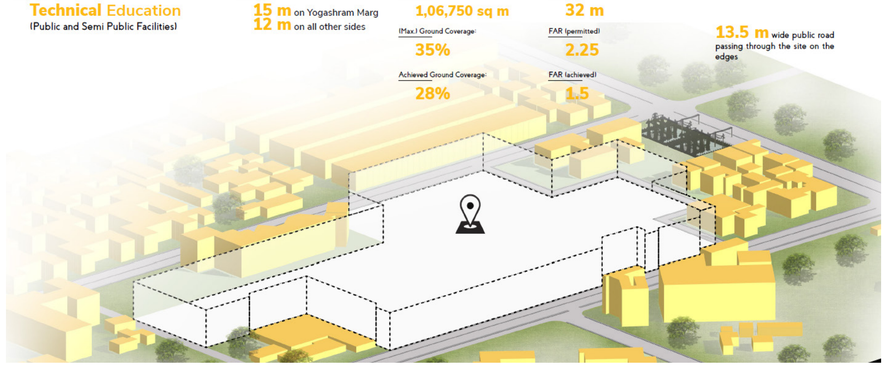


Exisiting vegetation on the site majorly around the perifery areas along with wild grass all over the site



The drainage is already laid on the site as per rpf. the natural drainage of the site is shown with respect to the contours

Zone: Zone H (North West Delhi-1)
Land-Use: Technical Education (Public and Semi Public Facilities)
Site Area: 7.3 ha (18 acres)
Setbacks: 15 m on Yogashram Marg, 12 m on all other sides
Max.I Built up area: 1,67,780 sq m
Achieved Built up area: 1,06,750 sq m
Max.I Ground Coverage: 35%
Achieved Ground Coverage: 28%
Maximum Height: 37 m
Achieved Height: 32 m
FAR (permitted): 2.25
FAR (achieved): 1.5
Buildable Area: 88,580 sq m (out of the site area excluding the road)
13.5 m wide public road passing through the site on the edges







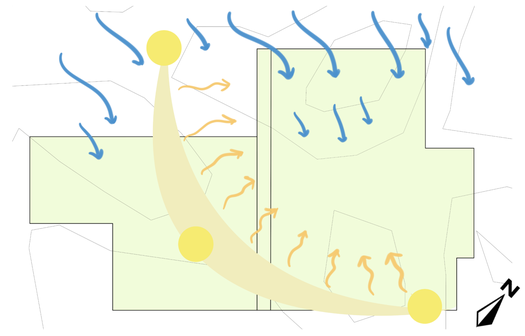


S Existing External Utilities
Metro Connectivity
Established Boundary Wall
Young Local Demographic

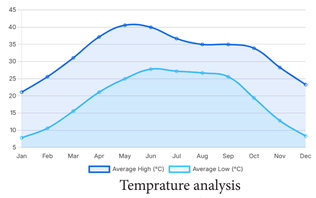
W Site Division by Public Road
Poor Local Drainage Management
Fish market on division road

O High Local Demand for Education
Emphasis on Sustainability
Developed Surrounding Areas

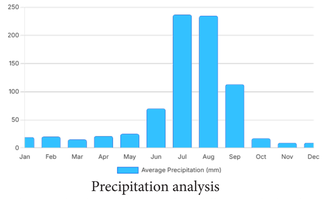
T Impact of Local Activity (Fish Market)
Waste Management Challenges



High solar radiation throughout the year presents a prime opportunity for renewable energy, though designs must account for a significant dip during the cloudy monsoon season. Rohini, Delhi, has a continental climate with hot, dry summers, transitioning to hot and humid during monsoons. Winters are cool to cold, influenced by Himalayan winds. High solar insolation offers renewable energy potential.



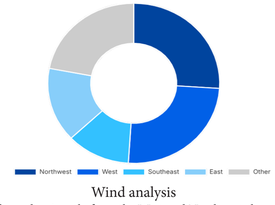
Temprature analysis
a dramatic swing in temperatures, from scorching summer highs to chilly winter lows, demanding robust architectural and HVAC solutions.



Precipitation analysis
A staggering 87% of the annual rainfall occurs during the monsoon, highlighting a critical need for effective water management and harvesting systems



Humidity analysis
Humidity skyrockets during the monsoon, creating "muggy" conditions that require effective dehumidification for a healthy indoor environment.



Wind analysis
Winds predominantly from the West and Northwest shape the campus microclimate. Building orientation can leverage these for passive cooling while mitigating hot summer "Loo" winds.

Note - The maps given are not to scale.

SITE ANALYSIS

Name - Bhargawee Alekar
Scholar no. - 211110020
Thesis Guide - Dr. Neha Kolhe
Thesis ARC 511

Sheet no. 02





Ancient & Traditional Era
The use of sunken, terraced courtyards for climate control and social interaction.



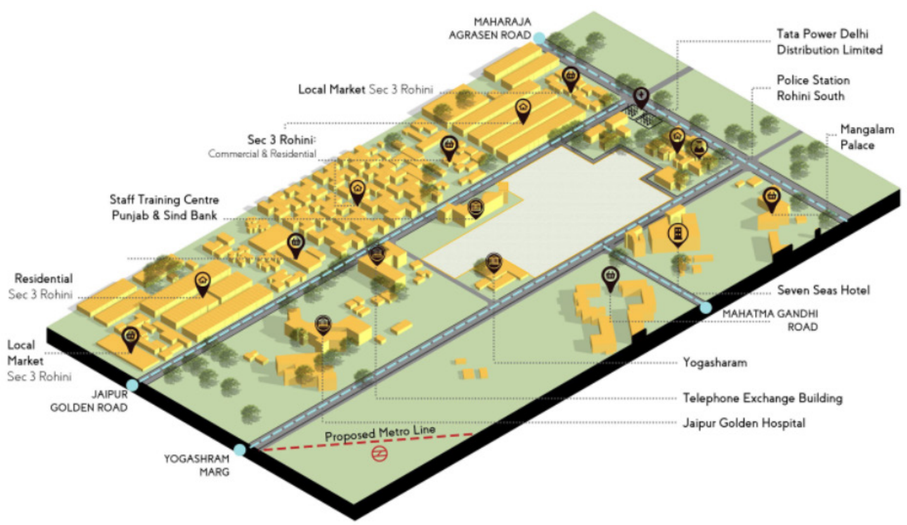
Mughal Era
Creating monumental, symmetrical spaces that integrate buildings with geometrically planned gardens and use intricate screens for

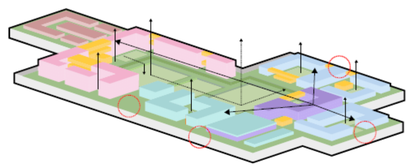


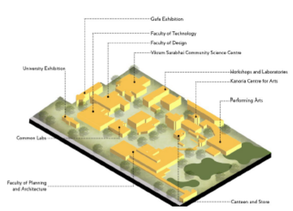
British & ColonialEra
Imposing a clear sense of order, hierarchy, and a grand scale through a master plan that organizes the entire campus.

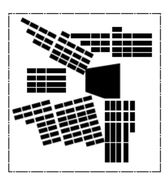


Modern Era
A synthesis of historical elements with modern techniques to create a flexible, functional, and climate-responsive campus that tells a story of Delhi's continuous evolution.

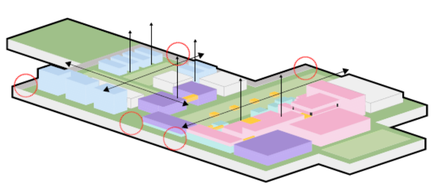




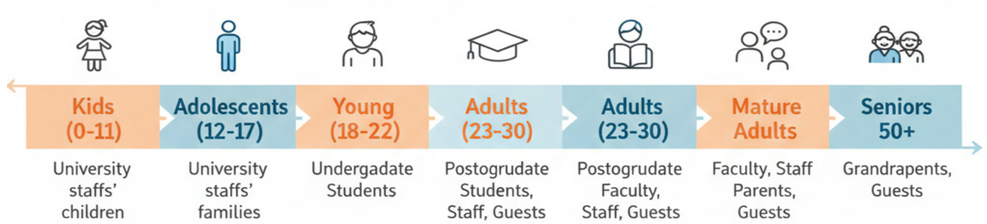


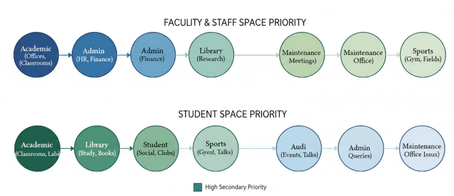


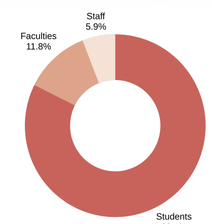
Free shape



USER GROUP AND HIERARCHY







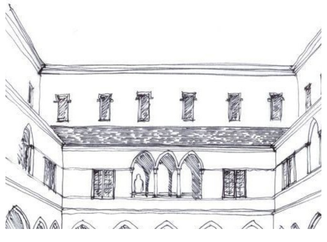
The design of an educational campus must be deeply informed by its primary users : students, faculty, and staff. Understanding their distinct priorities and usage patterns is crucial for creating a functional and intuitive environment. The hierarchy of space usage, therefore, becomes a guiding principle for the campus master plan, ensuring an optimal flow and a non-hierarchical community.

ELEVATION AND DETAIL LEVEL CONCEPT

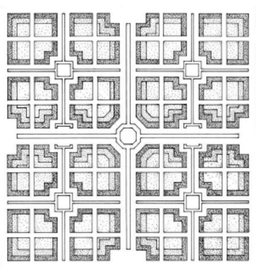
primary inspiration from the monumental, axial planning of Luty The campus design draws from the Mughal architectural legacy to create a living testament to Delhi's history. By reinterpreting principles of symmetry, grandeur, and holistic planning, it integrates monumental forms, a harmonious connection between indoor and outdoor spaces, and a profound sense of order within a contemporary context. ens· Delhi. This historical framework, known for its formal composition and symbolic grandeur, provides a powerful and organized foundation for a c ly resonant.



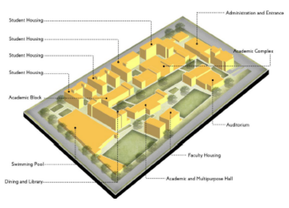
The arches create a rhythmic and grand visual experience, while also serving as a transitional space, similar to the arcades and continuous verandahs found in Mughal palaces and gardens.

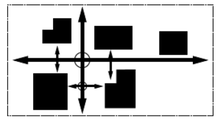


a courtyard and arcades is a powerful reference to traditional Delhi architecture. These spaces serve as a core for social life, providing natural light, ventilation, and a sense of community within a sheltered environment.

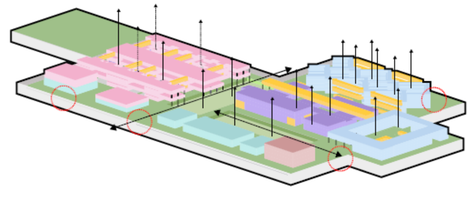


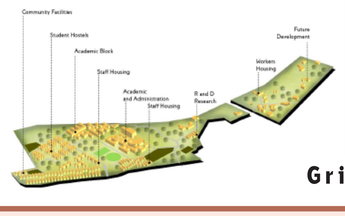
Mughal gardens known for their strict geometry, symmetry, and integration with the surrounding structures. These gardens were not merely aesthetic but also deeply symbolic and functional.

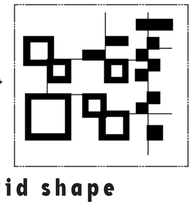




Branch shape

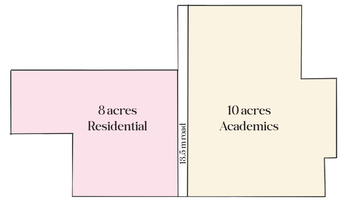




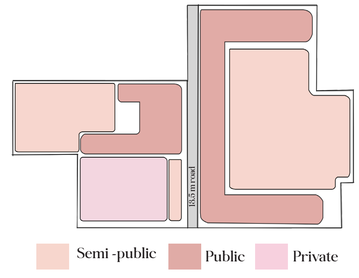


Grid shape

ZONING AND EVOLUTION



division of plot in 8 acres and 10 acres for residential and academic purpose respectively.



Primary Design Directives

- Pedagogy of the University (Master Planning)
- Inter and Intra relation of different built typologies in a single campus (Amalgamation and Cohesions)

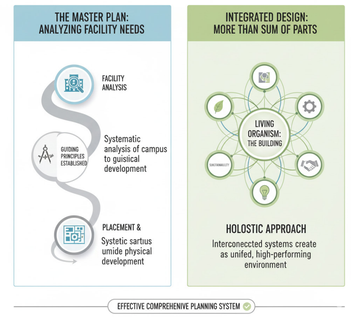
Primary Design Directives

A campus planning procedure is advocated as the means of establishing an effective comprehensive planning system. The master plan should analyse the facility needs of the campus and establish principles that guide the placement, Integrated design rests on the understanding that a building, like a living organism, is more than the sum of its parts.

Secondary Design Directives

- Open-Built Relationship
- Energy and Sustainability
- Image-ability / Building Character
- Individual Sector(based on Architectural typology) Plans

INTEGRATED CAMPUS PLANNING SYSTEM



Note -
The maps given are not to scale.

