

**RAJSHAHI DIVISIONAL PUBLIC LIBRARY**

By

KHANDAKAR ADIL AHNAF NOON  
17108032

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

Department of Architecture  
BRAC UNIVERSITY  
January 2024

© 2024 BRAC UNIVERISTY  
All rights reserved.

## DECLARATION

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
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 have acknowledged all main sources of help.

Student's Full Name & Signature:



---

Khandakar Adil Ahnaf Noon

17108032

## **APPROVAL**

The project titled “RAJSHAHI DIVISIONAL PUBLIC LIBRARY” submitted by Khandakar Adil Ahnaf Noon, ID 17108032 of Fall, 2023 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Architecture on 21st December, 2023.

Examining Committee:

Supervisor:  
(Member)

---

Iftekhar Ahmed, PhD  
Associate Professor, School of Architecture and Design  
BRAC University

Supervisor:  
(Member)

---

Md. Samiur Rahman Bhuiyan  
Lecturer, School of Architecture and Design  
BRAC University

Departmental  
Chairperson:

---

Zainab Faruqui Ali, PhD  
Professor & Chairperson, School of Architecture and Design  
BRAC University

## **ABSTRACT**

Public libraries are instrumental in the social and cultural development of any community. A divisional public library should aim to be inviting to serve the division as a whole, while maintaining the functional integrity of a public building. A massive decline in the use of public libraries in the last two decades is a problem that is caused by technological advancements in the field of information and data accessibility. This project aims to tackle this problem by focusing on the public character of the library, which in turn will invite more people into the library function itself. The paper also deals with the shifting nature of the public library in terms of the facilities it aims to provide to its users. By implementing design decisions generated from the context of the city of Rajshahi, this project aims to contribute to the overall development of the city and the people living in it.

Keywords: Public library; Rajshahi city; Rajshahi division; Thoroughfare; Public building; Library

## **ACKNOWLEDGEMENTS**

I would like to start by thanking The Almighty for giving me the strength and patience to persevere through every obstacle I faced on this journey. I am grateful to my parents and sisters for their unwavering support and unconditional love, which I hope to carry with me moving forward.

I am honored to have been able to receive guidance from my faculties, who believed in my abilities on days when even I did not. Special thanks to my studio instructors, Abul Fazal Mahmudun Nobi and Md. Samiur Rahman Bhuiyan, for helping me every step of the way in my final undergraduate design studio course. And I am thankful to Dr. Mohammad Habib Reza for his encouraging words, which will continue to motivate me in my future endeavors.

I am truly grateful to my juniors, Md. Kafil Uddin, Faiza Zahin, Kazi Muhaimen Zia, Reshad Mahbub Sayor, Mohammad Tasfik, and Samia Afroze, who helped me immensely in the last few months of the final design studio. Without their tireless dedication, this project might not have been completed in time. I also want to thank Rizwan, Sumaiya, Fariyana, and Elham, who supported me in earlier design projects, and Millat, who provided insightful feedback regarding the final project.

Finally, I would like to thank my amlas, Alvee Habib, Swakshar Roy, and many more, for teaching me a lot about what I know today. Their guidance has been instrumental in this journey, and I am extremely grateful for their support over the years. I am forever indebted to my seniors, peers, and juniors who helped me directly or indirectly through my undergraduate tenure.

## Table of Contents

Declaration	ii
Approval	iii
Abstract	iv
Acknowledgement	v
Table of Contents	vi
List of Figures	ix
Chapter 1: Background of the Project	1
1.1 Project Brief	1
1.2 Introduction	1
1.3 Aims and Objectives	2
1.4 Project Summary	3
1.5 Project Rationale	4
Chapter 2: Literature Review	5
2.1 Public Library as a Necessity	5
2.2 Evolution of Public Libraries	7
2.3 Public Libraries in Bangladesh	8
2.4 Library Culture in Rajshahi	11
2.5 Elements of a Modern Library	12
Chapter 3: Site Study Analysis	15
3.1 Location and Site Surroundings	15

3.2 Site Forces and Neighboring Functions	17
3.3 Land Use Pattern and Accessibility	18
3.4 Climatic Considerations	19
3.5 Site Opportunities	21
3.6 Site Limitations and Issues	23
Chapter 4: Case Study Analysis	25
4.1 Philips Exeter Academy Library	25
4.1.1 Form and Function	26
4.1.2 Horizontal and Vertical Circulation	26
4.1.3 Structural System	27
4.1.4 Façade Details	28
4.2 National Library of Bangladesh	30
4.2.1 Form and Function	31
4.2.2 Horizontal and Vertical Circulation	32
4.2.3 Structure and Façade Treatment	33
Chapter 5: Program Analysis	34
5.1 Proposed Program from Client	34
5.2 Main Sector and Zoning	35
5.3 Events and Activities	37
5.4 Deviations from Proposed Program	37
5.5 Program	38

Chapter 6: Case Study Analysis	40
6.1 Conceptual Framework	40
6.2 Design Decision Phase	42
6.3 Form Generation	43
6.4 Structural System Diagram	44
Chapter 7: Design Suggestions	45
7.1 Architectural Diagrams	45
7.2 Illustrations of Axonometric Views	54
7.3 Design Visualizations	55
Chapter 8: Conclusion	59
References	60



## List of Figures

Figure 1: A library as a public facility	6
Figure 2: Public Libraries over the years (Infographic, 2021)	7
Figure 3: Dhaka University Central Library. Source: Fonck (2012)	9
Figure 4: Khulna Divisional Library. Source: Bakshi (2013)	10
Figure 5: Rajshahi Public Library. Source: Hossain (2017).	11
Figure 6: Ideal Zoning of Library components. Source: Edwards B. (2009)	13
Figure 7: Relationship between library components. Source: Edwards B. (2009)	14
Figure 8: Location of site within Rajshahi city in relation to the capital Dhaka	15
Figure 9: Site Connection to Important Transportation Hub of Rajshahi city	16
Figure 10: Relevant functions surrounding the site	17
Figure 11: Land Use and Zoning	18
Figure 12: Road Typology and Accessibility around the site	19
Figure 13: Diagram depicting sun path and wind flow around the site	20
Figure 14: Establishing a connection between the green belt and open fields	20
Figure 15: Site is surrounded by ample vegetation including large trees and a pond	21
Figure 16: Diagram depicting the stumps and foliage diameter within the site	22
Figure 17: Section AA' of Existing Site from plan fig. 16	22
Figure 18: Footpath illegally occupied by various vendors	23
Figure 19: Large number of ambulances parked illegally in front of the site	23

Figure 20: Haphazard parking in front of the site	24
Figure 21: Footpath completely blocked by illegal vendors and pedestrians walking	24
Figure 22: Phillips Exeter Academy Library outside and inside. Source: Behance. (2018).	25
Figure 23: Circulation within the Philip Exeter Academy Library	27
Figure 24: Outer walls taper towards top. Central cross-beam support. Source: Archdaily	28
Figure 25: Structural system of the library building. Source: Israel A.(2020)	28
Figure 26: Window aperture details. Source: Archdaily	29
Figure 27: Interior lighting from facade apertures. Source: The Architectural Review	29
Figure 28: National Library and Archive of Bangladesh. Source: Banglapedia s	30
Figure 29: Ground Floor Plan of NLB showing protuberances from the distorted square.	31
Figure 30: South Elevation and North Elevation. Source: Islam M. (2011)	33
Figure 31: Brick Vertical Elements that aid in shading. Source: Islam M. (2011)	33
Figure 32: Functional Diagram of a Library. Source: Baiche. (2011).	36
Figure 33: Integrating accessibility as a design strategy for the public library	40
Figure 34: Conceptual Development of the public library	41
Figure 35: Design Decision Diagrams	42
Figure 36: Form Generation from contextual analysis	43
Figure 37: : Structural diagram and progression.	44
Figure 38: Axonometric View of the project.	45
Figure 39: Site Plan	45
Figure 40: Ground Floor Plan	46

Figure 41: Blowup 1 of Ground Floor Plan	46
Figure 42: Blowup 2 of Ground Floor Plan.	47
Figure 43: First Floor Plan	47
Figure 44: Second Floor Plan	48
Figure 45: Blowup 1 of Second Floor Plan	48
Figure 46: Third Floor Plan	49
Figure 47: Blowup 1 of Third Floor Plan	49
Figure 48: Blowup 2 of Third Floor Plan	50
Figure 49: Blowup 3 of Third Floor Plan	50
Figure 50: Fourth Floor Plan	51
Figure 51: Basement Plan	51
Figure 52: West Elevation	52
Figure 53: Section AA'	52
Figure 54: South Elevation	53
Figure 55: Section BB'	53
Figure 56: Axonometric View 1	54
Figure 57: Axonometric View 2	54
Figure 58: View from Public Entry	55
Figure 59: View from Southern pedestrian access	55
Figure 60: View from Eastern pedestrian access	56
Figure 61: View of library lobby stairs and Western facade	56

Figure 62: Interior view from uppermost floor	57
Figure 63: General reading area and private reading zone	57
Figure 64: : View from top of the stairs towards service point	58
Figure 65: Nighttime atmosphere within the library	58

## **CHAPTER 1: BACKGROUND OF THE PROJECT**

### **1.1 Project Brief**

Title: Rajshahi Divisional Public Library

Client: Department of Public Libraries, Ministry of Cultural Affairs,  
Bangladesh

Site Location: Sonadighi, Rajshahi city, Rajshahi Division

Site Area: 3.88 acres

Built Area: 1,18,405 sq. ft.

### **1.2 Introduction**

Libraries are essential to the core infrastructure of any society. It allows its users to engage in the enlightening and sharing of knowledge with each other. It also encourages anyone to engage in the solitary pursuit of knowledge in quiet and comfort. An ideal library can provide both physical and digital access to reading material within a well-designed dedicated space. It can also range in size encompassing a few shelves to thousands of items within its inventory. The key objective of a library is to ensure a quiet area for users to study in. It should also provide common areas for sharing of knowledge among a group of users and encourage discussion. The definition of a modern library is evolving to include locations where people may freely access information from a variety of sources and in a variety of formats.

A library can be the result of initiatives by a public governing body, an institution, a corporation or a private individual. Libraries under the caretaking of a public body may provide access to people who

may not have the ability to do so on their own. A public library is dedicated to anyone willing to spend time in the library, regardless of wealth or status. An ideal library should provide an atmosphere that promotes the exploration of knowledge. It should also provide readily available, well-organized information and stock. They are information hubs that give people free access to a plethora of information that is often unavailable elsewhere, whether online, in print, or in person. Libraries provide a fundamental social function by serving as access points to knowledge and culture. They also encourage interest in educational activities while promoting the fresh perspectives and ideas required to build a unique and dynamic society.

### **1.3 Aims and Objectives**

This project has five prime objectives:

- i) The project should satisfy the needs of the users in providing the basic services of a library in accordance with the given requirements.
- ii) The project should accommodate space for the latest technology in library design while also preparing for the future.
- iii) The project should act as a hub for social interaction and cultural activities for the users
- iv) The project should be inviting for people to visit in their daily lifestyle
- v) The project should create and enhance a new dimension in the context of the city of Rajshahi.

### **1.4 Project Summary**

The Divisional Public Library is the largest public library in Rajshahi city. It is run by the ministry of cultural affairs and administers fifteen other libraries in the district. The existing library building, built in 1983, was the result of a failed five-year plan undertaken in the 70s. Since the original plan

was never fully realized, the government proposed to rebuild the library with modern amenities, computer access and other specified functions to serve a wide variety of users. The proposed program for the project is given below:

#### Library

- Archives
- General reading room
- Library for children
- Library for reference books
- Private reading room
- AR/VR room
- Audiovisual room

Seminar halls

Meeting rooms

Book exhibition hall

Book cafe

Restaurant

Power station

Car parking for 70

Multipurpose hall

Administration office

- Director's office
- Assistant director's office
- Head librarian's office
- Librarian 8

Auditorium

- Main hall
- Green room
- Generator room
- Storage

### **1.5 Project Rationale**

The existing building housing the Divisional Public Library of Rajshahi was built in the late 1980s after a failed five-year plan to erect proper library facilities for each division. The existing library building is insufficient in fully servicing the citizens of Rajshahi city, while also failing to attract users from the entire Rajshahi division. Currently, the library is visited only by examinees for public exams and students from the neighboring institutions. Therefore, a redeveloped library facility with greater resources and more inviting premises is needed. The location of the library is ideal in its placement at the center of the city of Rajshahi, accessible by both major road transportation and water transportation as it is situated close to the edge of river Padma. Neighboring educational institutions also enroll thousands of students who would benefit greatly from better facilities and modern amenities at the divisional library.



## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Public Library as a Necessity**

Public libraries are necessary to the fundamental development of any society. They offer a safe space for everyone to come in and get access to vast amounts of information and resources. Moreover, a public library can be an open space to nurture social interaction, peer learning and most importantly, provide a sense of inclusivity to those who need it the most. Any public library must create a friendly environment for everyone who lives and works nearby, fulfilling its mandate to be open to everyone (Worpole, 2013). The resources and services provided by it produce opportunities for learning, support accomplishment and education, and facilitate the new ideas and views that are central to an original and innovative society (Mondal, 2022).

Libraries come in four primary categories, including academic libraries, special libraries, public libraries and national libraries (Ashikuzzaman, 2016). Academic libraries in educational institutions are essential for assisting students, professors, and researchers in their intellectual endeavors. Numerous academic subjects are represented in the substantial collections of books, journals, periodicals, databases, and digital resources housed in these libraries. On the other hand, Special libraries are frequently found in businesses, government organizations, legal firms, hospitals, and other specialized contexts. As the keepers of a country's historical documents, intellectual accomplishments, and cultural legacy, National libraries retain a particular place in society. These esteemed organizations act as repositories for essential national writings, records, and collections that illustrate a nation's identity and history. The public library differs from these other institutions in one significant way- it is accessible by people of all ages and backgrounds, without any need for identification or a definite social status.



The Library is a thousand-year old institution



Libraries consisted of a collection of information under **custodianship**



Public Libraries allow free access to this vast amount of resources

*Figure 1: A library as a public facility. Source: Author*

Public libraries provide a broad variety of items, such as printed books, electronic books, audiobooks, periodicals, newspapers, and multimedia tools. With comfortable seats, study rooms, and computer capabilities, public libraries offer warm settings for reading, research, and community involvement. In order to promote a love of reading and lifelong learning, public libraries are known to arrange a variety of activities and events, including book clubs, storytelling sessions, author presentations, and seminars. This communal effort towards the sharing of knowledge is the primary function of any proper public library.

## 2.2 Evolution of Public Libraries

Library as an institution has been instrumental in the evolution of civilization over thousands of years. Knowledge has been passed on from generation to generation through inscriptions on stone tablets and papyrus records, some of which are over 4000 years old. In the Fertile Crescent of Southwest Asia, which spanned from Mesopotamia to the Nile in Africa, the first libraries were founded over five thousand years ago (Renfrew, 2008). In South Asia, libraries were founded under medieval rulers with an obsession for books, in ancient universities and many more to house privately owned collections. However, the need for public libraries was not widely felt because of low levels of literacy among the general population.

Interest in establishing libraries open to the public with the goal of reducing social barriers and encouraging knowledge sharing intensified with the start of the 19th century, with the British rule establishing public libraries in the Indian subcontinent from 1820 and onwards. Meanwhile in the United States, the first ever tax supported public library opened in 1833.

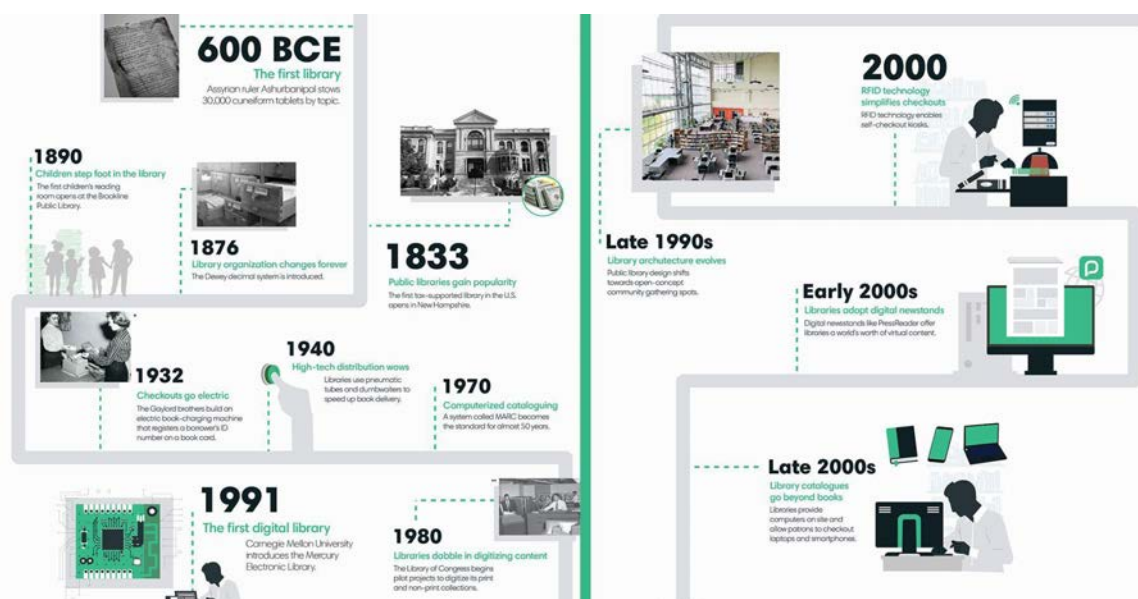


fig 2: Public Libraries over the years (Pressreader, 2021)

One of the first recordings of a reading room for children was opened in the 1890s, at the Brookline Public Library. This was a massive step for the public library embracing its goal of inclusivity for all.

