Mithila Cultural Learning Hub

Janakpur

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I hereby declare that this thesis has not been previously accepted in any form for any degree, and is not currently being submitted for any degree elsewhere. I affirm that this thesis is the result of my own independent work and investigation, except where otherwise stated.

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ABSTRACT

The provided text is a project proposal for designing a library of the future. The proposal includes information on the history of libraries, the importance of the project, objectives, scope and limitations, methodology, implementation plan, expected outcomes, and a conclusion.

The proposed library aims to investigate emerging trends in library design, develop design proposals for innovative library buildings, and incorporate sustainable design principles and digital technologies. The goal is to create inclusive, accessible, and transformative spaces for communities, while promoting Mithila culture.

The proposal also highlights the Greenpoint Library and Environmental Education Center in Brooklyn as an example of a community hub that promotes environmental awareness and education. The proposed library design draws inspiration from various libraries worldwide, including the Shanghai Book City, the Tribhuvan University Central Library, the Kaiser Library, the Sonnheta Bibliotheca Alexandria, and the Salem Public Library.

The design concept includes different sections for children, seniors, digital resources, and multipurpose activities. The proposed site in Murali Chowk, Janakpur, has been assessed for its accessibility and utility availability.

Key words: *Mithila Culture, Library, Exhibition Gallery, workshop, Studio, learning Centre.*

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Mithila cultural Learning Hub (Library)

ACKNOWLEDGEMENT

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Chapter 1: PROJECT JUSTIFICATION

Background

Janakpur, a prominent city in Province No. 2 of Nepal, holds deep cultural and historical significance as the ancient capital of the Mithila Kingdom and the legendary birthplace of Goddess Sita from the Hindu epic *Ramayana* (Thakur, 2017, pp. 12–14). The region is widely recognized for its vibrant cultural identity, especially its rich traditions in the Maithili language, Mithila painting, oral storytelling, ritual practices, music, and vernacular architecture. These traditions are not only artistic expressions but are deeply embedded in daily life and gendered spaces, particularly within domestic rituals and festivals (Narayan, 2012, pp. 7–13; Dixit, 2020, pp. 22–28).

Despite this cultural richness, there is a growing concern about the erosion of Mithila heritage, especially among younger generations, due to urbanization, outmigration, lack of institutional support, and the dominance of centralized educational systems that neglect regional knowledge systems (Joshi & Bajracharya, 2019, pp. 137–138; UNESCO, 2003, pp. 2–5). Informal modes of cultural transmission, such as learning Mithila art from mothers or grandmothers, are increasingly disrupted by changing lifestyles and economic priorities. This trend is exacerbated by the absence of dedicated educational and cultural institutions in the region that promote hands-on, community-based, and intergenerational learning (ACCU, 2012, pp. 10–14).

In addition, Janakpur faces socioeconomic challenges such as lower literacy rates—especially among women—as highlighted in the National Population and Housing Census (CBS, 2021, pp. 89–91). These factors point to the urgent need for a cultural learning infrastructure that is not only a repository of heritage but also a space for creative expression, skill-building, and inclusive community development.

The proposed *Mithila Learning Centre* is envisioned as a response to this need: a hybrid space that brings together learning, preservation, participation, and production. It will function not merely as a museum or art gallery, but as a living learning environment, rooted in Mithila's cultural landscape and architectural grammar. It also aligns with national and international frameworks, such as Nepal's Cultural Policy

2067 (Ministry of Culture, 2010, pp. 7–9) and UNESCO's Convention on Intangible Cultural Heritage (UNESCO, 2003), which advocate for decentralized, participatory, and sustainable cultural development.

1.1 **Introduction:**

Janakpur, the cultural and spiritual capital of the Mithila region, is a city where tradition and identity are deeply embedded in everyday life. Known as the birthplace of Goddess Sita and a major center of the *Ramayana* narrative, the city represents centuries of Maithili heritage, ranging from vivid mural art and ritual practices to an enduring tradition of folk music, language, and vernacular architecture. Despite this cultural wealth, the region currently faces challenges in preserving its intangible heritage in the face of modernization, globalization, and limited institutional support (Narayan, 2012; Thakur, 2017).

In recent decades, much of Mithila's cultural transmission has remained informal, often passed orally within families or communities. However, these forms of knowledge—particularly practiced by women through art and ritual—are increasingly under threat due to urban migration, reduced intergenerational engagement, and the lack of contemporary educational platforms that value indigenous culture (Joshi & Bajracharya, 2019). At the same time, the region suffers from low literacy rates and limited access to context-sensitive learning environments, especially for children and women (CBS, 2021). These factors highlight the urgent need for a new architectural typology—one that merges cultural preservation with active, inclusive learning.

The *Mithila Learning Centre* is envisioned as a vibrant, multidisciplinary space that celebrates the past while preparing for the future. It aims to integrate cultural learning, art practice, oral history, language, performance, and community-based education within a single architectural environment. The centre will not function as a static museum but as a living, evolving platform that nurtures local identity, empowers artisans, and facilitates meaningful exchange between generations.

Architecturally, the project seeks to reimagine Mithila's vernacular elements—such as courtyards, plinths, murals, and symbolic geometry—within a contemporary framework. It addresses both tangible and intangible heritage, blending design innovation with cultural continuity. Through participatory planning, climate-sensitive design, and the use of local materials and craftsmanship, the project proposes a replicable model for regional cultural hubs that are responsive, inclusive, and grounded in place.

This thesis aims to design a Mithila Learning Centre that not only safeguards cultural heritage but actively revitalizes it through education, interaction, and architectural storytelling.

1.2   Importance of the project

- Preservation and Revival of Intangible Cultural Heritage.
- Culturally Rooted Education Infrastructure
- Architectural Innovation with Vernacular Relevance
- Empowerment through Cultural Economy
- Model for Decentralized Cultural Development

1.3 **Objectives:**

The primary objective of the *Mithila Cultural Learning Hub* is to create a culturally immersive, inclusive, and sustainable architectural space that enables the preservation, education, and evolution of Mithila's intangible heritage. The project aims to translate traditional values into a dynamic learning environment that strengthens local identity and community participation.

- To design and develop a culturally responsive learning centre in Janakpur that serves as a hub for cultural education, community interaction, artistic expression, and knowledge preservation rooted in the Mithila tradition.
- To reinterpret Mithila's architecture (e.g., courtyard systems, jaali screens, muralized walls, symbolic geometry) into a contemporary learning infrastructure.
- To design a climate-responsive and contextually grounded built form using local materials and passive design strategies suited to the Terai climate.
- To create flexible and multifunctional spaces that support workshops, exhibitions, performances, storytelling, and language instruction.
- To empower local artisans, women, and youth by providing them with space for learning, sharing, and entrepreneurship through cultural crafts and education.
- To encourage community ownership by integrating participatory planning methods and incorporating feedback from local cultural practitioners.
- To support lifelong and intergenerational learning by blending informal and formal modes of education.
- To preserve and revitalize Mithila's intangible cultural heritage, such as Maithili painting, music, oral traditions, and rituals.
- To create an institutional platform for documenting, teaching, and evolving regional knowledge systems and the Maithili language.
- To foster cultural pride and awareness among children and youth through interactive, engaging, and localized educational content.
- To contribute to the decentralization of cultural infrastructure by establishing a replicable model for regional learning centres beyond Kathmandu.

- To align the project with national policies (e.g., Nepal Cultural Policy 2067) and global frameworks such as UNESCO's cultural safeguarding mandates and Sustainable Development Goals (SDGs 4, 5, 11).
- To promote heritage-based urban development in Janakpur through integration with tourism, schools, and city-wide cultural planning.

1.4 **Scope and Limitation of the Study**

The project aims to design a Mithila Learning Centre that serves as a multifunctional cultural and educational space, grounded in the local traditions of Janakpur and the Mithila region. The scope includes the following:

- Designing core programmatic spaces including:
  - Art and craft studios
  - Cultural classrooms and language labs
  - Folklore and oral history zones
  - Performance courtyard/theatre
  - Mithila archive/resource library
  - Interactive children's area
  - Exhibition gallery
  - Informal learning spaces and community gathering zones
- Integration of support functions: admin offices, washrooms, storage, and café/shop for artisan products.
- Provision for community workshops and temporary programs to support seasonal festivals and local rituals.
- Reinterpretation of Mithila vernacular architecture: high plinths, courtyards, murals, symbolic geometry, and ornamented walls.
- Use of local and sustainable materials, passive cooling strategies, and culturally responsive planning.
- Site planning to accommodate landscape elements, shaded transitions, and semi-open verandas.
- Placement of the project within a Janakpur urban fabric, possibly near cultural landmarks (e.g., Janaki Temple or Mithila Art Market).
- Integration with existing tourism and cultural circuits (e.g., *Ramayana Circuit* and Janakpur Women's Development Centre).
- Contribution to the revival of regional identity and promotion of cultural tourism.
- Field-based research into Mithila art, symbolism, space use, and community needs.
- Use of precedents including regional institutions (e.g., *Nokha Library by Sanjay Puri*) and learning spaces that merge culture and pedagogy.

Despite its broad aspirations, the project will operate under the following limitations:

- The final site will be a conceptual or selected available parcel in Janakpur, but not acquired or built; site conditions (topography, services, access) will be assumed or mapped from available data.

- The design will remain at the conceptual and schematic level; cost estimation, funding models, or detailed construction documents are outside the scope of this academic thesis.

- Material sourcing and structural detailing will be proposed but not engineered to full technical depth.

- While user-based design and participatory principles are considered, real-time stakeholder consultations and co-design workshops may be limited to secondary sources, interviews, or online surveys due to academic and logistical boundaries.

- Mithila culture is diverse across regions, castes, and gender roles. The project will interpret generalized cultural patterns, with acknowledgment that not all subcultural practices may be fully represented or spatialized in one institutional format.

1.5 **Methodology:**

The design of the *Mithila Learning Centre* is grounded in a research-based, culturally responsive, and user-centered approach. The methodology combines qualitative research**,** site analysis**,** participatory inputs**,** and context-sensitive design development to ensure that the final proposal reflects the social, cultural, climatic, and educational realities of Janakpur and the broader Mithila region. The methodology includes research, literature review, case studies, site analysis, program formulation, conceptual design development and final design that includes plans, elevation, section, etc.

1.6 **Implementation Plan:**

Based on the research findings, the thesis project will develop architectural proposals for Mithila cultural learning hub. This may involve:

- Designing flexible and adaptable spaces that can accommodate diverse activities, from collaborative workspaces to labs and cultural venues.

- Incorporating sustainable design principles, such as passive heating and cooling strategies, green roofs, and energy-efficient systems, to minimize environmental impact and promote stewardship.

- Integrating digital technologies and interactive features to enhance user engagement, information access, and learning experiences.

- Emphasizing inclusivity and accessibility through universal design principles, ensuring that functional spaces are welcoming and accessible to people of all ages, abilities, and backgrounds.

1.7 Expected Outcomes:

The thesis project is expected to:

- Generate insights into the evolving role of cultural learning centre architecture in shaping community identity, social cohesion, and cultural enrichment.

- Provide innovative design solutions and strategies for creating learning centres that are responsive to the needs and aspirations of diverse communities.

- Contribute to the advancement of architectural discourse on sustainable design, urban planning, and public space.

- Inspire future architects and designers to envision learning centre as vibrant, inclusive, and transformative spaces for generations to come.

1.8 Conclusion:

As an architecture student, I am excited to embark on this journey to reimagine cultural learning centre design for the 21st century. By blending creativity, sustainability, and community engagement, we can create libraries that not only reflect our values and aspirations but also inspire us to learn, connect, and thrive in an ever-changing world.

Chapter 2: LITERATURE REVIEW

2.1 **Background**

The design of a Mithila Learning Centre draws upon a multidisciplinary body of literature that intersects cultural studies, vernacular architecture, education design, and heritage preservation. This review identifies the key academic and professional sources that inform the project's conceptual framework, spatial language, and social objectives.

The foundation of this project lies in understanding Mithila as a unique cultural and geographical region with centuries of distinct traditions. According to Narayan (2012), Mithila art—especially Maithili painting—is more than decoration; it is a form of visual storytelling and ritual expression, deeply intertwined with gender roles and daily life (pp. 7–13). Similarly, Thakur (2017) highlights how Maithili rituals, seasonal festivals, and oral narratives function as vehicles of intergenerational learning, especially among women and children in domestic spaces (pp. 12–21).

Architecture in Mithila—particularly in Janakpur and surrounding Terai regions—has been historically climate-sensitive, communal, and symbolic. Joshi and Bajracharya (2019) analyze Terai vernacular houses, noting features like high plinths, deep verandas, courtyards, and breathable walls as responses to flooding, heat, and social rituals (pp. 137–140). Dixit (2020) adds that symbolism in architectural elements, such as the Kohbar Ghar (wedding chamber), reflects ritualistic storytelling that could inspire culturally embedded design strategies (pp. 22–28).

The Asia-Pacific Cultural Centre for UNESCO (ACCU, 2012) presents multiple case studies of community-based learning hubs that emphasize local knowledge systems and participatory education models (pp. 10–14). These learning environments succeed where formal

2.2 Introduction

A Cultural Learning Centre is a space—both physical and conceptual—dedicated to the preservation, practice, transmission, and evolution of cultural knowledge, skills, and expressions within a community. It functions at the intersection of education, heritage, and community development, often integrating art, language, performance, rituals, oral history, and craftsmanship into its programming and spatial organization.

A Cultural Learning Centre is a community-oriented institution designed to facilitate the active learning, safeguarding, and revitalization of cultural traditions and intangible heritage through interactive, participatory, and often informal educational experiences. "A space for the continued practice and transmission of living cultural expressions, including oral traditions, performing arts, traditional craftsmanship, and social practices." (UNESCO, 2003)

Key Characteristics:

- Culturally Rooted: Built upon the customs, language, history, and art forms of a specific region or ethnic group.

- Participatory and Experiential: Emphasizes hands-on learning through workshops, storytelling, performances, and community interaction.

- Intergenerational: Encourages learning across ages—from elders to youth—ensuring transmission of oral and skill-based knowledge.

- Hybrid Educational Space: Functions beyond a formal classroom—integrating museum, studio, archive, and performance space into a cohesive setting.

- Empowering and Inclusive: Often designed to empower women, artisans, and marginalized communities by validating their knowledge and skill systems.

Functions of a Cultural Learning Centre

- Education & Skill Development
- Cultural Preservation
- Community Building
- Economic Empowerment
- Intercultural Dialogue

The requirements of a learning center include:

- Learning space: library, studio, workshop, classes

- Exhibition space: museum, gallery, etc.
- Performing space: theater, auditorium, etc.
- Administration space
- Interactive space

The three zones- Library, Museum, and Workshops—should not operate in isolation. Instead, the learning center can be designed around a central cultural courtyard, where:

- Exhibitions spill into interactive storytelling spaces
- Libraries host oral history events with elder storytellers
- Workshops link to galleries through live artisan demos

This promotes a living-learning environment, where heritage is not only preserved but performed, practiced, and evolved.

2.3   **Libraries:**

To preserve and provide access to written, oral, and digital knowledge related to Mithila culture, language, history, folklore, and indigenous sciences. To serve as a quiet reading, research, and storytelling space for both academic and community users.

Types of library:

2.3.1   *Academic Library:*
Academic library is the library which is attached to academic institutions like schools, colleges and universities. An academic library serves more specifically the students, research scholars, teachers and staff of the academic institution. For e.g.: the Central Library of Pulchowk Campus.

Figure 1: Central Library of Pulchowk Campus

2.3.2   *Special Library:*
Special Library A special library is one which serves a particular group of people, such as the employees of a firm or the government department, or the staff and members of a professional or research organization. For e.g.: Central Law Library at Jamal.

Figure 2: Central Law Library

2.3.3   *National Library:*
A national library is a library specifically established by the government of a country to serve as the preeminent repository of information for that country and has the duty of collecting and preserving the literature of the nation within and outside the country. For e.g.: Nepal National Library.

Figure 3: Nepal National Library

2.3.4   *Public Library:*
By definition, public libraries are a common good - a resource available for the public at large. Instead of a specialized collection, they house a varied range of resources to serve different user groups. Instead of referencing, they encourage lending and loaning practices. Since they are public institutions, they play a more active part in community engagement and serve as public places. For e.g.: Kaiser Library at Jamal.

Figure 4: Kaiser Library

2.3.5 Problem Statement of library:
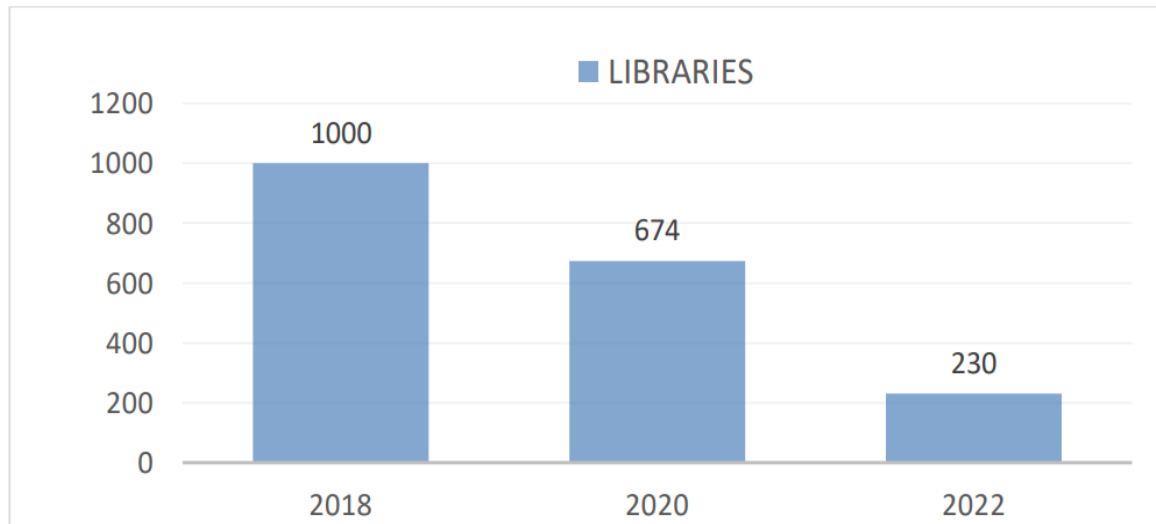
Figure 5: Chart showing the number of Libraries on Nepal

It is recorded that around 1,000 libraries were in Nepal around four years ago. However, this year (2022 A.D.) it is recorded to have 230 libraries only. With the easy access to the internet to the masses, knowledge is no longer limited to books and thus libraries aren't the only source of learning. Viewed as a storehouse of books, libraries as an institution have failed to upgrade themselves with the change in people's desires and needs. It fails to spark an excitement in people and are often seen as dead institutions not meant for the general masses. Although Kathmandu is the capital city of the country where most of the power is centralized and which is the hub for inter-living, meeting and inter- communication of the citizens all around the country, most public spaces in the city are facing the challenges of staying relevant and active. But if we re-interpret our understanding of what constitutes as a library and explore what all a library can do for the society, the future of public libraries seem to brighten up transforming into active public spaces capable of serving the role of a community and cultural icons.

2.4   **Museum:**

To showcase tangible and intangible elements of Mithila heritage: costumes, musical instruments, ritual objects, paintings, wedding artefacts, and agricultural tools. To host temporary exhibitions on themes like Maithili script, Ramayana traditions, women's roles, festivals, etc.

2.5   **Workshops:**

To allow active transmission of traditional skills like painting, paper-making, pottery, weaving, folk music, and storytelling. To empower local artisans, women, and youth by offering skill-building spaces that lead to both heritage preservation and income generation.

2.6   **General Requirements**

The site selection criteria are as follows:

- Better visibility from the street level.
- Centrally located and easy accessibility.
- Should be large enough for expansion.
- Public entrance must be accessible to the disabled.

2.6.1 *Space Relation*

- Space for books: 15 books per sq ft
- Space for staffs: 100 sq ft per staff member.
- Space for group meetings: this space can be used for conference, audiovisual equipment: 7 to 10
- sq ft per seat.
- Space for readers: min. 30 sq ft per adult and min. 20 sq ft per child.

Table 1: Space relation of table for the library

S.N.	Particulars	Area in sq. ft.
1.	Population served	Below 2500
2	Size for book collection	10, 000
3.	Space for books	1000
4.	Space for readers	400
5.	Staff work space	300
6.	Additional space needed	300
7.	Total floor space	2300
8.	Space for simple reading	30/ person
9.	Space for PC users	40/ person

2.6.2 *Design Considerations*

Basic principles when planning for library includes:

- Simplicity of design concept (collections, seating for readers, and

staff require adjacencies to each other that are clear to the user)

- Ease of supervision by library staff.
- Comfortable reading space.
- Public entrance must be accessible to the disabled.
- Reading sections should be easily accessible
- Access to reading room control gate, if possible, only one entrance and exit
- Overlapping of different routes must be avoided
- Reading areas preferable at daylight areas
- 20 % of total areas for circulation and utilities

- Special attention for disabled/handicapped users as well
- Provision of emergency exit

2.6.3 *Zoning and layout of the cultural learning center*

At most learning centers, four zones coexist– outworked and mixed in different ways: learning, experiencing, meeting and creating (Palaces, 2016).

2.6.1.1 The Learning Space

The strength of having a library as a learning space is that the learning becomes a dialogue-oriented process. The challenge of modern libraries is to create open, inviting multi-use spaces along with delimited/quiet learning spaces that are still in interplay with the rest of the library. Things to consider for a better learning experience Palaces, 2016):

- Connection with nature: Semi-open, open spaces created for learning
- Bring the outdoor in: Courtyard planning, internal landscaping
- Visibility: Visual connection between different spaces provided and with the outer world through glass facades.
- Ambience: By proper light, flexible furniture, color and view of either the outdoor gardens or hills can create a comfortable ambience.
- Different outdoor spaces: Solo study carrels, group study, homework cafes, learning through experience and creation i.e. makerspace

Figure 6: outdoor spaces

2.6.1.2 The inspiration space/ Experience Zone

The inspiration space' is based on experiences. It will typically offer access to materials including literature, art, films, music, entertainment and games as well as events with artists and similar.
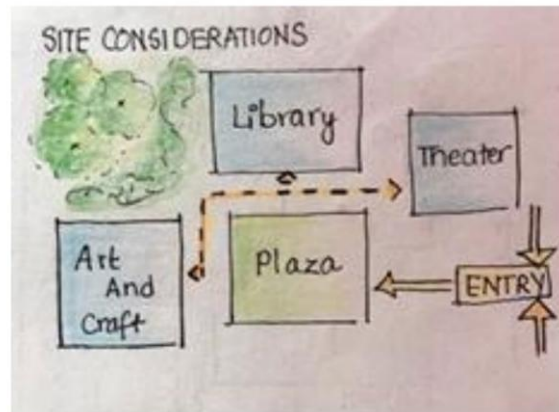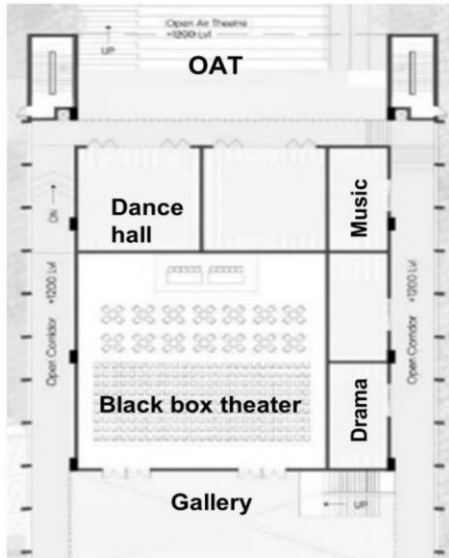
Figure 7: The type of inspiration Space in the library helping visitors to experience and get inspired

2.6.1.3 The Meeting Space

The concept of "the third space" often comes up when considering the library as a meeting space. (Sharan, 2020) Essentially, three dimensions of meeting spaces should be worked upon:

- Almost private, intimate and completely open public square
- Organized teaching and unorganized spontaneous meeting
- Scaling- room for both small and large meeting

Figure 8: The stairs used in the public space as the Meeting space

2.6.1.4 The performative space

'The performative space' is based on creatively innovative activities carried out by the users. It facilitates workshops of different kinds: writers' workshops, activities with in-house artists, innovation workshops, film workshops etc., and screenings and exhibition areas to cater the diverse interests of the users. For example, hacker spaces, maker spaces, tech labs, rentable office spaces, fab labs, stage and halls, workshop spaces, cafe environment, large gathering spaces etc.

2.6.1.5 Collection and Seating Zone

The collection and seating spaces are intermingled to some extent. Since staff should be able to supervise reader seats and computer seats, the sightlines through or over the stacks become important to making this sort of arrangement work.
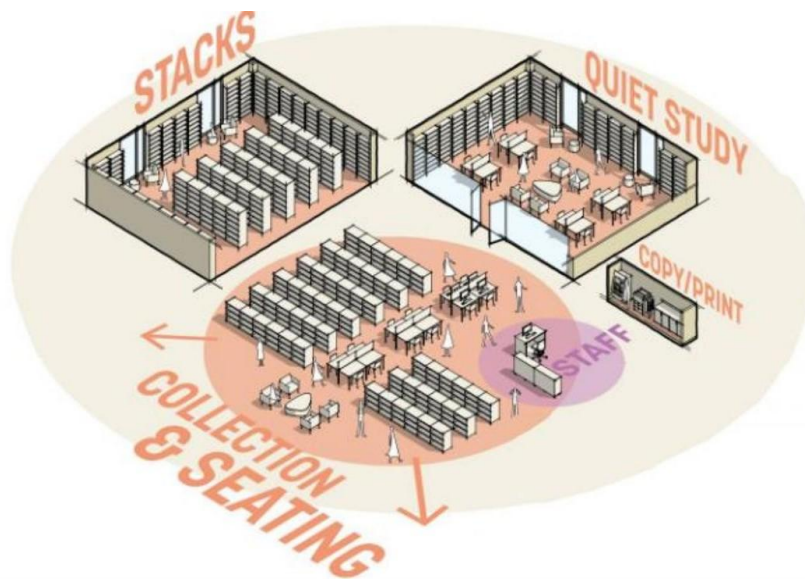
Figure 9: Intermingled collection and seating zone

2.6.4 *Lighting*

Lighting in the user area: generally, approx. 250-300 lx; reading and working places, card index, information, lending counter 500 lx. Climate in the user area: $20° \pm 2°C$, - $50 \pm 5\%$ relative humidity, air changes (flow of outside air) 20 m3 /h x no. of people; these values can sometimes be exceeded According to the weather. Avoid direct sunshine as UV and heat radiation destroy paper and bindings. Air-conditioning systems should be used sparingly because of the high energy consumption and thus high operation costs. Window ventilation is possible for low building depth.

Both natural and artificial lighting can be used in the library but natural light is more preferable but artificial lighting is need in case of night time.

Lighting:

It can be further divided into 3 types which are as follows:

    i.   Parallel Lighting

   ii.   Perpendicular Lighting

  iii.   Hybrid Lighting

General consideration for artificial lighting:

Lighting should be designed in such a way that glare should not occur on the computer screen.

