KHULNA DIVISIONAL GOVERNMENT PUBLIC LIBRARY

BOYRA, KHULNA

By

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A thesis submitted to the Department of Architecture
in partial fulfillment of the requirements for the degree of
Bachelor of Architecture

Department of Architecture
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Declaration

It is hereby declared that

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2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

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Approval

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ABSTRACT

The Khulna Divisional Government Public Library will provide a space for Khulna residents to socialize, live, share, and learn. The goal of this library isn't just to store books. Because this is a divisional library, it is both an information hub and a venue for social interaction. It will also bring individuals from other districts together. This library hosts a book fair every year. Throughout the month of February Although social contact is already existent, it was required. Improved during the year to establish a knowledge-hub, activities to obtain information, produce knowledge, and distribute must be placed in order to make a social-interaction space. It will be a symbol of municipal pride.

Keywords: Conservation, Social interaction, Communal Hub, Knowledge sharing zone, digital Library.

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Chapter 1: Introduction

1.1 Background of the Project

A library is a collection of sources of knowledge and comparable resources that are made available for reference or borrowing to a designated community. It might be a physical structure or room, a virtual place, or both, and it gives physical or digital access to material. Books, newspapers, journals, maps, prints, documents, manuscripts, microform, CDs, Cassettes, DVDs, Blu-ray Discs, films, videotapes, e-books, databases, and other forms can all be found in a library's collection. The size of a library might range from a few shelves of books to several million pieces.

1.2 Project Brief

Title of the project: Divisional public library Khulna

Implementer of the Project: Government

Statement: Pursuit of knowledge

Site location: Boyra, Khulna, Bangladesh

Site: 2.64 acre or 115366.20 sft

Proposed built-up area of the Project:2,18,504 sqft

Communication service: Beside Khulna-Jessore highway road

1.2 Introduction of the project

A governmental entity, an institution, a company, or a private individual organizes and maintains a library for public use. People who do not want to—or cannot afford to—purchase a significant collection themselves, who require material that no person can fairly be expected to hold, or who want expert assistance with their study may benefit from public and institutional

collections and services. Libraries not only supply resources but also librarians who are specialists in finding and organizing information as well as interpreting information requirements. Libraries frequently feature quiet study rooms as well as communal areas to promote group study and cooperation. Public access to electronic materials and the Internet is frequently provided by libraries. Modern libraries are being reinvented as locations where people may obtain unfettered access to knowledge in a variety of formats and from a variety of sources.

The beneficial impact of creative library programs throughout the world has reemphasized the need for greater thinking in the public library sector. Given the importance of public libraries in generating social capital, fostering knowledge communities, and restoring creative learning, the Bangladeshi government has showed fresh interest in reviving them. Bangladesh's government, BRAC, Bengal Foundation, and British Council have created a partnership to work together to improve Bangladesh's public libraries.

Khulna division

The requirements and services of library buildings have evolved over the previous decade, but the need for thoughtful and detailed planning has not. In reality, now, more than ever, limited finances and the complicated demands of both library customers and employees necessitate meticulous planning. Whether you're starting from scratch or just remodeling, planning, coordination, and communication are critical to the success of any project. The reader percentage of the Khulna Public Library, which was founded in 1965, was 68 percent ten years ago. The ratio of readers has now risen to 13%. The causes for the decrease in readers, according to user feedback and a physical survey, are changes in reading habits, reading culture, and surroundings, as well as the location of the library and the digital facility.

1.3 Aim and Objectives of the Project

There are three main objectives of this project

- The project aims to be a platform for social interaction that combine people from various fields, ages and income group. People will share their ideas, their findings for the betterment of society. It should be always kept on mind that knowledge has no boundaries and there is always something new to learn and each individual has something to teach others because everyone’s perspective is different from each other. The project should be able to blend into the lifestyle of the people and it should attract people.
- The project should add a new dimension in the context of the city. The project should act as a guideline or path that drives the society forward
- Conserving the old library part which is designed by architect doxiadise and which is almost about 70 years old.

1.4 Proposed programs

• Car parking: 50 cars

• Electric sub-station: electric power station (500kv)

• Seminar and meeting room: 150 sittings for seminar and 30 sittings for meeting room

• Book exhibition center

• Computer lab: 20 sittings

• Cyber cafe: 20 sittings

• Library and reading rooms:

I. normal reading room for 150 people with one librarian room

II. science textbook reading room for 100 people with one librarian room

III. reference textbooks reading room for 50 people with one librarian room

IV. children's reading room for 50 people

V. reading room for 50 disable people

VI. women's reading room for 50 people

VII. reading room for 30 old people

VIII. open reading room for 100 people with one librarian room

• Others: administration block

• Garden space

• Cafeteria: for 50 people

• Dormitory: for 20-25 trainers

• Residential facilities: Director-01 (grade-4), Sub-Director (grade-5), Residential Librarian, Security Officer, Deputy Assistant Engineer, Caretaker, Electrician, Security Guards

• Auditorium: 500 sittings

• Security and Generator

1.5 Project rationale

Any library is a temple of knowledge. A library nourishes a thirsty mind with knowledge is the best way to develop any civilization. In every division we have one divisional public library

that serves that division's people. Khulna have its divisional library on this proposed site but the library was too old and it needs reconstruction and boost.

Therefore, government thought to build a new divisional public library for Khulna on the same existing site, demolishing the old one. This library is also act as a public gathering space. Book fair (ekushe boi mela) is one of the popular fairs for citizens of Khulna. Every year this fair is held in this public library. The location of this project is surround mostly with educational institutes that make the place more suitable for build a public library. Though this library will attract people of all ages but Most of the users of this library will be students. Even boyra residential area is near to this library and people who is preparing themselves for BCS and IELTS are also attracted and regular users of this library. To give maximum facility to the wide range of readers, existing library is not sufficient enough. Therefore, this site demands a better and more user capable library. Library is not only about the building block, it's the interaction of people that gives them a platform to share their knowledge, it's an environment that influence people to pursuit the light of knowledge.

Trying to identifying the educational institutions because a huge amount of library users is students. Though every aged people and people of every sector is a user of this existing library. This educational institutes have very important historical background behind the development of this city. Site forces are shown in below figure.

Chapter 2: Literature Review

2.1Introduction

2.2Historical background of libraries in Bangladesh

2.3Transforming the space

2.4Types of Library

2.5Background of the concept

2.6Educational institute and Library

2.1Introduction

The word "library" seems to be utilized in such a lot of different aspects now, from the brick-and-mortar library to the digital library. Public libraries—and indeed, all libraries--are changing and dynamic places where librarians help people find the simplest source of knowledge whether it is a book, a web site, or database entry.

In The Librarian's Book of Lists (Chicago: ALA, 2010), George Eberhart offers this definition:

"A library may be a collection of resources in an exceedingly sort of formats that's (1) organized by information professionals or other experts who (2) provide convenient physical, digital, bibliographic, or intellectual access and (3) offer targeted services and programs (4) with the mission of teaching, informing, or entertaining a spread of audiences (5) and therefore the goal of stimulating individual learning and advancing society as a full."

A library (Merriam-Webster, 2018) is a gathering place for information that is open to the public. It allows for physical or virtual access to textual communication in a significant or virtual place. Books, journals, manuscripts, publications, videos, maps, papers, and other

reading, viewing, listening, and learning materials are all included in the purchase. The structure houses books that must be read or loaned in a standardized and monitored manner by a governmental entity, a business, or a private individual. It also includes a variety of other items for study and enjoyment, such as videos, musical records, and maps. For a fee, readers may borrow books from a legitimate organization.

2.2Historic Background of Libraries in Bangladesh

The library is a cultural institution where books, journals, and newspapers, as well as their content, are stored for readers and scholars to use. The word library comes from the Latin word liber, which means "books." Libraium is a derivation of the word liber that means 'place to stay books.' The word Librarie means 'collection of books' in Anglo-French.

Written works were done on tree leaves or bark, stone, clay pots, or animal skins before the invention of the machine. These items were gathered and stored in the libraries. According to research, the 30,000 burnt clay plates discovered in Mesopotamia (Iraq) were five thousand years old. The papyrus scrolls discovered in ancient Egypt's Amrana and Thebes were written between 1300 and 1200 BC. People from the Sumerian, Babylonian, and Assyrian cultures lived in Mesopotamia's valley and contributed to the civilization by building libraries.

During the medieval period, the Hossain Shahi dynasty created the first royal library. Srirampur Missionaries built a library in 1780 to preserve printed books and manuscripts. Soon after, Kolkata Aliya Madrasah and Benarash Hindu University followed suit. In 1805, Fort William College built an arts and science library. In 1805, the Asian Society constructed a new library in Calcutta.

In 1854, four public libraries were founded on private initiative. Bogra Woodburn Library, Rangpur Library, Jessore Institute Library, and Barisal Library are the four libraries mentioned. Until the outbreak of World War II, the trend of building libraries continued across undivided

Bengal. For British officials, these libraries served as a study center as well as a gathering place. The approval of a plan to establish libraries around the country during the 39th Congress, held in Belgoan in 1924, is notable. At addition, libraries are present in religious education centers based on madrasahs.

2.3Transforming the Space

The transformation of libraries from a gloomy mood to a creative and joyful ambiance is a 21st-century triumph. The combination of indoor and outdoor architecture tends to entice people to come inside and read. Group study fosters social awareness as well as knowledge of communal value. People typically meditate in an aesthetically attractive and joyful setting. (Library Transformation, 2013).

2.4 Sorts of libraries

There are four major types of libraries:

1. Academic libraries serve colleges and Universities.

2. Public libraries serve cities and towns of all types.

3. School libraries serve students from kindergarten to grade 12.

4. Special libraries are in specialized environments, such as hospitals, corporations,

museums, the military, private business, and the government

2.5Background of the Concept

2.5.1Influence of British colonial architectural style in the architectural style of Bangladesh

Connection between Calcutta and British colonial architecture:

From Toronto to Yangon, the British left their imprint across their vast colonial empire. But nowhere other has such a diverse collection of heritage buildings as Kolkata.

Thousands of structures from the British era have survived, including residences, churches, castles, and even synagogues. Thomas R Metcalfe, a historian and professor at the University of California, Berkeley's Department of History, writes in his book An Imperial Vision: Indian Architecture and Britain's Raj:

"It was critical to always make evident Britain's imperial role as a ruler in the general public buildings erected by the Raj, because these structures were entrusted with the explicit goal of symbolizing the empire itself. They decided to explain their existence by connecting themselves to the former rulers, the Mughals, in order to legitimate their reign."

By definition, colonial architecture is a style of architecture that is derived from a rustic source and then incorporated into structures in remote locations. Colonists produced a fusion by combining the architectural language of their home nation with the planning principles of the place they colonized, resulting in this architectural style.

Calcutta quickly rose to prominence as a city during the British rule, due to increased commercial possibilities and improved water connectivity. As a result, from 1773 to 1912, it served as the British capital of India. As a result, it's no wonder that numerous aesthetically noteworthy structures, such as the Belvedere House, the Writer's Building, and therefore the Victoria Memorial, were built in West Bengal during the British dominion of 200 years.

The British intended to build a neo-classical metropolis in Calcutta, but local opposition resulted in a segregation in the city's organization. Apart from the indigenous architecture, these structures drew significantly on the designs of their colonial masters, resulting in a hybrid of European neoclassical, native Mughal, and traditional Bengali architecture. Between the late 19th and early 20th centuries, with the major partition of Bengal in 1905, a mix of Mughal and European architecture appeared. Some novel architectural components were added throughout the 19th century, such as the semi-circular arch and the triangular pediment constructed.

Connection between Calcutta and southern-western part of Bangladesh:

Bangladesh's southern-western region is simply encircled by the Bay of Bengal. Through trade and business, this area of Bangladesh has been linked to Calcutta since the late 17th century. Because commerce was primarily done by watersheds at the time, Khulna became the most significant city in the region, with the largest port, named Mongla port. All trade was conducted through this port, which connected Khulna and Calcutta directly.

Source: Google

2.6 Educational institute and Library

From the outset, education and libraries have been intertwined. According to (Allen, R. E,1984), the library provides its wide collections and services to any or all members of society who require knowledge-based assistance for their study. These locations frequently include a quiet study room as well as a common area for studying in groups with other amenities. Electronic materials are also accessible through libraries. Libraries, as a common meeting place, play an important role in educating people about their rights. People want a divisional library since every division in Bangladesh has one.

Khulna has a divisional library that was founded in 1897. However, the building has become rather old, and the available space is insufficient. As a result, the government has decided to build a new library in the same location. But the design proposal of this project is to build a new library while conserving the old one and to build a connection between these two.

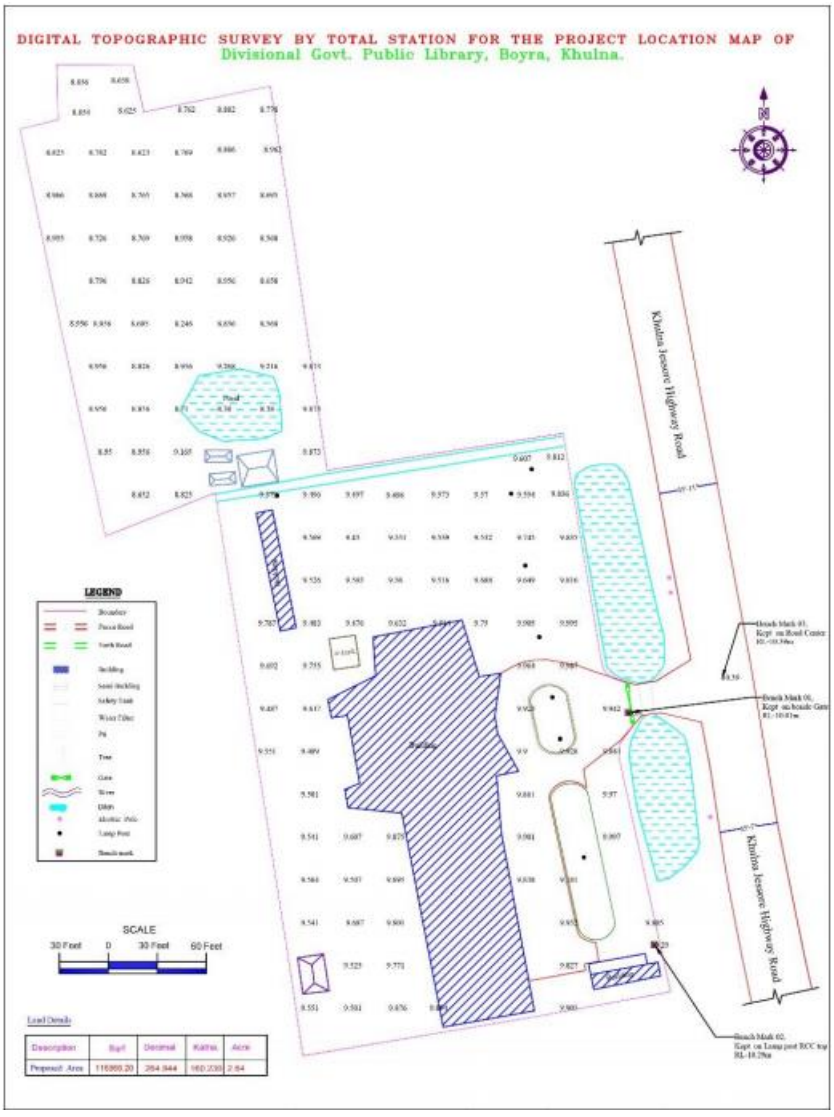
Chapter 3: Site analysis

3.1 Site location

3.2Site analysis

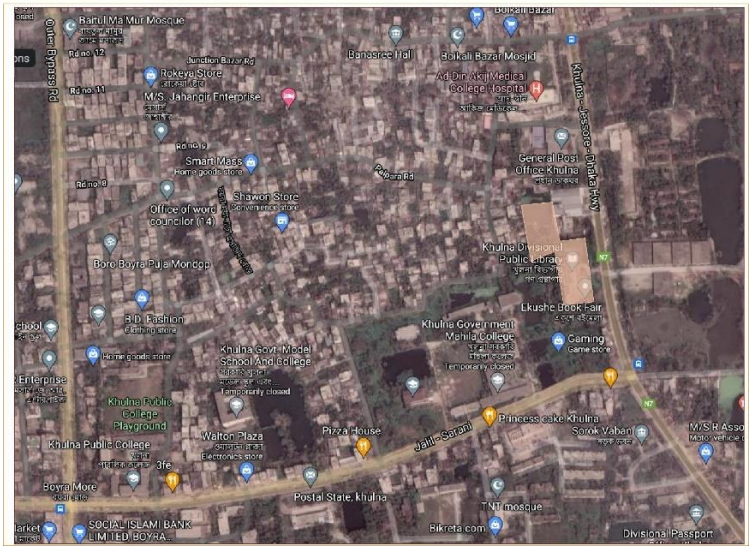
3.3SWOT analysis

3.1.1Site Map

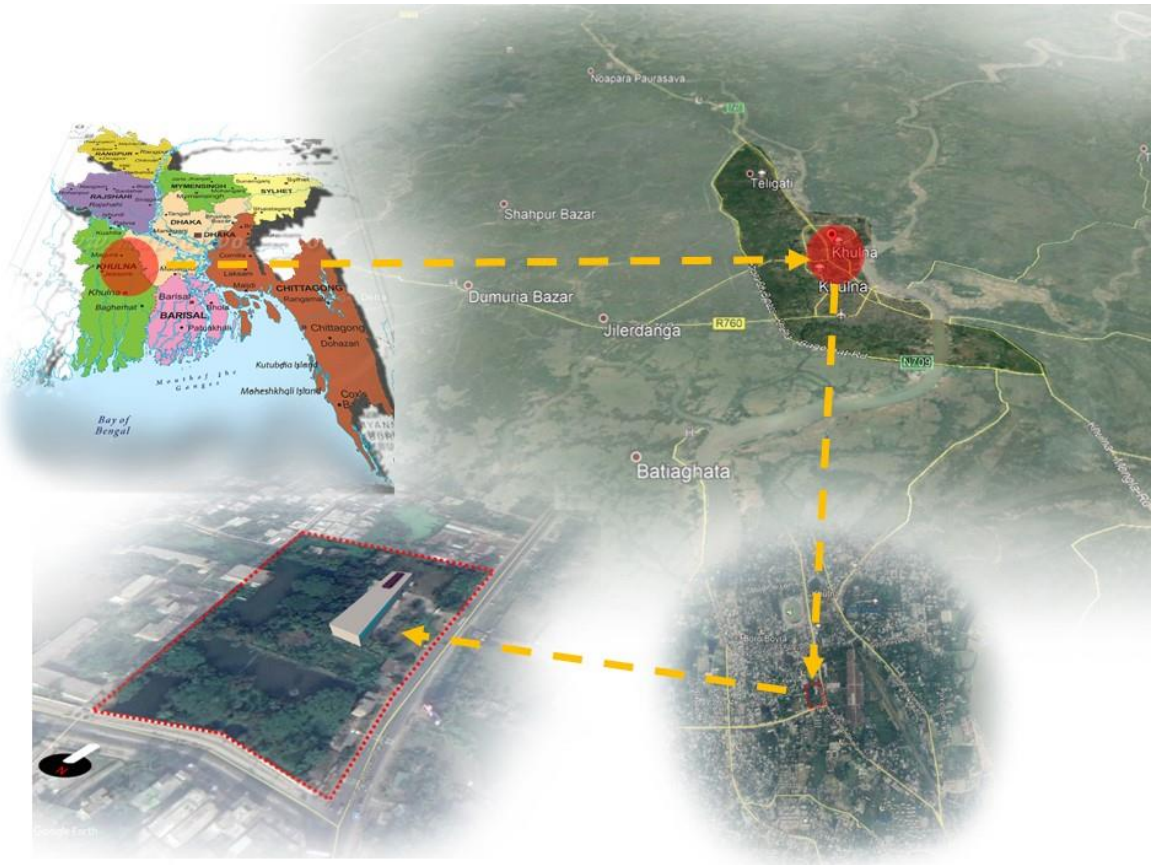


Source

3.1.2Location of the site



Source: Boyra Bazar. (2018). Boyra Bazar. Retrieved 4 March 2018, from https://www.google.com.bd/maps/place/Boyra+Bazar/@22.8374718,89.5342518,17z/data=!4m5!3m4!1s0x39ff9a95747715 Edited by: Author



The site is situated in Boyra,Khulna ,Bangladesh.It is on a major point of Dhaka-jessore-khulna highway. The site area is surrounded by residential zone,educational zone and commercial zone.