Moreover, it reinforced the notion that public libraries are open to people of all ages. With massive advancements in library science including the Dewey Decimal System and electronically assisted self-checkouts, public libraries became more efficient in assisting the public and the library administrators during its services.

However, with the advent of the 21st century came the opportunity to digitize contents within the library. And thus, a new branch of public service was born in the form of the digital library. During this time, the architecture of library buildings also started to incorporate light and airy, open gathering spaces for the community they catered to. Library design evolved from only creating quiet places for deep concentration to also include facilities for instigating conversation and knowledge sharing among its users.

### **2.3 Public Libraries in Bangladesh**

Bangladesh has been through many different changes over this millennium, including being under British occupation, the Partition of Bengal and independence from West Pakistan. These political shifts also ushered in various stages of advancement in the establishment of public libraries throughout the country. The library movement of Bengal took place in 1850, resulting in the founding of four public libraries under the British administration. The population of undivided Bengal consisted of 6.6 percent of males who had complete literacy in 1881, compared to 0.3 percent of literate women, according to the census. Early in the nineteenth century, public libraries were meant to act as social agents to further education. They needed to fulfill their obligations to encourage nationalism during the Swadeshi era and even beyond (Mandal, 2021). Public libraries and their administrators expanded their welfare efforts by establishing relief camps during wars, cyclones, floods, and famines; distributing medicine during plagues, implementing adult education programs across the region; providing night schools for workers in cities; providing opportunities for reading books and newspapers, and engaging the public in other activities to raise awareness against

illiteracy. The Rajshahi Sadharon Pustakaloy was recorded by historians of that period to engage in such activities. Later the library was renamed Rajshahi Public Library.

However, when the Indian subcontinent was divided in 1947, Bangladesh, which was then known as East Pakistan, did not get any books or other library resources from the significant libraries of Bengal as provincial assets. In 1954, almost a century after the first library movement of Bengal, the foundation for Dhaka Central Public Library was laid. This building was designed by architect Muzharul Islam and later became the Dhaka University Central library.



*fig 3: Dhaka University Central Library. Source: Fonck (2012)*

After the war of independence in 1971, a five-year plan (1973-1978) introduced for the development of the emerging nation of Bangladesh included the establishment of public libraries in different divisions. This included the planning of divisional public libraries in Sylhet, Chittagong, Khulna, Rajshahi and more. One example of this plan is the Khulna Divisional Library building, designed by

Greek architect and planner Constantinos A. Doxiadis. It is still standing today and serving its original purpose. However, the plan was not fully realized in some cases for various reasons. This included the Rajshahi Divisional Public library building built in 1983, which was not completed according to the plan, and was intended to serve a temporary solution.



*fig 4: Khulna Divisional Library. Source: Bakshi (2013)*

## **2.4 Library Culture of Rajshahi**

The division of Rajshahi was once part of the ancient kingdom of Pundravardhana, established before 1200 BC. Then under the rule of Bengal, the city became an important center for trading and commerce. It also housed many different viharas and madrasas during different eras. For example, the largest Buddhist viharas or monasteries in the Indian subcontinent, Somapura Mahavihara is

situated in the Naogaon district of Rajshahi division. This institution was a center for Buddhist learning and religious education during the 8th century. Another important example of an educational institute in the region is the Darasbari Mosque and Madrasa, built in 1479 AD. The word ‘Dars’ corresponds with the word for teaching and learning, hence it is believed to have been a madrasa or religious school. Stone tablets containing inscriptions were also recovered from the remains of the historical site.



*fig 5: Rajshahi Public Library. Source: Hossain (2017).*

Among all the libraries of Rajshahi, one of the oldest is Rajshahi Sadharon Pustakaloy or the Rajshahi Public Library. Established well before 1866, the library was housed in a different two-storied building in 1884. It is one of the oldest surviving libraries in the country and was visited by many notable guests, including Mahatma Gandhi, poet Nazrul Islam and more.

## **2.5 Elements of a Modern Library**

A modern library has to cater to the needs of a variety of different user demographics. It also has to adapt to the advancements in library technology regularly. Designing a complex dedicated to such a variety of activities demands at least five specific elements that must be present (*Five Elements of Modern Library Design*, 2023). The first of which is to enable the community to engage with each other. Community engagement exercises have been a part of library procedure in our country since the beginning. This also allows future users to take part in the creative process of library designing and giving their input. The second element prioritizes adaptability over flexibility of spaces, as too much flexibility loses the identity and purpose of designed spaces in an institution like this. The third element of a modern library is the presence of dedicated choice zones for certain demographics. This includes the possibility of separate kid and teenage zones for reading and learning. It may also offer such spaces for minorities and the differently abled. The fourth element is the integration of intuitive wayfinding design choices to guide the user throughout the complex. Accessibility is key in any architectural project, and well defined thoroughfare helps the human traffic to flow more efficiently. The final element introduces the concept of prioritizing the users over stacks. This is a sign of the evolution of the modern library interior from its use as book storage of the past. By inviting more people into the library in place of stack space, the method enables more revenue generating opportunities and increased public engagement. Public libraries are different in their method of displaying catalog from other libraries as it is freely accessible to anyone wishing to visit the library. Therefore, it must focus on the most efficient layout for display stacks that allow the user to be able to comprehend it easily and navigate accordingly. However, library design in modern times is undergoing constant changes to incorporate various advancements in library technology, including making provisions for augmented reality (AR) and virtual reality (VR). Modern libraries are also less dependent on physical copies of books as a library goer has the opportunity to utilize their smart devices to get access to those books on the library premises through mobile applications and web portals.



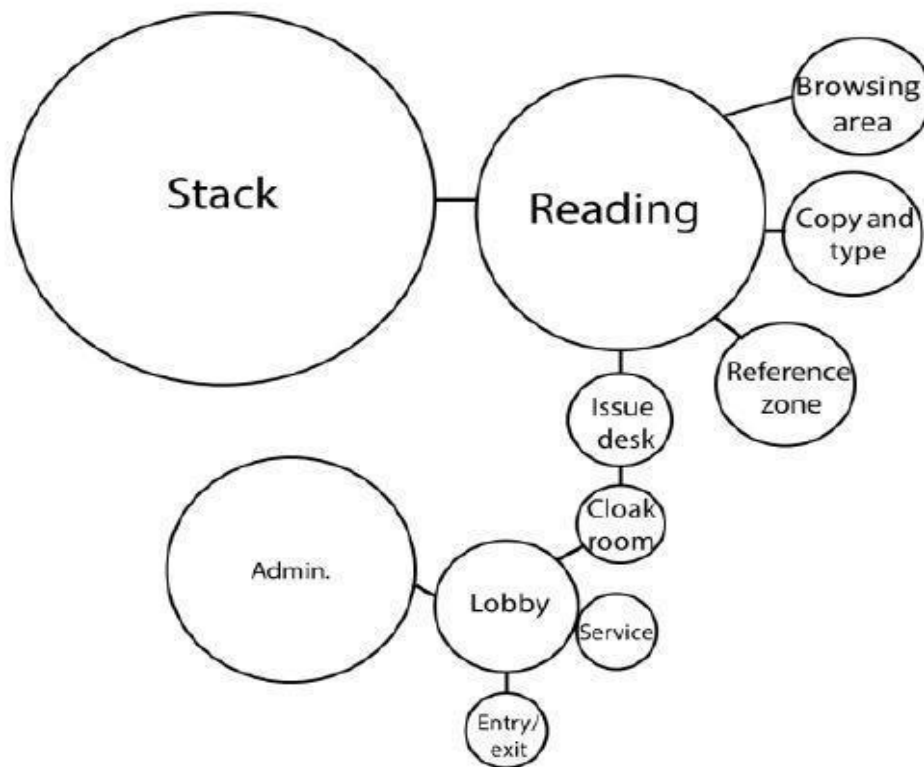
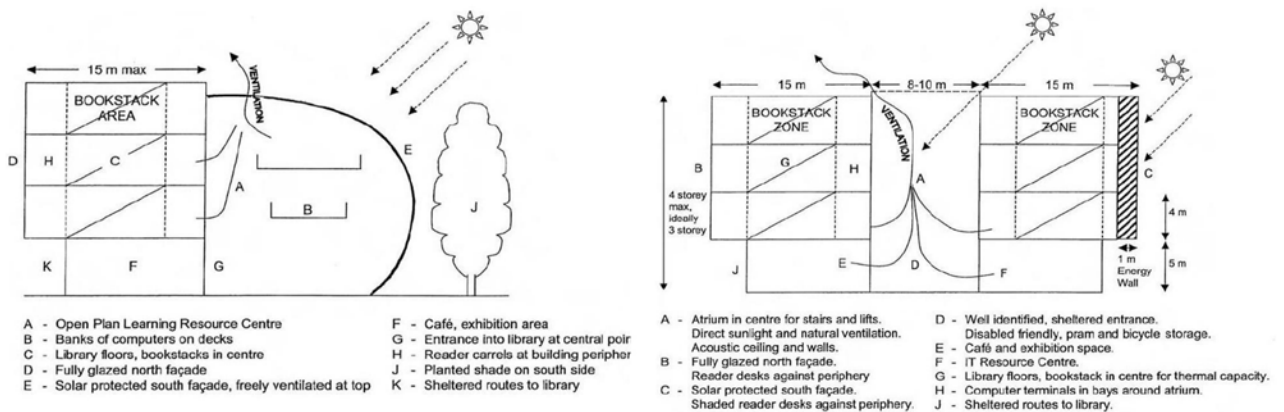


fig 6: Ideal Zoning of Library components. Source: Edwards B. (2009)



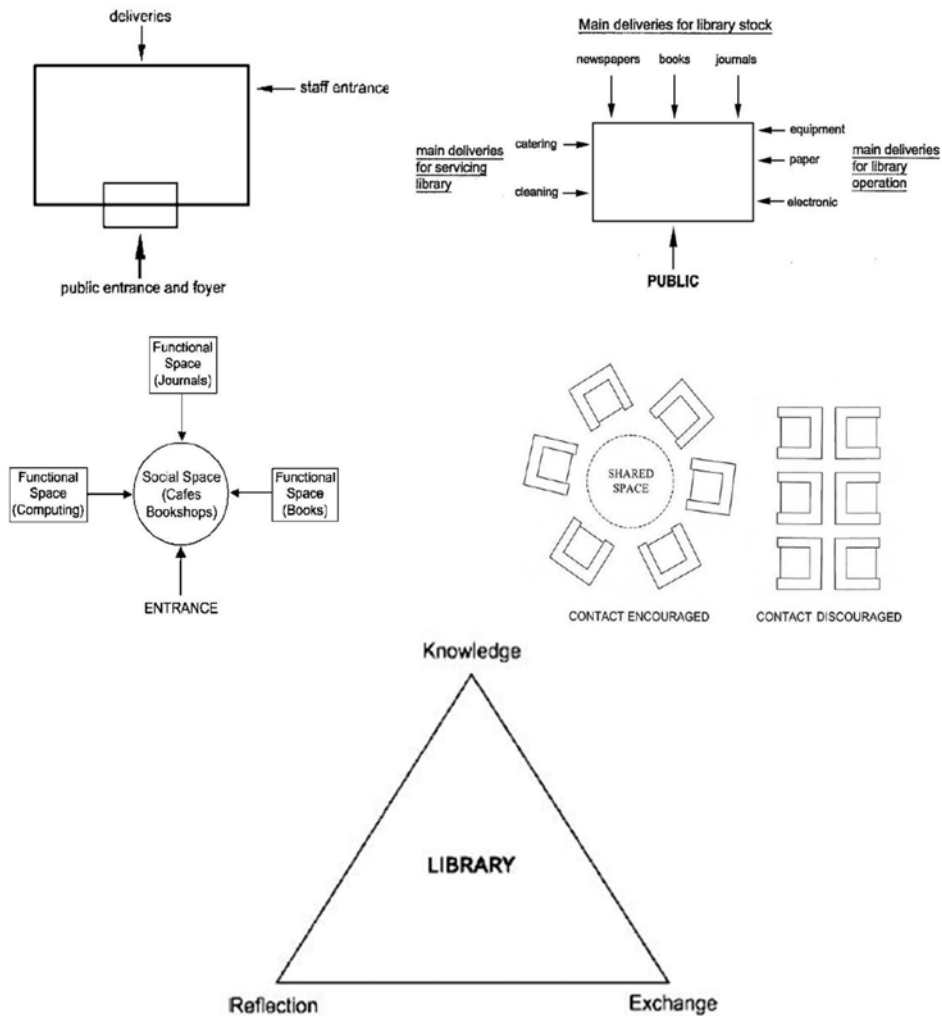


fig 7: Relationship between library components. Source: Edwards B. (2009)

## CHAPTER 3: SITE STUDY ANALYSIS

### 3.1 Location and Site Surroundings

The Divisional Library of Rajshahi is situated in the Sonadighi area within Rajshahi city, between 24°22'14.24"N and 88°35'3.82"E. The site sits across from Rajshahi Medical College in its north and is flanked by Rajshahi Teacher's Training College and Loxmiipur High School in its east and west, respectively. There is a large body present adjacent to the site, popularly known as the College Pukur.



*fig 8: Location of site within Rajshahi city in relation to the capital Dhaka. Source: Author*

The site is situated very close to the bank of the river Padma that runs along the side of the city. The site itself is very culturally significant because of its geographical location.

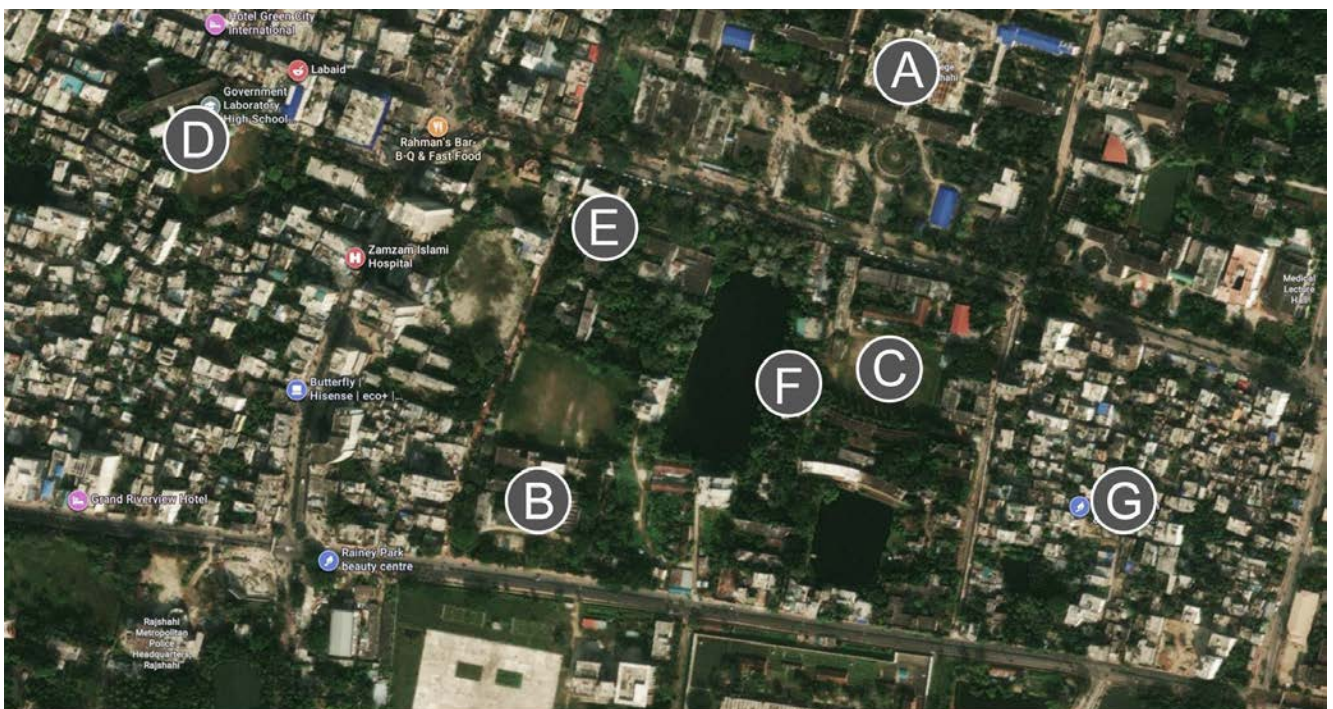


fig 9: Site Connection to Important Transportation Hub of Rajshahi city. Source: Author

The site is flanked on the North by the Medical Road, a four-lane wide road usually only usable as a two-lane street because of parked cars on either side. This road connects the site to the East of Rajshahi’s central bus stop, and therefore is highly accessible by a large number of people within and outside the city. Medical Road is also traversed daily by a large variety of vehicles that allow for better accessibility for the community. Rajshahi railway station is also situated in the same location as the central bus stop, therefore local public transportation is available to visitors from outside the city to travel to the site. Local transportation services include an intercity bus service, various forms of automated three wheelers and traditional rickshaws.