CONCEPTUAL DESIGN

Name - Bhargawee Alekar
Scholar no. - 211110020
Thesis guide - Dr. Neha Kolhe
Thesis ARC 511

Signature

Sheet no.
01

26m wide road

Site Area: 8 acres (≈ 32,375 sq.m)
Building Footprint: 4650 sq.m
Ground Coverage: ≈ 18% of total site area

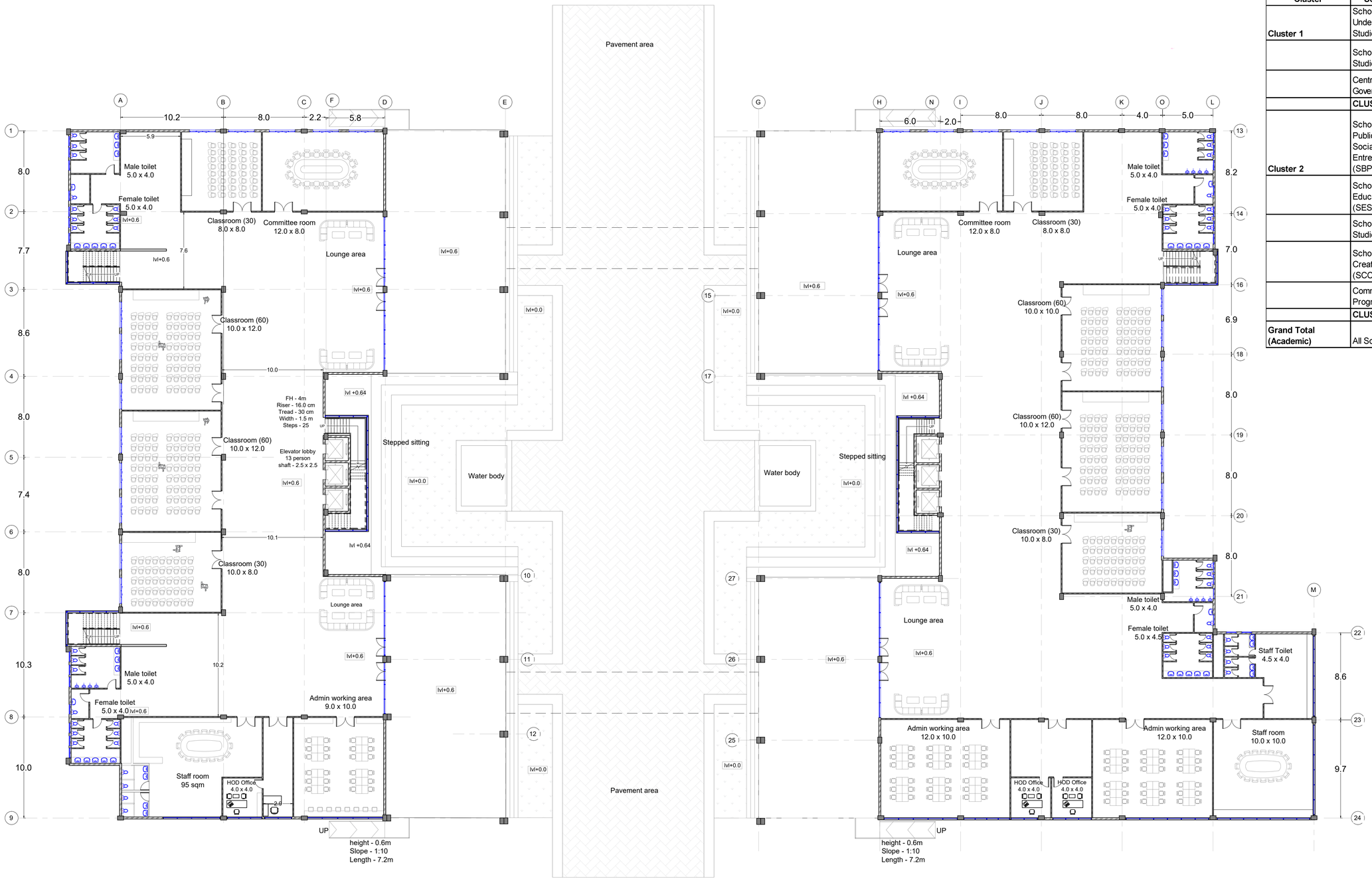
Site area - 18 acres
FAR - 2.5
Max GC - 40 %

Site Area: 10 acres (≈ 40,469 sq.m)
Total Building Footprint: 14,566 sq.m
Ground Coverage: ≈ 28% of total site area

222.8
83.0
84.4
83.0
138.4
147.9
95.0
46.5
105.0
16.5
50.0
178.4

BOYS HOSTEL
SPORTS CLUB
HEALTH CENTRE
MAINTENANCE OFFICE
SUB STATION
SERVICE ENTRY
GIRLS HOSTEL
TYPE 2
TYPE 3,4
TYPE 5,6
ENTRY
SERVICE EXIT
13.5 M WIDE ROAD
BASEMENT PARKING
LIBRARY
ACADEMIC BLOCK 1
ACADEMIC BLOCK 2
ADMIN
AUDITORIUM
SAC
SURFACE PARKING
OAT
CANTEEN
BASEMENT PARKING
SERVICE EXIT

ALL DIM IN M
SCALE 1:500



Cluster	School/Centre	Total Students (UG/PG)	Total Faculty (15 per School)	Total Occupancy (Approx.)
Cluster 1	School of Undergraduate Studies (SUS)	1,000	15	1,015
	School of Liberal Studies (SLS)	1,000	15	1,015
	Centre for Law and Governance (CLG)	750	15	765
	CLUSTER 1 TOTAL	**2,750**	**45**	**2,795**
Cluster 2	School of Business, Public Policy & Social Entrepreneurship (SBPPSE)	750	15	765
	School of Educational Studies (SES)	750	15	765
	School of Human Studies (SHS)	750	15	765
	School of Culture and Creative Expressions (SCCE)	500	15	515
	Community Outreach Programme (COP)	N/A (Staff Only)	5	5
	CLUSTER 2 TOTAL	**2,750**	**50**	**2,800**
Grand Total (Academic)	All Schools & Centres	5,500	95	5,595

Note -
All Dim in meters.
Scale - 1:200

N

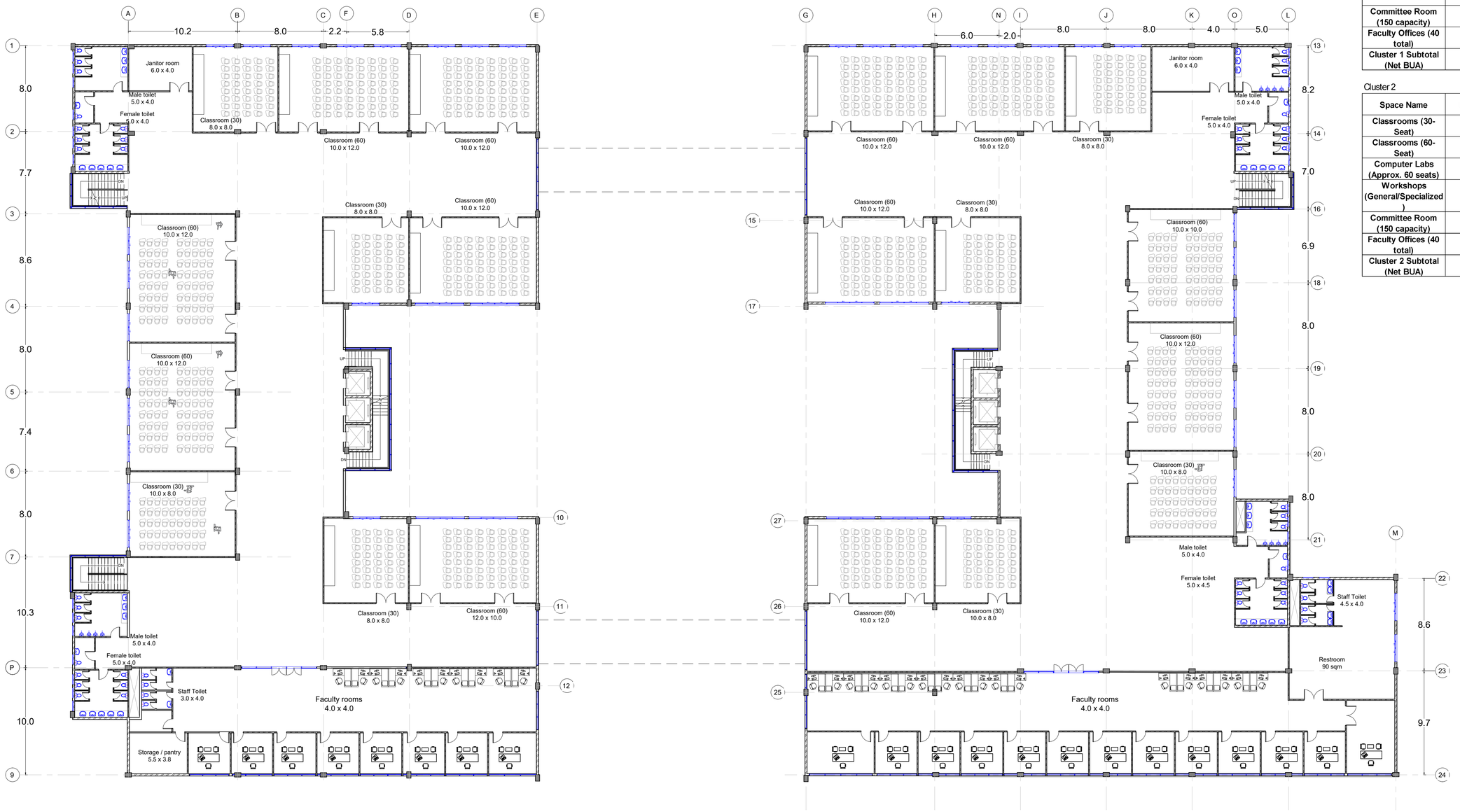
ACADEMIC BLOCK

Ground floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
04



Space Name	Units (Count)	Area/Unit (sq.m.)	Total Area (sq.m.)	Notes (Approx. Dimensions)
Classrooms (30-Seat)	19	45	855	8.0 x 10.0
Classrooms (60-Seat)	25	96	2,400	10.0 m×12.0 m
Computer Labs (Approx. 60 seats)	4	90	360	9.0 m×10.0 m
Workshops (General)	4	120	480	For hands-on/technical work.
Committee Room (150 capacity)	1	216	120	12.0 m×10.0 m
Faculty Offices (40 total)	40	16	640	4.0 m×4.0 m per cabin.
Cluster 1 Subtotal (Net BUA)			4,951	

Cluster 2

Space Name	Units (Count)	Area/Unit (sq.m.)	Total Area (sq.m.)	Notes (Approx. Dimensions)
Classrooms (30-Seat)	20	45	900	8.0 x 10.0
Classrooms (60-Seat)	28	96	2,688	10.0 m×12.0 m
Computer Labs (Approx. 60 seats)	3	90	270	9.0 m×10.0 m
Workshops (General/Specialized)	7	120	840	For specialized studies/labs.
Committee Room (150 capacity)	1	216	216	12.0 m×10.0 m
Faculty Offices (40 total)	40	16	640	4.0 m×4.0 m per cabin.
Cluster 2 Subtotal (Net BUA)			5,554	