3.2 Site analysis

3.2.1Surrounding land and building use

Commercial building

Residential building

Site

Water body

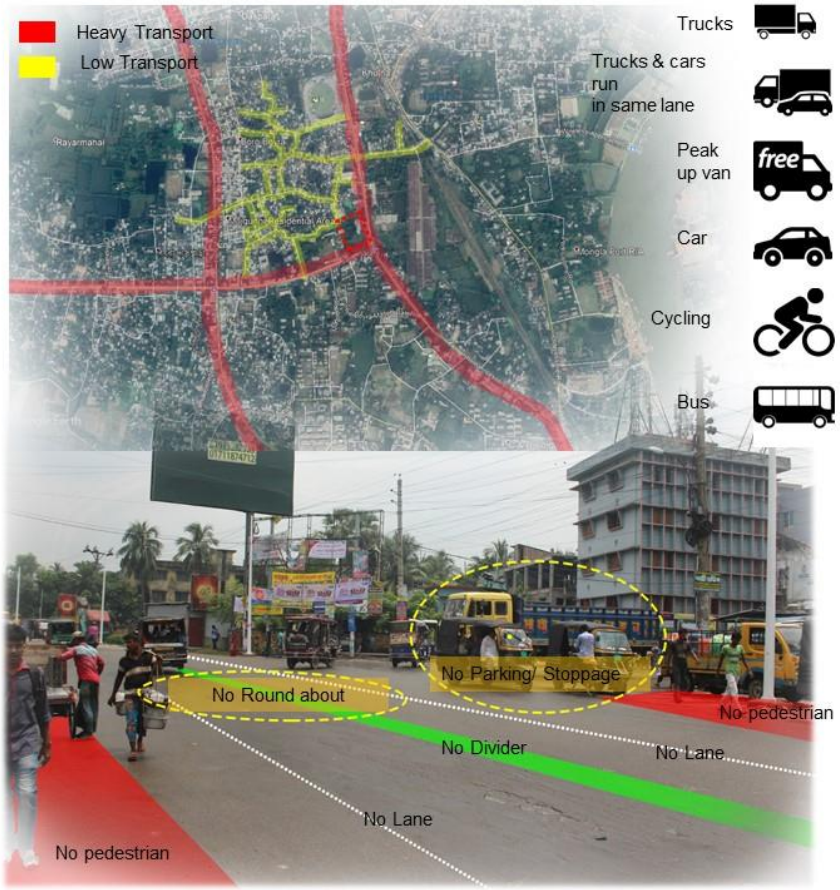
Educational institute

Source:Author

3.2.2Road network

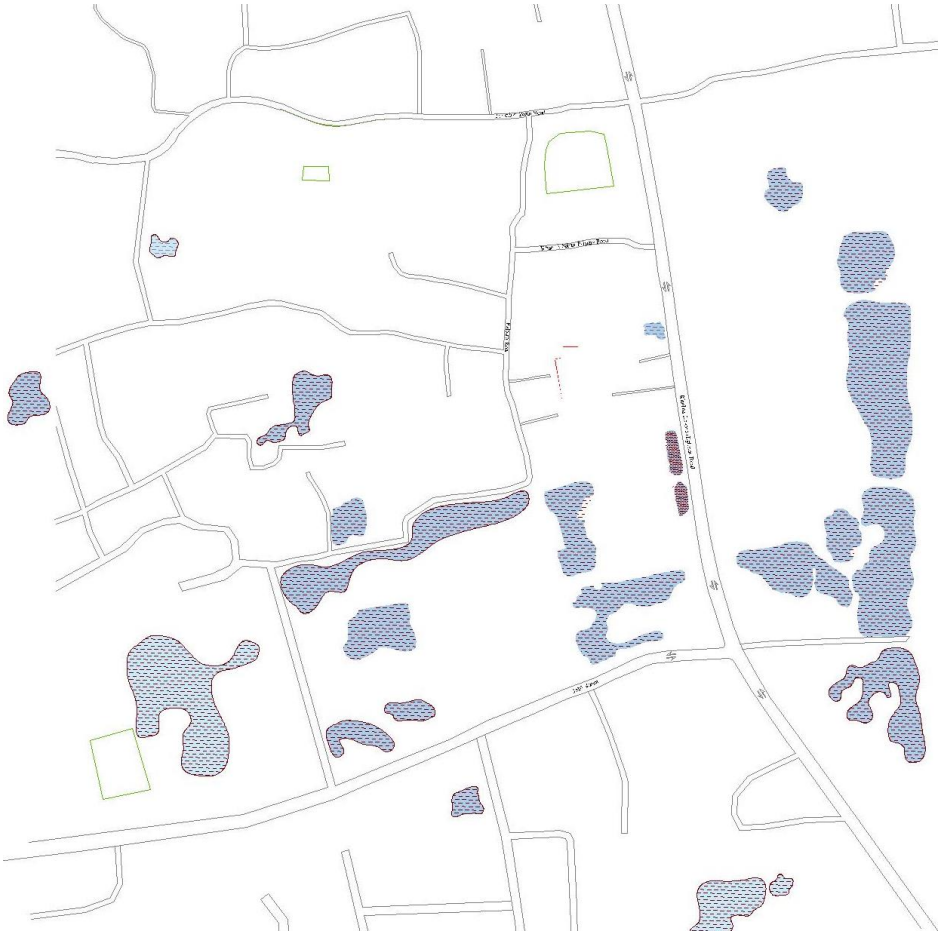
Source:Author

3.2.3Traffic pattern and road condition



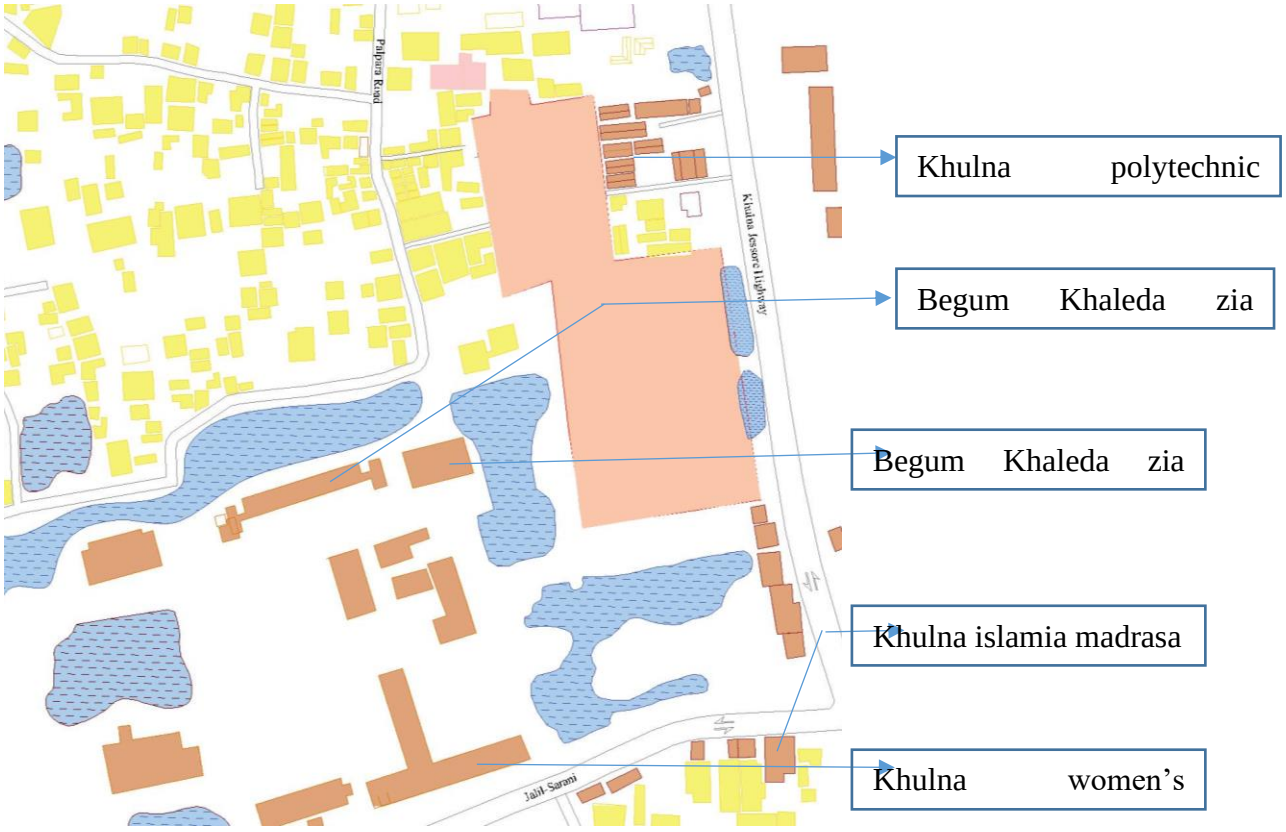
Source: Author

3.2.4 Surrounding Green and Waterbody

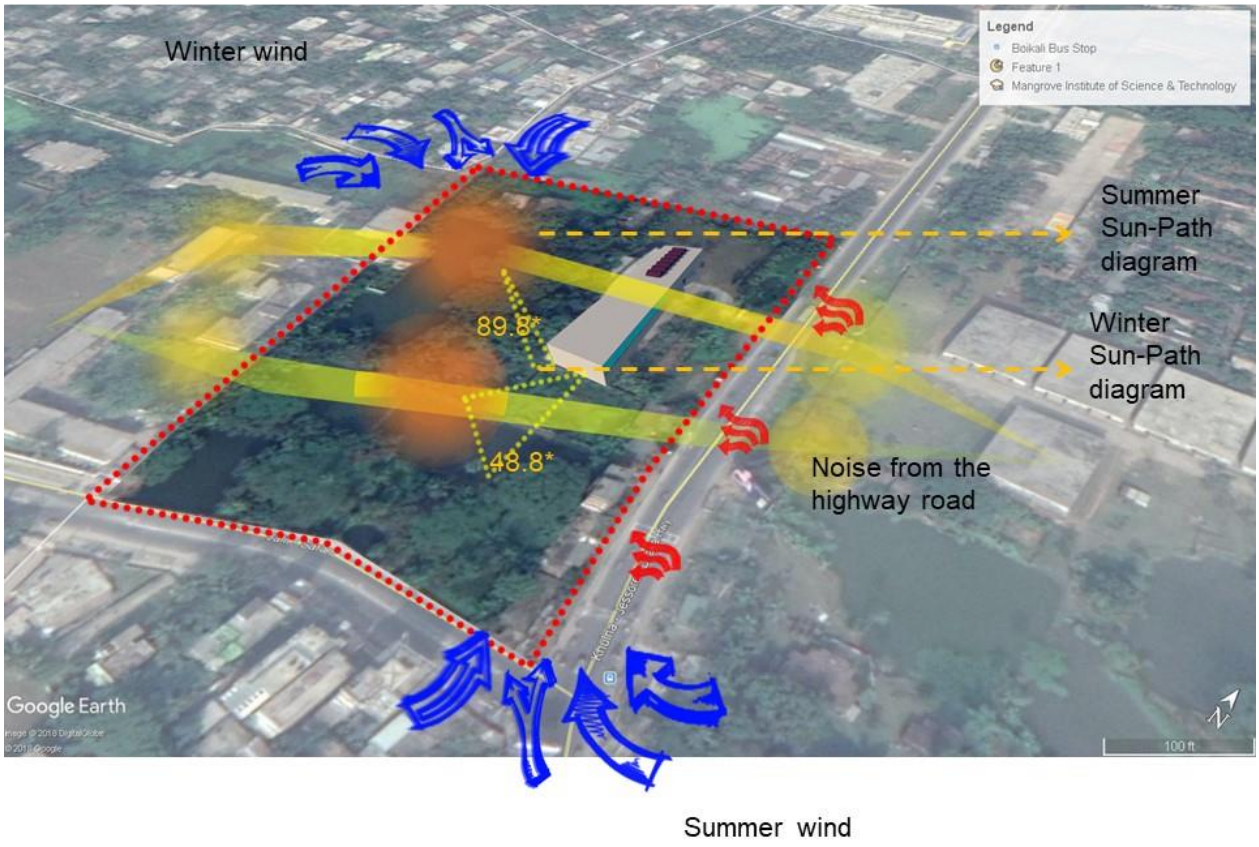


Source:Author

Every aged person can use a library ,but mainly people from institution especially educational institutes use library the most. That’s why educational institute surrounding the site is shown in the below figure:

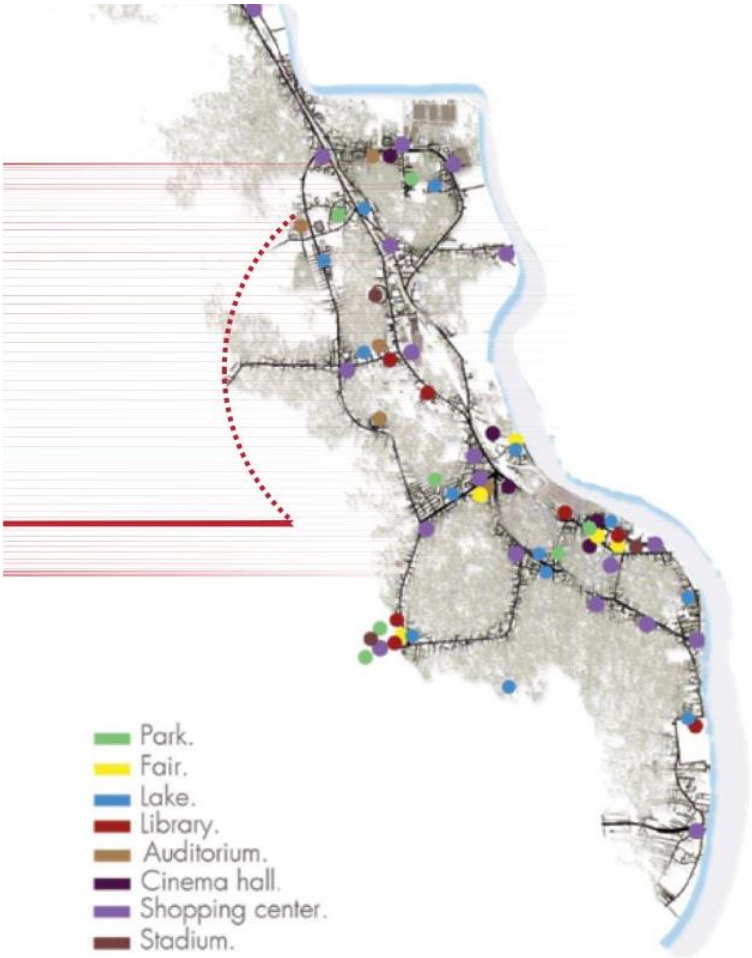

Khulna polytechnic
Begum Khaleda zia
Begum Khaleda zia
Khulna islamia madrasa
Khulna women's
Educational institute

3.2.5Analysis of the environmental aspects



Source:Author

3.2.6Landuse map



Source:Author

3.3Site pictures

View from road

Picture of existing library (Interior)

Picture of existing library

Picture of greenery on the site

Picture of ekushe boimela

Source: Google

3.4 SWOT analysis

Strengths

- Key point at Boyra
- Surrounded by waterbody's
- Site area has low rise buildings
- Nearby university and college
- Far from central Khulna
- Noise free environment
- Greenery

Weakness

- A lot of unplanned greens and waterbody has covered the half of the site

Opportunities

- Quiet place for readers
- Because of the site forces the library can become the heart and social gathering place of the city

Threat

- Far from the central city
- Boundary walls are stopping people from coming here

Chapter 4: Case study

4.1 Phillips Exeter Academy Library

4.2 Bishaw Sahitto Kendro, Dhaka, Bangladesh

4.3 Seattle Central Library

4.1 Philips Exeter Academy Library

Exeter, New Hampshire is home to the library. This was created for the Phillips Exeter Academy's high school community(H. Paul).

The inner zone, a wide atrium with a pyramidal roof that offers diffused light inside the building, is separated into three sections. The illumination descends from the pyramid in the shape of two huge concrete cross blades that are turned diagonally in relation to the floor.

Wood is used to construct the intermediate zone, which includes mezzanine floors for the book stacking area. The brick facade creates an exterior zone for reading and other activities. Exposed brick is used on the exterior façade. Triangle towers are used to cut the corners.

Spaces:

Externally, it appears to be a brick cube; however, upon entering, it was recently discovered that access to virtually any time of day lies under the shadows, giving it the appearance of a cave. This access leads to a core section of the building's height characterized by a sequence of Euclidean shapes (circles, triangles, and squares) and the extensibility of their material, which is bathed in an apparent indirect light that recalls the emotion of what is fundamental.

The severity of this riddle, whose inner is emphasized by the movement from darkness to light, which symbolizes their access, breathes life into the structure and assumes his duty, the search of knowledge as a spiritual endeavor.

Rooms for personal contemplation are positioned on the second, third, and fourth floors, and are organized around the perimeter walls, in the areas between the brick columns, and articulated in the façade as a reference line with a perpendicular cubicle window.

While the plant and the segment of the whole open space offer a cavernous one point, the difficulty of this interior space, which stretches from the circular openings of the four areas of surface to the roof, finishing with massive concrete cross beams assembled diagonally, recalled previous designs for libraries with large central spaces, like Etienne-Louis Boullée's design for a genuine library in 1785, or Eric Gunnar Asplund's public library in Stockholm in 1927.

Source: H. Paul, Ideas and ideologies in the Late Twentieth Century.

Fig: 4.1.1 Exterior of Phillips Exeter Academy Library, source: Arch daily.

Fig: 4.1.2 Interior of Phillips Exeter Academy Library, source: Arch daily.

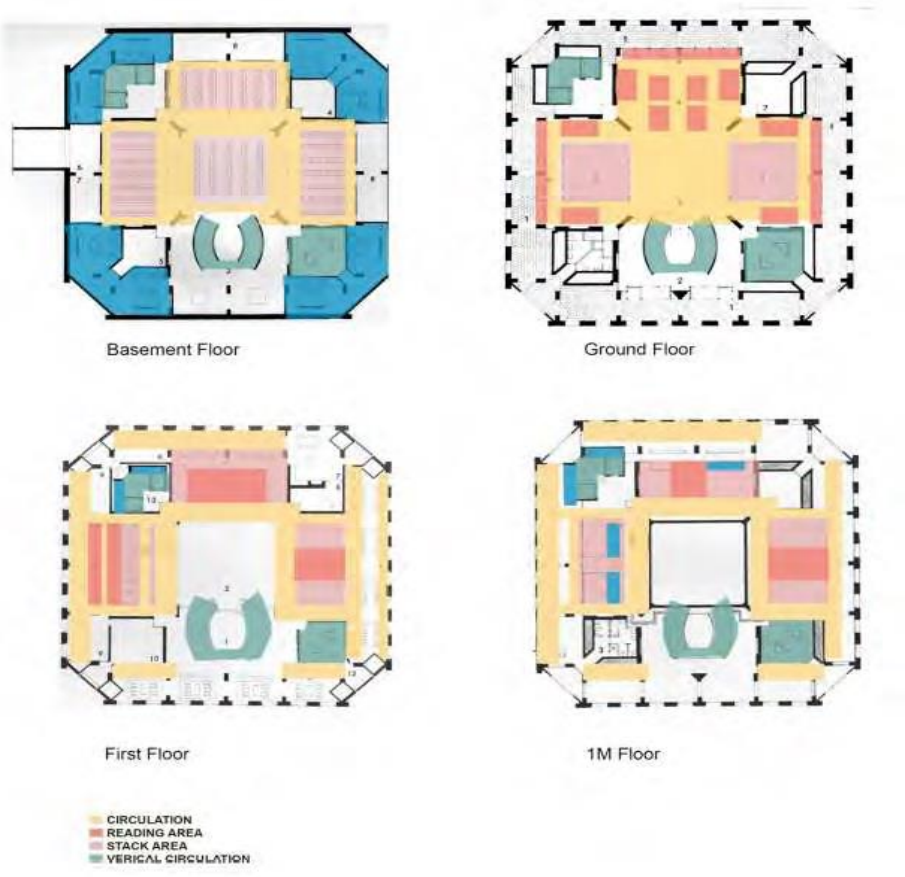


Fig: 4.1.3 plans, source: author via Arch daily.