- With indirect lighting, glare disappears. Computer screens are clear. Shadows are soft.
- With recessed ceiling fixtures, bright down light reflects on computer and video screens, causing glare that obliterates readout.
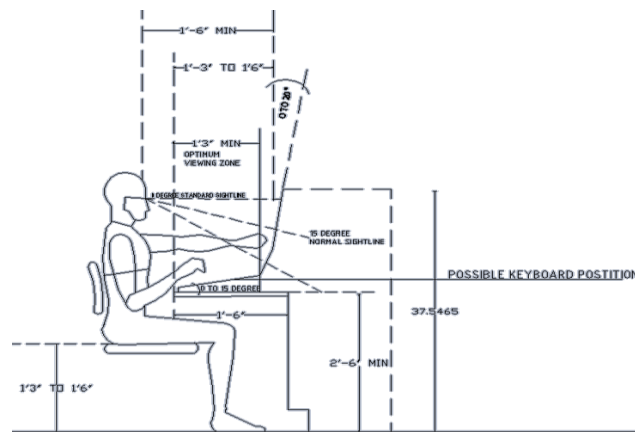
Figure 10: Light position in room
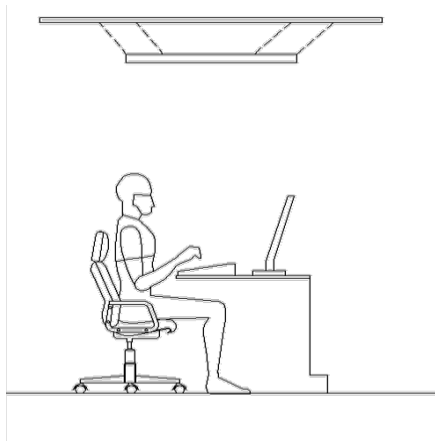
Figure 11: Indirect Light
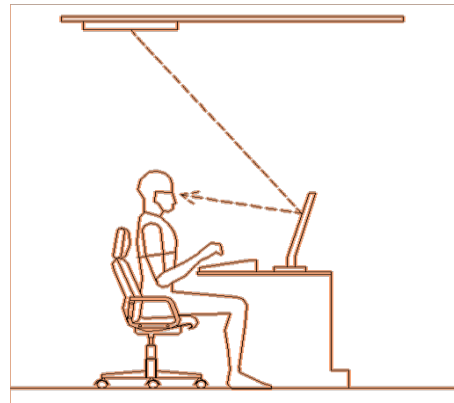
Figure 12: Direct Light

2.7 **Anthropometric data:**
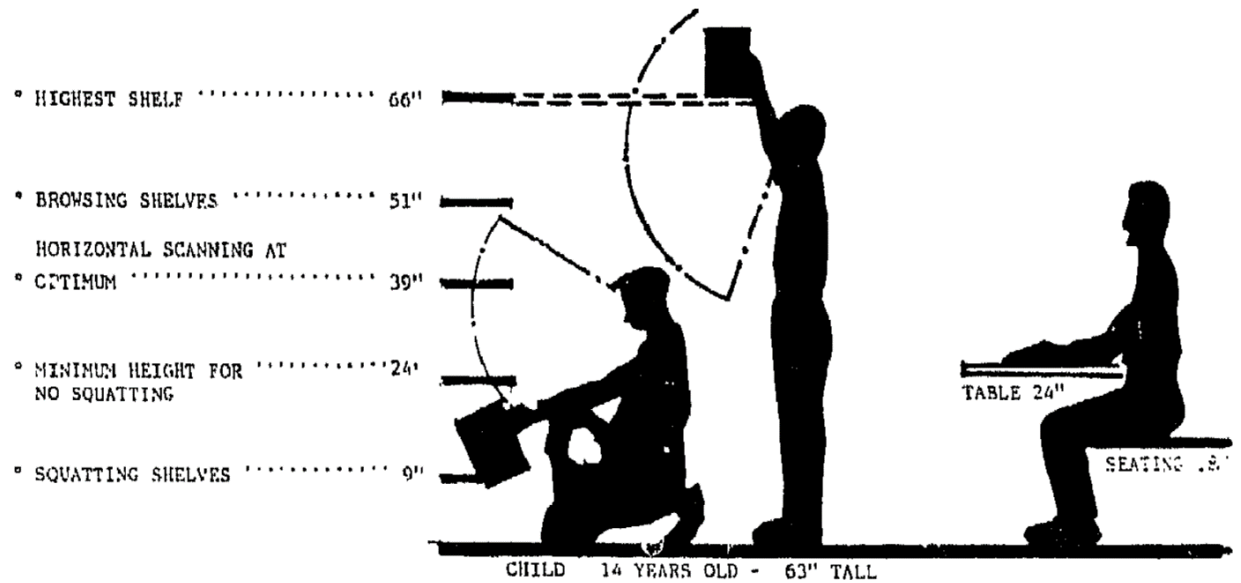
Figure 13: Optimum shelving conditions for adults (source: Time_Saver_Standards_for_Interior_Design)
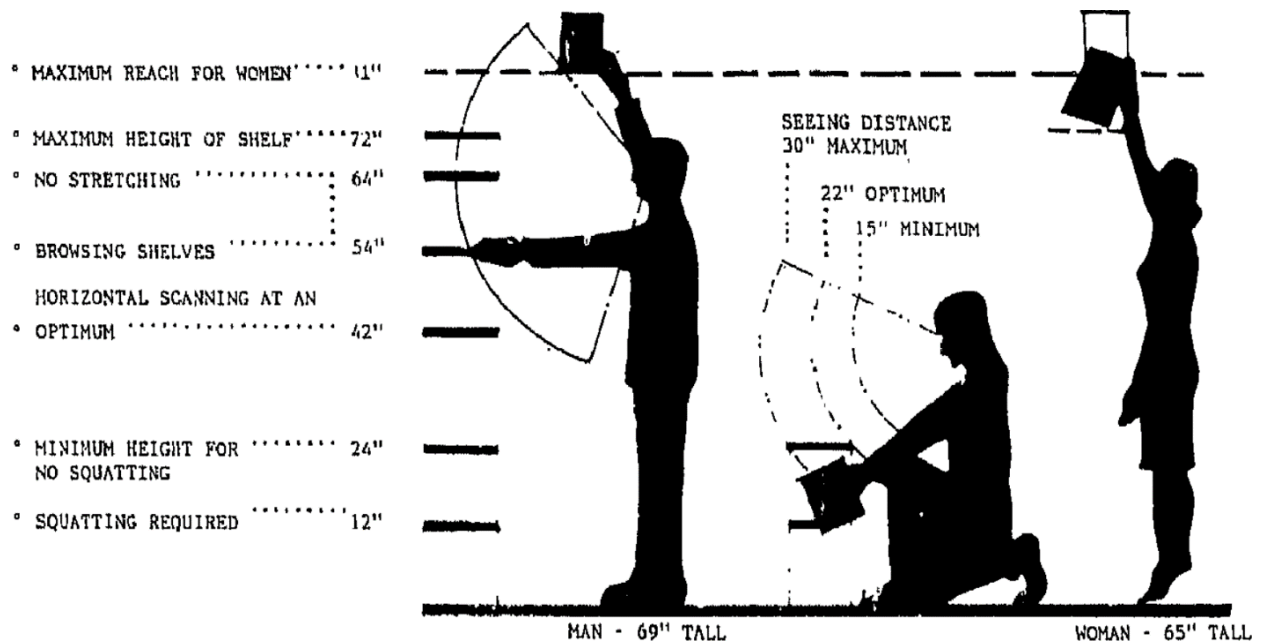
Figure 14: Optimum shelving conditions for Teenagers (source: Time_Saver_Standards_for_Interior_Design)

Figure 15: Optimum shelving conditions for Children (source: Time_Saver_Standards_for_Interior_Design)

Figure 16: Floor area for bookshelves in stacks (stores), which are closed to the

Table 2: Table of Space Calculation

Distance between centreline of double shelves (m)		Volumes/ m standard shelves	Vertical shelves	Volumes/m double shelves	Space needed for 1000 books (m²)	Volumes/ m²
for stores closed to users (additional 20%)	1.20	30	6	360	3.99	250.6
		30	6.5	390	3.68	271.7
		25	6.5	325	4.43	225.7
		30	7	420	3.42	292.3
		25	6	300	4.80	208.3
	1.25	30	6	360	4.16	240.3
		30	6.5	390	3.84	260.4
		25	6.5	325	4.61	216.9
		30	7	420	3.56	280.8
		25	6	300	4.99	200.4
	1.30	30	6	360	4.33	230.9
		30	6.5	390	3.99	250.6
		25	6.5	325	4.80	208.3
		30	7	420	3.70	270.2
		25	6	300	5.19	192.6
	1.35	30	6	360	4.50	222.2
		30	6.5	390	4.15	240.9
		25	6.5	325	4.98	200.8
		30	7	420	3.85	259.7
		25	6	300	5.40	185.1
self-service area (additional 25%)	1.40	30	6	360	4.85	206.1
		30	6.5	390	4.47	223.7
		25	6.5	325	5.17	193.4
		30	7	420	4.16	240.3
		25	6	300	5.82	171.8
		20	5.5	220	7.63	131.0
	1.44	25	6	300	6.00	166.6
		25	5.5	275	6.53	153.1
		20	6	240	7.50	133.3
		20	5.5	220	8.17	122.3
	1.50	25	6	300	6.25	160.0
		25	5.5	275	6.81	146.8
		20	6	240	7.81	128.0
		20	5.5	220	8.51	117.5
reading room area (additional 25%)	1.68	25	6	300	7.00	142.8
		25	5.5	275	7.62	131.2
		20	6	240	8.75	114.2
		20	5.5	220	9.53	104.9
	1.80	20	5.5	220	10.22	97.8
		20	5	200	11.25	88.8
	1.87	20	5.5	220	10.62	94.1
		20	5	200	11.68	85.6
	2.10	20	5.5	220	11.92	83.8
		20	5	200	13.12	76.2
		20	4	160	16.40	60.9

Source: Schweigler

Table 3: Table of Centre to Centre distance between Shelves in Library

No. of Shelves	Standard distance between centre-line(m)							
	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80
4	3.83	3.72	3.62	3.54	3.46	3.39	3.33	3.27
5	4.38	4.24	4.11	4.00	3.90	3.81	3.75	3.65
6	4.93	4.75	4.60	4.46	4.34	4.23	4.13	4.03
7	5.48	5.27	5.09	4.93	4.78	4.65	4.53	4.42
8	6.03	5.79	5058	5.39	5.22	5.07	4.93	4.80
9	6.58	6.31	6.07	5.85	5.66	5.49	5.33	5.18
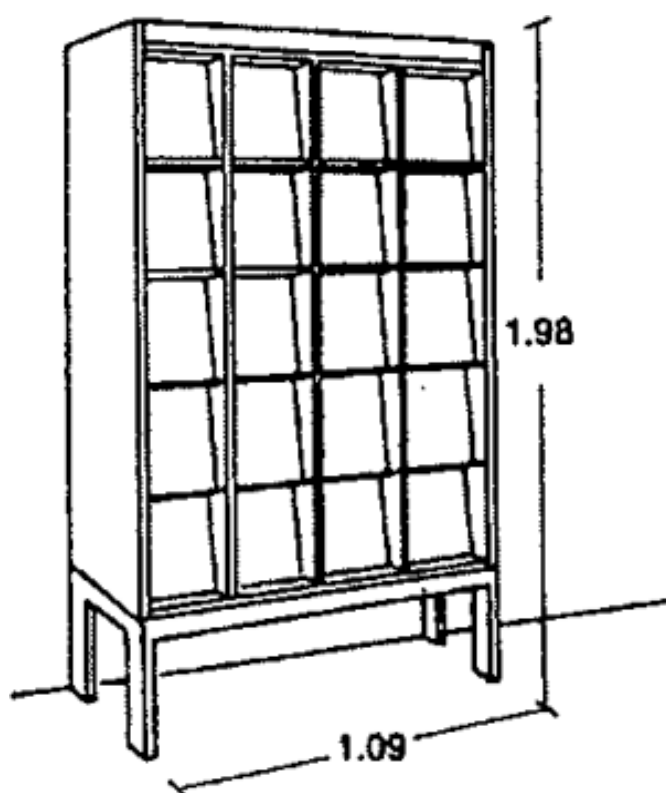
Figure 17: Magazine Rack

$$F_1 = b \cdot e \cdot \left(1 + \frac{N\%}{100}\right) \quad \text{formula 1}$$

F1   floor area required for an open workstation for library user
b   width of table
e   distance between centre-lines of tables arranged one behind the other
N%   percentage of area allowed for adjacent aisles providing access to individual workstations

Under the conditions listed above, the floor area required for an individual workstation is approx. 2.50 m². Example:
$F_1 = 1.00 \text{ m} \cdot (0.70 + 0.95) \cdot (1 + \frac{50}{100})$
$F_1 = 2.48 \text{ m}^2$

① Space for a single workplace → ③
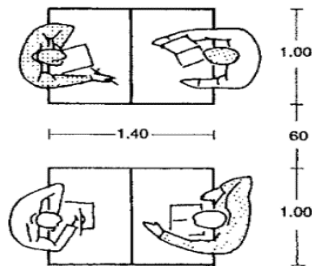
② Minimum spacing between tables

③ Area calculation → ① m² main usable area
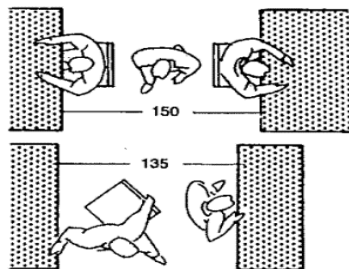
④ Minimum free room in reading area → ⑤
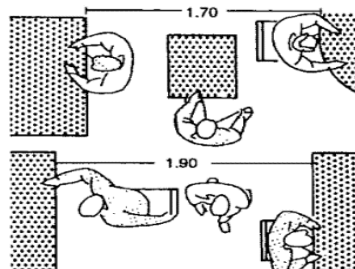
⑤ Transporting books between sitting and standing library users → ④
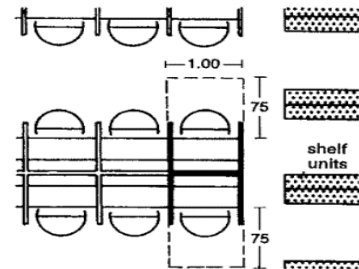
⑥ Carrels (non-lockable protected workplaces)
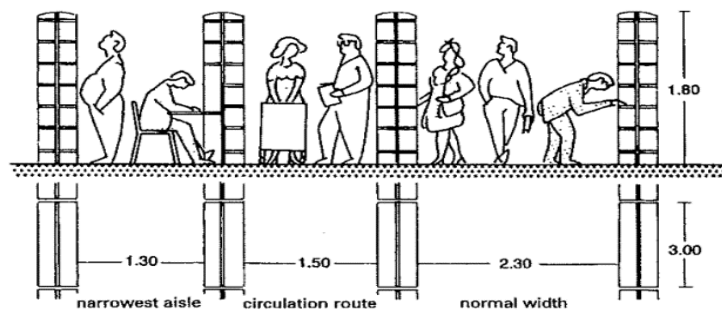
⑦ Minimum spacing
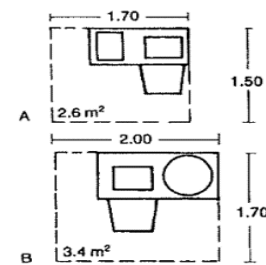
⑧ Microfiche reader workplace
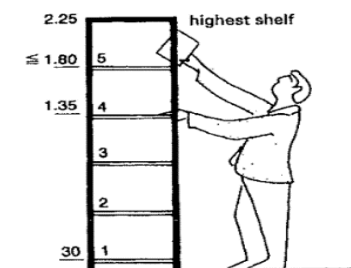
⑨ Shelf unit, five shelves

⑩ Shelf height for schoolchildren
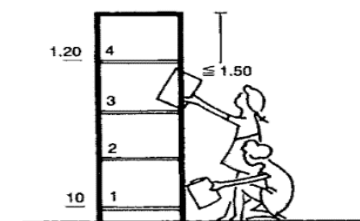
⑪ Shelf unit, four shelves – small children
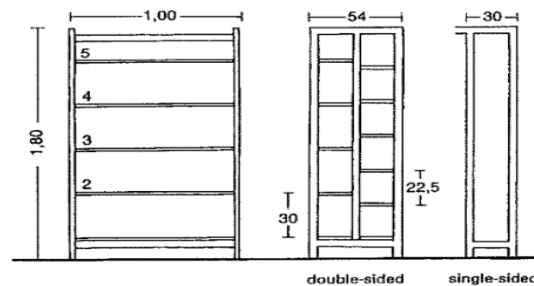
⑫ Bookshelves for adults 5–6 shelves, for children 4–5 shelves → ⑪

Figure 18: Anthropometric Data

26
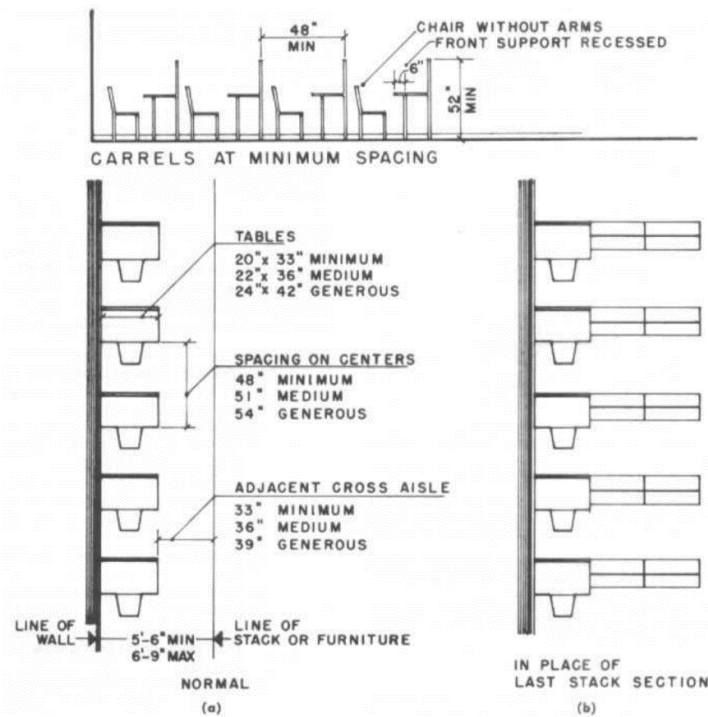
Fig. 1 Carrels at right angles to a wall. (a) Suggests sizes and spacing and shows elevations. (b) Carrel in place of last stack section next to a wall. The working surface of the carrel should be in line with the stack range instead of the aisle in order to make it easier to get into the chair.

Figure 19: Seating Arrangement 1
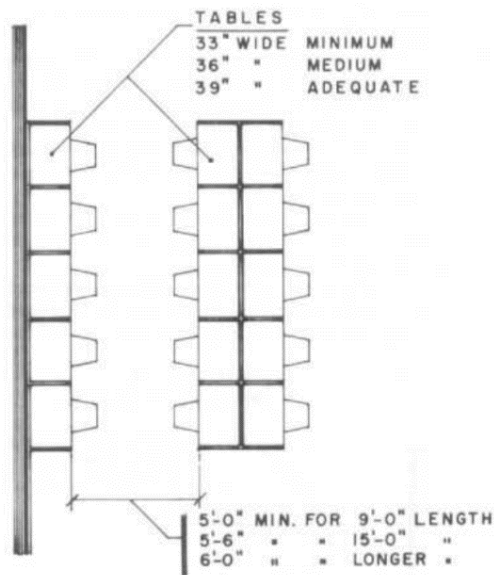
Fig. 3 Reading-room table with dividing partitions. Not very satisfactory if table seats more than four and reader is hemmed in on both sides. If he leans back, he is too close to his neighbor. If light is hung from the partition, it tends to cause an unpleasant glare. If partitions between readers sitting side by side are extended on both sides to provide more privacy, they become too confining.

Figure 20: Seating Arrangement 2
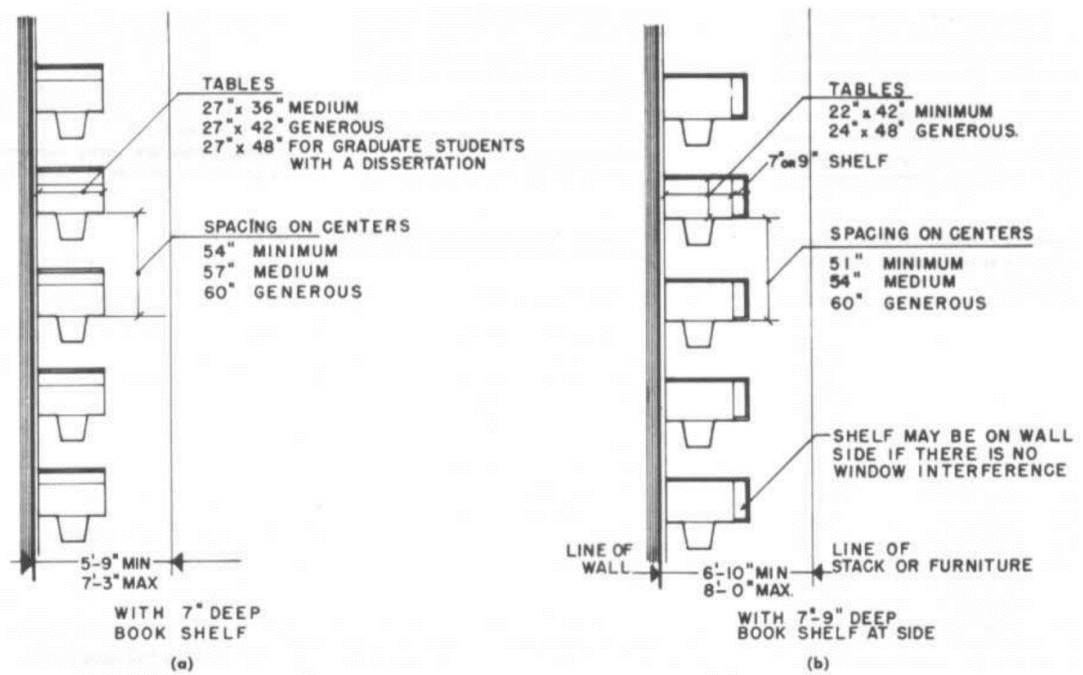
Fig. 2 Carrels with shelves. (a) Shelf in front of reader. The table should be 5 in. deeper than one without a shelf, and adequate spacing between carrels may be difficult to arrange. (b) Shelf at one side instead of in front. (It can be at either side.) This requires more width but less depth. (c) Shelf at one side facing the aisle. This can provide more shelf capacity and greater privacy; it also demands greater total width.

Figure 21: Seating Arrangement 3
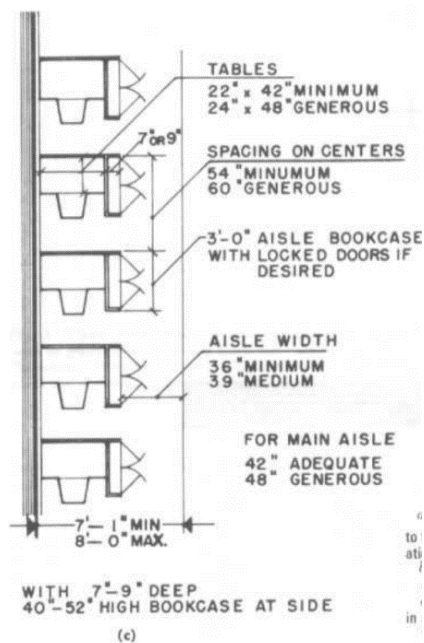
Figure 22: Seating Arrangement 4

Table 4: Table of approximate square-footage requirements for different types of seating accommodations

TABLE 10 Approximate Square-footage Requirements for Different Types of Seating Accommodations [a]

Type of accommodations	Requirements, sq ft		
	Minimum	Adequate	Generous
Small lounge chair [b]	20	25	30
Large lounge chair [c]	25	30	35
Individual table [d]	25	30	35
Tables for four [e]	22½	25	27½
Tables for more than four [f]	20	22½	25
Individual carrels [g]	20	22½	25
Double carrels [h]	22½	25	27½
Doubled-staggered carrels [i]	22½	25	27½
Triple-staggered carrels [j]	22½	25	27½
Double row of carrels with partitions between, placed in a reading room or in place of two stack ranges [k]	22½	25	27½
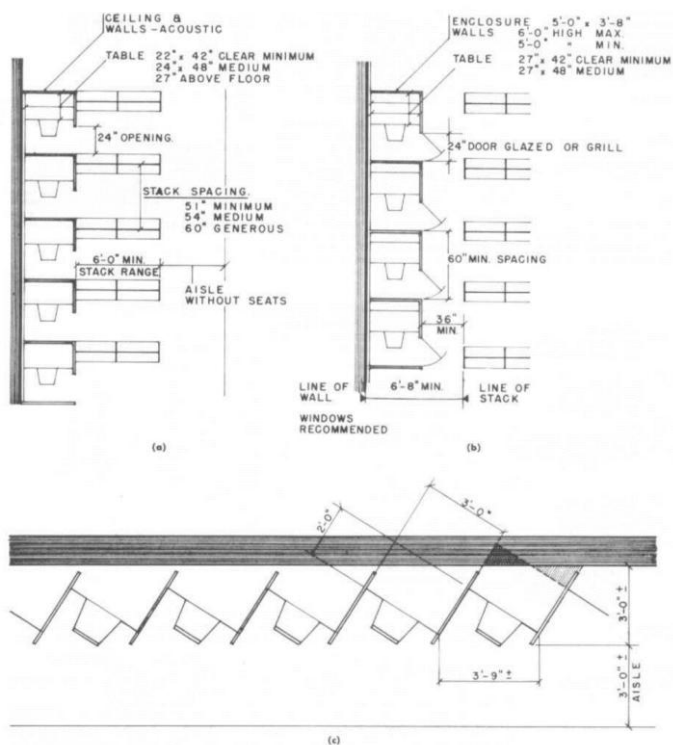
Fig. 4 Other types of single carrels. (a) Partly open typing carrel in place of last stack section with acoustically protected walls and ceiling aided by adjacent books. Absence of other seating close at hand makes doors unnecessary. (b) Closed carrel with door and shelf. If there is no window, wider spacing is desirable to prevent claustrophobia. Ventilation and lighting will present problems. (c) A dog-leg carrel is a compromise for one facing a wall, which is disliked by many, if partitions are extended enough to provide seclusion. The carrel is open on one side.

Figure 23: Table with high book case at side
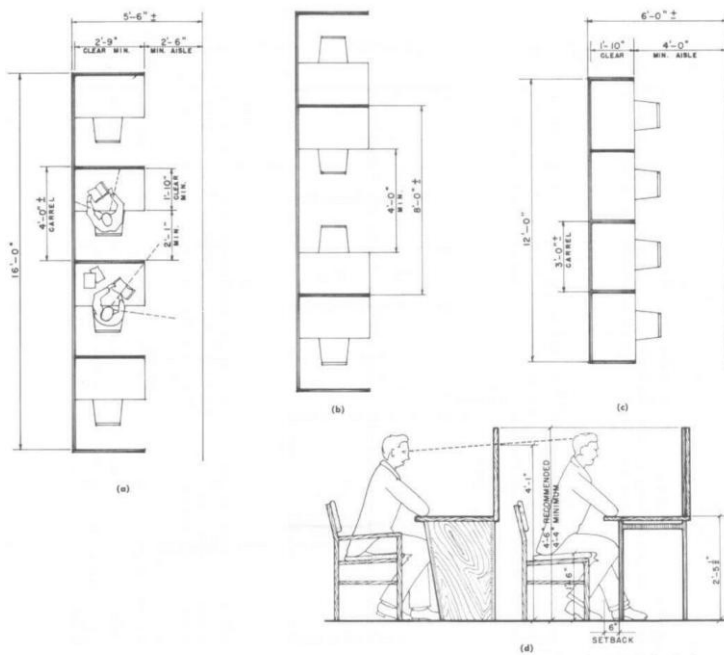
Fig. 5 Open carrels along a wall or a partition at least 52 in. high. (a) Carrels along a wall all facing the same way. (Recommended.) (b) Carrels along a wall in pairs. (Possible, but they back up to each other unpleasantly.) (c) Carrels facing a wall. (Not recommended. If there are side partitions, reader has "blinders." If he leans back, his neighbor is close at hand.) (d) Carrel elevation to show desirable height of partitions to prevent visual distraction. The left-hand carrel shows a rounded type of construction and the right-hand one a square type.

Figure 24: Seating Arrangements with Dimensions
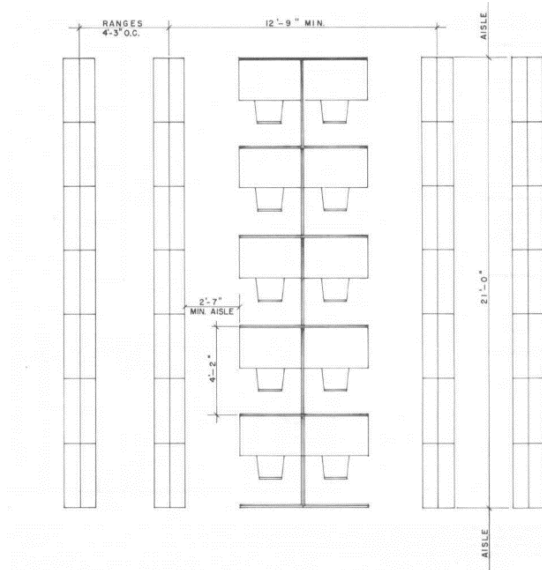
Fig. 6 Double rows of carrels in bookstack or reading area in place of two stack ranges.

Figure 25 Seating arrangement with shelves on both sides
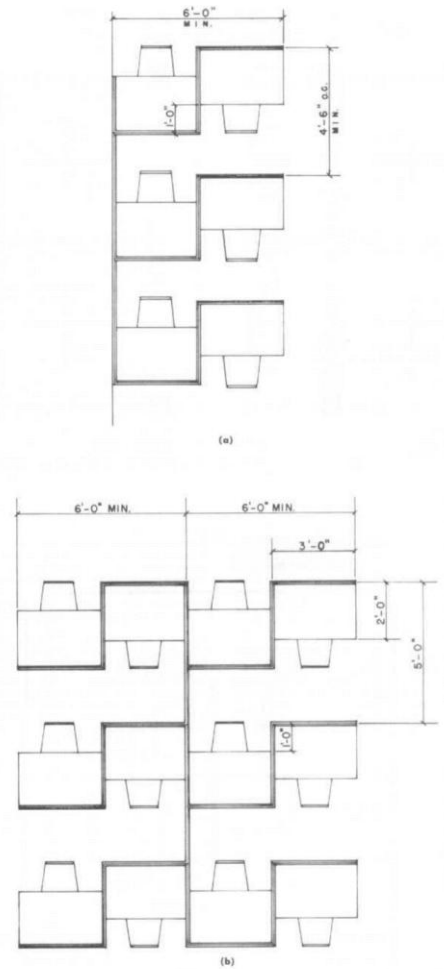
Fig. 7 Double-staggered carrels. (a) Double-staggered carrel adjacent to a wall. The carrel by the wall will be helped by a window. Partitions should be 52 in. high or higher. Recommended. (b) Double-staggered carrels on each side of a screen or partition. A space saver, but recommended only when necessary to provide required seating capacity. The backs of the inside carrels should be no more than 40 in. high.

Figure 26: Seating arrangement of Carrels
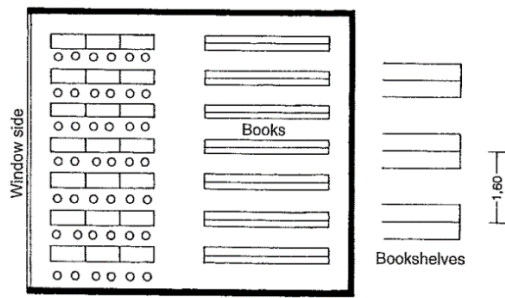
6 Arrangement of reading places and bookshelves
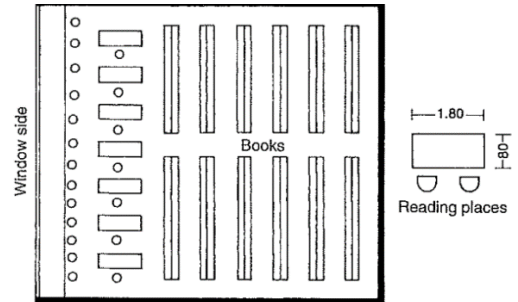
7 Arrangement of reading places and bookshelves

Figure 27: Seating Arrangements

TYPICAL ALCOVES
FOR 25'-6" x 25'-6" & 25'-6" x 13'-6" BAYS

(b)
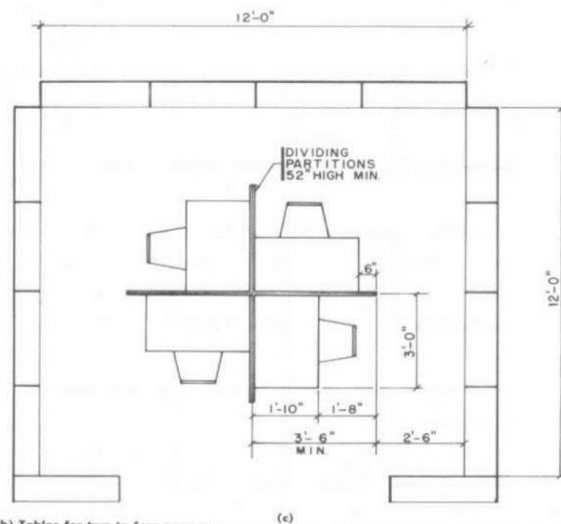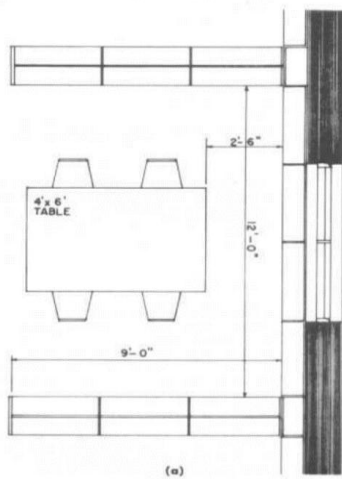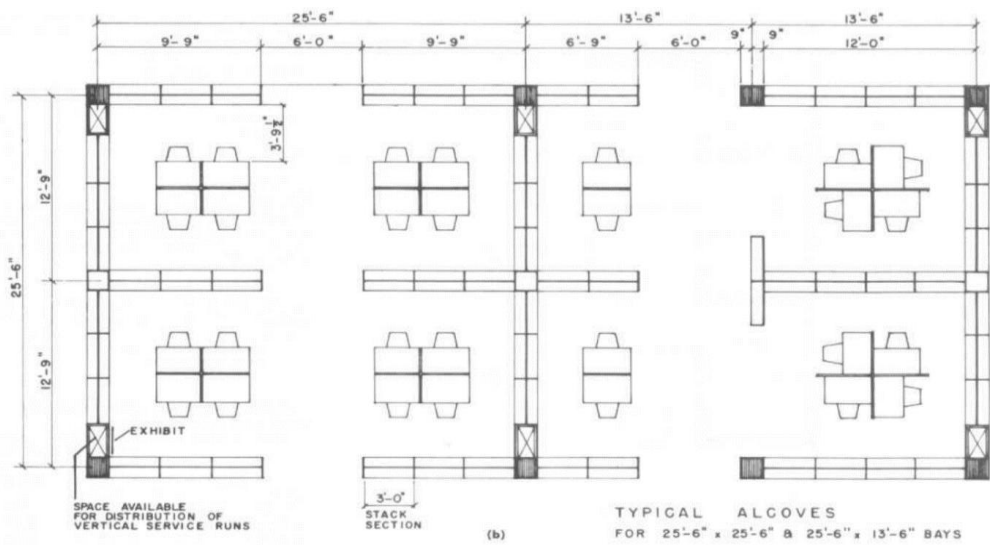
Fig. 8 Tables in book alcove. (a) Standard table with no partitions. (b) Tables for two to four persons, with partitions fitted in different column spacing and with exhibit space replacing a short section. (c) Nest of tables in pinwheel form to give additional privacy.