### 3.2 Site Forces and Neighboring Functions

The site is situated in an area that mainly consists of various institutions serving Rajshahi's educational and medical infrastructure. There are also a number of hostels and residential facilities for students of these various schools and colleges that surround the site. These facilities pose a unique challenge in terms of ensuring accessibility for these students to and from the site. The adjacent water body can also be considered as a resting place for visitors of Rajshahi Medical which is located opposite to the site itself.



- A. Rajshahi Medical Hospital
- B. Rajshahi New Degree College
- C. Teacher's Training College
- D. Govt. Laboratory High School, Rajshahi
- E. RND College Hostel
- F. TTC Hostel
- G. Shipaipara Residential Area

*fig 10: Relevant functions surrounding the site. Source: Author Via Google Earth Pro*

The site is connected through surrounding roads and pathways to four different educational institutions in its vicinity. As a result, the location of the site has an inherent strategic advantage in

enhancing the learning experience for the neighboring students and the visitors from all over and beyond the division.

### 3.3 Land-use Pattern and Accessibility

According to the Mouza map of Rajshahi city from its Detailed Area Plan of 2017, it is seen that the site is surrounded by areas reserved for educational and research activities. It is also situated near many important educational institutions who can enjoy the services of a well-designed library to great extent.



*fig 11: Land Use and Zoning. Source: Author*



fig 12: Road Typology and Accessibility around the site. Source: Author

The site is adjacent to a four-lane major road to the North called Medical road. The site boundaries also coincide with a few pedestrian paths to the West and South that connects it to surrounding educational institutes.

### 3.4 Climatic Considerations

Rajshahi has a very warm and humid climate, reaching an average temperature of 30 degrees Celsius almost all year round. The region also faces moderate rainfall during the middle of a year, with maximum rainfall at 13mm per day average in June. The general direction of wind flow is considered to be Southwest and strong winds from the Southeast during Monsoon season.

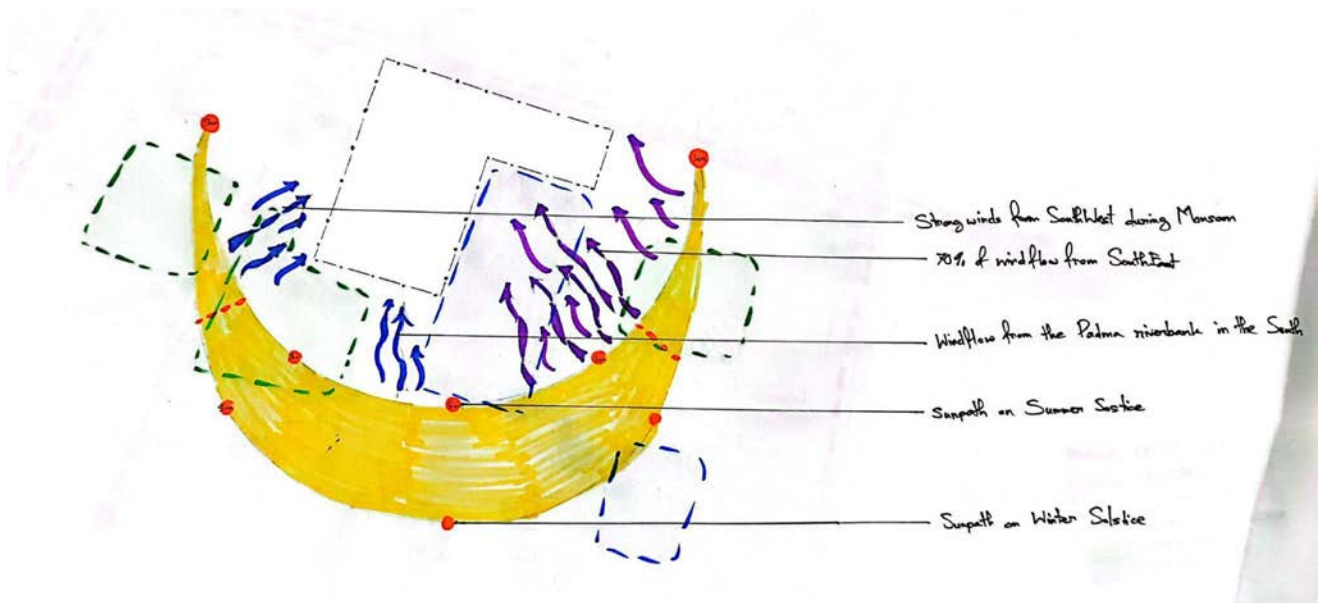


fig: 13: Diagram depicting sun path and wind flow around the site. Source: Author

The site surroundings and the city of Rajshahi in general is slowly undergoing massive urban changes in terms of average building height and scale. So such considerations must be adhered to when designing around the neighboring structures and future predictions. However, the presence of an adjacent water body and neighboring open green fields can be beneficial site forces for the project.

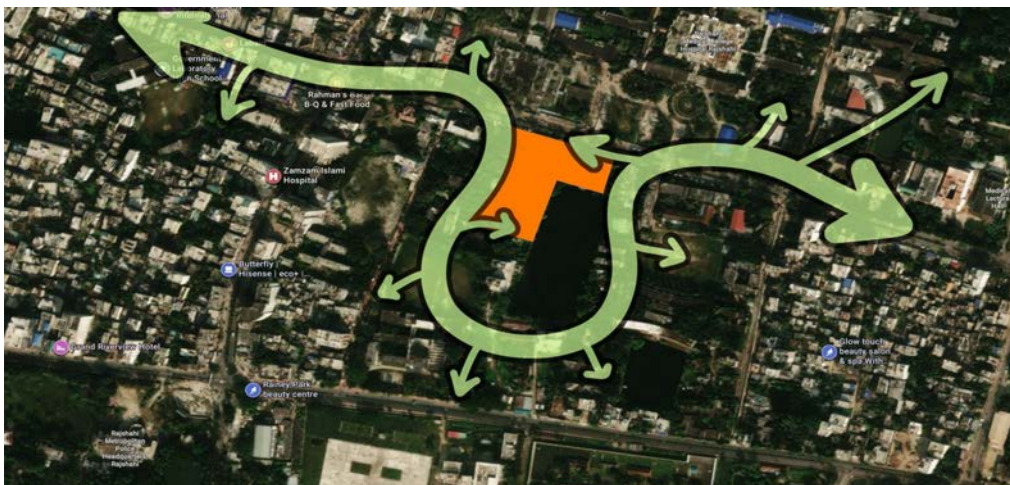


fig 14: Establishing a connection between the green belt and open fields surrounding the site.

Source: Author



The surrounding areas have multiple community fields and considerable vegetation has been planted on road dividers with local trees and shrubs. These and the adjacent water body can be immensely beneficial if considered as an urban green belt surrounding the site.

### 3.5 Site Opportunities

The site has been part of government owned land since the 1960s, but the temporary library structure had not been built until the 1980s. As a result, the site is covered with a large amount of vegetation including some large trees and shrubs. These can be identified and conserved as part of a sustainable approach to library development in the project. The position of these conserved trees may also guide the design approach on the placement of various functions and pathways.



*fig 15: Site is surrounded by ample vegetation including large trees and a pond. Source: Author via Google Earth Pro (2021)*

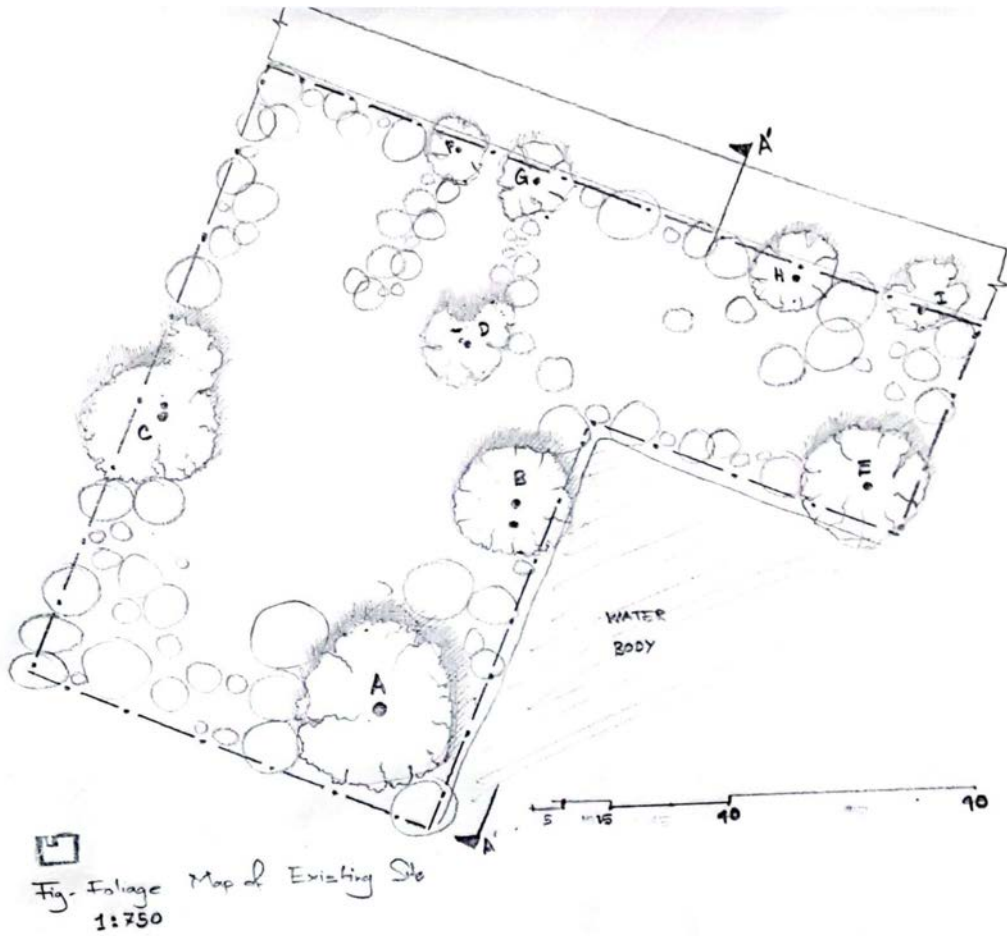


fig 16: Diagram depicting the stumps and foliage diameter within the site. Source: Author

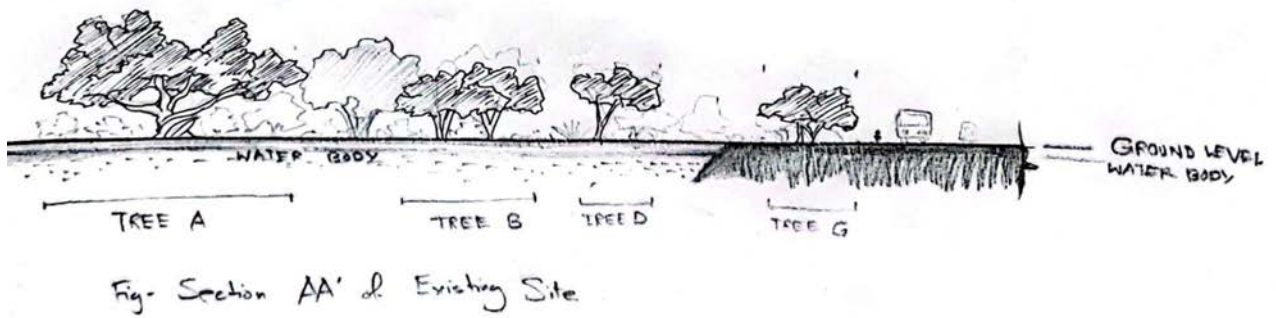


fig 17: Section AA' of Existing Site from plan fig 3.5.2. Source: Author

### 3.6 Site Limitations and Issues

Despite the geographical location of the site being near to institutions that can benefit from the presence of a public library, the site itself has a few drawbacks. First of all, the road adjacent to the northern side has limited walkability due to it being illegally occupied by a large number of street vendors. Although this serves the people from these different institutions in some way and ensures the need for facilities like the ones they offer, it also creates a number of problems for pedestrians and accessibility in general.



*fig 18: Footpath illegally occupied by various vendors. Source: Author, taken on July,2023*



*fig 19: Large number of ambulances parked illegally in front of the site. Source: Author, taken on July,2023*



*fig 20: Haphazard parking in front of the site. Source: Author, taken on June,2023*



*fig 21: Footpath completely blocked by illegal vendors and pedestrians walking on roads. Source: Author, taken on July,2023*

## CHAPTER 4: CASE STUDY ANALYSIS

### 4.1 Phillips Exeter Academy Library

The Phillips Exeter Academy Library is a library that provides services to the independent boarding school Phillips Exeter Academy in Exeter, New Hampshire in the United States of America. It is considered to be the world's largest secondary school library. It was designed by Architect Louis I. Khan and built between 1965-1971.



*fig 22 : Phillips Exeter Academy Library outside and inside. Source: Behance. (2018). Behance.net.*

Retrieved 2 July, 2023, from <https://www.behance.net/gallery/6784061/CaseStudy-Philips-Exeter>

#### 4.1.1 Form and Function

The library building was structured in three concentric square rings, where the outer ring consists of four load bearing walls and the inner ring contains a vast atrium that is 52 feet tall. The library has entrances on all sides, emphasizing its inviting nature to the users. The transition between interior and outdoor is created by the arcade, which links the façade to the entrances and adds to the library's friendly appearance. Even if one doesn't intend to attend the library, they may take a break from their travel at the arcade or seek shelter from the sun or rain.

#### **4.1.2 Horizontal and Vertical Circulation**

A double staircase invites users into the central vast atrium that connects all functions within the library building. One of the objectives the academy's building committee had set for Kahn was to make the library's arrangement obvious to visitors at a glance since the stacks are visible from the floor of the central hall. The center chamber is 32 feet (9.8 m) wide and 52 feet (15.8 m) high, measured from the floor to the start of the roof structure. The golden ratio, which the ancient Greeks studied and has long been regarded as the ideal architectural ratio, is a ratio with those dimensions. The atrium is flanked on both sides by staircases that connect the floors vertically. Kahn believed that reading areas should have access to natural light and be close to the literature. For Kahn, the act of selecting a book from a shelf and moving closer to a window for a closer look constituted the essence of a library. The openings at the top and around the atrium allows ventilation and light to pour throughout the building.