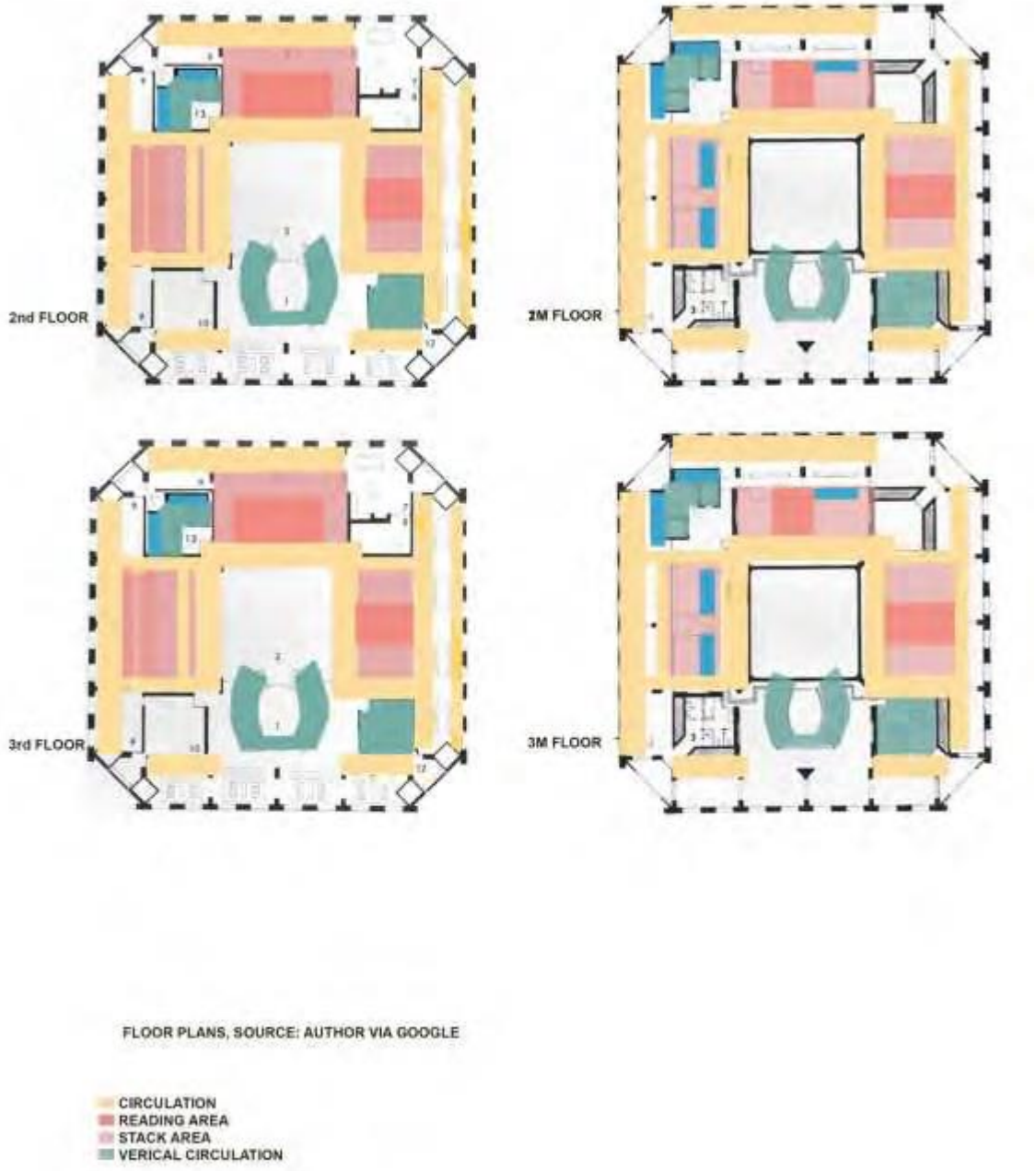


Fig: 4.1.4 plans, source: author via Arch daily.

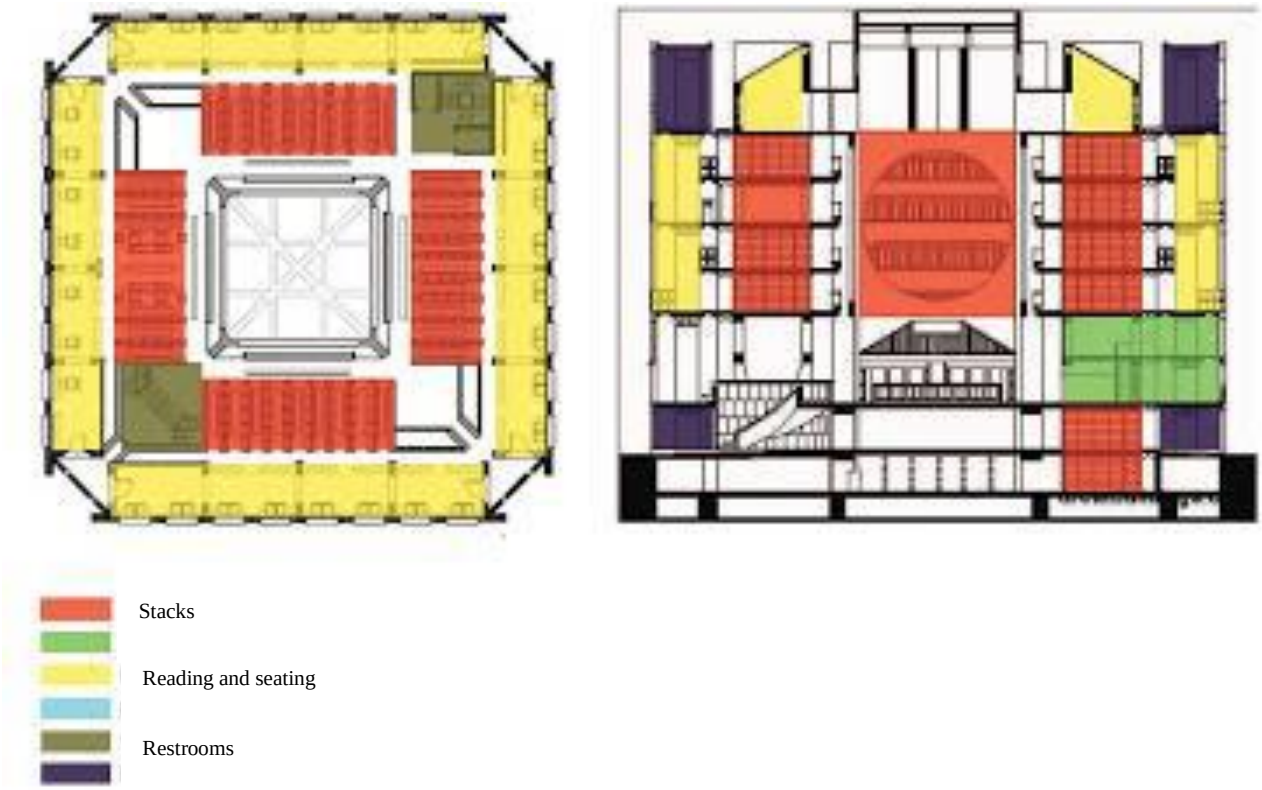


Fig: 4.1.5 functions in different floors, book stacks, office, reading spaces, vertical circulation and hollow spaces.
Source: Author via Behance. (2018). Behance.net. Retrieved 11 March 2018, from https://www.behance.net/gallery/6784061/Case-Study-Philips-Exeter.

The atrium is in the center, surrounded by book stacks, with reading areas on the outside and circulation on the corners. The center atrium lets in plenty of available sunlight, and the concept incorporates natural ventilation systems.

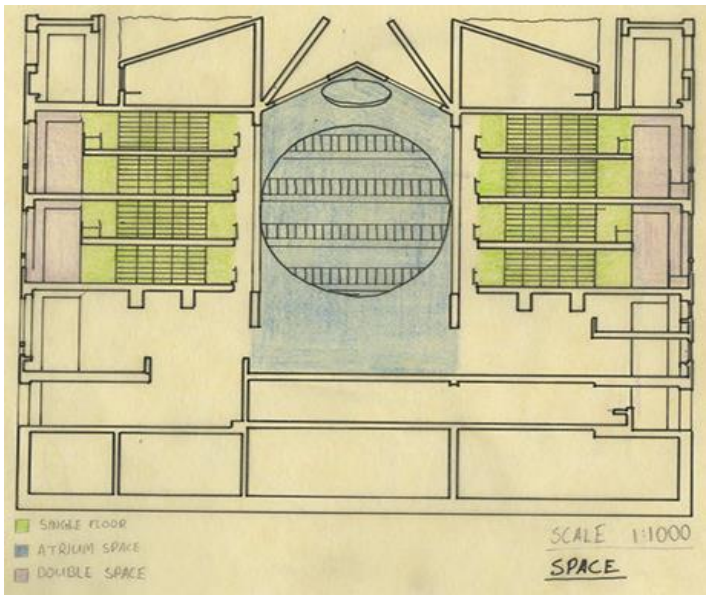


Fig 4.1.6: spaces inside the library.
Source: Behance. (2018). Behance.net. Retrieved 11 March 2018, from https://www.behance.net/gallery/6784061/Case-Study-Philips-Exeter.

Kahn's creations are always so simple yet majestic at a same time; he understands how to blend patterns and materials in their purest form to create magnificent spaces that are suited for everyone who enters his structures.

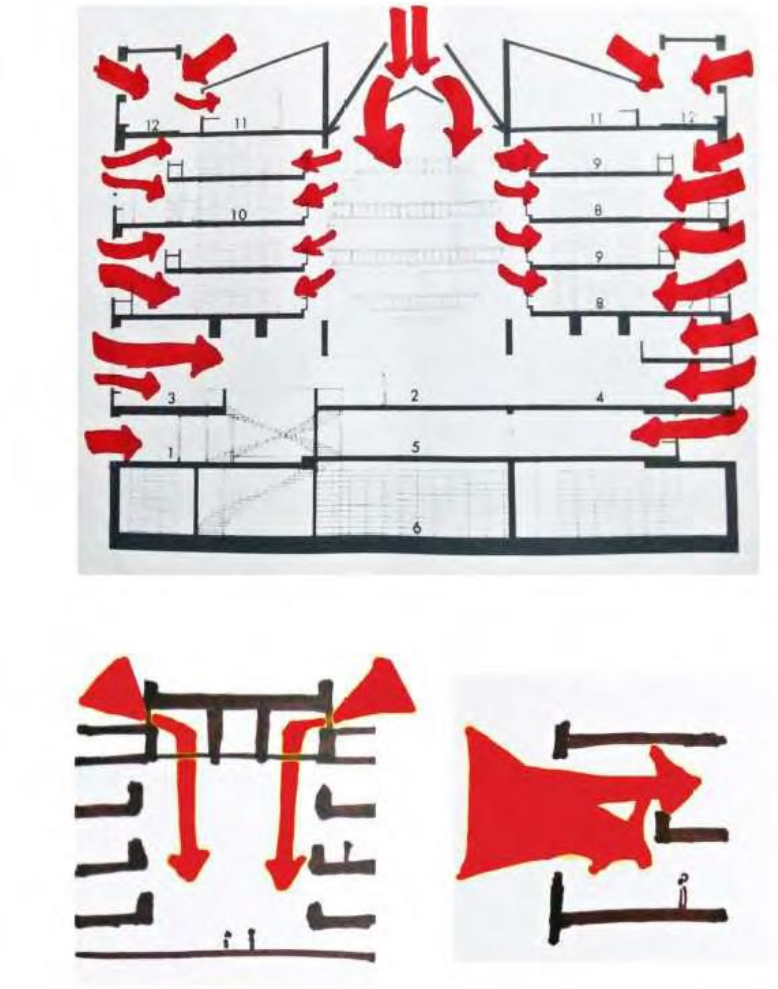


Fig4.1.7: Entrance of light inside building, Source: author.

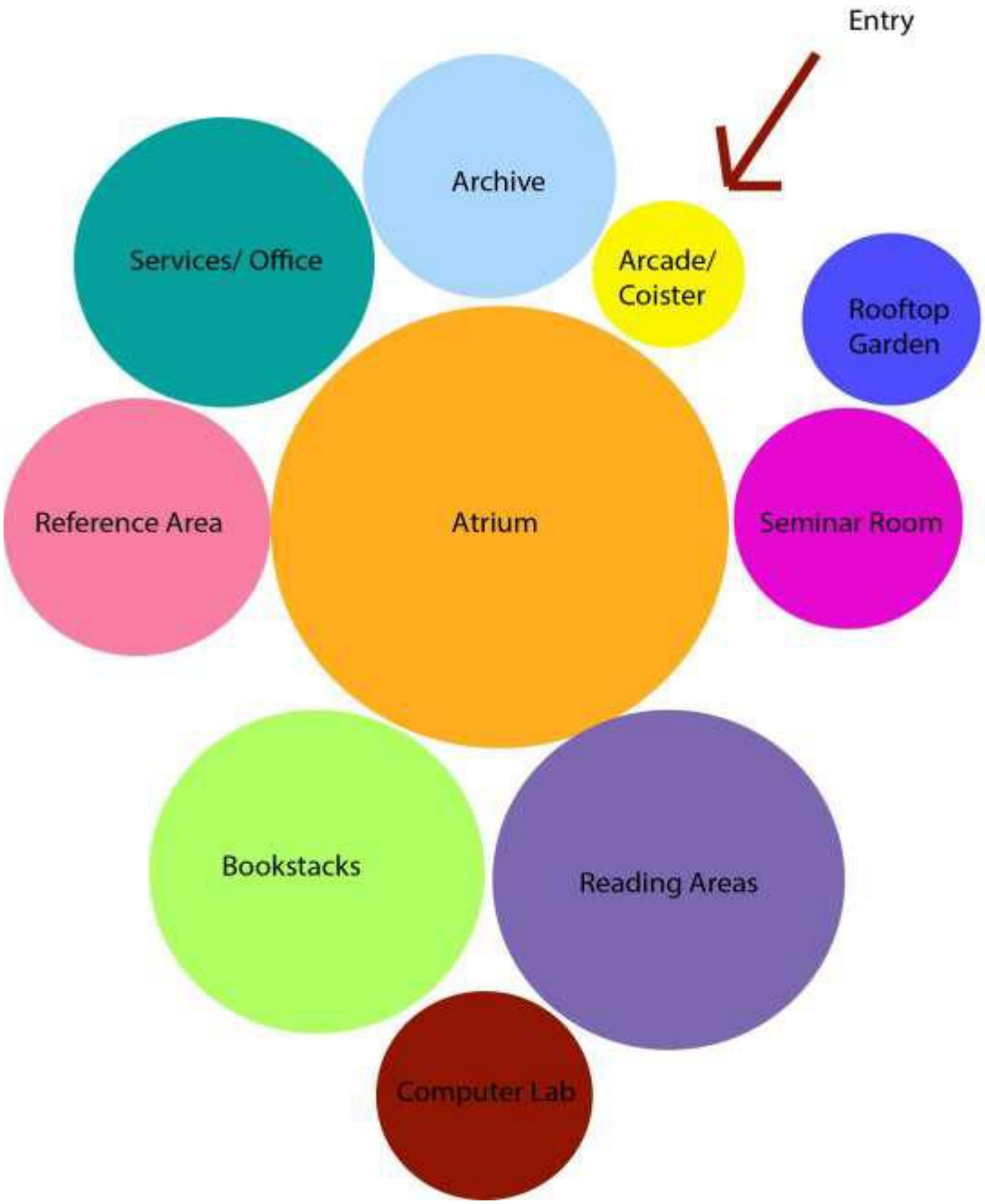


Fig: 4.1.8: Program flow diagram, Source: Fariha Tasnim

Analysis:

25% of the space is dedicated to circulation, 25% to service and administration, 40% to reading and 20% to book stacking. It becomes uninterrupted as the study area is positioned around the bookshelf racks. The reading zone is shielded from the service and administration areas.

Furthermore, the basement is utilized for loading and unloading books from trucks or vans, as well as stacking and other activities, all of which are hidden from the public eye. The seminar room and roof garden are located on the second floor, apart from the public area.

4.2 Bishaw Sahitto Kendro, Dhaka, Bangladesh

• Architect – Maruf Shaihan Sunny

• Location – Poribug, Banglamotor

• Project area – 130052 sft

• Built area – 8162 sft

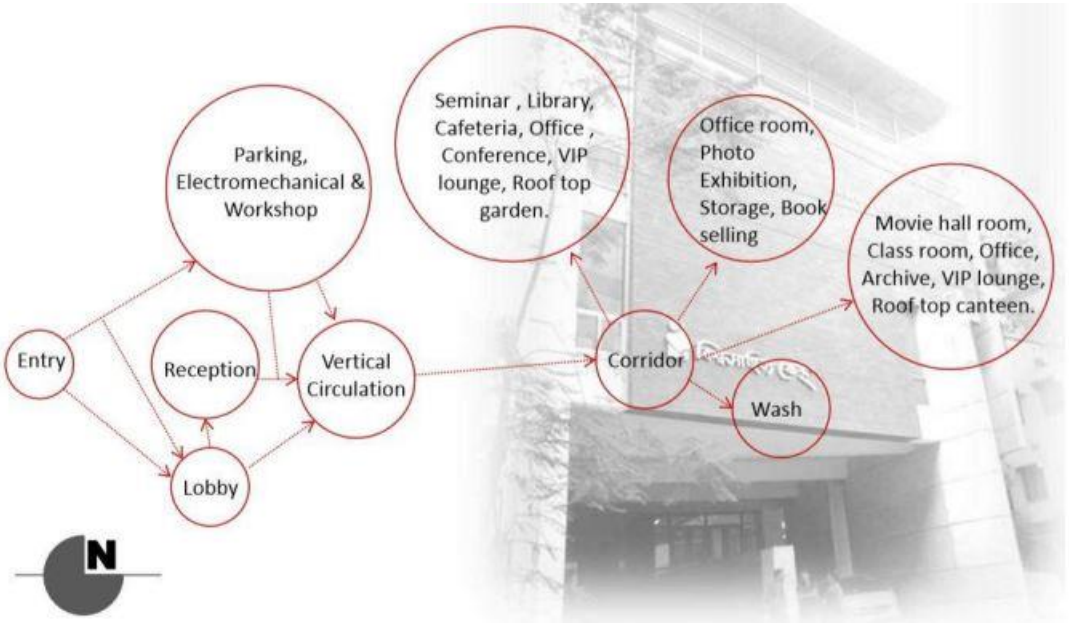
Site location

Source: Google

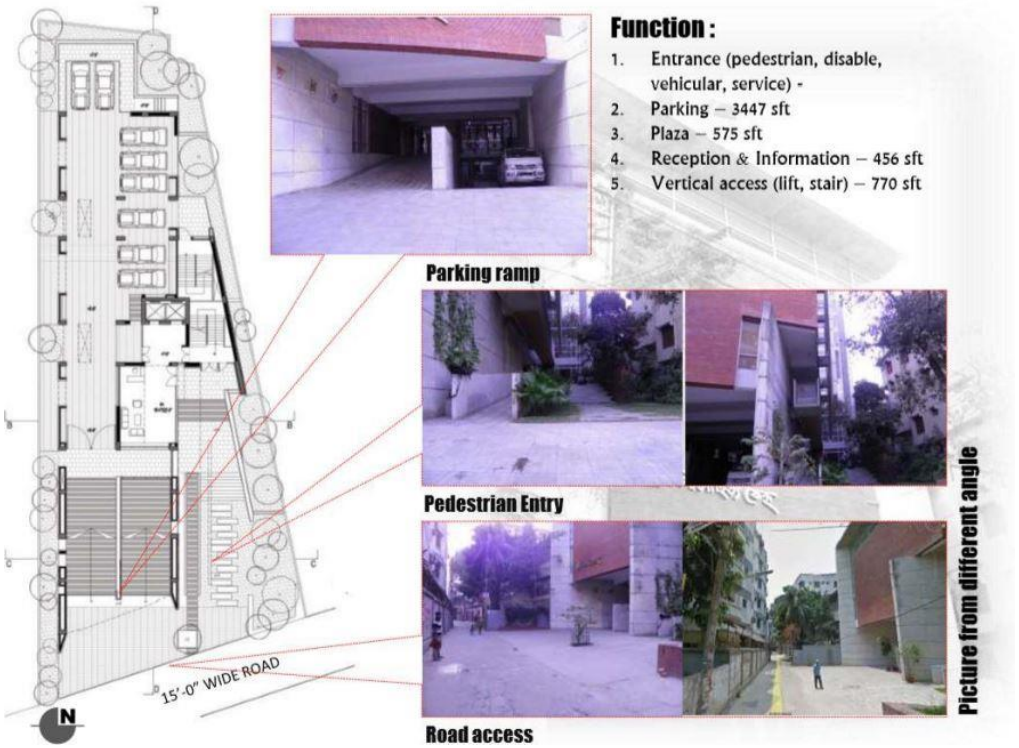
Concept of BSK(Bishwa sahitto kendro)

This library was created with the current site's surroundings in mind. It is a multi-educational program composite institute. The architect of this project plays with landscape, indoor-outdoor relationships, and form in this project. It's a library with plenty of room, natural light, and a leisure area.