Figure 28: Tables and Shelves Arrangement in the Library

Table 5: Table of suggested Stack-Aisle Width and Stack-Range Lengths

TABLE 14 Suggested Stack-Aisle Widths and Stack-Range Lengths*

Typical use of stack	Aisle width, in.†		Range lengths‡	
	Min.	Max.	Min.	Max.
Closed-access storage stack	24	30	30	60
Limited-access, little-used stack for over 1,000,000 volumes	26	31	30	42
Heavily used open-access stack for over 1,000,000 volumes	31	36	24	36
Very heavily used open-access stack with less than 1,000,000 volumes	33	40	15	30
Newspaper stack with 18 in. deep shelves	36	45	15	30
Reference and current-periodical room stacks	36	60	12	21
Current-periodical display stacks	42	60	12	21

* These are suggestions only and not to be considered definite recommendations. Circumstancas alter cases.

† Stack-aisle widths of 24 in. should be considered an absolute minimum and are rarely justifiable. Anything under 26 in. is difficult with a book truck, even when the use is light. The minimum range lengths suggested.

‡ Stack-range lengths are often determined by available space, rather than by their suitability. The maximum lengths shown in the table should generally be used only with the maximum aisle widths suggested.
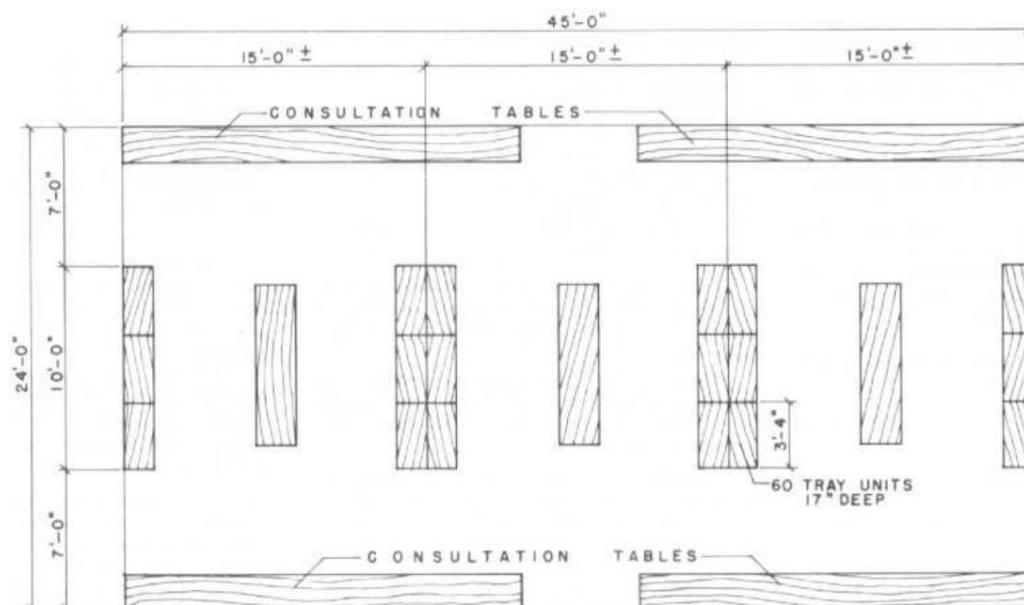
Fig. 17 Catalog room for a small university library with 1,000 seats. A larger proportion of the area is required for consultation tables and only 1,000 cards per square foot of floor space is provided.

Figure 29: Catalogue Room Layout with Dimension
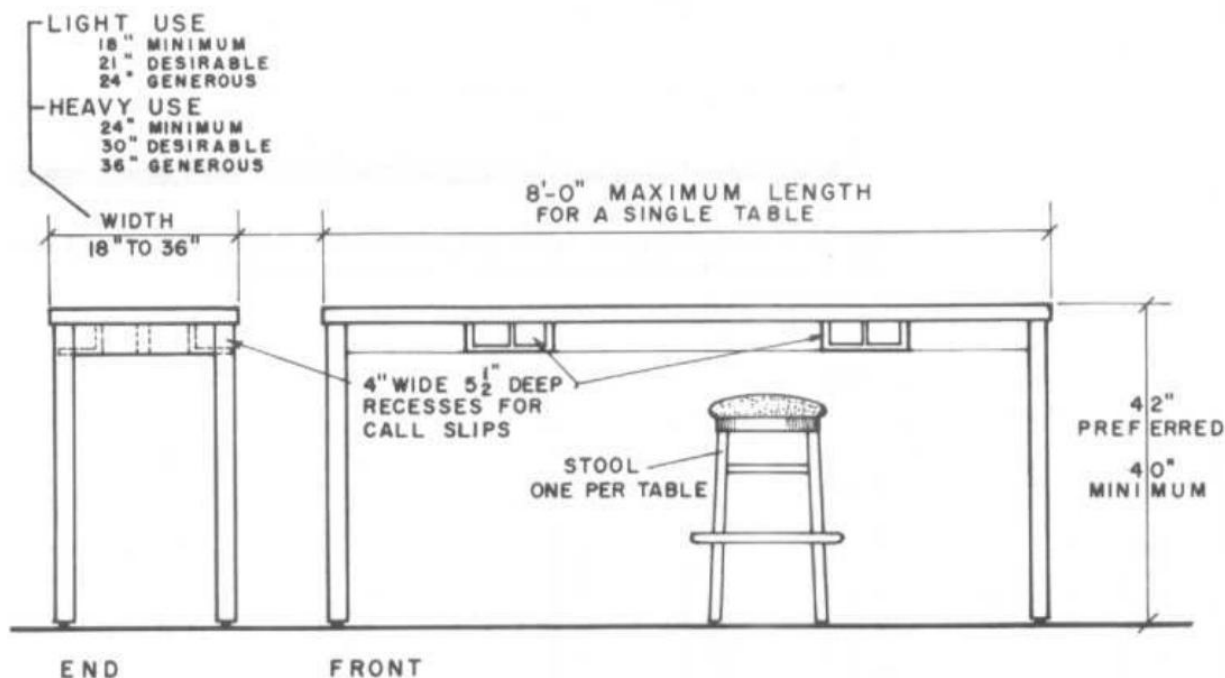
Figure 30: Dimension of the study table for single table

Table 6: Table of Cross-Aisle Widths

TABLE 15   Suggested Cross-Aisle Widths*†

Typical use of stack	Main aisle		Subsidiary cross aisle‡	
	Min.	Max.	Min.	Max.
Closed-access storage . . .	3 ft	4 ft 6 in.	2 ft 6 in.	3 ft 6 in.
Limited-access stack	3 ft	4 ft 6 in.	3 ft	3 ft 6 in.
Heavily used open-access stack.	4 ft	5 ft	3 ft	4 ft
Heavily used open-access stack for large collection and ranges 30 ft or more long	4 ft 6 in.	6 ft	3 ft 3 in.	4 ft 6 in.

* These are suggestions only and not to be considered definite recommendations. Circumstances alter cases.

† In determining minimum or maximum widths, keep in mind the length and width of the book trucks used, as well as the amount of use. Minimum width stack aisles should not be accompanied by minimum cross aisles. From the widths shown in the table, up to 4 in. may have to be subtracted to provide for adjacent stack uprights and irregularities in column sizes.

‡ If open carrels adjoin a subsidiary aisle, they will make it seem wider, but traffic will tend to be disturbing to the carrel occupants.

If closed carrels open from a subsidiary aisle, they will make it seem narrower.
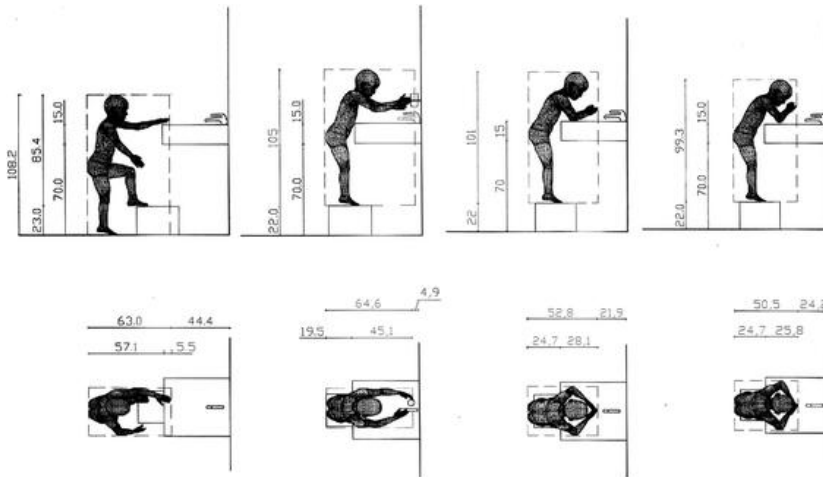
Figure 31: dimension of the counters or basins
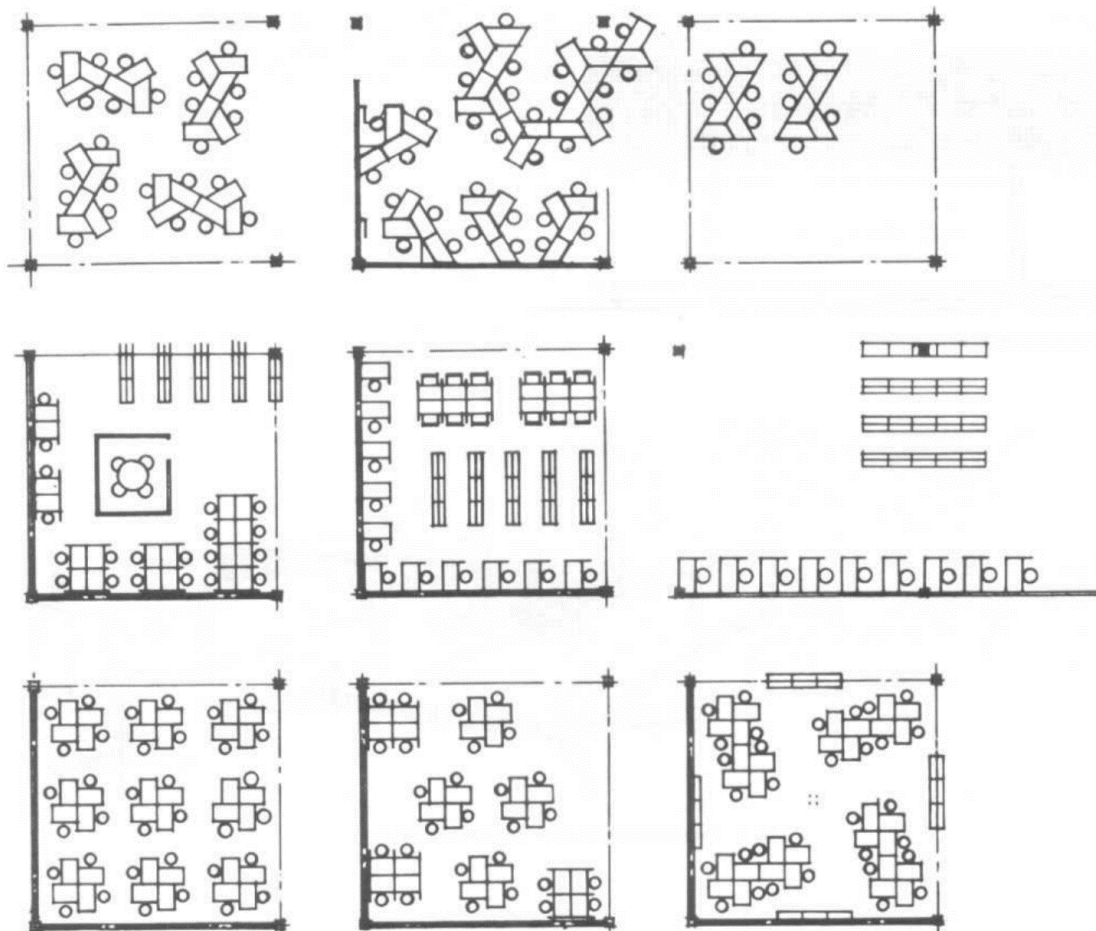
Fig. 2 A variety of possible carrel arrangements.

Figure 32: Possible Arrangements of Carrel in Library

2.8 Cafe

Size and type of a restaurant depends upon the patrons and the purpose. Dining hall, kitchen, dishwashing area, store and dump site are the basic requirements.

Spatial requirements:

-        Area per seat in dining hall: 1 m2 to 1.3 m2

-        Dining area per seat: 1.5-2.15m2 (60% of total area)

-        Net kitchen area: 1/6th of dining area

-        Kitchen area per seat: 0.4-0.6m2 (15-20%)

-        Ratio of service

area to total area: 25-50%

Design consideration:

•   It must be in a prime location, fed off a main pedestrian flow with positive striking and identifying entrance.

•   Minimum width of service aisle 0.9-1.35m

•   Waiter station: 1 per 20-30 seats

•   Aisle width: Main- Min 2m wide, Side – Min. 1.2 m wide and Intermediate– Min.0.9m wide

Figure 33: Clearance in Cafe
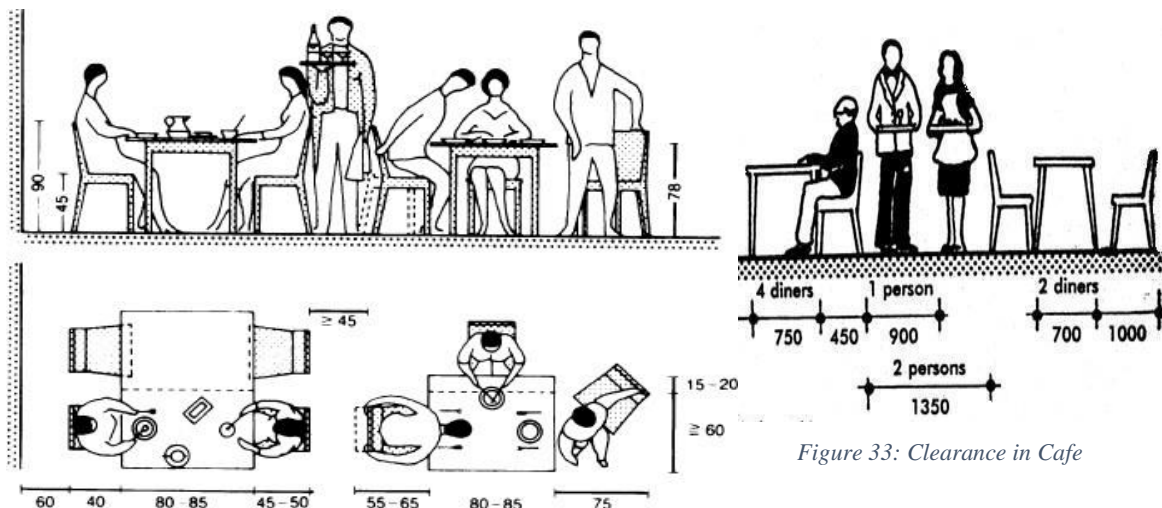
Figure 34: Layout of table with dimension in the cafe

2.9 Restrooms

Public restrooms should be accessed from the lobby. These may also need to serve other facilities, including accessory uses such as auditorium, theater, retail and the food service operations. For convenience, other restroom facilities may be located on upper floors but piping for these can be a water damage risk to collections on exhibit or in storage.

- For up to 100 people(male/female): 6wcs/ urinals
- For up to 20 staff members(men/women): 3wcs/ urinals
- For researchers: 2wcs/ urinals
- basins for every: 5wcs/ urinals
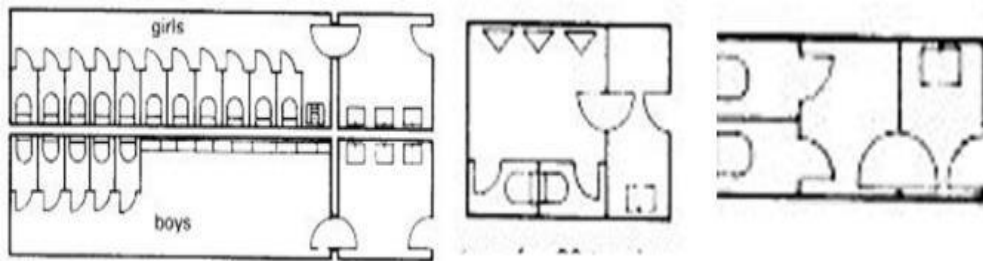
Figure 35: Public Restroom Layout Arrangements

2.10 Staircase

- Staircase shall not be less than 150 cm (5' – 0") wide.
- There shall be maximum 12 steps in one flight.
- Stairs: 1100 for up to 100p, 1600 for up to 250p, Centre handrail required over 1800w
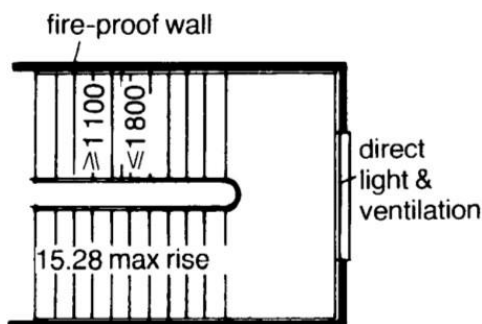
Figure 37: Dimension of Staircase
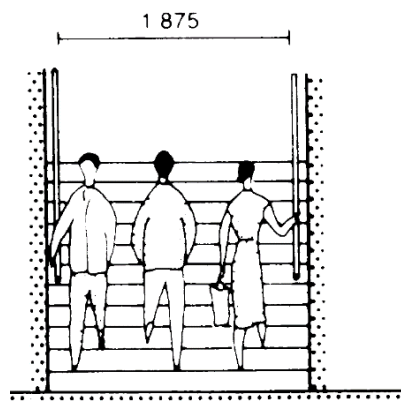
Figure 36: Staircase Width

2.11   **Lifts**

- 400kg (small lifts)-for use by passengers with hand baggage only
- 630kg (medium lift) for use by passengers with prams and wheelchairs.
- 1000kg (large lifts) can accommodate stretchers, furniture and wheelchairs.
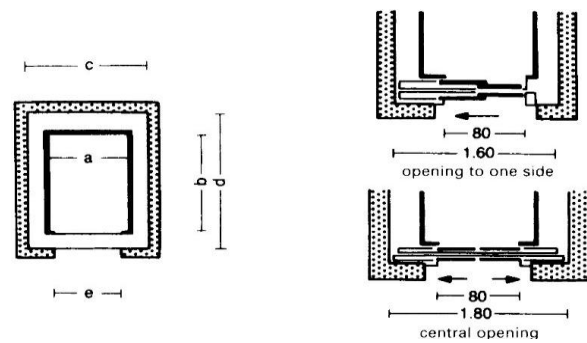
Figure 38: Lift Size and opening types

2.12 **Ramps**

- Minimum width is 1.7m and flight length should not exceed 6m.
- Maximum angle of ramp is 6 degree.
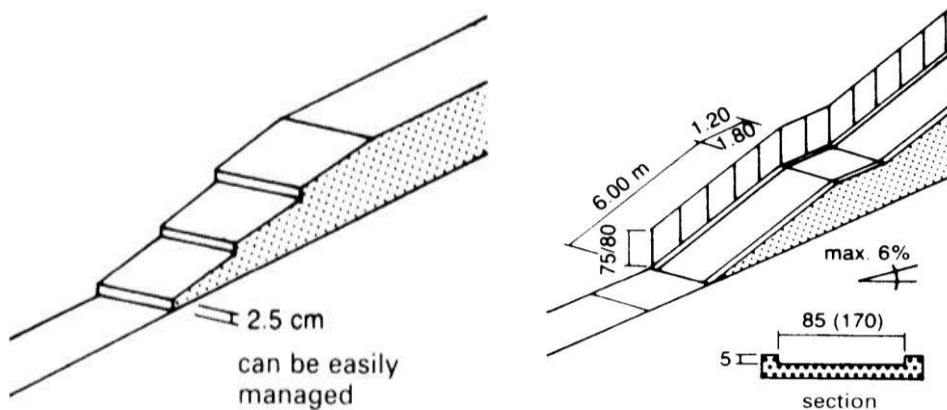
Figure 39: Ramp figures

2.13 **Parking**

Variety in surfaces-colored bricks, tarmacs, brushed concrete and grass block should be incorporated in large open plan. Landscaping to soften hard expanses- individual trees between parking bays, low- level plantings beds between back-to-back parking, at ends of run adjacent pedestrian routes should be used. Screenings and separations should be done to delineate the different areas as well as to locate the vehicles level changes, signing and planning. Parking spaces in parking bays range from 1.80m x 4.6m to 2.5m x 6m. The 90°parking is more economical in space requirement (20-22m² per car), 45°parking (23- 26m² per car) can be more convenient. Open car parks or basement car parks are design for the office complex which also works in town- Centre parking, tourist sites, supermarkets and multiplex cinemas. Large open–plan parking area often need to be broken down in scale by incorporating:

Location: Parking arrangements should be clear and organized, using road marking and signs, preferably with one-way systems. Keep dead end as short as possible so that the driver can view vacant spaces. Consider the passing of vehicles while waiting for another to reverse and depart. With larger car parks adopt a centralized route (may be two way), with a choice of one-way loops leading off. Spaces may need to be allocated for people with disabilities, important personnel or shoppers with young children.

Underground parking:

- It requires 7 ft. clear floor height.

- The ramp should be provided for this and grading should be between 1:7 or 1:10 but preferably, it should be 12% that is 1:10. The incoming and outgoing ramps should be separate.

Space requirements:

- Motorcycle: 2.2m X .7m, 1m turning radius

- Car: Standard: 4.7m X 1.75m, 5.75m turning radius;
  Large: 5m X 1.9m, 6m turning radius
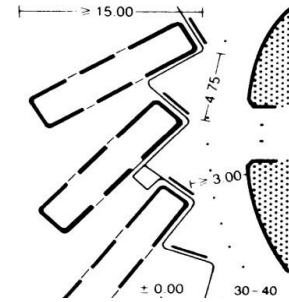
Figure 40: Parking for Bus

Figure 42: Parking turning Radius

Figure 43: Parking Layout
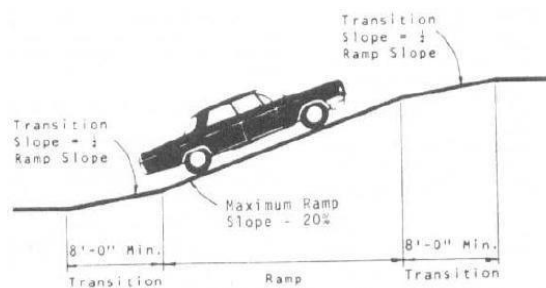
Figure 41: Ramp for Cars

2.14 Safety and security

Safety and security in the user area: fire protection is adequately covered in the regulations and requirements of the local building inspectors. Burglary prevention through motion detectors and burglary- resistant glazing and theft protection through   book   security systems, optimally securing unsupervised emergency doors through electronically controlled automatic locking on alarm. Mechanical securing of emergency doors, also with acoustic and/or optical signals, is not very effective.

2.15 Fire Fighting

- There shall be underground tanks of capacity of 2270 liters per 100 persons.
- Wet risers and loop hydrants shall be provided.
- Fire detection alarms and reserved water tanks for firefighting are important aspect of fire safety
- Fire fight stair- at least one fire- fighting stair is required in building with floors over 18.3 m above ground level which should
- Be continuous throughout building
- Have access at ground level direct to open air
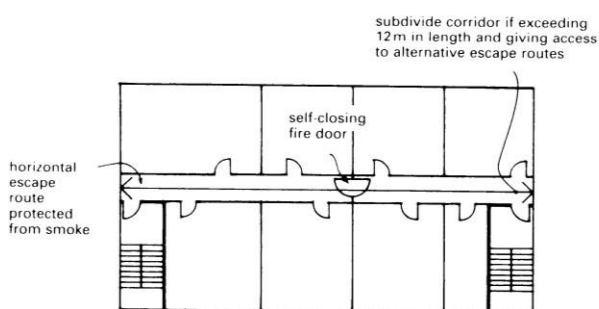
Figure 44: Firefighting method and techniques
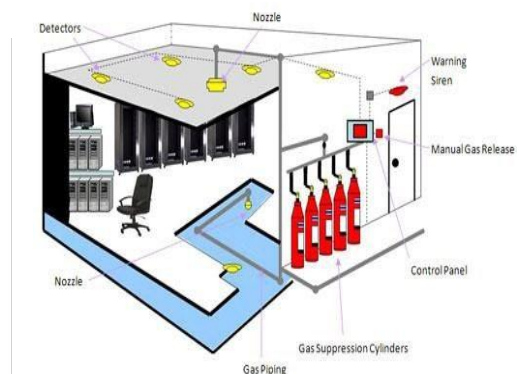
Figure 45: Firefighting Method and equipment

2.16 Landscaping

Landscaping is an activity that modifies the visible features of an area of land. There are two types of landscaping materials.

- Hard landscaping materials- brick, gravel, rock or stone, concrete, timber, bitumen
- Soft landscaping materials-plants

Some of the landscaping elements are as follows:

- Sculpture
- Dustbins
- Flowering plants and decorative shrubs
- Outdoor lighting
- Water bodies- pools, ponds, fountains
- Patios, fencing , hedges , compound walls
- Gazebos, kiosks, umbrellas and other coverings
- Outdoor furniture

Figure 46: Reading Garden

A learning center requires outdoor spaces like:

- Reading Gardens: Imagine a peaceful spot with comfy chairs and lots of plants. It's perfect for reading or just chilling out.
- Storytelling Corners: These are places where kids can listen to stories outside. They might have a stage or a special area just for storytelling.
- Community Plazas: These are big open spaces where people can gather for events like concerts or art shows. They're like the library's own mini-town square.
- Learning Gardens: These gardens are not just pretty – they're also educational! You might find cool stuff like plants you can touch or special exhibits about nature.
- Digital Commons: These are outdoor areas with Wi-Fi and places to charge your devices. So, if you want to work or play games outside, you totally can!

Chapter 3:Case Study

3.1 Regional Case Study

a) **Shanghai book city**

   Location: Huangpu, China

   Architects: Wutopia Lab

   Area: 11936 m²

   Year: 2023

Figure 47: Shanghai Book City

Shanghai Book City, designed by Wutopia Lab, is a comprehensive renovation and transformation project aimed at revitalizing a traditional bookstore into a multifaceted cultural complex.

The redesigned space spans 11,936 square meters and integrates modern fire safety standards and spatial reorganization without altering the building's external outline.

3.1.1 Design Philosophy and Vision:

The bookstore is for those who do not read. In China, the number of people who maintain a reading habit is far less than those who do not read. The limited number of readers alone cannot save bookstores. Therefore, book cities need to be designed for more non-readers, enticing them to step into the bookstore. This way, they can save the bookstore. In China, the time spent by online users on their phones has far exceeded the time spent in offline physical spaces. Additionally, the prices of books purchased online are much lower than those in physical bookstores, leading to a loss of readers for bookstores. Therefore, this redesign of Shanghai Book City aims to allocate even just 1 hour from the 10 hours or 8 hours that some online users dedicate to their phones each day, enticing them to step into a bookstore with attractions not found online. This way, they can save the bookstore.

The biggest challenge in renovating Shanghai Book City was confronting the romanticized memories of its past. When the bookstore announced its temporary closure for renovations in late 2021, it was mistakenly believed to be a permanent closure, prompting an outpouring of nostalgic visits. This collective memory overshadowed the real challenges the bookstore faced due to the rise of the internet and online book sales. The architect's task

was to move beyond these idealized memories and transform the bookstore into a cultural complex that integrates business and social spaces, focused on knowledge sharing. This new vision aims to honor the bookstore's history while evolving it into a dynamic, vertical city that represents an idealistic vision of Shanghai.

3.1.2 Architectural and Structural Innovations

In the upgrade and renovation of Shanghai Book City, several stringent conditions and regulations had to be met. The bookstore, originally built in 1998, needed to comply with the latest fire safety standards, requiring additional evacuation stairs, sprinklers, and fire curtains. The structural changes were restricted to less than 10% of the total structure, and the bookstore's external outline could not be altered. Despite these constraints, the renovation aimed to maintain the bookstore's 12,000 square meter area, although the original basement space was no longer part of the bookstore.

Figure 48: Shanghai Book City at evening

To balance operational costs and preserve the bookstore's ambiance, the renovation introduced commercial formats that complement the bookstore's environment. The goal was to ensure the bookstore's operational efficiency while continuing to serve as a cultural landmark in Shanghai. This transformation supports the revival of Fuzhou Road as a vibrant cultural street, blending modern commercial elements with the traditional atmosphere of the bookstore.

3.1.3 Integration of Natural Light:

During the initial site visit, it was evident that the upper floors of Shanghai Book City were inadequately lit, with the sixth floor receiving very little daylight due to a closed emergency exit. To address this, the design incorporated three overlapping double-height atriums, allowing sunlight to reach the center of the Red Book Mountain on the first floor via skylights and glass floors. These atriums function as key communal spaces: a square, an auditorium, and a theater.

The design unfolds vertically from the 2nd to the 7th floor, with urban elements such as streets, central gardens, courtyards, and structures extending from the staggered escalators every two floors. This layout creates a labyrinthine city within the bookstore, inviting visitors to explore casually. The exploration is meant to be leisurely and

Unhurried, mirroring a relaxed stroll through city streets, Where one can discover interest, surprise, and joy at every turn.

Figure 49: Floor to Ceiling Window

3.1.4. Bookshelves as Architectural Element:

To redefine Shanghai Book City, 10,000-meter-long bookshelf is used to construct its façade. With the loss of the underground floor and its original library, it was impractical to create a new library on the upper floors due to space constraints from added evacuation stairs, bathrooms, and utility rooms. Instead, the books are integrated into the architectural design. Floors 2 to 6 are dedicated to reading areas, while the 1st and 7th floors serve as storage, and the 8th floor displays book covers.

The bookshelves extend into the two atriums, showcasing over 470,000 books, surpassing the previous library

Figure 50: Bookshelf as Facade

capacity of 400,000. These continuous bookshelves create a dynamic façade along the street, described by a journalist as feeling like "a fish swimming in the ocean" due to the uninterrupted display.

Additional amenities include fast food, tea houses, galleries, cafes, an art furniture store, a gift shop, a stationery store, elevators, toilets, and evacuation stairwells.

Commerce is integrated seamlessly into the bookstore, with a requirement that shop owners respect the continuous façade of books. This approach ensures that diverse businesses are embedded within the bookstore, creating a unique city built with books. Building Shanghai with Books, everyone deserves respect. Because of its diversity and variety, Architect describe the upgraded and renovated bookstore as a miniature Shanghai. However, more importantly, the commonality is inclusiveness. When project architect suggested placing the disabled ramp on the side. This would make the front facade look complete. He refused and insisted that the ramp's endpoint be at the main entrance, allowing people with disabilities to enter the bookstore just as confidently as able-bodied individuals, reaching every corner of the bookstore. Drawing from his experience during a back injury, he designed the handrails to be 4 centimeters long and circular for easy grip and leverage. Finally, behind the Book Mountain, an escalator for people with disabilities is installed so that when they ascend the Book Mountain, they face Fuzhou Road. On the Book Mountain, everyone can be the protagoni

Figure 51: Ramp

3.1.5 Readable Architecture and Symbolism:

The renovation of Shanghai Book City involved giving the building a new outer layer made of perforated aluminum panels. This design idea was inspired by the famous art project "L'Arc de Triomphe, wrapped" by Christo and Jeanne-Claude, where a landmark was wrapped in fabric.