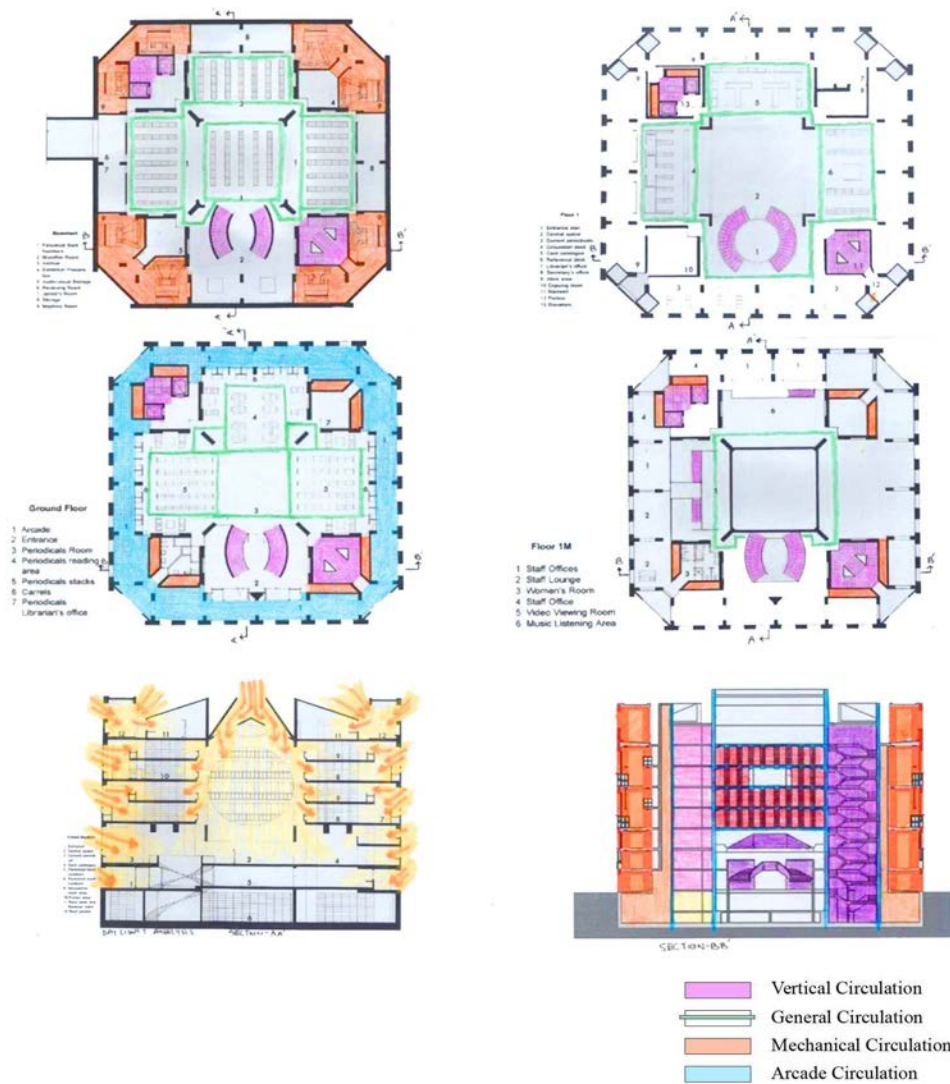


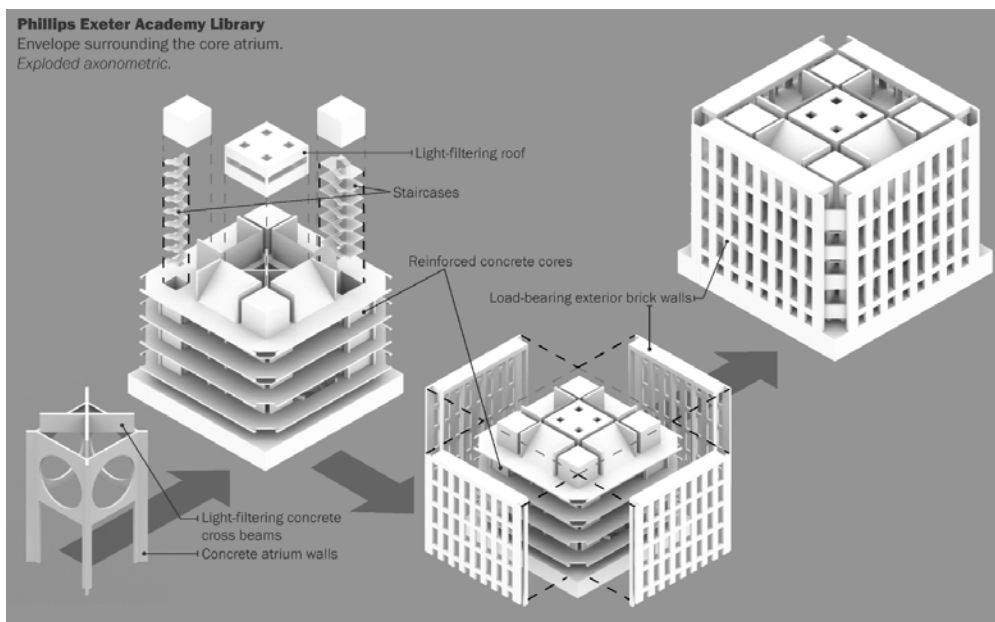
fig 23: Circulation within the Philip Exeter Academy Library. Source: Author

#### 4.1.3 Structural System

The building is a brick and concrete structure consisting of 4 outer load bearing walls that taper towards the top. A large concrete crossbeam located at the top of the central hall serves to reflect and disperse natural light into that area. Louis Kahn, who is known for his "poetry of light," may have meant more than simply structural and theatrical effects with this cross-beam because it also matches the aforementioned circular apertures.



*fig 24: Outer walls taper towards top (left), Central cross-beam support (right). Source: Archdaily*

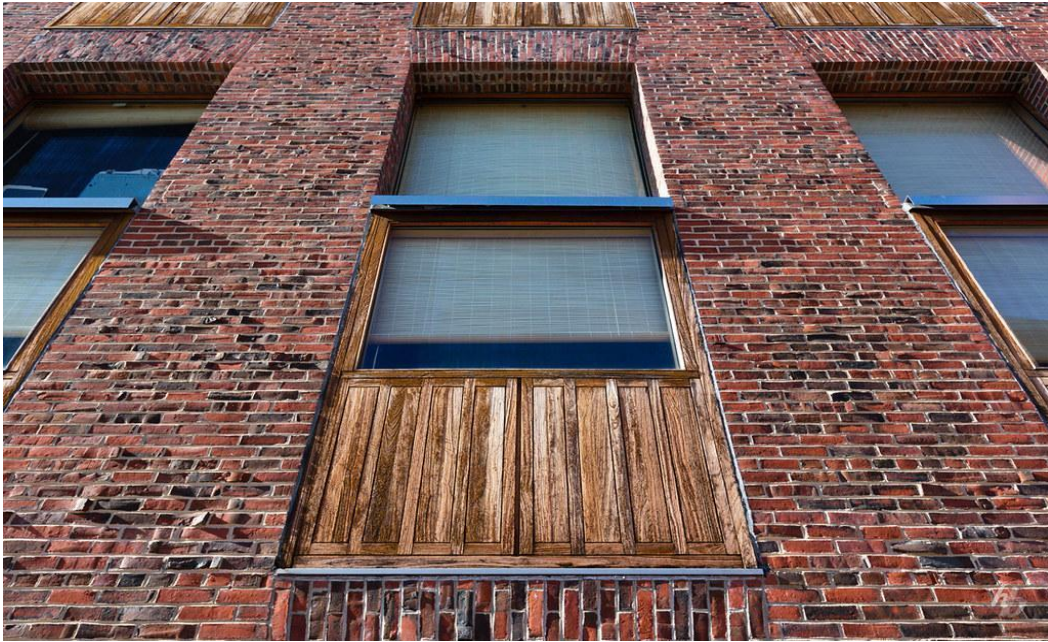


*fig 25: Structural system of the library building. Source: Israel A.(2020)*

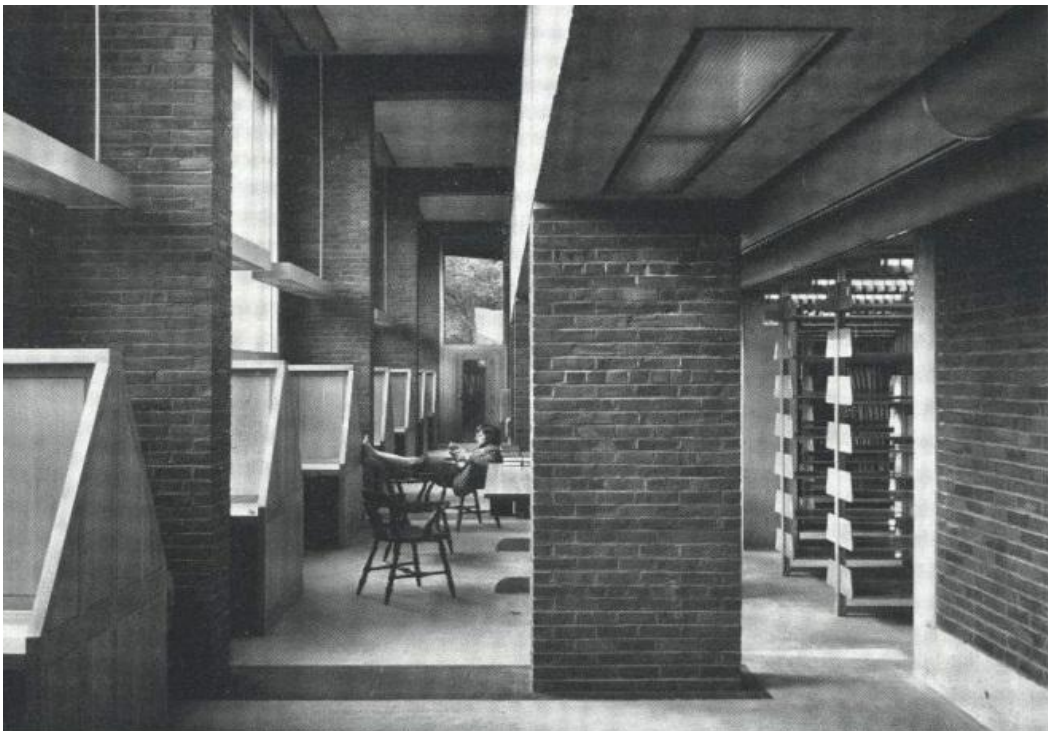
#### **4.1.4 Facade Details**

Since the exterior of the building is connected to the immediate reading zones for the users of the building, it consists of a large number of openings for natural ventilation and lighting.





*fig 26 Window aperture details. Source: Archdaily*



*fig 27: Interior lighting from facade apertures. Source: The Architectural Review*

## **4.2 National Library of Bangladesh**

The National Library and Archive of Bangladesh was constructed between 1978–1979. The location of the project is next to the Louis I. Kahn-designed parliament building and is in a region that was intended to be a part of Kahn's master plan. The powerful geometric arrangement and material selection in this project demonstrate Muzharul Islam's ability to work in harmony with Kahn's project and master plan.



*fig 28: National Library and Archive of Bangladesh. Source: Banglapedia*

#### **4.2.1 Form and Function**

A central tower of seven stories contains the stacks and reading rooms accessible to the users. The tower is surrounded by three stories of taller chambers created for assembly and administration. In the famous fashion of the architect responsible, the building is formed through the utilization of geometry in 45 degree and 135 degree angles. The form consists of basic shapes deconstructed thoroughly to create a sense of identity. For all intents and purposes, the building is distinctly

Muzharul Islam in nature. Triangular indentations from the base square plan create spaces that welcome the elements and the people alike. According to the architect, the pure square was distorted to mirror opposing demands of climate, pace and program.

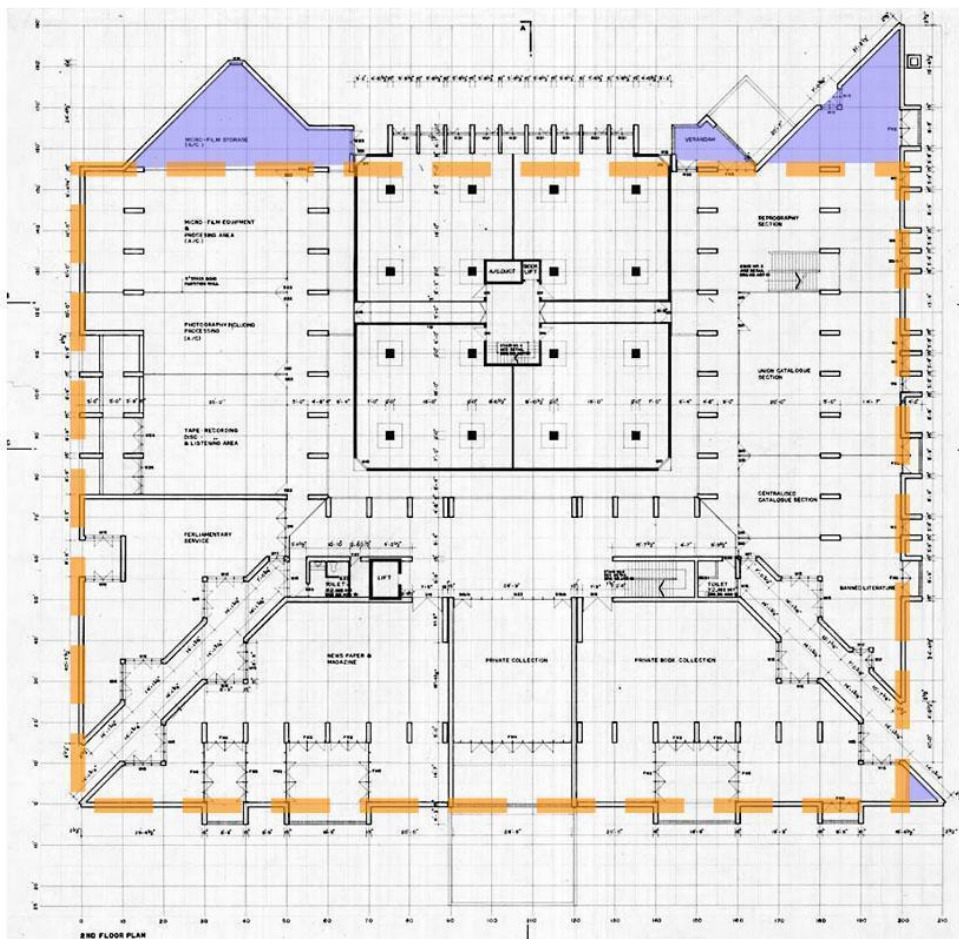


fig 29: Ground Floor Plan showing protuberances from the distorted square. Source: Author via Archinet

#### 4.2.2 Horizontal and Vertical Circulation

The building consists of three sets of stairs that offer vertical circulation to the users, one of which is positioned centrally. Two passageways cut through the building from the southernmost points of the east and west facades, allowing for thorough horizontal circulation.

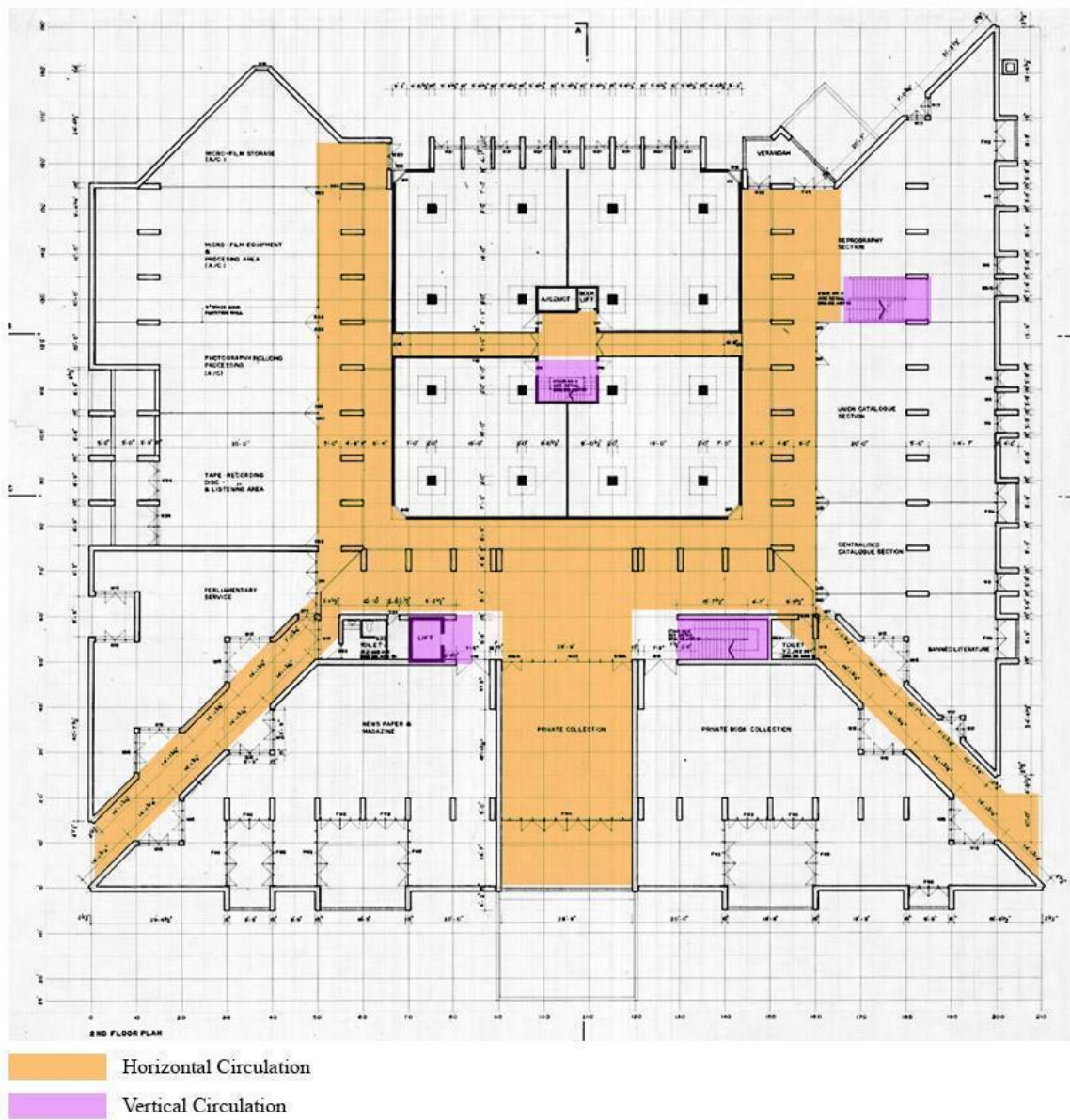
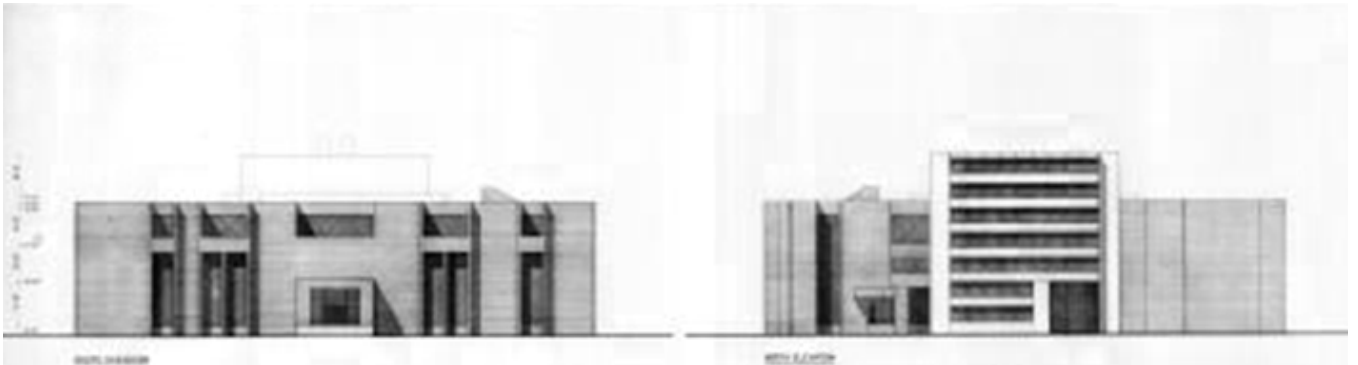


fig 29: Circulation diagram of the library. Source: Author via Archinnet

### 4.2.3 Structure and Facade Treatment

The National Library building of Bangladesh is mostly constructed out of traditional brick building techniques. Architect Muzharul Islam is known for utilizing this building method to tie in with the

vernacular roots of traditional local architecture. This building has sharp creases inwards that houses various openings and apertures towards the interior of the structure.