Functional diagram of BSK

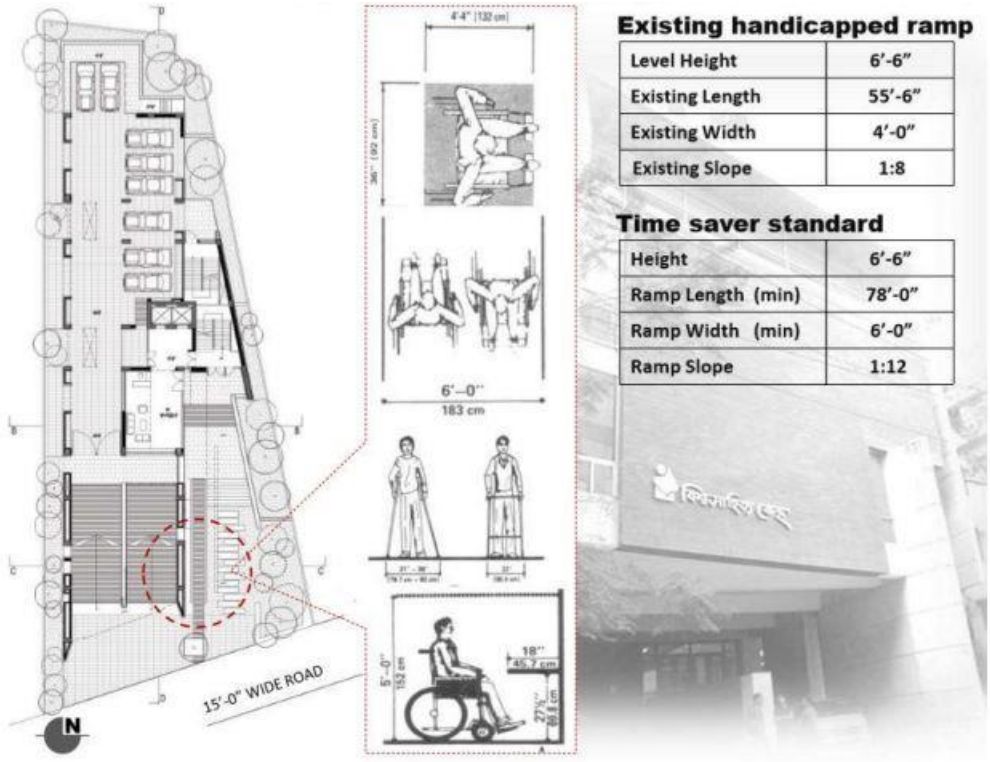


Source: Ashrafun Nahar Asha



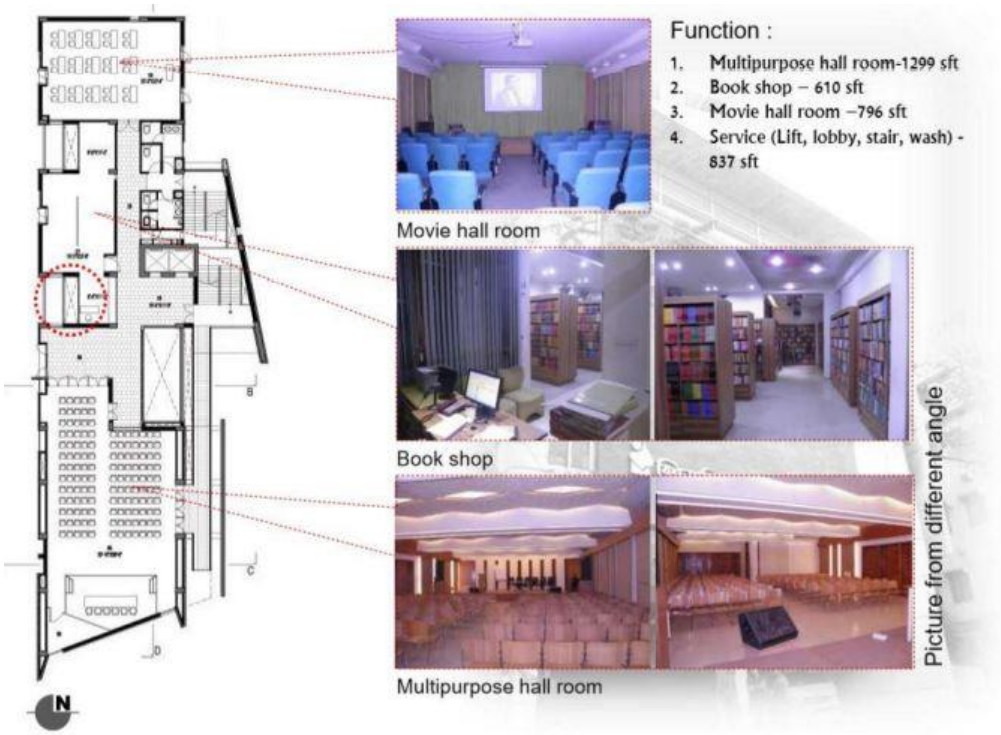
Source:Author via time saver standard

Ground floor plan



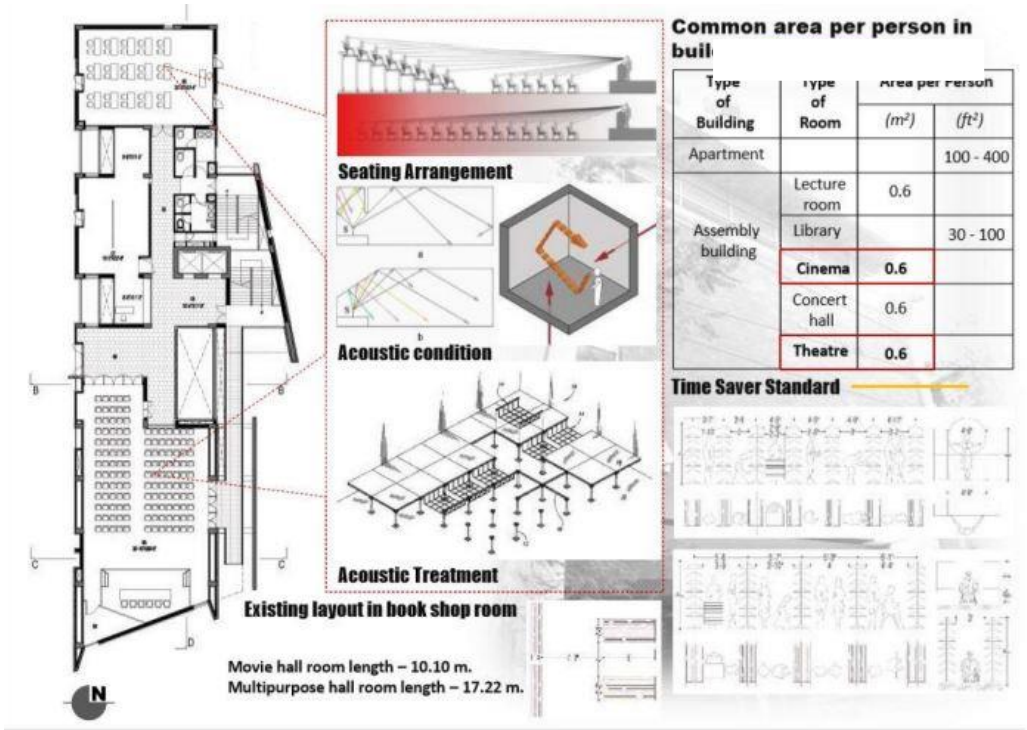
Source:Author via time saver standard

Universal accessibility at ground floor



Source:Author via time saver standard

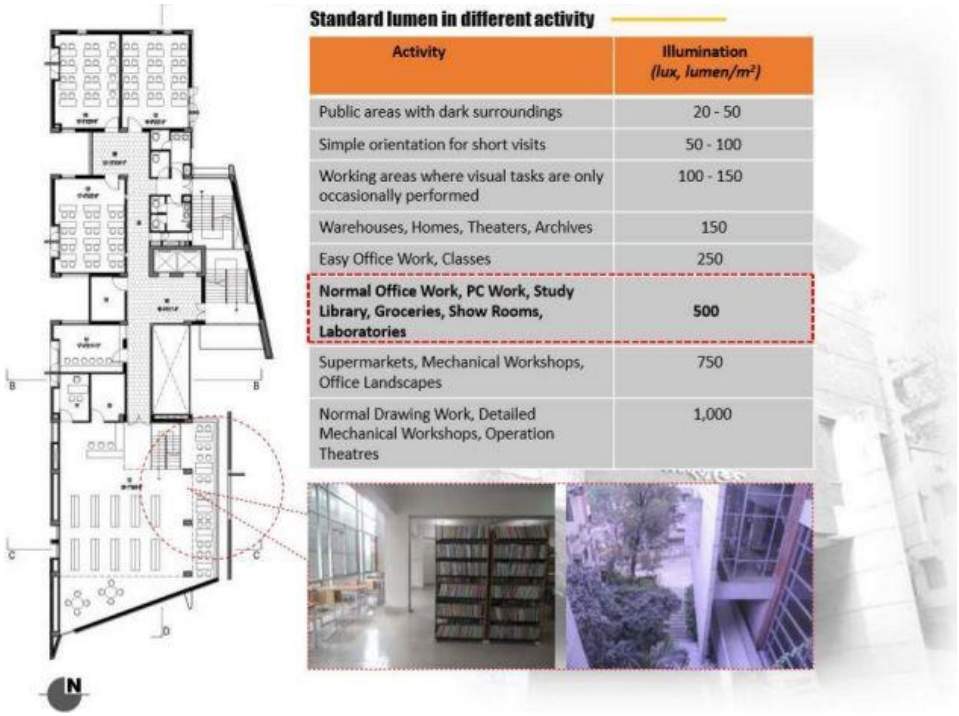
First floor plan



Type of Building	Type of Room	Area per Person (m^2)	(ft^2)
Apartment			100 - 400
Assembly building	Lecture room	0.6	
	Library		30 - 100
	Cinema	**0.6**	
	Concert hall	0.6	
	Theatre	**0.6**	

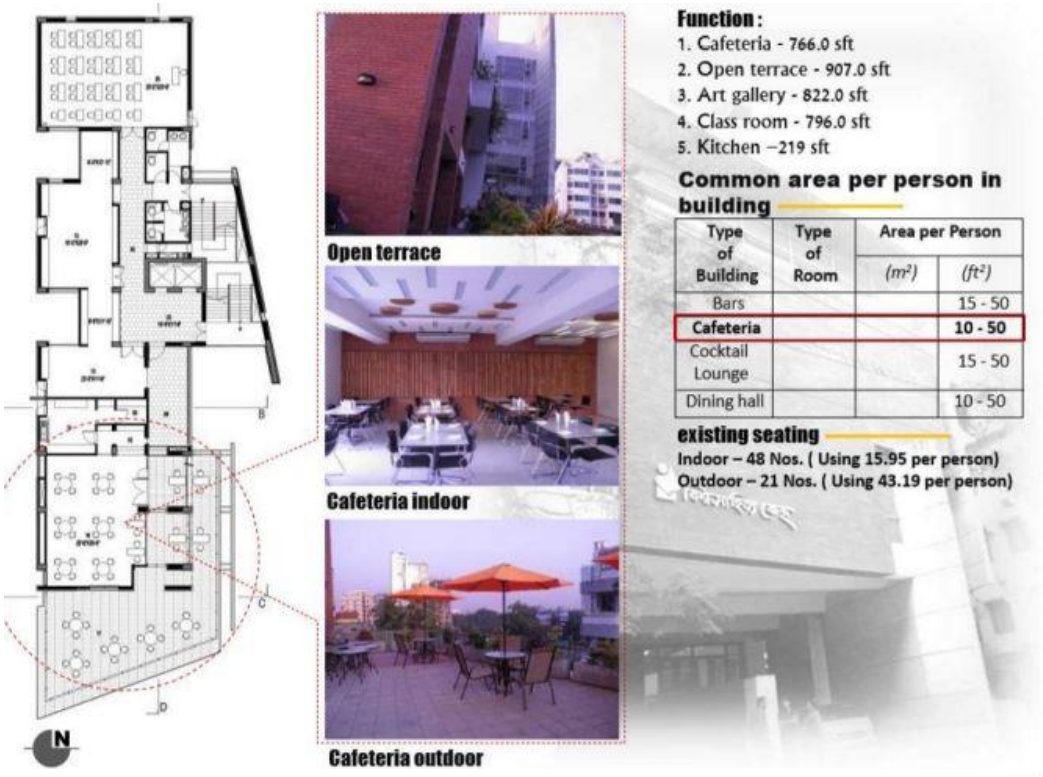
Source:Author via time saver standard

First floor acoustic system and functions



Source:Author via time saver standard

Second floor plan and entry of natural light



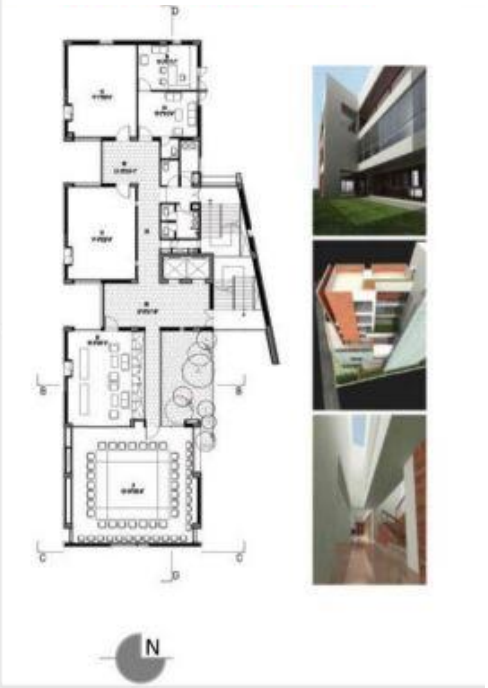
Source:Author via time saver standard

Fourth floor plan

Source:Author

Fifth floor plan

Sixth floor plan



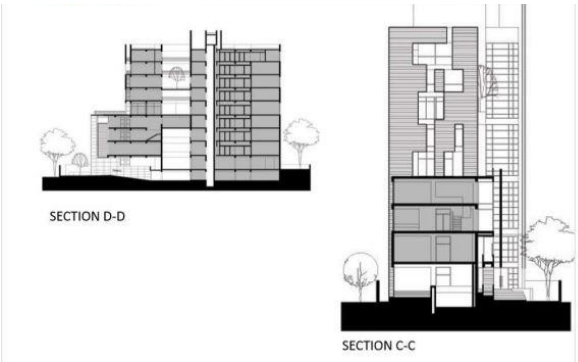
Source:Author

Seventh floor plan

Eighth floor plan

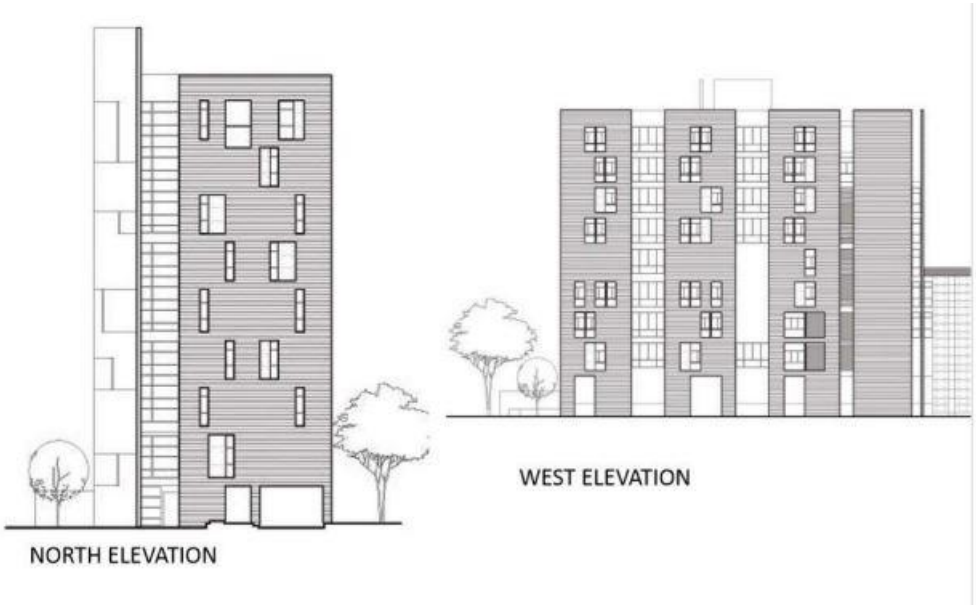
Source:Author

Section



Source: Ashrafun Nahar Asha

Elevation



Source: Ashrafun Nahar Asha

4.3Seattle Central Library

Architects: OMA + LMN

Location: Seattle, WA, United States

Area: 38300.0 sqm Project Year: 2004

Client: Seattle Public Library

The structural system consists of a concrete foundation, steel members, and a steel and glass skin.

Program: Seattle's 28-branch library system's central library, including 33,700 square meters of office space, a reading room, a book spiral, a mixing chamber, a conference platform, a living room, a staff floor, a children's collection, and an auditorium, as well as 4,600 square

meters of parking. F

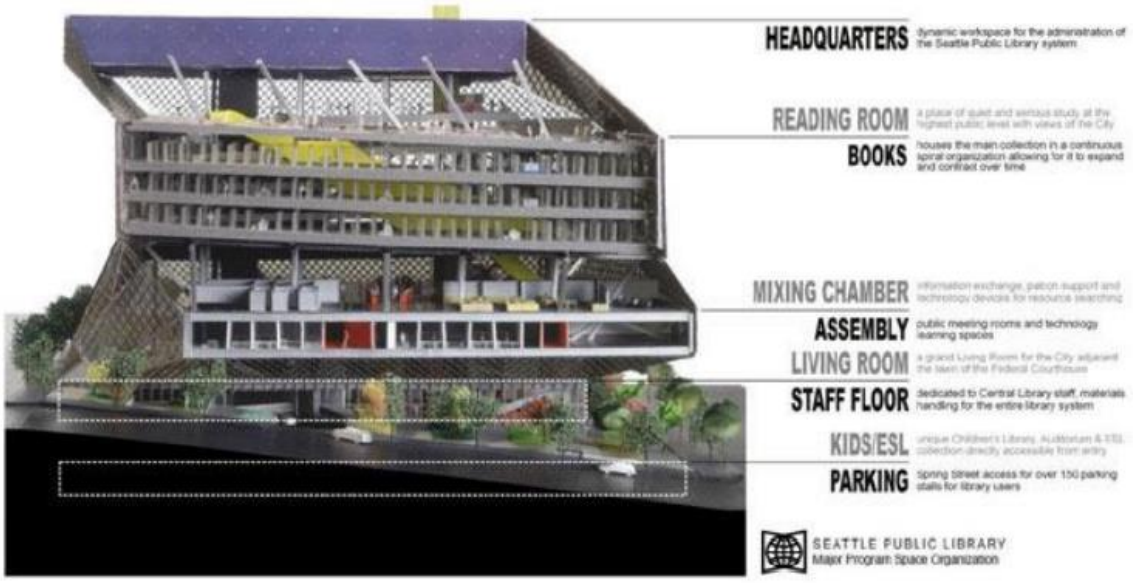


Fig 4.3.1: a cross section of the library showing the 'mixing chamber' customer help area and several purpose-built reading rooms. Source: Seattle Central Library in the USA, Designed by Rem Koolhaas - Verdict Design build. (2018). Verdict Design build. Retrieved 11 March 2018, from https://www.designbuild-network.com/projects/seattle-library/

The first formal facility for Seattle's public library was constructed on Pioneer Square in 1891, and it later relocated to a block encompassed by Fourth and Fifth Avenues, Madison and Spring Streets. Seattle voters approved a $196.4 million library renovation in 1998, called "Libraries for All."

In today's libraries, flexibility is defined as the construction of generic floors on which practically any activity may take place. Programs are not divided, and rooms or distinct places are not given. In reality, this means that on opening day, bookcases define large (but unremarkable) reading spaces, but that as the collection grows, so does the size of the reading rooms.

In reality, this implies that bookcases define large (but not necessarily spacious) spaces. On opening day, there were only a few generic) reading places, but as the collection grew, there were more and more. Eventually, they will intrude on public space.

In the end, the library's flexibility strangles the very features that distinguish it from other information resources. Each platform is a programmable cluster with architecturally specified architecture and specialized performance. Because each platform serves a different purpose, its size, flexibility, circulation, palette, construction, and MEP differ. The areas between the platforms serve as trade floors, where librarians instruct and excite, and where the interface

between the platforms is organized—work, engagement, and play places.