Note -
All Dim in meters.
Scale - 1:200

N

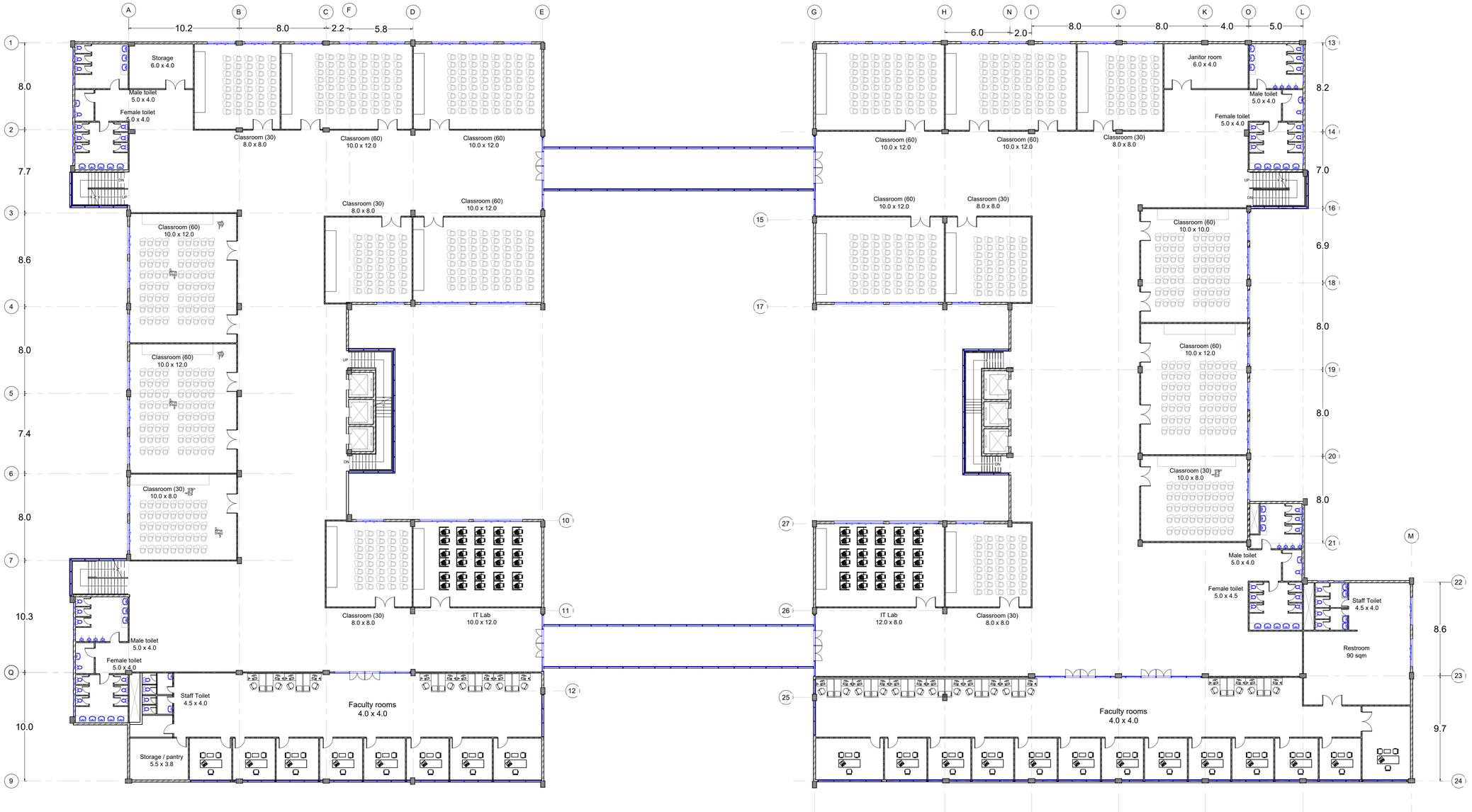
ACADEMIC BLOCK

First floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
05



Note -
All Dim in meters.
Scale - 1:200

N

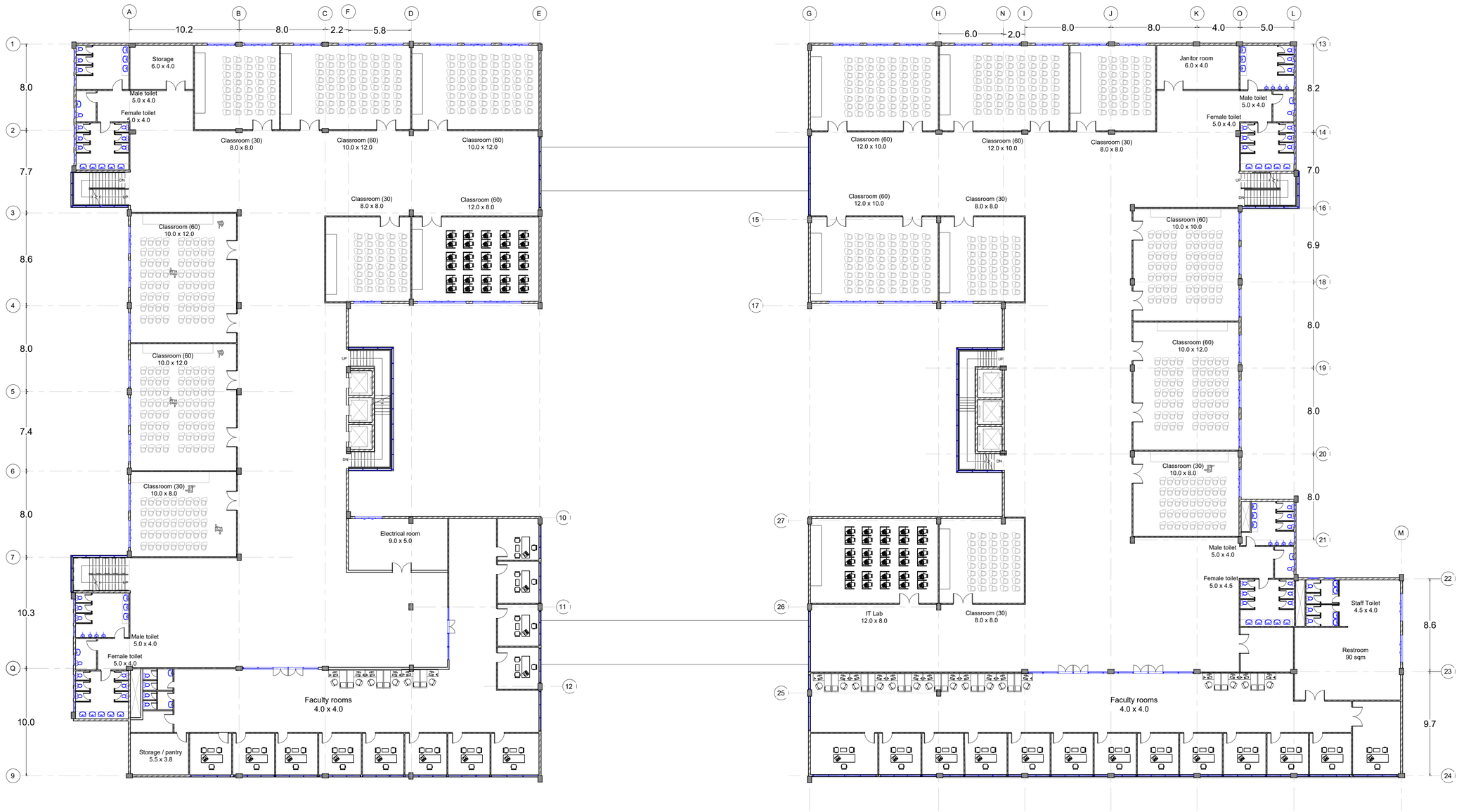
ACADEMIC BLOCK

Second floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARc 511

Sheet No.
06



Note -
All Dim in meters.
Scale - 1:200

N

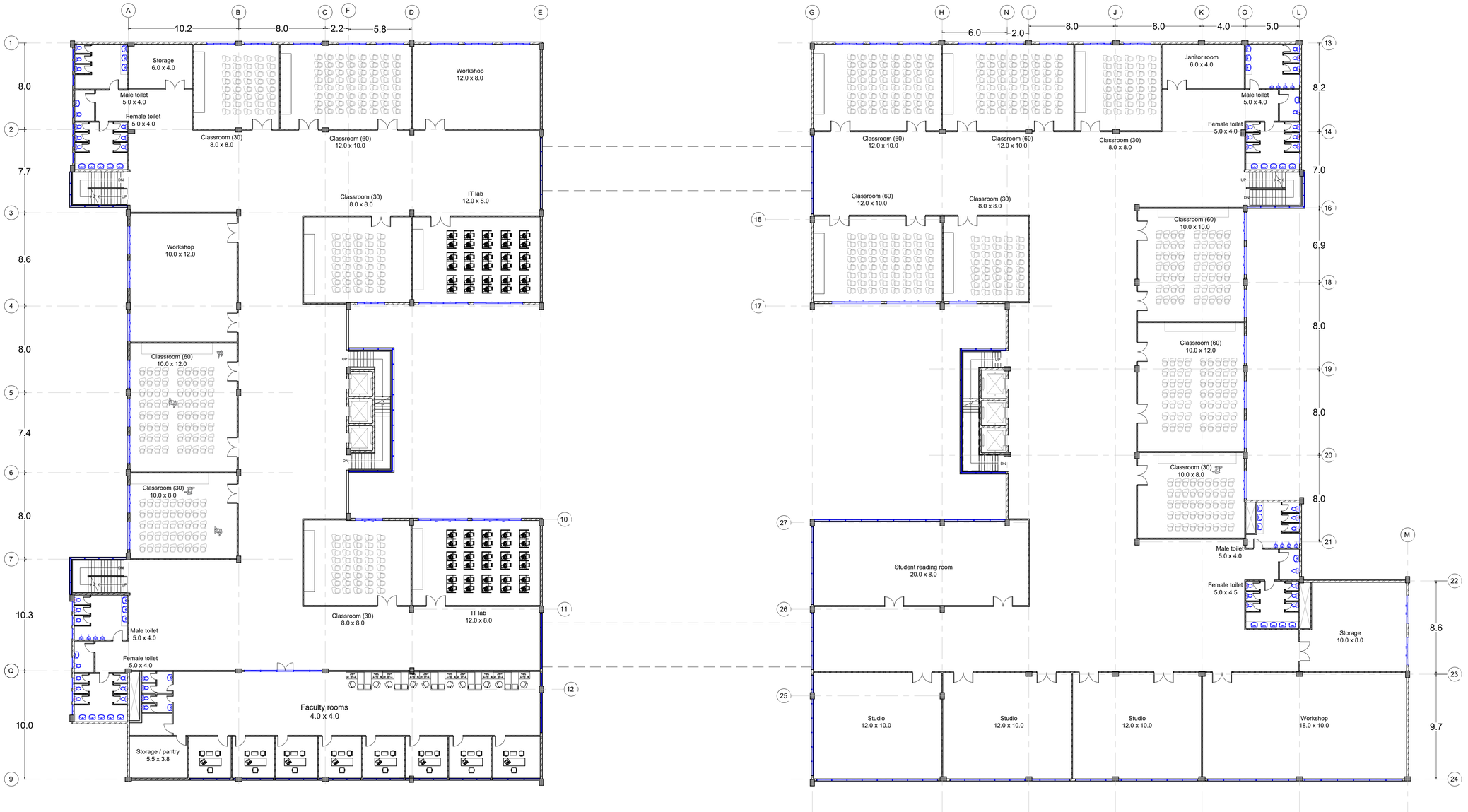
ACADEMIC BLOCK

Third floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
07



Note -
All Dim in meters.
Scale - 1:200

N

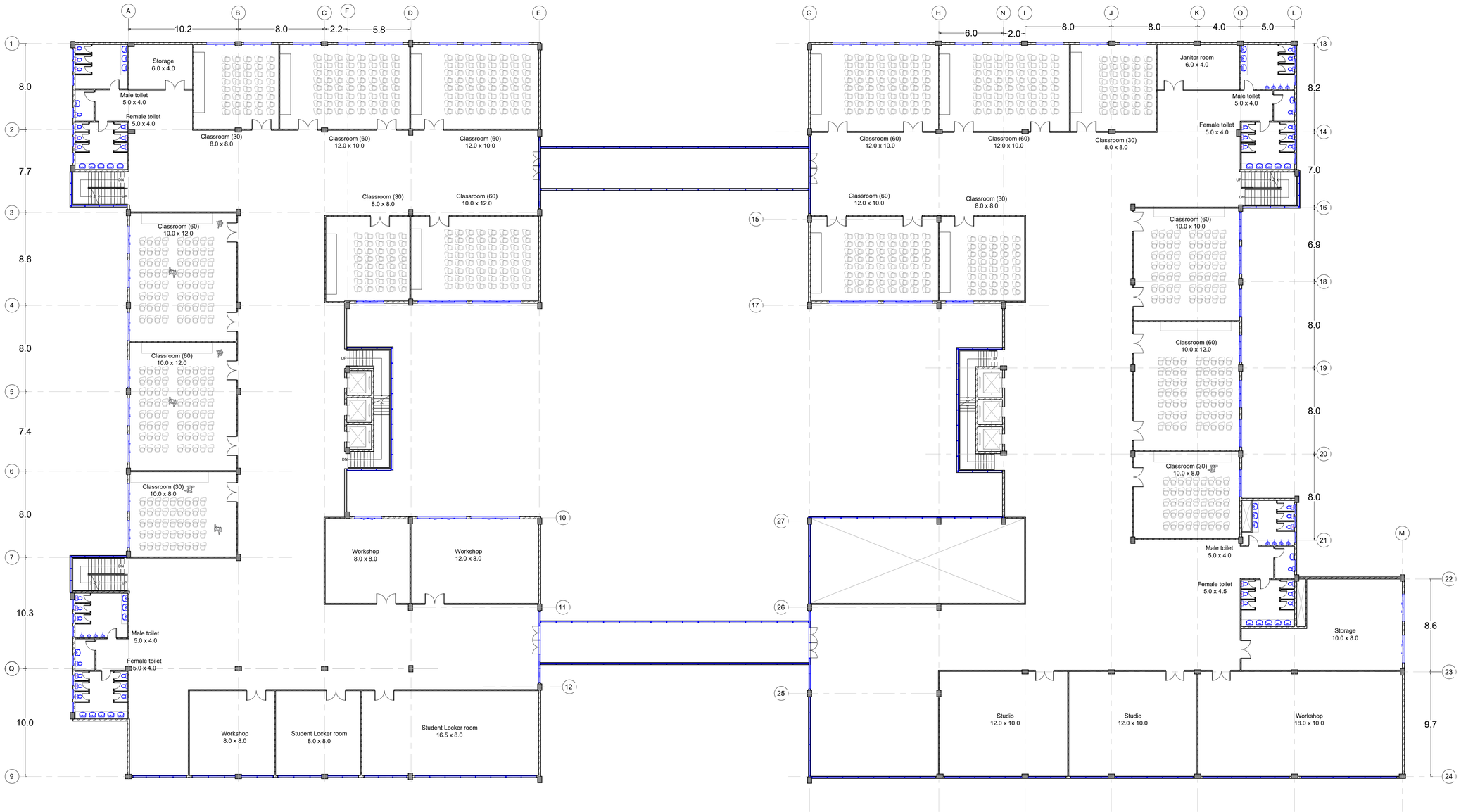
ACADEMIC BLOCK

Fourth floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
08



Note -
All Dim in meters.
Scale - 1:200

N

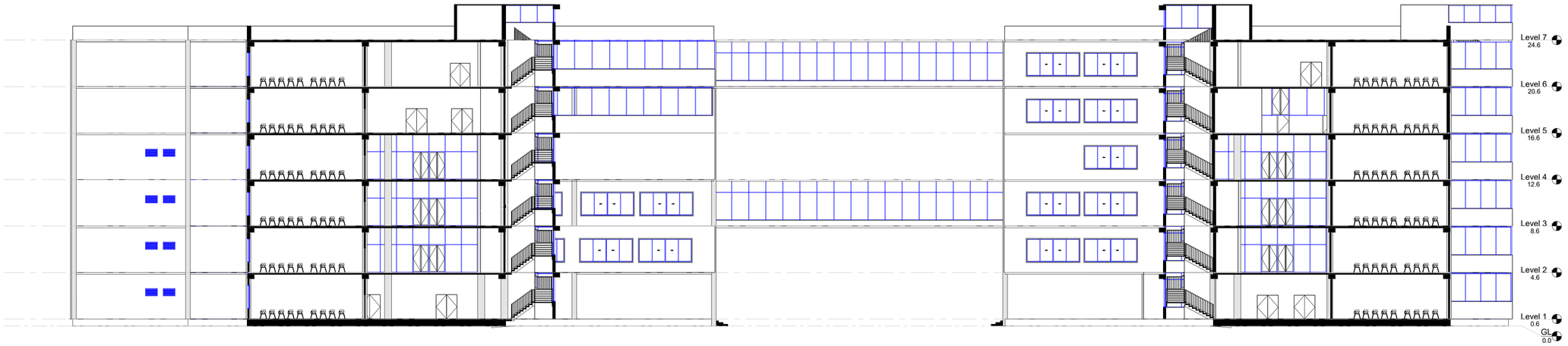
ACADEMIC BLOCK

Fifth floor

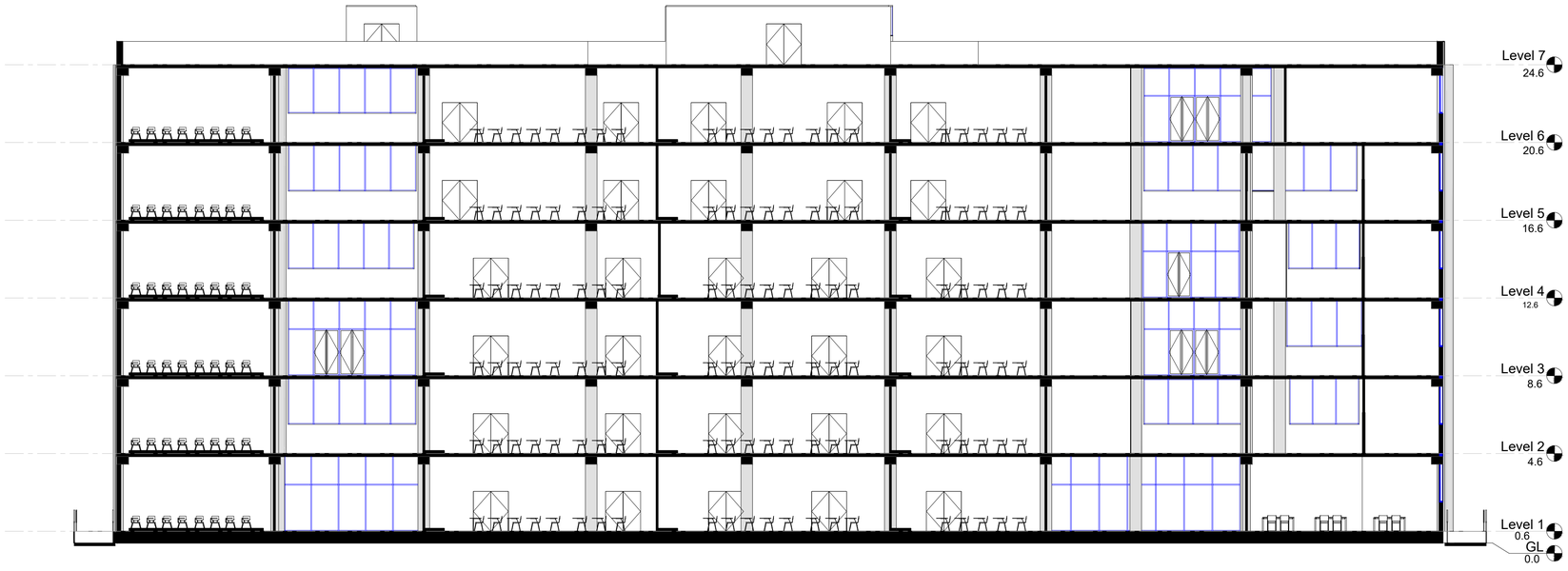
B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
09