*fig 30: South Elevation (left) and North Elevation (right). Source: Islam M. (2011)*



*fig 31: Brick Vertical Elements that aid in shading. Source: Islam M. (2011)*

## CHAPTER 5: PROGRAM ANALYSIS

### 5.1 Proposed program from Client

The proposal for the rebuilding of a Divisional Library in Rajshahi city is part of the Government's larger proposal to redevelop the basic infrastructure needed by the public in various regions across the country. The program brief issued by the authorities included various functions needed to establish a well-stacked library complex for a city of this nature. However, some functions needed revisiting and rethinking to ensure an even more efficient and timely design. This will focus the scope of the project to serve the user base better. The proposed program for the project included the following-

#### Library

- Archives
- Stack Area
- General library
- Library for the physically challenged
- Library for children
- Library for elder people
- Library for reference books
- Library for women
- Science books library

#### Seminar halls

#### Meeting rooms

#### Book exhibition hall

#### Computer lab

Cyber cafe

Cafeteria

Power station

Car parking for 100

Multipurpose hall

Administration office

- Secretary 2

- Librarian 8

Auditorium

- Main hall

- Green room

- Generator room

- Storage

## **5.2 Main Sector and Zoning**

According to the nature of the elements of a public library, it can be divided into three distinct categories:

i) Public Zone (General library, Reading spaces, Cafe or Restaurant)

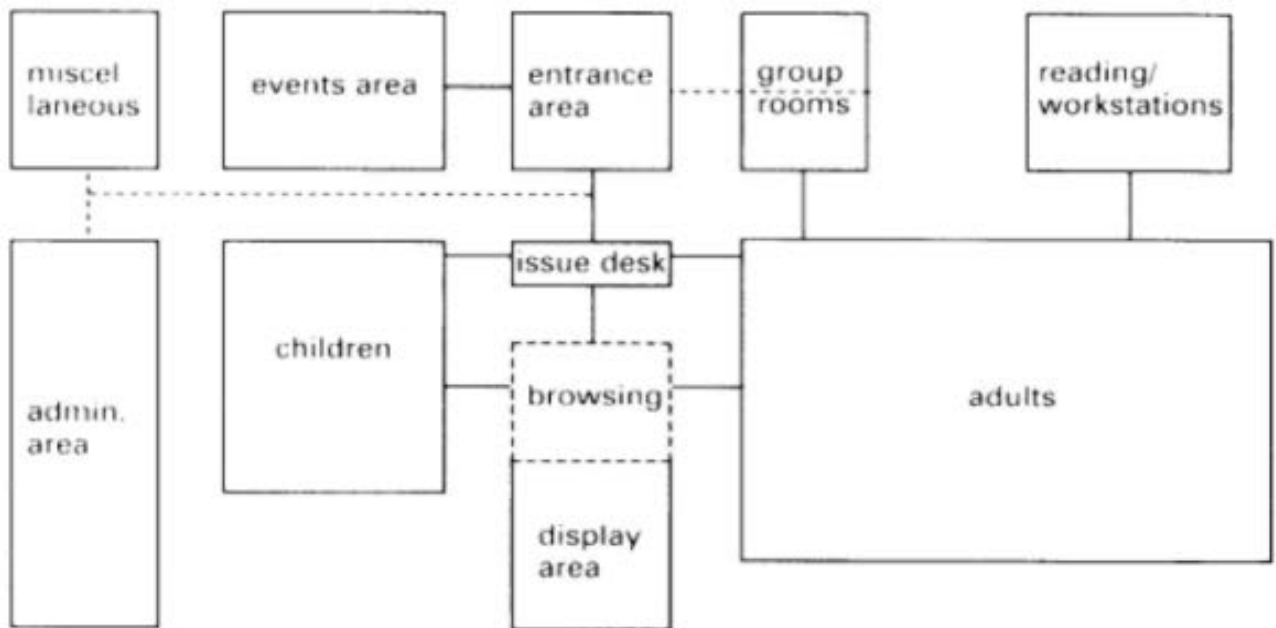
ii) Semi-public Zone (Workshop spaces, Conference halls)

iii) Private Zone (Administrative building, Service areas)

Based on the zoning above, the following blocks can be created in the proposed program. Any public library has specific sectors based on these three categories that helps in organizing the activities needed to run it properly. These include-

- The Supervised Zone
- Educational Zone
- Zone for conversations and sharing of knowledge
- Civic Facilities
- Entertainment Zone

The hierarchy among these elements can be seen portrayed in the following image-



**Fig 20:** functional diagram of a library.

**Source:** Baiche, B., Neufert, E., Neufert, P., & Walliman, N. (2011). *Architects' data* (3rd ed., pp. 330). New York, NY: Wiley-Blackwell.

### 5.3 Events and Activities

The categories of events and activities taking place in the library building can be classified into three types based on their regularity. These include daily activities which are tied to the core function of the project, which is to be inviting to the general public and enable them to engage in literary activities like reading, listening, and conversing. The regular activities on the other hand include



cultural events like exhibitions, workshops and conferences, documentaries and films, going to the cafe or restaurant and other facilities. Finally, the periodical activities include events that take place once or a few times in a year, like book fairs, science fairs, art competitions, poetry reading competitions for kids, debates and seasonal cultural events.

#### 5.4 Deviations from Proposed Program

Most of the library programs created for the project by the client can be dated back to the 1958 mandate for public libraries by the government. The rest were formulated during the 1980s. With the advancements of library technology and changes in social structure in a public space in the last forty years, the given programs can be repurposed into something that caters to the needs of modern library users. The most important of these changes can be the changing of separate reading areas based on gender, age and limited abilities into a space that is universal and inclusive to all. Therefore, a universally accessible general reading room is more beneficial to the project and the community. Provisions must also be made for incorporating Augmented reality or AR and Virtual reality or VR technologies into the library functions. Audiovisual library rooms of old can be replaced into multimedia library spaces that incorporate modern technological tools and more in the near future. Finally, flexible spaces should be prioritized over fixed walls that allow the library interior to morph into the needs of the users.

#### 5.5 Program

SI	TITLE	NO OF USERS	NO OF UNITS	AREA (PER PERSON sq. ft.)	TOTAL AREA (sq. ft.)
	<b>Admin Block</b>				
1	Director's Office	1	1	400	400

2	Powder Room For Director's Office	1	1	50	50
3	Assistant Director's Office	1	1	225	225
4	General Office	5	1	110	550
5	Storage	1	1	200	200
6	Lobby		1	300	300
7	Meeting Room	8	1	60	500
8	Washroom for General Office (2 W.C, 2 Sinks)	8	1	13	100
9	Receptionist Area	1	1	20	20
	Total				2,345
	With Circulation (+30%)				3,050
	<b>Library Block</b>				
1	General Reading Room	350	1	50	17,500
2	Reading Room for Children	110	1	30	3,300
3	Quiet Reading Room	50	1	50	2,500
4	Reference Book Room		1		1,250
5	Fab Lab	15	1	100	1,500
6	Digital Library and Audiovisual	50	1	50	2,500
7	Virtual and Augmented Reality Library Room	50	1	70	3,500
8	Stacks	75	1	100	7,500
9	Reception	2	1	250	500
10	Service Point	3	1	250	750
11	Periodicals and 'Living Room for the City'	35	1	100	3,500
12	Archive		1		1,200
13	Head Librarian's Office	1	1	350	350
14	Research Center	10	1	200	2,000
15	Locker Stations	50	1	15	750
16	Search Stations	25	1	50	1,250
17	Seminar Rooms	150	2	20	6,000
18	Washroom for Library Users Male (5W.C, 6 Urinals, 5 Sinks)	5	4	30	600
19	Washroom for Library Users Female (5W.C, 5 Sinks)	5	4	30	600
20	Universal Washroom (1W.C, 1 Sink)	1	2	50	100
	Total				50,850
	With Circulation (+30%)				66,105
	<b>Auditorium Block</b>				
1	Auditorium Hall	250	1	18	4,500
2	Auditorium Stage		1		750
3	Auditorium Backstage	25	1	115	1,750
4	Auditorium Green Room	10		25	500

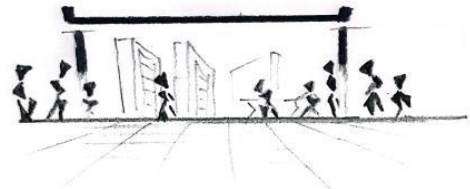
5	Auditorium Storage	10			1,000
6	Auditorium Lobby (30% of Auditorium Block)		1		2,000
7	Auditorium Washroom Block (11 W.C, 6 Urinals, 11 Sinks)	500	1		650
	Total				11,150
	<b>Recreational Block</b>				
1	Restaurant	50	1	100	5,000
2	Restaurant Kitchen	6	1	50	300
3	Book Cafe with Gift Shop	25	1	50	1,250
4	Book Exhibition Center	25	1	50	1,250
5	Prayer Space	100	1	18	1,800
	Total				9,600
	<b>Miscellaneous and Service</b>				
1	Substation and Generator		1		1,500
2	Car Parking Space for 80 Cars	80	1	150	12,000
3	Car Parking Circulation	80	1		15,000
	Total				31,500
	<b>Grand Total</b>				118,405

## CHAPTER 6: DESIGN CONSIDERATIONS AND DEVELOPMENT

### 6.1 Conceptual Framework:

In order to integrate the public library into day to day lives of the userbase the first design consideration was to increase the accessibility of the function itself. This involved identifying and connecting major public transportation hubs and pedestrian paths within and around the site.

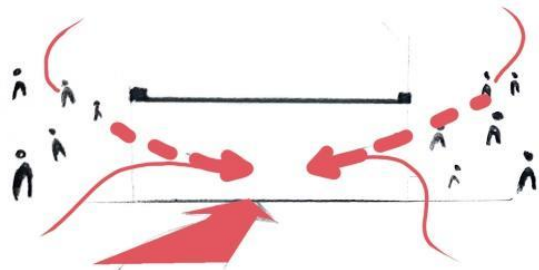
Public Libraries being used as intended



Interest in public libraries dwindling



Improving accessibility to encourage usage



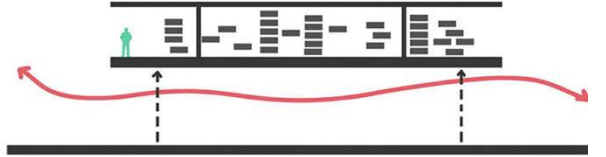
*Figure 33: Integrating accessibility as a design strategy for the public library. Source: Author*

Once the site and the function are properly accessible, focus shifted on including and improving necessary facilities required in a public building of this nature. Attention was paid so that the public

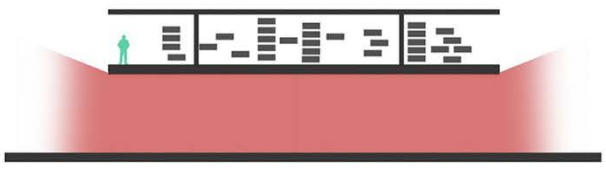
space and the core library function could co-exist and also overlap according to user demand.



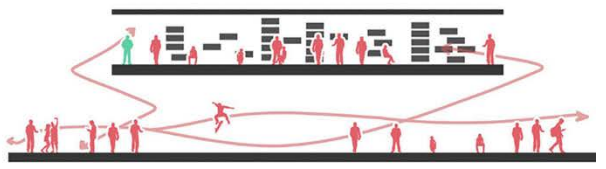
01 In the age of freely available data and knowledge through technology, public libraries are becoming less and less attractive to their communities each passing day



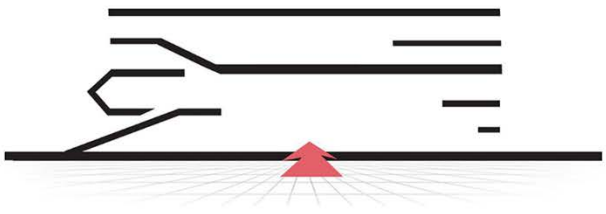
02 Improving accessibility and walkability by providing throughfare



03 Integrating open public spaces into the library program



04 An accessible public space that offers a variety of facilities to empower its community



05 Variety of spaces for public use



06 Wide range of offered activities and technological apparatus for the public

Figure 34: Conceptual Development of the public library. Source: Author

## 6.2 Design Decision Phase:

The location of the site in respect to the larger Rajshahi city and division was considered as the first step in the contextual analysis of the site. This step guided the accessibility aspects of the site in the design decision phase of the project.



Figure 35: Design Decision Diagrams. Source Author

### 6.3 Form Generation:

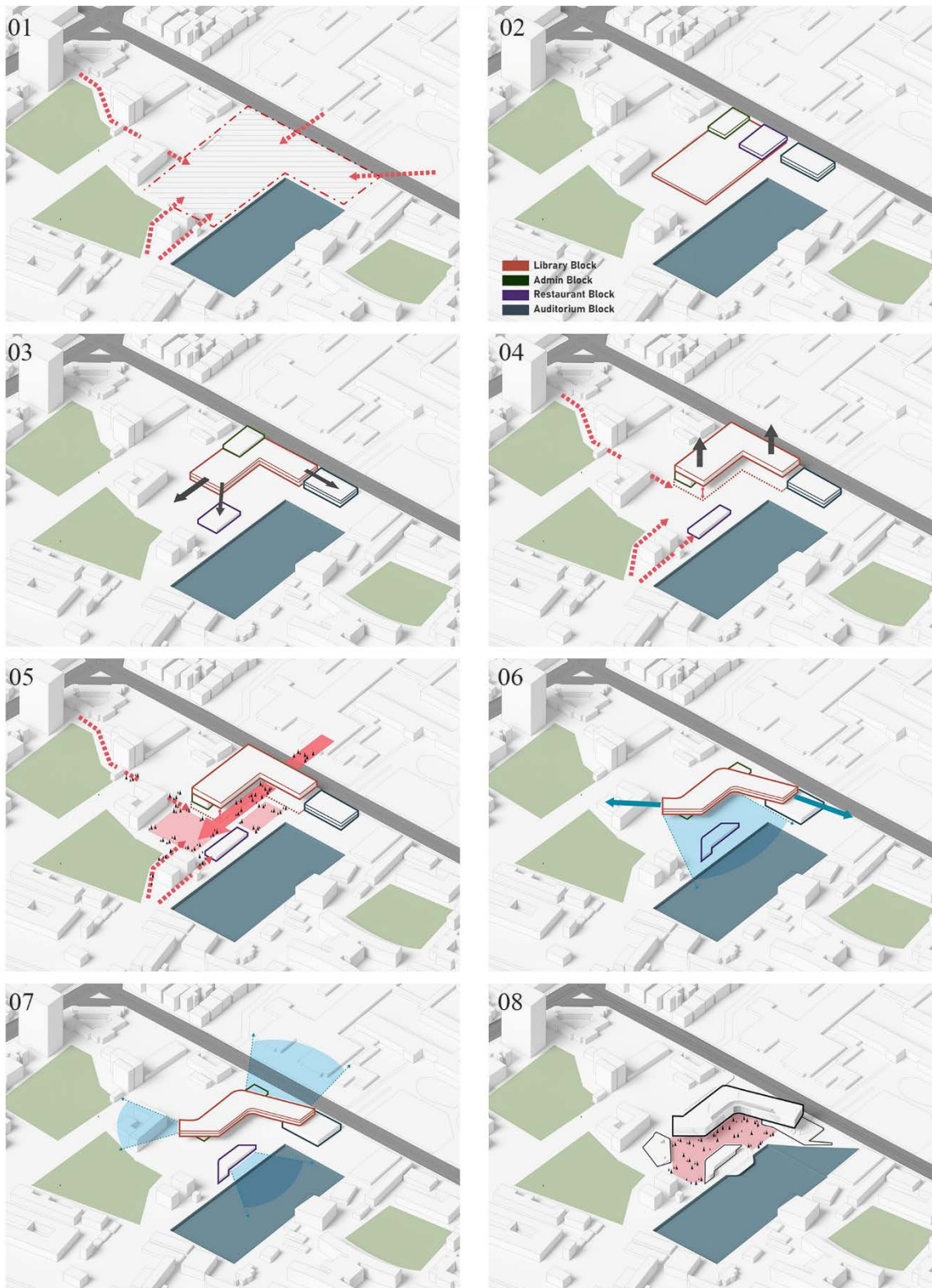


Figure 36: Form Generation from contextual analysis. Source: Author

### 6.4 Structural System Diagram:

Based on the conceptual framework for the project, a large public space was needed to be created within the site. This could have been done by uplifting the library block and creating an open public area underneath in the ground level. To create such a space by uplifting a large mass, innovative structural system was required. Inspired by the work of Steven Holl, vertical service elements are arranged in such a manner that they can be evenly distributed across the site. Then girder beams are placed on top of the vertical structures that in turn can hold floor beams of the main function. The library block is then reinforced on both sides by truss members that connect themselves to the extended floor beams and the roof. Therefore, a solid structural system can be adapted to implement an open public space underneath.