The new façade of the bookstore is designed to look like the spines of countless books stacked together. This symbolizes 'thousands of lights,' which is a modern representation of Shanghai, showing its journey from the historical area known as the Bund to the modern district of Pudong, and even imagining its future.

The goal of this new design is to make the bookstore's exterior interesting and engaging, so it can be 'read' like a book. It aims to spark imagination and invite people to think about the city's history and future.

Additionally, this redesign helps the building comply with

structural rules. By using the panels, the renovation hides pipes that had to be placed outside the building without making more changes than allowed to the structure. Overall, the new façade creates a meaningful and attractive exterior for the bookstore while also meeting practical requirements.

The design of Shanghai Book City incorporates scenery as a key element of its interior. The bookstore features floor-to-ceiling windows that serve a dual purpose: they let in natural light and create a stage-like setting for the activities inside.

Figure 52: Glass Panel

Figure 54: Beam as a sky Bridge

Figure 53: Reading space from outside
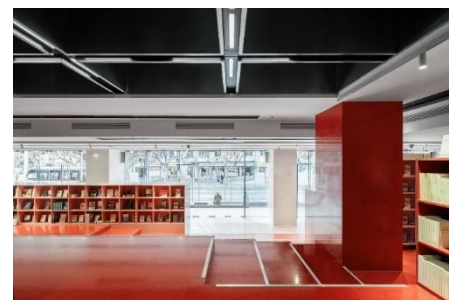
Figure 55: Reading space

People walking by can see the readers inside, making it look like scenes from a movie, while those inside can look out and watch the bustling street, creating a dynamic, theatrical atmosphere.

As visitors ride the escalator to the fourth floor, called 'Auditorium,' they are treated to a stunning view through the two-story high glass windows to the north, which shine brightly at night like crystal.

The renovation had to stay within the limit of making changes to only 10% of the structure. For example, instead of removing a beam in the fifth-floor atrium, which would exceed this limit, the beam was transformed into a sky bridge. From this bridge, visitors can gaze at the layers of city buildings, creating a connection with another building, Chunshe House, which the architect also designed on Nanjing East Road. This thoughtful design enhances both the aesthetic and functional aspects of the bookstore.

When the exterior lights of the renovated Shanghai Book City were first tested, they created a stir among the media and the public. The design, featuring perforated aluminum panels with internal backlighting, was so striking that citizens dubbed it the "Crystal Palace," even though it wasn't made of crystal or glass. After some complaints, the Huangpu District Lighting Department tested the brightness and found it met the standards. Adjustments to the lighting angles, as per the designer's plans, softened the dazzling effect. The bookstore now stands out against the dimmer backdrop of Fuzhou Road, giving it a radiant appearance. Observing this from the Chunshen House rooftop, the designer mused that while luxury goods stores have much higher façade costs, they don't match the texture and depth of the bookstore. True luxury, the designer concluded, lies in the knowledge within the books, not in consumerism's superficial allure.

The "Mosaic Epic" of the upgraded Shanghai Book City blends the old with the new. The original façade reliefs are preserved behind the Book Mountain, and a 98-year-old marble pillar, with its natural patterns forming a humanoid shape, stands protected in the evacuation stairwell. This space integrates various histories and memories, respecting the past while influencing the present and future. The collective memories and experiences of both new and old readers contribute to this living mosaic. This epic of Shanghai includes a rich tapestry of histories, literature, legends, myths, and the lives of both ordinary people and heroes, creating a continuous narrative that reflects the city's dynamic and diverse spirit.

① Book Mountain
② Bank
③ Commercial
④ Landscape
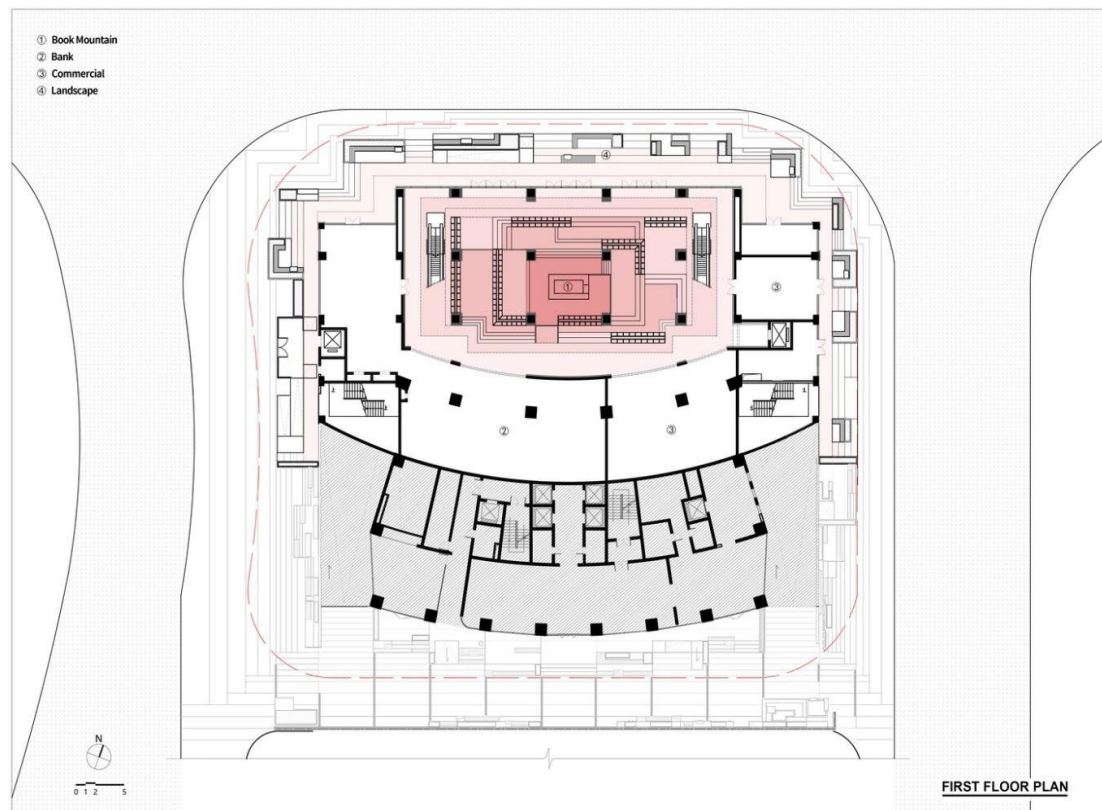
FIRST FLOOR PLAN

Figure 57: Ground floor Plan of Shanghai Book City

① Atrium
② Book House
③ Bank
④ Commercial
⑤ Bathroom
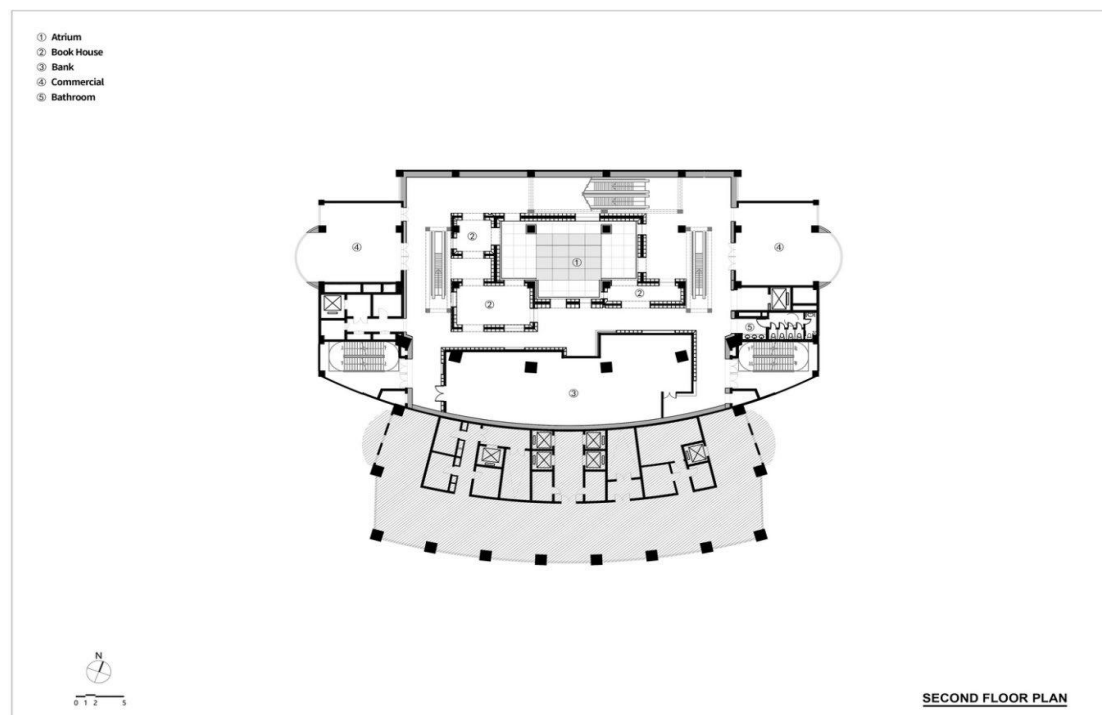
SECOND FLOOR PLAN

Figure 56: First Floor Plan of Shanghai Book City

① Atrium (void)
② Book House
③ Commercial
④ Bathroom
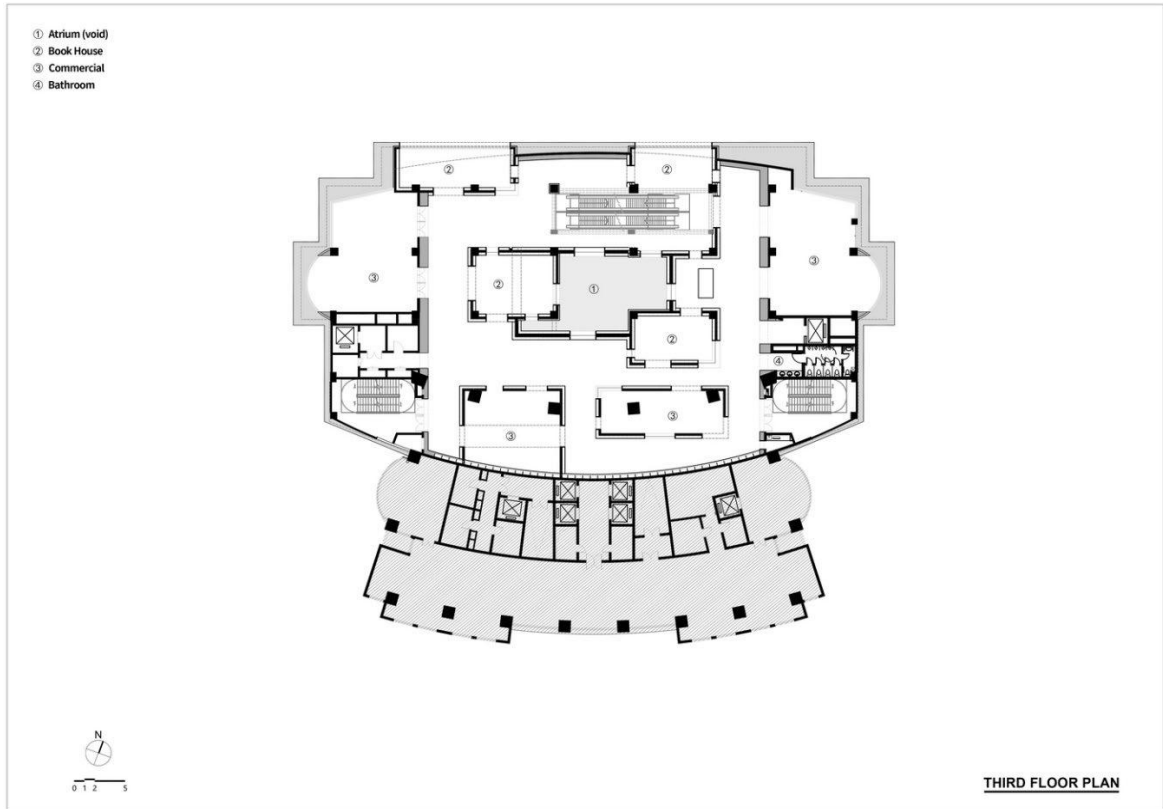
THIRD FLOOR PLAN

Figure 58: Second floor Plan of Shanghai Book City

① Atrium
② Book House
③ Commercial
④ Bathroom
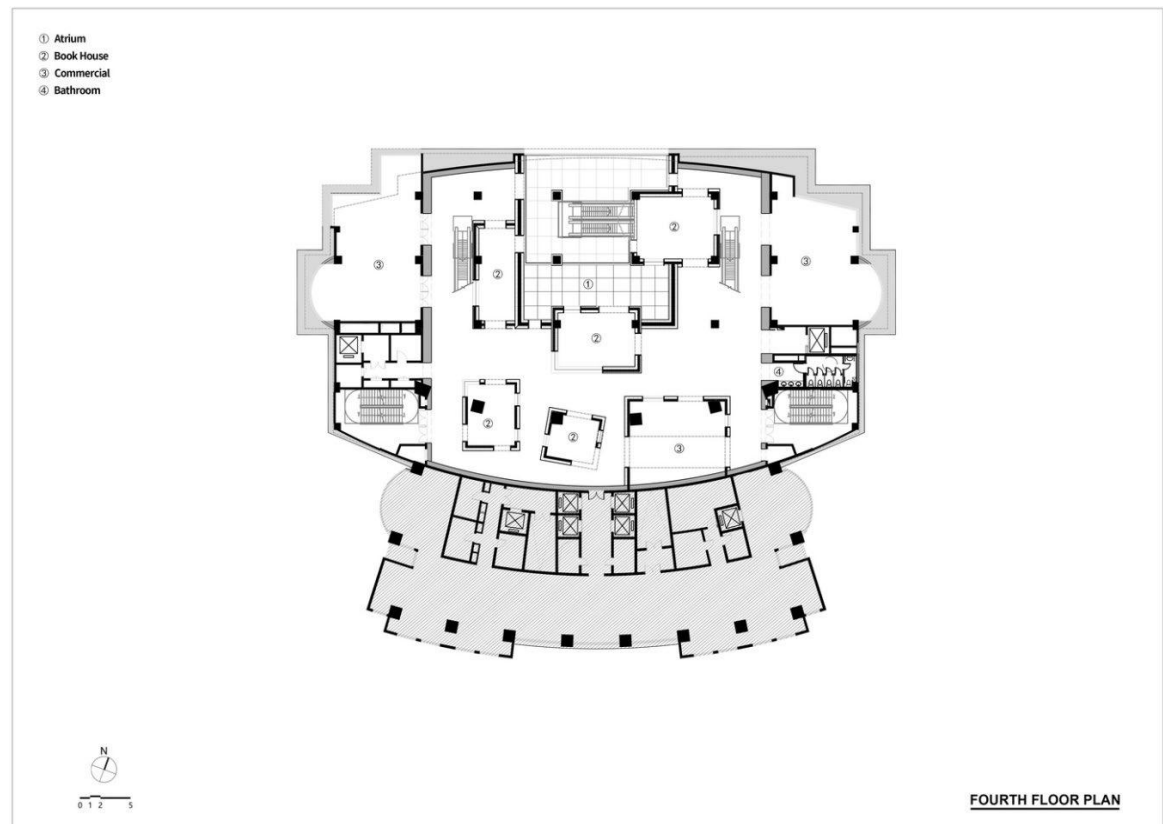
FOURTH FLOOR PLAN

Figure 59: Third floor Plan of Shanghai Book City
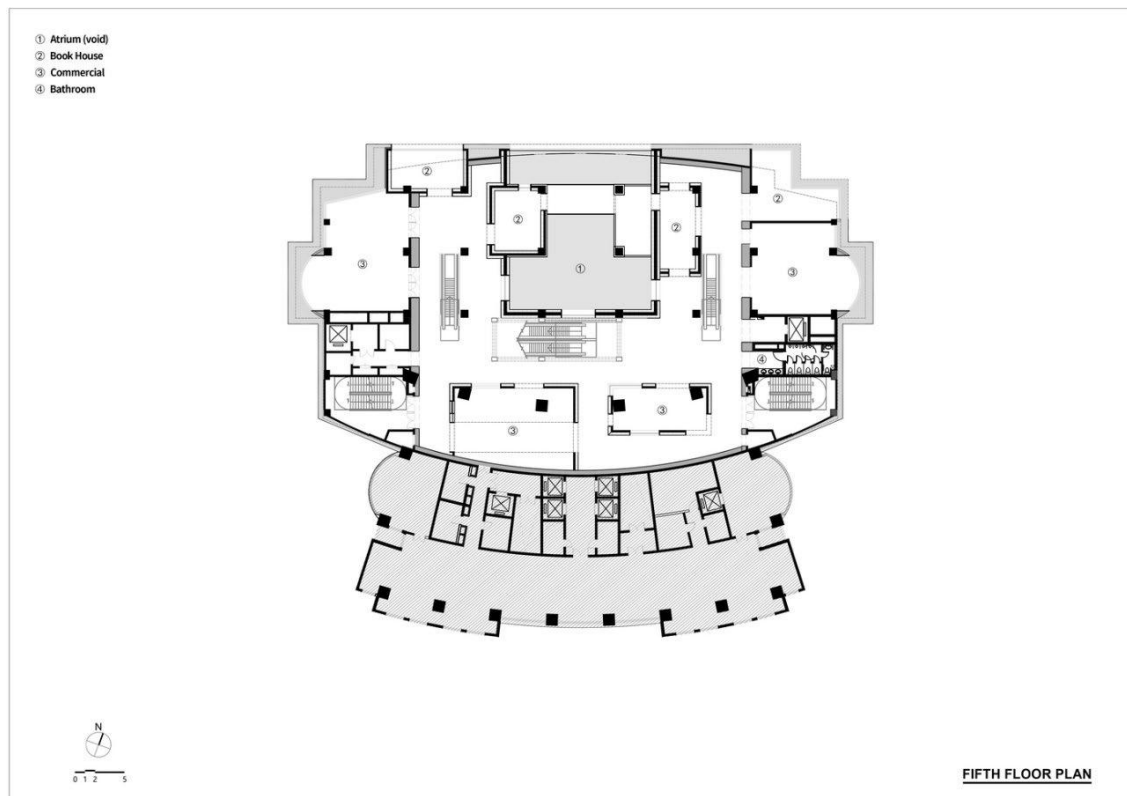
Figure 60: Fourth floor Plan of Shanghai Book City
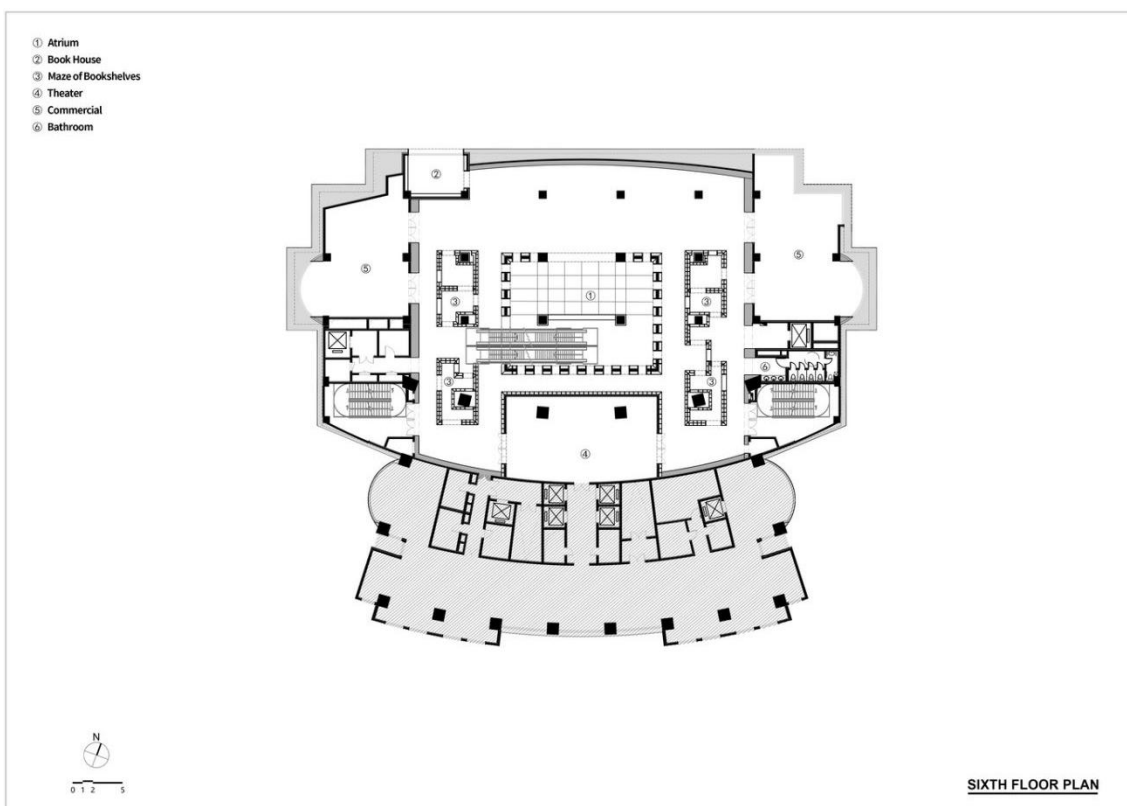
Figure 61: Fifth floor Plan of Shanghai Book City

① Atrium (void)
② Book House
③ Gallery
④ Commercial
⑤ Bathroom
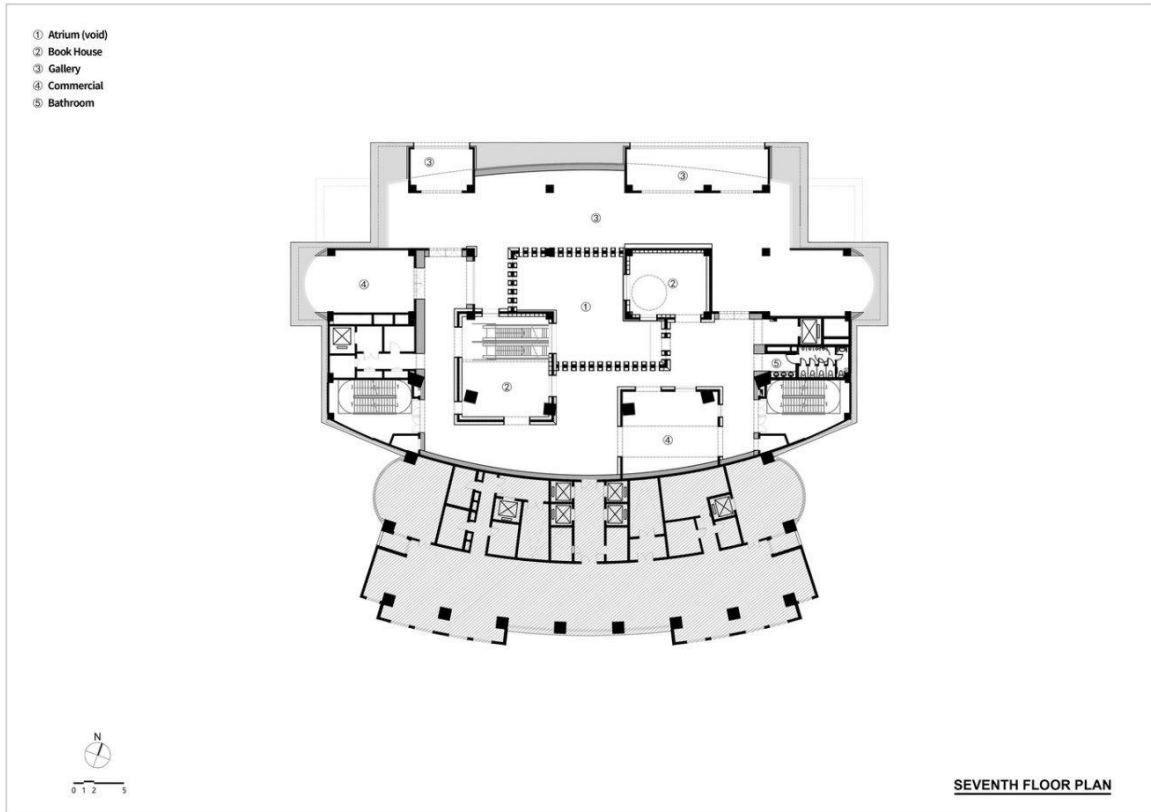
SEVENTH FLOOR PLAN

Figure 62: Sixth floor Plan of Shanghai Book City

① Glass Platform
② Book House
③ Roof Garden

ROOF PLAN
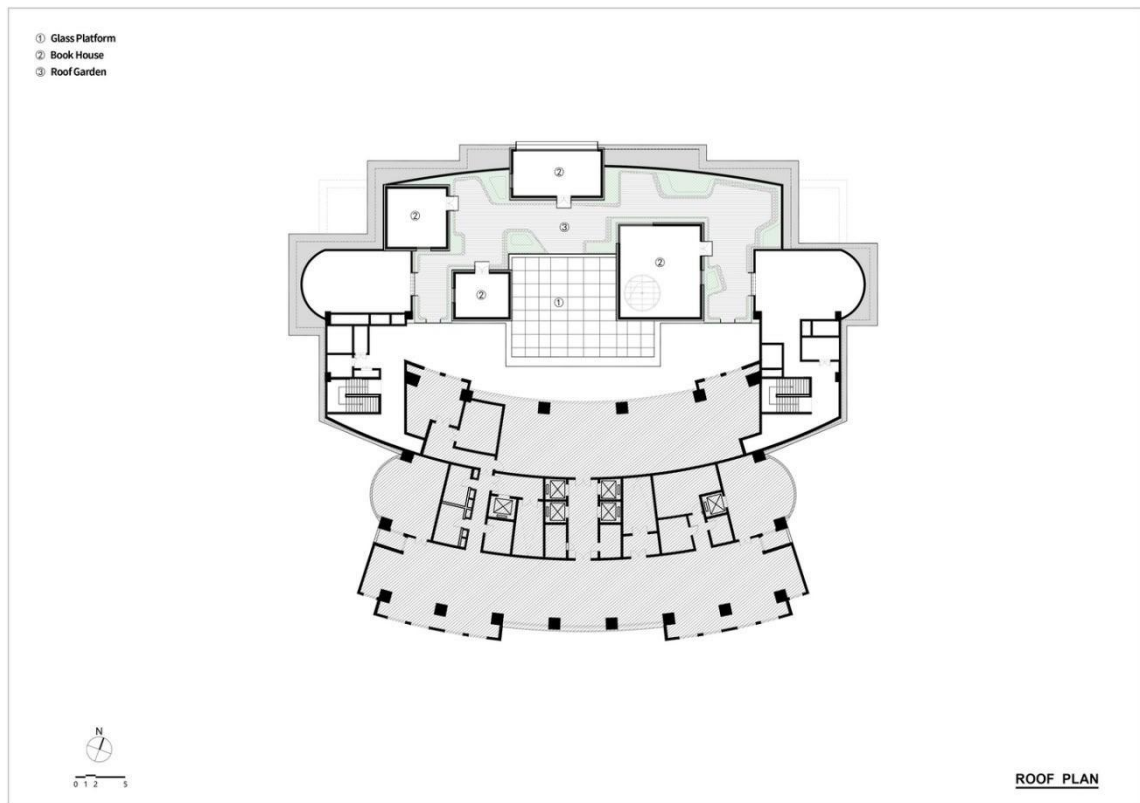
Figure 63: Seventh floor Plan of Shanghai Book City
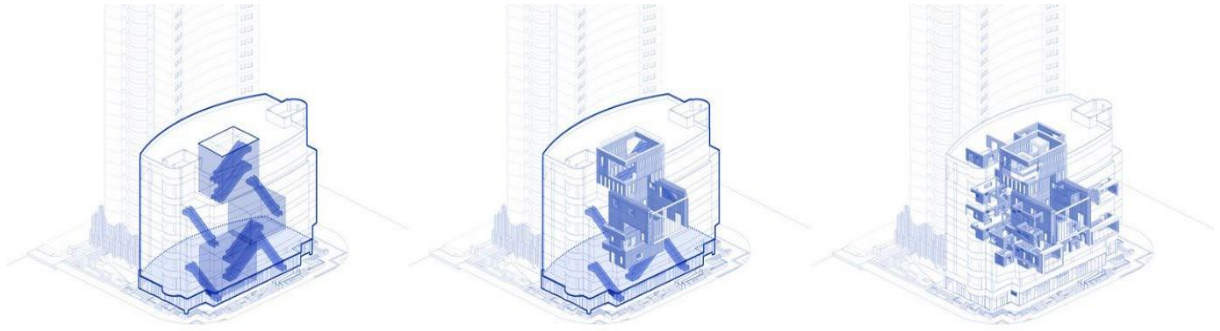
Figure 65: Vertical Circulation
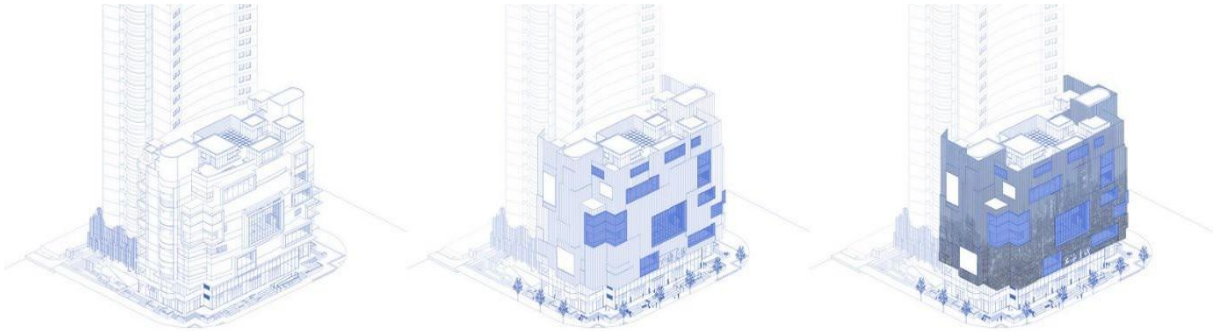
Figure 64: Transformation of Shanghai Book City

3.2 International Case Study

a) Greenpoint Library and Environmental Education Center

Location: Brooklyn, United States

Architects: Marble Fairbanks Architects

Area: 15256 ft²

Year: 2020

Figure 66: Greenpoint Library and Environmental Education Center

Figure 67: Lobby

The Greenpoint Library and Environmental Education Center is one of the fifty-eight neighborhood libraries that make up the Brooklyn Public Library (BPL) system. Distributed throughout the borough of Brooklyn, this network of libraries provides essential educational, cultural, and social services to the diverse communities they serve. Funded in part from a Legacy Grant from the Greenpoint Community Environmental Fund, this project is the result of an active engagement between BPL and the community.

The new building serves residents of all ages by partnering with local environmental groups to offer opportunities to learn about the rich history of Greenpoint and its specific ecological context. Many of those environmental groups are represented on the Community Advisory Committee, which acted as an integral participant in the design team's inclusive design process. The new Greenpoint Library offers a centralized venue where local organizations can meet and work collaboratively on initiatives that seek to benefit the residents and the natural environment.