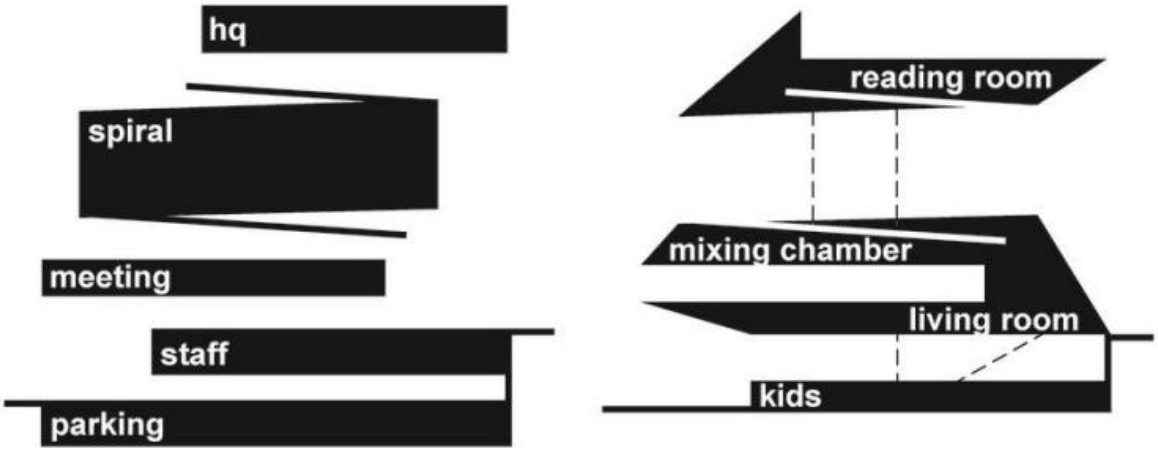


Fig 4.3.2:vertical zoning of the library building (five stable platforms and four unstable platforms). Source: Architect Joshua Prince-Ramus the first American to claim the $100,000 Marcus Prize. (2018). Archpaper.com. Retrieved 11 March 2018, from https://archpaper.com/2015/09/architect-joshua-prince-ramus-claims-100000-marcus-prize

The architects' concept was to let the building's needed functions define what it should look like, rather than imposing a structure and forcing the functions to adapt to it, despite the library's odd shape from the outside.

The Seattle Central Library has defied library conventions by introducing a new program that calls the library "the living rooms of the community." In this case, the flexibility of several functions has been emphasized, with each function having its own shape. The objective of this library was to provide the appearance of floating offset boxes while reducing the number of columns and transfer grids.

Chapter 5 Program and Program analysis

5.1 Standard program

5.2 Main sectors

5.3 Events and activities

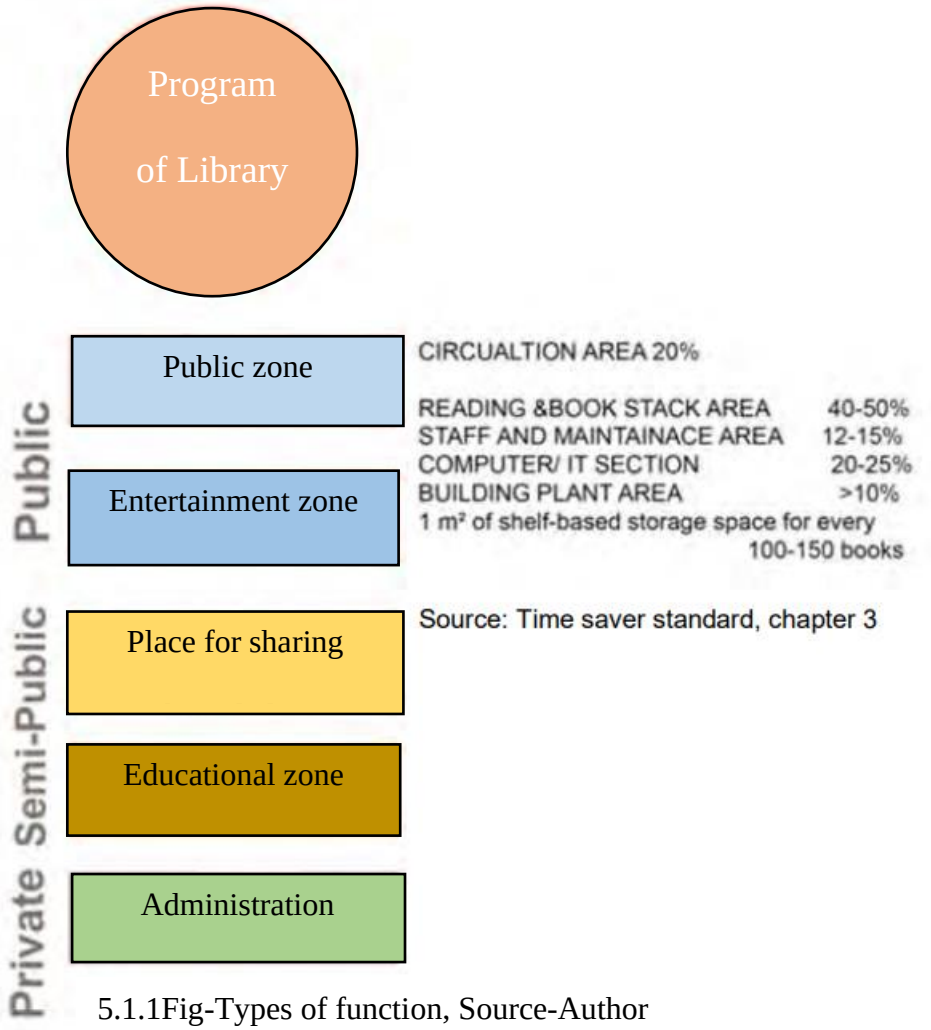
5.4 Space standards for public libraries

5.5 Program development

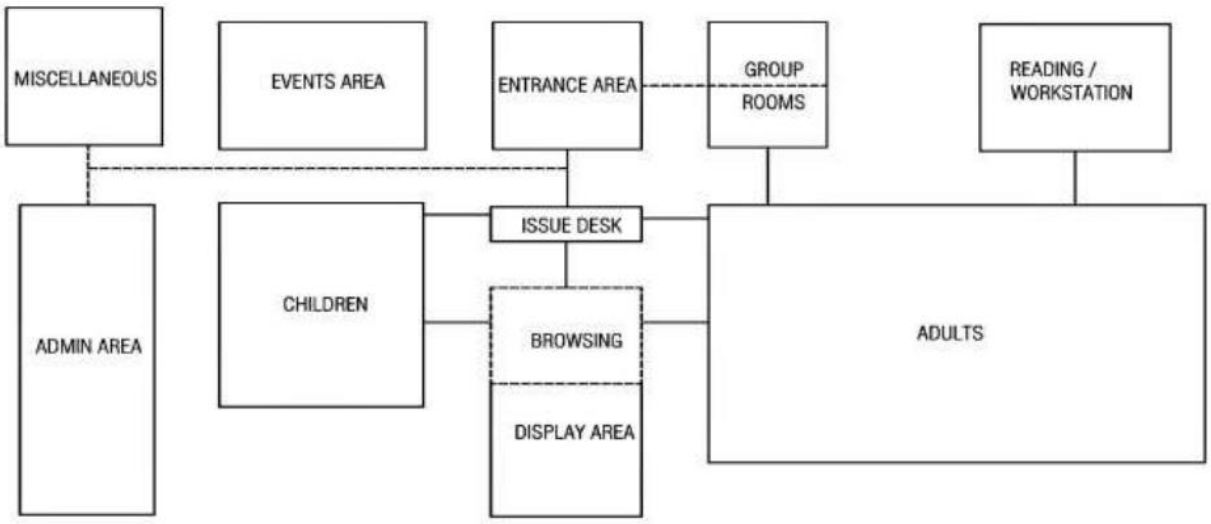
5.1 Standard program

The area is being imagined as a very active and dynamic environment. As a result, events and activities must take place throughout the year in order to foster social contact. There will be three primary areas in this project:

- **Public space:** This location will invite visitors to enjoy the space as well as use the library. Cultural events, more people gatherings, and a book fair will all take place here. Library space, reading areas, exhibition spaces, parking, landscaping, and so forth.
- **Semi-public space:** This location is neither entirely public nor fully private. This will serve as a transitional point or space between public and private areas. Workshops, conference rooms, and other similar places are examples.
- **Private space**: This will be a private zone, and only those with authorization will be allowed to enter. For instance, an administration block, a residential zone, and so on.



5.1.1Fig-Types of function, Source-Author



5.1.2 fig:Relation of functions, Source-Author via Baiche, B., Neufert, E., Neufert, P., &

5.2 Main sectors

There are several common sectors that should be considered while building and creating relationships between functions in order for the library to work effectively. I've figured out certain important components that would make any library function well based on case studies and similar projects and articles. They are,

- Supervision or monitoring
- Civic areas
- Educational areas
- Space for Innovation and sharing ideas
- Entertainment areas
- other

The functions can be effectively run if these components are structured in such a way that there is no privacy issue and services are provided without stop. This is a sample functional diagram that I found intriguing since it is a basic design with the most straightforward privacy and service solution.

5.3 Events and activities

Regular programs:

Reading

Exhibition

Workshop

Cafeteria

Documentary and film

Occasional activities:

Book fair

Language competition

Art competition

Book reading competition

Occasion on national events

5.4 Space for Public Libraries

30 sq. m for every 1,000 population

5 reader spaces per 1,000 population

Storage of 110 volumes per sq. m

Circulation areas around 20% of total floor space

1 staff member per 2,000 population

Source: Edwards. B (2009), Libraries and learning resource centers

Temperature and humidity:

Temperature should be in 18-22°C

Relative humidity 50±5 %

Air filtration is needed

Six or seven air change per hour

Source: Time saver standard

TABLE 1 Experience Formulas for Library Size and Costs

Population size	Book stock — volumes per capita	No. of seats per 1,000 population	Circulation — volumes per capita	Total sq ft per capita	Desirable, first floor, sq ft per capita
Under 10,000	3¼-5	10	10	0.7-0.8	0.5-0.7
10,000-35,000	2¾-3	5	9.5	0.6-0.65	0.4-0.45
35,000-100,000	2¼-2¾	3	9	0.5-0.6	0.25-0.3
100,000-200,000	1¾-2	2	8	0.4-0.5	0.15-0.2
200,000-500,000	1¼-1¾	1¼	7	0.35-0.4	0.1-0.125
500,000 and up	1-1¼	1	6.5	0.3	0.08-0.08

SOURCE: Joseph L. Wheeler and Herbert Goldhor, Practical Administration of Public Libraries (New York: Harper and Row, 1962) p. 554.

5.4.1 Fig: Function square feet of library, source: Time saver standard

The space design should appeal to individuals of all ages and encourage them to enjoy the areas independently, with open-plan spaces for activities. The floor areas are estimated based on the size of the collections. There should be 300m2 (3229.17ft2) of useable floor area for every 10,000 media collection.

Considerations according to time saver standard:

• Diffused light

• Silence

• Access for universal entry

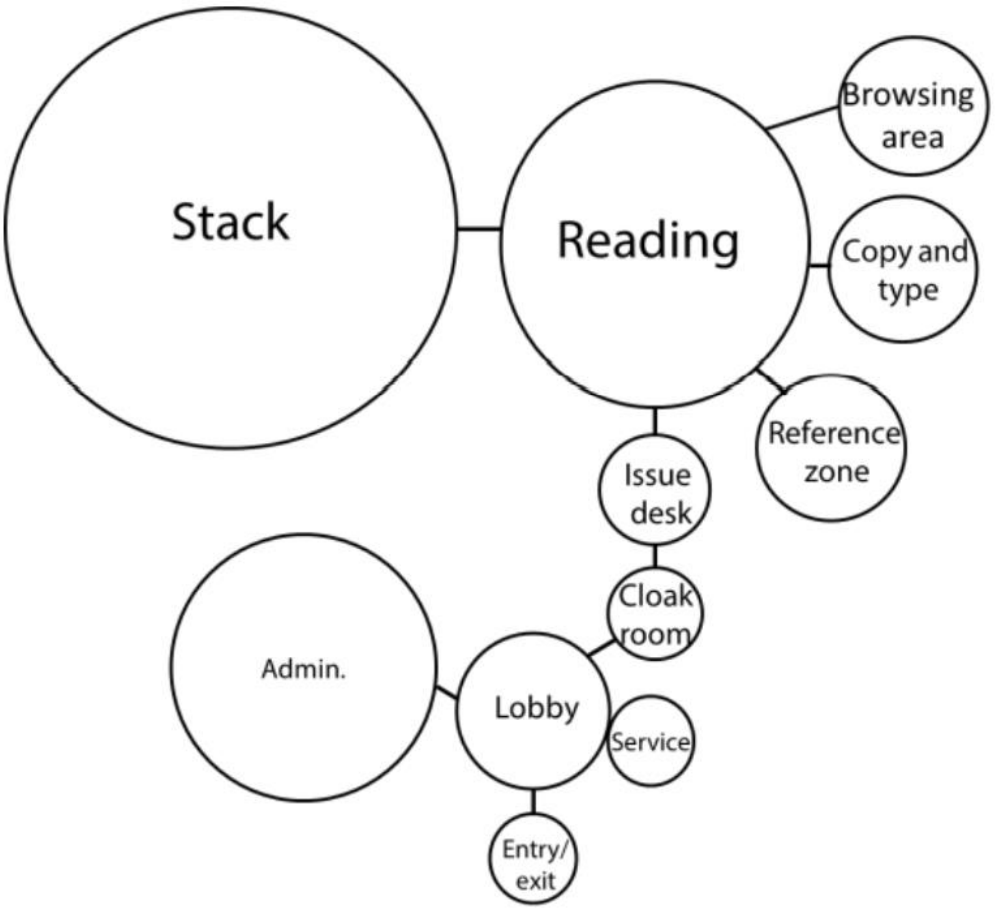
• Security and privacy

• Location to insure maximum accessibility

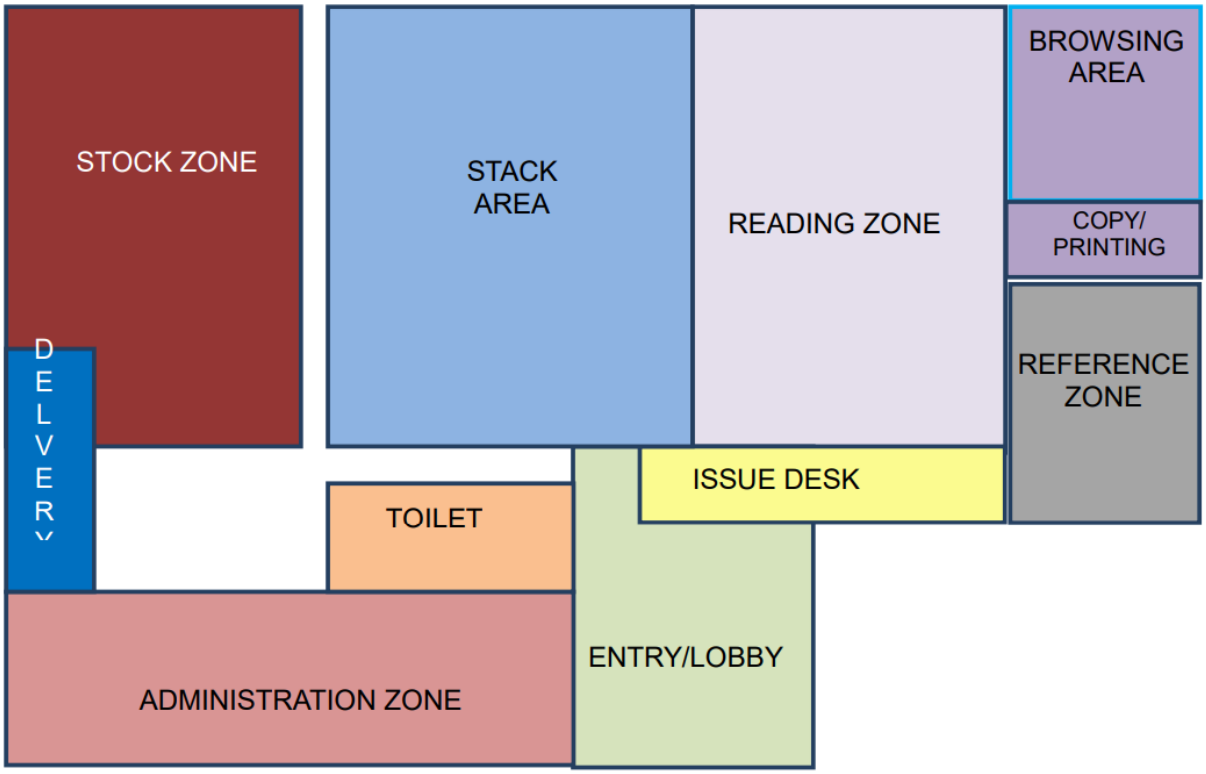
• Simplicity of design concept

• Ease of supervision by library stuff

• Provision for future expansion



5.4.2 Fig: Basic zoning, Source-Author via Time saver standard



5.4.3 fig: General layout of library, Source: Time Saver Standard

5.5 Program development

The program's functional and area requirements were developed from a variety of local and worldwide case studies, Time Saves Standards, Architects' Data, and The Architect's Handbook. In accordance with the site's rules and context

Administrative Block

SL. NO.	SPACE	User	Units	Area in (sqm)
1.	Director	1	1	18.5806
2.	Asst. director	1	1	13.9355
3.	General office	5	1	51.0967
4.	Storage	1	1	18.5806
5.	Lobby	1	1	37.1612
6.	Meeting room	1	1	37.1612
7.	Toilet			9.2903
	Total			185.8061

Table 1: Administrative space requirements

Source: (Time Savers and author)

Reading spaces

Sl no	Space	User	Units	Standard	Area in (Sq.m)
1.	Normal reading room with one librarian	150	1	2.78709 sq.m per person required in readers space (Time-saver standards for building types,1990)	427.354
2.	Science textbook reading room with one librarian	100	1		287.994
3.	Reference textbooks reading room with one librarian	50	1		148.6449
4.	Children's reading room	50			185.8061
5.	Reading room for disable people	50			185.8061
6.	Women's reading room	50			185.8061
7.	Reading room for old people	30			83.6127
8.	Open reading room with one librarian	100	1		287.994
	Total				1746.5772

Table 2: Reading space requirements Source: (Time Savers and author)

Residential Facilities

SL. NO	SPACE	USER	AREA in (sq.m.)
1.	director	1	204.3867
2.	asst. director	1	148.6449
3.	residential librarian	1	111.4836
4.	security officer	1	111.4836
5.	deputy assistant engineer	1	111.4836
6.	caretaker	1	
7.	electrician	5	204,3867
8.	security guards, night guard, cleaner	20-15	1393.5456
9.	Dormitory		

	Total		2255.4148

Table 3: Residential space requirements Source: (Time Savers and author)

SL NO	SPACE	USERS	UNITS	STANDARD	AREA in (Sp.m)
1	Parking (including cars, microbus and bikes)	50 cars		Lot width 2 rows + 1 driveway, per car is 28.8sq.m. (Time-saver standards for building types,1990)	2576.2013
2	Electric Power-station (500 Kv)		1		464.5152
3	Archives		1		1858.0608
4	Seminar Halls	150 seatings	1		371.6122
5	Meeting rooms	30 seatings	1		167.2255
6	Book exhibition center				464.5152
7	Administrative block				185.8061
8	Auditorium	500 seatings	1		636.3858
9	Security and generator		1		278.7091
10	Reception & Lounge				27.8709
11	lobby				92.903
12	Display area				185.8061
13	General library				1858.0608
14	Reading rooms,			2.78709sq.m per person required in readers space (Time-saver standards for building types,1990)	1746.5772

15	Computer lab	20 seatings	1		92.903
16	Cyber cafe	20 seating	1		92.903
17	Service & Storage				464.5152
18	Digital library (Audio & Visuals)				929.0304
19	Multimedia zone		1		371.6122
20	Cafeteria	50	1		464.5152
21	Residential facilities		2		2285.4148
Total					15615.143
Circulation(30%)					4684.5429
Total Build space required					20299.6859

Table 4: Total build space requirements Source : (Time Savers and author)

Reference

http://en.banglapedia.org/index.php/Art_and_Crafts

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Banik R., Rahman M., Sikder T., Gozal D. 020;183:50–51. doi: 10.1016/j.puhe.2020.04.037.

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https://en.banglapedia.org/index.php?title=Khulna_Division

Chapter 6 Design development

6.1Introduction

6.2Analysis of existing building

6.3Concept and design consideration

6.4Form derivation

6.5Design

6.6Render photos

6.7 Conclusion

6.1 Introduction

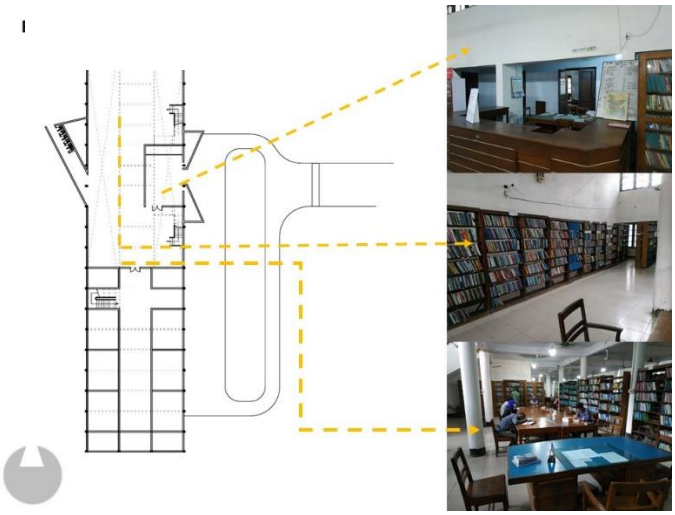
In this project the Khulna divisional public library is being utilized as a communal cornerstone for the people in the area. It is a fantastic site for knowledge exchange since individuals from all around Khulna city come and congregate here. Doxiadise's current structure, which was constructed in 1897, is a historically noteworthy structure. However, in order to accommodate a large number of new users and readers, a new library must be built. This concept aims to bring people together while also bridging the gap between history and modern architecture. As a result, the project is being planned while the historic structure is being conserved and treated.