Section - 1
1:200



Section - 2
1:150

Note -
All Dim in meters.
Scale - 1:200

N

ACADEMIC BLOCK
Sections

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
10



Front Elevation



Side Elevation

Note -
All Dim in meters.
Scale - 1:200

N

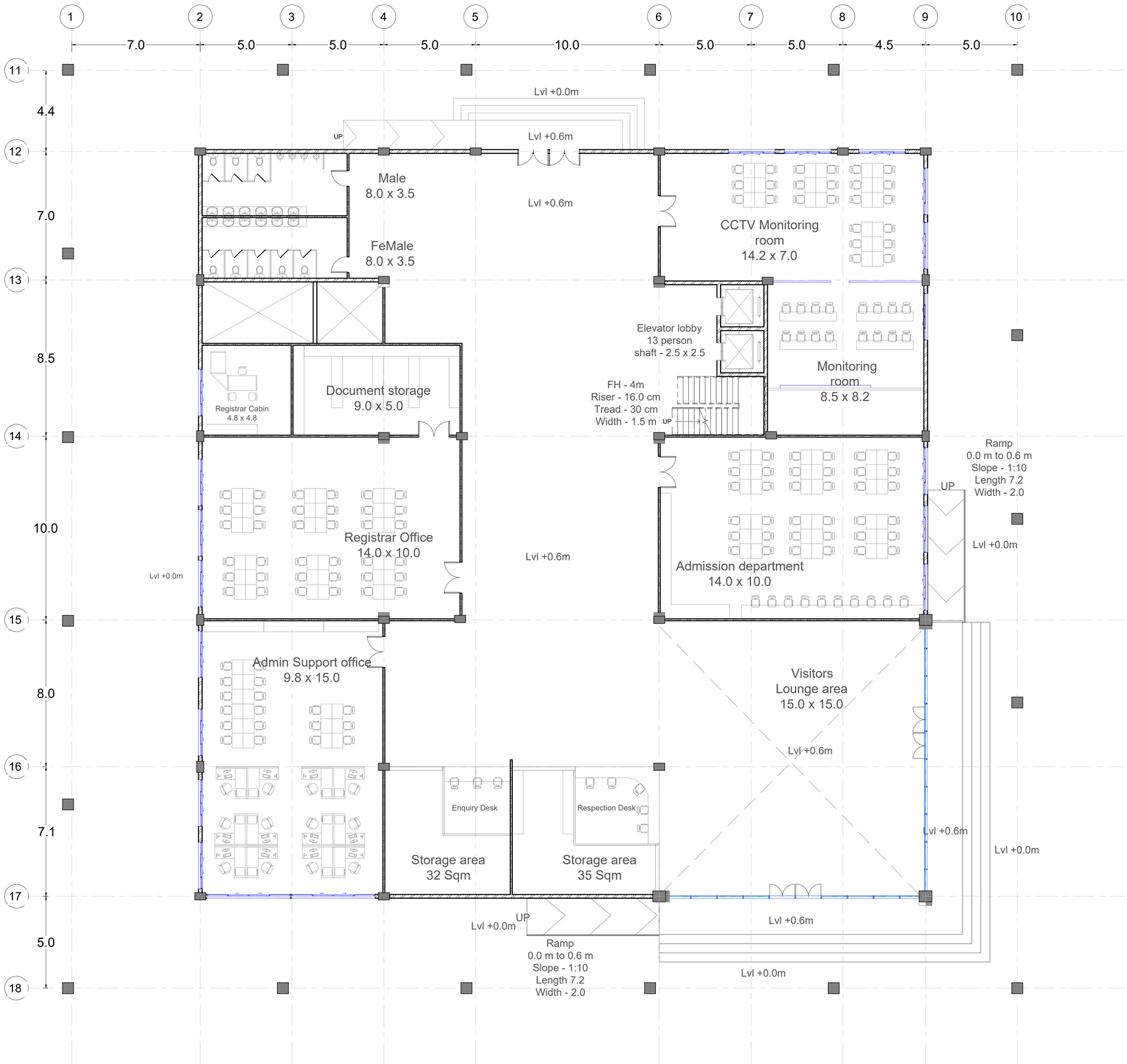
ACADEMIC BLOCK

Elevations

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
11



Note -
All Dim in meters.
Scale - 1:100

N

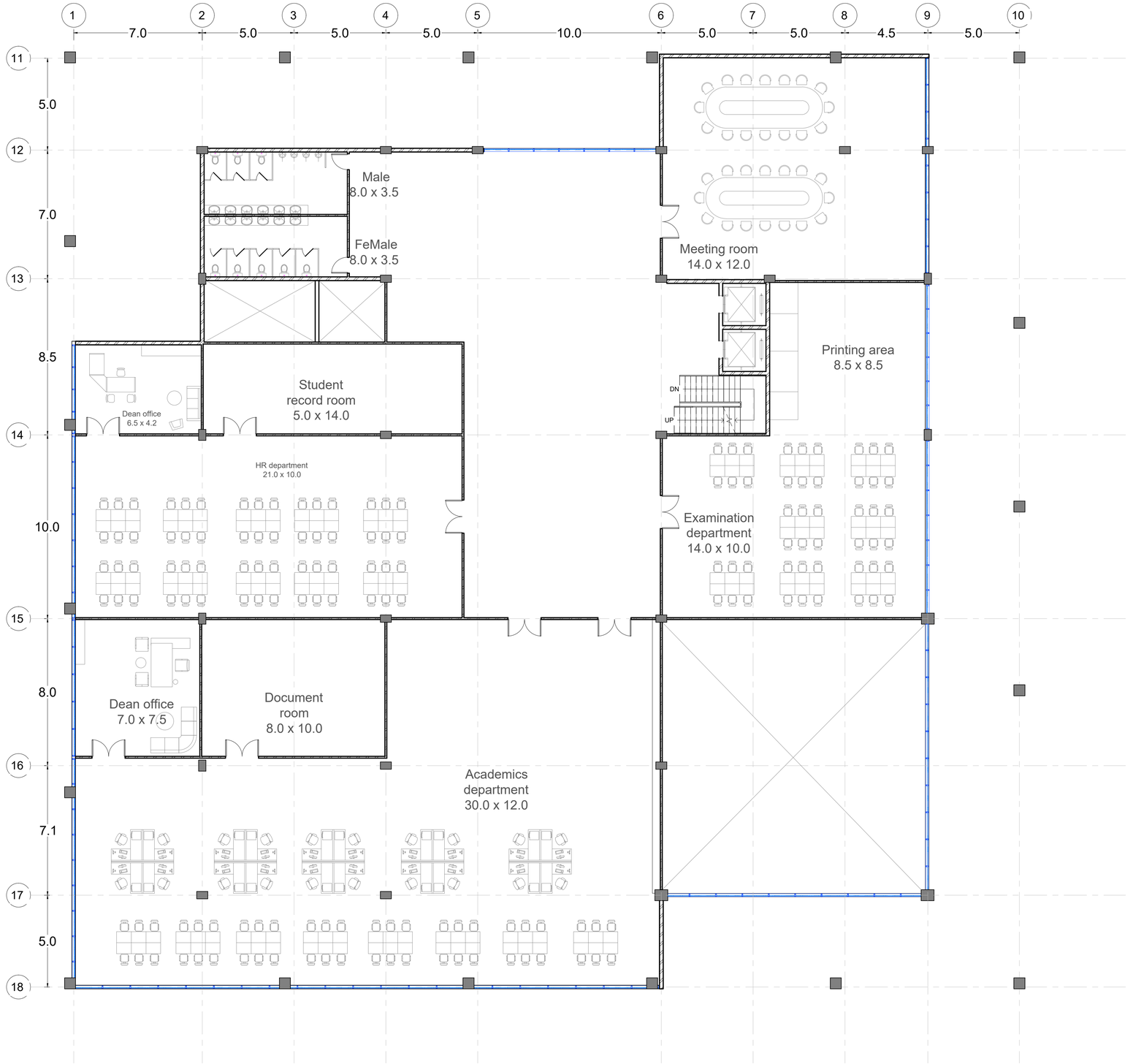
ADMIN BLOCK

Ground floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
12



Note -
All Dim in meters.
Scale - 1:100

N

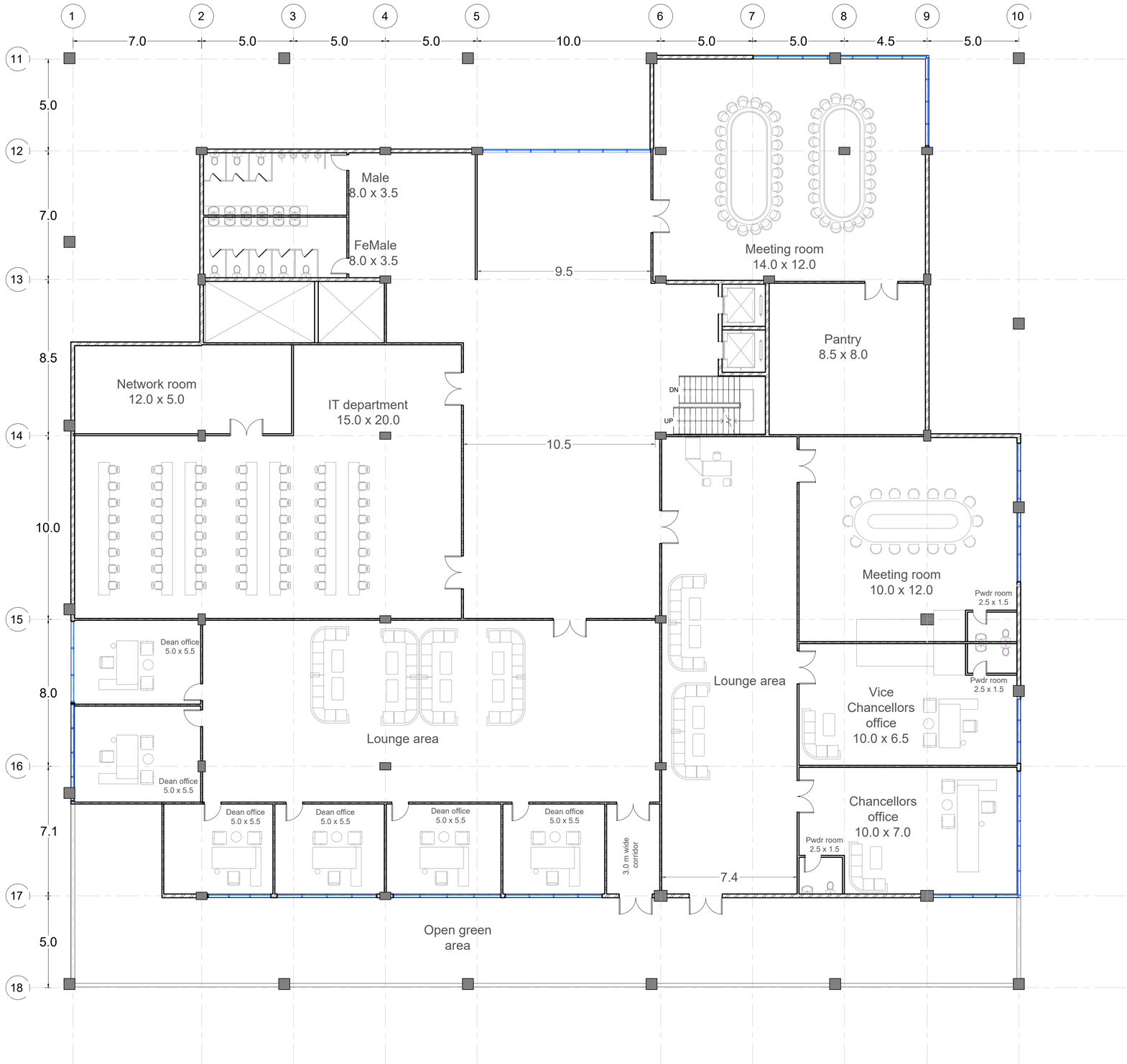
ADMIN BLOCK

First floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
13



Note -
All Dim in meters.
Scale - 1:100

N

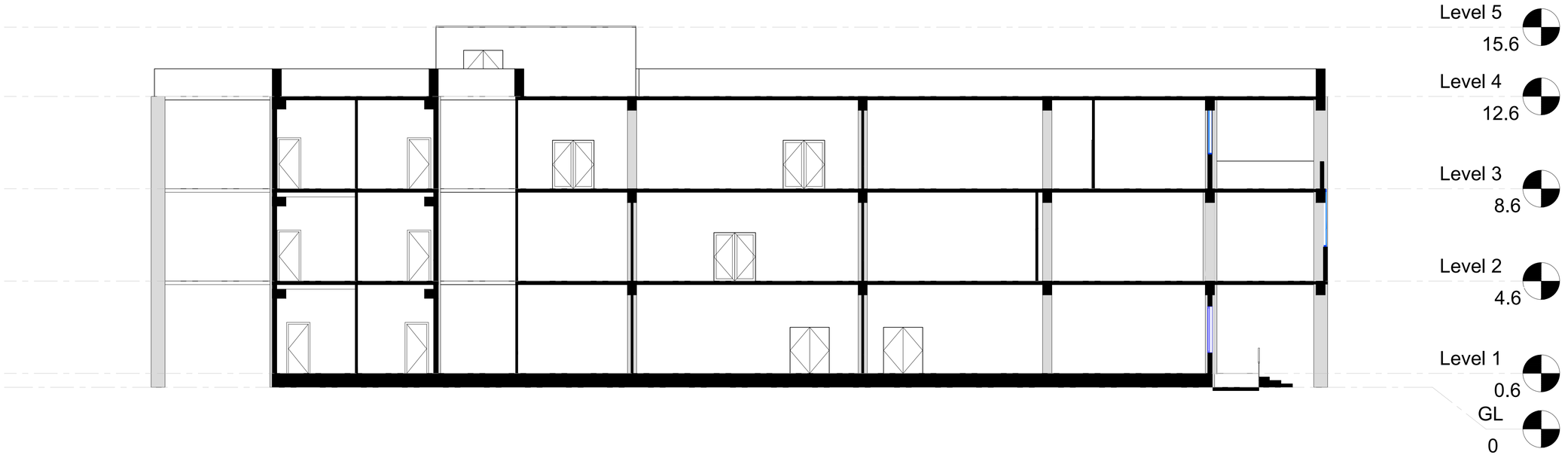
ADMIN BLOCK

Second floor

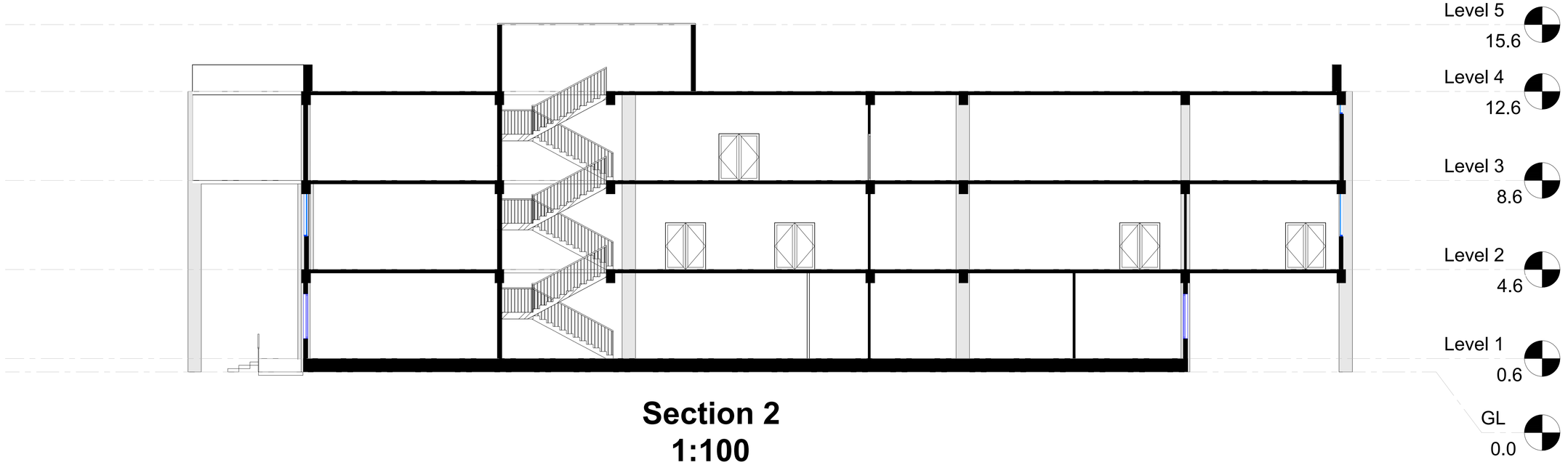
B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
14

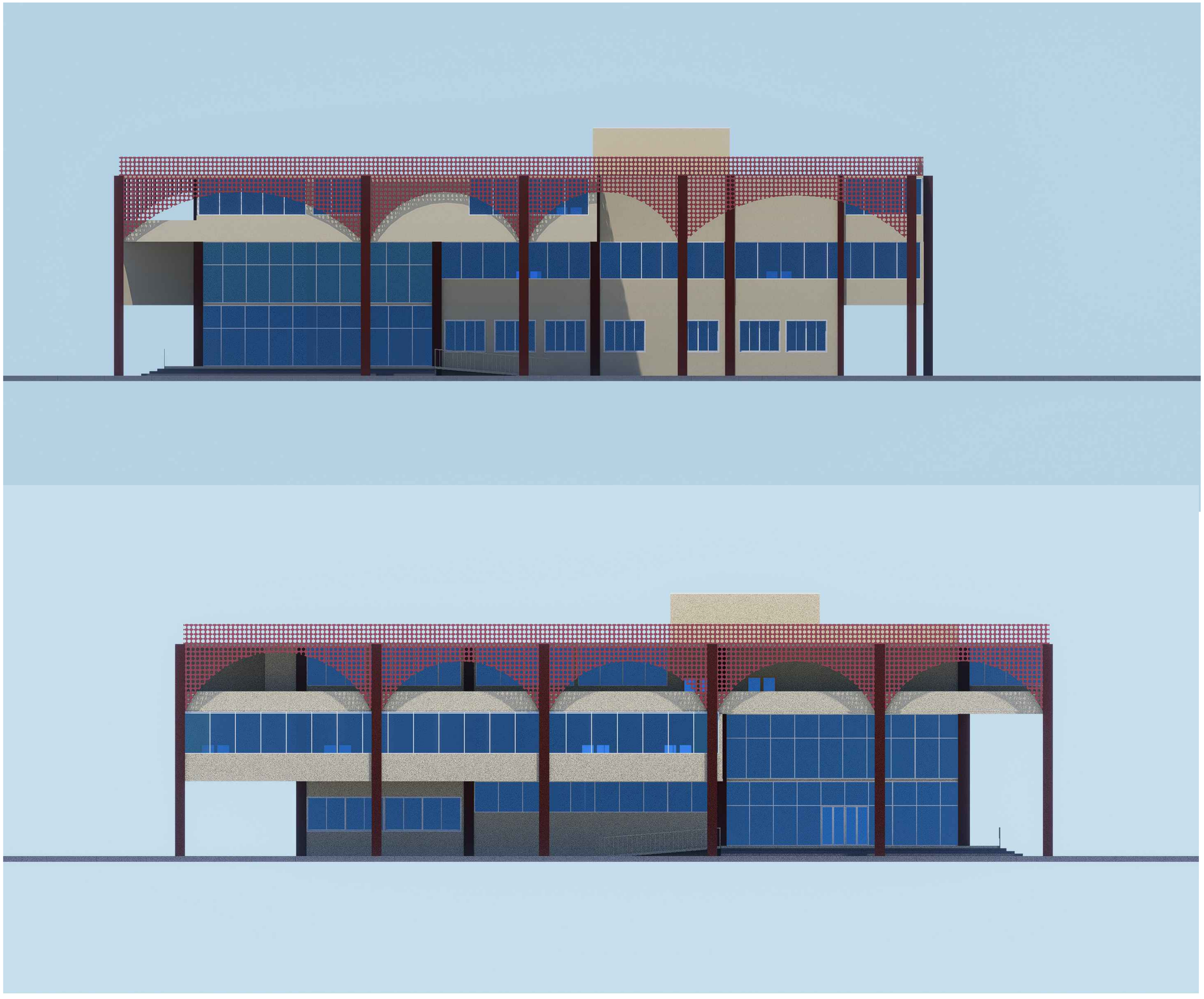


Section 1
1:100



Section 2
1:100

Note - All Dim in meters. Scale - 1:100	N	**ADMIN BLOCK** Sections		B.R Ambedkar University, Rohini, Delhi Site Area - 10 acres		Name - Bharagwee Alekar Scholar no - 211110020 Guided by - Dr. Neha Kolhe	Sheet No. 15