The new Greenpoint Library is a 15,000sf community hub for environmental awareness, activism, and education. The design doubles the size of the previous building, providing enlarged indoor and outdoor spaces to house expanded activities related to the exploration of the environment as well as everyday library use. The primary program elements are adult, young adult, and children reading rooms and collection spaces, and community spaces. Lab spaces for interactive projects, a large

community event space (which can be divided into lab spaces), a lounge, small meeting rooms, and staff spaces are distributed throughout the two levels.

With the ambition "to create environmental stewards and nature lovers out of future generations of New Yorkers," moments highlighting environmental awareness are integrated throughout. The landscape supports a local natural ecosystem. Building systems, solar windows aligned with equinoxes and solstices, and local materials are noted in the interior. Exterior materials include custom sandblasted wood and cast concrete panels, developed with a local Brooklyn artisan.

1	ENTRANCE	7	PLAZA	13	READING GARDEN
2	INFORMATION DESK	8	ECO LOUNGE	14	CISTERN
3	CHILDREN'S AREA	9	TEEN CENTER/LAB	15	DEMONSTRATION GARDEN
4	ADULT READING ROOM	10	COMMUNITY ROOM	16	CISTERN HAND PUMP
5	MEETING ROOM	11	DISPLAY WALL	17	POLLINATOR HABITAT
6	STAFF WORKROOM	12	STAFF LOUNGE	18	SOLAR PANELS
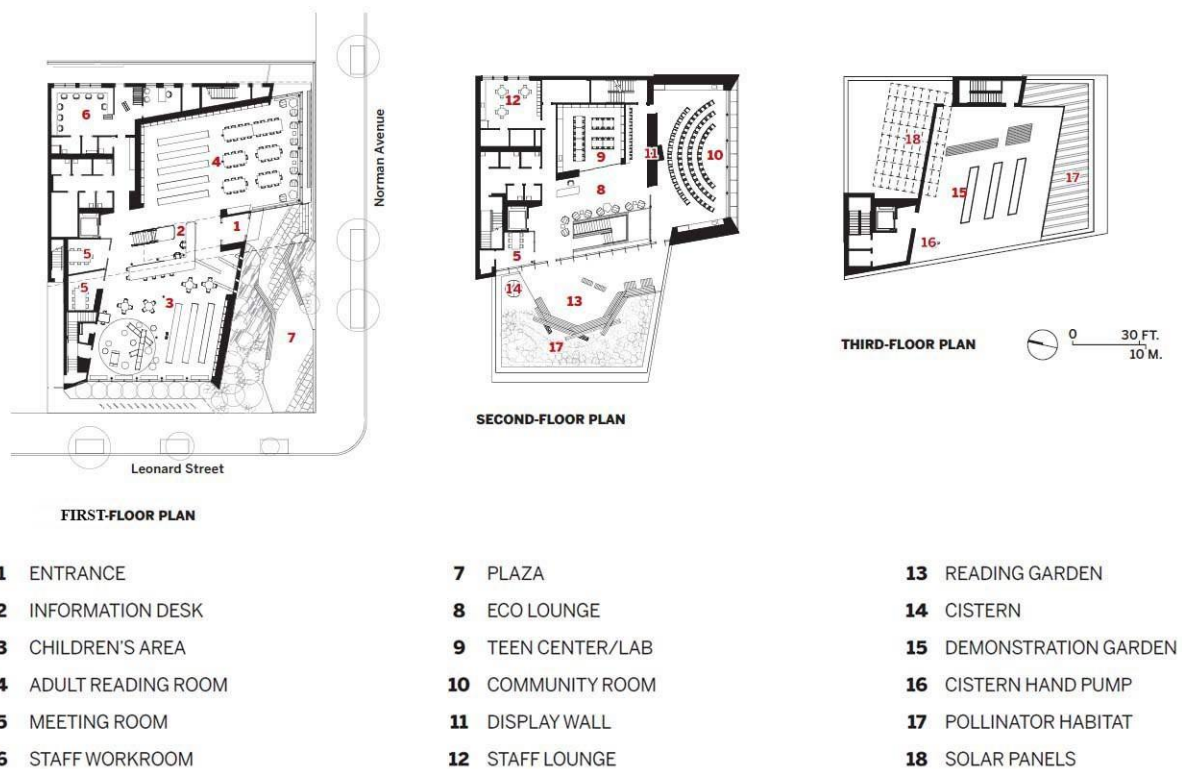
Figure 68: Floor Plans of Green-Point Library and Environment Education Centre

Figure 69: Reading Space

SOLAR WINDOWS

JUNE 21ST, 12PM

SEPTEMBER 21ST, 12PM

DECEMBER 21ST, 12PM

MARCH 21ST, 12PM

Figure 70: Solar Window of the Library to enhance the Light and Environment

The expansive outdoor landscape assists in stormwater retention and the ongoing combined sewer overflow problems through bioswales at the street level. Water is also collected on an upper roof, stored in a visible cistern, and accessed by community members to water the raised community gardens.

The landscape provides habitats for native birds and pollinators. Opening during the pandemic, the outdoor spaces are highly valued and creatively programmed. The street-level civic space is a front porch for the community, a place for informal uses, and public gatherings. The reading garden hosts storytime, book talks, and sewing classes. The demonstration garden provides food for the community and programming ranging from pickling to stargazing.

The Greenpoint Library and Environmental EducationCenter provides street-level exterior green space, clear visual connections to interior activities, and two accessible green roofs on the upper floors. The plaza design offers the public an engaging civic space that demonstrates sustainability and reinterprets the environmental history of the region allowing this library to pursue expansive public programming focusing on environmental activism and act as a community hub for education, and awareness, in the larger context of public responsibility. The building will exceed required LEED goals, becoming a demonstration project for innovative approaches to sustainable design and a learning tool for the community.

Figure 71: Environmental Consideration in the Library

b) Snohetta Bibliotheca Alexandria:

Location: Alexandria, Egypt

Architects: Snohetta Arkitekture

Area: 80000 sq.m

Year: 2002

Figure 72: Snohetta Bibliotheca Alexandria

It is a major library and cultural center on the shore of the Mediterranean Sea in Alexandria, Egypt. It is a commemoration of the Library of Alexandria, once one of the largest libraries worldwide, which was lost in antiquity. The Bibliotheca Alexandrina contains books in classical Arabic, English, and French languages. The idea of reviving the old library dates back to 1974 when a committee set up by Alexandria University selected a plot of land for its new library. Construction work began in 1995, and after some US$220 million had been spent, the complex was officially inaugurated on 16 October 2002. In 2009, the library received a donation of 500,000 books from the Bibliothèque nationale de France (BnF). The gift makes the Bibliotheca Alexandrina the sixth-largest Francophone library in the world.

Figure 73: Snohetta Bibliotheca Alexandria with Planetarium

The library offers shelf space for eight million books, and its main reading room spans 20,000 square meters (220,000 sq ft). The complex also houses a conference

center; specialized libraries for maps, multimedia, the blind and visually impaired, and for children; four museums; four art galleries for temporary exhibitions; 15 permanent exhibitions; a planetarium; and a manuscript restoration laboratory.
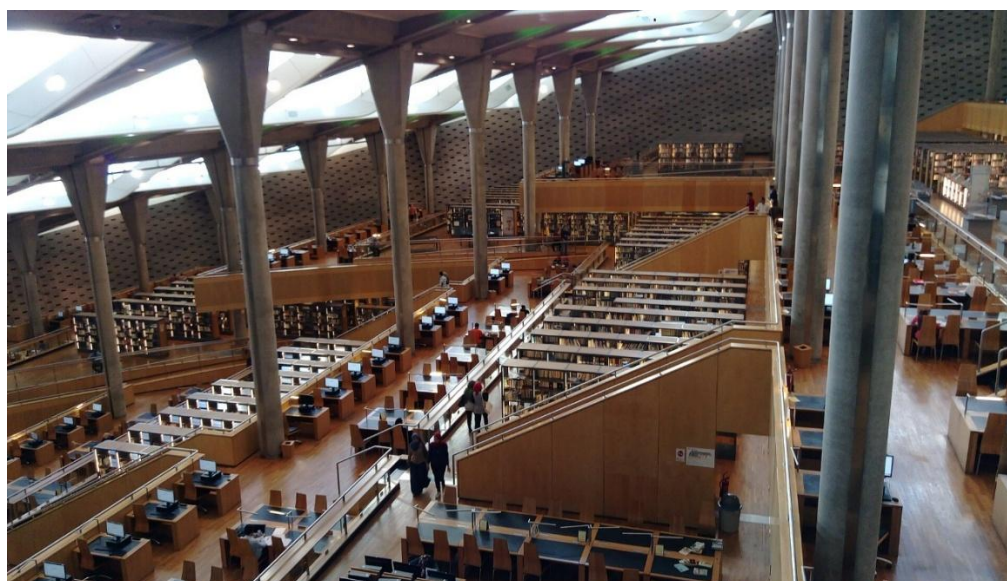
Figure 74: Library reading and stacking space.

Museums

i.   Antiquities Museum

Established in 2001, the Antiquities Museum is an archeological museum that was situated within a library. It held approximately 1,316 artifacts. The collection includes underwater antiquities from the Mediterranean seabed near the Eastern Harbour and the Bay of Abukir. The museum provides descriptions of artifacts in three languages: English, Arabic, and French.

ii.   Manuscript Museum

The Manuscript Museum provides visitors and researchers with rare manuscripts and books. Established in 2001, the Manuscript Museum contains the world's largest collection of digital manuscripts. The Manuscript Museum operates alongside the Manuscript Center.

iii.   Sadat Museum

Main article: Sadat Museum

This museum contains many personal belongings of the Egyptian president, Anwar Al Sadat. The collections include some of his military robes, his Nobel Prize medal, his copy of the Qur'an, a few of his handwritten letters, pictures of him and his family, and the blood-stained military robe he wore on the day of his assassination. The museum also contains a recording in his voice of part of the Qur'an and assorted newspaper articles written about him.

c) Salem Public Library:

Location: Salem, United States

Architects: Hacker Architects

Area: 96,000 sq.ft

Year: 1970 (renovated in 1990)

Figure 75: Salem Public Library

The Salem Public Library's downtown location was due for a renovation to bring its structural resilience and building systems up to modern standards. The 96,000-square-foot concrete structure was built in 1970 and underwent an expansion in 1990. When funding came through for seismic renovation, accessibility improvements, and life-safety updates, the city and library saw a rare chance to address some of the additional challenges encountered by staff and library patrons in their aging concrete building and outdated spaces.

Figure 76: Courtyard Space (Meeting Space)

Figure 77: Exploring Space with Chalk Wall

Design for Integration and Resources:

Through a deep partnership with the library team, a vision was established to create a space that is welcoming, safe, and flexible while enriching a connection between people and their community. The design brings daylight into the core of the large, fortress-like building, transforming an inward-facing brutalist-era building into a bright, voluminous space that invites the community in. New windows and redesigned entrances create connections between the outside and in, and the voluminous central space creates vertical connections between floors. With almost no wiggle room in a utilitarian budget, the design team for the library needed to get creative finding ways to make every dollar spent do double duty. Each aspect of the design is filtered through a practical lens of how each

choice can contribute to improved seismic and life safety while also delivering a vision that is community-oriented and centers the experience of patrons and staff.

Design for Change:

To create a more pleasant, cohesive library experience for patrons, the design reimagines how different spaces with different functions relate to one another – staff spaces vs. public spaces, the needs of library sections serving different age groups, quiet zones, noisy zones, and high-traffic areas. Library staff and back-of-house spaces are now consolidated on the lower floor for greater efficiency and functionality. Active public spaces are found primarily on the upper two levels. The youth services previously separated by several floors now relocated to the top level to allow for greater sharing of resources as well as improved operations and clarity of collections, which includes vibrant new spaces for the Teen Scene and Children's areas, and the Discovery Room has been relocated to Children's. The lower level plaza opens up to an active, bustling main entrance, adjacent to a maker space for hands-on learning, meeting and conference space, and a community room that can accommodate larger events after regular library hours.

Figure 78: Reading Space (Exile Space)
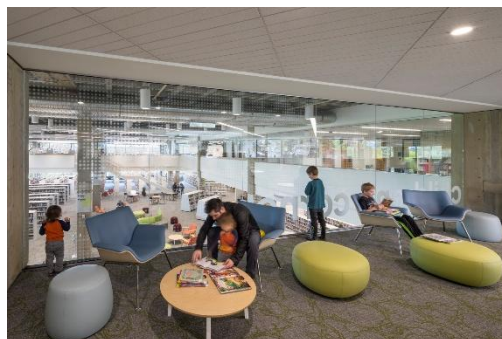
Figure 79: Reading Space (Exploring and Creative Space)

3.3 National case study:

a) Tribhuvan University Central Library (TUCL)

3.3.a.1   General Information

Location: Tribhuvan University

Complex, Kirtipur, Kathmandu

Established: 1959 A.D. established

along with the university Extension

date: 2007 A.D.

Architect: Robert Weise Total Area:

47,000 sq. ft. Orientation: East

Topography: Flat Land

3.3.a.2   Selection Criteria

Since, TUCL is the first and largest university library in Nepal in
terms of collection, services and members; I choose this library to study:

- Various library spaces and their interrelation
- The management system needs for library building

3.3.a.3   Historical Background

In 1962, the Central Library of Lal Durbar (established 1957) was merged
with the Tribhuvan University Library (established 1959) in accordance to
the decision of HMG, Nepal and became Tribhuvan University Library. In
1977 (2033 BS) it was renamed Tribhuvan University Central Library.

3.3.a.4   Present day

Currently, it hosts about 450,000 books. As of 2020, about 5000 people
uses the library in daily basis. The library has a secure section that is not
accessible to the general public. This section stores rare books that are over
300 years old.

3.3.a.5   Access

The library building is approached by 24' wide road around the site and
the main entry from the east side.

3.3.a.6   Zoning

Main building lies almost in the center of site. Courtyard is in between old
and extended building. Parking is done on the site of front of road, as

specific space for parking is not separated. Small canteen is located at south side and a toilet block is toward north south. The park is under construction just in front of library opposite to road.

3.3.a.7   Planning

Areas with maximum use are located at the level of the entrance at ground floor and other areas are located above this level reducing the vertical distance to minimum. Quiet study space is for from entrance. Service space almost 30% of the building.

3.3.a.8   Design Analysis

Overall building form is the combination of mass, surface and space elements. It has got symmetrical façade with central traditional entrance. The main stair is place straight ahead in front of entrance. On the entrance floor, small reading spaces are open placed on each side of the entrance. The book stack generally occupied the rear on all levels. A symmetrical building resulted. Tremendous amount of glass has been used in the façade for natural light. Protection has also been provided for the comfort of the users. Vertical and horizontal sun shading devices, wide overhangs, outside screens of concrete have been to counteract the excess light from the glass. Massive stone wall has been provided at the corners of the building for the visual stability.

3.3.a.9   Organization of Spaces

The building is of two stories where mostly the lending section are placed at the ground floor where as all other remaining sections of library are reference section placed in upper floors along with administration. Basically, books stack in the library are in both open access and closed access. In open access readers can themselves pick books from selves and put them back where as in closed access required name of the book is given to the librarian and obtained. In TUCL lending section, UN depository, periodicals are in open access whereas thesis collection, Singh collection, American studies section, textbook collection are in closed access.
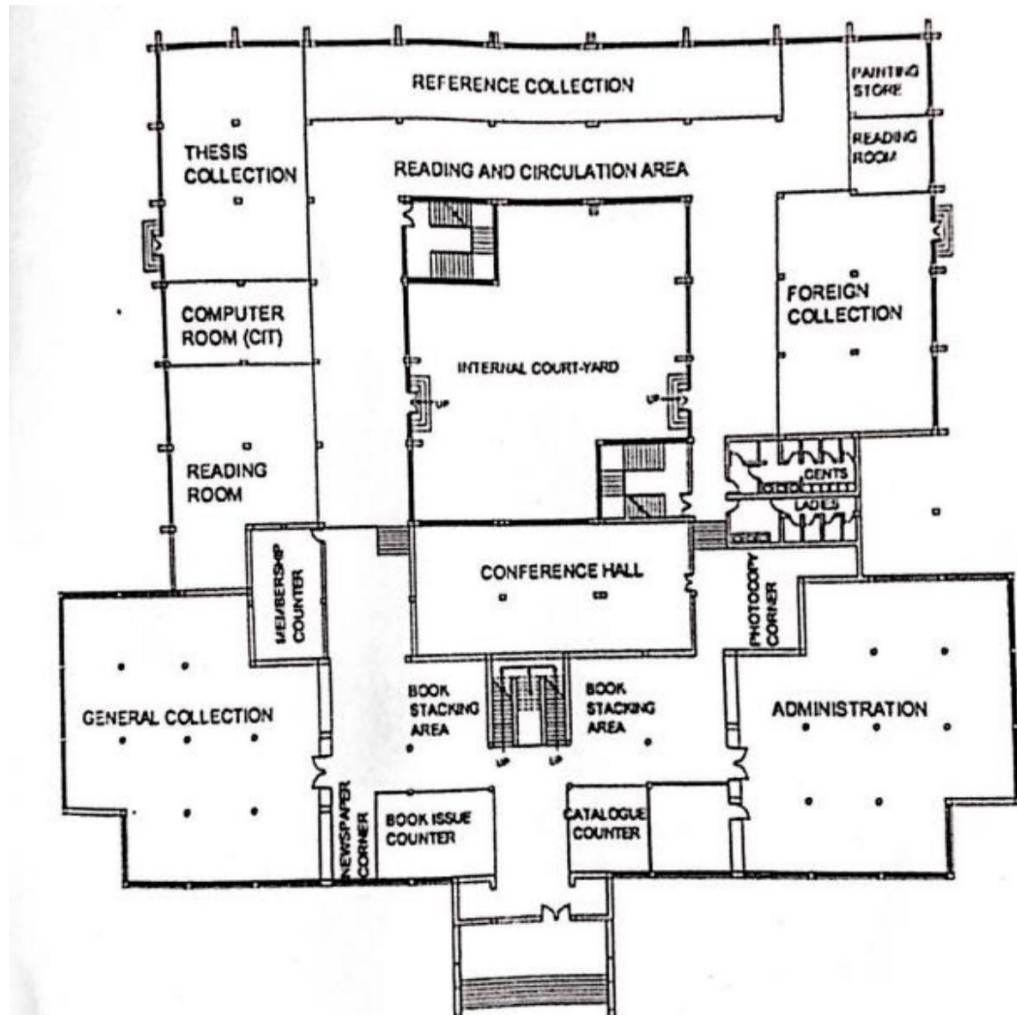
Figure 80: Ground Floor Plan of TUCL
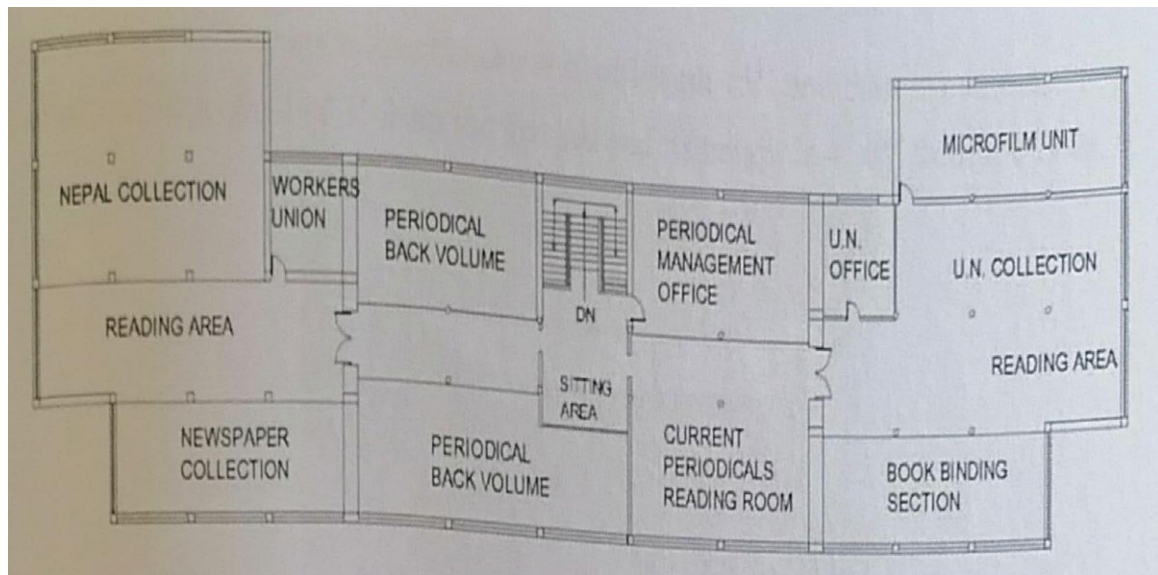
Figure 81: First Floor Plan of TUCL before Renovation
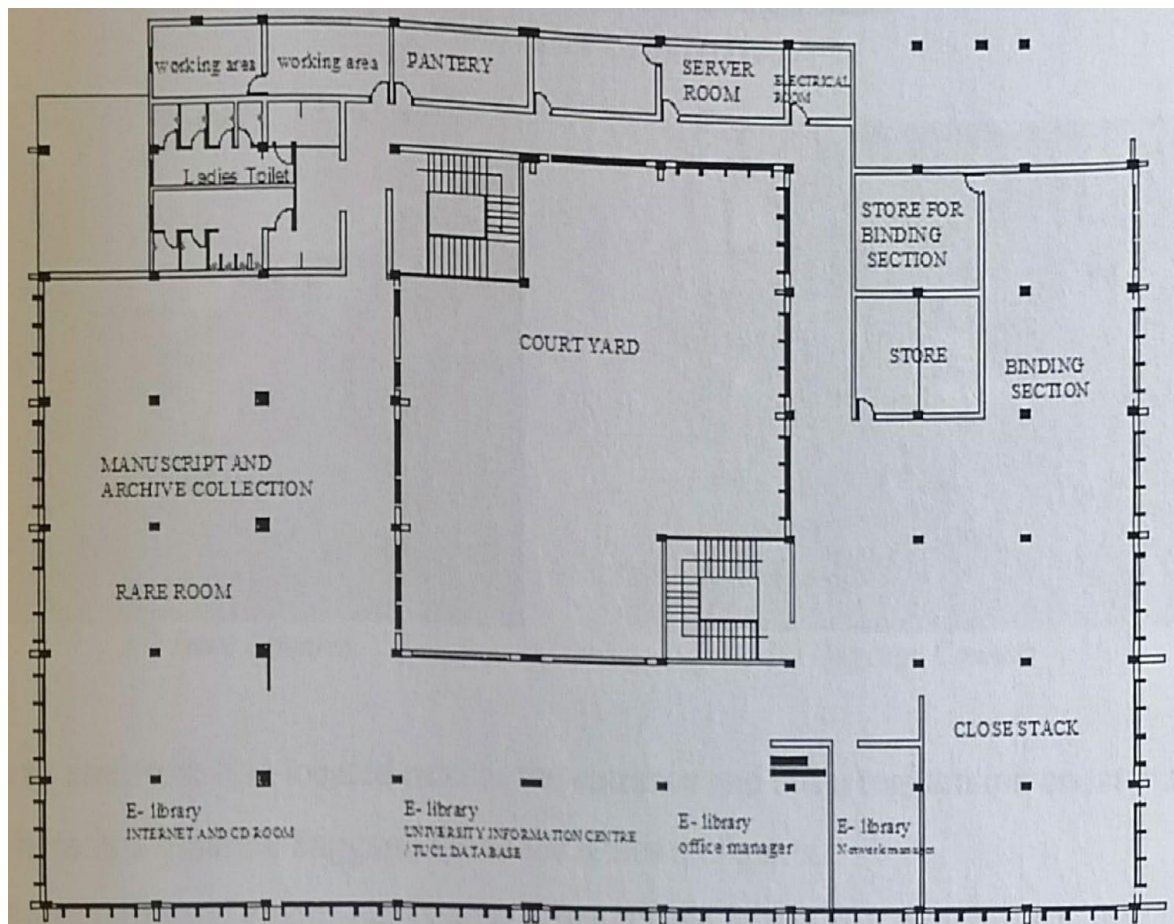
Figure 82: Extended First Floor Plan of TUCL after Renovation

3.3.a.10 Service Area

Entrance: Separate entrance is provided for staff and general public. Split level planning with provision of ramp for disable in the ground floor only.

Circulation counter: It is located near public catalogue area and general study area and has close access to the stacks. Size and function of circulation counter depend on size of library and issue system in use.

Public Catalogue Area: It is located near circulation counter and reference area and is within the easy reach have been catalogued according to AACR (Anglo American Cataloguing Rules).

Property counter: It is located next to the entrance and has a registration counter as well. There is a separate baggage space for ladies and gents.

Security: Guards and electronic system is being used in security. Since 2001, the library has able to install a magnetic security system near the checkout counter to prevent from being taken without issue.

Figure 83: Entrance
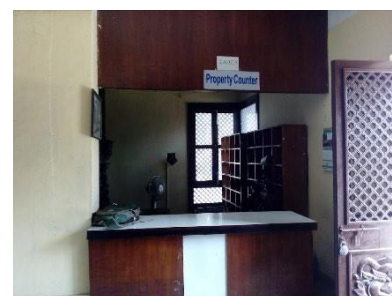
Figure 84: Locker room

Figure 85: Locker room (property Counter)

Figure 86: Issue and Return Section

3.3.a.11   Study Area

It is the most used area in the library which holds more than 3, 00,000 books and over 34,269 volumes back volumes of periodicals. Various section under reading is:

General Section: It is located near the circulation counter and has the collection of rare and heavily demanded book on various topics.

Reference Section: It is located near the public catalogue, circulation counter and reading areas.

Newspaper reading hall: It is located near circulation counter is the most crowded section of library.

Back volume of newspaper: Small section of 500mm wide and 2100 mm height is provided for keeping back volumes of newspaper. They are kept in open access system.

Nepali collection center: It is located near the reference section and housed all the books published in Nepal. It has closed access system and has a separate catalogue section.

Nepali journals: A separate section provided next to the back volume of newspaper.

Current journal reading room: current journals are displayed on special shelving.

Research scholar's room: A separate room is provide for research for scholar. It has capacity of 52 readers.

Information Technology (IT) room: To provide effective services from electronic sources and allow access to the world, the library has IT room to cater this need.

Microfilm unit: This section consists of microfilm laboratory and microfilm reading room. The microfilm laboratory consists of microfilm developers and fixers. This room consists of three microfilm reader machine, scanner and printer.

UN depository: This area is located next to the reference collection and reading room area. It housed the publication of UN and other international organizations.

E-library: This section is located on the 1st floor of expanded building and has computer with internet facilities. It has total capacity of 30 computers.

ISBN: This section of library is located next to e-library on northern part of the 1st floor. It has different machines to print ISBN number on the books, printer, storage racks and technician office.

Figure 87: Reading Room
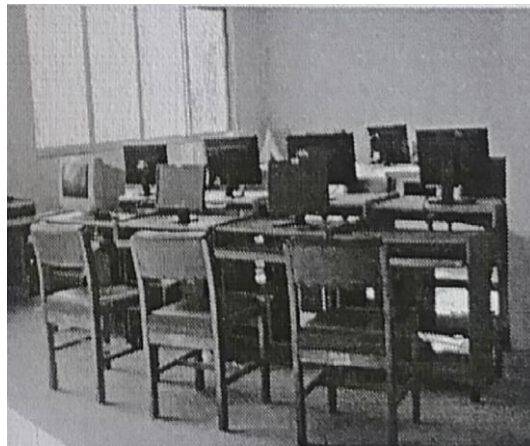
Figure 88: E-Library of TUCL

3.3.a.12   Library Interior

a. **Lighting**

Natural light is taken through openings on the wall. The central courtyard provides enough light in the interior. Therefore, there is no need to use artificial light in the daytime in reading area, Seating areas are adjusted around the central court for maximum use of natural light. Shading device are basically not provided except on the front façade therefor there is glare problem in some of reading spaces. Sun shading devices curtains glare but no admission of heat, so interior is cold during winter. Intensity of light is also lowered in the reading areas.

Figure 89: Courtyard

Figure 90: External Sun Shading Device

b. **Acoustics**

There is no acoustic treatment in the library. It lacks absorbing materials on the wall, floor and ceiling. Seminar hall also lacks acoustic treatment therefore it may disturb other areas of programs are run there.

Gypsum board has been installed in ceiling of extended library portion at present

c. **Heating and Cooling**

No alternative mechanism for heating and cooling has been provided than the openings which is in general enough for the spaces except in some corners and lobbies in absence of the openings creating discomfort and stuffiness.

d. **Circulation Pattern**

The library basically has a linear flow in between book stack and seating area. Overall, the library has enough space for circulation and seating except in the reference section in the main foyer where the long table in between the book stack creates some obstruction. The catalogue rack adjacent to the entrance passage also creates obstruction at the entrance.

3.3.a.13   Building Services

a) **Parking:** No specific area is provided for parking for library. But since the university has enough space so, there is no problem for parking.

b) **Rain water drainage:** rainwater drainage is done through plastic pipes connected to the traditional water spouts. Rainwater drains are provided along the periphery of the building.

c) **Electricity:** It is supplied by 3-phase system. Maintenance room is located outside library premises near the transformer, and from their underground supply is done to the library.

d) **Sanitation:** Septic tank of 5600x1500x1500 and soak pit of 4000 diameter, 300 depth is provided at the north of building.

3.3.a.14   Inferences

- Site can act as a source of inspiration for building design.

- Ramps should be properly incorporated.

- Greeneries should be included in the interiors as well.

- Entry and exit of the readers should be through the same door for good security provisions.

- Column spacing should be according to book stack.

- Acoustic treatment should need improvement.

- Day light is used through the courtyard.

- Individual carrels are desirable.

- Glare, ventilation and acoustics shall be considered while designing.

- Additional facilities such as café, group study area shall be incorporated.

- Proper designated parking spots are required. (Khadka, Rethinking Public Library, 2023) (Budha, 2023)

b)   Kaiser Library

3.3.b.1 General Information

Location: Kaiser Mahal, Kathmandu

Established: 1968 (as public library)

Orientation: East

Topography: Flat

Building Type: Neo-classical

Users: students, children, researchers and foreigners

Total staff: 20 staff members including Chief librarian,

library officer Collections: 60 thousand books and 700+

documents

Opening hours:

•   Summer: 10:00am to 5:00 pm (Sunday to Friday)

•   Winter: 10:00 am to 4:00 pm (Sunday to Friday)

3.3.b.2 Selection Criteria

It was a private library during Rana Rule which later turned as public library. So, being the nation's oldest federal cultural institution and served as the study arm of education for all. I selected this library to know how it is linked to history and its surrounding area which is Garden of Dreams. Also, to study the spaces of library and gallery.

3.3.b.3 Historical Background

Chandra Shumsher Rana was motivated to build the library after his visit to England in 1963BS for his son. Kaiser was also interested in collecting books, antiques, animal trophies, paintings and photographs. During Kaiser's lifetime, the library was accessible only to his family members and notable figures. The library was handed to the Nepal government in 2026BS after the death of Keshar Sumsher. The library has over 50,000 books half of which were donated by Kaiser's wife after his death in 1965. The library was made public on 11 September 1969. The library is open Sunday through Friday and is closed on Saturdays and government holidays.