6.2Existing building and the part which is designed by Architect doxidise

The existing building a part is designed by architect doxiadise and a part is later extended. The original part which is designed by architect doxiadise will be kept in its original way and the extended part will be demolished for historical preservation and to construct the new building.

6.2.1Pictures of existing building and interior of existing building

Image © 2018 DigitalGlobe



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6.2.2Plan of existing building

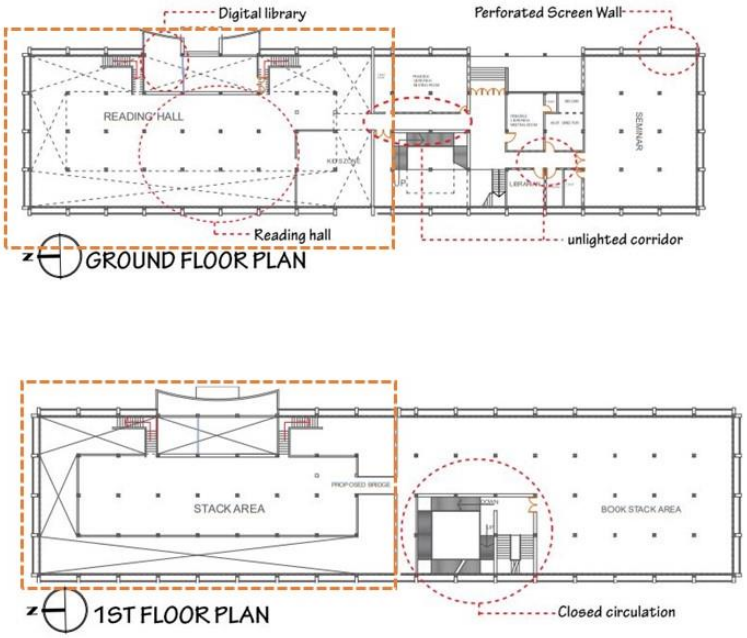
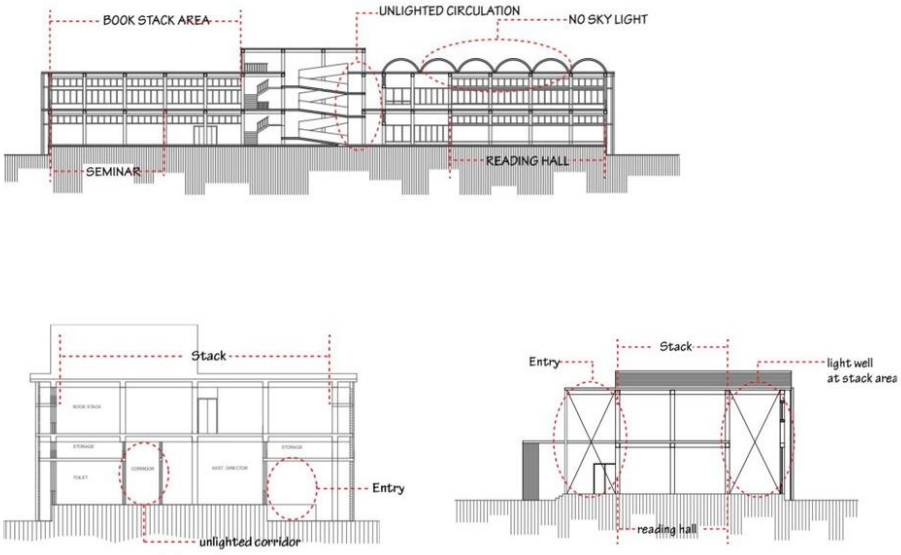
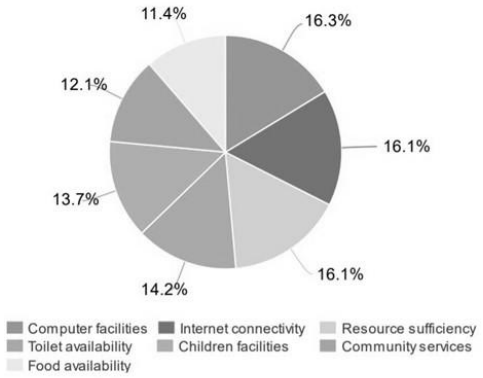


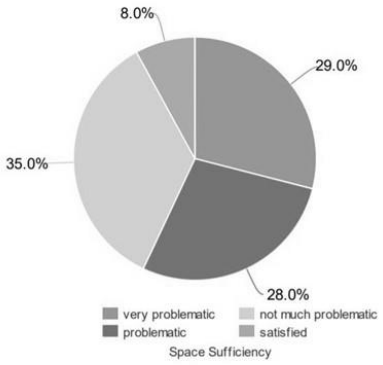
Fig6.2.1:Marked part is designed by architect doxiadise

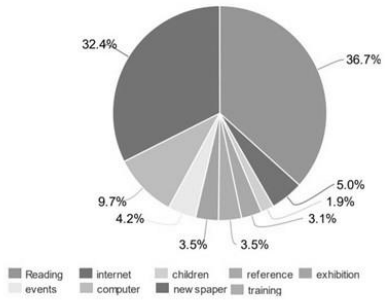
6.2.3Section of existing building

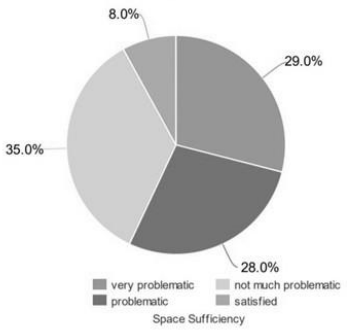


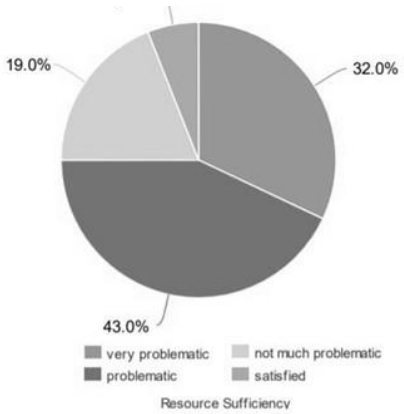
6.2.4 Data analysis of usage of space in existing building

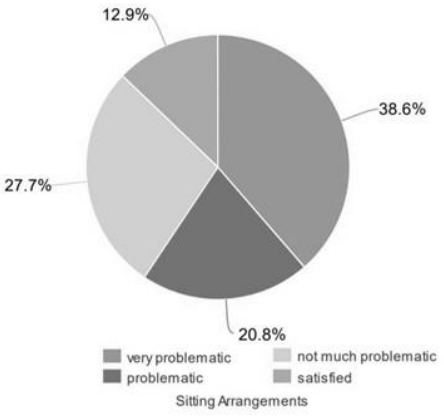


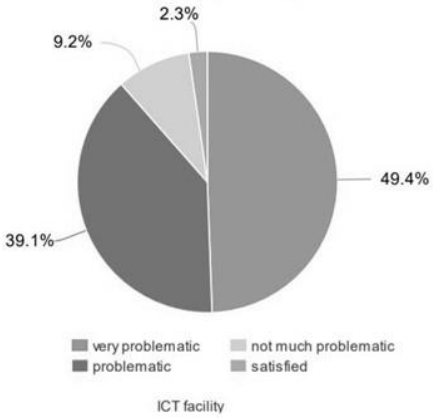


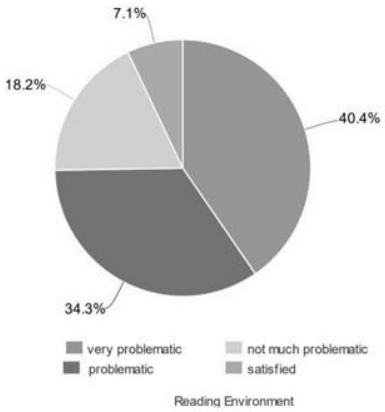








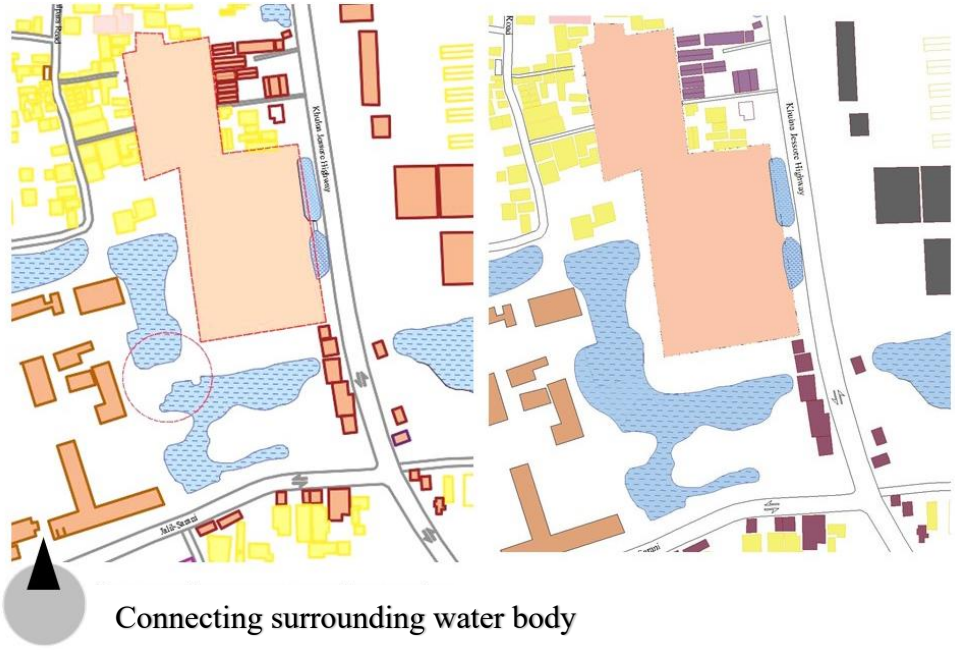




6.3 Design concept and design consideration

Conserving the part of the existing building which is designed by architect doxiadise while building a connection between the new building and the existing building is the main and foremost thing in this project. The envelop of the existing building is kept in its original way while designing the interior spaces and a connecting bridge is planned on the second floor to build the connection between the historic and contemporary ne building .The new building will be constructed in the contrast manner ,using brick and concrete columns whereas the historic building was built in concrete. There are mainly residential and educational institute in the surrounding of this site. The biggest fair of Khulna city is held here which is ekushey boi mela. The concept was to connect the surrounding people through a big plaza which will be used as the fair space. Not only that there is a surrounding waterbody which is being divided in two parts, there was a need to connect these parts and utilize it as a view from the library as well as used for passive cooling as the water body is situated in the west side of the site. Also, a space is needed to create on the waterbody so that people can connect with nature.

Main users Connecting people with plaza



Connecting surrounding water body

If we look through the geographical map, we will see man made buildings have raised and greenery has been demolished over time so considering the existing trees is also a consideration while designing. So, mapping the existing trees and developing form and others aspects through it is also noticeable in this project,

Chronological map

2007 2010

2017

Mapping existing trees Views and waterbody

So, employing these strategies, the goal is to construct an urban window to frame the historical existing structure. The urban window will be created by the use of shapes and the construction of a super roof over all of the structures. The current historical structure as well as the new modern building will be housed under the top. The name of the project was inspired by the notion, as this library is a home of information, and this project brings old and modern together under one roof.

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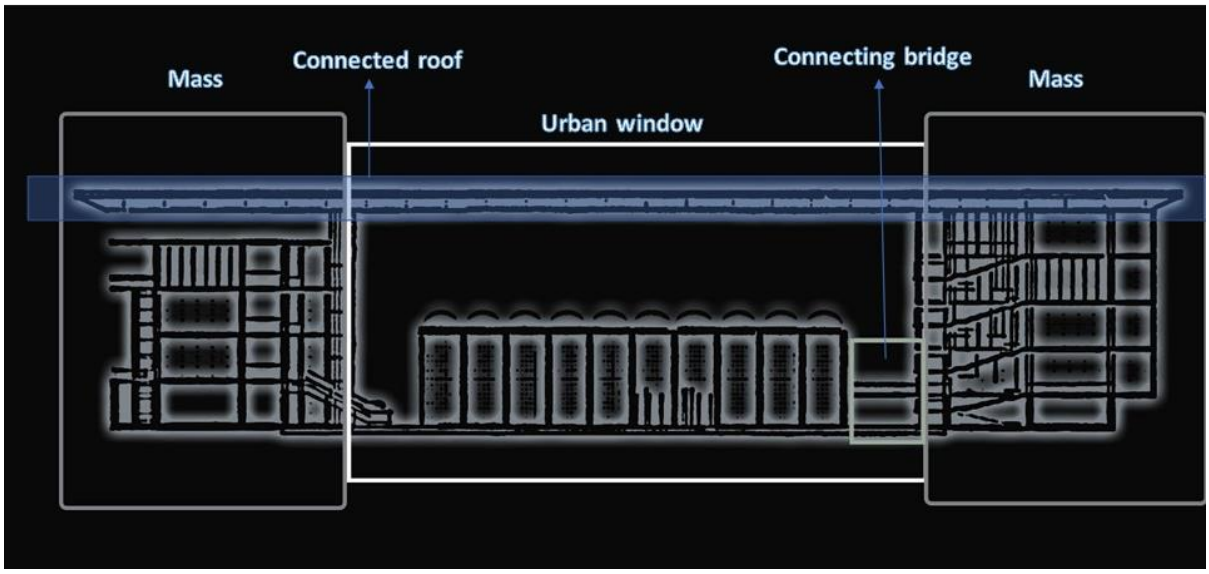
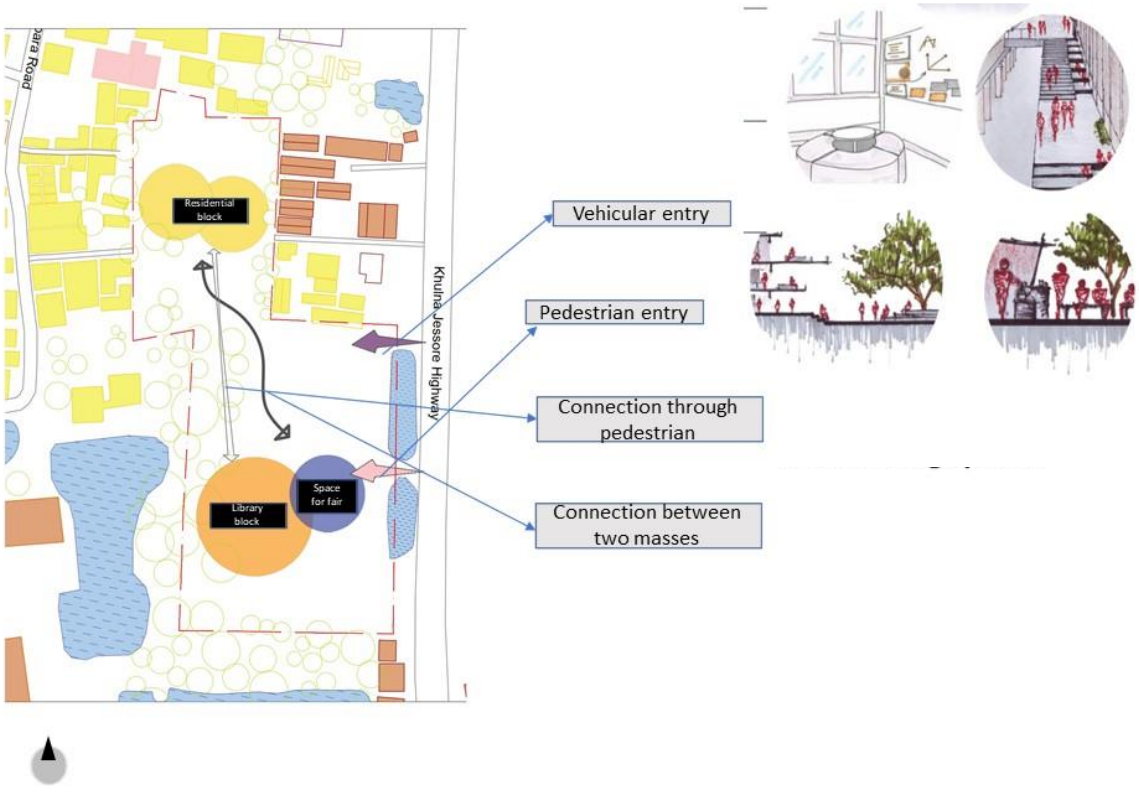


Fig 6.5.1 Concept

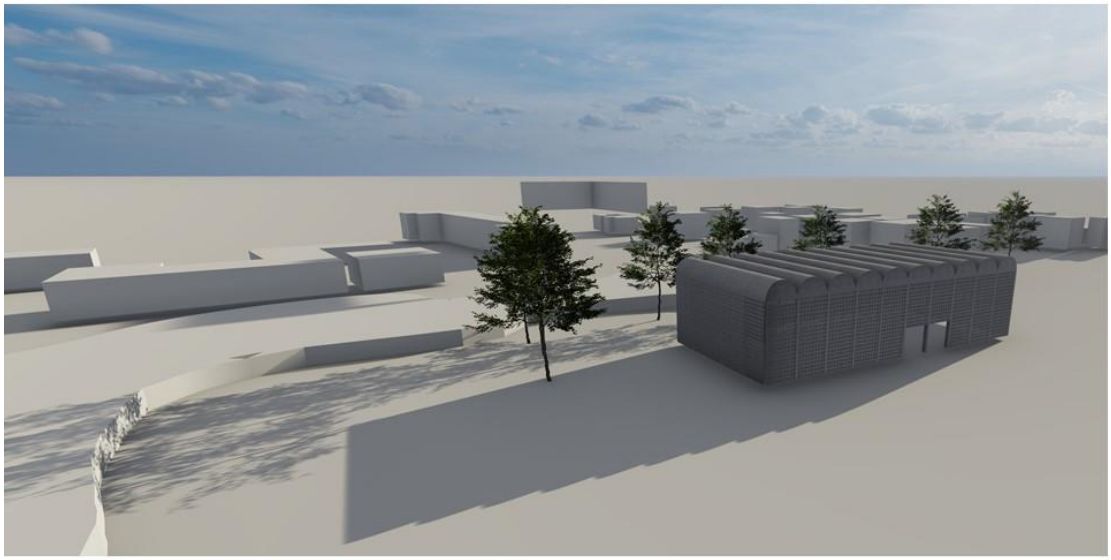


6.4 Form derivation

of spaces

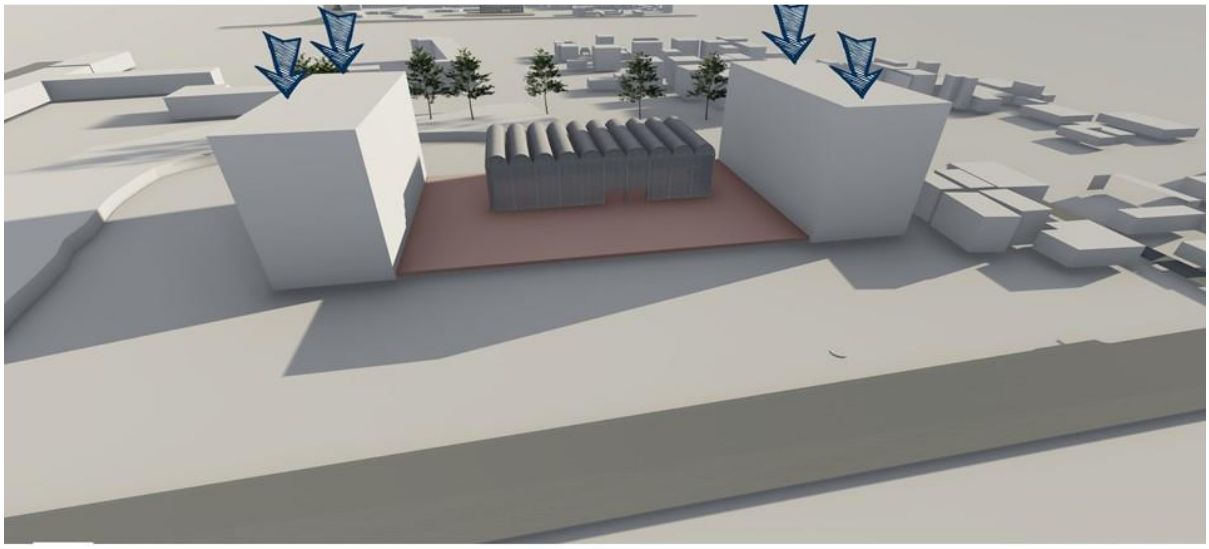
6.4Form development

Existing trees and existing building are marked



Plaza is created to connect the surrounding people while respecting the existing building and existing tress.