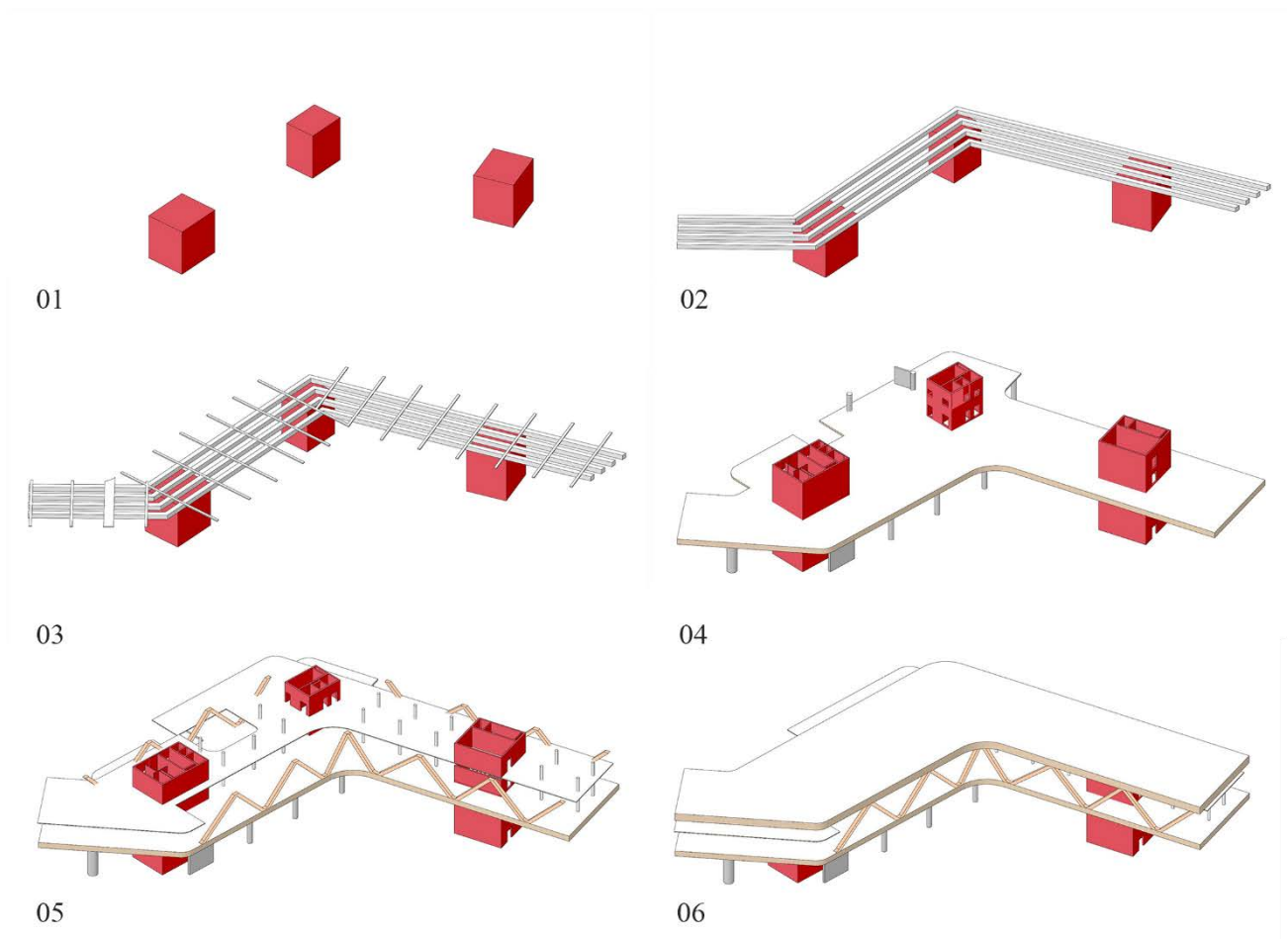


Figure 37: Structural diagram and progression. Source: Author

## CHAPTER 7: DESIGN SUGGESTIONS

### 7.1 Architectural Drawings:





Figure 38: Axonometric View of the project. Source: Author



Figure 39: Site Plan. Source: Author



Figure 40: Ground Floor Plan. Source: Author

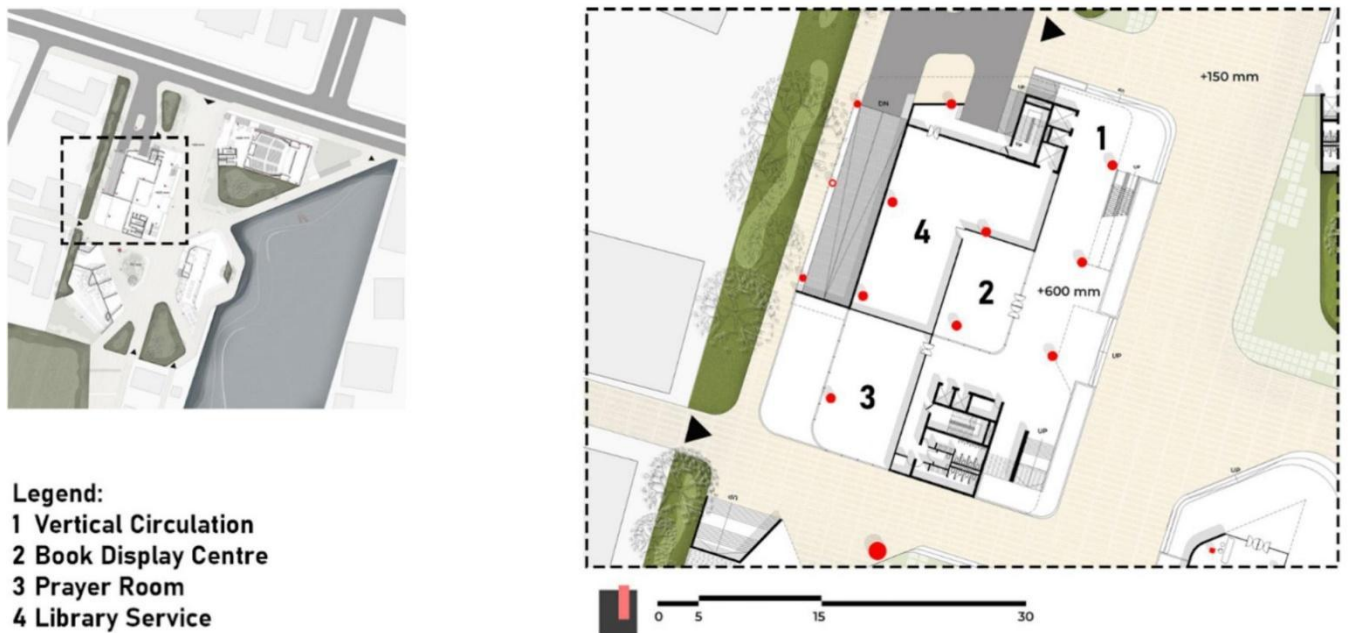
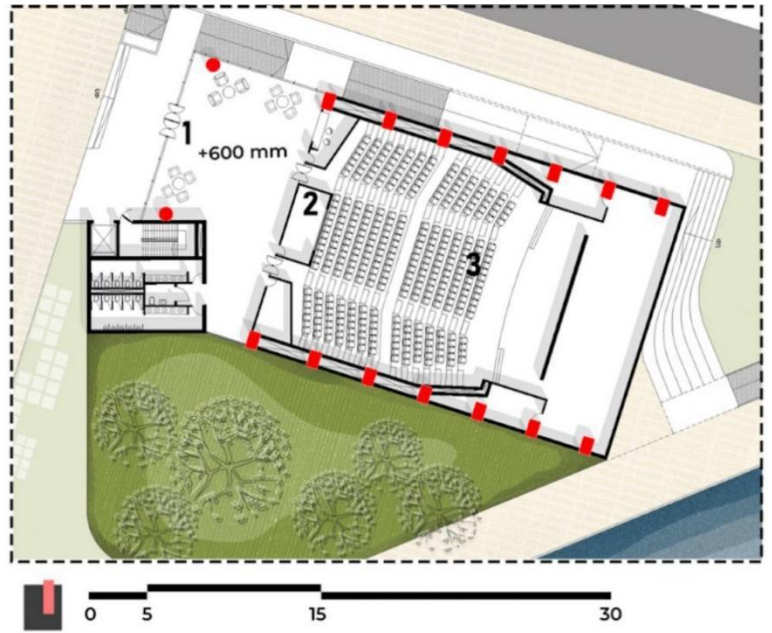
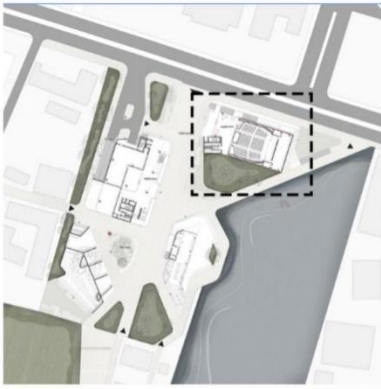
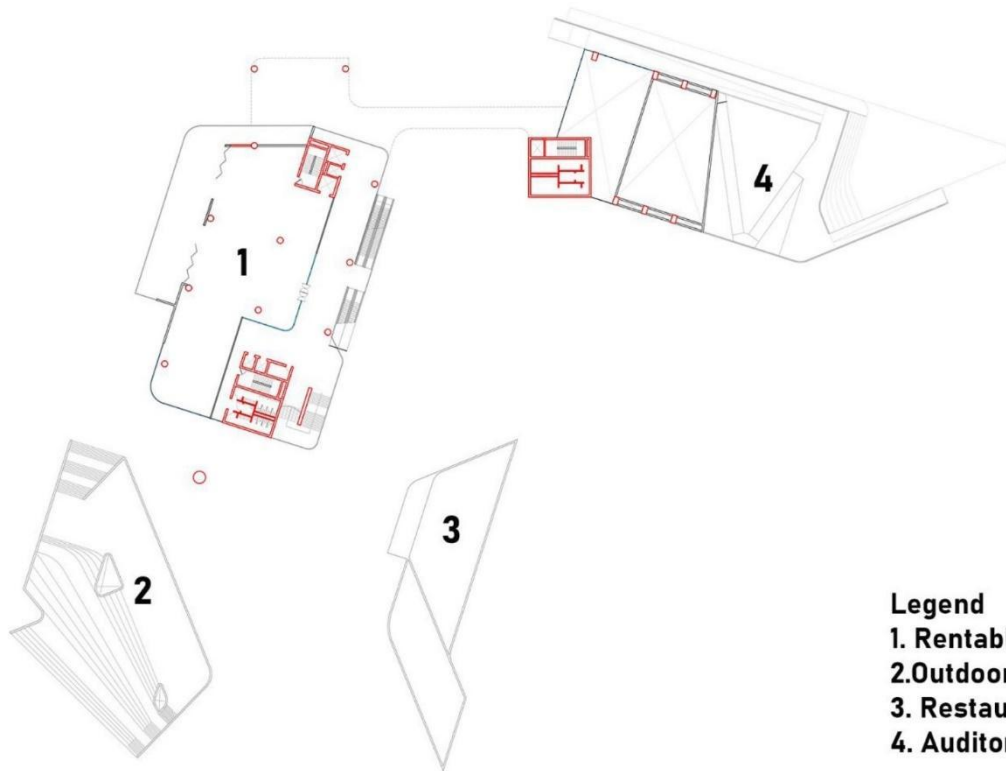


Figure 41: Blowup 1 of Ground Floor Plan. Source: Author



- Legend:**  
 1 Auditorium Entry  
 2 Auditorium Lobby  
 3 Auditorium Hall

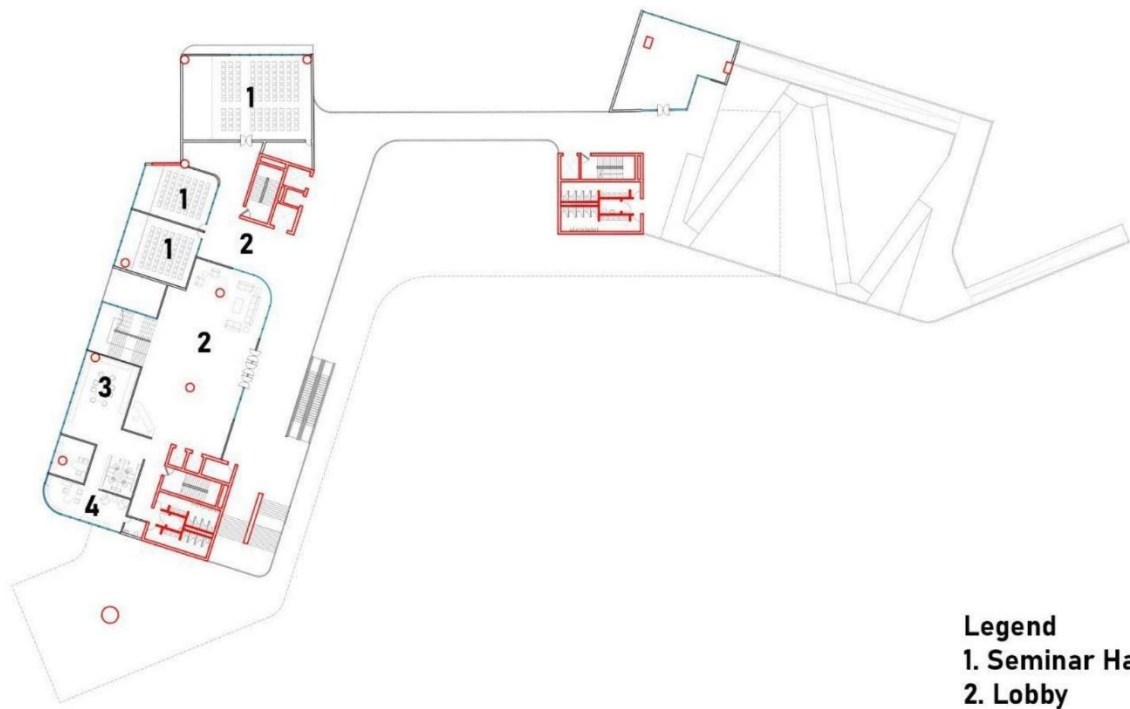
Figure 42: Blowup 2 of Ground Floor Plan. Source: Author



- Legend**  
 1. Rentable Spaces  
 2. Outdoor Sitting  
 3. Restaurant Roof  
 4. Auditorium Roof

**First Floor Plan**  
 0 5 15 30m

Figure 43: First Floor Plan. Source: Author

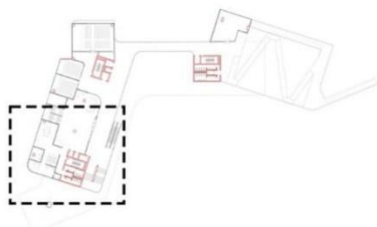


- Legend**
- 1. Seminar Hall
  - 2. Lobby
  - 3. Meeting Room
  - 4. Directors room