3.3.b.4 Access

The library building is located within a complex housing the NO office and garden of dreams at the junction of Lazimpat approached by road. A separate entrance is provided to go into the library having no direct access to the garden of dreams.
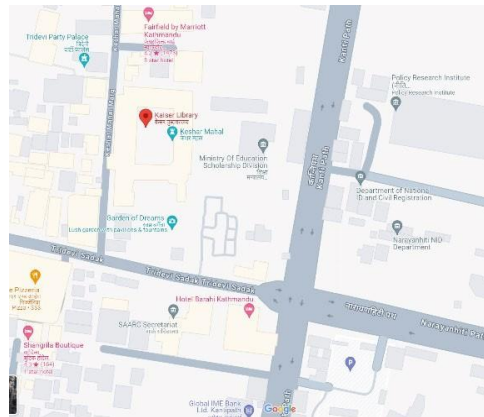
Figure 91: Location Map of Kaiser Library

3.3.b.5 Facilities and Services

The Kaiser library is a reference library. The resources are

freely available to all the user inside the library. All the collections, except manuscripts are kept in open access. The catalogue of 52 | entire collection is automated and all bibliographical data for books/documents can be searched in WINISS/KOHA software. The total collection of the library has divided into following section according to library collection:

- Kaiser collection (old collection)
- New Section
- Manuscripts Section
- Periodical Section
- Children Section
- UNESCO Section

3.3.b.6 Present Condition

The building was severely damaged in the earthquake of 2072 due to which most of section are closed now and only the ground floor is used nowadays. The books and documents from the damaged rooms have been retrieved but without any more space they remain packed in large bags and stored in the previous reading hall. The rare collections have been recovered as well which now collect dust in the books racks in the primarily closed section. The painting that once graced the walls are now laid at the feet of wall. Currently the building is being re-modelled and is said to be completed within this year. So, a pre-fabricated structure houses the library having a capacity of 50 students at a time.

3.3.b.7 Service Area

- **Entrance:** No Separate entrance is provided for staff and general public.

- **Circulation counter:** It is located near public catalogue area and general study area and has close access to the stacks. Size and function of circulation counter depend on size of library and issue system in use.

- **Property counter:** It is located next to the entrance and has a registration counter as well.

- **Security:** Guards and electronic system is not in use for security.
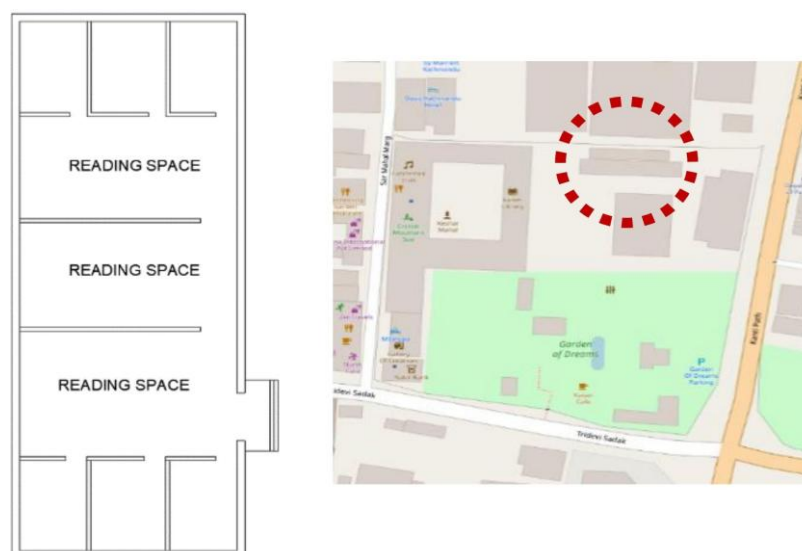
Figure 92: Present pre-fabricated Kaiser library plan and shifted location map

3.3.b.8 Study Area

General Reading area: It is located at the entrance with a study table in the middle for 12 people with circulation counter at the front.

Figure 93: General Reading Section

English Section: The individual carrels along with group study table is provided at the periphery housing the English collection stacks in the middle.

Figure 94: English Section

Nepali and Children Section: Due to lack of space at the time being collections are stored in a room where study tables are provided but not the ones for children. Adjacent to this section is the staff room. About the rare collections, they are currently placed in a different room located outside the building.

3.3.b.9 Library Interior

- **Lighting**

Natural lighting filters through the windows but in some area the day light is insufficient, and we find the use of artificial light from ceiling.

- **Acoustics**

No use of acoustical treatment such that the sound coming from the building being remodelled disturbs the reading environment

3.3.b.10   Inferences

- Location plays a vital role in attracting users.
- Surrounding greeneries shall be incorporated in the design.
- Adequate daylighting at reading places neglecting the glare.
- Individual carrels are desirable.
- Hubs for group discussion, project work should be provided.
- Acoustics and ventilation help to create a comfortable reading environment. (Budha, 2023) (Khadka, Rethinking Public Library, 2023)

Feature	Shanghai Book City	Greenpoint Library and EnvironmentalEducation Center	Snohetta Bibliotheca Alexandria	Tribhuvan University Central Library (TUCL)	Kaiser Library
Location	Shanghai, China	Brooklyn, United States	Alexandria, Egypt	Kirtipur, Kathmandu	Kaiser Mahal, Kathmandu
Established	2023	2020	2002	1959 (extension in 2007)	1968 (public library)
Architect	Wutopia Lab	Marble Fairbanks Architects	Snohetta Arkitekture	Robert Weise	N/A
Area	128478.03 sq.ft	15,256 sq.ft	80,000 sq.m	47,000 sq.ft	7,850 sq.ft
Orientation	North-east	South	South	East	East
Topography	Flat land	Flat land	Flat land	Flat land	Flat land
User Demographics	Students, researchers, general public	All ages	Students, researchers, general public	Students, researchers, general public	Students, children, researchers, foreigners
Collection Size	-	-	500,000	450,000 books	60,000 books, 700+ documents

Unique Features	Extensive Bookshelf Façade, Natural Light Integration, Theatrical and Dynamic interaction, historical preservation	Environmental education focus, community engagement	Slanted glass panel roof, Design like rising sun, Large open reading area	Largest university library in Nepal, rare books	Neo-classical building, historical significance

3.4: Lesson learned

3.4.1 Shanghai Book City

Historical Connection and Renovation: The renovation of Shanghai Book City offers valuable lessons in adapting to change while preserving heritage. It emphasizes inclusivity by making spaces welcoming for all, regardless of reading habits. The project showcases creative problem-solving to overcome structural constraints and enhance functionality, while also incorporating meaningful symbols into the design.

3.4.2 Green point Library and Environmental Education Center

Community Engagement and Sustainability: This library in Brooklyn is all about bringing the community together to learn and care for the environment. It's big and eco-friendly, with lots of space for activities both inside and outside. They even collect rainwater to water their gardens.

3.4.3 Snohetta Bibliotheca Alexandria:

Extensive use of glass panels and a very unique design to incorporate maximum sunlight in the library space. Each level of the Library receives ample amount of natural light the split level design helps in better visibility with its auditorium like**.**

3.4.4 Salem Public Library:

The library though made in 70's the design fulfills all the requirement of the modern library. It has different spaces for different activities such as individual learning (exile space), activity and learning space (explore and create space) and leisure space for relaxing and meeting (participation space).

3.4.5 Tribhuvan University Central Library (TUCL)

Accessibility and Safety: This library in Nepal's biggest university cares a lot about making sure everyone can use it safely. They have separate entrances and good pathways. It's a lesson in making libraries easy to get to and safe for everyone.

3.4.6 Kaiser Library

Historical Connection and Renovation: This library has a long history and is an important part of Nepal's past. But it got damaged in an earthquake, showing how old buildings need care. They're fixing it up now to keep it safe and special for future generations.

Chapter 4: Program Formulation

Selection criteria

The size of a library depends on the community it serves. In order to calculated areas required for different spaces, we have to know about the exact literate population of that community. Since my library is located in Janakpur, we obtained the following results from the 2021 census data. Standard stack size: 0.3x0.9x2.28=0.62cu.m.

Total Population of Janakpur (2021 A. D. census) = 195438

Literacy Rate: 76.6%

Active Literate Population: 149705

Total book volume = 149705

Capacity of reader = 300-350 (Assuming 2.25 seats per 1000 book volume)

4.1 Children Section

Table 8: Space Calculation of Children Section

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Volume of books	**50 stacks**	**o.27/stack**	**13.5**
Reading space	**40**	**1.5**	**60**
Play area	**20**	**3.25**	**65**
Librarian	**2**	**10**	**20**

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Issue counter			**10**
Baggage counter	**50**	**0.25**	**6.25**
Restroom			
Boys	**3**	**1**	**3**
Girls	**3**	**1**	**3**
Disabled	**1**	**1.8**	**1.8**
		Total	**186.35**

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Circulation	25%		46.58
		Total Area	250

4.2 Senior Section

Table 9: Space Calculation of Senior Section

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Volume of books	350 stacks	o.27/stack	94.5
Reading space	300	2.5	750
Photocopy room			10
Librarian	3	10	30
Issue counter			10
Baggage counter	50	0.25	12.5
Restroom			
Boys	3	1.4	7
Girls	3	1.4	7
Disabled	1	3.3	3.3
		Total	933.35
Circulation	25%		233.33
		Total Area	1200

4.3 Digital Library

Table 10: Space Calculation of Digital Library

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Computer room	90	2	180
Printing room			10
Librarian	1	10	10
		Total	200
Circulation	25%		50
		Total Area	250

4.4 Audio-Visual Room

Table 11: Space Calculation of Audio-Visual Room

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Room	50	1.2	60
Projector room			10
Restroom			
Boys	1	1.4	1.4
Girls	1	1.4	1.4
Disabled	1	3.3	3.3
		Total	76.1
Circulation	25%		19.02
		Total Area	100

4.5 Café

Table 12: Space Calculation of Cafe

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Dining	100	1.5	150
Kitchen	33%		49.5
Storage	15%		22.5
Utility	5%		7.5
Counter			10
Restroom			
Boys	2	1.4	12.8
Girls	2	1.4	12.8
Disabled	1	3.3	3.3
		Total	248.4
Circulation	25%		62.1
		Total Area	300

4.6 Administration

Table 13: Space Calculation for Administration

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Reception and waiting	2+12	2.5+1	17
Chief librarian	1		15
Deputy librarian	2	13	26
Assistant librarian	2	12	24
Account section	3	8	24
Administration head	1		20
Manager	1	15	15
Staff	5	2.3	11.5
Meeting room	25	1.1	27.5
Maintenance			18
Store			15
Pantry			15
Restroom			
Boys	2	1.4	2.8
Girls	2	1.4	2.8
Disabled	1	3.3	3.3
		Total	221.9
Circulation	25%		55.47
		Total Area	300

4.7 Technical Section

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Mechanical Room			35
Generator room			30
Engineer room			20
Maintenance room			10
Guard house			30
		Total	125
Service	10%		12.5
Circulation	25%		31.25
		Total Area	170

4.8 Learning Center

Table 15: Space Calculation for Learning Centre and admin section

SPACE TYPE	USERS	AREA/PERSON (SQ.M)	AREA (SQ.M)
Reception and waiting	2+12	2.5+1	17
Baggage counter	20	0.25	5
Classroom	4	55	220
Manager room			15
Staff room	5	2.3	11.5
Meeting room	10	1.1	11
Store			10
Pantry			12
Restroom			
Boys	1	1.4	1.4
Girls	1	1.4	1.4
Disabled	1	3.3	3.3
		Total	275
Circulation	25%		70
		Total Area	345

4.9 Final Area

Table 16: Built-up space of learning centre

PARTICULAR	AREA (SQ.M.)
Children section	250
Senior section	1167=1200
Digital library	300
Audio-visual room	100
Café	500
Administration	300
Technical section	170
Learning center	345
TOTAL AREA	3165

Total Built up Area = 3665 sq.m

Chapter 5: SITE ANALYSIS

Janakpur Area: 99.9 sq. km.
Total Population: 1,95,438
Population Density: 1957 person/sq.km

Figure 95: Location Detail of Janakpur Dham
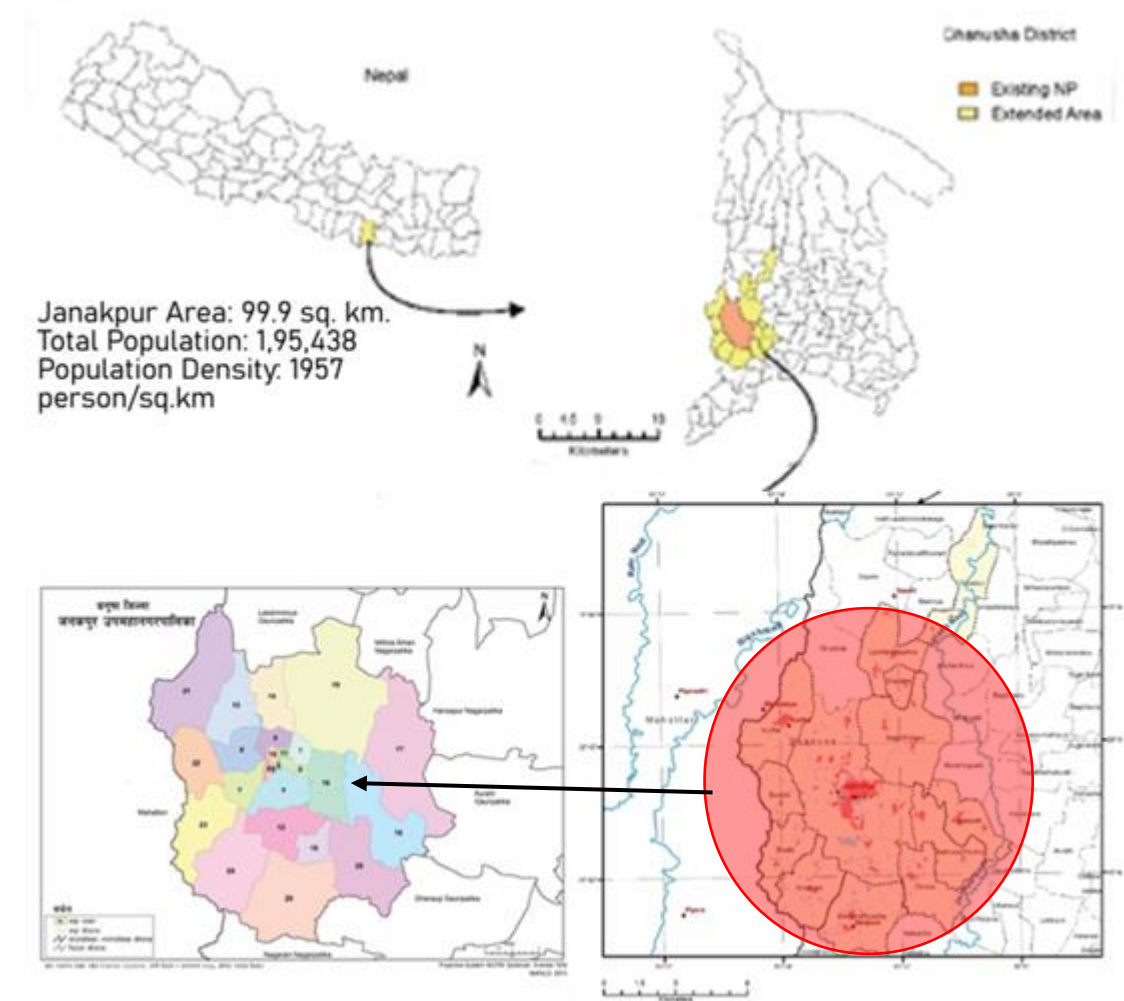
Janakpur Dham is a historic and culturally significant city located in the Dhanusha District of Madhesh Province, in southeastern Nepal. It is best known as the birthplace of Sita (Janaki), the consort of Lord Rama in the Hindu epic Ramayana, and is considered a major pilgrimage site for Hindus from Nepal, India, and beyond.

5.1 : General Information of Janakpur Dham:

5.1.1   Geography and Location

Country: Nepal

Province: Madhesh Province

District: Dhanusha

Distance from Kathmandu: ~225 km southeast Near the Indian border (close to Sitamarhi, Bihar)

5.1.2   Religious and Cultural Significance

- Believed to be the **ancient capital of the Mithila Kingdom**, ruled by **King Janak**, the father of Sita.
- Janakpur is associated with **many events from the Ramayana**, including:
    - The **birthplace of Sita**
    - The site where **Rama broke the bow of Shiva (Pinaka)** to win Sita's hand in marriage.

5.1.3   Important Sites

- **Janaki Mandir**:
    - A magnificent Hindu temple dedicated to Goddess Sita.
    - Built in 1898 by Queen Vrisha Bhanu of Tikamgarh (India).
    - Constructed in Mughal-Rajput architectural style with white marble and domes.
    - It is the largest temple in Nepal.
- **Ram Mandir**
- **Vivah Mandap**: Site commemorating the wedding of Rama and Sita.
- **Dhanush Sagar and Ganga Sagar**: Sacred ponds.
- **Dhanusha Dham**: A nearby pilgrimage site believed to be where part of Shiva's bow fell.

5.1.4   Festivals Celebrated

- **Vivah Panchami**: Celebrates the wedding of Rama and Sita, with dramatic processions and reenactments.

- **Ram Navami** and **Tihar**: Other major celebrations.
- **Chhath Puja**: Important for the local Maithil community.

5.1.5   Languages

- **Maithili** (primary)
- **Nepali**, **Hindi**, and **English** are also understood.

5.1.6   Modern Janakpur

- A developing city with a blend of **tradition and modernity**.
- Center for **Maithili culture**, **art**, and **literature**.
- Known for **Maithili paintings**, traditional music, and dance.

5.1.7   Transportation

- **Janakpur Airport**: Domestic flights from Kathmandu.
- **Janakpur Railway**: Nepal's only functional railway, connecting to India (Jaynagar).
- Good road access via the East-West Highway.

5.2 Urbanization and Change in Land use of Janakpur Dham:
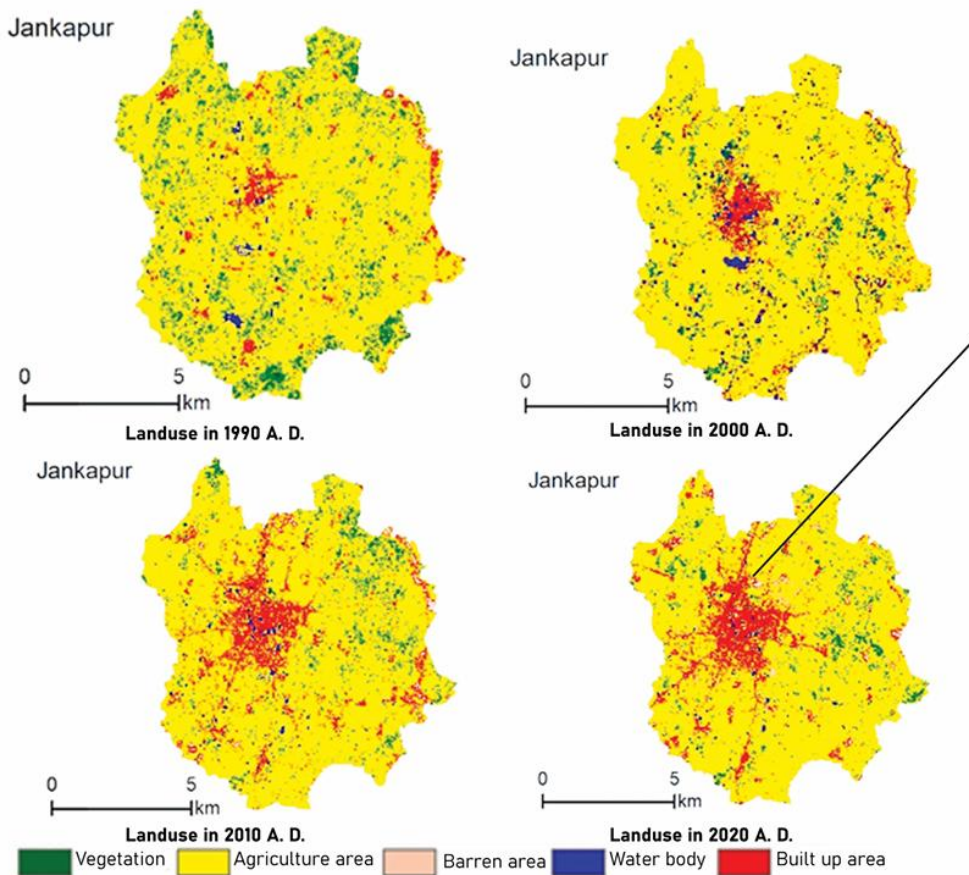
Figure 96: Urbanization throughout the time in Janakpur Dham

Janakpur dham has its own signification in the history of Nepal, also the urbanization of the city has taken drastic changes in decades. Above figure shows the change in land use of Janakpur. The urbanization of the city is seen in the city core. The city core is where all the religious building are seen. Core area of the city is developed with infrastructure and all the facilities.

The land use of Janakpur, like many urban centers in Nepal, reflects a blend of religious, residential, commercial, institutional, and agricultural functions. Below is a general overview of the land use patterns in Janakpur Dham:

- Religious and Cultural Land Use
- Residential Land Use
- Commercial Land Use
- Institutional and Public Land Use
- Transportation and Infrastructure
- Agricultural Land Use (Peripheral Areas)
- Open and Recreational Spaces
- Urban Development Issues

Table 17: Land use Data of Janakpur

Land Use Category	Description	Example Areas / Features	Estimated Share
1. Religious & Cultural	Land occupied by temples, monasteries, dharmashalas, sacred ponds, and festival grounds	Janaki Mandir, Ram Mandir, Vivah Mandap, Ganga Sagar	~15–20%
2. Residential	Housing from traditional Maithil homes to modern apartments	Janakpur city core, expansion areas around Ring Road	~30–35%
3. Commercial	Shops, markets, hotels, and mixed-use buildings	Ramananda Chowk, Railway Road, Bus Park Market	~10–12%
4. Institutional / Public	Government, educational, medical, and administrative facilities	Provincial govt offices, Ramsworup College, hospitals	~8–10%
5. Transportation	Roads, bus terminals, railway lines, airport	Janakpur Railway Station, Airport, Bus Park	~5–8%
6. Agricultural / Rural	Peripheral farmland used for seasonal crops and livestock	Outskirts toward Lohana, Mithileshwar, and Dhanusha	~20–25%
7. Open / Recreational	Parks, public gardens, fairgrounds, and unbuilt lands	Limited green spaces, religious fairgrounds	~2–3%
8. Water Bodies	Ponds, lakes, and drainage channels	Ganga Sagar, Dhanush Sagar, seasonal ponds	~1–2%
9. Industrial (Minor)	Small-scale workshops and light industries	Scattered near outskirts (e.g., brick kilns, mills)	<1%

5.3 Cultural and Historical Context:

Janakpur, renowned as the birthplace of Goddess Sita, is a pivotal Hindu pilgrimage site. The city boasts over 120 temples, with the Janaki Temple being particularly prominent. Janakpur saw major political shifts before and after its incorporation into Nepal under the Shah dynasty. Its governance evolved from being part of the Mithila Kingdom to a key administrative and religious region under the Gorkha rulers.

1. Governance of Janakpur Before the Shah Dynasty:

       a) Ancient and Medieval Period (Mithila Kingdom & Tirhut Rule)

       b) Rule of the Sena Dynasty (Makwanpur Kingdom)

2. Governance of Janakpur After Conquest by the Shah Dynasty

       a) Integration into Nepal (1774–1777 AD)

       b) Administrative Changes Under Shah Rule

       c) Influence of British and Indian Trade (Late 18th – Early 19th Century)

3. Long-Term Impact of Shah Rule on Janakpur:

    a) Cultural Preservation

    b) Political Stability

    c) Economic Growth

    d) Religious Significance Strengthened

5.4 Socio-Economic Factors:

The local economy is primarily based on agriculture, tourism, and small-scale industries, with cultural tourism playing a significant role due to the city's religious importance. In the ten years between 2014 and 2023, the annual growth rate of Indian tourist arrivals was 39.25%. Chinese tourism increased by 55.94% per year during the same period. The total of 68,137 tourist visited in year 2018-19

Figure 97: Tourism area

5.5 Urban Infrastructure and Accessibility:

The city is accessible via a domestic airport connecting to Kathmandu and has the only

operational railway in Nepal, linking it to the Indian town of Jayanagar.
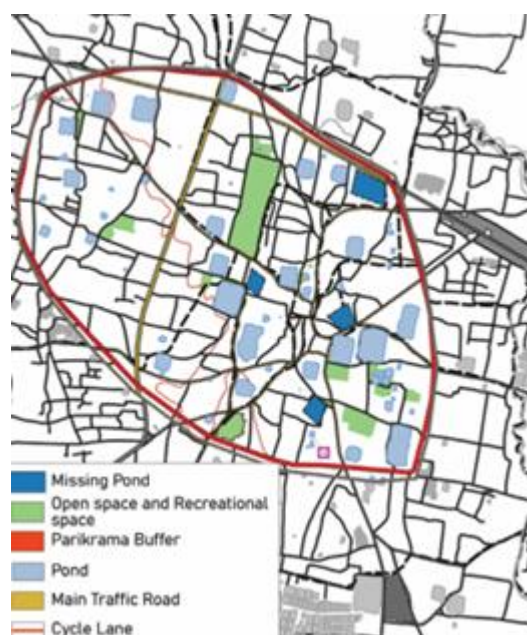
Figure 98: Urban Infrastructure and Accessibility of core area of Janakpur

5.6 Environmental and Climatic Conditions:

Janakpur experiences a humid subtropical climate, characterized by hot summers, a monsoon season, and mild winters. The presence of numerous sacred ponds contributes to the local ecosystem.
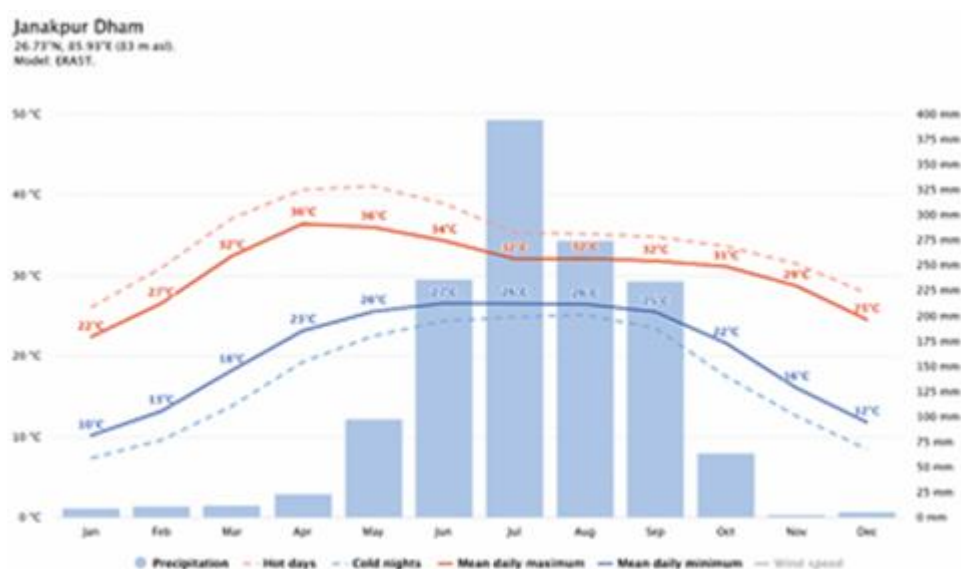
Figure 99: Climatic Chart of Janakpur Dham

5.7 Objectives of Cultural Public Library at Janakpur:

a. Preserve and Promote Mithila Culture

b. Enhance Educational Opportunities

c. Support Literary and Artistic Growth

d. Foster Community Engagement

e. Promote Tourism and Economic Growth

f. Facilitate Digital Preservation

5.8 Site Location:

Location: Murli Chowk-04, Janakpur.