Note -
All Dim in meters.
Scale - 1:100

N

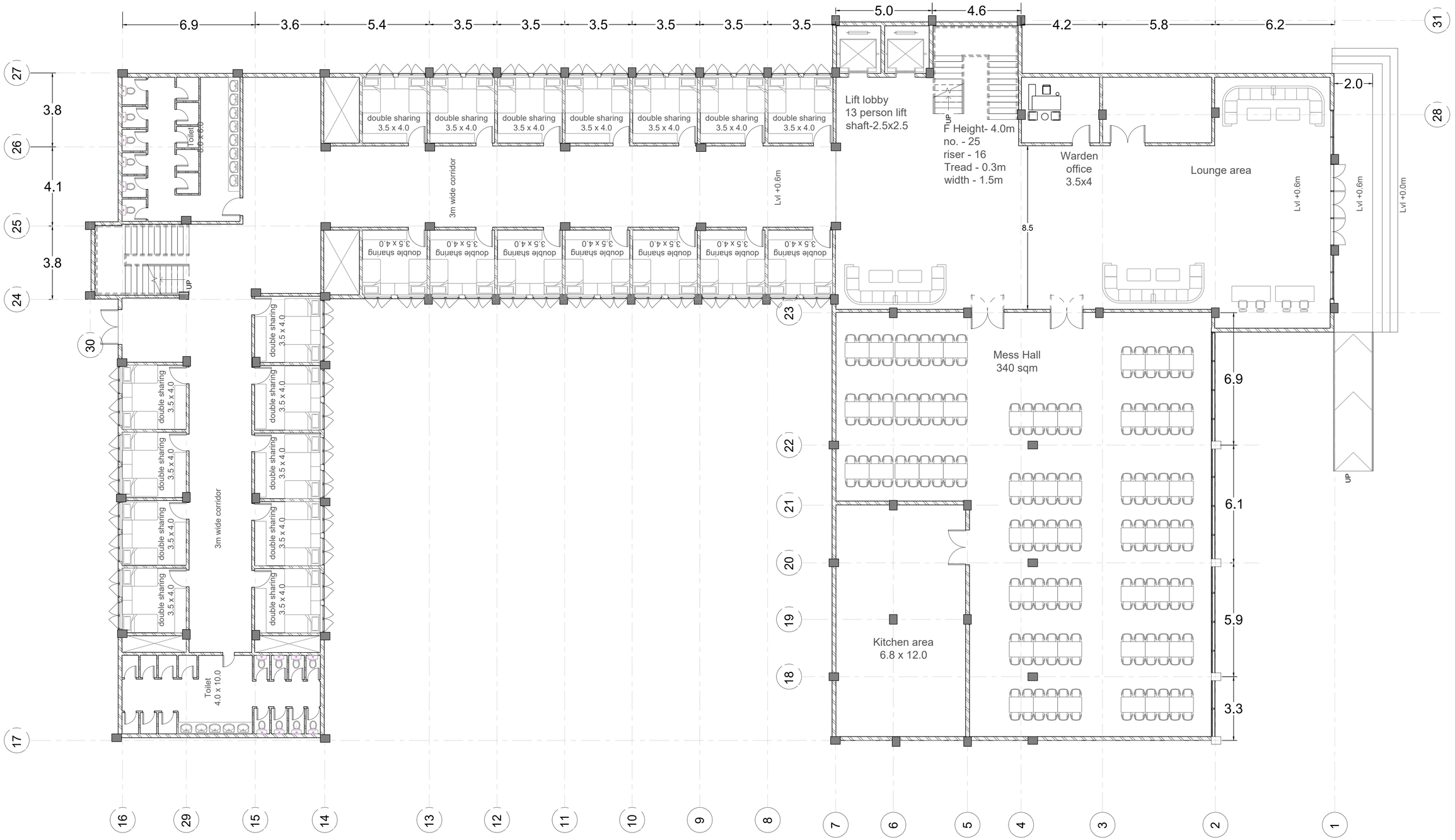
ADMIN BLOCK

Elevations

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
16



Note -
All Dim in meters.
Scale - 1:100

N

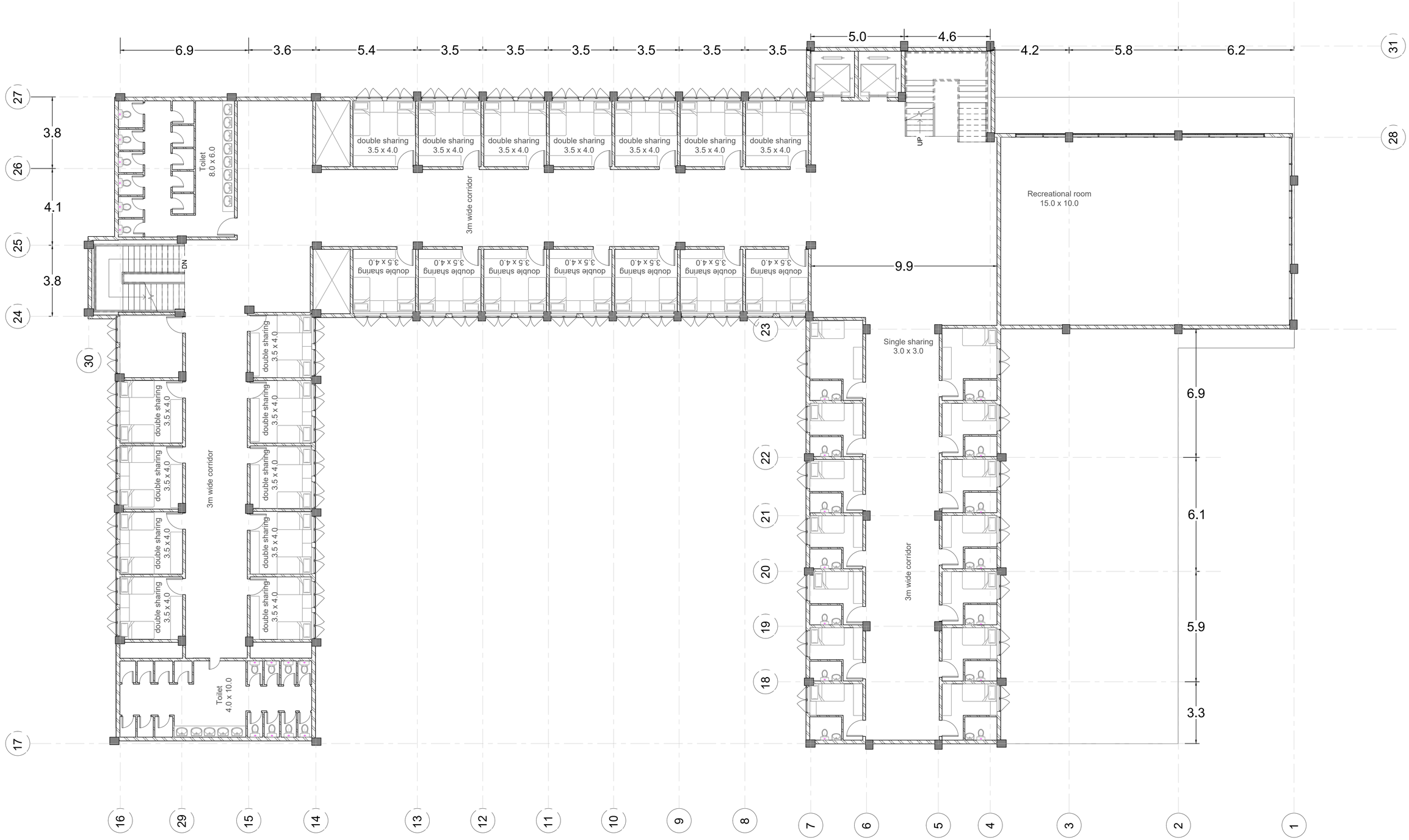
GIRLS HOSTEL

Ground Floor

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe
Thesis ARC 511

Sheet No.
17



Note -
All Dim in meters.
Scale - 1:100

N

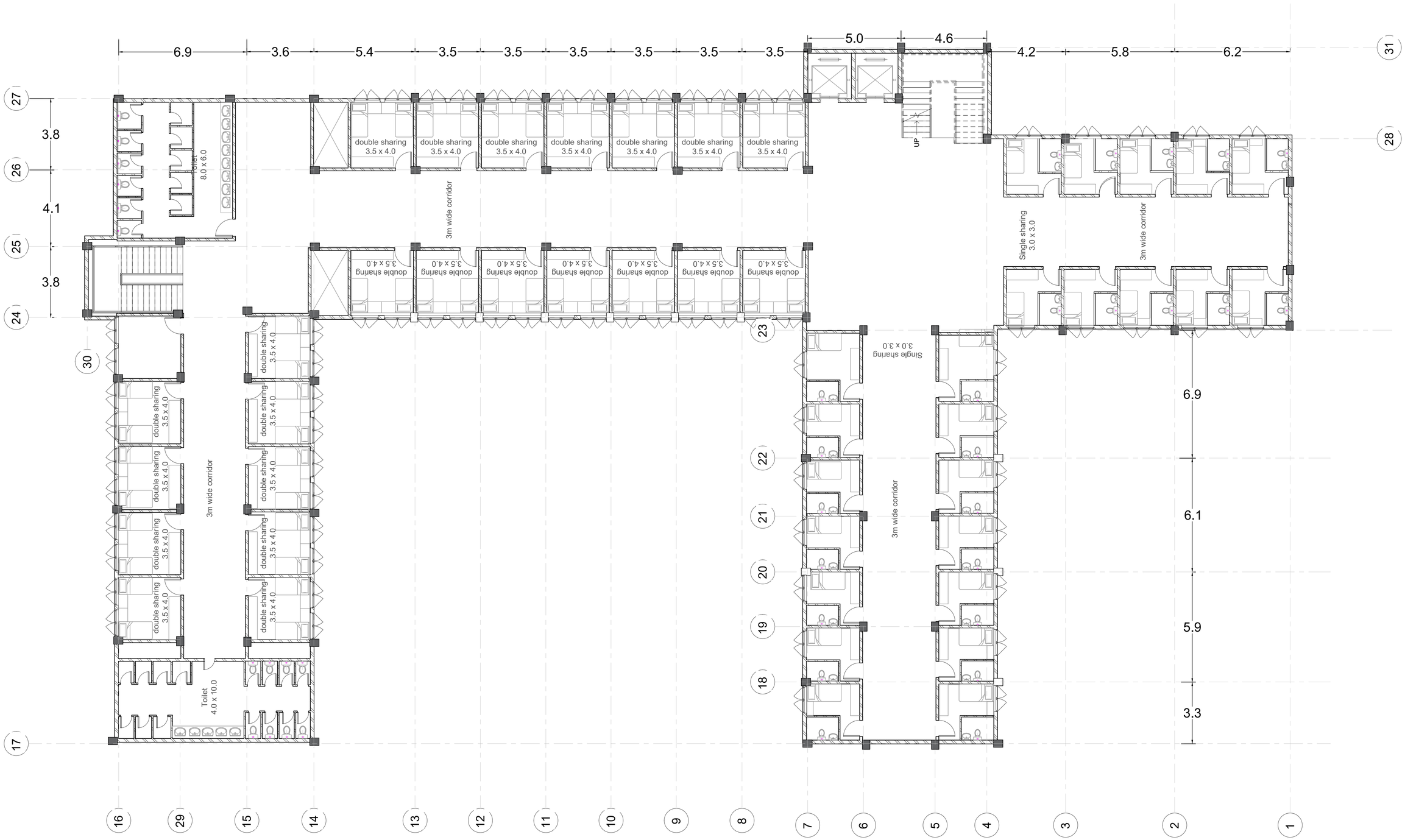
GIRLS HOSTEL

First Floor

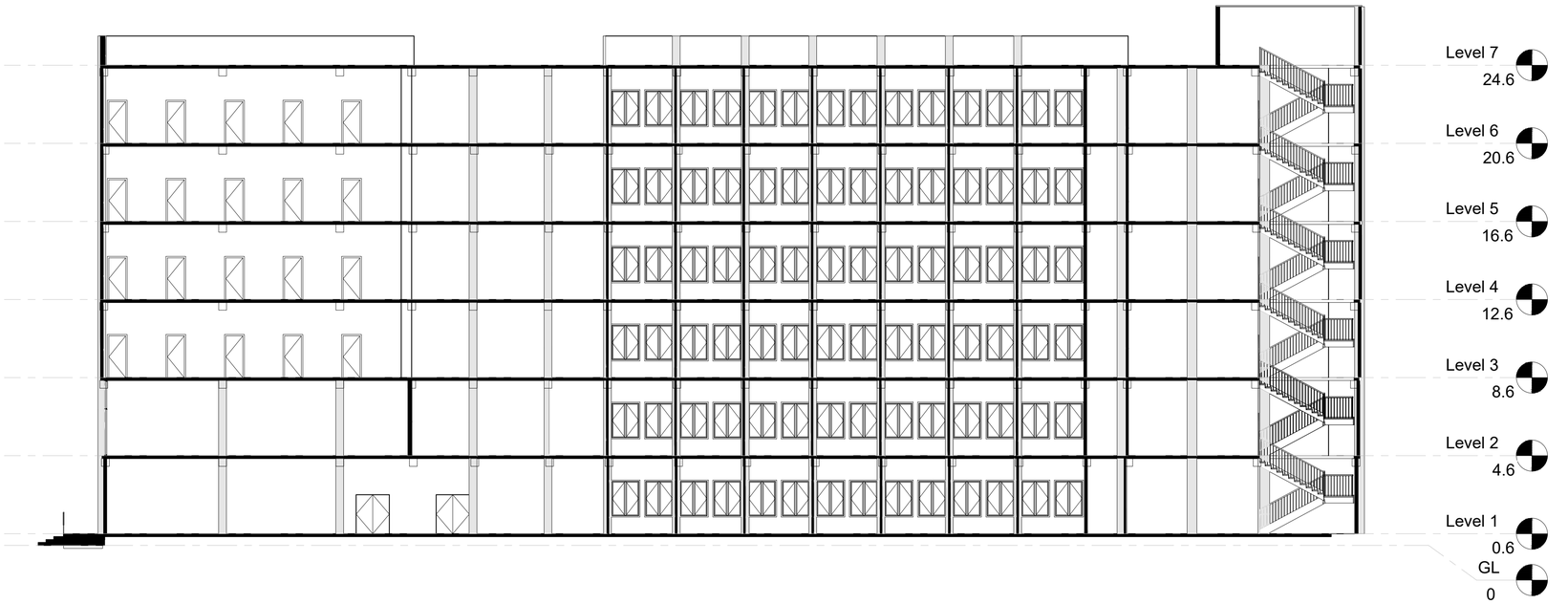
B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

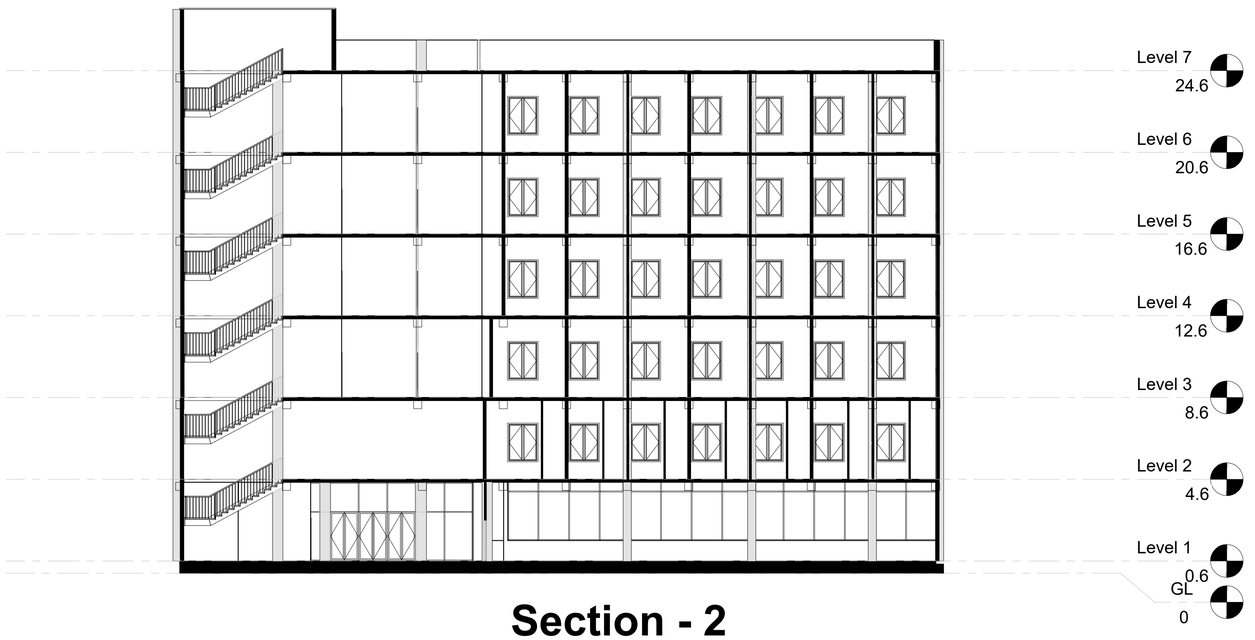
Sheet No.
18



Note - All Dim in meters. Scale - 1:100	N	**GIRLS HOSTEL** Second Floor	B.R Ambedkar University, Rohini, Delhi Site Area - 10 acres		Name - Bharagwee Alekar Scholar no - 211110020 Guided by - Dr. Neha Kolhe	Sheet No. 19