**Second Floor Plan**

0 5 15 30m

Figure 44: Second Floor Plan. Source: Author



- Legend:**
- 1 Library Lobby
  - 2 Admin
  - 3 Meeting Room
  - 4 Director's Room

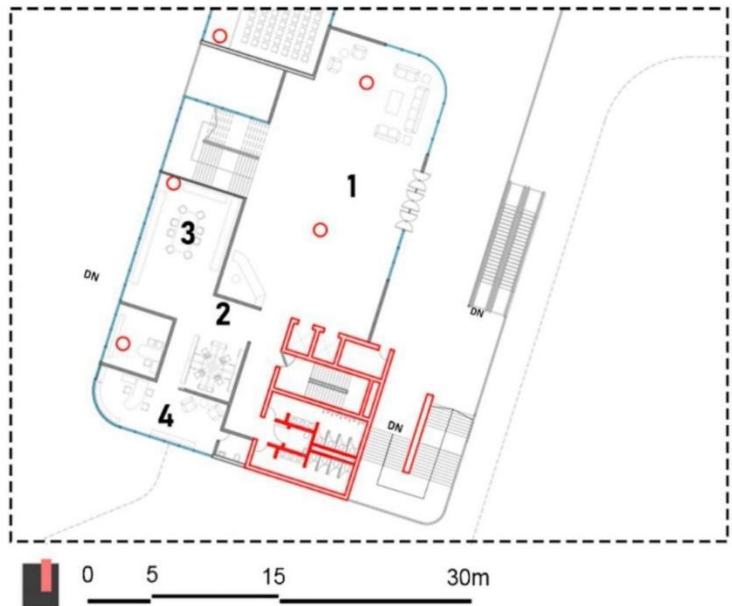
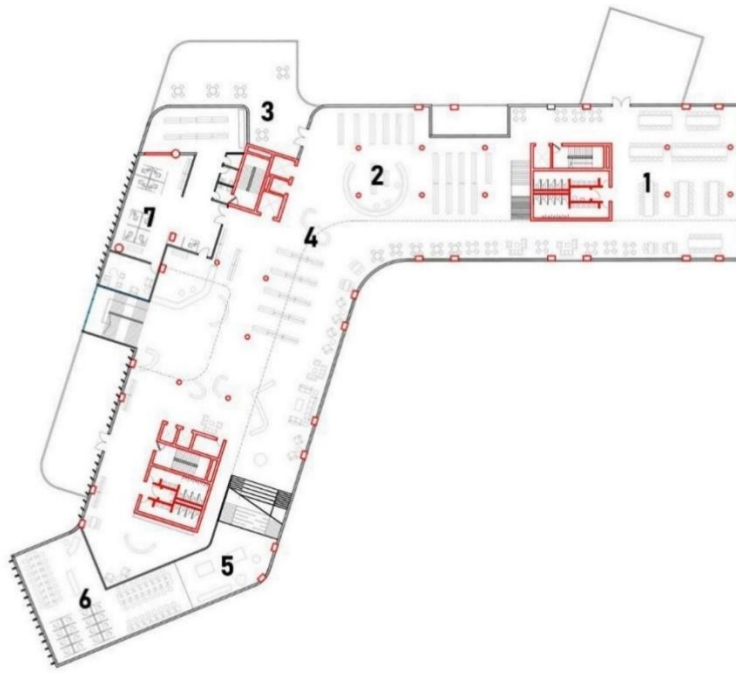


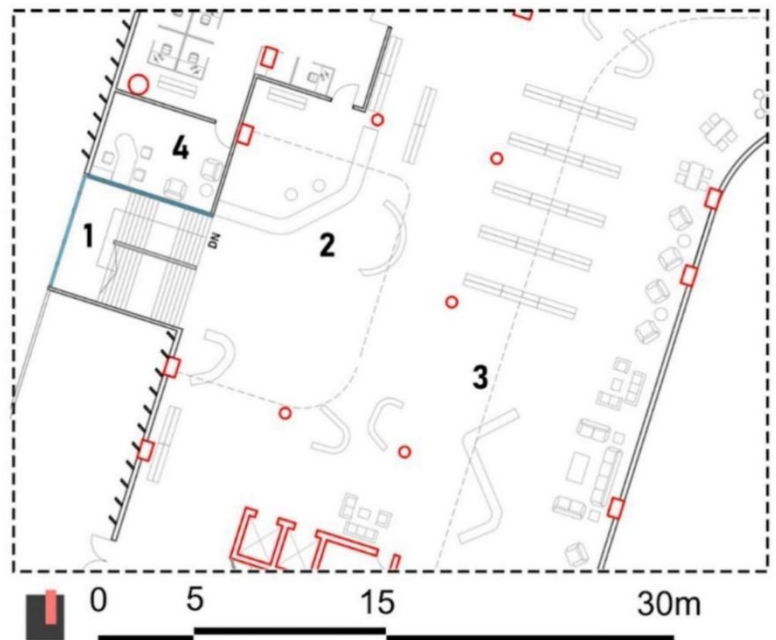
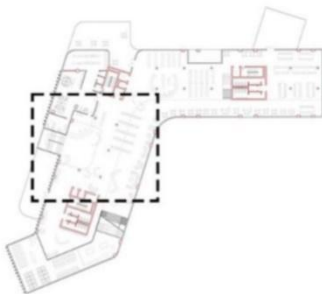
Figure 45: Blowup 1 of Second Floor Plan



- Legend**
- 1. General Reading Room
  - 2. Stacks
  - 3. Outdoor Reading
  - 4. Periodicals
  - 5. AR/VR
  - 6. Audiovisual Room
  - 7. Research

 **Third Floor Plan**  
0 5 15 30m

Figure 46: Third Floor Plan. Source: Author



- Legend:**
- 1 Library Lobby Stairs
  - 2 Information Desk
  - 3 Living Room for the City
  - 4 Head Librarian's Office

Figure 47: Blowup 1 of Third Floor Plan. Source: Author



- Legend:**  
 1 Service Point  
 2 Stacks  
 3 Outdoor Reading  
 4 Periodicals

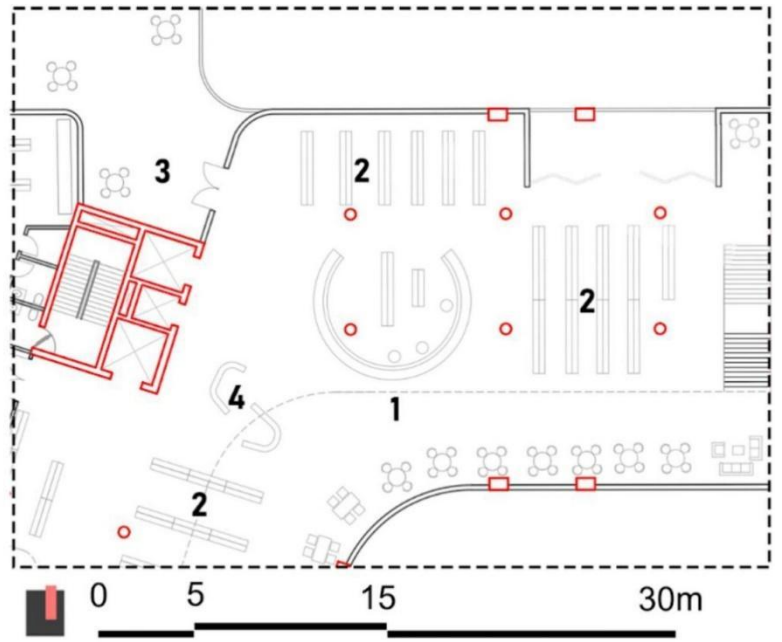
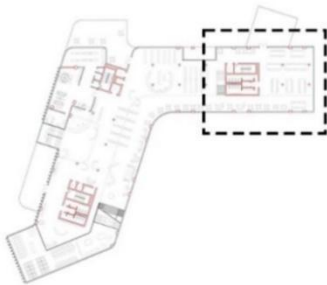