Area: 11380 m.sq. (22-5-3-2.49)

Topography: Flat Land

Present Use: Recreational

Zone: Institutional
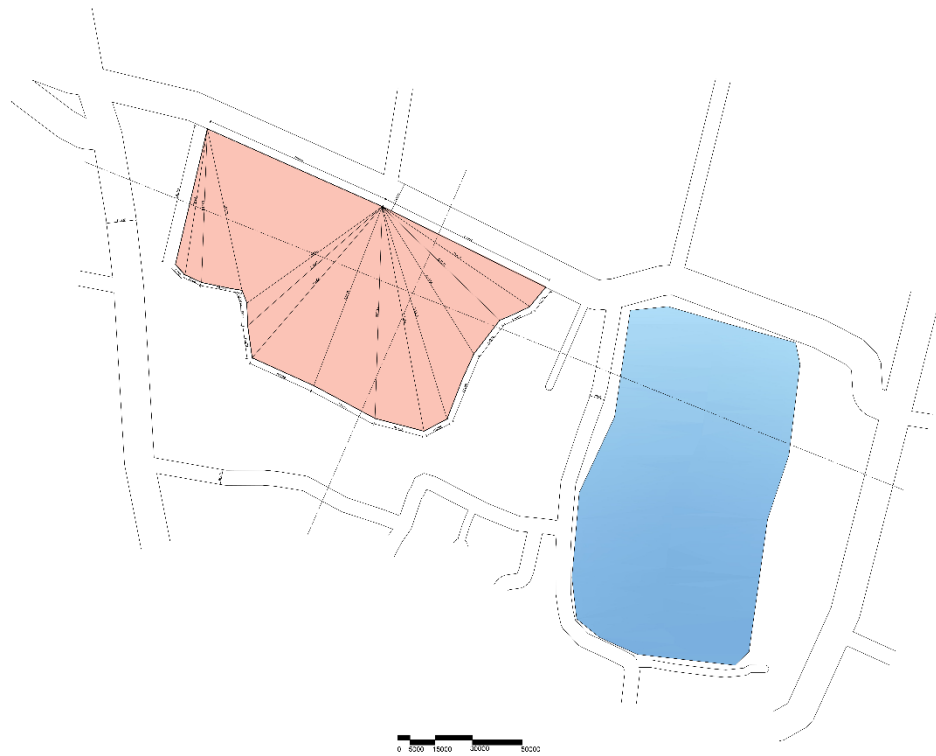
Figure 100: Site plan with visahara pond

Accessibility

450m from Murli Chowk, Parikarma Sadak

1800m from Janakpur-Dhulikhel Highway, Janakpur-Jaleshwor Highway

Presence of 12m wide Road on North

Bye Laws

Ground Coverage : 50% for more than 1-0-0-0

Setback: 2m

Building Height: 5 Stoery (16m)

Stairs and Corridor: 1.5m

Ramp: 1:10

Parking: 10sq.m. in 100sq.m. Builtup
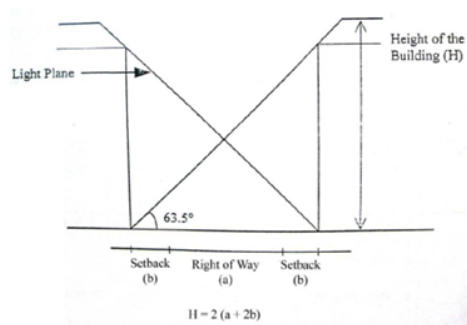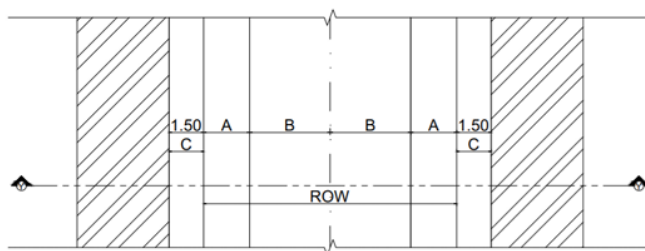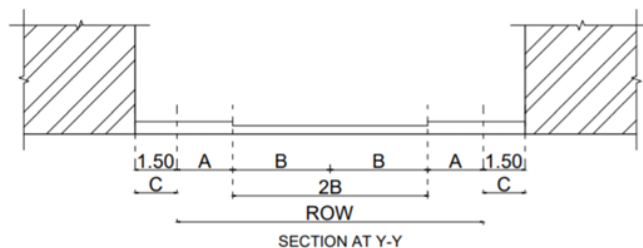
Figure 101: Bye-laws of Janakpur Dham

5.9 Accessibility and Landmarks:

The site is approached by 12 m wide murli road on north side. It is located in the South-East zone of Parikarma Buffer. Various cultural and historical heritages are located in the range of 750m from the site. The railway station and Airport are seen in the range of 1 km from the site. Almost 36 School and 6 out of 10 colleges are located in 1 km range of the site. Different governmental institutes such as District Administrative office, Malpot karyalaya, District court, Police Station, etc. are located in the close proximity.
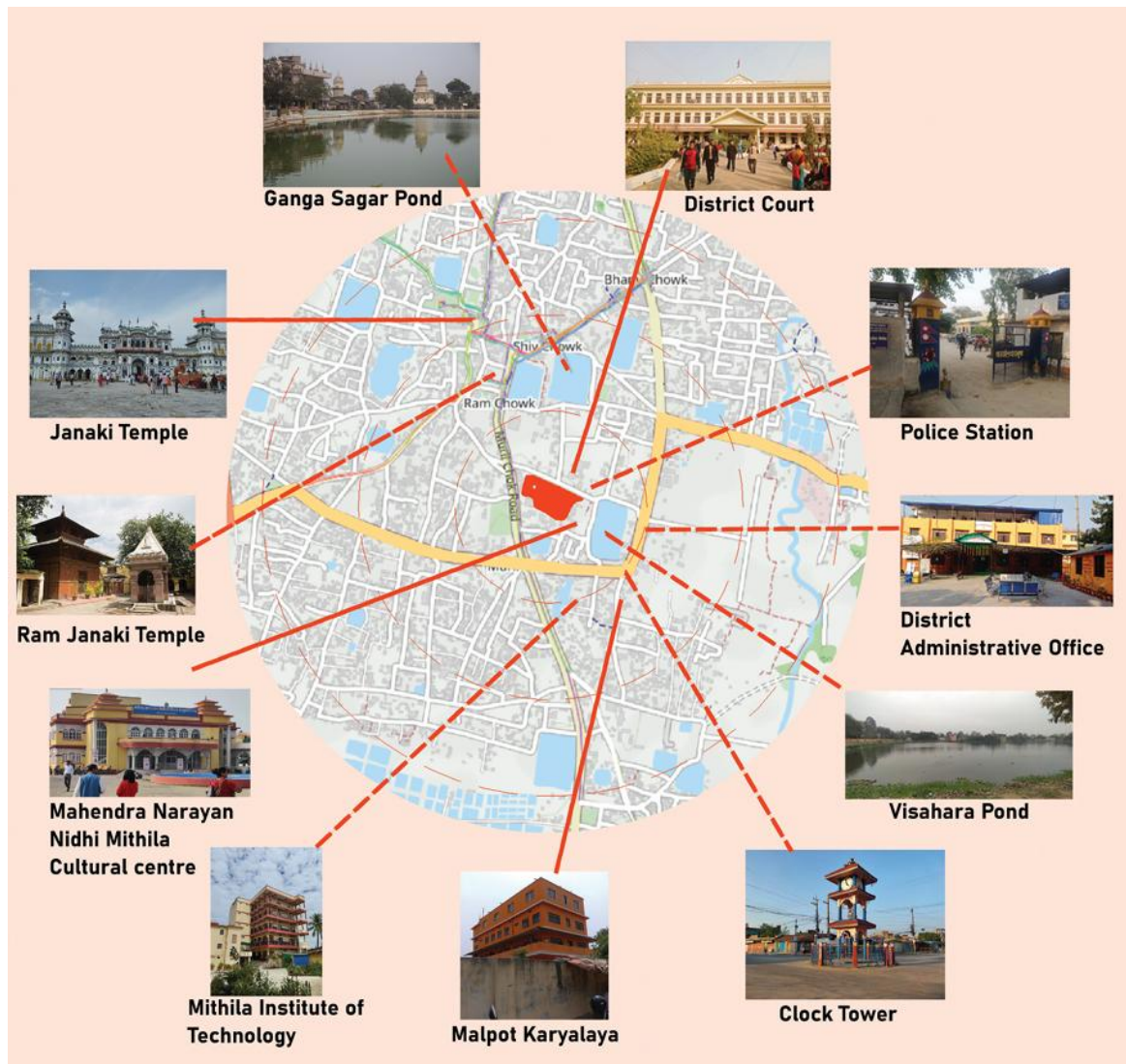
Figure 102: Infrastructure and Landmarks near the site

5.10   **S**trategic site location near institutional zone and heritage zone:
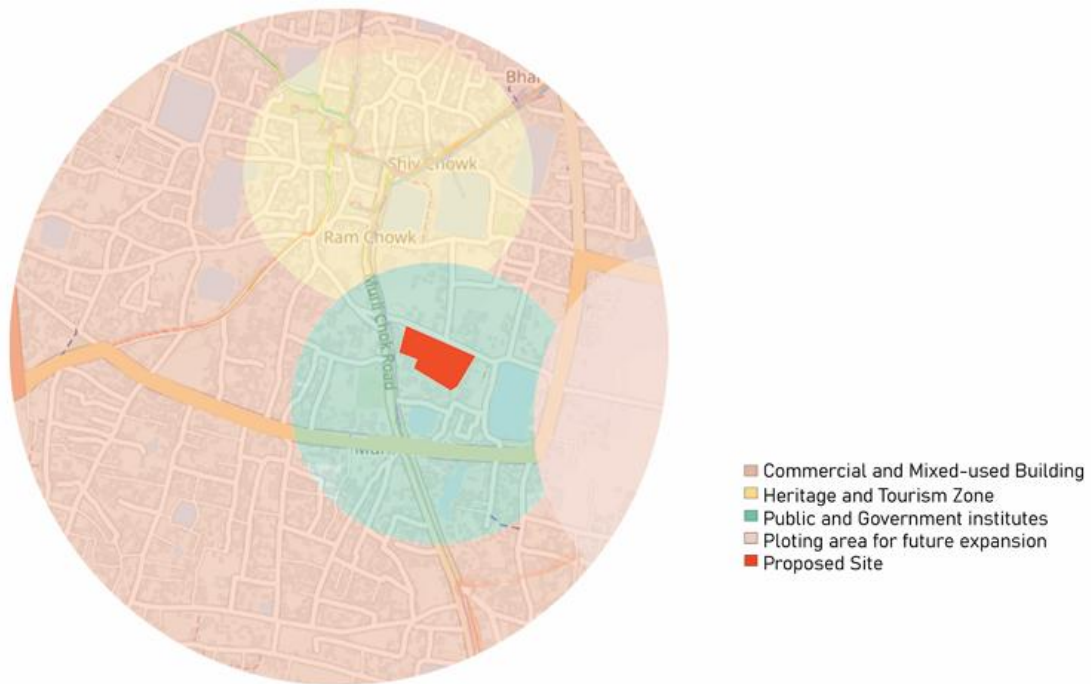
Figure 103: Location of the site in strategic area

The location is situated in the area near the heritage zone and institutional zone. The area is visited by different people either visiting the institutional area or governmental sector also the visitors and tourists visit the place. The area serves as the resting space for the people that visits the place.
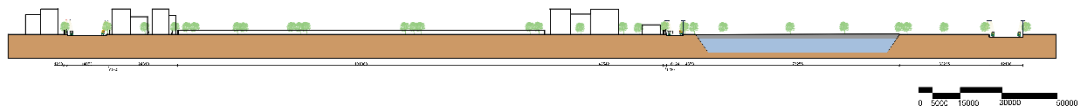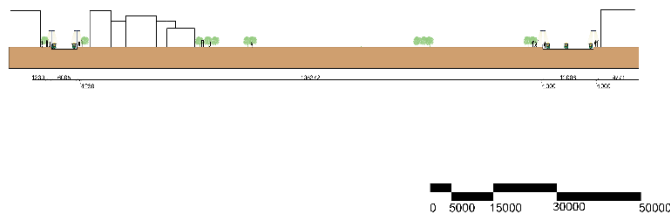

Figure 104: Longitudinal section of the site

Figure 105: Transverse Section of the Site

5.11   SWOT Analysis:

Strength:

Rich Cultural Heritage

Tourism Hub

Strong Artistic Tradition

Growing Educational Awareness

Support from Local Institutions

Weakness:

Limited Public Awareness

Climate Challenges

Limited Infrastructure

Opportunities:

Tourist Engagement

Integration of Modern Technology

Youth Engagement

Threat:

Natural Disasters

5.12   Site Photos:

Figure 106: South view of site

Figure 107: West view of Site

Figure 109: East view of site

Figure 108: North view of Site

Chapter 6: Concept and Development:

Mithila architecture is the traditional architectural style of the Mithila region, covering parts of southern Nepal (including Janakpur) and northern Bihar, India. It is known for courtyard-centric layouts, intricate wall paintings (Madhubani art), and sustainable construction techniques that suit the region's hot and humid climate.

6.1   Key Features of Mithila Art and Culture:

6.1.1   Courtyard-Centric Design (Angan):

Building revolves around a central courtyard (Aangan), which enhances ventilation and cooling. In larger structures, there are multiple courtyards for different purposes (family gatherings, worship, livestock, etc.).

Building revolves around a central courtyard (Aangan), which enhances ventilation and cooling.

In larger structures, there are multiple courtyards for different purposes (family gatherings, worship, livestock, etc.).

Courtyard-centric Design in Janaki Temple
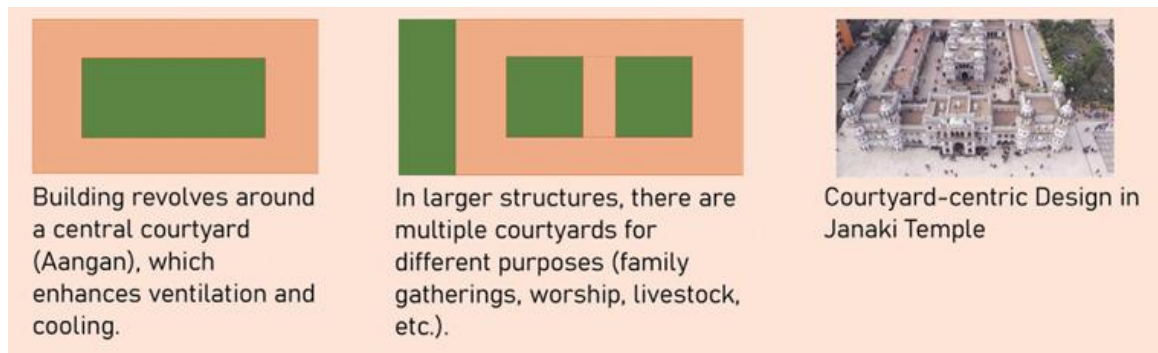
Figure 110: Courtyard centric Design (Aangan)

6.1.2   Sustainable Materials:

- Mud, clay, bamboo, and thatched roofs
- Lime and cow dung plaster
- Terracotta tiles are often used for flooring

THATCH ROOF
BITUMEN SHEET

MUD PLASTER
MUD PLASTER

20 MM CEMENT MORTAR
30 CM DEEP IN BRICK FOUNDATION
CREOSOTE COATING OVER BAMBOO
DOWEL
SAND PACKING
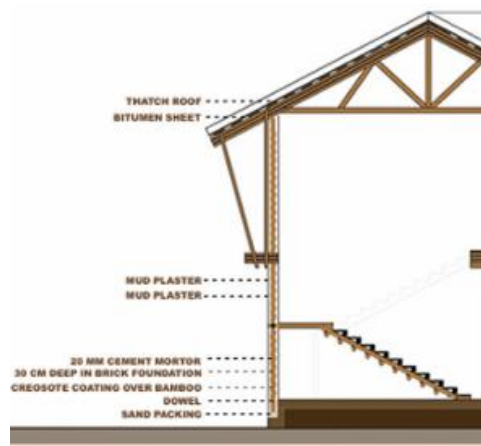
Figure 111: Section of typical traditional house in Terai

6.1.3   Madhubani Art & Wall Decorations:

Mithila architecture is famous for its vibrant murals and wall paintings, which depict scenes from Hindu mythology, nature, and daily life. These paintings are both decorative and spiritual, believed to bring prosperity.

Figure 112: Madhubani Art and Wall Painting in buildings

6.1.4   Arched Doorways & Niches:

Elegant wooden or brick archways are common in palatial and religious Mithila structures. Wall niches (Takias) are used to store lamps, religious idols, and household items.

Figure 113: Arch Gate and Niches in Janaki Temple

6.1.5   Religious and Symbolic Elements:

The entrance doors and windows are often adorned with ritualistic symbols like the Sun (Surya), Peacocks, Elephants, and Lotus Flowers. Tulsi Manch (Sacred Basil Platform) Most Mithila homes have a small raised platform for worshiping the Tulsi (holy basil) plant. Many structures include mini temples within or near homes to honor Hindu gods and ancestors.

6.1.6 Raised Platforms (Plinth Construction) Horizontality in Form:

Due to seasonal monsoons and flooding in the region, houses are often built on raised mud or brick platforms. This prevents waterlogging and protects the structure from damage.

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ANNEX

Mithila Cultural Learning Hub (Library)

INTRODUCTION:

A public library is one of the fundamental components of the democratic society, usually supported by the government, accessible to the general public.

The public library is a place where everyone can go to read books and learn new things.

It became popular during a time called the Enlightenment when people started to believe in the importance of education for everyone.
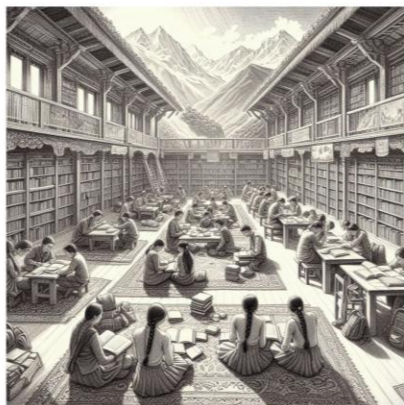
Learning Centre Of Past

What Makes A Great Place

Library of Future:

1. Designing flexible and adaptable spaces.

2. Incorporating sustainable design principles.

3. Integrating digital technologies and interactive features .

4. Emphasizing inclusivity and accessibility through universal design principles.

Reading pod

Children Playground
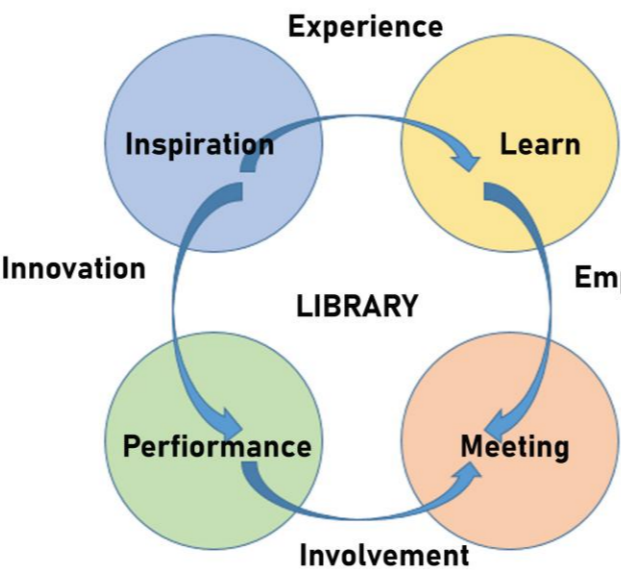
Atrium Space and Reading Area

Interacting and Learning Space

Experience / Inspiration / Learn / Innovation / LIBRARY / Empowerment / Performance / Meeting / Involvement

OBJECTIVES:

Majorobjectives of the project focuses on the following agendas:

1. Inclusiveness of all the people from different community, caste.

2. Provision of both traditional hardcopies of book with digital e-books and documentaries.

3. Informal education to all the people regardless of their social and financial status.

4. To increase the line of vision of the people who are either illiterate through technologies and documentaries.

5. Provision of innovative library building that responds to the needs and aspiration of present and future generation.

Library in the Past, Present and Future

-Past:
In the old days, libraries were all about their books. The reading room was like a treasure trove, with walls covered in books. People thought the more books a library had, the more powerful the country was. That's why they made the insides look so grand.

-Present:
Libraries are changing to make people feel more comfortable. Libraries are now designed like modern offices, with big, open spaces. They're also paying more attention to how they connect with the outside world, making the street experience important.

-Future:
Library will be portals for activities that mix leisure and learning. They will add value by providing avenues for interaction and opportunities for using disposable time constructively. There will be addition of more programs such as cooking classes, e-books and tablets, 3D printers, social services—such as career or literacy assistance, Robotic storytelling centers, VR chat rooms, Makerspace, business and homeless friendly. (Frey, 2020)

Meeting Space

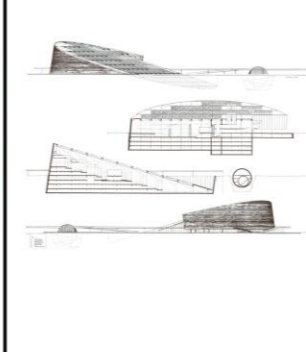**Interacting and Learning Space**
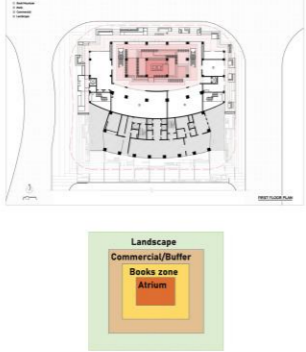
Libraries Of Past

Libraries of Present

Mithila Cultural Learning Hub (Library)

Features	Shanghai Book City	Grenpoint Library	TUCL	Kaiser Library	Bibliotheca Alexandria	Salem Public Libreary
Unique Design Features	Extensive Bookshelf Façade, Natural Light Integration, Theatricaland Dynamic Interactions, Historical Preservation	Environmental education focus, community engagement Solar window Local Materials stormwater Retention Full height window	Largest university library in Nepal, Symetrical facade Central Courtyard Large glass use	Carries historical value, Central single flight staircase Massive stone wall	Slanted roof with glass panel Theater like ambience Giant pillars Connected with panetarium	Well defined spaces with unique purpose Atrium space for adequate lighting
Services and Facilities	Adaptive reuse spaces Commercial facility	Research and Lab spaces Community Event Space Outdoor reading Space	Lending and reference section IT room Microfilm unit outdoor reading space	Reference library, No electronic security	Planetarium Reading space	Children section outdoor reading space Relaxing spots
Present Condition	Fully Operational	Fully operational	Operational, needs acoustic treatment	Operational, needs acoustic treatment	Fully Operational	Fully Operational
Access	Accessible location, central setting	Accessible location,	24' wide road access, main entry from east	Road junction access, separate library entrance	Accessible Location	Accessible Location
Architectural Style	Adaptive reuse of historical structure	Modern	Modern with traditional elements	Neo- classical	Modern	Modern
Users	Students, researchers, general public	All ages	Students, researchers, general public	Students, children, researchers, foreigners	Students, researchers, general public	Students, children, researchers, General Public
Inferences	Needs modern upgrades, preservation focus	Community hub for environmental awareness	Good daylight usage, needs better acoustics	Lacks modern security historic value	Slanted roof with glass panel Theater like ambience	Well defined spaces adequate lighting
Inferences						

Introduction:

Location: Murli Chowk-04, Janakpur.
Area: 11380 m.sq. (22-5-3- 2.49)
Topography: Flat Land
Present Use: Recreational
Zone: Institutional

Accessibility
450m from Murli Chowk, Parikarma Sadak
1800m from Janakpur-Dhulikhel Highway, Janakpur-Jaleshwor Highway
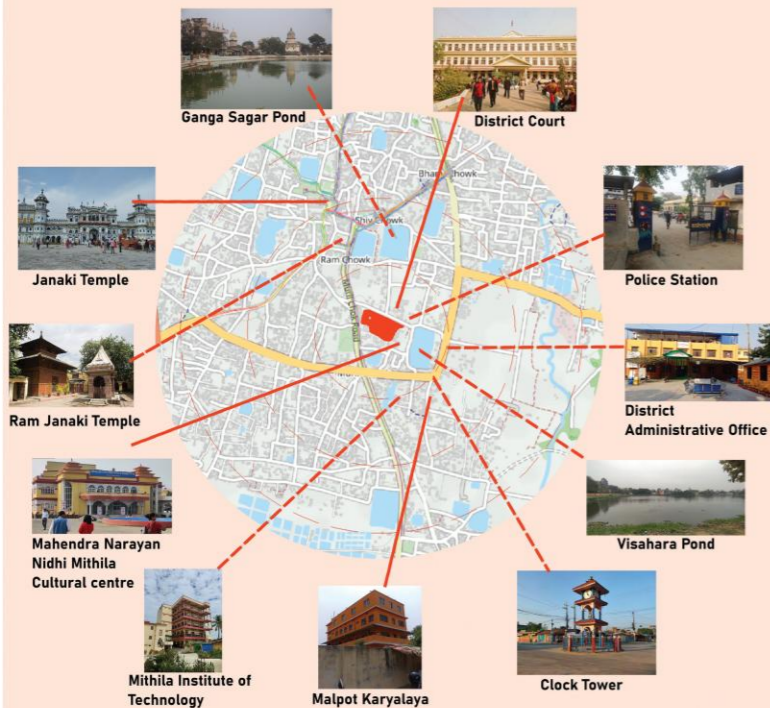Presence of 12m wide Road on North

Bye Laws
Ground Coverage : 50% for more than 1-0-0-0
Setback: 2m
Building Height: 5 Stoery (16m)
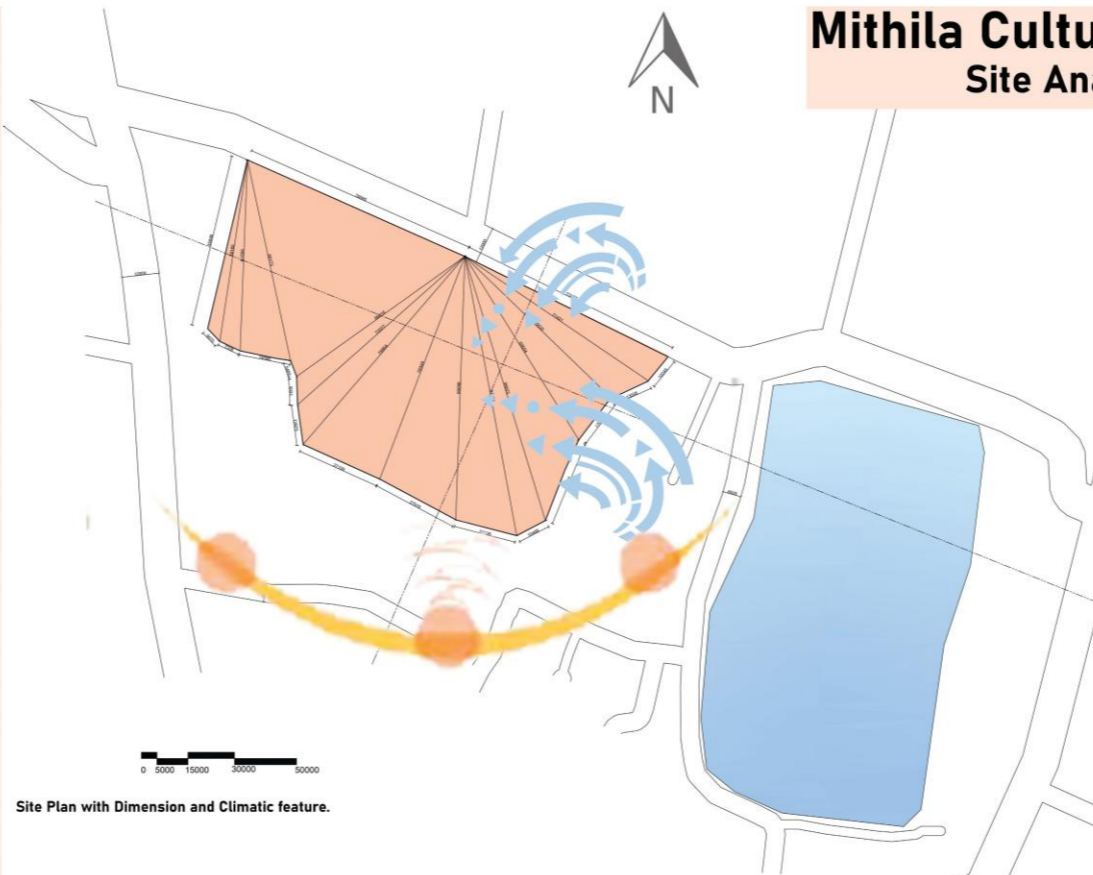Stairs and Corridor: 1.5m
Ramp: 1:10
Parking: 10sq.m. in 100sq.m. Builtup
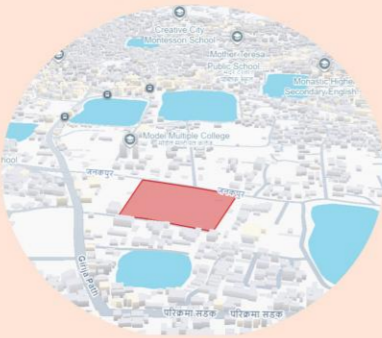
Location of Site

Acessibility and Landmarks:

The site is approached by 12 m wide murli road on north side. It is located in the South-East zone of Parikarma Buffer. Various cultural and historical heritages are located in the range of 750m from the site. The railway station and Airport are seen in the range of 1 km from the site. Almost 36 School and 6 out of 10 colleges are located in 1 km range of the site. Diferent governmental institutes such as District Administrative office, Malpot karyalaya, District court, Police Station, etc are located in the close proximity

Ganga Sagar Pond

District Court

Janaki Temple

Police Station

Ram Janaki Temple

District Administrative Office

Mahendra Narayan Nidhi Mithila Cultural centre

Visahara Pond

Mithila Institute of Technology

Malpot Karyalaya

Clock Tower

Infrastructures and Landmarks near the site

Mithila Cultural Learning Hub
Site Analysis

N

Site Plan with Dimension and Climatic feature.

Strategic site loction near institutional zone and heritage zone.
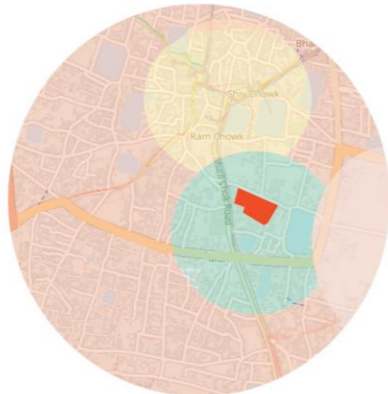
Commercial and Mixed-used Building
Heritage and Tourism Zone
Public and Government institutes
Ploting area for future expansion
Proposed Site

Strength:
Rich Cultural Heritage
Tourism Hub
Strong Artistic Tradition
Growing Educational Awareness
Support from Local Institutions

Weakness:
Limited Public Awareness
Climate Challenges
Limited Infrastructure

Opportunities:
Tourist Engagement
Integration of Modern Technology
Youth Engagement

Threat:
Natural Disasters

Design Considerartions:
-Understanding the rich cultural heritage is essential for integrating traditional architectural elements into the library's design, fostering a sense of identity and continuity.
-Incorporating green spaces within the library's design can enhance environmental sustainability and promote community well-being.
-Selecting a site that leverages existing transportation networks will enhance accessibility for a diverse user base.
-Understanding these socio-economic dynamics can inform the library's role in community development and educational support.

Site Photos:

South View from site:

West View from site:

East View from site:

North View from site:

Longitudinal Section at X-X

Transverse Section at Y-Y

PURBANCHAL UNIVERSITY
DEPARTMENT OF ARCHITECTURE
KHWOPA ENGINEERING COLLEGE
LIBALI, BAHKTAPUR

SUBMITTED BY: JAGREETI SHAH
760116
THESIS SITE ANALYSIS

Introduction:

Mithila architecture is the traditional architectural style of the Mithila region, covering parts of southern Nepal (including Janakpur) and northern Bihar, India. It is known for courtyard-centric layouts, intricate wall paintings (Madhubani art), and sustainable construction techniques that suit the region's hot and humid climate.

Key Features in Mithila Architecture:

a) Courtyard-Centric Design (Angan)
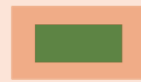
Building revolves around a central courtyard (Aangan), which enhances ventilation and cooling.

In larger structures, there are multiple courtyards for different purposes (family gatherings, worship, livestock, etc).

Courtyard-centric Design in Janaki Temple

b) Sustainable Materials

-Mud, clay, bamboo, and thatched roofs
-Lime and cow dung plaster
-Terracotta tiles are often used for flooring
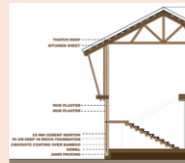
Section of typical traditional house in Terai

c) Madhubani Art & Wall Decorations

-Mithila architecture is famous for its vibrant murals and wall paintings, which depict scenes from Hindu mythology, nature, and daily life.

-These paintings are both decorative and spiritual, believed to bring prosperity.

Decorative Walls with Madhubani Art and Wall Decoration

d) Arched Doorways & Niches

-Elegant wooden or brick archways are common in palatial and religious Mithila structures.

-Wall niches (Takias) are used to store lamps, religious idols, and household items.

Arch gate and niches of Janaki Temple

e) Religious and Symbolic Elements

-The entrance doors and windows are often adorned with ritualistic symbols like the Sun (Surya), Peacocks, Elephants, and Lotus Flowers.

-Tulsi Manch (Sacred Basil Platform) Most Mithila homes have a small raised platform for worshiping the Tulsi (holy basil) plant.

-Many structures include mini temples within or near homes to honor Hindu gods and ancestors.

f) Raised Platforms (Plinth Construction) Horizontality in Form

-Due to seasonal monsoons and flooding in the region, houses are often built on raised mud or brick platforms.

-This prevents waterlogging and protects the structure from damage.