Section - 1
1 :150



Section - 2
1 :150

Note -
All Dim in meters.
Scale - 1:100

N

GIRLS HOSTEL

Sections

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
20



Front Elevation



Side Elevation

Note -
All Dim in meters.
Scale - 1:100

N

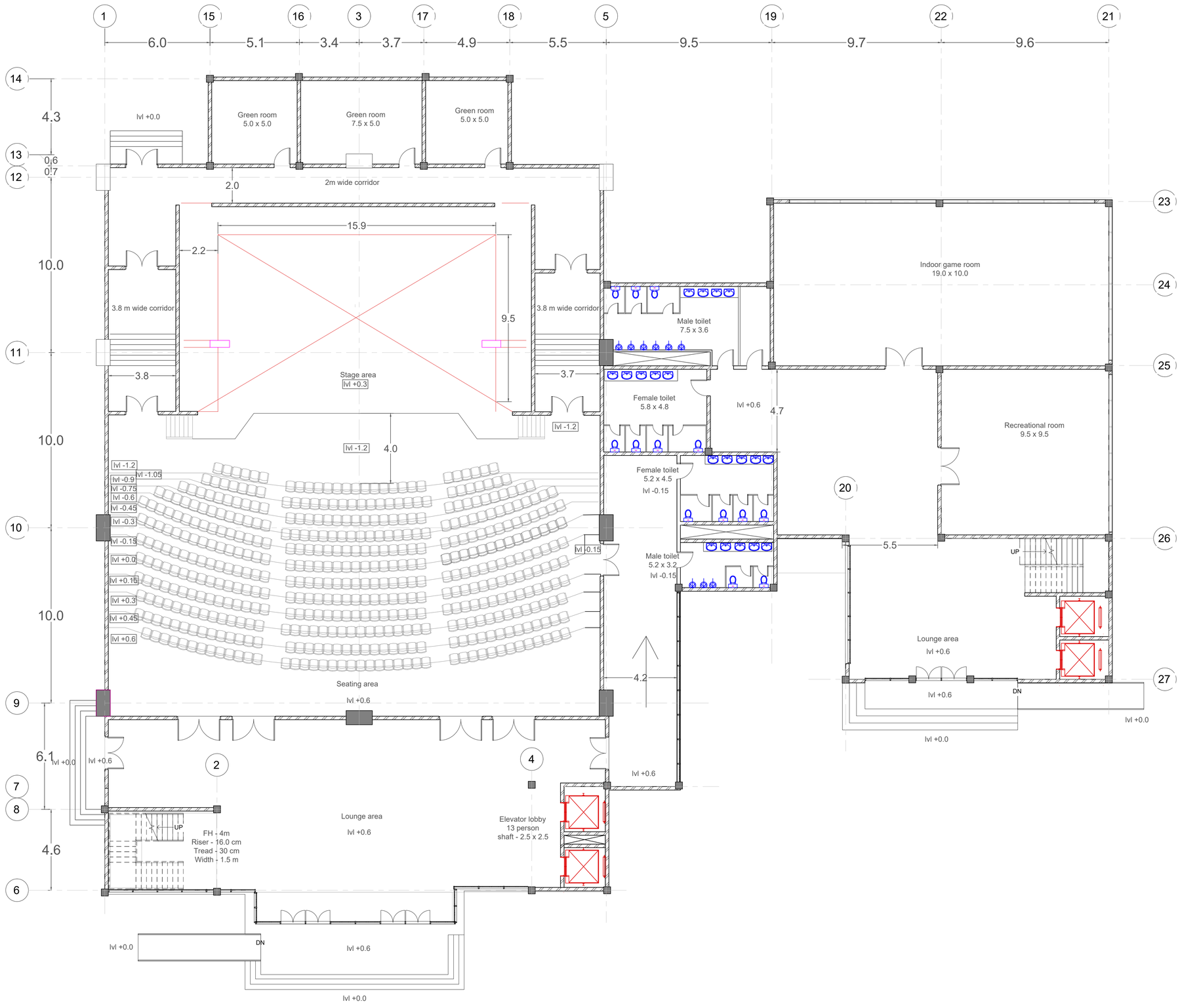
GIRLS HOSTEL

Elevations

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
21



Note -
All Dim in meters.
Scale - 1:100

N

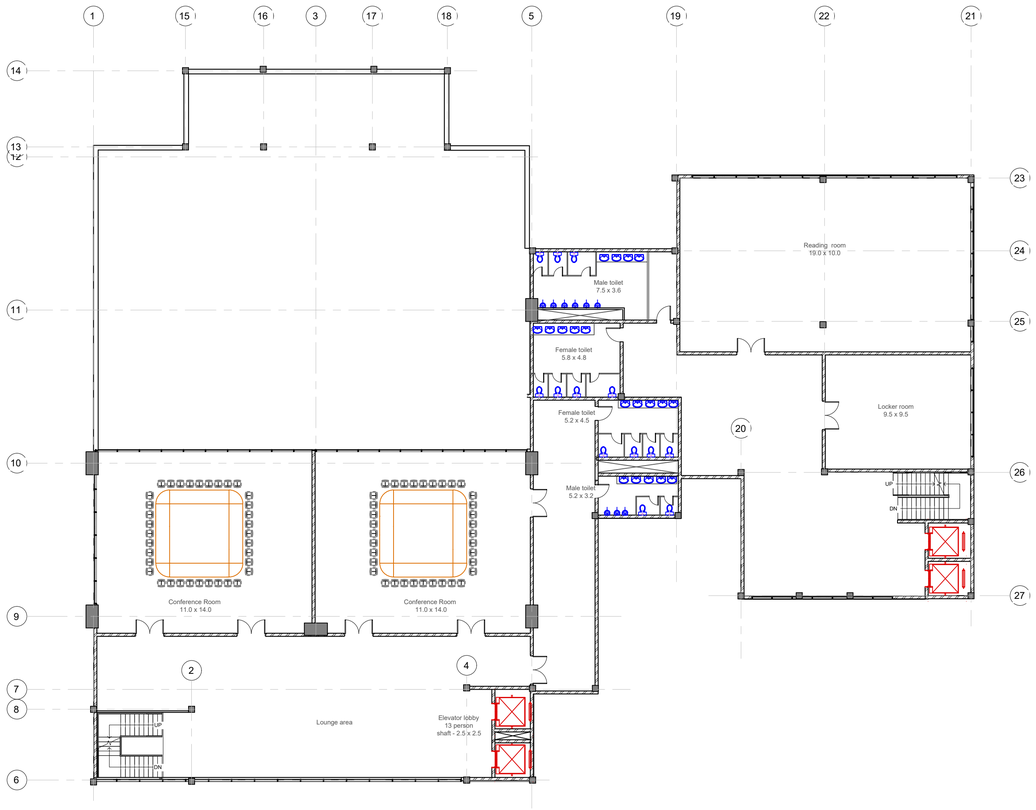
AUDITORIUM & SAC

Ground Floor

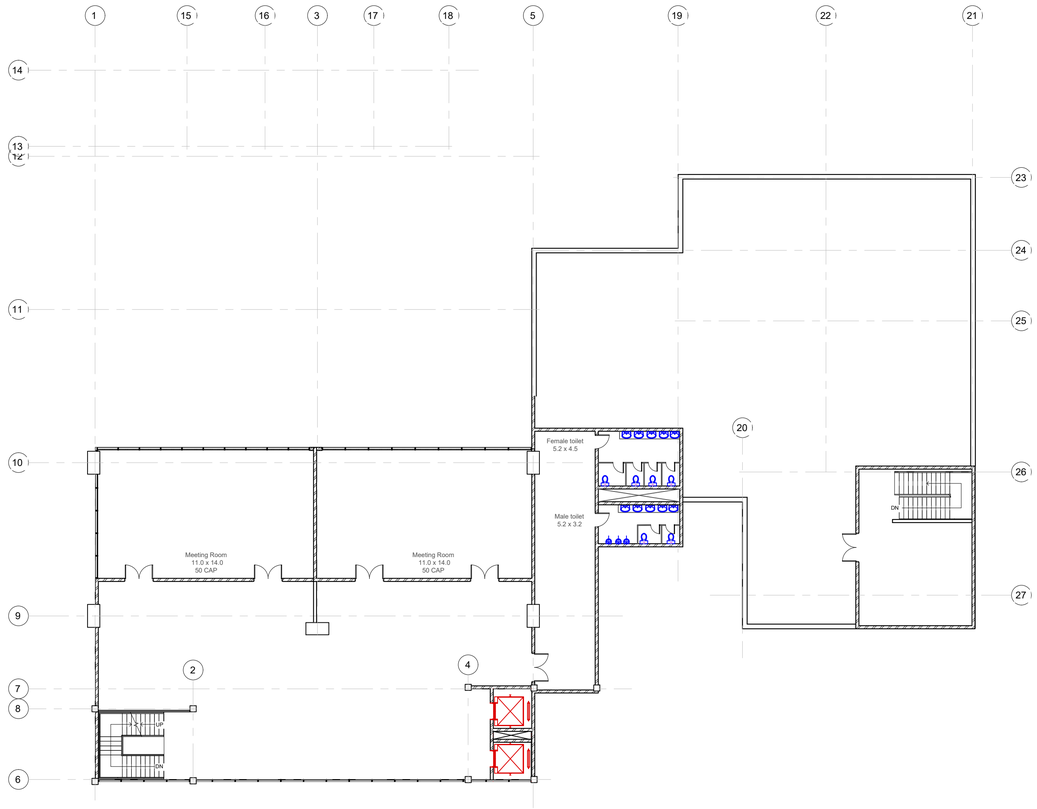
B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
22



First Floor



Second Floor

Note -
All Dim in meters.
Scale - 1:100

N

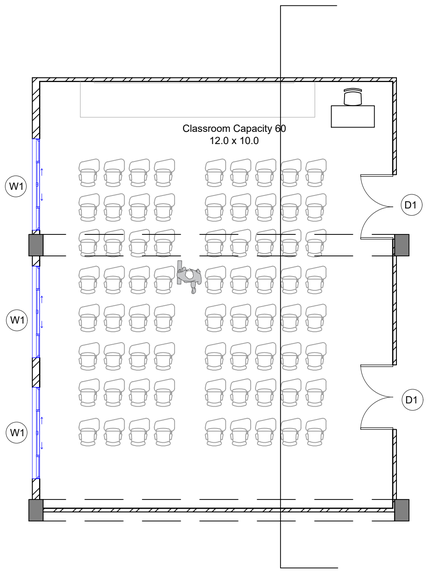
AUDITORIUM & SAC

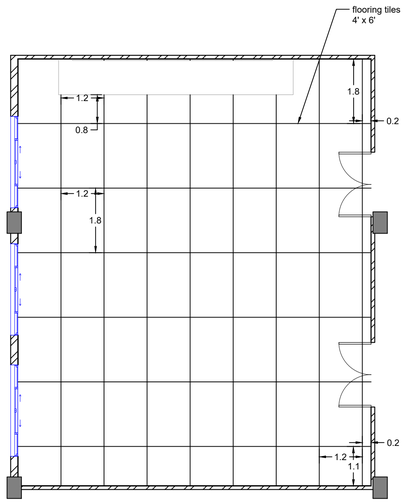
First Floor

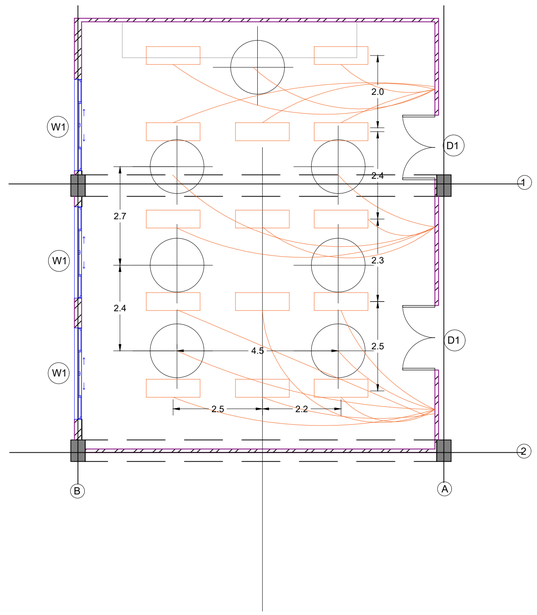
B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

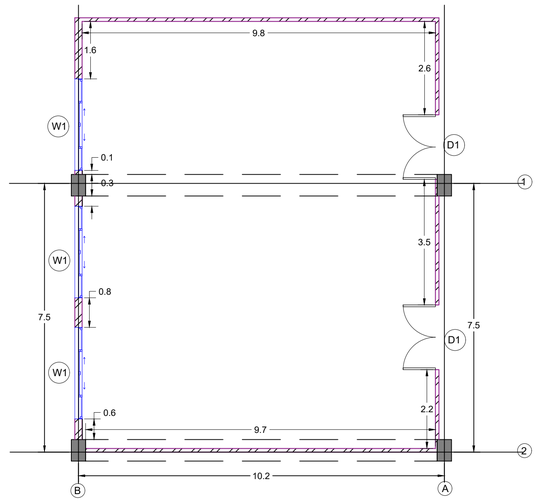
Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