Forms are placed to create the urban window



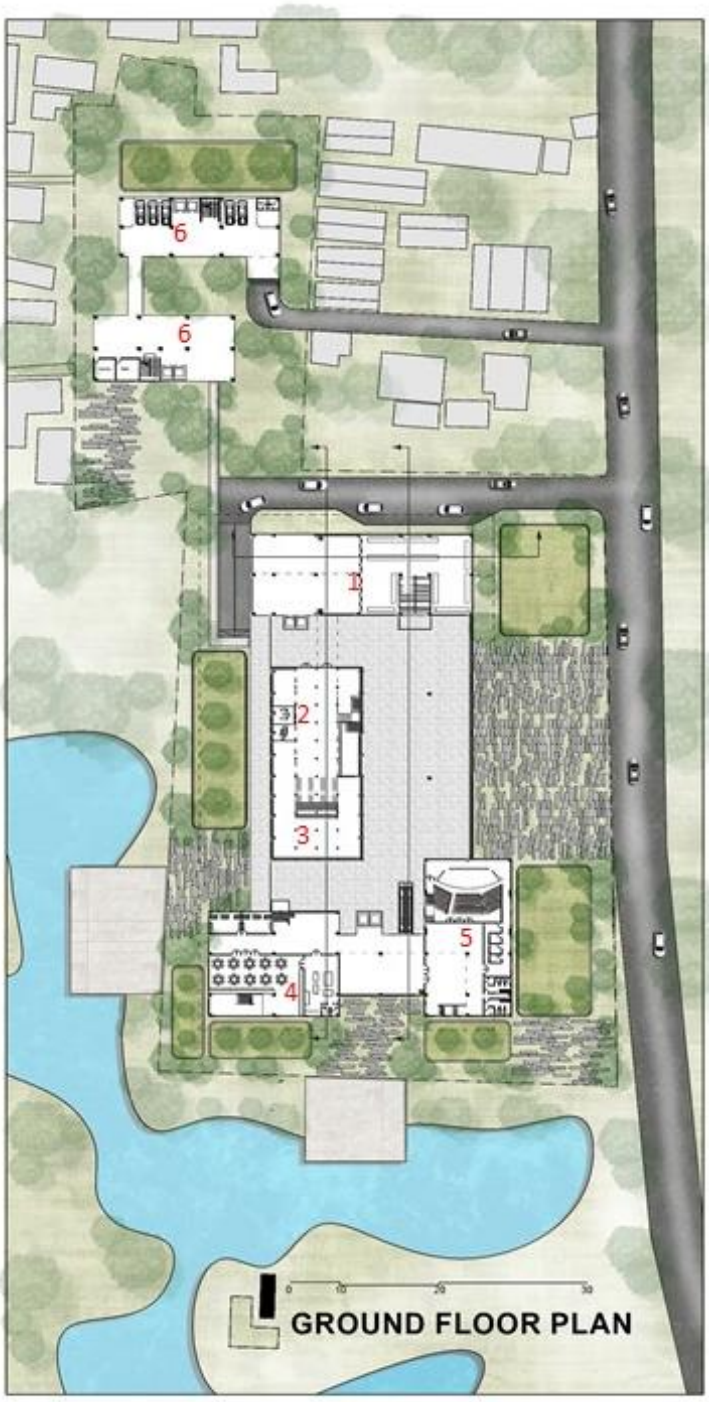
Incorporating trees inside the site to plan the landscape and to create a natural buffer from the highway road. Also subtracting from the forms to connect people and plaza with the forms.

The super roof is placed to frame the historic building from the roadside

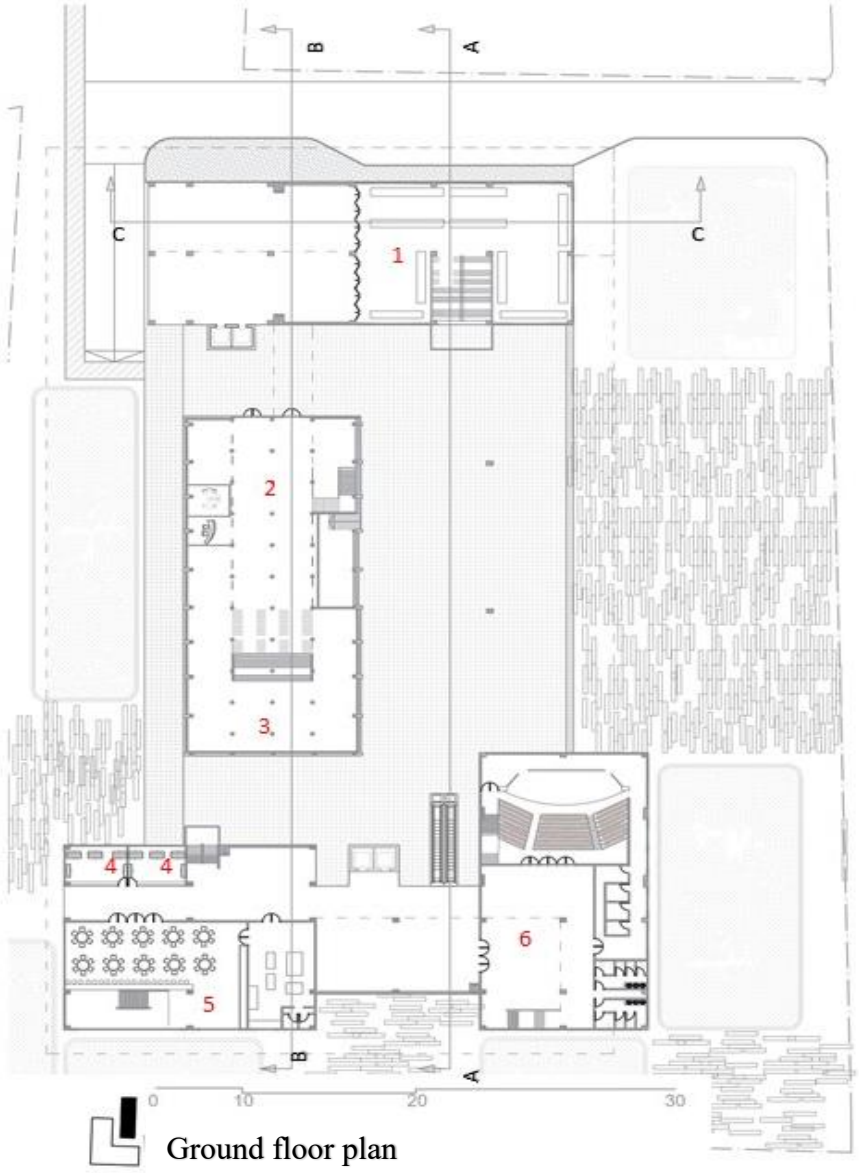
Final form is derived through concept and analysis shown above.

6.5 Design development

6.5.1Plan

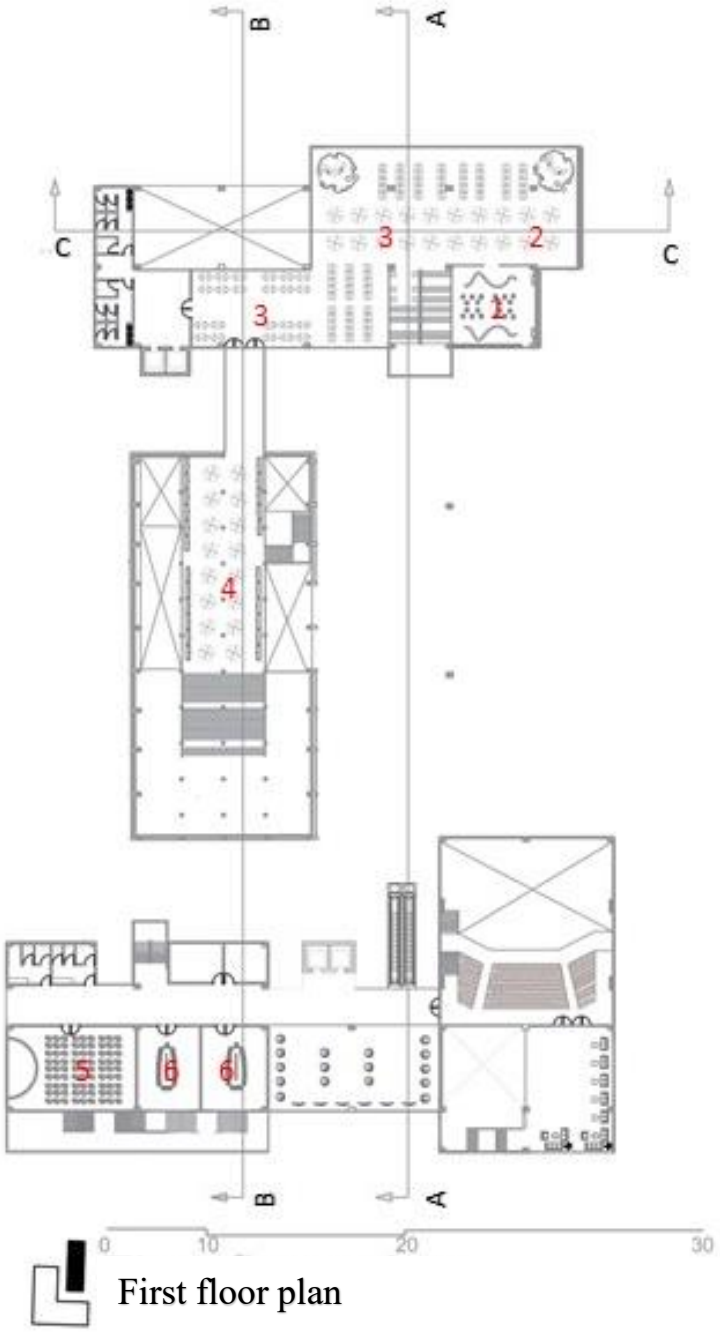


1.Book exhibition space
2.Reception
3.Book exhibition
4.Café
5.Auditorium
6.Parking



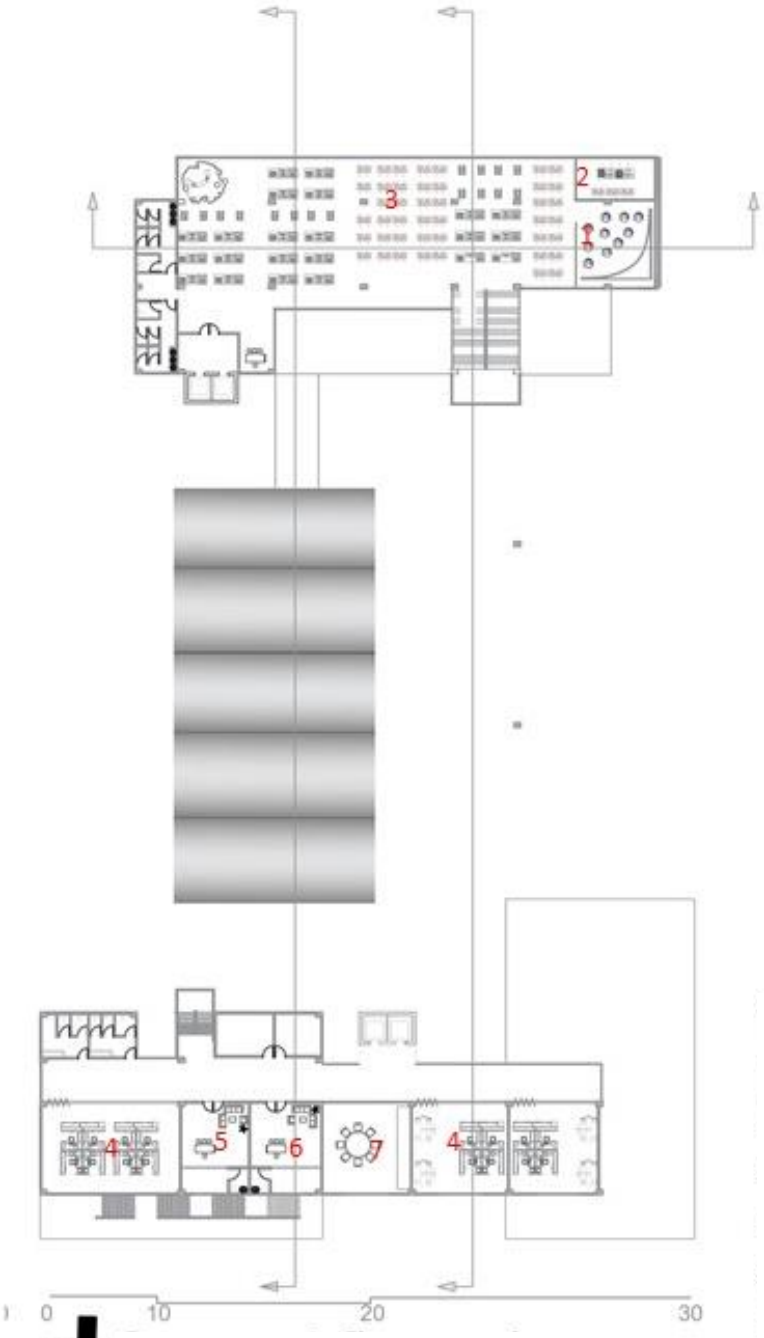
Ground floor plan

1.Book exhibition space
2.Reception
3.Book exhibition
4.Café
5.Auditorium
6.Parking



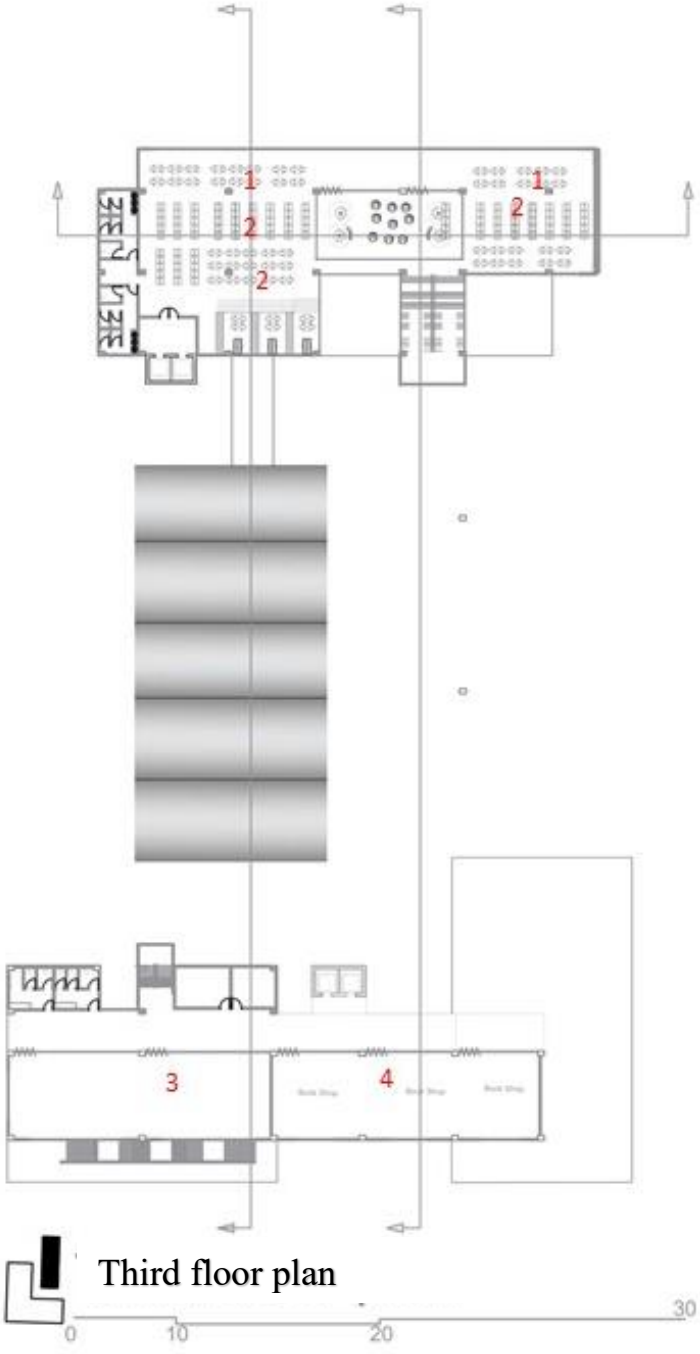
First floor plan

1.Kids zone
2.Reading area for elderly people
3.Regular reading area
4.Group reading area
5.Seminar Hall
6.Meeting room



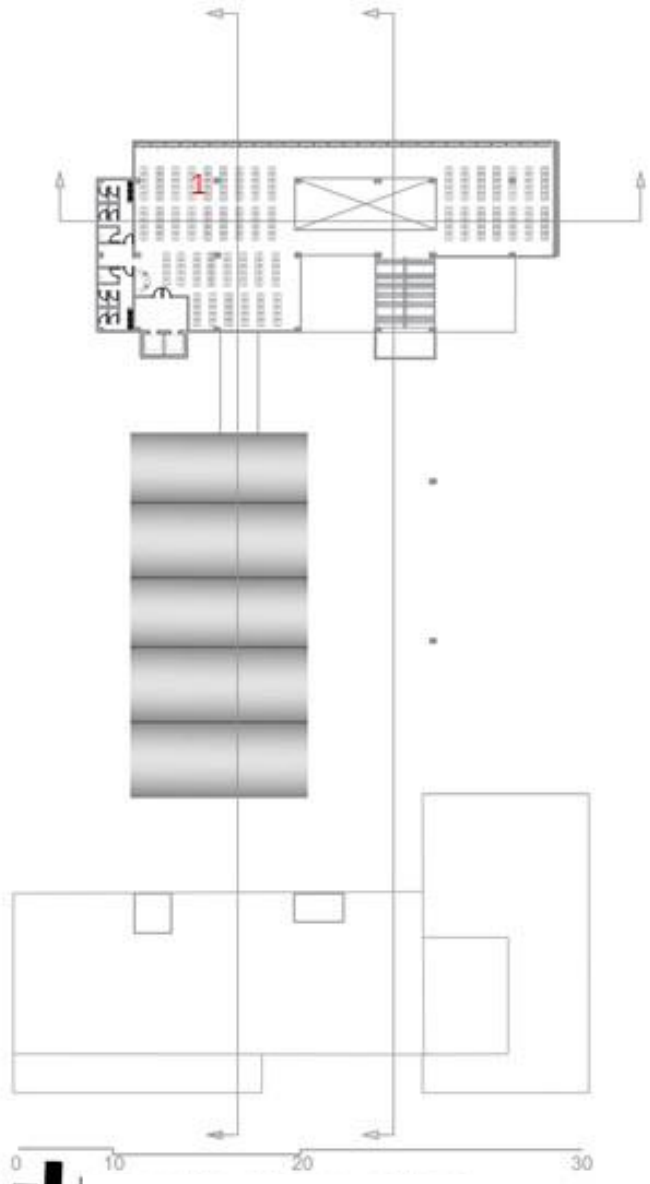
Second floor plan

1.Multimedia and audio video visuals
2. 3D lab
3.E-library
4.Area for Office staff
5.Director’s room
6.Assistant director’s room
7.Meeting room