Figure 48: Blowup 2 of Third Floor Plan. Source: Author



- Legend:**  
 1 General Reading Room

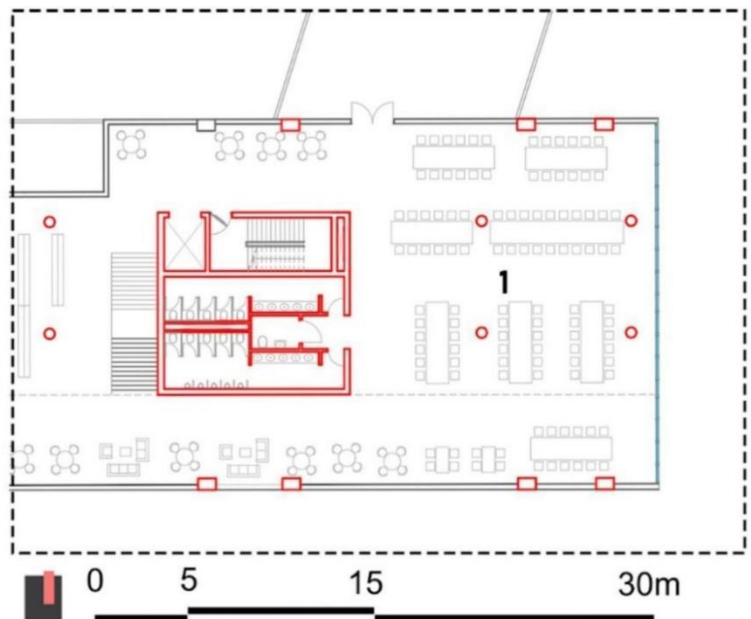


Figure 49: Blowup 3 of Third Floor Plan. Source: Author

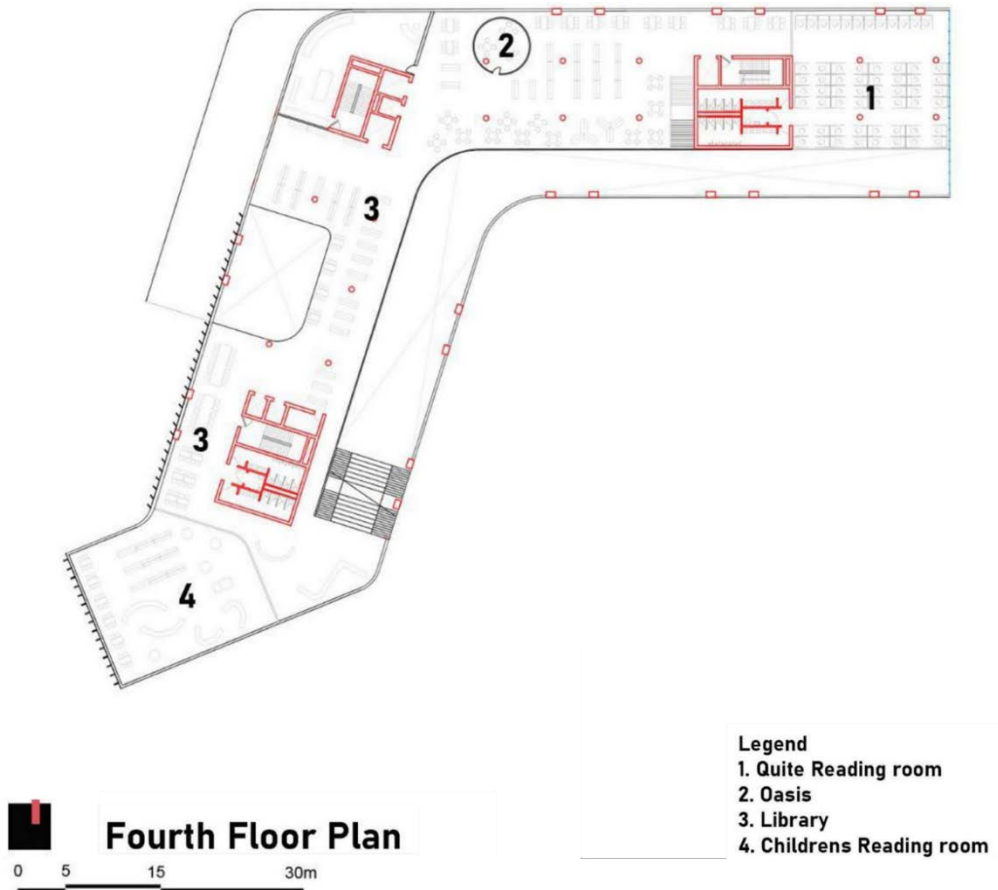


Figure 50: Fourth Floor Plan. Source: Author

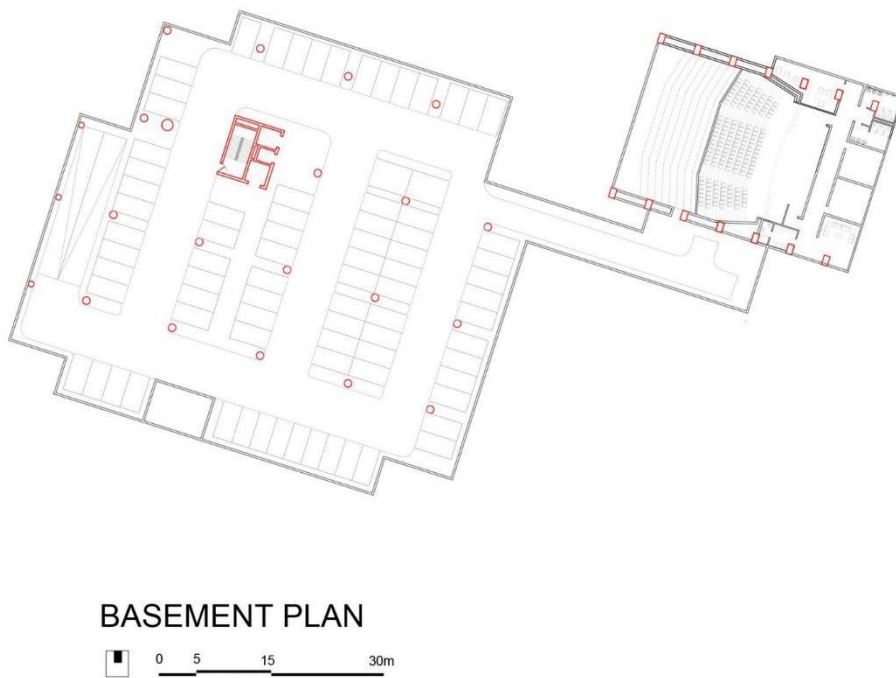


Figure 51: Basement Plan. Source: Author

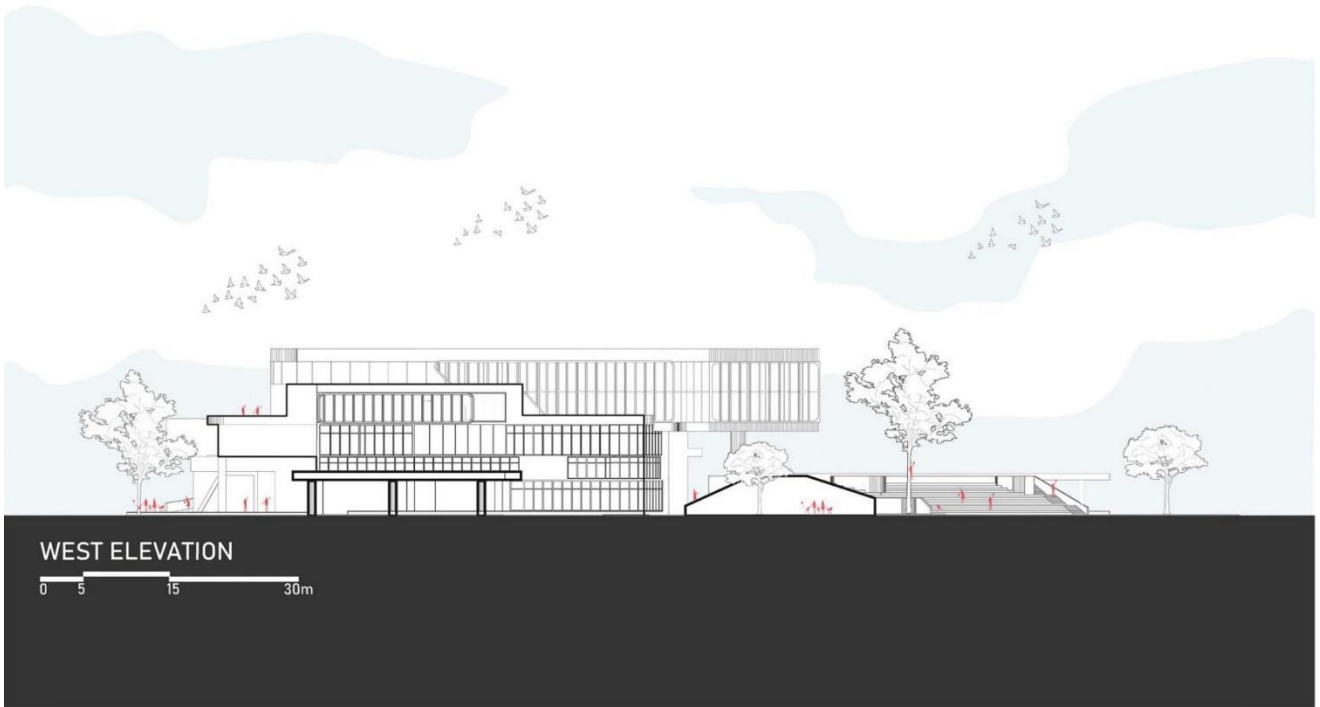


Figure 52: West Elevation. Source: Author

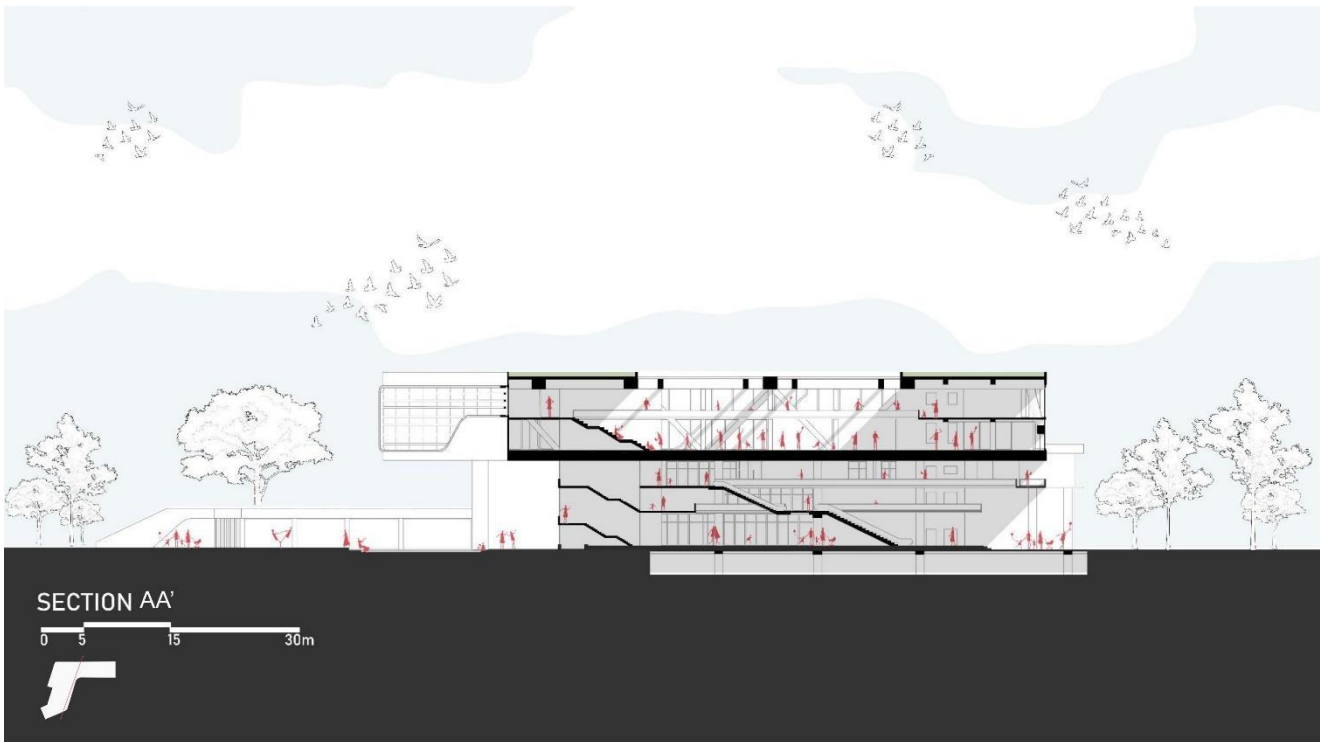


Figure 53: Section AA'. Source: Author





Figure 54: South Elevation. Source: Author

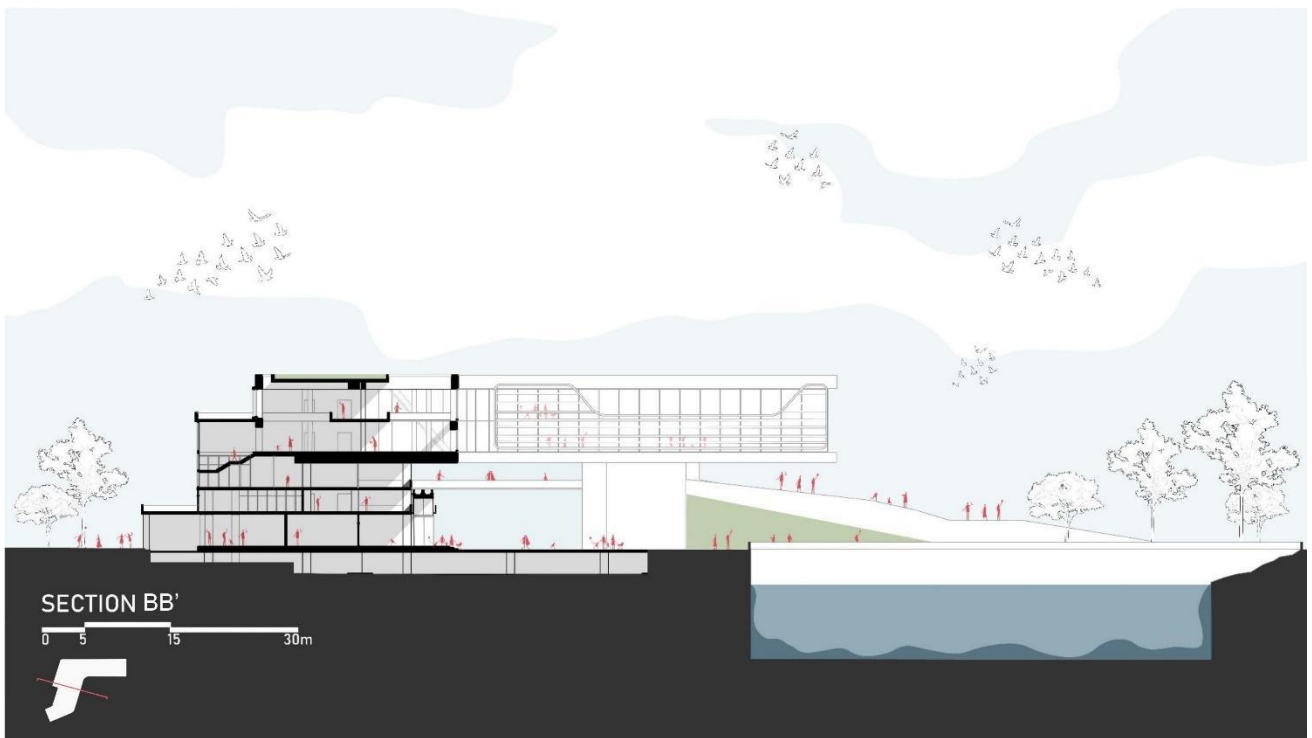


Figure 55: Section BB'. Source: Author

## 7.2 Illustrations of Axonometric Views:



Figure 56: Axonometric view 1. Source: Author

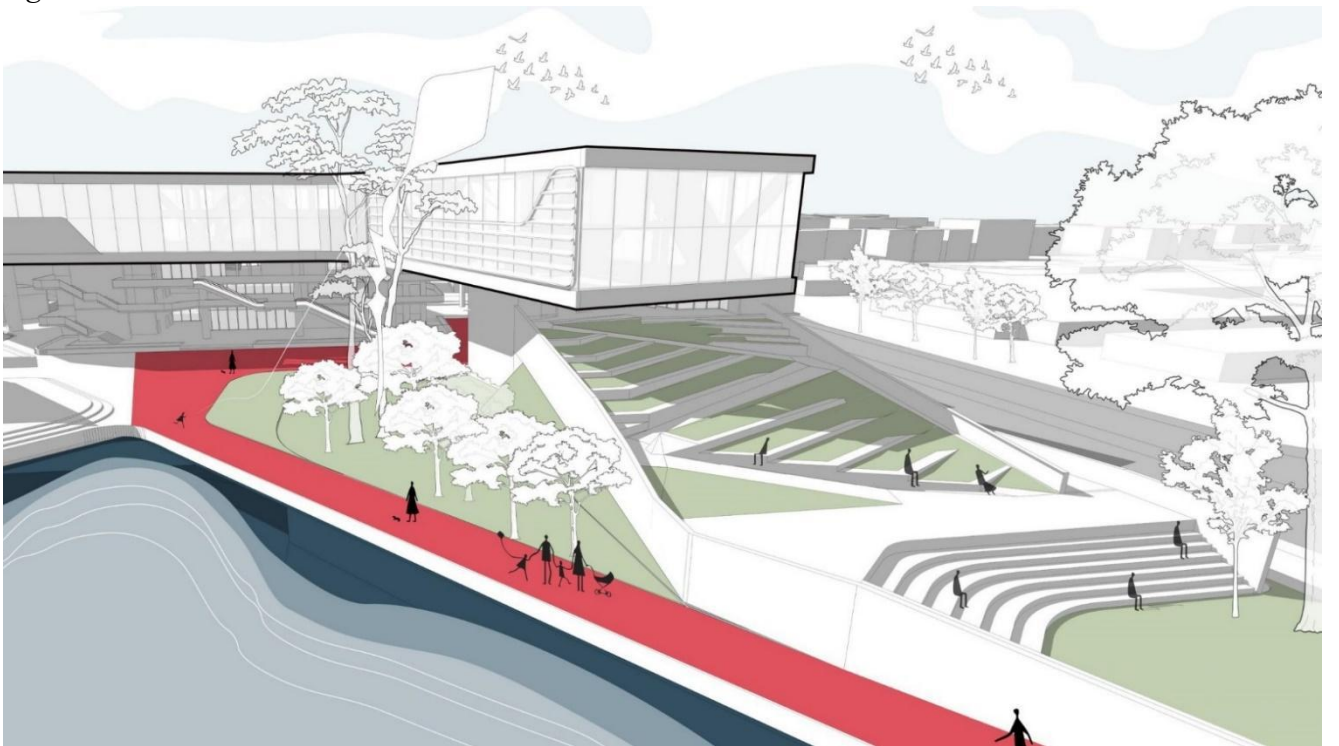


Figure 57: Axonometric view 2. Source: Author

### 7.3 Design Visualizations:



*Figure 58: View from Public Entry. Source: Author*



*Figure 59: View from Southern pedestrian access*



*Figure 60: View from Eastern pedestrian access. Source: Author*



*Figure 61: View of library lobby stairs and Western facade. Source: Author*



Figure 62: Interior view from uppermost floor. Source: Author

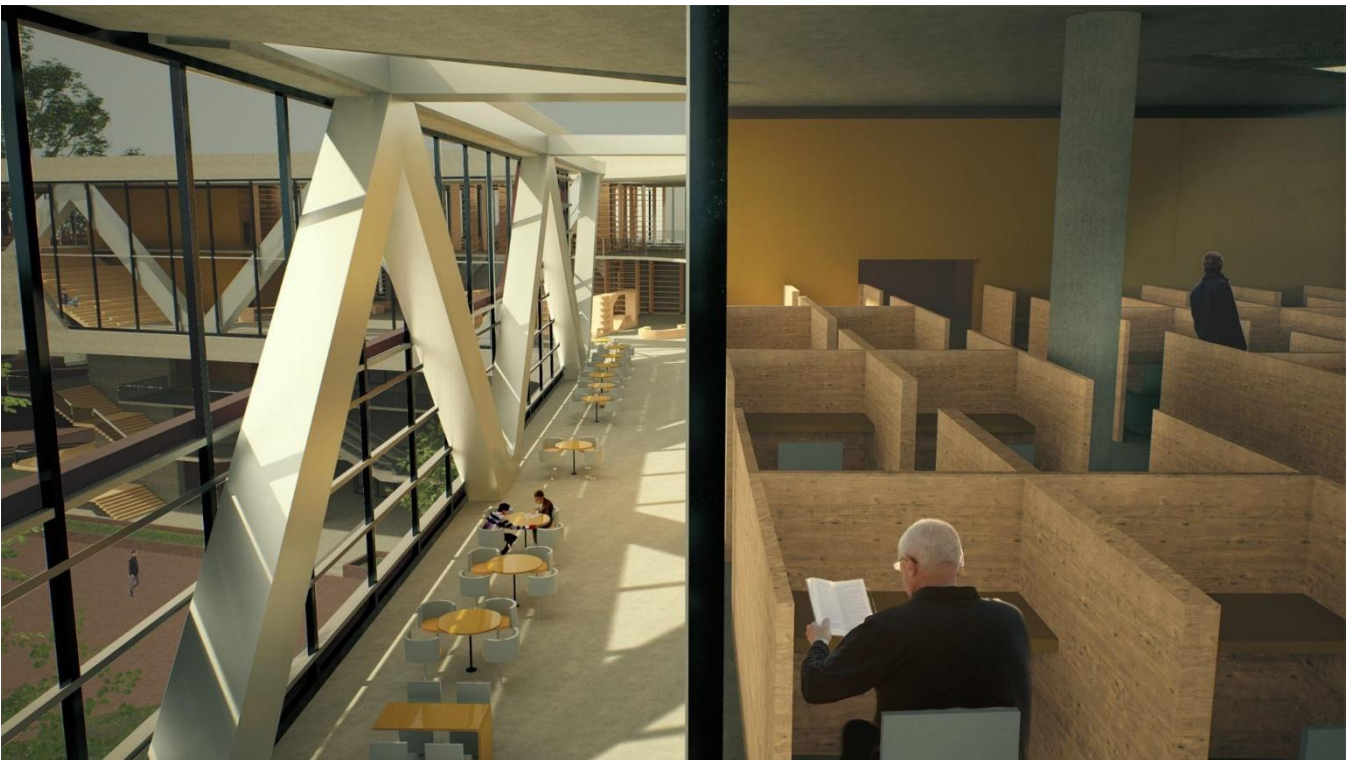


Figure 63: General reading area and private reading zone. Source: Author



*Figure 64: View from top of the stairs towards service point. Source: Author*



*Figure 65: Nighttime atmosphere within the library. Source: Author*

## **CHAPTER 8: CONCLUSION**

The city of Rajshahi is currently undergoing a shift in its urban fabric in terms of population growth and increased opportunities for the people. There should be infrastructure in place to aid the socioeconomic and cultural development of current and future generations of the city and the division as a whole. A public library that adheres to this growing need is thus imperative to this mission. A public facility that provides means for enlightenment and social harmony to its users while maintaining accessibility to the most marginal of communities is crucial to the development of any society. Therefore, we must focus on implementing more public facilities like the Rajshahi Divisional Public Library to improve our capabilities and move towards a brighter future.

## REFERENCES

- Ashikuzzaman, M. (2016). “Types of Library (Academic, Public, National & Special Library)”. Library & Information Science Education Network.  
<https://www.lisedunetwork.com/types-libraries-academic-public-national-special-library/>
- Bakshi, S. (2013). “Public library, Khulna” [Photograph]. Mapio, 2013,  
<https://mapio.net/pic/p-95540992/>
- Edwards, B. (2009). Libraries and learning resource centres. In *Routledge eBooks*.  
<https://doi.org/10.4324/9780080912202>
- Fonck, A. (2012). “Dhaka university central library” [Photograph]. Flickr, 2012,  
<https://www.flickr.com/photos/arnout-fonck/6808449645>
- Islam, M. (2011, April 12). *National Archive & National Library of Bangladesh*.  
<https://dome.mit.edu/handle/1721.3/62999>
- Israel, A. (2020). “PHILLIPS EXETER ACADEMY LIBRARY STUDY”. (n.d.).  
<https://tunastuff.com/phillips-exeter-academy-library-study>
- Mondal, H. (2022). The Role of Library in the Modern Society for supporting Education to Create a Sustainable Future. ResearchGate.  
[https://www.researchgate.net/publication/358797055\\_The\\_Role\\_of\\_Library\\_in\\_the\\_Modern\\_Society\\_for\\_supporting\\_Education\\_to\\_Create\\_a\\_Sustainable\\_Future](https://www.researchgate.net/publication/358797055_The_Role_of_Library_in_the_Modern_Society_for_supporting_Education_to_Create_a_Sustainable_Future)
- PressReader. (2021, November 11). “The evolution of libraries to the 21st century” [Infographic].  
<https://blog.pressreader.com>. <https://blog.pressreader.com/libraries-institutions/21st-century-library-evolution-timeline>
- Renfrew, C. (2012). *Prehistory: The Making of The Human Mind*. Hachette UK.



- Worpole, K. (2013). *Contemporary library architecture: a planning and design guide*. Routledge.
- Zhao, S. (2019). Evolution of public library. *UBC Library Open Collections*.  
<https://doi.org/10.14288/1.0379376>