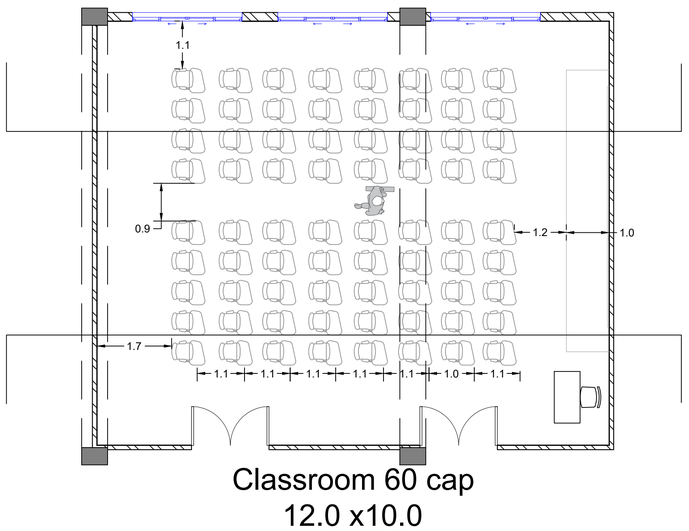
Sheet No.
23



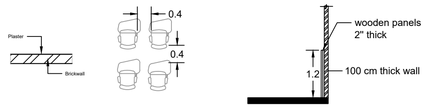


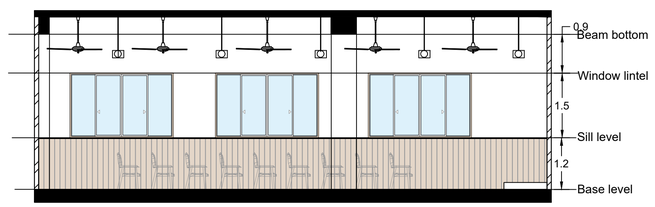


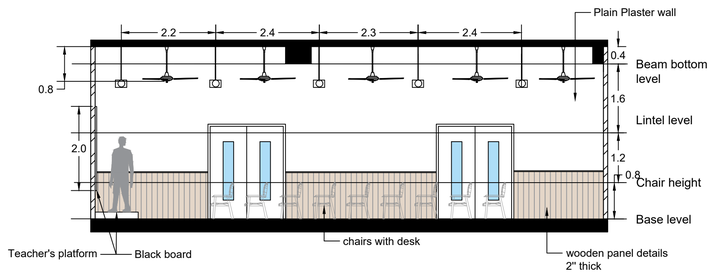




Classroom 60 cap
12.0 x10.0







Note -
All Dim in meters.
Scale - 1:100

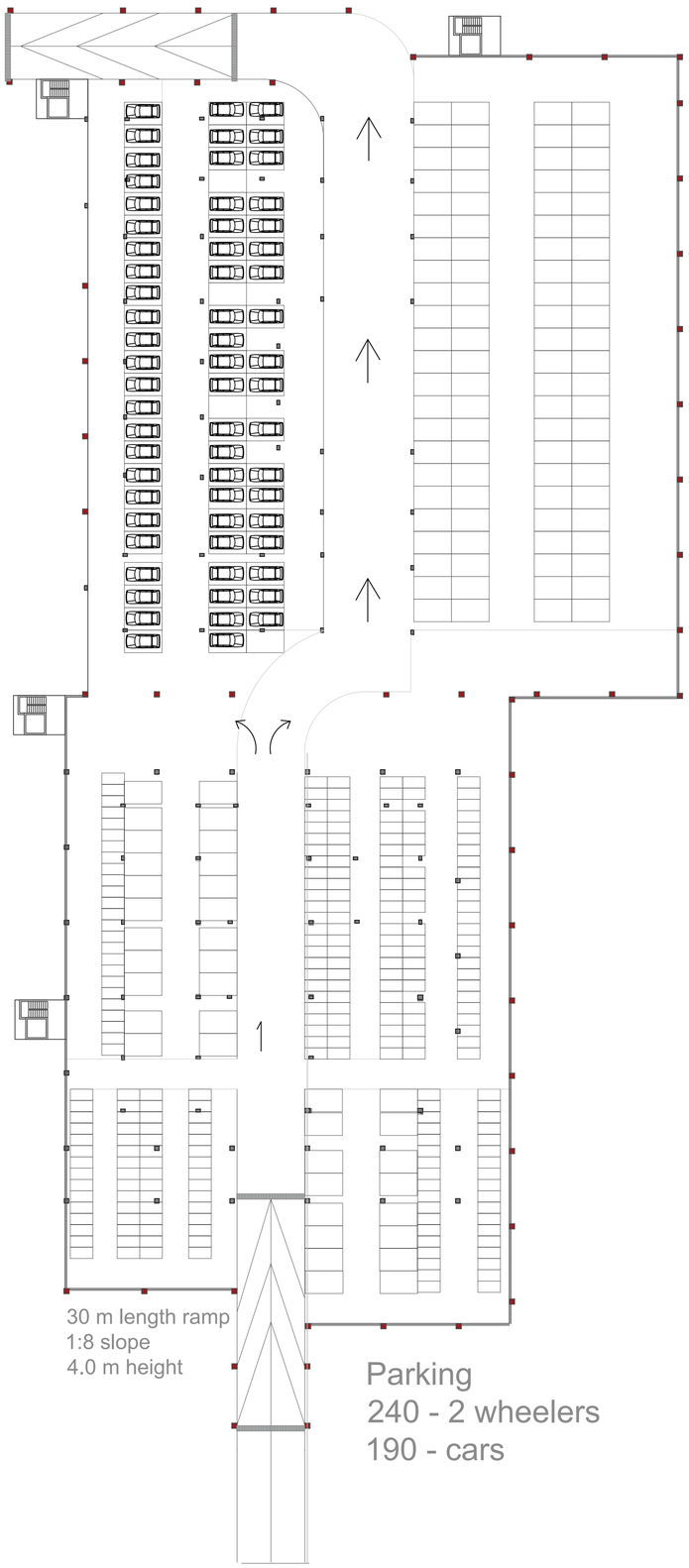
N

INTERIOR DETAILS & WORKING DRAWINGS

B.R Ambedkar University, Rohini, Delhi
Site Area - 10 acres

Name - Bharagwee Alekar
Scholar no - 211110020
Guided by - Dr. Neha Kolhe

Sheet No.
24

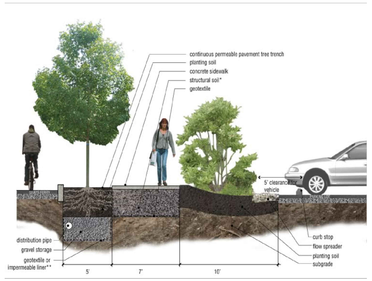


ALL DIM IN M
SCALE 1:500

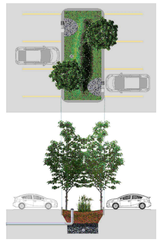
LEGEND

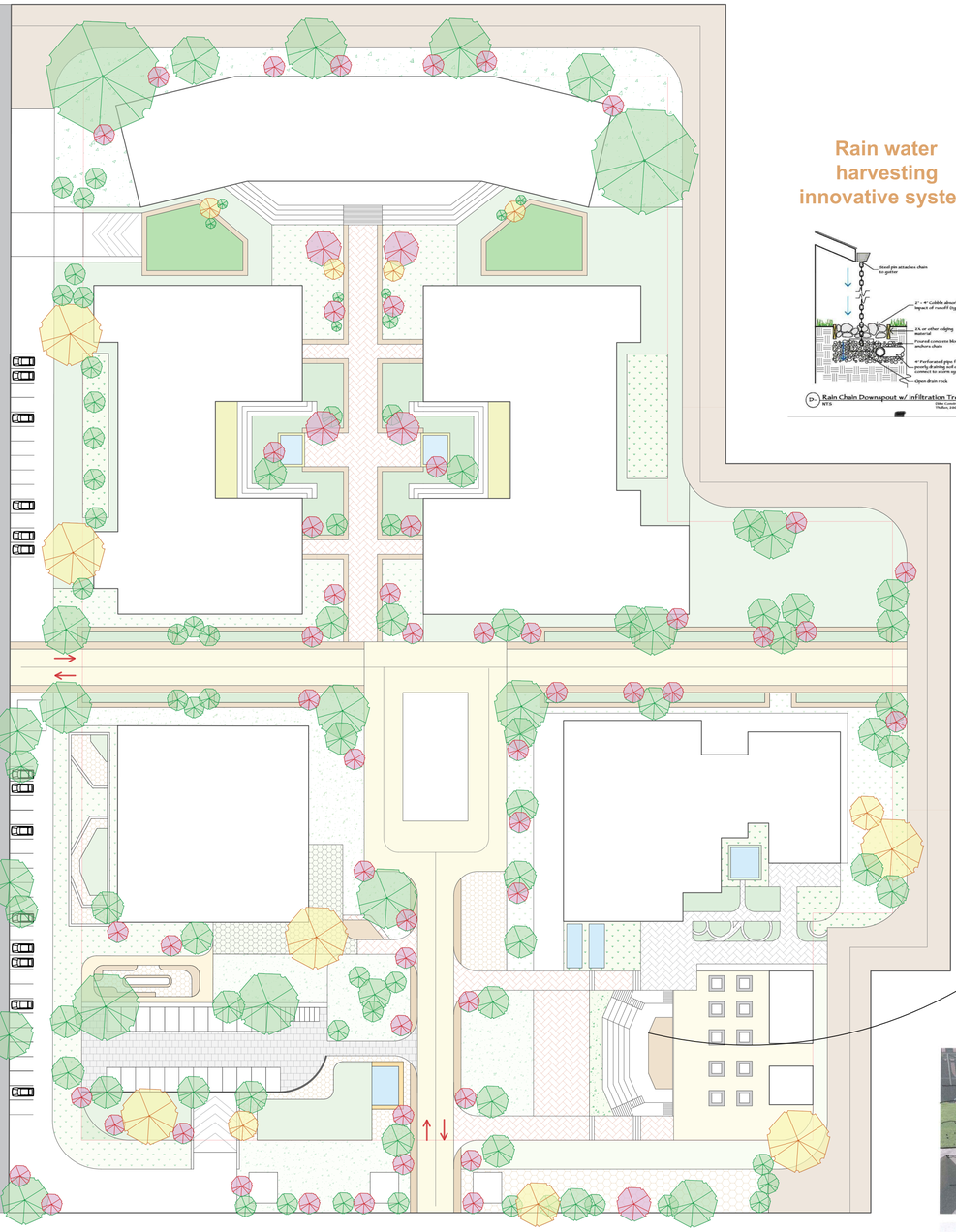
- Evergreen
- Ornamental
- Fragrant

General section of road near surface parking area