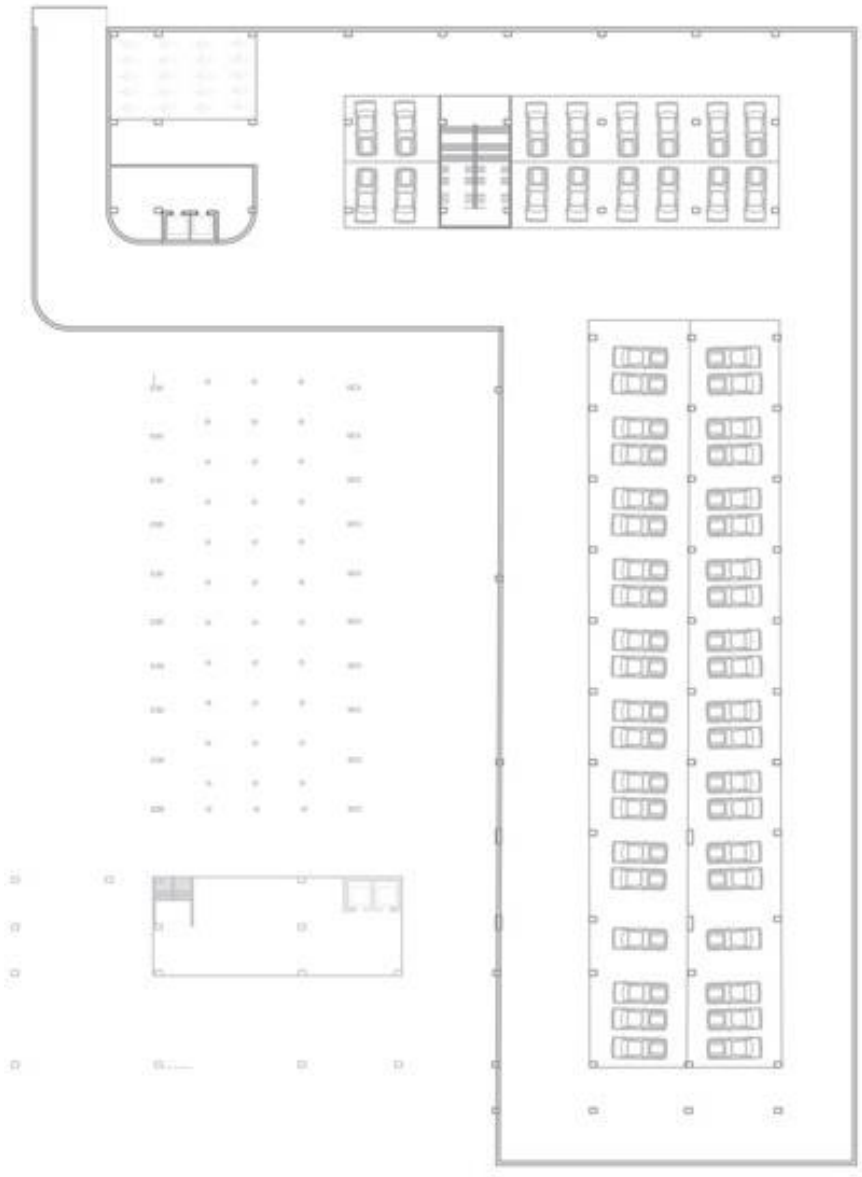
Third floor plan

1.Stack area
2.Reading area
3.Space for book binding workshop
4.Book shop



1.Archive

Fourth floor plan



Basement

0 10 20 30

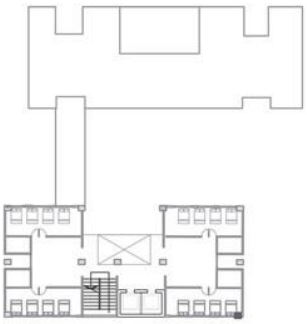
Plan of the residential block

First floor

0 10 20 30

Second floor

0 10 20 30

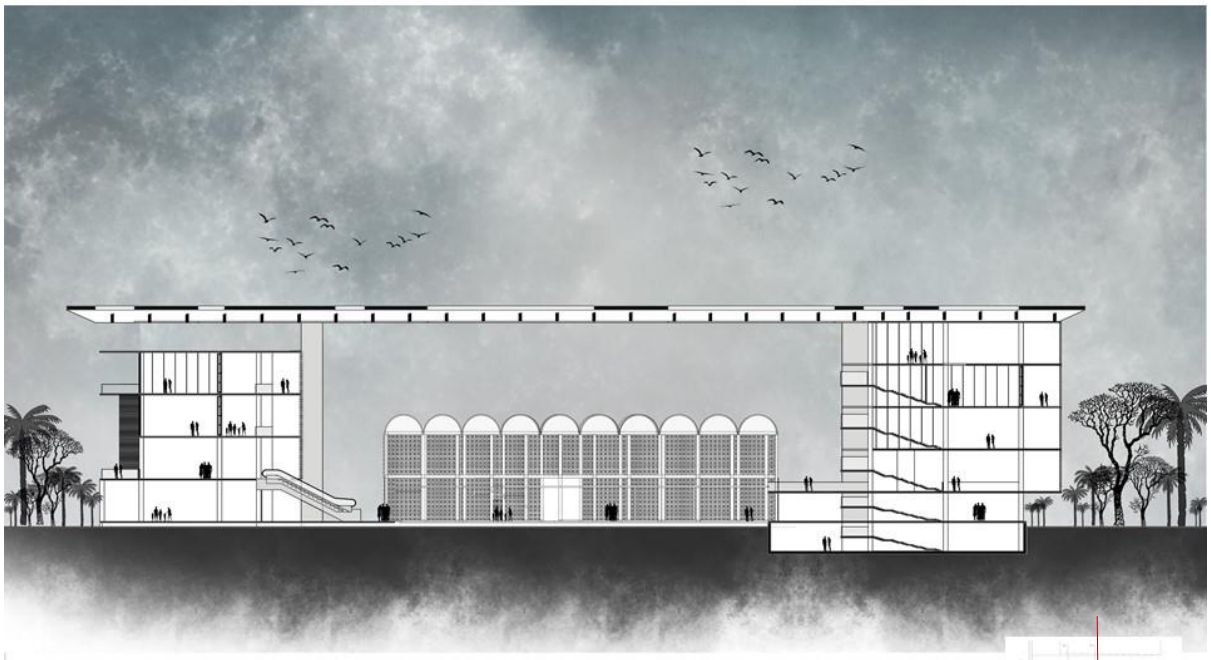


Typical floor plan

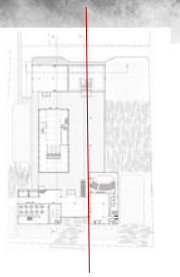
0 10 20 30

North elevation

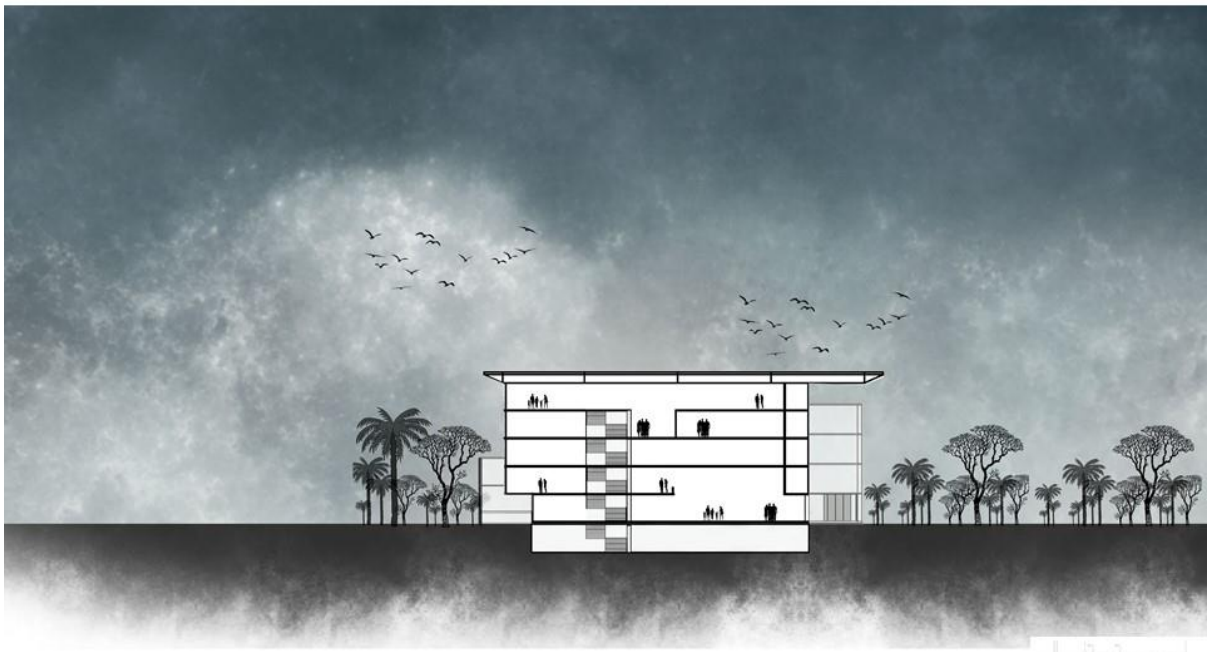
East elevation



Section AA



Section BB



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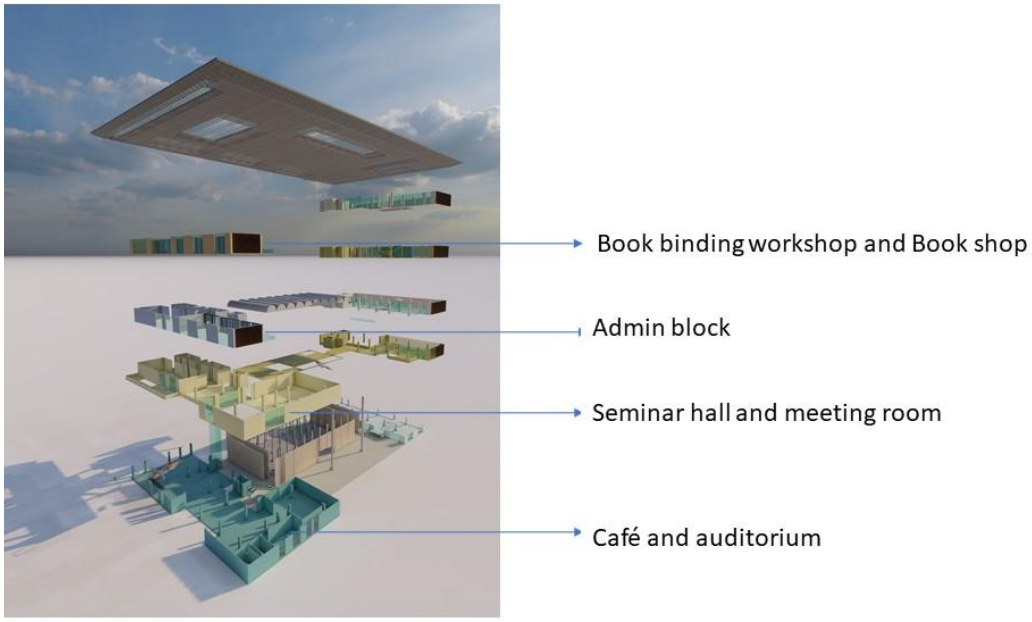
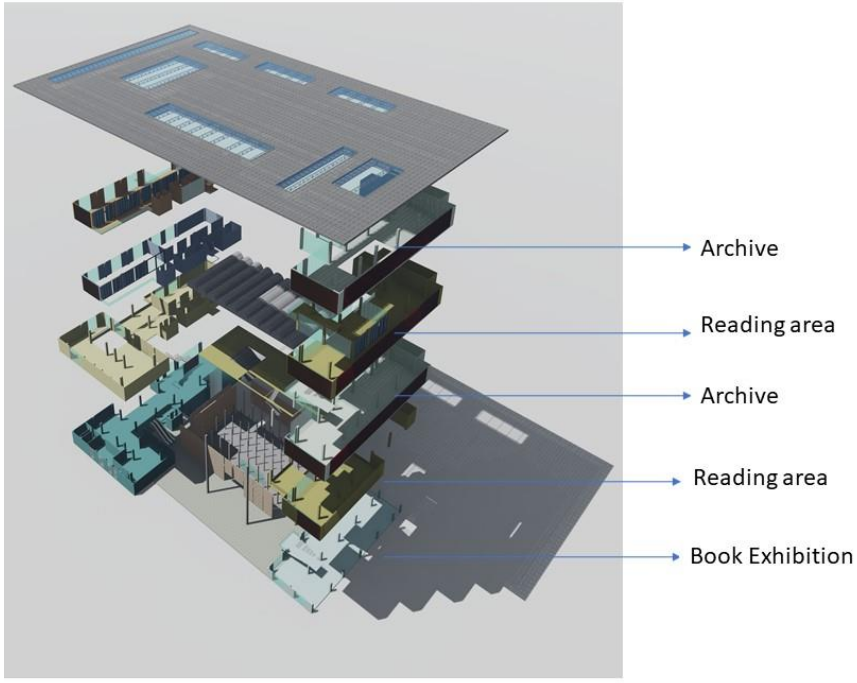


Axono of south block and functions

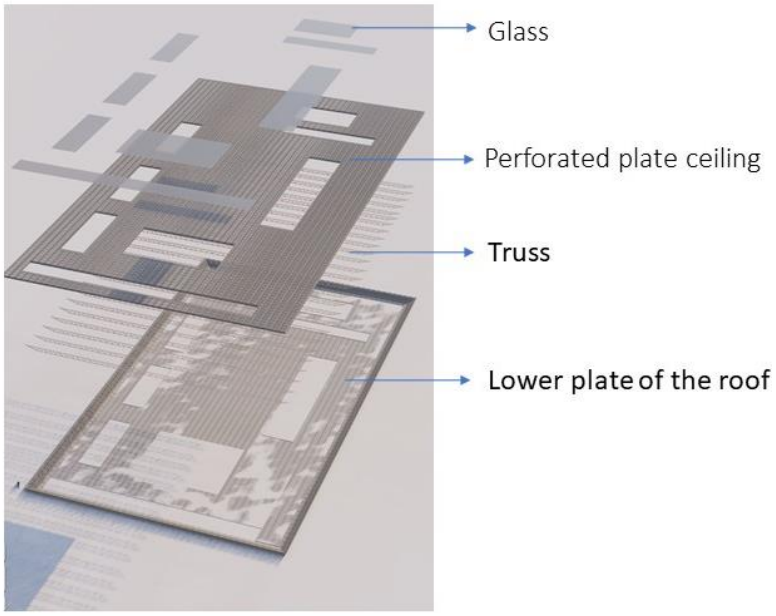


Axono of north block and functions

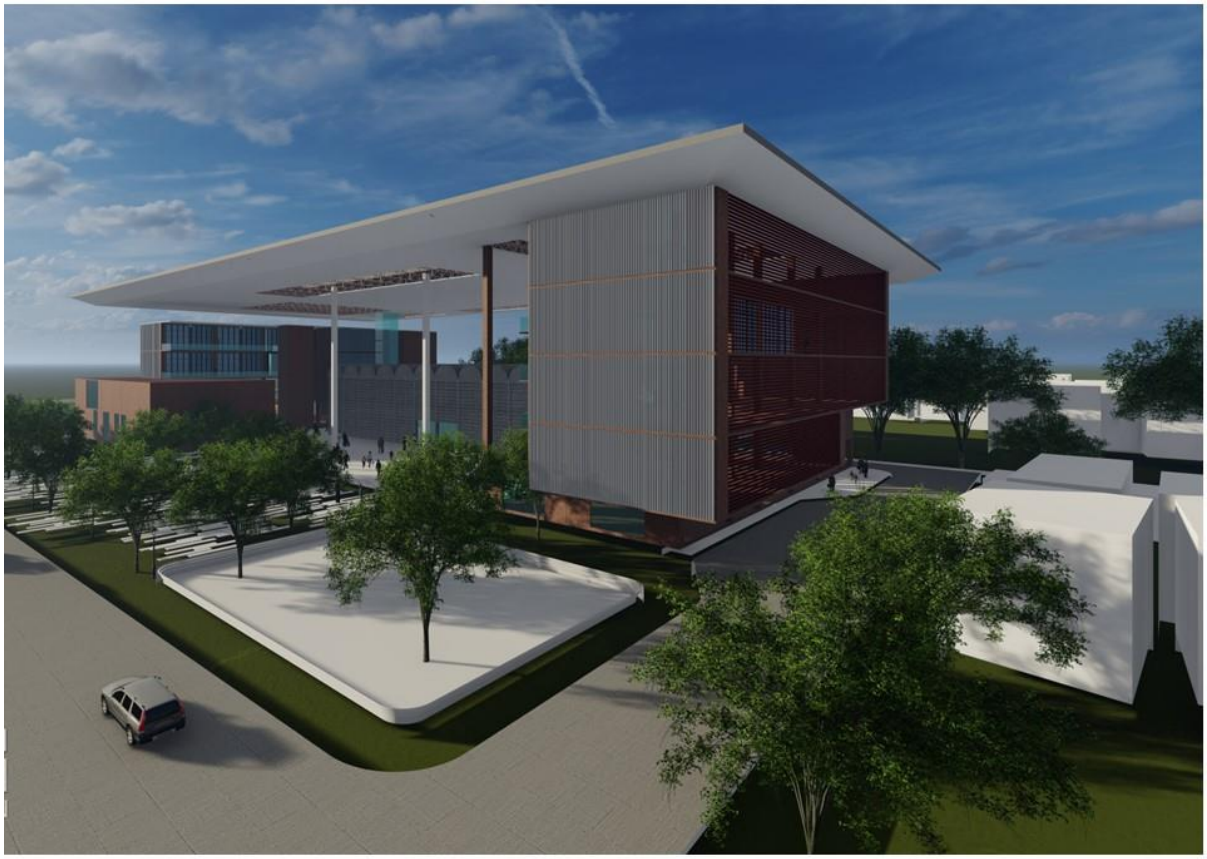
Roof structure

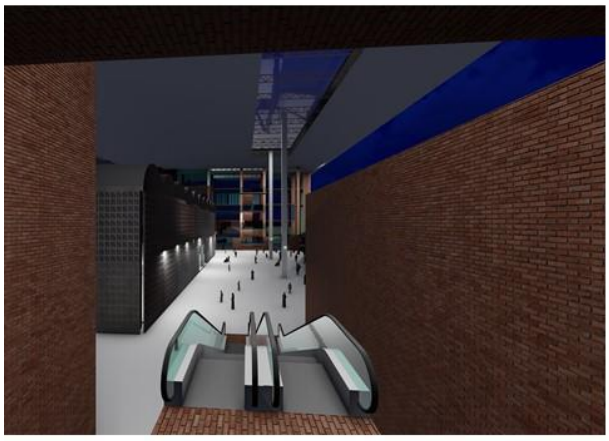
All spaces are connected by a large independent roof structure with laminated glass canopy, allowing natural light, saving energy, and a perforated plate ceiling, protecting from direct solar radiation.

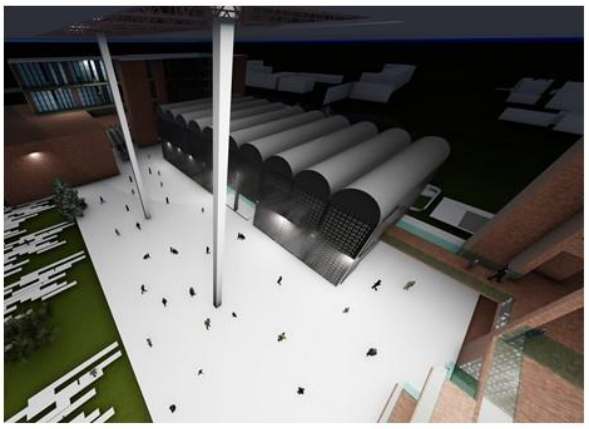
The most effective energy saving finish for metal roofing is referred as a cool metal roofing. This highly reflective coating uses cool pigments in the paint to increase solar reflectance and lower the surface temperature of the roof.

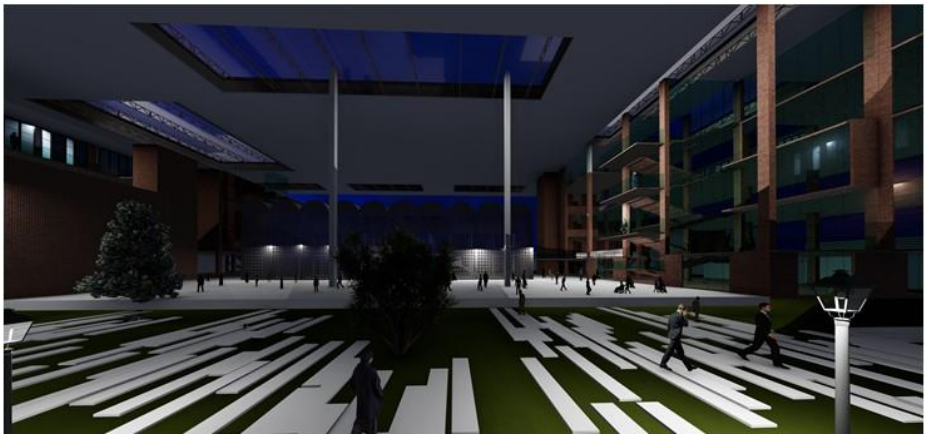


6.6 Render photos









Render of spaces during fair

6.7 Conclusion

People will come to the Khulna divisional government public library to commute and share their views and knowledge, as well as to be enlightened by the information and data in the stored books and archives. It will grow into a significant information hub where people will come to take a break from their daily routines in the natural green areas built here, read literature they enjoy, and have time to be mentally and physically balanced. It will also serve as a main social gathering place for Khulna residents, where they may be enlightened by the light of knowledge.

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