Raised platform plinth to prevent waterloging

1. Courtyard-Centric Design (Aangan)
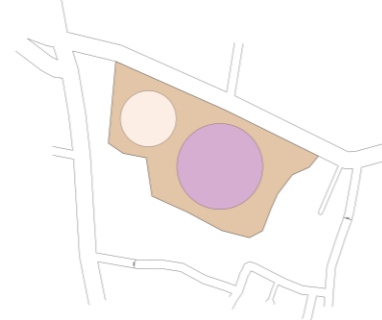
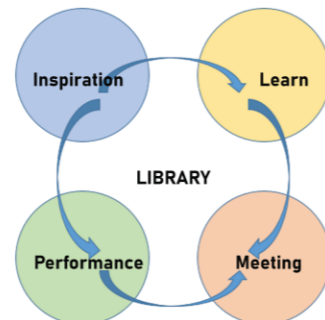Site Responsive space arrangement
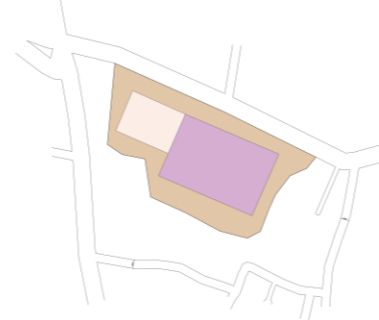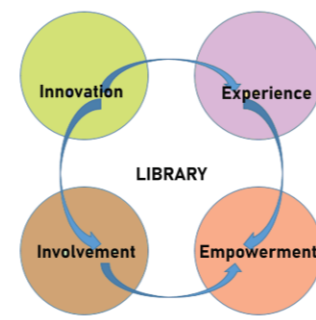
Block orientation Of mass
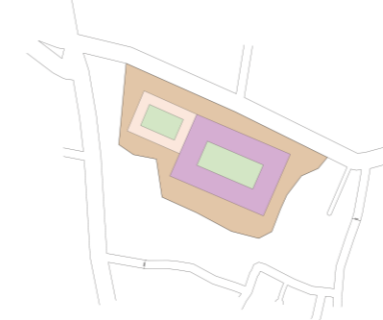
Introducing multiple Courtyard in mass

2. Space requirements for Modern Library

Types of Spaces needed in Library

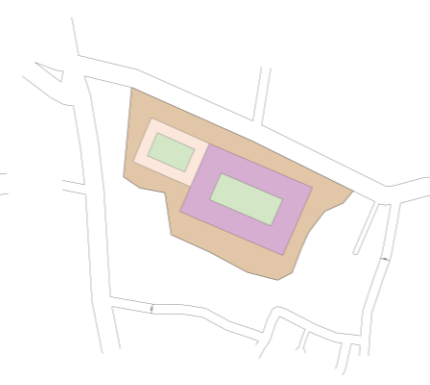Feelings the Space carry in Library

Space and their vibe neded For modern Library Design
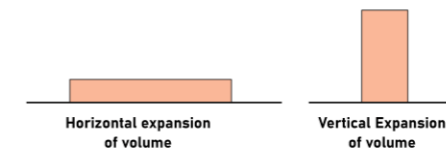
Bubble Diagram showing Spatial Arangement in site

Space Orientation on Site

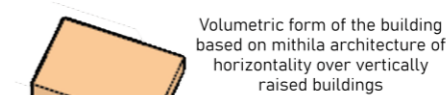Multiple courtyard form for Cooling Effect as well as for diferent activities

Vibe given in different spaces that attract users

3. Horizontality

Horizontal expansion of volume

Vertical Expansion of volume

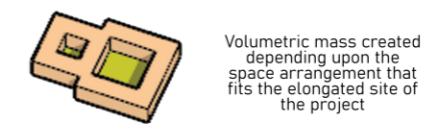Horizontal expansion of Volume is seen in Mithila Architecture

4. Conceptual form development

Volumetric form of the building based on mithila architecture of horizontality over vertically raised buildings

Introducing internal courtyards in the building also inspired by multiple courtyard feature of mithila architecture
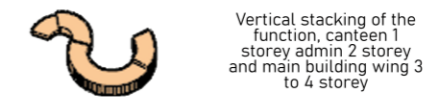
Volumetric mass created depending upon the space arrangement that fits the elongated site of the project
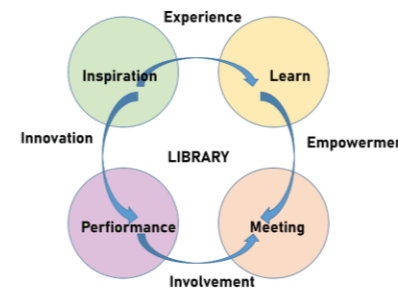
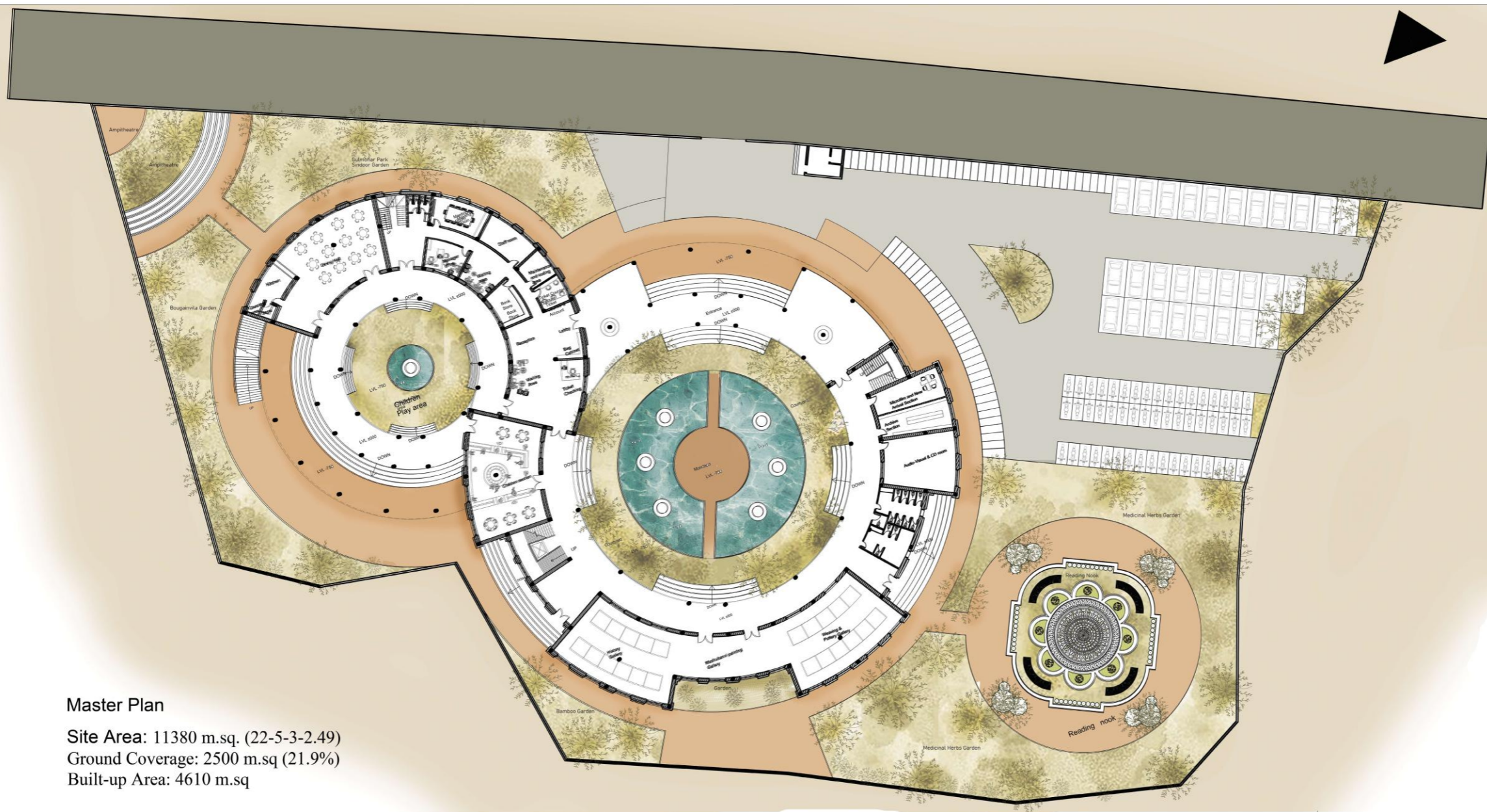Introducing circular form to contrast with elongated site

Introducing entrance foyer and backyard lobby

Vertical stacking of the function, canteen 1 storey admin 2 storey and main building wing 3 to 4 storey

Master Plan

Site Area: 11380 m.sq. (22-5-3-2.49)
Ground Coverage: 2500 m.sq (21.9%)
Built-up Area: 4610 m.sq

Section At X-X
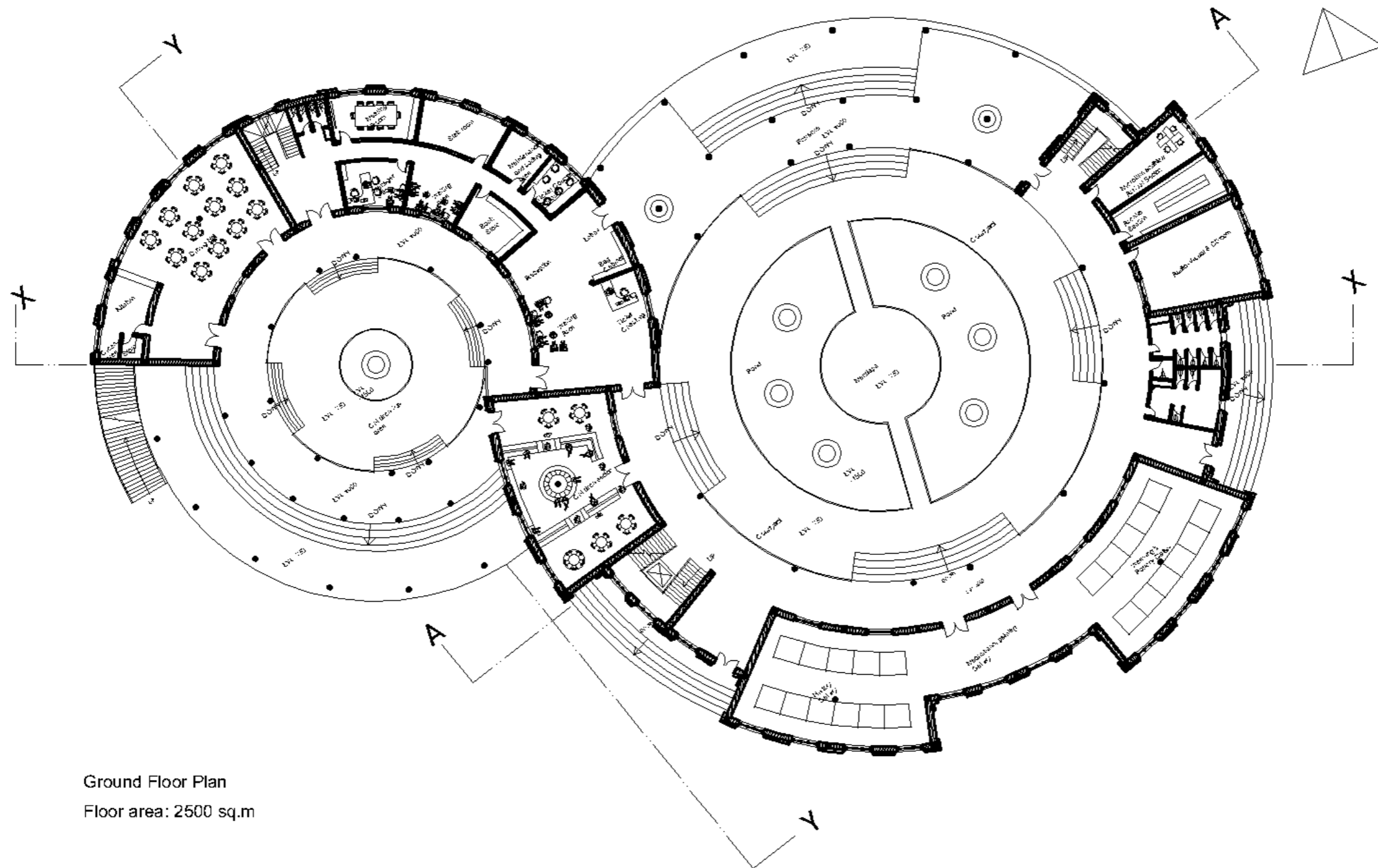
Ground Floor Plan

Floor area: 2500 sq.m

SUBJECT: THESIS	NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
	ROLL NO: 760116	DATE: 2082/04/27
TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	SCALE:

First Floor Plan

Floor area: 1780 sq.m

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	ROLL NO: 760116	DATE: 2082/04/27
TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	SCALE:

Second Floor plan

Floor Area : 1250 sq.m

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TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	SCALE:

Third Floor Plan

Floor Area: 380 sq. m.

	SUBJECT: THESIS	NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
KHWOPA ENGINEERING COLLEGE		ROLL NO: 760116	DATE: 2082/04/27
DEPARTMENT OF ARCHITECTURE	TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	SCALE:

Roof plan

SECTION AT X-X

SECTION AT Y-Y

SECTION AT A-A

Growing medium
Filler Layer
Drainage Aeration, Water Store
Root Barrier
Water Proofing Barrier
60mm thick Insulation Layer
50mm PCC
Plyethylene Sheet
Water Proof Ply Board/False Ceiling
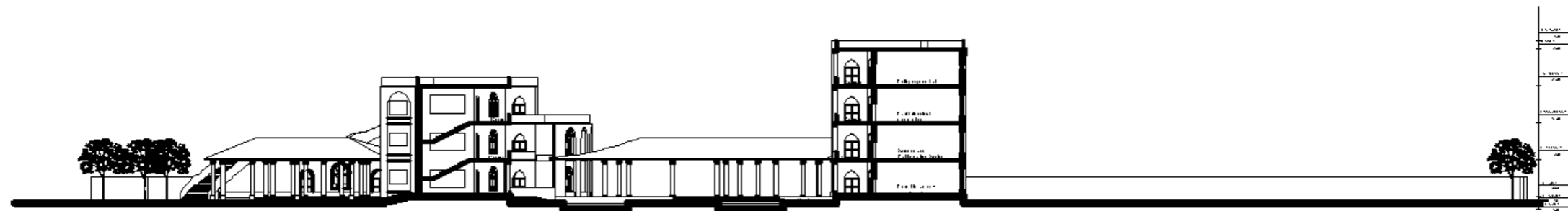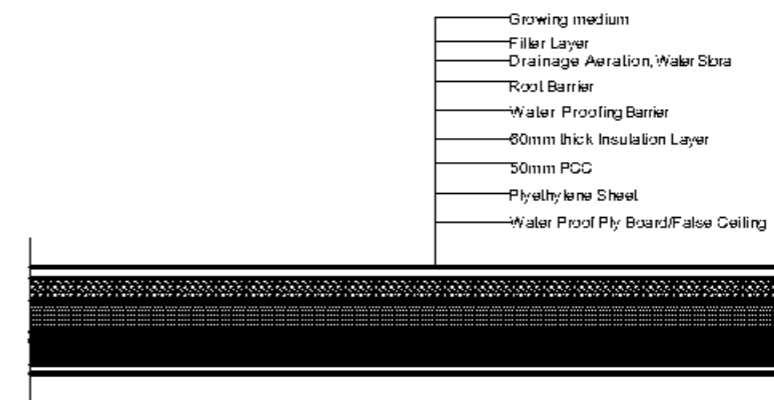
Detail at A
Scale : 1:20

Roof Plan
Scale 1:300
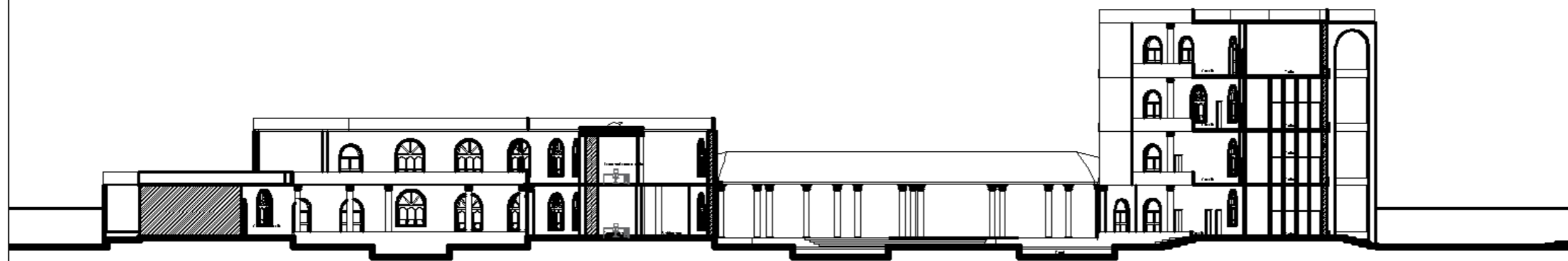
Section At X-X
Scale 1:150

SUBJECT: THESIS	NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
	ROLL NO: 760116	DATE: 2082/04/27
TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	
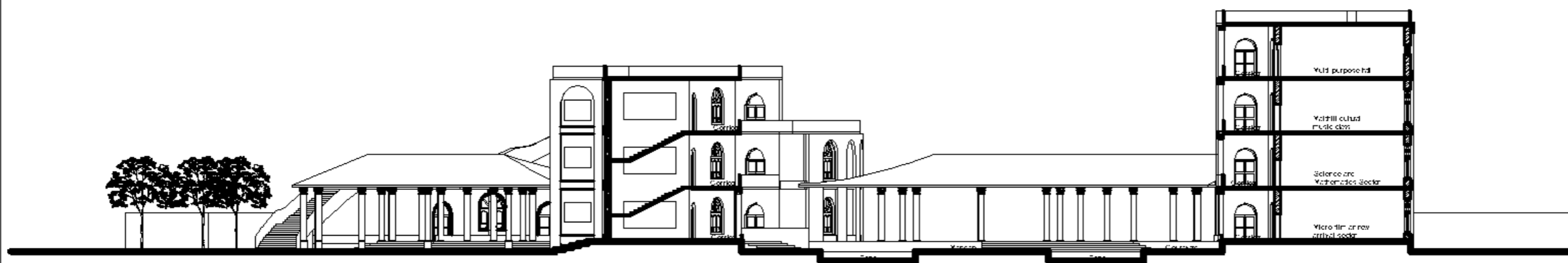
Section At A-A
Scale 1:150

Multi purpose hall

Multilli cultural music class

Science and Mathematics Sector

Micro film or new arrival Sector

Section At Y-Y
Scale 1:150

SUBJECT: THESIS	NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
	ROLL NO: 760116	DATE: 2082/04/27
TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	SCALE:
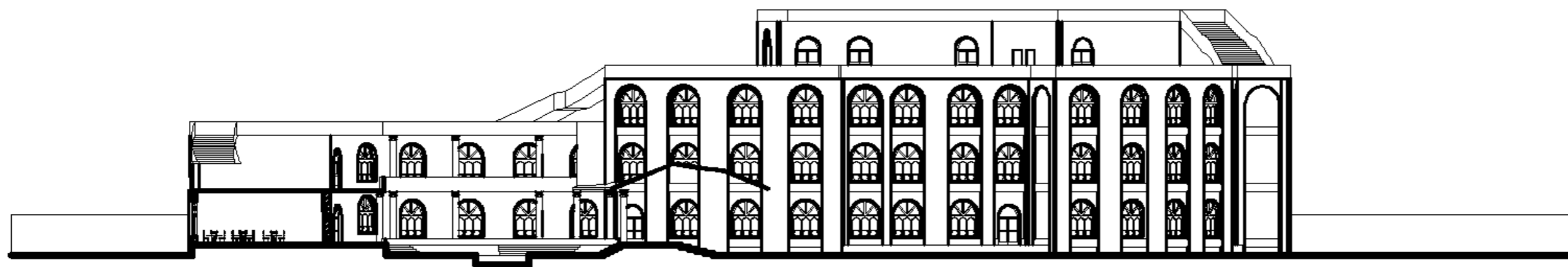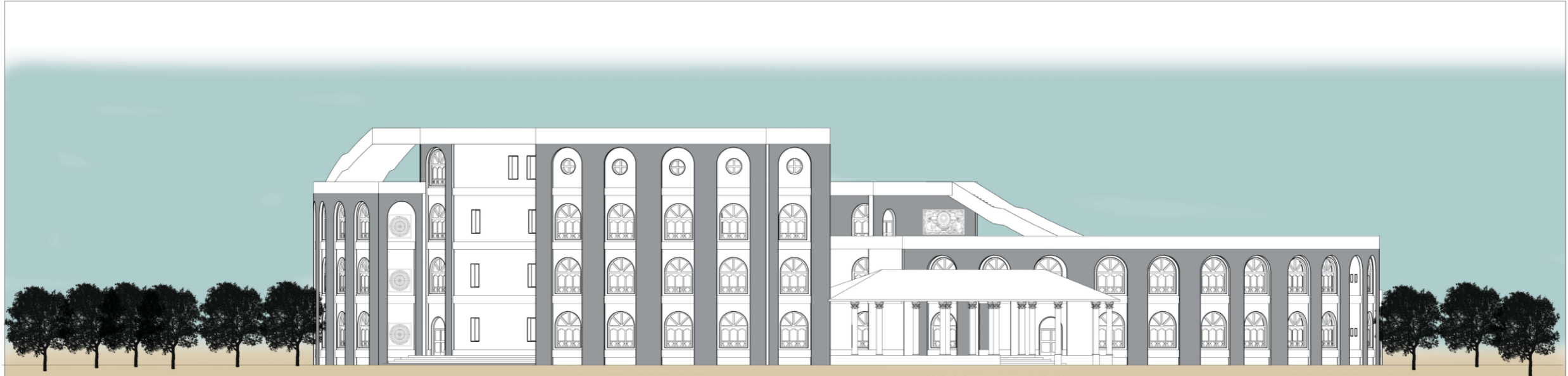
East Elevation
Scale 1:150

East Profile Elevation
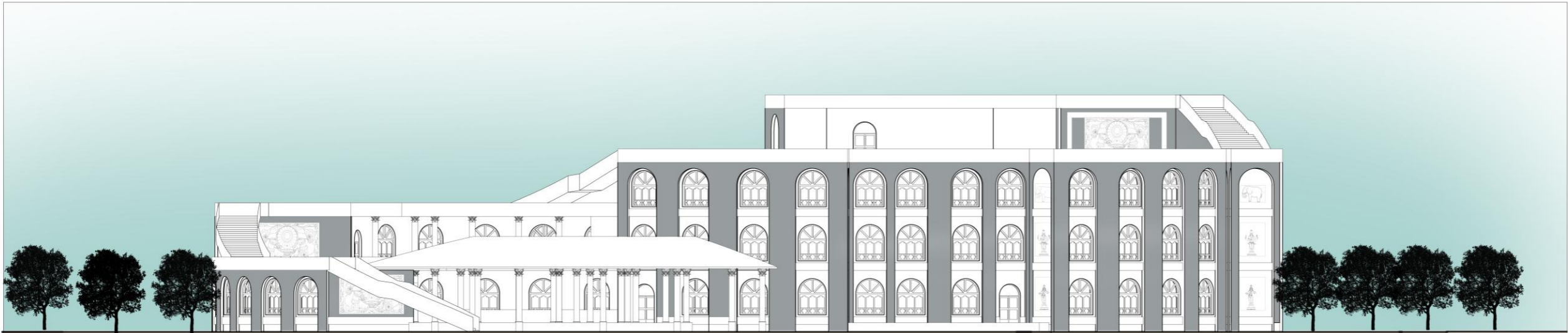Scale 1: 250

North Elevation
Scale 1:150
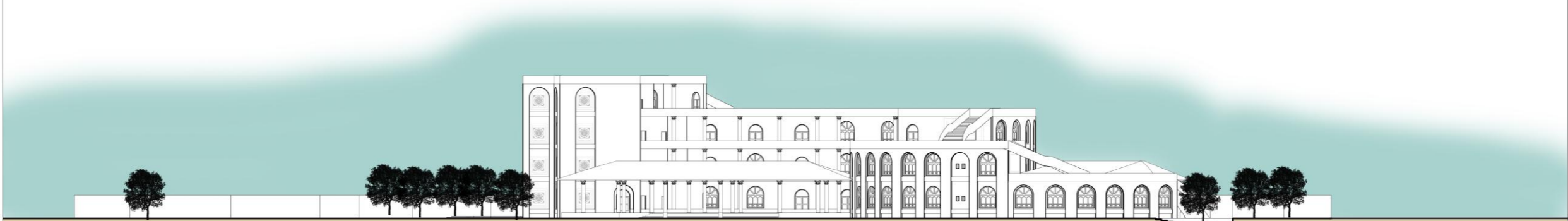
North Profile Elevation
Scale 1:250

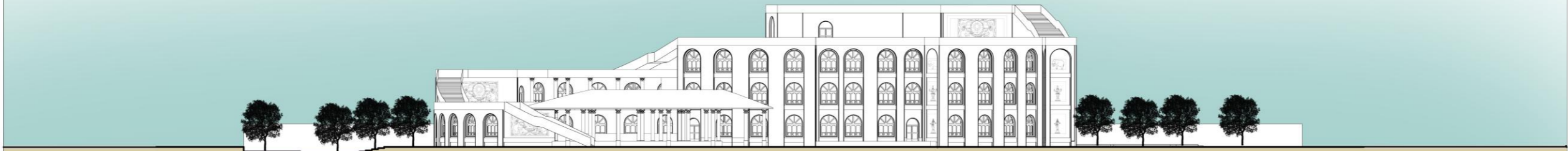| PURBANCHAL UNIVERSITY KHWOPA ENGINEERING COLLEGE DEPARTMENT OF ARCHITECTURE LIBALI, BHAKTAPUR	SUBJECT: THESIS		NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
			ROLL NO: 760116	DATE: 2082/04/27
	TITLE: MITHILA CULTURAL LEARNING HUB		CHECKED BY:	SCALE:

West Elevation
Scale 1:150

West Profile Elevation
Scale 1:250

SUBJECT: THESIS		NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
TITLE: MITHILA CULTURAL LEARNING HUB		ROLL NO: 760116	DATE: 2082/04/27
		CHECKED BY:	SCALE:
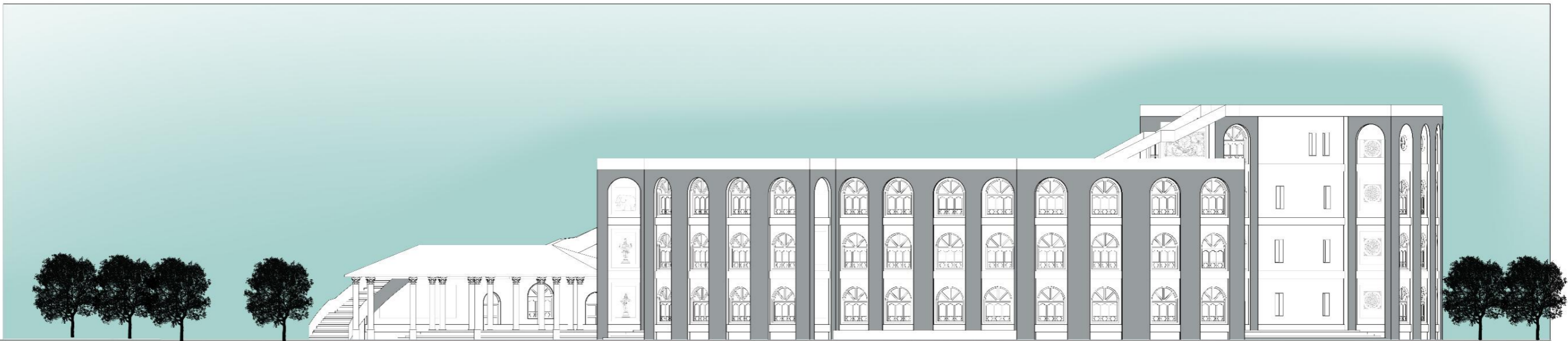
South Elevation
Scale 1:150

South Profile Elevation
Scale 1:250

3D RENDER IMAGES OF MITHILA CULTURAL LEARNING HUB:

3D VIEWS:

FRONT FACADE VIEW OF BUILDING

BACKYARD

ENTRANCE OF THE BUILDING

CHILDREN'S PLAY AREA

ENTRANCE AREA

EAST ELEVATION OF THE BUILDING


READING NOOK, OUTDOOR READING AREA

VIEW FROM READING NOOK

INTERNAL COURTYARD OF THE

PURBANCHAL UNIVERSITY KHWOPA ENGINEERING COLLEGE **DEPARTMENT OF ARCHITECTURE** LIBALI, BHAKTAPUR	SUBJECT: THESIS	NAME: JAGREETI SHAH	B. ARCH 076 BATCH V/X
		ROLL NO: 760116	DATE: 2082/04/27
	TITLE: MITHILA CULTURAL LEARNING HUB	CHECKED BY:	SCALE:

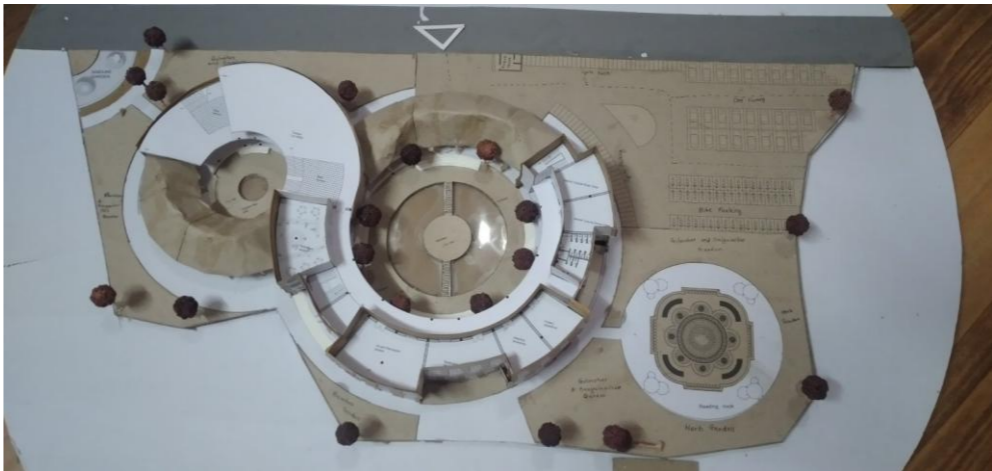## 3D MODEL OF MITHILA CULTURAL LEARNING HUB
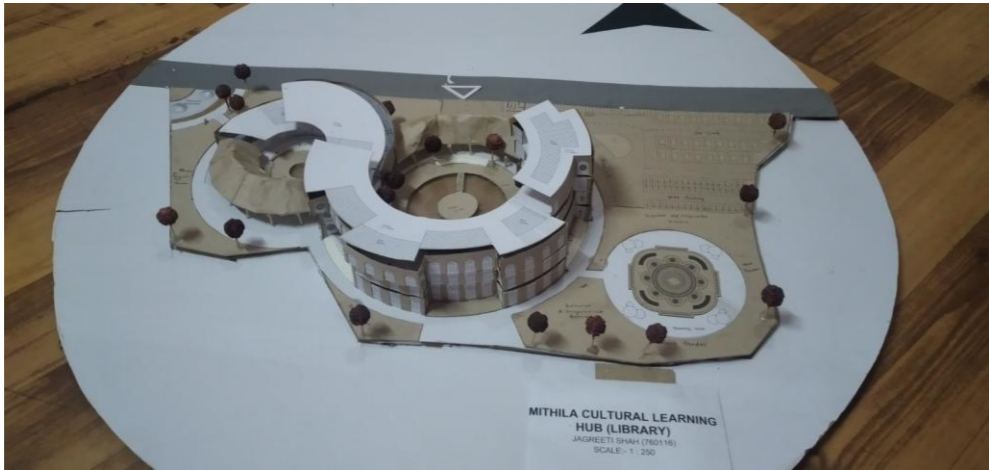
WHOLE MODEL WITH ALL LEVEL

GROUND FLOOR LEVEL MODEL

FIRST FLOOR LEVEL MODEL

SECOND FLOOR LEVEL MODEL

THIRD FLOOR LEVEL MODEL