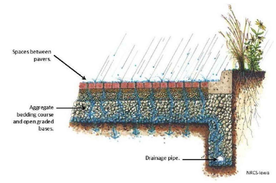


Plantation near parking system



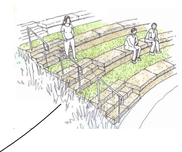


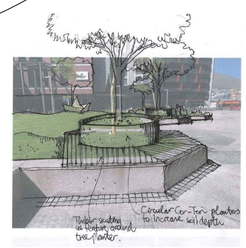
Rain water harvesting innovative system



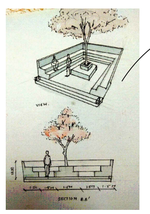
increasing ground water level

Steeped sitting in OAT





Concrete sitting around the trees



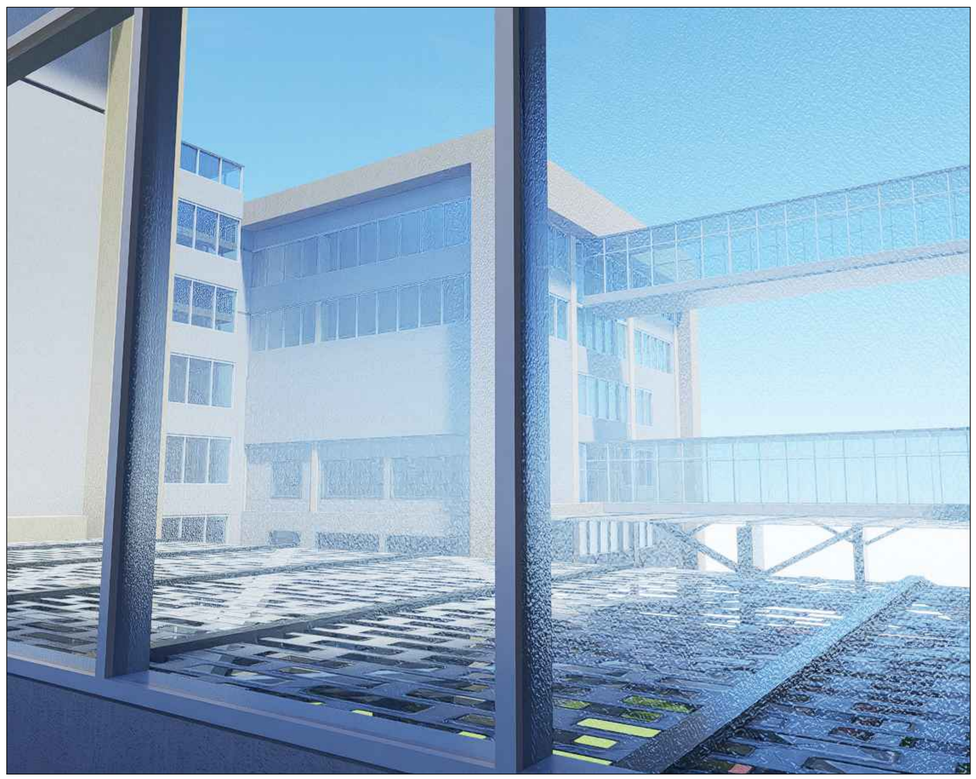
Stepped sitting in hostel area creating courtyard

ALL DIM IN M
SCALE 1:500

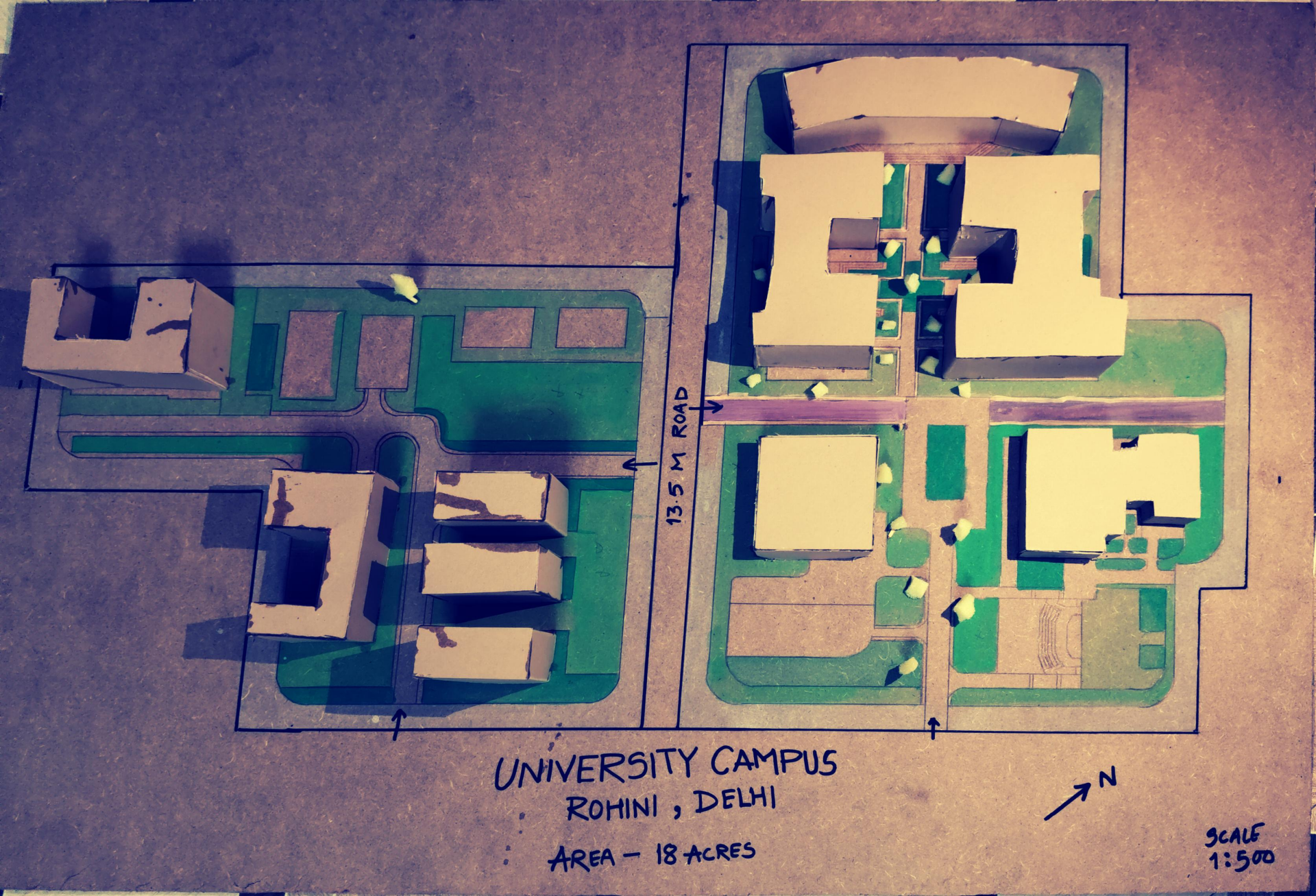








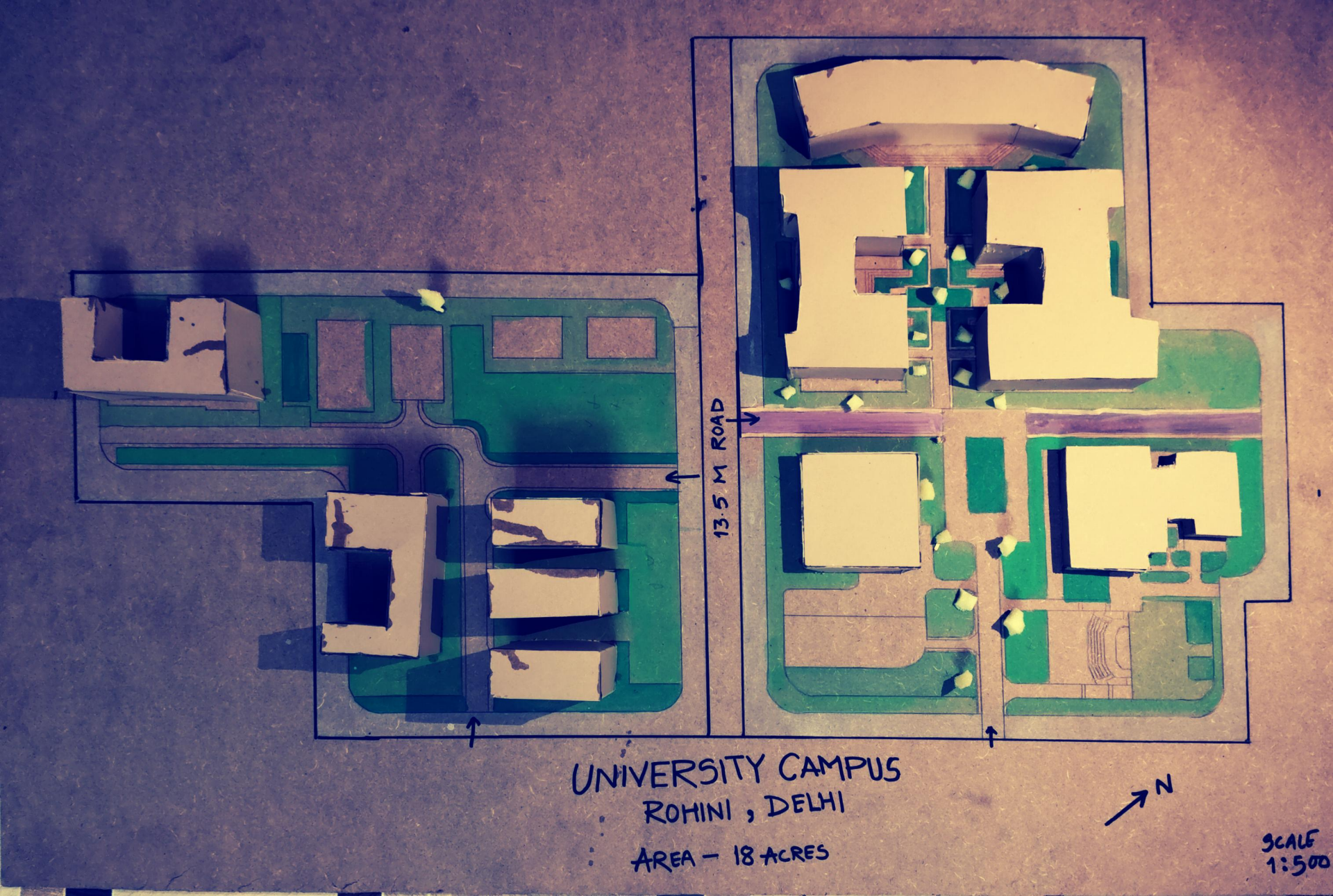



13.5 M ROAD
UNIVERSITY CAMPUS
ROHINI , DELHI
AREA – 18 ACRES
N
SCALE
1:500

13.5 M ROAD

UNIVERSITY CAMPUS

ROHINI , DELHI


13.5 M ROAD
UNIVERSITY CAMPUS
ROHINI , DELHI
AREA – 18 ACRES
N
SCALE
1:500

13.5 M ROAD